11 May 2017

MOUNT POLLEY REHABILITATION AND REMEDIATION STRATEGY

Human Health Risk Assessment

Submitted to:
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REPORT

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Golder Associates

Executive Summary

Golder Associated Ltd. (Golder) was retained by Mount Polley Mining Corporation (MPMC) to conduct a human health risk assessment (HHRA) of the tailings spilled following the Tailings Storage Facility (TSF) embankment breach at the Mount Polley Mine (herein referred to as "the Mine") on 4 August 2014. The HHRA outlined in this report focuses on the evaluation of potential long term impacts of the TSF embankment breach to people who may be present on the off-site impacted area downgradient of the TSF. The HHRA is one of several technical deliverables related to the assessment of impacts related to the TSF embankment breach. An ecological risk assessment that includes a terrestrial and aquatic component will be completed under separate cover.

The HHRA was conducted following the guidance as directed by Technical Guidance 7, which is consistent with Health Canada (2010a, 2012) and generally with international risk assessment guidance such as the United States Environmental Protection Agency (US EPA) Risk Assessment Guidance for Superfund.

Currently, the Hazeltine Channel receiving environment is within provincial crown land designated as a mixture of wildlands and backcountry recreational areas, with a small section of land designed within an Agricultural Land Reserve along lower Hazeltine Channel. The area designated as an Agricultural Land Reserve is forested. For the purpose of the HHRA, the overall land use of the remediation areas is considered to be wildland, with people accessing the area for recreational and subsistence land uses.

Subsistence use includes hunting, collecting plants and fishing. Although specific data regarding local consumption rates for different traditional foods was not available to the study team, community liaison members have reported that the land was, and still is, used for harvesting of food. Therefore, the HHRA included a First Nation subsistence and traditional land user receptor who was assumed to harvest food from the land. The subsistence and traditional land user is considered to be the most sensitive receptor, due to the assumptions made regarding reliance on traditional foods.

Current uses of Polley Lake, Quesnel Lake and Quesnel River include commercial, recreational and aboriginal fisheries, and recreational uses such as swimming, boating, kayaking, canoeing and waterskiing, and in the winter, snowmobiling and ice fishing when ice conditions allow. Quesnel Lake is also used as a source of drinking and residential water for domestic purposes[1].

The following receptors were evaluated in the HHRA:

- Subsistence and Traditional Land User
- Hiker/Camper
- ATV/Snowmobile User
- Boater/Kayaker
- Sport Fisher

[1] Domestic purposes as defined in the BC Water Act means the use of water for household requirements, sanitation and fire prevention, the watering of domestic animals and poultry and the irrigation of a garden not exceeding 1012 m^2 adjoining and occupied with a dwelling house.

- Hunter/Trapper
- Quesnel Lake Resident
- Logger
- Mine/Rehabilitation Worker

The DSI Update (Appendix A) identified contaminants in soil, groundwater, sediment and surface water. The contaminants in these media were evaluated in the HHRA. Aluminum was also evaluated at the request of the project reviewers. The following COPCs were identified for the HHRA:

- **Soil**: no CSR exceedances; aluminum added at the request of project reviewers
- **Groundwater**: no access to groundwater along Hazeltine Corridor
- **Sediment**: vanadium exceeded CSR PL standard; aluminum added at the request of project reviewers
- **Surface water**: none; no exceedances of drinking water standards
- **Air**: none; all potential contaminants met screening criteria
- **Vegetation**: copper and vanadium; aluminum added at the request of project reviewers
- **Fish**: aluminum, copper and vanadium; screening criteria not available, COPCs were identified based on the media listed above

Risks to the subsistence and traditional land user, hiker/camper, ATV/snowmobile user, boater/kayaker, sport fisher, hunter/trapper, Quesnel Lake resident, logger and mine/rehabilitation worker from exposure to aluminum, copper and vanadium were evaluated in the HHRA. Specifically, the following exposure pathways were evaluated:

- **Subsistence and traditional land user**: incidental sediment and soil ingestion, dermal contact with sediment, soil and surface water, inhalation of soil particulates, ingestion of surface water and ingestion of berries, traditional plants, deer meat, deer liver, moose meat, moose liver, fish and grouse
- **Hiker/Camper**: incidental sediment and soil ingestion, dermal contact with sediment, soil and surface water, inhalation of soil particulates, ingestion of surface water and ingestion of berries
- **ATV User**: incidental soil ingestion, dermal contact with soil, inhalation of soil particulates, ingestion of surface water and ingestion of berries
- **Boater/Kayaker**: incidental sediment ingestion, dermal contact with sediment, ingestion of surface water and ingestion of fish
- **Sport Fisher**: ingestion of surface water and ingestion of fish
- **Hunter/Trapper**: incidental soil ingestion, dermal contact with soil, inhalation of soil particulates, ingestion of surface water and ingestion of deer, moose, fish and grouse

- **Quesnel Lake Resident**: incidental sediment ingestion, dermal contact with sediment and surface water, ingestion of surface water and ingestion of berries, deer, moose, fish, grouse and cattle
- **Logger**: incidental soil ingestion, dermal contact with soil, inhalation of soil particulates, ingestion of surface water and ingestion of fish
- **Mine/Rehabilitation Worker**: incidental soil ingestion, dermal contact with soil, inhalation of soil particulates, ingestion of surface water and ingestion of berries and fish

Even with the conservative assumptions applied in the HHRA, the results indicate that risks are low for the subsistence and traditional land user, hiker/camper, ATV/snowmobile user, boater/kayaker, sport fisher, hunter/trapper, Quesnel Lake resident, logger and mine/rehabilitation worker exposed to aluminum, copper and vanadium in sediment, soil, surface water and dietary items (i.e., berries, plants, deer meat, deer liver, moose meat, moose liver, grouse, fish and cattle). The calculated hazard indices were below the threshold of 1 for each of the exposure pathways.

The estimated risks for the above receptors were considered acceptable because the hazard indices were below the threshold of 1.0. The majority of hazard indices were less than 1. Therefore, human health risks associated with the TSF embankment breach are considered to be very low.

The only risk control for the human health risk assessment is that groundwater in the Hazeltine Corridor should not be used for drinking water purposes unless found acceptable by a qualified professional. The rationale behind this risk control includes:

i) Based on the investigations of the tailings impacted groundwater, the following metals exceeded the drinking water standards: iron, manganese, arsenic, molybdenum, sulfate.

ii) Test wells were installed within the tailings deposition overlying the native till. The tailings thickness at the test well locations was generally 1-1.5 metres in the areas where the test wells were installed.

iii) Currently, there are no groundwater supply wells in the Hazeltine Corridor and no exposure pathway to groundwater.

iv) If groundwater supply wells are installed along the Hazeltine Corridor in the future, installation and evaluation of groundwater quality should be conducted under the supervision of a qualified professional.

This HHRA was conducted according to Technical Guidance 7, Supplemental Guidance for Risk Assessment. Risks to human health were quantified and found to be less than 1.0. Therefore, in accordance with the CSR **18**(3)(b), risks to human health are acceptable under current and future conditions.

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List of Acronyms and Abbreviations

Abbreviation	Definition
≥	greater than or equal to
%	percent
APEC	Area of potential environmental concern
ATV	All-Terrain Vehicle
BAF	bioaccumulation factor
BC	British Columbia
BC MoE	British Columbia Ministry of Environment
BTF	Biotransfer factors
CCME	Canadian Council of Ministers of the Environment
CEMP	Comprehensive Environmental Monitoring Plan
cm^2	square centimetre
COPC	Contaminant of Potential Concern
CSAP	Contaminated Sites Approved Professionals
CSR	Contaminated Sites Regulation
day/kg	day per kilogram
DSI	Detailed Site Investigation
EDI	Estimated daily intake
EMA	Environmental Management Act
FNFNES	First Nations Food, Nutrition and Environment Study
FSR	Forest Service Road
g/cm^2/event	grams per square centimetre per event
g/day	Grams per day
Golder	Golder Associates Ltd.
ha	Hectares
HHRA	Human Health Risk Assessment
HQ	Hazard Quotient
IARC	International Agency for Research on Cancer
ILCR	Incremental Lifetime Cancer Risk
IRIS	Integrated Risk Information System
kg	Kilogram
kg/day	Kilograms per day
Mine	Mount Polley Mine
Minnow	Minnow Environmental Inc.
mg/day	milligram per day
mg/kg	milligram per kilogram
mg/kg (bw)/day	Milligrams per kilogram (body weight) per day
mg/m^3	Milligrams per cubic meter

Abbreviation	Definition
MPMC	Mount Polley Mining Corporation
n/a	not applicable
PAO	Pollution Abatement Order
PBET	Physiologically based extraction tests
PEEIAR	Post-Event Environmental Impact Assessment Report
RAF	Relative Absorption factor
R&RS	Rehabilitation and Remediation Strategy
TRV	Toxicity Reference Value
TSF	Tailings Storage Facility
UCLM	Upper Confidence Limit of the Mean
US EPA	United States Environmental Protection Agency
WHO	World Health Organization
ww	wet weight

1.0 INTRODUCTION

Golder Associated Ltd. (Golder) was retained by Mount Polley Mining Corporation (MPMC) to conduct a human health risk assessment (HHRA) of the tailings spilled following the Tailings Storage Facility (TSF) embankment breach at the Mount Polley Mine (herein referred to as "the Mine") on 4 August 2014. Note that in this report, "spilled tailings" refer to a mixture of tailings, construction materials and scoured natural soils and sediments.

Immediately following the TSF embankment breach, the Mine implemented a Rehabilitation and Remediation Strategy (R&RS) as outlined in the Figure 1. Phase I of the R&RS focused on control of the tailings release and site safety measures. Phase II of the R&RS involved an evaluation of the impacts of the TSF embankment breach immediately following the release. The HHRA outlined in this report is included in Phase III of the R&RS and focuses on the evaluation of potential long term impacts of the TSF embankment breach to people who may be present on the off-site impacted area downgradient of the TSF.

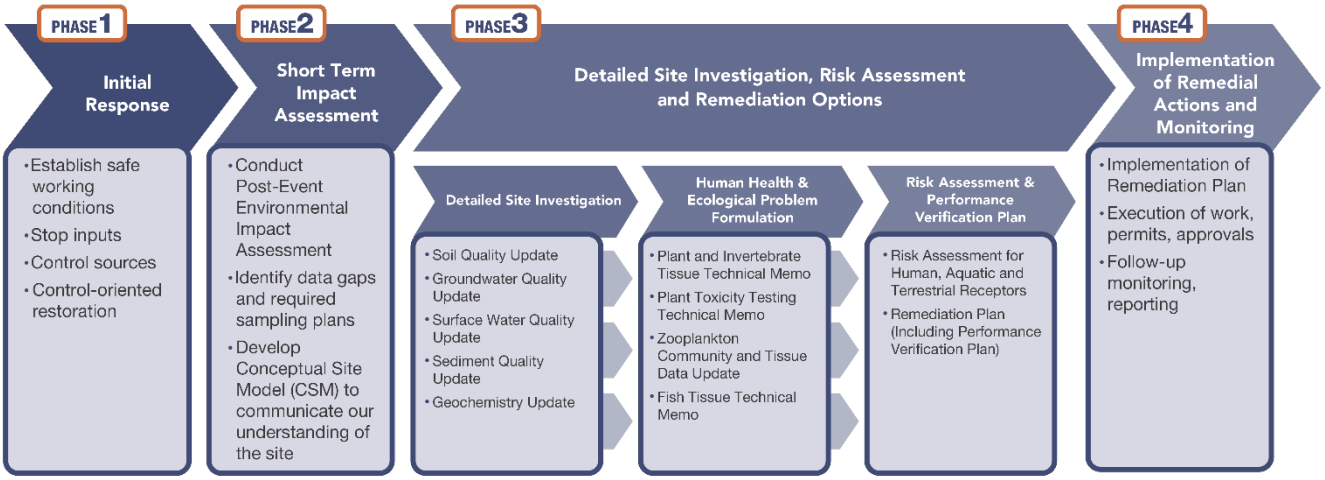

Figure 1: Rehabilitation and Remediation Strategy

The spatial areas of the zone of potential impact were identified early in the R&RS process and are outlined as areas of potential environmental concern (APECs) in Figure 2. These APECs collectively make up the area of investigation and are referred to as the "Study Area". Several investigations have been conducted of the physical, chemical and biological changes to these APECs as part of Phase II of the R&RS (MPMC 2015a). The findings of these reports have been used and referred to in this assessment.

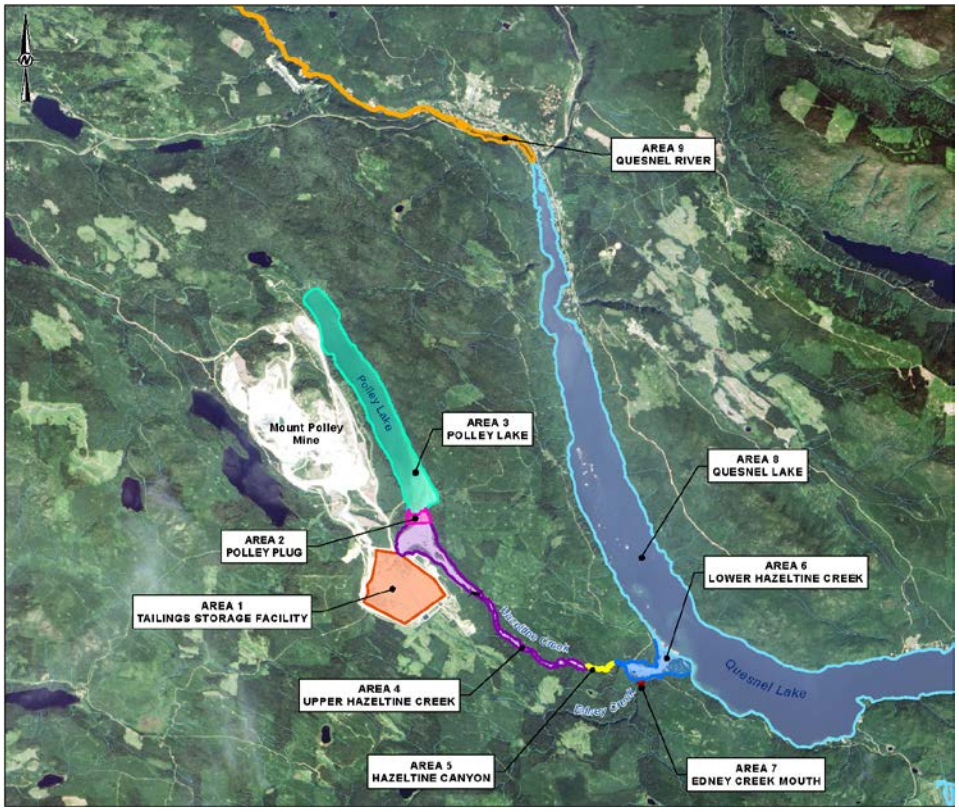

Figure 2: Mount Polley Mine TSF Embankment Breach Remediation Areas

1.1 Regulatory Context

In British Columbia (BC), environmental matters pertaining to the investigation and remediation of contaminated sites fall under the jurisdiction of the BC Ministry of Environment (MoE), pursuant to the Environmental Management Act (EMA; SBC 2003, Chapter 53 assessed 23 October 2003, including BC Reg. 179/2016 amendments effective 19 July 2016). Exceptions include federal lands and waters with migratory fish that fall under the jurisdiction of Environment Canada. The two key regulations under the EMA relating to the assessment and remediation of contaminated sites are the Contaminated Sites Regulation (CSR; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 184/2016, effective 19 July 2016), and the Hazardous Waste Regulation (BC Reg. 63/88, O.C. 268/88 including amendments up to BC Reg. 179/2016 App 1 amendments effective 19 July 2016).

The areas impacted by the tailings from the TSF embankment breach are under a Pollution Abatement Order (PAO; #107461) issued pursuant to Section 83 (1c) of the EMA. Section 83 outlines the actions to be taken to satisfy the Act, including a requirement to "undertake investigations, tests, surveys and any other action the director considers necessary to determine the extent and effects of the pollution and to report the results to the director" (Section 83[2b]). Pollution, in the context of the EMA, refers to substances or contaminants that substantially alter or impair the usefulness of the environment (Section 1[1]). The CSR 11(1) defines contaminants as those parameters that exceed the applicable CSR standard for the site.

The HHRA outlined in this report fulfills the requirement of the PAO Amendment to conduct a HHRA under the EMA. An ecological risk assessment that includes a terrestrial and aquatic component will be completed under separate cover. The separation of these two risk assessment reports is being done at the request of project reviewers.

The EMA, the CSR and its associated Protocols and Technical Guidance directly address the central question of determining whether contaminants associated with the release of tailings have the potential to constitute pollution that impairs the environment. Ultimately, the purpose of the HHRA is to determine if health risks associated with the tailings are acceptable for human health or if remediation works are needed for compliance with the CSR and EMA.

1.2 Technical Approach for Risk Assessment

In BC, preferences and policy decisions applicable to contaminated site HHRAs are contained in Technical Guidance 7 (BC MoE 2015a). Technical Guidance 7 provides “guidance related to the performance of human health and ecological risk assessments for contaminated sites in British Columbia [to] supplement existing provisions in protocols under the Environmental Management Act”. The guidance identifies the preferred sources for model parameterization and toxicity reference values (TRVs) for HHRAs.

The HHRA was conducted following the guidance as directed by Technical Guidance 7, which is consistent with Health Canada (2010a, 2012) and generally with international risk assessment guidance such as the United States Environmental Protection Agency (US EPA) Risk Assessment Guidance for Superfund. Key decisions that reflect specific information from Technical Guidance 7 include:

- Problem Formulation elements such as the evaluation of potential exposure pathways, human ‘receptors’, contaminants of potential concern (COPCs) and scenario assumptions followed Health Canada (2010a, 2012). If a particular exposure parameter, equation or scenario was not available in applicable Health Canada guidance, US EPA guidance was used.
- The purpose of the Problem Formulation step is to focus the quantitative steps of the risk assessment on those potentially significant exposure pathways that warrant further assessment and to identify those pathways that are not significant and do not require further assessment.
- Toxicological equations followed Health Canada (2010a, 2012).
- Classification of substances as carcinogenic followed the preferred hierarchy of data sources (Health Canada, US EPA Integrated Risk Information System [IRIS], International Agency for Research on Cancer [IARC]).
- TRVs (e.g., acceptable daily intakes, reference doses, cancer slope factors) were adopted from the US EPA IRIS. If a TRV was not available from the US EPA, then other sources (e.g., Health Canada) were consulted.

1.3 Report Organization and Relationship to Other Documents

The HHRA is one of several technical deliverables related to the assessment of impacts related to the TSF embankment breach. Findings from previous technical reports (Section 1.3.2) were used as they were applicable to this study.

1.3.1 Report Organization

This current document is organized as follows:

- Section 1—Introduction. This section provides regulatory and project context, describes the overall approach used in the risk assessment, and presents the qualifications of the authors.
- Section 2—Summary of Site Investigations. This section provides an overview of the results of the site investigations completed to date, which sets the stage for the HHRA.
- Section 3—Problem Formulation. The problem formulation provides a brief overview of the available data, and:
  - identifies the relevant stressors and COPCs, and presents a conceptual model of how those stressors and COPCs can impact human receptors
  - discusses key uncertainties or data gaps in the available information
  - describes how the available data will be interpreted and integrated in the context of a site-specific HHRA
- Sections 4, 5 and 6—Risk Assessment. Risks to human receptors are evaluated for those pathways, stressors and receptor combinations which were retained for quantitative risk assessment at the completion of the problem formulation.
- Section 7—Risk Conclusions. This section summarizes the overall risk conclusions. A discussion about the implications of the risk conclusions for site management planning is provided, with emphasis on how the risk assessment can be used to guide decisions regarding remediation and long term monitoring. Opportunities for refinement in risk conclusions in the context of the overall uncertainty are also discussed.

1.3.2 Previous Technical Deliverables

The HHRA was completed using data from pre-breach baseline reports, the Post-Event Environmental Impact Assessment Reports (PEEIAR), the detailed site investigation (DSI) report and other post-TSF embankment breach monitoring information, as detailed below. Relevant data for the risk assessment were available from the following previous technical deliverables:

- Golder completed a PEEIAR on behalf of MPMC in June 2015 (MPMC 2015b), which MPMC submitted to the BC MoE. The PEEIAR provided an assessment of the physical, chemical and biological impacts in the first six to eight months following the TSF embankment breach. The PEEIAR included the following relevant technical appendices for the HHRA:
  - geochemical characterization of the spilled tailings

- soil quality assessment
- sediment quality assessment
- surface water quality assessment

- Golder completed a DSI in January 2016 in accordance with the PAO amendment Order 107461 to characterize and delineate contamination in abiotic media associated with the release of tailings in the different remediation areas (Golder 2016a). Under the CSR Site Investigation and Remediation Process, the purpose of the DSI is to:

  v) identify COPC based on site history

  vi) characterize contamination at the site based on comparison of the chemistry of site samples to environmental quality standards

  vii) delineate the extent of contamination and estimate volumes

  Site sample chemistry data were compared to the applicable numerical standards prescribed by the CSR. The DSI included the following technical appendices:

  - Update to the soil quality assessment
  - Update to the geochemical characterization of the spilled tailings
  - Groundwater assessment
  - Update to the surface water quality assessment
  - Update to the sediment quality assessment

- Golder prepared an update to the PEEIAR in June 2016 (Golder 2016b). The update report continued to expand on the available information regarding the distribution of contaminants in surface water, groundwater, soil and sediment provided in the PEEIAR and DSI reports, and included the following additional technical appendices:

  - Groundwater quality
  - Sediment toxicology and benthic invertebrate tissue assessment
  - Lake productivity and lower trophic level tissue assessment
  - Fish tissue assessment
  - Terrestrial ecosystem assessment
  - Terrestrial plant and soil invertebrate tissue analysis
  - Evaluation of mercury for biomagnification potential

- Golder completed a DSI Update in February 2017 (Appendix A). The DSI Update report is a continuation of site investigation work previously completed at the Mine, and forms part of the on-going remediation and rehabilitation works at the Mine. The DSI Update presents the findings of investigation and monitoring works conducted at the Mine between August 2015 and August 2016, and incorporates the findings of the previous DSI report for the Mine as well as the PEEIAR update that was completed in June 2016 (Golder 2016b). The overall objective of the DSI Update was to confirm soil, groundwater and surface water quality to support the completion of a HHRA and an Ecological Risk Assessment for the Mine.
- MPMC submitted a comprehensive environmental monitoring plan (CEMP) to the BC MoE in June 2016 (MPMC 2016). This document outlined how existing and proposed monitoring programs would be executed for the next three to five years, and was generally built around the same data collection elements (abiotic and biotic chemistry, toxicity testing, and monitoring of biological communities) that comprised the PEEIAR. The CEMP includes provisions for monitoring updates based on the outcomes of the HHRA.

In many instances, these previous reports contained technical appendices where data were interpreted in light of the specific objectives. Several other investigations have been completed to date, some of them specifically for the HHRA. For transparency, Golder has opted to include the entirety of these reports as appendices, which are compiled in the Appendix Book, to convey a full understanding of the methods and data. The body of this report provides a summary of methods, but analysis and interpretation of those data emphasized a risk assessment context.

The following technical reports that are relevant to the HHRA are provided in the Appendix Book:

Appendix[1]	Appendix Title
APPENDIX A	**Detailed Site Investigation Update**
A-1	Background Soil Quality Technical Memorandum
A-2	SRK Laboratory Kinetic Tests on Spilled Tailings
A-3	SRK Polley Flats Geochemical Conceptual Model
A-4	Groundwater Quality Update Technical Memorandum
A-5	Physical Hydrogeological Assessment and Conceptual Site Model Technical Memorandum
A-6.1	Surface Water Quality Impact Assessment Update, March to August 2015
A-6.2	Addendum to Surface Water Quality Impact Assessment Update Technical Memorandum
A-7.1	Minnow Sediment Quality Data Report - August 2015 Collections
A-7.2	Minnow Sediment and Sediment Porewater Quality Data Update Memorandum
A-8	2016 Co-located Soil Samples – Laboratory Certificates of Analysis
APPENDIX B	**Human Health Risk Assessment Supporting Information**
B-1	Data Screening for the Human Health Risk Assessment
B-2	Berry and Fish Ingestion Rates
B-3	Food Chain Model Inputs and Outputs for Estimating Tissue Concentrations
B-4	Human Health Risk Assessment Model Outputs
B-5	Sample Calculation
B-6	Toxicity Information
B-7	Physiologically Based Extraction Test Results
APPENDIX C	**Air Quality**
C-1	Air Quality Prediction Methods Memo
C-2	Continuous Particulate Monitoring at Mount Polley 17 to 29 September 2015: Summary of Particulate Monitoring 7 July to 29 September 2015
APPENDIX D	**Fish Tissue Chemistry**
D-1	Summary of Available Fish Tissue Chemistry Data (2014–2015) for Assessment of Potential Changes in Concentrations Related to the Mount Polley Tailings Dam Failure
D-2[2]	Sentinel Fish Tissue Quality in the Vicinity of Mount Polley Mine, 2015-2016
APPENDIX E	**Terrestrial Plant and Invertebrate Tissue Chemistry**
E-1.1	Tissue Data Report for Plants Collected Along Hazeltine Channel
E-1.2	Addendum to Tissue Data Report for Plants Collected Along Hazeltine Channel
E-2	Tissue Data Report for Soil Invertebrates Collected Along Hazeltine Channel

1) Additional appendices relevant to the ecological and aquatic health risk assessments will be included in the Appendix Book.

2) Appendix D-2 will be issued with the ecological and aquatic health risk assessments Appendix Book.

1.4 Professional Statement

Protocol 6 (BC MoE 2015b) specifically outlines that qualified Approved Professionals may make recommendations to a Director that an application for a contaminated sites legal instrument be approved. This HHRA was completed by a team of risk assessment specialists with significant experience in applying the HHRA framework used as part of the CSR and other relevant guidance manuals. This team worked under the supervision of Trish Miller, MSc, RPBio, CSAP (Risk), who was assisted by Dr. Reidar Zapf-Gilje, PEng, CSAP (Standards, Risk). A summary of qualifications for each risk assessment practitioner involved in the HHRA is provided below.

1.4.1 Professional Statement and Signature of Risk Assessor Completing the Risk Assessment Report

Professional statement and signature:

1) In accordance with Section 63 of the Contaminated Sites Regulation, I confirm that I have demonstrable experience in conducting human health and/or ecological risk assessment pertinent to the purposes of the Contaminated Sites Regulation.

2) I also confirm that:

   a) the risk assessment performed by me, and reported herein, has been performed to the best of my ability in accordance with Ministry approved protocols, guidance, procedures, policies, methods and standards of professional practice, and

   b) the information used in the performance of the risk assessment and the conclusions of the risk assessment reported herein are true and accurate based on my current knowledge as of the date completed.

Print Name	Signature	Date Completed

1.4.2 Qualifications of Lead Authors

Trish Miller, MSc, RPBio, CSAP

Trish Miller, MSc, RPBio, CSAP, is a senior environmental scientist and Principal with Golder Associates Ltd. with more than 25 years' experience in human health and ecological risk assessment. Ms. Miller is active in all aspects of contaminated sites risk assessment and remediation, including oversight of the development of sampling plans, integrating objectives and data requirements of a risk assessment into work plans and site investigations, designing toxicology testing programs for ecological assessments, coordinating data analysis, developing site-specific remediation standards, liaising with clients, and reporting. Ms. Miller has developed provincial matrix standards and water quality guidelines, and derived numerous site-specific risk-based soil, groundwater and surface water standards. She works with a variety of First Nations on both large and small scale projects ranging for investigation and remediation of large scale diesel contamination to risk assessments of risk-based closure of remote dump sites. Ms. Miller works with Health Canada to develop guidance including how to conduct site investigations to support risk assessments in remote northern communities, guidance for sediment quality guidelines for human health and guidance for risk assessments in federal environmental impact assessments. She conducts workshops for professional development of managers and consultants on the advantages of risk assessment for contaminated site remediation and on general principles and procedures involved in the conduct of risk assessments. Ms. Miller was appointed by the Province to the BC Contaminated Sites Approved Professionals (CSAP) in Risk Assessment. She regularly reviews reports and makes recommendations related to remediation of contaminated land in BC on behalf of the Provincial Ministry of the Environment. Also, as an Approved Professional, Ms. Miller has served on the Technical Review Committee, currently serves on the Performance Assessment Committee, conducts peer Performance Assessments and was a member of the Board of Directors from 2011–2013. Confirmation of CSAP membership can be made by visiting the MOE website: http://www.csapsociety.bc.ca/member_database.htm.

Ms. Miller was responsible for technical direction and oversight of the risk assessment work.

Reidar Zapf-Gilje, PhD, PEng, CSAP

Dr. Reidar Zapf-Gilje, PhD, PEng, CSAP, has been providing contaminated site consulting and professional development services for 35 years. He is the Founder and Principal of GeoEnviroLogic. His experience includes development of management plans for contaminated soil, groundwater, and sediment from initial investigations stages, risk assessment and to implementation of remediation and/or risk management solutions. His experience includes work on remote and First Nations communities dealing with hydrocarbon and metals contaminated sites, as well with closure of former landfills and mines. He has also been involved with developing contaminated site framework and guidance documents for the Province of BC, Health Canada, Canadian Council of Ministers of the Environment, Fisheries and Oceans Canada, Public Works Canada and Environment Canada.

Dr. Zapf-Gilje also organizes and teaches professional development seminars on contaminated sites topics and has taught graduate and undergraduate courses on a part-time basis as Adjunct Professor in the departments of Civil Engineering and Earth and Ocean Sciences at UBC. He has been involved with development of new courses and programs for contaminated site education and training at the British Columbia Institute of Technology and Kwantlen University College. He was the Chair of the former Roster of Contaminated Site Experts (now replaced by the CSAP Society), and in that role he led the development of the new CSAP Society. He is an Approved Professional in BC for both numerical standard-based and risk-based submissions.

Dr. Zapf-Gilje was a technical advisor on the human health risk assessment and was technical director for the DSI.

Victoria Hart, MSc, BIT

Victoria Hart, MSc, BIT, is an environmental scientist with over five years' experience in human health risk assessment. She has worked on several contaminated sites risk assessments across Canada, primarily in BC and Ontario. Ms. Hart has also worked on multiple environmental assessments both nationally and internationally for the mining sector (e.g., metals, coal, diamond), primarily focusing on human health effects. She has also provided technical support for human and ecological health risk assessments for federal contaminated sites.

Ms. Hart co-authored the human health risk assessment, working under the direction of Ms. Miller.

Cristina Quinn, PhD, PChem

Cristina Quinn is an environmental scientist with 8 years of experience in human health risk assessment. Her project experience includes risk assessments of contaminated sites, environmental assessments of mining and wastewater treatment facilities, and the development of federal pesticide guidance documents. Dr. Quinn has a PhD in environmental chemistry. Her doctoral research on the bioaccumulation of persistent organic pollutants in terrestrial organisms, aquatic organisms, and humans was awarded the IPA/DGUV Award for Young Exposure Scientists in 2013 by the International Society of Exposure Science. Dr. Quinn is a member of the Association of the Chemical Profession of British Columbia as a professional chemist.

Dr. Quinn provided technical support to the human health risk assessment.

2.0 SUMMARY OF SITE INVESTIGATIONS

2.1 Detailed Site Investigation and Detailed Site Investigation Update

Golder (2016a and Appendix A) completed a DSI to characterize and delineate contamination associated with the TSF embankment breach for eight of the nine remediation areas that were identified in the PEEIAR. Area 1, the TSF, was excluded from the scope of the DSI as it is part of the operating mine. The eight areas were grouped into four receiving environments, as follows:

- Polley Lake: Area 3
- Hazeltine Creek: includes Area 2–Polley Flats, Area 4–Upper Hazeltine Creek, Area 5–Hazeltine Canyon, Area 6–Lower Hazeltine Creek, and Area 7–Edney Creek Mouth
- Quesnel Lake: Area 8
- Quesnel River: Area 9

Additional data have been collected since the completion of the DSI to support the HHRA. The following is a brief summary of the work reported in the DSI Update (Appendix A):

- Soil: Local background soil samples were collected in order to supplement the existing background soil concentrations for the Study Area. The local background soil results are presented in APPENDIX A-1 of the DSI Update. The 2014 and 2015 soil results were screened against the CSR soil standards for agricultural land use based on the identification of land dedicated under the Agricultural Land Reserve.
- Groundwater: Golder installed and sampled an additional 14 monitoring wells in 2016. Three additional background monitoring wells were also completed to evaluate background groundwater quality. The groundwater results are presented in APPENDIX A-4 of the DSI Update.
- Sediment: Minnow Environmental Inc. (Minnow) completed a 2016 sediment sampling program to i) characterize sediment and porewater quality at locations sampled in 2014 and/or 2015 and provide temporal comparisons of sediment quality from year to year, and ii) provide sediment quality data from previously unsampled locations to augment the existing spatial extent characterization. The 2016 sediment results are presented in APPENDIX A-7 of the DSI Update.
- Surface water: Since the TSF embankment breach, the surface water monitoring program has evolved, in consideration of factors that included, but were not limited to: monitoring results, safety and logistical constraints, recommendations from BC MoE and seasonal conditions (e.g., lake turnover, onset of winter). The DSI Update report included a summary of surface water quality data collected between August 2015 and December 2015 that is related to the TSF embankment breach, and that is relevant to the Study Area investigation works. The surface water quality results for this time period are presented in APPENDIX A-6 of the DSI Update.

The field observations and analytical results were used to update the conceptual site model.

The TSF embankment breach resulted in:

- Transportation and scouring of tailings, construction materials and natural sediments, and deposition of "spilled tailings" in Polley Lake and the Polley Flats, and
- Transportation, scouring and deposition of a mixture of tailings, construction and natural materials in the Hazeltine Creek corridor.

The impacted physical environment around Polley Lake, Edney Creek and Hazeltine Creek included approximately 136 hectares (ha; 1.36 square kilometres) where topsoil was removed and an additional area of approximately 100 ha (1 square kilometre) where tailings were deposited overlying intact topsoil.

In some areas, the tailings settled out in two distinct layers: a grey fine silt and a black-orange sand. The two layers settled out according to particle size and density, generally with the finer material overlying the coarser sand. As the debris flow moved down the Hazeltine Creek valley, it picked up and mixed with native till. Approximately 20 million cubic metres of tailings, native soil, water and debris were deposited into Quesnel Lake where a turbidity plume formed 20 to 30 metres below surface. The plume included a significant amount of fine-grained natural lake sediment that became suspended by the debris flow from Hazeltine Creek. Turbidity in Quesnel Lake persisted into December 2014, but cleared over the winter. Some turbidity was measured in Hazeltine Creek and in Quesnel Lake near Hazeltine Creek in 2015; however, the source of this turbidity has been accounted for in creek channel rehabilitation work, as well as other remediation work.

Together, the soil, sediment, groundwater and surface water results all confirm that while some tailings-related metals are present in these media above CSR standards, the leachability and migration potential of the dissolved phase are low. These results are significant, as it is the dissolved phase that is associated with uptake and toxicity in biota. Therefore, the results of the DSI Update support the preliminary findings of the PEEIAR and the DSI report submitted in January 2016, that the impacts related to the breach have been largely due to physical effects.

A summary of the remediation areas and human health contaminants of concern identified in the DSI Update are provided in Table 1. The DSI Update report is included in APPENDIX A. Section 7.0 of the DSI Update satisfies the requirements of the PAO; namely:

- Identification of areas of potential environmental concern
- Determination of the potential contaminants of concern based on the applicable CSR standards
- Delineation of the horizontal and vertical extent of contamination
- Confirmation that the contamination at the site is stable or decreasing in concentration and extent over time

Table 1: Contaminants of Concern Identified in the DSI Update

Remediation Area	Contaminant	Medium	CSR Schedule
Area 2 – Polley Plug/Polley Flats and Area 4, 5, and 6 – Hazeltine Channel	Copper	Soil	5 – Toxicity to soil invertebrates and plants
	Vanadium	Soil	4 – Parkland and Agricultural
	Sulfur	Soil	4 – Agricultural
	Molybdenum	Soil	4 – Agricultural
	Iron	Groundwater	6 – Irrigation
			6 – Drinking Water
	Manganese	Groundwater	6 – Irrigation
			6 – Drinking Water
	Arsenic	Groundwater	6 – Drinking Water
			6 – Livestock
	Molybdenum	Groundwater	6 – Irrigation
			6 – Livestock
	Sulfate	Groundwater	6 – Drinking Water
	Total and dissolved copper	Surface Water	BC Water Quality Guideline – Aquatic Life
	Copper	Sediment	9 – Typical
Area 3 – Polley Lake	Arsenic	Sediment	9 – Sensitive
	Copper	Sediment	9 – Sensitive
			9 – Typical
Area 7 – Edney Creek Mouth	Total and dissolved copper	Surface Water	BC Water Quality Guideline – Aquatic Life
Area 8 – Quesnel Lake	Copper	Sediment – Littoral and Profundal	9 – Sensitive
			9 – Typical
	Arsenic	Sediment – Littoral and Profundal	9 – Sensitive

CSR = Contaminated Sites Regulation.

2.2 Post DSI/DSI Update Soil Remediation Works

MPMC has been implementing a rehabilitation and remediation strategy throughout the Hazeltine corridor. Rehabilitation works have included excavation and removal of tailings, intermixing tailings with native soils, and re-grading and re-sloping of the slopes of the Hazeltine corridor. The rehabilitation works have been ongoing in parallel to field investigations for the preliminary soil quality impact assessment (MPMC 2015) and the DSI/DSI Update (Golder 2016a and Appendix A). Those reports provided information on the area, depth and degree of soil contamination in the Hazeltine corridor. However, because rehabilitation works were and are continue to be ongoing, the soil conditions and topography within the Hazeltine corridor are continuously changing. As such, the soil quality described in the DSI/DSI Update (Golder 2016a and Appendix A) is not representative of areas of the Hazeltine corridor that have undergone rehabilitation works. The remediation works have not changed the COPCs under investigation in this risk assessment, but they have changed the soil exposure concentrations. The impact of the remediation work on soil quality will be described under separate cover.

3.0 PROBLEM FORMULATION

3.1 Management Goal

The goal for the HHRA is to evaluate health risks to people from exposure to the spilled tailings on the Study Area. Specifically, as per the CSR (BC MoE 2016a; Part 6 Section 18.1 [4]), the management goal has been met if:

a) the calculated incremental lifetime cancer risk (ILCR) is less than or equal to 1 in 100,000 (1×10^{-5})

b) the hazard index is less than or equal to 1

3.2 Identification of Receptors of Potential Concern

The selection of human receptors was based on information available regarding the current use of the remediation areas (Figure 2), which was provided by MPMC staff and Golder employees who have visited the Study Area. On 7 August 2013, MPMC hosted a tour of reclamation sites at the Mine for a group of Elders and interested individuals from the T'exelc First Nations. Members of the T'exelc First Nations in attendance were interested in following plant species: balsam fir (*Abies balsamea*), blueberry (low, mid and high bush; *vaccinium* sp.), paper birch (*Betula papyrifera*), cedar, chamomile, common juniper (*Juniperus communis*), Devil's club (*Oplopanax horridus*), kinnikinnick (*Arctostaphylos* sp.), mosses, mullen, soapberry (*Shepherdia Canadensis*) and yarrow (*Achillea millefolium*).

Currently, the Hazeltine Channel receiving environment is within provincial crown land designated as a mixture of wildlands and backcountry recreational areas, with a small section of land designed within an Agricultural Land Reserve along lower Hazeltine Channel. The area designated as an Agricultural Land Reserve is forested. For the purpose of the HHRA, the overall land use of the remediation areas is considered to be wildland, with people accessing the area for recreational and subsistence land uses.

Subsistence use includes hunting, collecting plants and fishing. Although specific data regarding local consumption rates for different traditional foods was not available to the study team, community liaison members have reported that the land was, and still is, used for harvesting of food. Therefore, the HHRA included a First Nation subsistence and traditional land user receptor who was assumed to harvest food from the land. The subsistence and traditional land user is considered to be the most sensitive receptor, due to the assumptions made regarding reliance on traditional foods.

The Hazeltine Channel area is accessible via the Horsefly-Likely FSR to the public, hikers, all-terrain-vehicle (ATV) users and others who wish to use the area. Use of the FSR is highest in the summer, and to some extent in the early fall. It is plowed from Horsefly to Mitchell Bay in the winter. Mine workers will also plow access from the Mine down to lower Hazeltine Channel, but this segment will not connect up with the publicly accessible portion[2], so winter access will only be possible for mine-facilitated traffic and, potentially, ATV users (i.e., snowmobilers). Due to rehabilitation activities, this area has been officially closed to the public due to hazards such as opening or closing of the sluice gate at the Polley Lake weir. There is signage in place that indicates the area is closed. Despite the signage, hunting, trapping, logging and collection of plants for nourishment and medicinal purposes may take place in the Hazeltine Channel area. Therefore, people were assumed to access the area. Groundwater within the Hazeltine Channel area is not currently used for drinking water, nor is it anticipated to be used for this purpose in the future.

[2] This section of the Gavin Lake FSR used to be open to the public and may be at some point again in the future.

Current uses of Polley Lake, Quesnel Lake and Quesnel River include commercial, recreational and aboriginal fisheries, and recreational uses such as swimming, boating, kayaking, canoeing and waterskiing, and in the winter, snowmobiling and ice fishing when ice conditions allow. Quesnel Lake is also used as a source of drinking and residential water for domestic purposes[3]. It was assumed that receptors may consume drinking water from Quesnel Lake while they are in the Study Area.

Based on this information, the following scenarios were evaluated:

- **Subsistence and Traditional Land User**—A subsistence and traditional land user was considered to be the most sensitive receptor for this assessment based on the understanding that there is the potential for hunting, trapping, fishing and consumption of plants for nourishment and medicinal purposes. This scenario assumed that a person could be hunting game and collecting traditional plants found within the remediation areas for consumption throughout the year. The subsistence and traditional land user could come into contact with surrounding soils and surface water and sediment in Hazeltine Channel, Polley Lake, Quesnel Lake or Quesnel River, and consume berries, plants, game or fish. It was assumed that berries, traditional plants, game and fish could be brought home and frozen for consumption throughout the year. Sediment and surface water contact may occur during recreational activities such as swimming, playing in the shoreline and fishing during the warmer months (i.e., May through October). Soil contact may occur during the snow-free months. The subsistence and traditional land user was assumed to be people of any age (including toddlers).
- **Backcountry Recreation User (Hiker/Camper)**—Areas of Hazeltine Channel, Polley Lake, Quesnel Lake and Quesnel River are publicly accessible and are known to be used by the general public. Therefore, a scenario that assumed recreational hikers/campers could come to these areas to hike, camp, collect berries, fish and engage in activities along the lake shoreline (e.g., wading and swimming) was included. The hiker/camper was assumed to access the area three days per week during the warmer months (i.e., May through October). While visiting the area, the hiker/camper could come into contact with surrounding soils and surface water and sediment in Hazeltine Channel, Polley Lake, Quesnel Lake or Quesnel River, and consume berries or fish. Berry consumption would only occur when berries are ripe (i.e., July through September). It was assumed that fish would be consumed once per week while they are in the Study Area. The hiker/camper was assumed to be people of any age (including toddlers), given the easy access routes provided to some areas.
- **Backcountry Recreation User (ATV/Snowmobile User)**—Areas of Hazeltine Channel, Polley Lake, Quesnel Lake and Quesnel River are publicly accessible and are known to be used by the general public. Therefore, a scenario that assumed recreational ATV/snowmobile users could be present at any of the remediation areas was included. The ATV/snowmobile user would be present during the day throughout the year, but would not stay overnight. The ATV/snowmobile user could come into contact with surrounding soils and consume berries. Soil contact would only occur during the snow-free months and berry consumption would only occur when berries are ripe (i.e., July through September). The ATV/snowmobile user was assumed to be limited to teens and adults.

[3] Domestic purposes as defined in the BC Water Act means the use of water for household requirements, sanitation and fire prevention, the watering of domestic animals and poultry and the irrigation of a garden not exceeding 1012 m^2 adjoining and occupied with a dwelling house.

- **Boater/Kayaker**—Polley Lake, Quesnel Lake and Quesnel River are publicly accessible and are known to be used for recreational boating/kayaking activities. Therefore, a scenario that assumed people could go to these water bodies to participate in recreational activities (e.g., power boating, kayaking, canoeing and rafting) was included. The boater/kayaker would be on the water during the day over the warmer months (i.e., May through October) and could come into contact with sediment and surface water from Polley Lake, Quesnel Lake or Quesnel River and consume fish. The boater/kayaker was assumed to be people of any age (including toddlers).

- **Sport Fisher**—Polley Lake, Quesnel Lake and Quesnel River are publicly accessible and are known to be used for sport fishing. Therefore, a scenario that assumed people could go to these water bodies to participate in sport fishing was included. It was assumed that fish could be brought home, frozen and eaten throughout the year. It was also assumed that the sport fisher would be fishing during the day throughout the year as ice fishing may occur in the winter. The sport fisher was assumed to be people of any age (including toddlers).

- **Hunter/Trapper (Non-subsistence)**—The Hazeltine Channel area is located within the Cariboo Region 5 (management unit 5-2). Hunting and trapping licenses are available for some species in the region including: white-tailed deer, bighorn mountain sheep and sharp-tailed grouse (BC MoE 2016b). Therefore, a scenario that assumed non-subsistence hunters/trappers come up to the Hazeltine Channel area to hunt and set traps was included. The hunter/trapper could come into contact with the surrounding soils and consume game and fish. It was assumed that game meat and fish could be brought home, frozen and consumed throughout the year. Contact with soil was assumed to occur during the snow/ice-free months. The hunter/trapper was assumed to be limited to adults, but an additional scenario was considered where the game was consumed throughout the year by people of any age, including toddlers.

- **Quesnel Lake Resident**—Residential properties border Quesnel Lake. It was assumed the resident could be fishing, hunting and trapping, using surface water from Quesnel Lake as drinking water and consuming cattle (i.e., beef) that graze in the remediation areas throughout the year. Residents could come into contact with surface water and sediment in Hazeltine Channel, Polley Lake, Quesnel Lake or Quesnel River, and consume berries, game or fish. Sediment and surface water contact may occur during recreational activities such as swimming and playing in the shoreline during the warmer months (i.e., May through October). It was assumed that game meat, fish and berries could be brought home, frozen and consumed throughout the year. The resident was assumed to be people of any age (including toddlers).

- **Logger**—Logging currently occurs in the region and close to the Hazeltine Channel area; however, since the TSF embankment breach, logging has not occurred within the boundaries of the area impacted by the TSF embankment breach. The logger was conservatively retained because logging activity could occur in the area in the future. It was assumed that the logger would be present during the day during throughout the year. The logger could come into contact with the surrounding soils, surface water in Hazeltine Channel and consume berries. Contact with soil and surface water was assumed to occur during the snow/ice-free months. Berry consumption would only occur when berries are ripe (i.e., July through September). An adult would be the primary receptor for the logger scenario.

- **Mine/Rehabilitation Worker**—A mine/rehabilitation worker was considered as rehabilitation works are currently underway and could potentially occur in the future within the remediation areas. It was assumed that the mine/rehabilitation worker would be present during the day during the snow-free months. The mine/rehabilitation worker may come into contact with the surrounding soils, surface water, consume berries and catch fish while working within the remediation areas. Berry consumption would only occur when berries are ripe (i.e., July through September). An adult would be the primary receptor for the mine/rehabilitation worker scenario.

3.3 Identification of Contaminants of Potential Concern

3.3.1 Data Quality Review

Technical Bulletin 2 (BC MoE 2015c) emphasizes the importance for risk assessment professionals to seek confirmation from the Standards Approved Professional that site characterization data has been done adequately and that the data are representative of current site conditions. The risk assessor also needs to determine that each COPC has been adequately delineated to meet the needs of the risk assessment. This broader data quality review is particularly relevant to the current HHRA given that the assessment is based on a diverse data set collected during the initial emergency response and the subsequent assessment and rehabilitation activities.

Golder completed a data quality evaluation for media relevant to human health (i.e., soil, sediment, surface water, air, vegetation [berries and plants], fish and wild game) to determine the adequacy of the data to support the HHRA (Golder 2016c). The data quality evaluation resulted in one of three categories:

- **Category 1**: There is sufficient data and the uncertainty is low
- **Category 2**: There is some data and uncertainty is moderate to high
- **Category 3**: There is limited data and the future conditions are uncertain

The results of the data quality evaluation are provided in Golder (2016c). Groundwater was not included in the evaluation because it was not considered to be an operable exposure pathway for human health receptors. The results of the data quality evaluation are provided below in Table 2. Additional berry and plant data were collected to support the risk assessment in the summer of 2016. Golder considers there to be sufficient data to complete the HHRA. Wild game and cattle tissue samples were not collected for the HHRA. Concentrations of COPCs in wild game and cattle tissues were modelled for COPCs retained for evaluation in other media.

Table 2: Data Quality Evaluation of Media Included in the Human Health Risk Assessment

Media	Sufficient Number of Samples?	Additional Sampling Scheduled?	Category
Soil	Yes	Yes	1
Sediment	Yes	Yes	1
Surface Water	Yes	Yes	1
Air	Yes	No	1
Vegetation (Berries and Plants)	Yes	Yes	1
Fish	Yes	Yes	2

Additional soil, groundwater and vegetation (berry and plant) samples were collected in August 2016 to support the HHRA. Additional sediment and surface water samples were collected in 2016 as part of on-going monitoring. There is sufficient data and low uncertainty with the groundwater data collected within the remediation areas; however, additional background sampling is required to adequately characterize the local background reference concentrations. There is sufficient data and low uncertainty with the vegetation data to adequately support the HHRA. The measured vegetation tissue concentrations were lower in 2016 compared to 2015 (APPENDIX E-1), and it is, therefore, unlikely that vegetation concentrations have been underestimated. Additional plant samples will be collected as part of the CEMP.

The available fish tissue data are considered to be preliminary at this time. However, based on consultation with project reviewers, exposure to fish tissue using this preliminary data was included in the risk assessment for completeness. Concentrations of metals in fish tissue will continue to be monitored as part of the CEMP and evaluated to determine if a TSF embankment breach-related impact occurs over the longer term (see APPENDIX D-1 for further details). The preliminary data indicate that a TSF embankment breach-related impact to fish tissue is not anticipated in the future.

3.3.2 Approach for Further Evaluation of Contaminants of Potential Concern for Human Health

The starting point for identifying contaminants on a Study Area is the DSI. In the DSI, possible contaminants are investigated in relevant environmental media based on their physical/chemical properties and fate when introduced to the environment. Contaminants identified in the DSI (Table 1) were passed along to the risk assessment to determine the significance of the concentrations measured in the environment. In the problem formulation step of the HHRA, contaminants are evaluated in terms of their hazard with respect to human health. The CSR standards for the protection of human health were used as the primary screening criteria for determining if COPCs require assessment in the HHRA in each of the media. Note that under the CSR, only those parameters that exceed a CSR standard are required to be further evaluated in the risk assessment.

The CSR standards are the first line of assessment in a CSR risk assessment. For many potential contaminants, there are different standards for human health protection and environmental protection. The screening process in the risk assessment sorts the contaminants identified in the DSI into those that are a potential concern for humans, those that are a potential concern for the environment and those that may be a concern for both humans and the environment.

The CSR standards are intended to be protective of all situations for both human and ecological receptors, and incorporate multiple conservative assumptions such as safety factors and conservative exposure conditions. Therefore, comparison to standards represents a conservative evaluation of the potential for the contaminant concentrations to cause adverse effects. Comparison to background concentrations was also included in the screening process for substances. Since the Study Area is located in a highly mineralized area with rich ore deposits, this was considered a reasonable approach to identify and retain the substances that are present at concentrations exceeding what is normal for this area of BC.

The following general approach was used to identify COPCs for human health in soil, groundwater, sediment and surface water for the HHRA:

- **Step 1** – Compare the maximum concentrations to the applicable human health-based screening criteria. If the maximum concentration of a parameter exceeds the screening criterion, the substance was retained for further evaluation. A substance was concluded to be present in non-hazardous concentrations and eliminated from further evaluation if the maximum observed concentration was lower than the human health-based screening criteria or the 95th percentile regional background concentration.
- **Step 2** – For the substances retained at the completion of Step 1, calculate the 95% upper confidence limit of the mean (UCLM) concentration as an upper bound estimate of mean exposure and compare to the human health-based screening criteria. A substance was retained for further evaluation in the HHRA if the 95% UCLM was greater than the screening criteria.

No substances that are regulated under the CSR were excluded from further assessment on the basis of a comparison to local background concentrations. Substances that exceeded a CSR standard also exceed local background.

3.3.3 Contaminants of Potential Concern

The DSI Update (Appendix A) identified contaminants in soil, groundwater, sediment and surface water (Table 1). The contaminants in these media were then evaluated in the HHRA using the approach described in the previous section. Aluminum was also evaluated at the request of the project reviewers. The detailed results of the COPC screening process, including the data and screening criteria are described in more detail in APPENDIX B-1. The following COPCs were identified for the HHRA:

- **Soil**: no CSR exceedances; aluminum added at the request of project reviewers
- **Groundwater**: no access to groundwater along Hazeltine Corridor
- **Sediment**: vanadium exceeded CSR PL standard; aluminum added at the request of project reviewers
- **Surface water**: none; no exceedances of drinking water standards
- **Air**: none; all potential contaminants met screening criteria
- **Vegetation**: copper and vanadium; aluminum added at the request of project reviewers
- **Fish**: aluminum, copper and vanadium; screening criteria not available, COPCs were identified based on the media listed above

Wild Game and Cattle Tissue

Wild game and cattle tissue samples were not collected as part of the HHRA. The soil to plant bioaccumulation factors (BAFs) for aluminum, copper and vanadium were below one (APPENDIX E-1); therefore, the uptake of these COPCs into higher trophic levels (i.e., into mammals and birds) is not expected. However, exposure to aluminum, copper and vanadium in wild game and cattle tissues were included in the calculation of risk estimates as part of a multi-media assessment. Deer, moose and grouse, including deer and moose liver, were considered representative wild game species and organs potentially consumed by people. The concentrations of aluminum, copper and vanadium in game and cattle tissues were estimated using uptake models.

3.4 Identification of Exposure Pathways

Concentrations of potential contaminants in soil and tailings related to the breach were found to exceed the standards for the protection of soil invertebrates and plants, but are less than the standards for the protection of human health. Notwithstanding the fact that concentrations of COPCs in soil and tailings were acceptable for human health, exposures for these COPCs were calculated for humans exposed to sediment, soil, surface water, berries, traditional plants, fish, wild game and cattle at the request of project reviewers. Exposure pathways for human receptors are routes by which people could potentially be exposed to chemicals in each environmental media. Based on the current and likely future uses by humans, the receptors and exposure pathways that were included in the HHRA are presented in Table 3 and Figure 3. The exposure pathways were determined based on the potential receptors and their associated activities while on the Study Area, which are outlined above in Section 3.2.

Table 3: Exposure Pathways for Human Receptors

Receptor of Potential Concern	Soil			Groundwater[1]		Sediment		Surface Water		Dietary Items				
	Incidental Ingestion	Dermal Absorption	Particulate Inhalation	Ingestion	Dermal Contact	Incidental ingestion	Dermal Absorption	Ingestion	Dermal Absorption	Traditional Plants	Berries	Fish	Wild Game	Cattle
Subsistence and Traditional Land User	✓	✓	✓	×	×	✓	✓	✓	✓	✓	✓	✓	✓	×
Hiker/Camper	✓	✓	✓	×	×	✓	✓	✓	✓	×	✓	✓	×	×
ATV/Snowmobile User	✓	✓	✓	×	×	×	×	✓	×	×	✓	×	×	×
Boater/Kayaker	×	×	×	×	×	✓	✓	✓	×	×	×	✓	×	×
Sport Fisher	×	×	×	×	×	×	×	✓	×	×	×	✓	×	×
Hunter/Trapper	✓	✓	✓	×	×	×	×	✓	×	×	×	✓	✓	×
Quesnel Lake Resident	×	×	×	×	×	✓	✓	✓	✓	×	✓	✓	✓	✓
Logger	✓	✓	✓	×	×	×	×	✓	×	×	✓	×	×	×
Mine/Rehabilitation Worker	✓	✓	✓	×	×	×	×	✓	×	×	✓	✓	×	×

✓ = operable exposure pathway; × = inoperable exposure pathway.

1) There is no access to groundwater along Hazeltine Corridor groundwater is not currently used for drinking water, nor is it anticipated to be used for this purpose in the future.

The following exposure pathways were evaluated in the HHRA:

- Exposure to COPCs in soil/tailings (incidental ingestion, dermal contact and inhalation of soil particulates). While there were no CSR exceedances in soil/tailings for human health, incremental exposure to aluminum, copper and vanadium from soil was added to the assessment (Section 3.3.3). The subsistence and traditional land user, hiker/camper, ATV/snowmobiler, hunter/trapper, logger and mine/rehabilitation worker may be exposed to soil/tailings while accessing the Study Area.
- Exposure to COPCs in sediment (incidental ingestion and dermal contact). The subsistence and traditional land user, hiker/camper, boater/kayaker and Quesnel Lake resident may contact sediment during recreational activities (e.g., fishing from the shore, toddlers playing along the lake shoreline). Exposure to aluminum, copper and vanadium in sediment was evaluated further for these receptors of concern as concentrations in sediment exceeded the generic (Schedule 4) CSR soil standard in Quesnel Lake near the Hazeltine Channel. For the purpose of the HHRA, it was assumed that people exposed to sediment are exposed only to Quesnel Lake sediments. This was considered conservative since people may also use Polley Lake and Hazeltine Channel for recreational activities and no COPCs were identified in these sediments.
- Exposure to COPCs in surface water (ingestion as drinking water and dermal contact while swimming). Surface water quality meets drinking water standards for all water bodies in the study area. Incremental exposure to COPCs in surface water was added to the assessment at the request of project reviewers. Quesnel Lake is a source of drinking and residential water for domestic purposes. All receptors were assumed to obtain drinking water from Quesnel Lake while accessing the Study Area. The subsistence and traditional land user, hiker/camper and Quesnel Lake resident may contact surface water during recreational swimming. While the boater/kayaker and sport fisher may also be in contact with surface water (e.g., while fishing or launching boats), this pathway was considered negligible due to the relative surface area is small compared to a swimmer. If risks are predicted for the dermal contact with surface water during swimming pathway, a closer look at dermal contact with surface water for the boater/kayaker and sport fisher will be completed.
- Ingestion of COPCs in vegetation (i.e., edible berries and plants). The subsistence and traditional land user may consume vegetation collected from the remediation areas. Exposure to aluminum, copper and vanadium in both berries and plants was evaluated further for the subsistence and traditional land user. The hiker/camper, ATV/snowmobile user, Quesnel Lake resident, logger and mine/rehabilitation worker may consume berries collected from the remediation areas. Exposure to aluminum, copper and vanadium in berries was evaluated further for these receptors of concern.
- Ingestion of COPCs in wild game (i.e., deer, moose and grouse). The subsistence and traditional land user, hunter/trapper and Quesnel Lake resident may hunt wild game in the Study Area. Exposure to aluminum, copper and vanadium in deer, moose and grouse was evaluated further for these receptors of concern.
- Ingestion of COPCs in fish muscle tissue. The subsistence and traditional land user, hiker/camper, boater/kayaker, sport fisher, hunter/trapper, Quesnel Lake resident and mine/rehabilitation worker may consume fish from Polley Lake, Quesnel Lake or Quesnel River. Exposure to aluminum, copper and vanadium in fish tissue was evaluated further for these receptors of concern.
- Ingestion of COPCs in cattle muscle tissue. The Quesnel Lake resident may consume beef cattle that have been grazing in the remediation areas. Exposure to aluminum, copper and vanadium in cattle was evaluated for the Quesnel Lake resident.

The following were considered to be inoperable exposure pathways:

- There are no drinking water groundwater wells located on the Study Area or in the vicinity. Therefore, exposure to groundwater from ingestion and dermal contact were not retained as operable pathways for the receptors of concern.
- Ingestion of small mammals was not evaluated in the HHRA. Small mammals (e.g., rabbit, beaver and groundhog) were not among the top ten food items reportedly consumed by First Nations in the area. In addition, the small mammal ingestion rates were considerably lower than ingestions rates for the wild game included in this risk assessment.

A conceptual exposure model for the HHRA is presented in Figure 3.

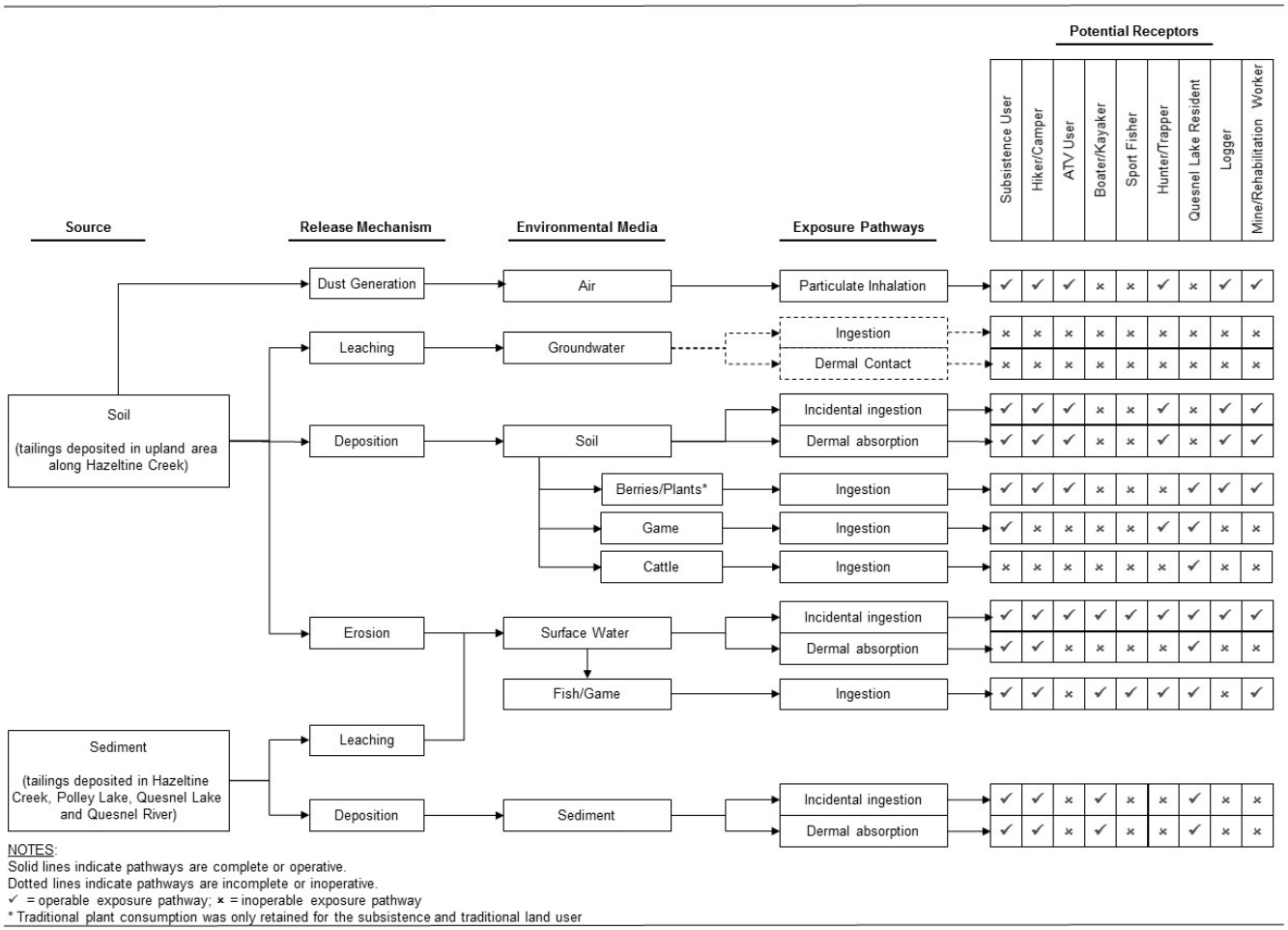

Figure 3: Conceptual Exposure Model for the Human Health Risk Assessment

4.0 EXPOSURE ASSESSMENT

Exposures and risks were calculated for the most sensitive receptor for the relevant exposure pathways. The infant life stage has the highest relative berry and traditional plant ingestion rates per unit body weight in comparison to other life stages. The toddler life stage has the highest relative sediment, soil, game, fish and cattle ingestion rates per unit body weight in comparison to other life stages. A teen was considered the most sensitive life stage for the ATV/snowmobile user. Non-carcinogenic exposure and risks were also calculated for the adult life stage for information purposes. Aluminum, copper and vanadium are not considered by regulatory agencies as carcinogenic COPCs (Section 5.2); therefore, carcinogenic exposures and risks were not calculated.

4.1 Receptor Characteristics

To evaluate the food consumption pathway, the receptors of concern were divided into two groups, First Nations Consumer (i.e., subsistence and traditional land user) and non-First Nations Consumer (i.e., hiker/camper, ATV/snowmobile user, boater/kayaker, sport fisher, hunter/trapper, Quesnel Lake resident, logger and mine/rehabilitation). Food ingestion rates were not available for the T'exelc First Nation (Williams Lake Indian Band) or Xatśūll First Nation (Soda Creek Indian Band). Therefore, the First Nations Food, Nutrition and Environment Study (FNFNES; Chan et al. 2011) was used to determine appropriate food consumption rates for the subsistence and traditional land user. The remaining human receptors were not considered to rely on traditional foods to the same extent as the subsistence and traditional land user. It was conservatively assumed that 100% of the country foods consumed by First Nations is obtained from the Hazeltine Channel corridor.

Receptor parameterization was conducted using Health Canada (2012) receptor characteristics for the Canadian population. Parameters that are not specifically addressed by Health Canada were adopted from other sources. Receptor characteristics used to evaluate potential exposure in the HHRA are presented in Table 4.

Table 4: Receptor Characteristics

Receptor Characteristic	Units	Infant	Toddler	Teen	Adult	Source
Age	-	0 to 6 months	7 months to 4 years	12 to 19 years	≥20 years	Health Canada (2012)
Body weight	kg	8.2	16.5	59.7	70.7	Health Canada (2012)
Incidental sediment ingestion rate	kg/day	0.00002	0.00008	n/a[2]	0.00002	Intrinsik (2011)
Incidental soil ingestion rate	kg/day	0.00002	0.00008	0.00002	0.00002 0.0001 (Worker)	Health Canada (2012)
Drinking water ingestion rate	L/day	0.3	0.6	1	1.5	Health Canada (2012)
Inhalation rate	m^3/day	2.2	8.3	15.6	16.6 33.6 (Worker)	Health Canada (2012)

Receptor Characteristic	Units	Infant	Toddler	Teen	Adult	Source
Skin surface area						
Hands	cm^2	320	430	800	890	Health Canada (2012)
Arms	cm^2	550	890	2230	2500	Health Canada (2012)
Forearms	cm^2	275	445	n/a[2]	1250	Intrinsik (2011)
Legs (upper and lower)	cm^2	910	1690	4970	5720	Health Canada (2012)
Feet	cm^2	284	465	n/a[2]	1271	Richardson (2013)
Whole body	cm^2	3620	6130	15,470	17,640	Health Canada (2012)
Sediment loading to exposed skin						
Hands	g/cm^2/event	0.00049	0.00049	n/a[2]	0.00049	Shoaf et al. (2005a)
Forearms	g/cm^2/event	0.00017	0.00017	n/a[2]	0.00017	Shoaf et al. (2005a)
Legs (lower)[3]	g/cm^2/event	0.0007	0.0007	n/a[2]	0.0007	Shoaf et al. (2005a)
Feet	g/cm^2/event	0.021	0.021	n/a[2]	0.021	Shoaf et al. (2005a)
Soil loading to exposed skin						
Hands	g/cm^2/event	0.0001	0.0001	0.0001	0.0001 0.001 (worker)	Health Canada (2012)
Other surfaces	g/cm^2/event	0.00001	0.00001	0.00001	0.00001 0.0001 (worker)	Health Canada (2012)
Food Ingestion Rates						
First Nations Consumer						
Berry ingestion rate	kg/day	0.020	0.034	n/a[2]	0.035	Chan et al. (2011)
Traditional plant ingestion rate	kg/day	0.0036	0.0034	n/a[2]	0.0069	Chan et al. (2011)
Deer meat ingestion rate	kg/day	n/a[1]	0.024	n/a[2]	0.077	Chan et al. (2011)
Deer liver ingestion rate	kg/day	n/a[1]	0.0023	n/a[2]	0.0074	Chan et al. (2011)
Moose meat ingestion rate	kg/day	n/a[1]	0.043	n/a[2]	0.14	Chan et al. (2011)
Moose liver ingestion rate	kg/day	n/a[1]	0.0019	n/a[2]	0.0061	Chan et al. (2011)
Grouse meat ingestion rate	kg/day	n/a[1]	0.0010	n/a[2]	0.0033	Chan et al. (2011)
Fish ingestion rate	kg/day	n/a[1]	0.020	n/a[2]	0.046	Chan et al. (2011)

Receptor Characteristic	Units	Infant	Toddler	Teen	Adult	Source
Non-First Nations Consumer						
Berry ingestion rate	kg/day	0.0040	0.0070	0.0077	0.0073	Chan et al. (2011)
Deer meat ingestion rate	kg/day	n/a[1]	0.0030	n/a[2]	0.0095	Chan et al. (2011)
Moose meat ingestion rate	kg/day	n/a[1]	0.0094	n/a[2]	0.030	Chan et al. (2011)
Grouse meat ingestion rate	kg/day	n/a[1]	0.00060	n/a[2]	0.0019	Chan et al. (2011)
Fish ingestion rate	kg/day	n/a[1]	0.0039	n/a[2]	0.0093	Chan et al. (2011)
Cattle meat ingestion rate	kg/day	n/a[1]	0.026	n/a[2]	0.059	US EPA (2011)

1) Inoperable exposure pathway; game, fish and cattle ingestion were not considered applicable for the infant.

2) Inoperable exposure pathway; sediment, vegetation, game, fish and cattle ingestion exposure pathways were not applicable for the ATV/snowmobile user.

3) The sediment loading rate for lower legs reported by Shoaf et al. (2005a) was assumed to be applicable for lower and upper legs.

"-" = not applicable; ≥ = greater than or equal to; cm^2 = square centimetre; g/cm2/event = grams per square centimetre per event; kg = kilogram; kg/day = kilograms per day; n/a = not applicable.

The mine rehabilitation worker wears some level of personal protective equipment while performing work in the remediation areas (e.g., footwear, long pants). It was assumed that hands and forearms may be exposed to soil.

Health Canada (2012) does not provide incidental sediment ingestion rates, sediment loading rates, skin surface areas of feet or cattle (i.e., beef) ingestion rates. The incidental sediment ingestion rates were taken from Intrinsik (2011), who completed a review on sediment exposure parameters for Health Canada. The sediment ingestion rates for a high contact recreational exposure scenario, which were assumed to be the same as the soil ingestion rates recommended by Health Canada (2012), were used in the HHRA.

The sediment loading rates were obtained from a Shoaf et al. (2005a) study, which estimated sediment loading rates for children (aged 7 to 12 years) playing in tidal flats without shoes on in medium to coarse sand. In another study by Shoaf et al. (2005b), sediment dermal loading rates were reported for adults digging in tidal flats in very fine to fine sand sediment. Sediment loading rates from Shoaf et al. (2005a) were considered more appropriate for the HHRA because impacted sediment that people may be exposed to in Quesnel Lake is predominantly sand (89.2% at near-field stations and 61.6% at far-field stations; APPENDIX A-7). The high sand content of substrate from near-field stations was visually evident during sample collection in both 2015 and 2016, and is likely a result of continued washing of fine substrates from these shallow sampling locations. The child sediment loading rates were applied for the infant, toddler and adult as there is no indication that rates would differ between the life stages. The skin surface area of feet was obtained from Richardson (2013). This was considered appropriate because the skin surface areas were based on the Canadian population and are more current than the skin surface areas presented in Richardson (1997). The skin surface area of forearms was obtained from Intrinsik (2011) and was assumed to be equal to 50% of the upper and lower arm skin surface area provided by Health Canada (2012). It was assumed that hands, forearms, legs (lower and upper) and feet were available for sediment contact.

The beef ingestion rates were obtained from US EPA (2011), which provides average per capita intake rates for various meats, dairy products and fats. The average intake rate of beef for consumers only (i.e., respondents who reported consuming beef in the survey) was used to estimate intake of beef in the HHRA. The US EPA (2011) provides average intake rates for eight different age groups. Intake rates were selected to match the age groups defined by Health Canada (2012) in Table 4. The intake rate for the age group 3 to 5 years was selected for toddlers because this group has the most similar body weight (18.6 kilogram [kg)]) to that defined by Health Canada for a toddler (16.5 kg) among age groups birth to 1 year, 1 to 2 years and 3 to 5 years. The intake rate for the age group 20 to 49 years was selected for adults because this group had the highest intake rate among age groups 20 to 49 years, 50 years and older and females 13 to 49 years. The following equation was used to calculate beef ingestion rates:

$$IR_{ww} = FIR_{ww} \times BW \times CF$$

Where:
IR_{ww} = ingestion rate of cattle (beef) in wet weight units (kg/day)
FIR_{ww} = consumers only food intake rate in wet weight units (g/kg/day)
BW = body weight (kg)
CF = conversion factor 0.001 (g/kg)

The calculated cattle ingestion rates are presented in Table 4.

Edible berries and traditional plants, deer meat, deer liver, moose meat, moose liver, grouse meat and fish muscle were considered the representative food items consumed by people. As noted above, in the absence of specific ingestion rates for the T'exelc and Xatśūll First Nations, data provided from the FNFNES study (Chan et al. 2011) were used for the subsistence and traditional land user. The objective of the FNFNES was to gather information on the food consumed by various First Nations groups across Canada (University of Northern British Columbia 2016). Chan et al. (2011) completed a food survey in 2008-2009 on 21 First Nations communities throughout BC. The survey results were presented by ecozone and cultural area. The T'exelc and Xatśūll First Nations are within the Montane Cordillera ecozone and plateau cultural area. Therefore, results for this ecozone and cultural area were selected to represent the food consumption patterns of the T'exelc and Xatśūll First Nations. The communities surveyed in this ecozone/cultural area included the Lower Nicola and Splatsin First Nation groups.

Chan et al. (2011) reports 95th percentile and average ingestion rates for traditional foods by gender and age groups 19 to 50 years, 51 to 70 years and 71 years and older. The highest 95th percentile ingestion rate for deer meat, deer liver, moose meat, moose liver and grouse meat between men and women of all age groups was selected as the adult subsistence and traditional land user ingestion rate for this assessment. It is noted that grouse was not listed as one of the top 10 traditional food items consumed and was not listed on the 24-hour recall survey for the Montane Cordillera ecozone, plateau cultural area (Chan et al. 2011). Nonetheless, consumption of grouse was included in the HHRA to represent game birds.

The non-First Nations Consumer was not considered to rely on traditional foods to the same extent as the subsistence and traditional land user. It was assumed that the non-First Nations Consumer would not be consuming traditional plants other than berries and would not be consuming wild game organs. Health Canada (2012) does not provide berry or wild game ingestion rates for the general Canadian population. Therefore, the highest average ingestion rates for deer meat, moose meat and grouse meat between men and women of all age groups reported in Chan et al. (2011) was selected as the adult non-First Nations Consumer ingestion rate for this assessment. This was considered appropriate since people living in more remote areas may consume more wild game than people living in urban centres.

Blue huckleberry, red huckleberry and soapberries were among the top 10 consumed traditional food items for First Nations living on reserve in the Montane Cordillera ecozone, plateau cultural area (Chan et al. 2011). Blueberry and cranberry were also reportedly consumed in this area based on the results from the 24-hour recall (Chan et al. 2011). The berry ingestion rate was assumed to be the sum of the consumption rate of the above listed berries reportedly consumed by First Nations in the Montane Cordillera ecozone, plateau cultural area. The 95th percentile and average berry ingestion rates are provided in APPENDIX B-2.

Salmon, including “any type”, sockeye and chinook, were listed as three of the top 10 consumed traditional food items for First Nations living on reserve in the Montane Cordillera ecozone, plateau cultural area (Chan et al. 2011). Salmon are anadromous fish, migrating from freshwater as juveniles to the ocean where they mature. Adult sockeye salmon spend two to three years in the ocean before returning to the freshwater where they originated to spawn. The Department of Fisheries and Oceans is following productivity of sockeye salmon in Quesnel Lake and, to date, has not found evidence of an impact on fish condition or productivity as a result of the breach. Since salmon are migratory fish, and salmon stop eating when spawning, their tissues would not be expected to reflect local conditions. Therefore, it is unlikely that the breach has impacted tissue concentrations in adult salmon.

Resident fish (i.e., rainbow trout, lake trout) were used to estimate exposure in the risk assessment. Given the known fate and uptake kinetics of copper (Dallinger and Kautzky 1985; Miller et al. 1993; Kamunde et al. 2002; Dang et al. 2009) in rainbow trout, increased concentrations of copper in fish muscle tissue are not expected. Concentrations of copper in muscle tissue are well regulated; dietary copper uptake in fish exposed to high copper conditions is characterized by low uptake efficiency and high rates of elimination. Liver and the gastrointestinal tract are the primary sites of whole body regulation of copper in fish exposed to dietary copper. Kamunde et al. (2002) reported that liver copper concentration rose 22-fold in the fish exposed to high dietary copper and fell by 80% in fish on low dietary and waterborne copper levels. No effects on growth were observed in these fish. Copper is detoxified in the liver through the production of metal-binding proteins, metallothioneins, and excreted through the biliary fecal route. Similarly, the copper concentrations in the gastrointestinal tract rose sharply for higher exposure conditions and fell rapidly in low exposure conditions, supporting the contention that copper, as a nutritionally essential element, is well-regulated in fish.

Based on the scientific literature, it is unlikely that fish muscle tissue would be impacted by the COPCs from the breach, and unlikely to be a significant exposure pathway. However, incremental exposure from consumption of fish was included in the HHRA. Fish ingestion rate was determined by summing the fish muscle ingestion rates for the freshwater fish species reportedly consumed by First Nations groups throughout BC (Chan et al, 2011). The 95th percentile and average fish ingestion rates are provided in APPENDIX B-2. The 95th percentile fish ingestion rate was used for the sport fisher because this receptor was assumed to consume a larger quantity of fish than the average person.

Labrador tea leaves was listed as one of the top 10 consumed traditional food items for First Nations living on reserve in the Montane Cordillera ecozone, plateau cultural area (Chan et al. 2011). The traditional plant ingestion rate for the subsistence and traditional land user was assumed to equal that of the Labrador tea leaves consumption rate.

To adjust the consumption rates provided for adults to consumption rates for toddlers, the relative ingestion rate for the toddler for similar food items provided in Richardson (1997) was used. For example, in Richardson (1997) the adult wild game consumption rate is 269 grams per day (g/day) while that of the toddler is 84 g/day. To

calculate a toddler deer meat ingestion, the adult deer meat ingestion rate of 77 g/day was multiplied by the ratio of the toddler's ingestion rate to the adult ingestion rate (i.e., 77 g/day × [84/269] = 24 g/day). The mean rates for females and males, combined, from Richardson (1997) were used to estimate the ratios of the relative ingestion rates for berries and traditional plants. The "fruits and juices" ingestion rate was used for berries and the "other vegetables" ingestion rate was used for traditional plants. Consumption data for Native Canadian males and females, combined, eaters only (i.e., not including people who don't consume these food categories at all) were used to estimate the ratios of the relative ingestion rates for wild game.

The ratios used to convert the adult ingestion rates from Chan et al. (2011) to infant, toddler and teen ingestion rates are presented in Table 5.

Table 5: Consumption Ratios Used to Convert Adult Ingestion Rates from Chan et al. (2011) to Other Life Stages

Consumption Rates and Ratios	Units	Infant (0 to 6 months)	Toddler (7 months to 4 years)	Teen (12 to 19 years)	Adult (age 20+ years)
Wild game consumption rate from Richardson (1997)	g/day	0	84	n/a[1]	269
Ratio of receptor consumption rate/adult consumption rate for wild game[2]	unitless	0	0.31	n/a[1]	1
Berry (fruits and juices) consumption rate from Richardson (1997)	g/day	136	234	258	245
Ratio of receptor consumption rate/adult consumption rate for berry (fruits and juices)	unitless	0.56	0.96	1.05	1
Traditional plant (other vegetables) consumption rate from Richardson (1997)	g/day	72	67	n/a[1]	137
Ratio of receptor consumption rate/adult consumption rate for traditional plants (other vegetables)	unitless	0.53	0.49	n/a[1]	1

1) Inoperable exposure pathway; vegetation, game and fish ingestion exposure pathways were not applicable for the ATV/snowmobile user.

2) The ratio was also applied to deer and moose liver.

g/day = gram per day; n/a = not applicable.

4.2 Receptor Exposure Frequency and Duration

The subsistence and traditional land user may be exposed to sediment and surface water during recreational activities such as swimming and playing along the shoreline. It was assumed that recreational activities occur 5 days/week during the warmer months of the year (i.e., May through October). This is consistent with the high contact sediment exposure durations presented in Intrinsik (2011). It was also assumed that the subsistence and traditional land user obtains all their drinking water from Quesnel Lake. The subsistence and traditional land user was also assumed to be exposed to soil and consume berries, plants, wild game and fish from the remediation areas (defined in Section 3.2). Plants may only be in season for short periods of the year and hunting may only occur during certain parts of the year. However, it was conservatively assumed that the subsistence and traditional land user could collect a large amount of traditional food items and store them for consumption throughout the year.

The hiker/camper was assumed to visit the remediation areas for recreational activities 3 days/week during the warmer months of the year (i.e., May through October). During this time, the hiker/camper may be exposed to sediment and surface water during recreational activities such as swimming and playing along the shoreline. The hiker/camper may also be exposed to soil and consume berries harvested from the remediation areas when they are in season (i.e., July through September).

The ATV/snowmobile user was assumed to visit the remediation areas where they may be exposed to soil and consume berries 1 day per week.

The boater/kayaker was assumed to visit the remediation areas (Polley Lake, Quesnel Lake and Quesnel River) for recreational boating and/or fishing 3 days/week during the warmer months of the year (i.e., May through October). The sport fisher was assumed to visit the remediation areas for fishing year-round.

The hunter/trapper may be exposed to soil and harvest wild game and fish from the remediation areas 1 day/week. Similar to the subsistence and traditional land user and Quesnel Lake resident, it was assumed that the hunter/trapper could harvest wild game meat and fish and store them for consumption year-round.

The Quesnel Lake resident may be exposed to sediment and surface water during recreational activities such as swimming and playing along the shoreline 3 days/week during the warmer months of the year (i.e., May through October). It was also assumed that the Quesnel Lake resident obtains all their drinking water from Quesnel Lake. The Quesnel Lake resident may also consume berries, hunt wild game and fish while visiting the remediation areas and consume cattle that used the remediation areas for grazing. Similar to the subsistence and traditional land user, it was assumed that the Quesnel Lake resident could harvest berries, wild game meat and fish when they are in season and store them for consumption year-round. Cattle have typically been observed at the Mine in June through September; therefore, exposure to COPCs would occur for this four month period. It was conservatively assumed that the Quesnel Lake resident purchases beef from cattle that have been exposed to COPCs during these four months and freezes it for consumption year-round.

The logger may be present in the remediation areas where they may be exposed to soil and consume berries 5 days per week.

The mine/rehabilitation worker was assumed to work 4 days per week during the snow/ice-free months (i.e., April through November). During this time, the mine/rehabilitation worker may be exposed to soil, consume berries and harvest fish in the remediation areas.

The hiker/camper, ATV/snowmobiler, boater/kayaker, sport fisher, hunter/trapper, logger and mine/rehabilitation worker were assumed to use surface water as drinking water while they are in the Study Area.

The receptor exposure frequencies and durations are presented in Table 6.

Table 6: Receptor Exposure Times

Parameters	Subsistence and Traditional Land User	Hiker/ Camper	ATV/ Snowmobile User	Boater/ Kayaker	Sport Fisher	Hunter/ Trapper	Quesnel Lake Resident	Logger	Mine/ Rehabilitation Worker
	Infant[1], Toddler[2], Adult	Infant[1], Toddler[2], Adult	Teen, Adult	Toddler[2], Adult	Toddler[2], Adult	Toddler[2], Adult	Infant[1], Toddler[2], Adult	Adult	Adult
Hours per day exposed (hours)	10	10	10	n/a	n/a	10	n/a	10	10
Days per week exposed (days)	5	3	1	3	3	1	3	5	4
Days per week drinking water (days)	7	3	1	3	3	1	7	5	4
Dermal events per day (event/day)	1	1	1	1	1	1	1	1	1

1) The infant was the most sensitive receptor used to evaluate the ingestion of berry and traditional plant exposure pathways.

2) The toddler was the most sensitive receptor used to evaluate the sediment, soil and surface water exposure and ingestion of wild game, fish and cattle exposure pathways.

n/a = not applicable, inoperable exposure pathway.

4.2.1 Exposure Amortization

To estimate risks for the food ingestion pathways, exposures were not amortized beyond days per week. For example, the hiker/camper, ATV/snowmobile user, logger and mine/rehabilitation worker receptors are unlikely to consume berries collected from the Hazeltine Channel corridor remediation areas year round. Additional amortization was not considered appropriate, as the food ingestion rates provided in Chan et al. (2011) were averaged over a year. To be conservative, averaging the berry exposure was not completed.

Similarly, to avoid underestimating risks from short term exposures, the exposure dose for the sediment exposure pathways, exposure amortization was limited to average weekly exposure. Toxicity reference values are predominantly derived using chronic health effects; therefore, in the absence of a suitable sub-chronic TRV for threshold-acting substances, the receptors were assumed to consume food and be exposed to sediment, soil and surface water at the seasonal rate for an entire year.

4.2.2 Consideration of Acute Exposure

Exposure to berries for the hiker/camper, ATV/snowmobile user, logger and mine/rehabilitation worker receptors was assumed to occur 1, 3, 4 or 5 days per week on an ongoing basis (Table 6). Therefore, risks were assessed assuming chronic (i.e., long term) exposure to chemicals, and risk estimates were calculated using chronic TRVs. To estimate the chronic exposure, exposure doses were amortized to account for receptors spending only 1, 3, 4 or 5 days per week in the remediation areas (i.e., exposure dose divided by seven [7]). Therefore, it is important to check that short term exposures are not associated with acute effects. Unfortunately, few reliable TRVs exist for assessing acute effects for metals. Theoretically, if the acute toxicity of a chemical is less than seven times greater than the chronic toxicity, then the potential exists for acute risks to be greater than the risks predicted in the current chronic assessment.

Wilson Scientific Consulting Inc. and Meridian Environmental Inc. (2007) reported acute-to-chronic ratios for select metals (arsenic, cadmium, lead and thallium) that were all greater than 1,000. This comparison considered acute toxicity information based on minimum lethal dose; it is possible that sub-lethal endpoint may result in lower acute-to-chronic ratios. While there is no universal conversion factor for deriving acute TRVs from chronic TRVs, these studies found that a value of at least seven has been used by some agencies to convert chronic TRVs to sub-chronic or acute TRVs for chemicals that are not known to be especially potent on a short-term exposure basis. For example, a 10-fold uncertainty factor is often used to convert sub-chronic study to chronic TRV.

Therefore, given the relatively low hazard indices estimated for chronic exposure at the Study Area (Section 6.1), and the high acute-to-chronic ratios for metals (at least seven times greater), it is unlikely that acute exposures would result in unacceptable risks at the Study Area.

4.3 Exposure Concentrations

The purpose of the HHRA is to evaluate the potential risks to receptors related to the TSF embankment breach. Concentrations of potential contaminants in soil and tailings related to the TSF embankment breach were found to exceed the standards for the protection of soil invertebrates and plants, but are less than the standards for the protection of human health. However, for the purposes of calculating risk, reasonable worst-case exposure concentrations were calculated for COPCs found to exceed the standards for the protection of soil invertebrates

and plants in soil. Potential exposure for these COPCs in sediment, soil, surface water, berries, traditional plants and fish were estimated. The 95% UCLM was selected as the reasonable worst-case exposure concentration in the HHRA and was calculated using ProUCL software (US EPA 2016c). The dataset used to calculate exposure concentrations was the same as that used to identify COPCs (APPENDIX B-1). The particulate concentrations were predicted using metals assay results from on-site air quality monitors and total suspended particulate concentrations measured for the particulate monitoring program. The methods are presented in APPENDIX C-1. The maximum concentrations were selected as the exposure concentrations. The exposure concentrations used in the HHRA are presented in Table 7.

Table 7: Exposure Concentrations for the Human Health Risk Assessment

COPC	Sediment[1] (mg/kg)	Soil[2] (mg/kg)	Particulate[3] (mg/m^3)	Surface Water[1] (mg/L)	Berries (mg/kg ww)	Traditional Plants (mg/kg ww)	Fish[4] (mg/kg ww)
Aluminum	24,149	14,984	0.00024	0.031	32.1	127	1.6
Copper	410	737	0.000014	0.0019	5.2	4.4	0.69
Vanadium	280	177	0.000003	0.00056[a]	0.21	0.71	0.033

1) Copper and vanadium measured in Quesnel Lake and aluminum measured in Hazeltine Channel.
2) Measured in tailings soil.
3) Maximum predicted concentrations.
4) The 95% upper confidence limit of the mean concentration was calculated using the combined results for lake trout and rainbow trout from Quesnel Lake, Polley Lake and Frypan Creek and Quesnel River.
a) The maximum concentration was used because there were an insufficient number of detected values to calculate a 95% upper confidence limit of the mean.

COPC = contaminant of potential concern; mg/kg = milligram per kilogram; mg/L = milligram per litre; mg/m^3 = milligram per cubic metre; ww = wet weight.

Wild game and cattle tissue samples were not collected for the HHRA. Concentrations of aluminum, copper and vanadium in deer, moose, grouse, and cattle tissues were estimated using uptake models and biotransfer factors (BTFs). The BTFs were obtained from the Risk Assessment Information System (2016) and presented in Table 8. These BTFs were based on the ingestion of beef parameters reported in Baes et al. (1984), which are representative of the fraction of daily elemental intake in feed that is transferred to and remains in a kilogram of beef until slaughter. Using beef BTFs for deer and moose may be conservative since domestic ruminants are more sensitive to copper uptake than wildlife (Ward and Nagy 1976). Furthermore, domestic ruminants tend to remain in one location for longer durations (e.g., weeks), while deer and moose do not. The beef BTF was applied to the grouse in the absence of transfer factors for birds.

Table 8: Biotransfer Factors

COPC	Deer BTF (day/kg ww)	Moose BTF (day/kg ww)	Grouse BTF (day/kg ww)	Cattle BTF (day/kg ww)
Aluminum	0.0015	0.0015	0.0015	0.0015
Copper	0.01	0.01	0.01	0.01
Vanadium	0.0025	0.0025	0.0025	0.0025

BTF = biotransfer factor; COPC = contaminant of potential concern; day/kg ww = day per kilogram wet weight.

Concentrations of aluminum, copper and vanadium in deer, moose, grouse and cattle tissues were estimated using the equation below. The estimated daily intake (EDI) of aluminum, copper and vanadium for each wild game and cattle was calculated using a mechanistic food chain model. The exposure point concentrations used in the food chain model were 95% UCLM concentrations. The exposure parameters and model outputs for the deer, moose, grouse and cattle are provided in APPENDIX B-3.

$$C_T = \sum(EDI) \times BTF \times BW$$

Where:
C_T = concentration of COPC in tissue (mg/kg ww)
∑EDI = estimated daily intake (sum of exposure dose from consumed media [food, water and soil]; mg/kg bw/day)
BTF = bio-transfer factor (day/kg)
BW = body weight of game or cattle (kg)

Although measured organ tissue samples were not collected for the HHRA, Chan et al. (2011) have summarized the measured concentrations of essential trace metals, including calcium, copper, iron, potassium, sodium, zinc and selenium, in several traditional food items. The Chan et al. (2011) results for copper are shown in Table 9 and indicate the copper concentrations are greater in liver than muscle tissue, which is consistent with copper uptake kinetics (Section 5.1.2). It is also known that the concentrations of copper and other nutritionally essential elements is regulated in the liver. Therefore, the ratio of copper in liver to muscle is expected change with changing dietary concentrations. For the purposes of this risk assessment, the ratio of calculated copper concentrations in deer and moose liver to muscle were applied to the predicted muscle tissue concentration to obtain a liver exposure concentration. This was considered to be a preliminary estimate and would require further evaluation if found to be a potentially significant exposure pathway.

Table 9: Measured Concentrations of Copper in Deer and Moose Muscle and Liver Tissue (Chan et al. 2011)

Traditional Food	n	Average (mg/kg ww)
Deer meat	15	2.09
Deer liver	5	28.26
Deer liver to meat ratio		13.52
Moose meat	17	1.79
Moose liver	7	43.68
Moose liver to meat ratio		24.40

mg/kg ww = milligram per kilogram wet weight; n = number of samples.

Measured tissue concentrations for aluminum and vanadium were not available in the Chan et al. (2011) study. Literature on aluminum and vanadium concentrations in liver and muscle of ruminants was limited. Therefore, the liver to muscle ratio for aluminum and vanadium was assumed to be the same as copper. However, this was considered highly conservative for the following reasons:

- Based on professional experience with other projects where measured tissue samples were available, the concentrations of aluminum and vanadium in muscle and liver were similar (i.e., liver to muscle ratio is close to one).
- Aluminum is poorly absorbed following oral exposure (Section 5.1.2).
- Based on the toxicokinetics of vanadium, a large portion of absorbed vanadium is excreted either via feces or urine (Section 5.1.2).

The predicted muscle tissue exposure concentrations used in the HHRA are presented in Table 10.

Table 10: Predicted Game and Cattle Tissue Concentrations

COPC	Deer (mg/kg ww)	Deer Liver (mg/kg ww)	Moose (mg/kg ww)	Moose Liver (mg/kg ww)	Grouse (mg/kg ww)	Cattle (mg/kg ww)
Aluminum	3.4	46.2	3.5	86.1	0.020	4.7
Copper	1.0	13.8	1.0	24.4	0.0089	1.6
Vanadium	0.051	0.69	0.052	1.27	0.00036	0.074

COPC = contaminant of potential concern; mg/kg ww = milligram per kilogram wet weight.

4.4 Exposure Equations

Exposure was estimated in terms of a daily dose for each exposure pathway retained for assessment. This value is called the EDI and is typically expressed as milligrams of a chemical per kilogram of body weight per day (mg/kg bw/day). The EDI was calculated from site-specific and estimated concentrations of COPCs in environmental media (i.e., sediment, soil, surface water, berries, traditional plants, wild game, fish and cattle) (Section 4.3), the amount of time a person would spend in the remediation area (Section 4.2) and receptor group-specific parameters such as body weight, ingestion rate and dietary preferences (Section 4.1).

Exposure equations were obtained from Health Canada (2012) and the US EPA (2004), and are presented below. The calculated exposure doses for the receptors of concern (i.e., model outputs) are provided in APPENDIX B-4. Sample calculations were also completed manually to provide an additional check for the model calculations, and are included in APPENDIX B-5.

Incidental Ingestion of Sediment/Soil

$$DR_{SI} = \frac{C_S \times IR_S \times RAF_O \times D_1 \times D_2}{BW}$$

Where:

DRSI = estimated dose rate from ingestion of COPC in sediment/soil (mg/kg bw/day)
CS = COPC concentration in sediment/soil (mg/kg)
IRS = sediment/soil ingestion rate (kg/day)
RAFO = bioavailability via sediment/soil ingestion (i.e., relative absorption factor from the gastrointestinal tract) (unitless)
D1 = days per week exposed / 7 days
D2 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)
BW = body weight (kg)

Dermal Contact with Sediment/Soil

$$DR_{DC} = \frac{C_S \times [(SA_H \times SL_H) + \sum(SA_O \times SL_O)] \times RAF_D \times D_1 \times D_2}{BW}$$

Where:

DR_{DC} = estimated dose rate from dermal contact with COPC in sediment/soil (mg/kg bw/day)
C_S = COPC concentration in sediment/soil (mg/kg)
SA_H = skin surface area available for dermal contact (hands) (m^2)
SL_H = sediment/soil loading to exposed skin (hands) ($kg/m^2/day$)
SA_O = skin surface area available for dermal contact (other than hands) (m^2)
SL_O = sediment/soil loading to exposed skin (other than hands) ($kg/m^2/day$)
RAF_D = bioavailability via dermal contact (unitless)
D_1 = days per week exposed / 7 days
D_2 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)
BW = body weight (kg)

Inhalation of Soil Particulates

$$DR_{Inh} = \frac{C_A \times IR_A \times RAF_{Inh} \times D_1 \times D_2 \times D_3}{BW}$$

Where:

DR_{Inh} = estimated dose rate from inhalation of COPC in air (mg/kg bw/day)
C_A = COPC concentration in air (mg/m^3)
IR_A = inhalation rate (m^3/day)
RAF_{Inh} = bioavailability via inhalation (unitless)
D_1 = hours per day exposed / 24 hours
D_2 = days per week exposed / 7 days
D_3 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)
BW = body weight (kg)

Ingestion of Surface Water (As Drinking Water)

$$DR_{WI} = \frac{C_W \times IR_W \times RAF_O \times D_1 \times D_2}{BW}$$

Where:

DR_{WI} = estimated dose rate from ingestion of COPC in surface water (mg/kg bw/day)
C_W = COPC concentration in surface water (mg/L)
IR_W = water ingestion rate (L/day)
RAF_O = bioavailability via water ingestion (i.e., relative absorption factor from the gastrointestinal tract) (unitless)
D_1 = days per week exposed / 7 days
D_2 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)
BW = body weight (kg)

Dermal Contact with Surface Water (While Swimming)

$$DAD = \frac{DA_{event} \times SA \times EF \times D_1 \times D_2}{BW}$$

Where:

DAD = dermally absorbed dose (mg/kg/day)
DA_{event} = absorbed dose per event (mg/cm^2/event); see below for equation
SA = skin surface area (cm^2)
EF = exposure frequency (events/day)
D1 = days per week exposed / seven days
D2 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)

$DA_{event} = k_p \times C_W \times t_{event}$Where:

DA_{event} = absorbed dose per event (mg/cm^2/event)
Kp = dermal permeability coefficient (cm/hour)
C_W = COPC concentration in water (mg/cm^3)
t_{event} = event duration (hour/event)

Ingestion of Food Items

$$DR_{FI} = \frac{\sum(C_{Foodi} \times IR_{Foodi} \times RAF_O)}{BW}$$

Where:

DR_{FI} = estimated dose rate from ingestion of COPC in food (mg/kg BW/day)
C_{foodi} = COPC concentration in food i (mg/kg ww)
IR_{foodi} = receptor ingestion rate for food i (kg ww/day)
RAF_O = relative absorption factor from the gastrointestinal tract (i.e., bioavailability via food ingestion) (unitless)
BW = body weight (kg)

5.0 TOXICITY ASSESSMENT

5.1 Toxicokinetics of Aluminum, Copper and Vanadium

5.1.1 Humans

Aluminum

In general, absorption of aluminum in humans and animals is poor via inhalation or oral exposure pathways, and dermal absorption is even less significant (ATSDR 2008). Absorption of aluminum through normal dietary uptake is estimated at 0.1%, while more bioavailable forms (e.g., complexes with some carboxylic acids) can be absorbed at a rate closer to 1.0%. In addition, the aqueous and pH conditions of the gut will also affect absorption (ATSDR 2008). Two human studies that examined the bioavailable of aluminum in diet reported absorption efficiencies of 0.28 to 0.76%. When the exposure dose was increased, the absorption decreased to 0.094% (ATSDR 2008). Therefore, absorption of aluminum from soil, tailings and food is expected to be less than 1%.

Elimination of aluminum following oral uptake in humans occurs in the kidneys (via urine) with unabsorbed aluminum being excreted primarily in the feces. Inhalation exposure studies on humans have found occupational exposure to aluminum fumes, dusts and flakes resulted in increased serum levels, and that direct absorption in the brain may occur through the olfactory tract via axonal transport. Autopsy results from a stonemason exposed to aluminum showed elevated concentrations (compared to normal baseline levels) in the lungs, hilar lymph nodes, liver and spleen (ATSDR 2008).

Excretion in humans occurs via urine, and a correlation exists between exposure duration and urinary concentrations; welders exposed to 0.2 to 5.3 mg/m^3 aluminum for 10 years had urinary aluminum half-lives of over 6 months compared to 9 days in individuals with less than 1-year exposure (ATSDR 2008). A study was conducted applying aluminum chlorohydrate to the underarms of two subjects, the conclusions of the study estimated 0.012% of the applied aluminum was absorbed through the skin (ATSDR 2008). No studies were found on the excretion of aluminum following dermal exposure in humans (ATSDR 2008).

Copper

Copper is an essential element that is well regulated in the human body (Linder 2002, CCME 1997). Uptake of copper is primarily through oral ingestion. The majority of copper absorption occurs in the stomach and small intestine (Bearn and Kunkel 1955) as either ionic copper or bound to amino acids (binding proteins). Of this, the majority of copper is absorbed on the absorptive surface (Crampton et al. 1965), involving mucosal uptake and binding to metallothioneins and other intestinal binding proteins (Evans and LeBlanc 1976). The copper bound to metallothionein can be slowly released to the blood (Marceau et al. 1970) or is excreted when the mucosal cell is sloughed off.

The average absorption efficiencies of orally ingested copper ranged from 24 to 60% in healthy adults (Jacob et al. 1987; Johnson et al. 1988, Turnlund et al. 1982, 1983; Turnland 1989, 1998) but was found to be inversely related to the amount of copper in the gastrointestinal tract (Strickland et al. 1972; Turnlund et al. 1989). In a study of 11 young men administered various copper doses in food over a period of 42 to 98 days, absorption efficiencies of 55 to 56, 36, and 12% were found at doses of 0.785, 1.68, and 7.53 milligram per day (mg/day), respectively (Turnland et al. 1989). Absorption did not appear to be influenced by the amount of copper stored in the human body (Strickland et al. 1972). A nutrient reference value review completed by the Australian National

Health and Medical Research Council and the New Zealand Ministry of Health (Australian National Health and Medical Research Council 2006) indicated that copper absorption ranged from more than 50% at intakes less than 1 mg/day to less than 20% at intakes above 5 mg/day.

There are a number of factors effecting copper absorption, including; i) competition with other metals, ii) the amount of copper in the stomach, iii) certain dietary components and iv) the form of copper (Canadian Council of Ministers of the Environment [CCME] 1997).

Following absorption, copper levels in the blood rise rapidly. The majority of copper is bound to albumin and transcuprein, proteins capable of carrying a large portion of the exchangeable copper in circulation before releasing the copper to other carriers for cell-specific uptake (ATSDR 2004). Most of the initially absorbed copper goes to the liver, where it will be converted to ceruloplasmin for delivery to the other organs (Linder 2002). Copper is very actively recycled between the digestive tract, body fluids and tissues (particularly the liver) (Linder 2002). Ultimately, dietary copper is taken up by the liver and kidneys (ATSDR 2004).

Copper is stored bound to methallothionein in association with copper-dependent enzymes in the liver and other tissues. Binding of copper to metallothionein provides a temporary storage for cytoplasmic copper, preventing it from occurring as (potentially toxic) free ionic metal (Luza and Speisky 1996).

The majority of copper excretion is through the biliary route and largely accounts for hepatic turnover (Luza and Speisky 1996). Following oral administration of copper acetate in healthy humans it was found that 72% was excreted in the feces (Bush et al. 1955). The copper in feces would represent the fraction excreted through the biliary pathway, unabsorbed copper and copper from desquamated mucosal cells (ATSDR 2004). A small portion of daily copper intake (0.5 to 3.0%) is excreted in urine (Cartwright and Wintrobe 1964). Regulation of copper excretion and absorption are the main mechanisms of copper homeostasis (Linder 2002, CCME 1997).

There was limited data regarding uptake of copper through inhalation exposure and through dermal exposure. What information was available suggested that copper is poorly absorbed through intact skin (ATSDR 2004).

Vanadium

The majority of studies on vanadium uptake, distribution, metabolism, excretion and toxicity in humans are for inhalation exposure in an occupational setting, generally to vanadium pentoxide aersols, dusts or fumes. Human studies surrounding inhalation exposure are from occupational exposure in the following industries involving high temperature processing of vanadium; ferroalloy plants (Gylseth et al. 1979), processing of vanadium rich ores and slags, oil combustion, vanadium catalyzed reactions and from cleaning oil-fueled boilers and furnaces (IARC 2006). Vanadium pentoxide was found to be rapidly absorbed following inhalation exposure, but poorly through dermal contact or when ingested as ammonium vanadyl tartrate (Dimond et al. 1963; Gylseth et al. 1979; Kiviluoto et al. 1981).

There is very little uptake kinetics data available for humans exposed to vanadium through oral ingestion. Studies on animals indicated that vanadium can also enter the body via the stomach, although most dietary vanadium is excreted (Rehder 2013). For humans given vanadium orally, 0.1 to 1% is absorbed from the gut, although absorption of more soluble vanadium compounds is greater (IARC 2006). Absorption of vanadium compounds from oral ingestion is known to be strongly effected by dietary components such as fibre protein concentrations, carbohydrates, chelating agents, electrolytes and other trace elements (IARC 2006).

Once absorbed, vanadium becomes distributed to the bones, kidney, spleen, liver, muscle and blood (Rehder 2013; IARC 2006) accumulating mainly in bones, followed by kidneys, spleen and liver (Health Canada 2016). In an acute study using rats, it was found that upon cessation of orally administered vanadium, accumulated vanadium mobilized rapidly from the liver and other tissues but slowly from the bones (Edel et al. 1984). Bones can act as storage pool for vanadate (Rehder 2013).

Vanadium is predominantly excreted through the kidney in animals (ATSDR 2012) and body retention is relatively low (Health Canada 2016). About 60% of absorbed vanadium is excreted in the urine within 24 hours (as cited in IARC 2006). However, since vanadium is poorly absorbed in the gastrointestinal tract, the major fraction of vanadium is unabsorbed and excreted in feces (ATSDR 2012). Of the administered dose of ammonium metavanadate or sodium metavanadate over 80% accumulated in the feces after 6 or 7 days (Adachi et al. 2000; Patterson et al. 1986).

5.1.2 Mammals

Aluminum

In general, absorption of aluminum in animals is poor via inhalation or oral exposure pathways, and dermal absorption is even less significant (ATSDR 2008). Elimination of aluminum following oral uptake in animals occurs in the kidneys (via urine) with unabsorbed aluminum being excreted primarily in the feces. No studies were found on the excretion of aluminum following dermal exposure in humans or animals (ATSDR 2008).

Copper

Dietary consumption of copper in soils and foods is the primary route of exposure for animals on the Study Area. Similar to humans, ingested copper is primarily absorbed in the stomach and small intestine (CCME 1997). In studies using rats, copper absorption was found to be approximately 30 to 50% of the dietary concentration (Linder 2002). As daily oral doses increased from 12 to 200 micrograms/day (10-fold increase over average ingestion) absorption rates steadily decreased to 10% where it leveled off with increasing concentration (Linder and Goode 1991).

Once absorbed, copper is transported in blood by albumin and transcuprein (as cited by Linder 2002). Absorbed copper will primarily accumulate in the liver and kidney, with relatively little accumulation in other organs and tissues (Zervas et al. 1990).

Microbial activity in the gut of the ruminant digestive tract can decrease the bioavailability of ingested copper (Ivan 1988). Deer are thought to accumulate copper at a slower rate than sheep (CCME 1997). A study of red deer stags (*Cerbus elaphus)* and Coopworth wether sheep fed equivalent diets found an 11-fold difference in hepatic copper concentrations between the two species (Freudenberger et al. 1987).

The primary method of copper regulation is excretion through the biliary pathway (CCME 1997). Because bile is the main route for excretion of copper from mammals, copper from peripheral tissues must return to the liver to exit the body (Linder 2002).

Vanadium

Vanadium can enter the body of animals via the stomach, although most dietary vanadium is excreted. Based on animal data, gastrointestinal absorption is rapid and can vary from less than 0.1% to 16.5% (ATSDR 2012). In general, vanadium accumulation is greatest in bones, followed by kidney, spleen, liver and to a lesser extent muscle and blood (Mongold et al. 1990; Yuen et al. 1993) Vanadium concentrations in bones, kidneys and liver as compared to muscle tissues were approximately; 50 to 80-fold, 30 to 50-fold and 7 to 8-fold higher, respectively (Mongold et al. 1990; Yuen et al. 1993). Accumulated vanadium mobilizes rapidly from the kidneys, liver and other tissues but slowly from bones (Edel et al. 1984). In a study of rats exposed to high doses of vanadium (100 mg/L in drinking water), significant increases, compared to controls, were found in bone, kidney and liver but no alterations in vanadium muscle levels were found (as cited in ATSDR 2012).

Since vanadium is poorly absorbed, a large portion of orally administered vanadium is excreted in feces (ATSDR 2012; Section 5.1.1). The remaining, absorbed vanadium, is primarily excreted through the kidneys in urine (ATSDR 2012; Section 5.1.1).

5.2 Contaminant Classification

Several organizations have developed classification systems based on the carcinogenic properties of chemicals. The classification systems for Health Canada (2010b), the IARC (2016) and the US EPA IRIS database (US EPA 2016a) are presented in Table B-6-1 of APPENDIX B-6. Parameters classified as Group I/II (Health Canada), Group 1/2A (IARC), or Group A/B1/B2 (US EPA), and for which acceptable carcinogenic TRVs were available were assessed as carcinogens in the HHRA.

The carcinogenicity classification for COPCs is provided in Table B-6-2 of APPENDIX B-6. Aluminum, copper and vanadium are not considered to be carcinogens and were therefore assessed as threshold acting substances in the HHRA.

5.3 Toxicity Reference Values

For threshold acting contaminants, a reference dose or reference concentration represents an estimated daily intake to which people can be exposed to every day over a lifetime without experiencing a significant or adverse health impact. Reference doses are expressed as milligram of contaminant per kg of body weight per day (mg/kg bw/day) and reference concentrations (used for the inhalation pathway) are expressed in units of milligram contaminant per cubic metre of air (mg/m^3).

The TRVs were selected preferentially from the US EPA (2016a), followed by Health Canada (2010b) in accordance with Technical Guidance 7 (BC MoE 2015a). There is limited information on the oral toxicity of vanadium in humans. The US EPA (2009) and the Netherlands National Institute for Public Health and the Environment (2009) have derived provisional TRVs for vanadium using limited toxicity information. For this reason, these provisional TRVs were not considered appropriate for use in the HHRA. The selected vanadium oral reference dose was based on the US EPA (1988) reference dose of 0.009 mg/kg/day for vanadium pentoxide, and was calculated based on the proportion of the compound that is vanadium metal (i.e., 0.009 mg/kg/day x 56% = 0.005 mg/kg/day). This is consistent with the oral reference dose presented in US EPA (2016b). The TRVs used in the HHRA are presented in Table B-6-2 of APPENDIX B-6.

5.4 Relative Absorption Factors

The potential for absorption detection of COPCs in environmental media depends on the matrix it is in, how tightly bound the COPC is to the matrix and how easily it moves from the matrix into the human body. When a person ingests a COPC in soil, sediment or food, or is exposed to a COPC on skin, some portion (from 0 to 100%) of the total amount of chemical concentration is absorbed by the body. Relative bioavailability allows for corrections to be made for the matrix to which a receptor is exposed. For example, TRVs are often based on studies in which exposure occurs via contaminated water or food. Chemicals in sediment and soil are typically much less bioavailable than in water or food. The COPCs in diet from a bioassay can be significantly more bioavailable than the same COPC in natural dietary items. This lower availability relates to the binding of the chemical to the inorganic and/or organic matrix. Consequently, when comparing exposure from sediment and soil ingestion to oral TRVs generated from laboratory studies of exposure to COPCs in water or food, some correction for relative bioavailability is generally accepted as being reasonable.

The physiologically based extraction test (PBET) is an in vitro test system for predicting the bioavailability of metals from soil by simulating the conditions in the human gastrointestinal tract (including stomach and small intestinal pH and chemistry, soil-to-solution ratio, stomach mixing, and stomach emptying rates (Ruby et al. 1999). This model system has been validated for both arsenic and lead (US EPA Method 200.8), a metalloid and a metal that range in solubility properties from cationic and oxyanion-forming elements (Stumm and Morgan 1996). Lead and copper are both cationic species that have increasing solubility with decreasing pH. Arsenic and vanadium are both oxyanion-forming elements with similar behavior in terms of mobilisation that have generally increasing solubility with increasing pH (Stumm and Morgan 1996). Aluminum has a U-shaped concentration trend (Langmuir 1997); therefore, PBET results were not considered for this assessment.

This assay was used to determine the bioavailability of copper and vanadium from exposure to soil/tailings along the Hazeltine Corridor. The results for were 45% for copper and 1.2% for vanadium (APPENDIX A-7).

PBET results have been approved by regulators for assessing the amount of metal in soil available for uptake for other metals, on the basis of our understanding of the mechanisms that control the solubility of metals and the conditions in the human gastrointestinal tract (e.g., other mine sites in BC and other sites in Ontario [Portlands Energy Centre[4]]). This is based on the findings of Ruby et al. (1999) that the rate limiting step in metal uptake kinetics is dissolution in the free metal in the stomach, rather than absorption across the gut epithelium, which may be different for different metals.

Although the results of the PBET model system indicate that the oral bioavailability of copper and vanadium from soil/tailings are considerably less than 100%, the PBET results were not applied to risk estimates as a conservative measure.

The dermal RAF for copper was obtained from Health Canada (2010b). A default dermal RAF of 1% was applied for aluminum and vanadium based on analysis of other inorganics with sufficient data (Ontario Ministry of the Environment 2011). The oral and dermal RAFs used in the HHRA are presented in Table B-6-2 of APPENDIX B-6.

6.0 RISK CHARACTERIZATION

For a threshold acting chemical, the risk characterization for each exposure pathway is expressed as a hazard quotient (HQ), which is the ratio of the estimated exposure dose to the reference dose. The HQs for a COPC associated with the different pathways of exposure are added to determine the potential risk associated with total exposure to a chemical. The sum of HQs over all exposure pathways is termed a hazard index. A hazard index of 1 is considered acceptable (BC MoE 2016a).

6.1 Results

A summary of hazard indices for the receptors of concern is provided in Table 11. The human health model results are provided in APPENDIX B-4 and a summary of the HQs by exposure pathway is presented in Table B-4-1 of APPENDIX B-4.

Table 11: Hazard Indices for Receptors of Concern

COPC	Infant	Toddler	Adult
Aluminum			
Subsistence and Traditional Land User	0.35	0.38	0.14
Hiker/Camper	0.14	0.17	0.055
ATV/Snowmobile User	n/a	0.0050[a]	0.0041
Boater/Kayaker	n/a	0.12	0.049
Sport Fisher	n/a	0.0024	0.0013
Hunter/Trapper	n/a	0.014	0.0029
Quesnel Lake Resident	0.13	0.15	0.059
Logger	n/a	n/a	0.022
Mine/Rehabilitation Worker	n/a	n/a	0.017
Copper			
Subsistence and Traditional Land User	0.35	0.41	0.13
Hiker/Camper	0.14	0.13	0.039
ATV/Snowmobile User	n/a	0.0058[a]	0.0042
Boater/Kayaker	n/a	0.090	0.034
Sport Fisher	n/a	0.0094	0.0033
Hunter/Trapper	n/a	0.016	0.0050
Quesnel Lake Resident	0.13	0.15	0.044
Logger	n/a	n/a	0.015
Mine/Rehabilitation Worker	n/a	n/a	0.012
Vanadium			
Subsistence and Traditional Land User	0.66	0.81	0.31
Hiker/Camper	0.32	0.37	0.12
ATV/Snowmobile User	n/a	0.0075[a]	0.0062
Boater/Kayaker	n/a	0.28	0.12
Sport Fisher	n/a	0.0098	0.0053

COPC	Infant	Toddler	Adult
Hunter/Trapper	n/a	0.035	0.0086
Quesnel Lake Resident	0.28	0.33	0.14
Logger	n/a	n/a	0.048
Mine/Rehabilitation Worker	n/a	n/a	0.038

Bold and shaded cells indicate a hazard index greater than the threshold of 1.

a) Hazard index is for the teen life stage.

n/a = not applicable, this life stage was not evaluated for the receptor of concern; ATV = all-terrain vehicle; COPC = contaminant of potential concern.

Pre-rehabilitation soil data were used to represent current conditions in the HHRA. However, remediation and rehabilitation activities are on-going in the Hazeltine Channel remediation areas and excavation of soil and tailings has taken place in various sections. The soil data used in the HHRA is reflective of conditions prior to rehabilitation activity and is, therefore, an overestimate, as approximately 8.86 ha (0.089 square kilometers) of tailings deposition have been removed so far, and more is planned for the future. Even with the conservative assumptions applied in the HHRA, the results of the HHRA indicate that risks are low for the subsistence and traditional land user, hiker/camper, ATV/snowmobile user, boater/kayaker, sport fisher, hunter/trapper, Quesnel Lake resident, logger and mine/rehabilitation worker exposed to aluminum, copper and vanadium in sediment, soil, surface water and dietary items (i.e., berries, plants, deer meat, deer liver, moose meat, moose liver, grouse, fish and cattle). The calculated hazard indices were below the threshold of 1 for each of the exposure pathways.

For the subsistence and traditional land user, hiker/camper, boater/kayaker and Quesnel Lake resident, where sediment exposure is an operable exposure pathway, the driving pathway for risk is dermal contact with sediment. For example, for the toddler subsistence and traditional land user, dermal contact with sediment makes up approximately 33% of the total hazard index. However, it should be noted that the dermal loading rates for sediment used in the HHRA are conservative and there is little regulatory guidance on dermal adherence factors for sediments.

When more than one COPC exhibits similar critical effects or acts on the same target organ, the hazard indices for these COPCs are generally summed to provide a hazard index by target organ/critical effect. Aluminum, copper and vanadium do not exhibit similar critical effects; therefore, hazard indices were not summed.

The copper risk estimates should be interpreted within the context that copper is an essential nutrient. Copper is a nutritionally essential element that is required to maintain homeostasis. The World Health Organization (WHO) (1996, 2002; as cited in Health Canada 2010b) considers copper to be essential for human nutrition. Copper is highly regulated in the human body and is part of many metabolic processes (Section 5.1.1). The body has a system that manages and regulates trace metals including incorporation into the blood, transportation to cells and excretion from the body when excess amounts are consumed (Osredkar and Sustar 2011). Copper is needed for metabolism, maintaining skin strength, blood vessels and connective tissue (Osredkar and Sustar 2011).

The WHO (1996) recommends a daily copper intake of 0.34 mg/day for toddlers and 1.3 mg/day for adults. The predicted exposure doses for the toddler and adult subsistence and traditional land user (the most conservative exposure scenario) were lower than the recommended intakes from the WHO (1996), respectively. The results of this assessment indicate that exposure to copper from the Study Area is well below the daily requirement necessary to regulate the body.

There is some evidence to suggest that vanadium also plays a role in human metabolism; however, data are inconclusive. The WHO (1996; as cited in Health Canada 2010b) considers vanadium to be a probably essential trace element. Therefore, the above considerations may also apply to vanadium exposure at the Study Area. Nonetheless, even with the conservative assumptions applied in the HHRA, risks are acceptable from exposure to vanadium at the Study Area.

6.2 Uncertainty

Conservative assumptions were applied in the HHRA. These assumptions likely result in overestimates of actual risks associated with the contaminants in the Study Area. Uncertainties associated with various aspects of the assessment are summarized in Table 12.

Table 12: Evaluation of Uncertainty in the Human Health Risk Assessment

Assumption	Uncertainty	Under/ Overestimate of Risk	Rationale
Food ingestion rates for the First Nations Consumer (i.e., subsistence and traditional land user)	Moderate	Overestimate	Traditional food ingestion rates were based on the results from Chan et al. (2011) because food consumption patterns on local T'exelc and Xatśūll First Nations were not provided. The highest 95th percentile ingestion rates of berries (sum of blue huckleberry, blueberry, red huckleberry, low bush cranberry and high bush cranberry), plants (Labrador tea), deer meat, deer liver, moose meat, moose liver, grouse meat and fish muscle (sum of freshwater fish species) out of adult men and women from the FNFNES were used in the HHRA. Use of the highest 95th percentile ingestion rates was considered conservative as Health Canada (2012) uses average rates for receptor characterization. Furthermore, it was conservatively assumed that all traditional food items are obtained from the Hazeltine Channel corridor. It is expected that traditional hunting and gathering territory ranges well beyond this area
Selection of COPCs for the HHRA	Low	Neutral	Based on the outcome of the problem formulation, there were no COPCs in soil or tailings present in concentrations exceeding human health protection standards. Vanadium concentrations in sediment exceeded the generic soil standard in sediments near the Hazeltine Corridor. Therefore, vanadium in sediment was conservatively retained as an operable exposure pathway warranting further evaluation. At the request of project reviewers, aluminum, copper and vanadium were assessed for all potential exposure pathways.
Bioavailability	Low	Overestimate	The bioavailability for incidental sediment and soil ingestion was assumed to be 100% as a conservative measure. However, site-specific bioavailability data are available for the Study Area and results indicate that bioavailability is much lower than 100% (12%, 45% and 1.7% for aluminum, copper and vanadium, respectively).
Body weights, contact rates, and skin surface areas used in HHRA	Low	Neutral	The receptor characteristics used in the HHRA were based on average Canadian exposure characteristics (Health Canada 2012).

Assumption	Uncertainty	Under/ Overestimate of Risk	Rationale
Food ingestion rates for the non-First Nations Consumer (i.e., hiker/camper, ATV/snowmobile user, hunter/trapper, Quesnel Lake resident, logger, mine/rehabilitation worker)	Moderate	Overestimate	Health Canada (2012) does not provide food ingestion rates for berries, wild game or fish for the general Canadian population. The highest average ingestion rates of berries (sum of blue huckleberry, blueberry, red huckleberry, low bush cranberry and high bush cranberry), deer meat, moose meat, grouse meat and fish out of adult men and women from the FNFNES were used in the HHRA. Use of the highest average ingestion rates was considered conservative as Health Canada (2012) uses average rates for receptor characterization.
Food consumption frequencies	Moderate	Natural/ Overestimate	The traditional food consumption frequencies for the subsistence and traditional land user was assumed to be 365 days per year for all dietary items (i.e., berries, traditional plants, deer meat, deer liver, moose meat, moose liver, grouse meat and fish muscle). However, the reported average consumption rates for the Montane Cordillera ecozone, plateau cultural area in Chan et al. (2011) are lower. Specifically: ■ the highest berry consumption rate is 14 days per year for blue huckleberries ■ the Labrador tea leaves consumption rate, which was used as a surrogate for plant consumption rates, is 14 days per year ■ the deer meat ingestion rate is 62 days per year ■ the moose meat ingestion rate is 30 days per year Based on the above consumption frequencies, risks from exposure to berries, traditional plants and moose may be overestimated. Grouse meat was not identified as one of the top ten food items consumed in the Montane Cordillera ecozone, plateau cultural area. Grouse meat was also not identified as a traditional food item in the 24 hour recall survey (Chan et al. 2011). Therefore, the risks from ingestion of grouse meat may be overestimated.

Assumption	Uncertainty	Under/ Overestimate of Risk	Rationale
Traditional food ingestion	High	Neutral	The traditional food ingestion rates were obtained from the FNFNES, which were based on survey results collected for the Lower Nicola and Splatsin First Nation groups (Chan et al. 2011). It was assumed that the T'exelc and Xatśūll First Nations would have similar traditional food harvesting practices and consumption patterns as these First Nations groups. Without any information about the T'exelc and Xatśūll First Nations food consumption habits, it is unknown if they have higher or lower consumption rates for certain food items.
Consumption of fish	Moderate	Neutral	Although fish tissue results are considered preliminary, the available data were used to characterize risks from exposure to aluminum, copper and vanadium in fish tissue. Fish tissue data will continue to be monitored as part of the CEMP. If results indicate that tissue concentrations are changing, then the risk assessment should be updated to include a fish ingestion pathway.
Less than chronic exposure duration	Moderate	Overestimate	The hiker/camper, ATV/snowmobile user, logger and mine/rehabilitation worker were assumed to consume berries from the remediation areas 13 weeks of the year (i.e., July through September). Similarly, the subsistence and traditional land user, hiker/camper and Quesnel Lake resident were only assumed to swim during the warmer months of the year (i.e., May through October). To evaluate chronic exposure for these pathways, no amortization beyond days per week was applied to the exposure dose. That is, the risk calculations were conducted assuming the above receptors were exposed 52 weeks of the year. This assumption is considered highly conservative; however, sub-chronic or acute duration TRVs were not available to evaluate shorter-term exposure durations.
Cattle (beef) consumption	Moderate	Overestimate	The Quesnel Lake resident may consume cattle that use the remediation areas for grazing. Prior to the TSF embankment breach, cattle were observed grazing at the Mine in June through September. It was assumed that the Quesnel Lake resident only consumes cattle that have grazed in the remediation areas during these four months (i.e., beef is purchased and frozen for consumption year round). Since the COPCs evaluated in this risk assessment are known to not accumulate in muscle, the significance of this overestimate is moderate.

Assumption	Uncertainty	Under/ Overestimate of Risk	Rationale
Sediment contact pathway parameters (e.g., sediment adherence)	High	Overestimate	Use of the sediment adherence factors from Shoaf et al. (2005a) is considered very conservative as these were derived based on children playing in tidal mud flats where a high level of sediment contact and adherence occurs, particularly for the feet. The dermal adherence factors for sediment were for medium to coarse sand (34% medium, 26% coarse). Sediment in Quesnel Lake is primarily coarse sand, reported as 89.2% at near-field stations and 61.6% at far-field stations (Appendix A-7), which would likely have a lower dermal adherence factor.
Use of 95% UCLM as exposure concentrations	Low	Overestimate	Sufficient samples were available to reliably calculate 95% UCLMs for aluminum, copper and vanadium. 95% UCLMs represent reasonable maximum exposure concentrations, and are, therefore, conservative estimates. However, these values represent a more realistic estimate of exposure compared to the maximum concentration, which is highly conservative.
Use of literature BTFs	Moderate	Overestimate	Biotransfer factors were obtained from literature and were based on studies with cattle. The use of beef BTFs is likely to overestimate risk from ingestion of deer and moose meat since domestic ruminants are more sensitive to copper than wildlife (Ward and Nagy 1976). A literature BTF was not available for a grouse; therefore, the deer and moose BTF was conservatively used as the grouse BTF.
Use of food chain modelling to estimate concentration of aluminum, copper and vanadium in deer, moose, grouse and cattle tissue	Moderate	Overestimate	Deer, moose, grouse and cattle muscle tissue concentrations were estimated using the BTF approach, which includes an estimation of the daily intake of a COPC by a wildlife receptor. Modeling the daily dose of aluminum, copper and vanadium uses some generally conservative assumptions. The BTF approach to estimating deer, moose, grouse and cattle tissue concentrations likely overestimates risks to people consuming these meats. For example, information on the size of the area that cattle use for grazing relative to the size of the Study Area was not available. The habitat range factor was assumed to be 20% for the purpose of estimating concentrations of COPCs in cattle muscle. The food chain model used for the HHRA assumed 100% bioavailability of aluminum, copper and vanadium; however, actual bioavailability from soil and dietary items may be less.

Assumption	Uncertainty	Under/ Overestimate of Risk	Rationale
Organ tissue concentrations	Low/High	Overestimate	Copper concentrations in deer and moose liver were predicted using the liver to muscle ratio from measured data presented in Chan et al. (2011). The data indicated that copper concentrations in liver were much higher than in muscle; approximately 14 times higher in deer and 24 times higher in moose. This ratio was applied to the predicted deer and moose muscle tissue concentrations to obtain the liver tissue concentrations. The same data were not available for aluminum and vanadium; therefore, the aluminum and vanadium liver to muscle ratios were assumed to be same as copper. There is more uncertainty regarding the predicted concentrations of aluminum and vanadium in organ tissues than copper in organ tissues.
Toxicity reference values	Low (based on humans) to high (based on animals)	Overestimate	Toxicity data are based on sensitive endpoints. Uncertainty and safety factors are applied to account for inter and intra species variability.

% = percent; COPC = contaminant of potential concern; ATV = all-terrain vehicle; BTF = beef transfer factor; CEMP = Comprehensive Environmental Monitoring Plan; FNFNES = First Nations Food and Nutrition Study; HHRA = human health risk assessment; TRV = toxicity reference value; TSF = tailings storage facility; UCLM = upper confidence limit of the mean.

6.3 Risk Controls

According to the CSR, it is required to document: (a) the principal risk controls necessary to ensure that risk-based standards are and continue to be met at a site and (b) the actions needed to ensure that these risk controls are implemented and maintained. This information is documented in a Performance Verification Plan (Administrative Guidance #14).

MPMC conducts an annual Comprehensive Environmental Monitoring Plan (CEMP) as part of their EMA Permit (#11678). In addition to meeting the requirements of the EMA Permit, the MPMC CEMP meets the requirement of a Performance Verification Plan, as outlined in Administrative Guidance 14 as it:

viii) includes the requirements to monitor potential contaminant concentrations in groundwater, surface water, sediment, plants and fish

ix) outlines monitoring locations and a schedule

x) confirms that conditions continue to meet the assumptions used in the risk assessment

xi) outlines the measures to be taken if conditions change from the assumptions used in the risk assessment

xii) is reviewed annually by an approved professional (as required by the BC MoE)

xiii) requires an annual report be submitted to the BC MoE

The only risk control for the human health risk assessment is that groundwater in the Hazeltine Corridor should not be used for drinking water purposes unless found acceptable by a qualified professional. The rationale behind this risk control includes:

i) Based on the investigations of the tailings impacted groundwater, the following metals exceeded the drinking water standards: iron, manganese, arsenic, molybdenum, sulfate.

ii) Test wells were installed within the tailings deposition overlying the native till. The tailings thickness at the test well locations was generally 1-1.5 metres in the areas where the test wells were installed.

iii) Currently, there are no groundwater supply wells in the Hazeltine Corridor and no exposure pathway to groundwater.

iv) If groundwater supply wells are installed along the Hazeltine Corridor in the future, installation and evaluation of groundwater quality should be conducted under the supervision of a qualified professional.

This HHRA was conducted according to Technical Guidance 7, Supplemental Guidance for Risk Assessment. Risks to human health were quantified and found to be less than 1.0. Therefore, in accordance with the CSR **18**(3)(b), risks to human health are acceptable under current and future conditions.

7.0 CONCLUSIONS

The HHRA was conducted in accordance with provincial guidance. The approach generally followed that of the CSR, although selection of COPCs was expanded to consider substances not typically regulated under the CSR (i.e., aluminum), in response to reviewer's comments. No COPCs were identified in soil; however, aluminum, copper and vanadium were conservatively retained for the assessment of the ingestion of berries, traditional plants, wild game fish tissue and cattle pathways as part of a multi-media evaluation.

Risks to the subsistence and traditional land user, hiker/camper, ATV/snowmobile user, boater/kayaker, sport fisher, hunter/trapper, Quesnel Lake resident, logger and mine/rehabilitation worker from exposure to aluminum, copper and vanadium were evaluated in the HHRA. Specifically, the following exposure pathways were evaluated:

- **Subsistence and traditional land user**: incidental sediment and soil ingestion, dermal contact with sediment, soil and surface water, inhalation of soil particulates, ingestion of surface water and ingestion of berries, traditional plants, deer meat, deer liver, moose meat, moose liver, fish and grouse
- **Hiker/Camper**: incidental sediment and soil ingestion, dermal contact with sediment, soil and surface water, inhalation of soil particulates, ingestion of surface water and ingestion of berries
- **ATV User**: incidental soil ingestion, dermal contact with soil, inhalation of soil particulates, ingestion of surface water and ingestion of berries
- **Boater/Kayaker**: incidental sediment ingestion, dermal contact with sediment, ingestion of surface water and ingestion of fish
- **Sport Fisher**: ingestion of surface water and ingestion of fish
- **Hunter/Trapper**: incidental soil ingestion, dermal contact with soil, inhalation of soil particulates, ingestion of surface water and ingestion of deer, moose, fish and grouse
- **Quesnel Lake Resident**: incidental sediment ingestion, dermal contact with sediment and surface water, ingestion of surface water and ingestion of berries, deer, moose, fish, grouse and cattle
- **Logger**: incidental soil ingestion, dermal contact with soil, inhalation of soil particulates, ingestion of surface water and ingestion of fish
- **Mine/Rehabilitation Worker**: incidental soil ingestion, dermal contact with soil, inhalation of soil particulates, ingestion of surface water and ingestion of berries and fish

The estimated risks for the above receptors were considered acceptable because the hazard indices were below the threshold of 1.0. The majority of hazard indices were less than 1. Therefore, human health risks associated with the TSF embankment breach are considered to be very low.

8.0 CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this report.

We trust the above meets your present requirements. If you have any questions or requirements, please contact the undersigned.

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STUDY LIMITATIONS

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APPENDIX A

Detailed Site Investigation Update

15 February 2017

MOUNT POLLEY REHABILITATION AND REMEDIATION STRATEGY

Detailed Site Investigation Update, Mount Polley Mine, BC

Submitted to:
Mount Polley Mining Corporation
Box 12
Likely, BC
V0L 1N0 Canada

Reference Number: 1662612-107-R-Rev0-22291

Distribution:

1 Electronic Copy- Mount Polley Mining Corporation
1 Hard Copy - Golder Associates Ltd.

REPORT

Golder Associates

Executive Summary

Golder Associates Ltd. (Golder) was retained by the Mount Polley Mining Corporation (MPMC) to conduct a Detailed Site Investigation (DSI) at the Mount Polley Mine, located near Likely, BC (the Site).

A DSI report (Golder 2016a) was prepared for the Site and submitted to the British Columbia Ministry of Environment (MoE) in January 2016 (also referred to as the "2016 DSI"), in accordance with a Pollution Abatement Order that was issued for the Site. This DSI Update report is a continuation of site investigation work previously completed at the Site and forms part of the on-going remediation and rehabilitation works at the Site (also referred to as the "DSI Update"). This report presents the findings of investigation and monitoring works conducted at the Site between August 2015 and August 2016, and incorporates the findings of the previous DSI report for the Site as well as the Post-Event Environmental Impact Assessment Report (PEEIAR) update that was completed in June, 2016 (Golder 2016b).

Rehabilitation and remediation works at the Site, including excavation of tailings material and re-grading and re-sloping of materials, have been ongoing in parallel to the site investigation activities described in this report. These rehabilitation and remediation works have reduced the volume of tailings and lowered the metal concentrations in surficial soils in the tailings impacted areas since the DSI field programs were undertaken (2014, 2015 and 2016); and as reported in the 2016 DSI report and this DSI Update report. Therefore the sampling results discussed in these DSI reports represent a conservative interpretation of the contamination related to the Tailings Storage Facility (TSF) embankment breach.

The overall objective of the DSI Update was to collect additional data to support the completion of a Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA) for the Site.

Based on the combined information provided in the 2016 DSI report (Golder, 2016a) and the DSI Update report (this report), we conclude that the DSI requirements of the Pollution Abatement Order has been met, including:

- Identification of areas of potential environmental concern
- Determination of the potential contaminants of concern based on the applicable CSR standards
- Delineation of the horizontal and vertical extent of contamination
- Confirmation that the contamination at the site is stable or decreasing in concentration and extent over time

Summary of Key Findings

The TSF embankment breach in August of 2014, resulted in physical impact of Hazeltine and Edney Creeks, Polley Lake and Quesnel Lake. Approximately 136 hectares (1.36 km^2) of the Site was scoured of forest and topsoil (floodplain zone). Tailings were also deposited on top of relatively undisturbed forest floor (halo zone) across an additional 100 hectares (1.0 km^2) at the Site. It is estimated that approximately 12.8 million m^3 of tailings was discharged to Quesnel Lake (plus an additional 5.8 million m^3 of native soil and TSF water); and that 1.6 million m^3 of tailings were deposited in the Polley Flats area and the Hazeltine Channel Corridor. In areas where the tailings distributed across the forest floor in the halo zone, air exchange was impeded with plant roots and the soil microbial community causing hypoxic or anaerobic environment of the tree roots, and tree mortality. In 2016, the soil, forest, and plant communities showed signs of recovery, especially in areas where the tailings layers were thin.

The initial physical impacts and contaminant concentrations have been mitigated by on-going rehabilitation and remediation works. MPMC immediately implemented a rehabilitation and remediation strategy including removal of tailings, construction of a new creek channel and sedimentation ponds, and rehabilitation and replanting of large portions of the impacted area. This work is ongoing and will continue to change and improve the site conditions.

To date, the rehabilitation and remediation works have reduced the volume of tailings and lowered the metal concentrations in surficial soils in the tailings impacted areas. Therefore, the site conditions documented in the 2016 DSI and this DSI Update report do not represent the current conditions in the field. As discussed in this report, some of the areas that were identified by the 2014, 2015 and 2016 sampling to contain tailings with copper and vanadium concentrations exceeding the soil standards have now been remediated. The remediation and rehabilitation work will be described in a separate report to be issued at a later date.

The following is a summary of the key findings of the DSI in relation to contamination associated with the tailings released by the TSF embankment breach:

- Copper is the main contaminant in the tailings with an estimated mean concentration (95%UCLM) of 737 mg/kg. The concentrations of copper exceeded the applicable CSR standards in tailings but not in groundwater. The geochemical assessment found that the tailings are not potentially acid rock drainage (ARD) generating and that the leaching that would occur under the neutral to basic pH conditions would be low. Kinetic laboratory testing and groundwater investigation confirmed the leaching rate of copper is low, and that the concentrations in groundwater will likely reduce over time as the tailings age and weather. For tailings materials with water flow paths longer than half a metre, mineral solubility controls for copper are expected with the formation of secondary copper minerals, which would limit the concentrations of copper in groundwater. The median copper concentration in groundwater is about one order of magnitude lower than the concentrations predicted by mineral solubility limits, likely due to dilution by precipitation.
- Vanadium, which is associated with the orange-black sandy tailings (contains magnetite), exceeded the CSR standards based on the 90th percentile of 212.8 mg/kg (CSR standard = 200 mg/kg). The estimated mean concentration (95%UCLM) for vanadium in tailings was less than the CSR standards. Based on geochemical characterization, vanadium was not considered to be enriched in tailings compared to concentrations in typical basalt rock in the region. Vanadium concentrations in groundwater did not exceed the CSR standards.

- Selenium is not a contaminant related to the TSF embankment breach in soil, groundwater, sediment or surface water.
- Other substances that exceeded the CSR standards for soil and groundwater are believed to be associated with natural conditions and were not derived from the tailings. These substances included sulfur and molybdenum in soil (exceedance of agricultural land use standards only); and arsenic, iron, manganese and molybdenum in groundwater.
- In the first few months after the breach, an initial increase in turbidity and concentrations of total metals in surface water was observed extending to the mouth of Quesnel River. During the monitoring period considered to be representative for the purposes of evaluating long term impacts related to the breach (June 2015 to 1 December 2015), concentrations of metals and turbidity decreased or stabilized below BC WQGs and/or are within the pre-event range in Polley Lake and Quesnel Lake. However, in Hazeltine Creek and Edney Creek, concentrations of copper consistently exceeded BC WQGs during that time.
- Sediment quality in Polley Lake, Hazeltine Channel and Quesnel Lake indicated concentrations of copper exceeding the CSR Schedule 9 (typical and sensitive) criterion and concentrations of arsenic exceeding the CSR Schedule 9 (sensitive) criterion. Copper concentrations in reference Bootjack Lake and Polley Lake prior to the TSF embankment breach also exceeded the CSR Schedule 9 (typical) standard. Concentrations of copper in sediments in Polley Lake were generally lower than those measured in Quesnel Lake. This is consistent with the results of the Tetra Tech (2015) report that indicated inputs to Polley Lake were largely aqueous, compared to Quesnel Lake that received both aqueous and solid phase inputs.
- Monitoring and confirmation sampling of soil, groundwater, surface water and sediment will be undertaken as part of the comprehensive environmental monitoring plan (CEMP). The sampling results will be evaluated for seasonal variability and long term trends, and compared to the assumptions made in the DSI and human health and ecological risk assessments.

Contaminants of Concern

Based on the findings of the 2016 DSI conducted in 2015 and the DSI Update conducted in 2016, the contaminants listed in the table below have been determined to exceed the applicable CSR standards for soil, groundwater and sediment; and BC Water Quality Guidelines for surface water. The concentrations of contaminants of concern on the Site are considered to be stable or decreasing in concentration.

Table A: Summary of Contaminants of Concern

Remediation Area	Contaminant	Medium	Applicable CSR Standard	CSR Schedule	Contaminant Concentration
Area 2 – Polley Plug/Polley Flats and Area 4, 5, and 6 – Hazeltine Channel	Copper	Soil	150	5 – Toxicity to soil invertebrates and plants	Refer to Table 6
	Vanadium	Soil	200	4 – Residential and Agricultural	
	Sulfur	Soil	500	4 – Agricultural	
	Molybdenum	Soil	5	4 – Agricultural	
	Iron	Groundwater	5	6 – Irrigation	Refer to Section 5.2.3.1
			6.5	6 – Drinking Water	
	Manganese	Groundwater	0.2	6 – Irrigation	
			0.55	6 – Drinking Water	
	Arsenic	Groundwater	0.01	6 – Drinking Water	
			0.025	6 – Livestock	
	Molybdenum	Groundwater	0.01-0.03	6 – Irrigation	
			0.05	6 – Livestock	
	Sulfate	Groundwater	500	6 – Drinking Water	
	Total and dissolved copper	Surface Water	Variable[1]	BC WQG – AW	Refer to Section 5.3.2.4
	Copper	Sediment	140	9 – Typical	Refer to Section 5.4.2
Area 3 – Polley Lake	Arsenic	Sediment	11	9 – Sensitive	Refer to Section 5.4.1
	Copper	Sediment	120	9 – Sensitive	
			140	9 – Typical	
Area 7 – Edney Creek Mouth	Total and dissolved copper	Surface Water	Variable[1]	BC WQG - AW	Refer to Section 5.3.2.4
Area 8 – Quesnel Lake	Copper	Sediment – Littoral and Profundal	120	9 – Sensitive	Refer to Section 5.4.3
			140	9 – Typical	
	Arsenic	Sediment – Littoral and Profundal	11	9 – Sensitive	

1) WQG is variable dependant on hardness and 30-day rolling averages.

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APPENDICES

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Appendix A-7
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1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by the Mount Polley Mining Corporation (MPMC) to conduct a Detailed Site Investigation (DSI) at the Mount Polley Mine, located near Likely, BC (Mine).

A DSI report (Golder 2016a) was prepared for MPMC and submitted to the British Columbia Ministry of Environment (MoE) in January 2016 (also referred to as the "2016 DSI"), in accordance with a Pollution Abatement Order that was issued for the Mine. This DSI update report is a continuation of site investigation work previously completed at the Mine and forms part of the on-going remediation and rehabilitation works at the Mine (also referred to as the "DSI Update"). This report presents the findings of investigation and monitoring works conducted at the Mine between August 2015 and August 2016, and incorporates the findings of the previous DSI report for the Mine as well as the Post-Event Environmental Impact Assessment Report (PEEIAR) update that was completed in June 2016 (Golder 2016b).

Rehabilitation and remediation works at the Mine, including excavation of tailings material and re-grading and re-sloping of materials, have been ongoing in parallel to the site investigation activities described in this report. These rehabilitation and remediation works have reduced the volume of tailings and lowered the metal concentrations in surficial soils in the tailings impacted areas since the DSI field programs were undertaken (2014, 2015 and 2016); and as reported in the 2016 DSI report and this DSI Update report. Therefore the sampling results discussed in these DSI reports represent a conservative interpretation of the contamination related to the Tailings Storage Facility (TSF) embankment breach.

1.1 Objectives and Scope of Work

The overall objective of the DSI Update was to collect additional data to support the completion of a Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA) for the Mine.

In order to meet this objective, the following scope of work was implemented as part of the 2016 site investigation program:

- collection of additional samples to improve estimation of local background soil concentrations
- preparation of a physical hydrogeological assessment, to describe the groundwater flow regime at the site
- updated screening of 2014, 2015 and 2016 soil results against applicable regulatory criteria, including the added agricultural land use standards
- confirmation of the Conceptual Site Model (CSM)

The overall approach and background information related to this DSI Update is provided in Section 2.0, below.

1.2 Professional Statement and Author Qualifications

Pursuant to Section 63 of the Contaminated Sites Regulation, Golder confirms that this DSI Update report has been prepared in accordance with the applicable sections of the Contaminated Sites Regulation (Part 5, 6 and 14).

Golder certifies that the senior reviewer for this report is an Approved Professional under the BC Contaminated Sites Approved Professional (CSAP) society, has demonstrated experience in the assessment and/or remediation described in this report and is familiar with the assessment work carried out at the Mine.

1.2.1 Qualifications of Lead Authors

Reidar Zapf-Gilje, PhD, PEng, CSAP

Dr. Reidar Zapf-Gilje, PhD, PEng, CSAP, has been providing contaminated site consulting and professional development services for 35 years. He is the Founder and Principal of GeoEnviroLogic. His experience includes development of management plans for contaminated soil, groundwater, and sediment from initial investigations stages, risk assessment and to implementation of remediation and/or risk management solutions. His experience includes work on remote and First Nations communities dealing with hydrocarbon and metals contaminated sites, as well with closure of former landfills and mines. He has also been involved with developing contaminated site framework and guidance documents for the Province of BC, Health Canada, CCME, DFO, Public Works Canada and Environment Canada.

Reidar also organizes and teaches professional development seminars on contaminated sites topics and has taught graduate and undergraduate courses on a part-time basis as Adjunct Professor in the departments of Civil Engineering and Earth and Ocean Sciences at UBC. He has been involved with development of new courses and programs for contaminated site education and training at the British Columbia Institute of Technology and Kwantlen University College. He was the Chair of the former Roster of Contaminated Site Experts (now replaced by the Contaminated Site Approved Professional (CSAP) Society), and in that role he led the development of the new CSAP Society. He currently sits on the CSAP Board and is the Chair of the Performance Assessment Committee. He is an Approved Professional in BC for both numerical standard-based and risk-based submissions.

Trish Miller, MSc, RPBio, CSAP

Trish Miller, MSc, RPBio, CSAP, is a senior environmental scientist and Principal with Golder Associates Ltd. with more than 25 years' experience in human health and ecological risk assessment. Ms. Miller is active in all aspects of contaminated sites risk assessment and remediation, including oversight of the development of sampling plans, integrating objectives and data requirements of a risk assessment into work plans and site investigations, designing toxicology testing programs for ecological assessments, coordinating data analysis, developing site-specific remediation standards, liaising with clients, and reporting. Ms. Miller has developed provincial matrix standards and water quality guidelines, derived numerous site-specific risk-based soil, groundwater and surface water standards. She works with a variety of First Nations on both large and small scale projects ranging for investigation and remediation of large scale diesel contamination to risk assessments of risk-based closure of remote dump sites.

Ms. Miller works with Health Canada to develop guidance including how to conduct site investigations to support risk assessments in remote northern communities, guidance for sediment quality guidelines for human health and including risk assessments in federal environmental impact assessments. She conducts workshops for professional development of managers and consultants on the advantages of risk assessment for contaminated site remediation and on general principles and procedures involved in the conduct of risk assessments. Ms. Miller was appointed by the Province to the B.C. Contaminated Sites Approved Professionals (CSAP) in Risk Assessment. She regularly reviews reports and makes recommendations related to remediation of contaminated land in BC on behalf of the Provincial Ministry of the Environment. Also as an Approved Professional, Ms. Miller currently serves on the CSAP Technical Review Committee, conducts peer Performance Assessments and was a member of the Board of Directors from 2011-2013. Confirmation of CSAP membership can be made by visiting the MoE website: http://www.csapsociety.bc.ca/member_database.htm

2.0 BACKGROUND AND APPROACH

MPMC developed a Rehabilitation and Remediation Strategy (the Strategy) in order to plan and implement the rehabilitation and remediation of the areas that were identified following the TSF embankment breach at the Mine. The Strategy is outlined in Figure 1, below, and combines and builds on existing processes outlined in the *Canadian Environmental Assessment Act,* the British Columbia *Environmental Management Act* and the CSR.

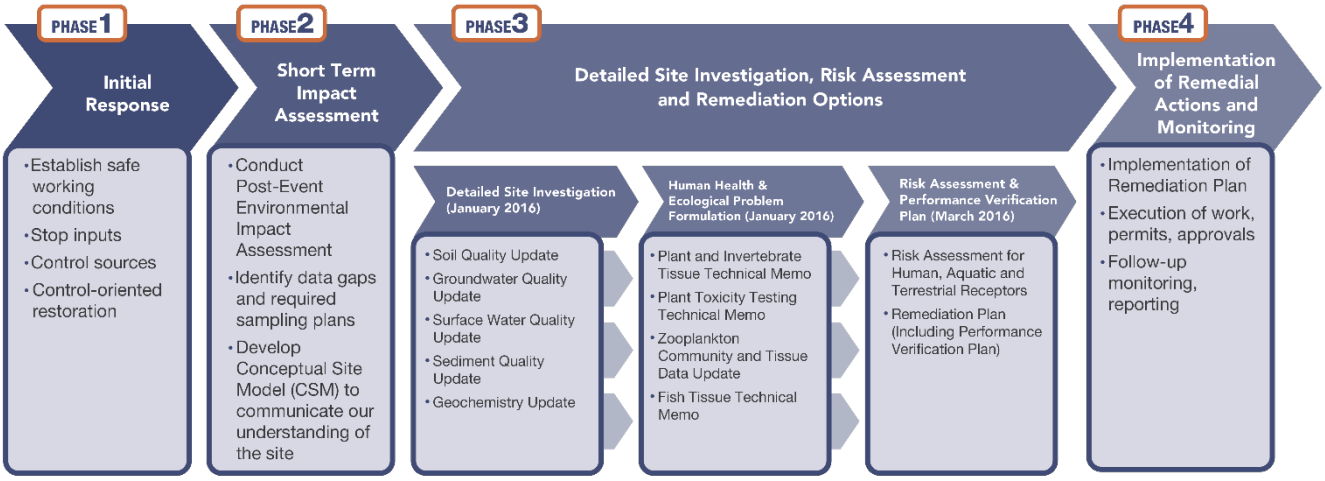


Figure 1: Rehabilitation and Remediation Strategy

The initial DSI report that was submitted to the BC MoE in January 2016 falls under Phase 3 of the Strategy and was completed in accordance with Pollution Abatement Order #107461 that was issued for the Mine. The 2016 DSI report and the current DSI Update report provide information on the area, depth, and degree of contamination in each of the remediation areas at the Mine (refer to Figure A-1) and also identified contaminants of concern (COCs) in soil, groundwater, surface water, and sediment.

As described in the 2016 DSI, the extent of the impacted area was determined to be large. Approximately 136 hectares (ha) (1.36 km^2) was scoured of forest and topsoil and an additional 100 hectares (1.0 km^2) was inundated with tailings deposited on top of relatively undisturbed forest floor. The deposited tailings consisted of two types, classified in the field as ‘grey tailings’ and ‘magnetite sands’. The grey tailings had a fine silty texture, whereas the magnetite sands were speckled pinkish-orange and black. The grey tailings were found along upper benches of the floodplain and in the forest halo zone, whereas the magnetite sands were found in low-lying areas near the creek. The thickness of the tailings deposits ranged from tens of centimetres in the forest halo zone, to more than a metre near in the plug area and in some parts of the Hazeltine Channel floodplain. Some of the tailings deposits contain a mixture of tailings and native soil as a result of scouring of native soil and subsequent mixing with tailings as it flowed down Hazeltine Creek.

Both types of tailings had similar chemical concentrations and geochemical characteristics and were found to be homogeneous and uniform in terms of physical and chemical characteristics throughout the impacted area. The 2016 DSI reported that the concentrations of copper and vanadium were greater than the CSR PL standards (parkland use) across the impacted areas of the site. The current DSI Update added comparison to the CSR AL standards (agricultural use), as a small part of the area near Hazeltine Channel Corridor is zoned agricultural. Sulfur and boron were found to exceed the CSR AL standards.

As described in the 2016 DSI, the main geochemical findings by SRK in 2015 were that the MPM tailings are not potentially acid rock drainage (ARD) generating and that any leaching would occur under neutral to basic pH conditions. SRK identified copper and selenium as the only elements that were enriched when compared to typical crustal rocks and concluded that the potential for leaching from tailings deposited on land or in the lakes was low.

This conclusion was in part based on results from the preliminary testing which indicated that ARD is not expected from the tailings and leaching will be under neutral to alkaline conditions. The preliminary results were from less than 40 weeks of testing. Further test results are now available as discussed in this DSI Update report, and confirm the preliminary results. The full SRK report can be found in Appendix A-2.

The groundwater assessment completed in 2015 as part of the DSI included a limited, focussed assessment of shallow groundwater within the tailings deposits (typical thickness of 0.5 m to 1 m). Because groundwater was encountered in 2015 within 1 m of the ground surface, and because of limited access due to soft ground conditions, hand-augered mini-piezometers and seeps were used instead of conventional drilled wells. The results from these samples of groundwater within the source material were considered to represent worst-case conditions. This assessment was considered sufficient to support the findings of the geochemical characterization (which indicated a low potential for leaching of copper and selenium).

The groundwater sampling results from 2015 confirmed the geochemical findings, as concentrations of metals parameters in shallow groundwater were less than applicable CSR Schedule 6 standards for protection of aquatic life and drinking water. A characterization of the regional groundwater flow systems and the installation of additional groundwater wells in the tailings and the underlying native till was completed as part of 2016 groundwater characterization work reported herein.

As described in the 2016 DSI report, the debris flow initially resulted in an increase in turbidity in Hazeltine Channel, Polley Lake and the west basin of Quesnel Lake. Some increase in turbidity was observed within the first few months after the breach extending to the mouth of Quesnel River. Results of surface water samples were collected from Polley Lake, Hazeltine Channel, Quesnel Lake and Quesnel River showed an initial increase in total metals associated with the turbidity plume that entered these water bodies, but that dissolved concentrations were generally below WQG for Polley and Quesnel Lakes. Exceedances of the WQG for the protection of aquatic life remained for Hazeltine Creek, although concentrations were less than the drinking water quality standards. These results also confirmed geochemistry findings (i.e., low leachability of metals).

As described in the 2016 DSI, concentrations of copper in sediment samples from Polley Lake, Hazeltine Channel (sedimentation ponds) and Quesnel Lake were found to exceed the CSR Schedule 9 standard for a typical site and concentrations of arsenic exceeded the standard for a sensitive site. Concentrations of copper in sediments in Polley Lake were generally lower than those measured in Quesnel Lake. This is consistent with the results of the Tetra Tech (2015) report that indicated inputs to Polley Lake were largely aqueous, compared to Quesnel Lake that received both aqueous and solid phase inputs.

3.0 REGULATORY FRAMEWORK

As described in the DSI report, the Mine is under a Pollution Abatement Order (#107461)[1] under Section 83 (1c) of the *Environmental Management Act (EMA)*. Section 83 of *EMA* outlines the required actions to be taken to satisfy the Act, including 83 (2b) *"undertake investigations, tests, surveys and any other action the director considers necessary to determine the extent and effects of the pollution and to report the results to the director*". Section 14 of the Contaminated Sites Regulation (CSR; BC Reg. 375/96, amendments to BC Reg. 184/2016, 19 July 2016; BC MoE, 2016) outlines the requirements for investigations to satisfy *EMA* 83 (2b).

The CSR outlines environmental quality standards, protocols and technical guidance so that detailed site investigations are conducted in accordance with the *EMA*.

3.1 Soil

The CSR soil standards are defined for six land use categories including: Agricultural (AL), Urban Park (PL), Wildland (WL), Residential (RL), Commercial (CL), and Industrial (IL). The remediation areas 2-9 are undeveloped and with the primary purpose of supporting natural ecosystems; therefore, a wildlands use was considered to be the most applicable standard. In the absence of WL standards, and consistent with CSR guidance, PL standards were used to identify contaminants for current and future use of the Mine.

In addition to wildlands use, agricultural land use is also considered applicable at the Mine, based on the presence of land that is dedicated under the Agricultural Land Reserve (ALR). Soil standards for the protection of agricultural uses were therefore also considered applicable as part of the DSI Update. The area that is part of the ALR is outlined on Figure A-1. Although the portion of land dedicated under the ALR at the Mine is small relative to the overall investigation area, Site-wide soil results were conservatively screened against CSR AL soil standards.

Soil standards for metals are found in the following CSR Schedules:

- Generic Numerical Soil Standards for PL and AL (Schedules 4 and 10)
  - The generic Schedule 4 AL standard for boron is derived from the hot water soluble (HWS) method. In the DSI Update, only results from the HWS method are compared against this standard. Boron results from strong acid leachable (SAL) method are discussed further in Section 5.1.3.1.
  - The generic Schedule 4 AL standard for sulfur is derived for elemental sulfur. In the DSI Update, in the absence of elemental sulfur results, existing results from a total combustion method are compared against this standard. This is considered a conservative estimate for elemental sulfur, and is further discussed in Section 5.1.3.2.
- CSR Matrix Numerical Soil Standards for PL and AL (Schedule 5) for the following pathways:
  - Human health protection – intake of contaminated soil
  - Human health protection – protection of groundwater used as drinking water

[1] As detailed in the 24 February bridge letter from the MOE regarding "Clarifying requirements for PAO #107461".

- Environmental protection – toxicity to soil invertebrates and plants
- Environmental protection – groundwater flow to freshwater used by aquatic life
- Environmental protection – groundwater used for livestock watering (*added pathway since 2016 DSI*)
- Environmental protection – groundwater used for irrigation (*added pathway since 2016 DSI*)

The BC MoE has also developed regional background soil concentrations for metals parameters, which are summarized in the MoE's "*Protocol 4 for Contaminated Sites - Determining Background Soil Quality*" (Protocol 4, dated October, 2010). The Mine is located within Region 5 - Cariboo Regional Area, as specified in Protocol 4. The Region 5 background concentrations of 150 µg/g for chromium, 150 µg/g for nickel and 4 µg/g for selenium, which are above the CSR PL and AL standards, were considered applicable and applied to the site. Therefore only concentrations of these parameters exceeding the applicable regional background concentrations were considered as exceedances of the standards.

Regional background concentrations for other metals were not retained as the established concentrations are less than the applicable CSR soil standards.

3.2 Groundwater

Generic Numerical Water Quality Standards are listed in Schedule 6 and Schedule 10 of the CSR and were used to assess groundwater quality at the site. The Water Quality Standards are divided into four categories that provide standards for the protection of freshwater (AW-F) and marine aquatic life (AW-M) and for defined groundwater uses including irrigation water (IW), water for livestock (LW), and drinking water (DW).

A water well search was conducted as part of the DSI Update report. The results are included in Appendix A-5 at the end of this report. Based on the results of the water well search, and the known land uses in the vicinity of the Mine, the following groundwater uses were considered applicable:

- AW-F: shallow groundwater at the site is inferred to discharge into Hazeltine Channel and into Quesnel Lake, which are both considered aquatic life habitats. CSR standards for protection of AW-F were therefore applied to groundwater results.
- DW: although groundwater at the site is not used for drinking water, the CSR requires that groundwater be protected as a future source of drinking water if aquifers that may provide sufficient water for household use are present and if these aquifers are not protected by a sufficiently thick confining layer. However, Quesnel Lake is used as a drinking water source, and DW standards would apply to surface water.
- IW (*added water use since 2016 DSI*): as described in Section 3.2, land dedicated under the BC ALR passes through a portion of the Hazeltine Channel drainage (refer to Figure A-1). Based on the presence of the ALR, groundwater standards for the protection of groundwater used as irrigation water have been conservatively included in screening of groundwater results for the site.
- LW (*added water use since 2016 DSI*): groundwater standards for protection of groundwater used for livestock watering have also been conservatively included in screening of groundwater results for the site, based on the rationale provided for IW standards.

3.3 Sediment

Schedule 9 of the CSR provides Generic Numerical Sediment Criteria for protection of freshwater and marine water sediment. The criteria are further divided into sensitive contaminated sites (SCS) and typical contaminated sites (TCS). Based on the aquatic receiving environments at the site, the sediment criteria for SCS were considered applicable for interpretation of the DSI results.

3.4 Surface Water

The BC Water Quality Guidelines (WQGs) for the protection of AW-F and the Schedule 6 drinking water standards were used to identify contaminants in the surface water bodies of Polley Lake, Hazeltine Creek, Edney Creek, Quesnel Lake and Quesnel River.

In addition to these standard methods, specific requirements for Quesnel Lake surface water quality were specified in a Pollution Abatement Order amendment (#107461) issued June 15, 2015, by the BC MoE (2015b). The amendment specified that MPMC must meet the following requirements with respect to water quality at specific stations in Quesnel Lake.

- Turbidity at the monitoring sites QUL-54, QUL-55, QUL-56 (and subsequently replacement stations QUL-54a, QUL-55a, and QUL-56a) of no greater than 2 NTU rolling average above background (1 NTU - as recommended by MoE.), at any monitored depth, over a period of 30 days using a minimum of five weekly samples.
- Turbidity at the monitoring site QUL-18 of no greater than 1 NTU above background at any monitored depth.

To assess compliance with the Pollution Abatement Order (#107461), depth profile measurements of turbidity were plotted for near-field stations QUL-54/a, QUL-55/a, QUL-56/a and the western mid-field station QUL-18. The plots were then interpreted to identify time periods where non-compliance was observed.

On 19 November 2015, MPMC received an amendment to *Environmental Management Act* (*EMA*) Permit 11678, which authorizes treated mine contact water discharge to Hazeltine Creek and subsequent discharge to Quesnel Lake through twin pipelines and submerged diffusers. Discharge from the treatment plant to Hazeltine Creek commenced on 1 December 2015, and is presently authorized, with conditions, until 30 November 2017. One of the conditions under *EMA* Permit 11678 is that MPMC must develop and implement an alternative to the discharge to Hazeltine Creek. An evaluation of discharge alternatives is in progress and is reported under a separate cover.

The key point for this DSI Update (and subsequent HHERA and Remediation Plan) is that surface water quality data included in this assessment included data from August 2014 to December 2015. During this time period, the mine was holding mine contact water in Springer Pit. The main source of water to Hazeltine Creek was Polley Lake. As of 1 December 2015, mine contact water has been treated and discharged to Hazeltine Creek with subsequent discharge to Quesnel Lake through twin pipelines.

Water quality conditions have changed significantly since the breach occurred, relative to changes that have occurred in other media. Water quality conditions immediately following the breach were evaluated in the PEEIAR. The water quality conditions from January 2015 to June 2015 were considered to be reflective of a short term construction period when the main Hazeltine Creek channel was being re-constructed. Water quality conditions following channel reconstruction were considered to be representative of long term conditions resulting from the breach. As noted above, MPMC began discharging treated mine water from Springer Pit into Hazeltine Creek on 1 December 2015 under permit. Therefore, for the purposes of evaluating long term impacts related to the breach, the water quality data from June 2015 to 1 December 2015 were considered to be representative.

4.0 RATIONALE AND METHODS

This report is referred to as the DSI Update report. The purpose of the DSI Update was to collect additional site investigation data during the sampling season of 2016 to complete work that was underway but had not been completed by the time the 2016 DSI was due; and to fill data gaps and add information requested by reviewers. A work plan describing the additional work planned for 2016 was developed for each of the abiotic media that were presented in the DSI report, including soil, groundwater, surface water, and sediment.

The additional site investigation, and the updated interpretation presented in the DSI Update report, were designed to fulfill the requirements for a Detailed Site Investigation which, as described in Section 59(2) of the CSR and the DSI report from January 2016, includes the following elements:

- Identification of substances that may cause or threaten to cause adverse effects to the environment.
- Identification of the specific areas, depths, and degree of contamination on the site, including areas and extent of migration, if applicable.
- Evaluation of contamination relative to the standards outlined in the CSR and the HWR (Hazardous Waste Regulation).

The rationale and methods for additional characterization of soil, groundwater, surface water, and sediment are detailed in the following sections.

4.1 Soil

Preliminary estimates of local background concentrations in soil were presented in the 2016 DSI. These estimates were based on samples collected by SNC Lavalin in 2014, and samples collected by Golder for the 2016 DSI. To improve the determination of local background concentrations, an additional 12 background soil samples were collected from four selected locations as described in Appendix A-1.

Twenty six additional background soil samples were collected from co-located plant sample locations as part of the terrestrial risk assessment sampling program carried out in 2016. At each location, the humus layer was removed, and the top 0.2 m of soil from the base of the plant was sampled. Additional detailed information related to soil sampling methodology and the nature of the soil samples obtained at the background locations was documented, including physical characteristics of the soil, depth of sample collection, GPS coordinates of the sampling point, and chemical analysis. A Golder-directed Field Technician documented observations at each soil sample location. A detailed summary of the background soil sampling program is presented in Appendix A-1.

Additional soil sampling carried out expressly for characterization and/or delineation purposes was not conducted as part of the DSI Update, because sufficient information on extent and concentrations of contaminated soil within the floodplain and halo zone was previously conducted by SNC in 2014 and by Golder in 2015 and were presented in the 2016 DSI report submitted in January 2016. However, fifty seven tailings soil samples were collected as part of the terrestrial risk assessment. Co-located soil and plant samples were collected at locations as described above. These samples were opportunistically included in the DSI Update, and are presented in Table 2 after the text.

Therefore, the following tasks were completed in order to update the soil conditions at the site:

- Re-screening of 2014 and 2015 soil results against CSR AL soil standards. The re-screening was completed because a small part of the land in the Hazeltine Channel corridor is dedicated under the ALR (Agricultural Land Reserve).
- Analysis of selected archived soil samples for boron using a HWS boron procedure. During the re-screening process of soil results against CSR AL standards, it was determined that the boron results were not analyzed using the method specified by MoE (CSR Schedule 4). This method is based on a HWS analysis, whereas the previous results were analyzed using a SAL method. A comparison of the two analytical methods is provided in the soil results section in Section 5.1.3.1.
- Incorporating results from soil samples collected as part of the terrestrial risk assessment (co-located soil and plant samples) such that the soil data reported in this DSI Update reflects the contribution from these additional sample results.

4.2 Geochemistry

As described in Section 2 above, SRK findings in 2015 were preliminary as the long-term kinetic testing had not been completed. SRK provided an updated report in early 2017, which is included in Appendix A-2. This DSI Update report presents the results of the completed kinetic tests as well as additional geochemical investigation work that was undertaken in 2016.

The updated geochemical results were used to confirm the overall Conceptual Site Model of the tailings impacts.

4.3 Groundwater

To confirm the preliminary findings of the 2016 DSI; namely that copper, vanadium, selenium in the tailings did not significantly leach into the groundwater, additional investigation was conducted in 2016 (Appendix A-4), including:

- Description of regional physical hydrogeological characteristics based on information from regional geological maps and various groundwater investigation of the mine site (Appendix A-5).
- Installation and sampling of 18 additional monitoring wells (typical installations are shown in Figures 2 and 3 below), including nested monitoring well pairs within tailings material and underlying till material (12 wells were sampled in 2016).
- Installation of three additional monitoring wells to evaluate background groundwater quality at the site.
- Incorporation of relevant hydrogeological information from the TSF groundwater assessment modeling work.
- Collection of additional groundwater samples to monitor temporal and/or seasonal changes in the groundwater quality.
- Measurement of groundwater elevations to provide an understanding of groundwater flow directions.
- Estimation of hydraulic conductivity at selected monitoring wells to provide an understanding of groundwater flow velocities in the various stratigraphies that were encountered during the investigation work.

The results of additional groundwater quality sampling are presented in Appendix A-4, and the physical hydrogeological properties are presented in Appendix A-5.

Figure 2: Typical drilling set-up, Including Installation of a Monitoring Well at the Mine

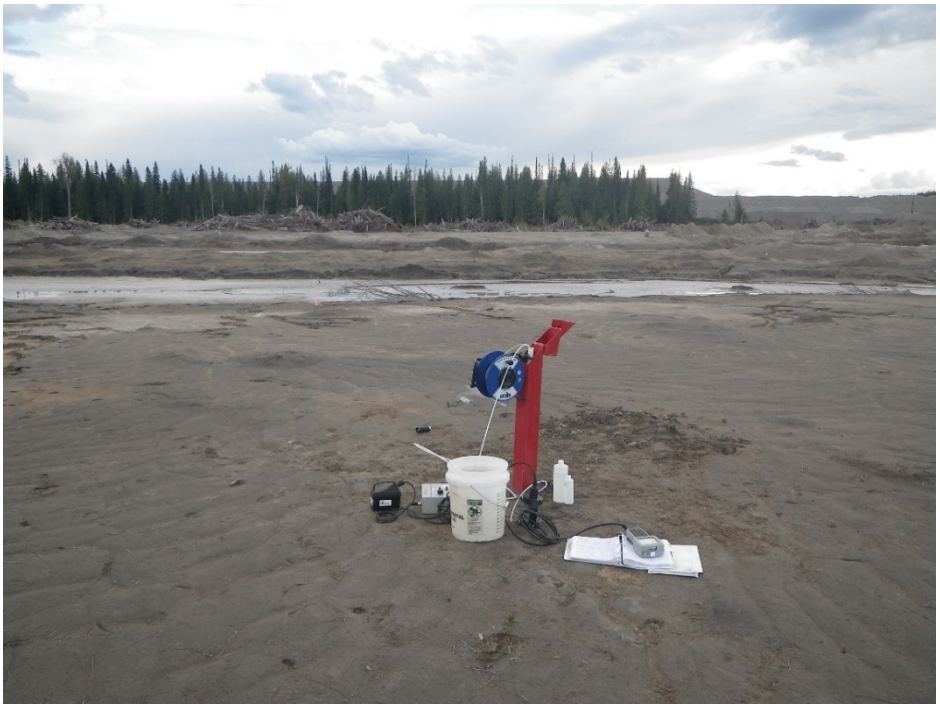


Figure 3: Groundwater Sampling at MW16-02

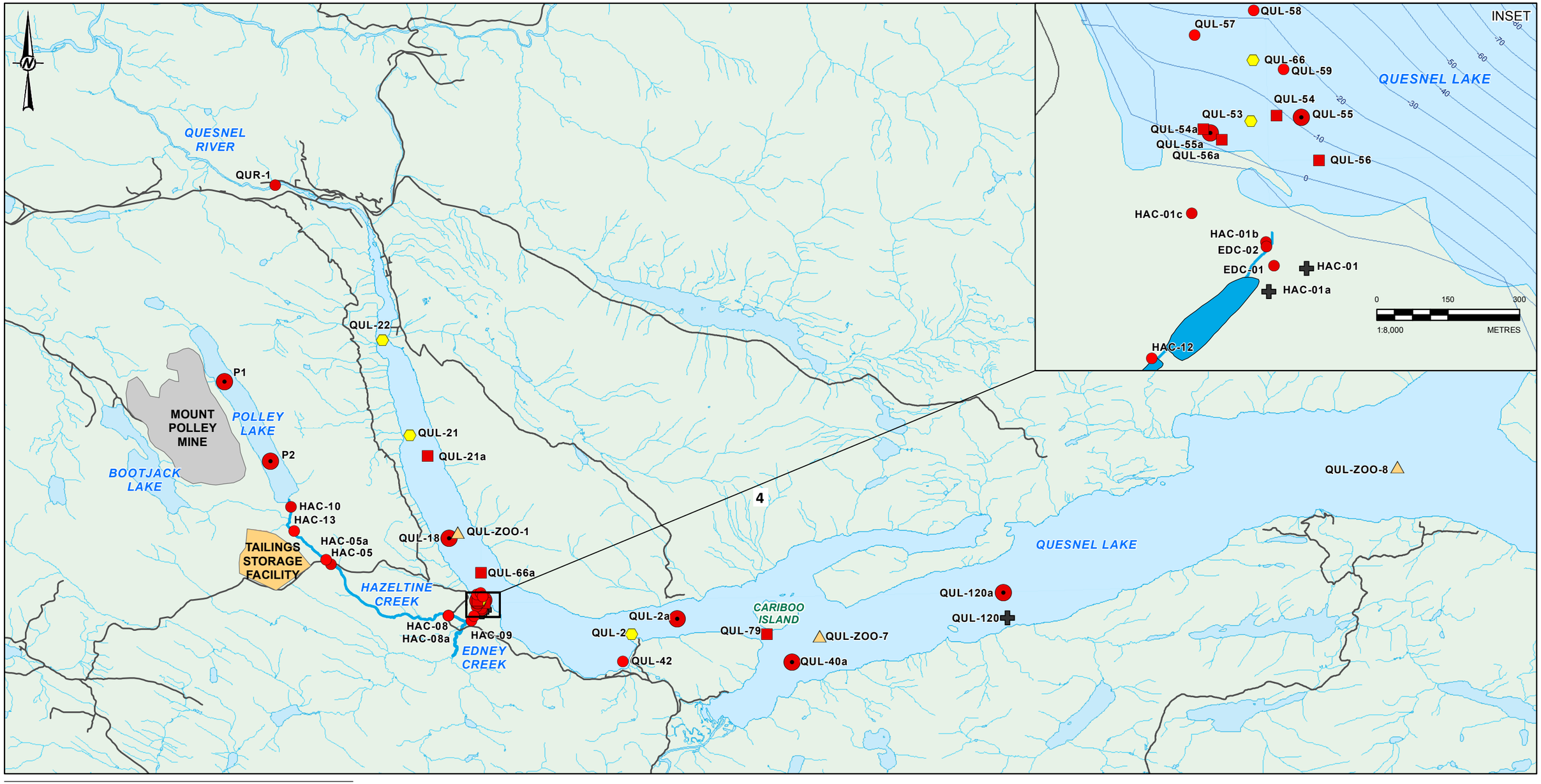
4.4 Surface Water

Since the embankment breach, the surface water monitoring program has evolved, in consideration of factors that included, but were not limited to: monitoring results, safety and logistical constraints, recommendations from BC MoE, and seasonal conditions (e.g., Lake Turnover, onset of winter). A number of stations in Polley Lake, Hazeltine Creek, and Quesnel Lake were consistently monitored, either weekly or monthly; while other stations were monitored on a more intermittent basis or were briefly monitored for a specific purpose. A summary of discrete water quality monitoring data that been reported since the breach is shown on Table 1, below.

Table 1: Summary of Surface Water Quality Reporting

Report	Time Period
Post-Event Environmental Impact Assessment Report (June 2015)	August 2014 to March 2015
Detailed Site Investigation Report (January 2016)	August 2014 to August 2015
Post-Event Environmental Impact Assessment Report Update (June 2016)	August 2015 to December 2015

This DSI Update report therefore includes a summary of surface water quality data that was collected between June 2015 and December 2015, that is related to the breach, and that is relevant to the site investigation works. The stations that were monitored between August 2015 and December 2015 are shown on Figure 4, below. A detailed description of the surface water quality results collected in 2015 and is included in Appendix A-6. Water quality data collected during 2016 is not included in this report, as it will be presented in MPMC's Annual Report that will be submitted to MoE in March 2017.



LEGEND

POST-EVENT MONITORING STATIONS
- ROUTINE - PROFILE
- ROUTINE - GRAB
- ROUTINE - GRAB + PROFILE
- NON-ROUTINE - PROFILE
- INTERMITTENTLY SAMPLED
- SUPERSEDED PRIOR TO MARCH 2015
- TAILINGS STORAGE FACILITY
- MOUNT POLLEY MINE SITE
- BATHYMETRY
- ROAD
- WATERCOURSE
- SEDIMENTATION PONDS
- WATERBODY

0 3 6
1:120,000 KILOMETRES

REFERENCES
1. WATER MONITORING STATIONS OBTAINED FROM MOUNT POLLEY MINING CORPORATION.
2. WATERCOURSE AND LAKE DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
3. PROJECTION: NAD 1983 UTM ZONE 10

CLIENT
IMPERIAL METALS
MOUNT POLLEY MINING CORPORATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-02-25
DESIGNED	AW
PREPARED	MH
REVIEWED	JV
APPROVED	EI

PROJECT
MOUNT POLLEY MINE
WATER QUALITY IMPACT ASSESSMENT

TITLE
POST-EVENT WATER QUALITY MONITORING STATIONS MARCH - DECEMBER 2015

PROJECT NO.	CONTROL	REV.	FIGURE
1411734	12000/2500	0	4

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

4.5 Sediment

Additional sediment sampling was conducted by Minnow in 2016. Sediment samples were collected from Polley Lake, Quesnel Lake, Hazeltine Creek sedimentation pond and the reference location, Bootjack Lake (Figure 5) for the following purposes:

- To characterize sediment and porewater quality at locations sampled in 2014 and/or 2015 and provide temporal comparisons of sediment quality from year to year. Samples collected for this purpose were collected at the same locations as 2014 and 2015, using the same sampling methods, where possible.
- To provide sediment quality data from previously unsampled locations to augment the existing spatial extent characterization. Seventeen additional sampling locations (14 in Quesnel Lake and 3 in Polley Lake) were selected in 2016 to supplement historical sampling locations

Sample collection methods are outlined in detail in Appendix A-7. Samples were analyzed for metals, particle size, total organic carbon (TOC), pH, total nitrogen, and total sulfur. For samples collected from the Hazeltine Channel Sedimentation Pond, laboratory analyses also included oil and grease and polycyclic aromatic hydrocarbons (PAHs). The sediment sampling results were compared to the applicable CSR Schedule 9 criteria for sediment quality.

590,000 595,000 600,000 605,000 610,000

5,825,000 5,820,000 5,815,000

Prior Lake
Slum Lake
Frypan Lake
Spanish Lake Road
Spanish Lake
Cedar Creek Road
Cedar Creek
Nina Lake
Winkley Creek Road
Cedar Creek
Boswell Lake
Horsefly Lake Forest Service Road
Polley Lake
Mount Polley Mine
Bootjack Lake
Bootjack Creek
Bootjack Creek Dam
Tailings Storage Facility
Gavin Lake Road
Hazeltine Creek
Edney Creek
Edney Lake Road
Edney Lake
Edney Creek
Quesnel Lake

LEGEND

- 2016 Spatial "In-fill" Sampling Location
- 2016 Toxicity "Intermediate" Sampling Location
- Sampling Location (2014-2016)
- Bootjack Creek Dam
- Tailings Storage Facility
- Active Mine Operation
- Waterbody
- Watercourse
- Bootjack Lake Bathymetry (5 m Intervals)
- Quesnel Lake Bathymetry (10 m Intervals)
- Polley Lake Bathymetry (10 m Intervals)
- Road
- Water Flow Direction

Please note: Quesnel Lake bathymetry lines are an approximate representation only and may not precisely delineate accurate depths at larger scales.

N
W E
S

0 0.5 1 2 3
Kilometers

MAP INFORMATION
Map Projection: UTM Zone 10 NAD 1983

Creation Date: November 2016
Project : 2574

Figure 5: Mount Polley Sediment Quality In-Fill Locations, August 2016

minnow environmental inc.
A Tetra Tech Consultants Company

5.0 RESULTS

This section of the report presents the results of the DSI Update, including field observations and laboratory results. The results for each media that was tested are presented under separate headings, below. Further details and a compilation of data from this investigation as well as from the PEEIAR (MPMC 2015) are provided in the supporting appendices attached to this report, as follows:

- Appendix A-1: Determination of Local Background Soil Concentrations – Mount Polley Mine, Likely, BC, prepared by Golder, dated 26 January 2017.
- Appendix A-2: Mount Polley Mine Tailings Storage Facility Embankment Breach: Laboratory Kinetic Tests on Spilled Tailings - Final, prepared by SRK, dated February 2017
- Appendix A-3: Mount Polley Spilled Tailings: Polley Flats Copper Geochemical Conceptual Model – Final, prepared by SRK and Minnow, dated 23 December 2016
- Appendix A-4: Updated Factual Data Report on Groundwater Quality, Hazeltine Channel Floodplain, 2015 & 2016, prepared by Golder, dated 28 October 2016
- Appendix A-5: Detailed Site Investigation for Hazeltine Channel at Mount Polley Mine – Physical Hydrogeological Assessment and Conceptual Model, prepared by Golder, DRAFT dated 25 January 2016
- Appendix A-6: Addendum to Mount Polley Surface Water Quality Impact Assessment Update, prepared by Golder, dated 30 March 2016
- Appendix A-7: Sediment and Sediment Porewater Quality Data Report – August 2016 Collections, prepared by Minnow, dated 6 December 2016
- Appendix A-8: Co-Located Soil Samples – Laboratory Certificate of Analysis

5.1 Soil Results

As described in the 2016 DSI, the term “soil” in this report refers to the following material types that were sampled as part of the investigation:

- Tailings.
- Native soils underlying deposited tailings (native). As part of the DSI update, native soils were further categorized as organic and mineral soil, based on observations made during sample collection.
- Native background soils (local background). Local background soil was also categorized as organic or mineral, based on observations made during sample collection.

5.1.1 Soil Conditions and Stratigraphy

Rehabilitation and remediation works at the site have been ongoing in parallel to the site investigation activities described in this report. Therefore, the site conditions as observed during the 2014, 2015 and 2016 sampling have changed at many locations. Rehabilitation works that were completed in 2015 and 2016 along the length of the Hazeltine Channel Corridor included (Pers. Com, G Holmes at Mount Polley, 29 November 2016):

- Excavation and removal of tailings material over approximately 9 ha in the vicinity of the Hazeltine Channel and in parts of the floodplain and halo zone.
- Removal of deceased tree and vegetation cover in the halo zone.
- Re-sloping on 46 ha of the floodplain zone that were scoured (i.e., areas with little topsoil or tailings material).
- Mounding of tailings through mixing with underlying organic soils on 32 ha of the site.
- Addition of transplanted soil in areas where tailings were removed. Transplanted soils consisted of a mix of topsoil and mineral soil.
- Addition of coarse woody debris (CWD) throughout the floodplain zone.
- Seeding and planting of various plant species along the Hazeltine Channel corridor.

A discussion of the rehabilitation works is presented in Golder's technical memorandum entitled "*Update to the Terrestrial Ecosystem Assessment of the Hazeltine Channel Corridor – Mount Polley Mine*" (Golder 2017). Additional rehabilitation work completed since 2015 is shown in Table 2, below. The terrestrial plot locations assessed in the Terrestrial Ecosystem Assessment (Golder 2017) are shown on Figures A2-A10 at the end of this report, while Figure 6, below, shows the rehabilitation work completed in the area of Plot 4. Plots 3, 4, 5, 10, 11, and 12 are located in the Upper Hazeltine Channel corridor, while Plots 24 and 25 are located in Lower Hazeltine Channel corridor. As of the date of this report, rehabilitation activities had not occurred in the halo plots not shown in Table 2 (plots 2, 6, 7, 8, 13, 15, 16, 21, 22, 23, 27, 29).

Table 2: Rehabilitation Activities that have Occurred Since 2015

Plot	Tailings Removed	Logged	Re-sloped	Mounding	Addition of Soil	Addition of CWD	Seeded
3	Yes	-	-	Yes	Yes	Yes	-
4	Yes	-	Yes	-	-	-	-
5	-	Yes	-	-	-	-	-
10	-	Yes	-	-	-	-	-
11	-	Yes	-	-	-	-	-
12	-	Yes	-	-	-	-	-
18	-	-	-	Yes	-	Yes	Yes
24	-	Yes	-	Yes	-	Yes	Yes
25	-	Yes	-	Yes	-	Yes	Yes

Figure 6: Rehabilitation Work along Hazeltine Channel Corridor

The general observations made along the length of Hazeltine Channel in relation to stratigraphy at the site, immediately following the TSF embankment breach included:

- Tailings deposits that were observed to be greater than 3 m thick in certain locations in the vicinity of Polley Flats. The layer of fine-grained tailings material was observed to be up to 1 m thick. At the time of the soil investigation work in August 2016, rehabilitation work involving the removal of tailings had begun in the Polley Flats area on the east side of Hazeltine Channel.
- The thickness of tailings material within Upper Hazeltine Channel was observed to be up to 2.5 m at Golder station ST15. Up to 269,000 m^3 of deposited tailings material was excavated from Upper Hazeltine Channel (as part of creek rehabilitation work completed in 2015). Further rehabilitation work was completed in the vicinity of ST15 in 2016, however an estimate of the volume of additional tailings that has been removed was not yet available at the time of this report.

- Tailings material was not observed within Hazeltine Canyon (except thin, isolated pockets), as material within the canyon was scoured to bedrock.
- A mixture of native till and tailings deposition was observed in Lower Hazeltine Channel and at the mouth of Edney Creek. The soil mixture is consistent with the scouring and deposition that occurred following the event. Based on survey information available at the time of this DSI Update report, approximately 6,000 m^3 of material were excavated from the vicinity of the sedimentation ponds at the downstream end of Hazeltine Channel, as part of works completed in 2015. The 2015 rehabilitation work also included mixing with native soil, re-sloping, placement of CWD and wood chips, and replanting.

5.1.2 Site-Specific Background Concentrations

Local background concentrations were determined for organic and mineral soils using local background soil samples collected in 2014, 2015 and 2016.

Four background soil sample datasets were combined to determine the background soil concentrations:

- Samples collected by SNC Lavalin 2015 (seven organic samples and 16 mineral samples)
- Samples collected by Golder in 2015 as part of the 2016 DSI (19 organic samples and six mineral samples)
- Samples collected by Golder in 2016 in anticipation of the DSI Update (12 mineral samples)
- Samples collected by Golder in 2016 as part of the terrestrial plant and invertebrate soil sampling program (26 organic samples)

Appendix A-1 provides the sampling locations (Figure 1) and details on the sampling methods and results.

As shown in Table 3, the estimated local background concentrations (i.e. the 95th percentile) were less than the applicable standards (or regional background concentrations where noted) for all substances listed, except for sulfur. No substances that exceeded standards were “overruled” using the estimated local background soil concentrations.

The local background concentrations were requested by project reviewers. A Director’s determination of the local background concentrations will not be sought.

The estimated local background concentrations and the corresponding lowest applicable CSR standards are shown in Table 3 below.

Table 3: Estimated Local Background Concentrations (ug/g)

Parameter	95th Percentile – Organic Soil	95th Percentile – Mineral Soil	Most Conservative Applicable CSR Standard
Antimony	9.2	9.5	20 (AL and PL -G)
Arsenic	0.48	0.43	15 (AL – DW/LW and PL - DW)
Barium	252	132	400 (AL– DW/LW and PL- DW)
Beryllium	1.1	0.6	4 (AL and PL – G)
Boron (HWS)	-	0.15[2]	2 (AL – G)
Cadmium	1	0.3	1.5 (AL – DW/I)
Chromium[1]	57	58	150 (Regional background)
Cobalt	19	17	40 (AL-G)
Copper	79	39	90 (AL and PL – GWtoFSW)
Lead	12.2	10.3	100 (PL – DW/I)
Lithium	28.63	23.56	1600 (AL and PL – G)
Manganese	1252	899	1800 (AL and PL – G)
Mercury	0.2	0.1	0.6 (AL – LI)
Molybdenum	1.4	0.7	5 (AL –G)
Nickel[1]	49.5	36.3	150 (Regional background)
Selenium[1]	0.5	0.2	4 (Regional background)
Silver	0.94	0.14	20 (AL and PL –G)
Strontium	137	66	47,000 (AL and PL – G)
Sulfur	900[2]	600[2]	500 (AL – G)
Thallium	0.20	0.09	2 (AL –G)
Tin	2	2	5 (AL – G)
Uranium	1.3	0.7	16 (AL and PL – G)
Vanadium	83.0	88.1	200 (G)
Zinc	144	75	150 (AL – GWtoFSW/LI/DW/I and PL - GWtoFSW)

1) The CSR standard has been substituted with the regional background concentration as the CSR standard is below regional background.

2) Maximum concentration used to estimate local background concentration. Less than 12 samples were available, which was considered to be insufficient for statistical estimation. Refer to Appendix A-1 for details.

AL – Agricultural Land use; PL – Park Landuse; LW – livestock Watering Protection Standard; DW – Drinking Water Protection Standard.

GWtoFSW Protection of groundwater flow to freshwater aquatic life. Standard is pH dependant.

G – Generic Standard; I – Intake of contaminated Soil Standard; LI – Livestock Ingestion Standard; Units are shown in µg/g.

Local background concentrations are based on the 95th percentile value for each parameter, except where noted.

All units are expressed in ug/g.

5.1.3 Laboratory Analytical Results

Laboratory analytical results of the soil investigation were screened against the applicable CSR PL and AL soil standards. In Table 4, native soil samples are shown separately from tailings samples. Native soil was further categorized as being native organic soil or native mineral soil. Detailed laboratory analytical results are presented on Tables 2, 3A and 3B at the end of this report. Statistical analysis of the soil data for determining the contaminants of concern is presented in Table 6 in Section 5.1.3.3.

Table 4: Summary of Exceedances in Soil based on Maximum and Mean Concentrations

Parameter	Number AL Exceedances	Number of PL Exceedances	Maximum	Mean	MCS AL	MCS PL
Native Under Tailings (Organic)						
Arsenic	1/24	1/24	**16.4**	5.5	**15**	15
Cadmium	1/24	1/24	**3.37**	0.62	**1.5**	1.5
Copper	3/24	3/24	**352**	84.6	**100**	100
Selenium	2/24	1/24	**8.89**	0.85	**2**[1]	3[1]
Zinc	1/24	0/24	**209.0**	76.0	**200**	200
Native Under Tailings (Mineral)						
Arsenic	3/52	3/52	**15.7**	8.8	**15**	15
Copper	6/52	6/52	**366**	89.1	**90**	90
Tailings						
Arsenic	2/182	2/182	**16.5**	10.4	**15**	15
Barium	1/182		**697**	152	**400**	400
Cadmium	1/182	1/182	**3.4**	0.19	**1.5**	1.5
Copper	178/182	178/182	**1560**	**702**	**150**	150
Molybdenum	28/182	0/182	**7.3**	3.8	**5**	10
Vanadium	42/182	42/182	**289**	171	**200**	200
Zinc	2/182	1/182	**552**	58.6	**200**	300

Concentrations shown are in mg/kg, unless otherwise noted.

mg/kg = milligrams/kilogram; MCS = Most Conservative Standard.

- Indicates there is no applicable CSR standard.

Cadmium, copper and zinc standards are pH dependant.

Where a result was below MDL, the MDL was used for the purpose of calculation.

The number of exceedances does not include results that were reported below MDL, even if the MDL was above standard.

1) The regional background concentration for selenium is 4 mg/kg.

5.1.3.1 Comparison of Boron Analyses

Boron concentrations reported in 2014, 2015 and 2016 were analysed via a SAL (strong acid leachable) method. Boron was not identified as a potential contaminant of concern in the 2016 DSI because the soil investigation results were not compared to the AL standard at that time. As discussed in Section 3.1, the soil investigation results have been re-screened against the CSR AL standard, because a small part of the land in the Hazeltine Channel Corridor is in the ALR (Agricultural Land Reserve). For this reason, archived samples (15 samples) were analyzed for boron using the hot water soluble (HWS) method specified by MoE (CSR Schedule 4). This section provides a comparison of the results obtained using these two different methods. Table 5 and Figure 7 provide the comparative results of the two methods.

Table 5: Comparison of SAL and HWS Boron Data in Tailings Samples

Sample Location	Boron (SAL)	Boron (HWS)
P2 - T Sand	8.0	<0.10
Rye Grass soil - 11	8.6	0.13
SS15-01	10.9	0.27
SS15-05	7.8	0.19
SS15-06	6.7	<0.10
SS15-08	6.3	<0.10
SS15-09	5.9	<0.10
SS15-10	7.6	0.10
SS15-11	<5.0	<0.10
SS15-12	5.9	<0.10
SS15-16	8.6	0.18
SS15-16	5.9	<0.10
SS15-18	8.0	<0.10
SS15-14 (FDA)	6.3	0.13
SS15-14 (FD)	6.0	<0.10

The HWS results ranged from <0.1 to 0.27 mg/kg. For the same samples, SAL concentrations ranged from <5.0 to 10.9 mg/kg. The HWS results were in the order of only 1-2% of the SAL results, and generally more than an order of magnitude below the CSR standard of 2 mg/kg.

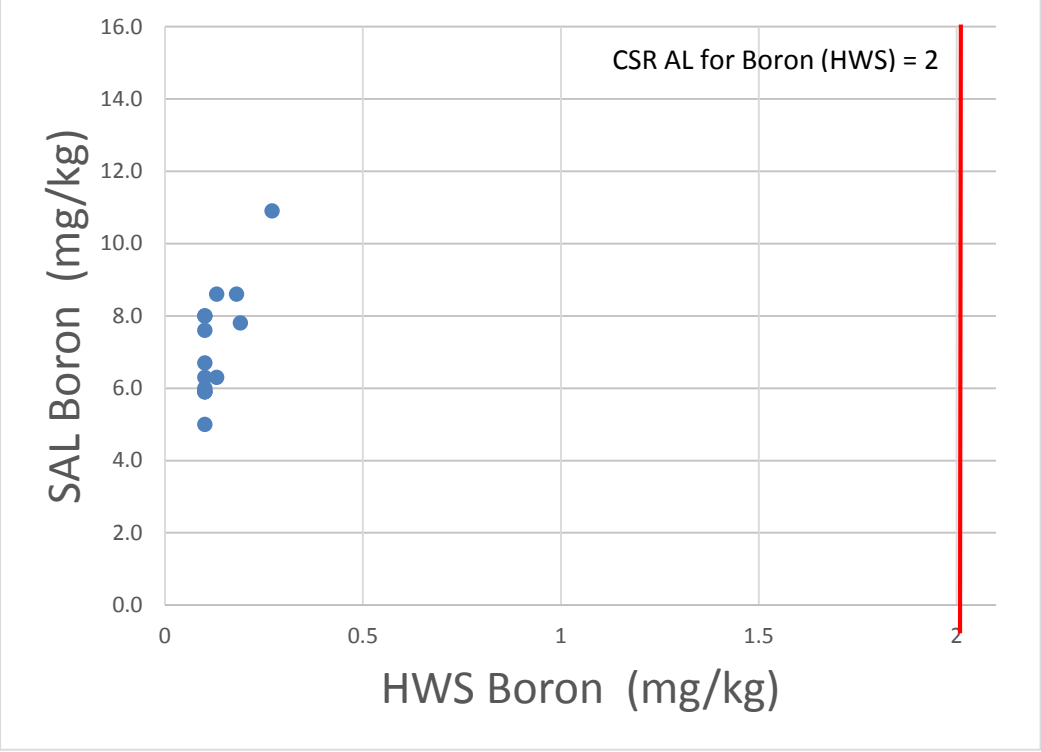


Figure 7: HWS vs SAL Boron Concentrations in Tailings

5.1.3.2 Sulfur Analysis

Sulfur results presented throughout this report are considered to be “total sulfur” results, and were analysed by the laboratory using a total combustion method. The generic Schedule 4 AL standard for sulfur is derived for elemental sulfur. In the absence of elemental sulfur results, these results are considered a conservative estimate for elemental sulfur. The reported sulfur concentrations exceed the CSR AL standard.

5.1.3.3 Summary Statistics and Contaminants of Concern

Summary statistics of each dataset, including number of samples, minimum, maximum, mean, and 90th percentile concentrations were calculated for each metal. The 95% upper confidence limit on the mean (95% UCLM) was calculated for metals with concentrations exceeding the applicable CSR standards. These statistics are presented in Tables 4A, 4B and 4C at the end of this report and summarized in Table 7 below.

Summary statistics were used to determine which of the parameters with exceedances shown in Table 5 should be retained as contaminants of concern, summarized below in Table 6.

Table 6: Summary of Contaminants of Concern Based on TG2

Parameter	Maximum	90th Percentile	95% UCLM	MCS AL	MCS PL
Native Under Tailings (Organic)					
Copper	**352**	**148**	**120**	**100**	100
Sulfur	**7000**	**6380**	NC	**500**	-
Native Under Tailings (Mineral)					
Copper	**366**	**177.7**	**107**	**90**	90
Sulfur	**1100**	**900**	855	**500**	-
Tailings					
Copper	**1560**	**1000**	**737**	**150**	150
Molybdenum	**7.3**	**5.4**	4.0	**5**	10
Sulfur	**3500**	**1550**	**1615**	**500**	-
Vanadium	**289**	**212.8**	177	**200**	200

Concentrations shown are in mg/kg, unless otherwise noted.

mg/kg = milligrams/kilogram; MCS = Most Conservative Standard.

NC = not calculated.

The copper standard is pH dependent.

Where a result was below MDL, the MDL was used for the purpose of calculation.

BC MoE Technical Guidance #2 (TG2) provides guidance on the use of statistics for interpreting soil concentrations. The recommendation of checking if the maximum concentration is greater than 2 times the standard is intended as a check on whether the data set represents a single population. For cases where the maximum is greater than two times the standard, a rationale must be provided if statistics is used.

In this case, the maximum concentrations for copper, cadmium, selenium, and zinc were greater than two times the lowest applicable standards. However, these higher concentrations were considered to be representative of the overall data set and part of the population for the following reasons:

- As described earlier in this report, the tailings are the only source of contamination and the concentrations are relatively homogeneous. The maximum concentration is therefore not considered to be related to a “hot spot” or point source of contamination, but rather a part of the population.
- With respect to the “native under tailings" soil, it appears that the maximum concentrations are part of the range of naturally occurring concentrations because:
  - vanadium concentrations at the locations with maximum cadmium, selenium, and zinc concentrations were lower than the vanadium values observed in tailings and similar to background concentrations
  - the copper concentrations at these sample locations (maximum value of 151 mg/kg) were about an order of magnitude lower than the maximum concentration of copper that was observed in tailings samples (1560 mg/kg)

5.1.3.4 QA/QC

Soil field duplicate samples were collected during each soil sampling program, and are shown alongside primary soil samples in Tables 2, 3A and 3B. Soil field duplicates collected in 2014 and 2015 are discussed further in the 2016 DSI. Soil field duplicates for background soil samples collected as part of the background soil quality determination are discussed further in Appendix A-1.

Field duplicate soil samples collected in 2016 as part of the terrestrial plant and invertebrate soil sampling program are discussed below. Results of analyses for these field duplicates are provided in Table 5 after the text of this report.

Field

In soil, RPDs were greater than 35% for the following parameters: copper, chromium, molybdenum, total carbon, total organic carbon, and potassium. Elevated Reportable Percent Differences (RPDs) were observed in two of the four duplicate samples, both of which were collected in floodplain area. The majority of the observed variability is likely attributed to the higher heterogeneity of floodplain soils. Although this variability could affect the precision of the individual results, selection of the duplicate samples was random, meaning that there would be no systematic bias in results due to the variability.

Laboratory

Laboratory data reports for samples collected during field sampling are provided in Attachment A-8. The following data quality issues were identified in the ALS laboratory reports for soil:

- recommended hold times were exceeded prior to analysis of organic carbon, inorganic carbon, available nitrate, pH, and mercury in some samples

- detection limits for several nutrients were adjusted in some samples due to high concentrations of test analytes, sample matrix effects, limited sample amount, or high percent moisture

The DQOs were met for copper, selenium and vanadium in all samples and were met for the majority of samples for other parameters; therefore, the data were considered reliable for the purposes of DSI Update.

5.1.4 Geochemistry

The geochemical characterization program carried out by SRK in 2015 and 2016 provided information on the potential for leaching from the spilled tailings. The kinetic tests conducted simulate subaerial weathering of the spilled tailings along Hazeltine Channel Corridor and the results confirm that the risk of ARD and metal leaching in the spilled tailings is low and that any leaching will be under neutral pH conditions.

The investigation involved the development of a geochemical conceptual model, and laboratory kinetic testing, which included humidity cells and water unsaturated columns. The kinetic testing provided estimates of solute release rates for predicting metal leaching and ARD potential of exposed tailings along Hazeltine Channel Corridor.

Copper and selenium were the main focus of SRK's investigations as they were identified to be enriched in the tailings compared to regional basalt rock and possibly have potential for leaching. Other parameters with guidelines for the protection of freshwater aquatic life were also included in the kinetic tests conducted by SRK.

The preliminary results based on 40 weeks of kinetic testing were reported in the 2016 DSI report (and in Appendix A-3). The kinetic testing continued through 2016 and the updated results after 90 weeks of testing is reported in SRK's February 2017 report (Appendix A-2). SRK concluded that the test objective of obtaining stable solute release rates have been met. The tests remain on-going, but could be decommissioned according to SRK.

SRK also updated the geochemical conceptual model to address the observed seasonal variations in pH and metal concentrations in groundwater in Polley Plug/Polley Flats. The SRK reports are included in Appendix A-2 and C and discussed separately in the following sections.

5.1.4.1 Kinetic Testing Updates

The results and interpretations presented by SRK in Appendix A-2 are a continuation of the geochemical characterization studies undertaken on representative samples of tailings that spilled into Hazeltine Channel Corridor.

Kinetic testing results have been obtained for up to 90 weeks as of the date of SRK's report. Based on these results and the update geochemical model of seasonal variability, SRK concluded that:

- ARD is not expected from the tailings and that leaching will be under neutral to alkaline conditions.
- The leaching rates in the kinetic tests have reached steady state or are slowly declining, and are suitable for predicting long term water quality from weathering of subaerial tailings.

- For tailings materials with water flow paths longer than half a metre, mineral solubility controls for copper are expected with the formation of secondary copper minerals which would limit the concentrations of copper in groundwater. Where dilution from precipitation is expected to be high, resulting copper concentrations could be lower than those predicted by mineral solubility limits.
- Longer flow paths in the fine grained materials may also be conducive to lower rates of oxygen diffusion and therefore conditions that support sequestration of selenium through selenium reduction to more insoluble forms such as selenite and elemental selenium.

5.1.4.2 Geochemical Conceptual Model

SRK and Minnow (Memo, December 23, 2016) updated the geochemical conceptual model (GCM) for the Polley Plug/Polley Flats area as part of geochemical investigations conducted in 2016. The GCM was developed in order to understand the copper concentrations what were observed at water quality monitoring points in the Polley Flats Area, and to make predictions about groundwater quality in rehabilitated areas. A detailed description of the geochemical GCM is included in Appendix A-3.

The findings indicated that a number of hydrogeological and geochemical processes contribute to copper leaching in the Polley Flats area, as depicted on Figure 5-1, Appendix A-3. The main processes, as presented in SRK and Minnow's memo are (verbatim):

- *"Oxidation of the tailings and release of copper (A). Atmospheric oxygen diffusion may be limited to the near surface (black dashed line in Figure 5-1) with a portion of the tailings not reactive due to sub-oxic conditions.*
- *Weathering of organics (B), with copper complexation by dissolved organic carbon.*
- *Precipitation, infiltration, and transport of copper and other oxidation products (C), including neutralization of sulphide acidity by carbonates and release of carbon dioxide.*
- *Run-off along the surface of the tailings (D) and collection in ditches along Hazeltine Channel, with some ditches draining into the creek.*
- *The till/tailings interface which may direct water laterally (E) and create seepage due to a lower hydraulic conductivity in the glacial till as compared to the tailings. A possible ground water table is depicted by the blue dashed line in Figure 5-1. If the materials below the sediment were at least as permeable as the tailings then infiltration would continue to groundwater.*
- *Contact water from tailings in the Polley Flats area may partially drain to Hazeltine Channel or contribute to groundwater (F). The weathered waste rock from the MPM used to rock armour Hazeltine Creak may have leached copper initially".*

The investigation conducted by SRK and Minnow was initiated to address dissolved copper concentrations upwards of 0.05 mg/L found in the ditches and pools alongside the upper reaches of Hazeltine Channel by MPM and the BC MoE. Rehabilitation works of the Hazeltine Channel and the surrounding area at the Polley Flats involved excavating the tailings and placement of soil and coarse woody debris as well rock armouring the creek channel. The ditches were created partly as temporary water diversion structures, but also to collect tailings contact water during the construction. BC MoE requested the copper leaching from tailings at the Polley Flats area be addressed. The GCM presented by SRK and Minnow provides input in support of effective seep management decisions.

Based on their investigation, SRK and Minnow concluded that the higher copper concentrations observed in the Polley Flats area in ditches and pooled water can be explained from geochemical first principles considering processes that release copper to solution then constrain the resulting copper concentrations by the solubility of copper oxides, as described in the GCM. Copper concentrations that were not constrained by mineral solubility were shown to be predominantly complexed with DOC. The resulting free copper concentrations are low and typical for waters in contact with non-acidic carbonate-containing materials with copper concentrations expected to be stable in the long term.

Detailed findings included:

- Seasonal increase in copper concentrations may be a result of oxidation products and acidity accumulation around sulphide grains during periods of low precipitation (winter and late summer/early fall). During later stages of freshet or times of year when precipitation is infiltrating the tailings, porewater concentrations are expected to decrease as pH goes above 8.0. Conservatively, it should be assumed that these upper end predictions are reached each season, but long term downward trends are probable. This seasonal variation is expected to reduce over time as the tailings age and weather.
- The upper end of free copper concentration is constrained by the formation of secondary copper minerals (e.g. malachite and tenorite) mineral solubility control, and is expected to be in the order of 0.04 mg/L based on the 95th percentile copper concentrations measurements of porewater in unsaturated (i.e., drained) tailings. Dissolved organic complexation would increase the apparent solubility of copper bound in mineral phases; however, it would also decrease the bioavailability and toxicity of dissolved copper.
- Application of water quality criteria that account for organic complexation indicate no exceedances of chronic guidelines for copper in any of the Hazeltine Channel samples. Copper concentrations in Hazeltine Channel are expected to decrease over time due to the aging processes and MPM's ongoing rehabilitation of Hazeltine Channel and its watershed.

5.2 Groundwater Results

The additional groundwater assessment presented in this DSI Update report include:

- An update to groundwater quality at the site, including details on the installation of 18 new monitoring wells and sampling of existing and newly installed monitoring wells is presented in Appendix A-4 "Updated Factual Data Report on Groundwater Quality Hazeltine Channel Corridor, 2015 and 2016".
- A description of the physical hydrogeology at the site is included in Appendix A-5 "Detailed Site Investigation for Hazeltine Channel at Mount Polley Mine – Physical Hydrogeological Assessment and Conceptual Model".

The following sections summarize the field results, physical hydrogeology, and analytical results for investigation work completed at the site.

5.2.1 Field Results

The condition of both the 2015 and 2016 wells was noted during the field work including recharge rates, volume of water in the well, and visible turbidity in the groundwater during sampling. These observations are summarized in Table 7 below. A photograph log of select photos taken during drilling and installation, development, sampling and surveying is included in Attachment 4, Appendix A-4.

Table 7: Field Observations of Well Condition, Volume and Groundwater Turbidity in 2016

Well Name	Well Condition	Volume	Sampled in 2016	Turbidity
MW16-02	Fast recharge	Low volume	Yes	Not turbid
MW16-01S	Dry	None	No	-
MW16-01D	Slow recharge	Low volume	Yes	Not turbid
MW16-03S	Dry	None	No	-
MW16-03D	Slow recharge	Low volume	Yes	Slightly turbid
MW16-05S	Dry	None	No	-
MW16-05D	Slow recharge	Low volume	Yes	Turbid
GW15-06	Destroyed	-	No	-
GW15-04	-	-	No	-
GW15-05	-	-	No	-
MW16-06S	Fast recharge	Low to mid volume	Yes	Not turbid
MW16-06D	Slow recharge	Mid volume	Yes	Slightly turbid
MW16-04	Fast recharge	Mid volume	Yes	Clear
GW15-03	Very slow recharge	Low volume	No	Black organic stained water
GW15-02	Fast recharge	Mid volume	Yes	Slightly turbid
MW16-07	Fast recharge	Mid volume	Yes	Slightly turbid
GW15-01	Slow recharge	Very low volume	No	Turbid
MW16-08S	Dry	None	No	-
MW16-08D	Slow recharge	Very low volume	Yes	Slightly turbid
MW16-09	Slow recharge	Low volume	Yes	Slightly turbid
MW16-10	Dry	None	No	-
MW16-11	Slow recharge	Mid to high volume	Yes	Slightly turbid
MW16-12	Dry	None	No	-
MW16-13	Dry	None	No	-
GW15-BKG-01	Destroyed	-	No	-

Notes: Dry – The well did not have any water at the time of monitoring in August 2016. Very low volume – Wells were considered very low volume if they had less than 0.05 litres of water. Low volume – Wells were considered low volume if they had less than 0.5 litres of water.

Mid volume – Wells were considered mid volume if they had between 0.5 litres and 1.5 litres of water.

Slow recharge – Recharge was considered slow where the lowest setting on a peristaltic pump was greater than the well recharge.

Fast recharge – Recharge was greater than the rate the well was pumped; approximately 150-200 mL/min. Well volume did not have an effect on development or sampling.

"-" = Not Applicable.

5.2.2 Physical Hydrogeology Assessment and Conceptual Model

The climate and hydrology for the mine site have been assessed as part of the water management plan for the TSF 970 m design. The mine site experiences high summer precipitation due to summer storms, with the lowest precipitation in February. Precipitation typically occurs as snowfall in November and accumulates until March. Average annual precipitation at Mount Polley is estimated to be 670 mm.

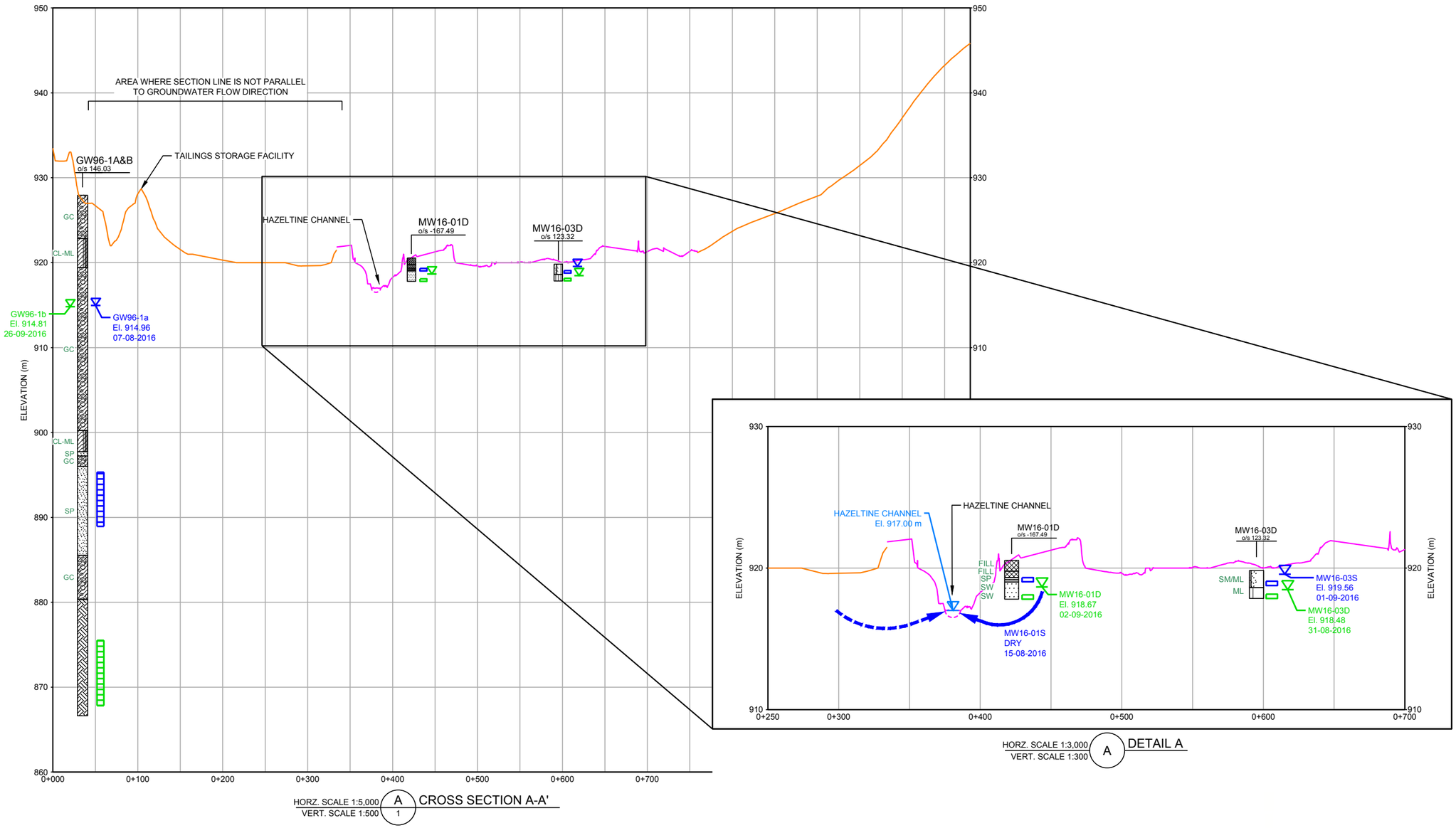
Groundwater recharge occurs through the infiltration of precipitation in the topographic high area of Polley Mountain and the surrounding slopes, excluding the existing mine pits. Groundwater recharge also occurs as infiltration through the tailings at the TSF, although this recharge (i.e., tailings seepage) is limited because of the basal liner of low permeability glacial till.

Based on the inferred water level elevations measured in August and September 2016, the overall regional shallow groundwater flow direction was primarily towards the southeast, from Bootjack Lake and the TSF, towards Hazeltine Channel and Quesnel Lake. The local groundwater regime near the TSF was inferred to be a radial outward flow system because of the high water level in the tailings ponds. Under this regime, some groundwater from below the TSF was inferred to flow towards the east and south towards Hazeltine Channel, and some towards the southwest towards Edney Creek and its tributaries. Deep (regional) groundwater flow in the area was inferred to discharge directly to Quesnel Lake.

Comparison of the shallow versus deeper groundwater level elevations at the paired well locations around the TSF indicates that the vertical component of groundwater flow was generally directed upward on the west side (and possibly also the northeast side) of the TSF and strongly downward on the southeast side of the TSF.

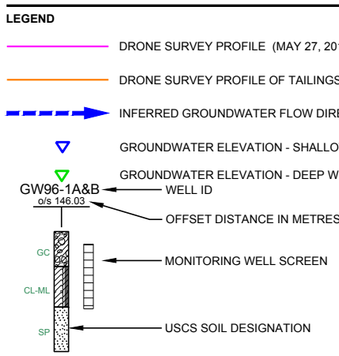
Hazeltine Channel is inferred to be predominantly a groundwater discharge area. This is based on a comparison of the approximate surface water level elevations along the channel with nearby groundwater level elevations, and is supported by an upward hydraulic gradient observed at one of the well pairs next to Hazeltine Channel. This comparison indicated that the creek is primarily a “gaining stream” (i.e., groundwater seeps into the creek as baseflow rather than the creek losing surface water to the groundwater environment). Figures 8 and 9, below show the conceptual groundwater flow directions at the cross-section locations selected as part of the physical hydrogeological assessment. Figure 10 shows the inferred groundwater flow direction at the site.

Based on a search in the BC MoE iMapBC online database in January 2017, no regional aquifers were mapped in the vicinity of the Mine. The closest mapped aquifer, Fraser Plateau Lave Aquifer No. 124 IIIB (11), is a laterally extensive bedrock unit. The northern terminus of this aquifer is located more than 15 km south of the Mine and is not considered to be hydraulically connected to groundwater from the Mount Polley Mine area or the Hazeltine Channel corridor.



LEGEND

- DRONE SURVEY PROFILE (MAY 27, 2015)
- DRONE SURVEY PROFILE OF TAILINGS STORAGE FACILITY (JUNE 27, 2016)
- INFERRED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION - SHALLOW WELL SCREEN
- GROUNDWATER ELEVATION - DEEP WELL SCREEN



GRAPHICS FOR TEST HOLES

BEDROCK	SAND (SP)	CLAY (CL)
GRAVEL (GP)	SAND (SW)	CLAY (CH)
SILTY SAND (SM)	ORGANICS (OL)	CLAY (CI)
SILT (ML)	SILT (MH)	

* VARIOUS COMBINATIONS OF THE ABOVE SYMBOLS HAVE BEEN USED TO REPRESENT MIXTURES OF THE ABOVE MATERIALS.

NOTES

1. ALL DIMENSIONS AND ELEVATIONS IN METRES UNLESS STATED OTHERWISE.
2. WATER ELEVATIONS IN HAZELTINE CHANNEL ARE APPROXIMATE.
3. SECTION LOCATION SHOWN IN FIGURE 1.

REFERENCE

DRONE SURVEYED TOPOGRAPHY PROVIDED BY MPMC.

0 5 10
1:300 METRES

0 50 100
1:3,000 METRES

0 10 20
1:500 METRES

0 100 200
1:5,000 METRES

CLIENT
MOUNT POLLEY MINING CORPORATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-01-20
DESIGNED	CR
PREPARED	JEF
REVIEWED	AB
APPROVED	CR

PROJECT
MOUNT POLLEY MINE
DETAILED SITE INVESTIGATION

TITLE
CROSS SECTION B-B'

PROJECT NO.	PHASE	REV.	FIGURE
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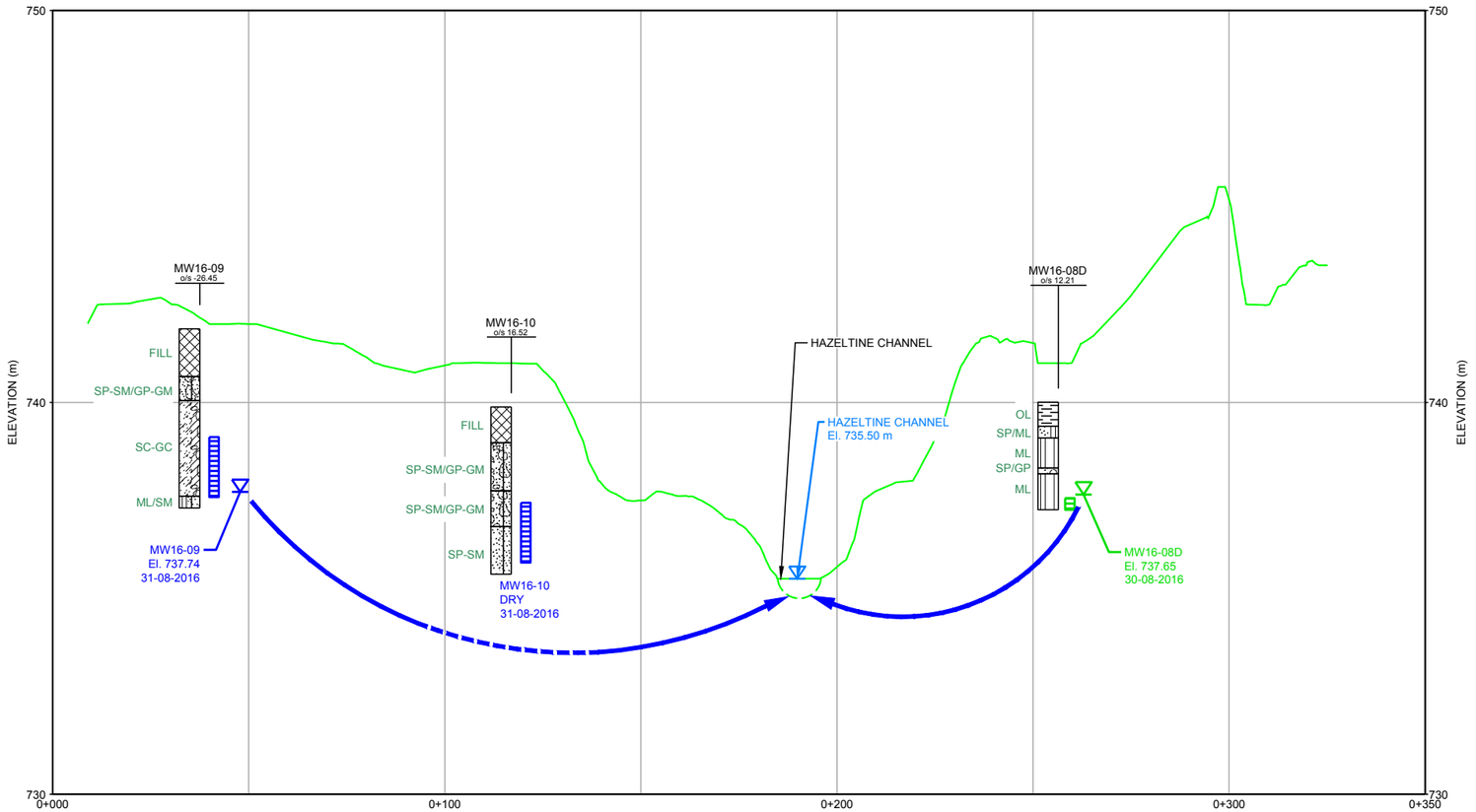


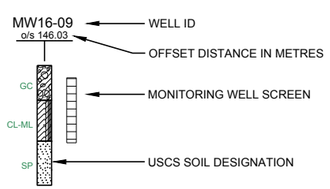
HORZ. SCALE 1:1,500
VERT. SCALE 1:150

B
1

CROSS SECTION B-B'

LEGEND

- DRONE SURVEY PROFILE (JULY 2015)
- INFERRED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION - SHALLOW WELL SCREEN
- GROUNDWATER ELEVATION - DEEP WELL SCREEN



GRAPHICS FOR TEST HOLES

BEDROCK	SAND (SP)	CLAY (CL)
GRAVEL (GP)	SAND (SW)	CLAY (CH)
SILTY SAND (SM)	ORGANICS (OL)	CLAY (CI)
SILT (ML)	SILT (MH)	

* VARIOUS COMBINATIONS OF THE ABOVE SYMBOLS HAVE BEEN USED TO REPRESENT MIXTURES OF THE ABOVE MATERIALS.

NOTES

1. ALL DIMENSIONS AND ELEVATIONS IN METRES UNLESS STATED OTHERWISE.
2. WATER ELEVATIONS IN HAZELTINE CHANNEL ARE APPROXIMATE.
3. SECTION LOCATION SHOWN IN FIGURE 1.

REFERENCE

DRONE SURVEYED TOPOGRAPHY PROVIDED BY MPMC.

0 2.5 5
1:150 METRES

0 25 50
1:1,500 METRES

CLIENT
MOUNT POLLEY MINING CORPORATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-01-20
DESIGNED	CR
PREPARED	JEF
REVIEWED	AB
APPROVED	CR

PROJECT
MOUNT POLLEY MINE
DETAILED SITE INVESTIGATION

TITLE
CROSS SECTION B-B'

PROJECT NO.	PHASE	REV.	FIGURE
1662612	22200	0	**9**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

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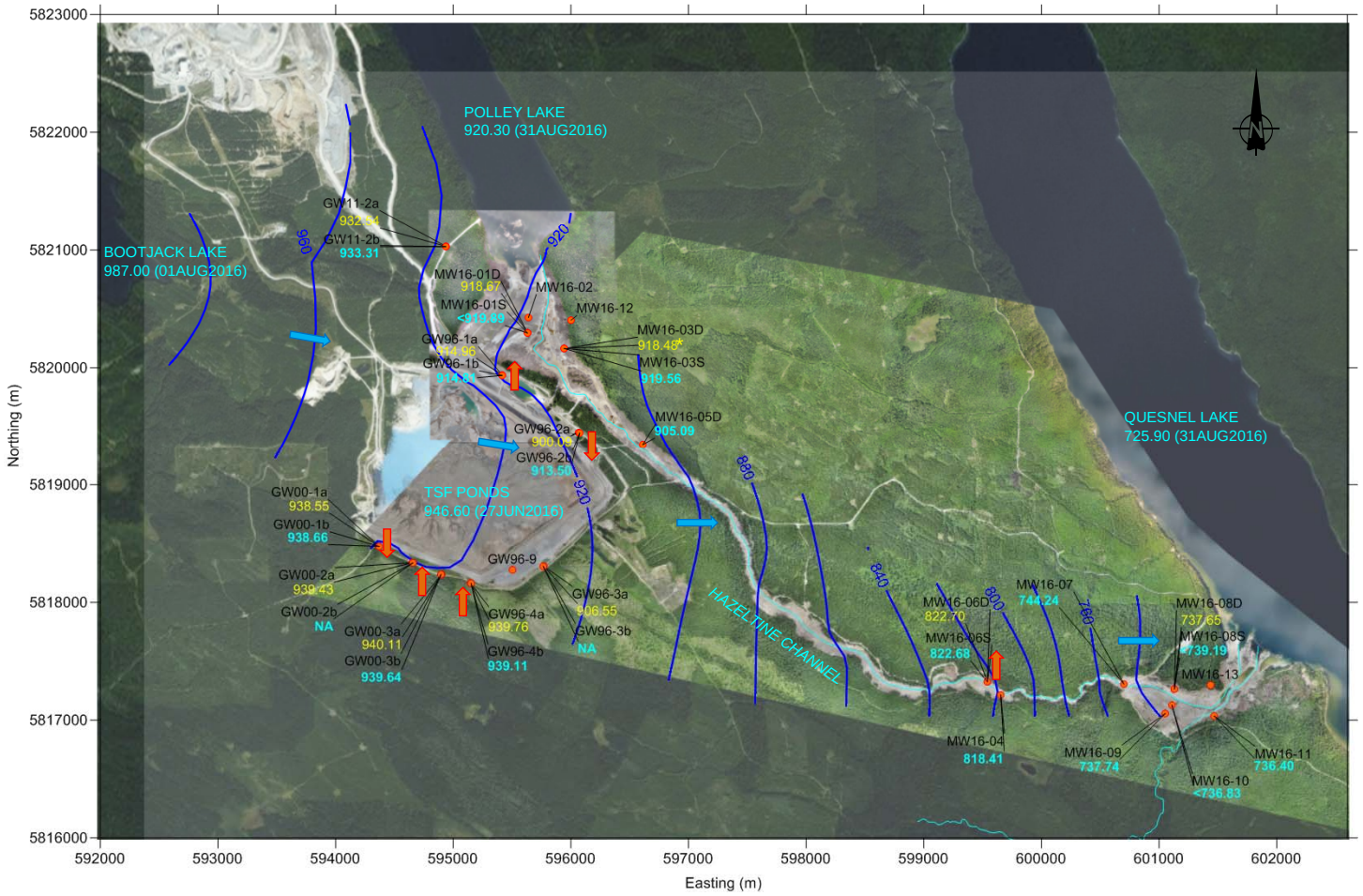

LEGEND

- MONITORING WELLS
- SHALLOW GROUNDWATER LEVEL ELEVATION CONTOURS (mASL)
- INFERRED LATERAL SHALLOW GROUNDWATER FLOW DIRECTION
- INFERRED VERTICAL GRADIENT AT MULTI-LEVEL WELLS
- 744.24 WATER LEVEL ELEVATION SHOWN IN BLUE FOR SHALLOWER WELL AND SHOWN IN YELLOW FOR DEEPER WELL.
- * WATER LEVEL AT MW16-03D NOT CONSIDERED TO BE STATIC.

NOTES

1. WATER LEVELS RECORDED AUG/SEPT 2016 UNLESS INDICATED OTHERWISE.
2. WATER LEVELS ALONG HAZELTINE CREEK BASED ON DETAILED TOPOGRAPHY FROM DRONE SURVEY BY MPMC (MAY 2016 AND JULY 2016).
3. GROUNDWATER LEVEL ELEVATIONS FOR TSF MONITORING WELLS BASED ON MARCH 2016 WELL SURVEY DATA (TOP-OF-PIPE ELEVATIONS) PROVIDED BY MPMC
4. WATER LEVEL CONTOURS BASED ON SURFACE WATER LEVELS AND SHALLOW GROUNDWATER LEVELS.
5. BASE MAP: IMAGERY COPYRIGHT © YYYYMMDD ESRI AND ITS LICENSORS. SOURCE: DIGITAL GLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGE DATE: 2009/07/26

CLIENT
IMPERIAL METALS
MOUNT POLLEY MINING CORPORATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-01-05
PREPARED	CGR
DESIGN	CGR
REVIEW	AB
APPROVED	CGR

PROJECT
DETAILED SITE INVESTIGATION UPDATE

TITLE
MEASURED WATER LEVEL ELEVATIONS AND GROUNDWATER FLOW DIRECTION

PROJECT No.	PHASE	Rev.	FIGURE
1662612	22200	0	10

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI A
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The results of *in situ* hydraulic conductivity (K) testing along the Hazeltine Channel corridor are summarized in Table 8 below. These results indicate a range in permeability that is in general accordance with soil type and depositional conditions. In order of decreasing permeability, K values were obtained for tailings mixed with till (K= 2×10^{-4} m/s), tailings (6×10^{-6} m/s to 7×10^{-7} m/s) and native till (2×10^{-7} m/s to 3×10^{-8} m/s).

Table 8: Summary of Hydraulic Conductivity Results

Well ID	Lithology of Screened Interval	K (m/s)
MW16-06S	Till and Re-deposited Tailings (SAND and GRAVEL, fine to medium)	2×10^{-4}
MW16-02	Tailings (SAND, some fines)	6×10^{-6}
MW16-07	Tailings (SILT)	7×10^{-7}
MW16-01D	Till (gravelly clayey SILT; some coarse sand)	2×10^{-7}
MW16-11	Till (SILT, some gravel and sand)	3×10^{-8}

5.2.3 Laboratory Analytical Results

5.2.3.1 Comparison of Groundwater Quality in Tailings versus "Native under Tailings"

Groundwater chemistry results from wells screened in tailings and native substrates are shown in Table 9 and Table 10 below. Results are shown for the metals of concern related to tailings (copper, selenium and vanadium) and other metals with one or more exceedances of applicable standards.

Table 9: Groundwater Chemistry Results from Wells Installed in Tailings

Parameter	Arsenic	Copper	Iron	Manganese	Molybdenum	Selenium	Vanadium
MW16-02	0.0034	0.0013	3.0	3.8	0.056	0.00013	0.0016
GW15-06	0.0031	<0.0010	13.4	9.3	0.0022	<0.0010	<0.030
GW15-05	0.0020	<0.0010	<0.030	0.10	0.0072	<0.0010	<0.030
GW15-04	0.0012	0.0091	<0.030	0.15	0.0079	<0.0010	<0.030
GW15-03	0.0034	0.0028	2.1	13.2	0.0082	<0.0010	<0.030
MW16-06S	0.00064	0.0046	<0.030	0.056	0.00068	0.00028	0.00079
GW15-01	0.029	0.0012	21.6	26.5	0.0036	<0.0010	<0.030
GW15-02	0.0037	0.0036	0.054	1.5	0.065	<0.0010	<0.030
GW15-02	0.0059	0.0014	1.2	2.9	0.082	0.000073	0.00073
MW16-07	0.0060	0.0034	0.19	0.33	0.11	0.000059	<0.00050
Median	0.0034	0.0021	0.67	2.2	0.0081	<0.0010	<0.030

All concentrations are in mg/L.

Bolding indicates an exceedance of CSR standards protective of freshwater aquatic life.

Red text indicates an exceedance of CSR standards protective of drinking water.

Underlined indicates an exceedance of CSR standards protective of water used for irrigation.

Yellow highlighting indicates an exceedance of CSR standards protective of water used for livestock watering.

Table 10: Groundwater Chemistry Results from Wells Installed in Native Soils Underlying Tailings

Wells	Arsenic	Copper	Iron	Manganese	Molybdenum	Selenium	Vanadium
MW16-01D	0.00095	0.021	1.9	12.5	0.0068	0.00025	0.0017
MW16-03D	0.00055	0.0030	0.12	0.77	0.000068	0.00011	0.00092
MW16-05D	0.0014	0.00056	1.6	3.1	0.00183	0.00017	<0.00050
MW16-06D	0.00085	0.0025	<0.030	2.6	0.019	<0.000050	<0.00050
MW16-04	0.00089	<0.00050	0.57	0.39	0.0014	0.000075	<0.00050
MW16-08D	0.0025	0.0048	0.081	0.13	0.0013	0.00083	<0.00050
MW16-09	0.00051	0.0024	0.29	3.8	0.0011	0.000052	0.0011
Median	0.00089	0.0025	0.29	2.6	0.0014	0.00011	<0.00050

All concentrations are in mg/L.

Red text indicates an exceedance of CSR standards protective of drinking water.

Underlined indicates an exceedance of CSR standards protective of water used for irrigation.

Concentrations of copper in groundwater in wells installed in tailings ranged from <0.0010 to 0.0091 milligrams per litre (mg/L) with a median value of 0.0021 mg/L. This was similar to groundwater from wells installed in native soils underlying tailing which had copper concentrations ranging from <0.00050 to 0.0048 mg/L with a median value of 0.0025 mg/, and similar to the concentrations measured in two background wells of 0.00084 to 0.0024 mg/l.

Vanadium concentrations in groundwater from wells installed in tailings and wells installed in native soils underlying tailings had a similar range of concentrations, <0.00050 to 0.0016 mg/L and <0.00050 to 0.0017 mg/L, respectively. The median concentration of vanadium in both screened stratigraphy's was less than the method detection limit (MDL), although the detection limit was raised for samples collected in 2015.

Concentrations of selenium in wells installed in tailings and wells installed in native soils underlying tailings had a similar range of concentrations, <0.0010 to 0.00028 mg/L and <0.000050 to 0.00083 mg/L, respectively. The median concentration of selenium in wells screened in tailings was less than the MDL (<0.0010 mg/L), while the median concentration of selenium in wells screened in native soils underlying tailings was 0.0011 mg/L.

Based on a comparison of median concentrations, concentrations of arsenic, iron and molybdenum were elevated in wells screened in tailings compared to wells screened in native soils underlying tailings (Table 9 and Table 10). Concentrations of manganese in groundwater was similar between wells screened in tailings and wells screened in native soils underlying tailings (Table 9 and Table 10).

5.2.3.2 Comparing 2015 to 2016 Results

Groundwater chemistry results from samples collected in 2015 and 2016 are shown in Table 11 and Table 12 below. Results are shown for the metals of concern related to tailings (copper, selenium and vanadium) and other metals with one or more exceedances of applicable standards.

Table 11: Results of the 2016 Groundwater Investigation

Wells	Arsenic	Copper	Iron	Manganese	Molybdenum	Selenium	Vanadium
MW16-01D	0.00095	0.021	1.9	12.5	0.0068	0.00025	0.0017
MW16-02	0.0034	0.0013	3.0	3.8	0.056	0.00013	0.0016
MW16-03D	0.00055	0.0030	0.12	0.77	0.000068	0.00011	0.00092
MW16-05D	0.0014	0.00056	1.6	3.1	0.0018	0.00017	<0.00050
MW16-06S	0.00064	0.0046	<0.030	0.056	0.00068	0.00028	0.00079
MW16-06D	0.00085	0.0025	<0.030	2.6	0.019	<0.000050	<0.00050
MW16-04	0.00089	<0.00050	0.57	0.39	0.0014	0.000075	<0.00050
GW15-02	0.0059	0.0014	1.2	2.9	0.082	0.000073	0.00073
MW16-07	0.0060	0.0034	0.19	0.33	0.11	0.000059	<0.00050
MW16-08D	0.0025	0.0048	0.081	0.13	0.0013	0.00083	<0.00050
MW16-09D	0.00051	0.0024	0.29	3.8	0.0011	0.000052	0.0011
Median	0.00095	0.0025	0.29	2.6	0.0018	0.00011	0.00073

All concentrations are in mg/L.

Red text indicates an exceedance of CSR standards protective of drinking water.

Underlined indicates an exceedance of CSR standards protective of water used for irrigation.

Table 12: Results of the 2015 Groundwater Investigation

Wells	Arsenic	Copper	Iron	Manganese	Molybdenum	Selenium	Vanadium
GW15-06	0.0031	<0.0010	13.4	9.3	0.0022	<0.0010	<0.030
Seep15-01	0.0016	0.029	0.51	4.3	0.0074	<0.0010	<0.030
GW15-05	0.0020	<0.0010	<0.030	0.10	0.0072	<0.0010	<0.030
GW15-04	0.0012	0.0091	<0.030	0.15	0.0079	<0.0010	<0.030
GW15-03	0.0034	0.0028	2.1	13.2	0.0082	<0.0010	<0.030
GW15-01	0.029	0.0012	21.6	26.5	0.0036	<0.0010	<0.030
GW15-02	0.0037	0.0036	0.054	1.5	0.065	<0.0010	<0.030
Median	0.0033	0.0020	1.1	5.4	0.0076	<0.0010	<0.030

All concentrations are in mg/L.

Red text indicates an exceedance of CSR standards protective of drinking water.

Underlined indicates an exceedance of CSR standards protective of water used for irrigation.

Concentrations of copper in groundwater collected in 2015 ranged from <0.0010 to 0.0091 mg/L with a median concentration of 0.0020 mg/L. Groundwater collected in 2016 had copper concentrations ranging from <0.00050 to 0.021 mg/L with a median value of 0.0025 mg/L.

Vanadium was detected in 6 of 11 samples collected in 2016, ranging from <0.00050 to 0.0017 mg/L, while all samples collected in 2015 had concentrations below the MDL (<0.030 mg/L). It was not possible to make a comparison between the concentrations of vanadium in groundwater collected in 2015 and 2016 as all detected concentrations in 2016 were below the MDL for the 2015 samples.

Selenium was detected in 10 of 11 samples collected in 2016, ranging from <0.00050 to 0.00083 mg/L, while all samples collected in 2015 had concentrations below the MDL (<0.0010 mg/L). It was not possible to make a comparison between the concentrations of vanadium in groundwater collected in 2015 and 2016 as all detected concentrations in 2016 were below the MDL for the 2015 samples.

The median concentrations of arsenic, iron, manganese and molybdenum were lower in samples collected in 2016 than samples collected in 2015 (Table 11 and Table 12). However, only GW15-02 was sampled during both events, and the concentrations at this location in 2016 were within two times of the concentrations measured in 2015 for arsenic, iron, manganese and molybdenum. Although this difference is small, it may be a result of a change to a reducing condition at this location as indicated by the change in oxidation-reduction potential (ORP) readings from 35.1 to -69.9 mV(Tables 1-1, Appendix A-4).

The concentration of copper collected in GW15-02 in 2016 (0.0014 mg/L) was somewhat lower that that measured in 2015 (0.0036 mg/L). Concentrations of selenium and vanadium could not be compared between the two years as the 2015 data was below the MDL. The detected levels of selenium and vanadium in 2016 (0.000073 and 0.00073 mg/L, respectively) was well below the MDL of the 2015 data (<0.0010 mg/L and <0.030 mg/L, respectively).

5.2.4 Background Wells

Background groundwater chemistry results for metals with a standard are shown Table 13. As shown, the background concentrations of metals were below applicable standards at both locations. GW-BKG15-01 was sampled in 2015 and MW16-11 in 2016.

Three new background monitoring wells were installed in accordance with the scope outlined in *Work Plan for Monitoring in Support of Risk Assessment at the Mount Polley Mine, Mount Polley Mine, BC* (Golder, 2016). Because of access problems, the installation was made by hand rather than using the pick-up mounted auger rig. Two attempts were made when installing MW16-12, both encountering rejection before reaching the reaching an apparent wet zone. It was decided to install a monitoring well with the goal of sampling during the wet season. Similarly, rejection was encountered at MW16-13 before reaching the water table. Both of these background wells (MW16-12 and MW16-13) were dry. The local background groundwater chemistry was collected for comparison of metals that do not exceed the standards to local background conditions. This comparison was of interest for the risk assessment.

Concentrations of copper background wells ranged from 0.00084 mg/L to 0.0024 mg/L (Table 13). The median copper concentration in wells installed in tailings and native soils underlying tailings was 0.0021 mg/L and 0.0025 mg/L, respectively. The range of copper concentrations in wells installed in tailings and native soils underlying tailings was <0.0010 to 0.0091 mg/L and <0.00050 to 0.0048 mg/L, respectively.

Vanadium concentrations in background wells were both below the MDL, although the detection limit for 2015 was considerably higher (Table 13). The median concentration of vanadium in both wells screened in tailings and in native underlying tailings was less than MDL. The range of vanadium concentrations in wells screened in tailings and in native underlying tailings was 0.00050 to 0.0016 mg/L and <0.00050 to 0.0017 mg/L, respectively.

Concentrations of selenium in background wells ranged from <0.0010 to 0.0022 mg/L. In wells installed in tailings and in native soils underlying tailings the selenium concentrations ranged from <0.0010 to 0.00028 mg/L and <0.000050 to 0.00083 mg/L, respectively. The median concentration of selenium in wells screened in tailings was less than the MDL (<0.0010 mg/L), while the median concentration of selenium in wells screened in native soils underlying tailings was 0.0011 mg/L.

Table 13: Groundwater Metal Concentrations in Background Wells

Metal	GW-BKG15-01	MW16-11	Median Tailings	Median Native Under Tailings
Aluminum	0.013	0.020	0.033	0.034
Antimony	<0.00050	0.00030	<0.00050	<0.00010
Arsenic	<0.0010	0.00071	0.0034	0.00089
Barium	0.028	0.064	0.089	0.12
Beryllium	<0.0050	<0.00010	<0.0050	<0.00010
Boron	<0.10	0.056	<0.10	0.036
Cadmium	<0.000050	0.000048	<0.000050	7.3E-05
Chromium	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	<0.00050	0.00040	0.0021	0.0033
Copper	0.0024	0.00084	0.0021	0.0025
Iron	<0.030	0.036	0.67	0.29
Lead	<0.0010	<0.000050	<0.0010	<0.000050
Lithium	<0.050	0.014	<0.050	0.002
Magnesium	6.4	25.5	30.6	32.3
Manganese	0.038	0.098	2.2	2.6
Mercury	<0.00020	-	<0.00020	-
Molybdenum	<0.0010	0.0016	0.0081	0.0014
Nickel	<0.0050	0.0021	<0.0050	0.0056
Selenium	<0.0010	0.0022	<0.0010	0.00011
Silver	<0.000050	<0.000010	<0.000050	<0.000010
Sodium	6.4	12.4	35.9	19.5
Thallium	<0.000010	0.000025	<0.000050	0.000018
Titanium	<0.050	<0.010	<0.050	<0.010
Uranium	0.00053	0.0039	0.0026	0.0013
Vanadium	<0.030	<0.00050	<0.030	<0.00050
Zinc	<0.0050	0.031	<0.0050	<0.0030

All concentrations are in mg/L.

5.3 Surface Water Results

Water quality conditions have changed significantly since the breach occurred, relative to changes that have occurred in other media. Water quality conditions immediately following the breach were evaluated in the PEEIAR. The water quality conditions from January 2015 to June 2015 were considered to be reflective of a short term construction period when the main Hazeltine Creek channel was being re-constructed. Water quality conditions following channel reconstruction were considered to be representative of long term conditions resulting from the breach. As noted in Section 3.4, MPMC began discharging treated mine water from Springer Pit into Hazeltine Creek on 1 December 2015 under permit. Therefore, for the purposes of evaluating long term impacts related to the breach, the water quality data from June 2015 to 1 December 2015 were considered to be representative.

Results in the following Sections are presented according to each group of parameters (i.e., suspended particulate matter, metals, nutrients), then within each parameter group. Changes in specific parameters are discussed for each waterbody.

Data shown for Hazeltine Channel and Quesnel River represent discrete surface grab samples collected as described in the PEEIAR (Golder 2016b), except where a continuous data logger measured turbidity. Quesnel Lake and Polley Lake data are from discrete grab samples taken at various depths and were categorized as either surface (1–20 m) or deep (greater than [>] 20 m) for the purpose of evaluating changes over time.

5.3.1 Suspended Particulate Matter (Turbidity/TSS)

5.3.1.1 Hazeltine Creek and Edney Creek

Turbidity levels in Hazeltine Creek showed a progressive decrease from peak levels in the first few months of 2015 to levels closer to applicable BC WQGs by the end of the year. However, levels in upper Hazeltine Creek (HAC-10 and HAC-05/a) and the lower creek above the sedimentation ponds (HAC-08/a) fluctuated during September-December 2015. During this time monthly concentrations at these stations were occasionally above the maximum and 30-d BC WQGs (Appendix A-6, Figure 2).

In lower Edney Creek at EDC-01 turbidity levels were typically below maximum and 30-d guideline values, except for a spike in October 2015. Turbidity levels at EDC-02 exhibited a general decrease over time until the station was discontinued in July 2015; however, concentrations were predominantly above the 30-d guideline. Elevated turbidity observed at HAC-01/a/b/c throughout July and August continued through September and October (Appendix A-6, Figure 2) with reported concentrations above the 24-h aquatic life and/or 30-d guidelines. Turbidity concentrations in Hazeltine Creek and Edney Creek were routinely above the BC WQG for untreated drinking water but were within the turbidity range reported for the creek prior to the event.

A similar progressive decline in TSS concentrations was also observed in Hazeltine Creek from peak concentrations in the first few months of 2015 to concentrations below BC WQGs by the end of the year (with the exception of HAC-08/a). Concentrations of TSS at HAC-10, HAC-05/a, and HAC-01/ab/c in Hazeltine Creek and at EDC-01 in Edney Creek were consistently below the 24-h aquatic life and 30-d guidelines throughout September-December 2015 (Appendix A-6, Figure 3). Before the station was discontinued in July 2015, TSS concentrations at EDC-02 exhibited a general decrease that was similar to the temporal trend observed at HAC-01/a/b/c (Golder 2016b; Figure 3). Concentrations at HAC-08/a were variable throughout September–December 2015 and were intermittently above the 24-h aquatic life and 30-d guidelines.

5.3.1.2 Quesnel Lake

Turbidity concentrations measured at the surface and at depth in Quesnel Lake at stations QUL-2/2a, QUL-66, QUL-18, and QUL-120/120a were below BC WQGs from approximately April through August 2015 (Golder 2016b). At the surface at QUL-66, turbidity levels generally remained below guideline values with the exception of a single exceedance of the aesthetic drinking water guideline for untreated water and the 30-d aquatic life guideline in spring 2015. Turbidity at QUL-66 continued to decline through September and remained below guidelines into December 2015 with concentrations close to or below background (1 NTU) (Appendix A-6, Figure 4).

5.3.1.3 Quesnel River

Daily average and in-situ turbidity concentrations at station QUR-1 in Quesnel River showed a progressive decrease over time throughout 2015. Turbidity levels remained well below guidelines with the exception of a few intermittent spikes measured by the continuous data recorder (Appendix A-6, Figure 5). The elevated values measured by the continuous recorder were not corroborated by the in-situ grab sample data and as discussed in (Golder 2016b) these measurements can be influenced by fouling associated with long-term deployment.

5.3.2 Copper

5.3.2.1 Polley Lake

Copper concentrations measured in Polley Lake were not elevated above BC WQGs during the March–August 2015 period, and so copper was no longer considered a contaminant by the WQIA update (Golder 2016b). However, copper was retained for analysis because it is considered a primary potential contaminant within the overall context of the PEEIAR. Both total and dissolved concentrations were below BC WQGs, with the exception of the total 30-d rolling average concentration associated with surface samples collected at P2 in early November 2015 that approximated the most conservative 30-d guideline based on pre-event hardness (Appendix A-6, Figure 6).

5.3.2.2 Quesnel Lake

Total and dissolved copper concentrations measured in Quesnel Lake were typically below maximum BC WQGs by the end of April 2015 (Golder 2016b). By late August 2015, copper concentrations reported for QUL-66 near the mouth of Hazeltine Channel were similar or only slightly elevated relative to concentrations reported elsewhere in the lake, including the far field station (QUL-120/120a) east of Cariboo Island (Golder 2016b). Total and dissolved copper concentrations at QUL-2/2a, QUL-66, QUL-18, and QUL-120/120a were below maximum and 30-d guidelines from September through December 2015, with the exception of a single monthly sample collected at near-field (QUL-66) and far-field (QUL-120/120a) stations in September (Appendix A-6, Figure 7). The corresponding monthly sample in September at the mid-field west station (QUL-18) approximated the most conservative 30-d guideline based on minimum measured hardness.

5.3.2.3 Quesnel River

No metals were identified as contaminants of concern for the receiving environment in Quesnel River in the original WQIA and the WQIA update; this was also the case for data collected from September to December 2015.

5.3.2.4 Hazeltine Creek and Edney Creek

Discrete Grab Samples (Instantaneous values)

In upper Hazeltine Creek at HAC-05/a, total copper concentrations were above the maximum BC WQG (based on measured maximum hardness) from January to May 2015, after which concentrations decreased to concentrations below the maximum guideline (based on mean pre-event hardness) by the end of the year (Appendix A-6, Figure 8). Dissolved concentrations at HAC-05/a were within the WQG range based on measured hardness but were above the WQG based on pre-event hardness until May 2015. Dissolved concentrations decreased thereafter and were below the WQG based on pre-event hardness from May to December 2015. At the most upstream station (HAC-10) total and dissolved concentrations followed a similar trends to those described for HAC-05/a.

In lower Hazeltine Creek (HAC-08/a, EDC-01, EDC-02, HAC-01/a/b/c), total concentrations peaked above BC maximum WQGs and at least one CSR standard from February through April (Appendix A-6, Figure 8). Total concentrations then decreased at all four stations to concentrations within the BC maximum guideline range (based on measured hardness values) by the end of the year. Dissolved concentrations at HAC-08/a and HAC-01/a/b/c peaked above the maximum guideline and decreased thereafter at these stations and were below the maximum guideline based on pre-event hardness at both HAC-08/a and HAC-01/a/b/c by the end of the year. The same was true for EDC-01.

Thirty-Day Rolling Average Values

During the months prior to June, total copper concentrations in upper and lower Hazeltine Creek (HAC-05/a, HAC-08/a, EDC-02, HAC-01/a/b/c) peaked above the 30-d BC WQG range based on measured hardness (Appendix A-6, Figure 8). Concentrations then decreased to values within the 30-d guideline range based on measured hardness and remained above the guideline based on pre-event hardness. Dissolved concentrations in the lower creek (HAC-08/a, HAC-01/a/b/c) only peaked above the 30-d guideline range (based on measured hardness) from March to May, with a subsequent decrease to concentrations within this guideline range. Concentrations remained above the 30-d guideline based on pre-event hardness (Appendix A-6, Figure 8). Dissolved concentrations at the other Hazeltine Creek stations were within the 30-d guideline range based on measured hardness and either approximated or were above the guideline based on pre-event hardness.

5.3.3 Other Metals

5.3.3.1 Hazeltine Creek and Edney Creek

Aluminum

In upper Hazeltine Creek (HAC-10, HAC-05/a), total and dissolved concentrations remained below maximum guideline values in 2015, with the exception of a single sample in January at HAC-05/a. In lower Hazeltine Creek (HAC-08/a, EDC-01, EDC-02, HAC-01/a/b/c), concentrations peaked in February through April and were above or approximated maximum guideline values; concentrations then decreased below guidelines by May and remained stable until the end of the year. Concentrations at HAC-05/a in upper Hazeltine and HAC-08/a in lower Hazeltine showed slight increases in November and December, based on monthly sampling; in the case of HAC-08/a concentrations approximated maximum guidelines for the protection of aquatic life (Appendix A-6, Figure 9).

Dissolved concentrations were above the 30-d dissolved guideline in lower Hazeltine Creek until May and June, when they decreased below this guideline and remained relatively stable until November, when concentrations at HAC-05/a and HAC-08/a increased to approach but not exceed the 30-d guideline value (Appendix A-6, Figure 10).

Arsenic

Total arsenic was evaluated in the PEEIAR update, based on guideline exceedances that occurred in Hazeltine Creek in spring 2015 (Golder 2016b). During this time concentrations at HAC-08/a peaked above the CSR drinking water and wildlife standards as well as the BC drinking water maximum guideline. Thirty-day rolling average total concentrations at HAC-08/a also peaked above the 30-d BC WQG during this time, before decreasing to concentrations more typical of the other stations on the creek by August. Total concentrations at the stations in Hazeltine and Edney Creek (Appendix A-6, Figure 11) were typically well below the maximum and 30-d guidelines from June through December, with the exception of two measurements at HAC-08/a upstream of the sediment ponds in September and December.

Beryllium

Thirty-day rolling average total concentrations were elevated above the 30-d WQG at HAC-08/a and HAC-01/a/b/c during spring 2015 (Appendix A-6, Figure 12). Concentrations at EDC-02 were also elevated during this time. From July through December 2015, total concentrations at the Hazeltine Channel and Edney Creek stations were below guideline values and were at or near the MDL, with the exception of one sample collected at HAC-08/a in December 2015 that was detected above the WQG (Appendix A-6, Figure 12).

Chromium

As discussed in Golder (2015a), the available speciation data for Hazeltine Creek indicates the dominant chromium species in Hazeltine Creek was chromium (III), which is less toxic than the chromium (VI) form. However, as a conservative measure, guidelines and standards for both chromium species have been considered when assessing water quality in Hazeltine Creek.

Total chromium was evaluated in the WQIA update, largely based on guideline exceedances recorded in spring 2015 in Hazeltine Creek at stations HAC-08/a, HAC-05/a, and HAC-01/a/b/c (Golder 2016b). However, by June 2015, total concentrations in Hazeltine Creek had decreased below the most conservative guidelines (Appendix A-6, Figure 13). In 2015, concentrations at stations HAC-10 and EDC-01 and EDC-02 in Edney Creek exhibited temporal trends similar to those previously reported for other stations in Hazeltine Creek (Appendix A-6, Figure 13).

Total chromium concentrations measured at the Hazeltine and Edney Creek stations were below applicable maximum guidelines from June to December 2015, and many were at or near the MDL. The same was true for total 30-d rolling average concentrations that were below the Cr(III) and Cr(VI) 30-day guidelines at all stations, with the exception of intermittent exceedances of the Cr(VI) guideline by total concentrations at HAC-08/a and HAC-01/a/b/c that were still below the more applicable Cr(III) 30-day guideline.

Cobalt

Instantaneous total concentrations reported in 2015 for the Hazeltine Creek stations shown were below the maximum BC WQG (Appendix A-6, Figure 14). Thirty-day average total concentrations were above the 30-d BC WQG from March to June at HAC-08/a and March to May at HAC-01/a/b/c, then decreased below the 30-d guideline thereafter (Appendix A-6, Figure 14). Stations EDC-01 and EDC-02 exhibited a similar temporal trend over the time period leading up to the end of August 2015, but did not exceed the guideline. Total concentrations remained stable well below the 30-d guideline from September through December, with the exception of intermittent values in the monthly September and December samples at HAC-08/a that approached or approximated the guideline.

Iron

Total concentrations at stations in lower Hazeltine Creek were consistently above the BC maximum WQG for aquatic life and the CSR drinking water standard until May 2015 (Appendix A-6, Figure 15). The higher CSR standard was mostly exceeded at HAC-08/a and HAC-01/a/b/c, with only a few exceedances at other stations. From May to December, total concentrations remained below this guideline, with the exception of one sampling event in August, during which total values at HAC-08/a and HAC-01/a/b/c were more than ten times the preceding and subsequent values recorded in July and August (Golder 2016b). Intermittent values measured in September and December at station HAC-08/a were above the BC maximum guideline. Concentrations at the other stations monitored in 2015 were below the BC maximum guideline.

Lead

Total lead was assessed in the PEEIAR update (Golder 2016b). In upper Hazeltine Creek, instantaneous concentrations were typically below guideline values in 2015 and 30-d average concentrations were below the long-term average guideline, with the exception of a concentration reported for HAC-05/a in January that was also above the CSR drinking water standard (Appendix A-6, Figure 16). In lower Hazeltine Creek, after peaking in March through April, rolling 30-d average concentrations declined below the 30-d BC WQG in May and remained relatively stable through the end of December.

Manganese

Total concentrations were below BC maximum WQGs and the CSR drinking water standard (Appendix A-6, Figure 17). The exceptions were total concentrations at HAC-05/a (January and February) and HAC-08/a (February to April) that were within the BC maximum guideline range, and concentrations at HAC-01/a/b/c (February to April) that were below the BC maximum guideline but above the CSR drinking water standard. Rolling-average 30-d manganese concentrations in Hazeltine Creek stations were below the 30-day guideline based on measured hardness and pre-event hardness, with the exception of HAC-08/a (March through May) and HAC-05/a (January and February) (Appendix A-6, Figure 17).

Selenium

The PEEIAR update indicated that post-event selenium concentrations in Hazeltine Creek remained stable below applicable guidelines/standards or decreased below these regulatory benchmarks shortly after the event, remaining stable thereafter (Golder 2016b). In 2015, instantaneous and rolling 30-day average concentrations remained well below applicable BC WQGs and CSR standards with the exception of the monthly sampling event in December 2015 at HAC-05/a and HAC-08/a located below the authorized discharge of treated effluent that commenced in December 2015 (Appendix A-6, Figure 18). Therefore, selenium was not considered to be a COPC related to the breach but was investigated further as part of MPMC's discharge permit monitoring.

Zinc

Total and 30-d rolling average concentrations reported for HAC-05/a, HAC-08/a, EDC-02, and HAC-01/a/b/c between January and June were typically within the BC WQG range based on measured hardness and above BC WQGs calculated using mean pre-event hardness (Appendix A-6, Figure 19). Concentrations reported for the other stations shown on Figure 19 were below the BC maximum guideline range. Between June and December, total and 30-day rolling average concentrations for all stations shown on Figure 19 in Appendix A-6 were below the most conservative BC WQG, with the exception of a few intermittent values for HAC-08/a.

5.3.4 Nutrients: Total Phosphorus

5.3.4.1 Polley Lake

Following the event and through August 2015, concentrations of total phosphorus (TP) at the surface in Polley Lake were within the pre-event range of concentrations reported in the PEEIAR for Polley Lake (Golder 2015a). Pre-event TP concentrations were defined as: mean = 0.041 mg/L; 95th percentile = 0.094 mg/L.; minimum = 0.0046 mg/L. Both pre-event mean and upper limit concentrations were above applicable BC WQGs (i.e., 0.005 to 0.015 mg/L). This is consistent with the observation by Minnow (2014) that the trophic status of the lake changed from oligotrophic/mesotrophic to mesotrophic/eutrophic by 2012, two years prior to the event.

Prior to fall turnover in 2014, concentrations of all three forms of phosphorus at depth were elevated above pre-event concentrations, unlike surface concentrations that were within pre-event concentration ranges (Golder 2016b). Pre-event dissolved phosphorus concentrations were defined in Golder (2015) as: mean = 0.03 mg/L; 95th percentile = 0.08mg/L; minimum = <0.002 mg/L; pre-event orthophosphate concentrations were defined as: mean = 0.03 mg/L; 95th percentile = 0.08 mg/L; minimum = <0.001 mg/L (Appendix A-6). Several months after the 2014 fall turnover, in April 2015, total and dissolved phosphorus and orthophosphate concentrations measured at depth were within or below these pre-event concentration ranges reported in the PEEIAR (Figure 20, Golder 2016b).

From July to October, there was a greater degree of disparity in phosphorus concentrations between those measured at the surface and those measured at depth. Higher concentrations above the TP WQG range were reported at depth and these concentrations remained relatively stable over the summer months, whereas surface concentrations decreased to concentrations within or below the TP WQG range. The noted disparity was likely the result of lake stratification during the summer, such that after mixing during fall turnover, concentrations measured at the surface and at depth in November were similar. Sampling in Polley Lake was suspended in November due to the onset of winter conditions.

Golder (2016) concluded that in 2015 there were no event related changes to phosphorus concentrations in Polley Lake based on an analysis of data collected from April through August 2015. This conclusion is supported by data collected from September through November shown on Figure 20 in the PEEIAR.

5.3.4.2 Quesnel Lake

After the event, TP concentrations at depth exceeded the BC WQG range in the West Basin of Quesnel Lake, but were not elevated at the far-field station (QUL-120/120a) east of Cariboo Island (Golder 2015a). By fall turnover in 2014, TP concentrations had substantially decreased in the West Basin of Quesnel Lake. Through August 2015, TP concentrations were below the BC WQG range and resembled pre-event concentrations with the exception of a few intermittent exceedances at near-field station QUL-66, near the mouth of Hazeltine Creek (Golder 2016b). At the near-field, mid-field, and far-field stations, dissolved phosphorus and orthophosphate concentrations reported between March and August were below pre-event concentrations (Golder 2016b).

Collectively, an evaluation of the phosphorus data collected between March and August 2015 suggest that event related changes of concern for phosphorus were not evident in Quesnel Lake (Golder 2016b). After September 2015, total phosphorus concentrations were intermittently above the most conservative BC WQG at near-field station QUL-66, near the mouth of Hazeltine Creek, but did not exceed the drinking water BC WQG or the upper boundary of the aquatic life guideline. Dissolved and orthophosphate concentrations remained at or near the MDL through to the end of December 2015 (Appendix A-6, Figure 21).

5.4 Sediment Results

Sediment samples were collected by Minnow in each of the three water bodies affected by the breach (Polley Lake, Hazeltine Creek and Quesnel Lake). In 2016, samples were collected to monitor temporal changes in sediment quality and to increase the sampling density in selected areas of the site. Overall, the sediment chemistry observed in 2016 was similar to the results observed in the 2014 and 2015 sampling events. 2016 mean concentrations are compared against the CSR Schedule 9 criteria. The following sections provide a more detailed description of the results for each water body.

5.4.1 Polley Lake

Sediment samples were collected from deep (POL-P1 and POL-P2) and mid-depth (POL-1 and POL-2) sampling locations, as well as three sampling locations for spatial extent in-filling. Sediment samples consisted almost entirely of silt and clay (over 93%).

Concentrations of metals in sediment were similar to those observed in 2014 and 2015. The 2016 mean copper concentration was greater than the CSR “sensitive” and “typical” criteria and reference (Appendix A-7, Table 2). The 2016 mean arsenic concentration was greater than the CSR “sensitive” criteria and reference (Appendix A-7, Table 2). However, copper concentrations in sediment in reference Bootjack Lake and in Polley Lake also exceeded the CSR “typical” criteria prior to the TSF embankment breach. Concentrations of arsenic and copper in sediment at three in-fill sampling locations were above CSR “sensitive” criterion at three locations, and above CSR “typical” criterion at two locations (Appendix A-7).

Similar to 2014 and 2015 results, total organic carbon (TOC) concentrations in sediment were also lower in Polley Lake than the reference location (Bootjack Lake).

In 2016, the mean copper concentration in deep Polley Lake sediment samples exceeded reference by approximately 1.7-times and the CSR “typical” criterion by approximately 2.9-times. The mean copper concentration for mid-depth Polley Lake sediment samples exceeded reference by approximately 1.1-times and the CSR “typical” criterion by approximately 2.3-times in 2016.

As described in the DSI report (Golder 2016a) a volume of 6.4 million m^3 of water was calculated to have entered Polley Lake immediately following the breach, based on aerial imagery and water level rise. This volume was considered to be primarily water. Therefore, the volume of tailings solids in Polley Lake is considered to be relatively small.

5.4.2 Hazeltine Channel

Sediment samples were collected from Lower Hazeltine Channel in 2014 (ST02) and from the Hazeltine Channel Upper Sedimentation Pond in 2015 and 2016. The sedimentation pond is a man-made maintained watercourse designed to collect suspended material prior to discharge to Quesnel Lake and is not currently a fish habitat (Appendix A-7), thus sediments in this area were evaluated against the CSR “typical” criterion only. Sediment samples collected in 2016 were similar to those observed in 2015 and consisted primarily of silt and clay (93%).

The 2016 mean copper concentration was the only analyte to exceed the CSR “typical” criterion and reference, exceeding by about 1.6- and 4.1-times, respectively (Appendix A-7, Table 8).

5.4.3 Quesnel Lake

In 2016, sediment samples were collected from reference (Horsefly Bay) and exposed (near-field and far-field) sampling locations, for both littoral and profundal sediments. Fourteen sediment samples were also collected for in-fill sampling purposes (Appendix A-7, Figure 2).

Sediment samples collected for in-filling purposes generally consisted of silt loam or silty clay loam, with a TOC content of less than 4%. Selected concentrations of arsenic and copper in sediment exceeded the CSR “sensitive” and/or “typical” criteria. The in-fill sampling locations were not categorized as being littoral (shallow) or profundal (deep) samples (Appendix A-7, Table D.11).

The results for littoral and profundal samples are presented in the following sections.

5.4.3.1 Quesnel Lake (Littoral)

Sediment collected from the littoral near-field area of Quesnel Lake in 2016 was predominantly sand (89.2%), and had a higher sand content than sediment collected from this location in both 2014 and 2015 (Appendix A-7, Table 6). This difference in sediment composition may be a result of washing of fine sediment from these locations between August 2014 and August 2016. The particle size distribution of sediment collected in the littoral far-field area (Appendix A-7) was similar to samples collected in 2014 and 2015 (approximately 60% sand), and was also similar to sediment collected in the Quesnel littoral reference area. Similar to results reported in 2014 and 2015, the concentrations of TOC and nitrogen in sediment in 2016 were lower than concentrations reported in the near-field area than in the far-field or reference areas.

Mean metal concentrations in 2016 were generally similar to those in 2014 and 2015, except for chromium, iron and vanadium which reported higher mean concentrations in the near-field area in 2016 relative to 2014. Iron and vanadium concentrations exceeded reference concentrations by 2.9 and 9.1 times, respectively (Appendix A-7, Table 6)

In 2016, mean arsenic and copper concentrations exceeded the CSR "sensitive" criteria as well as reference concentrations in the near-field area. The 2016 mean copper concentration also exceeded CSR "typical" criterion approximately 2.7 times on average, and exceeded reference concentrations by approximately 13.3 times on average. These results are similar to those reported in 2014 and 2015. 2016 mean metals concentrations were generally lower in the far-field area than in the near-field, with no exceedances of applicable criteria for mean metals concentrations in the far-field area.

5.4.3.2 Quesnel Lake (Profundal)

Sediment collected from the profundal near-field area of Quesnel Lake in 2016 was predominantly silt and clay (98.2%). (Appendix A-7, Table 4). The average clay content reported in these samples in 2016 (51.1%) was higher than 2014 and 2015 (22.6%-33.5%) due to the relocation of two sediment stations. Sediment collected from the profundal far-field area of Quesnel Lake in 2016 also reported a higher clay content (32.6%) compared to samples collected at the same locations from 2014 (14.4%). The 2016 mean TOC and nitrogen concentrations of sediment from both the near-field and far-field areas were lower than the concentrations observed in reference, as was also observed in 2014 and 2015.

2016 mean arsenic and copper concentrations were the only analytes to exceed the CSR "sensitive" criteria in the near-field and far-field areas. The 2016 mean arsenic concentration exceeded results from one reference area, while concentrations were similar to those reported at the second reference area (Appendix A-7, Figure 4). Elevated arsenic at the second reference area may be naturally occurring.

The 2016 mean chromium concentration at profundal sediment reference location PREF-1 exceeded the CSR "sensitive" criteria. However, given that the concentration was below the reference 95th percentile concentration of chromium (Appendix A-7, Table 4), this result is not considered to be related to the TSF embankment breach, and is thus not discussed further in the DSI Update.

The 2016 mean copper concentration also exceeded the CSR "typical" criterion and reference concentrations, as was also observed during previous sampling events. The mean copper concentration in Quesnel Lake near-field area sediment exceeded the CSR "typical" criterion by approximately 5.0 times on average, which is slightly higher than observed in 2014 (3.0 times higher) and in 2015 (3.6 times higher). The copper concentrations for far-field sediment samples exceeded the CSR "typical" criterion by 2.4 times on average, which is similar to 2014 results (2.0 times greater on average).

As described in the DSI report (Golder 2016a), the results of the profundal sampling indicate that contaminant migration extended beyond the near field location in the profundal environment of the west arm of Quesnel Lake.

6.0 DISCUSSION

Our understanding of the site conditions presented in the 2016 DSI report (based on data collected in 2015) has been updated based on the additional site investigation data collected in 2016. The updated CSM confirms and expands the understanding of the physical and chemical impacts that resulted in each of the remediation areas, the type and extent of the contamination, the transport and exposure pathways, and the receptors at the site.

6.1 Terrestrial Impacts in the Hazeltine Channel Area

6.1.1 Physical Impact

The initial physical changes to the landscape were documented by SNC as part of the PEEIAR. The TSF embankment breach resulted in physical changes to the Hazeltine Creek valley, including Polley Lake, the mouth of Edney Creek and the west basin of Quesnel Lake. Similar observations were made by Golder during the 2015 soil investigation, though rehabilitation works along the Hazeltine Channel was underway at that time and has continued since. As discussed previously (in Section 5.1), this rehabilitation and remediation work involves a combination of removal of tailings material and replacement with transplanted soil (transplanted soil generally consisted of a mixture of topsoil and mineral soil); re-grading and re-sloping of areas that were scoured following the TSF embankment breach; seeding and placement of coarse woody debris along the Hazeltine Channel corridor; removal of deceased tree and vegetation cover; and mounding of tailings in halo areas with underlying organic soils (Golder 2017a). The rehabilitation works have resulted in changes to the post TSF embankment breach stratigraphy and topography described in this report.

6.1.1.1 Geomorphological Impact (Erosion and Deposition)

Observations of the initial physical impacts made along the length of Hazeltine Channel corridor can be summarized as follows:

- The TSF embankment breach resulted in a complex sequence of debris flow and debris flood as described by SNC in the PEEIAR report. The initial surge consisted of a high sediment content debris flow that scoured a wide and deep channel along the Hazeltine Creek valley. This massive debris flow was followed by a debris flood caused by the blockage of the entrance to the Hazeltine Canyon with debris flow material. This blockage caused flooding into the surrounding forest leaving behind silty tailings material. The blockage gradually eroded, allowing the remaining water and sediment to be released.
- Tailings deposits were observed to be greater than 3 m thick in certain locations in the vicinity of Polley Flats. The layer of fine-grained tailings material was observed to be up to 1 m thick. At the time of the 2015 soil investigation work, tailings material within the Polley Flats area had not been removed as part of the rehabilitation efforts at the Mine. However, rehabilitation works were ongoing in the plug area throughout 2016. These results will be reported under separate cover.

- The thickness of tailings material within the Upper Hazeltine Channel corridor was observed to be up to 2.5 m (at ST15) during soil sampling work in 2015. Up to 269,000 m^3 of deposited tailings material was excavated from Upper Hazeltine Channel corridor (defined as the area from Polley Lake to the Gavin Lake Road Bridge) as part of creek rehabilitation work completed in 2015. The results of further excavation and remediation work in Upper Hazeltine Channel corridor during 2016 will be documented under separate cover.
- Tailings material was not observed within Hazeltine Canyon, as material within the canyon was scoured to bedrock and deposited within Lower Hazeltine Channel corridor.
- A mixture of native till and tailings deposition was observed in Lower Hazeltine Channel corridor and at the mouth of Edney Creek. The soil mixture is consistent with the scouring and deposition that occurred following the TSF embankment breach. Based on survey information available at the time of DSI report completed in January 2106, approximately 6,000 m^3 of material were excavated from the vicinity of the sedimentation ponds, as part of rehabilitation works completed in 2015. The results of further excavation and remediation work in Lower Hazeltine Channel corridor during 2016 will be documented under separate cover.

Based on the rehabilitation works completed in 2016, and described above, the topography at the site has changed significantly since the TSF embankment breach occurred. These changes can be observed on the updated aerial imagery shown on Figures A2 – A10 at the end of this report.

6.1.1.2 Impact on Forest

The terrestrial ecosystem assessment conducted in 2015 and again in 2016, was comprised of: i) field measurements of ecological impact including; forest floor and mineral soil properties; forest stand attributes; vegetation attributes; evidence of wildlife, and wildlife attributes, ii) laboratory evaluation of soil microbial communities, and iii) bioassays of the tailings mixture to determine causal factors for growth limiting conditions. The methods and results of the assessments are presented in the PEEIAR Update (Golder 2016b). The findings of the assessments indicated that a relatively sudden decline and die off of trees resulted from the physical habitat alterations caused by tailings deposits. The inundation of tailings across the forest floor in the halo zone impeded air exchange with plant roots and the soil microbial community causing hypoxic or anaerobic environment in the organic soils and lead to subsequent death of the tree roots and soil microbial community, as shown on Figure 11.

Figure 11: 2015 Site Conditions and the Pattern of Tree Mortality Suggest That the Mortality was caused by the Anaerobic Environment of the Tree Roots Created by the Thick Deposit of Fine Silty Material over the Forest Floor

In 2016, field observations indicated that the anaerobic conditions were no longer present in organic soil underlying the tailings in the halo zone. The soil and forest and plant communities showed signs of recovery, especially in areas where the tailings layer was thin, as documented in the 2016 update to the ecosystem assessment (Golder 2017a). These improvements included; development of a heavy litter layer, the initiation of “soil formation” in some halo areas, small overall increase in ground vegetation cover in 2016, an increase in species richness, and invasion of early successional and weedy species. Figure 12, below, shows some of the rehabilitation work that has been ongoing in the Lower Hazeltine Channel corridor. As described in Section 5.1, tailings material has been excavated and replaced with transplanted soil in approximately 9 ha of Upper Hazeltine Channel corridor, in halo areas mounding of tailings and underlying organic soils has been done over approximately 32 ha, and re-grading and re-sloping works have been completed in 46 ha of the corridor that were scoured following the TSF embankment breach.

Figure 12: 2016 Conditions along Hazeltine Channel Corridor

6.1.2 Chemical Impact - Contamination in Soil and Groundwater

The characterization and delineation of chemical impacts has included investigations of soil, groundwater, surface water and sediment. An approach was developed and implemented for the site that considered the unique circumstances at the site, specifically: one source (tailings), a linear migration path, a homogeneous contaminant distribution, and a visual difference between the background and impacted area. Representative cross sections were sampled in detail and used to interpolate environmental conditions in broad areas along the debris flow path of the tailings mixture.

There were two distinct types of tailings: a grey silt tailings that deposited in the eroded floodplain and the surrounding standing forest, during the debris flood that occurred after the initial debris flow; and a black or orange magnetite sand that was deposited in relatively thin layers within certain parts of the floodplain. Both tailings had similar chemical concentrations and geochemical characteristics. The tailings have low concentrations of available nitrogen and carbon. Concentrations of copper were greater than the CSR PL standard across the impacted areas of the site. Concentrations of vanadium, thought to be associated with the magnetite, exceeded the CSR PL Schedule 4 standard in 42 of 182 samples, but had an observed maximum concentration of approximately 1.4 times the standard. As part of the DSI update, soil results were screened against CSR AL standards. Based on the re-screening, exceedances of sulfur and molybdenum were also reported. Molybdenum concentrations exceeded the CSR AL standard in 28 of 182 samples, with a maximum observed concentration approximately 1.5 times the applicable standard. Sulfur concentrations exceeded the CSR AL standard in 34 of 40 samples.

6.1.3 Contamination Extent

As discussed in Section 7.1.2, the approach to the delineation of the soil contamination was based on several unique characteristics of the tailings debris flow/flood. The impacted area is large, but the tailings represent a single source of contaminants which was deposited on top of native soil and is distributed along a defined and visible linear flow path; the chemical composition of the tailings mixture is also relatively homogenous.

Lateral delineation is shown in Figures A-2 through A-10, and was achieved through:

- Interpretation of high resolution air photos taken in November 2014 and in May 2015. SNC used the November 2014 air photos for their estimates of the lateral extent of tailings deposition in the forest halo zone. The May 2015 air photos were used to refine the lateral extent, however the June 2016 air photos became available at a later date, and are used in figures A-2 through A-10.
- Field reconnaissance and visual observation of the limit of the tailings deposits at each of the investigated cross-sections using a field GPS unit.

Vertical delineation was achieved through test pit and borehole sampling at representative cross-sections. The cross-sections were selected to represent reaches of the creek valley with similar characteristics, e.g., topography, gradient, stratification and depth of tailings. The tailings depth ranged from a few centimetres in the forest halo zone to 3.5 m in the plug area. The depth at each sampling location is recorded on the borehole and test pit logs completed during the 2015 and 2016 investigations. As previously mentioned, rehabilitation work by MPMC is ongoing and involves removal or mixing of tailings, bringing in mineral and organic soil, and adding woody debris before replanting. This rehabilitation work often results changes to the ground elevation. The results of the rehabilitation work will be documented under separate cover.

6.1.4 Contamination Characterization and Migration Potential

Laboratory analytical results of the soil investigation were screened against the applicable CSR AL and PL soil standards and CSR regional background concentrations in order to define the nature and extent of soil contamination at the site. Detailed results for metals were presented in Section 6.1.3 and are shown on Figures A-2 to A-10 at the end of this report. Based on the maximum concentrations that were observed during the investigation the following metals exceeded applicable CSR AL or PL standards:

- Arsenic, barium, cadmium, copper, molybdenum, selenium, sulfur, vanadium, and zinc.

A statistical evaluation of the data set was conducted in order to determine whether the metals parameters with exceedances of CSR standards should be considered as contaminants of concern for the DSI. Based on the results of the summary statistics (maximum, 90th percentile, and 95% UCLM), the following metals are retained as soil contaminants of concern:

- For native soil, underlying tailings (organic and mineral soils): copper and sulfur
- For tailings: copper, molybdenum, sulfur, and vanadium

As expected, the tailings had higher concentrations of copper and vanadium than what were observed in the "native under tailings" soil.

Molybdenum and sulfur are retained as soil contaminants of concern based on exceedances of the standards for protection of agricultural land use only. The molybdenum concentrations observed at the site were less than the CSR PL standard of 10 mg/kg, but the 90th percentile for molybdenum was greater than the CSR AL standard of 5 mg/kg.

The sulfur standard of 500 mg/kg is for agricultural land use only (there are no applicable CSR standards for sulfur for other land uses) and is based on elemental sulfur present in a sample. Soil samples analyzed for sulfur as part of the 2014 and 2015 investigation work were analyzed for total sulfur and are therefore considered to be a conservative estimate of available elemental sulfur in the soil at the site.

The geochemical characterization program carried out by SRK in 2015 and 2016 provided information on the potential for leaching from the spilled tailings. The kinetic tests conducted to simulate subaerial weathering of the spilled tailings along Hazeltine Channel Corridor, confirmed that the metal leaching from the tailings is low and that the leaching is at steady state or decreasing. More detailed conclusions include:

- ARD is not expected from the tailings and that leaching will be under neutral to alkaline conditions.
- The leaching rates in the kinetic tests have reached steady state or are slowly declining, and are suitable for predicting long term water quality from weathering of subaerial tailings.
- For tailings materials with water flow paths longer than half a metre, mineral solubility controls for copper are expected with the formation of secondary copper minerals which would limit the concentrations of copper in groundwater. Where dilution from precipitation is expected to be high, resulting copper concentrations could be lower than those predicted by mineral solubility limits.
- Longer flow paths in the fine grained materials may also be conducive to lower rates of oxygen diffusion and therefore conditions that support sequestration of selenium through selenium reduction to more insoluble forms such as selenite and elemental selenium.
- Higher copper concentrations observed in the Polley Flats area in ditches and pooled water can be explained from geochemical first principles considering processes that release copper to solution then constrain the resulting copper concentrations by the solubility of copper oxides. Copper concentrations that were not constrained by mineral solubility were shown to be predominantly complexed with DOC. The resulting free copper concentrations are low and typical for waters in contact with non-acidic carbonate-containing materials with copper concentrations expected to be stable in the long term.
- Seasonal increase in copper concentrations may be a result of oxidation products and acidity accumulation around sulphide grains during periods of low precipitation (winter and late summer/early fall). During later stages of freshet or times of year when precipitation is infiltrating the tailings, porewater concentrations decrease as pH goes above 8.0. Conservatively, it should be assumed that these upper end predictions are reached each season, but long term downward trends are probable. This seasonal variation is expected to reduce over time as the tailings age and weather.

Copper and selenium concentrations in groundwater were less than applicable CSR standards during both the 2015 and 2016 sampling events. These results confirm the geochemistry findings of low leachability from the tailings. The median concentration of copper was about one order of magnitude lower than the concentrations predicted by mineral solubility limits, likely due to dilution by precipitation. Selenium concentrations are likely limited by low oxygen conditions that support sequestration of selenium through selenium reduction to more insoluble forms such as selenite and elemental selenium. Kinetic laboratory testing and groundwater investigation indicated that the concentrations of copper and selenium in groundwater will likely reduce over time as the tailings age and weather.

Vanadium, for which the 90th percentile concentration in soil (212.8 mg/kg) slightly exceed the applicable CSR standard (200 mg/kg), did not have any exceedances in groundwater.

Groundwater exceedances of sulfate, arsenic, iron, manganese, and molybdenum were observed in groundwater during monitoring events in 2015 and 2016. The exceedances of arsenic, iron, and manganese are likely related to reducing conditions caused by high dissolved organic carbon (DOC) concentrations, with corresponding low dissolved oxygen content and negative ORP in the groundwater.

The slight exceedance of sulfate in the Polley Flats area (MW16-02) is likely a result of geochemical processes which, according to SRK, may cause seasonal variation in pH and metal concentrations. The sulfate concentrations in all other monitoring wells were less than the applicable CSR standards.

Some detailed observations include:

- The arsenic exceedance was observed at GW15-01 during the 2015 monitoring round and exceeds the CSR standards for DW, IW, and LW. GW15-01 was installed within the tailings and is located within the floodplain of Hazeltine Channel. The exceedance is considered to be isolated and delineated, as arsenic concentrations at all other monitoring wells were less than applicable standards during monitoring events in 2015 and in 2016. The arsenic concentration in this well is believed to be related to natural materials and elevated because of reducing conditions (ORP = -40.5 mV).
- Iron concentrations exceeded the CSR DW and IW standards at two monitoring well locations in 2015 (GW15-06 and GW15-01). The monitoring wells installed in 2015 were completed within the tailings; field measurements at the time of sampling noted low dissolved oxygen readings in the groundwater, which may have contributed to dissolution of iron into the shallow groundwater. The exceedances are considered to be isolated and delineated. Dissolved iron concentrations were less that CSR standards for all samples that were collected as part of the 2016 monitoring program.
- Manganese exceedances were observed throughout the site in monitoring wells installed within tailings and native under tailings soil. The concentrations exceeded CSR DW and IW standards; there are no manganese standards for the protection of livestock or aquatic life. Similar to iron, the observed manganese concentrations are likely a result of reducing conditions in the groundwater.
- Molybdenum exceedances were observed at three monitoring well locations (MW16-02, GW15-02, and MW16-07) in 2016 and were above the IW and LW CSR standards, but were less than the DW and AW CSR standards. The molybdenum exceedance is considered to be isolated and delineated by MW16-01 and MW16-03.

Based on the physical hydrogeology assessment that was conducted at the site, shallow groundwater flow at the site is inferred to discharge to Hazeltine channel (i.e., groundwater seeps into the creek as baseflow rather than the creek losing surface water to the groundwater environment). This is supported by an upward hydraulic gradient observed at one of the well pairs next to Hazeltine Channel (MW16-06D). In addition, no regional aquifers were mapped in the vicinity of the Mine, and the closed aquifer, more than 15 km south of the Mine, is not considered to be hydraulically connected to groundwater from the Mine area or the Hazeltine Channel corridor.

Surface water quality monitoring between June 2015 and 1December 2015 indicated that the contaminants of concern identified in groundwater do not exceed the surface water criteria except for copper in Hazeltine and Edney Creeks. A discussion of the chemical impacts on aquatic environment, including Hazeltine Creek, is provided in Section 6.2, below.

It is recognized that the groundwater investigation to date has not collected sufficient information to assess seasonal variability. Future sampling will be undertaken as part of the comprehensive environmental monitoring plan (CEMP). The sampling results will be evaluated for seasonal variability and long term trends.

6.2 Impacts on the Aquatic Environment

6.2.1 Surface Water

The surface water and sediment results have similarities to findings for the terrestrial environment. The debris flow initially resulted in an increase in turbidity in Hazeltine Creek, Polley Lake and the West Basin of Quesnel Lake. Some increase in turbidity was observed in the first few months after the breach extending to the mouth of Quesnel River. The debris flow eventually settled out on the existing sediment surface environments in Polley and Quesnel Lakes, much like the terrestrial deposition in the halo area. The geochemistry results of the tailings have consistently shown low reactivity of the enriched metals, including low leachability potential. These geochemistry results are supported by the surface water results from within the TSF and in the aquatic receiving environments. A comparison of untreated water from within the TSF, prior to the breach, to CSR Schedule 6 found only a minor exceedance of the Schedule 6 standards. This supports the geochemistry findings of low leachability of the metals in the tailings material.

Based on the evaluation of water quality trends described in this report, the following parameters remain as COCs due to measured concentrations in December 2015 that remain above BC WQGs and CSR Standards (Table 14).

Table 14: Contaminants that Remain of Potential Concern in the Receiving Environment Based on Water Quality Monitoring as of December 2015

Waterbody	COC: Physical	COC: Total Metals	COC: Dissolved Metals	COC: Non-Metal Substances
Polley Lake	*no substances*	*no substances*	*no substances*	*no substances*
Hazeltine Channel and Edney Creek	**turbidity, TSS**	**copper**	**copper**	*no substances*
Quesnel Lake	*no substances*	*no substances*	*no substances*	*no substances*
Quesnel River	*no substances*	*no substances*	*no substances*	*no substances*

Notes: TSS = total suspended solids

A summary of water quality during 2015 in each receiving environment is provided in the following sections.

6.2.1.1 Hazeltine Channel

As described in Golder (2016b), there were exceedances of total metal WQGs in Hazeltine Creek in the first half of 2015, mainly during turbid flow periods typically associated with elevated concentrations of particulate matter. Clear-flow conditions ensued upon the completion of channel stabilization activities that typically resulted in much lower concentrations of particulate matter and subsequently lower concentrations of total forms of various metals.

The majority of metals identified as COCs by Golder (2016b) had decreased to below guideline levels by mid-summer and remained stable through to December 2015, with a few noted exceptions (e.g., beryllium, chromium, and cobalt at HAC-08/a). By December 2015, only total and dissolved copper consistently exceeded BC WQGs for the protection of aquatic life. Copper, turbidity and total suspended solids therefore remain the primary substances of concern in Hazeltine Creek.

6.2.1.2 Polley Lake

Levels of TSS, turbidity, and copper were low in Polley Lake and remained below guidelines throughout 2015. With respect to nutrients, total phosphorus concentrations were within the range observed in Polley Lake prior to the event. Therefore no contaminants remained of concern by December 2015 in Polley Lake.

6.2.1.3 Quesnel Lake

Levels of TSS and turbidity were low in the far-field area of Quesnel Lake as well as in the West Basin and remained below guidelines throughout 2015, with the exception of some higher levels recorded in the near-field area at the mouth of Hazeltine Creek when turbid inflows from Hazeltine Creek were present from March to May 2015. Close to the mouth of Hazeltine Creek, turbidity progressively declined between June and December to levels close to or below background (1 NTU).

Within the West Basin, total copper was below applicable BC WQGs and CSR standards in the near-field, mid-field and far-field stations. Exceptions to this were instances where concentrations were above applicable BC WQGs between March and May in the near-field close to the mouth of Hazeltine Creek and to a lesser extent at the western mid-field station further away from the mouth. These higher total concentrations coincided with turbid flow periods in Hazeltine Creek and dissolved concentrations did not exceed BC WQGs. Other metals monitored at the Quesnel Lake stations in 2015 were below applicable BC WQGs and CSR standards.

In agreement with Golder (2016b), phosphorus data collected throughout 2015 suggested that event related- changes of concern with respect to the potential for a change in lake trophic status were not evident in Quesnel Lake.

Based on the evaluation of the 2015 dataset, no contaminants remained of concern by December in Quesnel Lake.

6.2.1.4 Quesnel River

Similar to the eastern far-field area of Quesnel Lake, water quality in Quesnel River between March and August did not exhibit event-related changes that were identified to be of concern with respect to exceedance of water quality guidelines. Therefore no contaminants remained of concern by December 2015 in Quesnel River.

6.2.2 Sediment

6.2.2.1 Contaminant Impact

In contrast to the surface water results, 2016 sediment concentrations were similar to the 2014 and 2015 sampling. For Polley Lake, Hazeltine Channel and Quesnel Lake, concentrations of copper exceeded the CSR "sensitive" and "typical" criteria, and concentrations of arsenic exceeded "sensitive" criterion. Figure 10.1 (Minnow 2015) shows the distribution of copper concentrations in sediments Polley Lake, Hazeltine Creek, the sedimentation ponds, Quesnel Lake and Bootjack Lake. This figure shows a gradient of copper concentrations from Hazeltine Creek, with higher concentrations in the profundal sediments of Quesnel Lake compared to lower concentrations measured in the littoral sediments. This is consistent with the bathymetry study results from Tetra Tech (Tetra Tech, 2015) reporting that the tailings generally settled below the 100 m contour line.

6.2.2.2 Contamination Extent

A bathymetry comparison pre- and post- event shows that the estimated 15.5 million m^3 of displaced material that entered Quesnel Lake infilled a layer of over 10 m in the west arm with the upper surface of the deposited material at approximately 100 m depth. The area of event-related infill within the estimated depositional zone is 1.81 km^2 based on data from the bathymetric analysis and sub-bottom profiling of sediment layers. Most measurements of copper concentrations in Quesnel Lake deep sediments ranged in concentrations between 350 mg/kg to 800 mg/kg. This concentration range is somewhat less than that measured for the tailing mixture in the terrestrial environment and likely reflects mixing of the tailings with the native sediments.

Concentrations of copper in sediments in Polley Lake were generally lower than those measured in Quesnel Lake. This is consistent with the results of the Tetra Tech (2015) report that indicated inputs to Polley Lake were largely aqueous, compared to Quesnel Lake that received both aqueous and solid phase inputs.

6.3 Conceptual Site Model

The field observations and analytical results collected during the 2015 and 2016 investigations were used to update the conceptual site model. The following sections of the report present a description of the revised CSM for the receiving environments at the site.

6.3.1 Tailings Debris Flow and Immediate Physical Impact

The TSF embankment breach resulted in transportation and scouring of tailings, construction materials and natural sediments, deposition of the mixture of materials, termed “spilled tailings” in Polley Lake and the Polley Flats, and transportation, scouring and deposition of a mixture of tailings, construction and natural materials in the Hazeltine Creek valley. The impacted physical environment around Polley Lake, Edney Creek and Hazeltine Creek included approximately 136 ha (1.36 km^2) where topsoil was removed and an additional area of approximately 100 ha (1 km^2) where tailings were deposited overlying intact topsoil.

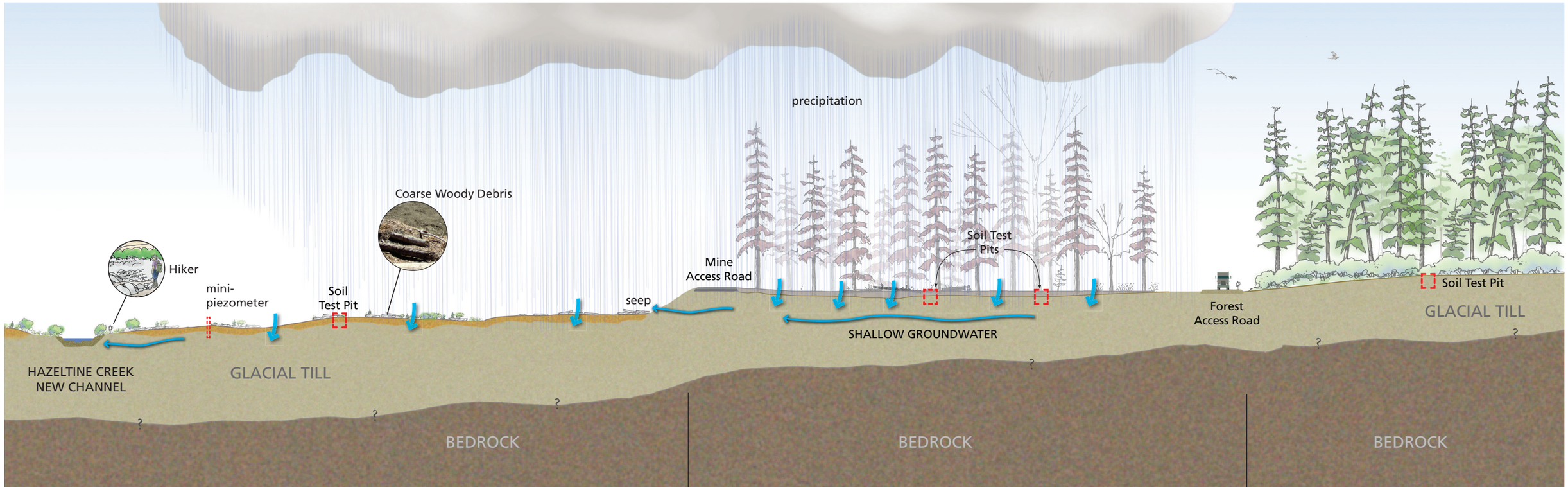
In some areas, the tailings settled out in two distinct layers: a grey fine silt and a black-orange sand. The two layers settled out according to particle size and density, generally with the finer material overlying the coarser sand. As the debris flow moved down the Hazeltine Creek valley, it picked up and mixed with native till. Approximately 20 million m^3 of tailings, native soil, water and debris were deposited into Quesnel Lake where a turbidity plume formed at about 20 to 30 metres below surface; which included a significant amount of fine-grained natural lake sediment that became suspended by the force of the debris flow from Hazeltine Creek. Turbidity in Quesnel Lake persisted into December 2014, but cleared over the winter. Some turbidity was measured in Hazeltine Creek and in Quesnel Lake near Hazeltine Creek in 2015; however, the source of this turbidity has been accounted for in creek channel rehabilitation work, as well as other remediation work.

Together, the soil, sediment, groundwater and surface water results all confirm that while some tailings-related metals are present in these media above CSR standards, the leachability and migration potential of the dissolved phase are low. These results are significant, as it is the dissolved phase that is associated with uptake and toxicity in biota. Furthermore, these results support the preliminary findings of the PEEIAR and the 2016 DSI; namely that the largest impact on terrestrial and aquatic habitats was caused by the physical nature of the debris flow from the TSF embankment breach.

6.3.2 Terrestrial – Hazeltine Channel Corridor

The CSM as of the summer of 2016, is shown in Figure 13. The cross section has been drawn to scale to better reflect the conditions at the site. The CSM shows the tailings deposits, which were thicker within the floodplain where the forest and some of the native till was scoured leaving behind tailings on top of native soil. Rehabilitation works at the site are ongoing and the landscapes and topography at the site are changing continuously. The forest halo was inundated during the flooding that happened when the debris flow formed a dam at the head of Hazeltine Canyon. The fine tailings deposited in the forest limited the oxygen diffusion and lead to tree mortality. As of the end of 2015, approximately a quarter million m^3 were removed by MPMC and placed in the TSF. In 2016, rehabilitation works continued along the length of the Hazeltine Channel corridor, including further excavation of tailings material, transplanting native soil, and re-sloping and re-contouring of scoured areas. This is important to note because the site conditions are changing continually.

The tailings contain copper and vanadium above the CSR PL standards as well as sulfur and molybdenum above CSR AL standards. The geochemistry findings suggest that the copper and vanadium are not reactive. The results of the groundwater investigation confirm that there is no transport pathway for metals observed in tailings to shallow groundwater. The surface water results in Hazeltine Creek, combined with the physical hydrogeological model, also indicate that there is no transport of groundwater exceedances to surface water. The significance of the soil and groundwater CSR exceedances will be evaluated further in the HHRA and ERA reports, prepared under separate cover.



FLOODPLAIN: TAILINGS EXCAVATED TO COMPETENT TILL ALONG CREEK. VARIABLE DEPTHS TAILINGS MIXED WITH NATIVE SOILS.

Trees, shrubs and ground covers absent. Organic soils absent, tailing deposition largely removed. Mitigation: wood mulch and coarse woody debris applied, new plantings installed.

HALO ZONE: VARIABLE DEPTH TAILINGS LAYER OVER NATIVE SOILS

Trees present, shrubs and ground covers absent or partially covered with tailings. Root zones compromised, vegetation die back.

UNDISTURBED HEALTHY FOREST

NEW HAZELTINE CREEK AND FLOODPLAIN

IMPACTED FOREST

HEALTHY FOREST

Figure 13: Current Conditions (Summer 2016)

TRANSECT 02

6.3.3 Aquatic – Quesnel Lake

The CSM for Quesnel Lake is shown on Figure 14, below.

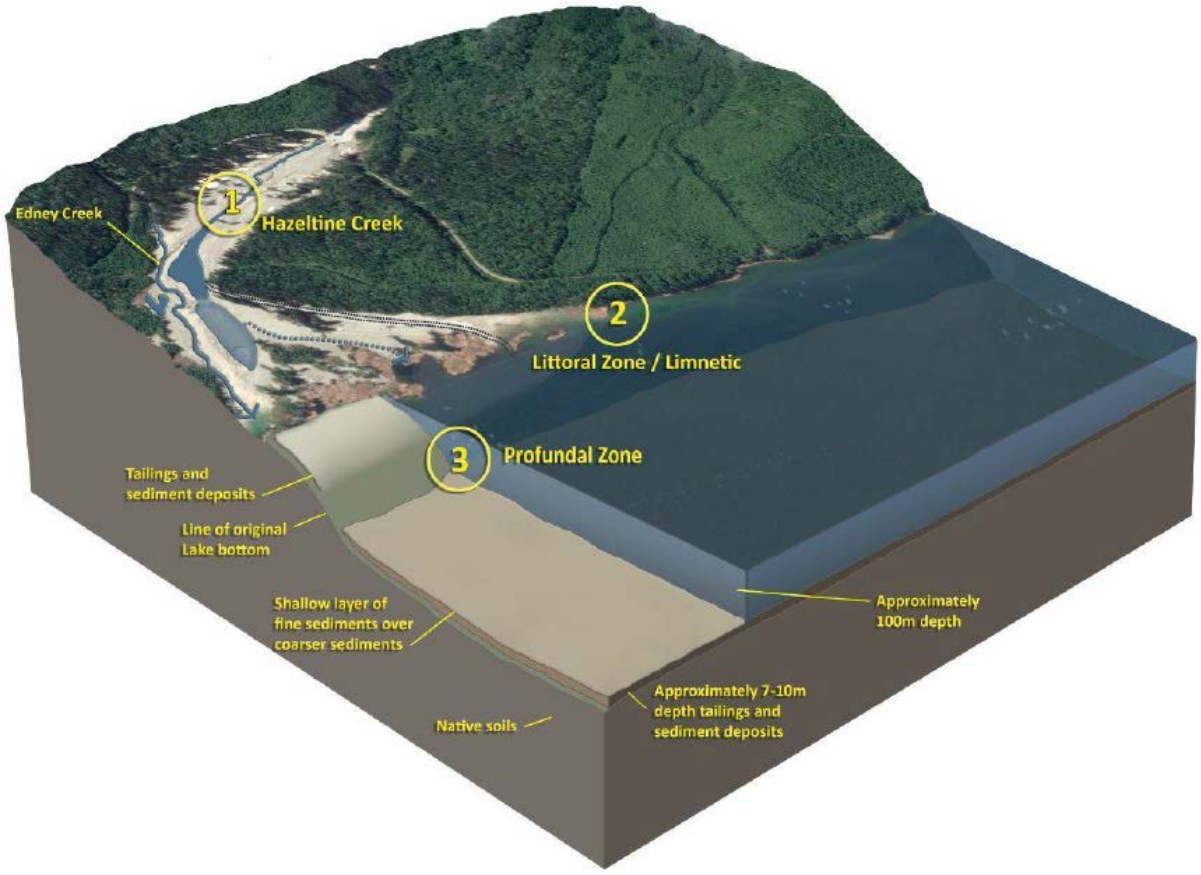


Figure 14: Conceptual Site Model for Quesnel Lake

The model shows a deposit on the lake bottom of approximately 10 m of a mixture of tailings and native material, with the upper surface of the deposited material at approximately 100 m depth. The distribution of tailings deposits shows the copper concentrations in Quesnel Lake sediment exceeding the CSR typical standard of 240 mg/kg, centered along an axis of about 5 km in the deepest portion of the West Arm. Concentrations in the littoral zone generally met the CSR sensitive standard, except in the immediate vicinity of Hazeltine Channel. This is significant as the littoral zone, where light can penetrate to the sediment surface, is the more biologically active sediment zone in the lake.

As described in the DSI, post TSF embankment breach changes in surface water quality in near field samples revealed three temporal populations of data. These describe the conditions: i) immediately following the breach characterized by high turbidity in Quesnel Lake at depths >20 m followed by a gradual decrease, ii) during construction of the creek channel and other restorative activities when turbidity increased a second time localized near Hazeltine Channel, and iii) during the period following completion of the creek channel construction when Hazeltine Creek was running under clear flow conditions. These three conditions were considered to be representative of: i) immediately following the breach, ii) during re-construction, and iii) current and future conditions. Based on water quality monitoring up to December 2015, contaminants of concern that remain at the site include total and dissolved copper in Hazeltine and Edney Creeks. Additional construction work is ongoing for Hazeltine Channel in the future, including the addition of side channels and complexity to enhance the habitat for rainbow trout and other aquatic receptors. This exposure scenario warrants evaluation in the risk assessment. Erosion management plans should be reviewed and enhanced to minimize the impact of construction activities on Hazeltine Creek water quality.

Contaminants requiring further assessment in the risk assessment include arsenic and copper in sediment for ecological exposure under current and future scenarios.

7.0 CONCLUSIONS

7.1 DSI Requirements

The DSI Update report completes the detailed site investigation at the Mount Polley Mine, located near Likely, BC. Based on the results of the investigation and the geochemical characterization discussed above we conclude, that the combined information provided in the 2016 DSI report (Golder, 2016a) and the DSI Update report (this report) satisfy the requirements of the Pollution Abatement Order for the site, and meet the CSR requirements of a DSI including:

- identification of areas of potential environmental concern
- determination of the potential contaminants of concern based on the applicable CSR standards
- delineation of the horizontal and vertical extent of contamination
- confirmation that the contamination at the site is stable or decreasing in concentration and extent over time

7.2 Summary of Key Findings

The TSF embankment breach in August of 2014, resulted in physical impact of Hazeltine and Edney Creeks, Polley Lake and Quesnel Lake. Approximately 136 hectares (1.36 km^2) of the Site was scoured of forest and topsoil (floodplain zone). Tailings were also deposited on top of relatively undisturbed forest floor (halo zone) across an additional 100 hectares (1.0 km^2) at the Site. It is estimated that approximately 12.8 million m^3 of tailings was discharged to Quesnel Lake (plus an additional 5.8 million m^3 of native soil and TSF water); and that 1.6 million m^3 of tailings were deposited in the Polley Flats area and the Hazeltine Channel Corridor. In areas where the tailings distributed across the forest floor in the halo zone, air exchange was impeded with plant roots and the soil microbial community causing hypoxic or anaerobic environment of the tree roots, and tree mortality. In 2016, the soil, forest, and plant communities showed signs of recovery, especially in areas where the tailings layers were thin.

The initial physical impacts and contaminant concentrations have been mitigated by on-going rehabilitation and remediation works. MPMC immediately implemented a rehabilitation and remediation strategy including removal of tailings, construction of a new creek channel and sedimentation ponds, and rehabilitation and replanting of large portions of the impacted area. This work is ongoing and will continue to change and improve the site conditions.

To date, the rehabilitation and remediation works have reduced the volume of tailings and lowered the metal concentrations in surficial soils in the tailings impacted areas. Therefore, the site conditions documented in the 2016 DSI and this DSI Update report do not represent the current conditions in the field. As discussed in this report, some of the areas that were identified by the 2014, 2015 and 2016 sampling to contain tailings with copper and vanadium concentrations exceeding the soil standards have now been remediated. The remediation and rehabilitation work will be described in a separate report to be issued at a later date.

The following is a summary of the key findings of the DSI in relation to contamination associated with the tailings released by the TSF embankment breach:

- Copper is the main contaminant in the tailings with an estimated mean concentration (95%UCLM) of 737 mg/kg. The concentrations of copper exceeded the applicable CSR standards in tailings but not in groundwater. The geochemical assessment found that the tailings are not potentially ARD generating and that the leaching that would occur under the neutral to basic pH conditions would be low. Kinetic laboratory testing and groundwater investigation confirmed the leaching rate of copper is low, and that the concentrations in groundwater will likely reduce over time as the tailings age and weather. For tailings materials with water flow paths longer than half a metre, mineral solubility controls for copper are expected with the formation of secondary copper minerals, which would limit the concentrations of copper in groundwater. The median copper concentration in groundwater is about one order of magnitude lower than the concentrations predicted by mineral solubility limits, likely due to dilution by precipitation.
- Vanadium, which is associated with the orange-black sandy tailings (contains magnetite), exceeded the CSR standards based on the 90th percentile of 212.8 mg/kg (CSR standard = 200 mg/kg). The estimated mean concentration (95%UCLM) for vanadium in tailings was less than the CSR standards. Based on geochemical characterization, vanadium was not considered to be enriched in tailings compared to concentrations in typical basalt rock in the region. Vanadium concentrations in groundwater did not exceed the CSR standards.
- Selenium is not a contaminant related to the TSF embankment breach in soil, groundwater, sediment or surface water.
- Other substances that exceeded the CSR standards for soil and groundwater are believed to be associated with natural conditions and were not derived from the tailings. These substances included sulfur and molybdenum in soil (exceedance of agricultural land use standards only); and arsenic, iron, manganese and molybdenum in groundwater.
- In the first few months after the breach, an initial increase in turbidity and concentrations of total metals in surface water was observed extending to the mouth of Quesnel River. During the monitoring period considered to be representative for the purposes of evaluating long term impacts related to the breach (June 2015 to 1 December 2015), concentrations of metals and turbidity decreased or stabilized below BC WQGs and/or are within the pre-event range in Polley Lake and Quesnel Lake. However, in Hazeltine Creek and Edney Creek, concentrations of copper consistently exceeded BC WQGs during that time.
- Sediment quality in Polley Lake, Hazeltine Channel and Quesnel Lake indicated concentrations of copper exceeding the CSR Schedule 9 (typical and sensitive) criterion and concentrations of arsenic exceeding the CSR Schedule 9 (sensitive) criterion. Copper concentrations in reference Bootjack Lake and Polley Lake prior to the TSF embankment breach also exceeded the CSR Schedule 9 (typical) standard. Concentrations of copper in sediments in Polley Lake were generally lower than those measured in Quesnel Lake. This is consistent with the results of the Tetra Tech (2015) report that indicated inputs to Polley Lake were largely aqueous, compared to Quesnel Lake that received both aqueous and solid phase inputs.
- Monitoring and confirmation sampling of soil, groundwater, surface water and sediment will be undertaken as part of the comprehensive environmental monitoring plan (CEMP). The sampling results will be evaluated

for seasonal variability and long term trends, and compared to the assumptions made in the DSI and human health and ecological risk assessments.

7.3 Contaminants of Concern

Based on the findings of the 2016 DSI conducted in 2015 and the DSI Update conducted in 2016, the following concentration of contaminants of concern have been determined to exceed the applicable CSR standards for soil, groundwater and sediment; and BC Water Quality Guidelines for surface water (Table 15).

Table 15: Summary of Contaminants of Concern

Remediation Area	Contaminant	Medium	Applicable CSR Standard	CSR Schedule	Contaminant Concentration
Area 2 – Polley Plug/Polley Flats and Area 4, 5, and 6 – Hazeltine Channel	Copper	Soil	150	5 – Toxicity to soil invertebrates and plants	Refer to Table 6
	Vanadium	Soil	200	4 – Residential and Agricultural	
	Sulfur	Soil	500	4 – Agricultural	
	Molybdenum	Soil	5	4 – Agricultural	
	Iron	Groundwater	5	6 – Irrigation	Refer to Section 5.2.3.1
			6.5	6 – Drinking Water	
	Manganese	Groundwater	0.2	6 – Irrigation	
			0.55	6 – Drinking Water	
	Arsenic	Groundwater	0.01	6 – Drinking Water	
			0.025	6 – Livestock	
	Molybdenum	Groundwater	0.01-0.03	6 – Irrigation	
			0.05	6 – Livestock	
	Sulfate	Groundwater	500	6 – Drinking Water	
	Total and dissolved copper	Surface Water	Variable[1]	BC WQG – AW	Refer to Section 5.3.2.4
	Copper	Sediment	140	9 – Typical	Refer to Section 5.4.2
Area 3 – Polley Lake	Arsenic	Sediment	11	9 – Sensitive	Refer to Section 5.4.1
	Copper	Sediment	120	9 – Sensitive	
			140	9 – Typical	
Area 7 – Edney Creek Mouth	Total and dissolved copper	Surface Water	Variable[1]	BC WQG - AW	Refer to Section 5.3.2.4
Area 8 – Quesnel Lake	Copper	Sediment – Littoral and Profundal	120	9 – Sensitive	Refer to Section 5.4.3
			140	9 – Typical	
	Arsenic	Sediment – Littoral and Profundal	11	9 – Sensitive	

1) WQG is variable dependant on hardness and 30-day rolling averages.

8.0 CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this report.

We trust that this report meets your immediate requirements. If you have any questions regarding the content of this report, please do not hesitate to contact this office.

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Contaminated Sites Expert

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AB/RZG/TAM/JC/cmm

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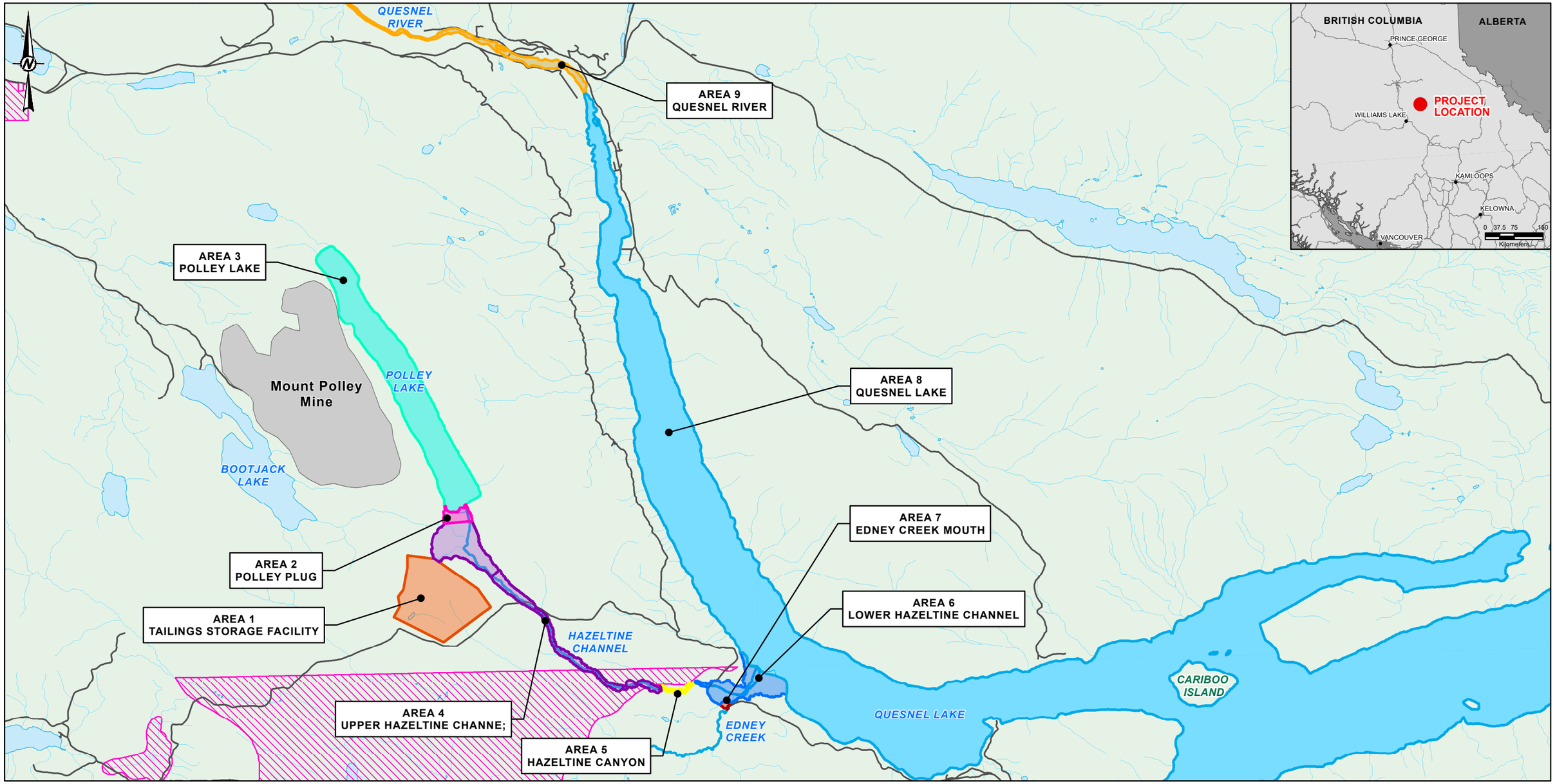

LEGEND

REMEDIATION AREA
- 1 - TAILINGS STORAGE FACILITY
- 2 - POLLEY PLUG
- 3 - POLLEY LAKE
- 4 - UPPER HAZELTINE CHANNEL
- 5 - HAZELTINE CANYON
- 6 - LOWER HAZELTINE CHANNEL
- 7 - EDNEY CREEK MOUTH
- 8 - QUESNEL LAKE
- 9 - QUESNEL RIVER

- MOUNT POLLEY MINE SITE
- ROAD
- WATERCOURSE
- AGRICULTURAL LAND RESERVE
- WATERBODY

0 2 4
1:80,000 KILOMETRES

REFERENCES
1. WATERCOURSE, LAKE, ROAD, CITY AND PROVINCE DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
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CLIENT
IMPERIAL METALS
MOUNT POLLEY MINING CORPORATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-15
DESIGNED	AB
PREPARED	RH / CD
REVIEWED	RZG
APPROVED	RZG

PROJECT
DETAILED SITE INVESTIGATION UPDATE

TITLE
MOUNT POLLEY MINE REMEDIATION AREAS

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DEPTH (m):	0.1	0.5	0.8
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VANADIUM:	171	71	101

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COPPER:	869	1120
VANADIUM:	195	227

SAMPLE:	SS15-04
TYPE:	Tailings
DEPTH (m):	0.1
COPPER:	860
VANADIUM:	201

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TYPE:	Tailings
DEPTH (m):	0.1 - 0.2
COPPER:	824
MOLYBDENUM:	5.4
VANADIUM:	218
SULFUR:	1300

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TYPE:	Background
DEPTH (m):	0.1 - 0.2
COPPER:	10.6
VANADIUM:	62

SAMPLE:	ST17-03
TYPE:	Tailings
DEPTH (m):	0.2 - 0.4
COPPER:	1560
VANADIUM:	172
ARSENIC:	16.5
SULFUR:	3500

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DEPTH (m):	0.0 - 0.2
COPPER:	847
VANADIUM:	210

SAMPLE:	ST17-05
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	833
VANADIUM:	206

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TYPE:	Tailings	Tailings
DEPTH (m):	0.1	0.3
COPPER:	803	873
MOLYBDENUM:	4.3	5.2
VANADIUM:	211	187
SULFUR:	1600	-

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TYPE:	Tailings
DEPTH (m):	0.3 - 0.5
COPPER:	823
VANADIUM:	225

SAMPLE:	ST18-03-01	ST18-03-02
TYPE:	Tailings	Tailings
DEPTH (m):	0.1 - 0.2	0.5 - 0.7
COPPER:	849	1360
MOLYBDENUM:	5.1	3.4
VANADIUM:	204	227
SULFUR:	1300	-

SAMPLE:	ST18-02-01	ST18-02-03
TYPE:	Tailings	Tailings
DEPTH (m):	0.0 - 0.3	0.4 - 0.5
COPPER:	938	881
MOLYBDENUM:	5.6	4.2
VANADIUM:	242	190

SAMPLE:	SS15-01	SS15-01	SS15-01	SS15-01
TYPE:	Tailings	Tailings	Tailings	Tailings
DEPTH (m):	0.08	0.3	0.55	0.75
COPPER:	903	844	882	1090
MOLYBDENUM:	5.7	4.9	5.3	5.4
VANADIUM:	185	193	192	195
ARSENIC:	15.1	12.1	12	11.1

SAMPLE:	P2 - T Sand	P2 - A Layer	P2 - B Layer
TYPE:	Tailings	Native	Native
DEPTH (m):	0.1	0.55	0.65
COPPER:	881	352	412
VANADIUM:	257	75	152

SAMPLE:	P1-Berries - AH Layer	P1 - A Layer	P1-Spruce - AH Layer	P1 - B Layer
TYPE:	Background	Background	Background	Background
DEPTH (m):	0.1	0.05	0.1	0.15
COPPER:	59.9	53.4	39.4	44.7
VANADIUM:	68	64	15	92
CHROMIUM:	60.9	54.7	12.4	58.7

SAMPLE:	CSS16-06
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	458
VANADIUM:	209

SAMPLE:	ST18-05-01	ST18-05-03
TYPE:	Tailings	Tailings
DEPTH (m):	0.0 - 0.2	0.2 - 0.4
COPPER:	869	1070
VANADIUM:	191	198

SAMPLE:	ST18-01
TYPE:	Background
DEPTH (m):	0.2 - 0.3
COPPER:	26.1
VANADIUM:	80

SAMPLE:	Rye grass soil - 9
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	1020
VANADIUM:	160

SAMPLE:	CSS16-05
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	574
VANADIUM:	205

SAMPLE:	Rye grass soil - 10
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	183
VANADIUM:	114

SAMPLE:	CSS16-04
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	472
VANADIUM:	185

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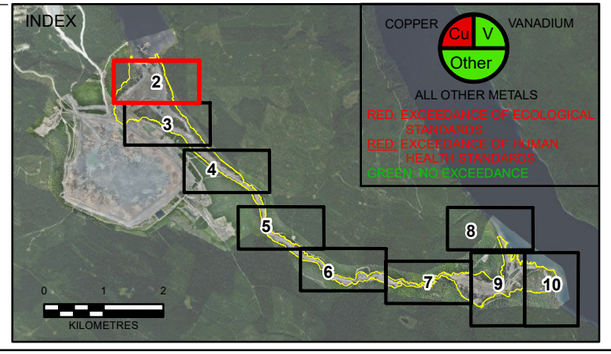
LEGEND

GOLDER SOIL SAMPLE LOCATION
- METALS
- NUTRIENTS
- NUTRIENTS AND METALS
- SNC SOIL SAMPLE LOCATION
- TERRESTRIAL HABITAT SAMPLE LOCATION
- SOIL TRANSECT
- POST BREACH AFFECTED AREA EXTENT
- NEW HAZELTINE CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- BERRY
- RYE GRASS
- WILLOW

INDEX



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NOTES
1. ST = SOIL TRANSECT
2. SS15-XX = SOIL SAMPLE LOCATION (GOLDER 2015)
3. PX = TERRESTRIAL HABITAT PLOT LOCATION (GOLDER 2015)

REFERENCES

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MOUNT POLLEY MINING CORPORATION
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YYYY-MM-DD	2017-02-15
DESIGNED	KE
PREPARED	RH / CD
REVIEWED	RZG
APPROVED	RZG

PROJECT
DETAILED SITE INVESTIGATION

TITLE
DETAILED SITE INVESTIGATION UPDATE

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SAMPLE:	ST16-04-01	ST16-04-02
TYPE:	Native	Native
DEPTH (m):	0.3 - 0.4	0.5 - 0.6
COPPER:	38.3	86.7
VANADIUM:	50	91

SAMPLE:	ST16-03
TYPE:	Tailings
DEPTH (m):	0.0 - 0.0
COPPER:	832
VANADIUM:	216

SAMPLE:	ST16-02
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	910
VANADIUM:	183

SAMPLE:	P4 - T Silty Sand	P4 - A B Layer
TYPE:	Tailings	Native
DEPTH (m):	0.1	0.25
COPPER:	1030	73
VANADIUM:	176	92

SAMPLE:	ST16-01-01	ST16-01-02
TYPE:	Background	Background
DEPTH (m):	0.1 - 0.2	0.2 - 0.3
COPPER:	68.2	21.8
VANADIUM:	107	71
CHROMIUM:	81.8	39.5

SAMPLE:	P5 - A Layer
TYPE:	Native
DEPTH (m):	0.25
COPPER:	75.2
VANADIUM:	82

SAMPLE:	Berries Tailings - 4	Berries soil - 4
TYPE:	Tailings	Native
DEPTH (m):	0.0 - 0.1	0.0 - 0.1
COPPER:	927	47.5
VANADIUM:	197	16

SAMPLE:	Berries Tailings - 3	Berries soil - 3
TYPE:	Tailings	Native
DEPTH (m):	0.0 - 0.1	0.0 - 0.1
COPPER:	1070	125
MOLYBDENUM:	5.27	1.64
VANADIUM:	176	58

SAMPLE:	ST16-05
TYPE:	Tailings
DEPTH (m):	0.4 - 0.6
COPPER:	997
MOLYBDENUM:	7.3
VANADIUM:	199

SAMPLE:	Rye Grass soil - 11
TYPE:	Tailings
DEPTH (m):	0.1
COPPER:	807
VANADIUM:	200

SAMPLE:	SS15-08	SS15-08
TYPE:	Tailings	Native
DEPTH (m):	0.1	2.9
COPPER:	1150	366
VANADIUM:	287	117

SAMPLE:	SS15-09	SS15-09
TYPE:	Tailings	Native
DEPTH (m):	0.05	0.15
COPPER:	781	121
VANADIUM:	187	78

SAMPLE:	ST15-03
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	876
VANADIUM:	192

SAMPLE:	ST15-04
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	868
VANADIUM:	200

SAMPLE:	CSS16-16
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	522
VANADIUM:	181

SAMPLE:	CSS16-15
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	541
VANADIUM:	193

SAMPLE:	ST16-06
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	977
MOLYBDENUM:	5.1
VANADIUM:	166
SULFUR:	1200

SAMPLE:	ST15-01-01	ST15-01-02
TYPE:	Background	Background
DEPTH (m):	0.0 - 0.1	0.2 - 0.3
COPPER:	36.3	22.1
VANADIUM:	82	74

SAMPLE:	P9 - A Layer	P9 - B Layer
TYPE:	Background	Background
DEPTH (m):	0.06	0.1
COPPER:	46.8	23.2
VANADIUM:	84	69

SAMPLE:	SS15-06	SS15-06	SS15-06
TYPE:	Tailings	Native	Native
DEPTH (m):	0.1	0.35	0.45
COPPER:	788	63.2	95.5
VANADIUM:	188	58	72

SAMPLE:	ST15-02-01	ST15-02-02
TYPE:	Tailings	Native
DEPTH (m):	0.0 - 0.1	0.2 - 0.3
COPPER:	873	63.7
VANADIUM:	203	100
CHROMIUM:	10.4	61.7

SAMPLE:	SS15-07	SS15-07	SS15-07
TYPE:	Tailings	Native	Native
DEPTH (m):	0.5	0.65	0.75
COPPER:	1040	137	29.5
MOLYBDENUM:	7.2	1.4	0.8
VANADIUM:	223	62	67

SAMPLE:	CSS16-03
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	148
VANADIUM:	95

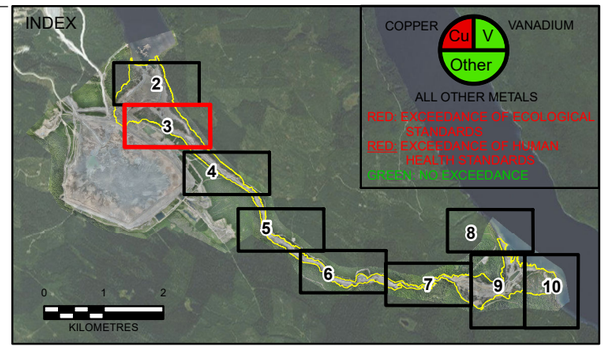
SAMPLE:	CSS16-02
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	677
VANADIUM:	177

LEGEND

GOLDER SOIL SAMPLE LOCATION
- METALS
- NUTRIENTS
- NUTRIENTS AND METALS
- SNC SOIL SAMPLE LOCATION
- TERRESTRIAL HABITAT SAMPLE LOCATION
- SOIL TRANSECT
- POST BREACH AFFECTED AREA EXTENT
- NEW HAZELTINE CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)

- BERRY
- RYE GRASS
- WILLOW

INDEX



0 75 150
1:3,500 METRES

NOTES
1. ST = SOIL TRANSECT
2. SS15-XX = SOIL SAMPLE LOCATION (GOLDER 2015)
3. PX = TERRESTRIAL HABITAT PLOT LOCATION (GOLDER 2015)

REFERENCES
1. WATERBODY AND ROAD DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
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COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N

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MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-15
DESIGNED	KE
PREPARED	RH / CD
REVIEWED	RZG
APPROVED	RZG

PROJECT
DETAILED SITE INVESTIGATION

TITLE
DETAILED SITE INVESTIGATION UPDATE

PROJECT NO.	CONTROL	REV.	FIGURE
1662612	22200 / 22243	0	**A-3**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm 0

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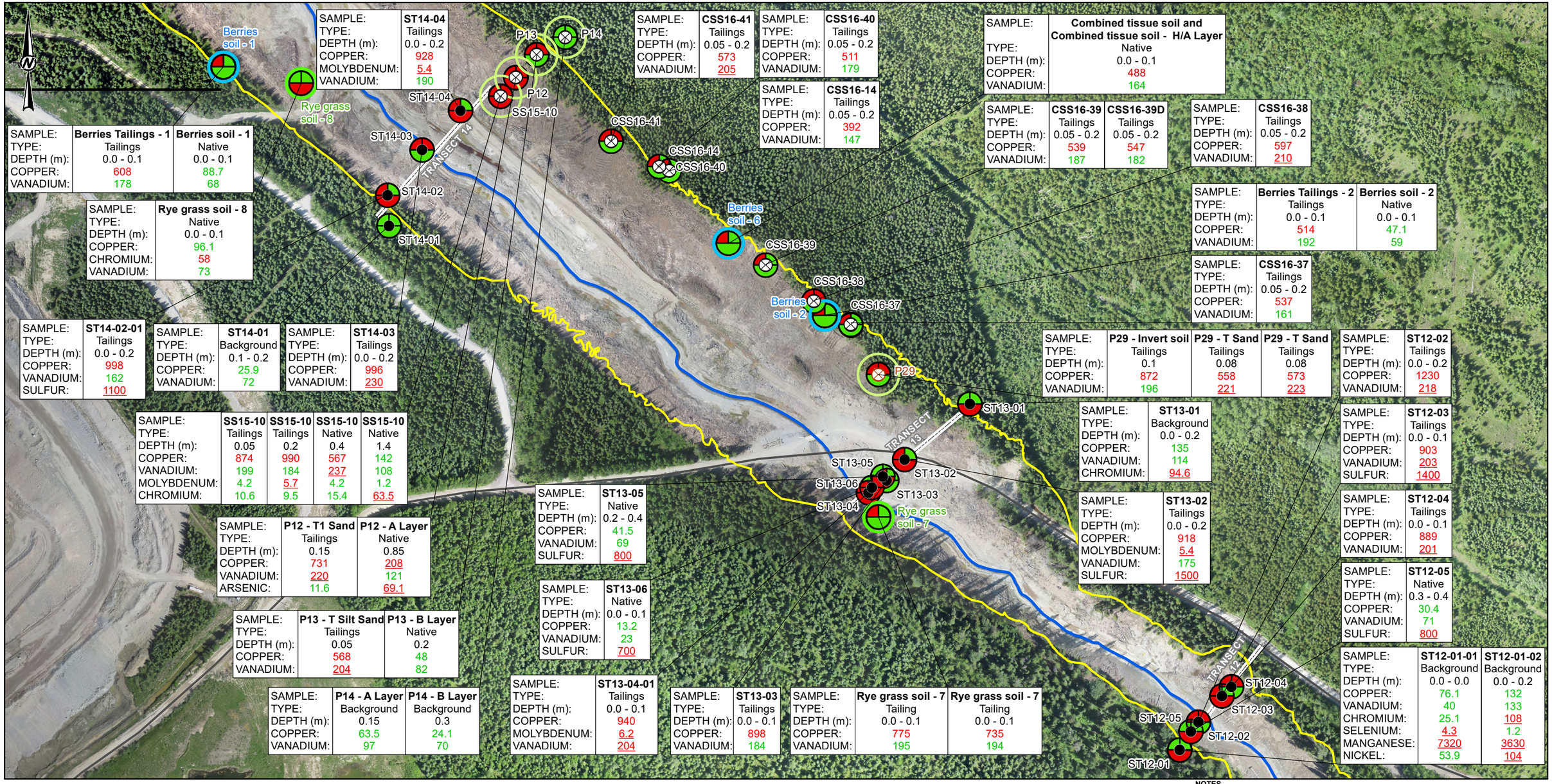

SAMPLE:	ST14-04
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	928
MOLYBDENUM:	5.4
VANADIUM:	190

SAMPLE:	CSS16-41
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	573
VANADIUM:	205

SAMPLE:	CSS16-40
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	511
VANADIUM:	179

SAMPLE:	CSS16-14
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	392
VANADIUM:	147

SAMPLE:	Combined tissue soil and Combined tissue soil - H/A Layer
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	488
VANADIUM:	164

SAMPLE:	CSS16-39	CSS16-39D
TYPE:	Tailings	Tailings
DEPTH (m):	0.05 - 0.2	0.05 - 0.2
COPPER:	539	547
VANADIUM:	187	182

SAMPLE:	CSS16-38
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	597
VANADIUM:	210

SAMPLE:	Berries Tailings - 1	Berries soil - 1
TYPE:	Tailings	Native
DEPTH (m):	0.0 - 0.1	0.0 - 0.1
COPPER:	608	88.7
VANADIUM:	178	68

SAMPLE:	Berries Tailings - 2	Berries soil - 2
TYPE:	Tailings	Native
DEPTH (m):	0.0 - 0.1	0.0 - 0.1
COPPER:	514	47.1
VANADIUM:	192	59

SAMPLE:	Rye grass soil - 8
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	96.1
CHROMIUM:	58
VANADIUM:	73

SAMPLE:	CSS16-37
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	537
VANADIUM:	161

SAMPLE:	ST14-02-01
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	998
VANADIUM:	162
SULFUR:	1100

SAMPLE:	ST14-01
TYPE:	Background
DEPTH (m):	0.1 - 0.2
COPPER:	25.9
VANADIUM:	72

SAMPLE:	ST14-03
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	996
VANADIUM:	230

SAMPLE:	P29 - Invert soil	P29 - T Sand	P29 - T Sand
TYPE:	Tailings	Tailings	Tailings
DEPTH (m):	0.1	0.08	0.08
COPPER:	872	558	573
VANADIUM:	196	221	223

SAMPLE:	ST12-02
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	1230
VANADIUM:	218

SAMPLE:	SS15-10	SS15-10	SS15-10	SS15-10
TYPE:	Tailings	Tailings	Native	Native
DEPTH (m):	0.05	0.2	0.4	1.4
COPPER:	874	990	567	142
VANADIUM:	199	184	237	108
MOLYBDENUM:	4.2	5.7	4.2	1.2
CHROMIUM:	10.6	9.5	15.4	63.5

SAMPLE:	ST13-01
TYPE:	Background
DEPTH (m):	0.0 - 0.2
COPPER:	135
VANADIUM:	114
CHROMIUM:	94.6

SAMPLE:	ST12-03
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	903
VANADIUM:	203
SULFUR:	1400

SAMPLE:	ST13-05
TYPE:	Native
DEPTH (m):	0.2 - 0.4
COPPER:	41.5
VANADIUM:	69
SULFUR:	800

SAMPLE:	ST13-02
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	918
MOLYBDENUM:	5.4
VANADIUM:	175
SULFUR:	1500

SAMPLE:	ST12-04
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	889
VANADIUM:	201

SAMPLE:	P12 - T1 Sand	P12 - A Layer
TYPE:	Tailings	Native
DEPTH (m):	0.15	0.85
COPPER:	731	208
VANADIUM:	220	121
ARSENIC:	11.6	69.1

SAMPLE:	ST13-06
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	13.2
VANADIUM:	23
SULFUR:	700

SAMPLE:	ST12-05
TYPE:	Native
DEPTH (m):	0.3 - 0.4
COPPER:	30.4
VANADIUM:	71
SULFUR:	800

SAMPLE:	P13 - T Silt Sand	P13 - B Layer
TYPE:	Tailings	Native
DEPTH (m):	0.05	0.2
COPPER:	568	48
VANADIUM:	204	82

SAMPLE:	ST12-01-01	ST12-01-02
TYPE:	Background	Background
DEPTH (m):	0.0 - 0.0	0.0 - 0.2
COPPER:	76.1	132
VANADIUM:	40	133
CHROMIUM:	25.1	108
SELENIUM:	4.3	1.2
MANGANESE:	7320	3630
NICKEL:	53.9	104

SAMPLE:	P14 - A Layer	P14 - B Layer
TYPE:	Background	Background
DEPTH (m):	0.15	0.3
COPPER:	63.5	24.1
VANADIUM:	97	70

SAMPLE:	ST13-04-01
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	940
MOLYBDENUM:	6.2
VANADIUM:	204

SAMPLE:	ST13-03
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	898
VANADIUM:	184

SAMPLE:	Rye grass soil - 7	Rye grass soil - 7
TYPE:	Tailing	Tailing
DEPTH (m):	0.0 - 0.1	0.0 - 0.1
COPPER:	775	735
VANADIUM:	195	194

LEGEND

GOLDER SOIL SAMPLE LOCATION
- METALS
- NUTRIENTS
- NUTRIENTS AND METALS
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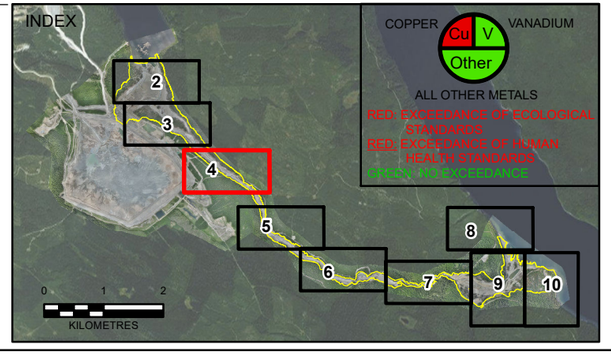
- SOIL TRANSECT
- POST BREACH AFFECTED AREA EXTENT
- NEW HAZELTINE CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- ROAD
- BERRY
- RYE GRASS
- WILLOW



0 75 150
1:3,500 METRES

NOTES
1. ST = SOIL TRANSECT
2. SS15-XX = SOIL SAMPLE LOCATION (GOLDER 2015)
3. PX = TERRESTRIAL HABITAT PLOT LOCATION (GOLDER 2015)

REFERENCES

COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N

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IMPERIAL METALS

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-15
DESIGNED	KE
PREPARED	RH / CD
REVIEWED	RZG
APPROVED	RZG

PROJECT
DETAILED SITE INVESTIGATION

TITLE
DETAILED SITE INVESTIGATION UPDATE

PROJECT NO.	CONTROL	REV.	FIGURE
1662612	22200 / 22243	0	**A-4**

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

SAMPLE:	CSS16-30
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	80.8
VANADIUM:	71

SAMPLE:	CSS16-31
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	67
VANADIUM:	82.2

SAMPLE:	ST11-01
TYPE:	Background
DEPTH (m):	0.0 - 0.3
COPPER:	21.7
VANADIUM:	55

SAMPLE:	Rye grass soil - 6
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	51.5
VANADIUM:	62

SAMPLE:	ST11-03
TYPE:	Native
DEPTH (m):	0.1 - 0.3
COPPER:	32.1
VANADIUM:	40
SULFUR:	900

SAMPLE:	CSS16-27	CSS16-27D
TYPE:	Tailings	Tailings
DEPTH (m):	0.05 - 0.2	0.05 - 0.2
COPPER:	649	620
VANADIUM:	184	180

SAMPLE:	ST10-04
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	899
MOLYBDENUM:	5.4
VANADIUM:	198

SAMPLE:	ST11-02-01	ST11-02-02
TYPE:	Tailings	Tailings
DEPTH (m):	0.0 - 0.2	0.2 - 0.4
COPPER:	1350	1360
MOLYBDENUM:	6.5	4.7
VANADIUM:	289	199
SULFUR:	1500	-

SAMPLE:	ST10-02
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	925
VANADIUM:	205
SULFUR:	1300

SAMPLE:	ST10-01
TYPE:	Background
DEPTH (m):	0.1 - 0.3
COPPER:	19.3
VANADIUM:	59

SAMPLE:	CSS16-26
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	52.5
VANADIUM:	50

SAMPLE:	ST10-03
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	863
VANADIUM:	187

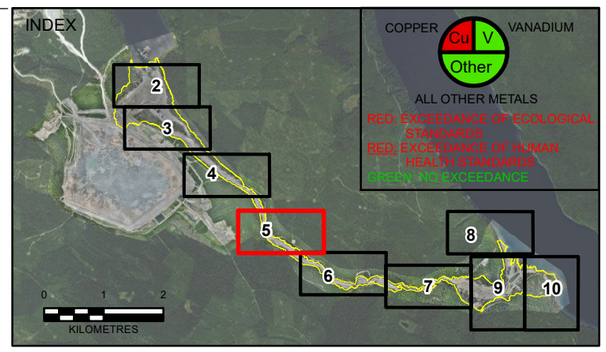
SAMPLE:	Berries soil - 5
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	794
VANADIUM:	186

CSS16-30
CSS16-31
ST11-03
TRANSECT 11
ST11-01
Rye grass soil - 6
ST11-02
CSS16-27
CSS16-26
ST10-01
Berries soil - 5
ST10-02
TRANSECT 10
ST10-04
ST10-03

LEGEND

GOLDER SOIL SAMPLE LOCATION
- METALS
- NUTRIENTS
- NUTRIENTS AND METALS
- SNC SOIL SAMPLE LOCATION
- TERRESTRIAL HABITAT SAMPLE LOCATION
- SOIL TRANSECT
- POST BREACH AFFECTED AREA EXTENT
- NEW HAZELTINE CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)

- BERRY
- RYE GRASS
- WILLOW



0 75 150
1:3,500 METRES

NOTES
1. ST = SOIL TRANSECT
2. SS15-XX = SOIL SAMPLE LOCATION (GOLDER 2015)
3. PX = TERRESTRIAL HABITAT PLOT LOCATION (GOLDER 2015)

REFERENCES

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CONSULTANT
Golder Associates

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DESIGNED	KE
PREPARED	RH / CD
REVIEWED	RZG
APPROVED	RZG

PROJECT
DETAILED SITE INVESTIGATION

TITLE
DETAILED SITE INVESTIGATION UPDATE

PROJECT NO.	CONTROL	REV.	FIGURE
1662612	22200 / 22243	0	**A-5**

25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

PATH: \\golder.gds.golder.com\burnaby\CAD-GIS\Client\1413803\1662612\99_PROJECTS\02_PRODUCTION\MXD\Report\PHASE_22200\1662612_22200_FIG_A2_A8_DETAILED_SITE_INVESTIGATION.mxd

SAMPLE:	CSS16-36
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	449
VANADIUM:	119

CSS16-36

CSS16-25

ST09-04

ST09-03

ST09-02

ST09-01

TRANSECT 9

SAMPLE:	ST09-04
TYPE:	Native
DEPTH (m):	0.1 - 0.3
COPPER:	18.5
VANADIUM:	59

SAMPLE:	ST09-03
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	885
MOLYBDENUM:	5.1
VANADIUM:	192

SAMPLE:	Rye grass soil - 5
TYPE:	Tailing
DEPTH (m):	0.0 - 0.1
COPPER:	809
VANADIUM:	185

SAMPLE:	CSS16-24
TYPE:	Tailing
DEPTH (m):	0.05 - 0.2
COPPER:	546
VANADIUM:	134

Rye grass soil - 5

CSS16-24

SAMPLE:	ST09-01-01	ST09-01-02
TYPE:	Background	Background
DEPTH (m):	0.0 - 0.2	0.2 - 0.4
COPPER:	15.3	22.4
VANADIUM:	58	58

SAMPLE:	ST09-02-01
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	1000
VANADIUM:	170

SAMPLE:	CSS16-25
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	48.3
VANADIUM:	62

SAMPLE:	ST08-02-01	ST08-02-02
TYPE:	Tailings	Tailings
DEPTH (m):	0.0 - 0.2	0.4 - 0.4
COPPER:	934	207
VANADIUM:	177	106
SULFUR:	1500	1100

SAMPLE:	ST08-01
TYPE:	Background
DEPTH (m):	0.1 - 0.3
COPPER:	19.2
VANADIUM:	62

SAMPLE:	ST08-03
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	875
VANADIUM:	225

SAMPLE:	CSS16-23
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	395
VANADIUM:	98

ST08-01

ST08-02

ST08-03

CSS16-23

ST08-06

TRANSECT 8

ST08-04

ST08-05

SAMPLE:	ST08-06
TYPE:	Native
DEPTH (m):	0.1 - 0.3
COPPER:	65.3
VANADIUM:	86

SAMPLE:	ST08-04
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	882
MOLYBDENUM:	6.7
VANADIUM:	201

SAMPLE:	ST08-05-01	ST08-05-02
TYPE:	Tailings	Native
DEPTH (m):	0.1 - 0.2	0.3 - 0.5
COPPER:	544	19.3
VANADIUM:	122	45
SULFUR:	-	700

SAMPLE:	ST07-02
TYPE:	Tailings
DEPTH (m):	0.0 - 0.0
COPPER:	938
VANADIUM:	194
SULFUR:	1400

SAMPLE:	ST07-01
TYPE:	Background
DEPTH (m):	0.1 - 0.2
COPPER:	18.9
VANADIUM:	40

SAMPLE:	CSS16-28
TYPE:	Tailing
DEPTH (m):	0.05 - 0.2
COPPER:	74
VANADIUM:	76

SAMPLE:	CSS16-32
TYPE:	Tailing
DEPTH (m):	0.05 - 0.2
COPPER:	107
VANADIUM:	79

SAMPLE:	CSS16-33
TYPE:	Tailing
DEPTH (m):	0.05 - 0.2
COPPER:	324
VANADIUM:	106

SAMPLE:	Rye grass soil - 3
TYPE:	Tailing
DEPTH (m):	0.0 - 0.1
COPPER:	216
VANADIUM:	97

SAMPLE:	CSS16-29
TYPE:	Tailing
DEPTH (m):	0.05 - 0.2
COPPER:	114
VANADIUM:	83

Rye grass soil - 3

CSS16-29

CSS16-32

CSS16-33

CSS16-28

TRANSECT 7

ST07-03

ST07-02

ST07-01

Rye grass soil - 4

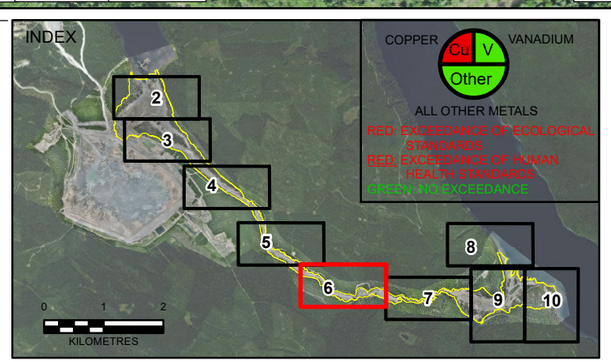
SAMPLE:	Rye grass soil - 4	Rye grass soil - 4
TYPE:	Tailing	Tailing
DEPTH (m):	0.0 - 0.1	0.0 - 0.1
COPPER:	707	638
VANADIUM:	163	150

SAMPLE:	ST07-03-01	ST07-03-02
TYPE:	Tailings	Tailings
DEPTH (m):	0.0 - 0.1	0.2 - 0.5
COPPER:	897	892
VANADIUM:	202	195
SULFUR:	-	1500

LEGEND

GOLDER SOIL SAMPLE LOCATION
- METALS
- NUTRIENTS
- NUTRIENTS AND METALS
- SNC SOIL SAMPLE LOCATION
- TERRESTRIAL HABITAT SAMPLE LOCATION
- SOIL TRANSECT
- POST BREACH AFFECTED AREA EXTENT
- NEW HAZELTINE CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)

- BERRY
- RYE GRASS
- WILLOW



0 75 150

1:3,500 METRES

NOTES
1. ST = SOIL TRANSECT
2. SS15-XX = SOIL SAMPLE LOCATION (GOLDER 2015)
3. PX = TERRESTRIAL HABITAT PLOT LOCATION (GOLDER 2015)

REFERENCES

CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

CONSULTANT
Golder Associates

PROJECT
DETAILED SITE INVESTIGATION

TITLE
DETAILED SITE INVESTIGATION UPDATE

YYYY-MM-DD	2017-02-15
DESIGNED	KE
PREPARED	RH / CD
REVIEWED	RZG
APPROVED	RZG

PROJECT NO.	CONTROL	REV.	FIGURE
1662612	22200 / 22243	0	**A-6**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

0

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SAMPLE:	CSS16-34
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	401
VANADIUM:	126

SAMPLE:	CSS16-35
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	487
VANADIUM:	117

SAMPLE:	ST06-01-01	ST06-01-02
TYPE:	Background	Background
DEPTH (m):	0.0 - 0.1	0.1 - 0.3
COPPER:	6	11.5
VANADIUM:	41	54

SAMPLE:	SS15-11
TYPE:	Tailings
DEPTH (m):	0.1 - 0.2
COPPER:	410
VANADIUM:	151

SAMPLE:	ST06-02-01
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	898
VANADIUM:	205
SULFUR:	1200

SAMPLE:	ST05-02-01
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	633
VANADIUM:	158
SULFUR:	1000

SAMPLE:	ST04-02
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	1080
MOLYBDENUM:	6.3
VANADIUM:	213
SULFUR:	1500

SAMPLE:	ST04-01
TYPE:	Background
DEPTH (m):	0.1 - 0.3
COPPER:	20.9
VANADIUM:	55

SAMPLE:	ST03-01-01	ST03-01-02	ST03-01-03
TYPE:	Tailings	Tailings	Tailings
DEPTH (m):	0.0 - 0.1	0.1 - 0.3	0.3 - 0.6
COPPER:	794	1110	901
MOLYBDENUM:	3.7	5.3	4.1
VANADIUM:	191	152	196
SULFUR:	-	2100	1300

SAMPLE:	Willow Seedling soil - 4
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	85.6
VANADIUM:	74

SAMPLE:	Willow Wattle soil - 4
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	38.4
VANADIUM:	57

SAMPLE:	ST03-02
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	909
VANADIUM:	211
SULFUR:	1300

SAMPLE:	ST03-05-01	ST03-05-02
TYPE:	Tailings	Native
DEPTH (m):	0.0 - 0.5	0.6 - 0.7
COPPER:	389	23.3
VANADIUM:	116	81
SULFUR:	800	-

SAMPLE:	ST03-04
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	884
VANADIUM:	191

SAMPLE:	ST03-01
TYPE:	Background
DEPTH (m):	0.1 - 0.3
COPPER:	29.2
VANADIUM:	53

SAMPLE:	Willow Wattle soil - 3
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	148
VANADIUM:	93

SAMPLE:	Willow Seedling soil - 2
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	48.9
VANADIUM:	69

SAMPLE:	Willow Stake soil - 3
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	359
MOLYBDENUM:	6.6
VANADIUM:	132

SAMPLE:	Willow soil - 5
TYPE:	Background
DEPTH (m):	0.0 - 0.1
COPPER:	48.5
VANADIUM:	78

SAMPLE:	Willow Wattle soil - 1
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	66.8
VANADIUM:	74

SAMPLE:	Willow Stake soil - 1
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	51.6
VANADIUM:	74

SAMPLE:	Willow Seedling soil - 1
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	71
VANADIUM:	72

SAMPLE:	Willow Wattle soil - 6
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	192
VANADIUM:	86

SAMPLE:	Willow Stake soil - 6
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	315
VANADIUM:	111

SAMPLE:	Willow Seedling soil - 3
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	87.8
VANADIUM:	91
ARSENIC:	15.7

SAMPLE:	Willow Wattle soil - 2
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	96.7
VANADIUM:	88

SAMPLE:	Willow Stake soil - 2
TYPE:	Tailings
DEPTH (m):	0.0 - 0.1
COPPER:	608
VANADIUM:	150

SAMPLE:	Willow Seedling soil - 6
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	115
VANADIUM:	90

SAMPLE:	Willow soil - 4
TYPE:	Background
DEPTH (m):	0.0 - 0.1
COPPER:	23.3
VANADIUM:	63

SAMPLE:	Rye grass soil - 2
TYPE:	Native
DEPTH (m):	0.0 - 0.1
COPPER:	109
VANADIUM:	81

SAMPLE:	ST06-03
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	874
VANADIUM:	196

SAMPLE:	ST06-04-01
TYPE:	Tailings
DEPTH (m):	0.0 - 0.2
COPPER:	889
MOLYBDENUM:	6.0
VANADIUM:	191

SAMPLE:	SS15-12	SS15-12	SS15-12
TYPE:	Tailings	Native	Native
DEPTH (m):	0.15	0.3	0.35
COPPER:	616	52.6	111
VANADIUM:	222	45	84

SAMPLE:	ST04-03
TYPE:	Background
DEPTH (m):	0.1 - 0.3
COPPER:	28.7
VANADIUM:	88

SAMPLE:	SS15-14	SS15-14	SS15-14	SS15-14	SS15-14	SS15-14
TYPE:	Tailings	Tailings	Tailings	Native	Native	Native
DEPTH (m):	0.05	0.05	0.2	0.7	0.8	0.8
COPPER:	480	469	612	151	61.9	64.2
VANADIUM:	189	198	143	79	63	70
ARSENIC:	8.7	8.7	8.9	16.4	15.1	17.3
CHROMIUM:	15.1	15.3	14.9	64.7	47.1	51.4
CADMIUM:	0.41	0.11	0.15	3.37	0.66	0.67
SELENIUM:	0.7	0.7	0.8	2.3	0.3	0.4
ZINC:	42.2	42.2	44.6	209	97.6	113

ST06-01, CSS16-34, SS15-11, CSS16-35, ST06-02, ST06-03, ST06-04, P15, SS15-12, P17, TRANSECT 6, ST05-02, TRANSECT 5, ST05-03, ST04-01, ST04-02, TRANSECT 4, ST04-03, Willow Wattle soil - 4, ST03-05, ST03-03, ST03-04, ST03-02, ST03-01, Willow Stake soil - 1, Willow Wattle soil - 1, Willow Seedling soil - 2, Willow Wattle soil - 2, Willow Seedling soil - 4, Willow Seedling soil - 1, Willow Wattle soil - 3, Willow Wattle soil - 6, Willow Seedling soil - 6, Willow Stake soil - 6, Willow soil - 5, Willow soil - 4, SS15-14

LEGEND

GOLDER SOIL SAMPLE LOCATION
- METALS
- NUTRIENTS
- NUTRIENTS AND METALS
- SNC SOIL SAMPLE LOCATION
- TERRESTRIAL HABITAT SAMPLE LOCATION
- SOIL TRANSECT
- POST BREACH AFFECTED AREA EXTENT
- NEW HAZELTINE CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- ROAD
- BERRY
- RYE GRASS
- WILLOW

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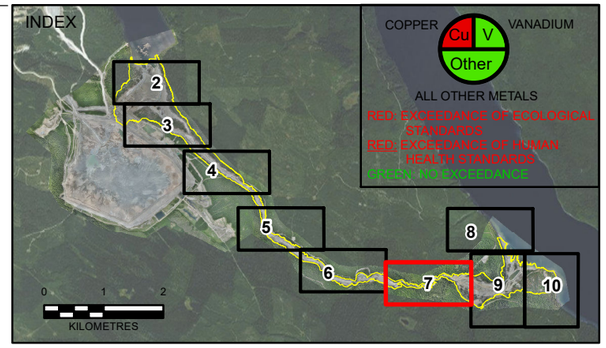

0 75 150
1:3,500 METRES

NOTES
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REFERENCES

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CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

CONSULTANT
Golder Associates

PROJECT
DETAILED SITE INVESTIGATION

TITLE
DETAILED SITE INVESTIGATION UPDATE

YYYY-MM-DD	2017-02-15
DESIGNED	KE
PREPARED	RH / CD
REVIEWED	RZG
APPROVED	RZG

PROJECT NO.	CONTROL	REV.	FIGURE
1662612	22200 / 22243	0	A-7

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm
0

LEGEND

GOLDER SOIL SAMPLE LOCATION
- METALS
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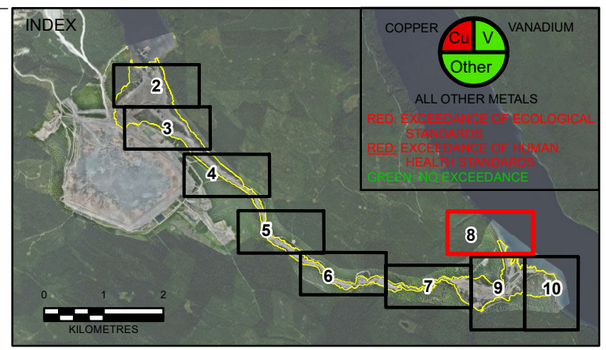
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- ROAD
- BERRY
- RYE GRASS
- WILLOW
- WATERBODY



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YYYY-MM-DD	2017-02-15
DESIGNED	KE
PREPARED	RH / CD
REVIEWED	RZG
APPROVED	RZG

PROJECT
DETAILED SITE INVESTIGATION

TITLE
DETAILED SITE INVESTIGATION UPDATE

PROJECT NO.	CONTROL	REV.	FIGURE
1662612	22200 / 22243	0	**A-8**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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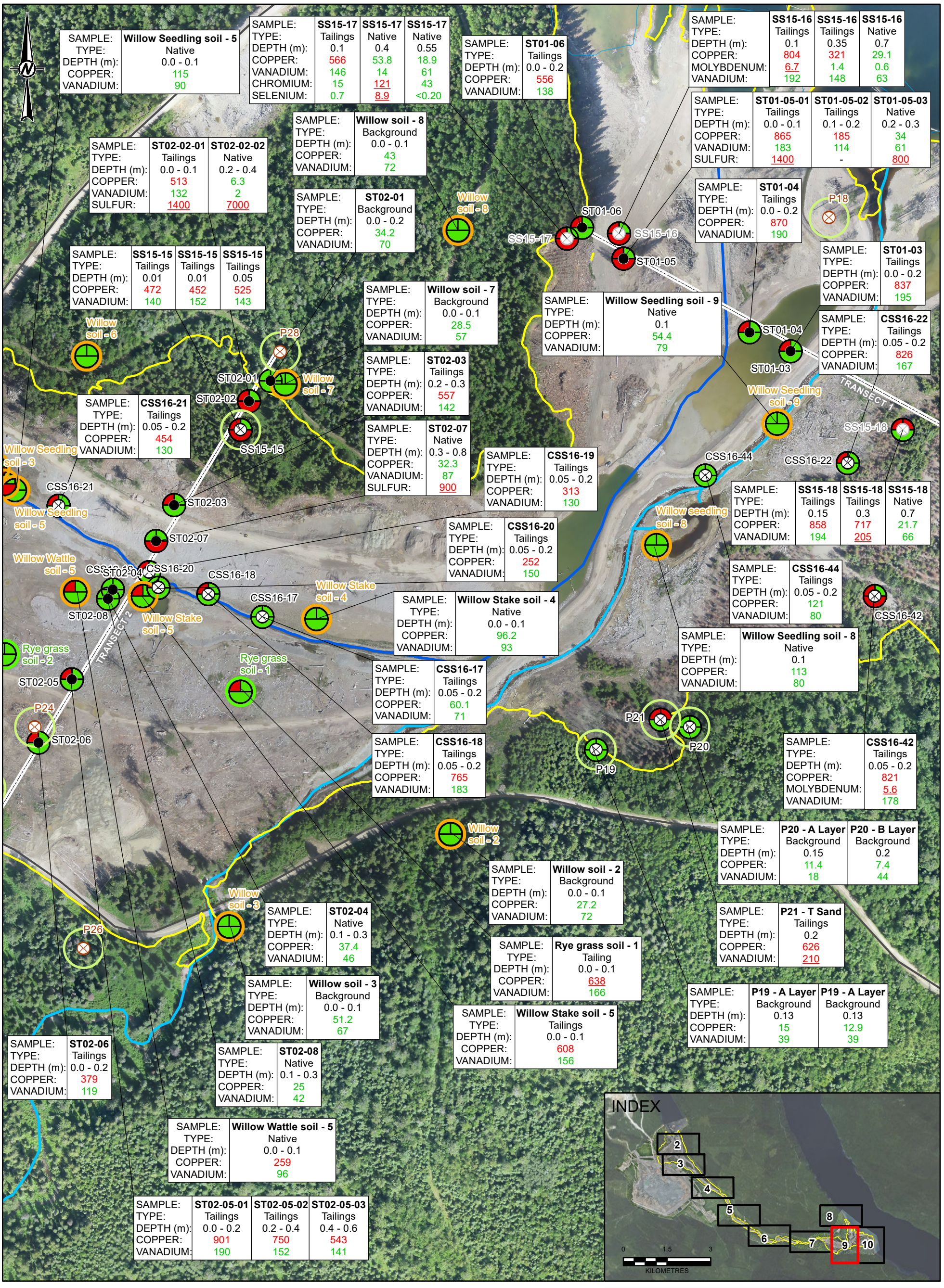

LEGEND

GOLDER SOIL SAMPLE LOCATION
- METALS
- NUTRIENTS
- NUTRIENTS AND METALS
- SNC SOIL SAMPLE LOCATION

SAMPLE LOCATION
- BERRY
- RYE GRASS
- WILLOW
- TERRESTRIAL HABITAT SAMPLE LOCATION
- POST BREACH AFFECTED AREA EXTENT
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- ROAD
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- WATERBODY

0 75 150
1:3,500 METRES

NOTE(S)
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REFERENCE(S)

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DESIGNED	KE
PREPARED	CD
REVIEWED	RZG
APPROVED	RZG

PROJECT
DETAILED SITE INVESTIGATION

TITLE
DETAILED SITE INVESTIGATION UPDATE

PROJECT NO.	CONTROL	REV.	FIGURE
1662612	22200 / 22243	0	A-9

SAMPLE:	SS15-19	SS15-19	SS15-19	SS15-19	SS15-19	SS15-19
TYPE:	Tailings	Tailings	Native	Native	Native	Native
DEPTH (m):	0.05	0.35	0.45	0.45	0.5	0.5
COPPER:	811	504	28	23.1	7.2	4.4
VANADIUM:	184	162	32	23	31	31

SAMPLE:	P23 - A B Layer
TYPE:	Native
DEPTH (m):	0.25
COPPER:	12.8
VANADIUM:	57

SAMPLE:	CSS16-11
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	706
VANADIUM:	147

SAMPLE:	CSS16-10
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	819
VANADIUM:	175

SAMPLE:	CSS16-13
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	340
VANADIUM:	113

SAMPLE:	CSS16-46
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	849
VANADIUM:	183

SAMPLE:	CSS16-45
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	455
VANADIUM:	129

SAMPLE:	CSS16-07
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	819
VANADIUM:	181

SAMPLE:	CSS16-09
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	453
VANADIUM:	118

SAMPLE:	CSS16-08
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	624
VANADIUM:	145

SAMPLE:	Willow soil - 1
TYPE:	Background
DEPTH (m):	0.0 - 0.1
COPPER:	19
VANADIUM:	60

SAMPLE:	ST01-01
TYPE:	Background
DEPTH (m):	0.0 - 0.2
COPPER:	16.6
VANADIUM:	81

SAMPLE:	ST01-02-01	ST01-02-02
TYPE:	Tailings	Native
DEPTH (m):	0.0 - 0.1	0.1 - 0.2
COPPER:	473	45.8
VANADIUM:	129	61
SULFUR:	1100	1100

SAMPLE:	CSS16-43
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	848
VANADIUM:	183

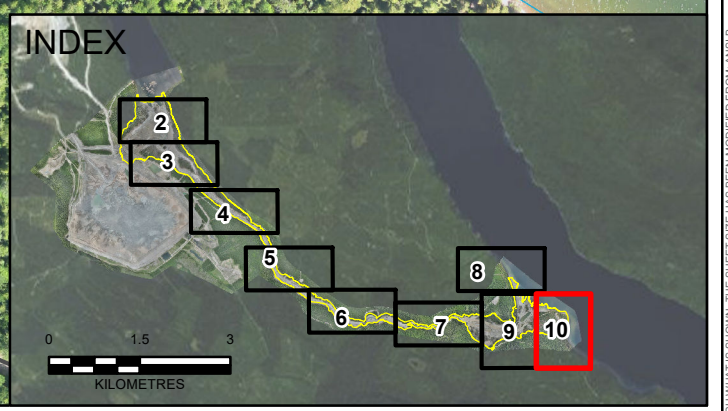
SAMPLE:	ST01-09-01	ST01-09-02
TYPE:	Tailings	Tailings
DEPTH (m):	0.0 - 0.1	0.4 - 0.5
COPPER:	874	483
VANADIUM:	191	152
SULFUR:	1100	-

SAMPLE:	CSS16-12
TYPE:	Tailings
DEPTH (m):	0.05 - 0.2
COPPER:	379
VANADIUM:	114

QUESNEL LAKE

P23
SS15-19
CSS16-46
TRANSECT 1
CSS16-11
CSS16-10
CSS16-07
CSS16-13
ST01-09
CSS16-45
CSS16-43
CSS16-08
ST01-02
ST01-01
CSS16-12
CSS16-09
Willow soil - 1

INDEX



LEGEND

GOLDER SOIL SAMPLE LOCATION
- METALS
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- NUTRIENTS AND METALS
- SNC SOIL SAMPLE LOCATION

SAMPLE LOCATION
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- WATERBODY

0 75 150
1:3,500 METRES

NOTE(S)
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IMPERIAL METALS

CONSULTANT
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YYYY-MM-DD	2017-02-15
DESIGNED	KE
PREPARED	CD
REVIEWED	RZG
APPROVED	RZG

PROJECT
DETAILED SITE INVESTIGATION

TITLE
DETAILED SITE INVESTIGATION UPDATE

PROJECT NO.	CONTROL	REV.	FIGURE
1662612	22200 / 22243	0	A-10

Table 1 - Results of Field Soil Analyses
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample Area	Units	Local Reference Samples									Native Underlying Tailings Samples										Tailings Samples						
Sample ID		P1-A Layer	P1-B Layer	P9-A Layer	P9-B Layer	P14-H Layer	P14-A Layer	P17-A Layer	P19-H Layer	P20-H Layer	P2-A Layer	P2-B Layer	P12-H Layer	P12-A Layer	P13-H/A	P16-H	P21-H	P22-H	P23-H	P23-A/B	P2-T Sand	12-T2 Silty San	P13-T Silt Sanc	P16-T Sand	P21-T Sand	P22-T Silt	P23-T
Date		2015 July 29	2015 July 29	2015 July 30	2015 July 30	2015 July 31	2015 July 31	2015 July 31	2015 August 2	2015 August 2	2015 July 29	2015 July 29	2015 July 31	2015 July 31	2015 July 31	2015 August 1s	2015 August 2	2015 August 2	2015 August 2	2015 August 2	2015 July 29	2015 July 31	2015 July 31	2015 August 1s	2015 August 2	2015 August 2	2015 August 2
Depth (m bgs)		0.05	0.15	0.06	0.1	0.05	0.15	0.1	0.02	0.1	0.55	0.65	0.75	0.85	0.1	0.25	0.5	0.45	0.2	0.25	0.1	0.65	0.05	0.15	0.2	0.05	0.1
Parameters																											
Temperature	°C	14.4	14.3	19.9	19.2	21.2	21.1	22.1	17.6	17.9	12.7	11.9	17.7	17.9	21.2	23.1	18.3	23.3	22.5	22.9	13.9	12.7	21.2	23.1	18.5	22	21.7
Dissolved Oxygen	mg/L	7.31	7.73	8.94	10	7.6	8.95	7.45	9.71	9.26	0.22	0.17	0.38	0.14	6.1	8.23	6.13	8.21	7.79	8.82	3.56	0.88	8.67	8.61	3.85	6.29	4.4
Specific Conductivity	µs/cm	52.3	20.6	24.1	17.3	45.9	21.8	44.9	39.1	48.2	99.6	293.5	281	343	223	103	57.8	224	372.4	253.2	90.4	303	140.7	968	201.3	356.2	204.2
Total Dissolved Solids	g/L	0.0305	0.0136	0.0156	0.0117	0.0299	0.014	0.0293	0.0253	0.0312	0.065	0.1905	0.183	0.223	0.146	0.0676	0.0377	0.1456	0.2424	0.1651	0.0605	0.227	0.0917	0.6435	0.13	0.2307	0.1329
Salinity	ppt.	0.02	0.01	-	-	0.02	0.01	0.02	0.02	0.02	0.05	0.14	0.13	0.16	0.11	0.05	0.03	0.11	0.18	0.12	0.04	0.17	0.07	0.5	0.09	0.18	0.1
pH	pH	5.65	5.76	4.99	5.55	5.91	5.52	5.08	6.89	5.8	6.53	6.3	6.75	6.73	6.12	7.63	6.49	7.61	7.6	7.98	7.5	6.87	7.14	7.38	8.06	7.79	8.21
Oxidation-reduction Potential	mV	215.7	295.9	283.8	257.8	228.9	237	271.9	227.2	228.8	48.6	-16.1	-67.5	-69.2	216.9	199.6	117	123.8	139.9	118.2	-46.2	-100.7	206.2	209.7	10.2	160.4	105.1

Notes:
MPMC = Mount Polley Mining Corporation
m bgs = metres below ground surface; mg/L = milligram per litre
µs/cm = microsiemens per centimetre; g/L = grams per litre
ppt. = parts per thousand; mV = millivolts

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID		BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	RYE GRASS SOIL-1	RYE GRASS SOIL-3	RYE GRASS SOIL-4	RYE GRASS SOIL-4X	RYE GRASS SOIL-5	RYE GRASS SOIL-7	RYE GRASS SOIL-7X	RYE GRASS SOIL-9	RYE GRASS SOIL-10	BERRIES TAILINGS-1	BERRIES TAILINGS-2	BERRIES TAILINGS-3	BERRIES TAILINGS-4	ST01-02	ST01-05
Coordinates	Easting												601218	599342	599204	599204	598568	596992	596992	595759	595787	596394	596943	595903	595800	-	-
	Northing												5817077	5817386	5817298	5817298	5817489	5818984	5818984	5820316	5820289	5819395	5819168	5819893	5819977	-	-
Date Sampled													30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	22-Sep-2014	11-Sep-2014
Sample Depth (m bgs)													0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0.0 - 0.1	0.0 - 0.1
QA/QC													-	-	FDA	DUP	-	FDA	DUP	-	-	-	-	-	-	-	-
ALS Sample ID													L1667543-1	L1667543-3	L1667543-4	L1667543-5	L1667543-6	L1667543-8	L1667543-9	L1667543-11	L1667543-12	L1667543-49	L1667543-50	L1667543-51	L1667543-52	-	-
Physical Parameters																											
pH	pH	-		-		-	-		-		-	-	8.08	7.5	8.12	7.98	8.06	7.84	7.82	7.91	7.92	7.59	7.55	8.54	7.99	7.66	8.72
Total Organic Carbon	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1	0.23
Total Inorganic Carbon	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.31
Inorganic Carbon (as CACO3)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	2.6
Moisture	%	-		-		-	-		-		-	-	8.80	11.9	13.4	13.0	8.37	14.4	14.9	7.93	7.79	4.16	9.67	1.90	21.7	47	15
Oxidation-Reduction Potential (ORP)	mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																											
Gravel	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1	8.2
Sand (0.125mm - 0.063mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	19
Sand (0.25mm - 0.125mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1	19
Sand (0.50mm - 0.25mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1	5.4
Sand (1.00mm - 0.50mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1	1.5
Sand (2.00mm - 1.00mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1	2.3
Silt (0.0312mm - 0.004mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	21
Silt (0.063mm - 0.0312mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	16
Clay	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	7.3
Plant Available Nutrients																											
Total Available Nitrogen	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																											
Total Carbon by Combustion	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals																											
Aluminum	mg/kg	-		-		-	-		-		-	-	16300	15700	17700	16400	17900	15900	15700	14500	17900	13800	12300	11000	12600	21900	16700
Antimony	mg/kg	-		-		20	-		-		(20)	-	0.37	0.29	0.38	0.41	0.39	0.37	0.37	0.56	0.49	0.31	0.31	0.28	0.30	0.56	0.37
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	11.2	6.72	12.1	11.5	12.0	11.6	11.7	11.4	7.40	8.61	9.02	9.26	10.1	13.3	11.0
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	149	116	206	202	166	163	160	145	123	147	159	124	125	219	157
Beryllium	mg/kg	-		-		4	-		-		(4)	-	0.60	0.51	0.68	0.65	0.67	0.60	0.60	0.58	0.54	0.50	0.49	0.47	0.51	0.74	0.62
Bismuth	mg/kg	-		-		-	-		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	< 0.2	< 0.2
Boron	mg/kg	-		-		-	-		-		-	-	8.3	<5.0	7.5	6.6	7.5	8.9	9.5	5.9	<5.0	6.8	7.3	5.8	7.4	-	-
Boron (Hot Water Soluble)	mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.179	0.264	0.157	0.180	0.150	0.152	0.181	0.212	0.051	0.155	0.145	0.170	0.134	0.29	0.13
Calcium	mg/kg	-		-		-	-		-		-	-	25200	11400	23600	22000	26200	24400	23500	19000	8160	19100	20000	19100	21400	23800	25200
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	15.4	28.1	12.8	13.2	10.6	11.8	13.4	17.3	45.8	13.5	13.5	8.39	9.56	29.1	10.7
Cobalt	mg/kg	-		-		40	-		-		(50)	-	16.0	13.3	18.1	17.3	18.0	16.4	16.0	14.7	14.3	13.2	13.2	12.8	13.4	19.0	15.7
Copper	mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**638**	**216**	**707**	**638**	**809**	**775**	**735**	**1020**	**183**	**608**	**514**	**1070**	**927**	**473**	**865**
Iron	mg/kg	-		-		-	-		-		-	-	44900	33200	43700	40100	49200	49700	50400	44100	41200	47400	52500	47500	50700	41000	48900
Lead	mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	5.34	6.55	5.32	5.51	4.67	5.06	5.17	5.92	7.53	4.11	3.95	4.39	4.03	8.6	4.8
Lithium	mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	17.2	18.1	18.9	18.3	16.8	16.0	15.7	15.6	14.8	12.3	12.3	11.6	11.5	22.6	14.1
Magnesium	mg/kg	-		-		-	-		-		-	-	9690	6850	10900	10200	10700	9420	9390	8310	7120	6760	6470	6820	6850	11500	9150
Manganese	mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	630	788	735	746	667	627	610	645	407	494	476	443	476	927	604
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	0.07
Molybdenum	mg/kg	-		-		5	-		-		(10)	-	4.03	1.46	3.87	3.30	4.73	4.00	4.64	3.86	1.95	4.05	3.23	5.27	4.52	3.6	3.9
Nickel	mg/kg	-		-		150	-		-		(100)	150	12.2	22.3	10.2	10.4	9.25	8.50	9.18	13.1	26.7	10.1	9.98	5.78	6.51	23.6	9.2
Phosphorus	mg/kg	-		-		-	-		-		-	-	1240	884	1320	1260	1410	1340	1300	1170	984	1120	1320	1040	1210	1180	1160
Potassium	mg/kg	-		-			-		-		-	-	1630	1440	1480	1390	1610	1450	1380	1110	1200	1140	1080	910	990	2010	1360
Selenium	mg/kg	-		-		2	-		-		(3)	4	0.91	0.31	0.89	0.80	1.07	0.96	0.91	0.99	0.31	0.78	0.75	1.15	0.98	1.2	1.1
Silver	mg/kg	-		-		20	-		-		(20)	-	0.27	0.19	0.38	0.33	0.38	0.34	0.32	0.50	0.13	0.30	0.26	0.38	0.32	0.3	0.3
Sodium	mg/kg	-		-		-	-		-		-	-	1530	323	840	769	955	873	847	699	284	803	747	881	916	800	1130
Strontium	mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	159	77.1	163	153	179	157	147	121	85	148	148	122	134	180	165
Sulfur	mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-	1100	1400
Thallium	mg/kg	-		-		2	-		-		-	-	<0.050	0.068	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.075	<0.050	<0.050	<0.050	<0.050	0.081	< 0.05
Tin	mg/kg	-		-		5	-		-		(50)	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	< 2	< 2
Titanium	mg/kg	-		-		-	-		-		-	-	1520	908	1420	1190	1670	1650	1610	1130	827	1100	1030	822	1170	1410	1560
Uranium	mg/kg	-		-		16[5]	-		-		(16)[5]	-	1.04	0.649	1.06	0.966	1.11	1.06	1.00	0.756	0.880	0.849	0.785	0.604	0.719	1.51	0.98
Vanadium	mg/kg	-		-		200	-		-		(200)	-	166	97.1	163	150	185	195	194	160	114	178	192	176	197	129	183
Zinc	mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	58.5	64.0	66.9	65.6	62.7	55.4	55.8	59.1	54.1	41.5	43.7	50.3	48.9	77.1	54.6
Zirconium	mg/kg	-		-		-	-		-		-	-	5.3	1.3	3.2	2.7	7.7	6.3	5.7	5.7	4.3	2.0	2.9	4.7	5.7	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	ST01-05	ST01-06	ST01-09	ST01-09	ST02-02	ST02-06	ST05-02	ST14-02	ST16-02	ST16-06	ST17-02	ST17-08	ST17-08	ST18-05	ST18-05
Coordinates	Easting													-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Northing													-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Date Sampled		Units	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		11-Sep-2014	11-Sep-2014	22-Sep-2014	22-Sep-2014	10-Sep-2014	10-Sep-2014	15-Sep-2014	14-Sep-2014	13-Sep-2014	13-Sep-2014	12-Sep-2014	12-Sep-2014	12-Sep-2014	17-Sep-2014	17-Sep-2014
Sample Depth (m bgs)														0.1 - 0.2	0.0 - 0.2	0.0 - 0.1	0.4 - 0.5	0.0 - 0.1	0.0 - 0.2	0.0 - 0.2	0.0 - 0.2	0.0 - 0.1	0.0 - 0.2	0.1 - 0.2	0.0 - 0.1	0.2 - 0.3	0.0 - 0.2	0.2 - 0.4
QA/QC														-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALS Sample ID														-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																												
pH		pH	-		-		-	-		-		-	-	7.99	8.1	8.72	7.9	8.07	8.31	8.56	8.8	8.9	8.35	8.42	8.66	8.61	8.66	8.71
Total Organic Carbon		%	-		-		-	-		-		-	-	-	-	0.11	-	0.46	-	0.35	< 0.1	-	0.12	0.29	-	-	-	-
Total Inorganic Carbon		%	-		-		-	-		-		-	-	0.17	0.24	0.46	0.38	0.21	0.23	0.31	0.24	0.28	0.33	0.46	0.38	0.27	0.26	0.19
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	1.4	2.0	3.8	3.2	1.7	1.9	2.6	2.0	2.3	2.7	3.8	3.2	2.3	2.2	1.6
Moisture		%	-		-		-	-		-		-	-	13	25	18	27	25	8.9	19	9.7	21	18	49	9.7	16	24	25
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																												
Gravel		%	-		-		-	-		-		-	-	-	-	0.49	-	-	-	-	< 0.1	-	< 0.1	< 0.1	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	19	-	-	-	-	10	-	29	34	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	19	-	-	-	-	39	-	48	35	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	5.3	-	-	-	-	36	-	2.9	1.6	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	1.1	-	-	-	-	< 0.1	-	< 0.1	0.1	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	0.85	-	-	-	-	< 0.1	-	< 0.1	< 0.1	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	26	-	-	-	-	6.4	-	7.2	11	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	19	-	-	-	-	7.2	-	12	17	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	9.3	-	-	-	-	1.8	-	1.2	1.6	-	-	-	-
Plant Available Nutrients																												
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																												
Total Carbon by Combustion		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals																												
Aluminum		mg/kg	-		-		-	-		-		-	-	11700	12900	16800	14000	11800	11100	13400	11800	12100	13600	14600	13000	11300	17200	13000
Antimony		mg/kg	-		-		20	-		-		(20)	-	0.45	0.36	0.36	0.36	0.32	0.37	0.37	0.26	0.28	0.33	0.37	0.36	0.27	0.39	0.49
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	8.8	10.2	11.7	9.9	8.6	8.7	9.5	8.7	9.4	9.6	10.3	11.0	9.6	11.9	11.2
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	66	159	168	155	113	75	126	136	136	147	155	106	96	176	118
Beryllium		mg/kg	-		-		4	-		-		(4)	-	0.36	0.46	0.59	0.5	0.41	0.39	0.52	0.46	0.51	0.52	0.56	0.53	0.51	0.67	0.53
Bismuth		mg/kg	-		-		-	-		-		-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (Hot Water Soluble)		mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.11	0.19	0.14	0.18	0.12	0.11	0.12	0.15	0.15	0.13	0.15	0.15	0.17	0.13	0.19
Calcium		mg/kg	-		-		-	-		-		-	-	12500	17600	25400	19700	16300	14500	20000	18400	20600	21000	23500	22200	20900	26500	21800
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	23.1	15.7	12.1	18.6	15.4	20.2	14.6	8.5	9.1	9.1	11.3	10.9	10.5	10.3	10.0
Cobalt		mg/kg	-		-		40	-		-		(50)	-	10.7	12.6	17.0	14.0	11.0	10.2	13.0	12.3	12.9	12.3	14.4	14.2	14.5	17.4	13.5
Copper		mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**185**	**556**	**874**	**483**	**513**	**379**	**633**	**998**	**910**	**977**	**824**	**1210**	**1110**	**869**	**1070**
Iron		mg/kg	-		-		-	-		-		-	-	34500	39600	50600	42700	37200	34100	42600	42600	48600	42300	56900	52300	60500	49400	50800
Lead		mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	4.4	4.7	5.3	5.3	4.4	4.1	4.7	4.0	3.7	4.1	4.5	5.0	4.1	5.3	4.8
Lithium		mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	11.3	10.7	15.9	13.9	10.7	9.2	11.7	10.2	10.4	12.0	12.4	12.3	11.6	16.9	12.0
Magnesium		mg/kg	-		-		-	-		-		-	-	7090	6360	10300	7340	5830	6150	6960	6900	7000	7090	7530	7710	6990	10600	7090
Manganese		mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	513	953	598	608	491	488	537	431	456	467	533	566	476	623	502
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.06	0.08	0.08	0.08	0.07	0.06	0.06	0.08	0.08	0.08	0.08	0.09	0.08	0.09	0.1
Molybdenum		mg/kg	-		-		5	-		-		(10)	-	1.2	4.3	4.6	3.0	3.3	3.1	3.3	4.5	4.7	5.1	5.4	4.8	6.0	4.1	4.6
Nickel		mg/kg	-		-		150	-		-		(100)	150	15.7	12.3	9.3	13.5	10.2	12.6	11.2	6.4	6.3	6.7	8.4	6.8	6.8	8.4	6.5
Phosphorus		mg/kg	-		-		-	-		-		-	-	948	962	1330	1140	865	851	1120	1040	1080	996	1240	1100	1220	1420	1080
Potassium		mg/kg	-		-			-		-		-	-	680	1010	1570	1280	870	730	1080	990	1050	1150	1270	950	880	1680	1050
Selenium		mg/kg	-		-		2	-		-		(3)	4	0.4	0.9	1.1	0.8	0.7	0.6	0.8	1.0	1.0	1.1	1.0	1.4	1.2	1.1	1.2
Silver		mg/kg	-		-		20	-		-		(20)	-	< 0.1	0.2	0.4	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.5
Sodium		mg/kg	-		-		-	-		-		-	-	440	830	1100	800	660	490	850	930	920	1050	1040	740	790	1140	940
Strontium		mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	85	135	174	140	112	93	138	134	135	171	177	108	104	183	134
Sulfur		mg/kg					500						-	-	-	1100	-	1400	-	1000	1100	-	1200	1300	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tin		mg/kg	-		-		5	-		-		(50)	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Titanium		mg/kg	-		-		-	-		-		-	-	1020	1070	1410	1070	941	1050	1210	799	1000	1170	1340	1180	907	1510	1260
Uranium		mg/kg	-		-		16[5]	-		-		(16)[5]	-	0.57	0.78	0.98	0.89	0.69	0.58	0.76	0.58	0.63	0.76	0.88	0.76	0.63	1.03	0.84
Vanadium		mg/kg	-		-		200	-		-		(200)	-	114	138	191	152	132	119	158	162	183	166	(218)	(201)	(231)	191	198
Zinc		mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	48.2	46.3	56.4	50.3	40.9	42.7	44.9	45.5	45.7	44.2	46.8	51.1	49.9	57.5	50.3
Zirconium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID Coordinates Easting Northing Date Sampled Sample Depth (m bgs) QA/QC ALS Sample ID	Units	BC CSR AL Standards: MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	BC CSR PLStandards: MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	Protocol 4 Regional Background Concentrations*	ST01-03 - - 11-Sep-2014 0.0 - 0.2 - -	ST01-04 - - 11-Sep-2014 0.0 - 0.2 - -	ST02-03 - - 10-Sep-2014 0.2 - 0.3 - -	ST02-05 - - 10-Sep-2014 0.0 - 0.2 - -	ST02-05 - - 10-Sep-2014 0.2 - 0.4 - -	ST02-05 - - 10-Sep-2014 0.4 - 0.6 - -	ST03-02 - - 15-Sep-2014 0.0 - 0.1 - -	ST03-03 - - 9-Sep-2014 0.0 - 0.1 - -	ST03-03 - - 9-Sep-2014 0.1 - 0.3 - -	ST03-03 - - 9-Sep-2014 0.3 - 0.6 - -	ST03-04 - - 9-Sep-2014 0.0 - 0.2 - -	ST03-05 - - 10-Sep-2014 0.0 - 0.5 - -	ST04-02 - - 15-Sep-2014 0.0 - 0.1 - -	ST06-02 - - 15-Sep-2014 0.0 - 0.1 - -	ST06-03 - - 22-Sep-2014 0.0 - 0.2 - -
Physical Parameters																											
pH	pH	-		-		-	-		-		-	-	8.57	8.28	8.45	8.24	8.23	8.32	8.59	8.44	8.58	8.93	8.24	8.37	9.09	8.5	8.51
Total Organic Carbon	%	-		-		-	-		-		-	-	-	-	-	-	-	0.15	0.13	-	0.17	0.1	-	0.13	< 0.1	< 0.1	-
Total Inorganic Carbon	%	-		-		-	-		-		-	-	0.18	0.31	0.1	0.29	0.17	0.23	0.32	0.37	0.35	0.66	0.31	0.22	0.37	0.33	0.4
Inorganic Carbon (as CACO3)	%	-		-		-	-		-		-	-	1.5	2.6	0.87	2.4	1.5	1.9	2.7	3.1	2.9	5.5	2.6	1.9	3.1	2.7	3.4
Moisture	%	-		-		-	-		-		-	-	16	16	6.1	17	6.8	8.8	16	18	8.4	23	16	9.8	19	15	21
Oxidation-Reduction Potential (ORP)	mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																											
Gravel	%	-		-		-	-		-		-	-	-	-	-	-	-	-	5.1	-	< 0.1	-	-	-	< 0.1	1.6	-
Sand (0.125mm - 0.063mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	19	-	12	-	-	-	17	17	-
Sand (0.25mm - 0.125mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	20	-	43	-	-	-	46	23	-
Sand (0.50mm - 0.25mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	4.1	-	38	-	-	-	18	4.0	-
Sand (1.00mm - 0.50mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	0.66	-	0.31	-	-	-	< 0.1	0.35	-
Sand (2.00mm - 1.00mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	0.78	-	< 0.1	-	-	-	< 0.1	0.18	-
Silt (0.0312mm - 0.004mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	24	-	2.2	-	-	-	7.5	25	-
Silt (0.063mm - 0.0312mm)	%	-		-		-	-		-		-	-	-	-	-	-	-	-	19	-	4.6	-	-	-	9.6	19	-
Clay	%	-		-		-	-		-		-	-	-	-	-	-	-	-	8.4	-	0.47	-	-	-	1.8	8.5	-
Plant Available Nutrients																											
Total Available Nitrogen	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																											
Total Carbon by Combustion	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals																											
Aluminum	mg/kg	-		-		-	-		-		-	-	16400	18900	12500	16000	11800	11900	16300	14700	11100	16700	16300	11500	12000	15600	17100
Antimony	mg/kg	-		-		20	-		-		(20)	-	0.38	0.50	0.48	0.35	0.36	0.42	0.43	0.40	0.33	0.40	0.38	0.36	0.37	0.38	0.36
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	11.2	12.4	11.4	11.4	9.6	9.8	11.9	12.1	10.5	12.8	11.7	8.0	11.8	11.6	11.5
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	179	191	97	160	92	98	185	165	90	173	175	87	98	184	178
Beryllium	mg/kg	-		-		4	-		-		(4)	-	0.59	0.71	0.46	0.61	0.45	0.42	0.65	0.54	0.48	0.62	0.63	0.38	0.5	0.64	0.6
Bismuth	mg/kg	-		-		-	-		-		-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (Hot Water Soluble)	mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.12	0.15	0.19	0.17	0.13	0.16	0.13	0.21	0.18	0.17	0.17	0.13	0.23	0.15	0.14
Calcium	mg/kg	-		-		-	-		-		-	-	26000	28800	16200	24800	17000	15600	27000	25200	21200	25700	25800	15300	23200	25700	27000
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	10.4	10.2	18.7	10.8	15.5	19.3	11.0	12.3	8.5	10.1	10.2	18.4	11.7	10.4	10.5
Cobalt	mg/kg	-		-		40	-		-		(50)	-	16.3	18.0	12.2	16.4	12.1	11.8	16.9	14.8	11.2	17.2	17.0	10.9	13.4	17.4	18.0
Copper	mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**837**	**870**	**557**	**901**	**750**	**543**	**909**	**794**	**1110**	**901**	**884**	**389**	**1080**	**898**	**874**
Iron	mg/kg	-		-		-	-		-		-	-	52800	51000	38900	50800	41000	39300	54900	49000	38600	52400	50200	33000	53400	55100	51100
Lead	mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	6.6	5.7	5.2	5.0	4.3	5.2	5.2	5.7	4.4	5.5	5.4	4.3	4.9	5.1	5.0
Lithium	mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	15.3	17.5	11.8	14.7	10.3	11.1	15.9	13.4	11.7	16.5	15.2	10.6	11.9	16.1	17.5
Magnesium	mg/kg	-		-		-	-		-		-	-	9390	11000	7570	9630	6850	6950	9700	9220	6800	10100	10300	6550	7140	10100	10700
Manganese	mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	614	688	566	632	514	556	635	619	519	632	641	486	599	602	613
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.08	0.07	0.1	0.08	0.07	0.08	0.08	0.09	0.1	0.08	0.07	0.06	0.1	0.08	0.07
Molybdenum	mg/kg	-		-		5	-		-		(10)	-	4.4	4.9	2.8	4.4	2.8	4.2	4.7	3.7	5.3	4.1	4.3	3.1	6.3	4.6	4.5
Nickel	mg/kg	-		-		150	-		-		(100)	150	7.9	8.6	12.0	9.0	10.2	13.3	8.0	8.8	6.3	8.0	7.9	12.8	7.2	8.1	8.6
Phosphorus	mg/kg	-		-		-	-		-		-	-	1250	1410	986	1390	997	982	1390	1430	1010	1310	1360	876	1200	1480	1310
Potassium	mg/kg	-		-			-		-		-	-	1470	1600	850	1380	850	840	1430	1370	760	1440	1470	710	970	1440	1660
Selenium	mg/kg	-		-		2	-		-		(3)	4	1.0	1.2	0.6	1.1	0.8	0.6	1.1	0.9	1.0	1.1	1.1	0.5	1.2	1.2	1.1
Silver	mg/kg	-		-		20	-		-		(20)	-	0.4	0.3	0.3	0.4	0.3	0.2	0.3	0.3	0.4	0.4	0.3	0.2	0.4	0.4	0.3
Sodium	mg/kg	-		-		-	-		-		-	-	1020	1210	580	1080	730	550	1020	920	670	1040	1110	570	750	1090	1220
Strontium	mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	153	179	103	155	105	99	161	129	79	151	148	104	97	157	175
Sulfur	mg/kg					500						-	-	-	-	-	-	500	1300	-	2100	1300	-	800	1500	1200	-
Thallium	mg/kg	-		-		2	-		-		-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05
Tin	mg/kg	-		-		5	-		-		(50)	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Titanium	mg/kg	-		-		-	-		-		-	-	1610	1760	1070	1290	1090	998	1670	1400	986	1410	1460	930	1310	1290	1420
Uranium	mg/kg	-		-		16[5]	-		-		(16)[5]	-	0.99	1.15	0.67	0.89	0.63	0.71	1.08	0.91	0.67	0.94	1.01	0.54	0.85	0.94	0.93
Vanadium	mg/kg	-		-		200	-		-		(200)	-	195	190	142	190	152	141	(211)	191	152	196	191	116	(213)	(205)	196
Zinc	mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	53.3	62.6	49.7	60.2	46.5	48.7	55.4	54.1	52.6	60.0	57.3	44.8	52.0	55.7	57.8
Zirconium	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID Coordinates Easting Northing Date Sampled Sample Depth (m bgs) QA/QC ALS Sample ID	Units	BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	ST06-04 - - 22-Sep-2014 0.0 - 0.2 - -	ST07-02 - - 11-Sep-2014 0.0 - 0.0 - -	ST07-03 - - 11-Sep-2014 0.0 - 0.1 - -	ST07-03 - - 11-Sep-2014 0.2 - 0.5 - -	ST08-02 - - 15-Sep-2014 0.0 - 0.2 - -	ST08-02 - - 15-Sep-2014 0.4 - 0.4 - -	ST08-03 - - 15-Sep-2014 0.0 - 0.1 - -	ST08-04 - - 15-Sep-2014 0.0 - 0.1 - -	ST08-05 - - 15-Sep-2014 0.1 - 0.2 - -	ST09-02 - - 15-Sep-2014 0.0 - 0.2 - -	ST09-03 - - 15-Sep-2014 0.0 - 0.1 - -	ST10-02 - - 14-Sep-2014 0.0 - 0.1 - -	ST10-03 - - 14-Sep-2014 0.0 - 0.1 - -	ST10-04 - - 14-Sep-2014 0.0 - 0.2 - -	ST11-02 - - 14-Sep-2014 0.0 - 0.2 - -
		MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic															
Physical Parameters																										
pH	pH	-		-		-	-		-		-	-	8.59	8.31	8.35	8.42	8.49	8.36	8.77	8.52	8.28	8.58	8.42	8.42	8.34	8.54	8.81
Total Organic Carbon	%	-		-		-	-		-		-	-	-	0.12	-	0.17	< 0.1	0.12	-	-	-	-	-	< 0.1	-	-	< 0.1
Total Inorganic Carbon	%	-		-		-	-		-		-	-	0.46	0.4	0.35	0.41	0.47	0.4	0.33	0.32	0.17	0.34	0.33	0.31	0.36	0.35	0.3
Inorganic Carbon (as CACO3)	%	-		-		-	-		-		-	-	3.8	3.3	2.9	3.4	3.9	3.3	2.8	2.7	1.4	2.9	2.7	2.6	3.0	2.9	2.5
Moisture	%	-		-		-	-		-		-	-	19	16	16	20	21	11	24	12	10	24	13	14	18	17	17
Oxidation-Reduction Potential (ORP)	mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																										
Gravel	%	-		-		-	-		-		-	-	-	-	-	17	0.58	-	-	-	-	-	-	0.11	-	-	< 0.1
Sand (0.125mm - 0.063mm)	%	-		-		-	-		-		-	-	-	-	-	14	11	-	-	-	-	-	-	18	-	-	13
Sand (0.25mm - 0.125mm)	%	-		-		-	-		-		-	-	-	-	-	11	9.0	-	-	-	-	-	-	15	-	-	38
Sand (0.50mm - 0.25mm)	%	-		-		-	-		-		-	-	-	-	-	2.9	1.8	-	-	-	-	-	-	2.6	-	-	33
Sand (1.00mm - 0.50mm)	%	-		-		-	-		-		-	-	-	-	-	1.1	0.37	-	-	-	-	-	-	0.12	-	-	0.55
Sand (2.00mm - 1.00mm)	%	-		-		-	-		-		-	-	-	-	-	1.1	0.4	-	-	-	-	-	-	< 0.1	-	-	< 0.1
Silt (0.0312mm - 0.004mm)	%	-		-		-	-		-		-	-	-	-	-	27	39	-	-	-	-	-	-	31	-	-	6.5
Silt (0.063mm - 0.0312mm)	%	-		-		-	-		-		-	-	-	-	-	16	17	-	-	-	-	-	-	21	-	-	7.8
Clay	%	-		-		-	-		-		-	-	-	-	-	10	20	-	-	-	-	-	-	12	-	-	1.4
Plant Available Nutrients																										
Total Available Nitrogen	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																										
Total Carbon by Combustion	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals																										
Aluminum	mg/kg	-		-		-	-		-		-	-	18500	20300	15600	18300	21200	13900	11500	16800	11100	10800	16300	17400	18100	16700	10500
Antimony	mg/kg	-		-		20	-		-		(20)	-	0.42	0.46	0.41	0.40	0.51	0.37	0.37	0.35	0.28	0.27	0.33	0.39	0.44	0.38	0.36
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	12.0	13.6	11.9	11.9	14.5	8.0	11.5	10.8	8.5	9.5	10.7	12.7	12.3	12.2	11.8
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	191	211	180	194	218	101	117	196	93	107	177	191	192	186	86
Beryllium	mg/kg	-		-		4	-		-		(4)	-	0.68	0.76	0.64	0.7	0.79	0.41	0.51	0.61	0.36	0.48	0.64	0.66	0.71	0.68	0.44
Bismuth	mg/kg	-		-		-	-		-		-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (Hot Water Soluble)	mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.14	0.14	0.18	0.14	0.16	0.18	0.15	0.11	0.12	0.17	0.1	0.14	0.16	0.13	0.22
Calcium	mg/kg	-		-		-	-		-		-	-	27800	29900	27500	27700	31300	20500	23100	26200	14200	19700	25800	27800	27800	27600	21500
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	11.1	11.1	9.9	10.7	11.6	29.6	12.0	9.8	15.8	10.0	9.2	10.5	10.1	10.3	15.8
Cobalt	mg/kg	-		-		40	-		-		(50)	-	18.8	19.7	16.8	18.2	21.1	12.0	13.9	17.5	10.5	12.3	17.2	18.8	17.9	17.3	16.4
Copper	mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**889**	**938**	**897**	**892**	**934**	**207**	**875**	**882**	**544**	**1000**	**885**	**925**	**863**	**899**	**1350**
Iron	mg/kg	-		-		-	-		-		-	-	50400	50800	54200	50900	46100	34800	57200	52900	34200	44400	52200	54900	49400	52300	72600
Lead	mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	5.7	6.3	5.0	5.5	6.9	6.3	4.7	5.2	4.0	4.3	4.4	5.7	4.7	5.1	5.0
Lithium	mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	18.9	19.7	16.8	17.9	22.3	14.3	12.4	16.6	10.4	12.0	16.0	18.1	17.1	17.0	13.0
Magnesium	mg/kg	-		-		-	-		-		-	-	11700	12900	9640	11300	14400	8120	6880	10000	5860	6820	9760	11200	10700	10100	7180
Manganese	mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	683	766	604	650	839	549	555	592	448	489	557	671	655	642	587
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.08	0.08	0.08	0.07	0.08	0.07	0.1	0.06	0.05	0.1	0.07	0.07	0.07	0.08	0.11
Molybdenum	mg/kg	-		-		5	-		-		(10)	-	6.0	4.1	5.0	4.4	4.6	1.4	4.5	6.7	3.1	4.4	5.1	4.7	4.9	5.4	6.5
Nickel	mg/kg	-		-		150	-		-		(100)	150	9.5	9.5	8.1	8.7	11.2	20.6	7.7	8.0	10.6	6.7	8.1	8.7	8.9	8.0	8.1
Phosphorus	mg/kg	-		-		-	-		-		-	-	1340	1400	1300	1340	1510	1040	1260	1300	774	970	1210	1480	1300	1320	1220
Potassium	mg/kg	-		-			-		-		-	-	1810	2020	1410	1800	1870	1230	960	1510	750	900	1480	1530	1670	1530	780
Selenium	mg/kg	-		-		2	-		-		(3)	4	1.2	1.2	1.1	1.1	1.2	0.5	1.0	1.1	0.7	1.0	1.2	1.2	1.1	1.0	1.5
Silver	mg/kg	-		-		20	-		-		(20)	-	0.4	0.4	0.4	0.3	0.4	0.2	0.4	0.3	0.2	0.4	0.3	0.4	0.3	0.3	0.6
Sodium	mg/kg	-		-		-	-		-		-	-	1200	1300	1090	1170	1190	580	710	1170	600	840	1130	1140	1240	1100	670
Strontium	mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	175	186	156	173	201	125	91	155	99	93	166	166	201	161	81
Sulfur	mg/kg					500						-	-	1400	-	1500	1500	1100	-	-	-	-	-	1300	-	-	1500
Thallium	mg/kg	-		-		2	-		-		-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.064	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tin	mg/kg	-		-		5	-		-		(50)	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Titanium	mg/kg	-		-		-	-		-		-	-	1580	1870	1550	1650	1890	1130	1070	1420	925	836	1360	1530	1520	1460	933
Uranium	mg/kg	-		-		16[5]	-		-		(16)[5]	-	1.04	1.26	1.07	1.09	1.27	0.8	0.85	0.9	0.56	0.67	0.9	1.04	1.09	1.02	0.73
Vanadium	mg/kg	-		-		200	-		-		(200)	-	191	194	(202)	195	177	106	(225)	(201)	122	170	192	(205)	187	198	(289)
Zinc	mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	61.8	71.5	60.2	61.3	74.6	53.7	56.3	58.2	43.2	51.4	51.2	61.6	60.6	61.5	64.4
Zirconium	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

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bold	exceeds BC CSR AL Ecological Health guideline
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Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID Coordinates Easting Northing Date Sampled Sample Depth (m bgs) QA/QC ALS Sample ID	Units	BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	ST11-02 - - 14-Sep-2014 0.2 - 0.4 - -	ST12-02 - - 14-Sep-2014 0.0 - 0.2 - -	ST12-03 - - 14-Sep-2014 0.0 - 0.1 - -	ST12-04 - - 14-Sep-2014 0.0 - 0.1 - -	ST13-02 - - 14-Sep-2014 0.0 - 0.2 - -	ST13-03 - - 14-Sep-2014 0.0 - 0.1 - -	ST13-04 - - 14-Sep-2014 0.0 - 0.1 - -	ST14-03 - - 14-Sep-2014 0.0 - 0.2 - -	ST14-04 - - 14-Sep-2014 0.0 - 0.2 - -	ST15-02 - - 13-Sep-2014 0.0 - 0.1 - -	ST15-03 - - 13-Sep-2014 0.0 - 0.1 - -	ST15-04 - - 13-Sep-2014 0.0 - 0.1 - -	ST16-03 - - 13-Sep-2014 0.0 - 0.0 - -	ST16-05 - - 13-Sep-2014 0.4 - 0.6 - -	ST17-03 - - 12-Sep-2014 0.2 - 0.4 - -
		MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic																
Physical Parameters																											
pH	pH	-		-		-	-		-		-	-	8.73	8.99	8.42	8.51	8.6	8.3	8.5	8.82	8.42	8.53	8.26	8.9	8.4	8.54	8.75
Total Organic Carbon	%	-		-		-	-		-		-	-	-	-	< 0.1	-	< 0.1	-	-	-	-	0.14	-	-	-	-	< 0.1
Total Inorganic Carbon	%	-		-		-	-		-		-	-	0.29	0.31	0.31	0.31	0.44	0.32	0.34	0.34	0.28	0.39	0.4	0.33	0.32	0.48	0.76
Inorganic Carbon (as CACO3)	%	-		-		-	-		-		-	-	2.4	2.6	2.6	2.6	3.7	2.7	2.8	2.8	2.3	3.2	3.3	2.7	2.7	4.0	6.3
Moisture	%	-		-		-	-		-		-	-	18	23	14	4.2	25	6.6	10	21	19	17	16	15	20	19	27
Oxidation-Reduction Potential (ORP)	mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																											
Gravel	%	-		-		-	-		-		-	-	-	-	0.1	-	< 0.1	-	-	-	-	< 0.1	-	-	-	-	< 0.1
Sand (0.125mm - 0.063mm)	%	-		-		-	-		-		-	-	-	-	22	-	13	-	-	-	-	20	-	-	-	-	0.55
Sand (0.25mm - 0.125mm)	%	-		-		-	-		-		-	-	-	-	20	-	11	-	-	-	-	16	-	-	-	-	< 0.1
Sand (0.50mm - 0.25mm)	%	-		-		-	-		-		-	-	-	-	4.0	-	2.0	-	-	-	-	3.1	-	-	-	-	< 0.1
Sand (1.00mm - 0.50mm)	%	-		-		-	-		-		-	-	-	-	0.13	-	0.14	-	-	-	-	0.15	-	-	-	-	< 0.1
Sand (2.00mm - 1.00mm)	%	-		-		-	-		-		-	-	-	-	< 0.1	-	< 0.1	-	-	-	-	< 0.1	-	-	-	-	< 0.1
Silt (0.0312mm - 0.004mm)	%	-		-		-	-		-		-	-	-	-	26	-	37	-	-	-	-	30	-	-	-	-	54
Silt (0.063mm - 0.0312mm)	%	-		-		-	-		-		-	-	-	-	21	-	19	-	-	-	-	19	-	-	-	-	14
Clay	%	-		-		-	-		-		-	-	-	-	7.7	-	19	-	-	-	-	11	-	-	-	-	32
Plant Available Nutrients																											
Total Available Nitrogen	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																											
Total Carbon by Combustion	%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals																											
Aluminum	mg/kg	-		-		-	-		-		-	-	11600	11500	15800	17200	20900	14700	15700	11600	19100	16000	18900	16100	10300	14400	24600
Antimony	mg/kg	-		-		20	-		-		(20)	-	0.60	0.28	0.40	0.36	0.47	0.30	0.36	0.37	0.41	0.34	0.48	0.37	0.29	0.37	0.55
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	14.2	10.9	11.8	11.7	13.8	10.8	12.2	11.4	13.1	11.7	13.5	11.8	10.8	12.2	**16.5**
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	108	107	178	193	220	170	179	109	195	186	200	179	118	153	295
Beryllium	mg/kg	-		-		4	-		-		(4)	-	0.51	0.48	0.61	0.65	0.78	0.61	0.64	0.54	0.72	0.63	0.81	0.55	0.49	0.58	0.93
Bismuth	mg/kg	-		-		-	-		-		-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (Hot Water Soluble)	mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.22	0.21	0.13	0.12	0.17	0.13	0.17	0.22	0.15	0.18	0.16	0.13	0.14	0.28	0.18
Calcium	mg/kg	-		-		-	-		-		-	-	22700	21600	25300	27400	30700	24800	26400	22600	28600	26100	30600	23000	22300	26500	36400
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	11.0	11.7	10.1	10.1	10.7	9.4	10.4	11.0	12.4	10.4	11.1	10.5	10.2	9.9	11.5
Cobalt	mg/kg	-		-		40	-		-		(50)	-	13.7	14.1	16.6	18.1	20.8	16.1	17.2	14.2	19.6	17.8	19.5	16.5	13.9	15.8	24.0
Copper	mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**1360**	**1230**	**903**	**889**	**918**	**898**	**940**	**996**	**928**	**873**	**876**	**868**	**832**	**997**	**1560**
Iron	mg/kg	-		-		-	-		-		-	-	50700	56300	53900	52700	46200	49900	53600	57700	50600	55000	49600	52800	55500	53300	43600
Lead	mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	5.0	4.9	4.5	5.2	7.0	4.8	5.3	5.0	5.7	7.6	5.9	4.3	4.6	5.2	6.7
Lithium	mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	13.2	13.0	14.2	17.6	22.2	15.7	17.3	12.1	18.6	17.0	21.5	12.4	12.2	14.4	28.7
Magnesium	mg/kg	-		-		-	-		-		-	-	7120	7250	9480	10500	14100	9270	9940	7070	12100	10400	12200	9560	7100	8890	17300
Manganese	mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	611	562	586	622	814	571	623	554	727	615	766	608	496	673	1140
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.11	0.11	0.08	0.07	0.08	0.09	0.08	0.1	0.08	0.08	0.08	0.08	0.09	0.12	0.12
Molybdenum	mg/kg	-		-		5	-		-		(10)	-	4.7	4.4	4.4	4.5	5.4	4.4	6.2	5.0	5.4	4.4	4.3	4.4	5.0	7.3	5.0
Nickel	mg/kg	-		-		150	-		-		(100)	150	7.4	7.4	7.3	8.6	10.3	7.3	8.1	6.7	10.4	8.5	9.8	7.3	6.5	6.8	12.6
Phosphorus	mg/kg	-		-		-	-		-		-	-	907	1090	1310	1270	1410	1220	1300	1250	1490	1350	1480	1360	1310	1260	1740
Potassium	mg/kg	-		-			-		-		-	-	890	950	1430	1600	2040	1320	1470	1010	1720	1440	1790	1540	950	1340	2410
Selenium	mg/kg	-		-		2	-		-		(3)	4	1.2	1.2	1.1	1.1	1.2	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.3	1.7
Silver	mg/kg	-		-		20	-		-		(20)	-	0.6	0.5	0.4	0.3	0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.3	0.4	0.5	0.5
Sodium	mg/kg	-		-		-	-		-		-	-	750	750	1090	1100	1440	1030	1060	780	1190	1050	1150	1140	840	1110	1150
Strontium	mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	89	93	151	162	194	145	159	93	180	164	188	138	88	148	212
Sulfur	mg/kg					500						-	-	-	1400	-	1500	-	-	-	-	1600	-	-	-	-	3500
Thallium	mg/kg	-		-		2	-		-		-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tin	mg/kg	-		-		5	-		-		(50)	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2.1
Titanium	mg/kg	-		-		-	-		-		-	-	1040	1030	1350	1400	1570	1100	1290	1120	1580	1290	1840	1560	912	1370	2290
Uranium	mg/kg	-		-		16[5]	-		-		(16)[5]	-	0.76	0.75	0.97	0.92	1.22	0.82	0.94	0.84	1.1	0.93	1.26	0.94	0.65	0.95	1.34
Vanadium	mg/kg	-		-		200	-		-		(200)	-	199	(218)	(203)	(201)	175	184	(204)	(230)	190	(203)	192	200	(216)	199	172
Zinc	mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	54.6	61.4	53.7	59.8	75.4	56.3	59.6	54.4	66.8	59.1	71.4	55.4	50.6	77.4	93.1
Zirconium	mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	ST17-04	ST17-05	ST17-06	ST17-07	ST18-02	ST18-02	ST18-03	ST18-03	ST18-04	P2 - T Sand	P3 - T Silt	P3 - T Sand	P3 - T Sand - DUP	P4 - T Silty Sand	Rye Grass soil - 11
Coordinates	Easting													-	-	-	-	-	-	-	-	-	595904	595688	595688	595688	595739	595688
	Northing													-	-	-	-	-	-	-	-	-	5820522	5820222	5820222	5820222	5820047	5820122
Date Sampled														12-Sep-2014	12-Sep-2014	12-Sep-2014	12-Sep-2014	17-Sep-2014	17-Sep-2014	13-Sep-2014	13-Sep-2014	13-Sep-2014	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015
Sample Depth (m bgs)														0.0 - 0.2	0.0 - 0.2	0.0 - 0.1	0.0 - 0.2	0.0 - 0.3	0.4 - 0.5	0.1 - 0.2	0.5 - 0.7	0.3 - 0.5	0.1	0.15	0.65	0.65	0.1	0.1
QA/QC														-	-	-	-	-	-	-	-	-	-	-	FDA	DUP	-	-
ALS Sample ID														-	-	-	-	-	-	-	-	-	L1654527-1	L1654527-4	L1654527-5	L1654527-6	L1654527-8	L1654527-12
Physical Parameters																												
pH		pH	-		-		-	-		-		-	-	8.88	8.3	8.46	8.76	7.51	8.92	8.88	8.5	8.85	8.46	8.41	8.51	8.55	8.40	7.76
Total Organic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-	-	< 0.1	-	-	-	-	-	-	-	-
Total Inorganic Carbon		%	-		-		-	-		-		-	-	0.32	0.29	0.3	0.41	0.25	0.26	0.34	0.45	0.22	-	-	-	-	-	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	2.6	2.4	2.5	3.4	2.1	2.2	2.8	3.8	1.9	-	-	-	-	-	-
Moisture		%	-		-		-	-		-		-	-	17	11	17	18	19	23	19	22	21	19.4	22.2	6.71	6.34	20.5	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	292	272	279	291	284	-
Grain Size																												
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	< 0.1	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	24	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	20	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	3.7	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	< 0.1	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	25	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	22	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	6.1	-	-	-	-	-	-	-	-
Plant Available Nutrients																												
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	<2.2	<2.2	<2.2	<2.2	5.4	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	0.041	0.038	0.043	0.033	0.047	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	1.7	2.0	<1.0	1.6	5.4	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	-
Available Potassium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	65	222	55	63	57	-
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	15.2	57.7	20.0	24.4	4.8	-
Organic / Inorganic Carbon																												
Total Carbon by Combustion		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	0.3	0.5	0.3	0.3	0.4	-
Stong Acid Leachable - Total Metals																												
Aluminum		mg/kg	-		-		-	-		-		-	-	16100	15200	12800	17500	16700	15800	14000	12400	9270	-	-	-	-	-	-
Antimony		mg/kg	-		-		20	-		-		(20)	-	0.37	0.39	0.32	0.41	0.34	0.32	0.39	0.28	0.28	0.36	-	-	-	0.30	0.43
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	11.2	11.0	11.3	12.1	11.3	11.4	11.1	11.1	7.5	11.3	-	-	-	8.8	12.4
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	179	163	120	179	161	160	169	119	181	120	-	-	-	115	177
Beryllium		mg/kg	-		-		4	-		-		(4)	-	0.65	0.59	0.53	0.68	0.67	0.63	0.58	0.56	0.4	0.55	-	-	-	0.46	0.63
Bismuth		mg/kg	-		-		-	-		-		-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	-	-	-	-	-
Boron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	8.0	-	-	-	-	8.6
Boron (Hot Water Soluble)		mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	<0.10	-	<0.10	-	-	0.13
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.15	0.17	0.2	0.17	0.09	0.14	0.14	0.16	0.12	0.17	-	-	-	0.13	0.15
Calcium		mg/kg	-		-		-	-		-		-	-	25300	27200	23200	28000	22900	25600	25400	29200	18200	-	-	-	-	-	-
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	10.3	9.7	9.4	10.0	9.3	10.4	10.5	8.6	7.8	11.7	-	-	-	8.7	11.3
Cobalt		mg/kg	-		-		40	-		-		(50)	-	16.5	15.7	13.2	17.2	15.6	17.2	16.6	13.9	12.2	14.7	-	-	-	12.8	17.1
Copper		mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**847**	**833**	**1000**	**876**	**938**	**881**	**849**	**1360**	**823**	**881**	-	-	-	**1030**	**807**
Iron		mg/kg	-		-		-	-		-		-	-	54900	52900	49700	51800	63800	49800	55600	52500	50600	-	-	-	-	-	-
Lead		mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	4.4	4.7	5.2	5.2	3.8	4.9	7.2	4.4	3.7	4.7	-	-	-	3.8	5.4
Lithium		mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	13.3	14.2	12.0	16.4	14.1	16.6	15.2	16.8	8.9	-	-	-	-	-	-
Magnesium		mg/kg	-		-		-	-		-		-	-	9450	8830	7440	10700	8830	10200	9000	7960	5350	-	-	-	-	-	-
Manganese		mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	585	626	590	683	472	590	545	712	403	-	-	-	-	-	-
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.08	0.08	0.1	0.08	0.062	0.09	0.08	0.17	< 0.05	0.079	-	-	-	0.080	0.070
Molybdenum		mg/kg	-		-		5	-		-		(10)	-	4.6	4.7	4.8	4.7	5.6	4.2	5.1	3.4	3.8	4.5	-	-	-	4.4	4.3
Nickel		mg/kg	-		-		150	-		-		(100)	150	7.3	6.8	6.6	8.3	8.4	8.5	7.4	6.5	4.7	7.0	-	-	-	6.1	8.7
Phosphorus		mg/kg	-		-		-	-		-		-	-	1330	1320	1140	1340	1430	1360	1420	1480	1140	-	-	-	-	-	-
Potassium		mg/kg	-		-			-		-		-	-	1470	1360	990	1560	1060	1440	1310	980	810	-	-	-	-	-	-
Selenium		mg/kg	-		-		2	-		-		(3)	4	1.1	1.1	1.1	1.1	1.0	1.1	1.1	0.9	0.9	1.1	-	-	-	1.1	1.1
Silver		mg/kg	-		-		20	-		-		(20)	-	0.3	0.4	0.5	0.3	0.3	0.4	0.3	0.6	0.3	0.4	-	-	-	0.4	0.3
Sodium		mg/kg	-		-		-	-		-		-	-	1080	980	880	1110	1730	1110	1010	430	410	-	-	-	-	-	-
Strontium		mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	155	138	109	177	194	165	145	86	60	-	-	-	-	-	-
Sulfur		mg/kg					500						-	-	-	-	-	-	-	1300	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.050	-	-	-	<0.050	<0.050
Tin		mg/kg	-		-		5	-		-		(50)	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<2.0	-	-	-	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	1640	1520	1340	1760	1440	1230	1250	1290	989	-	-	-	-	-	-
Uranium		mg/kg	-		-		16[5]	-		-		(16)[5]	-	0.98	0.87	0.92	1.09	1.14	0.92	0.91	0.95	0.41	0.95	-	-	-	0.59	1.04
Vanadium		mg/kg	-		-		200	-		-		(200)	-	(210)	(206)	198	197	(242)	190	(204)	(227)	(225)	(257)	-	-	-	176	200
Zinc		mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	54.4	57.3	57.4	60.8	45.6	59.5	**214.0**	79.8	43.9	52.7	-	-	-	43.9	60.5
Zirconium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	SS15-01	SS15-01	SS15-01	SS15-01	SS15-03	SS15-03	SS15-04	P12 - T1 Sand	P12 - T2 Silty Sand	P13 - T Silt Sand	SS15-04	SS15-05	SS15-02	SS15-02	SS15-06
Coordinates	Easting													595815	595815	595815	595815	595421	595421	595353	596661	596661	596680	595353	595335	595549	595549	596186
	Northing	Units												5820542	5820542	5820542	5820542	5820734	5820734	5820734	5819385	5819385	5819406	5820744	5820841	5820535	5820535	5819974
Date Sampled														29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	31-Jul-2015	31-Jul-2015	31-Jul-2015	30-Jul-2015	30-Jul-2015	30-Jul-2015	30-Jul-2015	30-Jul-2015
Sample Depth (m bgs)														0.08	0.3	0.55	0.75	0.15	0.7	0.1	0.15	0.65	0.05	0.4	0.1	0.1	0.3	0.1
QA/QC														-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALS Sample ID			MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		L1654527-13	L1654527-14	L1654527-15	L1654527-16	L1654527-17	L1654527-18	L1654527-20	L1654527-27	L1654527-28	L1654527-31	L1654527-33	L1654527-36	L1654527-39	L1654527-40	L1654527-41
Physical Parameters																												
pH		pH	-		-		-	-		-		-	-	8.08	8.16	8.26	8.35	8.64	8.82	8.84	8.05	7.28	7.61	8.40	8.56	8.27	8.14	7.93
Total Organic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Inorganic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	27.2	25.8	24.4	-	-	-	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	349	282	247	-	-	-	-
Grain Size																												
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																												
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	17.6	3.6	8.5	-	-	-	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	0.195	0.123	0.037	-	-	-	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	17.6	3.6	8.5	-	-	-	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	<1.0	1.4	<1.0	-	-	-	-
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	<4.0	<2.0	<2.0	-	-	-	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	<4.0	<2.0	<2.0	-	-	-	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	<0.80	<0.50	<0.50	-	-	-	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	4.2	3.6	<4.0	-	-	-	-
Available Potassium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	74	79	99	-	-	-	-
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	27.1	43.6	9.1	-	-	-	-
Organic / Inorganic Carbon																												
Total Carbon by Combustion		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	3.5	2.2	0.5	-	-	-	-
Stong Acid Leachable - Total Metals																												
Aluminum		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony		mg/kg	-		-		20	-		-		(20)	-	0.52	0.43	0.38	0.34	0.43	0.34	0.41	0.29	-	0.40	-	0.44	0.37	0.52	0.34
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	**15.1**	12.1	12.0	11.1	12.2	10.7	12.1	9.7	-	9.0	-	11.6	11.7	12.7	9.2
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	223	181	185	109	176	120	165	143	-	159	-	162	183	240	141
Beryllium		mg/kg	-		-		4	-		-		(4)	-	0.84	0.64	0.65	0.5	0.65	0.53	0.62	0.46	-	0.54	-	0.72	0.57	0.63	0.51
Bismuth		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron		mg/kg	-		-		-	-		-		-	-	10.9	-	-	-	-	-	-	-	-	-	-	7.8	-	-	6.7
Boron (Hot Water Soluble)		mg/kg	-		-		2	-		-		-	-	0.27	-	-	-	-	-	-	-	-	-	-	0.19	-	-	<0.10
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.18	0.16	0.15	0.19	0.17	0.13	0.25	0.13	-	0.21	-	0.16	0.14	0.15	0.14
Calcium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	11.2	10.1	10.1	10.3	10.0	11.4	11.1	11.6	-	16.7	-	9.3	10.8	9.1	10.4
Cobalt		mg/kg	-		-		40	-		-		(50)	-	20.8	18.0	18.0	12.9	17.7	14.2	16.7	13.9	-	13.9	-	18.1	16.2	21.9	12.9
Copper		mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**903**	**844**	**882**	**1090**	**869**	**1120**	**860**	**731**	-	**568**	-	**784**	**803**	**873**	**788**
Iron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead		mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	6.9	5.3	5.6	4.5	5.1	4.7	5.0	4.5	-	4.3	-	4.5	4.5	5.8	3.8
Lithium		mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese		mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.080	0.068	0.066	0.085	0.084	0.071	0.081	0.065	-	0.079	-	0.070	0.073	<0.050	0.066
Molybdenum		mg/kg	-		-		5	-		-		(10)	-	5.7	4.9	5.3	5.4	4.4	4.8	4.0	4.4	-	3.7	-	4.6	4.3	5.2	4.8
Nickel		mg/kg	-		-		150	-		-		(100)	150	10.7	8.4	8.4	6.9	8.8	7.7	8.7	7.9	-	11.6	-	8.5	7.5	6.2	7.2
Phosphorus		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		mg/kg	-		-			-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium		mg/kg	-		-		2	-		-		(3)	4	1.2	1.1	1.1	1.3	1.2	1.2	1.1	1.0	-	0.8	-	1.1	1.0	1.5	0.9
Silver		mg/kg	-		-		20	-		-		(20)	-	0.5	0.3	0.3	0.4	0.4	0.4	0.4	0.3	-	0.3	-	0.4	0.3	0.3	0.3
Sodium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium		mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfur		mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	-	<0.050	<0.050	<0.050	<0.050
Tin		mg/kg	-		-		5	-		-		(50)	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	-	<2.0	<2.0	2.2	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium		mg/kg	-		-		16[5]	-		-		(16)[5]	-	1.33	1.01	0.96	0.69	1.0	0.8	1.03	0.73	-	1.1	-	0.99	0.93	0.92	0.72
Vanadium		mg/kg	-		-		200	-		-		(200)	-	185	193	192	195	195	(227)	(201)	(220)	-	(204)	-	171	(211)	187	188
Zinc		mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	82.0	59.9	60.6	49.6	60.4	50.0	60.1	46.0	-	45.8	-	55.5	54.6	74.9	43.6
Zirconium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

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The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	SS15-07	SS15-08	SS15-09	SS15-10	SS15-10	SS15-11	P15 - T Sand	SS15-12	SS15-16	SS15-16	SS15-17	SS15-18	SS15-18	P21 - T Sand	SS15-19
Coordinates	Easting													596117	595969	595956	596647	596647	599697	599780	599813	601582	601582	601532	601855	601855	601622	601939
	Northing	Units												5819897	5819793	5819771	5819368	5819368	5717240	5817188	5817198	5817518	5817518	5817513	5817329	5817329	5817050	5817248
Date Sampled														30-Jul-2015	30-Jul-2015	30-Jul-2015	31-Jul-2015	31-Jul-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	2-Aug-2015	2-Aug-2015
Sample Depth (m bgs)														0.5	0.1	0.05	0.05	0.2	0.15	0.2	0.15	0.1	0.35	0.1	0.15	0.3	0.2	0.05
QA/QC														-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALS Sample ID			MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		L1654527-44	L1654527-47	L1654527-49	L1654527-51	L1654527-52	L1654527-55	L1654527-60	L1654527-64	L1654527-70	L1654527-71	L1654527-73	L1654527-76	L1654527-77	L1654527-93	L1654527-96
Physical Parameters																												
pH		pH	-		-		-	-		-		-	-	8.03	8.40	8.37	8.80	8.50	8.06	8.26	8.29	8.44	8.41	6.83	8.02	8.63	8.40	8.68
Total Organic Carbon		%	-		-		-	-		-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Inorganic Carbon		%	-		-		-	-		-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture		%	-		-		-	-		-		-	-	18.1	-	-	-	-	-	9.71	-	-	-	-	-	-	24.4	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	269	-	-	-	-	-	310	-	-	-	-	-	-	265	-
Grain Size																												
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																												
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	4.1	-	-	<2.2	<2.2	-	9	-	-	-	-	-	-	3.2	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	0.036	-	-	0.030	0.037	-	0.292	-	-	-	-	-	-	0.046	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	4.1	-	-	1.9	1.6	-	9.0	-	-	-	-	-	-	3.2	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	<1.0	-	-	<1.0	<1.0	-	<1.0	-	-	-	-	-	-	<1.0	-
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	<2.0	-	-	<2.0	<2.0	-	<2.0	-	-	-	-	-	-	<2.0	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	<2.0	-	-	<2.0	<2.0	-	<2.0	-	-	-	-	-	-	<2.0	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	<0.50	-	-	<0.50	<0.50	-	<0.50	-	-	-	-	-	-	<0.50	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	<2.0	-	-	4.8	<2.0	-	<4.0	-	-	-	-	-	-	<2.0	-
Available Potassium		mg/kg	-		-		-	-		-		-	-	67	-	-	139	62	-	128	-	-	-	-	-	-	71	-
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	29.5	-	-	18.2	23.2	-	6.3	-	-	-	-	-	-	11.0	-
Organic / Inorganic Carbon																												
Total Carbon by Combustion		%	-		-		-	-		-		-	-	0.4	-	-	0.4	0.3	-	3.6	-	-	-	-	-	-	0.5	-
Stong Acid Leachable - Total Metals																												
Aluminum		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony		mg/kg	-		-		20	-		-		(20)	-	0.36	0.41	0.29	0.36	0.33	0.35	0.32	0.43	0.43	0.45	0.37	0.36	0.37	0.36	0.41
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	10.5	12.0	8.8	11.3	10.1	7.8	8.50	9.3	11.9	11.7	8.6	11.2	9.8	10.0	11.4
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	119	76	139	156	126	87	108	94	166	90	119	161	120	113	166
Beryllium		mg/kg	-		-		4	-		-		(4)	-	0.55	0.48	0.47	0.58	0.55	0.36	0.47	0.42	0.6	0.42	0.42	0.6	0.49	0.48	0.63
Bismuth		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron		mg/kg	-		-		-	-		-		-	-	-	6.3	5.9	-	7.6	<5.0	-	5.9	8.6	5.9	-	-	8.0	-	-
Boron (Hot Water Soluble)		mg/kg	-		-		2	-		-		-	-		<0.10	<0.10	-	0.10	<0.10	-	<0.10	0.18	<0.10	-	-	<0.10	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.15	0.23	0.14	0.13	0.15	0.11	0.116	0.13	0.17	0.13	0.13	0.14	0.12	0.16	0.18
Calcium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	10.4	16.8	11.2	10.6	9.5	23.3	12.4	24.4	11.8	26.4	15.0	11.0	14.3	14.1	10.6
Cobalt		mg/kg	-		-		40	-		-		(50)	-	14.6	15.4	12.8	15.6	13.0	10.9	11.6	13.8	15.6	11.6	11.3	15.6	13.2	13.0	16.1
Copper		mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**1040**	**1150**	**781**	**874**	**990**	**410**	**853**	**616**	**804**	**321**	**566**	**858**	**717**	**626**	**811**
Iron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead		mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	5.0	4.8	3.8	4.8	4.5	4.0	4.37	4.7	5.0	4.5	4.0	5.0	4.3	4.2	4.5
Lithium		mg/kg	-		-		1600[5]	-		-		{1,600}[5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese		mg/kg	-		-		1800[5]	-		-		{1,800}[5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.079	0.100	0.080	0.083	0.070	<0.050	0.071	0.077	0.075	0.058	0.070	0.068	0.062	0.069	0.080
Molybdenum		mg/kg	-		-		5	-		-		{10}	-	7.2	3.4	4.4	4.2	5.7	1.7	3.54	3.9	6.7	1.4	3.2	4.8	3.8	3.3	4.9
Nickel		mg/kg	-		-		150	-		-		{100}	150	6.9	8.8	7.3	8.2	6.5	10.7	8.90	12.8	9.0	15.7	10.1	8.5	8.6	9.0	8.9
Phosphorus		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		mg/kg	-		-			-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium		mg/kg	-		-		2	-		-		{3}	4	1.2	1.2	0.9	1.1	1.1	0.6	0.94	**1.0**	1.0	0.5	0.7	1.0	0.9	0.8	1.1
Silver		mg/kg	-		-		20	-		-		{20}	-	0.4	0.5	0.3	0.4	0.4	0.2	0.33	0.3	0.4	0.2	0.2	0.4	0.3	0.3	0.4
Sodium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium		mg/kg	-		-		47,000[5]	-		-		{47,000}[5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfur		mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tin		mg/kg	-		-		5	-		-		{50}	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium		mg/kg	-		-		16[5]	-		-		{16}[5]	-	0.82	0.71	0.65	0.99	0.83	0.6	0.670	0.67	1.05	0.66	0.63	0.96	0.8	0.83	1.07
Vanadium		mg/kg	-		-		200	-		-		{200}	-	{223}	{287}	187	199	184	151	142	{222}	192	148	146	194	{205}	{210}	184
Zinc		mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	51.3	61.1	40.5	52.3	43.0	41.4	39.5	49.9	57.2	48.6	40.6	55.3	45.7	46.7	55.7
Zirconium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	SS15-19	3 - T Silty Sand & Gra	P24 - T Sand	SS15-14	SS15-14	SS15-14	SS15-15	SS15-15	SS15-15	P29 - T Sand	P29 - T Sand - DUP	Combined Tissue Soil - T	P29-I soil - T	Berry soil - 5 - T	SS15-10
Coordinates	Easting													601939	601984	601020	600973	600973	600973	601218	601218	601218	596992	596992	596855	596950	598079	596647
	Northing													5817248	5817261	5817043	5816984	5816984	5816984	5817329	5817329	5817329	5819114	5819114	5819234	5819112	5817872	5819368
Date Sampled														2-Aug-2015	2-Aug-2015	3-Aug-2015	3-Aug-2015	3-Aug-2015	3-Aug-2015	3-Aug-2015	3-Aug-2015	3-Aug-2015	4-Aug-2015	4-Aug-2015	4-Aug-2015	4-Aug-2015	4-Aug-2015	31-Jul-2015
Sample Depth (m bgs)														0.35	0.1	0.15	0.05	0.05	0.2	0.01	0.01	0.05	0.08	0.08	0.1	0.1	0.1	0.4
QA/QC														-	-	-	FDA	DUP	-	FDA	DUP	-	FDA	DUP	-	-	-	-
ALS Sample ID		Units	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		L1654527-97	L1654527-103	L1654527-106	L1654527-110	L1654527-111	L1654527-112	L1654527-119	L1654527-120	L1654527-121	L1654527-125	L1654527-126	L1654527-132	L1654527-134	L1654527-135	L1654527-53
Physical Parameters																												
pH		pH	-		-		-	-		-		-	-	8.20	8.38	8.06	8.39	8.18	8.06	8.00	7.93	8.09	7.92	7.94	7.51	8.63	8.53	7.94
Total Organic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Inorganic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture		%	-		-		-	-		-		-	-	-	13.7	4.37	-	-	-	-	-	-	15.4	19.0	-	-	-	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	351	291	-	-	-	-	-	-	286	304	-	-	-	-
Grain Size																												
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																												
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	2.5	2.7	-	-	-	-	-	-	<2.2	<2.2	-	-	-	5.8
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	0.043	0.043	-	-	-	-	-	-	0.061	0.094	-	-	-	0.079
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	2.5	2.7	-	-	-	-	-	-	<1.0	<1.0	-	-	-	5.8
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	<1.0	<1.0	-	-	-	-	-	-	<1.0	<1.0	-	-	-	<1.0
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	<2.0	<2.0	-	-	-	-	-	-	<2.0	<2.0	-	-	-	<2.0
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	<2.0	<2.0	-	-	-	-	-	-	<2.0	<2.0	-	-	-	<2.0
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	<0.50	<0.50	-	-	-	-	-	-	<0.50	<0.50	-	-	-	<0.50
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	-	<2.0	2.7	-	-	-	-	-	-	4.0	4.8	-	-	-	4.1
Available Potassium		mg/kg	-		-		-	-		-		-	-	-	116	57	-	-	-	-	-	-	88	97	-	-	-	87
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	29.5	79.7	-	-	-	-	-	-	40.1	22.9	-	-	-	30.2
Organic / Inorganic Carbon																												
Total Carbon by Combustion		%	-		-		-	-		-		-	-	-	0.4	0.3	-	-	-	-	-	-	0.9	1.3	-	-	-	1.3
Stong Acid Leachable - Total Metals																												
Aluminum		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony		mg/kg	-		-		20	-		-		(20)		0.40	0.41	-	0.34	0.30	0.37	0.40	0.40	0.35	0.37	0.31	0.30	0.32	0.33	0.33
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	9.1	12.6	-	8.7	8.7	8.9	9.9	9.8	9.2	9.8	9.7	7.2	10.8	9.1	9.6
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	128	171	-	124	136	132	172	167	128	143	148	148	158	120	159
Beryllium		mg/kg	-		-		4	-		-		(4)		0.45	0.62	-	0.45	0.45	0.49	0.54	0.51	0.45	0.48	0.46	0.42	0.58	0.48	0.52
Bismuth		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron		mg/kg	-		-		-	-		-		-	-	-	-	-	6.3	6.0	-	-	-	-	-	-	-	-	-	-
Boron (Hot Water Soluble)		mg/kg	-		-		2	-		-		-	-	-	-	-	0.13	<0.10	-	-	-	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.12	0.152	-	0.11	0.41	0.15	0.16	0.15	0.13	0.14	0.14	0.21	0.13	0.12	0.16
Calcium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	14.3	11.8	-	15.3	15.1	14.9	18.1	17.9	16.2	14.1	13.5	15.6	9.8	10.6	15.4
Cobalt		mg/kg	-		-		40	-		-		(50)	-	11.8	16.3	-	12.3	12.6	11.9	13.9	13.9	11.6	14.0	13.8	11.8	15.8	12.6	14.7
Copper		mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**504**	**854**	-	**469**	**480**	**612**	**472**	**452**	**525**	**558**	**573**	**488**	**872**	**794**	**567**
Iron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead		mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	4.0	4.95	-	4.1	4.2	4.7	5.8	5.3	4.3	4.2	4.2	4.2	7.3	4.3	4.7
Lithium		mg/kg	-		-		1600[5]	-		-		(1,600)[5]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese		mg/kg	-		-		1800[5]	-		-		(1,800)[5]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.061	0.080	-	0.055	0.069	0.066	0.072	0.064	0.064	0.063	0.077	0.083	0.066	0.065	0.077
Molybdenum		mg/kg	-		-		5	-		-		(10)	-	3.2	4.20	-	3.2	2.9	4.1	2.9	2.9	3.9	3.2	3.6	3.1	4.5	4.3	4.2
Nickel		mg/kg	-		-		150	-		-		(100)	150	9.6	9.57	-	10.1	10.6	11.0	14.1	13.7	10.8	9.1	8.9	11.2	7.9	7.3	10.2
Phosphorus		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		mg/kg	-		-			-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium		mg/kg	-		-		2	-		-		(3)	4	0.7	1.02	-	0.7	0.7	0.8	0.8	0.8	0.7	0.9	0.8	0.8	1.1	0.9	0.9
Silver		mg/kg	-		-		20	-		-		(20)	-	0.2	0.37	-	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.4	0.3	0.4	0.3	0.3
Sodium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium		mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfur		mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tin		mg/kg	-		-		5	-		-		(50)	-	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium		mg/kg	-		-		16[5]	-		-		(16)[5]	-	0.74	0.972	-	0.74	0.69	0.82	0.95	0.93	0.73	0.9	0.81	0.92	0.91	0.71	0.95
Vanadium		mg/kg	-		-		200	-		-		(200)	-	162	196	-	198	189	143	140	152	143	(221)	(223)	164	196	186	(237)
Zinc		mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	41.4	57.7	-	42.2	42.9	44.6	53.3	51.5	44.1	43.6	44.7	42.4	54.6	44.0	46.9
Zirconium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	WILLOW STAKE SOIL-5	WILLOW STAKE SOIL-2	P2 - B Layer	WILLOW STAKE SOIL-3	WILLOW-LHAC-5-16	SPRUCE-UHAC-1-16	SPRUCE-LHAC-1X-16	SPRUCE-UHAC-2-16	SPRUCE-LHAC-1-16	BERRIES-LHAC-2-16	BERRIES-LHAC-3-16	BERRIES-LHAC-1-16	RYEGRASS-UHAC-1-16	RYEGRASS-UHAC-2-16	CSS16-02
Coordinates	**Easting**													601001	600891	595904	600982	601032	596910	601984	596815	601984	601945	601942	601221	595661	595737	596373
	Northing													5817271	5817307	5820522	5817293	5817262	5819201	5817270	5819282	5817270	5817251	5817269	5817286	5820785	5820792	5819666
Date Sampled		**Units**	**MCS Ecological Health**	**Notes**	**MCS Human Health**	**Notes**	**Generic**	**MCS Ecological Health**	**Notes**	**MCS Human Health**	**Notes**	**Generic**		25-Aug-2015	19-Aug-2015	29-Jul-2015	19-Aug-2015	16-Aug-2016	3-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	3-Aug-2016	3-Aug-2016	17-Aug-2016
Sample Depth (m bgs)														0-0.1	0-0.1	0.65	0-0.1	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2
QA/QC																-			FDA	FD								
ALS Sample ID														L1667543-27	L1667543-18	L1654527-3	L1667543-21	L1824887-6	L1824887-8	L1824887-9	L1824887-10	L1824887-11	L1824887-12	L1824887-13	L1824887-14	L1824887-15	L1824887-16	L1826516-1
Physical Parameters																												
pH		pH	-		-		-	-		-		-	-	8.42	8.4	6.69	8.47	8.2	7.57	8.55	6.18	8.23	7.11	6.86	7.51	8.19	8.22	7.35
Total Organic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	<0.073	16.8	0.15	9.14	0.11	<0.063	<0.076	3.6	1.33	<0.12	2.04
Total Inorganic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	0.31	0.30	0.36	0.29	0.38	0.29	0.38	0.26	0.42	0.55	0.24
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	-	-	-	-	2.54	2.47	2.99	2.39	3.18	2.43	3.16	2.19	3.48	4.60	2.03
Moisture		%	-		-		-	-		-		-	-	15.8	14.9	46.9	14.2	-	-	-	-	-	-	-	-	-	-	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	323	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																												
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																												
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	24.4	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	0.278	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	24.4	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	<1.0	-	<1.0	<3.0	<1.0	32.6	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	<2.0	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	<2.0	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	-	-	19.7	-	<2.0	8.5	<2.0	4.9	<2.0	<2.0	<2.0	6.7	<2.0	<2.0	4.5
Available Potassium		mg/kg	-		-		-	-		-		-	-	-	-	166	-	139	245	126	187	128	75	123	117	213	387	127
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	9.6	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																												
Total Carbon by Combustion		%	-		-		-	-		-		-	-	-	-	4.3	-	0.37	17.1	0.51	9.43	0.49	0.31	0.38	3.86	1.75	0.61	2.28
Stong Acid Leachable - Total Metals																												
Aluminum		mg/kg	-		-		-	-		-		-	-	18000	15300	-	17600	-	-	-	-	-	-	-	-	-	-	15400
Antimony		mg/kg	-		-		20	-		-		{20}	-	0.49	0.39	0.34	0.53	0.37	0.39	0.38	0.45	0.37	0.19	0.19	0.34	0.46	0.50	0.35
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	14.4	11.8	7.8	11.2	12.3	8.6	12.0	8.5	11.7	4.0	3.7	9.3	10.8	14.1	9.1
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	174	148	197	253	166	163	168	298	166	**697**	339	123	175	224	146
Beryllium		mg/kg	-		-		4	-		-		{4}	-	0.66	0.59	0.75	0.59	0.59	0.53	0.63	1.22	0.60	0.20	0.15	0.42	0.67	0.84	0.54
Bismuth		mg/kg	-		-		-	-		-		-	-	<0.20	<0.20	-	<0.20	-	-	-	-	-	-	-	-	-	-	<0.20
Boron		mg/kg	-		-		-	-		-		-	-	8.5	6.6	-	6.6	-	-	-	-	-	-	-	-	-	-	6.9
Boron (Hot Water Soluble)		mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.194	0.161	0.44	0.157	0.134	0.188	0.149	1.090	0.140	**3.440**	1.390	0.138	0.128	0.169	0.170
Calcium		mg/kg	-		-		-	-		-		-	-	24600	21400	-	25600	-	-	-	-	-	-	-	-	-	-	18500
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	21.8	16.2	37.4	35.9	11.9	17.9	11.4	**62.9**	10.9	13.2	13.8	19.6	13.8	10.5	18.0
Cobalt		mg/kg	-		-		40	-		-		{50}	-	16.9	15.5	16.3	16.5	16.5	13.8	16.9	15.7	16.3	7.2	5.6	13.0	17.5	22.6	13.8
Copper		mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**608**	**608**	**412**	**359**	**770**	**492**	**902**	111	**833**	91.1	42	**463**	**688**	**953**	**677**
Iron		mg/kg	-		-		-	-		-		-	-	42700	42400	-	41100	-	-	-	-	-	-	-	-	-	-	48400
Lead		mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	5.79	5.76	7.7	5.64	5.34	4.93	5.03	11.80	4.76	11.10	8.93	4.74	4.89	6.52	5.15
Lithium		mg/kg	-		-		1600[5]	-		-		{1,600}[5]	-	18.7	16.3	-	17.3	-	-	-	-	-	-	-	-	-	-	12.3
Magnesium		mg/kg	-		-		-	-		-		-	-	11100	9490	-	13200	-	-	-	-	-	-	-	-	-	-	7280
Manganese		mg/kg	-		-		1800[5]	-		-		{1,800}[5]	-	745	607	-	704	-	-	-	-	-	-	-	-	-	-	525
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	-	-	0.060	-	0.087	0.085	0.082	0.077	0.08	0.123	0.255	0.08	0.072	0.083	0.102
Molybdenum		mg/kg	-		-		5	-		-		{10}	-	2.92	3.17	2.9	1.87	3.52	3.26	4.15	1.24	5.04	1.38	1.21	2.85	4.47	5.55	3.56
Nickel		mg/kg	-		-		150	-		-		{100}	150	15.2	13.9	22.9	35.7	10.0	11.6	9.8	56.6	9.0	12.5	10.4	11.9	10.1	9.7	12.2
Phosphorus		mg/kg	-		-		-	-		-		-	-	1250	1150	-	1250	-	-	-	-	-	-	-	-	-	-	1080
Potassium		mg/kg	-		-			-		-		-	-	1470	1340	-	1140	-	-	-	-	-	-	-	-	-	-	1300
Selenium		mg/kg	-		-		2	-		-		{3}	4	0.83	0.83	0.5	0.55	0.90	0.89	1.08	0.30	0.96	0.38	0.25	0.71	0.97	1.16	0.84
Silver		mg/kg	-		-		20	-		-		{20}	-	<0.30	0.28	0.4	<0.20	0.35	0.26	0.41	0.56	0.35	0.75	0.22	0.24	0.33	0.41	0.34
Sodium		mg/kg	-		-		-	-		-		-	-	803	729	-	601	-	-	-	-	-	-	-	-	-	-	742
Strontium		mg/kg	-		-		47,000[5]	-		-		{47,000}[5]	-	153	136	-	138	-	-	-	-	-	-	-	-	-	-	131
Sulfur		mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	<0.050	<0.050	0.08	0.053	<0.050	<0.050	<0.050	0.16	<0.050	0.1	0.056	<0.050	<0.050	<0.050	<0.050
Tin		mg/kg	-		-		5	-		-		{50}	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	1600	1270	-	1370	-	-	-	-	-	-	-	-	-	-	1160
Uranium		mg/kg	-		-		16[5]	-		-		{16}[5]	-	0.997	0.928	0.84	0.761	0.882	1.030	0.941	1.570	0.937	0.398	0.269	0.751	1.220	1.340	0.869
Vanadium		mg/kg	-		-		200	-		-		{200}	-	156	150	152	132	175	185	198	89	189	36	33	187	163	162	177
Zinc		mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	67.8	58.6	94.9	57.1	54.1	49.8	55.5	137.0	52.6	**552.0**	187.0	44.9	57.9	77.3	51.0
Zirconium		mg/kg	-		-		-	-		-		-	-	9.4	6.4	-	8.2	-	-	-	-	-	-	-	-	-	-	1.8

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

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The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

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bold	exceeds BC CSR AL Ecological Health guideline
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Bold outline	exceeds BC CSR AL generic guidelide
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{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	CSS16-03	CSS16-04	CSS16-05	CSS16-06	CSS16-14	CSS16-15	CSS16-16	CSS16-23	CSS16-24	CSS16-25	CSS16-26	CSS16-27	CSS16-27D	CSS16-28	CSS16-29
Coordinates	Easting													596288	595959	595970	595962	596801	596014	596002	598915	598563	598164	597740	597742	597742	599551	599329
	Northing	Units												5819800	5820428	5820431	5820467	5819300	5820169	5820208	5817252	5817481	5817669	5817962	5818043	5818043	5817310	5817358
Date Sampled														17-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	20-Aug-2016	20-Aug-2016	19-Aug-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016
Sample Depth (m bgs)														0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2
QA/QC																									FDA	FD		
ALS Sample ID														L1826516-2	L1826516-3	L1826516-4	L1826516-5	L1826516-6	L1826516-7	L1826516-45	L1826516-8	L1826516-9	L1826516-10	L1826516-11	L1826516-12	L1826516-13	L1826516-14	L1826516-15
			MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic																
Physical Parameters																												
pH		pH	-		-		-	-		-		-	-	6.22	7.06	7.69	6.83	7.32	7.59	7.59	8.1	7.77	8.05	8.43	7.84	7.86	8.34	8.34
Total Organic Carbon		%	-		-		-	-		-		-	-	4.19	13.3	1.72	2.74	8.42	2.92	3.86	0.155	0.779	0.22	0.14	3.46	1.84	0.13	0.247
Total Inorganic Carbon		%	-		-		-	-		-		-	-	0.12	0.24	0.26	0.13	0.23	0.27	0.24	0.24	0.24	0.32	0.42	0.23	0.21	0.09	0.23
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	1.03	1.96	2.13	1.05	1.92	2.23	1.98	1.97	2.01	2.63	3.52	1.89	1.78	0.72	1.95
Moisture		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																												
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																												
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	<1.0	<2.0	2.5	10.9	<2.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	13.1	4.7	2.8	5.4	5.8	5.1	4.7	3.2	10.9	2.2	<2.0	10.8	11	2.8	6.2
Available Potassium		mg/kg	-		-		-	-		-		-	-	127	92	132	118	136	90	114	59	113	43	42	146	135	46	64
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																												
Total Carbon by Combustion		%	-		-		-	-		-		-	-	4.31	13.5	1.97	2.87	8.65	3.19	4.1	0.39	1.02	0.53	0.56	3.69	2.05	0.22	0.48
Stong Acid Leachable - Total Metals																												
Aluminum		mg/kg	-		-		-	-		-		-	-	19100	12200	11900	16700	13600	13500	14100	10900	14200	8310	7420	12200	12200	9180	12200
Antimony		mg/kg	-		-		20	-		-		(20)	-	0.30	0.33	0.27	0.30	0.39	0.36	0.41	0.31	0.33	0.24	0.22	0.29	0.32	0.37	0.35
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	7.8	9.0	8.5	9.1	7.4	9.0	9.53	8.4	8.9	4.8	4.7	8.6	8.8	5.0	6.6
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	118	184	135	160	147	160	179	91	155	59	49	127	129	73	113
Beryllium		mg/kg	-		-		4	-		-		(4)	-	0.45	0.48	0.51	0.60	0.53	0.52	0.52	0.37	0.51	0.26	0.22	0.46	0.49	0.29	0.38
Bismuth		mg/kg	-		-		-	-		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron		mg/kg	-		-		-	-		-		-	-	<5.0	7.7	6.3	7.2	7.3	7.5	8.1	<5.0	5.9	<5.0	<5.0	7	7.3	<5.0	<5.0
Boron (Hot Water Soluble)		mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.139	0.254	0.161	0.206	0.245	0.179	0.203	0.133	0.196	0.104	0.095	0.161	0.168	0.085	0.181
Calcium		mg/kg	-		-		-	-		-		-	-	7090	20600	19200	14000	18100	21200	20900	14700	18200	15900	16000	18200	18300	6940	13300
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	35.9	13.1	12.8	21.9	17.5	14.8	15.2	14.6	19.9	18.6	19.5	14.0	16.3	19.3	26.2
Cobalt		mg/kg	-		-		40	-		-		(50)	-	10.8	13.2	13.3	15.9	11.9	13.4	13.6	10.3	13.6	6.6	7.5	13.3	13.2	7.8	10.8
Copper		mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	148	472	574	458	392	541	522	395	546	48.3	52.5	649	620	74	114
Iron		mg/kg	-		-		-	-		-		-	-	31900	49000	53700	56500	40700	50800	48800	29700	37600	20200	19800	49600	48700	22900	29400
Lead		mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	7.88	4.99	4.56	5.49	5.10	4.52	5.09	4.10	5.95	4.02	4.18	4.95	5.91	3.84	6.12
Lithium		mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	17.8	12.0	12.8	15.5	13.1	12.3	12.4	11.7	14.7	7.3	9.7	12.5	13.1	8.3	13.0
Magnesium		mg/kg	-		-		-	-		-		-	-	6530	6650	6670	8010	6210	6930	7100	6660	7990	4040	5290	6430	6380	4250	6420
Manganese		mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	574	573	433	624	509	518	576	465	600	350	321	532	536	317	524
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.075	0.093	0.07	0.075	0.097	0.082	0.091	0.07	0.066	<0.050	<0.050	0.095	0.094	0.058	0.065
Molybdenum		mg/kg	-		-		5	-		-		(10)	-	1.22	3.30	3.57	2.97	3.50	3.30	3.33	2.30	2.93	0.43	0.48	3.32	3.11	0.49	0.74
Nickel		mg/kg	-		-		150	-		-		(100)	150	21.6	9.9	9.1	14.5	12.8	10.1	11.6	10.4	12.3	12.2	17.5	9.9	10.8	14.1	19.9
Phosphorus		mg/kg	-		-		-	-		-		-	-	752	1440	1260	1390	1150	1320	1270	935	1060	828	596	1120	1090	627	839
Potassium		mg/kg	-		-			-		-		-	-	1560	950	1090	1360	1240	1150	1380	720	1050	490	660	1100	1120	510	880
Selenium		mg/kg	-		-		2	-		-		(3)	4	0.27	0.76	0.86	0.61	0.85	0.74	0.78	0.53	0.69	<0.20	0.24	0.83	0.84	<0.20	0.26
Silver		mg/kg	-		-		20	-		-		(20)	-	0.29	0.28	0.33	0.32	0.3	0.31	0.3	0.18	0.24	<0.10	<0.10	0.31	0.32	0.16	0.12
Sodium		mg/kg	-		-		-	-		-		-	-	231	648	674	681	569	760	663	629	543	669	197	583	546	147	445
Strontium		mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	56.7	139	132	127	152	152	161	100	122	86.4	89.3	121	135	53.5	95.3
Sulfur		mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	0.105	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.054
Tin		mg/kg	-		-		5	-		-		(50)	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	888	1070	799	1010	927	1170	1330	605	950	665	560	936	934	658	656
Uranium		mg/kg	-		-		16[5]	-		-		(16)[5]	-	0.762	0.875	0.738	0.892	1.230	0.943	1.09	0.508	0.741	0.503	0.496	0.812	0.846	0.399	0.527
Vanadium		mg/kg	-		-		200	-		-		(200)	-	95	185	{205}	{209}	147	193	181	98	134	62	50	184	180	76	83
Zinc		mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	58.1	59.4	45.0	60.3	43.8	48.2	51.6	40.8	53.9	31.6	32.8	46.1	45.6	33.1	46.4
Zirconium		mg/kg	-		-		-	-		-		-	-	<1.0	3.6	1.9	1.0	1.9	2.8	3.3	3.2	2.7	5.2	4.2	2.5	2.2	3.8	2.8

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

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bold	exceeds BC CSR AL Ecological Health guideline
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MPMC - Detailed Site Investigation
Mount Polley Mine, BC

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Coordinates	Easting													597518	597505	599464	599501	599592	599644	598205	596972	596933	596889	596889		596748	601828	601921
	Northing													5818447	5818325	5817347	5817317	5817258	5817223	5817716	5819178	5819181	5819214	5819214		5819327	5817169	5817160
Date Sampled														3-Sep-2016	3-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	5-Sep-2016	19-Aug-2016
Sample Depth (m bgs)														0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2
QA/QC																							FDA	FD				
ALS Sample ID		Units	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		L1826516-16	L1826516-46	L1826516-17	L1826516-18	L1826516-19	L1826516-20	L1826516-21	L1826516-22	L1826516-23	L1826516-24	L1826516-25	L1826516-26	L1826516-27	L1826516-28	L1826551-1
Physical Parameters																												
pH		pH	-		-		-	-		-		-	-	8.48	8.69	8.67	8.59	8.31	8.43	7.82	7.83	7.84	7.71	7.67	7.81	7.78	8.34	8.39
Total Organic Carbon		%	-		-		-	-		-		-	-	0.19	0.23	0.094	0.083	0.252	0.192	0.63	1.84	2.21	2.87	2.59	1.22	1.74	<0.098	0.152
Total Inorganic Carbon		%	-		-		-	-		-		-	-	0.32	0.47	0.30	0.22	0.23	0.23	0.16	0.23	0.29	0.26	0.26	0.27	0.30	0.41	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	2.67	3.90	2.53	1.87	1.93	1.87	1.36	1.93	2.44	2.19	2.17	2.28	2.48	3.42	-
Moisture		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																												
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																												
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	<1.0	1.4	<1.0	<1.0	<1.0	1	<1.0	<1.0	<2.0	1.6	1.6	<1.0	1.9	<1.0	<1.0
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	<2.0	3.2	2.4	2.2	6	3.6	9.4	3.7	2.9	3.3	3.9	3.7	4	<2.0	2.9
Available Potassium		mg/kg	-		-		-	-		-		-	-	77	98	56	68	52	56	98	98	98	88	86	93	95	164	155
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																												
Total Carbon by Combustion		%	-		-		-	-		-		-	-	0.51	0.69	0.4	0.31	0.48	0.42	0.79	2.07	2.5	3.13	2.85	1.49	2.04	0.49	-
Stong Acid Leachable - Total Metals																												
Aluminum		mg/kg	-		-		-	-		-		-	-	16100	18400	12500	13100	12100	12000	9970	15000	15300	14700	15000	13100	14200	15900	16000
Antimony		mg/kg	-		-		20	-		-		(20)	-	0.40	0.48	0.35	0.38	0.32	0.31	0.24	0.35	0.39	0.39	0.37	0.33	0.34	0.35	0.35
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	7.5	8.76	6.9	8.2	8.6	7.7	6.8	8.5	10.0	8.9	8.8	8.1	9.7	11.2	11.2
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	107	126	101	135	81	114	82	163	170	163	160	138	154	158	153
Beryllium		mg/kg	-		-		4	-		-		(4)	-	0.40	0.46	0.36	0.43	0.41	0.42	0.36	0.54	0.58	0.53	0.54	0.49	0.53	0.63	0.59
Bismuth		mg/kg	-		-		-	-		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron		mg/kg	-		-		-	-		-		-	-	<5.0	5.2	<5.0	11.1	5.5	6.1	<5.0	7	7.9	7.9	7.7	6.8	7.6	8.8	7.3
Boron (Hot Water Soluble)		mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.165	0.182	0.157	0.149	0.131	0.116	0.103	0.232	0.185	0.211	0.226	0.150	0.155	0.156	0.134
Calcium		mg/kg	-		-		-	-		-		-	-	14900	22400	15800	13100	13400	16300	11800	19900	22600	20800	20900	19300	21900	25900	23100
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	37.5	37.9	24.5	21.9	22.2	14.7	14.1	17.2	16.2	16.6	17.2	14.0	13.9	10.5	11.3
Cobalt		mg/kg	-		-		40	-		-		(50)	-	12.7	14.1	10.4	12.2	11.2	10.7	9.8	13.3	14.7	13.6	13.6	12.3	13.9	16.3	15.8
Copper		mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	80.8	67	107	**324**	**401**	**487**	**449**	**537**	**597**	**539**	**547**	**511**	**573**	**821**	**819**
Iron		mg/kg	-		-		-	-		-		-	-	30800	32200	27900	32400	34100	31200	32500	42800	54000	49200	47500	47800	51700	45700	47400
Lead		mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	7.76	7.59	6.13	5.23	5.49	3.89	3.68	4.72	4.86	4.66	4.74	4.16	4.29	4.92	4.43
Lithium		mg/kg	-		-		1600[5]	-		-		{1,600}[5]	-	16.4	18.5	12.9	13.4	11.9	11.2	10.3	12.8	13.3	12.3	12.5	11.6	12.3	16.1	14.3
Magnesium		mg/kg	-		-		-	-		-		-	-	7640	8970	6420	7670	6560	6220	5330	6650	7350	6600	6560	6000	6850	9670	9460
Manganese		mg/kg	-		-		1800[5]	-		-		{1,800}[5]	-	587	649	507	567	516	449	397	528	543	520	521	442	517	583	577
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.069	0.059	0.075	0.071	0.067	0.061	0.057	0.101	0.093	0.103	0.11	0.089	0.095	0.085	0.069
Molybdenum		mg/kg	-		-		5	-		-		{10}	-	0.75	0.69	0.72	1.35	2.48	2.53	2.10	3.45	4.50	3.96	3.69	3.40	3.84	5.60	3.28
Nickel		mg/kg	-		-		150	-		-		{100}	150	29.0	32.3	18.7	16.3	13.3	11.1	9.4	13.0	11.6	12.0	12.5	9.7	10.1	9.2	9.7
Phosphorus		mg/kg	-		-		-	-		-		-	-	709	828	790	897	878	865	747	1170	1370	1220	1210	1050	1320	1190	1260
Potassium		mg/kg	-		-			-		-		-	-	1340	1910	890	890	830	930	720	1240	1280	1230	1230	1100	1210	1400	1390
Selenium		mg/kg	-		-		2	-		-		{3}	4	0.28	0.31	0.24	0.40	0.52	0.57	0.53	0.83	0.83	0.82	0.77	0.80	0.80	0.93	0.97
Silver		mg/kg	-		-		20	-		-		{20}	-	0.11	0.10	0.12	0.13	0.19	0.24	0.23	0.29	0.33	0.29	0.31	0.28	0.33	0.37	0.34
Sodium		mg/kg	-		-		-	-		-		-	-	285	544	639	387	489	683	438	709	786	714	696	698	788	1080	900
Strontium		mg/kg	-		-		47,000[5]	-		-		{47,000}[5]	-	101	147	114	89.3	91.7	122	78.3	153	163	158	157	146	158	169	160
Sulfur		mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	0.082	0.126	0.052	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tin		mg/kg	-		-		5	-		-		{50}	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	692	951	786	719	1020	933	796	1030	1250	1170	1110	1060	1190	1310	1390
Uranium		mg/kg	-		-		16[5]	-		-		{16}[5]	-	0.668	0.772	0.437	0.470	0.615	0.763	0.514	1.080	1.040	1.230	1.200	0.932	0.963	0.998	0.875
Vanadium		mg/kg	-		-		200	-		-		{200}	-	71	82.2	79	106	126	117	119	161	{210}	187	182	179	{205}	178	181
Zinc		mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	57.9	61	48.7	46.5	45.0	40.0	36.7	45.7	48.7	46.1	45.5	39.4	48.9	56.2	53.3
Zirconium		mg/kg	-		-		-	-		-		-	-	5.8	8	5.3	4.4	4.4	4.5	2.5	1.6	2.4	2.0	1.9	1.8	2.3	6.9	6.2

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	CSS16-08	CSS16-09	CSS16-10	CSS16-11	CSS16-12	CSS16-13	CSS16-17	CSS16-18	CSS16-19	CSS16-20	CSS16-21	CSS16-22	CSS16-43	CSS16-44	CSS16-45
Coordinates	Easting													601910	601935	602019	601995	602092	602044	601239	601187	601130	601139	601043	601802	602161	601665	602266
	Northing													5817115	5817113	5817182	5817215	5817107	5817155	5817149	5817171	5817192	5817177	5817256	5817297	5817144	5817285	5817169
Date Sampled														19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	20-Aug-2016	20-Aug-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016
Sample Depth (m bgs)														0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2
QA/QC																												
ALS Sample ID														L1826551-2	L1826551-3	L1826551-4	L1826551-5	L1826551-7	L1826551-8	L1826551-9	L1826551-10	L1826551-11	L1826551-12	L1826551-13	L1826551-14	L1826551-15	L1826551-16	L1826551-17
		Units	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic																	
Physical Parameters																												
pH		pH	-		-		-	-		-		-	-	7.53	7.33	8.42	7.96	7.46	7.15	7.16	8.04	8.18	8.1	8.49	8.36	8.53	8.18	7.98
Total Organic Carbon		%	-		-		-	-		-		-	-	6.33	7.88	0.25	1.13	7.47	6.87	0.636	0.48	0.28	0.22	0.164	<0.077	0.123	0.469	6.23
Total Inorganic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																												
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																												
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	<2.0	<2.0	<1.0	<1.0	<2.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.2	<2.0
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	3.2	3.6	2	4.5	2.6	6.1	<2.0	<2.0	<2.0	<2.0	<2.0	2.5	<2.0	<2.0	2.5
Available Potassium		mg/kg	-		-		-	-		-		-	-	168	144	141	123	94	137	35	116	63	68	89	126	140	54	144
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																												
Total Carbon by Combustion		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals																												
Aluminum		mg/kg	-		-		-	-		-		-	-	15600	14600	14600	13600	12600	13800	13200	15500	11900	10900	12600	13800	15500	10600	19300
Antimony		mg/kg	-		-		20	-		-		(20)	-	0.37	0.39	0.34	0.29	0.34	0.38	0.31	0.40	0.36	0.44	0.40	0.29	0.34	0.45	0.50
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	10.6	9.4	10.5	9.5	7.7	8.7	10.5	12.1	10.4	12.3	12.5	10.0	11.3	12.6	12.3
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	151	139	148	139	124	150	93	160	107	102	119	145	153	115	201
Beryllium		mg/kg	-		-		4	-		-		(4)	-	0.57	0.51	0.57	0.47	0.44	0.48	0.46	0.55	0.38	0.37	0.48	0.50	0.57	0.41	0.64
Bismuth		mg/kg	-		-		-	-		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron		mg/kg	-		-		-	-		-		-	-	8.3	8	6.7	5.2	7.4	8.2	<5.0	7.9	<5.0	<5.0	5.4	5.6	6.8	<5.0	7.8
Boron (Hot Water Soluble)		mg/kg	-		-		2	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.220	0.306	0.146	0.172	0.209	0.240	0.110	0.178	0.160	0.167	0.157	0.160	0.145	0.175	0.269
Calcium		mg/kg	-		-		-	-		-		-	-	24700	20400	22700	17800	19600	19200	6050	25500	17100	17700	14600	20500	22700	8430	21000
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	11.9	17.2	10.4	13.2	17.5	17.1	36.6	13.4	23.8	28.0	19.7	11.0	10.9	30.7	25.4
Cobalt		mg/kg	-		-		40	-		-		(50)	-	15.3	13.4	15.4	13.9	10.9	12.1	9.7	15.8	11.8	12.6	13.1	14.8	16.0	11.0	17.0
Copper		mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	624	453	819	706	379	340	60.1	765	313	252	454	826	848	121	455
Iron		mg/kg	-		-		-	-		-		-	-	38100	34900	46500	40600	33400	33000	26600	48600	38600	44600	37900	44100	48200	27500	40400
Lead		mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	4.60	5.89	4.59	4.38	5.36	5.76	6.33	4.70	5.23	5.25	4.87	4.46	4.52	5.26	7.42
Lithium		mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	14.3	15.0	13.9	12.4	14.7	15.0	14.3	14.4	11.2	11.2	12.6	13.2	14.0	11.3	19.5
Magnesium		mg/kg	-		-		-	-		-		-	-	9460	8010	9010	8120	6440	7130	5550	9460	6660	6870	7680	8720	9460	6490	10200
Manganese		mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	611	544	551	555	480	651	365	654	533	583	578	533	572	730	817
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.07	0.082	0.079	0.068	0.075	0.082	0.089	0.078	0.061	0.089	0.083	0.07	0.073	0.079	0.101
Molybdenum		mg/kg	-		-		5	-		-		{10}	-	3.12	2.82	3.57	2.89	2.63	3.00	1.11	3.87	1.88	1.88	1.99	4.14	3.79	1.48	3.33
Nickel		mg/kg	-		-		150	-		-		{100}	150	10.7	14.4	8.8	10.5	14.0	13.9	22.7	10.4	17.7	20.4	14.7	8.9	9.0	26.4	21.2
Phosphorus		mg/kg	-		-		-	-		-		-	-	1210	1070	1240	1090	924	1060	674	1260	992	1130	1030	1200	1250	725	1150
Potassium		mg/kg	-		-			-		-		-	-	1350	1250	1250	1090	1100	1280	800	1330	970	860	1000	1200	1380	740	1620
Selenium		mg/kg	-		-		2	-		-		{3}	4	0.95	0.96	0.94	0.80	0.77	0.66	<0.20	0.98	0.54	0.69	0.55	0.85	0.97	0.31	1.00
Silver		mg/kg	-		-		20	-		-		{20}	-	0.27	0.26	0.34	0.28	0.23	0.25	0.13	0.3	0.2	0.17	0.2	0.34	0.35	0.13	0.29
Sodium		mg/kg	-		-		-	-		-		-	-	776	571	810	732	520	548	156	877	520	501	498	870	896	393	647
Strontium		mg/kg	-		-		47,000[5]	-		-		{47,000}[5]	-	157	134	149	126	128	133	61.5	137	105	101	91.7	137	156	80.4	161
Sulfur		mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	<0.050	<0.050	<0.050	<0.050	0.051	<0.050	0.072	<0.050	0.056	0.188	<0.050	<0.050	<0.050	0.07	0.065
Tin		mg/kg	-		-		5	-		-		{50}	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	1340	1040	1110	919	829	985	690	1470	994	930	981	986	1300	717	1290
Uranium		mg/kg	-		-		16[5]	-		-		{16}[5]	-	1.260	1.260	0.785	0.709	1.170	0.976	1.580	1.010	0.782	0.873	0.734	0.699	0.847	0.643	1.340
Vanadium		mg/kg	-		-		200	-		-		{200}	-	145	118	175	147	114	113	71	183	130	150	130	167	183	80	129
Zinc		mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	59.3	57.6	53.0	54.1	54.4	56.5	43.2	56.4	49.6	50.8	56.7	55.5	53.2	46.9	70.1
Zirconium		mg/kg	-		-		-	-		-		-	-	5.7	2.9	5.4	3.5	3.0	3.1	1.5	6.3	4.3	3.8	4.2	4.8	6.1	2.4	2.8

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 2 - Results of Soil Analyses (Tailings Samples)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID Coordinates Easting Northing Date Sampled Sample Depth (m bgs) QA/QC ALS Sample ID	Units	BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	CSS16-46 602189 5817242 5-Sep-2016 0.05-0.2 L1826551-18
		MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		
Physical Parameters													
pH	pH	-		-		-	-		-		-	-	8.25
Total Organic Carbon	%	-		-		-	-		-		-	-	<0.089
Total Inorganic Carbon	%	-		-		-	-		-		-	-	-
Inorganic Carbon (as CACO3)	%	-		-		-	-		-		-	-	-
Moisture	%	-		-		-	-		-		-	-	-
Oxidation-Reduction Potential (ORP)	mV	-		-		-	-		-		-	-	-
Grain Size													
Gravel	%	-		-		-	-		-		-	-	-
Sand (0.125mm - 0.063mm)	%	-		-		-	-		-		-	-	-
Sand (0.25mm - 0.125mm)	%	-		-		-	-		-		-	-	-
Sand (0.50mm - 0.25mm)	%	-		-		-	-		-		-	-	-
Sand (1.00mm - 0.50mm)	%	-		-		-	-		-		-	-	-
Sand (2.00mm - 1.00mm)	%	-		-		-	-		-		-	-	-
Silt (0.0312mm - 0.004mm)	%	-		-		-	-		-		-	-	-
Silt (0.063mm - 0.0312mm)	%	-		-		-	-		-		-	-	-
Clay	%	-		-		-	-		-		-	-	-
Plant Available Nutrients													
Total Available Nitrogen	mg/kg	-		-		-	-		-		-	-	-
Total Nitrogen by LECO	%	-		-		-	-		-		-	-	-
Available Ammonium-N	mg/kg	-		-		-	-		-		-	-	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-	<1.0
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-	-
Available Phosphate-P	mg/kg	-		-		-	-		-		-	-	<2.0
Available Potassium	mg/kg	-		-		-	-		-		-	-	165
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-	-
Organic / Inorganic Carbon													
Total Carbon by Combustion	%	-		-		-	-		-		-	-	-
Stong Acid Leachable - Total Metals													
Aluminum	mg/kg	-		-		-	-	-	-		-	-	16200
Antimony	mg/kg	-		-		20	-	-	-		{20}	-	0.34
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	11.4
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	163
Beryllium	mg/kg	-		-		4	-		-		{4}	-	0.57
Bismuth	mg/kg	-		-		-	-		-		-	-	<0.20
Boron	mg/kg	-		-		-	-		-		-	-	7.8
Boron (Hot Water Soluble)	mg/kg	-		-		2	-		-		-	-	-
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.143
Calcium	mg/kg	-		-		-	-		-		-	-	23700
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	10.7
Cobalt	mg/kg	-		-		40	-		-		{50}	-	16.3
Copper	mg/kg	**150**	pH/AW/T	15000-15000	pH/DW/I	-	150	pH/AW/T	15000-15000	pH/DW/I	-	-	**849**
Iron	mg/kg	-		-		-	-		-		-	-	48600
Lead	mg/kg	**350-350**	pH/AW/LI	250-400	pH/DW/I	-	1000-1000	pH/AW/T	250-400	pH/DW/I	-	-	4.33
Lithium	mg/kg	-		-		1600[S]	-		-		{1,600}[S]	-	14.3
Magnesium	mg/kg	-		-		-	-		-		-	-	9710
Manganese	mg/kg	-		-		1800[S]	-		-		{1,800}[S]	-	618
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.075
Molybdenum	mg/kg	-		-		5	-		-		{10}	-	4.14
Nickel	mg/kg	-		-		150	-		-		{100}	150	8.8
Phosphorus	mg/kg	-		-		-	-		-		-	-	1280
Potassium	mg/kg	-		-			-		-		-	-	1420
Selenium	mg/kg	-		-		2	-		-		{3}	4	1.05
Silver	mg/kg	-		-		20	-		-		{20}	-	0.37
Sodium	mg/kg	-		-		-	-		-		-	-	941
Strontium	mg/kg	-		-		47,000[S]	-		-		{47,000}[S]	-	157
Sulfur	mg/kg					500						-	-
Thallium	mg/kg	-		-		2	-		-		-	-	<0.050
Tin	mg/kg	-		-		5	-		-		{50}	-	<2.0
Titanium	mg/kg	-		-		-	-		-		-	-	1420
Uranium	mg/kg	-		-		16[S]	-		-		{16}[S]	-	0.894
Vanadium	mg/kg	-		-		200	-		-		{200}	-	183
Zinc	mg/kg	**200-200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	-	56.1
Zirconium	mg/kg	-		-		-	-	-	-		-	-	6.4

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

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*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 3A - Results of Soil Analyses (Native Organic Soils)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	ST01-05	ST02-02	ST16-04	P2 - A Layer	P3 - A Layer	P4 - A B Layer	P5 - A Layer	SS15-03	P12 - H Layer	P12 - A Layer	P13 - H Layer	SS15-04	SS15-05	SS15-06
Coordinates	Easti		-					-						-	-	-	595904	595688	595739	595685	595421	596661	596661	596680	595353	595335	596186
	Northing	Units	-					-						-	-	-	5820522	5820222	5820047	5819997	5820734	5819385	5819385	5819406	5820744	5820841	5819974
Date Sampled			MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		11-Sep-2014	10-Sep-2014	13-Sep-2014	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	29-Jul-2015	31-Jul-2015	31-Jul-2015	31-Jul-2015	30-Jul-2015	30-Jul-2015	30-Jul-2015
Sample Depth (mbgs)														0.2 - 0.3	0.2 - 0.4	0.3 - 0.4	0.55	1.5	0.25	0.25	1.15	0.75	0.85	0.1	0.55	0.5	0.35
QA/QC														-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALS Sample ID														-	-	-	L1654527-2	L1654527-7	L1654527-9	L1654527-10	L1654527-19	L1654527-29	L1654527-30	L1654527-32	L1654527-34	L1654527-37	L1654527-42
Physical Parameters																											
pH		pH	-		-		-	-		-		-	-	6.79	6.76	6.93	6.30	5.99	6.04	6.00	6.27	6.33	6.24	5.93	6.90	6.09	5.78
Total Inorganic Carbon		%	-		-		-	-		-		-	-	< 0.1	< 0.1	0.1	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	< 0.8	< 0.8	0.86	-	-	-	-	-	-	-	-	-	-	-
Moisture		%	-		-		-	-		-		-	-	26	84	26	77.7	40.7	47.4	45.7	59.3	62.0	44.6	35.3	55.1	-	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	-	351	330	349	349	365	347	330	267	281	-	-
Grain Size																											
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients																											
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	-	38.7	9.3	29.1	27.9	34.5	72.5	85	20	64.7	-	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	-	0.589	0.305	0.290	0.456	0.427	0.580	0.557	0.726	0.637	-	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	-	38.7	9.3	29.1	27.9	34.5	72.5	85.0	20.0	28.9	-	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	<6.0	<1.0	<4.0	<4.0	<6.0	<4.0	<1.0	<6.0	34.4	-	-
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	<6.0	<4.0	<4.0	<4.0	<4.0	<2.0	<2.0	<6.0	35.8	-	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	<6.0	<4.0	<4.0	<4.0	<4.0	<2.0	<2.0	<6.0	35.8	-	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	<1.2	<0.80	<0.80	<0.80	<0.80	<0.50	<0.50	<1.2	<1.2	-	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	-	-	-	10.2	3.9	4.1	4.4	2.5	<2.0	<2.0	14.8	10.6	-	-
Available Potassium		mg/kg	-		-		-	-		-		-	-	-	-	-	117	77	107	126	113	219	258	253	122	-	-
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	-	60.4	93.8	22.9	15.2	15.9	18.5	6.8	525	16.1	-	-
Organic / Inorganic Carbon																											
Total Carbon by Combustion		%	-		-		-	-		-		-	-	-	-	-	18.4	7.2	5.9	7.9	7.1	9.2	8.6	17.0	9.5	-	-
Stong Acid Leachable - Total Metals																											
Aluminum		mg/kg	-		-		-	-	-	-		-	-	12100	553	10200	-	-	-	-	-	-	-	-	-	-	-
Antimony		mg/kg	-		-		20	-	-	-		{20}	-	0.34	0.17	0.35	0.29	-	0.26	0.32	-	-	0.37	-	-	0.25	0.33
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	9.5	0.4	4.4	4.8	-	5.4	4.7	-	-	9.7	-	-	4.9	3.4
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	100	31	153	193	-	138	144	-	-	306	-	-	153	132
Beryllium		mg/kg	-		-		4	-		-		{4}	-	0.34	< 0.2	0.24	0.31	-	0.65	0.65	-	-	1.26	-	-	0.43	0.23
Bismuth		mg/kg	-		-		-	-		-		-	-	< 0.2	< 0.2	< 0.2	-	-	-	-	-	-	-	-	-	-	-
Boron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.31	0.08	0.22	0.43	-	0.33	0.29	-	-	1.02	-	-	0.43	0.5
Calcium		mg/kg	-		-		-	-		-		-	-	9610	26700	7420	-	-	-	-	-	-	-	-	-	-	-
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	35.4	1.0	25.4	13.7	-	49.3	49.8	-	-	69.1	-	-	33.7	29.4
Cobalt		mg/kg	-		-		40	-		-		{50}	-	10.9	0.2	6.8	9.4	-	20.4	26.0	-	-	20.6	-	-	8.3	9.3
Copper		mg/kg	**100-150**	pH/AW/T	400-15000	pH/DW/I	-	100-150	pH/AW/T	400-15000	pH/DW/I	-	-	34.0	6.3	38.3	**352.0**	-	73.0	75.2	-	-	**208.0**	-	-	109.0	63.2
Iron		mg/kg	-		-		-	-		-		-	-	25700	822	18900	-	-	-	-	-	-	-	-	-	-	-
Lead		mg/kg	**150-350**	pH/AW/LI	100-400	pH/DW/I	-	150-1000	pH/AW/T	100-400	pH/DW/I	-	-	6.1	< 0.5	10.8	6.3	-	13.6	17.4	-	-	11.6	-	-	7.5	9.9
Lithium		mg/kg	-		-		1600[S]	-		-		{1,600}[S]	-	12.1	< 5	8.0	-	-	-	-	-	-	-	-	-	-	-
Magnesium		mg/kg	-		-		-	-		-		-	-	5550	1510	3470	-	-	-	-	-	-	-	-	-	-	-
Manganese		mg/kg	-		-		1800[S]	-		-		{1,800}[S]	-	686	7	805	-	-	-	-	-	-	-	-	-	-	-
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.08	< 0.05	0.22	0.223	-	0.125	0.063	-	-	0.07	-	-	0.078	0.131
Molybdenum		mg/kg	-		-		5	-		-		{10}	-	0.7	2.0	0.7	3.5	-	1.8	1.6	-	-	1.4	-	-	1.3	1.4
Nickel		mg/kg	-		-		150	-		-		{100}	150	25.2	2.3	15.6	12.2	-	26.9	28.8	-	-	63.0	-	-	22.4	15.6
Phosphorus		mg/kg	-		-		-	-		-		-	-	819	507	369	-	-	-	-	-	-	-	-	-	-	-
Potassium		mg/kg	-		-		-	-		-		-	-	1130	< 100	630	-	-	-	-	-	-	-	-	-	-	-
Selenium		mg/kg	-		-		2	-		-		{3}	4	0.5	1.5	< 0.2	0.6	-	0.4	0.2	-	-	0.4	-	-	0.5	0.2
Silver		mg/kg	-		-		20	-		-		{20}	-	0.1	< 0.1	0.3	0.2	-	1.2	0.5	-	-	0.9	-	-	0.3	1.5
Sodium		mg/kg	-		-		-	-		-		-	-	210	< 100	170	-	-	-	-	-	-	-	-	-	-	-
Strontium		mg/kg	-		-		47,000[S]	-		-		{47,000}[S]	-	84	120	60	-	-	-	-	-	-	-	-	-	-	-
Sulfur		mg/kg					500						-	800	7000		-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	0.1	< 0.05	0.051	<0.050	-	0.157	0.164	-	-	0.171	-	-	0.102	0.080
Tin		mg/kg	-		-		5	-		-		{50}	-	< 2	< 2	< 2	<2.0	-	<2.0	<2.0	-	-	<2.0	-	-	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	658	15	616	-	-	-	-	-	-	-	-	-	-	-
Uranium		mg/kg	-		-		16[S]	-		-		{16}[S]	-	0.9	3.15	0.43	0.63	-	0.98	0.74	-	-	1.79	-	-	1.81	0.42
Vanadium		mg/kg	-		-		200	-		-		{200}	-	61	2	50	75	-	92	82	-	-	121	-	-	71	58
Zinc		mg/kg	**150-200**	pH/AW/LI	200-10000	pH/DW/I	-	150-450	pH/AW/T	200-10000	pH/DW/I	-	-	51.1	2.3	93.8	106.0	-	70.6	93.8	-	-	128.0	-	-	45.7	78.8
Zirconium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Results are expressed in milligram per kilogram (mg/kg)
mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.
MPMC = Mount Polley Mining Corporation
Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.
*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations
AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	SS15-07	SS15-10	P15 - H Layer	P15 - A Layer	SS15-12	SS15-12	SS15-16	SS15-17	P18 - H Layer	P18 - A Layer	P21 - H Layer	P21 - A Layer	SS15-19
Coordinates	Easti													596117	596647	599780	599780	599813	599813	601582	601532	601784	601784	601622	601622	601939
	Northing	Units												5819897	5819368	5817188	5817188	5817198	5817198	5817518	5817513	5817533	5817533	5817050	5817050	5817248
Date Sampled			MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		30-Jul-2015	31-Jul-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	2-Aug-2015	2-Aug-2015	2-Aug-2015
Sample Depth (mbgs)														0.65	1.4	0.5	0.55	0.25	0.3	0.7	0.4	0.85	0.95	0.5	0.6	0.45
QA/QC														-	-	-	-	-	-	-	-	-	-	-	-	FDA
ALS Sample ID														L1654527-45	L1654527-54	L1654527-61	L1654527-62	L1654527-65	L1654527-66	L1654527-72	L1654527-74	L1654527-83	L1654527-84	L1654527-94	L1654527-95	L1654527-98
Physical Parameters																										
pH		pH	-		-		-	-		-		-	-	6.26	6.47	6.34	6.27	6.48	6.37	8.40	8.25	5.88	6.04	6.14	6.22	6.52
Total Inorganic Carbon		%	-		-		-	-		-		-	-		-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-		-	-	-	-	-	-	-	-	-	-	-	-
Moisture		%	-		-		-	-		-		-	-	46.3	-	68.1	52.4	61.2	56.7	-	-	55.7	34.9	74.0	58.7	47.4
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	252	-	251	291	276	266	-	-	290	303	284	298	277
Grain Size																										
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients																										
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	40.3	37.2	132	65.5	29.9	28.2	-	-	42.2	18.3	76	28.4	61.5
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	0.570	0.434	1.15	0.479	1.01	0.470	-	-	0.838	0.231	1.61	0.947	1.01
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	40.3	37.2	132	65.5	29.9	15.4	-	-	42.2	18.3	75.9	28.4	14.2
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	<4.0	<1.0	<10	<4.0	19	11.7	-	-	<8.0	<4.0	<12	<6.0	37.9
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	<6.0	<2.0	<10	<4.0	<8.0	12.9	-	-	<6.0	<4.0	<12	<6.0	47.3
Nitrate-N		mg/kg	-		-		-	-		-		-	-	<6.0	<2.0	<10	<4.0	<8.0	12.9	-	-	<6.0	<4.0	<12	<6.0	47.3
Nitrite-N		mg/kg	-		-		-	-		-		-	-	<1.2	<0.50	<2.0	<0.80	<1.6	<1.2	-	-	<1.2	<0.80	<2.4	<1.2	<1.2
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	41.9	<2.0	8.2	<2.0	15.9	17.8	-	-	14.0	<2.0	45.8	3.2	82.2
Available Potassium		mg/kg	-		-		-	-		-		-	-	96	245	91	95	136	84	-	-	145	80	58	64	170
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	143	20.8	44	27.6	77	59.8	-	-	257	41.4	153	208	178
Organic / Inorganic Carbon																										
Total Carbon by Combustion		%	-		-		-	-		-		-	-	13.2	5.8	35.1	10.5	23.5	10.6	-	-	16.8	3.6	37.2	17.6	20.2
Stong Acid Leachable - Total Metals																										
Aluminum		mg/kg	-		-		-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony		mg/kg	-		-		20	-	-	-		{20}	-	0.29	0.32	-	0.42	-	0.36	0.29	0.70	-	-	-	-	0.18
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	4.6	9.6	-	7.9	-	3.8	9.2	1.6	-	-	-	-	2.2
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	124	233	-	244	-	254	90	50	-	-	-	-	173
Beryllium		mg/kg	-		-		4	-		-		{4}	-	0.26	0.87	-	0.79	-	0.22	0.3	0.13	-	-	-	-	0.11
Bismuth		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.36	0.56	-	0.68	-	0.91	0.16	0.86	-	-	-	-	0.98
Calcium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	21.8	63.5	-	44.4	-	16.6	31.3	121.0	-	-	-	-	12.2
Cobalt		mg/kg	-		-		40	-		-		{50}	-	7.5	18.7	-	15.0	-	11.9	9.1	2.7	-	-	-	-	5.0
Copper		mg/kg	**100-150**	pH/AW/T	400-15000	pH/DW/I	-	100-150	pH/AW/T	400-15000	pH/DW/I	-	-	137.0	142.0	-	102.0	-	52.6	29.1	53.8	-	-	-	-	23.1
Iron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead		mg/kg	**150-350**	pH/AW/LI	100-400	pH/DW/I	-	150-1000	pH/AW/T	100-400	pH/DW/I	-	-	6.9	10.7	-	9.5	-	14.5	4.9	1.9	-	-	-	-	11.3
Lithium		mg/kg	-		-		1600[S]	-		-		{1,600}[S]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese		mg/kg	-		-		1800[S]	-		-		{1,800}[S]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.088	0.054	-	0.151	-	0.191	<0.050	0.210	-	-	-	-	0.161
Molybdenum		mg/kg	-		-		5	-		-		{10}	-	1.4	1.2	-	1.6	-	2.3	0.6	0.8	-	-	-	-	1.6
Nickel		mg/kg	-		-		150	-		-		{100}	150	11.5	47.6	-	38.4	-	10.7	20.0	12.4	-	-	-	-	6.5
Phosphorus		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium		mg/kg	-		-		2	-		-		{3}	4	0.3	0.3	-	1.3	-	0.6	0.3	{8.89}	-	-	-	-	<0.20
Silver		mg/kg	-		-		20	-		-		{20}	-	0.5	0.5	-	0.7	-	0.4	<0.10	0.4	-	-	-	-	0.2
Sodium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium		mg/kg	-		-		47,000[S]	-		-		{47,000}[S]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfur		mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	0.074	0.129	-	0.168	-	0.182	0.063	0.053	-	-	-	-	0.076
Tin		mg/kg	-		-		5	-		-		{50}	-	<2.0	<2.0	-	<2.0	-	<2.0	<2.0	<2.0	-	-	-	-	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium		mg/kg	-		-		16[S]	-		-		{16}[S]	-	0.51	1.15	-	2.71	-	0.6	0.65	2.86	-	-	-	-	0.32
Vanadium		mg/kg	-		-		200	-		-		{200}	-	62	108	-	76	-	45	63	14	-	-	-	-	23
Zinc		mg/kg	**150-200**	pH/AW/LI	200-10000	pH/DW/I	-	150-450	pH/AW/T	200-10000	pH/DW/I	-	-	76.7	121.0	-	53.5	-	62.3	44.1	22.1	-	-	-	-	118.0
Zirconium		mg/kg	-		-		-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	SS15-19	SS15-19	SS15-19	P23 - H Layer	P23 - A B Layer	P24 - H Layer	P24 - A Layer	SS15-14	SS15-14	SS15-15	P29 - H Layer	P29 - H Layer - DUP	P29 - A Layer
Coordinates	Easti													601939	601939	601939	601984	601984	601020	601020	600973	600973	601218	596992	596992	596992
	Northing	Units												5817248	5817248	5817248	5817261	5817261	5817043	5817043	5816984	5816984	5817329	5819114	5819114	5819114
Date Sampled			MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		2-Aug-2015	2-Aug-2015	2-Aug-2015	2-Aug-2015	2-Aug-2015	3-Aug-2015	3-Aug-2015	3-Aug-2015	3-Aug-2015	3-Aug-2015	4-Aug-2015	4-Aug-2015	4-Aug-2015
Sample Depth (mbgs)														0.45	0.5	0.5	0.2	0.25	0.35	0.45	0.6	0.7	0.25	0.15	0.15	0.2
QA/QC														DUP	FDA	DUP	-	-	-	-	-	-	-	FDA	DUP	-
ALS Sample ID														L1654527-99	L1654527-100	L1654527-101	L1654527-104	L1654527-105	L1654527-107	L1654527-108	L1654527-113	L1654527-114	L1654527-122	L1654527-127	L1654527-128	L1654527-129
Physical Parameters																										
pH		pH	-		-		-	-		-		-	-	7.11	6.70	6.92	6.86	6.46	5.83	5.93	6.44	6.04	7.01	7.11	5.98	6.16
Total Inorganic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture		%	-		-		-	-		-		-	-	51.9	24.5	20.2	41.7	13.4	59.6	39.3	66.1	55.8	77.7	36.9	34.7	17.9
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	277	291	293	150	288	316	323	168	239	204	239	254	338
Grain Size																										
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients																										
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	62.1	9.6	8.5	20.8	5.8	151	90.7	449	46.9	52.8	7.6	11.1	12.2
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	0.811	0.095	0.117	0.657	0.118	0.939	0.724	1.54	1.08	2.30	0.422	0.847	0.914
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	11.5	1.7	1.5	20.8	5.8	33.5	27.3	449	46.9	17.6	7.6	11.1	12.2
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	46.2	7.4	6.5	<6.0	<1.0	120	60.0	<10	<6.0	30	<4.0	<10	<4.0
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	50.6	7.9	7.0	<4.0	<2.0	117	63.3	<6.0	<6.0	35.2	<4.0	<6.0	<6.0
Nitrate-N		mg/kg	-		-		-	-		-		-	-	50.6	7.9	7	<4.0	<2.0	117	63.3	<6.0	<6.0	35.2	<4.0	<6.0	<6.0
Nitrite-N		mg/kg	-		-		-	-		-		-	-	<1.2	<0.50	<0.50	<0.80	<0.50	<1.2	<0.80	<1.2	<1.2	<1.6	<0.80	<1.2	<1.2
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	83.6	17.6	17.5	50.3	84.0	26.8	8.8	33.7	19.3	6.5	12.0	57.4	12.1
Available Potassium		mg/kg	-		-		-	-		-		-	-	134	35	47	259	98	138	97	210	235	91	366	351	212
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	172	49.1	51.9	355	308	494	271	208	403	75	39.4	142	21.1
Organic / Inorganic Carbon																										
Total Carbon by Combustion		%	-		-		-	-		-		-	-	16.3	1.0	1.2	14.3	1.7	14.3	9.5	24.4	15.7	37.6	6.5	12.5	12.3
Stong Acid Leachable - Total Metals																										
Aluminum		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony		mg/kg	-		-		20	-		-		{20}	-	0.25	0.14	0.11	-	0.22	-	-	-	0.70	-	-	-	-
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	2.6	2.0	1.8	-	5.7	-	-	-	**16.4**	-	-	-	-
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	199	65	57	-	69	-	-	-	336	-	-	-	-
Beryllium		mg/kg	-		-		4	-		-		{4}	-	0.18	<0.10	<0.10	-	0.24	-	-	-	0.94	-	-	-	-
Bismuth		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	1.2	0.18	0.14	-	0.3	-	-	-	**3.37**	-	-	-	-
Calcium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	17.6	15.2	14.3	-	29.0	-	-	-	**64.7**	-	-	-	-
Cobalt		mg/kg	-		-		40	-		-		{50}	-	7.4	2.7	2.6	-	7.4	-	-	-	17.7	-	-	-	-
Copper		mg/kg	**100-150**	pH/AW/T	400-15000	pH/DW/I	-	100-150	pH/AW/T	400-15000	pH/DW/I	-	-	28.0	7.2	4.4	-	12.8	-	-	-	**151.0**	-	-	-	-
Iron		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead		mg/kg	**150-350**	pH/AW/LI	100-400	pH/DW/I	-	150-1000	pH/AW/T	100-400	pH/DW/I	-	-	11.9	5.5	6.0	-	5.8	-	-	-	12.7	-	-	-	-
Lithium		mg/kg	-		-		1600[S]	-		-		{1,600}[S]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese		mg/kg	-		-		1800[S]	-		-		{1,800}[S]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	0.16	<0.050	<0.050	-	<0.050	-	-	-	0.16	-	-	-	-
Molybdenum		mg/kg	-		-		5	-		-		{10}	-	1.4	0.5	0.3	-	0.7	-	-	-	2.5	-	-	-	-
Nickel		mg/kg	-		-		150	-		-		{100}	150	13.2	4.9	4.2	-	16.8	-	-	-	71.0	-	-	-	-
Phosphorus		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium		mg/kg	-		-		2	-		-		{3}	4	0.2	<0.20	<0.20	-	<0.20	-	-	-	2.3	-	-	-	-
Silver		mg/kg	-		-		20	-		-		{20}	-	0.3	<0.10	<0.10	-	0.1	-	-	-	1.5	-	-	-	-
Sodium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium		mg/kg	-		-		47,000[S]	-		-		{47,000}[S]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfur		mg/kg					500						-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	0.080	<0.050	<0.050	-	0.061	-	-	-	0.168	-	-	-	-
Tin		mg/kg	-		-		5	-		-		{50}	-	<2.0	<2.0	<2.0	-	<2.0	-	-	-	<2.0	-	-	-	-
Titanium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium		mg/kg	-		-		16[S]	-		-		{16}[S]	-	0.35	0.3	0.32	-	0.43	-	-	-	1.93	-	-	-	-
Vanadium		mg/kg	-		-		200	-		-		{200}	-	32	31	31	-	57	-	-	-	79	-	-	-	-
Zinc		mg/kg	**150-200**	pH/AW/LI	200-10000	pH/DW/I	-	150-450	pH/AW/T	200-10000	pH/DW/I	-	-	118.0	36.1	31.7	-	73.7	-	-	-	**209.0**	-	-	-	-
Zirconium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 3A - Results of Soil Analyses (Native Organic Soils)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	Combined Tissue Soil - H/A Layer	BERRIES SOIL-1	BERRIES SOIL-2	BERRIES SOIL-3	BERRIES SOIL-4
Coordinates	Easti													596855	596394	596943	595903	595800
	Northing	Units												5819234	5819395	5819168	5819893	5819977
Date Sampled			MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		4-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015
Sample Depth (mbgs)														0.25	0-0.1	0-0.1	0-0.1	0-0.1
QA/QC														-	-	-	-	-
ALS Sample ID														L1654527-133	L1667543-45	L1667543-46	L1667543-47	L1667543-48
Physical Parameters																		
pH		pH	-		-		-	-		-		-	-	6.07	5.08	5.87	6.30	5.99
Total Inorganic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	-	-	-	-	-
Moisture		%	-		-		-	-		-		-	-	-	29.2	25.6	16.6	68.3
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	-	-	-
Grain Size																		
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-
Plant Avilable Nutrients																		
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	-	-	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-
Available Potassium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-
Organic / Inorganic Carbon																		
Total Carbon by Combustion		%	-		-		-	-		-		-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals																		
Aluminum		mg/kg	-		-		-	-		-		-	-	-	25700	20400	8070	3720
Antimony		mg/kg	-		-		20	-		-		{20}	-	0.43	0.36	0.36	0.23	<0.10
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	7.8	6.06	4.86	3.08	1.12
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	192	220	139	149	49.4
Beryllium		mg/kg	-		-		4	-		-		{4}	-	0.69	1.19	0.63	0.20	0.11
Bismuth		mg/kg	-		-		-	-		-		-	-	-	<0.20	<0.20	<0.20	<0.20
Boron		mg/kg	-		-		-	-		-		-	-	-	<5.0	<5.0	<5.0	<5.0
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.56	0.927	0.745	0.333	0.236
Calcium		mg/kg	-		-		-	-		-		-	-	-	8100	10700	8730	8790
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	**50.1**	41.6	36.2	16.2	5.88
Cobalt		mg/kg	-		-		40	-		-		{50}	-	33.1	16.7	11.3	6.52	4.16
Copper		mg/kg	**100-150**	pH/AW/T	400-15000	pH/DW/I	-	100-150	pH/AW/T	400-15000	pH/DW/I	-	-	52.4	88.7	47.1	125	47.5
Iron		mg/kg	-		-		-	-		-		-	-	-	33300	26400	17600	6620
Lead		mg/kg	**150-350**	pH/AW/LI	100-400	pH/DW/I	-	150-1000	pH/AW/T	100-400	pH/DW/I	-	-	10.5	10.5	8.46	7.29	1.80
Lithium		mg/kg	-		-		1600[S]	-		-		{1,600}[S]	-	-	18.8	18.7	7.9	2.2
Magnesium		mg/kg	-		-		-	-		-		-	-	-	5760	6170	3350	1370
Manganese		mg/kg	-		-		1800[S]	-		-		{1,800}[S]	-	-	1250	513	1110	661
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	<0.050	-	-	-	-
Molybdenum		mg/kg	-		-		5	-		-		{10}	-	1.0	1.40	0.90	1.64	0.76
Nickel		mg/kg	-		-		150	-		-		{100}	150	37.5	35.1	31.9	8.47	4.15
Phosphorus		mg/kg	-		-		-	-		-		-	-	-	1140	824	607	322
Potassium		mg/kg	-		-		-	-		-		-	-	-	1830	1470	970	320
Selenium		mg/kg	-		-		2	-		-		{3}	4	<0.20	0.36	<0.20	0.22	<0.20
Silver		mg/kg	-		-		20	-		-		{20}	-	0.3	0.75	0.23	0.56	0.68
Sodium		mg/kg	-		-		-	-		-		-	-	-	241	189	252	167
Strontium		mg/kg	-		-		47,000[S]	-		-		{47,000}[S]	-	-	80.7	83.2	70.0	61.6
Sulfur		mg/kg					500						-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	0.124	0.138	0.087	0.054	<0.050
Tin		mg/kg	-		-		5	-		-		{50}	-	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	-	564	484	699	128
Uranium		mg/kg	-		-		16[S]	-		-		{16}[S]	-	0.85	1.17	1.07	0.439	0.281
Vanadium		mg/kg	-		-		200	-		-		{200}	-	90	68.0	58.7	58.3	16.2
Zinc		mg/kg	**150-200**	pH/AW/LI	200-10000	pH/DW/I	-	150-450	pH/AW/T	200-10000	pH/DW/I	-	-	102.0	87.6	83.6	49.9	15.3
Zirconium		mg/kg	-		-		-	-		-		-	-	-	<1.0	<1.0	<1.0	<1.0

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

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*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
(brackets)	exceeds BC CSR PL Generic guideline

Table 3B - Results of Soil Analyses (Native Mineral Soils)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Parameter	Units	BC CSR AL Standards: MCS Ecological Health	Notes	BC CSR AL Standards: MCS Human Health	Notes	BC CSR AL Standards: Generic	BC CSR PL Standards: MCS Ecological Health	Notes	BC CSR PL Standards: MCS Human Health	Notes	BC CSR PL Standards: Generic	Protocol 4 Regional Background Concentrations*
Physical Parameters												
pH	pH	-		-		-	-		-		-	-
Total Organic Carbon	%	-		-		-	-		-		-	-
Total Inorganic Carbon	%	-		-		-	-		-		-	-
Inorganic Carbon (as CACO3)	%	-		-		-	-		-		-	-
Moisture	%	-		-		-	-		-		-	-
Oxidation-Reduction Potential (ORP)	mV	-		-		-	-		-		-	-
Grain Size												
Gravel	%	-		-		-	-		-		-	-
Sand (0.125mm - 0.063mm)	%	-		-		-	-		-		-	-
Sand (0.25mm - 0.125mm)	%	-		-		-	-		-		-	-
Sand (0.50mm - 0.25mm)	%	-		-		-	-		-		-	-
Sand (1.00mm - 0.50mm)	%	-		-		-	-		-		-	-
Sand (2.00mm - 1.00mm)	%	-		-		-	-		-		-	-
Silt (0.0312mm - 0.004mm)	%	-		-		-	-		-		-	-
Silt (0.063mm - 0.0312mm)	%	-		-		-	-		-		-	-
Clay	%	-		-		-	-		-		-	-
Plant Avilable Nutrients												
Total Available Nitrogen	mg/kg	-		-		-	-		-		-	-
Total Nitrogen by LECO	%	-		-		-	-		-		-	-
Available Ammonium-N	mg/kg	-		-		-	-		-		-	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-
Available Phosphate-P	mg/kg	-		-		-	-		-		-	-
Available Potassium	mg/kg	-		-		-	-		-		-	-
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-
Organic / Inorganic Carbon												
Total Carbon by Combustion	%	-		-		-	-		-		-	-
Stong Acid Leachable - Total Metals												
Aluminum	mg/kg	-		-		-	-	-	-		-	-
Antimony	mg/kg	-		-		20	-	-	-		{20}	-
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-
Beryllium	mg/kg	-		-		4	-		-		{4}	-
Bismuth	mg/kg	-		-		-	-		-		-	-
Boron	mg/kg	-		-		-	-		-		-	-
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-
Calcium	mg/kg	-		-		-	-		-		-	-
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150
Cobalt	mg/kg	-		-		40	-		-		{50}	-
Copper	mg/kg	**90-150**	pH/AW/T	250-15000	pH/DW/I	-	90-150	pH/AW/T	250-15000	pH/DW/I	-	-
Iron	mg/kg	-		-		-	-		-		-	-
Lead	mg/kg	**150-350**	pH/AW/LI	100-400	pH/DW/I	-	150-1000	pH/AW/T	100-400	pH/DW/I	-	-
Lithium	mg/kg	-		-		1600[S]	-		-		{1,600}[S]	-
Magnesium	mg/kg	-		-		-	-		-		-	-
Manganese	mg/kg	-		-		1800[S]	-		-		{1,800}[S]	-
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-
Molybdenum	mg/kg	-		-		5	-		-		{10}	-
Nickel	mg/kg	-		-		150	-		-		{100}	150
Phosphorus	mg/kg	-		-		-	-		-		-	-
Potassium	mg/kg	-		-			-		-		-	-
Selenium	mg/kg	-		-		2	-		-		{3}	4
Silver	mg/kg	-		-		20	-		-		{20}	-
Sodium	mg/kg	-		-		-	-		-		-	-
Strontium	mg/kg	-		-		47,000[S]	-		-		{47,000}[S]	-
Sulfur	mg/kg					500						-
Thallium	mg/kg	-		-		2	-		-		-	-
Tin	mg/kg	-		-		5	-		-		{50}	-
Titanium	mg/kg	-		-		-	-		-		-	-
Uranium	mg/kg	-		-		16[S]	-		-		{16}[S]	-
Vanadium	mg/kg	-		-		200	-		-		{200}	-
Zinc	mg/kg	**150-200**	pH/AW/LI	150-10000	pH/DW/I	-	150-450	pH/AW/T	150-10000	pH/DW/I	-	-
Zirconium	mg/kg	-		-		-	-	-	-		-	-

Sample ID	ST01-02	ST02-04	ST02-07	ST02-08	ST03-05	ST08-05	ST08-06	ST09-04	ST11-03	ST12-05	ST13-05	ST13-06	ST15-02	ST16-04
Coordinates	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Northing	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Date Sampled	22-Sep-2014	10-Sep-2014	3-Sep-2014	10-Sep-2014	10-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	29-Oct-2014	14-Sep-2014	29-Oct-2014	29-Oct-2014	13-Sep-2014	13-Sep-2014
Sample Depth (mbgs)	0.1 - 0.2	0.1 - 0.3	0.3 - 0.8	0.1 - 0.3	0.6 - 0.7	0.3 - 0.5	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.3 - 0.4	0.2 - 0.4	0.0 - 0.1	0.2 - 0.3	0.5 - 0.6
QA/QC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALS Sample ID	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters														
pH	6.92	8.46	7.75	7.74	6.41	5.95	6.7	8.2	8.25	7.27	7.58	8.48	7.2	6.7
Total Organic Carbon	2.5	0.32	0.48	0.13	-	0.76	0.27	0.21	-	0.3	-	-	-	2.1
Total Inorganic Carbon	0.26	1.2	< 0.1	< 0.1	0.44	< 0.1	< 0.1	< 0.1	-	< 0.1	-	-	< 0.1	0.27
Inorganic Carbon (as CACO3)	2.1	9.8	< 0.8	< 0.8	3.7	< 0.8	< 0.8	< 0.8	-	< 0.8	-	-	< 0.8	2.2
Moisture	20	23	8.9	15	14	19	5.5	6.9	-	13	-	-	18	25
Oxidation-Reduction Potential (ORP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size														
Gravel	32	< 0.1	33	< 0.1	0.61	5.4	-	< 0.1	6.5	12	23	< 0.1	0.64	5.5
Sand (0.125mm - 0.063mm)	7.1	0.82	4.8	33	17	5.5	-	17	9.1	8.2	9.2	20	9.3	13
Sand (0.25mm - 0.125mm)	8.7	< 0.1	8.9	17	21	6.6	-	27	5.6	9.0	9.1	18	8.7	9.3
Sand (0.50mm - 0.25mm)	8.8	< 0.1	15	0.85	17	5.9	-	22	4.7	8.2	7.8	5.4	7.2	5.3
Sand (1.00mm - 0.50mm)	7.0	< 0.1	16	< 0.1	4.4	3.3	-	2.4	2.5	6.5	5.6	0.81	5.0	2.8
Sand (2.00mm - 1.00mm)	6.3	< 0.1	10.0	< 0.1	1.8	3.1	-	< 0.1	2.5	8.7	6.4	0.16	5.4	2.0
Silt (0.0312mm - 0.004mm)	14	52	5.5	21	18	41	-	13	35	19	19	29	24	25
Silt (0.063mm - 0.0312mm)	8.7	15	3.6	22	13	14	-	11	16	10	12	20	13	15
Clay	6.7	33	3.9	6.3	6.8	15	-	7.5	18	18	7.4	6.3	27	23
Plant Avilable Nutrients														
Total Available Nitrogen	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon														
Total Carbon by Combustion	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals														
Aluminum	15900	22400	10700	11500	13100	17100	12800	11800	16300	15800	11400	8080	24000	24600
Antimony	0.24	0.25	0.37	0.27	0.28	0.20	0.31	0.18	0.40	0.39	0.22	0.12	0.54	0.41
Arsenic	7.0	8.7	9.3	14.7	7.0	3.5	7.2	4.4	5.3	8.0	6.6	2.6	10.5	9.7
Barium	104	145	74	69	83	114	70	81	84	96	68	60	204	156
Beryllium	0.46	0.59	0.4	0.28	0.32	0.37	0.34	0.29	0.38	0.4	0.28	0.21	0.69	0.74
Bismuth	< 0.2	0.32	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.23	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	0.37	0.16	0.1	0.13	0.18	0.25	0.08	< 0.05	0.17	0.08	0.08	0.06	0.08	0.18
Calcium	6080	43900	6250	4740	4300	2560	6270	5390	33100	6620	5240	13000	6610	7040
Chromium	34.3	48.4	28.5	32.8	32.6	36.6	25.8	26.9	40.8	36.4	29.8	19.9	**61.7**	**53.3**
Cobalt	9.3	16.9	8.7	9.4	8.8	12.4	9.7	8.3	13.9	12.6	9.6	6.3	16.0	16.4
Copper	45.8	37.4	32.3	25.0	23.3	19.3	65.3	18.5	32.1	30.4	41.5	13.2	63.7	86.7
Iron	25100	41800	27400	22600	28300	29600	27800	19300	31400	30400	24600	14100	40800	34100
Lead	5.9	13.8	5.1	5.9	5.5	8.3	4.6	5.2	10.2	7.2	6.7	4.1	8.7	8.4
Lithium	22.3	42.0	10.1	12.9	13.0	25.9	11.3	13.9	22.6	15.2	11.5	9.1	20.3	18.6
Magnesium	5020	12000	6040	5540	4980	6090	6910	5180	9810	7200	5970	4470	8540	6690
Manganese	499	802	370	307	321	635	495	235	549	696	499	189	694	1670
Mercury	< 0.05	< 0.05	0.093	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.057	< 0.05	< 0.05	0.083	0.08
Molybdenum	< 0.5	0.7	1.2	< 0.5	< 0.5	0.7	< 0.5	0.5	0.7	0.5	< 0.5	< 0.5	0.6	3.3
Nickel	26.3	44.9	17.2	26.0	18.6	24.9	18.7	16.1	40.1	25.9	17.2	21.1	38.7	32.4
Phosphorus	431	646	785	728	780	547	765	579	629	842	602	451	762	578
Potassium	700	4120	530	1010	640	1170	660	720	2120	1550	910	810	1960	1230
Selenium	0.4	0.4	< 0.2	0.3	< 0.2	< 0.2	< 0.2	< 0.2	0.6	0.3	< 0.2	< 0.2	< 0.2	0.6
Silver	0.3	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3
Sodium	160	280	250	190	110	110	120	200	250	290	230	140	310	210
Strontium	59	223	57	43	43	25	78	67	179	67	45	70	88	78
Sulfur	1100	< 500	900	< 500		700	< 500	< 500	900	800	800	700		500
Thallium	0.11	0.22	< 0.05	0.072	< 0.05	0.084	< 0.05	< 0.05	0.16	0.081	0.053	0.05	0.12	0.11
Tin	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Titanium	701	1020	678	719	823	595	902	845	706	735	852	615	1030	702
Uranium	1.08	1.25	0.7	0.65	0.55	0.58	0.5	0.53	1.12	0.73	0.6	0.45	0.73	2.16
Vanadium	61	46	87	42	81	45	86	59	40	71	69	23	100	91
Zinc	52.7	84.7	60.6	42.5	48.6	90.0	42.0	34.5	70.7	53.8	36.4	29.6	74.4	46.1
Zirconium	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample ID	P4 - A B Layer	P5 - B Layer	SS15-04	SS15-05	SS15-06	SS15-07	SS15-08	SS15-09	SS15-10	P13 - B Layer	P15 - B Layer
Coordinates	595739	595685	595353	595335	596186	596117	595969	595956	596647	596680	599780
Northing	5820047	5819997	5820744	5820841	5819974	5819897	5819793	5819771	5819368	5819406	5817188
Date Sampled	29-Jul-2015	29-Jul-2015	30-Jul-2015	30-Jul-2015	30-Jul-2015	30-Jul-2015	30-Jul-2015	30-Jul-2015	31-Jul-2015	31-Jul-2015	1-Aug-2015
Sample Depth (mbgs)	0.25	0.35	0.8	0.8	0.45	0.75	2.9	0.15	1.4	0.2	0.6
QA/QC	-	-	-	-	-	-	-	-	-	-	-
ALS Sample ID	L1654527-9	L1654527-11	L1654527-35	L1654527-38	L1654527-43	L1654527-46	L1654527-48	L1654527-50	L1654527-54	L1654527-57	L1654527-63
Physical Parameters											
pH	6.04	5.79	7.00	7.00	4.97	6.07	8.40	5.68	6.47	6.04	7.43
Total Organic Carbon	-	-	-	-	-		-	-	-	-	-
Total Inorganic Carbon	-	-	-	-	-		-	-	-	-	-
Inorganic Carbon (as CACO3)	-	-	-	-	-		-	-	-	-	-
Moisture	47.4	22.4	30.4	-	-	21.7	-	-	-	10.8	21.3
Oxidation-Reduction Potential (ORP)	349	435	281	-	-	276	-	-	-	300	287
Grain Size											
Gravel	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)	-	-	-	-	-	-	-	-	-	-	-
Clay	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients											
Total Available Nitrogen	29.1	9.4	8.4	-	-	16.2	-	-	37.2	4	9.5
Total Nitrogen by LECO	0.290	0.110	0.105	-	-	0.122	-	-	0.434	0.164	0.068
Available Ammonium-N	29.1	9.4	8.4	-	-	16.2	-	-	37.2	4.0	9.5
Available Nitrate-N	<4.0	<1.0	<1.0	-	-	<1.0	-	-	<1.0	<1.0	<1.0
Nitrate+Nitrite-N	<4.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	<2.0	<2.0
Nitrate-N	<4.0	<2.0	<2.0	-	-	<2.0	-	-	<2.0	<2.0	<2.0
Nitrite-N	<0.80	<0.50	<0.50	-	-	<0.50	-	-	<0.50	<0.50	<0.50
Available Phosphate-P	4.1	2.7	4.0	-	-	97.8	-	-	<2.0	<2.0	<2.0
Available Potassium	107	47	39	-	-	80	-	-	245	81	<20
Available Sulfate-S	22.9	<3.0	7.0	-	-	13.7	-	-	20.8	8.4	11.6
Organic / Inorganic Carbon											
Total Carbon by Combustion	5.9	1.1	1.4	-	-	1.8	-	-	5.8	2.1	0.7
Stong Acid Leachable - Total Metals											
Aluminum	-	-	-	-	-	-	-	-	-	-	-
Antimony	0.26	-	-	0.76	0.33	0.31	0.35	0.29	0.32	0.27	-
Arsenic	5.4	-	-	12.1	4.1	5.3	7.9	4.9	9.6	7.5	-
Barium	138	-	-	254	97	84	141	102	233	120	-
Beryllium	0.65	-	-	0.78	0.32	0.34	0.39	0.51	0.87	0.57	-
Bismuth	-	-	-	-	-	-	-	-	-	-	-
Boron	-	-	-	-	-	-	-	-	-	-	-
Cadmium	0.33	-	-	0.06	0.33	0.28	0.14	0.4	0.56	0.2	-
Calcium	-	-	-	-	-	-	-	-	-	-	-
Chromium	49.3	-	-	**55.3**	41.9	34.0	21.9	36.4	**63.5**	41.8	-
Cobalt	20.4	-	-	23.4	7.6	9.3	12.7	10.7	18.7	10.0	-
Copper	73.0	-	-	130.0	95.5	29.5	**366.0**	121.0	142.0	48.0	-
Iron	-	-	-	-	-	-	-	-	-	-	-
Lead	13.6	-	-	10.4	5.9	6.6	5.4	7.2	10.7	7.9	-
Lithium	-	-	-	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-	-	-
Mercury	0.125	-	-	0.171	<0.050	<0.050	0.053	0.053	0.054	<0.050	-
Molybdenum	1.8	-	-	2.5	1.1	0.8	2.4	1.3	1.2	0.7	-
Nickel	26.9	-	-	31.8	19.0	17.4	18.6	24.7	47.6	27.8	-
Phosphorus	-	-	-	-	-	-	-	-	-	-	-
Potassium	-	-	-	-	-	-	-	-	-	-	-
Selenium	0.4	-	-	1.1	0.3	<0.20	0.5	0.3	0.3	<0.20	-
Silver	1.2	-	-	<0.10	0.3	0.4	0.2	0.6	0.5	0.2	-
Sodium	-	-	-	-	-	-	-	-	-	-	-
Strontium	-	-	-	-	-	-	-	-	-	-	-
Sulfur	-	-	-	-	-	-	-	-	-	-	-
Thallium	0.157	-	-	0.167	0.053	0.064	0.054	0.091	0.129	0.086	-
Tin	<2.0	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-
Titanium	-	-	-	-	-	-	-	-	-	-	-
Uranium	0.98	-	-	4.33	0.45	0.52	0.59	0.63	1.15	0.73	-
Vanadium	92	-	-	101	72	67	117	78	108	82	-
Zinc	70.6	-	-	64.8	69.2	77.3	49.6	71.8	121.0	70.2	-
Zirconium	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in milligram per kilogram (mg/kg)

mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 3B - Results of Soil Analyses (Native Mineral Soils)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards						BC CSR PLStandards						Protocol 4 Regional Background Concentrations*	SS15-12	SS15-17	SS15-18	P18 - B Layer	SS15-19	P23 - A B Layer	P24 - B Layer	SS15-14	SS15-14	P29 - B Layer	RYE GRASS SOIL-	RYE GRASS SOIL-	RYE GRASS SOIL-	WILLOW SEEDLING SOIL-1	WILLOW WATTLE SOIL-1	WILLOW STAKE SOIL-1	WILLOW SEEDLING SOIL-2	WILLOW WATTLE SOIL-2	WILLOW SEEDLING SOIL-3	WILLOW WATTLE SOIL-3	WILLOW SEEDLING SOIL-4	WILLOW WATTLE SOIL-4	WILLOW STAKE SOIL-4	WILLOW STAKE SOIL-4X	WILLOW WATTLE SOIL-4X
Coordinates	Northing															5817198	5817513	5817329	5817533	5817248	5817261	5817043	5816984	5816984	5819114	2	6	8	5817294	5817298	5817315	5817292	5817295	5817277	5817285	5817307	5817341	5817147	5817341	5817147
	Units	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic					600991	597675	596465	600794	600792	600837	600940	600877	600991	600962	600969	600634	601291	600634	601291	600634	601291
Date Sampled																1-Aug-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	2-Aug-2015	2-Aug-2015	3-Aug-2015	3-Aug-2015	3-Aug-2015	4-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015
Sample Depth (mbgs)																0.35	0.55	0.7	1.05	0.55	0.25	0.55	0.8	0.8	0.25	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
QA/QC																-	-	-	-	-	-	-	FDA	DUP	-	-	-	-	-	-	-	-	-	-	FDA	FDA	DUP	DUP
ALS Sample ID																L1654527-67	L1654527-75	L1654527-79	L1654527-85	L1654527-102	L1654527-105	L1654527-109	L1654527-115	L1654527-116	L1654527-130	L1667543-2	L1667543-7	L1667543-10	L1667543-13	L1667543-14	L1667543-15	L1667543-16	L1667543-17	L1667543-19	L1667543-20	L1667543-22	L1667543-23	L1667543-24	L1667543-25	L1667543-26
Physical Parameters																																							
pH	pH	-		-		-	-		-		-	-		-		6.73	6.94	5.80	6.56	6.24	6.46	5.78	7.27	7.26	6.66	7.2	7.12	8.09	8.45	8.37	8.41	8.46	8.48	8.08	8.66	8.3	8.77	8.12	8.09	8.75
Total Organic Carbon	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Inorganic Carbon	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-		-		-	-		-		-	-		-		-	-	-	17.4	22.2	13.4	33.5	-	-	6.59	16.2	8.97	17.7	2.78	2.58	5.22	14.5	10.4	6.25	4.36	7.96	1.42	4.95	5.67	1.30
Oxidation-Reduction Potential (ORP)	mV	-		-		-	-		-		-	-		-		-	-	-	285	239	288	345	FDA	DUP	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																																							
Gravel	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay	%	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients																																							
Total Available Nitrogen	mg/kg	-		-		-	-		-		-	-		-		-	-	-	2.2	7.2	5.8	67.4	9.9	8.1	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	%	-		-		-	-		-		-	-		-		-	-	-	0.083	0.090	0.118	0.543	0.225	0.237	0.164	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-		-		-	-		-		-	-		-		-	-	-	2.2	4.9	5.8	22.6	9.9	8.1	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-		-		-	-	-	<4.0	2.2	<1.0	41.8	<1.0	<1.0	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-		-		-	-	-	<2.0	2.4	<2.0	44.8	<2.0	<4.0	<2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-		-		-	-	-	<2.0	2.4	<2.0	44.8	<2.0	<4.0	<2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-		-		-	-	-	<0.50	<0.50	<0.50	<0.80	<0.50	<0.80	<0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	-		-		-	-		-		-	-		-		-	-	-	<2.0	6.7	84.0	10.3	4.4	4.3	13.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium	mg/kg	-		-		-	-		-		-	-		-		-	-	-	40	26	98	84	99	83	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-		-		-	-	-	11.0	29.5	308	164	18.4	16.4	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																																							
Total Carbon by Combustion	%	-		-		-	-		-		-	-		-		-	-	-	0.7	1.0	1.7	6.7	2.8	2.3	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals																																							
Aluminum	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	11600	16500	26000	9800	10300	11000	10300	14400	11200	13800	15800	9260	12400	12600	10500
Antimony	mg/kg	-		-		20	-		-		-	(20)		-		0.24	0.31	0.31	-	-	0.22	-	0.36	0.41	-	0.29	0.27	0.54	0.44	0.40	0.45	0.41	0.56	0.60	0.43	0.61	0.45	0.44	0.40	0.46
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-		-		5.7	7.4	7.8	-	-	5.7	-	**15.1**	**17.3**	-	7.54	5.64	10.0	9.64	9.57	11.7	7.67	8.67	**15.7**	12.3	11.1	7.56	14.3	12.6	12.6
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-		-		116	71	81	-	-	69	-	137	172	-	114	88.9	153	79.5	139	97.5	80.2	94.4	112	133	107	48.3	109	103	50.1
Beryllium	mg/kg	-		-		4	-		-		-	(4)		-		0.37	0.31	0.28	-	-	0.24	-	0.49	0.56	-	0.34	0.41	0.61	0.31	0.31	0.35	0.31	0.40	0.49	0.47	0.46	0.28	0.45	0.47	0.30
Bismuth	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	<0.20	<0.20	0.27	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	6.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-		-		0.13	0.07	0.18	-	-	0.3	-	0.66	0.67	-	0.513	0.108	0.272	0.141	0.150	0.194	0.151	0.219	0.297	0.200	0.218	0.209	0.213	0.198	0.226
Calcium	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	9490	4550	23300	6120	6330	6100	6420	20100	9690	11100	13500	20200	8120	8220	16700
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150		-		29.5	43.0	37.2	-	-	29.0	-	47.1	**51.4**	-	30.2	39.1	**58.0**	30.1	28.6	32.3	30.8	33.9	37.1	23.4	39.4	22.7	39.3	33.5	25.3
Cobalt	mg/kg	-		-		40	-		-		-	(50)		-		8.9	11.0	10.1	-	-	7.4	-	16.0	17.4	-	11.0	12.4	21.1	9.81	9.89	11.1	9.50	12.8	14.1	13.2	14.6	9.37	12.4	11.5	9.72
Copper	mg/kg	**90-150**	pH/AW/T	250-15000	pH/DW/I	-	90-150	pH/AW/T	250-15000	pH/DW/I	-	-		-		111.0	18.9	21.7	-	-	12.8	-	61.9	64.2	-	109	51.5	96.1	71.0	66.8	51.6	48.9	96.7	87.8	148	85.6	38.4	96.2	101	39.0
Iron	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	28000	27800	47300	24800	24400	26600	23800	30900	33200	33000	33100	22200	32900	31500	23200
Lead	mg/kg	**150-350**	pH/AW/LI	100-400	pH/DW/I	-	150-1000	pH/AW/T	100-400	pH/DW/I	-	-		-		4.8	6.6	6.3	-	-	5.8	-	8.6	9.8	-	6.33	7.44	13.6	4.90	4.99	6.30	4.87	6.21	8.20	6.17	7.88	4.68	5.76	5.36	4.83
Lithium	mg/kg	-		-		1600[3]	-		-		-	(1,600)[3]		-		-	-	-	-	-	-	-	-	-	-	11.9	20.2	36.3	9.9	9.7	11.2	9.4	14.5	10.1	15.9	17.6	10.4	12.6	12.7	10.1
Magnesium	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	4910	6490	13100	6150	5640	6200	6320	9000	6840	9730	8140	5880	7190	6590	6710
Manganese	mg/kg	-		-		1800[3]	-		-		-	(1,800)[3]		-		-	-	-	-	-	-	-	-	-	-	954	477	760	483	473	555	339	616	503	870	601	486	594	572	449
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-		-		0.057	<0.050	<0.050	-	-	<0.050	-	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	mg/kg	-		-		5	-		-		-	(10)		-		1.2	0.4	0.6	-	-	0.7	-	1.4	1.5	-	1.44	0.65	1.15	0.66	0.59	0.69	0.63	0.81	0.80	1.04	0.87	0.72	1.24	1.23	0.61
Nickel	mg/kg	-		-		150	-		-		-	(100)		150		17.9	23.1	24.5	-	-	16.8	-	36.9	39.7	-	16.7	33.4	58.1	23.8	22.5	25.0	23.8	27.8	32.7	23.6	32.5	19.9	27.6	22.8	21.1
Phosphorus	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	1000	555	788	770	726	821	648	934	919	1060	822	683	882	891	790
Potassium	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	1310	1440	2560	660	710	880	700	1090	740	910	1300	570	870	880	750
Selenium	mg/kg	-		-		2	-		-		-	(3)		4		0.4	<0.20	<0.20	-	-	<0.20	-	0.3	0.4	-	0.29	<0.20	0.39	<0.20	0.20	<0.20	0.80	0.55	0.74	0.30	0.37	0.20	0.37	0.32	0.26
Silver	mg/kg	-		-		20	-		-		-	(20)		-		0.2	<0.10	<0.10	-	-	0.1	-	0.4	0.5	-	0.25	0.11	0.15	0.12	0.12	0.17	0.13	0.12	0.16	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	197	145	369	201	191	226	256	416	457	501	204	259	333	609	371
Strontium	mg/kg	-		-		47,000[3]	-		-		-	(47,000)[3]		-		-	-	-	-	-	-	-	-	-	-	80.7	73.3	146	47.7	75.7	75.6	55.7	106	72.8	88.7	74.8	93.2	84.7	78.3	95.1
Sulfur	mg/kg	-		-		500	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/kg	-		-		2	-		-		-	-		-		0.070	0.071	0.078	-	-	0.061	-	0.104	0.133	-	0.053	0.097	0.179	0.066	0.082	0.093	0.065	0.072	0.094	0.077	0.134	0.107	0.084	0.075	0.091
Tin	mg/kg	-		-		5	-		-		-	(50)		-		<2.0	<2.0	<2.0	-	-	<2.0	-	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	794	867	1060	743	778	806	835	1000	620	857	881	621	875	906	678
Uranium	mg/kg	-		-		16[3]	-		-		-	(16)[3]		-		0.86	0.52	0.45	-	-	0.43	-	1.45	1.55	-	0.748	0.942	1.10	0.491	0.525	0.574	0.482	0.650	0.745	0.482	0.628	0.438	0.941	0.896	0.595
Vanadium	mg/kg	-		-		200	-		-		-	(200)		-		84	61	66	-	-	57	-	63	70	-	80.8	61.5	72.9	71.6	73.6	74.3	69.3	87.8	90.7	92.8	73.9	57.4	93.3	91.2	61.7
Zinc	mg/kg	**150-200**	pH/AW/LI	150-10000	pH/DW/I	-	150-450	pH/AW/T	150-10000	pH/DW/I	-	-		-		42.1	42.3	50.6	-	-	73.7	-	97.6	113.0	-	90.0	50.4	104	47.1	44.9	49.6	52.1	58.6	71.7	58.2	67.9	43.5	59.9	56.3	44.7
Zirconium	mg/kg	-		-		-	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	1.1	1.4	9.3	5.0	4.8	5.0	5.8	7.3	5.7	5.3	5.8	5.1	2.9	2.8	5.2

Notes:
Results are expressed in milligram per kilogram (mg/kg)
mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.
MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion; S = Schedule 10; pH = standard is pH dependent.
*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guideide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
(brackets)	exceeds BC CSR PL Generic guideline

Table 3B - Results of Soil Analyses (Native Mineral Soils)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Sample ID			BC CSR AL Standards					BC CSR PLStandards					Protocol 4 Regional Background Concentrations*	WILLOW SEEDLING SOIL-5	WILLOW WATTLE SOIL-5	WILLOW STAKE SOIL-6	WILLOW WATTLE SOIL-6	WILLOW SEEDLING SOIL-6	Willow Seedling soil - 8	Willow Seedling soil - 9	WILLOW-LHAC-2X-16	WILLOW-LHAC-1-16	WILLOW-LHAC-2-16	WILLOW-LHAC-3-16	WILLOW-LHAC-4-16
Coordinates	Northing													601059	601124	600873	600797	600917	601618	601734	600682	600706	600682	600647	601019
														5817173	5817169	5817247	5817236	5917178	5817218	5817335	5817305	5817302	5817305	5817314	5817257
Date Sampled														25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	4-Aug-2015	4-Aug-2015	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016
Sample Depth (mbgs)														0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0.1	0.1	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2
QA/QC														-	-	-	-	-	-	-	-	-	-	-	-
ALS Sample ID		Units	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		L1667543-28	L1667543-29	L1667543-30	L1667543-31	L1667543-32	L1654527-136	L1654527-131	L1824887-3	L1824887-5	L1824887-4	L1824887-2	L1824887-1
Physical Parameters																									
pH		pH	-		-		-	-		-		-	-	8.03	8.48	8.51	8.08	8.3	7.88	7.65	8.13	8.27	8.23	8.16	8.06
Total Organic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	0.23	0.35	0.18	<0.13	0.16
Total Inorganic Carbon		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	0.37	0.27	0.49	0.51	0.36
Inorganic Carbon (as CACO3)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	3.04	2.21	4.09	4.24	2.97
Moisture		%	-		-		-	-		-		-	-	7.58	2.96	14.5	9.39	4.41	-	-	-	-	-	-	-
Oxidation-Reduction Potential (ORP)		mV	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grain Size																									
Gravel		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.125mm - 0.063mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.25mm - 0.125mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (0.50mm - 0.25mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (1.00mm - 0.50mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand (2.00mm - 1.00mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.0312mm - 0.004mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silt (0.063mm - 0.0312mm)		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients																									
Total Available Nitrogen		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Nitrate+Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	2.9	7.9	2.7	3.2	<2.0
Available Potassium		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	66	54	59	45	66
Available Sulfate-S		mg/kg	-		-		-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																									
Total Carbon by Combustion		%	-		-		-	-		-		-	-	-	-	-	-	-	-	-	0.6	0.6	0.7	0.6	0.5
Stong Acid Leachable - Total Metals																									
Aluminum		mg/kg	-		-		-	-		-		-	-	11600	12000	16500	13000	13800	-	-	-	-	-	-	-
Antimony		mg/kg	-		-		20	-		-		(20)	-	0.45	0.36	0.51	0.37	0.51	0.33	0.45	0.48	0.71	0.52	0.54	0.51
Arsenic		mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	-	10.7	10.9	9.01	10.2	13.6	10.1	10.1	8.9	13.8	7.9	8.1	10.7
Barium		mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	-	122	125	139	118	118	89.7	106	81	104	72	61	131
Beryllium		mg/kg	-		-		4	-		-		(4)	-	0.39	0.45	0.49	0.40	0.42	0.32	0.38	0.36	0.41	0.32	0.29	0.5
Bismuth		mg/kg	-		-		-	-		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	-	-	-	-	-	-	-
Boron		mg/kg	-		-		-	-		-		-	-	<5.0	8.5	6.1	<5.0	<5.0	-	-	-	-	-	-	-
Cadmium		mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	-	0.178	0.139	0.218	0.182	0.208	-	0.22	0.22	0.26	0.19	0.26	0.23
Calcium		mg/kg	-		-		-	-		-		-	-	14800	14000	22400	9720	9730	-	-	-	-	-	-	-
Chromium		mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	150	29.7	19.5	28.9	30.9	36.2	30.8	27.3	28.4	41.6	26.7	29.0	29.6
Cobalt		mg/kg	-		-		40	-		-		(50)	-	10.9	10.6	14.6	12.3	13.7	10.8	10.6	12.1	15.1	10.7	11.2	14.3
Copper		mg/kg	**90-150**	pH/AW/T	250-15000	pH/DW/I	-	90-150	pH/AW/T	250-15000	pH/DW/I	-	-	115	259	315	152	115	113	54.4	181.0	76.4	120.0	55.0	224.0
Iron		mg/kg	-		-		-	-		-		-	-	30200	30600	36600	32000	34200	-	-	-	-	-	-	-
Lead		mg/kg	**150-350**	pH/AW/LI	100-400	pH/DW/I	-	150-1000	pH/AW/T	100-400	pH/DW/I	-	-	5.65	4.44	5.98	5.65	6.06	5.33	5.5	6.3	8.6	6.2	5.7	7.1
Lithium		mg/kg	-		-		1600[5]	-		-		(1,600)[5]	-	11.5	11.1	15.7	13.4	13.9	-	-	-	-	-	-	-
Magnesium		mg/kg	-		-		-	-		-		-	-	6430	7460	10300	7050	8490	-	-	-	-	-	-	-
Manganese		mg/kg	-		-		1800[5]	-		-		(1,800)[5]	-	574	532	687	615	562	-	-	-	-	-	-	-
Mercury		mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	-	-	-	-	-	-	0.058	0.052	0.071	0.086	0.077	0.068	0.128
Molybdenum		mg/kg	-		-		5	-		-		(10)	-	0.99	1.61	1.74	1.34	0.96	1.01	0.8	1.5	1.2	1.0	0.8	1.6
Nickel		mg/kg	-		-		150	-		-		(100)	150	20.5	16.6	24.1	22.8	30.1	21.1	19.0	25.7	37.2	23.4	26.6	27.4
Phosphorus		mg/kg	-		-		-	-		-		-	-	849	985	994	869	893	-	-	-	-	-	-	-
Potassium		mg/kg	-		-		-	-		-		-	-	960	900	1360	910	1130	-	-	-	-	-	-	-
Selenium		mg/kg	-		-		2	-		-		(3)	4	0.61	0.36	0.75	0.43	0.34	0.44	0.3	0.5	0.3	0.4	0.4	0.5
Silver		mg/kg	-		-		20	-		-		(20)	-	<0.20	<0.20	<0.20	<0.20	<0.20	0.11	0.1	0.2	0.1	0.2	0.1	0.2
Sodium		mg/kg	-		-		-	-		-		-	-	306	570	656	450	285	-	-	-	-	-	-	-
Strontium		mg/kg	-		-		47,000[5]	-		-		(47,000)[5]	-	90.9	110	133	77.9	74.4	-	-	-	-	-	-	-
Sulfur		mg/kg					500							-	-	-	-	-	-	-	-	-	-	-	-
Thallium		mg/kg	-		-		2	-		-		-	-	0.073	<0.050	0.062	0.064	0.097	0.062	0.063	0.103	0.154	0.101	0.108	0.1
Tin		mg/kg	-		-		5	-		-		(50)	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium		mg/kg	-		-		-	-		-		-	-	924	938	1190	747	994	-	-	-	-	-	-	-
Uranium		mg/kg	-		-		16[5]	-		-		(16)[5]	-	1.32	0.651	0.813	0.739	0.749	0.736	0.7	0.62	0.57	0.56	0.54	0.85
Vanadium		mg/kg	-		-		200	-		-		(200)	-	90.0	96.2	111	86.3	90.3	80.4	79	76	69	66	60	99
Zinc		mg/kg	**150-200**	pH/AW/LI	150-10000	pH/DW/I	-	150-450	pH/AW/T	150-10000	pH/DW/I	-	-	50.5	48.6	60.8	52.2	60.3	48.1	67.1	48.8	64.6	43.8	46.4	58.4
Zirconium		mg/kg	-		-		-	-		-		-	-	5.2	6.0	8.9	2.2	4.6	-	-	-	-	-	-	-

Notes:
Results are expressed in milligram per kilogram (mg/kg)
mbgs = meters below ground surface; QA/QC = Quality Assurance / Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate; mV = millivolt, % = Percent; mm = millimetre; "-" = no data available.
MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.
*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations
AL = Agricultural Land Use; PL = Parkland Use

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
(brackets)	exceeds BC CSR PL Generic guideline

	Units	BC CSR AL Standards					BC CSR PLStandards					Local Background (Mineral)	Tailings					
		MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		# Samples	Minimum	Maximum	Average	90th Percentile	95 UCL
Physical Parameters																		
pH	pH	-		-		-	-		-		-	-	175	6.2	9.1	8.2	8.7	-
Total Organic Carbon	%	-		-		-	-		-		-	-	80	0.063	16.8	1.6	6.2	-
Total Inorganic Carbon	%	-		-		-	-		-		-	-	108	0.087	0.76	0.31	0.433	-
Inorganic Carbon (as CACO3	%	-		-		-	-		-		-	-	125	0.87	80.0	20.0	67.6	-
Moisture	%	-		-		-	-		-		-	-	101	1.9	49.0	17.0	24.5	-
Oxidation-Reduction Potentia	mV	-		-		-	-		-		-	-	16	247	351	298	350	-
Plant Available Nutrients																		
Total Available Nitrogen	mg/kg	-		-		-	-		-		-	-	19	2.2	24.4	5.9	10.7	-
Total Nitrogen by LECO	%	-		-		-	-		-		-	-	19	0.030	0.29	0.095	0.28	-
Available Ammonium-N	mg/kg	-		-		-	-		-		-	-	19	<1.0	24.4	5.7	10.7	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-	73	<1.0	32.6	1.8	2.0	-
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-	19	<2.0	4.0	2.1	2.0	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-	19	<2.0	4.0	2.1	2.0	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-	19	<0.50	0.80	0.52	0.50	-
Available Phosphate-P	mg/kg	-		-		-	-		-		-	-	73	<2.0	19.7	3.9	6.2	-
Available Potassium	mg/kg	-		-		-	-		-		-	-	73	35.0	387	110	165	-
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-	19	4.8	79.7	25.8	46.4	-
Organic / Inorganic Carbon																		
Total Carbon by Combustion	%	-		-		-	-		-		-	-	56	0.22	17.1	2.2	4.2	-
Stong Acid Leachable - Total Metals																		
Aluminum	mg/kg	-		-		-	-	-	-		-	-	130	7420	24600	14546	18120	-
Antimony	mg/kg	-		-		20	-	-	-		{20}	0.43	182	0.19	0.60	0.37	0.46	-
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	9.5	182	3.7	**16.5**	10.4	12.39	10.6
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	132	182	49.0	**697**	152	194	161
Beryllium	mg/kg	-		-		4	-		-		{4}	0.6	182	0.15	1.2	0.54	0.68	-
Bismuth	mg/kg	-		-		-	-		-		-		130	<0.20	<0.20	<0.20	<0.20	-
Boron	mg/kg	-		-		-	-		-		-	5	73	<5.0	11.1	6.8	8.3	7.0
Boron (Hot Water Soluble)	mg/kg	-		-		2	-		-		-	NC	15	<0.1	0.27	0.13	0.19	-
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	0.3	182	0.051	**3.4**	0.19	0.22	0.25
Calcium	mg/kg	-		-		-	-		-		-		130	6050	36400	21444	27610	-
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	58	182	7.8	**62.9**	15.0	23.8	16.1
Cobalt	mg/kg	-		-		40	-		-		{50}	17	182	5.6	24.0	14.5	18.0	-
Copper	mg/kg	**150**	pH/AWT	15000	pH/DW/I	-	150	pH/AW/T	15000	pH/DW/I	-	39	182	42.0	**1560**	**702**	**1000**	**737**
Iron	mg/kg	-		-		-	-		-		-		130	19800	72600	45515	54900	-
Lead	mg/kg	**350**	pH/AW/LI	250-400	pH/DW/I	-	1000	pH/AW/T	250-400	pH/DW/I	-	10.3	182	3.7	11.8	5.1	6.5	-
Lithium	mg/kg	-		-		1600[S]	-		-		{1,600}[S]	23.56	130	7.3	28.7	14.3	18.1	-
Magnesium	mg/kg	-		-		-	-		-		-		130	4040	17300	8390	10910	-
Manganese	mg/kg	-		-		1800[S]	-		-		{1,800}[S]	899.2	130	317	1140	583	714	-
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	0.05	168	<0.050	0.26	0.079	0.10	-
Molybdenum	mg/kg	-		-		5	-		-		{10}	0.72	182	0.43	7.3	3.8	5.4	4.0
Nickel	mg/kg	-		-		150	-		-		{100}	36.3	182	4.7	56.6	11.1	16.2	-
Phosphorus	mg/kg	-		-		-	-		-		-		130	596	1740	1166	1410	-
Potassium	mg/kg	-		-			-		-		-		130	490	2410	1234	1633	-
Selenium	mg/kg	-		-		2	-		-		{3}	0.20	182	<0.20	1.7	0.90	1.2	0.93
Silver	mg/kg	-		-		20	-		-		{20}	0.14	182	<0.10	0.75	0.32	0.43	-
Sodium	mg/kg	-		-		-	-		-		-		130	147	1730	817	1150	-
Strontium	mg/kg	-		-		47,000[S]	-		-		{47,000}[S]	66.4	130	53.5	212	135	177	140
Sulfur	mg/kg					500					-	NC	26	<500	3500	1381	1550	1615
Thallium	mg/kg	-		-		2	-		-		-	0.09	182	<0.050	0.19	0.054	0.053	-
Tin	mg/kg	-		-		5	-		-		{50}	2	182	<2.0	2.2	2.0	2.0	-
Titanium	mg/kg	-		-		-	-		-		-		130	560	2290	1198	1582	-
Uranium	mg/kg	-		-		16[S]	-		-		{16}[S]	0.70	182	0.27	1.6	0.88	1.1	-
Vanadium	mg/kg	-		-		200	-		-		{200}	88.1	182	33.1	{289}	172	{212.8}	177
Zinc	mg/kg	**200**	pH/AW/LI	1000-10000	pH/DW/I	-	300-450	pH/AW/T	1000-10000	pH/DW/I	-	75.3	182	31.6	**552**	58.6	66.9	67.8
Zirconium	mg/kg	-		-		-	-	-	-		-	-	59	<1.0	9.4	4.1	6.4	-

MPMC = Mount Polley Mining Corporation; BC CSR = British Columbia Contaminated Sites Regulation

Samples = Number of Samples; 95 UCL = 95th Upper Conifidence Limit of the Mean

'-' = no chemistry data available to calculate statistics; mV = millivolts; mm = millimetres; mg/kg = milligrams per kilogram

95 upper confidence of the means were only calculated for parameters that exceeded one or more of the applicable BC Contaminated Sites Regulations (CSR) Standards

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

Where a concentration was reported below detection limit, the detection limit is used as a conservative measure.

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 4B - Results of Soil Analyses (Native Organic Soils)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

	Units	BC CSR AL Standards					BC CSR PLStandards					Local Background (Organic)	Native Organic				
		MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		# Samples	Minimum	Maximum	Average	90th Percentile	95 UCL
Physical Parameters																		
pH	pH	-		-		-	-		-		-	-	38	5.8	8.4	6.4	7.0	-
Total Organic Carbon	%	-		-		-	-		-		-	-	2	4.6	44.2	24.4	40.24	-
Total Inorganic Carbon	%	-		-		-	-		-		-	-	3	<0.10	0.10	0.10	0.10	-
Inorganic Carbon (as CACO3)	%	-		-		-	-		-		-	-	3	<0.80	0.86	0.82	0.85	-
Moisture	%	-		-		-	-		-		-	-	36	13.4	83.8	48.1	71.2	-
Oxidation-Reduction Potential (ORP)	mV	-		-		-	-		-		-	-	29	150	365	287	349	-
Total Available Nitrogen	mg/kg	-		-		-	-		-		-	-	30	5.8	449	59.6	94.8	-
Total Nitrogen by LECO	%	-		-		-	-		-		-	-	30	0.10	2.3	0.74	1.2	-
Available Ammonium-N	mg/kg	-		-		-	-		-		-	-	30	1.7	449	48.9	76.8	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-	30	<1.0	120	14.4	34.75	-
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-	30	<2.0	117	14.6	37.0	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-	30	<2.0	117	14.6	37.0	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-	30	<0.50	2.4	1.1	1.6	-
Available Phosphate-P	mg/kg	-		-		-	-		-		-	-	30	<2.0	84.0	18.7	46.3	-
Available Potassium	mg/kg	-		-		-	-		-		-	-	30	35.0	366	147	253.5	-
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-	30	6.8	525	140	360	-
Organic / Inorganic Carbon																		
Total Carbon by Combustion	%	-		-		-	-		-		-	-	30	1.0	37.6	14.1	25.5	-
Stong Acid Leachable - Total Metals																		
Aluminum	mg/kg	-		-		-	-	-	-		-	-	7	553	25700	11535	22520	-
Antimony	mg/kg	-		-		20	-	-	-		{20}	0.48	24	<0.10	0.70	0.32	0.43	-
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	9.2	24	0.43	**16.4**	5.5	9.6	7.3
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	252	24	30.8	336	156	251	-
Beryllium	mg/kg	-		-		4	-		-		{4}	1.1	24	<0.10	1.26	0.46	0.92	-
Bismuth	mg/kg	-		-		-	-		-		-	-	7	<0.20	<0.20	<0.20	<0.20	-
Boron	mg/kg	-		-		2	-		-		-	5	4	<5.0	<5.0	<5.0	<5.0	-
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	1	24	0.084	**3.37**	0.62	1.0	0.84
Calcium	mg/kg	-		-		-	-		-		-	-	7	7420	26700	11436	17100	-
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	57	24	1.0	**121**	36.5	**64.34**	49.8
Cobalt	mg/kg	-		-		40	-		-		{50}	19	24	0.20	33.1	11.7	20.5	-
Copper	mg/kg	**100-150**	pH/AWT	400-15000	pH/DW/I	-	100-150	pH/AW/T	400-15000	pH/DW/I	-	79	24	6.3	**352**	84.6	**148**	120
Iron	mg/kg	-		-		-	-		-		-	-	7	822	33300	18477	29160	-
Lead	mg/kg	**150-350**	pH/AW/LI	100-400	pH/DW/I	-	150-1000	pH/AW/T	100-400	pH/DW/I	-	12.2	24	<0.50	17.4	8.6	13.3	-
Lithium	mg/kg	-		-		1600[S]	-		-		{1,600}[S]	28.63	7	2.2	18.8	10.4	18.7	-
Magnesium	mg/kg	-		-		-	-		-		-	-	7	1370	6170	3883	5924	-
Manganese	mg/kg	-		-		1800[S]	-		-		{1,800}[S]	1252	7	7.4	1250	719	1166	-
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	0.2	20	<0.050	0.22	0.11	0.21	-
Molybdenum	mg/kg	-		-		5	-		-		{10}	1.4	24	0.46	3.5	1.4	2.2	1.7
Nickel	mg/kg	-		-		150	-		-		{100}	49.5	24	2.3	71.0	23.7	44.8	-
Phosphorus	mg/kg	-		-		-	-		-		-	-	7	322	1140	655	950	-
Potassium	mg/kg	-		-			-		-		-	-	7	<100	1830	921	1614	-
Selenium	mg/kg	-		-		2	-		-		{3}	0.5	24	<0.20	{8.89}	0.85	1.4	1.5
Silver	mg/kg	-		-		20	-		-		{20}	0.94	24	<0.10	1.5	0.50	1.1	-
Sodium	mg/kg	-		-		-	-		-		-	-	7	<100	252	190	245	-
Strontium	mg/kg	-		-		47,000[S]	-		-		{47,000}[S]	137	7	60.3	120	80.0	98.4	120*
Sulfur	mg/kg	-		-		500	-		-		-	NC	2	800	7000	3900	6380	-
Thallium	mg/kg	-		-		2	-		-		-	0.20	24	<0.050	0.18	0.10	0.17	-
Tin	mg/kg	-		-		5	-		-		{50}	2	24	<2.0	<2.0	<2.0	<2.0	-
Titanium	mg/kg	-		-		-	-		-		-	-	7	15.4	699	452	674	-
Uranium	mg/kg	-		-		16[S]	-		-		{16}[S]	1.3	24	0.28	3.2	1.1	2.5	-
Vanadium	mg/kg	-		-		200	-		-		{200}	83.0	24	2.0	121	60.9	91.7	70.1
Zinc	mg/kg	**150-200**	pH/AW/LI	200-10000	pH/DW/I	-	150-450	pH/AW/T	200-10000	pH/DW/I	-	144	24	2.3	**209**	76.0	120	100
Zirconium	mg/kg	-		-		-	-	-	-		-	-	4	<1.0	<1.0	<1.0	<1.0	-

MPMC = Mount Polley Mining Corporation; BC CSR = British Columbia Contaminated Sites Regulation

Samples = Number of Samples; 95 UCL = 95th Upper Conifidence Limit of the Mean

'-' = no chemistry data available to calculate statistics; mV = millivolts; mm = millimetres; mg/kg = milligrams per kilogram

95 upper confidence of the means were only calculated for parameters that exceeded one or more of the applicable BC Contaminated Sites Regulations (CSR) Standards

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

Where a concentration was reported below detection limit, the detection limit is used as a conservative measure.

* 95 UCLM = 103, however due to small sample size (n<8), the maximum concentration is presented

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 4C - Results of Soil Analyses (Native Mineral Soils)
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

	Units	BC CSR AL Standards					BC CSR PLStandards					Local Background (Mineral)	Native Mineral				
		MCS Ecological Health	Notes	MCS Human Health	Notes	Generic	MCS Ecological Health	Notes	MCS Human Health	Notes	Generic		# Samples	Minimum	Maximum	Average	90th Percentile	95 UCL
Physical Parameters																		
pH	pH	-		-		-	-		-		-	-	41	5.0	8.5	7.1	8.3	-
Total Organic Carbo	%	-		-		-	-		-		-	-	14	<0.13	2.45	0.6	1.7	-
Total Inorganic Carb	%	-		-		-	-		-		-	-	16	<0.10	1.2	0.30	0.50	-
Inorganic Carbon (as	%	-		-		-	-		-		-	-	16	<0.80	9.8	3.0	6.5	-
Moisture	%	-		-		-	-		-		-	-	40	1.42	47.4	13.9	22.7	-
Oxidation-Reduction	mV	-		-		-	-		-		-	-	11	239	435	308	349	-
Plant Available Nutrients																		
Total Available Nitro	mg/kg	-		-		-	-		-		-	-	13	2.2	67.4	16.1	35.6	-
Total Nitrogen by LE	%	-		-		-	-		-		-	-	13	0.068	0.54	0.19	0.41	-
Available Ammoniur	mg/kg	-		-		-	-		-		-	-	13	2.2	37.2	12.5	27.8	-
Available Nitrate-N	mg/kg	-		-		-	-		-		-	-	18	<1.0	41.8	3.7	4.0	-
Nitrate+Nitrite-N	mg/kg	-		-		-	-		-		-	-	13	<2.0	44.8	5.5	3.7	-
Nitrate-N	mg/kg	-		-		-	-		-		-	-	13	<2.0	44.8	5.5	3.7	-
Nitrite-N	mg/kg	-		-		-	-		-		-	-	13	<0.50	0.80	0.55	0.74	-
Available Phosphate	mg/kg	-		-		-	-		-		-	-	18	<2.0	97.8	14.1	34.3	-
Available Potassium	mg/kg	-		-		-	-		-		-	-	18	20.0	245	74.5	101	-
Available Sulfate-S	mg/kg	-		-		-	-		-		-	-	13	3.0	308	48.1	137	-
Organic / Inorganic Carbon																		
Total Carbon by Cor	%	-		-		-	-		-		-	-	18	0.51	6.7	2.1	5.8	-
Stong Acid Leachable - Total Metals																		
Aluminum	mg/kg	-		-		-	-	-	-		-	-	32	8080	26000	14211	21870	-
Antimony	mg/kg	-		-		20	-	-	-		{20}	0.43	52	0.12	0.76	0.39	0.54	-
Arsenic	mg/kg	**15**	LW	15	DW	-	20	AW-F	15	DW	-	9.5	52	2.64	**15.7**	8.8	13.5	9.6
Barium	mg/kg	**400**	LI	400	DW	-	1,000	T	400	DW	-	132	52	48.3	254	109	144.6	-
Beryllium	mg/kg	-		-		4	-		-		{4}	0.6	52	0.21	0.87	0.42	0.61	-
Bismuth	mg/kg	-		-		-	-		-		-		32	<0.20	0.32	0.21	0.20	-
Boron	mg/kg	-		-		2	-		-		-	5	18	<5.0	8.5	5.3	6.1	N/A
Cadmium	mg/kg	**2-9**	pH/AW/LI	1.5-35	pH/DW/I	-	2-70	pH/AW/T	1.5-35	pH/DW/I	-	0.3	51	<0.050	0.66	0.21	0.33	-
Calcium	mg/kg	-		-		-	-		-		-		32	2560	43900	11462	22180	-
Chromium	mg/kg	**50**	LI	60	DW	-	60	IR	60	DW	-	58	52	19.5	**63.5**	35.4	49.2	37.8
Cobalt	mg/kg	-		-		40	-		-		{50}	17	52	6.29	23.4	12.2	16.4	-
Copper	mg/kg	**90-150**	pH/AWT	250-15000	pH/DW/I	-	90-150	pH/AW/T	250-15000	pH/DW/I	-	39	52	12.8	**366**	89.1	**177.7**	107
Iron	mg/kg	-		-		-	-		-		-		32	14100	47300	29653	36360	-
Lead	mg/kg	**150-350**	pH/AW/LI	100-400	pH/DW/I	-	150-1000	pH/AW/T	100-400	pH/DW/I	-	10.3	52	4.12	13.8	6.9	10.0	-
Lithium	mg/kg	-		-		1600[S]	-		-		{1,600}[S]	23.56	32	9.1	42.0	15.8	22.6	-
Magnesium	mg/kg	-		-		-	-		-		-		32	4470	13100	7180	9802	-
Manganese	mg/kg	-		-		1800[S]	-		-		{1,800}[S]	899.2	32	189	1670	583	798	-
Mercury	mg/kg	**0.6**	LI	15	I	-	100	T	15	I	-	0.05	34	<0.050	0.17	0.065	0.09	-
Molybdenum	mg/kg	-		-		5	-		-		{10}	0.72	52	0.39	3.3	1.0	1.6	1.2
Nickel	mg/kg	-		-		150	-		-		{100}	36.3	52	16.1	58.1	26.2	37.2	-
Phosphorus	mg/kg	-		-		-	-		-		-		32	431	1060	760	980	-
Potassium	mg/kg	-		-			-		-		-		32	530	4120	1160	1919	-
Selenium	mg/kg	-		-		2	-		-		{3}	0.20	52	<0.20	1.08	0.36	0.61	0.41
Silver	mg/kg	-		-		20	-		-		{20}	0.14	52	<0.10	1.2	0.20	0.27	-
Sodium	mg/kg	-		-		-	-		-		-		32	110	656	277	456	-
Strontium	mg/kg	-		-		47,000[S]	-		-		{47,000}[S]	66.4	32	25.3	223	83.8	131	97.9
Sulfur	mg/kg	-		-		500	-		-		-	NC	12	<500	1100	700	900	855
Thallium	mg/kg	-		-		2	-		-		-	0.09	52	<0.050	0.22	0.090	0.15	-
Tin	mg/kg	-		-		5	-		-		{50}	2	52	<2	<2	<2	<2	-
Titanium	mg/kg	-		-		-	-		-		-		32	595	1190	827	1018	-
Uranium	mg/kg	-		-		16[S]	-		-		{16}[S]	0.70	52	0.43	4.3	0.81	1.1	-
Vanadium	mg/kg	-		-		200	-		-		{200}	88.1	52	22.9	117	76.0	98.6	81.1
Zinc	mg/kg	**150-200**	pH/AW/LI	150-10000	pH/DW/I	-	150-450	pH/AW/T	150-10000	pH/DW/I	-	75.3	52	29.6	121	59.9	83.96	-
Zirconium	mg/kg	-		-		-	-	-	-		-	-	18	1.1	9.3	5.1	7.8	-

MPMC = Mount Polley Mining Corporation; BC CSR = British Columbia Contaminated Sites Regulation

Samples = Number of Samples; 95 UCL = 95th Upper Conifidence Limit of the Mean

'-' = no chemistry data available to calculate statistics; mV = millivolts; mm = millimetres; mg/kg = milligrams per kilogram

95 upper confidence of the means were only calculated for parameters that exceeded one or more of the applicable BC Contaminated Sites Regulations (CSR) Standards

MPMC = Mount Polley Mining Corporation

Standards shown are from the British Columbia (BC) Contaminated Sites Regulation ("CSR"; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 4/2014, January 31, 2014), Schedule 4 (Generic), Schedule 5 (Human Health Protection and Ecological Protection)

The most conservative standard (MCS) of the reference site specific factors have been applied, including: G = Generic; I = Intake of Contaminated Soil; AW = Groundwater Flow to Surface Water used by Aquatic Life, F = Freshwater Aquatic Life, M = Marine Aquatic Life; T = Toxicity to Invertebrates and Plants; DW = Drinking Water; IR = Irrigation Water; LW = Livestock Watering; LI = Livestock Ingestion: S = Schedule 10; pH = standard is pH dependent.

*Where applicable CSR standards were lower than the MoE Protocol 4 regional background concentrations, the background concentration was considered appropriate for final screening against individual sample concentrations

AL = Agricultural Land Use; PL = Parkland Use

Where a concentration was reported below detection limit, the detection limit is used as a conservative measure.

N/A - 95 UCLM not determined due to low number of samples reported above laboratory detection limit

bold	exceeds BC CSR AL Ecological Health guideline
underline	exceeds BC CSR AL Human Health guideline
Bold outline	exceeds BC CSR AL generic guidelide
red	exceeds BC CSR PL Ecological Health guideline
highlight	exceeds BC CSR PL Human Health guideline
{brackets}	exceeds BC CSR PL Generic guideline

Table 5 Results of Soil QA/QC Analyses - Co-located Soil Samples
MPMC - Detailed Site Investigation
Mount Polley Mining Corporation

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	WILLOW-LHAC-2X-16 16-Aug-2016 10:23 L1824887-3	WILLOW-LHAC-2-16 16-Aug-2016 10:23 L1824887-4	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	SPRUCE-UHAC-1-16 3-Aug-2016 13:45 L1824887-8	SPRUCE-UHAC-1X-16 16-Aug-2016 13:45 L1824887-9	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Tests													
pH	pH	8.13	8.23	0.10	8.18	1%	NA	7.57	8.55	0.10	8.06	12%	NA
Organic / Inorganic Carbon													
Inorganic Carbon	%	0.37	0.490	0.050	0.43	29%	NA	0.30	0.36	0.050	0.33	19%	NA
Inorganic Carbon (as CaCO3 Equivalent)	%	3.04	4.09	0.40	3.57	29%	NA	2.47	2.99	0.40	2.73	19%	NA
Total Carbon by Combustion	%	0.60	0.67	0.05	0.64	11%	NA	17.1	0.51	0.05	8.81	**188%**	NA
Total Organic Carbon	%	0.23	0.18	0.13	0.21	NA	0.37	16.8	0.15	0.10	8.48	**196%**	NA
Plant Available Nutrients													
Available Nitrate-N	mg/kg	<1.0	<1.0	1.0	NC	NC	NC	<3.0	<1.0	1.0	NC	NC	NC
Available Phosphate-P	mg/kg	2.9	2.7	2.0	2.8	NA	0.10	8.5	<2.0	2.0	NC	NC	NC
Available Potassium	mg/kg	66	59	20	62.5	NA	0.35	245	126	20	186	**64%**	NA
Metals													
Aluminum (Al)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/kg	0.48	0.52	0.10	0.5	8%	NA	0.39	0.38	0.10	0.39	NA	0.10
Arsenic (As)	mg/kg	8.91	7.90	0.10	8.41	12%	NA	8.60	12.0	0.10	10.3	33%	NA
Barium (Ba)	mg/kg	80.9	71.6	0.50	76.3	12%	NA	163	168	0.50	166	3%	NA
Beryllium (Be)	mg/kg	0.36	0.32	0.10	0.34	NA	0.40	0.53	0.63	0.10	0.58	17%	NA
Bismuth (Bi)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/kg	0.22	0.19	0.050	0.204	NA	0.58	0.19	0.15	0.050	0.17	NA	0.78
Calcium (Ca)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/kg	28.4	26.7	0.50	27.6	6%	NA	17.9	11.4	0.50	14.7	**44%**	NA
Cobalt (Co)	mg/kg	12.1	10.7	0.10	11.4	12%	NA	13.8	16.9	0.10	15.4	20%	NA
Copper (Cu)	mg/kg	181	120	0.50	151	**41%**	NA	492	902	0.50	697	**59%**	NA
Iron (Fe)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg	6.33	6.17	0.50	6.25	3%	NA	4.93	5.03	0.50	4.98	2%	NA
Lithium (Li)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/kg	0.071	0.077	0.050	0.074	NA	0.12	0.085	0.082	0.050	0.084	NA	0.06
Molybdenum (Mo)	mg/kg	1.49	1.00	0.10	1.25	**39%**	NA	3.26	4.15	0.10	3.71	24%	NA
Nickel (Ni)	mg/kg	25.7	23.4	0.50	24.6	9%	NA	11.6	9.80	0.50	10.7	17%	NA
Phosphorus (P)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg	0.53	0.43	0.20	0.48	NA	0.50	0.89	1.08	0.20	0.99	NA	0.95
Silver (Ag)	mg/kg	0.16	0.15	0.10	0.16	NA	0.10	0.26	0.41	0.10	0.34	NA	1.5
Sodium (Na)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	mg/kg	0.10	0.101	0.050	0.10	NA	0.0	<0.050	<0.050	0.050	NC	NC	NC
Tin (Sn)	mg/kg	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC
Titanium (Ti)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	mg/kg	0.62	0.56	0.050	0.59	11%	NA	1.03	0.94	0.050	0.99	9%	NA
Vanadium (V)	mg/kg	76.4	66.0	0.20	71.2	15%	NA	185	198	0.20	192	7%	NA
Zinc (Zn)	mg/kg	48.8	43.8	2.0	46.3	11%	NA	49.8	55.5	2.0	52.7	11%	NA
Zirconium (Zr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.
Golders' acceptable RPD for soil is less than or equal to 35%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.
Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

Table 5 Results of Soil QA/QC Analyses - Co-located Soil Samples
MPMC - Detailed Site Investigation
Mount Polley Mining Corporation

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	CSS16-27 3-Sep-2016 0:00 L1826516-12	CSS16-27D 3-Sep-2016 0:00 L1826516-13	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	CSS16-39 4-Sep-2016 0:00 L1826516-24	CSS16-39D 4-Sep-2016 0:00 L1826516-25	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Tests													
pH	pH	7.84	7.86	0.10	7.85	0%	NA	7.71	7.67	0.10	7.69	1%	NA
Organic / Inorganic Carbon													
Inorganic Carbon	%	0.23	0.21	0.050	0.22	NA	0.28	0.26	0.26	0.050	0.26	1%	NA
Inorganic Carbon (as CaCO3 Equivalent)	%	1.89	1.78	0.40	1.84	NA	0.28	2.19	2.17	0.40	2.18	1%	NA
Total Carbon by Combustion	%	3.69	2.05	0.05	2.87	**57%**	NA	3.13	2.85	0.05	2.99	9%	NA
Total Organic Carbon	%	3.46	1.84	0.050	2.65	**61%**	NA	2.87	2.59	0.050	2.73	10%	NA
Plant Available Nutrients													
Available Nitrate-N	mg/kg	<2.0	<1.0	2.0	NC	NC	NC	1.6	1.6	1.0	1.6	NA	0.00
Available Phosphate-P	mg/kg	10.8	11.0	2.0	10.9	2%	NA	3.3	3.9	2.0	3.6	NA	0.30
Available Potassium	mg/kg	146	135	20	141	8%	NA	88	86	20	87	NA	0.10
Metals													
Aluminum (Al)	mg/kg	12200	12200	50	12200	0%	NA	14700	15000	50	14850	2%	NA
Antimony (Sb)	mg/kg	0.29	0.32	0.10	0.31	NA	0.30	0.39	0.37	0.10	0.38	NA	0.20
Arsenic (As)	mg/kg	8.61	8.79	0.10	8.7	2%	NA	8.92	8.82	0.10	8.87	1%	NA
Barium (Ba)	mg/kg	127	129	0.50	128	2%	NA	163	160	0.50	161.5	2%	NA
Beryllium (Be)	mg/kg	0.46	0.49	0.10	0.48	NA	0.30	0.53	0.54	0.10	0.54	2%	NA
Bismuth (Bi)	mg/kg	<0.20	<0.20	0.20	NC	NC	NC	<0.20	<0.20	0.20	NC	NC	NC
Boron (B)	mg/kg	7.0	7.3	5.0	7.15	NA	0.06	7.9	7.7	5.0	7.8	NA	0.0
Cadmium (Cd)	mg/kg	0.16	0.17	0.020	0.16	4%	NA	0.21	0.23	0.020	0.22	7%	NA
Calcium (Ca)	mg/kg	18200	18300	50	18250	1%	NA	20800	20900	50	20850	0%	NA
Chromium (Cr)	mg/kg	14.0	16.3	0.50	15.2	15%	NA	16.6	17.2	0.50	16.9	4%	NA
Cobalt (Co)	mg/kg	13.3	13.2	0.10	13.3	1%	NA	13.6	13.6	0.10	13.6	0%	NA
Copper (Cu)	mg/kg	649	620	0.50	634.5	5%	NA	539	547	0.50	543	1%	NA
Iron (Fe)	mg/kg	49600	48700	50	49150	2%	NA	49200	47500	50	48350	4%	NA
Lead (Pb)	mg/kg	4.95	5.91	0.50	5.43	18%	NA	4.66	4.74	0.50	4.70	2%	NA
Lithium (Li)	mg/kg	12.5	13.1	2.0	12.8	5%	NA	12.3	12.5	2.0	12.4	2%	NA
Magnesium (Mg)	mg/kg	6430	6380	20	6405	1%	NA	6600	6560	20	6580	1%	NA
Manganese (Mn)	mg/kg	532	536	1.0	534	1%	NA	520	521	1.0	521	0%	NA
Mercury (Hg)	mg/kg	0.095	0.094	0.050	0.095	NA	0.02	0.10	0.11	0.050	0.11	NA	0.14
Molybdenum (Mo)	mg/kg	3.32	3.11	0.10	3.22	7%	NA	3.96	3.69	0.10	3.83	7%	NA
Nickel (Ni)	mg/kg	9.89	10.8	0.50	10.3	9%	NA	12.0	12.5	0.50	12.3	4%	NA
Phosphorus (P)	mg/kg	1120	1090	50	1105	3%	NA	1220	1210	50	1215	1%	NA
Potassium (K)	mg/kg	1100	1120	100	1110	2%	NA	1230	1230	100	1230	0%	NA
Selenium (Se)	mg/kg	0.83	0.84	0.20	0.84	NA	0.05	0.82	0.77	0.20	0.80	NA	0.25
Silver (Ag)	mg/kg	0.31	0.32	0.10	0.32	NA	0.10	0.29	0.31	0.10	0.3	NA	0.20
Sodium (Na)	mg/kg	583	546	50	565	7%	NA	714	696	50	705	3%	NA
Strontium (Sr)	mg/kg	121	135	0.50	128	11%	NA	158	157	0.50	158	1%	NA
Thallium (Tl)	mg/kg	<0.050	<0.050	0.050	NC	NC	NC	<0.050	<0.050	0.050	NC	NC	NC
Tin (Sn)	mg/kg	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC
Titanium (Ti)	mg/kg	936	934	1.0	935	0%	NA	1170	1110	1.0	1140	5%	NA
Uranium (U)	mg/kg	0.81	0.85	0.050	0.83	4%	NA	1.23	1.20	0.050	1.22	2%	NA
Vanadium (V)	mg/kg	184	180	0.20	182	2%	NA	187	182	0.20	185	3%	NA
Zinc (Zn)	mg/kg	46.1	45.6	2.0	45.9	1%	NA	46.1	45.5	2.0	45.8	1%	NA
Zirconium (Zr)	mg/kg	2.5	2.2	1.0	2.35	NA	0.30	2.0	1.9	1.0	1.95	NA	0.10

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.
Golders' acceptable RPD for soil is less than or equal to 35%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.
Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

APPENDIX A-1

Background Soil Quality Technical Memorandum

TECHNICAL MEMORANDUM

DATE 10 February 2017 **REFERENCE No.** 1662612-025-TM-Rev1-22241

TO Art Frye and Colleen Hughes, Mount Polley Mining Corporation
'Lyn Anglin, Imperial Metals Corporation

CC Don Parsons, Imperial Metals Corporation

FROM Kathleen Edwards, Reidar Zapf-Gilje, and Trish Miller

EMAIL Kathleen_Edwards@golder.com; Reidar_Zapf-Gilje@golder.com; Trish_Miller@golder.com

DETERMINATION OF LOCAL BACKGROUND SOIL CONCENTRATIONS – MOUNT POLLEY MINE

Golder Associates Ltd. (Golder) is pleased to provide Mount Polley Mining Corporation (MPMC) with this technical memorandum for determination of local background concentrations for soil in support of the Detailed Site Investigation (DSI) and Human Health and Ecological Risk Assessment (HHERA) for the Mount Polley Mine (Mine). Work was carried out in accordance with the *Work Plan for Determination of Local Background Concentrations for Environmental Media, Mount Polley Mine, BC* (Golder 2016).

The background soil concentrations were determined in general accordance with BC MoE Protocol #4 – Determining Background Soil Quality but with modifications as noted to reflect the site nature of the project, and the intended use of the local background concentrations.

It is important to note that the local background concentrations are not being used for "overriding" exceedances of a standard. In fact, the local background concentrations are lower than the applicable soil standards for all metals.

The local background concentrations were requested by project reviewers. A Director's determination of the local background concentrations will not be sought.

1.0 SCOPE OF WORK

The scope of work related to the determination of background soil included the following tasks:

- Review of existing background soil sampling locations and results.
- Collection of supplementary background soil samples.
- Inclusion of results for co-located soil samples collected as part of the terrestrial plant and invertebrate soil sampling program completed by Golder in August and September 2016.

2.0 METHODS

2.1 Approach and Rationale

The emphasis in the background sampling procedure was on estimation of the range of substance concentrations in soil which can be shown to be attributable solely to natural (i.e., not related to the tailings spill) and generalized non-point anthropogenic sources. This is achieved by selection, analysis and comparison of background soil substance concentrations to those observed in native soil located outside the area impacted by tailings deposits.

MoE Technical Guidance #16 (TG16) suggests a process for soil sampling to determine background quality, including choosing a reference site and splitting the site into sections for random sampling. However, given the uniform nature of contamination at the site along a large, linear zone, a site-specific sampling program was developed to better suit site conditions.

Background samples were collected at 29 locations along the length of the impacted zone at least 10 metres beyond the extent of the 'halo' zone (based on visual observations of deposited tailings material). Figure 1 shows the locations of each background soil sample collected. Generally, one sample of either organic or inorganic soil was collected at each location. At SS16-BKG-01 through SS16-BKG-04, three samples from varying depths were collected at each sampling point, as suggested in TG16.

Fifty-six existing background soil samples previously collected at the site by SNC-Lavalin Inc. (SNC) in 2014 and by Golder in 2015 were also included in the dataset to determine background concentrations. These background samples were collected from locations at least 10 metres beyond the extent of the 'halo' zone (based on visual observations of deposited tailings material).

The preliminary assessment of the local background concentrations presented in the 2016 DSI combined all soil types as the data set was limited. Based on our review of the preliminary data, we concluded that it would be appropriate to separate the data into two datasets; organic soil and mineral soil. In general, the observed soil profiles included the following horizons:

- L and F horizons - surficial layers consisting of fresh and partly decomposed plant matter.
- H horizon – located under the L and F horizons, composed of well-decomposed plant residues in which plant structures are generally not recognizable.
- A horizon – located under the H horizon, contains <17% organic carbon by mass and has formed at or near the soil surface in the zone of leaching or eluviation of organic materials in solution or suspension (i.e., transport of organic material and minerals to lower layers), *or* of maximum accumulation of organic matter, or both.
- B horizon – located under the A horizon, it is a mineral soil characterised by enrichment in organic matter or clay; or by the development of soil structure by a change of colour denoting hydrolysis, reduction, or oxidation.
- C horizon – located under the B horizon, it is an unconsolidated material below the zones of greatest biological activity, and is comprised of mineral material.

For the purposes of this report, the organic soil dataset includes soil samples collected within the "H" and "A" soil horizons, and the mineral dataset soil includes soil samples collected within the "B" and "C" soil horizons.

2.1.1 Boron and Sulfur Analysis

After the 2016 DSI was completed, rescreening of soil data at the site was completed because a small part of the land in the Hazeltine Channel corridor is dedicated under the ALR (Agricultural Land Reserve). During this process, it was determined that the boron and sulfur results available at that time were not analyzed using the method specified by MOE (CSR Schedule 4).

Boron concentrations reported in 2014, 2015 and 2016 were analysed via a strong acid leach (SAL) method. The boron soil standard is based on a hot water soluble (HWS) laboratory analysis. To provide a meaningful comparison for DSI soil results, ten stored mineral background soil samples were submitted for HWS boron analysis.

Sulfur results for background soil samples were analysed by SNC in 2014 via a total combustion method. The sulfur soil standard is based on elemental sulfur. In the absence of elemental sulfur data, background concentrations for the available sulfur results are presented in this technical memorandum.

2.2 Local Background Site Selection

Golder reviewed the locations of existing background soil sample locations (56 samples at 38 sampling locations) and selected additional background sampling locations where necessary based on recent available aerial imagery and visual observations of the extent of the tailings deposition. Four additional background sampling locations for soil (SS16-BKG-01 through SS16-BKG-04) were selected as part of the 2016 DSI field sampling program. Each of the sample locations was located a minimum of 10 m outside the halo zone. As described in the DSI report, the demarcation between tailings impacted area and undisturbed native area was clearly visible in the field.

Samples were collected at three depth intervals, as outlined in TG16, within the B and C horizons at each sampling location (twelve samples per location). Additional sampling of organic (H and A layer) soil was not considered necessary in the 2016 DSI field program, as sufficient data was available from the previous sampling.

Background locations were selected outside the Hazeltine Channel corridor in order to capture representative soil conditions along its length, as follows:

- Area 4 – Upper Hazeltine (2016 soil sampling locations SS16-BKG-01, SS16-BKG-02, SS16-BKG-03).
- Area 6 – Lower Hazeltine (2016 soil sampling location SS16-BKG-04).

These areas of the Site are described in detail in the DSI report. Soil samples were not collected from Area 5 – Middle Hazeltine as the Canyon was scoured clean and little undisturbed soil remains.

Local background sampling locations from samples collected in 2014, 2015 and 2016 are shown in Figure 1.

2.2.1 2016 Soil Sampling

The scope of the 2016 soil sampling work included collection of 12 background soil samples at varying depths from the four locations selected (SS16-BKG-01 through SS16-BKG-04). The sample collection targeted the mineral soils from three different depths within the upper 1 m of soil. Two field duplicate samples were also collected as part of the sampling program, for quality assurance / quality control (QA / QC) purposes.

Additional detailed information related to the soil samples obtained at the local background locations was documented, including physical characteristics of the soil, depth of sample collection, GPS coordinates of the sampling point, and chemical analysis. A Golder-directed Field Technician documented observations at each soil sample location.

The soil samples were collected in pre-cleaned 125 millilitres (mL) glass soil sample jars supplied by the laboratory. Two jars of soil were collected for each sample interval. Samples jars were packed in cardboard boxes, placed in a cooler with a chain-of-custody form and several ice packs, and shipped to the laboratory.

Each sample was submitted to the laboratory for analysis of metals parameters and pH.

In addition to soil samples collected as part of the 2016 background soil sampling, background soil samples (CSS16-BKG series samples) were collected as part of the terrestrial plant and invertebrate soil sampling program completed by Golder in August and September 2016. Soil samples were collected with each co-located plant sample location. Surface soil within the top 0.2 m from the base of the plant was collected using a hand shovel. The humus layer was removed from samples collected in background areas. Soil was homogenized in a stainless steel bowl prior to transfer to clean, laboratory-supplied 125-mL, glass sample jars with Teflon™ lined lids. Background samples were collected from organic soil layers only during this investigation.

2.3 Laboratory Analysis

ALS Laboratory Group (ALS) of Burnaby, BC performed chemical analyses for the soil samples collected during the background soil sampling programs by SNC in 2014 and by Golder in 2015 and 2016. ALS is accredited by the Canadian Association for Laboratory Accreditation (CALA).

The analytical methods that were used to analyse soil samples are summarised below in Table 1. The methods are approved under the CSR and the BC Environmental Laboratory Manual. Furthermore, the analytical methods used (shown on Table 1 below) were the same methods used for the Detailed Site Investigation. Methods for physical parameters that were not included as part of the background determination (e.g., total organic carbon, pH, etc.) are not shown in Table 1, but are outlined in the laboratory report included in Attachment 1.

In particular, boron (hot water soluble; HWS) was analysed to measure concentrations of boron directly comparable to the CSR standard, which is related to plant uptake.

Table 1: Summary of Analytical Methods

Parameter	Method Reference	Comment
Metals	MET-200.2-CCMS-VA	Soil samples are digested with nitric acid and hydrochloric acids, followed by analysis by CRC ICPMS.
Mercury	HG-200.2-CVAF-VA	Soil samples are digested with nitric acid and hydrochloric acids, followed by analysis by CVAFS.
Boron (HWS)	B-HOTW-CL	Soil samples are extracted by boiling a 2:1 mixture of 0.01 M CaCl2 to soil for 5-15 minutes, prior to filtration of the extract and boron determination using ICPOES.
Sulfur	S-TOT-LECO-SK	Soil samples are ignited in a combustion analyzer where sulfur in the reduced SO_2 gas is determined using a thermal conductivity detector.

2.4 Quality Assurance / Quality Control

Methods for QA/QC are outlined in Attachment 2.

3.0 RESULTS

3.1 Pre-mining Baseline Results for Soil

The Mt Polley Mine commenced operation in 1997. A pre-mine baseline investigation was undertaken in 1995 by Hallam Knight Piesold Ltd. The soil samples were analyzed for metals. A figure showing the locations of the soil samples was not included in the material that Golder reviewed, however MPMC staff indicated that sample locations were placed and labelled in reference to planned mine infrastructure. Attachment 3 presents logs for select test pits where baseline soil samples were collected, as well as select photos showing the soil profile at those locations.

Results indicated the following concentrations for parameters with applicable CSR standards at the Site:

Table 2: Summary of Baseline Data Concentrations

Parameter	Minimum	Maximum	Average
Arsenic	3.6 or <30*	21 or <30*	24.9
Antimony	<10	<10	-
Barium	55	352	134.6
Beryllium	<1	<1	-
Boron	11	32	18.6
Cadmium	<0.25	1.3	0.3
Chromium	11	71	34.9
Cobalt	6	42	15.1
Copper	17	11100	702.6
Lead	2 or <5*	11	5.7
Lithium	No Data		
Manganese	191	5010	895.0
Mercury	0.018	0.76	0.1
Molybdenum	21	75	7.3
Nickel	14	42	25.8
Selenium	<0.5	20	3.0
Silver	<2	<2	-
Strontium	34	241	80.6
Sulfur	No Data		
Thallium	No Data		
Tin	<5	9	5.2
Uranium	No Data		
Vanadium	29	287	102.6
Zinc	28	242	94.9

Notes:
Units are shown in µg/g
Where a result was below detection limit, the detection limit was used for the purpose of calculating an average concentration
* The detection limit for some parameters varied between laboratory reports

The results shown above have been included in this technical memorandum to provide context on the overall soil conditions in the vicinity of the mine, prior to development of the mine facility. The results were not included in the calculation of background concentrations described in Section 4.0 below. Results for these samples are presented in Attachment 3.

3.2 Results of 2016 Soil Sampling

A total of 12 samples were collected from four local background locations (SS16-BKG-01 through SS16-BKG-04) in August 2016. An additional 26 soil samples were collected from 26 local background locations as part of the background plant and invertebrate tissue sampling program (CSS16-BKG series samples) in Areas 4 and 6. Depths and soil descriptions are described below in Table 3.

Table 3: Summary of 2016 Soil Sampling Locations

Sampling Location	Sampling Depths (m)	Number of samples, n	Area	Soil Description
SS16-BKG-01	0.25 – 0.35 0.6 – 0.7 0.9 – 1.0	3	4 - Upper Hazeltine	Silt, with some fine and coarse sand, some gravel
SS16-BKG-02	0.1 – 0.3 0.4 – 0.6 0.7 – 0.9	3	4 - Upper Hazeltine	Silt, with some fine and coarse sand, trace gravel
SS16-BKG-03	0.1 – 0.3 0.4 – 0.6 0.7 – 0.9	3	4 - Upper Hazeltine	Silt, with trace sand, trace gravel
SS16-BKG-04	0.1 – 0.3 0.4 – 0.6 0.75 – 0.95	3	6 – Lower Hazeltine	Silt, with some fine sand
Soil/Tissue Sampling Locations	0.05 – 0.2	26	4 - Upper Hazeltine 6 – Lower Hazeltine	Organic silt with variable amounts of sand, clay and gravel

Analytical results are shown in Table A, at the end of this report. Results indicate that concentrations of background samples collected during the 2016 sampling programs were below applicable CSR standards.

The results from the 2016 sampling program were combined with 56 samples collected previously and reported in the 2016 DSI.

3.2.1 QA/QC Results

The results of soil QA/QC analyses are shown on Table D, at the end of this report. Two soil duplicates were collected as part of the 2016 background soil sampling event, and three soil duplicates were collected as part of the terrestrial plant and invertebrate soil sampling program. The resulting field duplicate frequency of approximately 11% meets Golder's internal data quality objective (DQO) of 10% for the 2016 sampling program.

Relative percent differences (RPDs) and difference factors (DFs) were within acceptable limits as set out in Attachment 2, except for the following;

- Cobalt at 38.78% RPD (10.6 µg/g in the primary sample and 15.7 µg/g in the duplicate) in SS16-BKG-02A.
- Strontium at 54.7% RPD (44.1 µg/g in the primary sample and 77.3 µg/g in the duplicate) in SS16-BKG-02A.
- Antimony at 2.5 DF (0.51 µg/g in the primary sample and 0.26 µg/g in the duplicate) in CSS16-BKG-13.

As a conservative measure, the lower concentration of strontium in the primary sample was included in consideration of the 95th percentile value. In addition, the primary result is within the range of other background sample results for strontium in mineral soil, while the duplicate result is above the range for mineral soil. The lower concentration of cobalt in the primary sample was also included in consideration of the 95th percentile value.

Similarly, the lower antimony concentration was included in the calculation of the 95th percentile value.

Laboratory QA/QC indicated that the following results did not meet the laboratory DQO:

- Method blank results for copper, lead and manganese for select sample batches; however, the associated sample results were at least five times greater than the blank levels and are considered reliable.
- Laboratory duplicate RPD was slightly above the acceptable limit for chromium, lithium and titanium in some samples, due to sample heterogeneity.
- Detection limits were raised in some samples due to high concentrations, high moisture content, matrix interference, or limited sample amount.

Although some DQO outliers exist, the data from the 2016 sampling events are considered reliable for interpretation purposes.

4.0 STATISTICAL ANALYSIS OF BACKGROUND SOIL DATA

Results for background soil samples obtained in 2014, 2015 and 2016 are shown in Table A, at the end of this report.

Upper 95th percentile values of the results were calculated using Microsoft Excel. Prior to calculating the 95th percentile values for metals, Golder calculated the upper and lower cut-off values, as outlined in TG16, for each metal parameter. Detailed results are shown in Tables B and C (organic and mineral soils, respectively), at the end of this report.

As discussed in Section 2.1.1, ten mineral soil samples were submitted for re-analyses for boron using the specified HWS method. Six organic soil samples and ten mineral soil samples were analysed for sulfur by SNC in 2014.

We consider the number of soil samples analyzed for sulfur and boron (HWS) to be insufficient for statistical estimation of the local background concentrations. Instead, the maximum concentration was used. TG16 suggests that the statistical calculations should be based on a dataset of a minimum of 12 local background samples.

UC and LC values were calculated based on the entire data set. As stated in TG16, analytical results falling outside the UC or LC values may be considered as outliers. The analytical results falling outside the UC values are highlighted in bold italic font in Tables B and C at the end of this report. These results were checked for data quality and determined to be valid results and representative of the soil quality. The samples were therefore not re-analyzed. The number of values used for the calculation of each 95th percentile is shown for reference in Tables B and C.

The following results were found to exceed the UC and therefore excluded from the calculation of the 95th percentile background concentrations. No results were below the LC.

Table 4: Summary of Excluded Values Based on UC Values

Parameter	Excluded Sample Concentrations	
	Mineral Soil	**Organic Soil**
Arsenic	ST01-01	ST12-01A2, ST13-01, WILLOW SOIL-4
Antimony	SS16-BKG-03B	ST12-01A2, ST13-01,
Barium	P1 – B Layer	ST12-01A, ST12-01A2, ST13-01,
Beryllium	P1 – B Layer	ST12-01A2, ST13-01, CSS16-BKG-15
Cadmium	-	ST12-01A,
Chromium	-	ST12-01A2, ST13-01, ST16-01A
Cobalt	-	ST12-01A2, ST13-01, P9- A Layer
Copper	SS16-BKG-02C, SS16-BKG-03C,	ST12-01A2, ST13-01, CSS16-BKG-18
Lead	SS16-BKG-03A, SS16-BKG-03B	ST12-01A2, ST13-01, ST16-01A
Lithium	ST07-01, SS16-BKG-03A, SS16-BKG-03B	ST13-01, ST16-01A
Manganese	-	ST12-01A, ST12-01A2,
Mercury	-	P1-Spruce-AH Layer
Molybdenum	ST14-01, SS16-BKG-03A, SS16-BKG-03B	ST12-01A, ST12-01A2, CSS16-BKG-06
Nickel	SS16-BKG-03C	ST12-01A2, ST13-01, ST16-01A, CSS16-BKG-15
Selenium	-	ST12-01A, ST12-01A2, CSS16-BKG-15, CSS16-BKG-18, CSS16-BKG-19, CSS16-BKG-20
Silver	SS16-BKG-03B, SS16-BKG-04A, P1 – B Layer, P9 – B Layer	-
Strontium	-	WILLOW SOIL-9, CSS16-BKG-19, CSS16-BKG-20
Thallium	SS16-BKG-03B, SS16-BKG-03C, P1 – B Layer,	ST12-01A2, ST13-01, ST16-01A, WILLOW SOIL-4
Uranium	SS16-BKG-03A, SS16-BKG-03B	ST12-01A, ST12-01A2, ST13-01, CSS16-BKG-14, CSS16-BKG-15, CSS16-BKG-18, CSS16-BKG-19, CSS16-BKG-20
Vanadium	-	ST12-01A2, ST13-01, WILLOW SOIL-10
Zinc	ST01-01, ST17-01, P1 – B Layer,	-

The exclusion of the data points above the UC is conservative. Excluding the concentrations that were above the UC leads to lower estimated local background concentrations than would be the case had the data been included in the calculations.

The 95th percentile for each parameter in organic and mineral soils is shown in Table 5 below.

Table 5: Summary of 95th Percentile Values (ug/g)

Parameter	Organic Soil		Mineral Soil	
	Number of samples (n)	95th Percentile	Number of samples (n)	95th Percentile
Antimony	52	9.2	34	9.5
Arsenic	52	0.48	34	0.43
Barium	52	252	34	132
Beryllium	52	1.1	34	0.6
Boron (HWS)	0	-	10	0.15[1]
Cadmium	51	1	34	0.3
Chromium	52	57	34	58
Cobalt	52	19	34	17
Copper	52	79	34	39
Lead	52	12.2	34	10.3
Lithium	43	28.63	28	23.56
Manganese	43	1252	28	899
Mercury	42	0.2	34	0.05
Molybdenum	52	1.4	34	0.72
Nickel	52	49.5	34	36.3
Selenium	52	0.5	34	0.2
Silver	52	0.94	34	0.14
Strontium	42	137	28	66.4
Sulfur	6	900[1]	10	600[1]
Thallium	52	0.20	34	0.09
Tin	52	2	34	2
Uranium	52	1.3	34	0.7
Vanadium	52	83.0	34	88.1
Zinc	52	144	34	75

Notes:

NC = Not Calculated

1) Maximum concentration

5.0 CONCLUSIONS – LOCAL BACKGROUND CONCENTRATIONS

The local background concentrations were determined by using a combined dataset from the site investigations and terrestrial plant and invertebrate soil sampling programs undertaken over the last three years. Local background concentrations were determined for metals parameters with regulated standards under the CSR.

The applicable CSR standards at the Site are for Parkland (PL) and Agricultural Land use (AL). The calculated local background soil concentrations are compared with the most conservative applicable CSR standard in Table 6 below.

Table 6: Estimated Local Background Concentrations (ug/g)

Parameter	95th Percentile – Organic Soil	95th Percentile – Mineral Soil	Most Conservative Applicable CSR Standard
Antimony	9.2	9.5	20 (AL and PL -G)
Arsenic	0.48	0.43	15 (AL – DW/LW and PL - DW)
Barium	252	132	400 (AL– DW/LW and PL- DW)
Beryllium	1.1	0.6	4 (AL and PL – G)
Boron (HWS)	-	0.15[2]	2 (AL – G)
Cadmium	1	0.3	1.5 (AL – DW/I)
Chromium[1]	57	58	150 (Regional background)
Cobalt	19	17	40 (AL-G)
Copper	79	39	90 (AL and PL – GWtoFSW)
Lead	12.2	10.3	100 (PL – DW/I)
Lithium	28.63	23.56	1600 (AL and PL – G)
Manganese	1252	899	1800 (AL and PL – G)
Mercury	0.2	0.1	0.6 (AL – LI)
Molybdenum	1.4	0.7	5 (AL –G)
Nickel[1]	49.5	36.3	150 (Regional background)
Selenium[1]	0.5	0.2	4 (Regional background)
Silver	0.94	0.14	20 (AL and PL –G)
Strontium	137	66	47,000 (AL and PL – G)
Sulfur	900[2]	600[2]	500 (AL – G)
Thallium	0.20	0.09	2 (AL –G)
Tin	2	2	5 (AL – G)
Uranium	1.3	0.7	16 (AL and PL – G)
Vanadium	83.0	88.1	200 (G)
Zinc	144	75	150 (AL – GWtoFSW/LI/DW/I and PL - GWtoFSW)

Notes:

1. The CSR standard has been substituted with the regional background concentration as the CSR standard is below regional background.
2. Maximum concentration.

AL – Agricultural Land use

PL – Park Landuse

LW – livestock Watering Protection Standard

DW – Drinking Water Protection Standard

GWtoFSW Protection of groundwater flow to freshwater aquatic life. Standard is pH dependant

G – Generic Standard

I – Intake of contaminated Soil Standard

LI – Livestock Ingestion Standard

NC = Not Calculated

6.0 CLOSURE

We trust that the contents of this technical memorandum are sufficient for your current review purposes. Should you have any questions regarding this memorandum, please do not hesitate to contact the undersigned at 604-296-4200.

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Attachments: Study Limitations
Figure 1: Background Soil and Groundwater Locations
Table A: Results of Soil Analyses (Local Background)
Table B: Summary of Statistics of Metal Analyses (Local Background) – Organic Soil
Table C: Summary of Statistics of Metal Analyses (Local Background) – Mineral Soil
Table D: Results of Soil QA/QC Analyses for 2016 Background Sampling Results
Attachment 1: 2016 Laboratory Certificates of Analysis
Attachment 2: QA/QC Methods
Attachment 3: Baseline Results and Photos

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STUDY LIMITATIONS

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LEGEND

- BACKGROUND SOIL SAMPLING LOCATION
- BACKGROUND GROUNDWATER SAMPLING LOCATION
- ROAD
- WATERCOURSE

0 600 1,200

1:25,000 METRES

REFERENCES

1. LOCATIONS ARE APPROXIMATE AND KNOWN TO BE IN UNDISTURBED AREAS.

REFERENCES

1. PROJECT IMAGERY OBTAINED FROM MOUNT POLLEY MINE CORPORATION (JULY, 2016)
2. ROAD AND WATERCOURSE DATA CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE – CANADA
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4. DATUM: NAD 1983 UTM ZONE 10N

CLIENT
MOUNT POLLEY MINING CORPORATION

PROJECT
DSI / RISK ASSESSMENT PROGRAM

TITLE
BACKGROUND SOIL AND GROUNDWATER LOCATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-10-05
DESIGNED	AB
PREPARED	CD
REVIEWED	AA
APPROVED	TM

PROJECT NO.	PHASE/DOC	REV.	FIGURE
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Table A - Results of Soil Analyses (Local Background)
MPMC - Background Determination of Soil
Mount Polley Mine, BC

Sample ID		ST01-01	ST02-01	ST03-01	ST04-01	ST04-03	ST06-01A	ST06-01B	ST07-01	ST08-01	ST09-01BI	ST09-01BII	ST10-01	ST11-01	ST12-01A	ST12-01A2	ST13-01	ST14-01	ST15-01A	ST15-01B	ST16-01A	ST16-01B
Client Sample ID		ST01-01-140906	ST02-01-140903	ST03-01-140907	ST04-01-140905	ST04-03-140906	ST06-01-01-140905	ST06-01-02-140905	ST07-01-140907	ST08-01-140905	ST09-01-01-140907	ST09-01-02-140907	ST10-01-140905	ST11-01-140907	ST12-01-01-140904	ST12-01-02-140904	ST13-01-140908	ST14-01-140904	ST15-01-01-140908	ST15-01-02-140908	ST16-01-01-140906	ST16-01-02-140906
Date Sampled	Units	6-Sep-2014	3-Sep-2014	7-Sep-2014	5-Sep-2014	6-Sep-2014	5-Sep-2014	5-Sep-2014	7-Sep-2014	5-Sep-2014	7-Sep-2014	7-Sep-2014	5-Sep-2014	7-Sep-2014	4-Sep-2014	4-Sep-2014	8-Sep-2014	4-Sep-2014	8-Sep-2014	8-Sep-2014	6-Sep-2014	6-Sep-2014
Sample Depth (mbgs)		0.0 - 0.2	0.0 - 0.2	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.0 - 0.1	0.1 - 0.3	0.1 - 0.2	0.1 - 0.3	0.0 - 0.2	0.2 - 0.4	0.1 - 0.3	0.0 - 0.3	0.0 - 0.0	0.0 - 0.2	0.0 - 0.2	0.1 - 0.2	0.0 - 0.1	0.2 - 0.3	0.1 - 0.2	0.2 - 0.3
QA/QC		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALS Sample ID		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Horizon		B	B	B	A	B	A	B	B	B	BI	BII	C	B	A	A	A	B	A	B	A	B
Physical Parameters																						
pH	pH	6.01	6.61	5.36	6.02	6.03	4.97	5.55	4.92	5.06	5.14	6.19	5.61	5.03	6.63	7.13	6.24	5.46	4.88	5.3	4.96	5.26
Total Organic Carbon	%	0.45	-	1.2	0.58	0.39	1.1	-	0.74	0.55	0.8	-	0.35	0.67	-	3.3	11	-	3.4	-	6.5	-
Total Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	6.1	9.1	14	9.4	5.4	18	14	10	9.6	11	10	11	9.3	59	26	40	17	25	14	45	13
Oxidation-Reduction Potential (ORP)	mV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients																						
Total Available Nitrogen	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																						
Total Carbon by Combustion	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stong Acid Leachable - Total Metals																						
Aluminum	ug/g	14800	10800	12700	12900	18000	6270	12800	20000	14700	14100	14700	11100	13100	10300	45100	56100	19600	27700	16400	43400	18100
Antimony	ug/g	0.26	0.44	0.36	0.25	0.38	0.35	0.42	0.21	0.3	0.23	0.3	0.27	0.23	0.46	0.56	0.57	0.36	0.26	0.26	0.37	0.26
Arsenic	ug/g	14.2	8.69	7.69	5.33	7.26	8.1	11.2	5	4.28	4.09	5.23	3.87	3.94	4.86	14	11.3	4.96	6.48	6.17	6.27	6.26
Barium	ug/g	101	72.2	88	69.7	128	92.5	150	101	62	70.5	62.2	49.8	62.9	369	396	365	92	147	89.3	248	82.1
Beryllium	ug/g	0.34	0.33	0.3	0.31	0.35	< 0.2	0.25	0.3	0.35	0.35	0.41	0.31	0.28	0.4	1.37	1.7	0.48	0.64	0.37	1.18	0.35
Bismuth	ug/g	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.54	< 0.4	< 0.2	< 0.2	< 0.2	0.4	< 0.2
Boron	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (Hot Water Soluble)	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	ug/g	0.243	0.127	0.344	0.087	0.125	< 0.05	0.064	0.104	0.145	0.192	0.106	0.158	0.221	1.98	0.74	0.718	0.261	0.359	0.209	0.445	0.09
Calcium	ug/g	4990	5490	2930	3380	6430	1330	1010	1570	2230	2780	3900	3420	2920	24600	11700	11600	3330	3000	3810	4060	4110
Chromium	ug/g	29.5	23.7	38.5	31.2	23.9	9.59	15.5	43.2	35.4	33.1	40.1	29.6	30.1	25.1	108	94.6	46.5	47.6	38.4	81.8	39.5
Cobalt	ug/g	10.5	8.75	11.1	8.66	10.8	2.51	5.22	14.3	11.7	10.9	11.9	8.48	10.8	14	35	23.2	17.2	13.1	11.1	19.8	12.2
Copper	ug/g	16.6	34.2	29.2	20.9	28.7	5.98	11.5	18.9	19.2	15.3	22.4	19.3	21.7	76.1	132	135	25.9	36.3	22.1	68.2	21.8
Iron	ug/g	28400	22900	24900	23600	29100	16200	24200	35800	29100	25900	28000	23300	25100	19400	75700	61900	31300	34700	27300	53400	29300
Lead	ug/g	5.44	4.55	5.34	4.25	5.37	5.03	4.84	10.5	7.69	6.87	7.43	5	5.59	5.05	22	14.8	9.69	8.58	6.08	15.9	8.08
Lithium	ug/g	11.9	8	13.1	11.3	11.1	7.1	13.6	33.9	21.4	19.3	20.1	13.2	16.6	5.7	31.5	36.3	24.1	19.7	14.1	34.7	20.5
Magnesium	ug/g	7470	4930	5430	4330	7620	1340	2640	9010	5920	5280	6700	5180	5520	3650	11900	12000	7900	7040	5700	11400	7730
Manganese	ug/g	518	413	408	252	410	171	170	385	377	352	398	290	329	7320	3630	1240	916	663	506	978	552
Mercury	ug/g	< 0.05	0.064	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17	0.132	0.09	< 0.05	0.057	< 0.05	0.087	< 0.05
Molybdenum	ug/g	< 0.5	0.65	0.51	< 0.5	0.55	0.58	0.65	< 0.5	0.65	< 0.5	< 0.5	< 0.5	0.53	5.11	2.33	1.13	0.99	0.67	< 0.5	1.61	0.51
Nickel	ug/g	23.5	19.7	27.2	22.6	25.2	4.4	12.7	36.3	23.3	20.6	25.4	21.2	22.9	53.9	{104}	85.5	29.2	30.2	22.1	60.3	27.9
Phosphorus	ug/g	1560	555	889	956	1160	436	898	531	488	964	710	805	814	968	493	1210	568	909	755	761	522
Potassium	ug/g	680	610	890	770	710	650	640	1430	1160	930	1170	740	790	940	4700	3650	980	1390	990	3950	1340
Selenium	ug/g	< 0.2	< 0.2	< 0.2	< 0.2	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	4.29	1.21	0.66	0.23	< 0.2	< 0.2	0.31	0.25
Silver	ug/g	< 0.1	< 0.1	0.11	< 0.1	< 0.1	< 0.1	0.11	< 0.1	< 0.1	0.14	< 0.1	< 0.1	< 0.1	0.66	1.15	0.78	0.12	0.71	< 0.1	0.75	< 0.1
Sodium	ug/g	110	130	100	110	130	< 100	< 100	< 100	130	120	160	< 100	< 100	< 100	260	210	140	120	180	190	170
Strontium	ug/g	36.8	47.5	22.5	33.1	40.3	16.8	14.8	16.1	25.1	27.1	37.3	31.4	26.1	142	96.8	97.7	25.9	36.4	44	43.4	45.7
Sulphur	ug/g	< 500	-	600	< 500	< 500	< 500	-	< 500	< 500	< 500	-	< 500	< 500	-	900	800	-	< 500	-	900	-
Thallium	ug/g	< 0.05	< 0.07	0.085	0.051	0.051	< 0.05	< 0.05	0.094	0.077	0.06	0.084	< 0.05	0.055	0.124	0.301	< 0.25	< 0.08	< 0.09	< 0.05	0.262	< 0.09
Tin	ug/g	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Titanium	ug/g	799	820	735	741	930	406	375	515	751	750	830	774	706	198	1120	805	814	719	988	576	1050
Uranium	ug/g	0.378	0.462	0.551	0.507	0.401	0.424	0.407	0.512	0.534	0.493	0.578	0.487	0.481	10.5	4.54	2.47	0.542	0.786	0.547	1.23	0.565
Vanadium	ug/g	81.3	69.6	53.3	55.2	88.2	40.8	54	40.2	61.5	58.3	58	59.4	55.1	40.3	133	114	72.1	81.5	74.1	107	71.2
Zinc	ug/g	95.4	40.1	61.7	44	45.5	32	53.7	79.1	53.6	61.2	51.4	42.6	53	46.8	149	145	74.6	86.1	45.5	147	48.7
Zirconium	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

MPMC = Mount Polley Mining Corporation; BC CSR = British Columbia Contaminated Sites Regulation

m bgs = metres below ground surface; QA/QC = Quality Assurance / Quality Check; FDA = Field Duplicate Available; DUP = Duplicate
mV = millivolt; mm = millimetre; ug/g = milligram per kilogram; < = below detection limit; '-' = no data
a. Guidelines for groundwater used for drinking water (residential and urban park areas)
b. Guidelines for intake of contaminated soil (residential and urban park areas)
c. Guidelines for toxicity to soil invertebrates and plants (residential and urban park areas)
d. Guidelines for groundwater flow to surface water used by aquatic life (residential and urban park areas)
e. Generic guidelines from Schedule 4
f. Generic guidelines from Schedule 10
g. Guideline is pH dependent

underline	exceeds BC CSR DW guideline
double underline	exceeds BC CSR ICS guideline
(round brackets)	exceeds BC CSR TSIP guideline
[square brackets]	exceeds BC CSR GWtoFSW guideline
{braces brackets}	exceeds BC CSR Generic guideline

Table A - Results of Soil Analyses (Local Background)
MPMC - Background Determination of Soil
Mount Polley Mine, BC

Sample ID	Units	ST17-01	ST18-01	P1 - A Layer	P1 - B Layer	P1-Spruce - AH Layer	P1-Berry - AH Layer	P9 - A Layer	P9 - B Layer	P14 - A Layer	P14 - B Layer	P17 - H Layer	P17 - A Layer	P17 - B Layer	P19 - H Layer	P19 - A Layer	P19 - A Layer - DUP	P19 - B Layer	P20 - H Layer	P20 - A Layer	P20 - B Layer	P26 - H A Layer
Client Sample ID		ST17-01-140912	ST18-01-140917	384856-01	384856-02	384856-03	384856-04	384856-05	384856-06	384857-02	384857-03	384857-12	384858-01	384858-02	384858-07	384858-08	384858-09	384858-10	384858-11	384858-12	384859-01	389821-02
Date Sampled		12-Sep-2014	17-Sep-2014	28-Jul-2015	28-Jul-2015	28-Jul-2015	28-Jul-2015	30-Jul-2015	30-Jul-2015	31-Jul-2015	31-Jul-2015	1-Aug-2015	1-Aug-2015	1-Aug-2015	2-Aug-2015	2-Aug-2015	2-Aug-2015	2-Aug-2015	2-Aug-2015	2-Aug-2015	2-Aug-2015	3-Aug-2015
Sample Depth (mbgs)		0.1 - 0.2	0.2 - 0.3	0.05	0.15	0.1	0.1	0.06	0.1	0.15	0.3	0.05	0.1	0.2	0.02	0.13	0.13	0.2	0.1	0.15	0.2	0.1
QA/QC		-	-	-	-	-	-	-	-	-	-	-	-	-	-	FDA	DUP	-	-	-	-	-
ALS Sample ID		-	-	L1654527-21	L1654527-22	L1654527-23	L1654527-24	L1654527-25	L1654527-26	L1654527-58	L1654527-59	L1654527-68	L1654527-80	L1654527-81	L1654527-86	L1654527-87	L1654527-88	L1654527-89	L1654527-90	L1654527-91	L1654527-92	L1654527-117
Soil Horizon		BI	B	A	B	AH	AH	A	B	A	B	H	A	B	H	A	A	B	H	A	B	HA
Physical Parameters																						
pH	pH	4.69	6.2	4.84	5.01	5.11	5.38	4.81	5.06	5.59	6.51	5.00	4.82	5.11	5.98	5.83	5.80	5.87	5.84	5.79	6.29	6.69
Total Organic Carbon	%	1.1	0.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	16	10	47.4	21.9	-	-	34.9	16.7	35.2	10.2	35.4	26.0	13.5	31.3	20.1	18.9	11.8	41.9	11.6	10.5	69.4
Oxidation-Reduction Potential (ORP)	mV	-	-	359	406	-	-	376	393	337	329	346	312	317	255	301	317	326	330	316	312	175
Plant Avilable Nutrients																						
Total Available Nitrogen	ug/g	-	-	13.2	4.4	-	-	10.6	3	6	3	23.5	9	5	16	2.9	<4.3	2.7	24	4.6	<4.3	29.3
Total Nitrogen by LECO	%	-	-	1.09	0.292	-	-	0.808	0.203	0.201	0.062	0.659	0.401	0.159	0.876	0.197	0.240	0.096	1.68	0.280	0.090	1.93
Available Ammonium-N	ug/g	-	-	13.2	4.4	-	-	10.6	3.0	6.0	3.0	23.5	9.0	5.0	16.0	2.9	2.8	2.7	24.3	4.6	1.6	29.3
Available Nitrate-N	ug/g	-	-	<10	<4.0	-	-	<6.0	<1.0	38.7	<1.0	<8.0	<6.0	<4.0	<8.0	<1.0	<1.0	<1.0	<12	<4.0	<1.0	<10
Nitrate+Nitrite-N	ug/g	-	-	<4.0	<2.0	-	-	<6.0	<2.0	<2.0	<2.0	<8.0	<4.0	<4.0	<6.0	<2.0	<4.0	<2.0	<12	<4.0	<4.0	<8.0
Nitrate-N	ug/g	-	-	<4.0	<2.0	-	-	<6.0	<2.0	<2.0	<2.0	<8.0	<4.0	<4.0	<6.0	<2.0	<4.0	<2.0	<12	<4.0	<4.0	<8.0
Nitrite-N	ug/g	-	-	<0.80	<0.50	-	-	<1.2	<0.50	<0.50	<0.50	<1.6	<0.80	<0.80	<1.2	<0.50	<0.80	<0.50	<2.4	<0.80	<0.80	<1.6
Available Phosphate-P	ug/g	-	-	6.8	2.8	-	-	12.4	6.1	<2.0	<2.0	53.0	30.0	12.8	46.5	2.7	3.3	<2.0	57.7	8.1	2.3	23.3
Available Potassium	ug/g	-	-	349	127	-	-	280	74	92	38	316	208	75	220	29	33	42	607	44	27	176
Available Sulfate-S	ug/g	-	-	26	<6.0	-	-	16.4	<3.0	10.9	<3.0	22	17.3	6.6	16	3.6	4.6	<3.0	45	10.9	4.3	33
Organic / Inorganic Carbon																						
Total Carbon by Combustion	%	-	-	19.7	4.2	-	-	16.2	3.2	3.1	0.5	16.7	9.9	3.2	15.7	3.5	4.3	1.4	40.3	4.4	1.0	38.0
Stong Acid Leachable - Total Metals																						
Aluminum	ug/g	14100	15800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	ug/g	0.34	0.36	0.3	0.28	0.23	0.36	0.35	0.23	0.36	0.32	-	0.25	0.22	-	0.15	0.14	0.15	0.18	<0.10	0.12	-
Arsenic	ug/g	3.06	8.25	4.55	6.3	1.82	4.38	5.7	4.12	9.78	8.95	-	2.96	4.93	-	1.99	1.82	3.14	1.83	0.94	2.75	-
Barium	ug/g	62.7	100	204	185	173	236	194	112	176	95.7	-	133	103	-	42.5	46.3	40.8	200	50	50.3	-
Beryllium	ug/g	0.25	0.4	0.89	0.8	0.58	0.95	0.87	0.42	0.8	0.38	-	<0.10	0.21	-	0.14	0.1	0.22	0.15	<0.10	0.18	-
Bismuth	ug/g	< 0.2	< 0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron	ug/g	-	-	-	<5.0	-	-	-	<5.0	-	<5.0	-	-	-	-	-	-	<5.0	-	-	<5.0	-
Boron (Hot Water Soluble)	ug/g	-	-	-	0.15	-	-	-	<0.10	-	<0.10	-	-	-	-	-	-	<0.10	-	-	0.11	-
Cadmium	ug/g	0.29	0.097	0.938	0.33	0.844	0.617	0.417	0.191	0.658	0.092	-	0.341	0.144	-	1.27	1.06	0.32	3.87	0.327	0.139	-
Calcium	ug/g	2170	4020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	ug/g	40.5	42.2	54.7	58.7	12.4	60.9	48.6	37.7	54.7	35.7	-	12.2	24.3	-	18.6	18.7	25.2	12.0	13.9	26.6	-
Cobalt	ug/g	8.13	15.9	13.1	15.2	8.81	20.9	24	11.1	13.5	12	-	3.52	5.28	-	7.5	7.17	7.48	11.3	2.31	6.91	-
Copper	ug/g	10.6	26.1	53.4	44.7	39.4	59.9	46.8	23.2	63.5	24.1	-	18	11.9	-	15	12.9	11.1	22.1	11.4	7.39	-
Iron	ug/g	27200	31500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	ug/g	6.64	8.01	7.34	10.2	5.3	8.95	13.4	6.35	11.7	6.87	-	9.31	5.73	-	6.97	6.86	6.63	7.43	5.21	5.73	-
Lithium	ug/g	19.4	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	ug/g	4860	6320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	ug/g	304	808	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	ug/g	< 0.05	< 0.05	0.229	<0.050	0.304	0.23	0.108	<0.050	0.055	<0.050	-	0.086	<0.050	-	<0.050	<0.050	<0.050	0.183	<0.050	<0.050	-
Molybdenum	ug/g	0.53	< 0.5	1.01	0.75	0.96	1.04	1.34	0.41	0.99	0.55	-	1.1	0.69	-	0.72	0.77	0.68	1.05	0.35	0.62	-
Nickel	ug/g	18	24.5	35.7	35.4	15.7	43.4	28.1	21	39.6	21.5	-	5.49	9.81	-	8.02	8.48	12.5	13.6	5.31	13.9	-
Phosphorus	ug/g	476	576	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	ug/g	730	1120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	ug/g	< 0.2	0.23	0.33	<0.20	0.27	0.39	<0.20	<0.20	0.22	0.22	-	<0.20	<0.20	-	<0.20	<0.20	<0.20	0.52	<0.20	<0.20	-
Silver	ug/g	0.12	< 0.1	0.74	0.27	0.78	0.62	1	0.21	0.45	<0.10	-	0.2	0.13	-	0.14	0.14	0.13	0.59	0.15	0.13	-
Sodium	ug/g	100	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium	ug/g	23.8	49.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphur	ug/g	< 500	< 500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	ug/g	0.081	0.087	0.143	0.137	0.065	0.156	0.14	0.069	0.135	0.072	-	0.065	0.064	-	<0.050	<0.050	<0.050	0.098	<0.050	0.055	-
Tin	ug/g	< 2	< 2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-
Titanium	ug/g	892	819	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	ug/g	0.5	0.596	1.14	0.697	0.792	1.33	0.975	0.611	1.1	0.62	-	0.259	0.373	-	0.547	0.459	0.671	0.224	0.39	0.616	-
Vanadium	ug/g	61.8	80.4	64.2	92.4	14.8	68.4	84	68.5	96.7	70.1	-	30.8	51.8	-	38.8	39	50.5	15.9	17.8	43.7	-
Zinc	ug/g	93.4	44.5	130	131	54.6	139	91.3	61.6	97	40.8	-	35.7	48.2	-	41.9	44.6	49.8	89.8	16.4	40	-
Zirconium	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

MPMC = Mount Polley Mining Corporation; BC CSR = British Columbia Contaminated Sites Regulation

m bgs = metres below ground surface; QA/QC = Quality Assurance / Quality Check; FDA = Field Duplicate Available; DUP = Duplicate
mV = millivolt; mm = millimetre; ug/g = milligram per kilogram; < = below detection limit; '-' = no data
a. Guidelines for groundwater used for drinking water (residential and urban park areas)
b. Guidelines for intake of contaminated soil (residential and urban park areas)
c. Guidelines for toxicity to soil invertebrates and plants (residential and urban park areas)
d. Guidelines for groundwater flow to surface water used by aquatic life (residential and urban park areas)
e. Generic guidelines from Schedule 4
f. Generic guidelines from Schedule 10
g. Guideline is pH dependent

underline	exceeds BC CSR DW guideline
double underline	exceeds BC CSR ICS guideline
(round brackets)	exceeds BC CSR TSIP guideline
[square brackets]	exceeds BC CSR GWtoFSW guideline
{braces brackets}	exceeds BC CSR Generic guideline

Table A - Results of Soil Analyses (Local Background)
MPMC - Background Determination of Soil
Mount Polley Mine, BC

Sample ID		P26 - B Layer	P28 - H Layer	WILLOW SOIL-1	WILLOW SOIL-2	WILLOW SOIL-3	WILLOW SOIL-3X	WILLOW SOIL-4	WILLOW SOIL-5	WILLOW SOIL-6	WILLOW SOIL-6X	WILLOW SOIL-7	WILLOW SOIL-8	WILLOW SOIL-9	WILLOW SOIL-10	SS16-BKG-01A	SS16-BKG-01B	SS16-BKG-01C	SS16-BKG-02A	SS16-BKG-02A(D)	SS16-BKG-02B	SS16-BKG-02C
Client Sample ID		389821-03	389821-09	WILLOW SOIL-1	WILLOW SOIL-2	WILLOW SOIL-3	WILLOW SOIL-3X	WILLOW SOIL-4	WILLOW SOIL-5	WILLOW SOIL-6	WILLOW SOIL-6X	WILLOW SOIL-7	WILLOW SOIL-8	WILLOW SOIL-9	WILLOW SOIL-10	-	-	-	-	-	-	-
Date Sampled	Units	3-Aug-2015	3-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	14-Aug-2016	14-Aug-2016	14-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016
Sample Depth (mbgs)		0.25	0.35	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0.25-0.35	0.6-0.7	0.9-1.0	0.1-0.3	0.1-0.3	0.4-0.6	0.7-0.9
QA/QC		-	-	-	-	FDA	DUP	-	-	FDA	DUP	-	-	-	-	-	-	-	FDA	DUP	-	-
ALS Sample ID		L1654527-118	L1654527-124	L1667543-33	L1667543-34	L1667543-35	L1667543-36	L1667543-37	L1667543-38	L1667543-39	L1667543-40	L1667543-41	L1667543-42	L1667543-43	L1667543-44	L1826528-1	L1826528-2	L1826528-3	L1826528-4	L1826528-5	L1826528-6	L1826528-7
Soil Horizon		B	H	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	BC	BC	BC	BC	BC	BC	BC
Physical Parameters																						
pH	pH	6.97	7.12	5.95	10.4	15.3	6.2	6.29	6.67	6.39	6.23	7.22	7.02	8.07	7.70	6.18	6.74	7.28	5.68	5.73	6.50	6.82
Total Organic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.658	0.347	0.203	1.96	1.87	0.562	0.451
Total Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CACO3)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	41.0	59.4	10.6	10.4	15.3	13.8	10.8	4.79	3.78	3.84	2.90	9.84	3.98	7.22	-	-	-	-	-	-	-
Oxidation-Reduction Potential (ORP)	mV	260	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients																						
Total Available Nitrogen	ug/g	7.5	26.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	%	0.581	1.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	ug/g	7.5	26.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	ug/g	<8.0	<10	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	2.4	2.5	<1.0	<1.0
Nitrate+Nitrite-N	ug/g	<6.0	<8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	ug/g	<6.0	<8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	ug/g	<1.2	<1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	ug/g	<2.0	12.3	-	-	-	-	-	-	-	-	-	-	-	-	4.3	<2.0	<2.0	2.7	3.1	<2.0	<2.0
Available Potassium	ug/g	145	280	-	-	-	-	-	-	-	-	-	-	-	-	53	45	45	72	71	67	64
Available Sulfate-S	ug/g	15	64	-	-	-	-	-	-	-	-	-	-	-	-				-	-	-	-
Organic / Inorganic Carbon																						
Total Carbon by Combustion	%	8.0	38.1	-	-	-	-	-	-	-	-	-	-	-	-	0.658	0.347	0.203	1.96	1.87	0.562	0.451
Stong Acid Leachable - Total Metals																						
Aluminum	ug/g	-	-	19400	18000	20200	15800	13700	14300	13100	12900	8830	16400	14700	18200	13600	15000	18100	17300	18000	17600	18800
Antimony	ug/g	-	-	0.2	0.33	0.52	0.43	0.36	0.49	0.26	0.29	0.32	0.39	0.23	0.24	0.23	0.32	0.43	0.24	0.24	0.35	0.4
Arsenic	ug/g	-	-	4.45	5.53	11	10	12.1	9.73	6.08	6.9	5.95	8.41	5.19	6.82	4.85	8.03	9.78	6.24	6.35	8	9.23
Barium	ug/g	-	-	82.7	89.9	127	96.7	232	115	52.4	53	49.4	91.3	43.8	101	72.4	101	127	103	124	118	138
Beryllium	ug/g	-	-	0.4	0.36	0.52	0.4	0.47	0.39	0.29	0.28	0.24	0.42	0.29	0.38	0.32	0.37	0.47	0.42	0.42	0.48	0.54
Bismuth	ug/g	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron	ug/g	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Boron (Hot Water Soluble)	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	-	0.13	0.12	<0.10
Cadmium	ug/g	-	-	0.15	0.121	0.348	0.229	0.742	0.224	0.078	0.086	0.145	0.239	0.169	0.16	0.17	0.1	0.095	0.182	0.196	0.089	0.106
Calcium	ug/g	-	-	5530	7980	6420	5630	4970	5210	3470	3570	7210	5210	25200	18300	3880	5290	5750	3770	3690	4950	6120
Chromium	ug/g	-	-	35.1	37.4	47.7	40.7	34.2	34.8	38.1	36.4	26	35	30.3	40.7	38.5	43.2	50.4	39.9	42.2	49	56.9
Cobalt	ug/g	-	-	10.8	11.3	16.3	12.6	11.1	11.2	9.3	9.13	8.49	12.7	11.7	14	11.2	12	14.5	10.6	15.7	14.7	17
Copper	ug/g	-	-	19	27.2	51.2	34.3	23.3	48.5	28.4	27.9	28.5	43	32	72.4	18	27.6	45.3	25.7	27	34	45.7
Iron	ug/g	-	-	30000	30800	37800	32200	28500	29300	27800	27600	22200	30400	29700	35700	27000	29300	32900	27800	30300	30500	32000
Lead	ug/g	-	-	6.92	7.61	9.53	8.11	6.91	6.5	4.59	4.57	4.57	8.09	7.33	5.35	6.2	7.04	8.37	7.43	7.41	8.19	7.5
Lithium	ug/g	-	-	27.8	19.7	28.2	20	25.2	13.4	14.9	14.8	8.7	16.3	20.3	13.2	19.2	14.5	16.5	20	19.5	17.4	16.5
Magnesium	ug/g	-	-	7280	8030	8630	6760	4700	6030	5330	5340	4930	6460	7040	9060	5810	6000	7160	6050	6560	6440	6980
Manganese	ug/g	-	-	416	441	654	529	1130	540	244	244	408	716	489	599	465	652	656	493	679	663	828
Mercury	ug/g	-	-													<0.050	<0.050	0.06	0.051	<0.050	<0.050	0.07
Molybdenum	ug/g	-	-	0.72	0.51	0.76	0.64	1.04	0.62	0.53	0.55	0.45	0.65	0.54	0.6	0.48	0.64	0.77	0.56	0.57	0.51	0.55
Nickel	ug/g	-	-	27.7	28	39.8	30.2	24.6	25.1	24.9	23.4	18.4	28.8	26.8	27.1	23.2	24.8	31.1	25.2	26.6	29.2	34.3
Phosphorus	ug/g	-	-	392	751	792	751	595	803	546	550	638	806	847	963	451	628	680	521	535	737	842
Potassium	ug/g	-	-	880	960	1940	1410	1050	1020	810	830	610	1310	1080	1660	960	1050	1220	1300	1390	1380	1340
Selenium	ug/g	-	-	0.23	0.21	0.39	0.35	0.36	<0.20	<0.20	<0.20	<0.20	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver	ug/g	-	-	<0.10	<0.10	<0.20	<0.10	<0.30	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/g	-	-	125	293	233	225	96	107	112	102	153	136	264	576	144	188	252	168	169	252	325
Strontium	ug/g	-	-	56.2	61.7	62.3	53.3	49.5	45.7	30	29.3	45	44.2	171	146	40.5	63.4	68	44.1	77.3	61.6	72.3
Sulphur	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	ug/g	-	-	0.091	0.097	0.183	0.142	0.251	0.091	0.065	0.064	0.077	0.115	0.1	<0.050	0.054	0.072	0.091	0.079	0.081	0.085	0.085
Tin	ug/g	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	ug/g	-	-	768	995	768	695	524	827	814	808	670	811	792	1170	788	783	710	779	786	822	732
Uranium	ug/g	-	-	0.982	0.71	0.755	0.844	1.47	0.517	0.533	0.513	0.415	0.502	0.627	0.418	0.555	0.646	0.707	0.581	0.604	0.633	0.606
Vanadium	ug/g	-	-	60.2	72.1	67.3	61.2	63.4	77.5	64.1	64.1	57.1	72.2	53.3	119	68.7	74.7	78.7	74.9	76.9	81.8	88
Zinc	ug/g	-	-	57.5	57.6	92.7	69.6	130	67.3	38.6	38.5	37.6	67.4	54.3	45.6	64.8	48.3	53.6	61.6	63.2	49.5	53
Zirconium	ug/g	-	-	2	3.2	1.5	1.1	<1.0	1.9	2.1	1.9	2.5	2.4	4.3	4.7	1.3	3.4	5.8	<1.0	<1.0	2.9	3

Notes:

MPMC = Mount Polley Mining Corporation; BC CSR = British Columbia Contaminated Sites Regulation

m bgs = metres below ground surface; QA/QC = Quality Assurance / Quality Check; FDA = Field Duplicate Available; DUP = Duplicate
mV = millivolt; mm = millimetre; ug/g = milligram per kilogram; < = below detection limit; '-' = no data
a. Guidelines for groundwater used for drinking water (residential and urban park areas)
b. Guidelines for intake of contaminated soil (residential and urban park areas)
c. Guidelines for toxicity to soil invertebrates and plants (residential and urban park areas)
d. Guidelines for groundwater flow to surface water used by aquatic life (residential and urban park areas)
e. Generic guidelines from Schedule 4
f. Generic guidelines from Schedule 10
g. Guideline is pH dependent

underline	exceeds BC CSR DW guideline
double underline	exceeds BC CSR ICS guideline
(round brackets)	exceeds BC CSR TSIP guideline
[square brackets]	exceeds BC CSR GWtoFSW guideline
{braces brackets}	exceeds BC CSR Generic guideline

Table A - Results of Soil Analyses (Local Background)
MPMC - Background Determination of Soil
Mount Polley Mine, BC

Sample ID		SS16-BKG-03A	SS16-BKG-03B	SS16-BKG-03C	SS16-BKG-04A	SS16-BKG-04B	SS16-BKG-04B(D)	SS16-BKG-04C	SPRUCE-REF-1-16	CSS16-BKG-01	CSS16-BKG-07	CSS16-BKG-08	CSS16-BKG-09	CSS16-BKG-10	CSS16-BKG-11	CSS16-BKG-12	CSS16-BKG-13	CSS16-BKG-13D	CSS16-BKG-14	CSS16-BKG-15	CSS16-BKG-16	CSS16-BKG-17
Client Sample ID		-	-	-	-	-	-	-														
Date Sampled	Units	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	3-Aug-2016	19-Aug-2016	19-Aug-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016
Sample Depth (mbgs)		0.1-0.3	0.4-0.6	0.7-0.9	0.1-0.3	0.4-0.6	0.4-0.6	0.75-0.95	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2
QA/QC		-	-	-	-	FDA	DUP	-									FDA	FD				
ALS Sample ID		L1826528-8	L1826528-9	L1826528-10	L1826528-11	L1826528-12	L1826528-13	L1826528-14	L1824887-7	L1826516-29	L1826516-30	L1826516-31	L1826516-32	L1826516-33	L1826516-34	L1826516-35	L1826516-36	L1826516-37	L1826516-38	L1826516-39	L1826516-40	L1826516-41
Soil Horizon		BC	BC	BC	BC	BC	BC	BC	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA
Physical Parameters																						
pH	pH	5.61	5.77	7.38	5.45	6.02	6.05	6.63	5.86	5.33	4.88	8.38	6.21	6.65	5.60	5.46	5.48	5.53	5.23	5.70	5.12	5.74
Total Organic Carbon	%	1.97	3.52	0.317	1.38	0.531	0.508	0.416	10.8	18.4	13	0.32	1.54	0.348	2.5	0.905	17.4	17.8	22.2	19	7.31	16.6
Total Inorganic Carbon	%	-	-	-	-	-	-	-	0.21	0.20	0.12	0.35	0.08	0.08	0.07	0.06	0.16	0.16	0.19	0.24	0.10	0.22
Inorganic Carbon (as CACO3)	%	-	-	-	-	-	-	-	1.73	1.67	1.00	2.87	0.68	0.64	0.61	0.54	1.30	1.29	1.56	2.02	0.81	1.87
Moisture	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxidation-Reduction Potential (ORP)	mV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients																						
Total Available Nitrogen	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	ug/g	5.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	17.2	<3.0	1.3	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	6	6	<2.0	<4.0
Nitrate+Nitrite-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	ug/g	<2.0	5.1	<2.0	17.9	21.1	20.0	5.4	5.4	2.2	25.9	3.4	136.0	8.1	73.0	9.9	55.5	48.9	5.5	4.8	4.8	10.0
Available Potassium	ug/g	69	124	44	56	48	49	46	188	224	173	67	131	66	96	44	267	252	275	152	89	343
Available Sulfate-S	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																						
Total Carbon by Combustion	%	1.97	3.52	0.317	1.38	0.531	0.508	0.416	11	18.6	13.1	0.67	1.62	0.42	2.57	0.97	17.6	18	22.4	19.2	7.41	16.8
Stong Acid Leachable - Total Metals																						
Aluminum	ug/g	22200	22800	21100	10300	10800	10400	11000	-	31200	19700	18500	14600	15600	14200	15700	14500	14200	39200	43200	11400	44300
Antimony	ug/g	0.24	0.59	0.49	0.17	0.24	0.22	0.25	0.41	0.29	0.23	0.44	0.28	0.35	0.27	0.23	0.51	0.26	0.32	0.45	0.21	0.42
Arsenic	ug/g	5.91	6.01	8.09	4.12	5.53	5.23	6.33	6.03	3.39	3.93	8.24	4.73	5.5	4.59	4.46	4.22	3.61	4.89	6.11	2.42	5.71
Barium	ug/g	97.6	108	121	90.5	88	86.4	66.7	180	191	182	104	79.3	86.6	86.8	78.7	176	162	255	282	73.9	280
Beryllium	ug/g	0.57	0.61	0.57	0.22	0.24	0.25	0.27	0.76	0.93	0.64	0.44	0.35	0.4	0.35	0.35	0.4	0.42	1.15	1.22	0.26	1.13
Bismuth	ug/g	0.21	0.24	0.21	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.22	0.29	<0.20	0.25
Boron	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.8	<5.0	<5.0	<5.0	<5.0	<5.0
Boron (Hot Water Soluble)	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	ug/g	0.109	0.218	0.109	0.236	0.134	0.143	0.088	1.08	0.542	0.438	0.204	0.246	0.226	0.215	0.096	0.519	0.448	0.281	0.961	0.322	0.619
Calcium	ug/g	2630	4080	6590	2480	3080	3150	3360	-	6010	5710	14300	4030	4260	4370	3200	8650	8200	3920	11500	3320	9880
Chromium	ug/g	51.6	53.8	58.9	26.6	29.5	29.4	32.9	43.5	53.5	34.5	41.9	33.6	38.8	34.8	32.5	28.9	29.7	43.3	57.8	26.7	64
Cobalt	ug/g	17.4	20	15.7	7.12	10.3	10.3	10	12.7	21.8	9.6	16.2	11.3	13.6	9.38	11.4	12.4	11.9	7.53	15.6	5.63	17.5
Copper	ug/g	25.1	29.5	47.3	10.6	15.7	15.7	22.2	53.7	54.6	39.9	61.6	24.9	32.3	37.6	19.7	40.4	36.8	69.2	96.2	17.8	81.2
Iron	ug/g	34800	38000	36900	18900	19200	18800	20600	-	27600	24500	35900	25300	27300	25800	25300	21500	22800	19400	35200	17600	39100
Lead	ug/g	11.9	14.9	11.3	5.13	4.74	4.73	5.49	8.12	8.73	8.86	12.2	6.94	7.92	6.46	7.3	7.84	7.78	12.2	12.8	5.73	10.9
Lithium	ug/g	37.8	35.6	27.7	12.6	10.6	10.1	8.8	-	18.7	13.1	26.2	18.8	17.6	15.6	22	15.3	14.8	18	29.1	10.7	28.6
Magnesium	ug/g	8230	9560	9370	3190	3810	3750	4380	-	6940	4760	9040	5870	6720	4860	5900	5820	5540	3590	8310	3270	8630
Manganese	ug/g	868	984	622	363	330	336	400	-	1380	980	619	456	556	484	390	1290	1100	86.1	493	126	969
Mercury	ug/g	<0.050	<0.050	0.057	<0.050	<0.050	<0.050	<0.050	0.064	0.205	0.129	<0.050	<0.050	<0.050	<0.050	<0.050	0.114	0.12	0.248	0.206	0.052	0.204
Molybdenum	ug/g	0.89	1.08	0.54	0.54	0.46	0.48	0.44	0.72	1.35	0.65	0.58	0.48	0.49	0.5	0.53	1.6	1.38	0.69	1.01	0.56	1.37
Nickel	ug/g	36.3	36.9	44.3	15.9	21.6	21.4	22.4	35.6	33.7	23	42.4	25.1	30.1	18.7	24.4	24.3	22.1	52.8	72.8	15.5	58.7
Phosphorus	ug/g	320	441	703	586	631	618	555	-	1540	1130	704	1070	546	934	468	934	873	1540	1390	337	1570
Potassium	ug/g	2060	2090	1760	560	750	700	810	-	2000	1170	1580	1240	1440	980	1100	1380	1370	2620	2620	780	2970
Selenium	ug/g	0.23	0.3	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.46	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.35	<0.20	0.41	0.72	<0.20	0.5
Silver	ug/g	0.16	0.21	0.11	0.17	<0.10	<0.10	<0.10	0.37	0.64	0.73	0.13	0.18	<0.10	0.13	<0.10	0.27	0.23	0.74	0.95	0.19	0.94
Sodium	ug/g	157	158	230	80	77	77	86	-	125	109	192	110	152	118	130	89	131	102	121	97	113
Strontium	ug/g	26.8	39.4	56.7	26.7	34.4	32.5	35.6	-	60	54.2	72.7	33	38	40.5	32.6	58.5	60.2	43.8	111	38	89.8
Sulphur	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	ug/g	0.124	0.155	0.165	<0.050	0.058	0.058	0.082	0.12	0.154	0.105	0.12	0.083	0.093	0.061	0.088	0.098	0.109	0.214	0.221	0.061	0.215
Tin	ug/g	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	ug/g	653	701	772	514	598	587	658	-	247	504	674	713	899	842	759	721	806	218	333	397	401
Uranium	ug/g	0.83	0.925	0.765	0.354	0.408	0.384	0.508	1.04	1.21	0.67	0.804	0.564	0.594	0.453	0.521	0.379	0.418	2.41	3.3	0.497	2.03
Vanadium	ug/g	62.8	65.4	64	46.9	48.3	47.3	49.7	67	57.2	56.2	62.9	57.9	65.1	74.9	57	55.1	56.6	32.6	66.3	42.6	67.3
Zinc	ug/g	70.4	76	68.9	55.7	38.8	37.9	31.3	110	97.1	83.1	71.4	59.6	58.5	58.7	51.1	143	126	40.9	89.7	32.7	105
Zirconium	ug/g	<1.0	<1.0	4.9	<1.0	1.9	1.8	2.4	-	<1.0	<1.0	5.3	<1.0	1.8	1.3	<1.0	1.3	1.6	1.7	2.5	<1.0	<1.0

Notes:

MPMC = Mount Polley Mining Corporation; BC CSR = British Columbia Contaminated Sites Regulation

m bgs = metres below ground surface; QA/QC = Quality Assurance / Quality Check; FDA = Field Duplicate Available; DUP = Duplicate
mV = millivolt; mm = millimetre; ug/g = milligram per kilogram; < = below detection limit; '-' = no data
a. Guidelines for groundwater used for drinking water (residential and urban park areas)
b. Guidelines for intake of contaminated soil (residential and urban park areas)
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underline	exceeds BC CSR DW guideline
double underline	exceeds BC CSR ICS guideline
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Table A - Results of Soil Analyses (Local Background)
MPMC - Background Determination of Soil
Mount Polley Mine, BC

Sample ID	Units	CSS16-BKG-24	CSS16-BKG-25	CSS16-BKG-02	CSS16-BKG-03	CSS16-BKG-04	CSS16-BKG-05	CSS16-BKG-06	CSS16-BKG-18	CSS16-BKG-19	CSS16-BKG-20	CSS16-BKG-20D	CSS16-BKG-21	CSS16-BKG-22	CSS16-BKG-22D	CSS16-BKG-23	CSS16-BKG-23D
Client Sample ID																	
Date Sampled		5-Sep-2016	5-Sep-2016	17-Aug-2016	17-Aug-2016	17-Aug-2016	19-Aug-2016	19-Aug-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016
Sample Depth (mbgs)		0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.2
QA/QC											FDA	FD		FDA	FD	FDA	FD
ALS Sample ID		L1826516-43	L1826516-47	L1826551-19	L1826551-20	L1826551-21	L1826551-22	L1826551-23	L1826551-24	L1826551-25	L1826551-26	L1826551-27	L1826551-28	L1826551-29	L1826551-30	L1826551-31	L1826516-42
Soil Horizon		HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA
Physical Parameters																	
pH	pH	5.22	5.75	5.49	5.74	6.71	6.23	5.23	7.01	6.75	6.46	6.40	6.41	5.55	5.57	6.75	6.78
Total Organic Carbon	%	7.26	8.27	1.99	7.55	8.45	8.18	38.6	22.2	22.1	41.6	41.8	2.27	6.1	6.12	0.898	1.21
Total Inorganic Carbon	%	0.09	0.08														0.08
Inorganic Carbon (as CACO3)	%	0.76	0.64														0.65
Moisture	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxidation-Reduction Potential (ORP)	mV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Avilable Nutrients																	
Total Available Nitrogen	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	ug/g	<1.0	<3.0	<1.0	<2.0	<2.0	<2.0	<4.0	<3.0	<3.0	<5.0	<5.0	<1.0	<2.0	<2.0	<1.0	<1.0
Nitrate+Nitrite-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	ug/g	42.4	15.6	54.9	64.6	6.0	7.7	14.7	2.8	<2.0	7.5	8.3	4.2	98.0	98.0	14.6	16.3
Available Potassium	ug/g	104	127	95	120	142	82	471	130	51	170	160	59	90	86	112	108
Available Sulfate-S	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																	
Total Carbon by Combustion	%	7.35	8.35														1.29
Stong Acid Leachable - Total Metals																	
Aluminum	ug/g	7540	15000	9280	6680	13500	10400	3690	10100	11300	3410	3440	13900	10900	11800	10900	10700
Antimony	ug/g	0.16	0.24	0.21	0.16	0.24	0.21	0.22	0.28	0.32	0.28	0.24	0.3	0.27	0.24	0.37	0.36
Arsenic	ug/g	2.73	4.76	3.61	2.64	4.74	3.47	3.24	3.46	2.86	1.54	1.47	7.54	6.56	7.18	6.81	7.14
Barium	ug/g	139	137	66.9	129	49.7	92.9	83.7	76.9	79.5	58.8	58.4	83.5	132	123	65.8	67.8
Beryllium	ug/g	0.2	0.51	0.19	0.15	0.27	0.2	<0.10	0.27	0.46	0.14	0.12	0.32	0.24	0.22	0.29	0.31
Bismuth	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6.8	5.7	9.9	8.6	<5.0	<5.0	<5.0	<5.0	<5.0
Boron (Hot Water Soluble)	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	ug/g	0.325	0.289	0.221	0.84	0.257	0.488	0.697	0.499	0.645	1.05	1.06	0.205	0.39	0.375	0.163	0.159
Calcium	ug/g	3360	5310	2680	4670	9330	6400	17100	23800	33000	35100	31300	5030	4600	4050	5060	4990
Chromium	ug/g	20.1	33.1	28.6	19.9	30.9	21.2	6.07	19.7	23.8	5.66	5.71	31.7	30.3	33.4	28.4	38
Cobalt	ug/g	7.29	8.84	7.89	6.1	9.4	8.27	3.04	7.21	5.72	2.41	2.39	9.3	7.66	8.48	9.01	9.06
Copper	ug/g	12.1	32.2	10.5	12.1	27.3	13	17.9	117	101	33.1	33.1	21.7	24.1	24.8	36.2	38.7
Iron	ug/g	16600	23400	22700	14800	23900	19800	4960	17100	15900	4970	4920	26600	24900	24600	23600	24700
Lead	ug/g	5.94	6.42	5.85	4.91	5.55	5.59	4.3	3.86	4.38	4.05	3.58	5.09	5.65	4.81	5	5.54
Lithium	ug/g	9.2	14.6	11.2	6.7	16.2	9.6	2	10.4	10.9	2.4	2.3	15.4	8.5	7.7	9.8	10.9
Magnesium	ug/g	2410	4590	3550	2600	6460	4910	1570	4800	3690	2000	1990	5760	4530	5620	5670	5570
Manganese	ug/g	1250	462	391	1040	448	844	409	261	214	163	165	341	404	452	429	429
Mercury	ug/g	0.058	0.094	<0.050	<0.050	<0.050	<0.050	0.184	0.101	0.189	0.15	0.151	<0.050	<0.050	<0.050	<0.050	0.061
Molybdenum	ug/g	0.58	0.62	0.51	0.45	0.74	0.79	1.91	0.83	0.73	0.9	0.8	0.44	0.69	0.58	0.48	0.58
Nickel	ug/g	11.8	22.7	13.6	11.8	22.5	14.7	5.95	19.2	29.6	10.7	10.7	22.7	17.6	22.2	21.6	22.1
Phosphorus	ug/g	589	709	849	674	674	346	710	1040	1220	858	849	499	1060	1060	720	686
Potassium	ug/g	700	960	680	590	960	560	810	800	560	490	510	750	650	640	930	920
Selenium	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.56	2.62	3.66	1.45	1.48	<0.20	<0.20	<0.20	<0.20	<0.20
Silver	ug/g	0.16	0.4	0.13	0.22	<0.10	0.15	0.24	0.17	0.39	0.31	0.26	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/g	54	91	71	63	131	82	<50	178	89	<50	<50	102	93	102	177	162
Strontium	ug/g	29.3	60.1	23.5	34.5	60.8	51.3	136	105	184	224	196	43.1	47.3	36.4	38.3	43.2
Sulphur	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	ug/g	0.056	0.084	<0.050	<0.050	0.087	0.055	<0.050	0.06	0.088	<0.050	<0.050	0.075	0.059	0.051	0.073	0.077
Tin	ug/g	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	ug/g	295	363	743	442	719	774	154	345	177	78.3	83.4	849	709	750	741	721
Uranium	ug/g	0.294	0.635	0.295	0.275	0.631	0.299	0.346	2.87	8.1	3.12	2.63	0.603	0.348	0.29	0.427	0.464
Vanadium	ug/g	38	56.2	57.4	34.8	51.8	56.5	12.9	36.6	29.9	9.31	9.45	77.1	66.1	72.2	64.1	67.4
Zinc	ug/g	53.3	59.5	62.5	119	54.3	74.3	46.7	41.2	27.3	65.1	63.7	64.5	67.2	66.6	43.8	44.2
Zirconium	ug/g	<1.0	<1.0	1.2	<1.0	1.2	2	1.1	1.7	4.7	1.6	1.4	1.1	1.3	1.2	1.9	2

Notes:

MPMC = Mount Polley Mining Corporation; BC CSR = British Columbia Contaminated Sites Regulation

m bgs = metres below ground surface; QA/QC = Quality Assurance / Quality Check; FDA = Field Duplicate Available; DUP = Duplicate
mV = millivolt; mm = millimetre; ug/g = milligram per kilogram; < = below detection limit; '-' = no data
a. Guidelines for groundwater used for drinking water (residential and urban park areas)
b. Guidelines for intake of contaminated soil (residential and urban park areas)
c. Guidelines for toxicity to soil invertebrates and plants (residential and urban park areas)
d. Guidelines for groundwater flow to surface water used by aquatic life (residential and urban park areas)
e. Generic guidelines from Schedule 4
f. Generic guidelines from Schedule 10
g. Guideline is pH dependent

underline	exceeds BC CSR DW guideline
double underline	exceeds BC CSR ICS guideline
(round brackets)	exceeds BC CSR TSIP guideline
[square brackets]	exceeds BC CSR GWtoFSW guideline
{braces brackets}	exceeds BC CSR Generic guideline

Table B - Summary and Statistics of Metal Analyses (Local Background) - Organic Soil
MPMC - Background Determination of Soil
Mount Polley Mine, BC

	Arsenic	Antimony	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Strontium	Sulfur	Thallium	Tin	Uranium	Vanadium	Zinc
ST04-01	5.33	0.25	69.7	0.31	0.087	31.2	8.66	20.9	4.25	11.30	252	0.050	0.5	22.6	0.20	0.10	33.1	500	0.05	2	0.51	55.2	44.00
ST06-01A	8.1	0.35	92.5	0.2	0.05	9.59	2.51	5.98	5.03	7.1	171	0.050	0.6	4.40	0.20	0.10	16.8	500	0.050	2	0.424	40.8	32.0
ST12-01A	4.86	0.46	***369***	0.4	***1.98***	25.1	14	76.1	5.05	5.7	***7320***	0.17	***5.1***	53.9	***4.29***	0.66	142.0	-	0.124	2	***10.50***	40.3	46.8
ST12-01A2	***14.0***	***0.56***	***396***	***1.37***	0.74	***108***	***35***	***132.0***	***22.00***	31.5	***3630***	0.13	***2.3***	***104.0***	***1.21***	1.15	96.8	900	***0.301***	2	***4.54***	***133.0***	149
ST13-01	***11.3***	***0.57***	***365***	***1.7***	0.718	***94.6***	***23.2***	***135.0***	***14.80***	***36.3***	1240	0.09	1.1	***85.5***	0.66	0.78	97.7	800	***0.250***	2	***2.47***	***114.0***	145
ST15-01A	6.48	0.26	147	0.64	0.359	47.6	13.1	36.3	8.58	19.7	663	0.06	0.7	30.2	0.20	0.71	36.4	500	0.090	2	0.79	81.5	86.1
ST16-01A	6.27	0.37	248	1.18	0.445	***81.8***	19.8	68.2	***15.90***	***34.7***	978	0.09	1.6	***60.3***	0.31	0.75	43.4	900	***0.262***	2	1.23	107.0	147
P1 - A Layer	4.55	0.3	204	0.89	0.938	54.7	13.1	53.4	7.34	-	-	0.23	1.0	35.7	0.33	0.74	-	-	0.143	2	1.14	64.2	130
P1-Spruce - AH Layer	1.82	0.23	173	0.58	0.844	12.4	8.81	39.4	5.30	-	-	***0.30***	1.0	15.7	0.27	0.78	-	-	0.065	2	0.792	14.8	54.6
P1-Berry - AH Layer	4.38	0.36	236	0.95	0.617	60.9	20.9	59.9	8.95	-	-	0.23	1.0	43.4	0.39	0.62	-	-	0.156	2	1.33	68.4	139
P9 - A Layer	5.70	0.35	194	0.87	0.417	48.6	***24***	46.8	13.40	-	-	0.11	1.3	28.1	0.20	1.00	-	-	0.14	2	0.975	84.0	91.3
P14 - A Layer	9.78	0.36	176	0.8	0.658	54.7	13.5	63.5	11.70	-	-	0.06	1.0	39.6	0.22	0.45	-	-	0.135	2	1.10	96.7	97.0
P17 - A Layer	2.96	0.25	133	0.1	0.341	12.2	3.52	18.0	9.31	-	-	0.09	1.1	5.49	0.20	0.20	-	-	0.065	2	0.259	30.8	35.7
P19 - A Layer	1.99	0.15	42.5	0.14	1.27	18.6	7.5	15.0	6.97	-	-	0.050	0.7	8.02	0.20	0.14	-	-	0.050	2	0.547	38.8	41.9
P20 - H Layer	1.83	0.18	200	0.15	***3.87***	12.0	11.3	22.1	7.43			0.183	1.05	13.6	0.52	0.59			0.098	2	0.224	15.9	89.8
P20 - A Layer	0.94	0.1	50	0.1	0.327	13.9	2.31	11.4	5.21	-	-	0.050	0.4	5.31	0.20	0.15	-	-	0.050	2	0.390	17.8	16.4
WILLOW SOIL-1	4.45	0.2	82.7	0.4	0.15	35.1	10.8	19.0	6.92	27.8	416	-	0.72	27.7	0.23	0.10	56.2	-	0.091	2	0.982	60.20	57.5
WILLOW SOIL-2	5.53	0.33	89.9	0.36	0.121	37.4	11.3	27.2	7.61	19.7	441	-	0.51	28.0	0.21	0.10	61.7	-	0.097	2	0.710	72.10	57.6
WILLOW SOIL-3	11.0	0.52	127	0.52	0.348	47.7	16.3	51.2	9.53	28.2	654	-	0.76	39.8	0.39	0.20	62.3	-	0.183	2	0.755	67.30	92.7
WILLOW SOIL-4	***12.1***	0.36	232	0.47	0.742	34.2	11.1	23.3	6.91	25.2	1130	-	1.04	24.6	0.36	0.30	49.5	-	***0.251***	2	1.47	63.40	130
WILLOW SOIL-5	9.73	0.49	115	0.39	0.224	34.8	11.2	48.5	6.50	13.4	540	-	0.62	25.1	0.20	0.10	45.7	-	0.091	2	0.517	77.5	67.3
WILLOW SOIL-6	6.08	0.26	52.4	0.29	0.078	38.1	9.3	28.4	4.59	14.9	244	-	0.53	24.9	0.20	0.10	30	-	0.065	2	0.533	64.1	38.6
WILLOW SOIL-7	5.95	0.32	49.4	0.24	0.145	26	8.49	28.5	4.57	8.7	408	-	0.45	18.4	0.20	0.10	45	-	0.077	2	0.415	57.1	37.6
WILLOW SOIL-8	8.41	0.39	91.3	0.42	0.239	35	12.7	43.0	8.09	16.3	716	-	0.65	28.8	0.22	0.12	44.2	-	0.115	2	0.502	72.20	67.4
WILLOW SOIL-9	5.19	0.23	43.8	0.29	0.169	30.3	11.7	32.0	7.33	20.3	489	-	0.54	26.8	0.20	0.10	***171***	-	0.10	2	0.627	53.3	54.3
WILLOW SOIL-10	6.82	0.24	101	0.38	0.16	40.7	14	72.4	5.35	13.2	599	-	0.60	27.1	0.20	0.10	146	-	0.050	2	0.418	***119***	45.6
SPRUCE-REF-1-16	6.03	0.41	180	0.76	1.08	43.5	12.7	53.7	8.12	-	-	0.064	0.72	35.6	0.20	0.37	-	-	0.120	2	1.04	67.0	110
CSS16-BKG-01	3.39	0.29	191	0.93	0.542	53.5	21.8	54.6	8.73	18.7	1380	0.205	1.35	33.7	0.46	0.64	60.0	-	0.154	2	1.21	57.2	97.1
CSS16-BKG-07	3.93	0.23	182	0.64	0.438	34.5	9.60	39.9	8.86	13.1	980	0.129	0.65	23.0	0.20	0.73	54.2	-	0.105	2	0.670	56.2	83.1
CSS16-BKG-08	8.24	0.44	104	0.44	0.204	41.9	16.2	61.6	12.2	26.2	619	0.050	0.58	42.4	0.20	0.13	72.7	-	0.120	2	0.804	62.9	71.4
CSS16-BKG-09	4.73	0.28	79.3	0.35	0.246	33.6	11.3	24.9	6.94	18.8	456	0.050	0.48	25.1	0.20	0.18	33.0	-	0.083	2	0.564	57.9	59.6
CSS16-BKG-10	5.50	0.35	86.6	0.40	0.226	38.8	13.6	32.3	7.92	17.6	556	0.050	0.49	30.1	0.20	0.10	38.0	-	0.093	2	0.594	65.1	58.5
CSS16-BKG-11	4.59	0.27	86.8	0.35	0.215	34.8	9.38	37.6	6.46	15.6	484	0.050	0.50	18.7	0.20	0.13	40.5	-	0.061	2	0.453	74.9	58.7
CSS16-BKG-12	4.46	0.23	78.7	0.35	0.096	32.5	11.4	19.7	7.30	22.0	390	0.050	0.53	24.4	0.20	0.10	32.6	-	0.088	2	0.521	57.0	51.1
CSS16-BKG-13	4.22	0.26**	176	0.40	0.519	28.9	12.4	40.4	7.84	15.3	1290	0.114	1.60	24.3	0.35	0.27	58.5	-	0.098	2	0.379	55.1	143
CSS16-BKG-14	4.89	0.32	255	1.15	0.281	43.3	7.53	69.2	12.2	18.0	86.1	0.248	0.69	52.8	0.41	0.74	43.8	-	0.214	2	***2.41***	32.6	40.9
CSS16-BKG-15	6.11	0.45	282	***1.22***	0.961	57.8	15.6	96.2	12.8	29.1	493	0.206	1.01	***72.8***	***0.72***	0.95	111	-	0.221	2	***3.30***	66.3	89.7
CSS16-BKG-16	2.42	0.21	73.9	0.26	0.322	26.7	5.63	17.8	5.73	10.7	126	0.052	0.56	15.5	0.20	0.19	38.0	-	0.061	2	0.497	42.6	32.7
CSS16-BKG-17	5.71	0.42	280	1.13	0.619	64.0	17.5	81.2	10.9	28.6	969	0.204	1.37	58.7	0.50	0.94	89.8	-	0.215	2	2.03	67.3	105
CSS16-BKG-24	2.73	0.16	139	0.20	0.325	20.1	7.29	12.1	5.94	9.2	1250	0.058	0.58	11.8	0.20	0.16	29.3	-	0.056	2	0.294	38.0	53.3
CSS16-BKG-25	4.76	0.24	137	0.51	0.289	33.1	8.84	32.2	6.42	14.6	462	0.094	0.62	22.7	0.20	0.40	60.1	-	0.084	2	0.635	56.2	59.5
CSS16-BKG-02	3.61	0.21	66.9	0.19	0.221	28.6	7.89	10.5	5.85	11.2	391	0.050	0.51	13.6	0.20	0.13	23.5	-	0.050	2	0.295	57.4	62.5
CSS16-BKG-03	2.64	0.16	129	0.15	0.840	19.9	6.10	12.1	4.91	6.7	1040	0.050	0.45	11.8	0.20	0.22	34.5	-	0.050	2	0.275	34.8	119
CSS16-BKG-04	4.74	0.24	49.7	0.27	0.257	30.9	9.40	27.3	5.55	16.2	448	0.050	0.74	22.5	0.20	0.10	60.8	-	0.087	2	0.631	51.8	54.3
CSS16-BKG-05	3.47	0.21	92.9	0.20	0.488	21.2	8.27	13.0	5.59	9.6	844	0.050	0.79	14.7	0.20	0.15	51.3	-	0.055	2	0.299	56.5	74.3
CSS16-BKG-06	3.24	0.22	83.7	0.1	0.697	6.07	3.04	17.9	4.30	2.0	409	0.184	***1.91***	5.95	0.56	0.24	136	-	0.050	2	0.346	12.9	46.7
CSS16-BKG-18	3.46	0.28	76.9	0.27	0.499	19.7	7.21	***117***	3.86	10.4	261	0.101	0.83	19.2	***2.62***	0.17	105	-	0.060	2	***2.87***	36.6	41.2
CSS16-BKG-19	2.86	0.32	79.5	0.46	0.645	23.8	5.72	101	4.38	10.9	214	0.189	0.73	29.6	***3.66***	0.39	***184***	-	0.088	2	***8.10***	29.9	27.3
CSS16-BKG-20	1.54	0.28	58.8	0.14	1.05	5.66	2.41	33.1	4.05	2.4	163	0.150	0.90	10.7	***1.45***	0.31	***224***	-	0.050	2	***3.12***	9.31	65.1
CSS16-BKG-21	7.54	0.30	83.5	0.32	0.205	31.7	9.30	21.7	5.09	15.4	341	0.050	0.44	22.7	0.20	0.10	43.1	-	0.075	2	0.603	77.1	64.5
CSS16-BKG-22	6.56	0.27	132	0.24	0.390	30.3	7.66	24.1	5.65	8.5	404	0.050	0.69	17.6	0.20	0.10	47.3	-	0.059	2	0.348	66.1	67.2
CSS16-BKG-23	6.81	0.37	65.8	0.29	0.163	28.4	9.01	36.2	5.00	9.8	429	0.050	0.48	21.6	0.20	0.10	38.3	-	0.073	2	0.427	64.1	43.8
Total Samples	52	52	52	52	51	52	52	52	52	43	43	42	52	52	52	52	42	6	52	52	52	52	52
Number of Detected Samples	52	51	52	48	50	52	52	52	52	43	43	26	51	52	23	36	42	3	42	0	52	52	52
% Detected	100%	98%	100%	92%	98%	100%	100%	100%	100%	100%	100%	62%	98%	100%	44%	69%	100%	50%	81%	0%	100%	100%	100%
75th percentile	6.50	0.36	184.25	0.64	0.67	43.35	13.53	55.93	8.76	20.15	937.75	0.17	1.02	34.18	0.39	0.63	85.53		0.13	2.00	1.16	67.58	91.65
25th percentile	3.47	0.23	79.15	0.26	0.22	24.78	7.83	21.50	5.28	10.48	394.25	0.05	0.54	17.13	0.20	0.10	38.08		0.06	2.00	0.43	40.68	46.43
IQR	3.03	0.13	105.10	0.39	0.45	18.58	5.69	34.4	3.49	9.68	543.50	0.12	0.48	17.05	0.19	0.53	47.45	n<12 use Maximum : 900	0.07	0.00	0.73	26.90	45.23
UC	11.05	0.56	341.90	1.22	1.34	71.21	22.06	107.6	13.99	34.66	1753.00	0.3525	1.74	59.75	0.68	1.41	156.70		0.23	2.00	2.25	107.93	159.49
LC	0*	0.04	0*	0*	0*	0*	0*	0*	0.05	0*	0*	0*	0*	0*	0*	0*	0*		0*	2.00	0*	0.32	0*
95th percentile without outliers	9.2	0.48	252	1.1	1	57	19	79	12.2	28.63	1252	0.2	1.4	49.5	0.5	0.94	137		0.20	2	1.3	83.0	144

Notes:

All results shown in ug/g, unless otherwise noted.

Bold, italics indicates samples that exceeded the UC values and were excluded from calculation of the 95th percentile.

Blue font indicates that a result was below detection limit, and that the detection limit was used for the purpose of calculating statistics.

* Where the LC was calculated to be a negative number, the result is displayed as 0* in the table. Negative LCs are not statistically valid, but rather indicate that there is are no lower outliers in that specific dataset.

** Duplicate Concentration - see Section 3.2.1 in the report for details.

95th percentile value was not calculated due to insufficient sample size (n<12) for sulfur. The maximum concentration is presented in absence of a 95th percentile value

Table C - Summary and Statistics of Metal Analyses (Local Background) - Inorganic Soil
MPMC - Background Determination of Soil
Mount Polley Mine, BC

	Arsenic	Antimony	Barium	Beryllium	Boron (HWS)	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Strontium	Sulfur	Thallium	Tin	Uranium	Vanadium	Zinc
ST01-01	***14.2***	0.26	101	0.34	-	0.243	29.5	10.5	16.6	5.44	11.9	518	0.05	0.50	23.5	0.20	0.1	36.8	500	0.05	2	0.378	81.3	***95.4***
ST02-01	8.7	0.44	72.2	0.33	-	0.127	23.7	8.75	34.2	4.55	8	413	0.064	0.65	19.7	0.20	0.1	47.5	-	0.07	2	0.462	69.6	40.1
ST03-01	7.7	0.36	88	0.3	-	0.344	38.5	11.1	29.2	5.34	13.1	408	0.05	0.51	27.2	0.20	0.11	22.5	600	0.085	2	0.551	53.3	61.7
ST04-03	7.3	0.38	128	0.35	-	0.125	23.9	10.8	28.7	5.37	11.1	410	0.05	0.55	25.2	0.20	0.1	40.3	500	0.051	2	0.401	88.2	45.5
ST06-01B	11.2	0.42	150	0.25	-	0.064	15.5	5.22	11.5	4.84	13.6	170	0.05	0.65	12.7	0.20	0.11	14.8	-	0.05	2	0.407	54.0	53.7
ST07-01	5.0	0.21	101	0.3	-	0.104	43.2	14.3	18.9	10.5	***33.9***	385	0.05	0.50	36.3	0.20	0.1	16.1	500	0.094	2	0.512	40.2	79.1
ST08-01	4.3	0.3	62	0.35	-	0.145	35.4	11.7	19.2	7.69	21.4	377	0.05	0.65	23.3	0.20	0.1	25.1	500	0.077	2	0.534	61.5	53.6
ST09-01BI	4.1	0.23	70.5	0.35	-	0.192	33.1	10.9	15.3	6.87	19.3	352	0.05	0.50	20.6	0.20	0.14	27.1	500	0.06	2	0.493	58.3	61.2
ST09-01BII	5.2	0.3	62.2	0.41	-	0.106	40.1	11.9	22.4	7.43	20.1	398	0.05	0.50	25.4	0.20	0.1	37.3	-	0.084	2	0.578	58.0	51.4
ST10-01	3.9	0.27	49.8	0.31	-	0.158	29.6	8.48	19.3	5	13.2	290	0.05	0.50	21.2	0.20	0.1	31.4	500	0.05	2	0.487	59.4	42.6
ST11-01	3.9	0.23	62.9	0.28	-	0.221	30.1	10.8	21.7	5.59	16.6	329	0.05	0.53	22.9	0.20	0.1	26.1	500	0.055	2	0.481	55.1	53
ST14-01	5.0	0.36	92	0.48	-	0.261	46.5	17.2	25.9	9.69	24.1	916	0.05	***0.99***	29.2	0.23	0.12	25.9	-	0.08	2	0.542	72.1	74.6
ST15-01B	6.2	0.26	89.3	0.37	-	0.209	38.4	11.1	22.1	6.08	14.1	506	0.05	0.50	22.1	0.20	0.1	44.0	-	0.05	2	0.547	74.1	45.5
ST16-01B	6.3	0.26	82.1	0.35	-	0.09	39.5	12.2	21.8	8.08	20.5	552	0.05	0.51	27.9	0.25	0.1	45.7	-	0.09	2	0.565	71.2	48.7
ST17-01	3.1	0.34	62.7	0.25	-	0.29	40.5	8.13	10.6	6.64	19.4	304	0.05	0.53	18	0.20	0.12	23.8	500	0.081	2	0.5	61.8	***93.4***
ST18-01	8.3	0.36	100	0.4	-	0.097	42.2	15.9	26.1	8.01	14.4	808	0.05	0.50	24.5	0.23	0.1	49.2	500	0.087	2	0.596	80.4	44.5
P1 - B Layer	6.3	0.28	***185***	***0.8***	0.15	0.33	58.7	15.2	44.7	10.2	-	-	0.05	0.75	35.4	0.20	***0.27***	-	-	***0.137***	2	0.697	92	***131***
P9 - B Layer	4.1	0.23	112	0.42	0.10	0.191	37.7	11.1	23.2	6.35	-	-	0.05	0.41	21	0.20	***0.21***	-	-	0.069	2	0.611	69	61.6
P14 - B Layer	9.0	0.32	95.7	0.38	0.10	0.092	35.7	12	24.1	6.87	-	-	0.05	0.55	21.5	0.22	0.1	-	-	0.072	2	0.62	70	40.8
P17 - B Layer	4.93	0.22	103	0.21	-	0.144	24.3	5.28	11.9	5.73	-	-	0.05	0.69	9.81	0.20	0.13	-	-	0.064	2	0.373	51.8	48.2
P19 - B Layer	3.14	0.15	40.8	0.22	0.10	0.32	25.2	7.48	11.1	6.63	-	-	0.05	0.68	12.5	0.20	0.13	-	-	0.05	2	0.671	50.5	49.8
P20 - B Layer	2.8	0.12	50.3	0.18	0.11	0.139	26.6	6.91	7.4	5.73	-	-	0.05	0.62	13.9	0.20	0.13	-	-	0.055	2	0.616	44	40
SS16-BKG-01A	4.85	0.23	72.4	0.32	-	0.17	38.5	11.2	18.0	6.2	19.2	465	0.05	0.48	23.2	0.20	0.1	40.5	-	0.054	2	0.555	68.7	64.8
SS16-BKG-01B	8.03	0.32	101	0.37	0.10	0.1	43.2	12	27.6	7.04	14.5	652	0.05	0.64	24.8	0.20	0.1	63.4	-	0.072	2	0.646	74.7	48.3
SS16-BKG-01C	9.78	0.43	127	0.47	0.10	0.095	50.4	14.5	45.3	8.37	16.5	656	0.06	0.77	31.1	0.20	0.1	68.0	-	0.091	2	0.707	78.7	53.6
SS16-BKG-02A	6.24	0.24	103	0.42	0.13**	0.182	39.9	10.6	25.7	7.43	20	493	0.051	0.56	25.2	0.20	0.1	44.1	-	0.079	2	0.581	74.9	61.6
SS16-BKG-02B	8.00	0.35	118	0.48	0.12	0.089	49	14.7	34.0	8.19	17.4	663	0.05	0.51	29.2	0.20	0.1	61.6	-	0.085	2	0.633	81.8	49.5
SS16-BKG-02C	9.23	0.4	138	0.54	0.10	0.106	56.9	17	***45.7***	7.5	16.5	828	0.07	0.55	34.3	0.20	0.1	72.3	-	0.085	2	0.606	88.0	53
SS16-BKG-03A	5.91	0.24	97.6	0.57	-	0.109	51.6	17.4	25.1	***11.9***	***37.8***	868	0.05	***0.89***	36.3	0.23	0.16	26.8	-	0.124	2	***0.83***	62.8	70.4
SS16-BKG-03B	6.01	***0.59***	108	0.61	-	0.218	53.8	20	29.5	***14.9***	***35.6***	984	0.05	***1.08***	36.9	0.30	***0.21***	39.4	-	***0.155***	2	***0.925***	65.4	76
SS16-BKG-03C	8.09	0.49	121	0.57	-	0.109	58.9	15.7	***47.3***	11.3	27.7	622	0.057	0.54	***44.3***	0.20	0.11	56.7	-	***0.165***	2	0.765	64.0	68.9
SS16-BKG-04A	4.12	0.17	90.5	0.22	-	0.236	26.6	7.12	10.6	5.13	12.6	363	0.05	0.54	15.9	0.20	***0.17***	26.7	-	0.05	2	0.354	46.9	55.7
SS16-BKG-04B	5.53	0.24	88	0.24	-	0.134	29.5	10.3	15.7	4.74	10.6	330	0.05	0.46	21.6	0.20	0.1	34.4	-	0.058	2	0.408	48.3	38.8
SS16-BKG-04C	6.33	0.25	66.7	0.27	-	0.088	32.9	10	22.2	5.49	8.8	400	0.05	0.44	22.4	0.20	0.1	35.6	-	0.082	2	0.508	49.7	31.3
Total Samples	34	34	34	34	10	34	34	34	34	34	28	28	34	34	34	34	34	28	10	34	34	34	34	34
Number of Detected Samples	34	34	34	34	4	34	34	34	34	34	28	28	5	27	34	7	14	28	1	25	0	34	34	34
% Detected	100%	100%	100%	100%	40%	100%	100%	100%	100%	100%	100%	100%	15%	79%	100%	21%	41%	100%	10%	74%	0%	100%	100%	100%
75th percentile	8.02	0.36	106.75	0.42		0.22	43.20	14.45	28.43	8.06	20.20	653.00	0.050	0.65	28.88	0.2	0.13	46.15		0.09	2	0.62	74.55	64.03
25th percentile	4.42	0.23	70.93	0.29		0.10	29.53	10.08	16.95	5.52	13.18	373.50	0.050	0.50	21.05	0.2	0.10	26.55		0.06	2	0.49	54.28	46.18
IQR	3.60	0.13	35.83	0.14		0.11	13.68	4.38	11.48	2.55	7.03	279.50	0.00	0.15	7.83	0.0	0.03	19.60		0.03	0	0.13	20.28	17.85
UC	13.42	0.55	160.49	0.62		0.38	63.71	21.01	45.64	11.88	30.74	1072.25	0.050	0.88	40.61	0.2	0.17	75.55		0.13	2	0.81	104.96	90.80
LC	0*	0.04	17.19	0.08		0*	9.01	3.51	0*	1.69	2.64	0*	0.050	0.28	9.31	0.2	0.06	0*		0.01	2	0.29	23.86	19.40
95th percentile	9.5	0.43	132	0.6		0.3	58	17	39	10.3	23.56	899.2	0.05	0.72	36.3	0.20	0.14	66.4		0.09	2	0.70	88.1	75.3

n<12 use Maximum: 0.15

n<12 use Maximum : 600

Notes:

All results shown in ug/g, unless otherwise noted.

Bold, italics indicates samples that exceeded the UC values and were excluded from calculation of the 95th percentile.

Blue font indicates that a result was below detection limit, and that the detection limit was used for the purpose of calculating statistics.

* Where the LC was calculated to be a negative number, the result is displayed as 0* in the table. Negative LCs are not statistically valid, but rather indicate that there is are no lower outliers in that specific dataset.

** Duplicate sample result used in absence of primary sample result

95th percentile value was not calculated due to insufficient sample size (n<12) for HWS boron and sulfur. The maximum concentration is presented in absence of a 95th percentile value

Table D - Results of Soil QA/QC Analyses for 2016 Background Sampling Results
MPMC - Background Determination of Soil
Mount Polley Mine, BC

Sample ID		SS16-BKG-02A	SS16-BKG-02A(D)					SS16-BKG-04B	SS16-BKG-04B(D)					CSS16-BKG-13	CSS16-BKG-13D		
Date Sampled		16-Aug-2016	16-Aug-2016					16-Aug-2016	16-Aug-2016					3-Sep-2016	3-Sep-2016		
Soil Type (Native, Tailing, Background)	Units	Background	Background	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	Background	Background	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	Background	Background	Method Detection Limit	Mean
Sample Depth (m bgs)		0.1-0.3	0.1-0.3					0.4-0.6	0.4-0.6					0.05-0.2	0.05-0.2		
QA/QC		FDA	DUP					FDA	DUP					FDA	DUP		
ALS Sample ID		L1826528-4	L1826528-5					L1826528-12	L1826528-13					L1826516-36	L1826516-37		
Physical Parameters																	
pH	pH	5.68	5.73	0.100	5.71	0.88%	NA	6.02	6.05	0.100	6.04	0.50%	NA	5.48	5.53	0.10	5.51
Stong Acid Leachable - Total Metals																	
Aluminum	ug/g	17300	18000	50	17650	3.97%	NA	10800	10400	50	10600	3.77%	NA	14500	14200	50	14350
Antimony	ug/g	0.24	0.24	0.10	0.24	NA	0.000	0.24	0.22	0.10	0.23	NA	0.200	0.51	0.26	0.10	0.385
Arsenic	ug/g	6.24	6.35	0.10	6.295	1.75%	NA	5.53	5.23	0.10	5.38	5.58%	NA	4.22	3.61	0.10	3.915
Barium	ug/g	103	124	1	113.5	18.50%	NA	88.0	86.4	1	87.2	1.83%	NA	176	162	0.50	169
Beryllium	ug/g	0.42	0.42	0.10	0.42	NA	0.000	0.24	0.25	0.10	0.245	NA	0.100	0.4	0.42	0.10	0.41
Bismuth	ug/g	<0.20	<0.20	0.2	NC	NC	NC	<0.20	<0.20	0.2	NC	NC	NC	<0.20	<0.20	0.20	NC
Boron	ug/g	<5.0	<5.0	5	NC	NC	NC	<5.0	<5.0	5	NC	NC	NC	5.8	<5.0	5.0	NC
Cadmium	ug/g	0.182	0.196	0.020	0.189	7.41%	NA	0.134	0.143	0.020	0.1385	6.50%	NA	0.519	0.448	0.020	0.4835
Calcium	ug/g	3770	3690	50	3730	2.14%	NA	3080	3150	50	3115	2.25%	NA	8650	8200	50	8425
Chromium	ug/g	39.9	42.2	0.5	41.05	5.60%	NA	29.5	29.4	0.5	29.45	0.34%	NA	28.9	29.7	0.50	29.3
Cobalt	ug/g	10.6	15.7	0.1	13.15	**38.78%**	NA	10.3	10.3	0.1	10.3	0.00%	NA	12.4	11.9	0.10	12.15
Copper	ug/g	25.7	27.0	0.5	26.35	4.93%	NA	15.7	15.7	0.5	15.7	0.00%	NA	40.4	36.8	0.50	38.6
Iron	ug/g	27800	30300	50	29050	8.61%	NA	19200	18800	50	19000	2.11%	NA	21500	22800	50	22150
Lead	ug/g	7.43	7.41	0.50	7.42	0.27%	NA	4.74	4.73	0.50	4.735	0.21%	NA	7.84	7.78	0.50	7.81
Lithium	ug/g	20.0	19.5	2.0	19.75	2.53%	NA	10.6	10.1	2.0	10.35	4.83%	NA	15.3	14.8	2.0	15.05
Magnesium	ug/g	6050	6560	20	6305	8.09%	NA	3810	3750	20	3780	1.59%	NA	5820	5540	20	5680
Manganese	ug/g	493	679	1	586	31.74%	NA	330	336	1	333	1.80%	NA	1290	1100	1.0	1195
Mercury	ug/g	0.051	<0.050	0.05	NC	NC	NC	<0.050	<0.050	0.05	NC	NC	NC	0.114	0.12	0.050	0.117
Molybdenum	ug/g	0.56	0.57	0.10	0.565	1.77%	NA	0.46	0.48	0.10	0.47	NA	0.200	1.6	1.38	0.10	1.49
Nickel	ug/g	25.2	26.6	0.5	25.9	5.41%	NA	21.6	21.4	0.5	21.5	0.93%	NA	24.3	22.1	0.50	23.2
Phosphorus	ug/g	521	535	50	528	2.65%	NA	631	618	50	624.5	2.08%	NA	934	873	50	903.5
Potassium	ug/g	1300	1390	100	1345	6.69%	NA	750	700	100	725	6.90%	NA	1380	1370	100	1375
Selenium	ug/g	<0.20	<0.20	0.2	NC	NC	NC	<0.20	<0.20	0.2	NC	NC	NC	0.35	<0.20	0.20	NC
Silver	ug/g	<0.10	<0.10	0.1	NC	NC	NC	<0.10	<0.10	0.1	NC	NC	NC	0.27	0.23	0.10	0.25
Sodium	ug/g	168	169	50	168.5	NA	0.020	77	77	50	77	NA	0.000	89	131	50	110
Strontium	ug/g	44.1	77.3	0.5	60.7	**54.70%**	NA	34.4	32.5	0.5	33.45	5.68%	NA	58.5	60.2	0.50	59.35
Thallium	ug/g	0.079	0.081	0.050	0.08	NA	0.040	0.058	0.058	0.050	0.058	NA	0.000	0.098	0.109	0.050	0.1035
Tin	ug/g	<2.0	<2.0	2	NC	NC	NC	<2.0	<2.0	2	NC	NC	NC	<2.0	<2.0	2.0	NC
Titanium	ug/g	779	786	1	782.5	0.89%	NA	598	587	1	592.5	1.86%	NA	721	806	1.0	763.5
Uranium	ug/g	0.581	0.604	0.050	0.5925	3.88%	NA	0.408	0.384	0.050	0.396	6.06%	NA	0.379	0.418	0.050	0.3985
Vanadium	ug/g	74.9	76.9	0.2	75.9	2.64%	NA	48.3	47.3	0.2	47.8	2.09%	NA	55.1	56.6	0.20	55.85
Zinc	ug/g	61.6	63.2	2.0	62.4	2.56%	NA	38.8	37.9	2.0	38.35	2.35%	NA	143	126	2.0	134.5
Zirconium	ug/g	<1.0	<1.0	1	NC	NC	NC	1.9	1.8	1	1.85	NA	0.100	1.3	1.6	1.0	1.45

Notes:

All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.

FDA = Field Duplicate Available; FD = Field Duplicate; QA/QC = Quality Assurance/Quality Control

NA = Not Applicable; NC = Not Calculated; Mean = average of two values

"-" = no data; m bgs = metres below ground surface; mV = millivolt

Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. **Golders' acceptable RPD is less than or equal to 35%.**

RPD is calculated when the concentration is greater than five times the detection limit.

Difference factor (DF) = absolute difference between two values divided by the method detection limit. **Golders' acceptable DF is less than or equal to 2.0.**

DF is calculated when the concentration is less than five times the detection limit.

Table D - Results of Soil QA/QC Analyses for 2016 Background Sampling Results
MPMC - Background Determination of Soil
Mount Polley Mine, BC

Sample ID Date Sampled Soil Type (Native, Tailing, Background) Sample Depth (m bgs) QA/QC ALS Sample ID	Units	Relative Percent Difference (RPD)	Difference Factor (DF)	CSS16-BKG-20 5-Sep-2016 Background 0.05-0.2 FDA L1826551-26	CSS16-BKG-20D 5-Sep-2016 Background 0.05-0.2 DUP L1826551-27	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	CSS16-BKG-23 5-Sep-2016 Background 0.05-0.2 FDA L1826551-31	CSS16-BKG-23D 5-Sep-2016 Background 0.05-0.2 DUP L1826516-42	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Parameters															
pH	pH	0.91%	NA	6.46	6.40	0.10	6.43	0.93%	NA	6.75	6.78	0.10	6.77	0.44%	NA
Stong Acid Leachable - Total Metals															
Aluminum	ug/g	2.09%	NA	3410	3440	50	3425	0.88%	NA	10900	10700	50	10800	1.85%	NA
Antimony	ug/g	NA	**2.500**	0.28	0.24	0.10	0.26	NA	0.400	0.37	0.36	0.10	0.365	NA	0.100
Arsenic	ug/g	15.58%	NA	1.54	1.47	0.10	1.505	4.65%	NA	6.81	7.14	0.10	6.975	4.73%	NA
Barium	ug/g	8.28%	NA	58.8	58.4	0.50	58.6	0.68%	NA	65.8	67.8	0.50	66.8	2.99%	NA
Beryllium	ug/g	NA	0.200	0.14	0.12	0.10	0.13	NA	0.200	0.29	0.31	0.10	0.3	NA	0.200
Bismuth	ug/g	NC	NC	<0.20	<0.20	0.20	NC	NC	NC	<0.20	<0.20	0.20	NC	NC	NC
Boron	ug/g	NC	NC	9.9	8.6	5.0	9.25	NA	0.260	<5.0	<5.0	5.0	NC	NC	NC
Cadmium	ug/g	14.68%	NA	1.05	1.06	0.020	1.055	0.95%	NA	0.163	0.159	0.020	0.161	2.48%	NA
Calcium	ug/g	5.34%	NA	35100	31300	50	33200	11.45%	NA	5060	4990	50	5025	1.39%	NA
Chromium	ug/g	2.73%	NA	5.66	5.71	0.50	5.685	0.88%	NA	28.4	38	0.50	33.2	28.92%	NA
Cobalt	ug/g	4.12%	NA	2.41	2.39	0.10	2.4	0.83%	NA	9.01	9.06	0.10	9.035	0.55%	NA
Copper	ug/g	9.33%	NA	33.1	33.1	0.50	33.1	0.00%	NA	36.2	38.7	0.50	37.45	6.68%	NA
Iron	ug/g	5.87%	NA	4970	4920	50	4945	1.01%	NA	23600	24700	50	24150	4.55%	NA
Lead	ug/g	0.77%	NA	4.05	3.58	0.50	3.815	12.32%	NA	5	5.54	0.50	5.27	10.25%	NA
Lithium	ug/g	3.32%	NA	2.4	2.3	2.0	2.35	NA	0.050	9.8	10.9	2.0	10.35	10.63%	NA
Magnesium	ug/g	4.93%	NA	2000	1990	20	1995	0.50%	NA	5670	5570	20	5620	1.78%	NA
Manganese	ug/g	15.90%	NA	163	165	1.0	164	1.22%	NA	429	429	1.0	429	0.00%	NA
Mercury	ug/g	NA	0.120	0.15	0.151	0.050	0.1505	NA	0.020	<0.050	0.061	0.050	NC	NC	NC
Molybdenum	ug/g	14.77%	NA	0.9	0.8	0.10	0.85	11.76%	NA	0.48	0.58	0.10	0.53	18.87%	NA
Nickel	ug/g	9.48%	NA	10.7	10.7	0.50	10.7	0.00%	NA	21.6	22.1	0.50	21.85	2.29%	NA
Phosphorus	ug/g	6.75%	NA	858	849	50	853.5	1.05%	NA	720	686	50	703	4.84%	NA
Potassium	ug/g	0.73%	NA	490	510	100	500	4.00%	NA	930	920	100	925	1.08%	NA
Selenium	ug/g	NC	NC	1.45	1.48	0.20	1.465	2.05%	NA	<0.20	<0.20	0.20	NC	NC	NC
Silver	ug/g	NA	0.400	0.31	0.26	0.10	0.285	NA	0.500	<0.10	<0.10	0.10	NC	NC	NC
Sodium	ug/g	NA	0.840	<50	<50	50	NC	NC	NC	177	162	50	169.5	NA	0.300
Strontium	ug/g	2.86%	NA	224	196	0.50	210	13.33%	NA	38.3	43.2	0.50	40.75	12.02%	NA
Thallium	ug/g	NA	0.220	<0.050	<0.050	0.050	NC	NC	NC	0.073	0.077	0.050	0.075	NA	0.080
Tin	ug/g	NC	NC	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC
Titanium	ug/g	11.13%	NA	78.3	83.4	1.0	80.85	6.31%	NA	741	721	1.0	731	2.74%	NA
Uranium	ug/g	9.79%	NA	3.12	2.63	0.050	2.875	17.04%	NA	0.427	0.464	0.050	0.4455	8.31%	NA
Vanadium	ug/g	2.69%	NA	9.31	9.45	0.20	9.38	1.49%	NA	64.1	67.4	0.20	65.75	5.02%	NA
Zinc	ug/g	12.64%	NA	65.1	63.7	2.0	64.4	2.17%	NA	43.8	44.2	2.0	44	0.91%	NA
Zirconium	ug/g	NA	0.300	1.6	1.4	1.0	1.5	NA	0.200	1.9	2	1.0	1.95	NA	0.100

Notes:

All parameter units in milligrams per kilogram (mg/kg), unless othen

FDA = Field Duplicate Available; FD = Field Duplicate; QA/QC = Qu

NA = Not Applicable; NC = Not Calculated; Mean = average of two v

"-" = no data; m bgs = metres below ground surface; mV = millivolt

Relative percent difference (RPD) = the difference between two valu

RPD is calculated when the concentration is greater than five times

Difference factor (DF) = absolute difference between two values div

DF is calculated when the concentration is less than five times the d

ATTACHMENT 1
2016 Laboratory Certificates of Analysis

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 31-OCT-16 10:44 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826516

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0148
Legal Site Desc:

Comments: ADDITIONAL 25-OCT-16 18:04

31-OCT-2016 Revision 2: As requested, additional analyses were performed on the samples ALS identify as l1826516-45 and L1826516-46.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-1	L1826516-2	L1826516-3	L1826516-4	L1826516-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	17-AUG-16	17-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-02	CSS16-03	CSS16-04	CSS16-05	CSS16-06
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	7.35	6.22	7.06	7.69	6.83
Organic / Inorganic Carbon Inorganic Carbon (%)	0.244	0.124	0.235	0.255	0.126
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.03	1.03	1.96	2.13	1.05
Total Carbon by Combustion (%)	2.28	4.31	13.5	1.97	2.87
Total Organic Carbon (%)	2.04	4.19	13.3	1.72	2.74
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	<2.0 DLR	2.5	10.9
Available Phosphate-P (mg/kg)	4.5	13.1	4.7	2.8	5.4
Available Potassium (mg/kg)	127	127	92	132	118
Metals Aluminum (Al) (mg/kg)	15400	19100	12200	11900	16700
Antimony (Sb) (mg/kg)	0.35	0.30	0.33	0.27	0.30
Arsenic (As) (mg/kg)	9.12	7.78	9.02	8.54	9.09
Barium (Ba) (mg/kg)	146	118	184	135	160
Beryllium (Be) (mg/kg)	0.54	0.45	0.48	0.51	0.60
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	6.9	<5.0	7.7	6.3	7.2
Cadmium (Cd) (mg/kg)	0.170	0.139	0.254	0.161	0.206
Calcium (Ca) (mg/kg)	18500	7090	20600	19200	14000
Chromium (Cr) (mg/kg)	18.0	35.9	13.1	12.8	21.9
Cobalt (Co) (mg/kg)	13.8	10.8	13.2	13.3	15.9
Copper (Cu) (mg/kg)	677	148	472	574	458
Iron (Fe) (mg/kg)	48400	31900	49000	53700	56500
Lead (Pb) (mg/kg)	5.15	7.88	4.99	4.56	5.49
Lithium (Li) (mg/kg)	12.3	17.8	12.0	12.8	15.5
Magnesium (Mg) (mg/kg)	7280	6530	6650	6670	8010
Manganese (Mn) (mg/kg)	525	574	573	433	624
Mercury (Hg) (mg/kg)	0.102	0.075	0.093	0.070	0.075
Molybdenum (Mo) (mg/kg)	3.56	1.22	3.30	3.57	2.97
Nickel (Ni) (mg/kg)	12.2	21.6	9.89	9.11	14.5
Phosphorus (P) (mg/kg)	1080	752	1440	1260	1390
Potassium (K) (mg/kg)	1300	1560	950	1090	1360
Selenium (Se) (mg/kg)	0.84	0.27	0.76	0.86	0.61
Silver (Ag) (mg/kg)	0.34	0.29	0.28	0.33	0.32
Sodium (Na) (mg/kg)	742	231	648	674	681
Strontium (Sr) (mg/kg)	131	56.7	139	132	127
Thallium (Tl) (mg/kg)	<0.050	0.105	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-6	L1826516-7	L1826516-8	L1826516-9	L1826516-10
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	03-SEP-16	03-SEP-16	03-SEP-16
Sampled Time					
Client ID	CSS16-14	CSS16-15	CSS16-23	CSS16-24	CSS16-25
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	7.32	7.59	8.10	7.77	8.05
Organic / Inorganic Carbon Inorganic Carbon (%)	0.230	0.268	0.237	0.241	0.315
Inorganic Carbon (as CaCO3 Equivalent) (%)	1.92	2.23	1.97	2.01	2.63
Total Carbon by Combustion (%)	8.65	3.19	0.39	1.02	0.53
Total Organic Carbon (%)	8.42	2.92	0.155	0.779	0.22
Plant Available Nutrients Available Nitrate-N (mg/kg)	<2.0 DLR	<1.0	<1.0	<1.0	<1.0
Available Phosphate-P (mg/kg)	5.8	5.1	3.2	10.9	2.2
Available Potassium (mg/kg)	136	90	59	113	43
Metals Aluminum (Al) (mg/kg)	13600	13500	10900	14200	8310
Antimony (Sb) (mg/kg)	0.39	0.36	0.31	0.33	0.24
Arsenic (As) (mg/kg)	7.41	9.03	8.39	8.86	4.76
Barium (Ba) (mg/kg)	147	160	90.7	155	58.6
Beryllium (Be) (mg/kg)	0.53	0.52	0.37	0.51	0.26
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	7.3	7.5	<5.0	5.9	<5.0
Cadmium (Cd) (mg/kg)	0.245	0.179	0.133	0.196	0.104
Calcium (Ca) (mg/kg)	18100	21200	14700	18200	15900
Chromium (Cr) (mg/kg)	17.5	14.8	14.6	19.9	18.6
Cobalt (Co) (mg/kg)	11.9	13.4	10.3	13.6	6.61
Copper (Cu) (mg/kg)	392	541	395	546	48.3
Iron (Fe) (mg/kg)	40700	50800	29700	37600	20200
Lead (Pb) (mg/kg)	5.10	4.52	4.10	5.95	4.02
Lithium (Li) (mg/kg)	13.1	12.3	11.7	14.7	7.3
Magnesium (Mg) (mg/kg)	6210	6930	6660	7990	4040
Manganese (Mn) (mg/kg)	509	518	465	600	350
Mercury (Hg) (mg/kg)	0.097	0.082	0.070	0.066	<0.050
Molybdenum (Mo) (mg/kg)	3.50	3.30	2.30	2.93	0.43
Nickel (Ni) (mg/kg)	12.8	10.1	10.4	12.3	12.2
Phosphorus (P) (mg/kg)	1150	1320	935	1060	828
Potassium (K) (mg/kg)	1240	1150	720	1050	490
Selenium (Se) (mg/kg)	0.85	0.74	0.53	0.69	<0.20
Silver (Ag) (mg/kg)	0.30	0.31	0.18	0.24	<0.10
Sodium (Na) (mg/kg)	569	760	629	543	669
Strontium (Sr) (mg/kg)	152	152	100	122	86.4
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-11	L1826516-12	L1826516-13	L1826516-14	L1826516-15
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
Sampled Time					
Client ID	CSS16-26	CSS16-27	CSS16-27D	CSS16-28	CSS16-29
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.43	7.84	7.86	8.34	8.34
Organic / Inorganic Carbon Inorganic Carbon (%)	0.423	0.227	0.213	0.087	0.234
Inorganic Carbon (as CaCO3 Equivalent) (%)	3.52	1.89	1.78	0.72	1.95
Total Carbon by Combustion (%)	0.56	3.69	2.05	0.22	0.48
Total Organic Carbon (%)	0.14	3.46	1.84	0.130	0.247
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<2.0 DLR	<1.0	<1.0	<1.0
Available Phosphate-P (mg/kg)	<2.0	10.8	11.0	2.8	6.2
Available Potassium (mg/kg)	42	146	135	46	64
Metals Aluminum (Al) (mg/kg)	7420	12200	12200	9180	12200
Antimony (Sb) (mg/kg)	0.22	0.29	0.32	0.37	0.35
Arsenic (As) (mg/kg)	4.67	8.61	8.79	4.96	6.63
Barium (Ba) (mg/kg)	49.0	127	129	72.9	113
Beryllium (Be) (mg/kg)	0.22	0.46	0.49	0.29	0.38
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	<5.0	7.0	7.3	<5.0	<5.0
Cadmium (Cd) (mg/kg)	0.095	0.161	0.168	0.085	0.181
Calcium (Ca) (mg/kg)	16000	18200	18300	6940	13300
Chromium (Cr) (mg/kg)	19.5	14.0	16.3	19.3	26.2
Cobalt (Co) (mg/kg)	7.47	13.3	13.2	7.79	10.8
Copper (Cu) (mg/kg)	52.5	649	620	74.0	114
Iron (Fe) (mg/kg)	19800	49600	48700	22900	29400
Lead (Pb) (mg/kg)	4.18	4.95	5.91	3.84	6.12
Lithium (Li) (mg/kg)	9.7	12.5	13.1	8.3	13.0
Magnesium (Mg) (mg/kg)	5290	6430	6380	4250	6420
Manganese (Mn) (mg/kg)	321	532	536	317	524
Mercury (Hg) (mg/kg)	<0.050	0.095	0.094	0.058	0.065
Molybdenum (Mo) (mg/kg)	0.48	3.32	3.11	0.49	0.74
Nickel (Ni) (mg/kg)	17.5	9.89	10.8	14.1	19.9
Phosphorus (P) (mg/kg)	596	1120	1090	627	839
Potassium (K) (mg/kg)	660	1100	1120	510	880
Selenium (Se) (mg/kg)	0.24	0.83	0.84	<0.20	0.26
Silver (Ag) (mg/kg)	<0.10	0.31	0.32	0.16	0.12
Sodium (Na) (mg/kg)	197	583	546	147	445
Strontium (Sr) (mg/kg)	89.3	121	135	53.5	95.3
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	0.054
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-16	L1826516-17	L1826516-18	L1826516-19	L1826516-20
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-30	CSS16-32	CSS16-33	CSS16-34	CSS16-35
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.48	8.67	8.59	8.31	8.43
Organic / Inorganic Carbon Inorganic Carbon (%)	0.320	0.304	0.224	0.232	0.225
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.67	2.53	1.87	1.93	1.87
Total Carbon by Combustion (%)	0.51	0.40	0.31	0.48	0.42
Total Organic Carbon (%)	0.19	0.094	0.083	0.252	0.192
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<1.0	1.0
Available Phosphate-P (mg/kg)	<2.0	2.4	2.2	6.0	3.6
Available Potassium (mg/kg)	77	56	68	52	56
Metals Aluminum (Al) (mg/kg)	16100	12500	13100	12100	12000
Antimony (Sb) (mg/kg)	0.40	0.35	0.38	0.32	0.31
Arsenic (As) (mg/kg)	7.46	6.87	8.22	8.57	7.73
Barium (Ba) (mg/kg)	107	101	135	80.5	114
Beryllium (Be) (mg/kg)	0.40	0.36	0.43	0.41	0.42
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	<5.0	<5.0	11.1	5.5	6.1
Cadmium (Cd) (mg/kg)	0.165	0.157	0.149	0.131	0.116
Calcium (Ca) (mg/kg)	14900	15800	13100	13400	16300
Chromium (Cr) (mg/kg)	37.5	24.5	21.9	22.2	14.7
Cobalt (Co) (mg/kg)	12.7	10.4	12.2	11.2	10.7
Copper (Cu) (mg/kg)	80.8	107	324	401	487
Iron (Fe) (mg/kg)	30800	27900	32400	34100	31200
Lead (Pb) (mg/kg)	7.76	6.13	5.23	5.49	3.89
Lithium (Li) (mg/kg)	16.4	12.9	13.4	11.9	11.2
Magnesium (Mg) (mg/kg)	7640	6420	7670	6560	6220
Manganese (Mn) (mg/kg)	587	507	567	516	449
Mercury (Hg) (mg/kg)	0.069	0.075	0.071	0.067	0.061
Molybdenum (Mo) (mg/kg)	0.75	0.72	1.35	2.48	2.53
Nickel (Ni) (mg/kg)	29.0	18.7	16.3	13.3	11.1
Phosphorus (P) (mg/kg)	709	790	897	878	865
Potassium (K) (mg/kg)	1340	890	890	830	930
Selenium (Se) (mg/kg)	0.28	0.24	0.40	0.52	0.57
Silver (Ag) (mg/kg)	0.11	0.12	0.13	0.19	0.24
Sodium (Na) (mg/kg)	285	639	387	489	683
Strontium (Sr) (mg/kg)	101	114	89.3	91.7	122
Thallium (Tl) (mg/kg)	0.082	0.052	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-21 Soil/Sediment 04-SEP-16 CSS16-36	L1826516-22 Soil/Sediment 04-SEP-16 CSS16-37	L1826516-23 Soil/Sediment 04-SEP-16 CSS16-38	L1826516-24 Soil/Sediment 04-SEP-16 CSS16-39	L1826516-25 Soil/Sediment 04-SEP-16 CSS16-39D
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.82	7.83	7.84	7.71	7.67
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.164	0.232	0.293	0.263	0.261
	Inorganic Carbon (as CaCO3 Equivalent) (%)	1.36	1.93	2.44	2.19	2.17
	Total Carbon by Combustion (%)	0.79	2.07	2.50	3.13	2.85
	Total Organic Carbon (%)	0.630	1.84	2.21	2.87	2.59
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<2.0 DLR	1.6	1.6
	Available Phosphate-P (mg/kg)	9.4	3.7	2.9	3.3	3.9
	Available Potassium (mg/kg)	98	98	98	88	86
Metals	Aluminum (Al) (mg/kg)	9970	15000	15300	14700	15000
	Antimony (Sb) (mg/kg)	0.24	0.35	0.39	0.39	0.37
	Arsenic (As) (mg/kg)	6.75	8.53	10.0	8.92	8.82
	Barium (Ba) (mg/kg)	82.0	163	170	163	160
	Beryllium (Be) (mg/kg)	0.36	0.54	0.58	0.53	0.54
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	7.0	7.9	7.9	7.7
	Cadmium (Cd) (mg/kg)	0.103	0.232	0.185	0.211	0.226
	Calcium (Ca) (mg/kg)	11800	19900	22600	20800	20900
	Chromium (Cr) (mg/kg)	14.1	17.2	16.2	16.6	17.2
	Cobalt (Co) (mg/kg)	9.84	13.3	14.7	13.6	13.6
	Copper (Cu) (mg/kg)	449	537	597	539	547
	Iron (Fe) (mg/kg)	32500	42800	54000	49200	47500
	Lead (Pb) (mg/kg)	3.68	4.72	4.86	4.66	4.74
	Lithium (Li) (mg/kg)	10.3	12.8	13.3	12.3	12.5
	Magnesium (Mg) (mg/kg)	5330	6650	7350	6600	6560
	Manganese (Mn) (mg/kg)	397	528	543	520	521
	Mercury (Hg) (mg/kg)	0.057	0.101	0.093	0.103	0.110
	Molybdenum (Mo) (mg/kg)	2.10	3.45	4.50	3.96	3.69
	Nickel (Ni) (mg/kg)	9.42	13.0	11.6	12.0	12.5
	Phosphorus (P) (mg/kg)	747	1170	1370	1220	1210
	Potassium (K) (mg/kg)	720	1240	1280	1230	1230
	Selenium (Se) (mg/kg)	0.53	0.83	0.83	0.82	0.77
	Silver (Ag) (mg/kg)	0.23	0.29	0.33	0.29	0.31
	Sodium (Na) (mg/kg)	438	709	786	714	696
	Strontium (Sr) (mg/kg)	78.3	153	163	158	157
	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID / Description / Sampled Date / Sampled Time / Client ID				
		L1826516-26 Soil/Sediment 04-SEP-16 CSS16-40	L1826516-27 Soil/Sediment 04-SEP-16 CSS16-41	L1826516-28 Soil/Sediment 05-SEP-16 CSS16-42	L1826516-29 Soil/Sediment 19-AUG-16 CSS16-BKG-01	L1826516-30 Soil/Sediment 19-AUG-16 CSS16-BKG-07
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.81	7.78	8.34	5.33	4.88
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.274	0.298	0.411	0.201	0.120
	Inorganic Carbon (as CaCO3 Equivalent) (%)	2.28	2.48	3.42	1.67	1.00
	Total Carbon by Combustion (%)	1.49	2.04	0.49	18.6	13.1
	Total Organic Carbon (%)	1.22	1.74	<0.098	18.4	13.0
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	1.9	<1.0	17.2 DLR	<3.0 DLR
	Available Phosphate-P (mg/kg)	3.7	4.0	<2.0	2.2	25.9
	Available Potassium (mg/kg)	93	95	164	224	173
Metals	Aluminum (Al) (mg/kg)	13100	14200	15900	31200	19700
	Antimony (Sb) (mg/kg)	0.33	0.34	0.35	0.29	0.23
	Arsenic (As) (mg/kg)	8.13	9.65	11.2	3.39	3.93
	Barium (Ba) (mg/kg)	138	154	158	191	182
	Beryllium (Be) (mg/kg)	0.49	0.53	0.63	0.93	0.64
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	6.8	7.6	8.8	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.150	0.155	0.156	0.542	0.438
	Calcium (Ca) (mg/kg)	19300	21900	25900	6010	5710
	Chromium (Cr) (mg/kg)	14.0	13.9	10.5	53.5	34.5
	Cobalt (Co) (mg/kg)	12.3	13.9	16.3	21.8	9.60
	Copper (Cu) (mg/kg)	511	573	821	54.6	39.9
	Iron (Fe) (mg/kg)	47800	51700	45700	27600	24500
	Lead (Pb) (mg/kg)	4.16	4.29	4.92	8.73	8.86
	Lithium (Li) (mg/kg)	11.6	12.3	16.1	18.7	13.1
	Magnesium (Mg) (mg/kg)	6000	6850	9670	6940	4760
	Manganese (Mn) (mg/kg)	442	517	583	1380	980
	Mercury (Hg) (mg/kg)	0.089	0.095	0.085	0.205	0.129
	Molybdenum (Mo) (mg/kg)	3.40	3.84	5.60	1.35	0.65
	Nickel (Ni) (mg/kg)	9.74	10.1	9.15	33.7	23.0
	Phosphorus (P) (mg/kg)	1050	1320	1190	1540	1130
	Potassium (K) (mg/kg)	1100	1210	1400	2000	1170
	Selenium (Se) (mg/kg)	0.80	0.80	0.93	0.46	<0.20
	Silver (Ag) (mg/kg)	0.28	0.33	0.37	0.64	0.73
	Sodium (Na) (mg/kg)	698	788	1080	125	109
	Strontium (Sr) (mg/kg)	146	158	169	60.0	54.2
	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	0.154	0.105
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-31 Soil/Sediment 03-SEP-16 CSS16-BKG-08	L1826516-32 Soil/Sediment 03-SEP-16 CSS16-BKG-09	L1826516-33 Soil/Sediment 03-SEP-16 CSS16-BKG-10	L1826516-34 Soil/Sediment 03-SEP-16 CSS16-BKG-11	L1826516-35 Soil/Sediment 03-SEP-16 CSS16-BKG-12
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	8.38	6.21	6.65	5.60	5.46
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.345	0.082	0.077	0.073	0.064
	Inorganic Carbon (as CaCO3 Equivalent) (%)	2.87	0.68	0.64	0.61	0.54
	Total Carbon by Combustion (%)	0.67	1.62	0.42	2.57	0.97
	Total Organic Carbon (%)	0.32	1.54	0.348	2.50	0.905
Plant Available Nutrients	Available Nitrate-N (mg/kg)	1.3	<1.0	<1.0	<1.0	<1.0
	Available Phosphate-P (mg/kg)	3.4	136 DLHC	8.1	73 DLHC	9.9
	Available Potassium (mg/kg)	67	131	66	96	44
Metals	Aluminum (Al) (mg/kg)	18500	14600	15600	14200	15700
	Antimony (Sb) (mg/kg)	0.44	0.28	0.35	0.27	0.23
	Arsenic (As) (mg/kg)	8.24	4.73	5.50	4.59	4.46
	Barium (Ba) (mg/kg)	104	79.3	86.6	86.8	78.7
	Beryllium (Be) (mg/kg)	0.44	0.35	0.40	0.35	0.35
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.204	0.246	0.226	0.215	0.096
	Calcium (Ca) (mg/kg)	14300	4030	4260	4370	3200
	Chromium (Cr) (mg/kg)	41.9	33.6	38.8	34.8	32.5
	Cobalt (Co) (mg/kg)	16.2	11.3	13.6	9.38	11.4
	Copper (Cu) (mg/kg)	61.6	24.9	32.3	37.6	19.7
	Iron (Fe) (mg/kg)	35900	25300	27300	25800	25300
	Lead (Pb) (mg/kg)	12.2	6.94	7.92	6.46	7.30
	Lithium (Li) (mg/kg)	26.2	18.8	17.6	15.6	22.0
	Magnesium (Mg) (mg/kg)	9040	5870	6720	4860	5900
	Manganese (Mn) (mg/kg)	619	456	556	484	390
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	0.58	0.48	0.49	0.50	0.53
	Nickel (Ni) (mg/kg)	42.4	25.1	30.1	18.7	24.4
	Phosphorus (P) (mg/kg)	704	1070	546	934	468
	Potassium (K) (mg/kg)	1580	1240	1440	980	1100
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.13	0.18	<0.10	0.13	<0.10
	Sodium (Na) (mg/kg)	192	110	152	118	130
	Strontium (Sr) (mg/kg)	72.7	33.0	38.0	40.5	32.6
	Thallium (Tl) (mg/kg)	0.120	0.083	0.093	0.061	0.088
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-36	L1826516-37	L1826516-38	L1826516-39	L1826516-40
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-BKG-13	CSS16-BKG-13D	CSS16-BKG-14	CSS16-BKG-15	CSS16-BKG-16
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	5.48	5.53	5.23	5.70	5.12
Organic / Inorganic Carbon Inorganic Carbon (%)	0.157	0.155	0.187	0.242	0.098
Inorganic Carbon (as CaCO3 Equivalent) (%)	1.30	1.29	1.56	2.02	0.81
Total Carbon by Combustion (%)	17.6	18.0	22.4	19.2	7.41
Total Organic Carbon (%)	17.4	17.8	22.2	19.0	7.31
Plant Available Nutrients Available Nitrate-N (mg/kg)	<4.0 DLR	<4.0 DLR	6.0 DLR	6.0 DLR	<2.0 DLR
Available Phosphate-P (mg/kg)	55.5 DLM	48.9	5.5 DLM	4.8 DLM	4.8
Available Potassium (mg/kg)	267 DLM	252	275 DLM	152 DLM	89
Metals Aluminum (Al) (mg/kg)	14500	14200	39200	43200	11400
Antimony (Sb) (mg/kg)	0.51	0.26	0.32	0.45	0.21
Arsenic (As) (mg/kg)	4.22	3.61	4.89	6.11	2.42
Barium (Ba) (mg/kg)	176	162	255	282	73.9
Beryllium (Be) (mg/kg)	0.40	0.42	1.15	1.22	0.26
Bismuth (Bi) (mg/kg)	<0.20	<0.20	0.22	0.29	<0.20
Boron (B) (mg/kg)	5.8	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd) (mg/kg)	0.519	0.448	0.281	0.961	0.322
Calcium (Ca) (mg/kg)	8650	8200	3920	11500	3320
Chromium (Cr) (mg/kg)	28.9	29.7	43.3	57.8	26.7
Cobalt (Co) (mg/kg)	12.4	11.9	7.53	15.6	5.63
Copper (Cu) (mg/kg)	40.4	36.8	69.2	96.2	17.8
Iron (Fe) (mg/kg)	21500	22800	19400	35200	17600
Lead (Pb) (mg/kg)	7.84	7.78	12.2	12.8	5.73
Lithium (Li) (mg/kg)	15.3	14.8	18.0	29.1	10.7
Magnesium (Mg) (mg/kg)	5820	5540	3590	8310	3270
Manganese (Mn) (mg/kg)	1290	1100	86.1	493	126
Mercury (Hg) (mg/kg)	0.114	0.120	0.248	0.206	0.052
Molybdenum (Mo) (mg/kg)	1.60	1.38	0.69	1.01	0.56
Nickel (Ni) (mg/kg)	24.3	22.1	52.8	72.8	15.5
Phosphorus (P) (mg/kg)	934	873	1540	1390	337
Potassium (K) (mg/kg)	1380	1370	2620	2620	780
Selenium (Se) (mg/kg)	0.35	<0.20	0.41	0.72	<0.20
Silver (Ag) (mg/kg)	0.27	0.23	0.74	0.95	0.19
Sodium (Na) (mg/kg)	89	131	102	121	97
Strontium (Sr) (mg/kg)	58.5	60.2	43.8	111	38.0
Thallium (Tl) (mg/kg)	0.098	0.109	0.214	0.221	0.061
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-41	L1826516-42	L1826516-43	L1826516-45	L1826516-46
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	04-SEP-16	05-SEP-16	05-SEP-16	19-AUG-16	03-SEP-16
Sampled Time					
Client ID	CSS16-BKG-17	CSS16-BKG-23D	CSS16-BKG-24	CSS16-16	CSS16-31
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	5.74	6.78	5.22	7.59	8.69
Organic / Inorganic Carbon Inorganic Carbon (%)	0.224	0.078	0.091	0.238	0.468
Inorganic Carbon (as CaCO3 Equivalent) (%)	1.87	0.65	0.76	1.98	3.90
Total Carbon by Combustion (%)	16.8	1.29	7.35	4.10	0.69
Total Organic Carbon (%)	16.6	1.21	7.26	3.86	0.23
Plant Available Nutrients Available Nitrate-N (mg/kg)	<4.0 DLR	<1.0	<1.0	1.4	1.4
Available Phosphate-P (mg/kg)	10.0	16.3	42.4	4.7	3.2
Available Potassium (mg/kg)	343	108	104	114	98
Metals Aluminum (Al) (mg/kg)	44300	10700	7540	14100	18400
Antimony (Sb) (mg/kg)	0.42	0.36	0.16	0.41	0.48
Arsenic (As) (mg/kg)	5.71	7.14	2.73	9.53	8.76
Barium (Ba) (mg/kg)	280	67.8	139	179	126
Beryllium (Be) (mg/kg)	1.13	0.31	0.20	0.52	0.46
Bismuth (Bi) (mg/kg)	0.25	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	<5.0	<5.0	<5.0	8.1	5.2
Cadmium (Cd) (mg/kg)	0.619	0.159	0.325	0.203	0.182
Calcium (Ca) (mg/kg)	9880	4990	3360	20900	22400
Chromium (Cr) (mg/kg)	64.0	38.0	20.1	15.2	37.9
Cobalt (Co) (mg/kg)	17.5	9.06	7.29	13.6	14.1
Copper (Cu) (mg/kg)	81.2	38.7	12.1	522	67.0
Iron (Fe) (mg/kg)	39100	24700	16600	48800	32200
Lead (Pb) (mg/kg)	10.9	5.54	5.94	5.09	7.59
Lithium (Li) (mg/kg)	28.6	10.9	9.2	12.4	18.5
Magnesium (Mg) (mg/kg)	8630	5570	2410	7100	8970
Manganese (Mn) (mg/kg)	969	429	1250	576	649
Mercury (Hg) (mg/kg)	0.204	0.061	0.058	0.091	0.059
Molybdenum (Mo) (mg/kg)	1.37	0.58	0.58	3.33	0.69
Nickel (Ni) (mg/kg)	58.7	22.1	11.8	11.6	32.3
Phosphorus (P) (mg/kg)	1570	686	589	1270	828
Potassium (K) (mg/kg)	2970	920	700	1380	1910
Selenium (Se) (mg/kg)	0.50	<0.20	<0.20	0.78	0.31
Silver (Ag) (mg/kg)	0.94	<0.10	0.16	0.30	0.10
Sodium (Na) (mg/kg)	113	162	54	663	544
Strontium (Sr) (mg/kg)	89.8	43.2	29.3	161	147
Thallium (Tl) (mg/kg)	0.215	0.077	0.056	<0.050	0.126
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826516-47				
	Description					
	Sampled Date	05-SEP-16				
	Sampled Time					
	Client ID	CSS16-BKG-25				
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	5.75				
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.077				
	Inorganic Carbon (as CaCO3 Equivalent) (%)	0.64				
	Total Carbon by Combustion (%)	8.35				
	Total Organic Carbon (%)	8.27				
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<3.0 DLR				
	Available Phosphate-P (mg/kg)	15.6				
	Available Potassium (mg/kg)	127				
Metals	Aluminum (Al) (mg/kg)	15000				
	Antimony (Sb) (mg/kg)	0.24				
	Arsenic (As) (mg/kg)	4.76				
	Barium (Ba) (mg/kg)	137				
	Beryllium (Be) (mg/kg)	0.51				
	Bismuth (Bi) (mg/kg)	<0.20				
	Boron (B) (mg/kg)	<5.0				
	Cadmium (Cd) (mg/kg)	0.289				
	Calcium (Ca) (mg/kg)	5310				
	Chromium (Cr) (mg/kg)	33.1				
	Cobalt (Co) (mg/kg)	8.84				
	Copper (Cu) (mg/kg)	32.2				
	Iron (Fe) (mg/kg)	23400				
	Lead (Pb) (mg/kg)	6.42				
	Lithium (Li) (mg/kg)	14.6				
	Magnesium (Mg) (mg/kg)	4590				
	Manganese (Mn) (mg/kg)	462				
	Mercury (Hg) (mg/kg)	0.094				
	Molybdenum (Mo) (mg/kg)	0.62				
	Nickel (Ni) (mg/kg)	22.7				
	Phosphorus (P) (mg/kg)	709				
	Potassium (K) (mg/kg)	960				
	Selenium (Se) (mg/kg)	<0.20				
	Silver (Ag) (mg/kg)	0.40				
	Sodium (Na) (mg/kg)	91				
	Strontium (Sr) (mg/kg)	60.1				
	Thallium (Tl) (mg/kg)	0.084				
	Tin (Sn) (mg/kg)	<2.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-1 Soil/Sediment 17-AUG-16 CSS16-02	L1826516-2 Soil/Sediment 17-AUG-16 CSS16-03	L1826516-3 Soil/Sediment 19-AUG-16 CSS16-04	L1826516-4 Soil/Sediment 19-AUG-16 CSS16-05	L1826516-5 Soil/Sediment 19-AUG-16 CSS16-06
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	1160	888	1070	799	1010
	Uranium (U) (mg/kg)	0.869	0.762	0.875	0.738	0.892
	Vanadium (V) (mg/kg)	177	95.2	185	205	209
	Zinc (Zn) (mg/kg)	51.0	58.1	59.4	45.0	60.3
	Zirconium (Zr) (mg/kg)	1.8	<1.0	3.6	1.9	1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-6 Soil/Sediment 19-AUG-16 CSS16-14	L1826516-7 Soil/Sediment 19-AUG-16 CSS16-15	L1826516-8 Soil/Sediment 03-SEP-16 CSS16-23	L1826516-9 Soil/Sediment 03-SEP-16 CSS16-24	L1826516-10 Soil/Sediment 03-SEP-16 CSS16-25
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	927	1170	605	950	665
	Uranium (U) (mg/kg)	1.23	0.943	0.508	0.741	0.503
	Vanadium (V) (mg/kg)	147	193	98.2	134	62.0
	Zinc (Zn) (mg/kg)	43.8	48.2	40.8	53.9	31.6
	Zirconium (Zr) (mg/kg)	1.9	2.8	3.2	2.7	5.2

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-11	L1826516-12	L1826516-13	L1826516-14	L1826516-15
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
Sampled Time					
Client ID	CSS16-26	CSS16-27	CSS16-27D	CSS16-28	CSS16-29
Grouping / **Analyte**					
SOIL					
Metals					
Titanium (Ti) (mg/kg)	560	936	934	658	656
Uranium (U) (mg/kg)	0.496	0.812	0.846	0.399	0.527
Vanadium (V) (mg/kg)	49.9	184	180	75.6	83.1
Zinc (Zn) (mg/kg)	32.8	46.1	45.6	33.1	46.4
Zirconium (Zr) (mg/kg)	4.2	2.5	2.2	3.8	2.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-16	L1826516-17	L1826516-18	L1826516-19	L1826516-20
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-30	CSS16-32	CSS16-33	CSS16-34	CSS16-35
Grouping / **Analyte**					
SOIL					
Metals					
Titanium (Ti) (mg/kg)	692	786	719	1020	933
Uranium (U) (mg/kg)	0.668	0.437	0.470	0.615	0.763
Vanadium (V) (mg/kg)	71.0	78.6	106	126	117
Zinc (Zn) (mg/kg)	57.9	48.7	46.5	45.0	40.0
Zirconium (Zr) (mg/kg)	5.8	5.3	4.4	4.4	4.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-21	L1826516-22	L1826516-23	L1826516-24	L1826516-25
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-36	CSS16-37	CSS16-38	CSS16-39	CSS16-39D
Grouping / **Analyte**					
SOIL					
Metals Titanium (Ti) (mg/kg)	796	1030	1250	1170	1110
Uranium (U) (mg/kg)	0.514	1.08	1.04	1.23	1.20
Vanadium (V) (mg/kg)	119	161	210	187	182
Zinc (Zn) (mg/kg)	36.7	45.7	48.7	46.1	45.5
Zirconium (Zr) (mg/kg)	2.5	1.6	2.4	2.0	1.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-26	L1826516-27	L1826516-28	L1826516-29	L1826516-30
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	04-SEP-16	04-SEP-16	05-SEP-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-40	CSS16-41	CSS16-42	CSS16-BKG-01	CSS16-BKG-07
Grouping / **Analyte**					
SOIL					
Metals					
Titanium (Ti) (mg/kg)	1060	1190	1310	247	504
Uranium (U) (mg/kg)	0.932	0.963	0.998	1.21	0.670
Vanadium (V) (mg/kg)	179	205	178	57.2	56.2
Zinc (Zn) (mg/kg)	39.4	48.9	56.2	97.1	83.1
Zirconium (Zr) (mg/kg)	1.8	2.3	6.9	<1.0	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-31 Soil/Sediment 03-SEP-16 CSS16-BKG-08	L1826516-32 Soil/Sediment 03-SEP-16 CSS16-BKG-09	L1826516-33 Soil/Sediment 03-SEP-16 CSS16-BKG-10	L1826516-34 Soil/Sediment 03-SEP-16 CSS16-BKG-11	L1826516-35 Soil/Sediment 03-SEP-16 CSS16-BKG-12
SOIL						
Metals	Titanium (Ti) (mg/kg)	674	713	899	842	759
	Uranium (U) (mg/kg)	0.804	0.564	0.594	0.453	0.521
	Vanadium (V) (mg/kg)	62.9	57.9	65.1	74.9	57.0
	Zinc (Zn) (mg/kg)	71.4	59.6	58.5	58.7	51.1
	Zirconium (Zr) (mg/kg)	5.3	<1.0	1.8	1.3	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-36 Soil/Sediment 03-SEP-16 CSS16-BKG-13	L1826516-37 Soil/Sediment 03-SEP-16 CSS16-BKG-13D	L1826516-38 Soil/Sediment 04-SEP-16 CSS16-BKG-14	L1826516-39 Soil/Sediment 04-SEP-16 CSS16-BKG-15	L1826516-40 Soil/Sediment 04-SEP-16 CSS16-BKG-16
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	721	806	218	333	397
	Uranium (U) (mg/kg)	0.379	0.418	2.41	3.30	0.497
	Vanadium (V) (mg/kg)	55.1	56.6	32.6	66.3	42.6
	Zinc (Zn) (mg/kg)	143	126	40.9	89.7	32.7
	Zirconium (Zr) (mg/kg)	1.3	1.6	1.7	2.5	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-41 Soil/Sediment 04-SEP-16 CSS16-BKG-17	L1826516-42 Soil/Sediment 05-SEP-16 CSS16-BKG-23D	L1826516-43 Soil/Sediment 05-SEP-16 CSS16-BKG-24	L1826516-45 Soil/Sediment 19-AUG-16 CSS16-16	L1826516-46 Soil/Sediment 03-SEP-16 CSS16-31
SOIL						
Metals	Titanium (Ti) (mg/kg)	401	721	295	1330	951
	Uranium (U) (mg/kg)	2.03	0.464	0.294	1.09	0.772
	Vanadium (V) (mg/kg)	67.3	67.4	38.0	181	82.2
	Zinc (Zn) (mg/kg)	105	44.2	53.3	51.6	61.0
	Zirconium (Zr) (mg/kg)	<1.0	2.0	<1.0	3.3	8.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826516-47				
	Description					
	Sampled Date	05-SEP-16				
	Sampled Time					
	Client ID	CSS16-BKG-25				
Grouping	**Analyte**					
SOIL						
Metals	Titanium (Ti) (mg/kg)	363				
	Uranium (U) (mg/kg)	0.635				
	Vanadium (V) (mg/kg)	56.2				
	Zinc (Zn) (mg/kg)	59.5				
	Zirconium (Zr) (mg/kg)	<1.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Titanium (Ti)	DUP-H	L1826516-18

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

G0148

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

RUSH

Priority processing

please log all highlighted soils for:

- CSR + Full Metals
- TOC/TIC
- Avail N, P, K

"Group A" soils are due Sept 15 with 'P' codes

"Group B" soils are due Sept 21, no priority code

SK sublets should go out Monday.

Group A Tissue

SCN	Tissue ID
G0149-8	BERRY16-11
G0149-9	ANT16-02
G0149-10	BERRY16-12
G0149-11	BERRY16-13
G0149-12	SPRUCE16-02
G0150-1	BERRY16-14
G0150-2	BERRY16-15
G0150-3	ANT16-03
G0150-4	ANT16-03d
G0150-5	SPRUCE16-03
G0150-6	BERRY16-BKG-04
G0150-7	BERRY16-BKG-05
G0150-8	BERRY16-BKG-06
G0150-9	BERRY16-BKG-07
G0150-10	BERRY16-BKG-08
G0150-11	BERRY16-BKG-09
G0150-12	BERRY16-16
G0152-1	BERRY16-17
G0152-6	WILLOW16-06
G0152-7	WILLOW16-07
G0152-8	GRASS16-03
G0152-9	GRASS16-04
G0152-10	WILLOW16-08
G0152-11	GRASS16-05
G0152-12	GRASS16-06
G0156-1	GRASS16-07
G0156-2	GRASS16-08
G0156-3	WILLOW16-09
G0156-4	GRASS16-10
G0156-5	WILLOW16-10
G0156-6	GRASS16-09
G0156-7	SPRUCE16-06
G0156-8	SPRUCE16-07
G0168-3	SPRUCE16-15
G0168-4	ANT16-04
G0168-5	AR16-04
G0168-6	WILLOW16-BKG-07
G0168-7	SPRUCE16-BKG-06
G0168-8	AR16-BKG-01
G0168-9	WILLOW16-BKG-08
G0168-10	SPRUCE16-BKG-07
G0168-11	ANT16-BKG-01
G0168-12	AR16-BKG-02
G0169-1	WORM16-BKG-02
G0169-2	WILLOW16-BKG-09
G0169-3	WILLOW16-BKG-09d
G0169-4	SPRUCE16-BKG-08
G0169-5	SPRUCE16-BKG-08d
G0169-9	WILOW16-21
G0169-10	WILLOW16-22
G0169-11	WILOW16-23
G0169-12	WILLOW16-24
G0170-1	SPRUCE16-16
G0170-2	ANT16-05
G0170-3	AR16-05
G0170-4	BEETLE16-02
G0170-5	WILLOW16-BKG-10
G0170-6	SPRUCE16-BKG-09
G0170-7	ANT16-BKG-02
G0170-8	ANT16-BKG-02d
G0170-9	SPRUCE16-BKG-10
G0170-10	ANT16-BKG-03
G0170-11	ANT16-BKG-03d
G0170-12	WILLOW16-25
G171-1	SPRUCE16-17
G171-2	WORM16-05
G171-3	SPRUCE16-18
G171-4	GRASS16-BKG-09
G171-5	GRASS16-BKG-09d
G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B So

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

B 13
V 36
INV 14

= 63

47 + 23 = 70

L1826516-COFC

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0148

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	aatkinson@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only):	[redacted]	ALS Contact:	Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hold	Number of Containers
[redacted]	CSS16-01	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-04	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-01	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-07	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-08	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-09	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-10	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-11	19-Aug-16		Soil/Sediment	x	2

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0148

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-04	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-12	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-13	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-14	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-15	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-16	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-07	19-Aug-16		Soil/Sediment	x	2
[redacted]						

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(4) JC	SEP - 9 2016	9am	3,4,10°c			

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Canada Toll Free: 1 800 668 9878
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COC # G0148

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	CSS16-17	02-Sep-16		Soil/Sediment	x	2
	CSS16-18	02-Sep-16		Soil/Sediment	x	2
	CSS16-19	02-Sep-16		Soil/Sediment	x	2
	CSS16-20	02-Sep-16		Soil/Sediment	x	2
	CSS16-21	02-Sep-16		Soil/Sediment	x	2
	CSS16-22	02-Sep-16		Soil/Sediment	x	2
	CSS16-23	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-08	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-09	03-Sep-16		Soil/Sediment	x	2
	CSS16-24	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-10	03-Sep-16		Soil/Sediment	x	2
	CSS16-25	03-Sep-16		Soil/Sediment	x	2

L1826516-COFC

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Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

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Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-11	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-26	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-27	03-Sep-16	FDA - G0162-04	Soil/Sediment	x	2
[redacted]	CSS16-27d	03-Sep-16	FD - G0162-03	Soil/Sediment	x	2
[redacted]	CSS16-BKG-12	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-13	03-Sep-16	FDA - G0162-07	Soil/Sediment	x	2
[redacted]	CSS16-BKG-13d	03-Sep-16	FD - G0162-06	Soil/Sediment	x	2
[redacted]	CSS16-28	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-29	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-30	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-31	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-32	04-Sep-16		Soil/Sediment	x	2

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Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only):	[redacted]	ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-33	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-34	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-35	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-14	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-15	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-16	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-17	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-36	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-37	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-38	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-39	04-Sep-16	FDA - G0163-12	Soil/Sediment	x	2
[redacted]	CSS16-39d	04-Sep-16	FD - G0163- 11	Soil/Sediment	x	2

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Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3,4,10'c			

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Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-40	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-41	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-42	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-18	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-19	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20d	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-44	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-21	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-22	05-Sep-16	FDA- G0165-01	Soil/Sediment	x	2

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Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-22d	05-Sep-16	FD - G0164-12	Soil/Sediment	x	2
[redacted]	CSS16-45	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-46	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-23	05-Sep-16	FDA-G0165-05	Soil/Sediment	x	2
[redacted]	CSS16-BKG-23d	05-Sep-16	FD-G0165-04	Soil/Sediment	x	2
[redacted]	CSS16-BKG-24	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-25	05-Sep-16		Soil/Sediment	x	2
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

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Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-JAN-17 17:06 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826528

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0145
Legal Site Desc:

Comments: ADDITIONAL 10-JAN-17 11:29
16-JAN-2017 Revision 2: Additional Hot Water Soluble Boron Analysis.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826528-1 Soil/Sediment 14-AUG-16 SS16-BKG-01A	L1826528-2 Soil/Sediment 14-AUG-16 SS16-BKG-01B	L1826528-3 Soil/Sediment 14-AUG-16 SS16-BKG-01C	L1826528-4 Soil/Sediment 16-AUG-16 SS16-BKG-02A	L1826528-5 Soil/Sediment 16-AUG-16 SS16-BKG-02A(D)
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	6.18	6.74	7.28	5.68	5.73
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.658	0.347	0.203	1.96	1.87
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	2.4	2.5
	Available Phosphate-P (mg/kg)	4.3	<2.0	<2.0	2.7	3.1
	Available Potassium (mg/kg)	53	45	45	72	71
Metals	Aluminum (Al) (mg/kg)	13600	15000	18100	17300	18000
	Antimony (Sb) (mg/kg)	0.23	0.32	0.43	0.24	0.24
	Arsenic (As) (mg/kg)	4.85	8.03	9.78	6.24	6.35
	Barium (Ba) (mg/kg)	72.4	101	127	103	124
	Beryllium (Be) (mg/kg)	0.32	0.37	0.47	0.42	0.42
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.170	0.100	0.095	0.182	0.196
	Calcium (Ca) (mg/kg)	3880	5290	5750	3770	3690
	Chromium (Cr) (mg/kg)	38.5	43.2	50.4	39.9	42.2
	Cobalt (Co) (mg/kg)	11.2	12.0	14.5	10.6	15.7
	Copper (Cu) (mg/kg)	18.0	27.6	45.3	25.7	27.0
	Iron (Fe) (mg/kg)	27000	29300	32900	27800	30300
	Lead (Pb) (mg/kg)	6.20	7.04	8.37	7.43	7.41
	Lithium (Li) (mg/kg)	19.2	14.5	16.5	20.0	19.5
	Magnesium (Mg) (mg/kg)	5810	6000	7160	6050	6560
	Manganese (Mn) (mg/kg)	465	652	656	493	679
	Mercury (Hg) (mg/kg)	<0.050	<0.050	0.060	0.051	<0.050
	Molybdenum (Mo) (mg/kg)	0.48	0.64	0.77	0.56	0.57
	Nickel (Ni) (mg/kg)	23.2	24.8	31.1	25.2	26.6
	Phosphorus (P) (mg/kg)	451	628	680	521	535
	Potassium (K) (mg/kg)	960	1050	1220	1300	1390
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	144	188	252	168	169
	Strontium (Sr) (mg/kg)	40.5	63.4	68.0	44.1	77.3
	Thallium (Tl) (mg/kg)	0.054	0.072	0.091	0.079	0.081
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	788	783	710	779	786
	Uranium (U) (mg/kg)	0.555	0.646	0.707	0.581	0.604
	Vanadium (V) (mg/kg)	68.7	74.7	78.7	74.9	76.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826528-6	L1826528-7	L1826528-8	L1826528-9	L1826528-10
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16
Sampled Time					
Client ID	SS16-BKG-02B	SS16-BKG-02C	SS16-BKG-03A	SS16-BKG-03B	SS16-BKG-03C
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	6.50	6.82	5.61	5.77	7.38
Organic / Inorganic Carbon Total Organic Carbon (%)	0.562	0.451	1.97	3.52	0.317
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	5.7	<1.0	<1.0
Available Phosphate-P (mg/kg)	<2.0	<2.0	<2.0	5.1	<2.0
Available Potassium (mg/kg)	67	64	69	124	44
Metals Aluminum (Al) (mg/kg)	17600	18800	22200	22800	21100
Antimony (Sb) (mg/kg)	0.35	0.40	0.24	0.59	0.49
Arsenic (As) (mg/kg)	8.00	9.23	5.91	6.01	8.09
Barium (Ba) (mg/kg)	118	138	97.6	108	121
Beryllium (Be) (mg/kg)	0.48	0.54	0.57	0.61	0.57
Bismuth (Bi) (mg/kg)	<0.20	<0.20	0.21	0.24	0.21
Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd) (mg/kg)	0.089	0.106	0.109	0.218	0.109
Calcium (Ca) (mg/kg)	4950	6120	2630	4080	6590
Chromium (Cr) (mg/kg)	49.0	56.9	51.6	53.8	58.9
Cobalt (Co) (mg/kg)	14.7	17.0	17.4	20.0	15.7
Copper (Cu) (mg/kg)	34.0	45.7	25.1	29.5	47.3
Iron (Fe) (mg/kg)	30500	32000	34800	38000	36900
Lead (Pb) (mg/kg)	8.19	7.50	11.9	14.9	11.3
Lithium (Li) (mg/kg)	17.4	16.5	37.8	35.6	27.7
Magnesium (Mg) (mg/kg)	6440	6980	8230	9560	9370
Manganese (Mn) (mg/kg)	663	828	868	984	622
Mercury (Hg) (mg/kg)	<0.050	0.070	<0.050	<0.050	0.057
Molybdenum (Mo) (mg/kg)	0.51	0.55	0.89	1.08	0.54
Nickel (Ni) (mg/kg)	29.2	34.3	36.3	36.9	44.3
Phosphorus (P) (mg/kg)	737	842	320	441	703
Potassium (K) (mg/kg)	1380	1340	2060	2090	1760
Selenium (Se) (mg/kg)	<0.20	<0.20	0.23	0.30	<0.20
Silver (Ag) (mg/kg)	<0.10	<0.10	0.16	0.21	0.11
Sodium (Na) (mg/kg)	252	325	157	158	230
Strontium (Sr) (mg/kg)	61.6	72.3	26.8	39.4	56.7
Thallium (Tl) (mg/kg)	0.085	0.085	0.124	0.155	0.165
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti) (mg/kg)	822	732	653	701	772
Uranium (U) (mg/kg)	0.633	0.606	0.830	0.925	0.765
Vanadium (V) (mg/kg)	81.8	88.0	62.8	65.4	64.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826528-11	L1826528-12	L1826528-13	L1826528-14	
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	
Sampled Date	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16	
Sampled Time					
Client ID	SS16-BKG-04A	SS16-BKG-04B	SS16-BKG-04B(D)	SS16-BKG-04C	
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	5.45	6.02	6.05	6.63	
Organic / Inorganic Carbon Total Organic Carbon (%)	1.38	0.531	0.508	0.416	
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<1.0	
Available Phosphate-P (mg/kg)	17.9	21.1	20.0	5.4	
Available Potassium (mg/kg)	56	48	49	46	
Metals Aluminum (Al) (mg/kg)	10300	10800	10400	11000	
Antimony (Sb) (mg/kg)	0.17	0.24	0.22	0.25	
Arsenic (As) (mg/kg)	4.12	5.53	5.23	6.33	
Barium (Ba) (mg/kg)	90.5	88.0	86.4	66.7	
Beryllium (Be) (mg/kg)	0.22	0.24	0.25	0.27	
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	
Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	
Cadmium (Cd) (mg/kg)	0.236	0.134	0.143	0.088	
Calcium (Ca) (mg/kg)	2480	3080	3150	3360	
Chromium (Cr) (mg/kg)	26.6	29.5	29.4	32.9	
Cobalt (Co) (mg/kg)	7.12	10.3	10.3	10.0	
Copper (Cu) (mg/kg)	10.6	15.7	15.7	22.2	
Iron (Fe) (mg/kg)	18900	19200	18800	20600	
Lead (Pb) (mg/kg)	5.13	4.74	4.73	5.49	
Lithium (Li) (mg/kg)	12.6	10.6	10.1	8.8	
Magnesium (Mg) (mg/kg)	3190	3810	3750	4380	
Manganese (Mn) (mg/kg)	363	330	336	400	
Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	
Molybdenum (Mo) (mg/kg)	0.54	0.46	0.48	0.44	
Nickel (Ni) (mg/kg)	15.9	21.6	21.4	22.4	
Phosphorus (P) (mg/kg)	586	631	618	555	
Potassium (K) (mg/kg)	560	750	700	810	
Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	
Silver (Ag) (mg/kg)	0.17	<0.10	<0.10	<0.10	
Sodium (Na) (mg/kg)	80	77	77	86	
Strontium (Sr) (mg/kg)	26.7	34.4	32.5	35.6	
Thallium (Tl) (mg/kg)	<0.050	0.058	0.058	0.082	
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	
Titanium (Ti) (mg/kg)	514	598	587	658	
Uranium (U) (mg/kg)	0.354	0.408	0.384	0.508	
Vanadium (V) (mg/kg)	46.9	48.3	47.3	49.7	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826528-1	L1826528-2	L1826528-3	L1826528-4	L1826528-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	14-AUG-16	14-AUG-16	14-AUG-16	16-AUG-16	16-AUG-16
Sampled Time					
Client ID	SS16-BKG-01A	SS16-BKG-01B	SS16-BKG-01C	SS16-BKG-02A	SS16-BKG-02A(D)
Grouping **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	64.8	48.3	53.6	61.6	63.2
Zirconium (Zr) (mg/kg)	1.3	3.4	5.8	<1.0	<1.0
Leachable Metals Boron (B), Hot Water Ext. (mg/kg)		<0.10	<0.10		0.13

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826528-6	L1826528-7	L1826528-8	L1826528-9	L1826528-10
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16
Sampled Time					
Client ID	SS16-BKG-02B	SS16-BKG-02C	SS16-BKG-03A	SS16-BKG-03B	SS16-BKG-03C
Grouping **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	49.5	53.0	70.4	76.0	68.9
Zirconium (Zr) (mg/kg)	2.9	3.0	<1.0	<1.0	4.9
Leachable Metals Boron (B), Hot Water Ext. (mg/kg)	0.12	<0.10			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826528-11	L1826528-12	L1826528-13	L1826528-14	
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	
Sampled Date	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16	
Sampled Time					
Client ID	SS16-BKG-04A	SS16-BKG-04B	SS16-BKG-04B(D)	SS16-BKG-04C	
Grouping	**Analyte**				
SOIL					
Metals	Zinc (Zn) (mg/kg)	55.7	38.8	37.9	31.3	
	Zirconium (Zr) (mg/kg)	<1.0	1.9	1.8	2.4	
Leachable Metals	Boron (B), Hot Water Ext. (mg/kg)					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Copper (Cu)	B	L1826528-10, -11, -12, -13, -4, -5, -6, -7, -8, -9
Method Blank	Lead (Pb)	B	L1826528-10, -11, -12, -13, -4, -5, -6, -7, -8, -9
Method Blank	Manganese (Mn)	B	L1826528-10, -11, -12, -13, -4, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)	DUP-H	L1826528-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
B-HOTW-CL	Soil	Available Boron, Hot Water	CSSS Ch. 4/EPA 6010B

Soil samples are extracted by boiling a 2:1 mixture of 0.01 M CaCl2 to soil for 5 - 15 minutes, prior to filtration of the extract and boron determination using ICPOES (EPA Method 6010B.");

C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA

Reference Information

CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0145

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0145

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L1826528	ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	METALS	PLANT AVAILABLE NUTRIE	TOC / INORGANIC CARBON	Number of Containers
	SS16-BKG-01a	14-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-01b	14-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-01c	14-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-02a	16-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-02a(d)	16-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-02b	16-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-02c	16-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-03a	16-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-03b	16-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-03c	16-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-04a	16-Aug-16		Soil/Sediment	X	X	X	2
	SS16-BKG-04b	16-Aug-16		Soil/Sediment	X	X	X	2

L1826528-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	9Sep2016	9am	3, 4, 10 °C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0145

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample # [redacted]	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	METALS	PLANT AVAILABLE NUTRIE	TOC / INORGANIC CARBON	Number of Containers
[redacted]	SS16-BKG-04b(d)	16-Aug-16		Soil/Sediment	X	X	X	2
[redacted]	SS16-BKG-04c	16-Aug-16		Soil/Sediment	X	X	X	2
[redacted]								
[redacted]								
[redacted]								
[redacted]								
[redacted]								
[redacted]								
[redacted]								
[redacted]								
[redacted]								

L1826528-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9 am	3, 4, 10 °C			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-SEP-16 17:02 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826551

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0148
Legal Site Desc:

Comments: Note - The samples 'CSS16-11D' and 'CSS16-BKG-23D' were not received.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-1	L1826551-2	L1826551-3	L1826551-4	L1826551-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-07	CSS16-08	CSS16-09	CSS16-10	CSS16-11
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.39	7.53	7.33	8.42	7.96
Organic / Inorganic Carbon Total Organic Carbon (%)	0.152	6.33	7.88	0.25	1.13
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<2.0 DLR	<2.0 DLR	<1.0	<1.0
Available Phosphate-P (mg/kg)	2.9	3.2	3.6	2.0	4.5
Available Potassium (mg/kg)	155	168	144	141	123
Metals Aluminum (Al) (mg/kg)	16000	15600	14600	14600	13600
Antimony (Sb) (mg/kg)	0.35	0.37	0.39	0.34	0.29
Arsenic (As) (mg/kg)	11.2	10.6	9.44	10.5	9.46
Barium (Ba) (mg/kg)	153	151	139	148	139
Beryllium (Be) (mg/kg)	0.59	0.57	0.51	0.57	0.47
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	7.3	8.3	8.0	6.7	5.2
Cadmium (Cd) (mg/kg)	0.134	0.220	0.306	0.146	0.172
Calcium (Ca) (mg/kg)	23100	24700	20400	22700	17800
Chromium (Cr) (mg/kg)	11.3	11.9	17.2	10.4	13.2
Cobalt (Co) (mg/kg)	15.8	15.3	13.4	15.4	13.9
Copper (Cu) (mg/kg)	819	624	453	819	706
Iron (Fe) (mg/kg)	47400	38100	34900	46500	40600
Lead (Pb) (mg/kg)	4.43	4.60	5.89	4.59	4.38
Lithium (Li) (mg/kg)	14.3	14.3	15.0	13.9	12.4
Magnesium (Mg) (mg/kg)	9460	9460	8010	9010	8120
Manganese (Mn) (mg/kg)	577	611	544	551	555
Mercury (Hg) (mg/kg)	0.069	0.070	0.082	0.079	0.068
Molybdenum (Mo) (mg/kg)	3.28	3.12	2.82	3.57	2.89
Nickel (Ni) (mg/kg)	9.65	10.7	14.4	8.78	10.5
Phosphorus (P) (mg/kg)	1260	1210	1070	1240	1090
Potassium (K) (mg/kg)	1390	1350	1250	1250	1090
Selenium (Se) (mg/kg)	0.97	0.95	0.96	0.94	0.80
Silver (Ag) (mg/kg)	0.34	0.27	0.26	0.34	0.28
Sodium (Na) (mg/kg)	900	776	571	810	732
Strontium (Sr) (mg/kg)	160	157	134	149	126
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti) (mg/kg)	1390	1340	1040	1110	919
Uranium (U) (mg/kg)	0.875	1.26	1.26	0.785	0.709
Vanadium (V) (mg/kg)	181	145	118	175	147

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-7 Soil/Sediment 19-AUG-16 CSS16-12	L1826551-8 Soil/Sediment 19-AUG-16 CSS16-13	L1826551-9 Soil/Sediment 02-SEP-16 CSS16-17	L1826551-10 Soil/Sediment 02-SEP-16 CSS16-18	L1826551-11 Soil/Sediment 02-SEP-16 CSS16-19
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.46	7.15	7.16	8.04	8.18
Organic / Inorganic Carbon	Total Organic Carbon (%)	7.47	6.87	0.636	0.48	0.28
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR	<2.0 DLR	<1.0	<2.0 DLR	<1.0
	Available Phosphate-P (mg/kg)	2.6	6.1	<2.0	<2.0	<2.0
	Available Potassium (mg/kg)	94	137	35	116	63
Metals	Aluminum (Al) (mg/kg)	12600	13800	13200	15500	11900
	Antimony (Sb) (mg/kg)	0.34	0.38	0.31	0.40	0.36
	Arsenic (As) (mg/kg)	7.71	8.71	10.5	12.1	10.4
	Barium (Ba) (mg/kg)	124	150	92.8	160	107
	Beryllium (Be) (mg/kg)	0.44	0.48	0.46	0.55	0.38
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	7.4	8.2	<5.0	7.9	<5.0
	Cadmium (Cd) (mg/kg)	0.209	0.240	0.110	0.178	0.160
	Calcium (Ca) (mg/kg)	19600	19200	6050	25500	17100
	Chromium (Cr) (mg/kg)	17.5	17.1	36.6	13.4	23.8
	Cobalt (Co) (mg/kg)	10.9	12.1	9.74	15.8	11.8
	Copper (Cu) (mg/kg)	379	340	60.1	765	313
	Iron (Fe) (mg/kg)	33400	33000	26600	48600	38600
	Lead (Pb) (mg/kg)	5.36	5.76	6.33	4.70	5.23
	Lithium (Li) (mg/kg)	14.7	15.0	14.3	14.4	11.2
	Magnesium (Mg) (mg/kg)	6440	7130	5550	9460	6660
	Manganese (Mn) (mg/kg)	480	651	365	654	533
	Mercury (Hg) (mg/kg)	0.075	0.082	0.089	0.078	0.061
	Molybdenum (Mo) (mg/kg)	2.63	3.00	1.11	3.87	1.88
	Nickel (Ni) (mg/kg)	14.0	13.9	22.7	10.4	17.7
	Phosphorus (P) (mg/kg)	924	1060	674	1260	992
	Potassium (K) (mg/kg)	1100	1280	800	1330	970
	Selenium (Se) (mg/kg)	0.77	0.66	<0.20	0.98	0.54
	Silver (Ag) (mg/kg)	0.23	0.25	0.13	0.30	0.20
	Sodium (Na) (mg/kg)	520	548	156	877	520
	Strontium (Sr) (mg/kg)	128	133	61.5	137	105
	Thallium (Tl) (mg/kg)	0.051	<0.050	0.072	<0.050	0.056
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	829	985	690	1470	994
	Uranium (U) (mg/kg)	1.17	0.976	1.58	1.01	0.782
	Vanadium (V) (mg/kg)	114	113	71.0	183	130

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-12 Soil/Sediment 02-SEP-16 CSS16-20	L1826551-13 Soil/Sediment 02-SEP-16 CSS16-21	L1826551-14 Soil/Sediment 02-SEP-16 CSS16-22	L1826551-15 Soil/Sediment 05-SEP-16 CSS16-43	L1826551-16 Soil/Sediment 05-SEP-16 CSS16-44
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	8.10	8.49	8.36	8.53	8.18
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.22	0.164	<0.077	0.123	0.469
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<1.0	2.2
	Available Phosphate-P (mg/kg)	<2.0	<2.0	2.5	<2.0	<2.0
	Available Potassium (mg/kg)	68	89	126	140	54
Metals	Aluminum (Al) (mg/kg)	10900	12600	13800	15500	10600
	Antimony (Sb) (mg/kg)	0.44	0.40	0.29	0.34	0.45
	Arsenic (As) (mg/kg)	12.3	12.5	10.0	11.3	12.6
	Barium (Ba) (mg/kg)	102	119	145	153	115
	Beryllium (Be) (mg/kg)	0.37	0.48	0.50	0.57	0.41
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	5.4	5.6	6.8	<5.0
	Cadmium (Cd) (mg/kg)	0.167	0.157	0.160	0.145	0.175
	Calcium (Ca) (mg/kg)	17700	14600	20500	22700	8430
	Chromium (Cr) (mg/kg)	28.0	19.7	11.0	10.9	30.7
	Cobalt (Co) (mg/kg)	12.6	13.1	14.8	16.0	11.0
	Copper (Cu) (mg/kg)	252	454	826	848	121
	Iron (Fe) (mg/kg)	44600	37900	44100	48200	27500
	Lead (Pb) (mg/kg)	5.25	4.87	4.46	4.52	5.26
	Lithium (Li) (mg/kg)	11.2	12.6	13.2	14.0	11.3
	Magnesium (Mg) (mg/kg)	6870	7680	8720	9460	6490
	Manganese (Mn) (mg/kg)	583	578	533	572	730
	Mercury (Hg) (mg/kg)	0.089	0.083	0.070	0.073	0.079
	Molybdenum (Mo) (mg/kg)	1.88	1.99	4.14	3.79	1.48
	Nickel (Ni) (mg/kg)	20.4	14.7	8.90	8.96	26.4
	Phosphorus (P) (mg/kg)	1130	1030	1200	1250	725
	Potassium (K) (mg/kg)	860	1000	1200	1380	740
	Selenium (Se) (mg/kg)	0.69	0.55	0.85	0.97	0.31
	Silver (Ag) (mg/kg)	0.17	0.20	0.34	0.35	0.13
	Sodium (Na) (mg/kg)	501	498	870	896	393
	Strontium (Sr) (mg/kg)	101	91.7	137	156	80.4
	Thallium (Tl) (mg/kg)	0.188	<0.050	<0.050	<0.050	0.070
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	930	981	986	1300	717
	Uranium (U) (mg/kg)	0.873	0.734	0.699	0.847	0.643
	Vanadium (V) (mg/kg)	150	130	167	183	80.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-17 Soil/Sediment 05-SEP-16 CSS16-45	L1826551-18 Soil/Sediment 05-SEP-16 CSS16-46	L1826551-19 Soil/Sediment 17-AUG-16 CSS16-BKG-02	L1826551-20 Soil/Sediment 17-AUG-16 CSS16-BKG-03	L1826551-21 Soil/Sediment 17-AUG-16 CSS16-BKG-04
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.98	8.25	5.49	5.74	6.71
Organic / Inorganic Carbon	Total Organic Carbon (%)	6.23	<0.089	1.99	7.55	8.45
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR	<1.0	<1.0	<2.0 DLR	<2.0 DLR
	Available Phosphate-P (mg/kg)	2.5	<2.0	54.9	64.6	6.0
	Available Potassium (mg/kg)	144	165	95	120	142
Metals	Aluminum (Al) (mg/kg)	19300	16200	9280	6680	13500
	Antimony (Sb) (mg/kg)	0.50	0.34	0.21	0.16	0.24
	Arsenic (As) (mg/kg)	12.3	11.4	3.61	2.64	4.74
	Barium (Ba) (mg/kg)	201	163	66.9	129	49.7
	Beryllium (Be) (mg/kg)	0.64	0.57	0.19	0.15	0.27
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	7.8	7.8	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.269	0.143	0.221	0.840	0.257
	Calcium (Ca) (mg/kg)	21000	23700	2680	4670	9330
	Chromium (Cr) (mg/kg)	25.4	10.7	28.6	19.9	30.9
	Cobalt (Co) (mg/kg)	17.0	16.3	7.89	6.10	9.40
	Copper (Cu) (mg/kg)	455	849	10.5	12.1	27.3
	Iron (Fe) (mg/kg)	40400	48600	22700	14800	23900
	Lead (Pb) (mg/kg)	7.42	4.33	5.85	4.91	5.55
	Lithium (Li) (mg/kg)	19.5	14.3	11.2	6.7	16.2
	Magnesium (Mg) (mg/kg)	10200	9710	3550	2600	6460
	Manganese (Mn) (mg/kg)	817	618	391	1040	448
	Mercury (Hg) (mg/kg)	0.101	0.075	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	3.33	4.14	0.51	0.45	0.74
	Nickel (Ni) (mg/kg)	21.2	8.83	13.6	11.8	22.5
	Phosphorus (P) (mg/kg)	1150	1280	849	674	674
	Potassium (K) (mg/kg)	1620	1420	680	590	960
	Selenium (Se) (mg/kg)	1.00	1.05	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.29	0.37	0.13	0.22	<0.10
	Sodium (Na) (mg/kg)	647	941	71	63	131
	Strontium (Sr) (mg/kg)	161	157	23.5	34.5	60.8
	Thallium (Tl) (mg/kg)	0.065	<0.050	<0.050	<0.050	0.087
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	1290	1420	743	442	719
	Uranium (U) (mg/kg)	1.34	0.894	0.295	0.275	0.631
	Vanadium (V) (mg/kg)	129	183	57.4	34.8	51.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-22 Soil/Sediment 19-AUG-16 CSS16-BKG-05	L1826551-23 Soil/Sediment 19-AUG-16 CSS16-BKG-06	L1826551-24 Soil/Sediment 05-SEP-16 CSS16-BKG-18	L1826551-25 Soil/Sediment 05-SEP-16 CSS16-BKG-19	L1826551-26 Soil/Sediment 05-SEP-16 CSS16-BKG-20
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	6.23	5.23	7.01	6.75	6.46
Organic / Inorganic Carbon	Total Organic Carbon (%)	8.18	38.6	22.2	22.1	41.6
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR	<4.0 DLR	<3.0 DLR	<3.0 DLR	<5.0 DLR
	Available Phosphate-P (mg/kg)	7.7	14.7 DLR	2.8	<2.0	7.5 DLR
	Available Potassium (mg/kg)	82	471 DLR	130	51	170 DLR
Metals	Aluminum (Al) (mg/kg)	10400	3690	10100	11300	3410
	Antimony (Sb) (mg/kg)	0.21	0.22	0.28	0.32	0.28
	Arsenic (As) (mg/kg)	3.47	3.24	3.46	2.86	1.54
	Barium (Ba) (mg/kg)	92.9	83.7	76.9	79.5	58.8
	Beryllium (Be) (mg/kg)	0.20	<0.10	0.27	0.46	0.14
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	6.8	5.7	9.9
	Cadmium (Cd) (mg/kg)	0.488	0.697	0.499	0.645	1.05
	Calcium (Ca) (mg/kg)	6400	17100	23800	33000	35100
	Chromium (Cr) (mg/kg)	21.2	6.07	19.7	23.8	5.66
	Cobalt (Co) (mg/kg)	8.27	3.04	7.21	5.72	2.41
	Copper (Cu) (mg/kg)	13.0	17.9	117	101	33.1
	Iron (Fe) (mg/kg)	19800	4960	17100	15900	4970
	Lead (Pb) (mg/kg)	5.59	4.30	3.86	4.38	4.05
	Lithium (Li) (mg/kg)	9.6	2.0	10.4	10.9	2.4
	Magnesium (Mg) (mg/kg)	4910	1570	4800	3690	2000
	Manganese (Mn) (mg/kg)	844	409	261	214	163
	Mercury (Hg) (mg/kg)	<0.050	0.184	0.101	0.189	0.150
	Molybdenum (Mo) (mg/kg)	0.79	1.91	0.83	0.73	0.90
	Nickel (Ni) (mg/kg)	14.7	5.95	19.2	29.6	10.7
	Phosphorus (P) (mg/kg)	346	710	1040	1220	858
	Potassium (K) (mg/kg)	560	810	800	560	490
	Selenium (Se) (mg/kg)	<0.20	0.56	2.62	3.66	1.45
	Silver (Ag) (mg/kg)	0.15	0.24	0.17	0.39	0.31
	Sodium (Na) (mg/kg)	82	<50	178	89	<50
	Strontium (Sr) (mg/kg)	51.3	136	105	184	224
	Thallium (Tl) (mg/kg)	0.055	<0.050	0.060	0.088	<0.050
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	774	154	345	177	78.3
	Uranium (U) (mg/kg)	0.299	0.346	2.87	8.10	3.12
	Vanadium (V) (mg/kg)	56.5	12.9	36.6	29.9	9.31

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-27 Soil/Sediment 05-SEP-16 CSS16-BKG-20D	L1826551-28 Soil/Sediment 05-SEP-16 CSS16-BKG-21	L1826551-29 Soil/Sediment 05-SEP-16 CSS16-BKG-22	L1826551-30 Soil/Sediment 05-SEP-16 CSS16-BKG-22D	L1826551-31 Soil/Sediment 05-SEP-16 CSS16-BKG-23
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	6.40	6.41	5.55	5.57	6.75
Organic / Inorganic Carbon	Total Organic Carbon (%)	41.8	2.27	6.10	6.12	0.898
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<5.0 DLR	<1.0	<2.0 DLR	<2.0 DLR	<1.0
	Available Phosphate-P (mg/kg)	8.3 DLR	4.2	98 DLHC	98 DLHC	14.6
	Available Potassium (mg/kg)	160 DLR	59	90	86	112
Metals	Aluminum (Al) (mg/kg)	3440	13900	10900	11800	10900
	Antimony (Sb) (mg/kg)	0.24	0.30	0.27	0.24	0.37
	Arsenic (As) (mg/kg)	1.47	7.54	6.56	7.18	6.81
	Barium (Ba) (mg/kg)	58.4	83.5	132	123	65.8
	Beryllium (Be) (mg/kg)	0.12	0.32	0.24	0.22	0.29
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	8.6	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	1.06	0.205	0.390	0.375	0.163
	Calcium (Ca) (mg/kg)	31300	5030	4600	4050	5060
	Chromium (Cr) (mg/kg)	5.71	31.7	30.3	33.4	28.4
	Cobalt (Co) (mg/kg)	2.39	9.30	7.66	8.48	9.01
	Copper (Cu) (mg/kg)	33.1	21.7	24.1	24.8	36.2
	Iron (Fe) (mg/kg)	4920	26600	24900	24600	23600
	Lead (Pb) (mg/kg)	3.58	5.09	5.65	4.81	5.00
	Lithium (Li) (mg/kg)	2.3	15.4	8.5	7.7	9.8
	Magnesium (Mg) (mg/kg)	1990	5760	4530	5620	5670
	Manganese (Mn) (mg/kg)	165	341	404	452	429
	Mercury (Hg) (mg/kg)	0.151	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	0.80	0.44	0.69	0.58	0.48
	Nickel (Ni) (mg/kg)	10.7	22.7	17.6	22.2	21.6
	Phosphorus (P) (mg/kg)	849	499	1060	1060	720
	Potassium (K) (mg/kg)	510	750	650	640	930
	Selenium (Se) (mg/kg)	1.48	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.26	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	<50	102	93	102	177
	Strontium (Sr) (mg/kg)	196	43.1	47.3	36.4	38.3
	Thallium (Tl) (mg/kg)	<0.050	0.075	0.059	0.051	0.073
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	83.4	849	709	750	741
	Uranium (U) (mg/kg)	2.63	0.603	0.348	0.290	0.427
	Vanadium (V) (mg/kg)	9.45	77.1	66.1	72.2	64.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-1	L1826551-2	L1826551-3	L1826551-4	L1826551-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-07	CSS16-08	CSS16-09	CSS16-10	CSS16-11
Grouping / **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	53.3	59.3	57.6	53.0	54.1
Zirconium (Zr) (mg/kg)	6.2	5.7	2.9	5.4	3.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-7 Soil/Sediment 19-AUG-16 CSS16-12	L1826551-8 Soil/Sediment 19-AUG-16 CSS16-13	L1826551-9 Soil/Sediment 02-SEP-16 CSS16-17	L1826551-10 Soil/Sediment 02-SEP-16 CSS16-18	L1826551-11 Soil/Sediment 02-SEP-16 CSS16-19
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Zinc (Zn) (mg/kg)	54.4	56.5	43.2	56.4	49.6
	Zirconium (Zr) (mg/kg)	3.0	3.1	1.5	6.3	4.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-12	L1826551-13	L1826551-14	L1826551-15	L1826551-16
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	02-SEP-16	02-SEP-16	02-SEP-16	05-SEP-16	05-SEP-16
Sampled Time					
Client ID	CSS16-20	CSS16-21	CSS16-22	CSS16-43	CSS16-44
Grouping **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	50.8	56.7	55.5	53.2	46.9
Zirconium (Zr) (mg/kg)	3.8	4.2	4.8	6.1	2.4

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-17 Soil/Sediment 05-SEP-16 CSS16-45	L1826551-18 Soil/Sediment 05-SEP-16 CSS16-46	L1826551-19 Soil/Sediment 17-AUG-16 CSS16-BKG-02	L1826551-20 Soil/Sediment 17-AUG-16 CSS16-BKG-03	L1826551-21 Soil/Sediment 17-AUG-16 CSS16-BKG-04
SOIL						
Metals	Zinc (Zn) (mg/kg)	70.1	56.1	62.5	119	54.3
	Zirconium (Zr) (mg/kg)	2.8	6.4	1.2	<1.0	1.2

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-22 Soil/Sediment 19-AUG-16 CSS16-BKG-05	L1826551-23 Soil/Sediment 19-AUG-16 CSS16-BKG-06	L1826551-24 Soil/Sediment 05-SEP-16 CSS16-BKG-18	L1826551-25 Soil/Sediment 05-SEP-16 CSS16-BKG-19	L1826551-26 Soil/Sediment 05-SEP-16 CSS16-BKG-20
Sample ID **Description** **Sampled Date** **Sampled Time** **Client ID**						
SOIL						
Metals	Zinc (Zn) (mg/kg)	74.3	46.7	41.2	27.3	65.1
	Zirconium (Zr) (mg/kg)	2.0	1.1	1.7	4.7	1.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-27 Soil/Sediment 05-SEP-16 CSS16-BKG-20D	L1826551-28 Soil/Sediment 05-SEP-16 CSS16-BKG-21	L1826551-29 Soil/Sediment 05-SEP-16 CSS16-BKG-22	L1826551-30 Soil/Sediment 05-SEP-16 CSS16-BKG-22D	L1826551-31 Soil/Sediment 05-SEP-16 CSS16-BKG-23
Sample ID / **Description** / **Sampled Date** / **Sampled Time** / **Client ID**						
SOIL						
Metals	Zinc (Zn) (mg/kg)	63.7	64.5	67.2	66.6	43.8
	Zirconium (Zr) (mg/kg)	1.4	1.1	1.3	1.2	1.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Lithium (Li)	DUP-H,J	L1826551-21, -22, -23, -24, -25, -26, -27, -28, -29, -30, -31

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0148

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

RUSH

Priority processing

Please log all highlighted soils for:

- CSR + Full Metals
- TOC/TIC
- Avail N, P, K

"Group A" soils are due Sept 16 with 'P' codes

"Group B" soils are due Sept 21, no priority code.

SK sublets should go out Monday.

Group A Tissue

SCN	Tissue ID
G0149-8	BERRY16-11
G0149-9	ANT16-02
G0149-10	BERRY16-12
G0149-11	BERRY16-13
G0149-12	SPRUCE16-02
G0150-1	BERRY16-14
G0150-2	BERRY16-15
G0150-3	ANT16-03
G0150-4	ANT16-03d
G0150-5	SPRUCE16-03
G0150-6	BERRY16-BKG-04
G0150-7	BERRY16-BKG-05
G0150-8	BERRY16-BKG-06
G0150-9	BERRY16-BKG-07
G0150-10	BERRY16-BKG-08
G0150-11	BERRY16-BKG-09
G0150-12	BERRY16-16
G0152-1	BERRY16-17
G0152-6	WILLOW16-06
G0152-7	WILLOW16-07
G0152-8	GRASS16-03
G0152-9	GRASS16-04
G0152-10	WILLOW16-08
G0152-11	GRASS16-05
G0152-12	GRASS16-06
G0156-1	GRASS16-07
G0156-2	GRASS16-08
G0156-3	WILLOW16-09
G0156-4	GRASS16-10
G0156-5	WILLOW16-10
G0156-6	GRASS16-09
G0156-7	SPRUCE16-06
G0156-8	SPRUCE16-07
G0168-3	SPRUCE16-15
G0168-4	ANT16-04
G0168-5	AR16-05
G0168-6	WILLOW16-BKG-07
G0168-7	SPRUCE16-BKG-06
G0168-8	AR16-BKG-01
G0168-9	WILLOW16-BKG-08
G0168-10	SPRUCE16-BKG-07
G0168-11	ANT16-BKG-01
G0168-12	AR16-BKG-02
G0169-1	WORM16-BKG-02
G0169-2	WILLOW16-BKG-09
G0169-3	WILLOW16-BKG-09d
G0169-4	SPRUCE16-BKG-08
G0169-5	SPRUCE16-BKG-08d
G0169-9	WILOW16-21
G0169-10	WILLOW16-22
G0169-11	WILOW16-23
G0169-12	WILLOW16-24
G0170-1	SPRUCE16-16
G0170-2	ANT16-05
G0170-3	AR16-05
G0170-4	BEETLE16-02
G0170-5	WILLOW16-BKG-10
G0170-6	SPRUCE16-BKG-09
G0170-7	ANT16-BKG-02
G0170-8	ANT16-BKG-02d
G0170-9	SPRUCE16-BKG-10
G0170-10	ANT16-BKG-03
G0170-11	ANT16-BKG-03d
G0170-12	WILLOW16-25
G171-1	SPRUCE16-17
G171-2	WORM16-05
G171-3	SPRUCE16-18
G171-4	GRASS16-BKG-09
G171-5	GRASS16-BKG-09d
G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B So

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

B 13
V 36 } 63
INV 14

49 + 14 = 70

L1826551-COFC

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Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: aatkinson@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hold	Number of Containers
[redacted]	CSS16-01	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-04	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-01	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-07	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-08	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-09	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-10	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-11	19-Aug-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3, 4, 10°C			

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		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
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Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD											Number of Containers
[redacted]	CSS16-BKG-02	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-03	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-04	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-05	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-06	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-12	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-13	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-14	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-15	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-16	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-07	19-Aug-16		Soil/Sediment	x											2
[redacted]																

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(4) JC	SEP - 9 2016	9am	3,4,10°C			

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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-17	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-18	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-19	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-20	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-21	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-22	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-23	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-08	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-09	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-24	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-10	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-25	03-Sep-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

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[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-11	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-26	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-27	03-Sep-16	FDA - G0162-04	Soil/Sediment	x	2
[redacted]	CSS16-27d	03-Sep-16	FD - G0162-03	Soil/Sediment	x	2
[redacted]	CSS16-BKG-12	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-13	03-Sep-16	FDA - G0162-07	Soil/Sediment	x	2
[redacted]	CSS16-BKG-13d	03-Sep-16	FD - G0162-06	Soil/Sediment	x	2
[redacted]	CSS16-28	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-29	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-30	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-31	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-32	04-Sep-16		Soil/Sediment	x	2

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Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

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Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

[redacted] Sample # [redacted]	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-33	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-34	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-35	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-14	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-15	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-16	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-17	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-36	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-37	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-38	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-39	04-Sep-16	FDA - G0163-12	Soil/Sediment	x	2
[redacted]	CSS16-39d	04-Sep-16	FD - G0163- 11	Soil/Sediment	x	2

L1826551-COFC

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3,4,10'c			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0148

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-40	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-41	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-42	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-18	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-19	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20d	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-44	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-21	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-22	05-Sep-16	FDA- G0165-01	Soil/Sediment	x	2

L1826551-COFC

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3, 4, 10°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0148

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	**Analysis Request**
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	**ALS Contact:** Can Dang	**Sampler:** EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-22d	05-Sep-16	FD - G0164-12	Soil/Sediment	x	2
[redacted]	CSS16-45	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-46	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-23	05-Sep-16	FDA-G0165-05	Soil/Sediment	x	2
[redacted]	CSS16-BKG-23d	05-Sep-16	FD-G0165-04	Soil/Sediment	x	2
[redacted]	CSS16-BKG-24	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-25	05-Sep-16		Soil/Sediment	x	2
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

ATTACHMENT 2
QA/QC Methods

Quality Assurance / Quality Control Methods

To ensure that the sampling and analytical data for the 2016 background soil sampling were interpretable, meaningful and reproducible, conformance to a Golder Quality Assurance and Quality Control (QA/QC) program was followed. This involved using QA/QC measures in both the collection (field program) and analysis (laboratory program) of samples. The following discussion includes a brief summary of the QA/QC measures implemented by Golder during the field program and during our review of the data, as well as the QA/QC measures implemented by the analytical laboratory.

Quality Assurance (QA) measures used in the collection, preservation and shipment of samples included the following measures:

- Sampling methods were consistent with established Golder protocols and provincial/federal requirements;
- Field notes were recorded during all stages of the investigation;
- Sample locations were recorded by a professional land surveyor, or were measured from fixed points and marked in the field; and
- Samples were subsequently transported to the laboratory using Golder chain-of-custody procedures.

Data was verified by checking the summary tables against the original laboratory reports and sample custody forms.

The Quality Control (QC) measures established for the field program included:

- Submission of field duplicate samples. A field duplicate sample is a second sample of a certain media (e.g., soil; water) from the same location that is submitted to the analytical laboratory under a separate label.
- The relative percent difference (RPD) between field duplicate sample results was used to assess duplicate sample data. The RPD is a measure of the variability between two outcomes from the same procedure or process and is calculated by:

$$RPD(\%) = absolute\left(\frac{(x_1 - x_2)}{average(x_1, x_2)}\right) \times 100$$

  Where x_1 is the original sample result and x_2 is the blind field duplicate result. In general, the RPD should not be more than 35% on average, or a maximum of 50%, depending on the parameter and the concentration. A RPD greater than 50% may reflect “within jar” variability, which reflects the nature of the contaminant distribution, or variation in the test procedures. RPD values exceeding this data quality objective (DQO) were examined and assessed on a case-by-case basis.

Where the concentration of a given parameter is less than five times the method detection limit (MDL), the laboratory results are considered to be less precise and the RPD is not calculated. For parameters with concentrations less than five times the MDL, the difference factor (DF) between the sample and its duplicate is calculated by:

$$DF = absolute\left(\frac{(x_1 - x_2)}{MDL}\right)$$

Where x_1 is the original sample result and x_2 is the blind field duplicate result. In general, the DF should not be more than two (2).

The following DQOs were established for the laboratory program:

- The laboratory that was used must have achieved proficiency certification by the Canadian Association for Laboratory Accreditation (CALA) for the analyses conducted; and
- An internal Quality Control Report was completed and reviewed by the laboratory prior to submission to Golder. Copies of these reports are provided in Appendix L.

The following criteria were considered acceptable for laboratory QA/QC samples:

- For organic analytes, analytical duplicates should exhibit less than 50%, for a specific set;
- For inorganic elements, analytical duplicates should exhibit less than 35% in soil samples, for a specific set;
- Analytical recovery results for reference materials or spiked standards should be within laboratory-applied certified values for inorganic elements and organic compounds; and
- Analytical blanks should have concentrations below the detection limits used for the specific analysis.

ATTACHMENT 3
Baseline Results and Photos

Table 1. Summary list of Mt. Polley soil samples and chemical analysis required.

		ANALYSIS REQUIRED		
SOIL PIT #	HORIZON	PHYSICAL	CHEMICAL	METALS
MP95 - 30	Bg		x	x
MP95 - 31	Bm		x	x
	Cg			
MP95 - 32	Bg	x l	x	x
	Cg	x l		
MP95 - 33	Bg		x	x
	Cg			
MP95 - 34	Bg	x sl	x	x
	Cg	x cl		
MP95 - 35	Btg		x	x
	C			
MP95 - 36	Bm		x	x
	C			
MP95 - 37	Btg	x cl	x	x
	C	x l		
MP95 - 38	Bg		x	x
	Cg			
MP95 - 39	Btg	x l	x	x
	Cg	x l		
MP95 - 40	Of		x	x
	II Cg	x sic		
MP95 - 41	Btg		x	x
	C			
MP95 - 42	Btg		x	x
	II C			
MP95 - 43	Btg	x cl	x	x
	C	x cl		
MP95 - 44	Btg		x	x
	C			
MP95 - 45	Bm	x sl/ls	x	x
MP95 - 46	Bf		x	x
MP95 - 47	Bf		x	x
MP95 - 48	Bf1		x	x
MP95 - 49	Bf		x	x
MP95 - 50	Ah	x sl	x	x
MP95 - 51	Ah		x	x
MP95 - 52	Bt		x	x
	C	x l		
MP95 - 53	Bf	x sl/ls	x	x
MP95 - 54	Bm		x	x

May 31/95 – added these to particle size X

MP95 - 55	Bt	X	x	x
	C	X		

Table 2. Specific analysis required for Mt. Polley soil samples as per Table 1.

1. Physical

a. % sand, silt, clay and texture
b. coarse fragments > 2mm

2. Chemical

a. pH buffered pH EC OM% N%
b. P K Ca Mg Na (available ppm)

3. Metals

a. total metal content (mg/kg) of the soil samples for the following metals

aluminum	antimony	arsenic	barium	beryllium	cadmium	calcium	chromium
cobalt	iron	lead	magnesium		manganese		moly
nickel	potassium		selenium	silver	sodium	tin	zinc

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Jun 5/95

Wayne Blashill

SAMPLE	pH	Buffered pH	Sodium (ppm) Na	Salts (mmhos/cm) E.C.	Organic Matter (%) O.M.	Total Nitrogen (%) N	AVAILABLE NUTRIENTS (ppm) Phosphorus P	Potassium K	Calcium Ca	Magnesium Mg	Copper Cu	Zinc Zn	Iron Fe	Manganese Mn	Boron B	Sulfate-Sulfur S
MP95-30 Bg	6.2		12	0.18	0.79	0.05	0.9	45	1050	180						
-31 Bm	5.6		9.5	.26	3.2	.10	3.2	35	1300	180						
-32 Bg	6.1		11	.18	.37	.03	.9	30	650	115						
-33 Bg	6.1		18	.18	.49	.03	<.2	44	1150	285						
-34 Bm	6.3		11	.30	2.4	.08	.7	59	2200	230						
-35 Btg	6.4		12	.16	.32	.03	.5	35	900	105						
-36 Bm	5.0		9.0	.24	3.7	.11	20	55	650	185						
-37 Btg	6.6		18	.16	.35	.03	.5	45	850	255						
-38 Bg	5.9		11	.18	.92	.05	1.8	58	800	180						
-39 Btg	5.9		18	.14	.24	.03	6.1	68	1150	290						
-40 Of	5.4		41	.26	51	1.5	15	113	4300	590						
-41 Btg	5.9		15	.14	.43	.03	2.0	28	700	175						
-42 Btg	5.9		8.5	.14	.40	.02	.9	30	700	115						

COMMENTS:

#5 1720 Voyageur Way, Richmond, B.C. V6X 3G9 273-8

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June 5/95

Wayne Blashill

SAMPLE		pH	Buffered pH	Sodium (ppm) Na	Salts (mmhos/cm) E.C.	Organic Matter (%) O.M.	Total Nitrogen (%) N	AVAILABLE NUTRIENTS (ppm) Phosphorus P	Potassium K	Calcium Ca	Magnesium Mg	Copper Cu	Zinc Zn	Iron Fe	Manganese Mn	Boron B	Sulfate-Sulfur S
MP95-43	Btg	6.6		9.0	0.18	0.59	0.03	13	48	750	145						
-44	Btg	6.2		19	.18	.58	.03	4.1	55	1250	150						
-45	Bm	5.5		7.5	.22	2.8	.09	114	188	650	80						
-46	Bf	5.0		7.0	.18	5.3	.12	66	120	300	45						
-47	Bf	5.5		11	.14	3.2	.10	45	53	400	45						
-48	Bf1	5.1		13	.16	2.6	.09	82	77	350	45						
-49	Bf	5.2		9.0	.20	6.6	.16	64	210	850	95						
-50	Ah	5.1		12	.32	11.2	.34	10	70	1300	100						
-51	Ah	5.8		18	.28	6.5	.21	4.9	110	2950	245						
-52	Bt	6.1		12	.18	.43	.03	1.1	53	1500	150						
-53	Bf	5.2		6.5	.16	3.9	.13	70	108	750	45						
-54	Bm	4.9		7.0	.22	5.0	.08	116	125	350	55						
-55	Bm	5.4		23	.18	.33	.02	30	38	700	155						

COMMENTS:

#5 11720 Voyageur Way, Richmond, B.C. V6X 1Z8 273-8500

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June 6/95

Wayne Blashill / Dan Ruzea

			GRAVEL				SAND							SILT		CLAY	
			COARSE		FINE		VCS	CS	MEDIUM		FS	VERY FINE		#1	#2	#1	#2
			3 inches	3/4 inch	1/2 inch	#4 – 4.76 mm	#10 – 2.00 mm	#18 – 1.00 mm	#35 – 0.50 mm	#40 – 0.42 mm	#60 – 0.25 mm	#140 – 0.105 mm	#200 – 0.074 mm	#230 – 0.063 mm	#270 – 0.053 mm	4 microns	2 microns
IIIf. 95-32	Bg	Loam					43.7								46.3		10.0
	Cg	Loam					37.9								40.3		21.8
34	BgI	SLOAM sandy loam.					60.9								26.0		13.1
	Cg	Loam					35.1								40.3		24.6
37	Btg	SiL-L silt loam-loam.					35.7								48.8		16.5
	C	Loam					31.0								49.0		20.0
39	Btg	Loam					36.9								45.0		18.1
	Cg	Loam					37.4								47.2		15.4
40	IICg	SiCL silty clay loam.					0.2								61.0		38.8
43	Btg	Loam					41.8								44.8		13.4
	C	Loam					36.0								43.7		20.3
45	Bm	L-SL					52.3								37.2		10.5
50	Ah	Loam					45.0								34.1		15.9
52	C	Loam					40.4								43.7		15.9
53	Bf	SL sandy loam					54.8								37.4		7.8
55	Bt	SL sandy loam.					58.1								34.3		7.6
	C	L-SL loam-sandy loam.					51.3								35.2		13.5

Results are reported as % on a weight basis VCS = very coarse sand CS = coarse sand FS - fine sand

Reported results are of a size which is less than the designated sieve opening, but greater than the next reported results designated sieve opening.

Particle size is determined by the pipette method. Sedimentation times are determined by using the Tanner and Jackson Nomograph I Sar[illegible]dent

is determined by wet sieving. Manual of Soil Sampling and Methods of Anal[illegible] 1978. J.A. McKeague, Canadian Society of Soil Science.

PSDI

Fine 5/95

Wayne Blashill

*NOTE: Do not use this table for texture. This data can only be used for % gravel.

		GRAVEL*				SAND These % are based on total sample and not just <2 mm fraction								SILT	CLAY
		COARSE		FINE		VCS	CS	MEDIUM		FS	VERY FINE	#1 V		#2	#1	#2
		3 inches	3/8 inch	1/2 inch	#4 - 4.75 mm	#10 - 2.00 mm	#18 - 1.00 mm	#35 - 0.50 mm	#40 - 0.42 mm	#60 - 0.25 mm	#140 - 0.106 mm	#200 - 0.075 mm	#230 - 0.063 mm	#270 - 0.053 mm	4 microns	2 microns
MP95-32	Bg			9.9		39.4								41.7		9.0
MP95-32	Cg			21.3		29.8								31.7		17.2
MP95-34	Bg1			26.9		44.5								17.0		9.6
MP95-34	Cg			11.2		31.2								35.8		21.8
MP95-37	Btg			—		35.7								48.8		15.5
MP95-37	C			13.5		26.8								42.4		17.3
MP95-39	Btg			15.0		31.4								38.2		15.4
MP95-39	Cg			15.7		31.5								39.8		13.0
MP95-40	IICg			—		0.2								61.0		38.0
MP95-43	Btg			23.2		32.1								31.5		10.4
MP95-43	C			—		36.0								43.7		20.3
MP95-45	Bm			60.8		20.5								14.6		4.1
MP95-50	Ah			40.9		26.6								23.1		9.4
MP95-52	C			26.3		29.8								32.2		11.7
MP95-53	Bf			39.8		33.0								22.5		4.7
MP95-55	Bt			—		58.1								34.3		7.6
MP95-55	C			49.7		25.8								17.7		6.8

Texture can be calculated using only S, Si, C

Results are reported as % on a weight basis. VCS = very coarse sand CS = coarse sand FS - fine sand

Reported results are of a size which is less than the designated sieve opening, but greater than the next reported results designated sieve opening.

Particle size is determined by the pipette method. Sedimentation time[illegible]e determined by using the Tanner and Jackson Nomograph [illegible]nd content is det[illegible]ied by wet sieving. Manual of Soil Sampling and Methods o[illegible]alysis, 1978. J.A. McKeague. Canadian Society of Soil Sci[illegible]

P.1

JUN 05 '95 08:45 PACIFIC SOIL ANALYSIS INC.

PSAI

June 6/95

Wayne Blashill / Dan Ruzza

		GRAVEL				SAND								SILT		CLAY	
		COARSE		FINE		VCS	CS	MEDIUM		FS	VERY FINE			#1	#2	#1	#2
		3 inches	3/4 inch	1/2 inch	#4 – 4.76 mm	#10 – 2.00 mm	#18 – 1.00 mm	#35 – 0.50 mm	#40 – 0.42 mm	#60 – 0.25 mm	#140 – 0.105 mm	#200 – 0.074 mm		#230 – 0.063 mm	#270 – 0.053 mm	4 microns	2 microns
MP 95-32	Bg	Loam				43.7									46.3		10.0
	Cg	Loam				37.9									40.3		21.8
34	Bgl	SLOAm				60.9									26.0		13.1
	Cg	Loam				35.1									40.3		24.6
37	Btg	SiL-L				35.7									48.8		16.5
	C	Loam				31.0									49.0		20.0
39	Btg	Loam				36.9									45.0		18.1
	Cg	Loam				37.4									47.2		15.4
40	IICg	SiCL				0.2									61.0		38.8
43	Btg	Loam				41.8									44.8		13.4
	C	Loam				36.0									43.7		20.3
45	Bm	L-SL				52.3									37.2		10.5
50	Ah	Loam				45.0									39.1		15.9
53	C	Loam				40.4									43.7		15.9
53	Bt	SL				54.8									37.4		7.8
55	Bt	SL				58.1									34.3		7.6
	C	L-SL				51.3									35.2		13.5

Results are reported as % on a weight basis. VCS = very coarse sand CS = coarse sand FS = fine sand

Reported results are of a size which is less than the designated sieve opening, but greater than the next reported results designated sieve opening.

Particle size is determined by the pipette method. Sedimentation times are determined by using the Tanner and Jacobs Nomograph I. Sand content is determined by wet sieving. Manual of Soil Sampling and Methods of Analysis 1978. J.A. McKeague Canadian Society of Soil Science

PSAI

Jun 5/95

Wayne Blashill Dan Royea

		GRAVEL				SAND							SILT		CLAY	
		COARSE		FINE		VCS	CS	MEDIUM		FS	VERY FINE		#1	#2	#1	#2
		3 inches	3/4 inch	1/2 inch	#4 – 4.76 mm	#10 – 2.00 mm	#18 – 1.00 mm	#35 – 0.50 mm	#40 – 0.42 mm	#60 – 0.25 mm	#140 – 0.105 mm	#200 – 0.074 mm	#230 – 0.063 mm	#270 – 0.053 mm	4 microns	2 microns
MP95-32	Bg			9.9		39.4								41.7		9.0
MP95-32	Cg			21.3		29.8								31.7		17.2
MP95-34	Bg1			26.9		44.5								19.0		9.6
MP95-34	Cg			11.2		31.2								35.8		21.8
MP95-37	Btg			–		35.7								48.8		15.5
MP95-37	C			13.5		26.8								42.4		17.3
MP95-39	Btg			15.0		31.4								38.2		15.4
MP95-39	Cg			15.7		31.5								39.8		13.0
MP95-40	IICg			–		0.2								61.0		38.0
MP95-43	Btg			23.2		32.1								34.5		10.4
MP95-43	C			–		36.0								43.7		20.3
MP95-45	Bm			60.8		20.5								14.6		4.1
MP95-50	Ah			40.9		26.6								23.1		9.4
MP95-52	C			26.3		29.8								32.2		11.7
MP95-53	Bf			39.8		33.0								22.5		4.7
MP95-55	Bt			–		58.1								34.3		7.6
MP95-55	C			49.7		25.8								17.7		6.8

Results are reported as % on a weight basis. VCS = very coarse sand CS = coarse sand FS - fine sand

Reported results are of a size which is less than the designated sieve opening, but greater than the next reported results designated sieve opening. Particle size is determined by the pipette method. Sedimentation times are determined by using the Terzaghi and Jackson Nomograph. Sand content is determined by wet sieving. Manual of Soil Sampling and Methods of Analysis, 1978 J.A. McKeague, Canadian Society of Soil Science.

PSAI

June 5/95

Wayne Blashill / Dan Royea

SAMPLE	pH	Buffered pH	Sodium (ppm) Na	Salts (mmhos/cm) E.C.	Organic Matter (%) O.M.	Total Nitrogen (%) N	AVAILABLE NUTRIENTS (ppm) Phosphorus P	Potassium K	Calcium Ca	Magnesium Mg	Copper Cu	Zinc Zn	Iron Fe	Manganese Mn	Boron B	Sulfate-Sulfur S
MP95-30 Bg	6.2		12	0.18	0.79	0.05	0.9	45	1050	180						
-31 Bm	5.6		9.5	.31	3.2	.10	3.3	35	1300	180						
-32 Bg	6.1		11	.18	.37	.03	.9	30	650	115						
-33 Bg	6.1		18	.18	.49	.03	<.2	44	1150	285						
-34 Bm	6.3		11	.30	2.4	.08	.7	59	2000	230						
-35 Btg	6.4		12	.16	.32	.03	.5	35	900	105						
-36 Bm	5.0		9.0	.24	3.7	.11	20	55	650	185						
-37 Btg	6.6		18	.16	.35	.03	.5	45	850	255						
-38 Bg	5.9		11	.18	.92	.05	1.8	58	800	180						
-39 Btg	5.9		18	.14	.24	.03	6.1	68	1150	290						
-40 Of	5.4		41	.26	51	1.5	15	113	4300	590						
-41 Btg	5.9		15	.14	.43	.03	2.0	28	700	175						
-42 Btg	5.9		8.5	.14	.40	.02	.9	30	700	115						

COMMENTS:

11720 Voyageur Way. Richmond. B.C. V6X 3G9 273

PSAI

June 5/95

Wayne Blashill / Dan Royea

SAMPLE		pH	Buffered pH	Sodium (ppm) Na	Salts (mmhos/cm) E.C.	Organic Matter (%) O.M.	Total Nitrogen (%) N	AVAILABLE NUTRIENTS (ppm) Phosphorus P	Potassium K	Calcium Ca	Magnesium Mg	Copper Cu	Zinc Zn	Iron Fe	Manganese Mn	Boron B	Sulfate-Sulfur S
MP95-43	Btg	6.6		9.0	0.18	0.59	0.03	13	48	750	145						
-44	Btg	6.2		19	.18	.58	.03	4.1	55	1250	150						
-45	Bm	5.5		7.5	.22	2.8	.09	114	188	650	80						
-46	Bf	5.0		7.0	.18	5.3	.12	66	120	300	45						
-47	Bf	5.5		11	.14	3.2	.10	45	53	400	45						
-48	Bf1	5.1		13	.16	2.6	.09	82	77	350	45						
-49	Bf	5.2		9.0	.20	6.6	.16	64	210	850	95						
-50	Ah	5.1		12	.32	11.2	.34	10	70	1300	100						
-51	Ah	5.8		18	.28	6.5	.21	4.9	110	2950	215						
-52	Bt	6.1		12	.18	.43	.03	1.1	53	1500	150						
-53	Bf	5.2		6.5	.16	3.9	.13	70	108	750	45						
-54	Bm	4.9		7.0	.22	5.0	.08	116	125	350	55						
-55	Bm	5.4		23	.18	.33	.02	30	38	700	155						

COMMENTS:

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APPENDIX E

SOIL DESCRIPTIONS

SOIL PIT # MP95-11
Orthic Humo-Ferric Podzol with a Mv over Rj landform sampled near the primary crusher.

Horizon	Depth	Description
LFH	10-0cm	Leaf / needle litter with a moder humus layer.
Bf	0-20	Strong brown (7.5YR4/6m); sandy loam; 30% coarse fragments (cf); abundant fine roots; moderate medium subangular blocky structure; friable and slightly sticky consistence.
BC	20-40	Brown (10YR4/3m); sandy loam; 45% cf; plentiful very fine roots; moderate-strong coarse subangular blocky structure; firm and slightly sticky consistence.
R	40-100+	

SOIL PIT # MP95-12a
Brunisolic Gray Luvisol with a Mj landform sampled near the concentrator building.

Horizon	Depth	Description
LFH	15-0	Leaf / needle litter with a moder humus layer.
Bm	0-20	Brown (10YR4/3m); sandy loam; 20% cf; abundant coarse roots; weak-moderate medium subangular blocky structure; very friable and slightly sticky consistence.
Btg	20-60	Brown (10YR5/3m); dark yellowish brown (10YR4/6m) mottles; loam; 20% cf; few fine roots; strong fine platey structure; friable and sticky consistence.
BC	60-120	Brown (10YR4/3m); loam; 20% cf; moderate coarse subangular blocky structure; firm and sticky consistence.
Ck	120-180	Brown (10YR4/3m); loam; 25% cf; moderate coarse subangular blocky structure; firm and sticky consistence.

SOIL PIT # MP95-13
Orthic Humo-Ferric Podzol with a Mv over Rj landform sampled near crusher conveyor.

Horizon	Depth	Description
LFH	20-0	Leaf / needle litter with a moder humus layer.
Bf	0-28	Strong brown (7.5YR4/6m); loamy sand; 25% cf; abundant coarse roots; weak-moderate fine subangular blocky structure; friable and slightly sticky consistence.
BC	28-58	Brown (10YR4/3m); loamy sand; 85% cf; abundant medium roots; moderate medium subangular blocky structure; friable and slightly sticky consistence.
R	58+	

SOIL PIT # MP95-14a
Brunisolic Gray Luvisol with a Mj landform sampled near the coarse ore stockpile.

Horizon	Depth	Description
LFH	35-0	Leaf / needle litter with a moder humus layer; abundant coarse roots.
Bm	0-30	Brown (10YR4/3m); loam; 25% cf; plentiful medium roots; weak-moderate fine subangular blocky structure; very friable and sticky consistence.
Btg	30-80	Brown (10YR4/3m); dark yellowish brown (10YR4/6m) mottles; loam; 25% cf; few fine roots; strong coarse subangular blocky structure; friable and sticky consistence.
C	80-105+	Dark grayish brown (10YR4/2m); loam; 30% cf; moderate-strong coarse subangular blocky structure; very friable and sticky consistence.

SOIL PIT # MP95-15
Orthic Dystric Brunisol with a Mv over Rj landform sampled near crusher conveyor.

Horizon	Depth	Description
LFH	3-0	Leaf / needle litter with a mor humus layer.
Bm	0-35	Brown (10YR4/3m); sandy loam; 55% cf; abundant fine roots; weak-moderate medium subangular blocky structure; slightly sticky consistence.
R	35+	

SOIL PIT # MP95-16a
Podzolic Gray Luvisol with a Mv over R landform sampled near the fine ore stockpile.

Horizon	Depth	Description
LFH	15-0	Leaf / needle litter with a moder humus layer.
Bf	0-20	Brown (7.5YR4/4m); sandy loam; 20% cf; abundant coarse roots; moderate medium subangular blocky structure; very friable and slightly sticky consistence.
Btg	20-45	Brown (10YR4/3m); dark yellowish brown (10YR4/6m) mottles; loam; 20% cf; plentiful fine roots;moderate-strong coarse subangular blocky structure; firm and sticky consistence.
BC	45-110	Brown (10YR4/3m); loam; 45% cf; weak-moderate fine subangular blocky structure; friable and sticky consistence.
R	110+	

SOIL PIT # MP95-17
Typic Mesisol with a Ob over LG landform sampled at the concentrator building.

Horizon	Depth	Description
Om	0-200	Black (10YR2/1m); mesic; abundant coarse roots.
Cg	200+	Dark greenish gray (5GY4/1m); clay loam; 10% cf; moderate-strong massive structure; sticky consistence.

SOIL PIT # MP95-19
Brunisolic Gray Luvisol with a Ov over M landform sampled near the concentrator building.

Horizon	Depth	Description
Of/LFH	40-0	Black (10YR2/1m); fibric; leaf / needle litter with a organic/moder humus layer; abundant coarse roots.
Ah	0-15	Loam; 20% cf; abundant coarse roots.
Bm	15-30	Loam; 20% cf; plentiful fine roots.
Bt	30-60	Loam; 30% cf; few fine roots.
BC	60-90	Loam; 35% cf.
C	90-130	Loam; 35% cf. 15-0 Leaf / needle litter with a moder humus layer.
Bm	0-20	Brown (10YR4/3m); sandy loam; 20% cf; abundant coarse [s]
Om	0-20_	
Cg	200+	Dark greenish gray (5GY4/1m); clay loam; 10% cf;

moderates
Brunisolic Gray Luvisol with a Ov over M landform sampled_

Horizon	Depth	Description
Of/LFH	40-0	Black (10YR2/1m); fibric; leaf / needle litter w

IMPERIAL METALS CORPORATION
MT. POLLEY PROJECT

SOIL SAMPLE RESULTS

Parameter	Sample Number	MP 95 - 11		MP 95 - 12a		MP 95 - 13		MP 95 - 14a		MP 95 - 15	MP 95 - 16a		MP 95 - 17		MP 95 - 19	
	Horizon	B	C	B	C	B	C	B	C	B	B	C	Om	Cg	Ah	C
	Detection Limit															
Texture																
Textural Class		Loam	Loam			Loam	Loam	Clay loam	Loam						Clay	Loam
% Sand		45.3	51.5			48.5	50.1	36	38.9					35.8	27.5	39
% Silt		38.5	38.3			39.4	38.6	31.4	37.4					37	28.3	36.7
% Clay		16.1	10.2			12.1	11.3	32.6	23.7					27.2	44.2	24.3
% > 2 mm			8.2			5.9	21.9	12.1	19.6							
% < 2 mm			91.8			94.1	78.1	87.9	80.4							
% Moisture	0.01	21.6		15		15.9		22.6		16.8	13.9		80.9		63.4	
pH		5.1		5.1	7.6	5.2		6		5.2	5.9		5.7		5.7	
Buffered pH		6.1		6.2		6.2				6.2	6.9		6.7		6.7	
Salts (mmhos/cm)		0.2		0.26	0.36	0.2		0.2		0.5	0.2		0.31		0.26	
% Organic Matter		2.6		2.3	0.7	3.5		3.7		2.7	1					
Total Nitrogen (%)		0.08		0.09	0.01	0.11		0.15		0.08	0.03		1.58		0.71	
Available Nutrients (ppm)																
Phosphorous		105		55	3	57		5		70	3		7		8	
Potassium		75		60	70	35		125		85	40		60		50	
Calcium		300		700	3250	90		3000		800	1200		6900		4600	
Magnesium		45		180	265	50		355		95	155		7900		490	
Sodium		8		7	22	9		14		14	13		32		33	
Metals (µg/g)																
Arsenic	0.05	5.7		7.9		4.9		6.7		8.4	7.4		3.6		21	
Barium	0.1	125		81		114		265		169	82		231		352	
Cadmium	0.25	<0.25		<0.25		<0.25		0.69			0.25		1.1		1.3	
Chromium	2	26		17		27		45		11	18		28		71	
Cobalt	1	17		14		14		21		13	14		9		42	
Copper	1	131		152		181		1980		249	3349		11100		2990	
Lead	1	6		5		7		6		5	3		5		2	
Mercury	0.001	0.035		0.043		0.047		0.031		0.059	0.056		0.28		0.76	
Molybdenum	4	<4		<4		<4		<4		<4	<4		<4		75	
Nickel	2	31		16		22		42		15	16		27		38	
Selenium	0.5	<0.5		<0.5		<0.5		<0.5		<0.5	<0.5		20		1.5	
Silver	2	<2		<2		<2		<2		<2	<2		<2		<2	
Tin	5	<5		<5		5		<5		<5	<5		<5		9	
Zinc	1	252		49		90		223		81	53		149		180	
Aluminium	10	28700		20800		32400		33200		23900	18600		40900		56400	
Antimony	10	<10		<10		<10		<10		<10	<10		<10		<10	
Beryllium	1	<1		<1		<1		<1		<1	<1		<1		<1	
Boron	0.5	21		11		18		13		13	13		13		24	
Calcium	1	6350		5700		7720		7410		9220	9740		25600		11800	
Iron	2	53700		43400		50700		49600		43700	38500		29600		149000	
Magnesium	0.1	8940		8660		7330		11600		7650	8070		6440		7990	
Manganese	0.2	674		772		646		1430		821	1040		540		5010	
Phosphorus	20	2990		2050		3300		1380		2820	1960		3960		12300	
Potassium	1	1090		794		962		1480		853	724		2370		1830	
Sodium	5	652		114		154		165		143	178		163		166	
Strontium	0.1	131		114		159		53		184	126		124		80	
Titanium	0.3	478		501		943		671		563	546		507		634	
Vanadium	0.5	127		118		136		103		121	104		112		287	

IMPERIAL METALS CORPORATION
MT. POLLEY PROJECT

1995 SOILS QA/QC RESULTS

	Sample ID			
Parameter	MP95 - 11 B Horizon Duplicate	Digestion Blank #1	Digestion Blank #2	Digestion Blank #3
Metals (µg/g)				
Arsenic	2.2	<0.01	<0.02	<0.02
Barium	128	0.001	1.001	0.015
Cadmium	<0.005	<0.005	<0.005	<0.005
Chromium	36	<0.03	<0.03	<0.03
Cobalt	18	<0.02	<0.02	<0.02
Copper	127	<0.015	<0.015	<0.015
Lead	5	<0.08	<0.08	<0.08
Mercury	0.034	<0.0002	<0.0002	<0.0002
Molybdenum	<0.04	<0.04	<0.04	<0.04
Nickel	0.36	<0.025	<0.025	<0.025
Selenium	<0.05	<0.05	<0.05	<0.05
Silver	<0.03	<0.03	<0.03	<0.03
Tin	6	<0.03	<0.03	<0.03
Zinc	103	<0.015	0.03	1.03
Aluminium	28800	<0.15	<0.15	<0.15
Antimony	<0.15	<0.15	<0.15	<0.15
Beryllium	<0.001	<0.006	<0.006	<0.006
Boron	23	0.04	0.05	0.05
Calcium	6740	<0.01	0.14	0.01
Iron	50700	0.18	1.81	0.15
Magnesium	9550	<0.001	0.02	0.01
Manganese	652	<0.003	0.005	<0.003
Phosphorus	2330	<0.4	<0.5	<0.6
Potassium	1170	<1	<2	<3
Sodium	357	<0.1	<0.1	<0.1
Strontium	132	<0.001	<0.001	<0.001
Titanium	512	<0.006	<0.006	<0.006
Vanadium	124	<0.01	<0.01	<0.01

MT. POLLEY

MARCH 21/95

SAMPLE SUMMARY:

SAMPLE #	Horizon
MP95-11	B horizon. (Bm or Bf)
MP95-11	C — parent material.
MP95-12a	B
MP95-12a	C
MP95-13	B
MP95-13	C
MP95-14a	B
MP95-14a	C
MP95-15	B — only
MP95-16a	B
MP95-16a	C
MP95-17	O_m — organic
MP95-17	C_g
MP95-19	Ah
MP95-19	C

TOTAL = 15 samples.

DAN
March 22/95

Table 1. Summary of Soil Physical and Chemical Analysis required for the Mt. Polley Interim Reclamation Plan

. Particle size characteristics for samples. MP95-11, 13, 14a, 17(Cg only), 19 (Both B and C horizons) → also Ah, not Om.

Coarse Fragments					
> 2 mm	< 2 mm	Sand %	Silt %	Clay %	Texture

. Chemical characteristics of the B horizons. also the Om, Ah and MP95-12a (C horizon).

					Available ppm			
pH	Buffered pH	EC mmhos/cm	OM %	N %	P	K	Ca	Mg

. Total metal content of the B horizon (mg/kg). also the Om and Ah.

al	m	antimony	arsenic	barium	beryllium	cadmium	calcium	chromium	cobalt
copper		iron	lead	magnesium	manganese	moly	nickel	potassium	selenium
silver		sodium	tin	zinc					

PSAT

TABLE 2.

Mar 28/95

WB Consulting --- Hallam Knight Piesold

H1271

SAMPLE	pH	Buffered pH	% Sand	% Silt	% Clay	Salts (mmhos/cm) E.C.	Organic Matter (%) O.M.	Total Nitrogen (%) N	AVAILABLE NUTRIENTS (ppm) Phosphorus P	Potassium K	Calcium Ca	Magnesium Mg	Sodium Na	Zinc Zn	Iron Fe	Textural Class	% > 2 mm	% < 2 mm
MP 95-11 B	5.1	6.1	45.3	38.5	16.1	0.20	2.6	0.08	105	75	300	45	8			Loam		
11 C	–	–	51.5	38.3	10.2	–	–	–	–	–	–	–	–			Loam	8.2	91.8
-12a B	5.1	6.2	–	–	–	0.26	2.3	0.09	55	60	700	180	7			–	–	–
-12a C	7.6	–	–	–	–	0.36	0.7	0.01	3	70	3250	265	22			–	–	–
-13 B	5.2	6.2	48.5	39.4	12.1	0.20	3.5	0.11	57	35	90	50	9			Loam	5.9	94.1
-13 C	–	–	50.1	38.6	11.3	–	–	–	–	–	–	–	–			Loam	21.9	78.1
-14a B	6.0	–	36.0	31.4	32.6	0.20	3.7	0.15	5	125	3000	355	14			CLAY LOAM	12.1	87.9
-14a C	–	–	38.9	37.4	23.7	–	–	–	–	–	–	–	–			LOAM	19.6	80.4
-15 B	5.2	6.2	–	–	–	0.50	2.7	0.08	70	85	800	95	14			–	–	–
-16a B	5.9	6.9	–	–	–	0.20	1.0	0.03	3	40	1200	155	13			–	–	–
-16a C	–	–	–	–	–	–	–	–	–	–	–	–	–			–	–	–
-17 Dm	5.7	6.7	–	–	–	0.31		1.58	7	60	6900	790	32			–	–	–
-17 Cg	–	–	35.8	37.0	27.2	–	–	–	–	–	–	–	–			–	–	–
-19Ah	5.7	6.7	27.5	28.3	44.2	0.26		0.71	8	50	4600	490	33			LOAM		
-19C	–	–	39.0	36.7	24.3	–	–	–	–	–	–	–	–			CLAY LOAM		

COMMENTS:

#5 – 11720 Voyageur Way, Richmond, B.C. V6X 3G9 273-8226

REPORTED TO: Hallam Knight Piesold Ltd.

REPORT DATE: April 7, 1995

GROUP NUMBER: 5032804

CANTEST

Metals Analysis in Soil

CLIENT SAMPLE IDENTIFICATION:		MP95-11(B)	MP95-12a (8)	MP95-13(B)	MP95-14a (B)	DETECTION LIMIT	UNITS
CAN TEST ID:		503280006	503280007	503280008	503280009		
Metals Analysis							
Moisture		21.6	15.0	15.9	22.6	0.01	%
Arsenic	As	5.7	7.9	4.9	6.7	0.05	µg/g
Barium	Ba	125	81	114	265	0.1	µg/g
Cadmium	Cd	<	<	<	0.69	0.25	µg/g
Chromium	Cr	28	17	27	45	2	µg/g
Cobalt	Co	17	14	14	21	1	µg/g
Copper	Cu	131	152	181	1980	1	µg/g
Lead	Pb	6	5	7	6	1	µg/g
Mercury	Hg	0.035	0.043	0.047	0.031	0.001	µg/g
Molybdenum	Mo	<	<	<	<	4	µg/g
Nickel	Ni	31	16	22	42	2	µg/g
Selenium	Se	<	<	<	<	0.5	µg/g
Silver	Ag	<	<	<	<	2	µg/g
Tin	Sn	<	<	5	<	5	µg/g
Zinc	Zn	252	49	90	223	1	µg/g
Aluminum	Al	28700	20800	32400	33200	10	µg/g
Antimony	Sb	<	<	<	<	10	µg/g
Beryllium	Be	<	<	<	<	1	µg/g
Boron	B	21	11	18	13	0.5	µg/g
Calcium	Ca	6530	5700	7720	7410	1	µg/g
Iron	Fe	53700	43400	50700	49600	2	µg/g
Magnesium	Mg	8940	8860	7330	11600	0.1	µg/g
Manganese	Mn	674	772	646	1430	0.2	µg/g
Phosphorus	PO4	2990	2050	3300	1380	20	µg/g
Potassium	K	1090	794	962	1480	1	µg/g
Sodium	Na	652	114	154	165	5	µg/g
Strontium	Sr	131	114	159	53	0.1	µg/g
Titanium	Ti	478	501	943	671	0.3	µg/g
Vanadium	V	127	118	136	103	0.5	µg/g

% = percent
< = Less than detection limit

µg/g = micrograms per gram, on a dry weight basis.

REPORTED TO: Hallam Knight Piesold Ltd.

REPORT DATE: April 7, 1995

GROUP NUMBER: 5032804

CANTEST

Metals Analysis in Soil

CLIENT SAMPLE IDENTIFICATION:		MP95-15(B)	MP95-16a (B)	MP95-17 (Om)	MP95-19 (Ah)	DETECTION LIMIT	UNITS
CAN TEST ID:		503280010	503280011	503280012	503280013		
Metals Analysis							
Moisture		16.8	13.9	80.9	63.4	0.01	%
Arsenic	As	8.4	7.4	3.6	21	0.05	µg/g
Barium	Ba	169	82	231	352	0.1	µg/g
Cadmium	Cd	<	0.25	1.1	1.3	0.25	µg/g
Chromium	Cr	11	18	58	71	2	µg/g
Cobalt	Co	13	14	9	42	1	µg/g
Copper	Cu	249	349	11100	2990	1	µg/g
Lead	Pb	5	3	5	2	1	µg/g
Mercury	Hg	0.059	0.056	0.28	0.76	0.001	µg/g
Molybdenum	Mo	<	<	<	75	4	µg/g
Nickel	Ni	15	16	27	38	2	µg/g
Selenium	Se	<	<	20	1.5	0.5	µg/g
Silver	Ag	<	<	<	<	2	µg/g
Tin	Sn	<	<	<	9	5	µg/g
Zinc	Zn	81	53	149	180	1	µg/g
Aluminum	Al	23900	18600	40900	56400	10	µg/g
Antimony	Sb	<	<	<	<	10	µg/g
Beryllium	Be	<	<	<	<	1	µg/g
Boron	B	13	13	13	24	0.5	µg/g
Calcium	Ca	9220	9740	25600	11800	1	µg/g
Iron	Fe	43700	38500	29600	149000	2	µg/g
Magnesium	Mg	7650	8070	6440	7990	0.1	µg/g
Manganese	Mn	821	1040	540	5010	0.2	µg/g
Phosphorus	PO4	2820	1960	3960	12300	20	µg/g
Potassium	K	853	724	2370	1830	1	µg/g
Sodium	Na	143	178	163	166	5	µg/g
Strontium	Sr	184	126	124	80	0.1	µg/g
Titanium	Ti	563	546	507	634	0.3	µg/g
Vanadium	V	121	104	112	287	0.5	µg/g

% = percent

< = Less than detection limit

µg/g = micrograms per gram, on a dry weight basis.

CANTEST

QUALITY ASSURANCE / QUALITY CONTROL DATA

CANTEST

Client: Hallam Knight Piesold Ltd.
File: 5032804
Date: March 30, 1995

Sample I.D.		503280006 MP95-11(B)	503280006' MP95-11(B) Duplicate	503280006 MP95-11(B) Average	RPD	Detection Limit
% Moisture	H2O	21.6%	–	21.6%		
Arsenic	As	9.3	2.2	5.7	124%	0.05
Barium	Ba	122	128	125	4.7%	0.1
Cadmium	Cd	<	<	<		0.25
Chromium	Cr	19	36	28	63%	2
Cobalt	Co	17	18	17	6.0%	1
Copper	Cu	137	124	131	10%	1
Lead	Pb	6	5	6	11%	1
Mercury	Hg	0.035	0.034	0.035	2.8%	0.001
Molybdenum	Mo	<	<	<		4
Nickel	Ni	25	36	31	37%	2
Selenium	Se	0.6	<	<	97%	0.5
Silver	Ag	<	<	<		2
Tin	Sn	<	6	<	64%	5
Zinc	Zn	400	103	252	118%	1
Aluminum	Al	28700	28800	28700	0.5%	10
Antimony	Sb	<	<	<		10
Beryllium	Be	<	<	<		1
Boron	B	20	23	21	13%	0.5
Calcium	Ca	6320	6740	6530	6.3%	1
Iron	Fe	56700	50700	53700	11%	2
Magnesium	Mg	8330	9550	8940	14%	0.1
Manganese	Mn	695	652	674	6.4%	0.2
Phosphorus	PO4	3660	2330	2990	44%	20
Potassium	K	1000	1170	1090	16%	1
Sodium	Na	947	357	652	90%	5
Strontium	Sr	130	132	131	1.6%	0.1
Titanium	Ti	443	512	478	14%	0.3
Vanadium	V	130	124	127	4.5%	0.5

All results expressed as micrograms per gram (µg/g) on a dry weight basis.

CANTEST

Client: Hallam Knight Piesold Ltd.
File: 5032804
Date: March 30, 1995

Cantest I.D. / Client I.D.		Digestion Blank #1	Digestion Blank #2	Digestion Blank #3	Detection Limit
Aluminum	Al	<	<	<	0.15
Antimony	Sb	<	<	<	0.15
Arsenic	As	<	<	<	0.01
Barium	Ba	0.001	<	0.015	0.001
Beryllium	Be	<	<	<	0.006
Boron	B	0.04	0.05	0.05	0.010
Cadmium	Cd	<	<	<	0.005
Calcium	Ca	<	0.14	0.01	0.01
Chromium	Cr	<	<	<	0.03
Cobalt	Co	<	<	<	0.02
Copper	Cu	<	<	<	0.015
Iron	Fe	0.18	1.81	0.15	0.030
.ead	Pb	<	<	<	0.08
Magnesium	Mg	<	0.02	0.01	0.001
Manganese	Mn	<	0.005	<	0.003
Mercury	Hg	<	<	<	0.0002
Molybdenum	Mo	<	<	<	0.04
Nickel	Ni	<	<	<	0.025
Phosphorus	PO4	<	<	<	0.4
Potassium	K	<	<	<	1
Selenium	Se	<	<	<	0.05
Silver	Ag	<	<	<	0.03
Sodium	Na	<	<	<	0.1
Strontium	Sr	<	<	<	0.001
Tin	Sn	<	<	<	0.03
Titanium	Ti	<	<	<	0.006
Vanadium	V	<	<	<	0.010
Zinc	Zn	<	0.03	<	0.015

Results expressed as milligrams per litre (mg/L).

< = Less than

QA/QC 2B BLANKS\03-30.WK1

CANTEST

Client: Hallem Knight Piesold Ltd.
File: 5032804
Date: March 30, 1995

National Research Council Canada (NRC)
Certified Reference Material

PACS–1

COMPONENT		RESULT	PERCENT RECOVERY	CERTIFIED VALUE
Major Components (%)				
Silica	SiO2	–		55.7 ±0.5
Alumina	Al2O3	4.96	41%	12.23 ±0.22
Iron	Fe2O3	6.29	90%	6.96 ±0.12
Calcium	CaO	1.50	52%	2.92 ±0.09
Magnesium	MgO	1.74	72%	2.41 ±0.09
Sodium	Na2O	2.43	55%	4.40 ±0.11
Potassium	K2O	0.58	39%	1.50 ±0.09
L.O.I.		–		
Trace Components (ug/g)				
Antimony	Sb	75	44%	171. ±14.
Arsenic	As	175	83%	211. ±11.
Barium	Ba	385		–
Beryllium	Be	<3.0		–
Boron	B	60		–
Cadmium	Cd	2.65	111%	2.38 ±0.20
Chromium	Cr	49.0	43%	113. ±8.
Cobalt	Co	15.5	89%	17.5 ±1.1
Copper	Cu	450	100%	452. ±16.
Lead	Pb	428	106%	404. ±20.
Manganese	Mn	320	68%	470. ±12.
Mercury	Hg	5.40	118%	4.57 ±0.16
Molybdenum	Mo	6.5	50%	12.9 ±0.9
Nickel	Ni	34.5	78%	44.1 ±2.0
Phosphorous	PO4	2750	88%	3110. ±240.
Selenium	Se	1.60	147%	1.09 ±0.11
Silver	Ag	<15		–
Strontium	Sr	100.0	36%	277. ±11.
Tin	Sn	30.0	73%	41.1 ±3.1
Titanium	Ti	1550	37%	4210. ±66.
Vanadium	V	90	71%	127. ±5.
Zinc	Zn	745	90%	824. ±22.

< = Not detected
% = Percent
µg/g = micrograms per gram

REPORTED TO: Imperial Metals Corporation

REPORT DATE: June 9, 1995

GROUP NUMBER: 5052911

CANTEST

Metals Analysis in Soil

CLIENT SAMPLE IDENTIFICATION:		WB1 MP95-30 (Bg)	WB2 MP95-31 (Bm)	WB3 MP95-32 (Bg)	WB5 MP95-33 (Bg)	DETECTION LIMIT	UNITS
CAN TEST ID:		505290032	505290033	505290034	505290035		
Moisture		15.1	26.1	11.8	14.3	0.01	%
Metals Analysis							
Arsenic	As	<	<	<	<	30	µg/g
Barium	Ba	100	55	59	86	0.1	µg/g
Cadmium	Cd	<	<	<	<	0.25	µg/g
Chromium	Cr	40	38	30	32	2	µg/g
Cobalt	Co	17	8	13	9	1	µg/g
Copper	Cu	27	17	18	22	1	µg/g
Lead	Pb	6	4	5	4	1	µg/g
Mercury	Hg	0.022	0.018	0.020	0.064	0.001	µg/g
Molybdenum	Mo	<	<	<	<	4	µg/g
Nickel	Ni	32	23	25	23	2	µg/g
Selenium	Se	<	<	<	<	3	µg/g
Silver	Ag	<	<	<	<	2	µg/g
Tin	Sn	<	<	<	<	5	µg/g
Zinc	Zn	64	53	45	30	1	µg/g
Aluminum	Al	21400	17600	14200	16700	10	µg/g
Antimony	Sb	<	<	<	<	10	µg/g
Beryllium	Be	<	<	<	<	1	µg/g
Boron	B	17	16	14	12	0.5	µg/g
Calcium	Ca	4780	5240	3620	4380	1	µg/g
Iron	Fe	38000	29200	27400	23400	2	µg/g
Magnesium	Mg	7760	5670	6100	5810	0.1	µg/g
Manganese	Mn	762	312	541	191	0.2	µg/g
Phosphorus	PO4	1110	780	1290	1000	20	µg/g
Sodium	Na	146	150	111	186	5	µg/g
Strontium	Sr	50	50	38	39	0.1	µg/g
Titanium	Ti	512	634	319	495	0.3	µg/g
Vanadium	V	67	71	52	62	0.5	µg/g

% = percent

< = Less than detection limit

µg/g = micrograms per gram, on a dry weight basis.

REPORTED TO: Imperial Metals Corporation

REPORT DATE: June 9, 1995

GROUP NUMBER: 5052911

CANTEST

Metals Analysis in Soil

CLIENT SAMPLE IDENTIFICATION:		WB6 MP95-34 (Bg1)	WB8 MP95-35 (Btg)	WB9 MP95-36 (Bm)	WB10 MP95-37 (Btg)	DETECTION LIMIT	UNITS
CAN TEST ID:		505290036	505290037	505290038	505290039		
Moisture		20.4	10.1	20.0	13.2	0.01	%
Metals Analysis							
Arsenic	As	<	<	<	<	30	µg/g
Barium	Ba	87	69	86	92	0.1	µg/g
Cadmium	Cd	0.26	<	0.34	<	0.25	µg/g
Chromium	Cr	60	53	56	38	2	µg/g
Cobalt	Co	18	14	12	14	1	µg/g
Copper	Cu	33	26	30	29	1	µg/g
Lead	Pb	6	4	5	6	1	µg/g
Mercury	Hg	0.044	0.036	0.026	0.037	0.001	µg/g
Molybdenum	Mo	<	<	<	<	4	µg/g
Nickel	Ni	42	33	31	30	2	µg/g
Selenium	Se	<	<	<	<	3	µg/g
Silver	Ag	<	<	<	<	2	µg/g
Tin	Sn	<	<	<	<	5	µg/g
Zinc	Zn	95	50	109	42	1	µg/g
Aluminum	Al	24200	18600	21700	18800	10	µg/g
Antimony	Sb	<	<	<	<	10	µg/g
Beryllium	Be	<	<	<	<	1	µg/g
Boron	B	19	16	16	15	0.5	µg/g
Calcium	Ca	7320	4850	4540	4400	1	µg/g
Iron	Fe	38700	34400	32500	33200	2	µg/g
Magnesium	Mg	9420	8970	7730	7540	0.1	µg/g
Manganese	Mn	640	545	379	615	0.2	µg/g
Phosphorus	PO4	950	1300	1530	1210	20	µg/g
Sodium	Na	155	157	140	181	5	µg/g
Strontium	Sr	54	45	38	44	0.1	µg/g
Titanium	Ti	652	510	542	419	0.3	µg/g
Vanadium	V	91	70	84	59	0.5	µg/g

% = percent

< = Less than detection limit

µg/g = micrograms per gram, on a dry weight basis.

REPORTED TO: Imperial Metals Corporation

REPORT DATE: June 9, 1995

GROUP NUMBER: 5052911

CANTEST

Metals Analysis in Soil

CLIENT SAMPLE IDENTIFICATION:		WB11 MP95-38 (Bg)	WB12 MP95-39 (Btg)	WB14 MP95-40 (Of)	WB15 MP95-41 (Btg)	DETECTION LIMIT	UNITS
CAN TEST ID:		505290040	505290041	505290042	505290043		
Moisture		20.0	14.5	81.3	11.0	0.01	%
Metals Analysis							
Arsenic	As	<	<	<	<	30	µg/g
Barium	Ba	99	128	62	73	0.1	µg/g
Cadmium	Cd	<	<	<	<	0.25	µg/g
Chromium	Cr	40	46	17	34	2	µg/g
Cobalt	Co	17	13	6	13	1	µg/g
Copper	Cu	28	50	59	34	1	µg/g
Lead	Pb	6	6	<	5	1	µg/g
Mercury	Hg	0.033	0.055	0.11	0.021	0.001	µg/g
Molybdenum	Mo	<	<	<	<	4	µg/g
Nickel	Ni	28	36	20	23	2	µg/g
Selenium	Se	<	<	<	<	3	µg/g
Silver	Ag	<	<	<	<	2	µg/g
Tin	Sn	<	<	<	<	5	µg/g
Zinc	Zn	61	54	28	36	1	µg/g
Aluminum	Al	20200	23600	11300	16300	10	µg/g
Antimony	Sb	<	<	<	<	10	µg/g
Beryllium	Be	<	<	<	<	1	µg/g
Boron	B	17	18	11	15	0.5	µg/g
Calcium	Ca	4010	3960	10100	4510	1	µg/g
Iron	Fe	35200	34900	15300	31100	2	µg/g
Magnesium	Mg	7420	7660	3220	6100	0.1	µg/g
Manganese	Mn	616	552	231	665	0.2	µg/g
Phosphorus	PO4	1250	1390	3590	1700	20	µg/g
Sodium	Na	132	145	91	120	5	µg/g
Strontium	Sr	40	42	92	37	0.1	µg/g
Titanium	Ti	365	190	323	415	0.3	µg/g
Vanadium	V	66	69	29	66	0.5	µg/g

% = percent

< = Less than detection limit

µg/g = micrograms per gram, on a dry weight basis.

REPORTED TO: Imperial Metals Corporation

REPORT DATE: June 9, 1995

GROUP NUMBER: 5052911

CANTEST

Metals Analysis in Soil

CLIENT SAMPLE IDENTIFICATION:		WB16 MP95-42 (Btg)	WB17 MP95-43 (Btg)	WB19 MP95-44 (Btg)	WB20 MP95-45 (Bm)	DETECTION LIMIT	UNITS
CAN TEST ID:		505290044	505290045	505290046	505290047		
Moisture		12.3	10.3	20.9	15.9	0.01	%
Metals Analysis							
Arsenic	As	<	<	<	<	30	µg/g
Barium	Ba	66	65	115	106	0.1	µg/g
Cadmium	Cd	<	<	<	<	0.25	µg/g
Chromium	Cr	43	34	17	36	2	µg/g
Cobalt	Co	11	12	18	13	1	µg/g
Copper	Cu	35	23	308	153	1	µg/g
Lead	Pb	4	5	7	6	1	µg/g
Mercury	Hg	0.036	0.026	0.073	0.033	0.001	µg/g
Molybdenum	Mo	<	<	<	<	4	µg/g
Nickel	Ni	32	24	15	22	2	µg/g
Selenium	Se	<	<	<	<	3	µg/g
Silver	Ag	<	<	<	<	2	µg/g
Tin	Sn	<	<	<	<	5	µg/g
Zinc	Zn	42	43	96	133	1	µg/g
Aluminum	Al	16000	15500	23900	26600	10	µg/g
Antimony	Sb	<	<	<	<	10	µg/g
Beryllium	Be	<	<	<	<	1	µg/g
Boron	B	14	13	28	24	0.5	µg/g
Calcium	Ca	5050	4420	11700	5260	1	µg/g
Iron	Fe	28900	27700	42600	44200	2	µg/g
Magnesium	Mg	7950	6560	10400	7130	0.1	µg/g
Manganese	Mn	512	494	1230	462	0.2	µg/g
Phosphorus	PO4	1580	1610	3140	3880	20	µg/g
Sodium	Na	164	120	178	121	5	µg/g
Strontium	Sr	41	40	195	69	0.1	µg/g
Titanium	Ti	522	408	727	562	0.3	µg/g
Vanadium	V	71	60	132	123	0.5	µg/g

% = percent
< = Less than detection limit

µg/g = micrograms per gram, on a dry weight basis.

REPORTED TO: Imperial Metals Corporation

REPORT DATE: June 9, 1995

GROUP NUMBER: 5052911

CANTEST

Metals Analysis in Soil

CLIENT SAMPLE IDENTIFICATION:		WB21 MP95-46 (Bf)	WB22 MP95-47 (Bf)	WB23 MP95-48 (Bf)	WB24 MP95-49 (Bf)	DETECTION LIMIT	UNITS
CAN TEST ID:		505290048	505290049	505290050	505290051		
Moisture		17.3	25.0	17.2	32.0	0.01	%
Metals Analysis							
Arsenic	As	<	<	<	<	30	µg/g
Barium	Ba	117	195	242	204	0.1	µg/g
Cadmium	Cd	<	<	<	<	0.25	µg/g
Chromium	Cr	34	35	28	33	2	µg/g
Cobalt	Co	11	20	14	14	1	µg/g
Copper	Cu	483	86	1180	1780	1	µg/g
Lead	Pb	5	6	4	7	1	µg/g
Mercury	Hg	0.019	0.029	0.036	0.029	0.001	µg/g
Molybdenum	Mo	<	<	<	<	4	µg/g
Nickel	Ni	18	35	21	34	2	µg/g
Selenium	Se	<	<	<	<	3	µg/g
Silver	Ag	<	<	<	<	2	µg/g
Tin	Sn	<	5	<	7	5	µg/g
Zinc	Zn	79	130	100	109	1	µg/g
Aluminum	Al	29300	37500	30600	47800	10	µg/g
Antimony	Sb	<	<	<	<	10	µg/g
Beryllium	Be	<	<	<	<	1	µg/g
Boron	B	22	21	23	24	0.5	µg/g
Calcium	Ca	10300	3230	5660	4110	1	µg/g
Iron	Fe	43200	46100	48100	56300	2	µg/g
Magnesium	Mg	5640	6560	8250	7160	0.1	µg/g
Manganese	Mn	613	546	512	370	0.2	µg/g
Phosphorus	PO4	2940	4720	4400	6040	20	µg/g
Sodium	Na	121	117	139	113	5	µg/g
Strontium	Sr	63	44	65	34	0.1	µg/g
Titanium	Ti	671	481	437	367	0.3	µg/g
Vanadium	V	124	104	165	76	0.5	µg/g

% = percent

< = Less than detection limit

µg/g = micrograms per gram, on a dry weight basis.

REPORTED TO: Imperial Metals Corporation

REPORT DATE: June 9, 1995

GROUP NUMBER: 5052911

CANTEST

Metals Analysis in Soil

CLIENT SAMPLE IDENTIFICATION:		WB25 MP95-50 (Ah)	WB26 MP95-51 (Ah)	WB27 MP95-52 (Bt)	WB29 MP95-53 (Bf)	DETECTION LIMIT	UNITS
CAN TEST ID:		505290052	505290053	505290054	505290055		
Moisture		25.3	35.3	15.0	21.7	0.01	%
Metals Analysis							
Arsenic	As	<	<	<	<	30	µg/g
Barium	Ba	127	284	134	242	0.1	µg/g
Cadmium	Cd	<	0.90	0.30	0.34	0.25	µg/g
Chromium	Cr	21	38	39	24	2	µg/g
Cobalt	Co	12	23	17	21	1	µg/g
Copper	Cu	335	346	187	102	1	µg/g
Lead	Pb	9	11	8	6	1	µg/g
Mercury	Hg	0.15	0.19	0.12	0.037	0.001	µg/g
Molybdenum	Mo	28	21	<	<	4	µg/g
Nickel	Ni	16	29	32	16	2	µg/g
Selenium	Se	<	<	<	<	3	µg/g
Silver	Ag	<	<	<	<	2	µg/g
Tin	Sn	<	<	<	<	5	µg/g
Zinc	Zn	153	233	122	111	1	µg/g
Aluminum	Al	20600	34300	22300	30000	10	µg/g
Antimony	Sb	<	<	<	<	10	µg/g
Beryllium	Be	<	<	<	<	1	µg/g
Boron	B	24	32	18	20	0.5	µg/g
Calcium	Ca	20600	12600	5010	5960	1	µg/g
Iron	Fe	42400	50600	36500	40900	2	µg/g
Magnesium	Mg	6410	9270	8600	5740	0.1	µg/g
Manganese	Mn	843	2600	717	3060	0.2	µg/g
Phosphorus	PO4	1610	2110	1510	3340	20	µg/g
Sodium	Na	148	244	184	150	5	µg/g
Strontium	Sr	103	145	49	59	0.1	µg/g
Titanium	Ti	475	684	447	579	0.3	µg/g
Vanadium	V	104	139	65	113	0.5	µg/g

% = percent

< = Less than detection limit

µg/g = micrograms per gram, on a dry weight basis.

REPORTED TO: Imperial Metals Corporation

REPORT DATE: June 9, 1995

GROUP NUMBER: 5052911

CANTEST

Metals Analysis in Soil

CLIENT SAMPLE IDENTIFICATION:		WB30 MP95-54 (Bm)	WB31 MP95-55 (Bt)	DETECTION LIMIT	UNITS
CAN TEST ID:		505290056	505290057		
Moisture		17.4	11.5	0.01	%
Metals Analysis					
Arsenic	As	<	<	30	µg/g
Barium	Ba	132	132	0.1	µg/g
Cadmium	Cd	<	0.25	0.25	µg/g
Chromium	Cr	27	21	2	µg/g
Cobalt	Co	10	18	1	µg/g
Copper	Cu	866	501	1	µg/g
Lead	Pb	6	8	1	µg/g
Mercury	Hg	0.037	0.065	0.001	µg/g
Molybdenum	Mo	<	<	4	µg/g
Nickel	Ni	16	14	2	µg/g
Selenium	Se	<	<	3	µg/g
Silver	Ag	<	<	2	µg/g
Tin	Sn	<	<	5	µg/g
Zinc	Zn	63	79	1	µg/g
Aluminum	Al	27600	27800	10	µg/g
Antimony	Sb	<	<	10	µg/g
Beryllium	Be	<	<	1	µg/g
Boron	B	25	32	0.5	µg/g
Calcium	Ca	3640	14100	1	µg/g
Iron	Fe	54500	50900	2	µg/g
Magnesium	Mg	7490	9990	0.1	µg/g
Manganese	Mn	399	1090	0.2	µg/g
Phosphorus	PO4	3710	3070	20	µg/g
Sodium	Na	88	185	5	µg/g
Strontium	Sr	51	241	0.1	µg/g
Titanium	Ti	572	644	0.3	µg/g
Vanadium	V	154	164	0.5	µg/g

% = percent
< = Less than detection limit

µg/g = micrograms per gram, on a dry weight basis.

Table 2. Summary of Soils Data for Each Pit at Mt. Polley Mine Site.												
Soil Pit#	Rooting Depth(cm)	Depth To Bedrock	Topsoil Horizon	Depth (cm)	Cf (%)	Texture	Lower Soil Horizon	Lower Boundary	Cf (%)	Texture	Depth of LFH	Parent Material
e. Tailings Storage Area												
MP95 - 30	30	-	Ah	17	15	l	Bg	30	15	l	7	-
MP95 - 31	60	-	Bm	45	10	l	Ahb	57	10	l	15	Cg
MP95 - 32	30	-	Bg	30	15	l	-	-	-	-	16	Cg
MP95 - 33	30	-	Bg	30	15	l	-	-	-	-	20	Cg
MP95 - 34	60	-	Bg1	37	5	sl	Bg2	62	5	l	22	Cg
MP95 - 35	55	-	Ae/Btg	39	25	l	Bg	59	25	cl	30	Cg
MP95 - 36	60	-	Bm/Ae	45	10	sl	Btg	70	15	l	10	C
MP95 - 37	55	-	Aeg	18	15	sl	Btg	63	20	cl	20	C
MP95 - 38	45	-	Bg	45	15	l	-	-	-	-	15	Cg
MP95 - 39	63	-	Ahj/Aeg	36	15	l	Btg	68	20	l	12	C
MP95 - 40	70	-	Of	70	-	fibric	-	-	-	-	-	Cg
MP95 - 41	50	-	Ahje	18	10	sl	Btg	50	20	l	25	Cg
MP95 - 42	55	-	Ahe	23	20	sl	Btg	58	25	sl	12	II C
MP95 - 43	80	-	Bmj/Ae	28	20	sil	Btg	83	15	cl	17	C
b. East Dump												
MP95 - 44	60	-	Ae	36	10	sl	Btg	62	10	sl	40	C
MP95 - 45	25	35	Bm	26	60	sl/ls	-	-	-	-	18	R
c. Central Pit												
MP95 - 46	30	30	Aej/Bf	30	35-40	sl	-	-	-	-	7	R
MP95 - 47	70	70	Aej/Bf	43	30-35	sl	Bm	70	40	l	4	R
d. North Pit												
MP95 - 48	50	55	Ae/Bf1	45	25-30	sl	Bf2	55	35	ls	4	R
MP95 - 49	20	20	Ae	5	85	sl	Bf	20	85	sl	18	R
e. North Dump												
MP95 - 50	56	56	Ah	28	30	sl	Bg	56	40	l	4	R
MP95 - 51	33	33	Ah	24	20	l	Bg	35	55	sl	8	R
MP95 - 52	40	-	Ae	13	15	sl	Bt	40	20	cl	29	C
f. West dump												
MP95 - 53	26	26	Aej	5	35	ls	Bf	26	40	sl/ls	11	R
g. West pit												
MP95 - 54	18	18	Bm	18	40	ls	-	-	-	-	9	R
MP95 - 55	60	-	Ae/Bm	34	20-25	ls/sl	Bt	65	30	l	12	C

Horizon		Depth	Texture	Gravel	Cobble	Stones	Total(cf %)	Root Ab	Root Size	Struct Grade	Class	Kind	Consistency	Colour
LFH		10-0												
Bf		0-20	sl	20	10		30	A	F	M	M	SBK	friable	7.5YR4/6
BC		20-40	sl	20	15	10	45	P	V	MS	C	SBK	firm	10YR4/3
R		40-100+												
Soil Classification	O.HFP													
Terrain Type	Mv over Rj													
Humus Form	Moder													
Drainage Class	Well													
Rooting Depth	40 cm													
Seepage Depth														
Root Restriction Type	Rock													
Root Restriction	40 cm													
Soil Pit # MP95-11														

Horizon		Depth	Texture	Gravel	Cobble	Stones	Total(cf %)	Root Ab	Root Size	Struct Grade	Class	Kind	Consistency	Colour
LFH		15-0												
Bm		0-20	sl	15	5		20	A	C	WM	M	SBK	v. friable	10YR4/3
Btg		20-60	l	15	5		20	F	F	S	F	PL	friable	10YR5/3
BC		60-120	l	10	10		20			M	C	SBK	firm	10YR4/3
Ck		120-180	l	15	10		25			M	C	SBK	firm	10YR4/3
Soil Classification	BR.GL													
Terrain Type	Mj													
Humus Form	Moder													
Drainage Class	Moderately-well													
Rooting Depth	60 cm													
Seepage Depth														
Root Restriction Type														
Root Restriction														
Soil Pit # MP95-12a														

Horizon		Depth	Texture	Gravel	Cobble	Stones	Total(cf %)	Root Ab	Root Size	Struct Grade	Class	Kind	Consistency	Colour
LFH		20-0												
Bf		0-28	ls	15	5	5	25	A	C	WM	F	SBK	friable	7.5YR4/6
BC		28-58	ls	15	30	40	85	A	M	M	M	SBK	friable	10YR4/3
R		58+												
Soil Classification	O. HFP													
Terrain Type	Mv over Rj													
Humus Form	Moder													
Drainage Class	Well													
Rooting Depth	58 cm													
Seepage Depth														
Root Restriction Type	Rock													
Root Restriction	58 cm													
Soil Pit # MP95-13														

Horizon		Depth	Texture	Gravel	Cobble	Stones	Total(cf %)	Root Ab	Root Size	Struct Grade	Class	Kind	Consistency	Colour
LFH		35-0						A	C					
Bm		0-30	I	15	10		25	P	M	WM	F	SBK	v. friable	10YR4/3
Btg		30-80	I	15	10		25	F	F	S	C	SBK	friable	10YR4/3
C		80-105	I	20	10		30			MS	C	SBK	v. friable	10YR4/2
Soil Classification	BR.GL													
Terrain Type	Mj													
Humus Form	Moder													
Drainage Class	Moderately-well													
Rooting Depth	50 cm													
Seepage Depth														
Root Restriction Type														
Root Restriction														
Soil Pit # MP95-14a														

Horizon		Depth	Texture	Gravel	Cobble	Stones	Total(cf %)	Root Ab	Root Size	Struct Grade	Class	Kind	Consistency	Colour
LFH		3-0												
Bm		0-35	sl	20	30	5	55	A	F	WM	M	SBK		10YR4/3
R		35+												
Soil Classification	O. DYB													
Terrain Type	Mv over Rj													
Humus Form	Mor													
Drainage Class	Well													
Rooting Depth	35 cm													
Seepage Depth														
Root Restriction Type	Rock													
Root Restriction	35 cm													
Soil Pit # MP95-15														

Horizon		Depth	Texture	Gravel	Cobble	Stones	Total(cf %)	Root Ab	Root Size	Struct Grade	Class	Kind	Consistency	Colour
LFH		15-0												
Bf		0-20	sl	15	5		20	A	C	M	M	SBK	v. friable	7.5YR4/4
Btg		20-45	l	15	5		20	P	F	MS	C	SBK	firm	10YR4/3
BC		45-110	l	30	15		45			WM	F	SBK	friable	10YR4/3
R		110+												
Soil Classification	PZ.GL													
Terrain Type	Mv over R													
Humus Form	Moder													
Drainage Class	Moderately-well													
Rooting Depth	50 cm													
Seepage Depth	70 cm													
Root Restriction Type														
Root Restriction														
Soil Pit # MP95-16a														

Horizon		Depth	Texture	Gravel	Cobble	Stones	Total(cf %)	Root Ab	Root Size	Struct Grade	Class	Kind	Consistency	Colour
Om		0-200	mesic					A	C					10YR2/1
Cg		200+	cl	10			10			MS		MA		5GY4/1
Soil Classification	Typic Mesisol													
Terrain Type	Ob over L^G													
Humus Form	Organic													
Drainage Class	Poorly													
Rooting Depth	50 cm													
Seepage Depth	0 cm													
Root Restriction Type														
Root Restriction														
Soil Pit # MP95-17														

Horizon		Depth	Texture	Gravel	Cobble	Stones	Total(cf %)	Root Ab	Root Size	Struct Grade	Class	Kind	Consistency	Colour
Of/LFH		40-0						A	C					
Ah		0-15	I	15	5		20	A	C					
Bm		15-30	I	15	5		20	P	F					
Bt		30-60	I	20	10		30	F	F					
BC		60-90	I	20	15		35							
C		90-130+		20	15		35							
Soil Classification	BR.GL													
Terrain Type	Ov over M													
Humus Form	Organic/moder													
Drainage Class	Imperfectly													
Rooting Depth	60 cm													
Seepage Depth	0 cm													
Root Restriction Type														
Root Restriction														
Soil Pit # MP95-19														

Figure 1: Soil pit #MP95−11: Shallow to bedrock podzolic soil on morainal veneer over rock.

Figure 2: Soil pit #MP95–12a: Luvisolic soil developed on deep, calcareous till parent material.

Figure 3: Soil pit #MP95–13: Sub–xeric podzolic soil on shallow to fragmented bedrock parent material.

Figure 4: Soil pit #MP95−14a: Luvisolic soil on deep morainal parent material

Figure 5: Soil pit #MP95−15: Brunisol developed on very shallow till over bedrock

Figure 6: Soil pit #MP95–16a: Podzolic gray luvisol on a morainal veneer over rock. The till in this area was up to 20' thick.

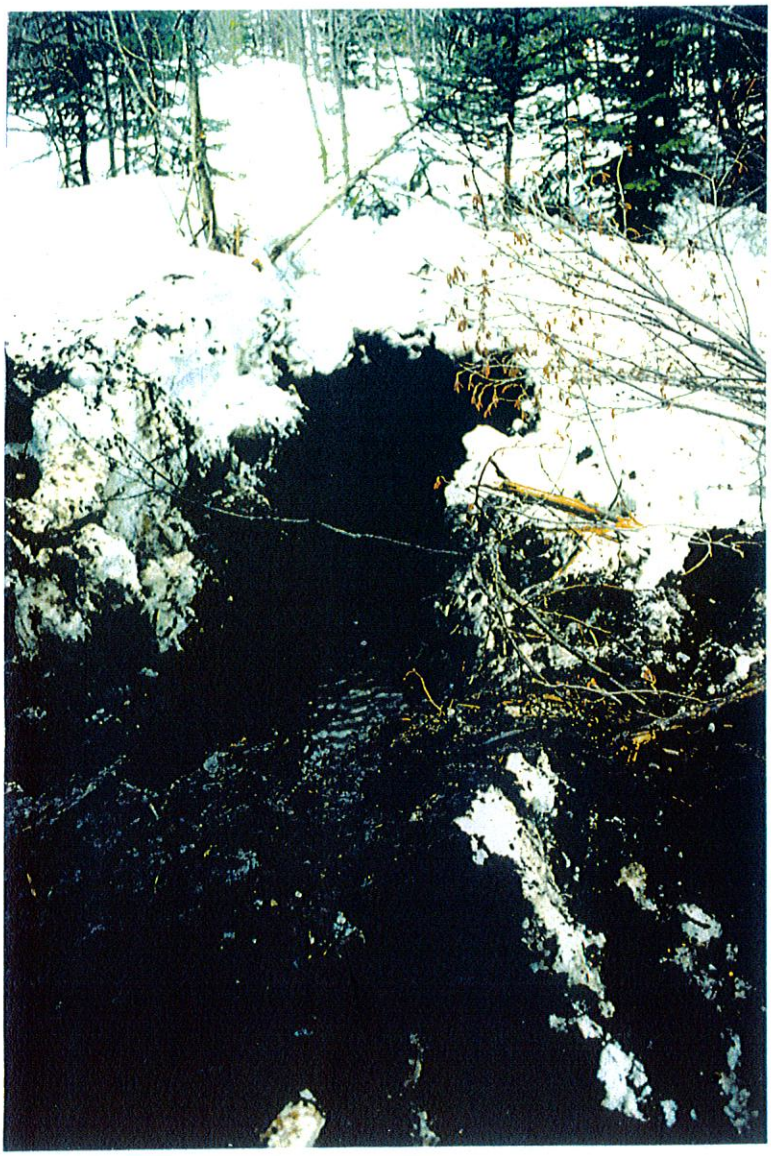
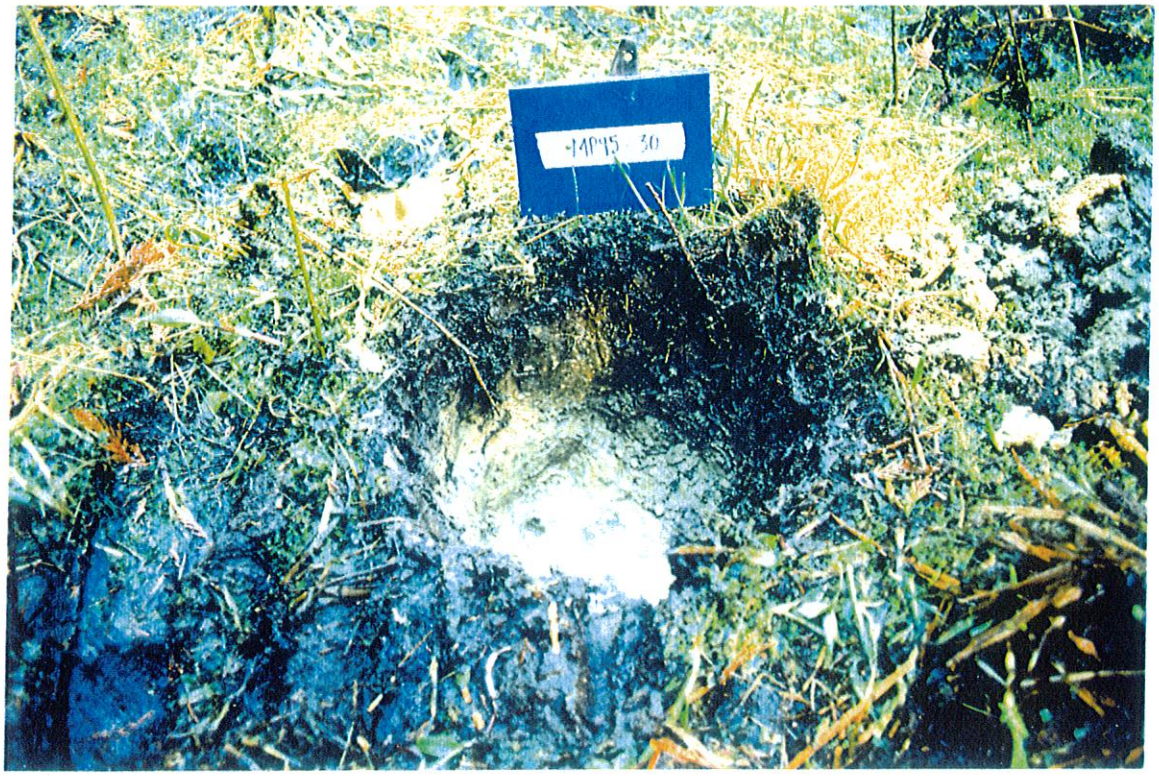


Figure 7: Soil pit #MP95–17: Typic mesisol organic soil formed over a poorly drained glacio–lacustrine parent material.

Figure 8: Soil pit #MP95–19: An organic/humus veneer over a Brunisolic gray luvisol formed in deep till parent material. These shallow organics are found in the "wetland" fringe areas.

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT



Site MP 95-30

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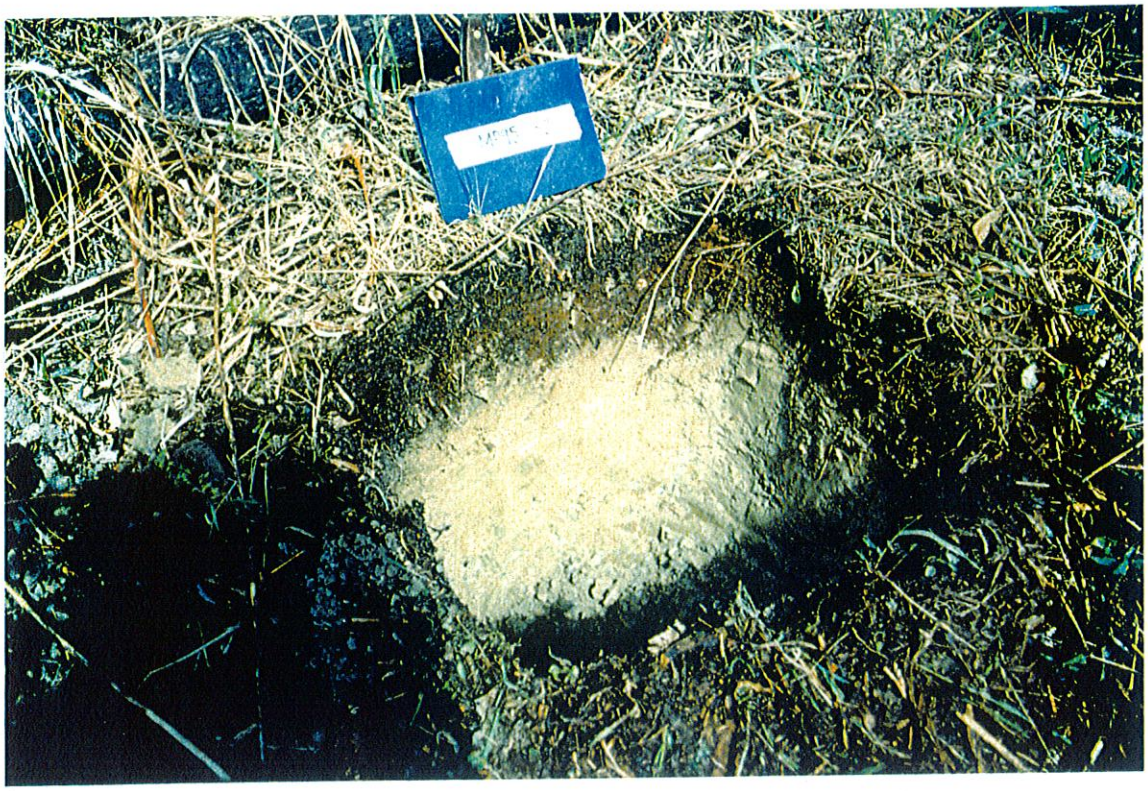
Site MP95-31

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT



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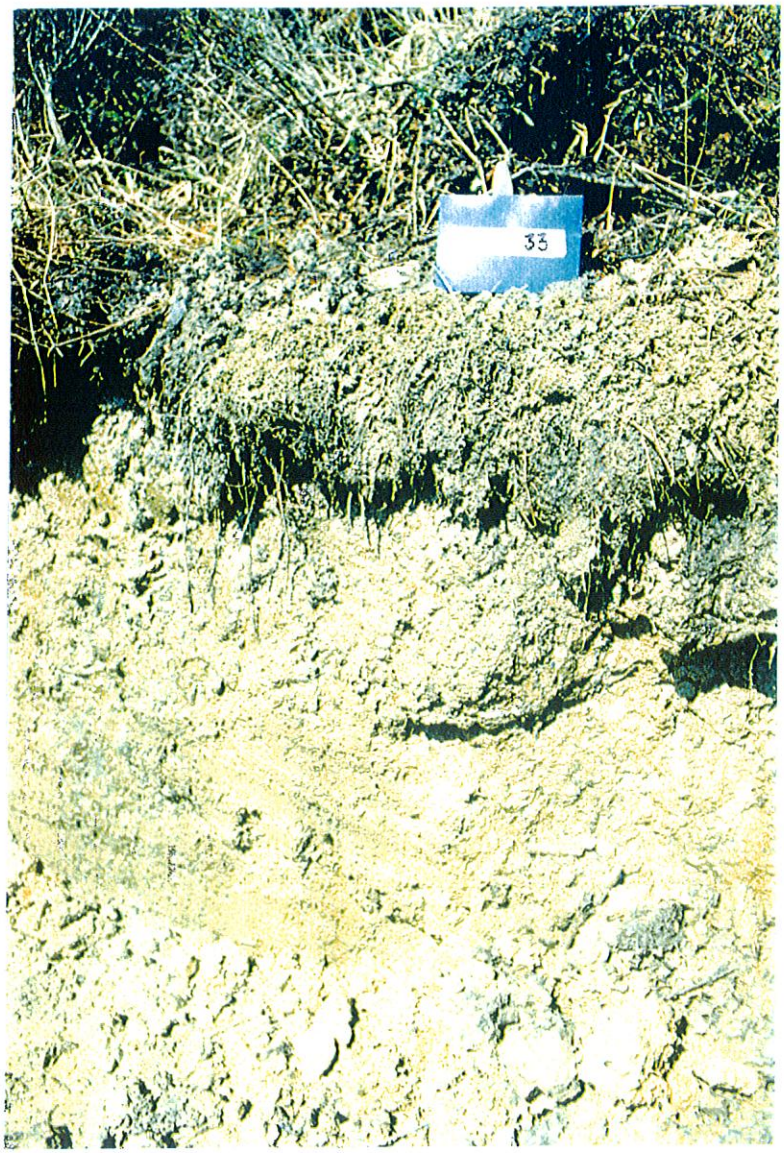

Site MP95-33

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-34

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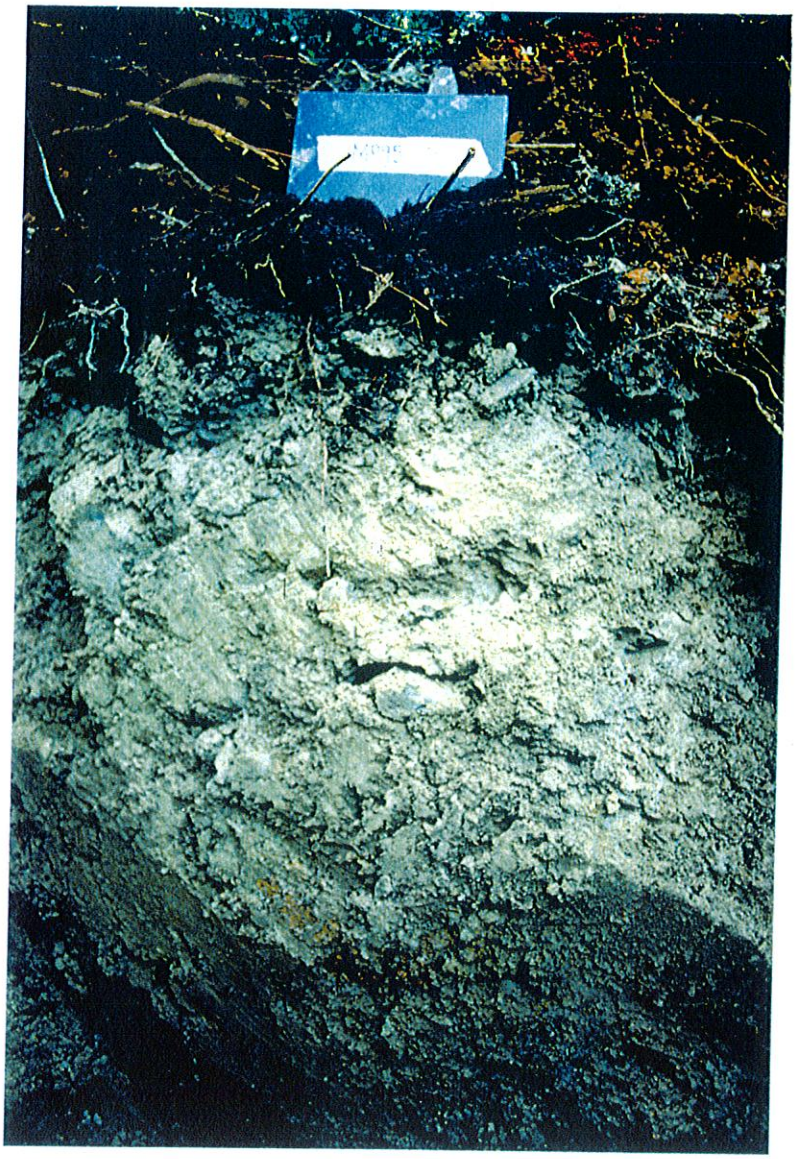

Site MP95-35

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Site MP95-36

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-37

Site MP95-38

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-39

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-40

Site MP95-41

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-42

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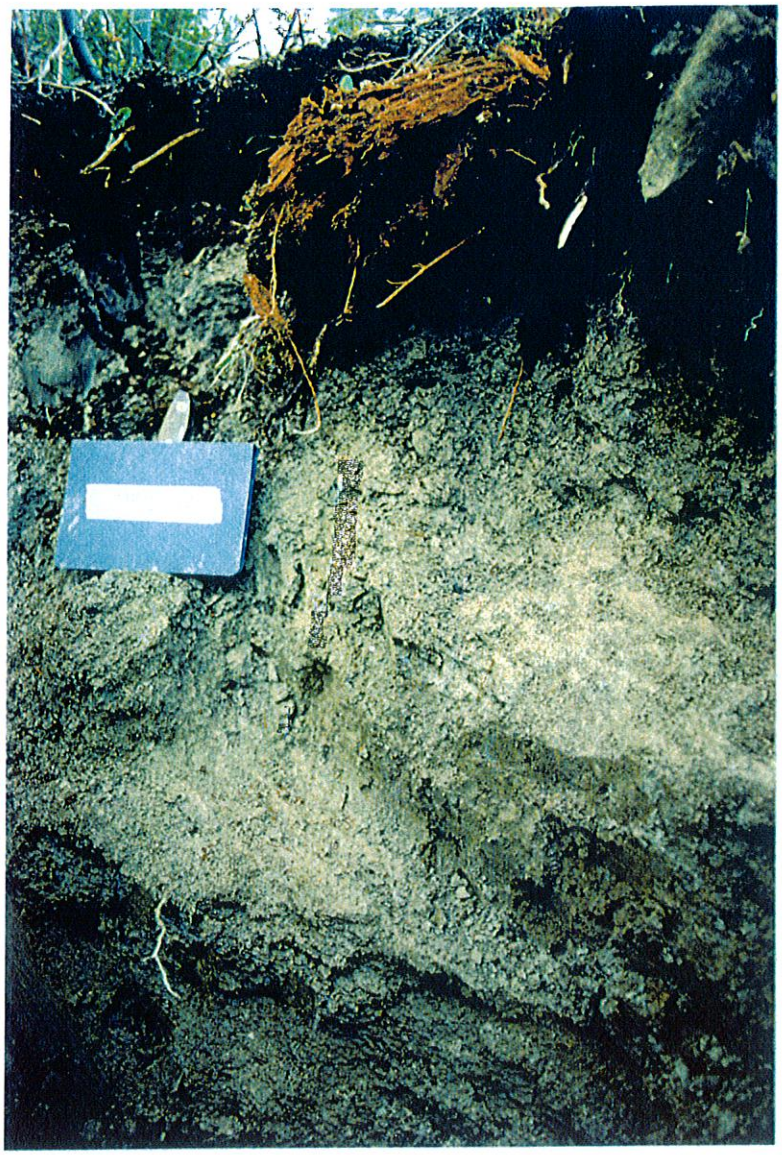

Site MP95-43

Site MP95-44

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-45

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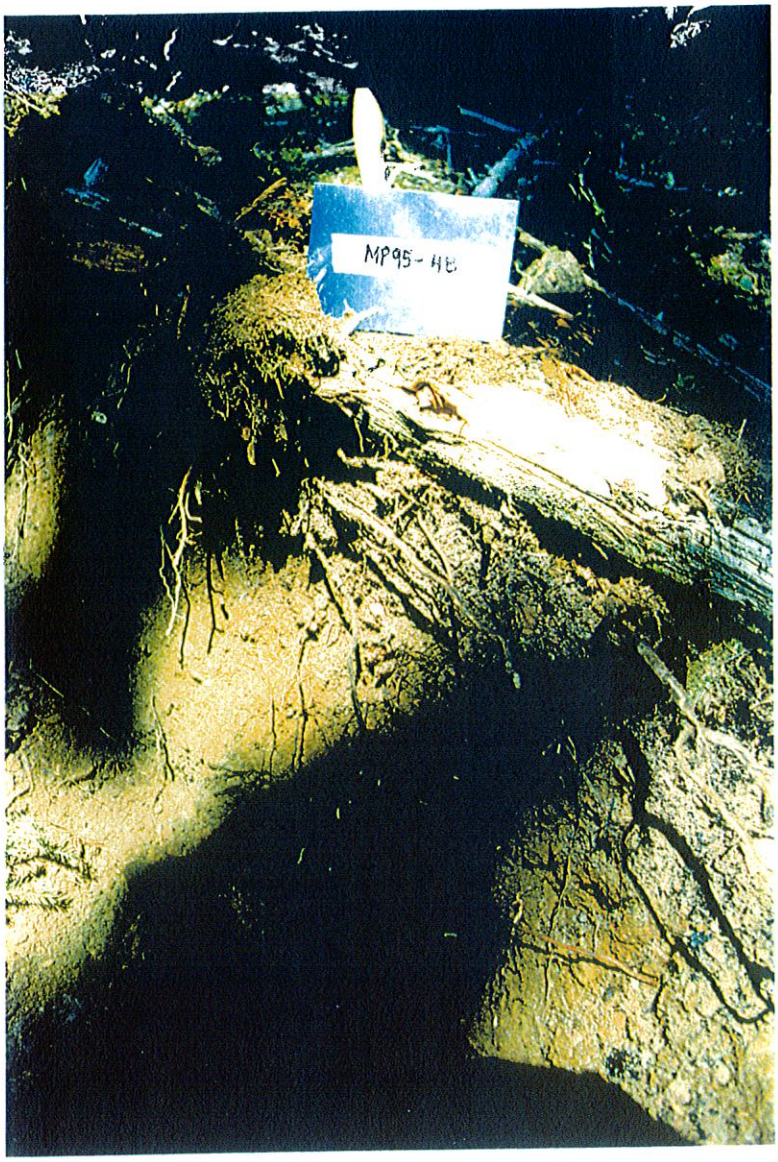
Site MP95-46

Site MP95-47



Site MP95-48

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-49

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-50

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-51

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-52

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-53

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-54

IMPERIAL METALS CORPORATION - MT POLLEY PROJECT

Site MP95-55

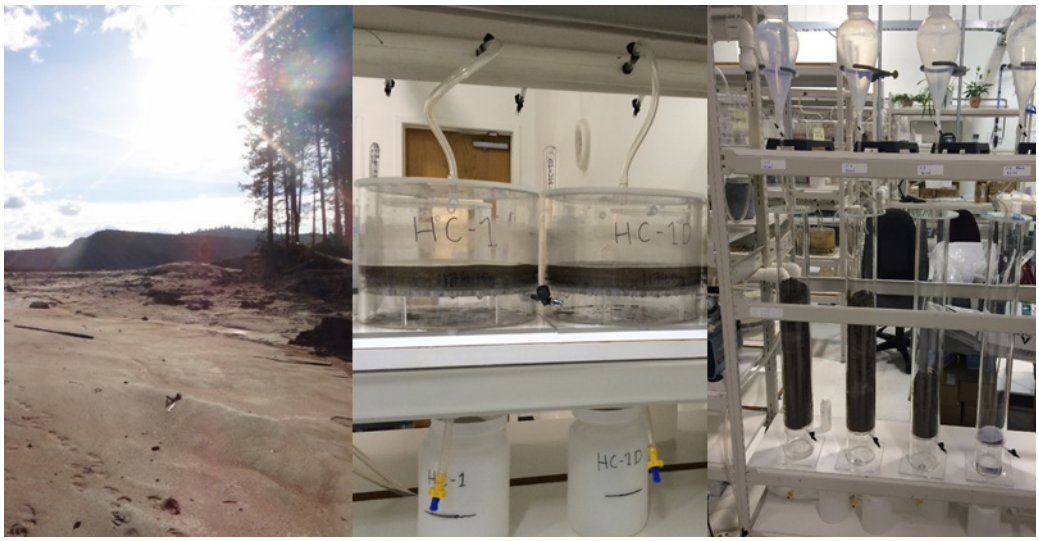
APPENDIX A-2

SRK Laboratory Kinetic Tests on Spilled Tailings

Mount Polley Mine Tailings Storage Facility Embankment Breach: Laboratory Kinetic Tests on Spilled Tailings – FINAL

Prepared for

Mount Polley Mining Corp.



Prepared by

srk consulting

SRK Consulting (Canada) Inc.
1CI008.003
February 2017

Mount Polley Mine Tailings Storage Facility Embankment Breach: Laboratory Kinetic Tests on Spilled Tailings – FINAL

February 2017

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Project No: 1CI008.003

File Name: MtPolleySpilledTailings_GeochemUpdate_1CI008-003_20170201_CBK

srk consulting

Executive Summary

A geochemical characterization program was developed and carried out by SRK Consulting (Canada) Inc. on spilled tailings from the Mount Polley Mine (MPM) Tailings Storage Facility (TSF) embankment breach that occurred on August 4, 2014, approximately 55 km north-east of Williams Lake, BC. Results were provided in SRK (2015a, 2015b), including initial results from laboratory kinetic testing (humidity cells and columns). This report provides an update to the on-going kinetic testing program.

Copper and selenium were the main focus of continued investigations as they were identified to be enriched in the initial study of tailings geochemical characteristics and possibly have potential for leaching. However, all parameters with guidelines for the protection of freshwater aquatic life in British Columbia are being monitored.

Kinetic testing results have been reported for up to 90 weeks as of the date of this report. Results support the assessment that ARD is not expected from the tailings and leaching will be under neutral to alkaline conditions. Leaching rates are now either stable or slowing declining, which is expected to continue as the testing progresses. Variability in leaching rates has also been established and the necessary components for providing contact water chemistry predictions (i.e. geochemical source terms) are now available.

One of the considerations for water chemistry prediction will be flow paths as copper and selenium leaching rate differences were noted between the humidity cells and columns. Mineral solubility limits for tenorite (copper oxide), and malachite (copper carbonate) were reached in the columns but not in the humidity cells, with the formation of secondary copper minerals expected to limit concentrations of copper. Selenium does not have a known mineral solubility control under fully oxygenated conditions, but the longer water flow paths in fine grained materials may also be conducive to lower rates of oxygen diffusion and, therefore, conducive to conditions that support selenium reduction to more insoluble forms such as selenite and elemental selenium.

Kinetic testing is on-going, although the objectives of the kinetic testing program have been met and the program could be decommissioned.

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Appendix A – Geochemical Properties and Mineralogy of Tailings

Appendix B – Humidity Cell Concentrations Charts

Appendix C – Average Release Rates for Humidity Cells and Columns

Appendix D – Column Concentrations Charts

List of Abbreviations

ABA	acid-based accounting
ARD	acid rock drainage
DOC	dissolved organic carbon
HC	humidity cells
ICP-MS	inductively coupled plasma mass spectrometry
IGCM	initial geochemical conceptual model
LOD	limit of detection
ML/ARD	metal leaching and acid rock drainage
MPM	Mount Polley Mine
MPMC	Mount Polley Mining Corporation
ORP	oxidation-reduction potentials
QA/QC	quality control and quality assurance
RPD	relative percentage difference
SI	saturation indices
TIC	total inorganic carbon
TSF	Tailings Storage Facility

1 Introduction

SRK was retained by the Mount Polley Mining Corporation (MPMC) to develop and execute a plan to geochemically characterize tailings materials that were released as a result of the TSF embankment breach on August 4, 2014 from the Mount Polley Mine (MPM), located approximately 55 km north-east of Williams Lake, BC. The plan included a review of existing operational data, development of a geochemical conceptual model to guide sampling design, and a sampling and analysis plan.

The majority of geochemical characterization work has been completed with interpretation of results previously reported by SRK (2015a, 2015b). The work presented in this report is from laboratory kinetic testing including humidity cells and water unsaturated columns. The objective of the kinetic testing program is to establish stable solute release rates to be used as one of the inputs to predicting water quality impacts from mine waste.

This report is a supporting document to the work completed to date and provides updates to the conclusions provided in the SRK (2015a, 2015b) reports on the metal leaching and acid rock drainage (MLARD) potential of exposed tailings along Hazeltine Creek.

2 Background

Geochemical characterization, including acid-base accounting (ABA) tests, trace element analyses, mineralogical analyses, sequential extractions, humidity cell tests and column tests were undertaken on representative samples of tailings that spilled into Hazeltine Creek, and Quesnel and Polley Lakes from the MPM. The characterization approach was based on SRK's sampling plan (SRK 2014) and the geochemical conceptual models presented along with complete details on the sampling and analytical methods used, field observations and analytical results are provided in SRK (2015a, 2015b). For ease of reference, relevant sections have been reproduced in this report.

Two types of tailings-bearing materials were observed along Hazeltine Creek. They were classified in the field as 'grey tailings' and 'magnetite sands'. Grey tailings were dominantly grey in colour and had a finer texture (silty sand) than the magnetite sands. Magnetite sands were speckled pinkish-orange and black. They were strongly magnetic and sandier than the grey tailings. The grey tailings tended to be most abundant along the embankments and upper benches of the creek, whereas the magnetite sands were commonly present in low-lying areas near the creek. With the exception of the area near the TSF embankment breach and Polley Lake, the tailings were deposited in relatively thin 'skiffs' (e.g. less than 10 and up to 20 cm deep). The thickest observed tailings deposits (e.g. around 1 metre deep) were in the immediate vicinity of the TSF embankment breach and Polley Lake (SRK 2015a).

The main geochemical finding was that the MPM tailings are not potentially ARD generating, which is consistent with historical understanding of the tailings and the low sulphur nature of the ore deposit. Any leaching would be expected to occur under neutral to basic pH conditions only, which tends to support low mineral and element specific solubility. The only elements that were

noted to be enriched when compared to typical crustal rocks (basalt) were copper and selenium. Both of these elements were expected to be associated with sulphide minerals and require oxidation to be leached. The potential for reductive dissolution processes to leach elements from natural oxidation components of the spilled tailings that settled in Quesnel and Polley Lakes was assessed and found to be low.

A significant portion of the copper (up to 66%) was found to be associated with the non-sulphide portion of the tailings. As extremely acidic conditions are required to leach this form of copper, it is considered to be non-reactive in the Hazeltine Creek environment because pH conditions are neutral and there is a low risk of acid rock drainage potential from the tailings.

Preliminary kinetic testing results supported the assessment that ARD is not expected from the tailings and leaching will be under neutral to alkaline conditions. However, the preliminary results were from less than 40 weeks of testing (typically the minimum requirement for testing duration) and longer term testing was needed to confirm stable leaching rates for use in long term assessment of water quality expected from leaching of the tailings exposed to the atmosphere.

3 Methods

3.1 General

The kinetic testing program consists of six standard laboratory humidity cells (HCs), three column leach tests, two blanks (a HC and a column), and one HC duplicate (Table 3-1). Samples were selected to represent the median and upper range of geochemical variability identified during the initial characterization work.

The intent of the program is to establish stable solute release rates under atmospheric conditions using humidity cell testing and then use column tests to evaluate the effect of longer water flow paths. Longer flows paths are more likely to represent field conditions and to assess potential attenuation processes such as formation of secondary minerals and surface sorption.

Geochemical composition and mineralogy characteristics were obtained during the initial characterization work and results are summarized in Section 4.5 for ease of reference.

Table 3-1: Composite preparation requirements and sample labelling.

Kinetic Test ID	Tailings Type	Original Sample IDs (SRK 2015a)
HC-1/COL-1; HC-1D	Magnetite Sand	Composite of ST11-02-02, ST12-02 and ST11-02-1
HC-2/COL2	Magnetite Sand	Composite of ST16-02 and ST01-03
HC-3/COL-3	Grey Tailings	Composite of ST08-02-01 and ST13-03
HC-4	Grey Tailings	ST01-05-02
HC-5	Magnetite Sand	ST02-05-02
HC-6	Grey Tailings	ST17-08-01
HC-7	Blank	
COL-4		

Source:\01_SITES\Mt_Polley\1CI008.003_Privileged_and_Confidential\500_Reporting\Interpretations\Geochemistry\Hzltn_Crk_2014\[PhII_sample_selections_1CI008.003_REV00_CBK.xlsx]

3.2 Humidity Cells

The HCs were set up according to the methods described in the 1991 Mine Environment Neutral Drainage Program's Acid Rock Drainage Prediction Manual (MEND 1991). A photograph of the set-up is provided in Figure 3-1.

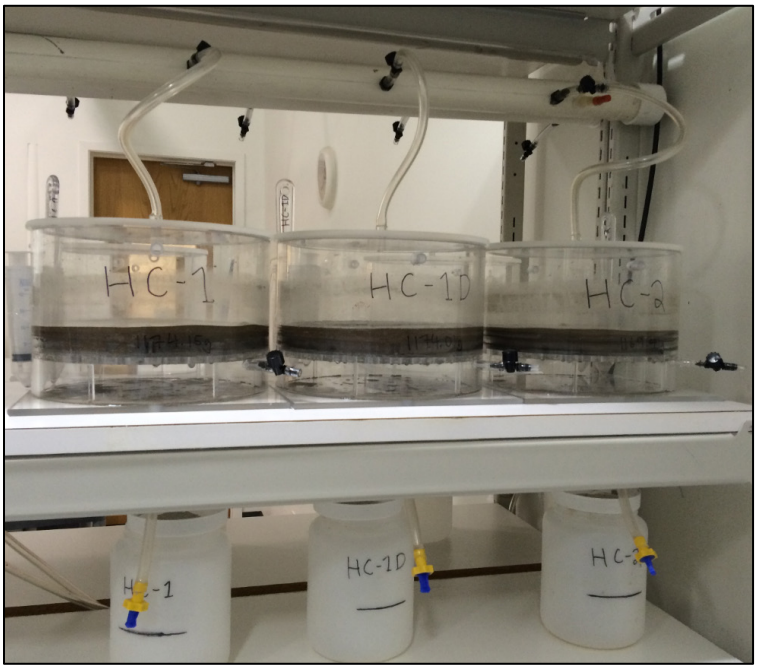

Figure 3-1: Set-up of tailings humidity cells at ALS Environmental. For scale, the diameter of the clear plastic cells is 20 cm.

The two major sample mixture/tailings types identified in the field, (1) magnetite sands tailings and (2) grey tailings, were both tested. The duplicate cell (HC-1D) is a split from HC-1. The blank cell (HC-7) was constructed using the exact same material and adhesives as the other cells and is operating according to the same procedures.

Weekly analyses of leachate included volume recovered, pH, and conductivity.

The following parameters were measured weekly for the first four weeks and then every two weeks thereafter:

- Acidity, alkalinity
- Oxidation-reduction potential (ORP)
- Sulphate
- Nitrate, nitrite, ammonia
- Bromide, chloride, fluoride
- Orthophosphate, total phosphorus

- 35 element scan by ICP-MS
- Low level mercury

The tests were initiated on March 6, 2015. Four of the six HCs and the duplicate were closed on May 27, 2016 after 64 weeks of leaching (Table 3-2). The remaining two HCs are ongoing and have been leached for 90 weeks as of November 25, 2016.

Table 3-2: Humidity cell test status

Humidity Cell	Tailings Type	Last Data	Status	Leach Weeks
HC-1	Magnetite Sand	27-May-2016	Closed	64
HC-1D	Magnetite Sand	27-May-2016	Closed	64
HC-2	Magnetite Sand	27-May-2016	Closed	64
HC-3	Grey Tailings	25-Nov-2016	Ongoing	90
HC-4	Grey Tailings	25-Nov-2016	Ongoing	90
HC-5	Magnetite Sand	27-May-2016	Closed	64
HC-6	Grey Tailings	27-May-2016	Closed	64

Source: \\VAN-SVR0\Projects\01_SITES\Mt_Polley\1CI008.003_Privileged_and_Confidential\410_Kinetic_Tests\Calculations+Charts\HCTs\[Mt. Polley_HCT_Outcomes _1CI008-003_rtc_rev00.xlsx]

3.3 Columns

The column tests, including the blank, were constructed from plexiglass (acrylic) with an 8.2 cm inner diameter and a perforated base supporting two layers of nylon screen (400 mesh). The columns were filled as follows:

- Column 1 (magnetite sand): 4.3 kg (dry weight) to a height of 45 cm
- Column 2 (magnetite sand): 4.5 kg (dry weight) to a height of 36 cm
- Column 3 (grey tailings): 1.5 kg (dry weight) to a height of 16 cm

ALS Environmental confirmed that heavier Column 2 had a lower height than Column 1, which is attributed to greater compaction compared to the other columns.

Each of the samples is being trickle leached. Columns 1 and 2 have about 90 mL added daily until 500 mL has been added in a work week (5 days). For Column 3, only 30 mL of water can be added in a day to avoid pooling on the surface and, as a result, only 150 mL is added in a week. Collection of leachate from the magnetite sands is performed weekly, whereas collection of leachate from the grey tailings column requires up to three weeks due to the fine grained nature of these materials resulting in slow infiltration rates. Laboratory analysis of leachate includes the same parameters as the humidity cells (Section 3.2). A photograph of the set-up is provided in Figure 3-2.

The tests were initiated on April 21, 2015. The magnetite sands samples have been leached for 83 weeks as of November 23, 2016, and the grey tailings for 77 weeks as of November 2, 2016.

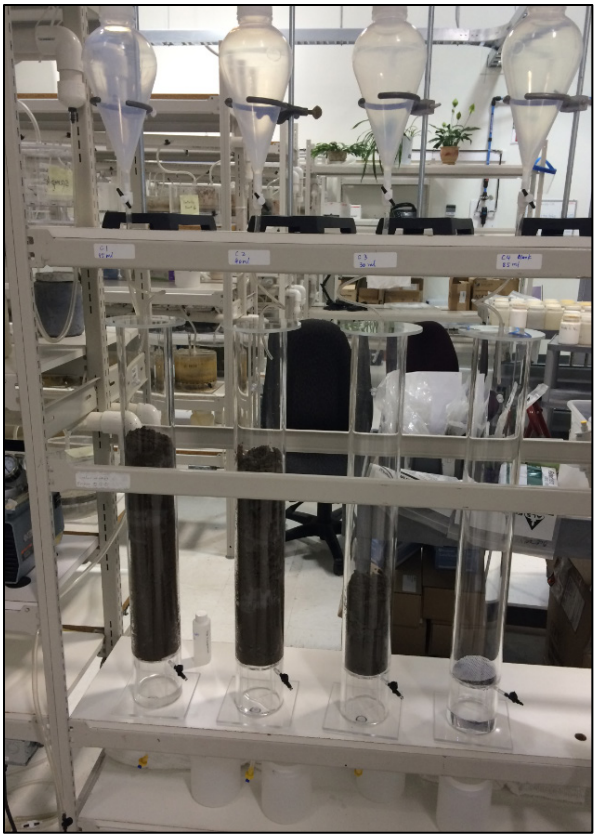

Figure 3-2: Column set-up at ALS Environmental. For scale, the diameter of the columns is 8 cm and the height of materials in column 1 (far left) is 45 cm.

4 Results

4.1 Quality Assurance and Quality Control

Various quality control and quality assurance (QA/QC) measures were included in the program. Duplicate comparisons were done for the non-sulphide copper analysis and kinetic tests. For the kinetic tests only, ion balance calculations and blank sample analysis were also done. Results were as follows:

- Duplicates – samples were assessed with a relative percent difference (RPD) target of 25% (set by SRK) when results were greater than ten times the limit of detection. RPD was calculated using the equation below, where 'x' is the concentration of the original sample and 'y' is the concentration from the duplicate sample:

$$\text{RPD}\,(\%) = \frac{x - y}{(x + y)/2} \times 100$$

- The RPD criterion does not apply at concentrations near the LOD because RPD is expected to frequently be greater than 25% due to reduced analytical accuracy at very low concentrations. This applied to silver and boron. All other parameters with guidelines for the

protection of freshwater aquatic life in British Columbia (BC FAL guidelines) were within the criterion.

- Ion balance – samples were assessed with an RPD target of ±15% (set by SRK) when major anions and cations were greater than ten times analytical detection limits. For all sampling dates the ion balance was within ±15%.
- Blanks – samples were assessed with a target of ten times the detection limit (set by SRK). None of the samples exceeded this criterion.

SRK's overall conclusion is that data quality is acceptable.

4.2 Solid Phase Composition

Geochemical properties and mineralogy of the kinetic test samples were provided in SRK (2015a), but for ease of reference key properties are provided in Table 4-1 and complete results are provided in Appendix A

Table 4-1: Geochemical properties of kinetic tests.

Kinetic Test	Tailings Type	TIC kg $CaCO_3$/t	Total S %	SO_4 %	AP kg $CaCO_3$/t	TIC/AP ratio	Cu mg/kg	Se mg/kg
HC-1/COL-1	Magnetite Sand	25	0.26	<0.01	8.4	3.0	1200	1.5
HC-1D	Magnetite Sand	-	0.27	<0.01	8.4	-	1200	1.7
HC-2/COL-2	Magnetite Sand	18	0.16	<0.01	4.7	3.8	950	1.3
HC-3/COL-3	Grey Tailings	33	0.16	<0.01	4.7	7.0	940	1.6
HC-4	Grey Tailings	26	0.17	<0.01	2.8	9.3	320	0.9
HC-5	Magnetite Sand	15	0.18	<0.01	4.1	3.6	720	1.2
HC-6	Grey Tailings	32	0.21	<0.01	7.2	4.5	1300	1.8

Source:Z:\01_SITES\Mt_Polley\1CI008.003_Privileged_and_Confidential\500_Reporting\5.Kinetic+CuOxide_UpdateReport\Tables\[Kt+Cu_Memo_tables_1CI008.003_REV00_CBK.xlsx]

Sample mineralogy by QEMSCAN was dominated by silicates (88 to 95%) including feldspars, chlorite, and quartz, with lesser iron oxides (2.8 to 7.0%), calcite (0.72 to 4.5%), pyrite and chalcopyrite (0.10 to 0.63%) (Appendix A). Malachite was detected in four of the six samples at less than 0.1%. Magnetite was indistinguishable from other iron oxides analyzed by QEMSCAN but was found to account for approximately 75% of the iron oxide detected in the magnetite sands sample, HC-1/COL-1, by X-ray diffraction (SRK 2015a).

Copper, selenium, and sulphur concentrations for kinetic test samples and the entire dataset are compared in Figure 4-1 and Figure 4-2.

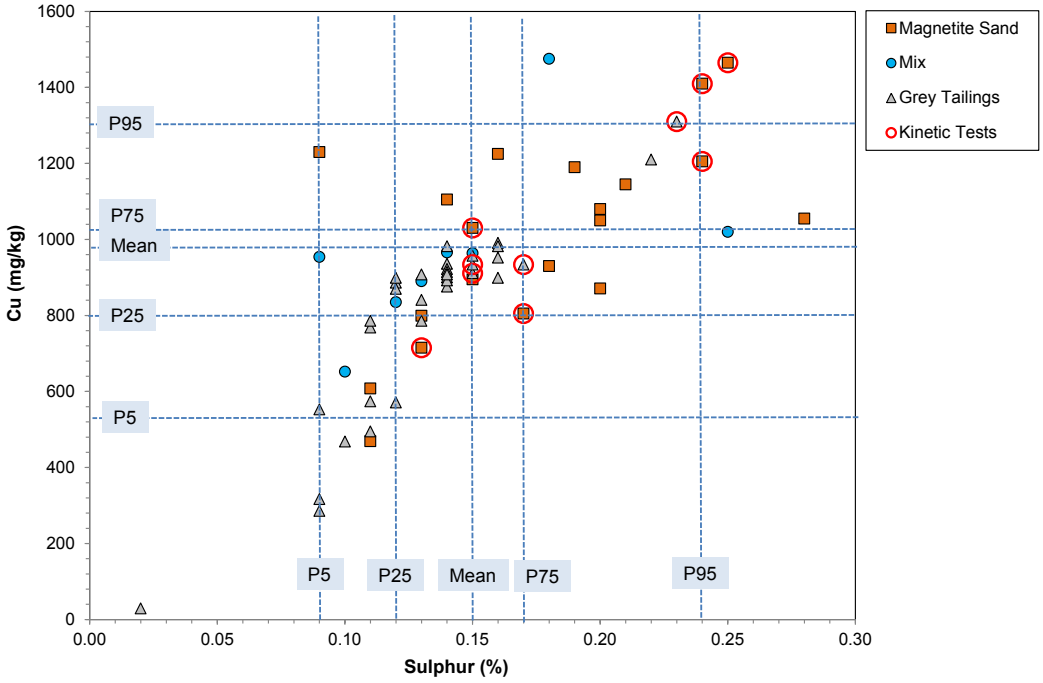

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Figure 4-1: Solid phase copper and sulphur concentrations in kinetic test selections compared to existing dataset.

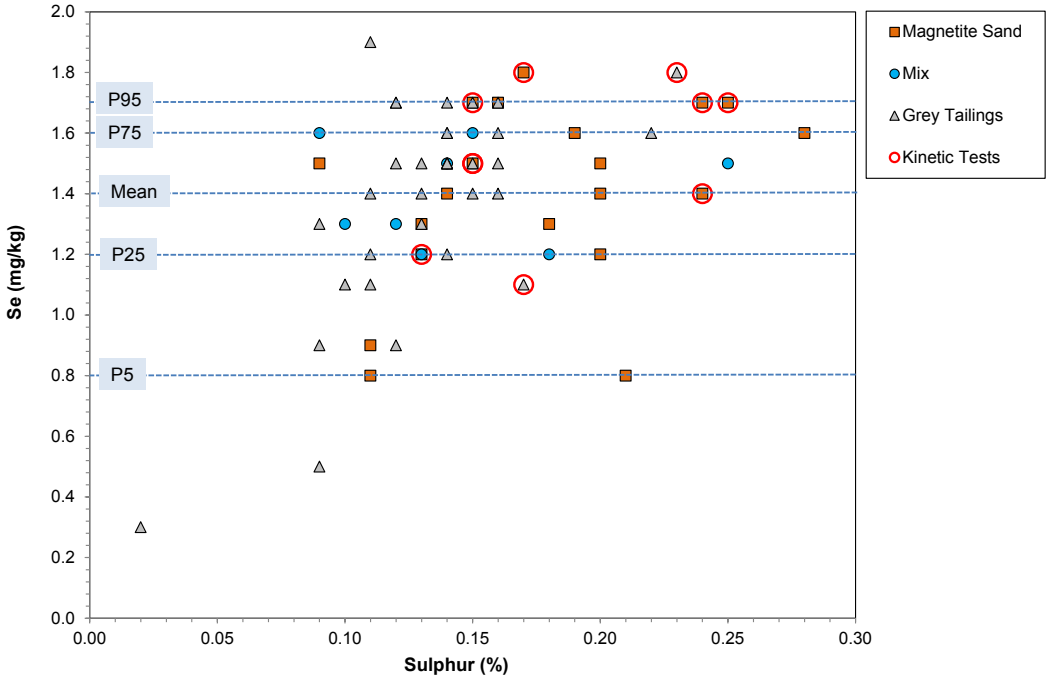

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Figure 4-2: Solid phase selenium and sulphur concentrations in kinetic test selections compared to existing dataset.

4.3 Humidity Cells

Four of the six tests were placed into storage (sealed containers purged with nitrogen gas) in May 2016 after 64 weeks of leaching. The remaining two tests, HC-3 and HC-4 (grey tailings), were continued and have reached 90 weeks of leaching as of November 2016. Concentration charts of humidity cells results for all parameters that have BC FAL guidelines are provided in Appendix B and average element release rates are provided in Appendix C. Charts for pH and sulphate are provided in Figure 4-3 for ease of reference as these parameters are used to understand oxidation and leaching rates. Copper and selenium charts are also provided in Figure 4-3 as these are the two main elements noted to be of leaching concern by SRK (2015a).

Humidity cell results for all parameters except pH are presented as release rates in units of mg/kg/week. The laboratory data provides results as concentrations (i.e. mg/L), but given the known weight of each sample and a measured volume of water leached through the cells on a weekly basis, concentrations are converted to release rates.

Leachates from all humidity cell tests were alkaline and never fell below pH 7 (i.e. leachate was never acidic) with major ion chemistries dominated by calcium and bicarbonate alkalinity. Sulphate release rates were initially elevated in all tests in the first few weeks of testing, which is typical of these tests reflecting flushing of solutes that accumulated prior to testing. The initial flushing of sulphate dominated release rates between weeks 0 and 35 in the grey tailings, and weeks 0 and 15 in the magnetite sands. After this, sulphate release rates showed some variability (for example, sulphate release in HC-5 ranged from 5.3 to 13 mg/kg/week), but overall, the rates did not show a continued increasing or decreasing trend. On this basis, sulphate release rates are interpreted to have stabilized from week 35 onwards in the grey tailings, and from week 15 onwards in the magnetite sands.

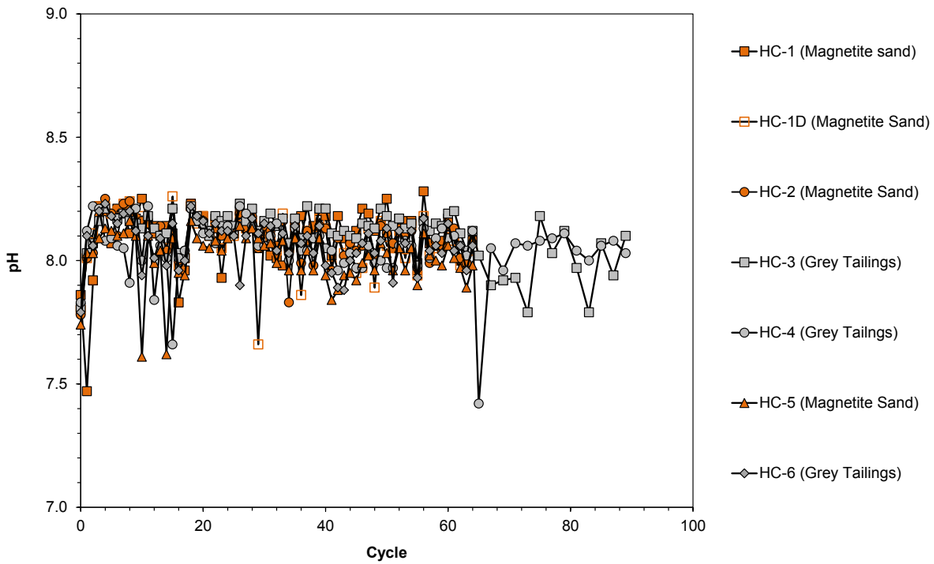
Average sulphate and trace element release rates were calculated for the period of stability as defined above (Table 4-2). Average sulphate release rates were similar between the magnetite sands and grey tailings, and ranged from 3.7 mg/kg/week in HC-1 to 10 mg/kg/week in HC-5. For the trace elements, all tests except HC-4 generally leached at similar rates with average rates for copper ranging from 0.0014 to 0.0025 mg/kg/week, and 0.0011 to 0.0017 mg/kg/week for selenium.

HC-4 leached copper at the highest rate, and leached selenium at the lowest rate, compared to other samples. This is not consistent with the solid phase content of copper (Figure 4-4) or with the significant correlation previously established by SRK (2015a) between copper and selenium in the tailings. Nitrate release rates were also elevated for HC-4. Further investigation has found that the elevated copper concentrations were likely complexed with dissolved organic carbon (DOC), which was leaching at higher rates than the other tests (Figure 4-5) (SRK 2016). A small plant was observed growing from the base of HC-4 (Figure 4-6). The plant growth and elevated DOC and nitrate in HC-4 are consistent with the presence of organic material intermixed with the tailings.

An investigation performed by SRK and Minnow Environmental showed that high levels of DOC (typically over 30 mg/L) were complexing copper (SRK 2016), with the impact of complexation

having two effects: 1) to increase the apparent solubility of copper bound in mineral phases; and 2) to decrease the bioavailability and toxicity of dissolved copper (Stumm and Morgan 1996; Grosell 2012). As part of the evaluation by SRK and Minnow, HC4 was also assessed and found to be consistent with other samples containing elevated DOC. The resulting free or ionic copper was 90% lower and consistent with all other humidity cell results.

Other elements subject to BC FAL guidelines show either steady or slowly decreasing trends (Appendix B).



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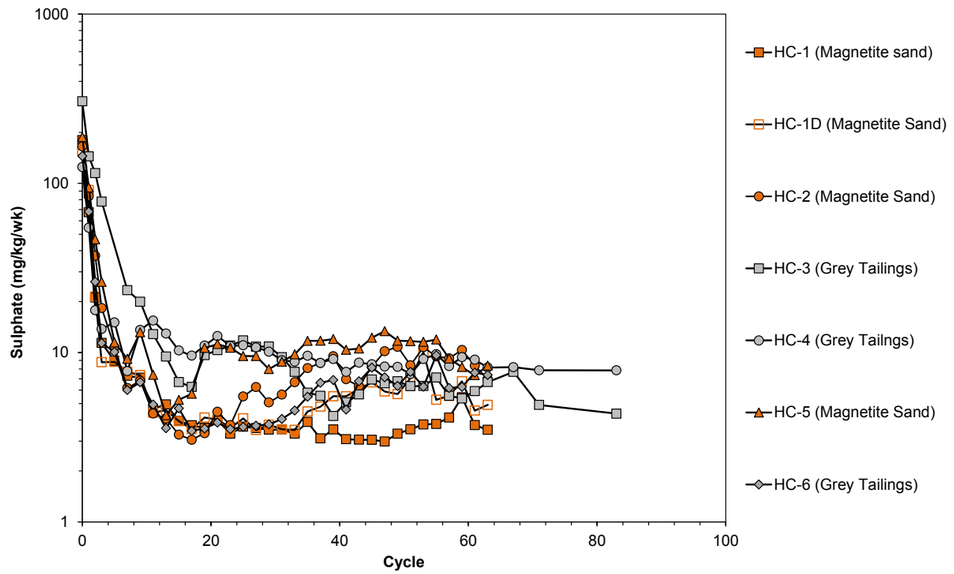

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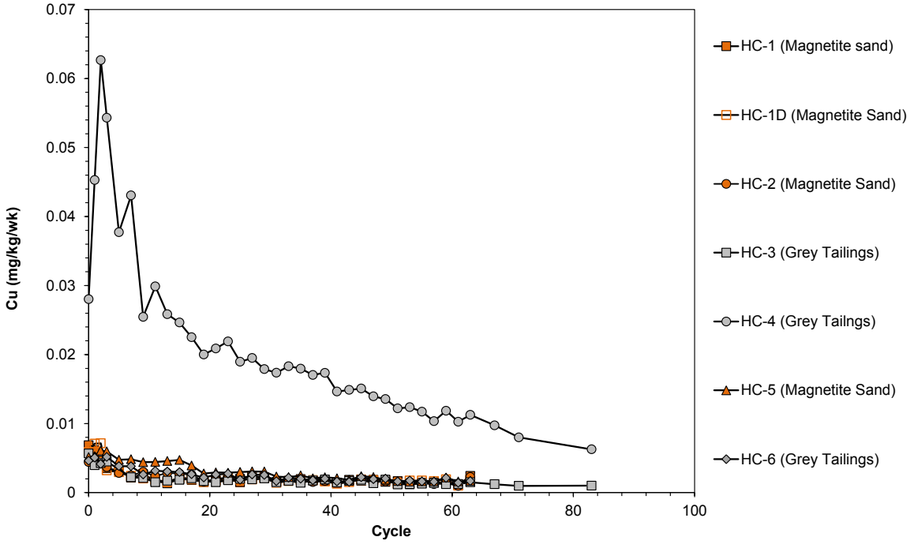

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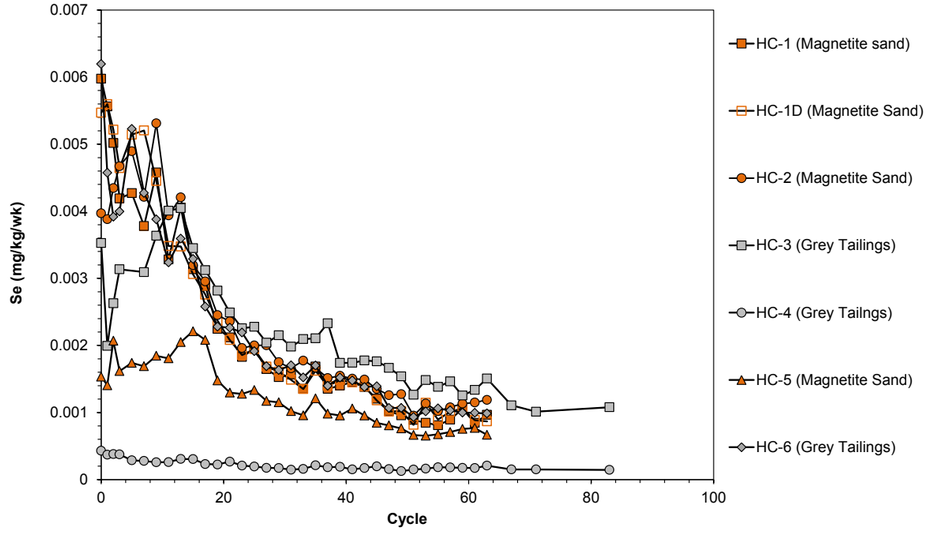

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Figure 4-3: Humidity cell charts for pH and sulphate, copper, and selenium release rates.

Table 4-2: Summary of average element release rates from the humidity cell tests.

Humidity Cell	Tailings Type	Average Element Release Rate (mg/kg/week)									
		Start Week	End Week[(a)]	Total Alkalinity as $CaCO_3$	SO_4	Ca	Mg	Na	K	Cu	Se
HC-1	Magnetite Sand	15	63	17	3.7	6.9	0.57	0.34	0.53	0.0018	0.0015
HC-1D	Magnetite Sand	15	63	17	5.3	7.6	0.61	0.34	0.54	0.0018	0.0016
HC-2	Magnetite Sand	15	63	19	7.5	8.8	0.55	0.59	0.62	0.0019	0.0017
HC-3	Grey Tailings	35	83	22	5.9	8.8	0.56	0.60	0.88	0.0014	0.0015
HC-4	Grey Tailings	35	83	23	8.7	12	0.62	0.18	0.43	0.012	0.00017
HC-5	Magnetite Sand	15	63	16	10	9.4	0.52	0.40	0.52	0.0025	0.0011
HC-6	Grey Tailings	35	63	18	7.4	8.6	0.54	0.41	0.45	0.0019	0.0013

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Notes:

Results have been rounded to two significant figures.

a) Last week with full suite chemical analysis.

Table 4-3: A comparison of physical parameters between the column tests.

Test	Tailings Type	Dry Weight (kg)	Fill Height (cm)	Volume of Tailings (cm^3)	Bulk Density (g/cm^3)	Avg. Flow Rate (mL/day)
COL-1	Magnetite sand	4.3	45	2376	1.8	60
COL-2	Magnetite sand	4.5	36	1901	2.4	64
COL-3	Grey tailings	1.5	16	845	1.8	21

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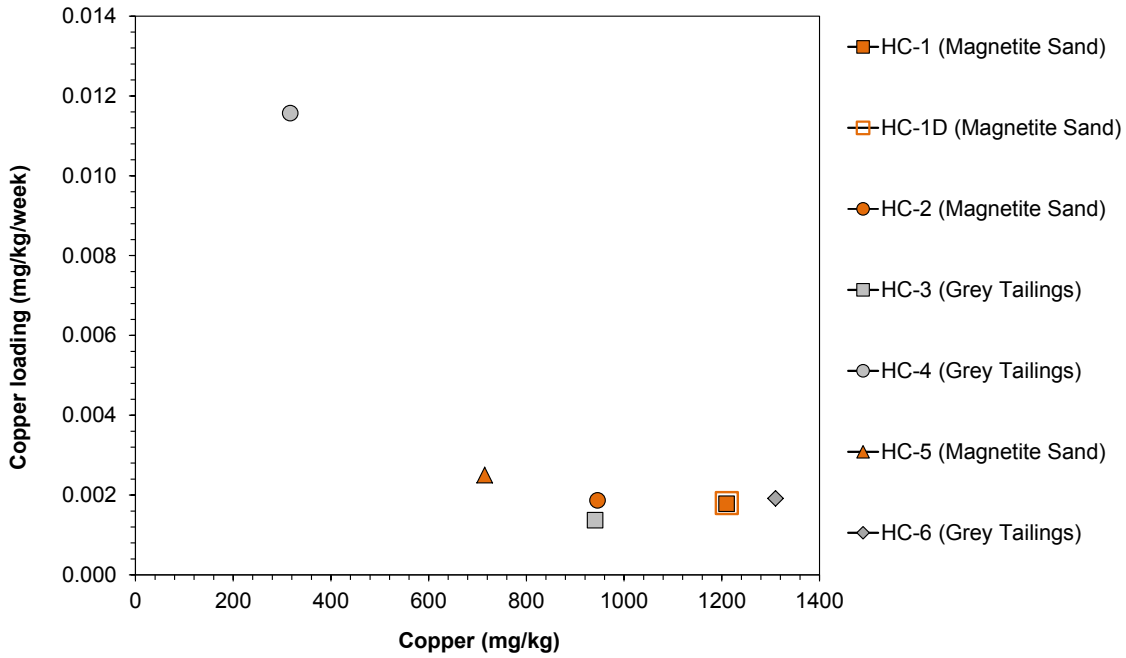

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Figure 4-4: Comparison of average copper leaching rate versus solid phase copper content.

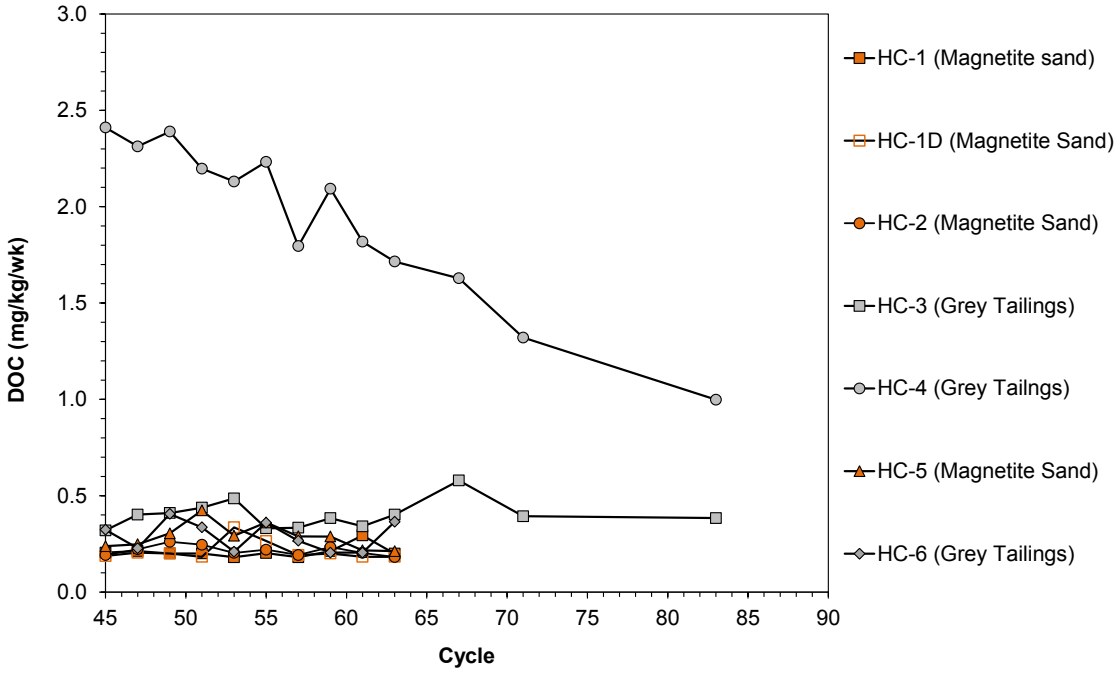

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Figure 4-5: Humidity cell release rates for dissolved organic carbon (DOC) measured from week 45 to 83.

Note: DOC measurements prior to week 45 are not shown because they were subject to contamination from filtration after collection from the humidity cell.

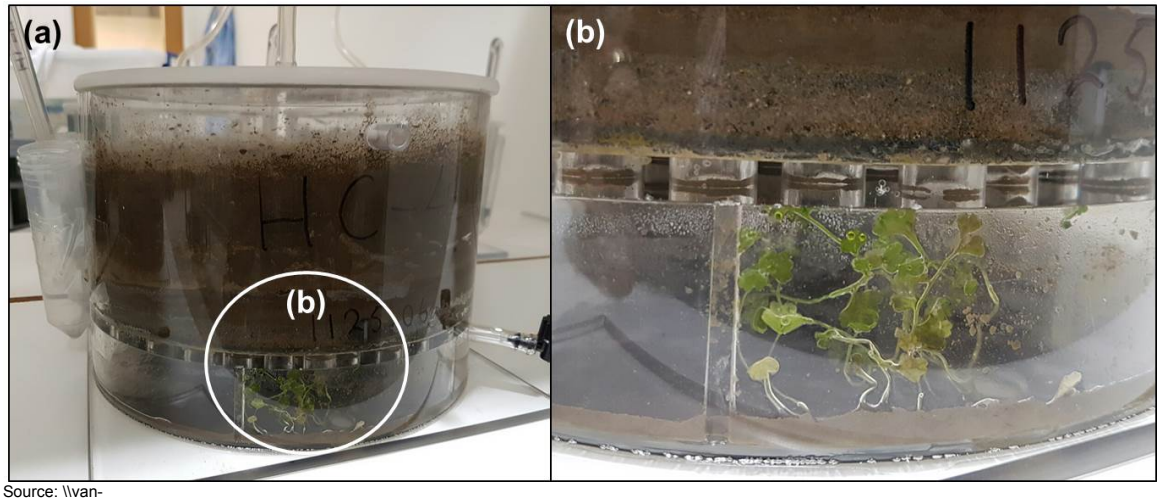

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Figure 4-6: A plant growing from the base of HC-4.

Note: For scale, the diameter of the clear plastic cell is 20 cm. Photo taken by SRK geochemist Chris Kennedy at ALS Laboratory in Burnaby, BC, September 2016.

4.4 Columns

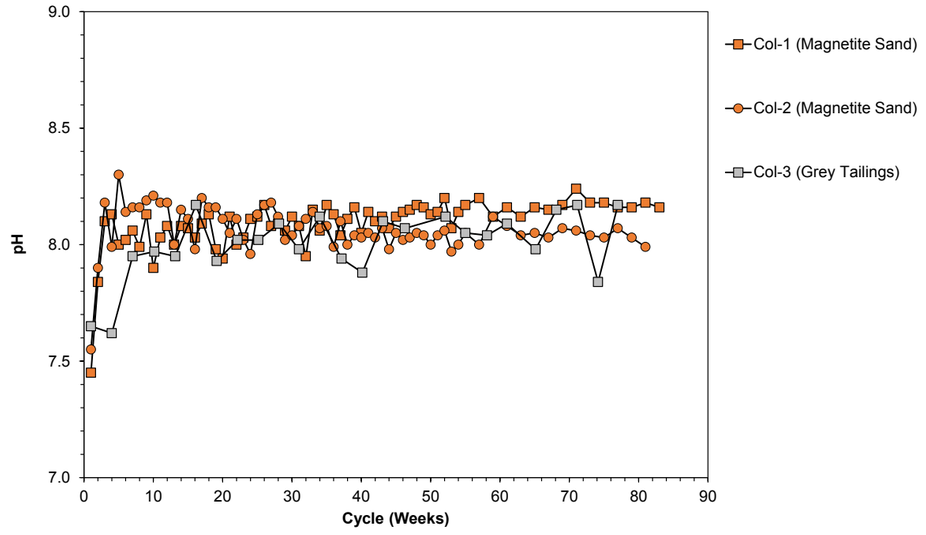
The columns containing magnetite sands (COL-1 and COL-2) have been leached for 83 weeks as of November 23, 2016, and the column containing grey tailings (COL-3) for 77 weeks as of November 2, 2016. Concentration charts for columns for all parameters with BC FAL guidelines are provided in Appendix D and average release rates are provided in Appendix C. When comparing concentration results to BC FAL guidelines it is important to note that porewater chemistry from the tests is not representative of the receiving environment. Results for pH, sulphate, copper, and selenium are provided in Figure 4-7, for the same reason as the humidity cell tests (Section 4.3).

Column leachates were alkaline (pH 7.8 to 8.2). Major ion chemistries were dominated by calcium and bicarbonate alkalinity in the magnetite sands columns (COL-1 and -2), and calcium and sulphate in the grey tailings column (COL-3). Similar to the humidity cells, sulphate release rates were initially elevated in all tests in the first few weeks of testing due to the initial flush of solutes that accumulated prior to testing. Sulphate release rates from COL-1 and COL-3 are still slowly decreasing. Sulphate release rates from COL-2 show no increasing or decreasing trend, and appear to have stabilized after week 25.

Average sulphate and trace element release rates were calculated for the period of stability as defined in Table 4-4. Average sulphate release rates were highest from the grey tailings (COL-3). This sample contained less sulphur than the grey tailings in COL-1 and had the same sulphur content as the magnetite tailings in COL-2. The difference in sulphate release rates is likely attributable to the smaller particle size of the grey tailings relative to the magnetite tailings, and consequently its larger particle surface area per unit of mass.

Copper and selenium release rates were consistent with the solid phase content (Table 4-1). Average copper release rates were highest from the magnetite tailings in COL-1. Selenium release rates were similar between all three columns.

Other elements subject to BC FAL guidelines show either steady or slowly decreasing trends (Appendix D).



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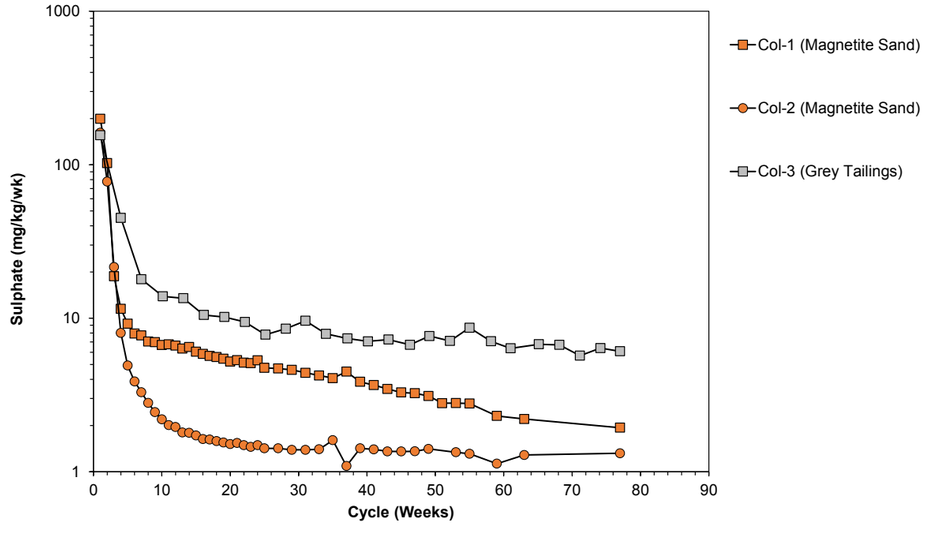

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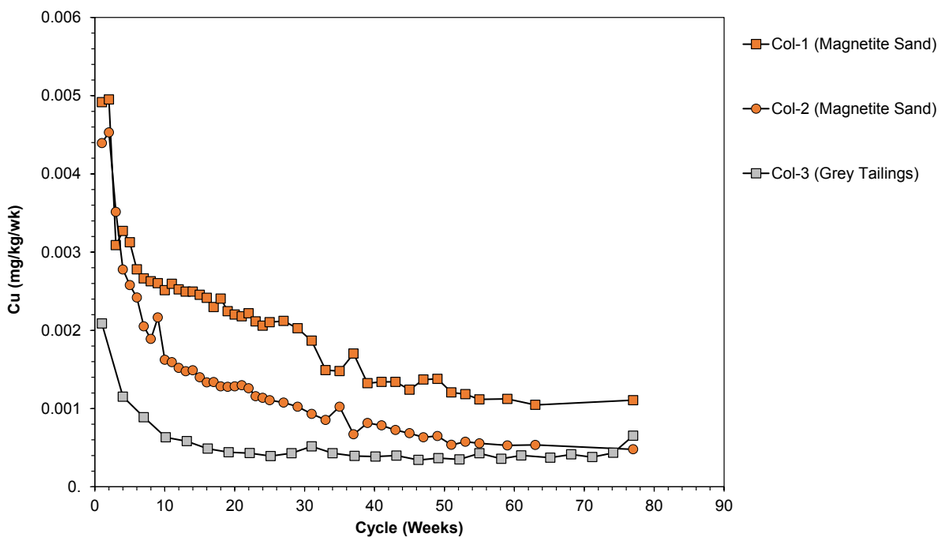

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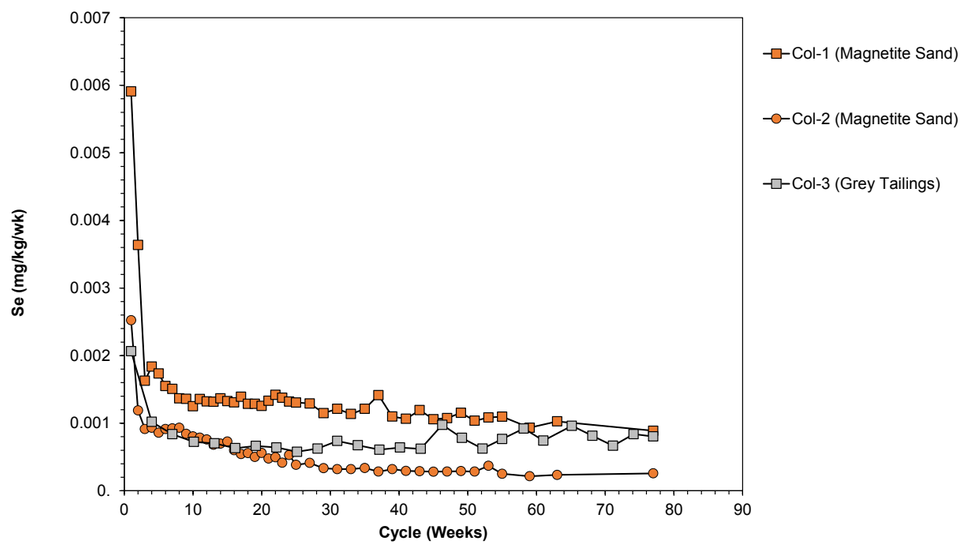

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Figure 4-7: Column cell charts for pH, and sulphate, copper, and selenium release rates.

Table 4-4: Summary of average element release rates from the column tests.

Column	Tailings Type	Average Element Release Rate (mg/kg/week)									
		Start Week	End Week[(a)]	Total Alkalinity as $CaCO_3$	SO_4	Ca	Mg	Na	K	Cu	Se
COL-1	Magnetite Sand	51[(b)]	77	7.6	2.3	3.0	0.36	0.16	0.26	0.0012	0.00099
COL-2	Magnetite Sand	25	77	5.4	1.3	1.9	0.17	0.29	0.21	0.00066	0.00029
COL-3	Grey Tailings	25[(b)]	63	5.5	7.5	3.6	0.35	0.75	0.48	0.00043	0.00077

Source: \\van-svr0.van.na.srk.ad\projects\01_SITES\Mt_Polley\1CI008.003_Privileged_and_Confidential\410_Kinetic_Tests\Calculations+Charts\COLs\[Mt. Polley_Col_Outcomes _1CI008-003_rtc_rev00.xlsx]

Notes:

Results have been rounded to two significant figures.

(a) Last week with full suite chemical analysis.

(b) Sulphate release rates are decreasing and are yet to stabilize.

4.5 Kinetic Test Comparison

Comparison of humidity cells and columns data for pH, sulphate, copper, and selenium provides the basis to understand how the different test configurations impact leaching rates in order to better predict how tailings materials in the field might react and impact water chemistry. The main difference between the columns and the humidity cells is that in the columns, water is trickle-fed at an average rate of 62 mL/day for the magnetite sands, and 21 mL/day in the smaller column containing the grey tailings giving pore water residence times in the order of days to weeks (Table 4-3). In contrast to the columns, 500 mL of water is added to the humidity cells once a week to flush solutes that have accumulated during the previous six days of subaerial weathering. The average pore water residence time in the humidity cell tests is less than one day.

The pH conditions were essentially the same for both tests at around pH 8.1 (Table 4-5). Relative to their humidity cell pair, the columns showed:

- Lower sulphate release rates for samples 1 and 2 (magnetite sands).
- Higher sulphate release rate for sample 3 (grey tailings).
- Lower copper and selenium release rates for all three samples.

Sulphate and trace element release rates from the columns are expected to be lower than their humidity cell pair due to oxygen diffusion limitations and secondary mineral solubility constraints in the columns. The higher sulphate release rate from the grey tailings column relative to its humidity cell test was unexpected, although the difference was minor (24% RPD) and may simply reflect measurement variability between the methods.

Table 4-5: Comparison of humidity cell and column average solute release rates.

Tailings Type	Test	pH avg	SO_4 mg/kg/wk	Cu mg/kg/wk	Se mg/kg/wk
Magnetite Sand	HC-1	8.1	3.7	0.0018	0.0015
	COL-1	8.2	2.3	0.0012	0.0010
	RPD		-48%	-43%	-44%
Magnetite Sand	HC-2	8.1	7.5	0.0019	0.0017
	COL-2	8.1	1.3	0.00066	0.00029
	RPD		-139%	-95%	-143%
Grey Tailings	HC-3	8.1	5.9	0.0014	0.0015
	COL-3	8.0	7.5	0.00043	0.00077
	RPD		24%	-105%	-61%

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The difference in metal release rates was also evaluated by calculating mineral saturation indices (SI) for malachite ($Cu_2CO_3(OH)_2$) and tenorite (CuO) using the equilibrium modelling software package PHREEQC (version 3.0.6) (Parkhurst and Appelo 2013) and the minteq.v8 thermodynamic database. A number of secondary minerals were reviewed in the calculations but the above three were chosen as they illustrate the influence of longer flow paths and also potential controls on copper solubility (malachite and tenorite). Malachite and tenorite were also

shown to be controlling copper concentrations in seepage from sub-aerial tailings near the outlet of Polley Lake (also referred to as Polley Flats, SRK 2016). Ferrihydrite, an iron oxyhydroxide, is also likely at saturation in the tests and is an important secondary mineral for attenuating metals, but concentrations were always below detection and therefore SI calculations were not possible. In the SI calculation, the most recent chemistry from each of the tests was used, but the solutions were not equilibrated with the atmosphere in order to evaluate what was potentially controlling the copper concentration at the time of sampling.

Saturation indices showed that in addition to differences in sample oxidation rate, secondary mineral formation of copper containing minerals is likely decreasing the release rates of copper in the column tests when compared to the humidity cell tests. This is because as the mineral oxidizes and releases copper, it would precipitate as a secondary mineral and not be released from the sample. SI values were always higher in the column tests, indicating that mineral precipitation was potentially higher in the columns as compared to the humidity cells. An example of mineral saturation differences, malachite saturation in column-1 compared to humidity cell 1 (same sample material), as well as tenorite in column 1 is provided in Figure 4-8. Based on the modeling results, tenorite appears to be a likely mineral control for long term release rates.

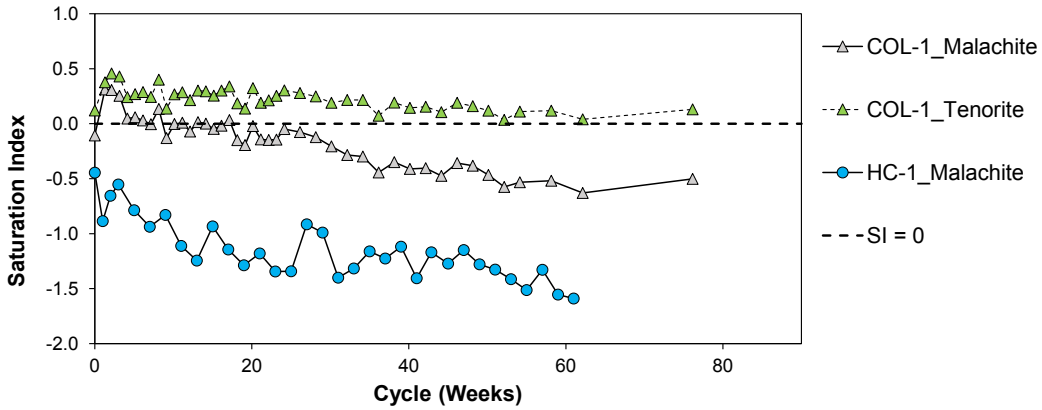

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Figure 4-8: Comparison of malachite saturation index in COL-1 and HC-1.

5 Discussion

5.1 Overview

The overall geochemical characterization program outlined by SRK (2015a) was developed to provide information on the potential for leaching from the spilled tailings. The kinetic tests are specifically for subaerial weathering of the spilled tailings along Hazeltine Creek and are confirming that the risk of ARD and metal leaching in the spilled tailings is low and that any leaching will be under neutral pH conditions.

5.2 Tailings Leaching Rates

Leaching rates for subaerial tailings situated along Hazeltine Creek have been established with stabilized sulphate release rates observed from the humidity cell tests and either stable or slowly declining sulphate release rates in the column tests. As sample selection included materials that represented median and upper 95th percentile materials in terms of sulphur, copper, and selenium concentration, leaching variability has also been established.

As discussed in SRK (2015a), the presence of secondary copper minerals will tend to keep the concentration of copper in seepage and contact from tailings at a 'ceiling' concentration, which is supported by measured concentrations at other copper porphyry mines with neutral to basic pH site conditions (Day and Rees 2006). For locations along Hazeltine Creek where the tailings settled in thin layers (i.e. less than 0.5 metres), dilution from precipitation is expected to be high and concentrations could be even lower than predicted by mineral solubility limits. Copper concentrations not constrained by mineral solubility (i.e. HC-4) are predominantly complexed with DOC as described by SRK (2016). The non-complexed copper is well constrained by mineral solubility meaning that copper leaching is predicted to be well constrained and is only expected to continue deceasing over time.

Selenium is not expected to be influenced by a mineral solubility control at neutral pH and in surface waters that are fully aerated. However, there was a difference in leaching rates between HC-3 and COL-3 that was not observed with the sulphate leaching rates. Sulphate in the humidity cells and columns is considered a conservative tracer as concentrations are not high enough for mineral precipitation of sulphate minerals that could have a significant control on concentrations (i.e. precipitation of gypsum). The other removal mechanism for sulphate is through chemical reduction, which requires anaerobic and very reducing conditions that were not likely present in the columns.

The difference in selenium leaching rates is attributed to a selenium sequestration process. Selenium has several chemical forms (notably selenate, selenite, elemental selenium and selenide) and does not need to have very low reducing conditions like sulphate to be chemically reduced (it tends to occur either at or just below the redox conditions required for denitrification). When selenium (as selenate) is reduced to selenite, it becomes less soluble as it has a higher affinity for mineral surfaces than its more oxidized form selenate (MEND 2015). If environmental conditions become even more reducing, elemental selenium will precipitate from solution, also resulting in decreased dissolved selenium concentrations. As a result, the difference observed for the selenium leaching rate in COL-3 versus HC-3 is likely a result selenium being reduced from selenate to selenite in the column and being sequestered onto the mineral surfaces as opposed to leaching into solution. Conditions in the humidity cells likely remained full aerated and conditions supportive of selenium reduction did not develop.

5.3 Assessment for Test Completeness

A kinetic test is complete when the overall objective of the test has been met. The objective of the kinetic testing program is to obtain stable solute release rates. "Stable" in this context is defined as results that are either showing flat trends (i.e. no upward or downward trend), or changing

sufficiently slowly that the trend is predictable, and can be used to understand the future behaviour of the materials under investigation. As previously noted, the trends observed are for tailings with some of the highest solid phase copper concentrations along Hazeltine Creek and the leaching rates reported herein are expected to be conservative.

Based on the cumulative results of the program, the humidity cells and column tests are considered stable. Variability for leaching rates under neutral pH conditions has been established with leaching rates for all BC FAL parameters available. The objectives of the kinetic test program have been met and SRK recommends decommissioning the three remaining humidity cells.

6 Conclusions

The results and interpretations presented in this report are a continuation of the geochemical characterization studies undertaken on representative samples of tailings that spilled into Hazeltine Creek in August 2014 from the MPM TSF embankment breach.

Kinetic testing confirmed that leaching considerations are under neutral to alkaline conditions and continue to support the previous assessment that ARD is not expected in these materials. Based on more than 80 weeks of testing, leaching rates are either stable or slowly declining and are suitable for use in predicting long term water quality from weathering of subaerial tailings. Variability in leaching rates has also been established and water contact chemistry predictions (i.e. geochemical source terms) are now possible.

For any tailings materials with water flow paths longer than half a metre, mineral solubility controls for copper are expected. Longer flow paths in the fine grained materials may also be conducive to lower rates of oxygen diffusion and therefore conditions that support sequestration of selenium.

Testing remains on-going but given the objective of the testing has been met, SRK recommends that the cells be decommissioned.

This report, Mount Polley Mine Tailings Storage Facility Embankment Breach: Update on Geochemical Characterization of Spilled Tailings, was prepared by

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

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Appendix A – Geochemical Properties and Mineralogy of Tailings

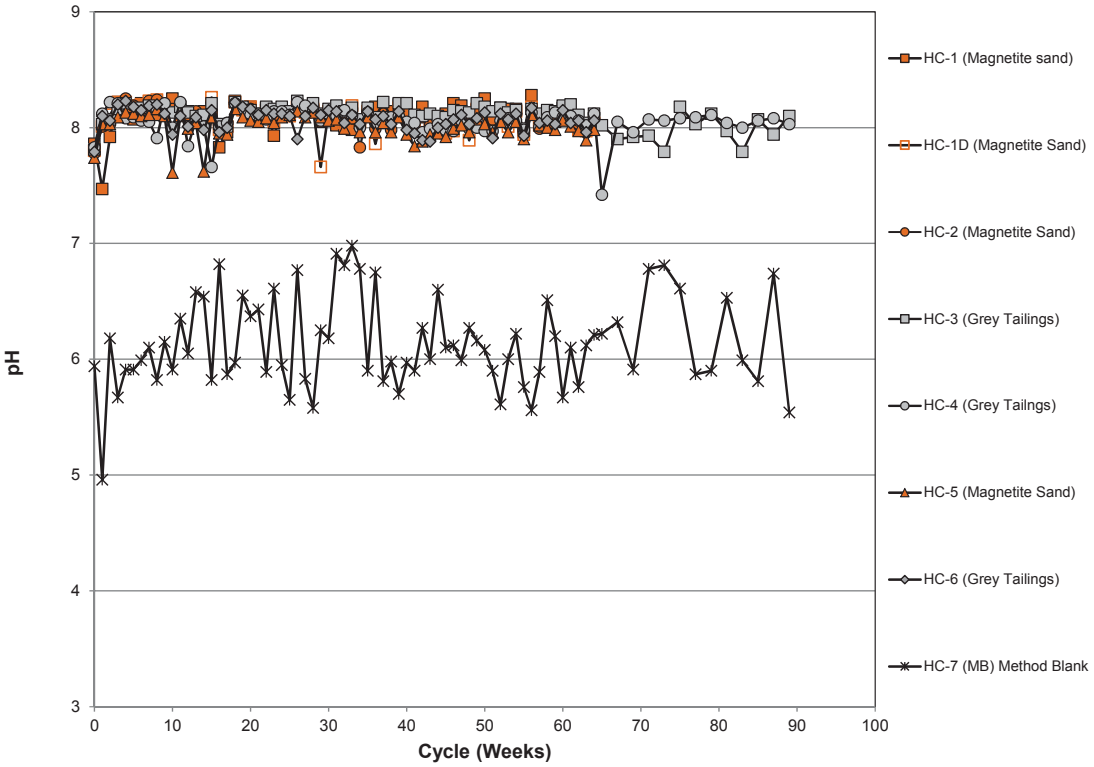
Composition

Kinetic Test	Tailings Type	Leco S %	Aqua Regia S %	Al %	As mg/kg	B mg/kg	Cd mg/kg	Co mg/kg	Cu mg/kg	Fe %	Hg mg/kg	Mn mg/kg	Mo mg/kg	Ni mg/kg	Pb mg/kg	Se mg/kg	Ag mg/kg	Zn mg/kg
HC-1/COL-1	Magnetite Sand	0.26	0.27	1.2	13	<10	0.22	19	1200	8.0	0.14	630	5.6	9.2	6.8	1.5	0.51	82
HC-1D	Magnetitie Sand	0.27	0.27	1.2	14	<10	0.17	19	1200	8.2	0.13	610	5.1	9.0	5.5	1.7	0.60	63
HC-2/COL-2	Magnetite Sand	0.16	0.15	1.3	11	<10	0.15	16	950	5.7	0.1	520	4.3	7.1	4.6	1.3	0.33	54
HC-3/COL-3	Grey Tailings	0.16	0.15	1.8	13	<10	0.13	21	940	5.0	0.08	710	4.7	10	5.6	1.6	0.33	70
HC-4	Grey Tailings	0.17	0.09	1.3	9.6	10	0.16	12	320	4.2	0.08	600	1.8	16	5.4	0.9	0.18	55
HC-5	Magnetite Sand	0.18	0.13	1.4	10	10	0.16	12	720	4.3	0.1	560	3.6	13	9.0	1.2	0.34	53
HC-6	Grey Tailings	0.21	0.23	1.4	11	10	0.24	15	1300	4.9	0.11	620	5.1	8.2	6.0	1.8	0.53	59

Mineralogy

		Sulphides			Carbonates			Silicates											Oxides and Other			
Kinetic Test	Tailings Type	Pyrite %	Chalcopyrite %	Bornite %	Calcite %	Dolomite %	Malachite %	Quartz %	Plagioclase %	K-Feldspar %	Sericite/Muscovite %	Biotite %	Clinopyroxene %	Epidote Group %	Garnet %	Chlorite %	Clays %	Other Silicates %	Fe-Oxides %	Ti (Fe) Oxides %	Apatite %	Other %
HC-1/COL-1	Magnetite Sand	0.24	0.24	0.035	2.2	0.11	0.0081	3.8	24	43	1.5	1.7	4.3	0.87	2.2	3.8	1.8	1.9	7	0.29	0.7	0.027
HC-1D	Magnetitie Sand	0.32	0.24	0.02	2.5	0.051	0.013	5	25	41	1.4	1.4	5.9	0.49	2.5	3.7	1.7	2	6.5	0.23	0.6	0.051
HC-2/COL-2	Magnetite Sand	0.19	0.18	0.019	2.3	0.037	0.00048	1.3	29	43	1.1	2.2	5.1	0.47	1.8	3.6	1.9	1.9	5.3	0.24	0.68	0.027
HC-3/COL-3	Grey Tailings	0.33	0.024	0.0	2.6	0.018	0.0	1.1	27	39	1.5	3.2	5	0.28	1.3	6.9	2.3	3.1	4.9	0.11	0.88	0.054
HC-4	Grey Tailings	0.08	0.021	0.00029	0.72	0.43	0.0	27	19	24	1.7	1.2	3.9	1.1	3.4	5.2	5.3	2.9	2.8	0.64	0.44	0.036
HC-5	Magnetite Sand	0.16	0.16	0.015	1.3	0.15	0.0028	21	21	31	1.1	1.3	3.9	0.89	2.5	4.1	4.3	1.9	3.8	0.73	0.51	0.032
HC-6	Grey Tailings	0.40	0.23	0.016	4.5	0.048	0.013	3	27	39	1.8	1.6	4.6	0.4	1.8	3.8	2.8	2.2	4.9	0.28	0.81	0.021

Appendix B – Humidity Cell Concentrations Charts



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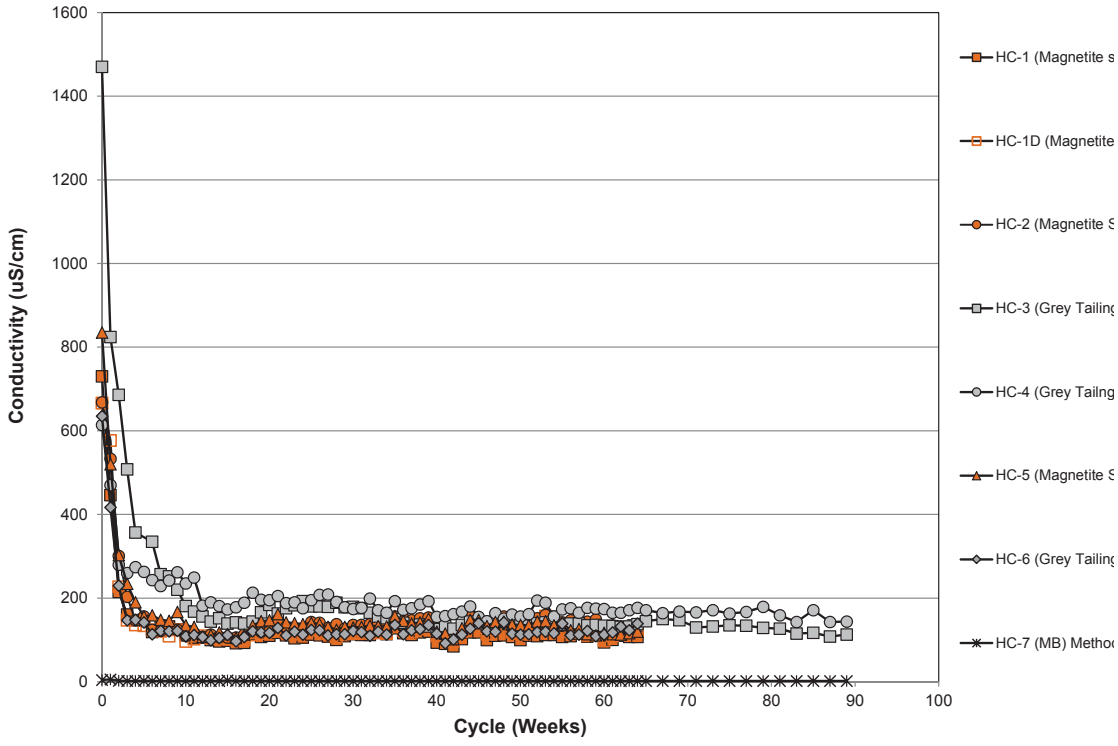

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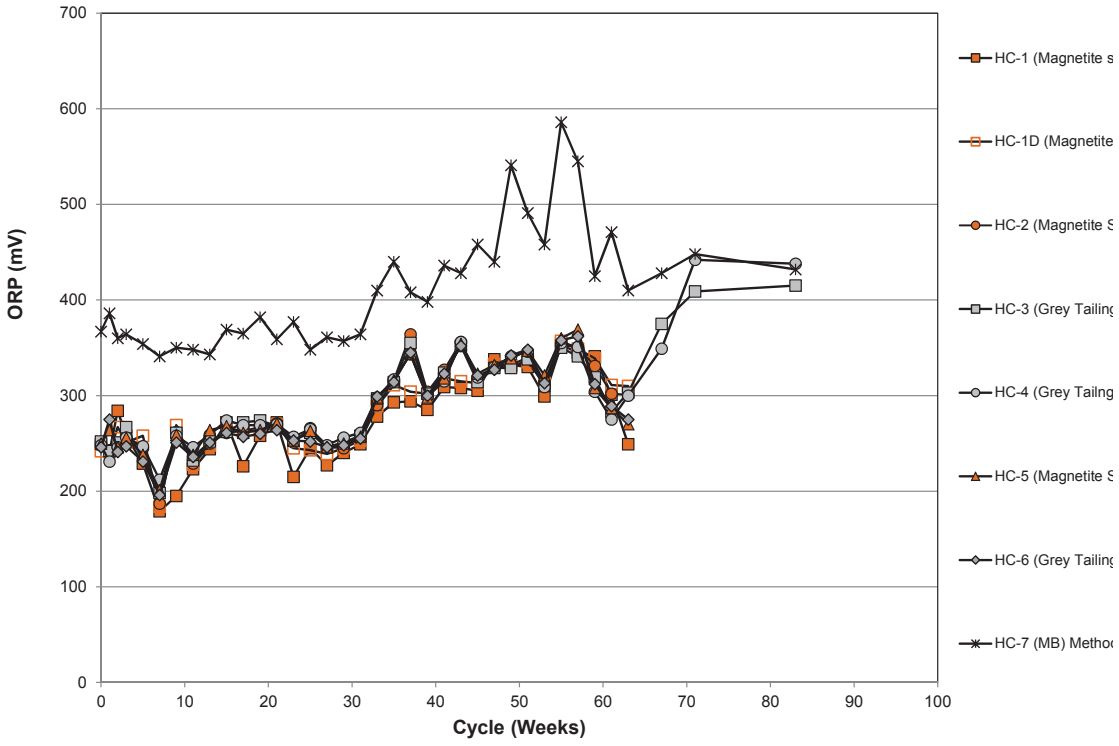

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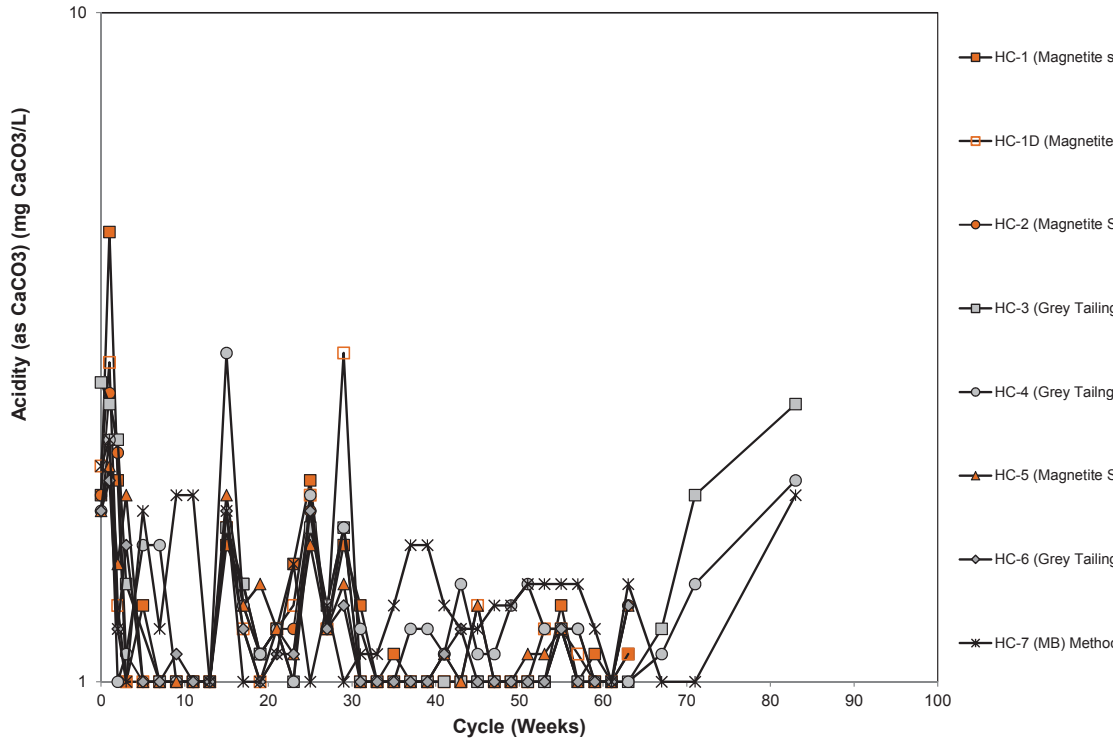

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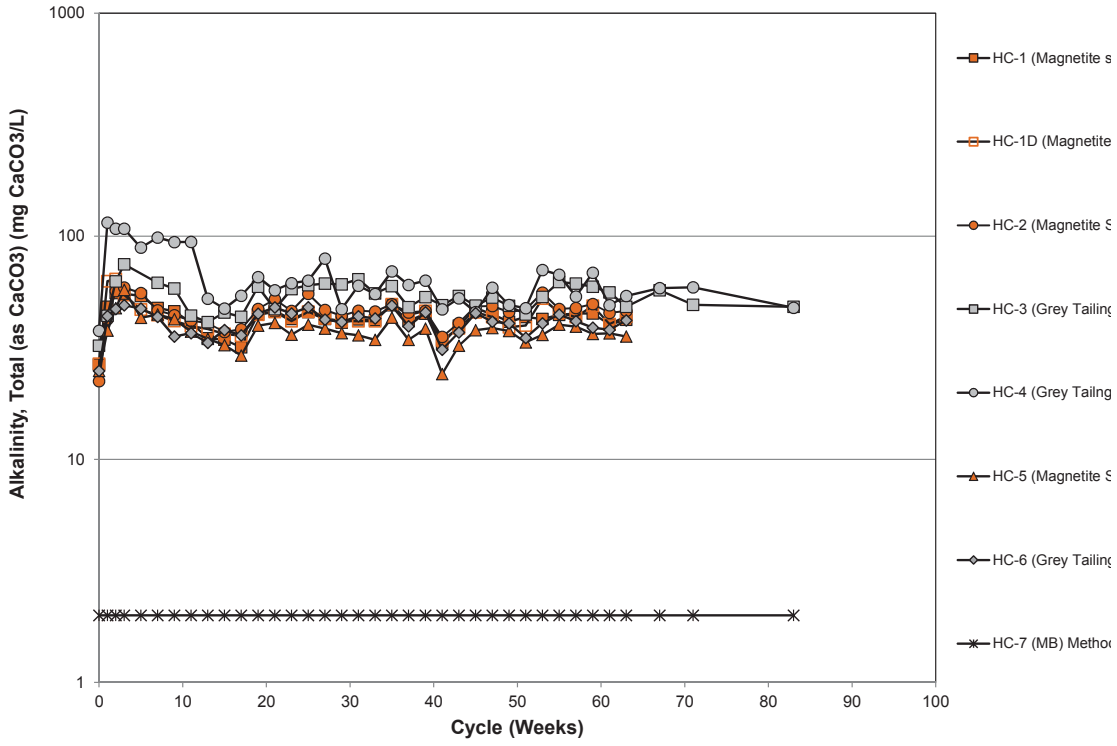

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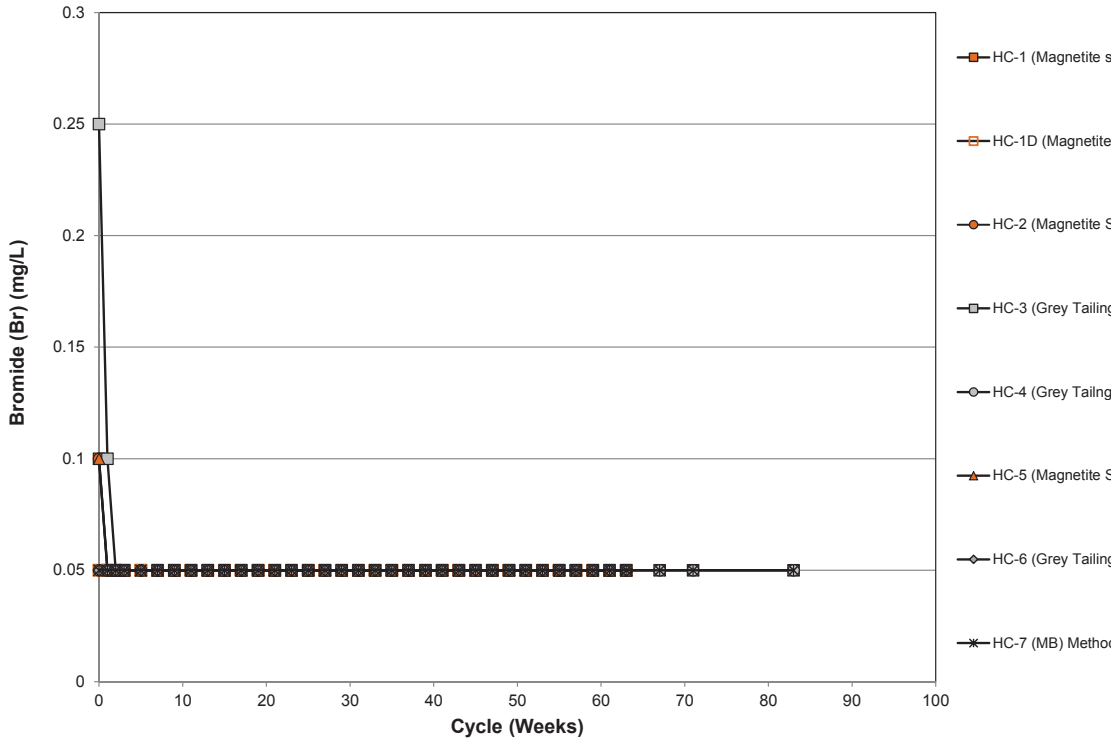

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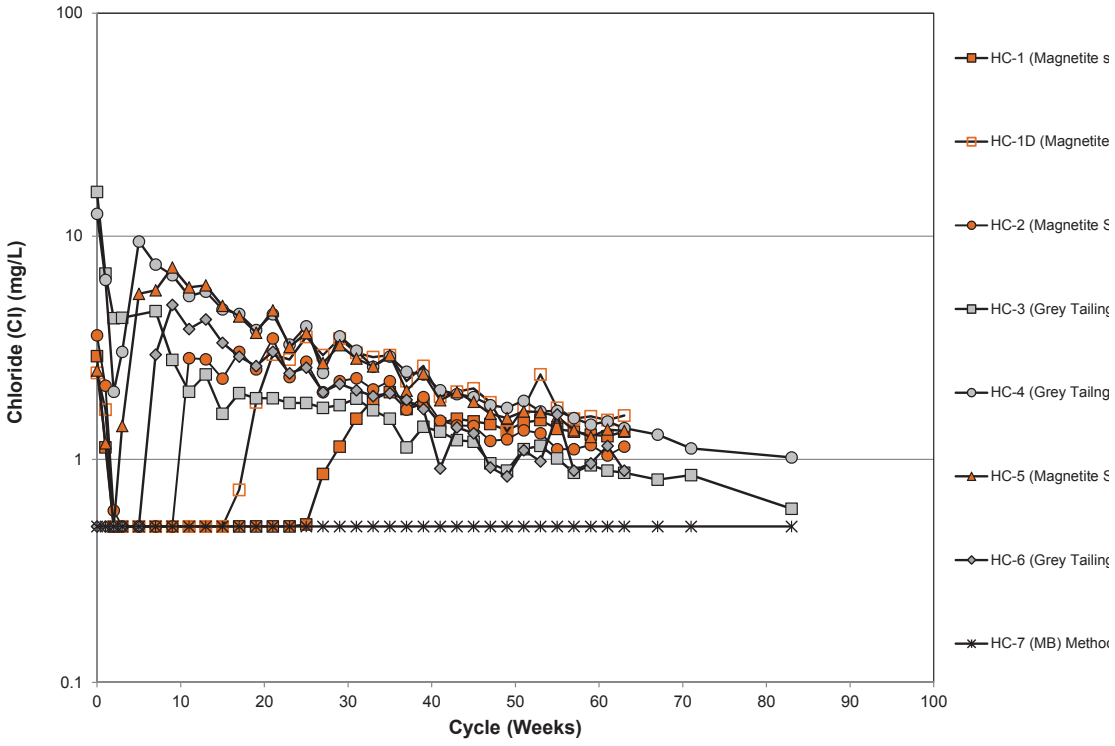

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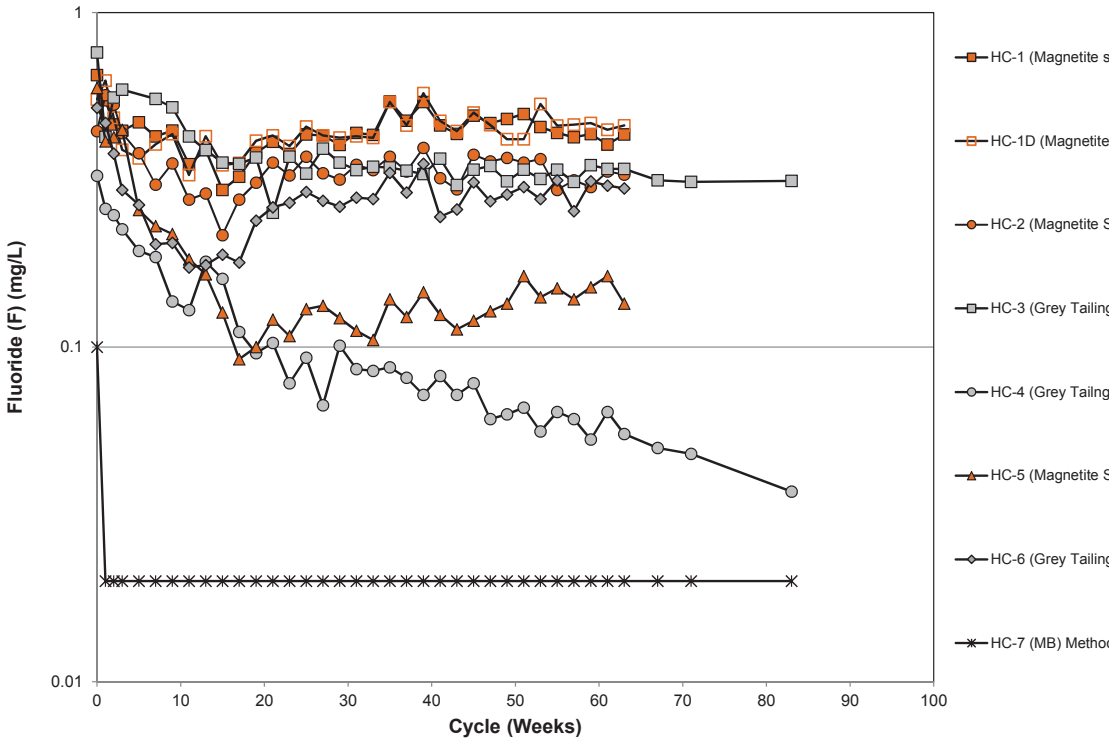

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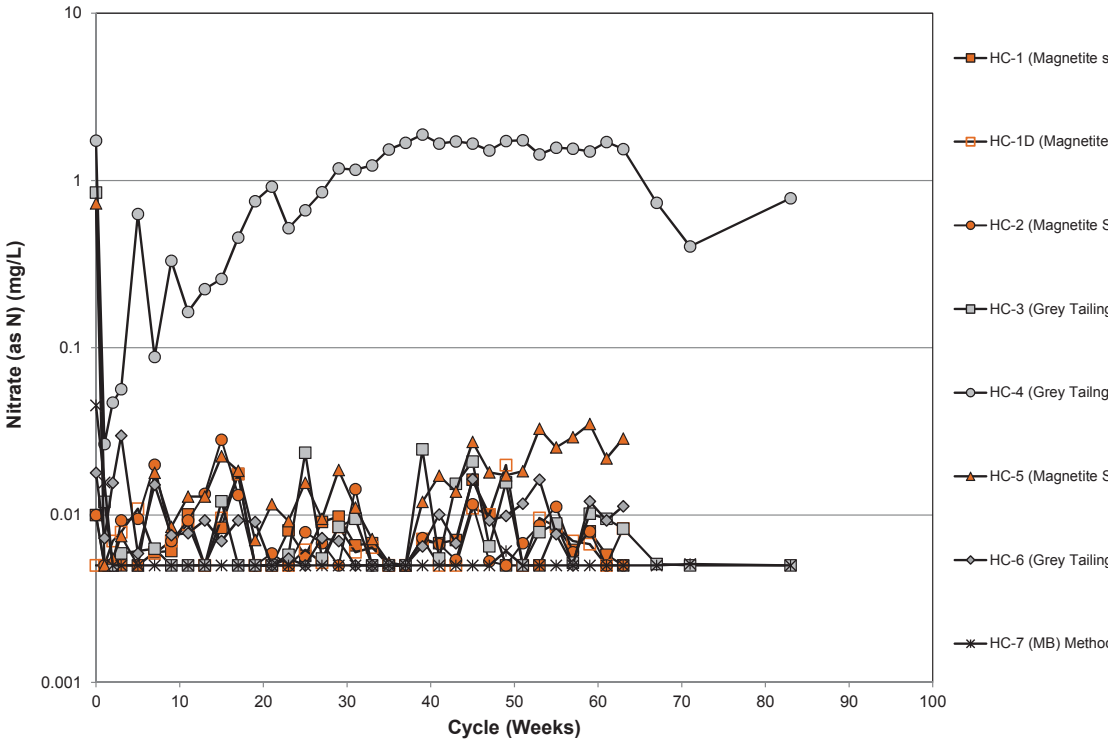

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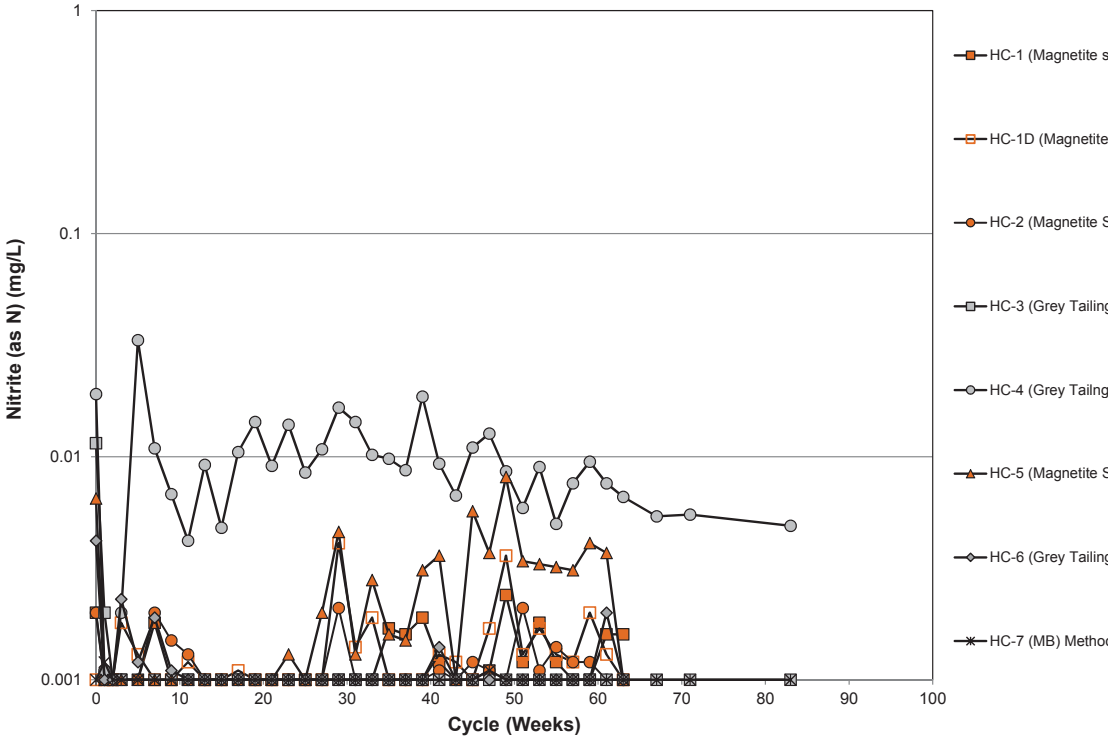

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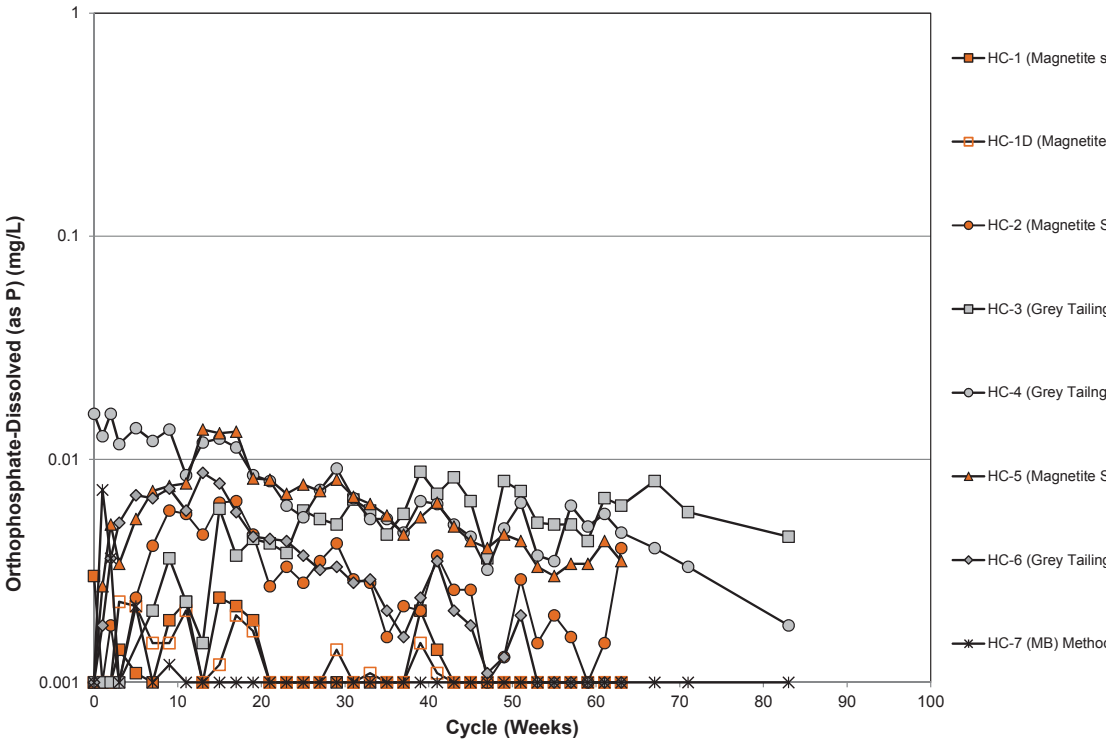

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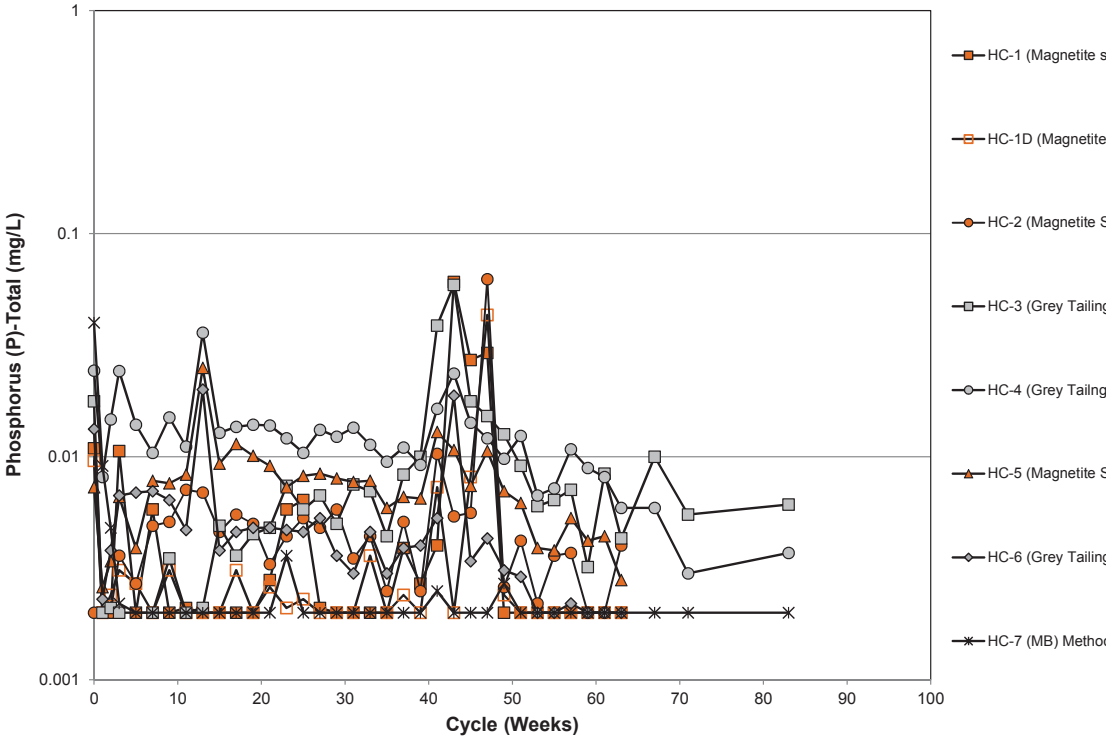

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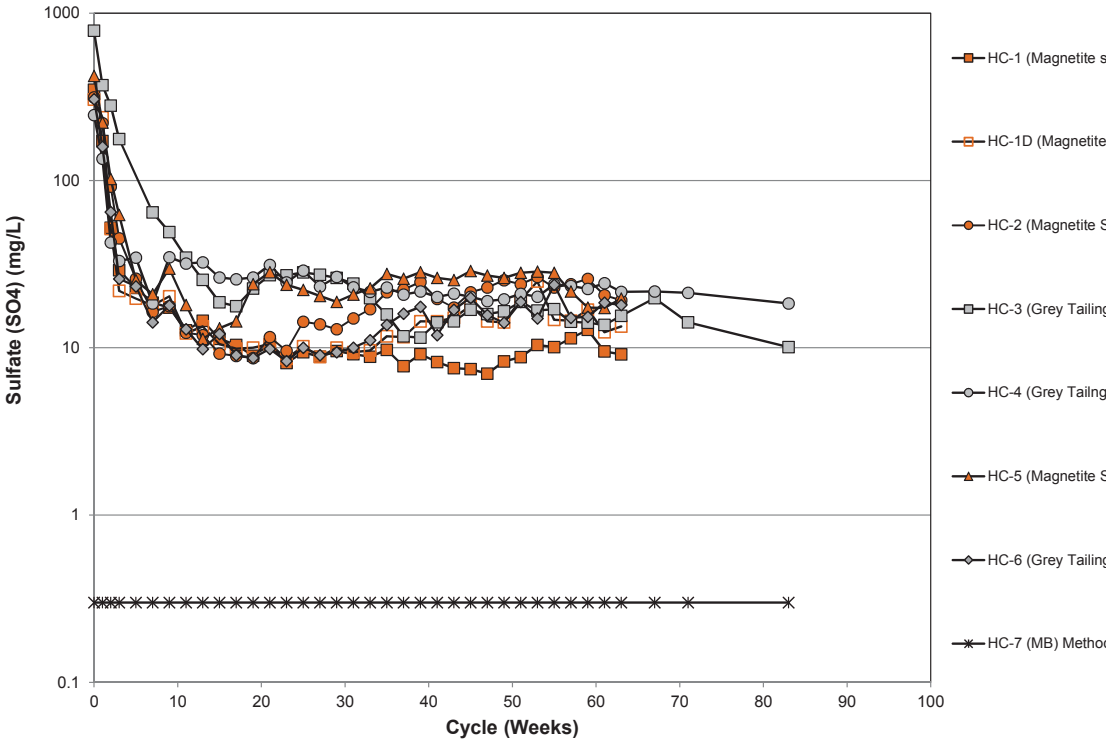

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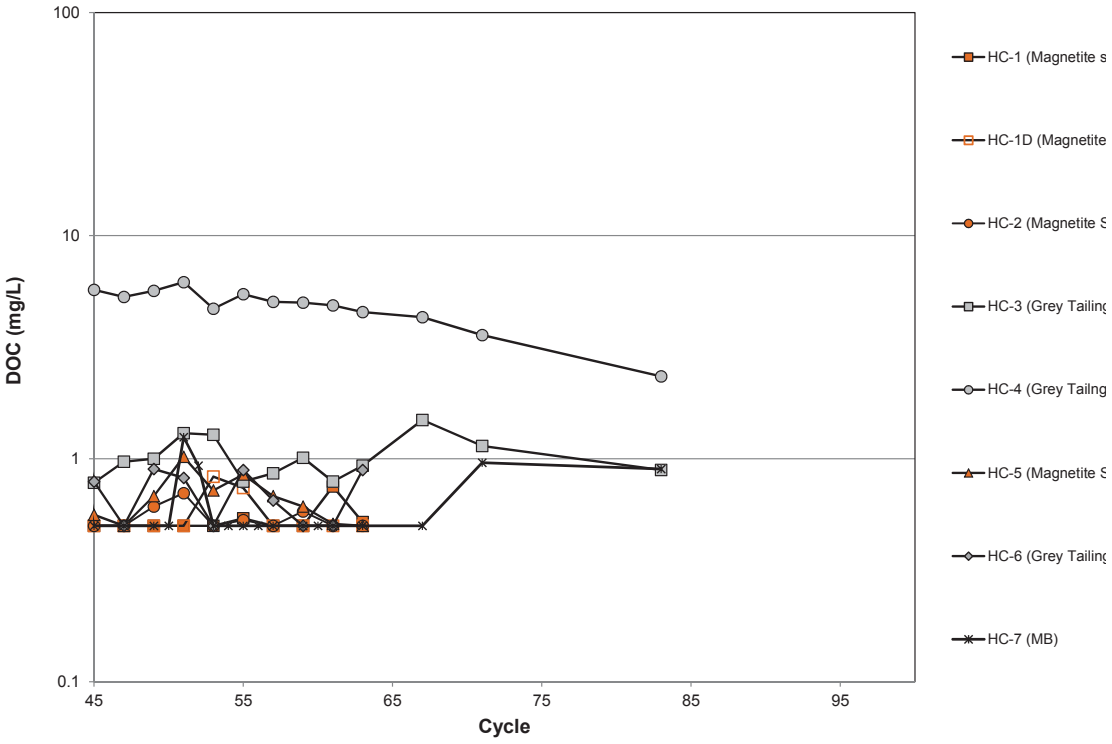

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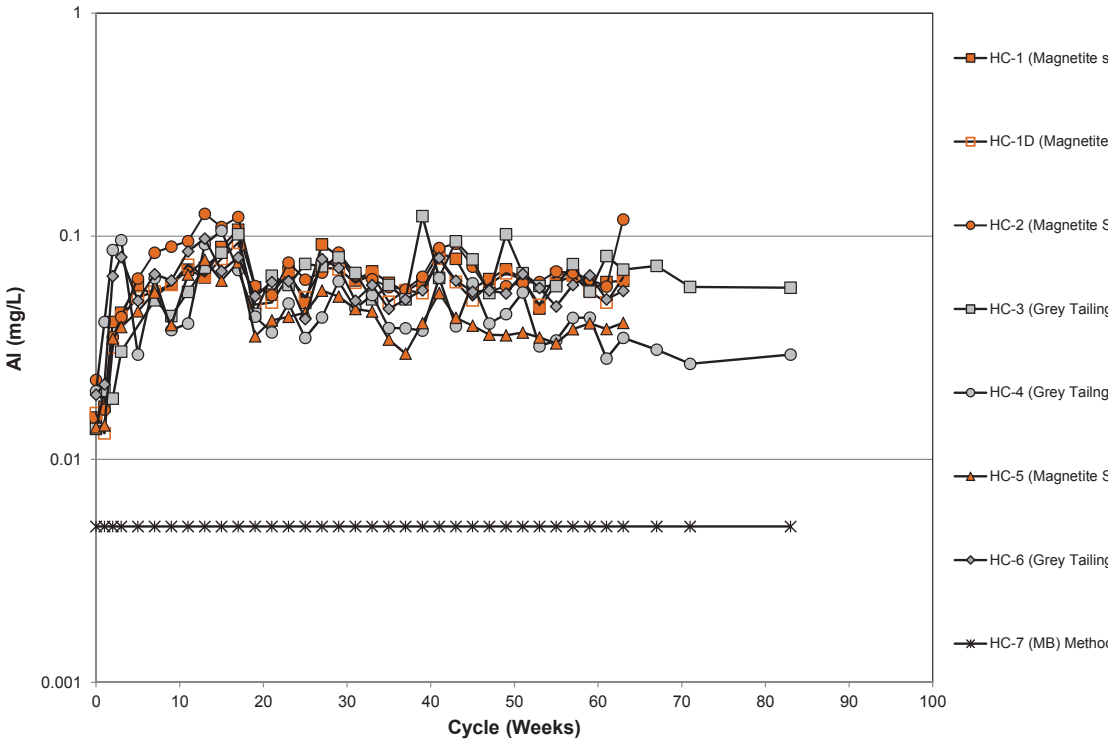

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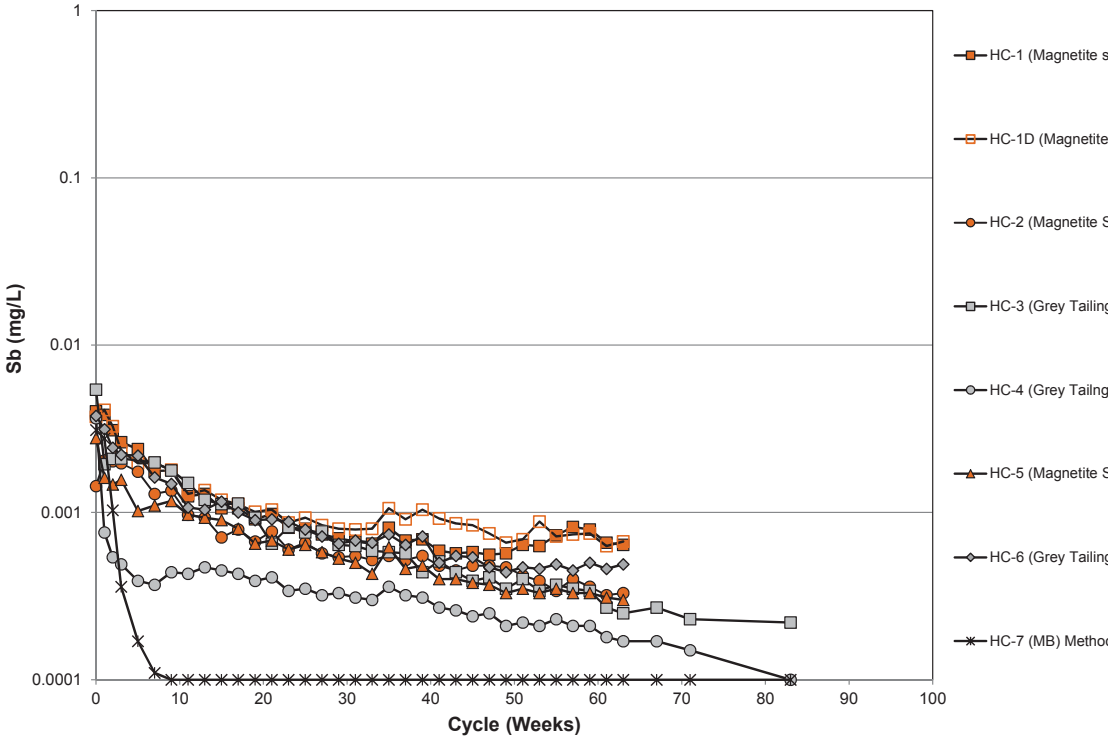

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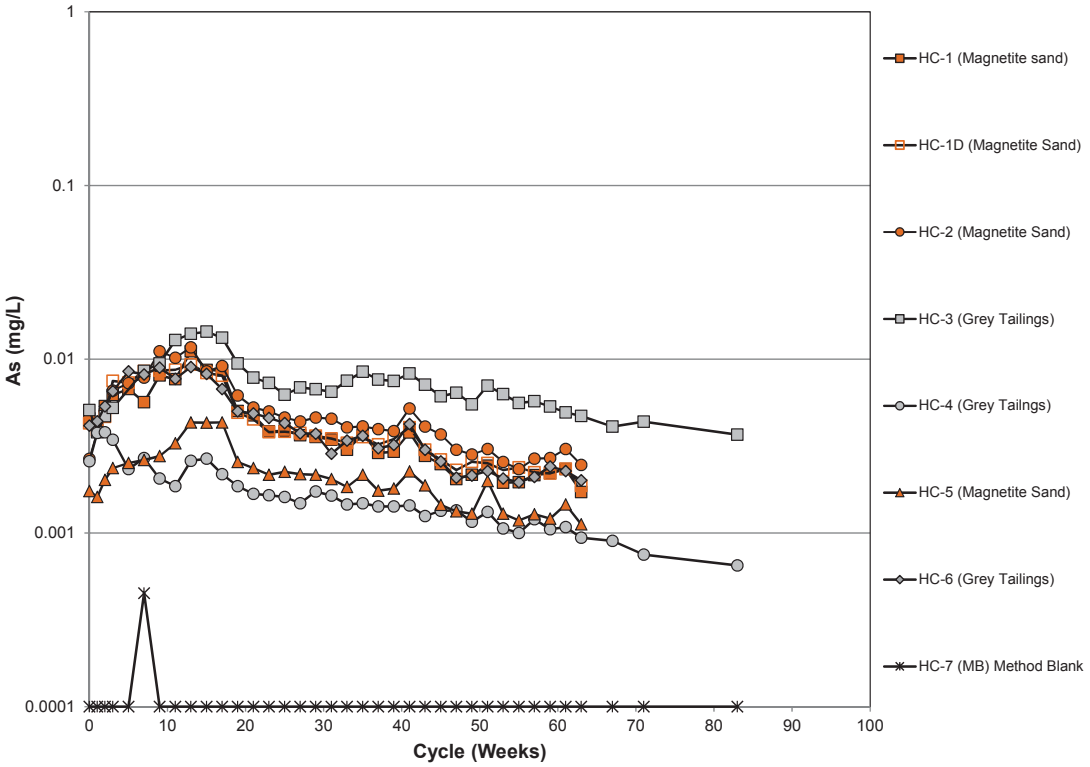

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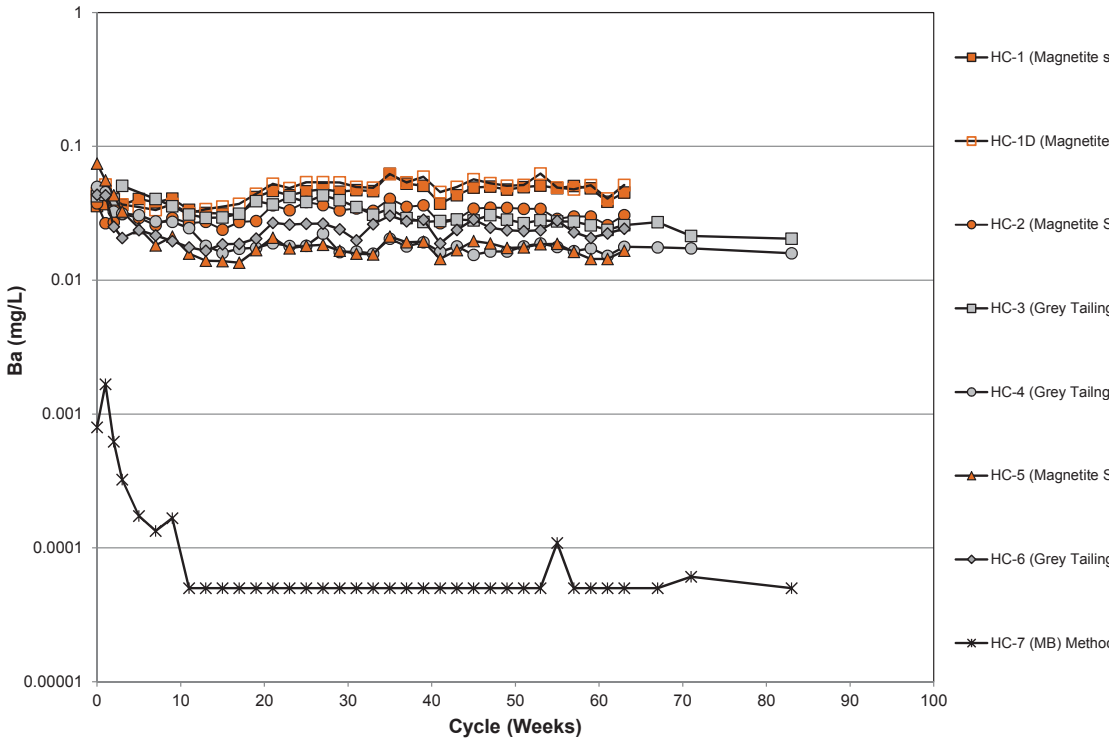

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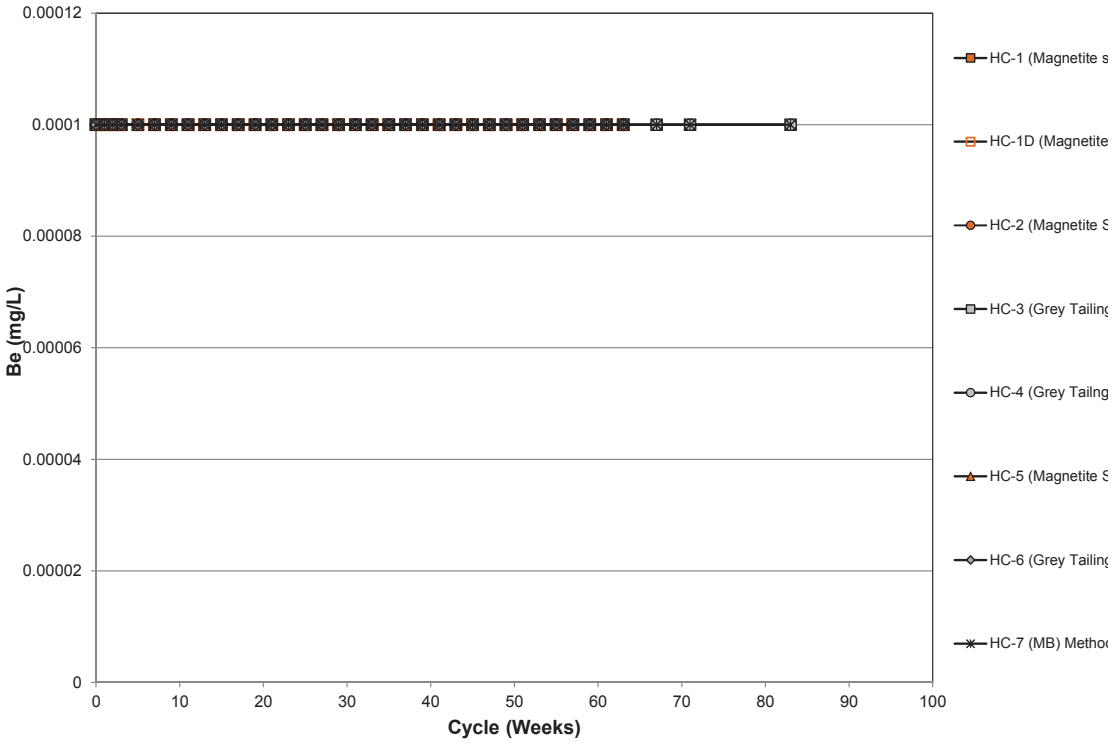

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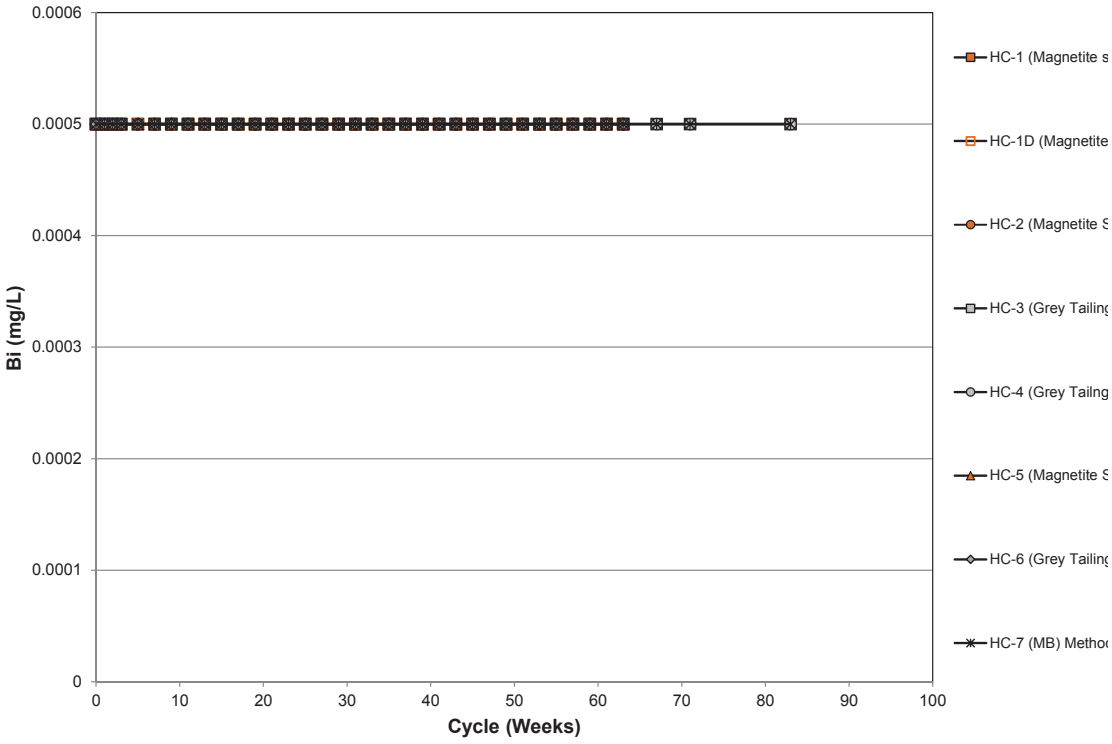

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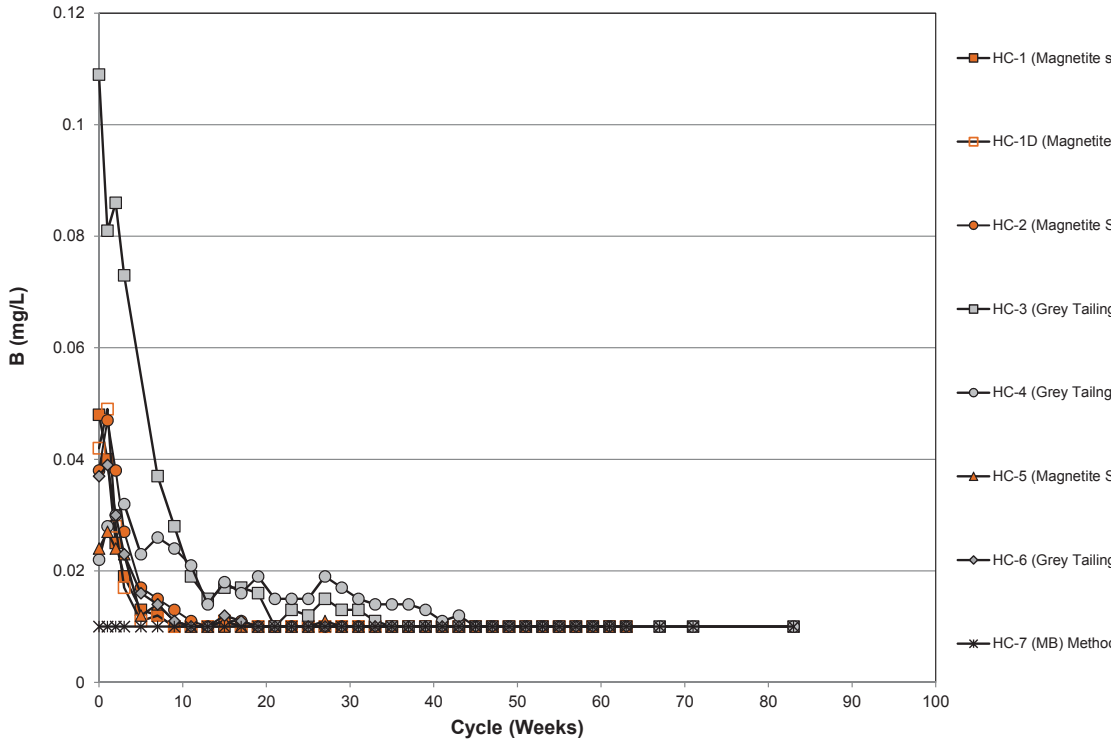

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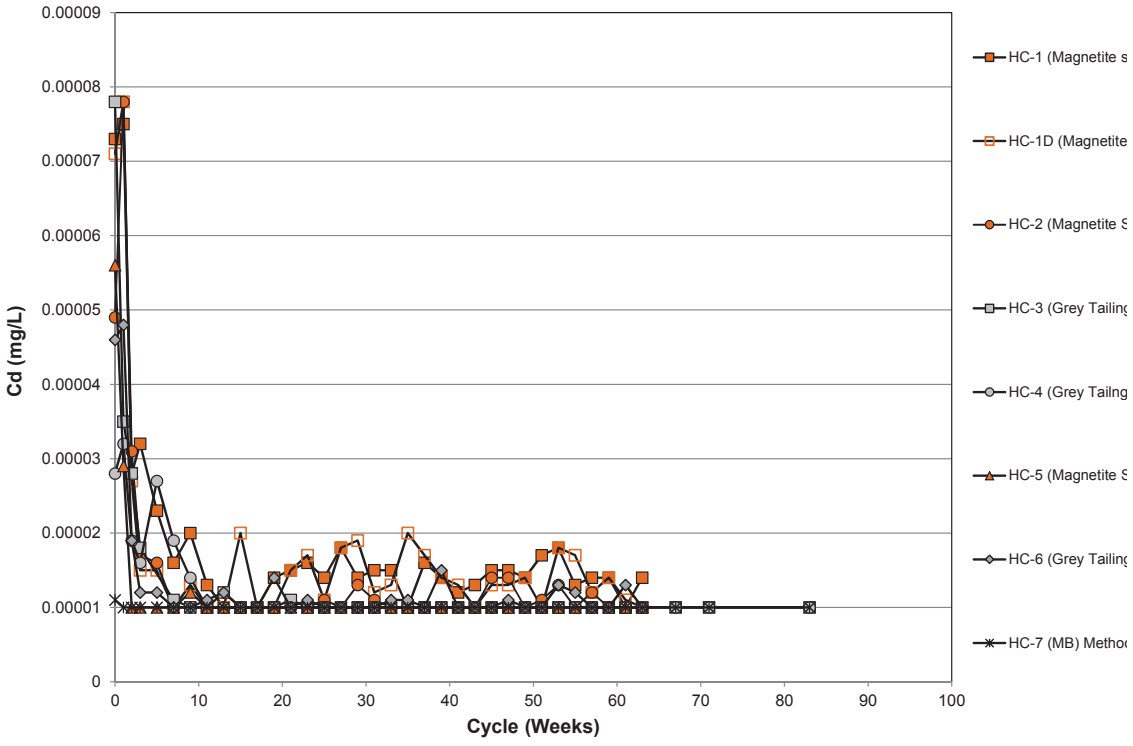

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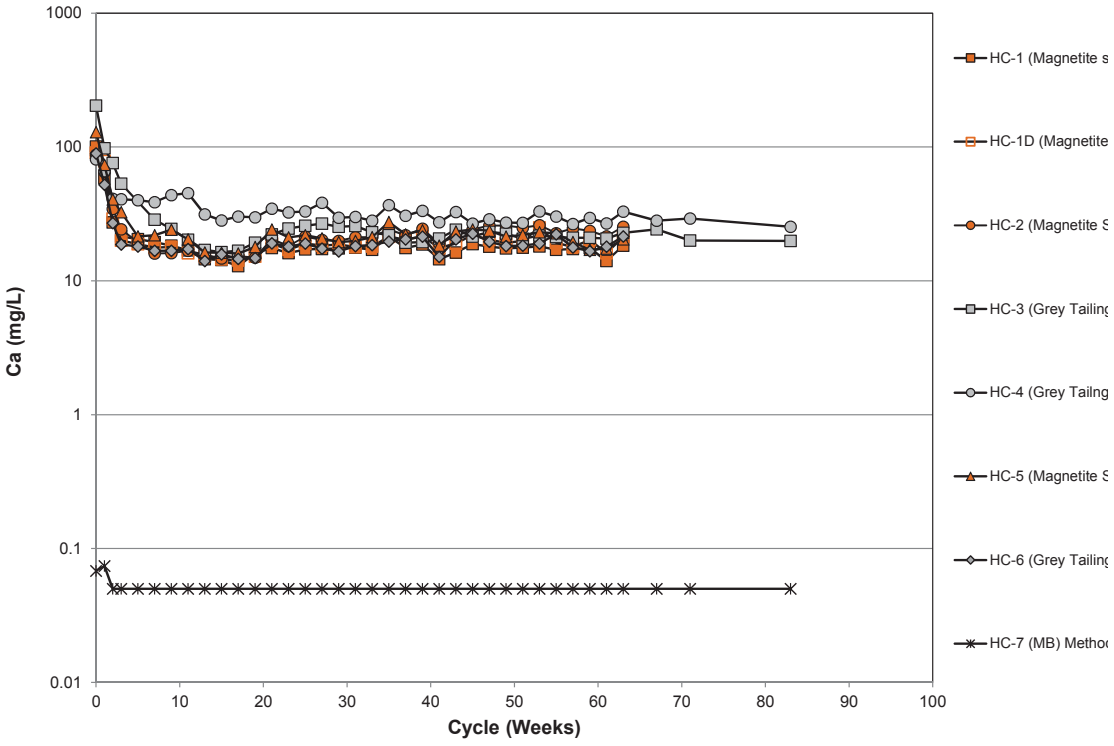

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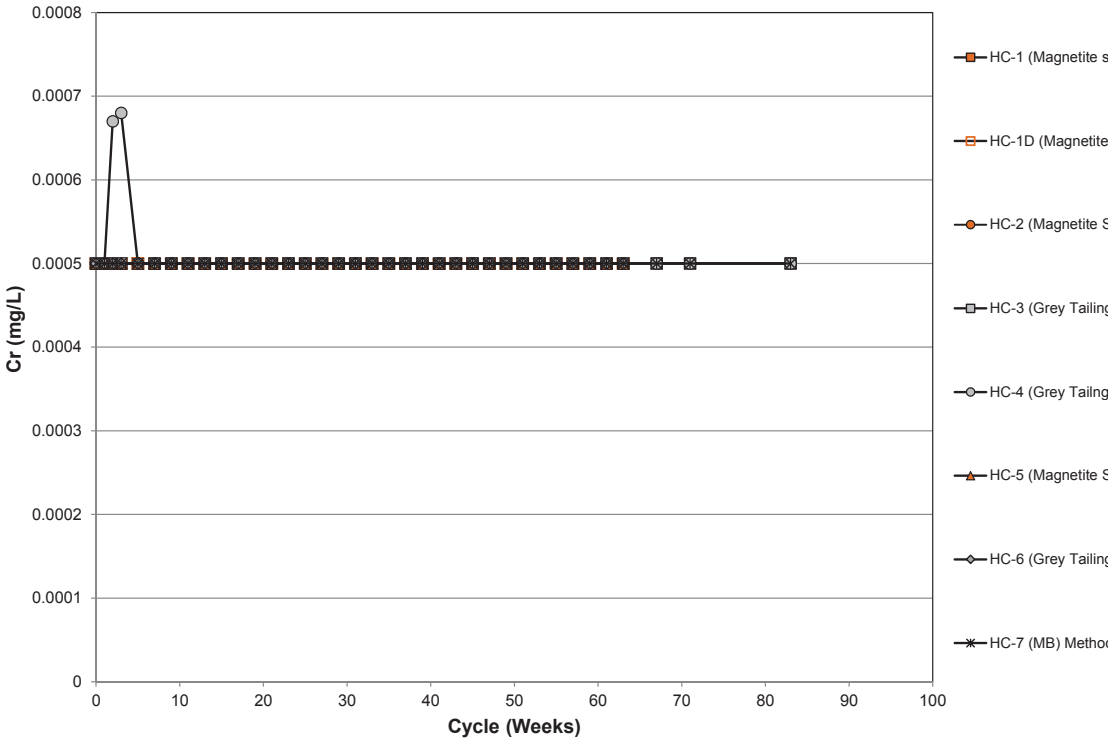

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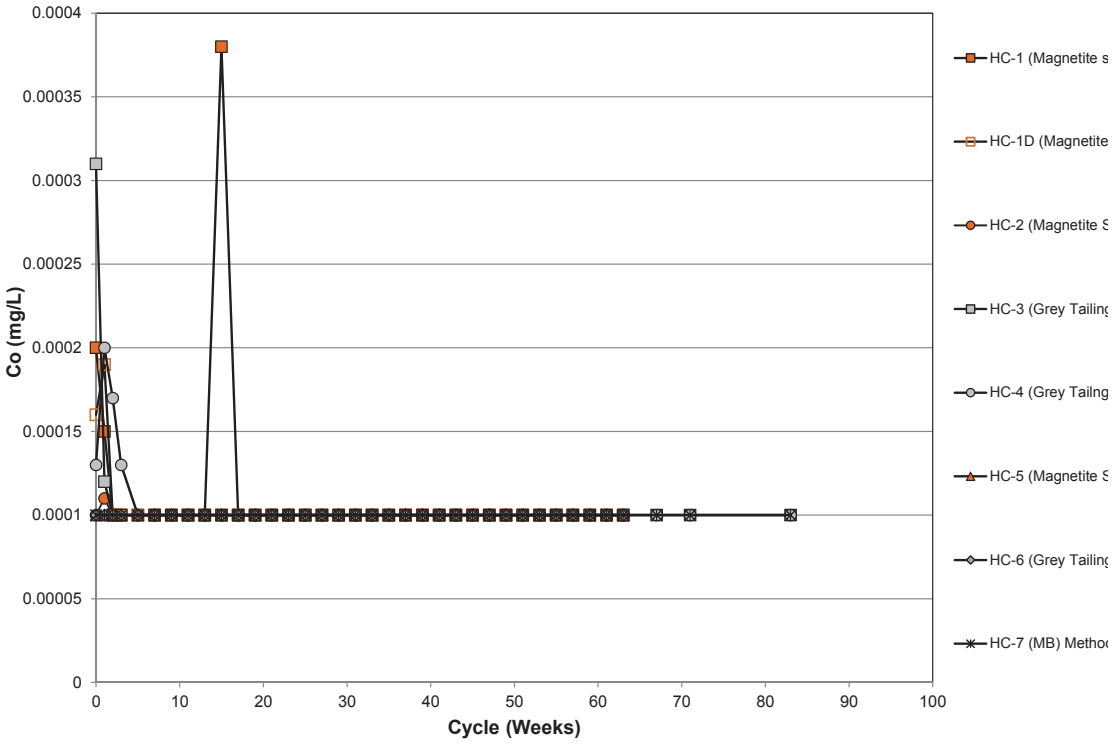

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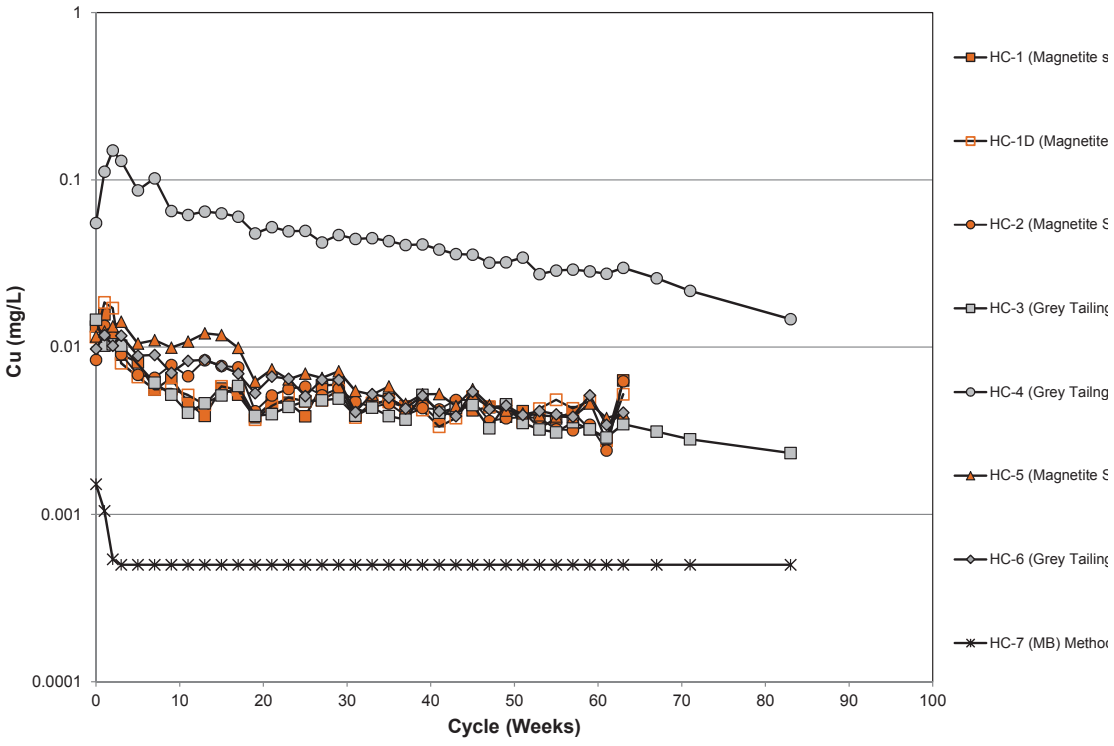

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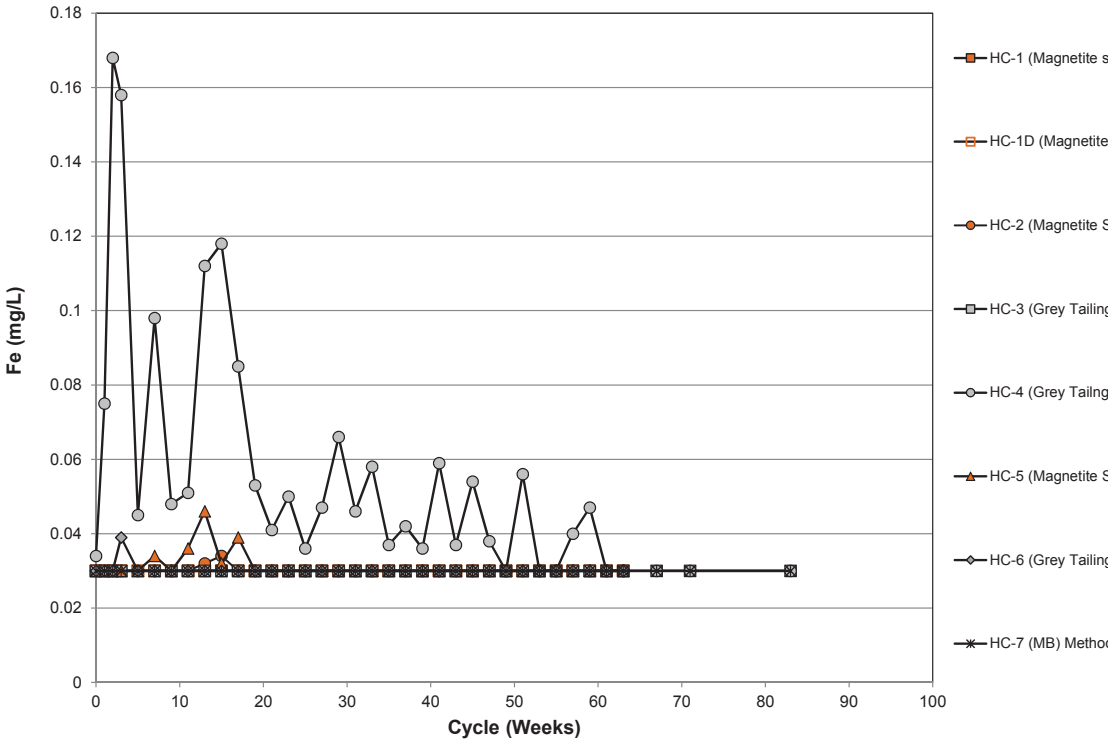

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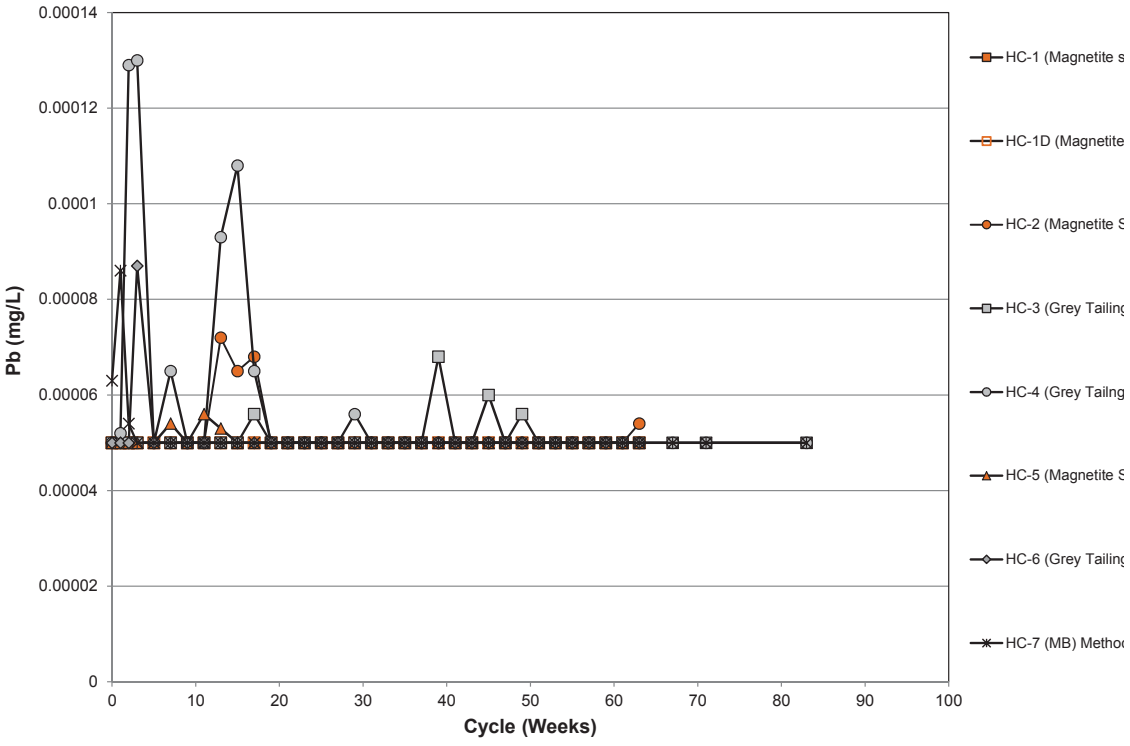

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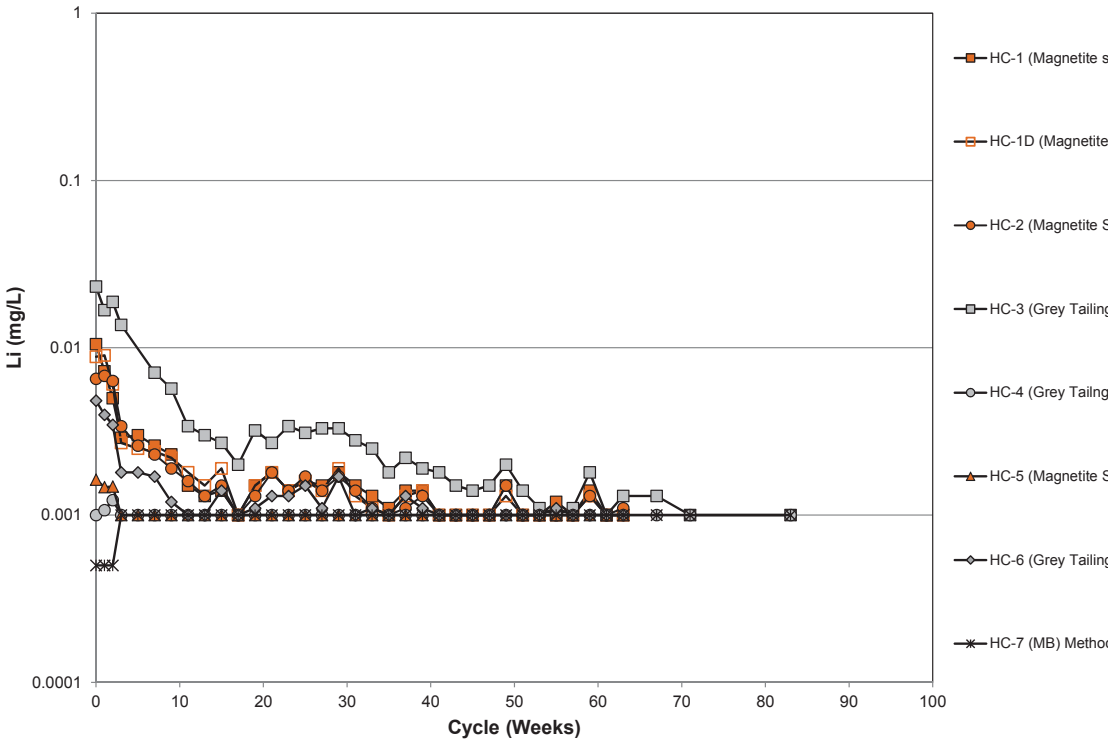

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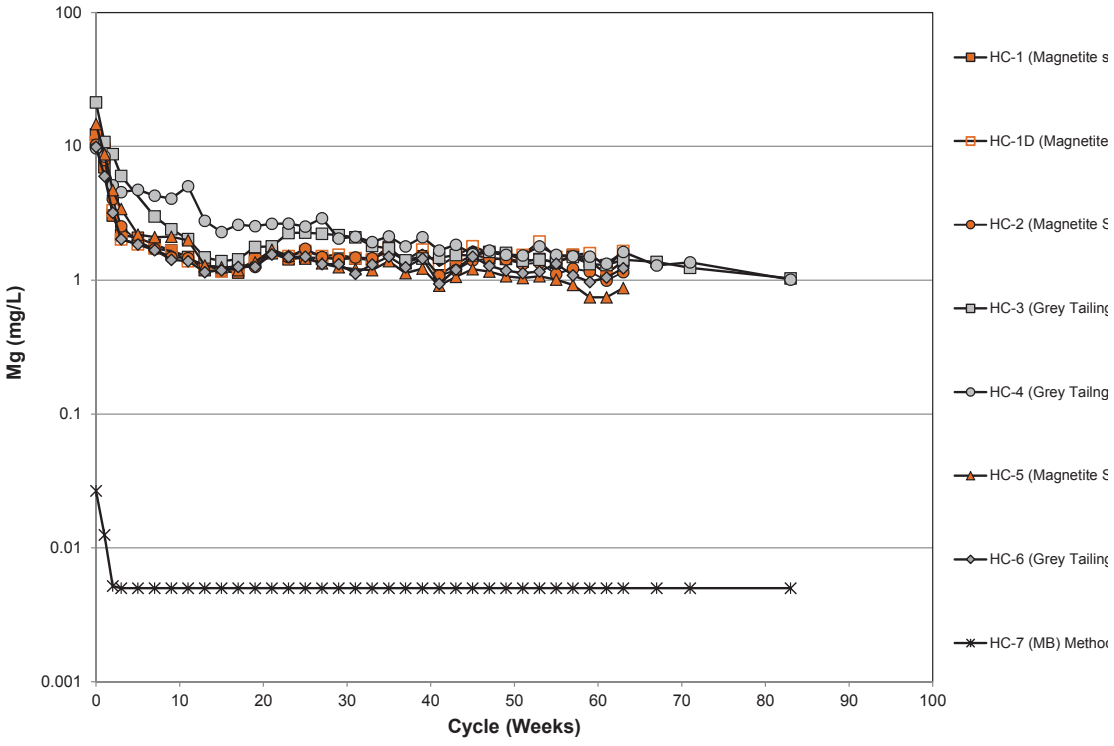

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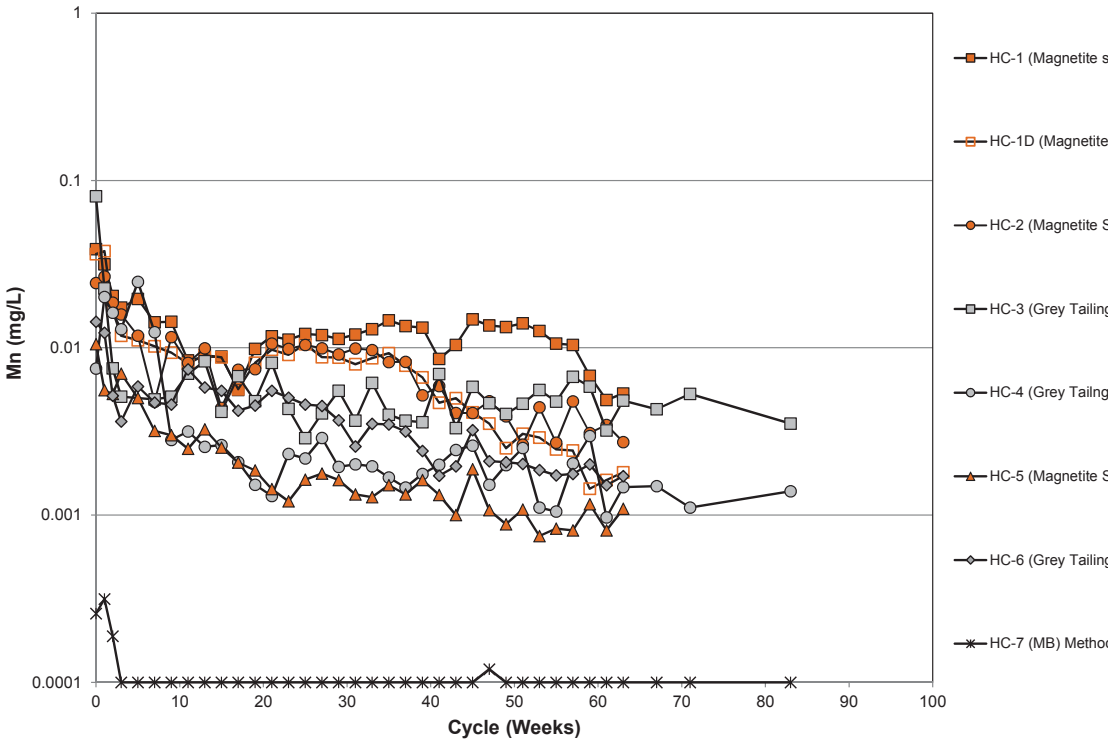

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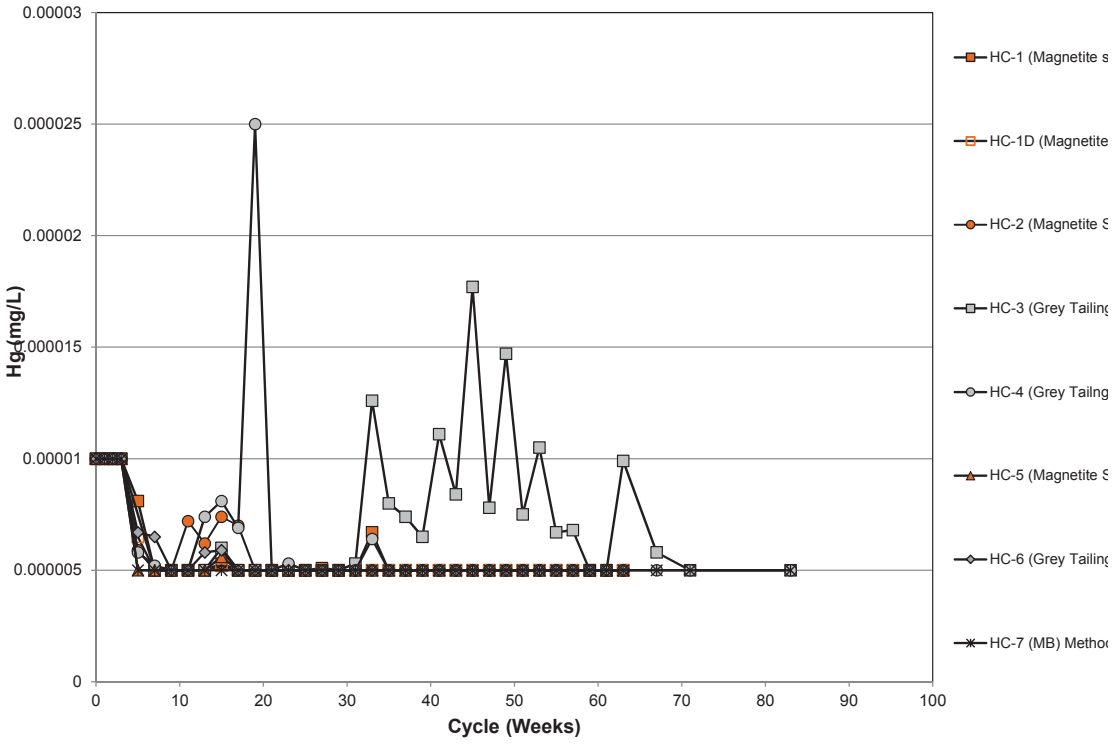

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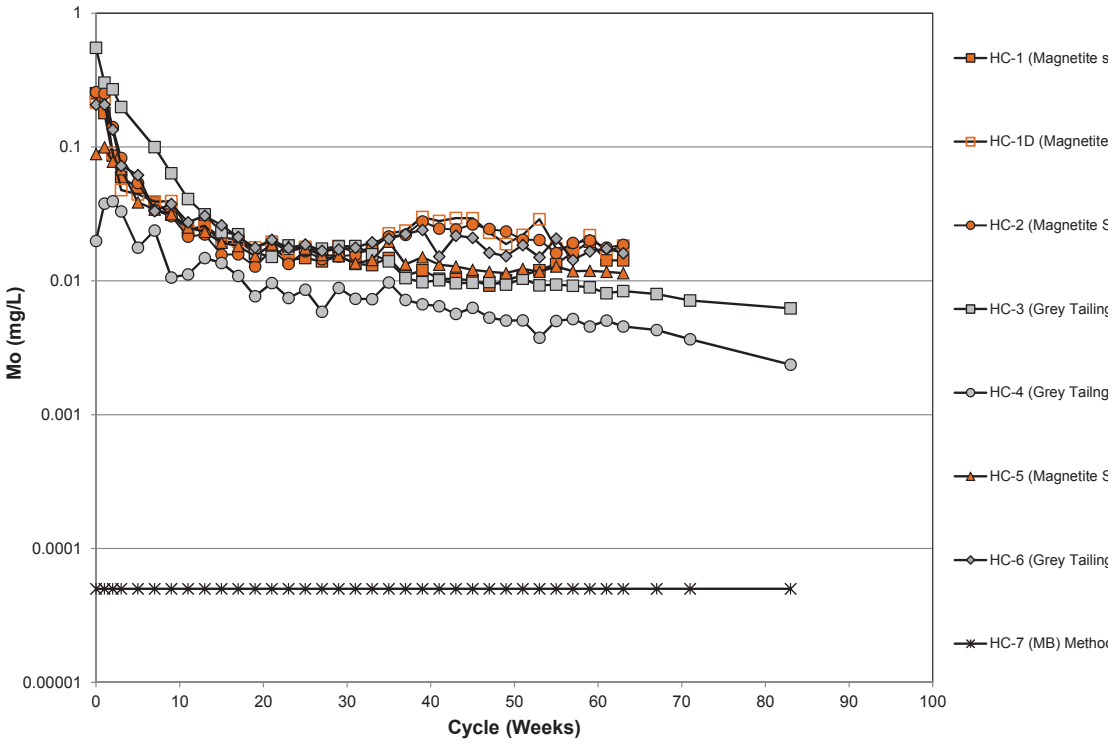

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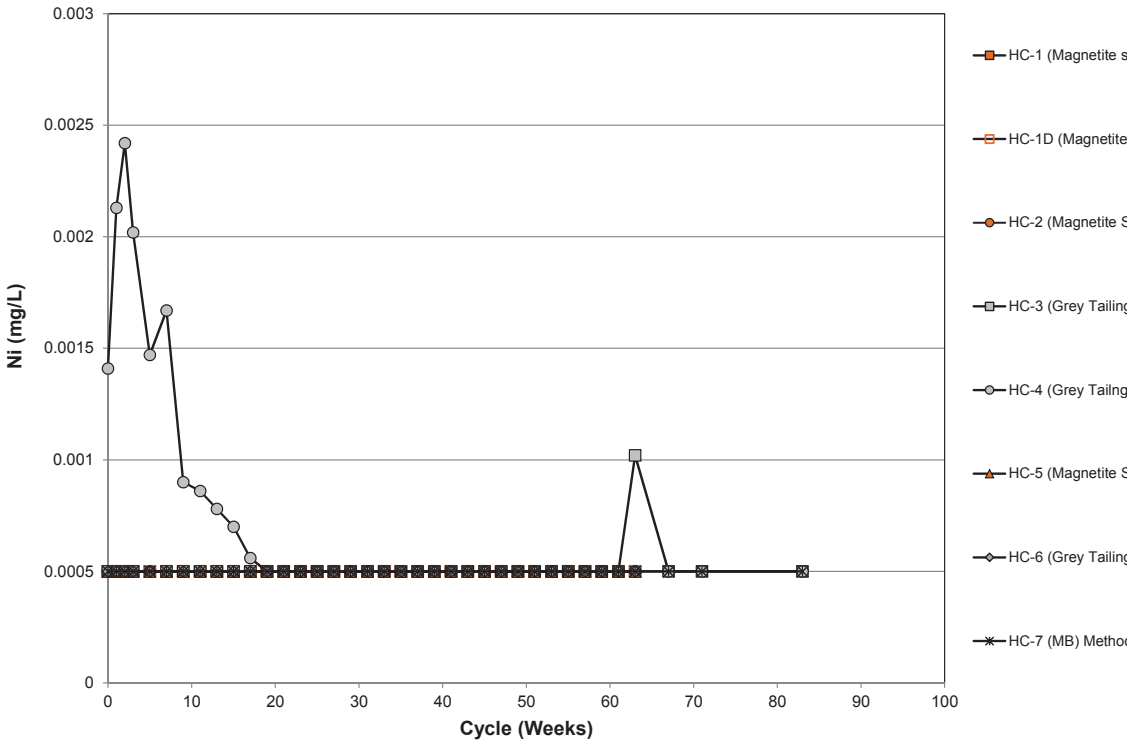

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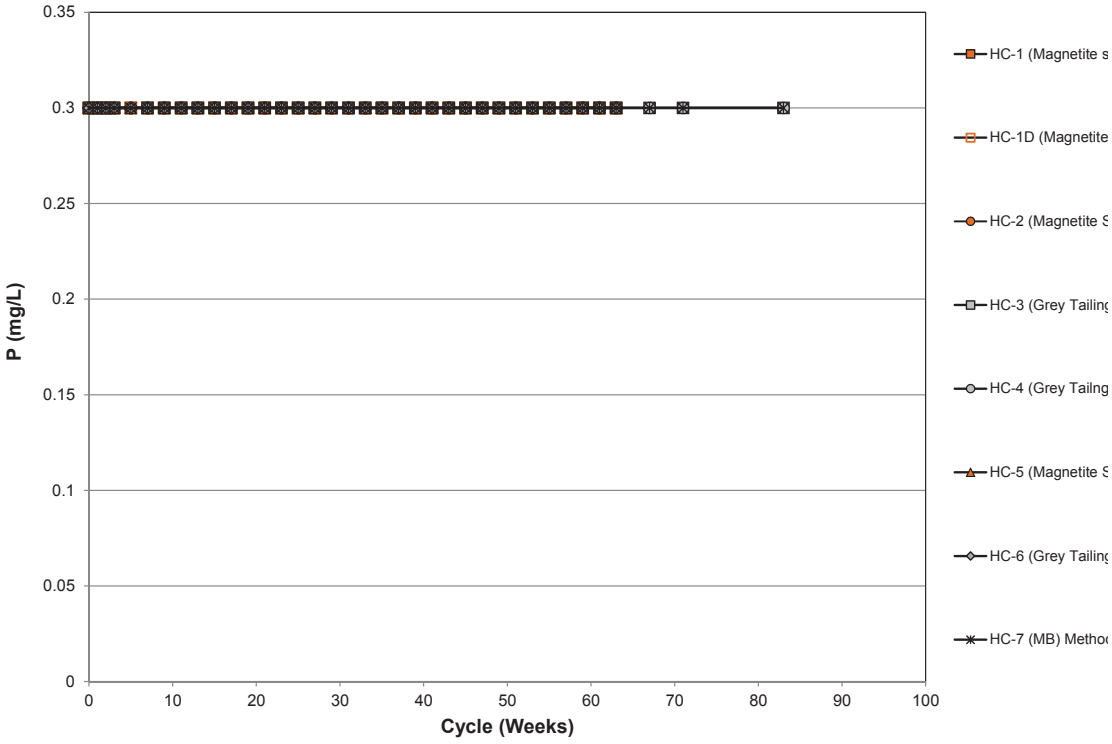

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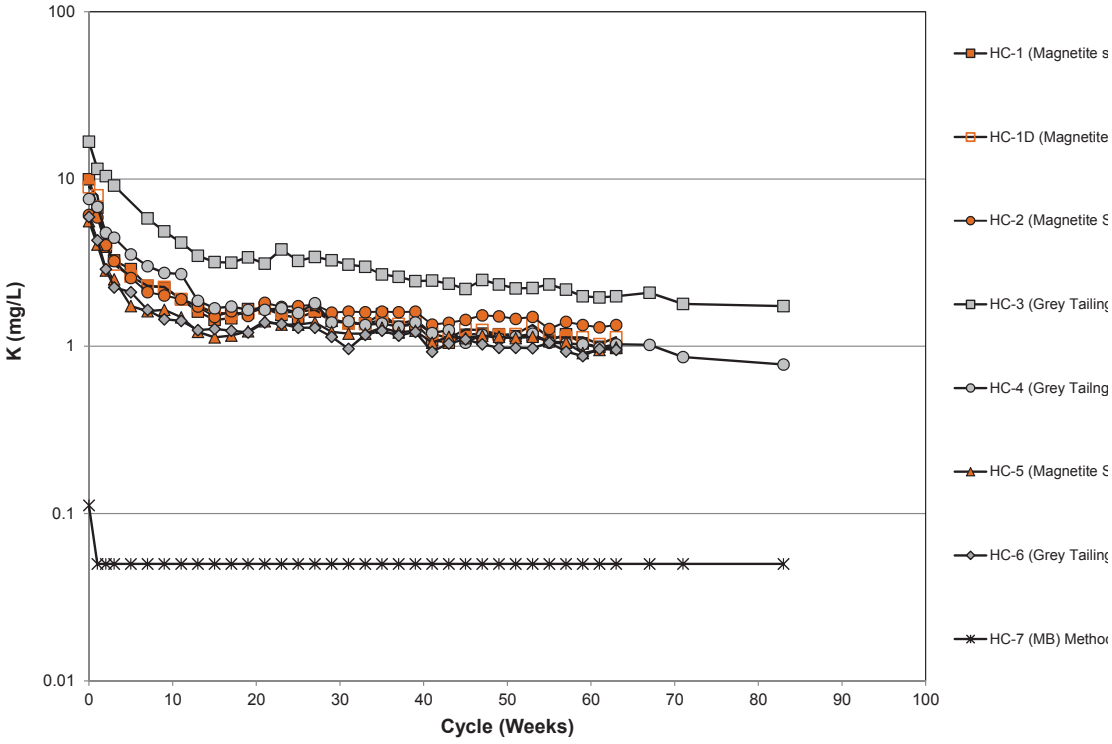

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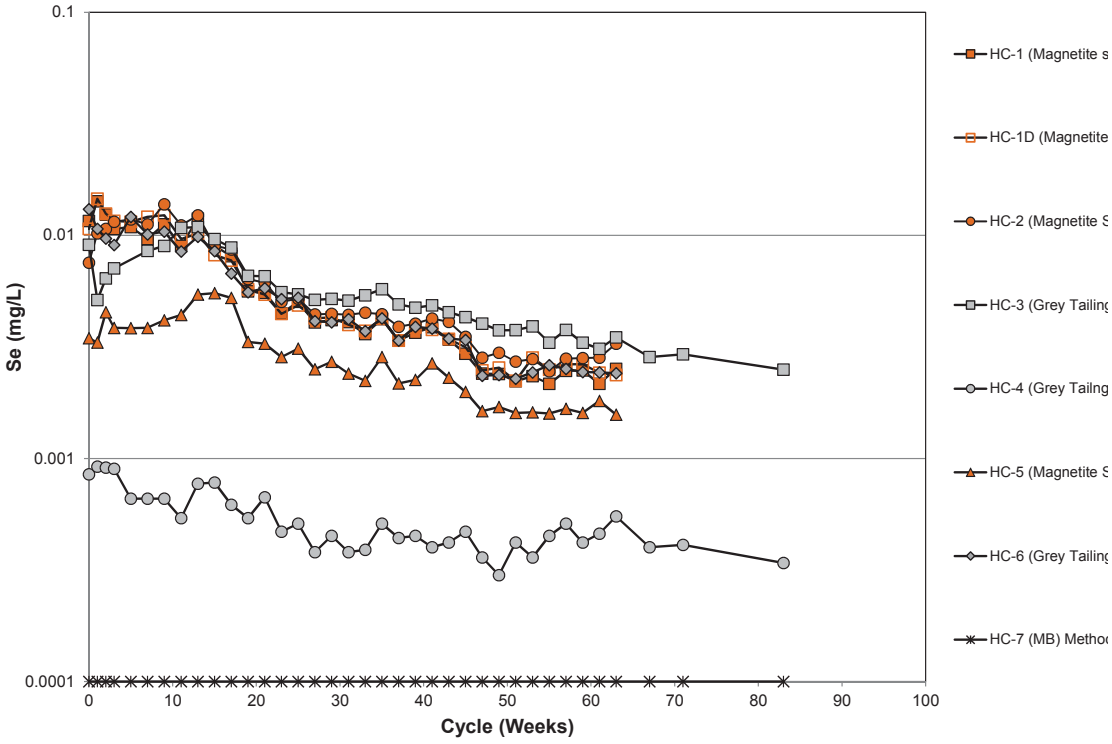

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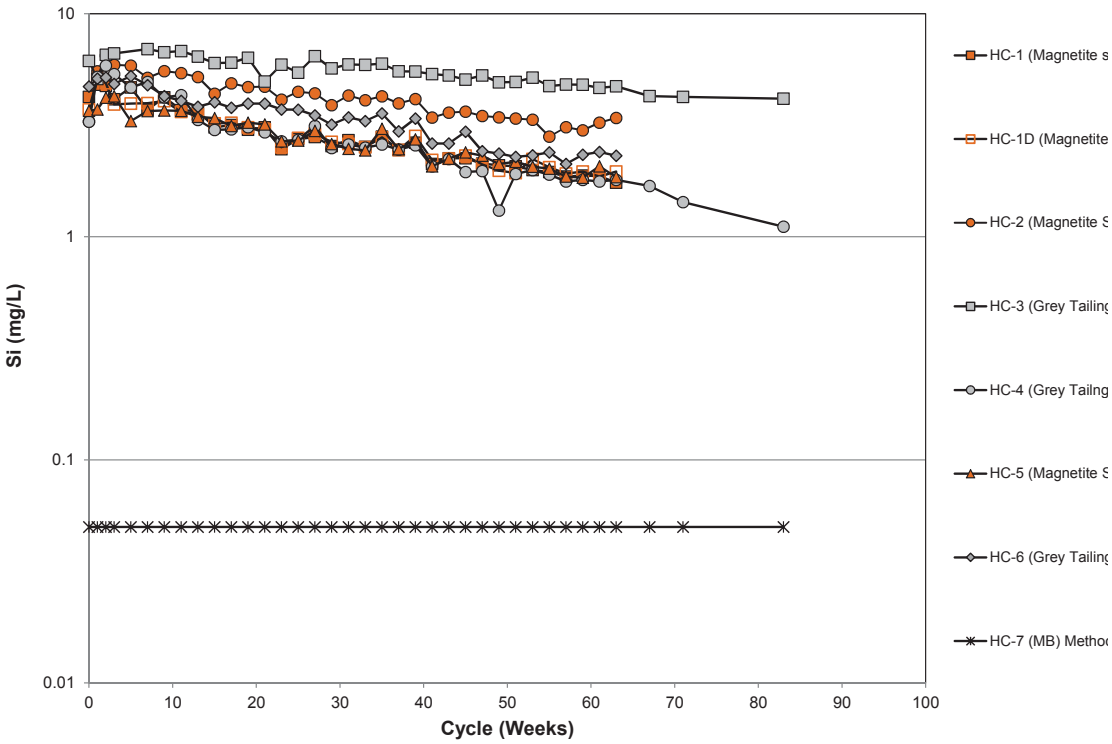

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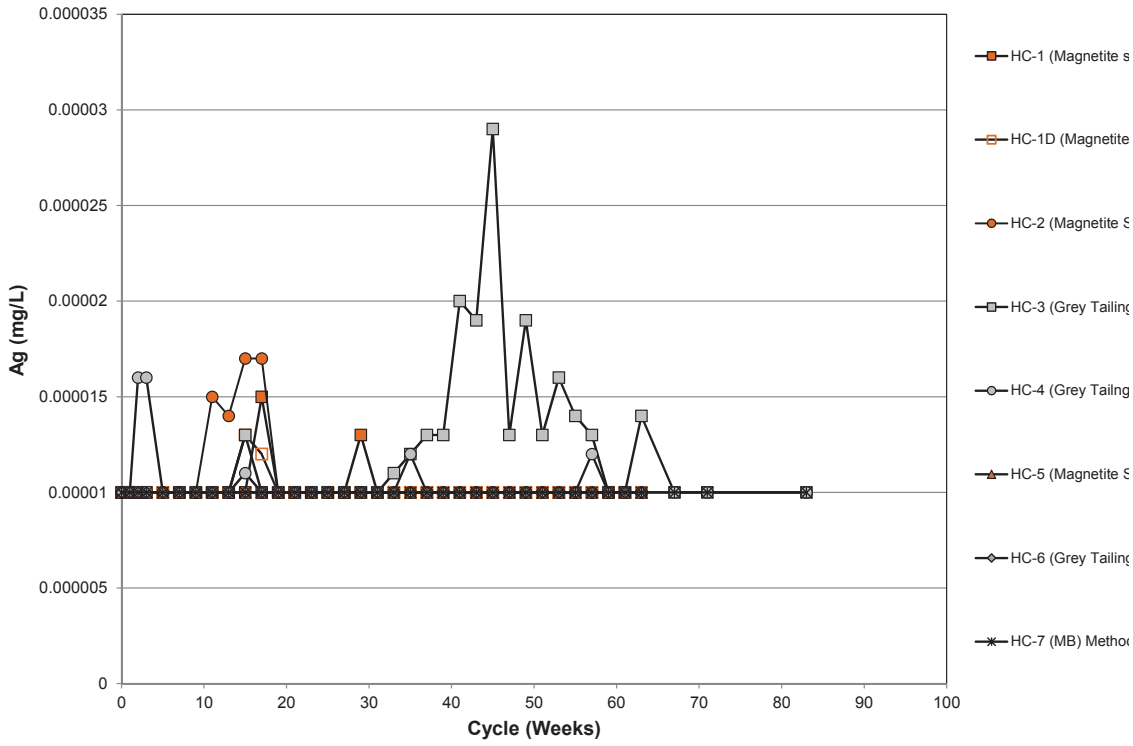

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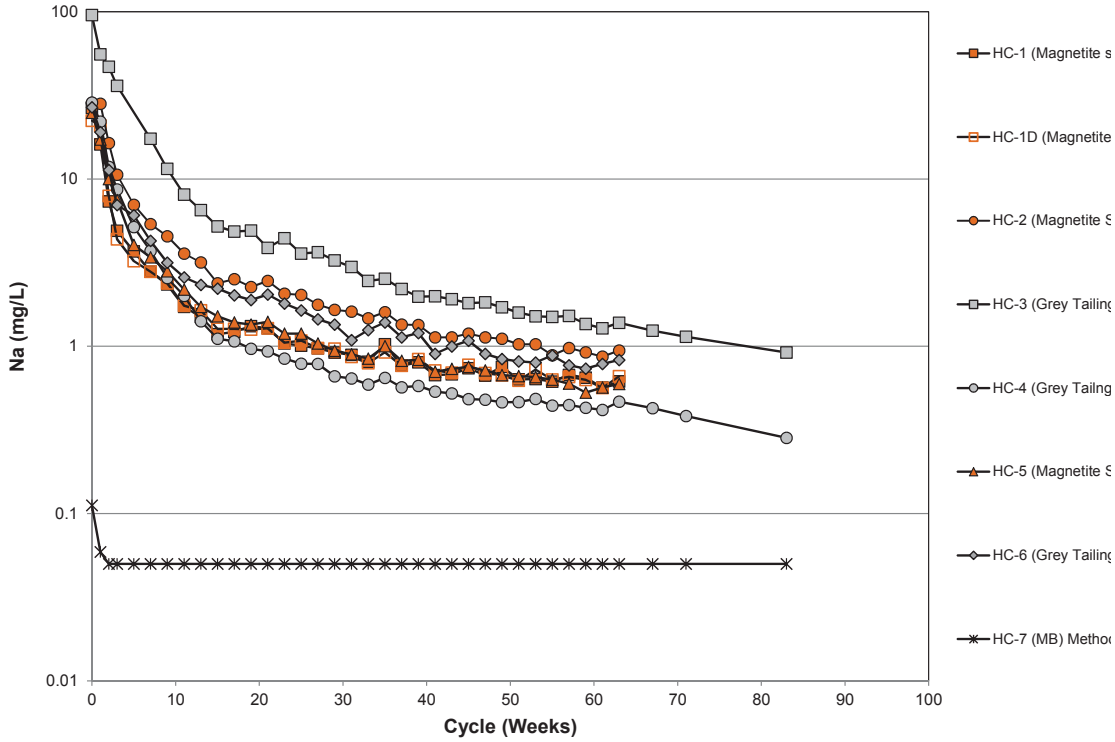

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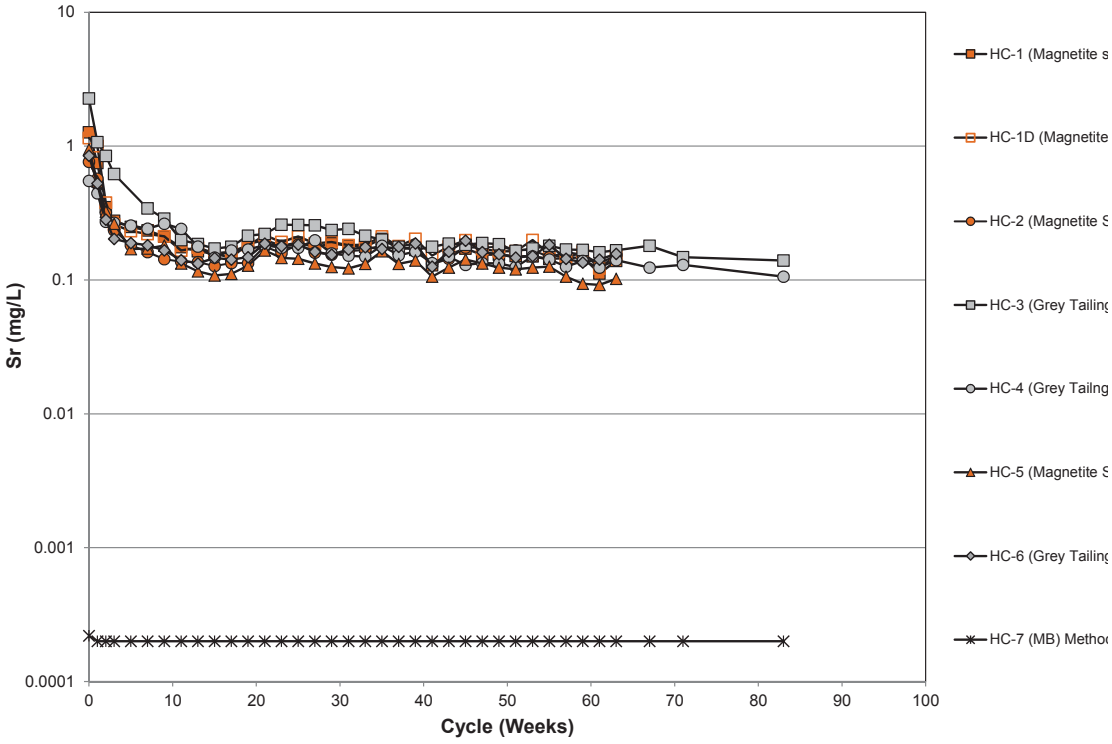

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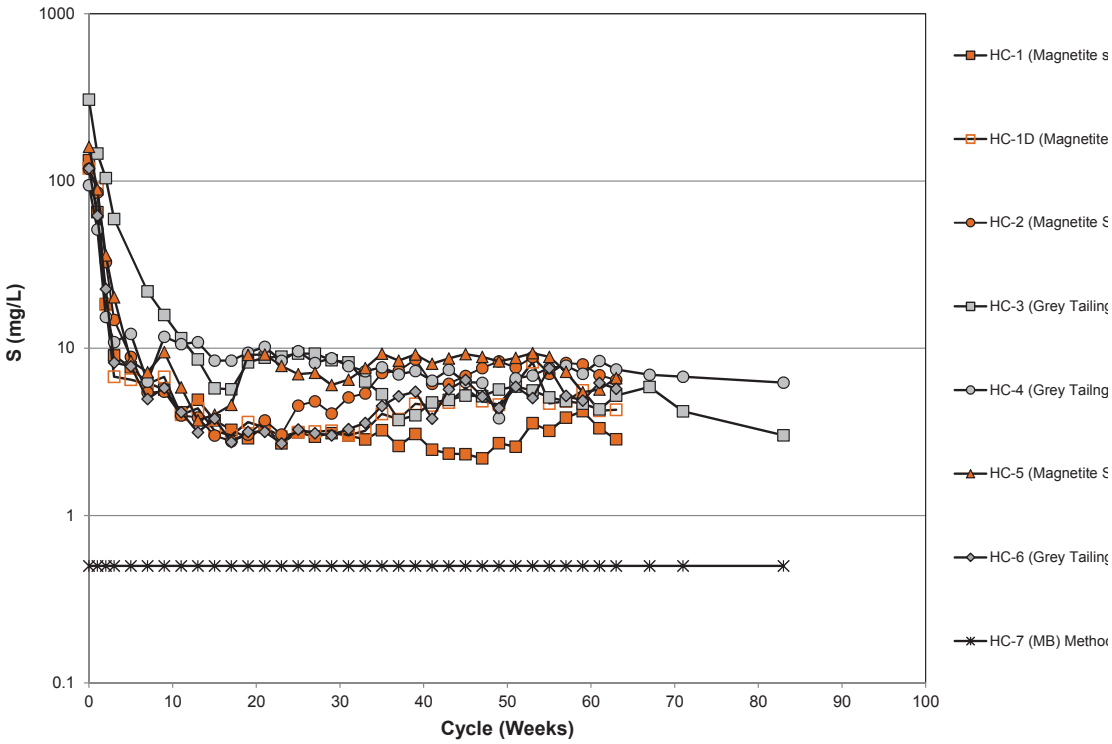

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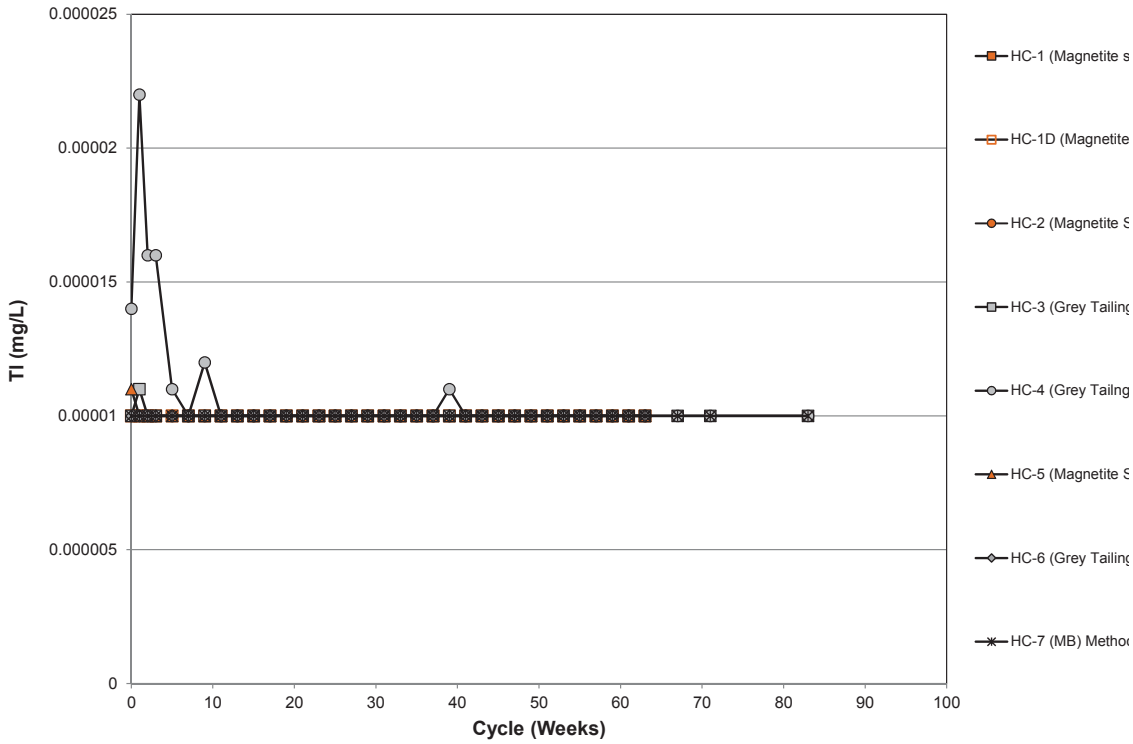

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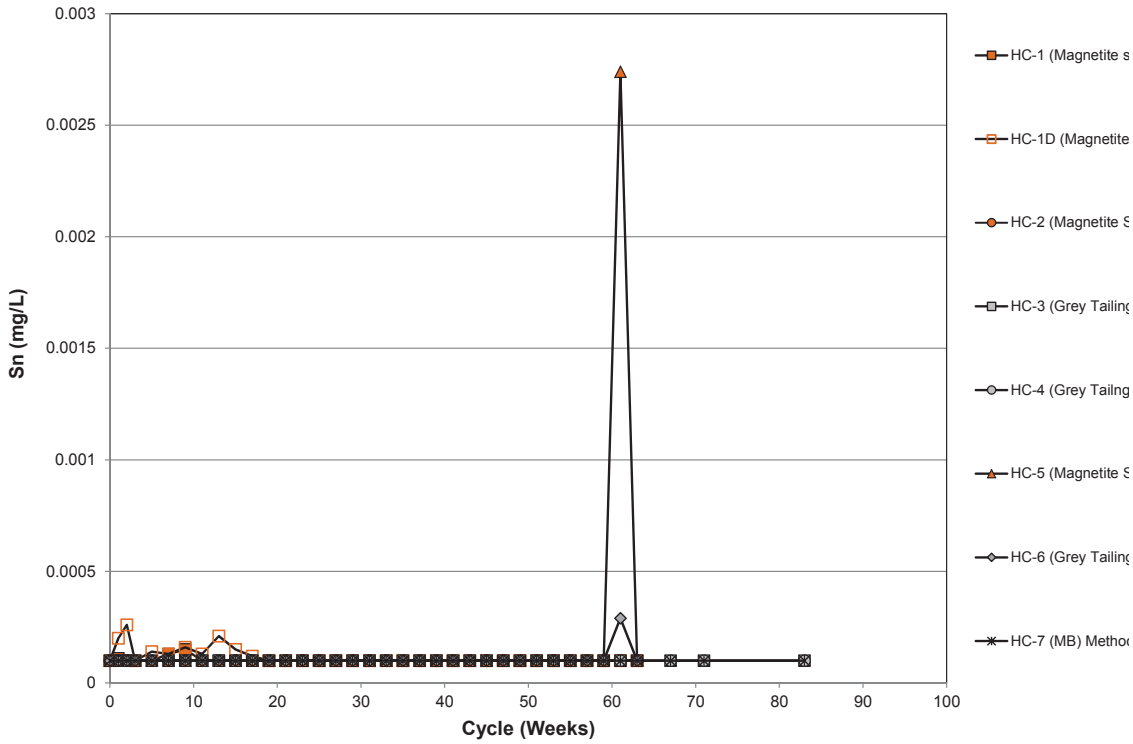

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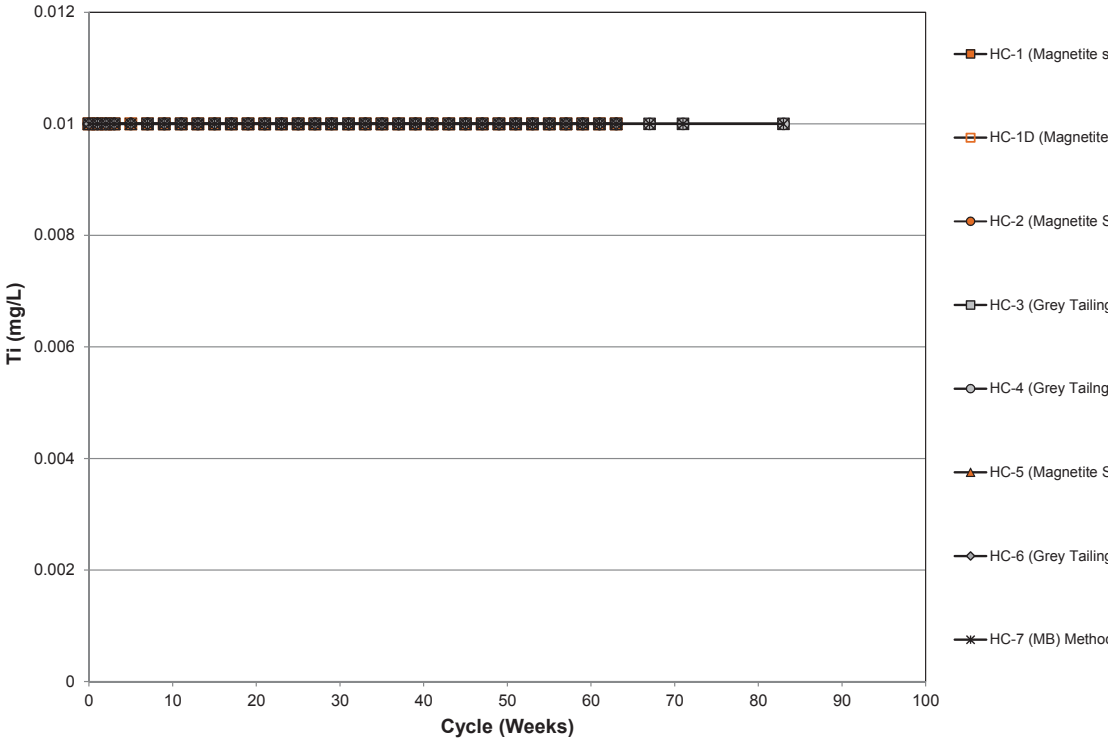

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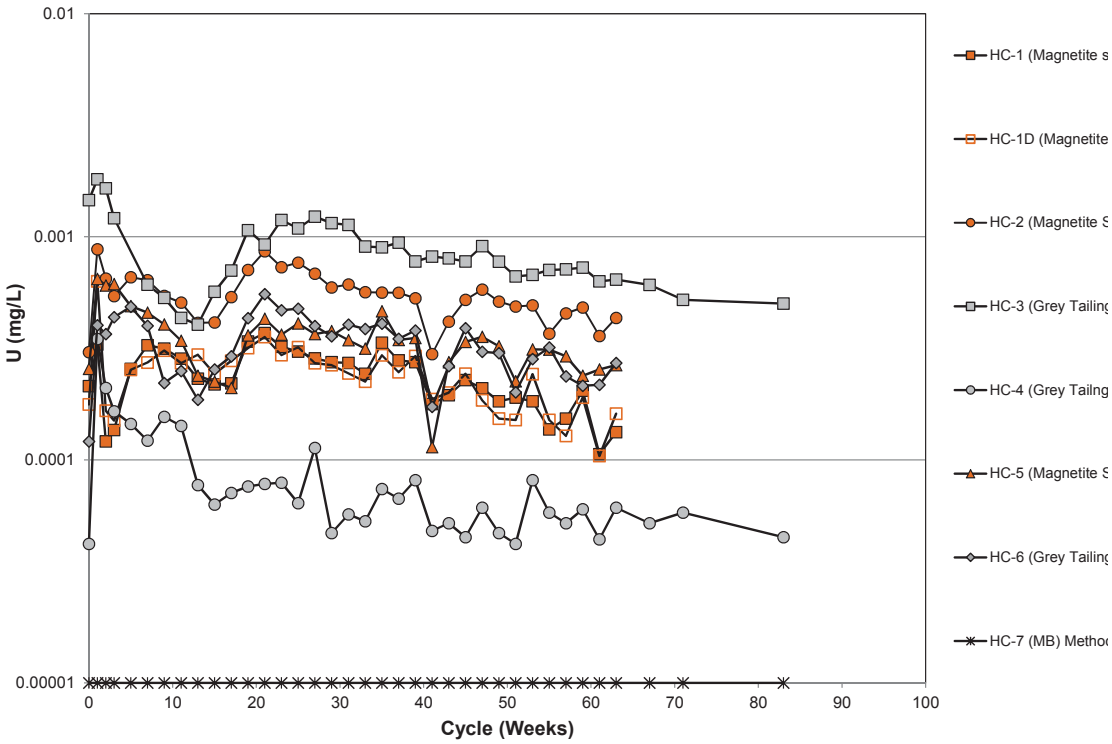

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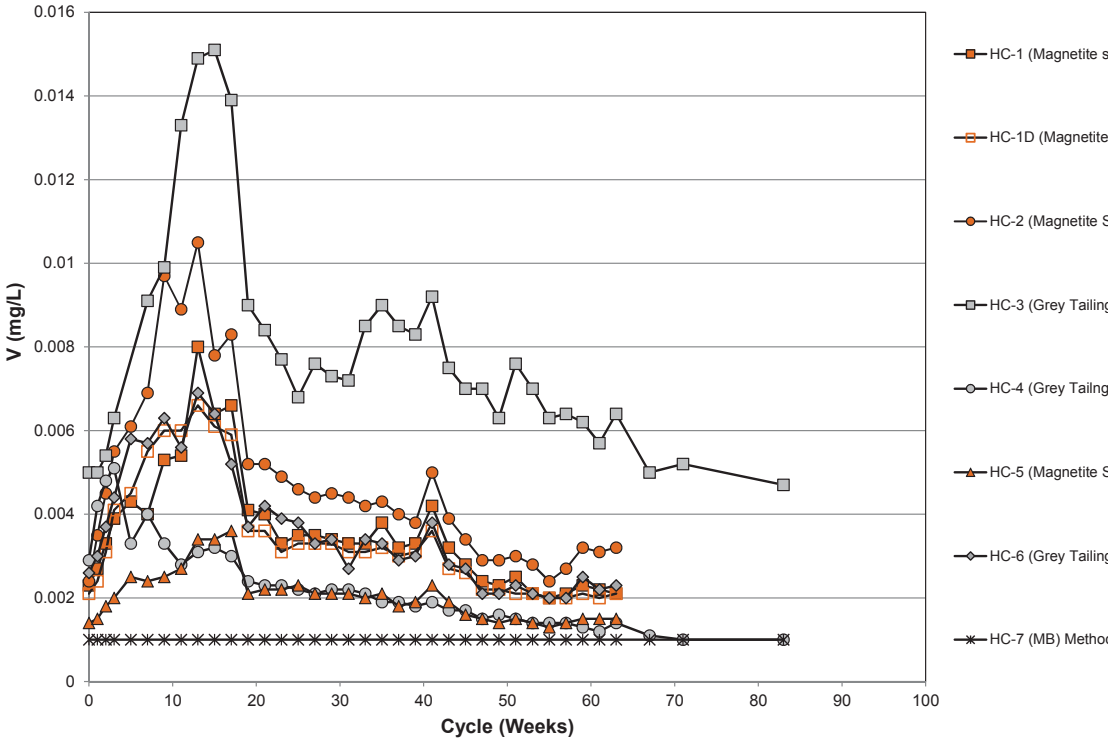

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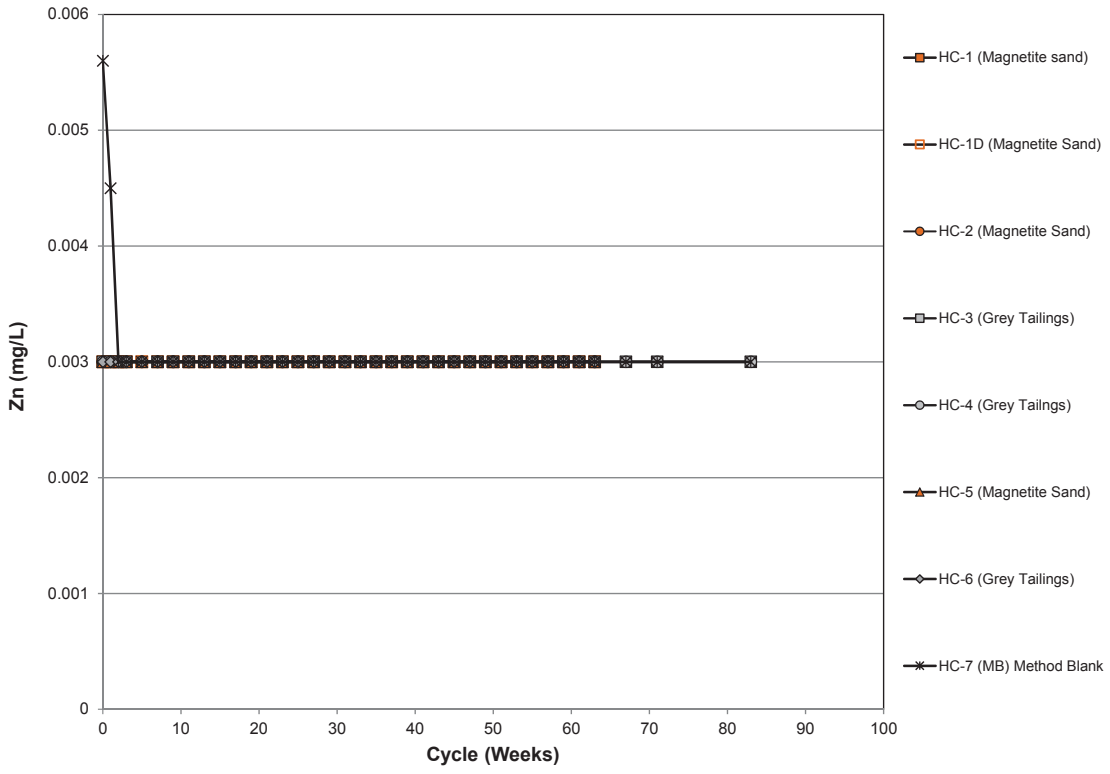

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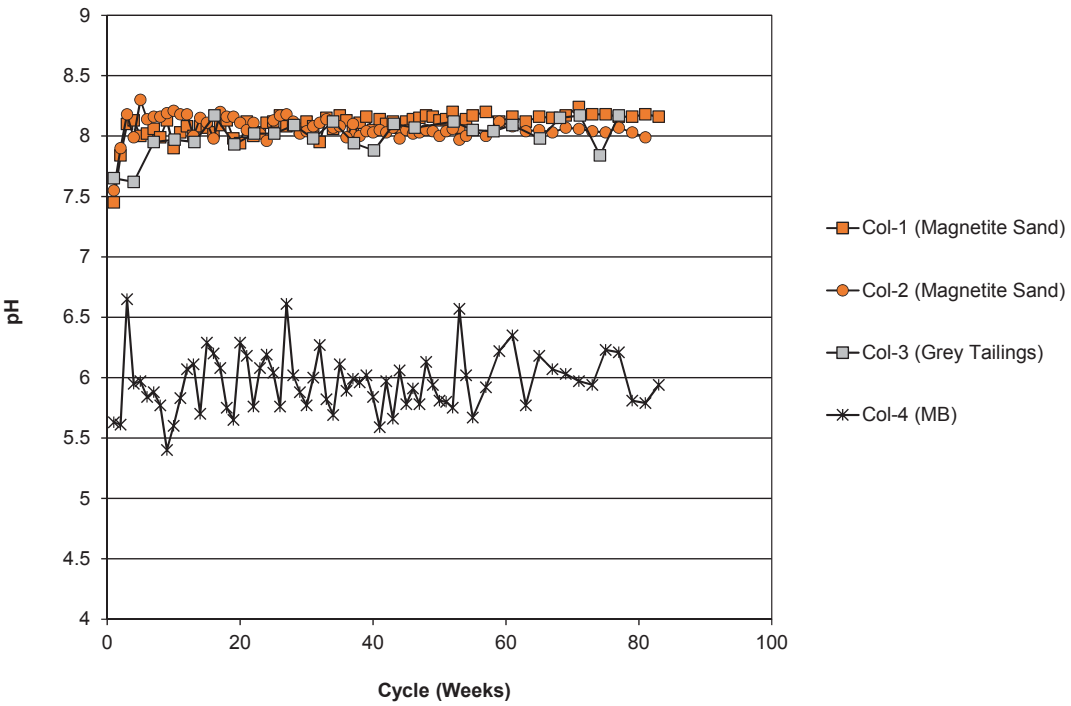
Appendix C – Average Release Rates for Humidity Cells and Columns

Kinetic Test	Tailings Type	Start Week	End Week	Cl	F	NO_3-N	NO_2-N	SO_4	Al	As	B	Cd	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Zn
				mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HC-1	Magnetite Sand	15	63	0.5	0.18	0.003	0.00051	3.7	0.027	0.0014	0.004	0.0000057	0.000045	0.0018	0.012	0.00002	0.0045	0.0000021	0.0056	0.0002	0.0015	0.0000042	0.0012
HC-1D	Magnetitie Sand	15	63	0.86	0.18	0.0031	0.00058	5.3	0.025	0.0014	0.004	0.0000057	0.00004	0.0018	0.012	0.00002	0.0023	0.000002	0.0085	0.0002	0.0016	0.0000041	0.0012
COL-1	Magnetitie Sand	51	77	0.051	0.089	0.00051	0.0001	2.3	0.0013	0.00052	0.001	0.000003	0.00001	0.0012	0.003	0.0000051	0.00001	0.00000051	0.0045	0.000051	0.00099	0.000001	0.0003
HC-2	Magnetite Sand	15	63	0.74	0.13	0.0032	0.00046	7.5	0.029	0.0017	0.0041	0.0000044	0.00004	0.0019	0.012	0.000021	0.0025	0.0000021	0.0078	0.0002	0.0017	0.0000042	0.0012
COL-2	Magnetite Sand	25	77	0.049	0.036	0.0005	0.000099	1.3	0.0025	0.0014	0.00099	0.0000011	0.0000098	0.00066	0.003	0.0000049	0.000017	0.00000049	0.0034	0.000049	0.00029	0.00000098	0.0003
HC-3	Grey Tailings	35	83	0.39	0.14	0.0034	0.00042	5.9	0.029	0.0022	0.0042	0.0000042	0.000042	0.0014	0.013	0.000021	0.0018	0.0000031	0.0036	0.00022	0.0015	0.0000055	0.0013
COL-3	Grey Tailings	25	63	0.088	0.044	0.00051	0.0001	7.5	0.0033	0.00085	0.0011	0.000001	0.00001	0.00043	0.0031	0.0000051	0.000076	0.00000051	0.005	0.000051	0.00077	0.000001	0.00031
HC-4	Grey Tailings	35	83	0.66	0.024	0.53	0.0032	8.7	0.016	0.00043	0.0045	0.0000042	0.000042	0.012	0.015	0.000021	0.00069	0.0000021	0.0019	0.00021	0.00017	0.0000043	0.0013
HC-5	Magnetite Sand	15	63	1.1	0.058	0.0078	0.0012	10	0.019	0.00088	0.0045	0.0000045	0.000045	0.0025	0.014	0.000022	0.0006	0.0000022	0.0064	0.00022	0.0011	0.0000045	0.0013
HC-6	Grey Tailings	35	63	0.54	0.13	0.0042	0.00048	7.4	0.026	0.0011	0.0044	0.0000048	0.000044	0.0019	0.013	0.000022	0.00096	0.0000022	0.0081	0.00022	0.0013	0.0000044	0.0013

Appendix D – Column Concentrations Charts



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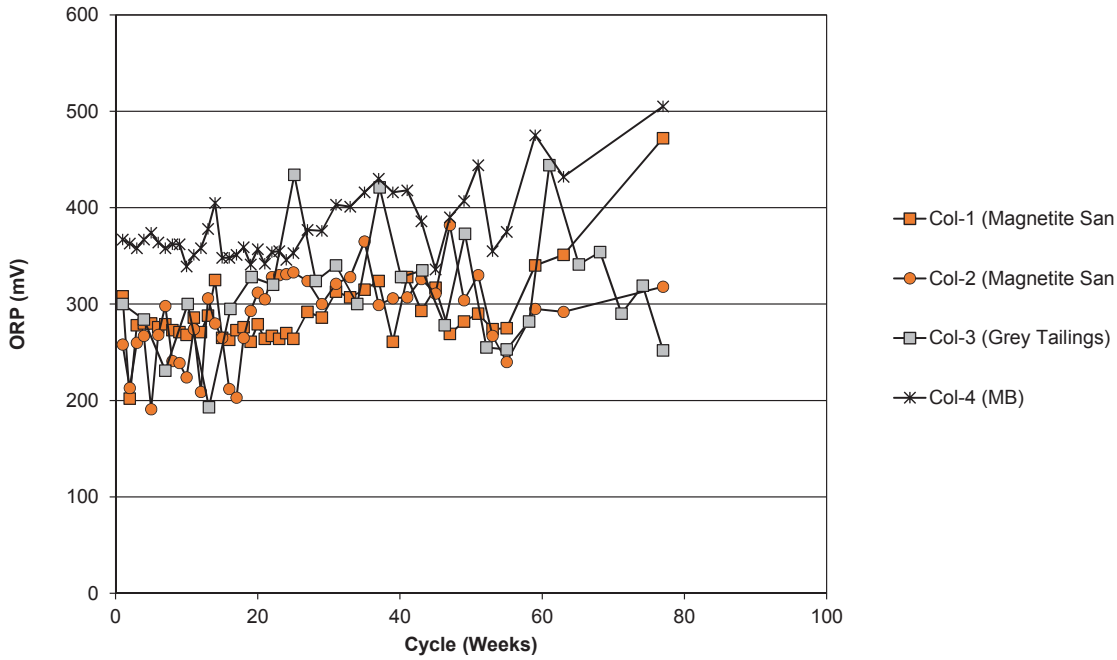

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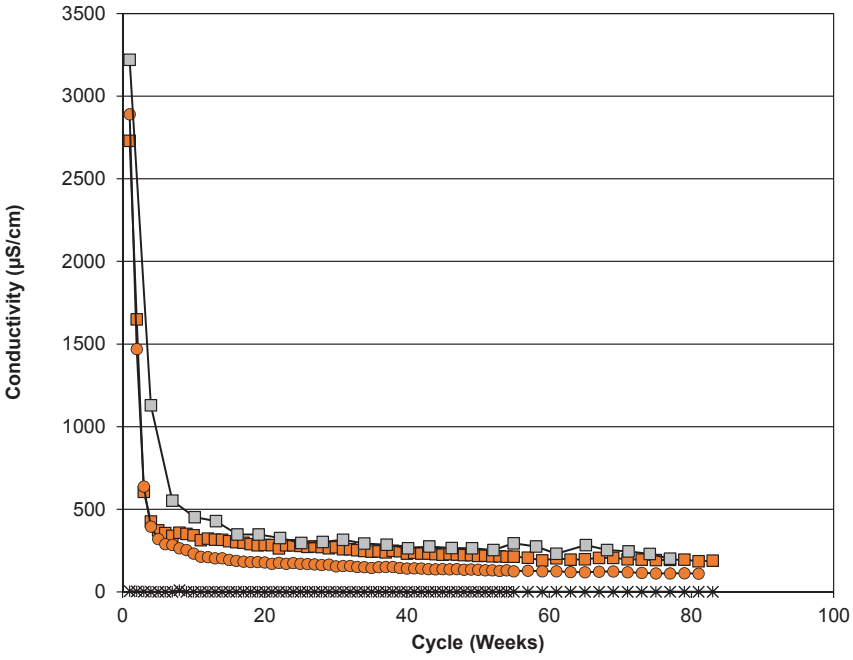

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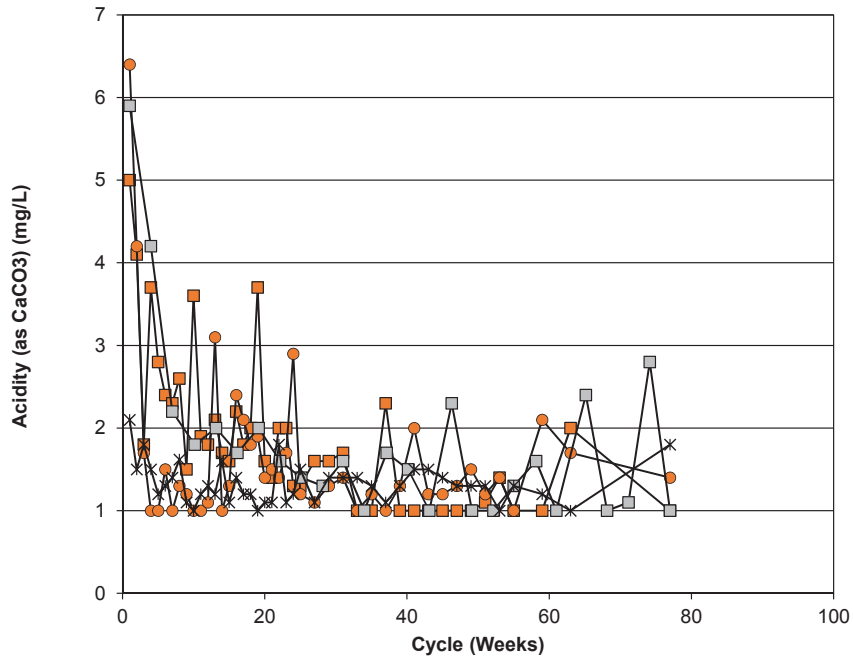

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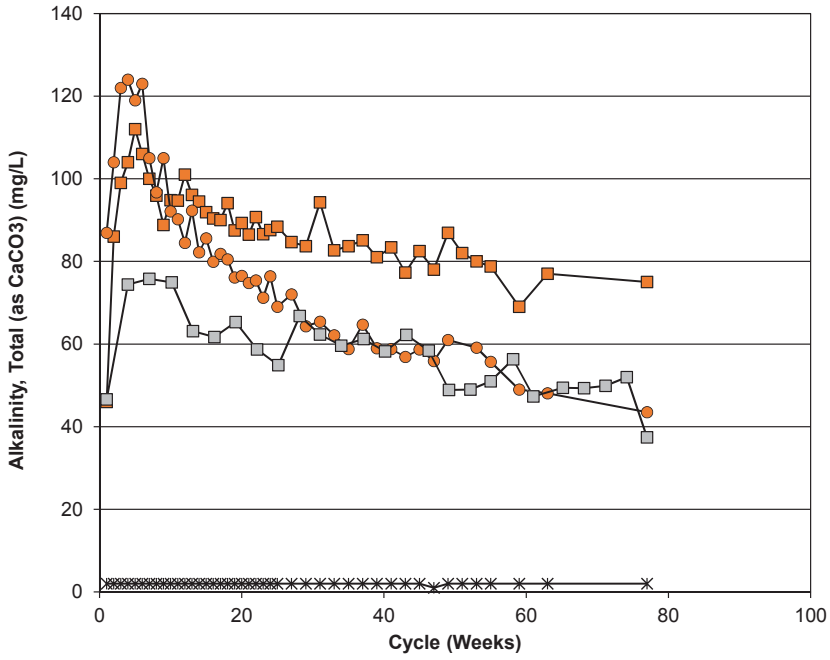

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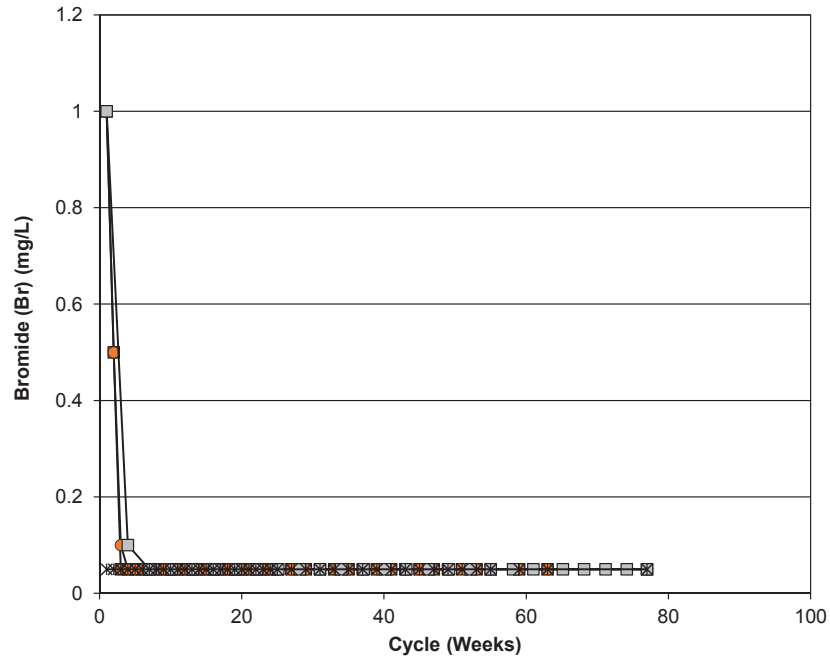

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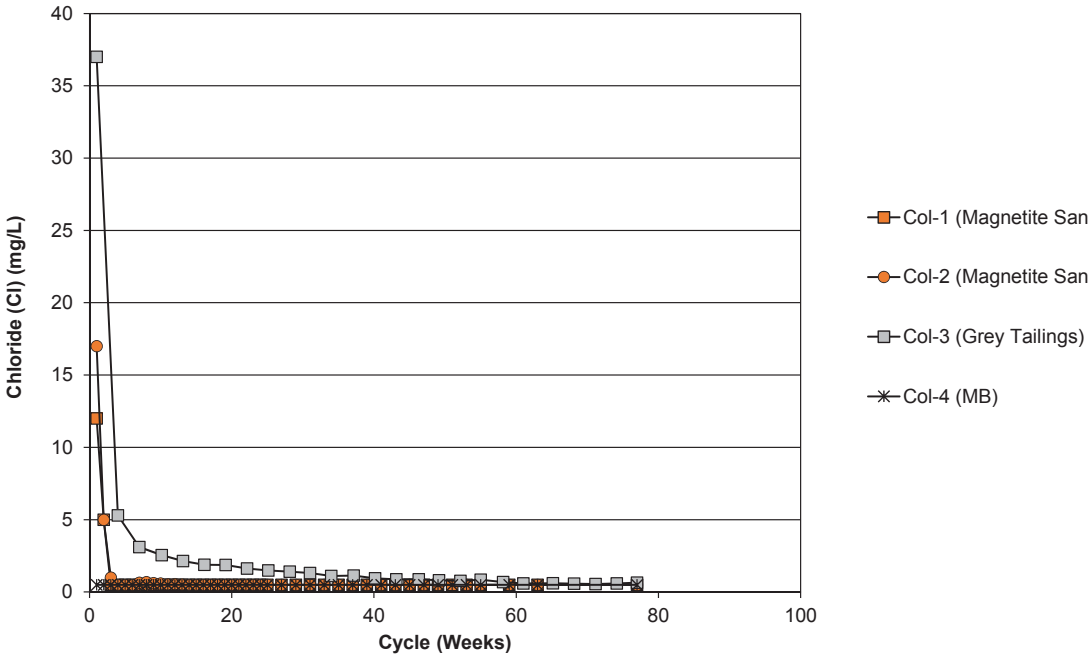

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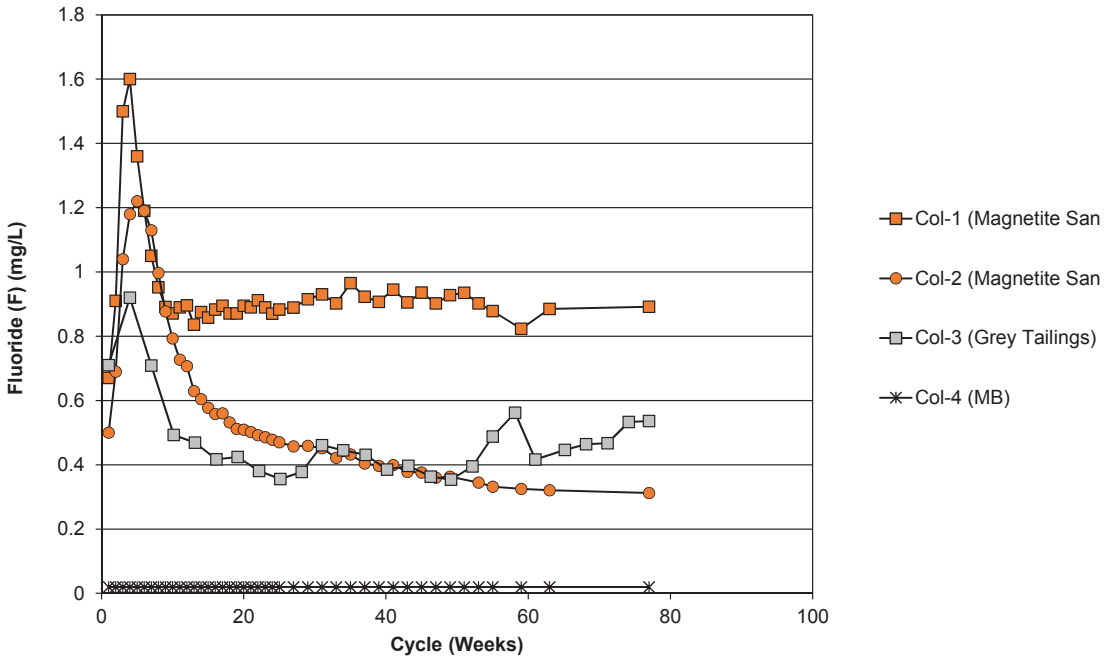

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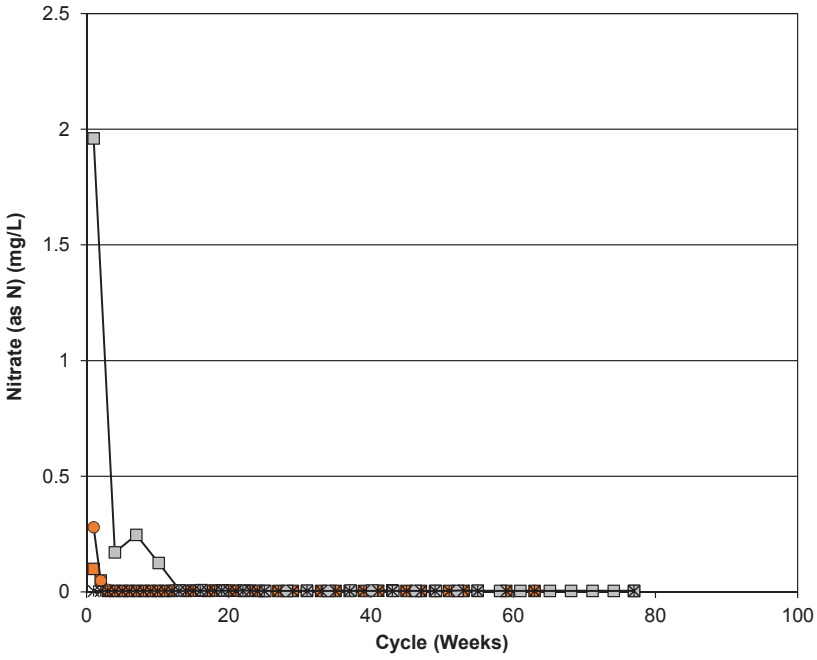

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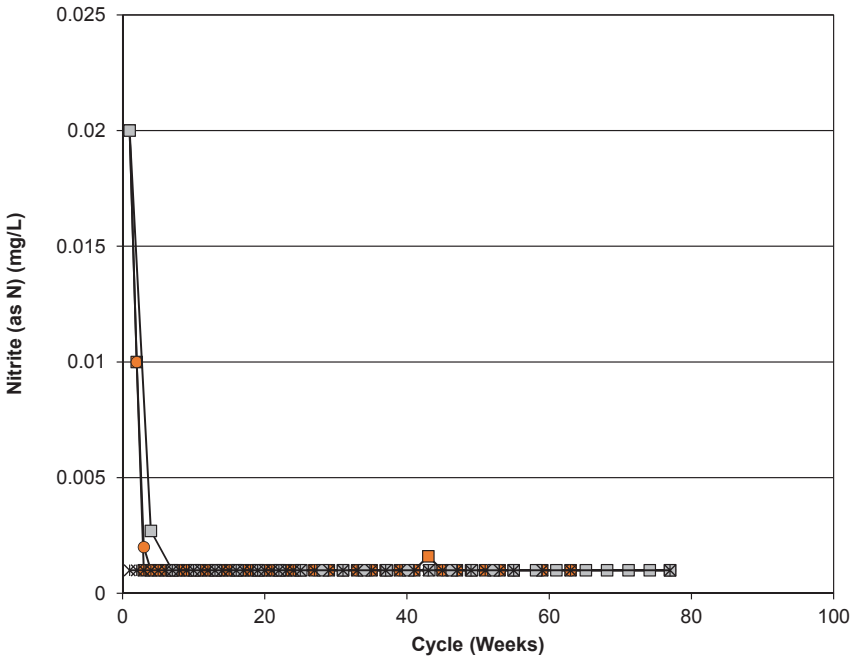

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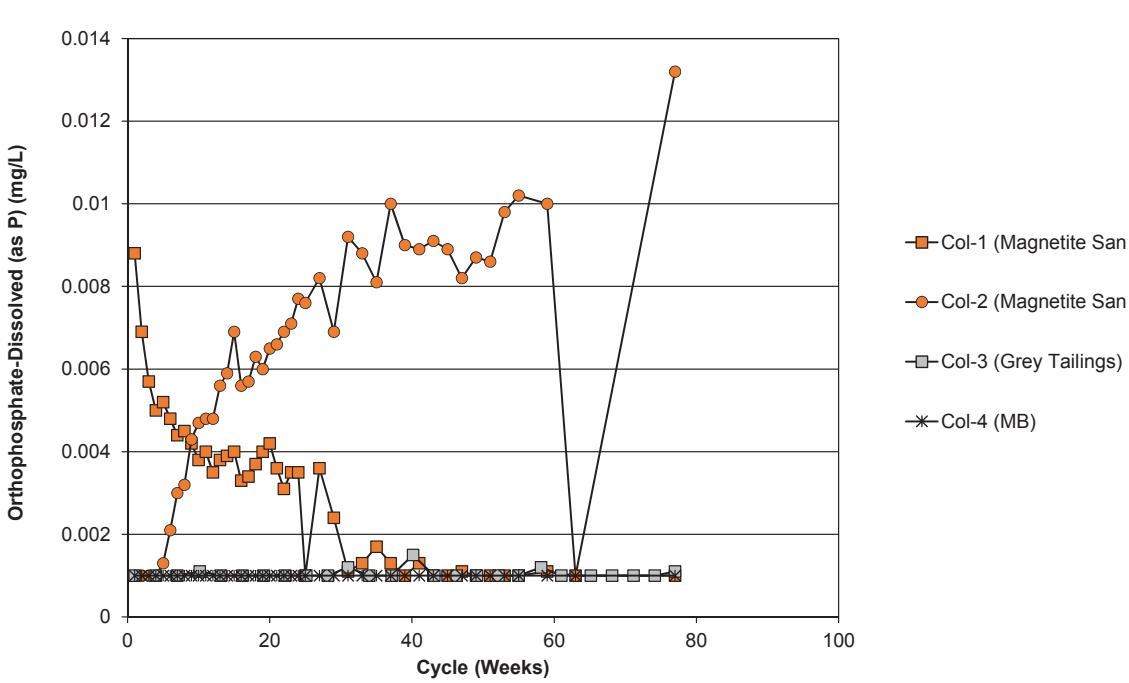

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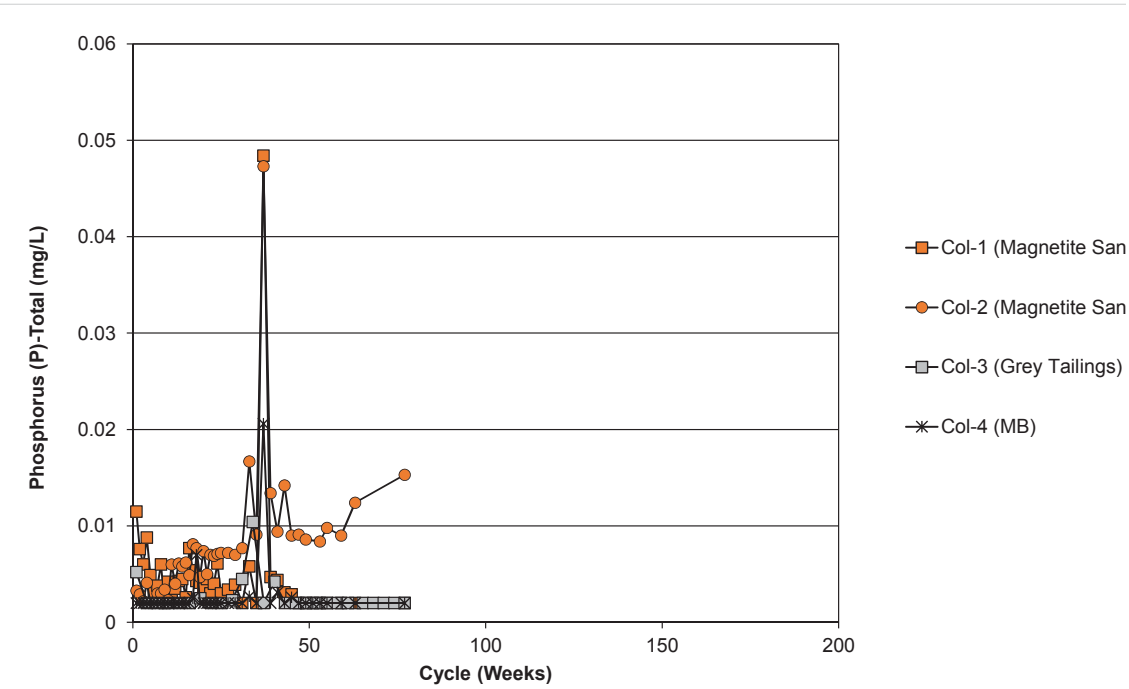

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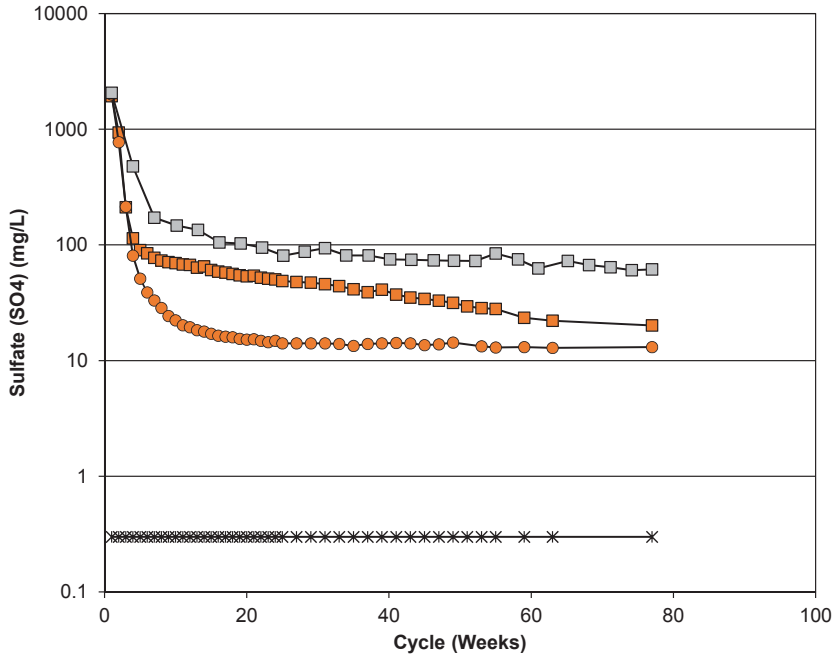

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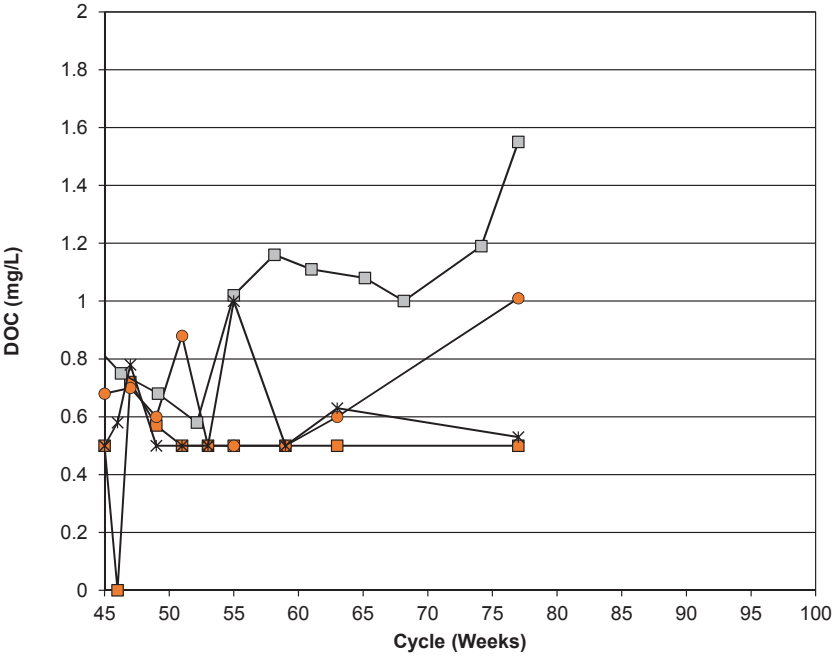

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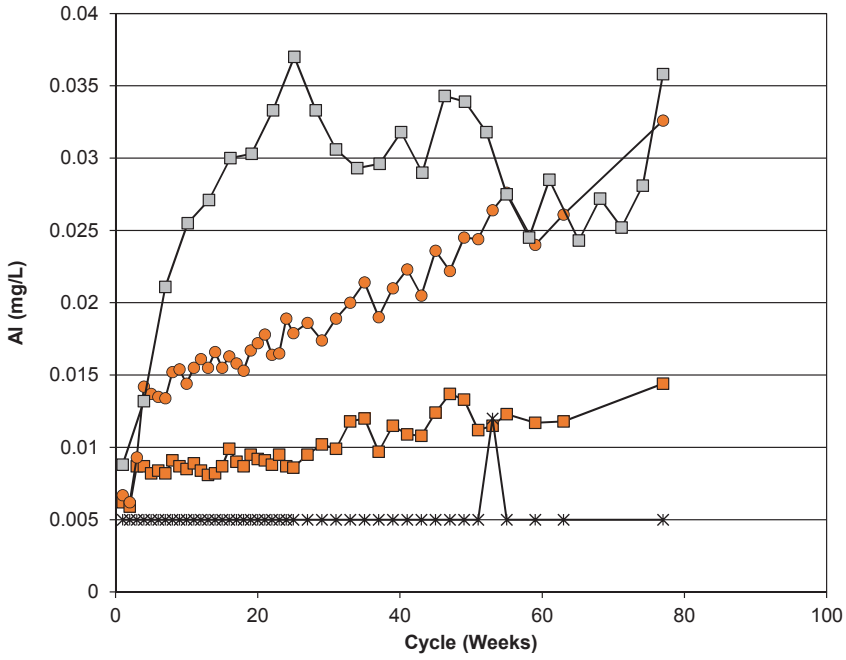

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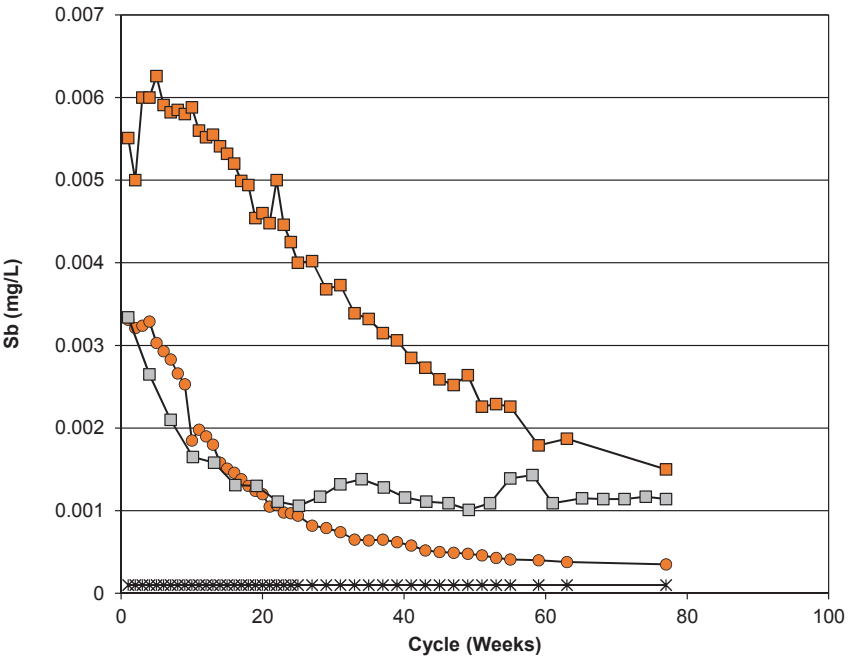

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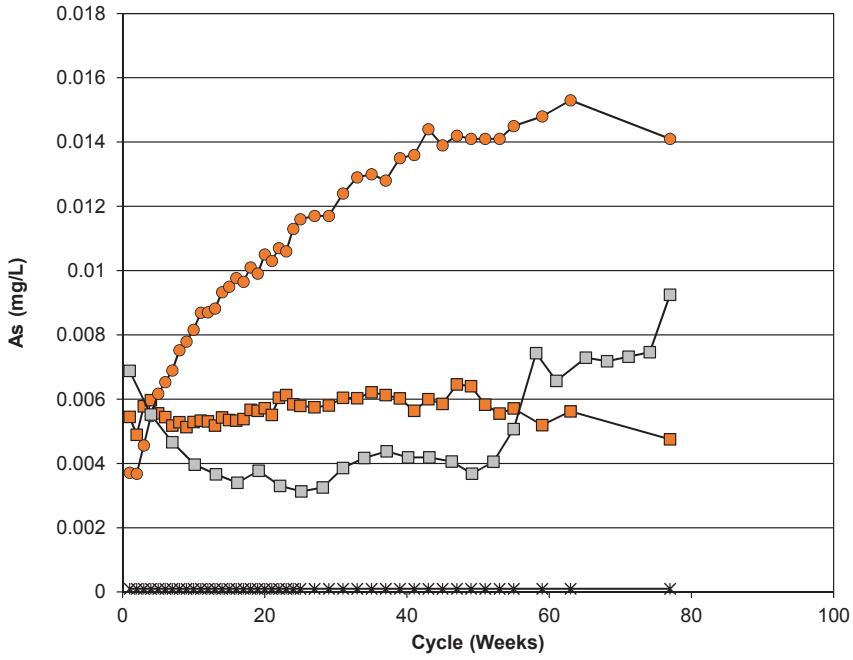

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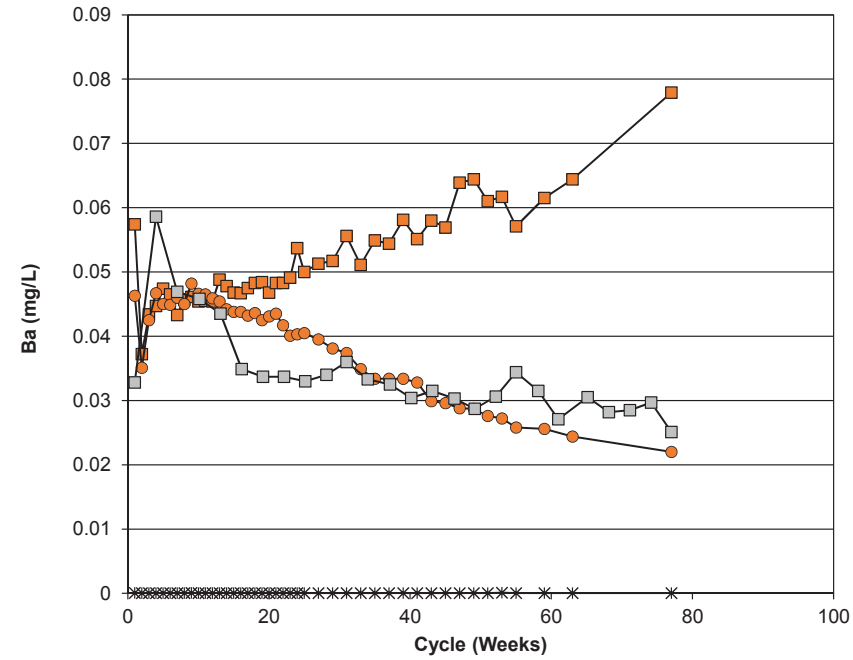

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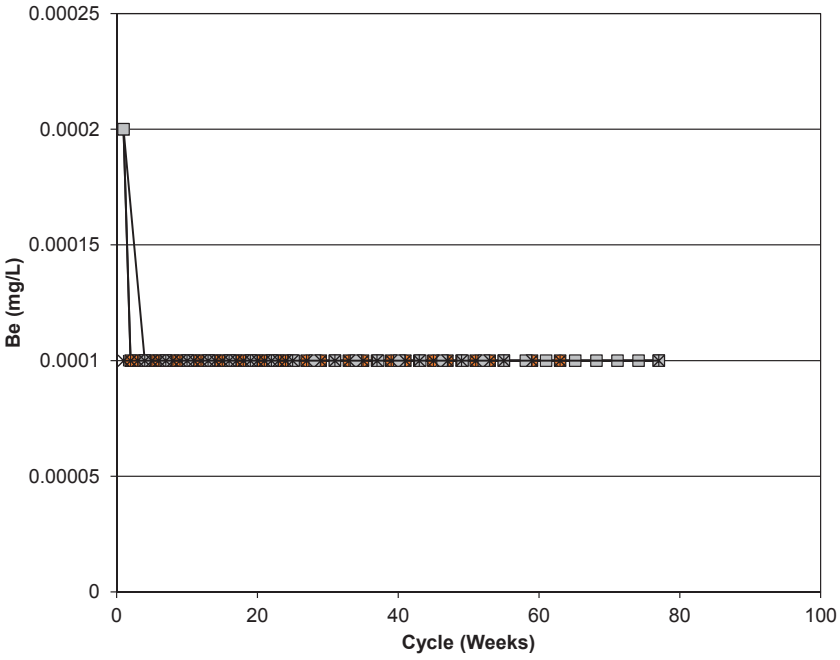

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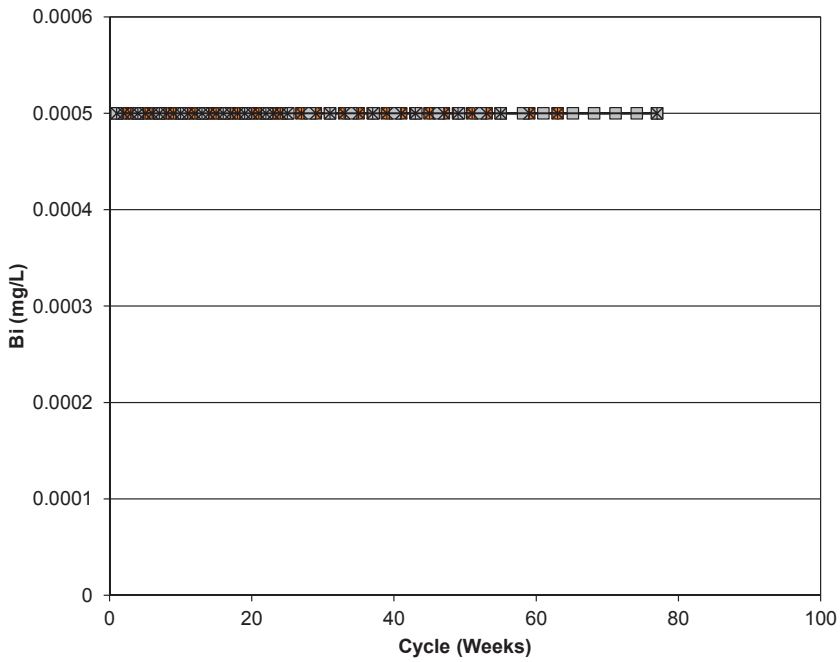

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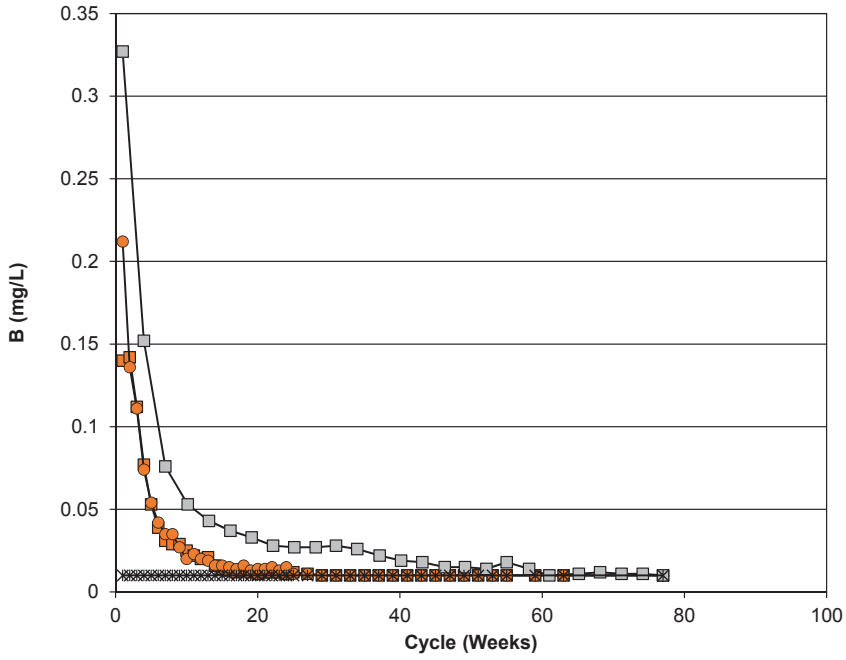

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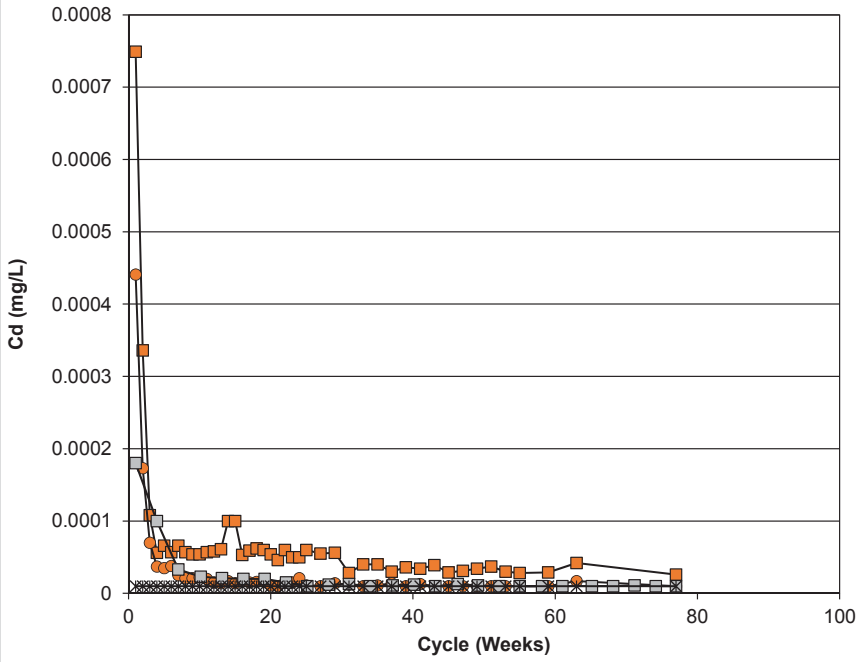

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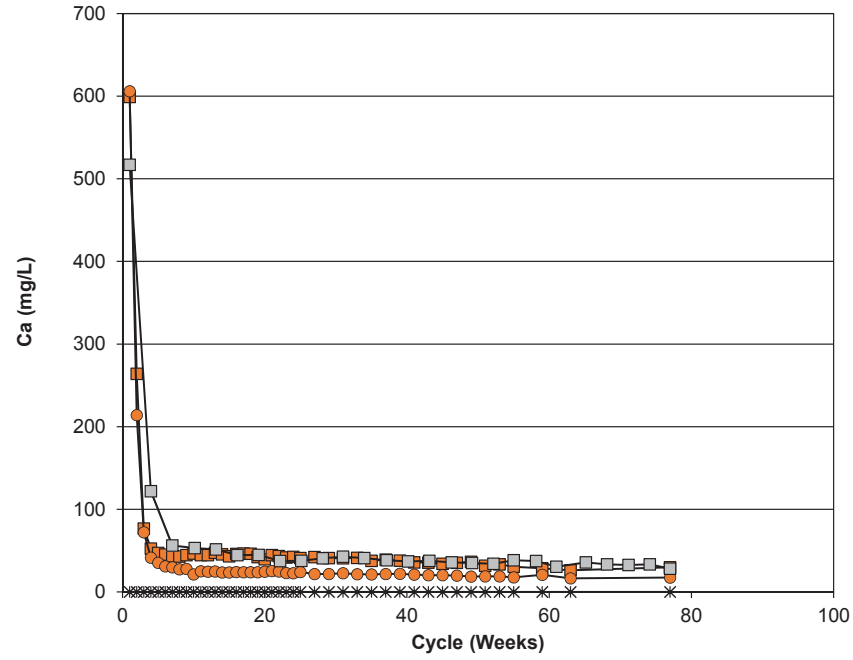

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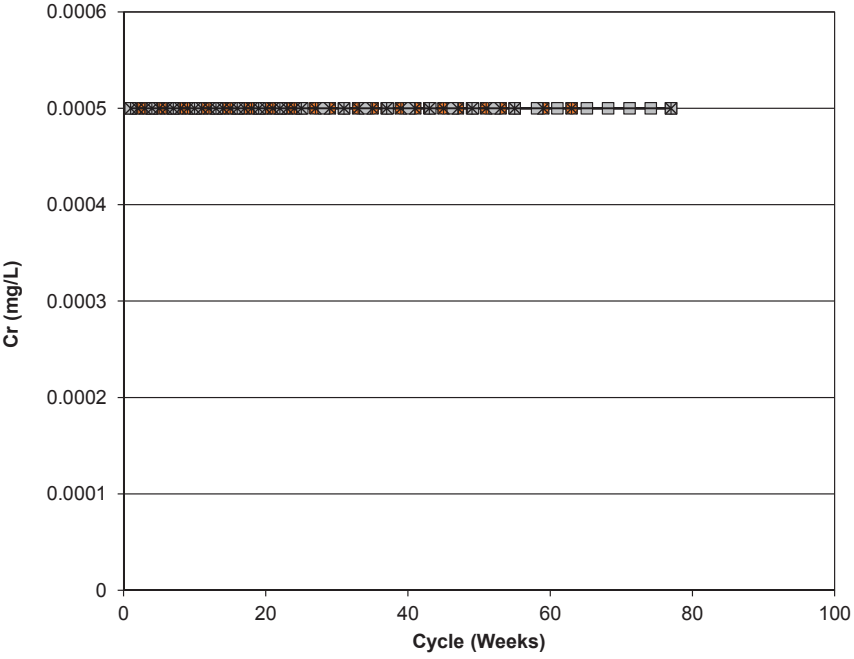

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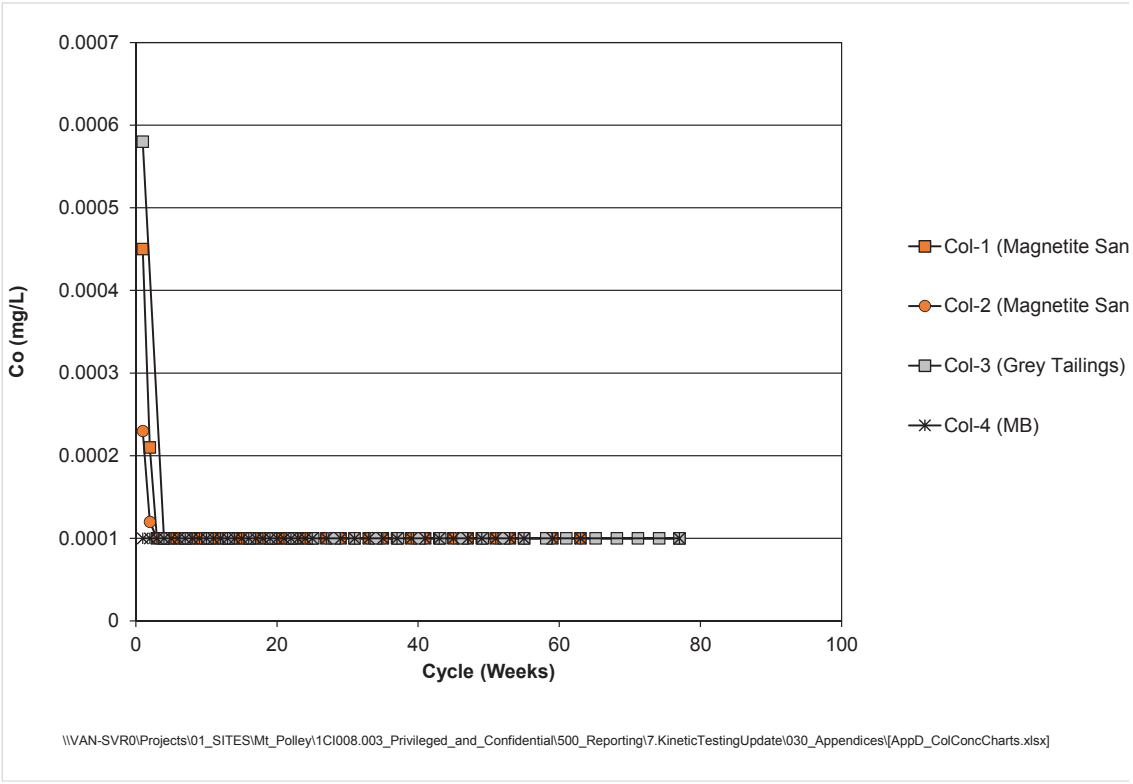

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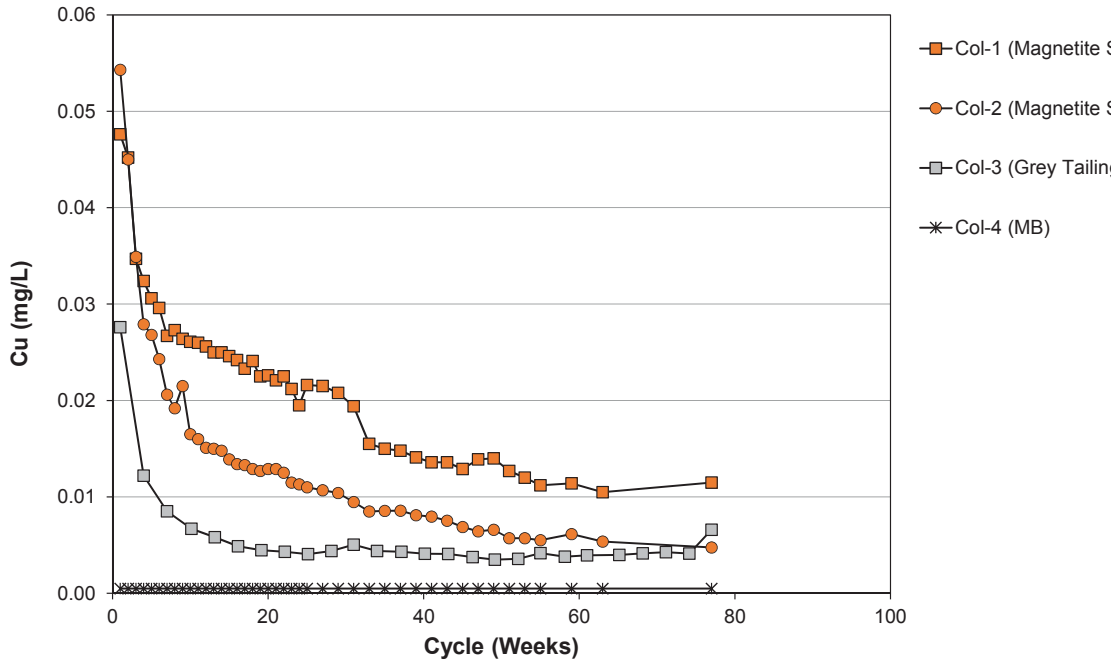

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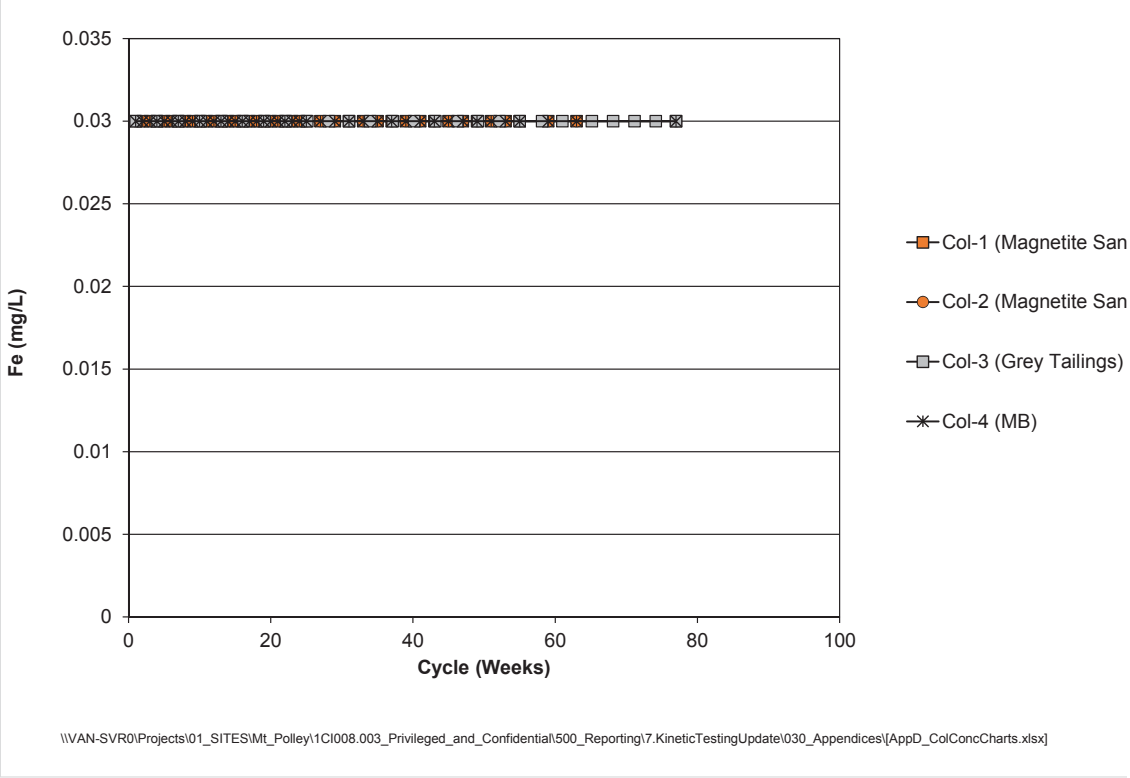

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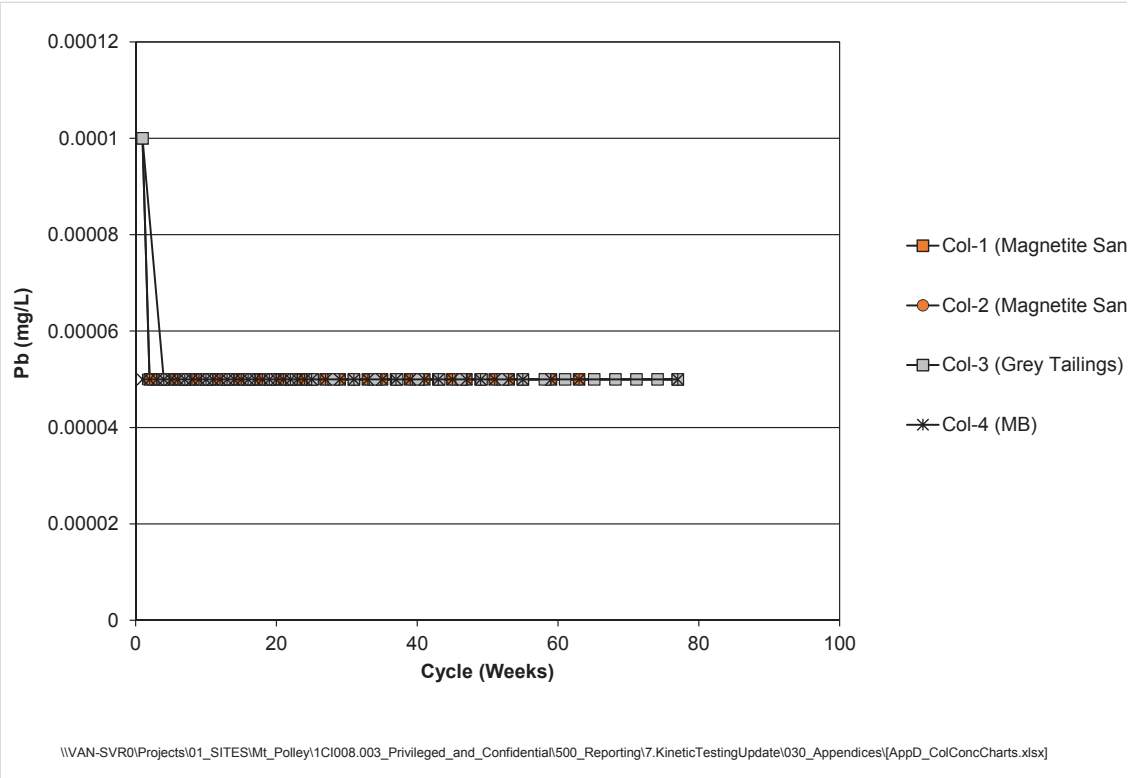

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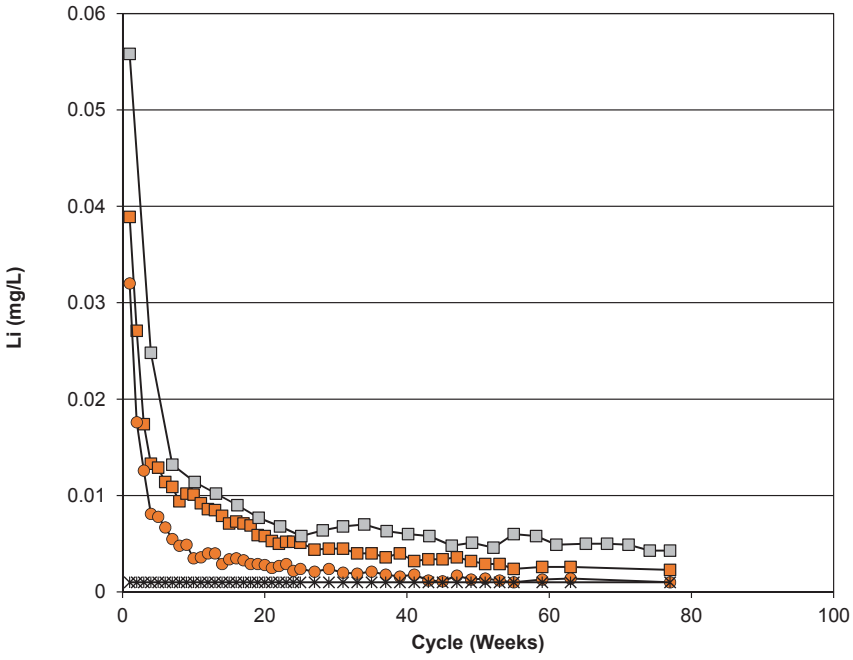

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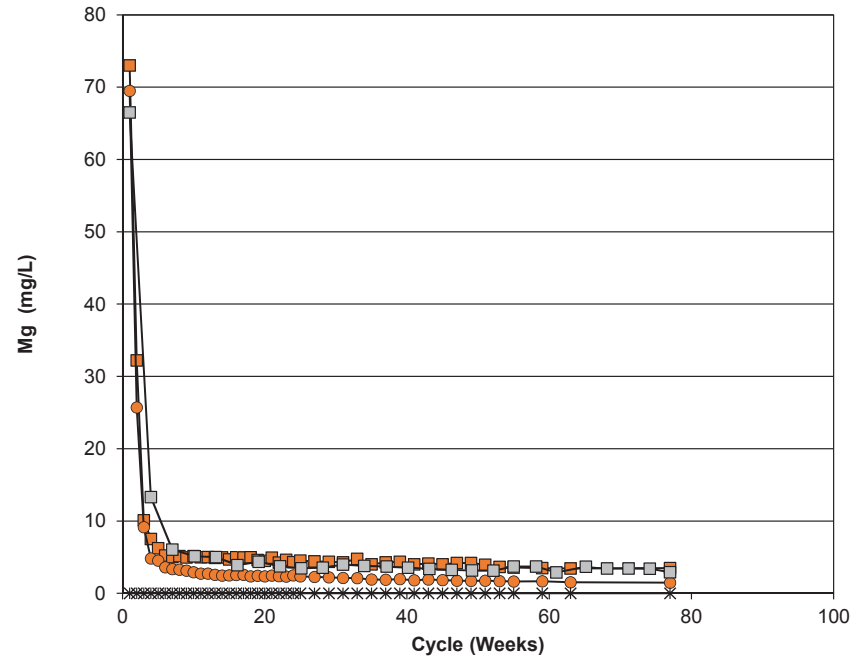

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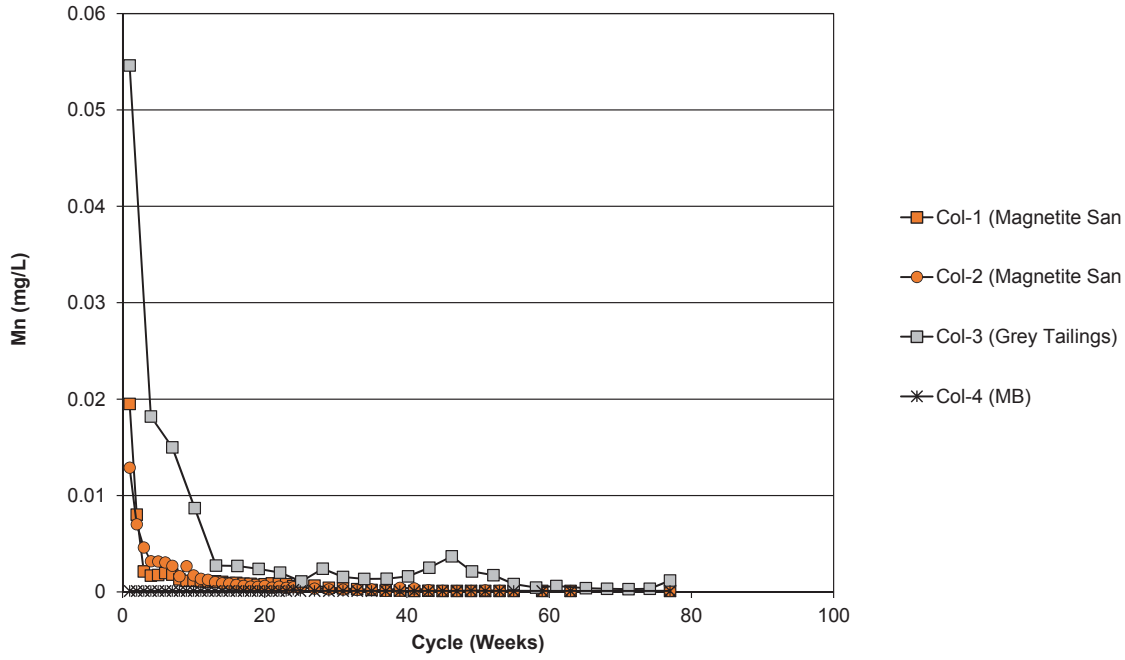

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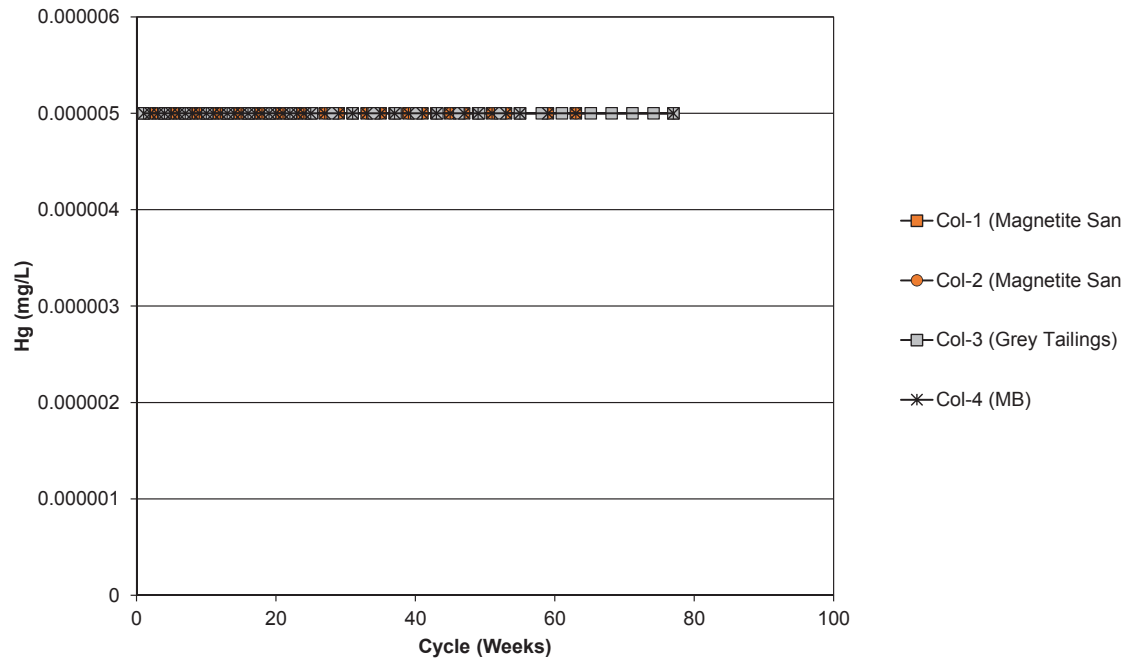

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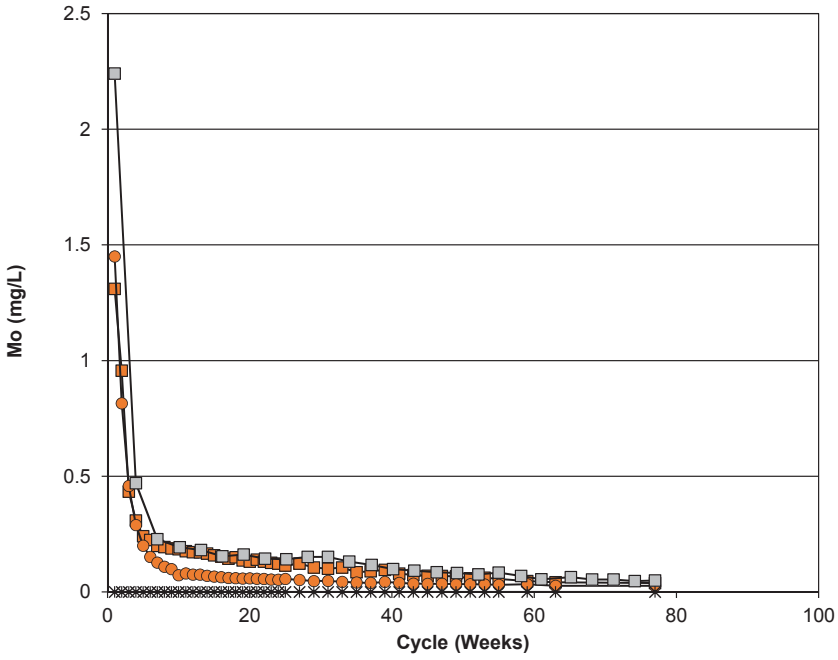

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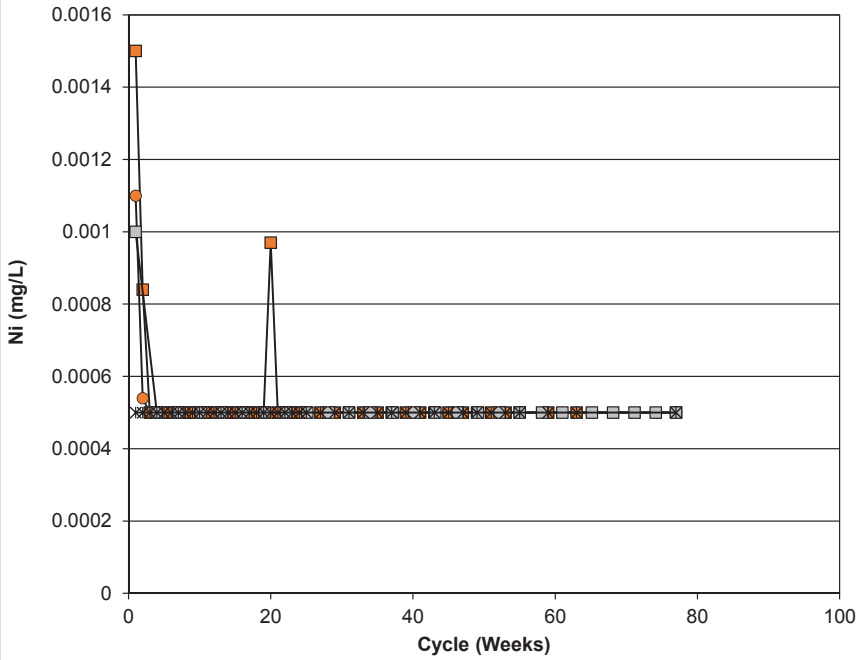

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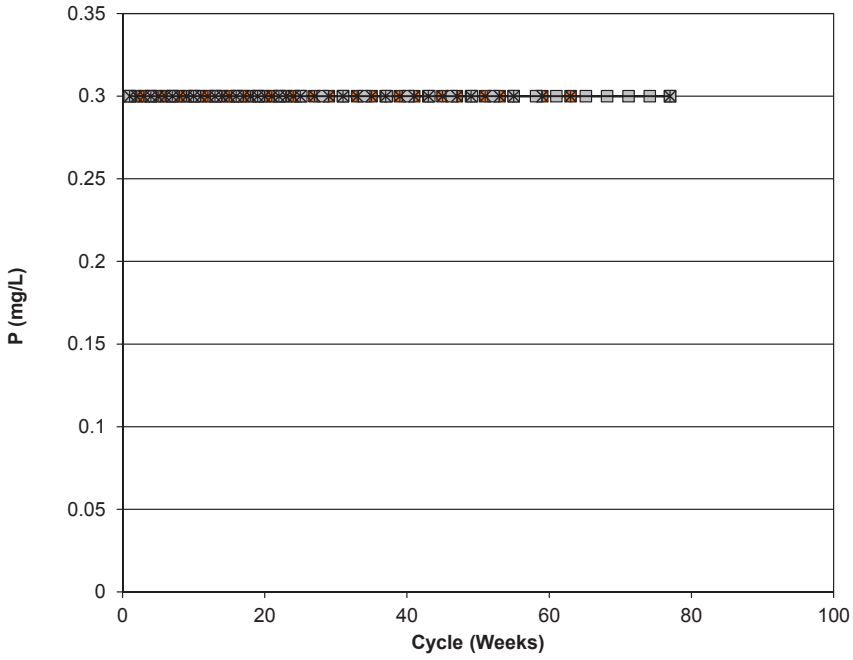

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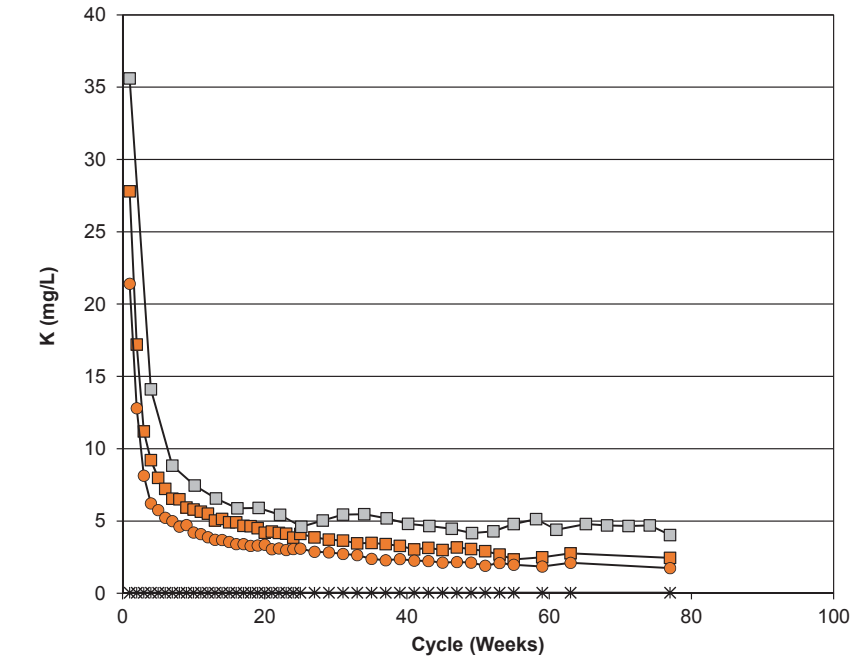

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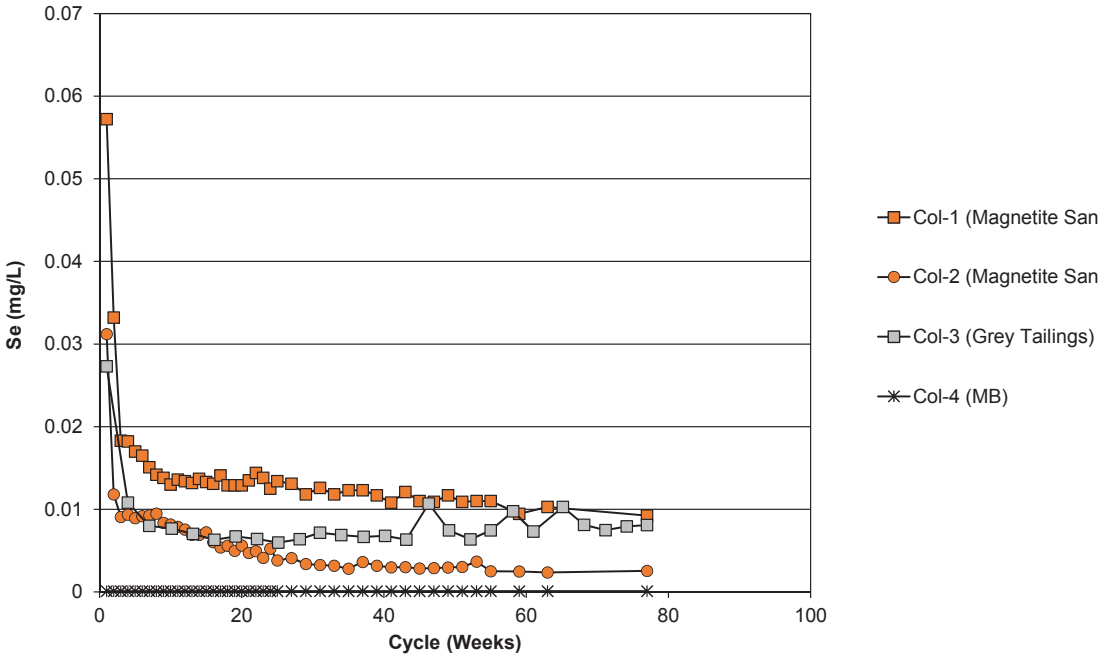

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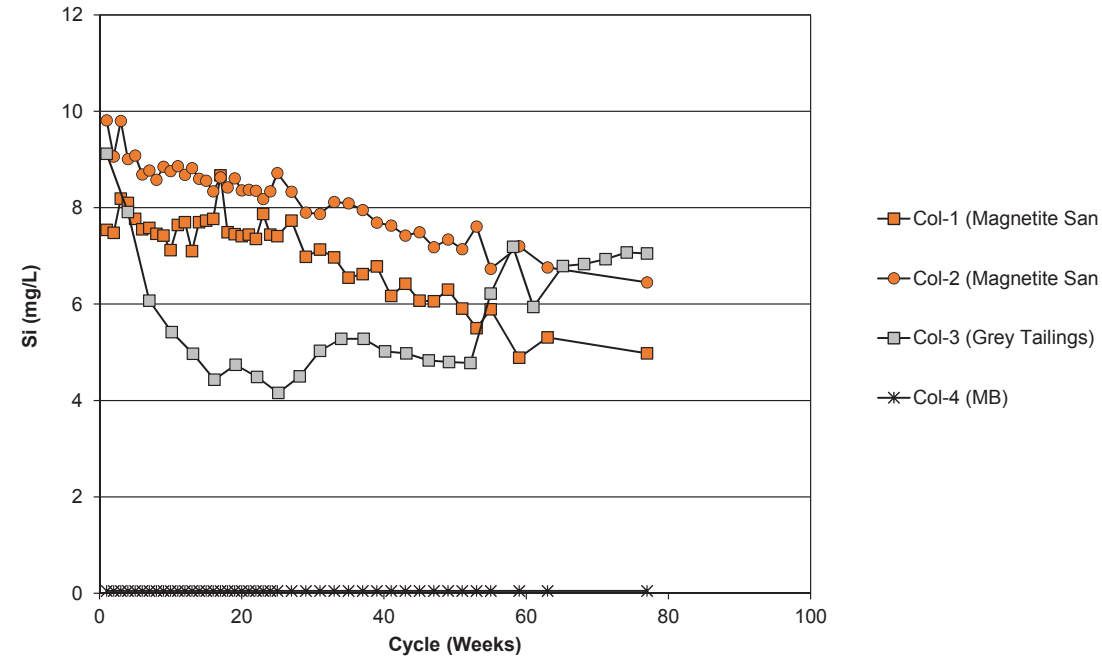

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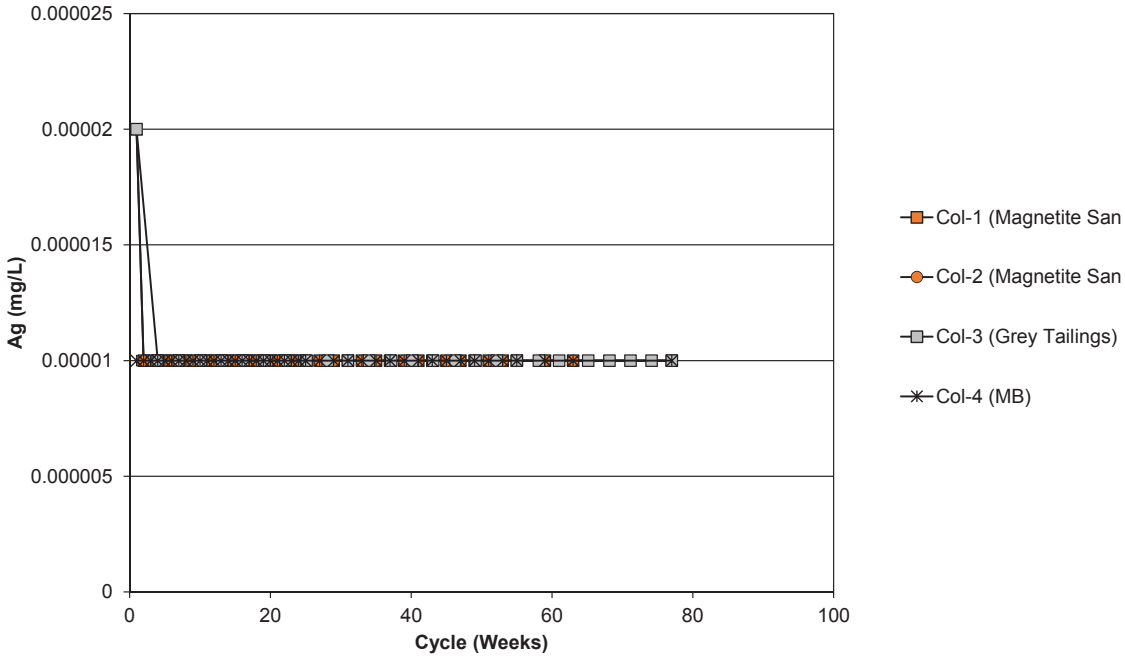

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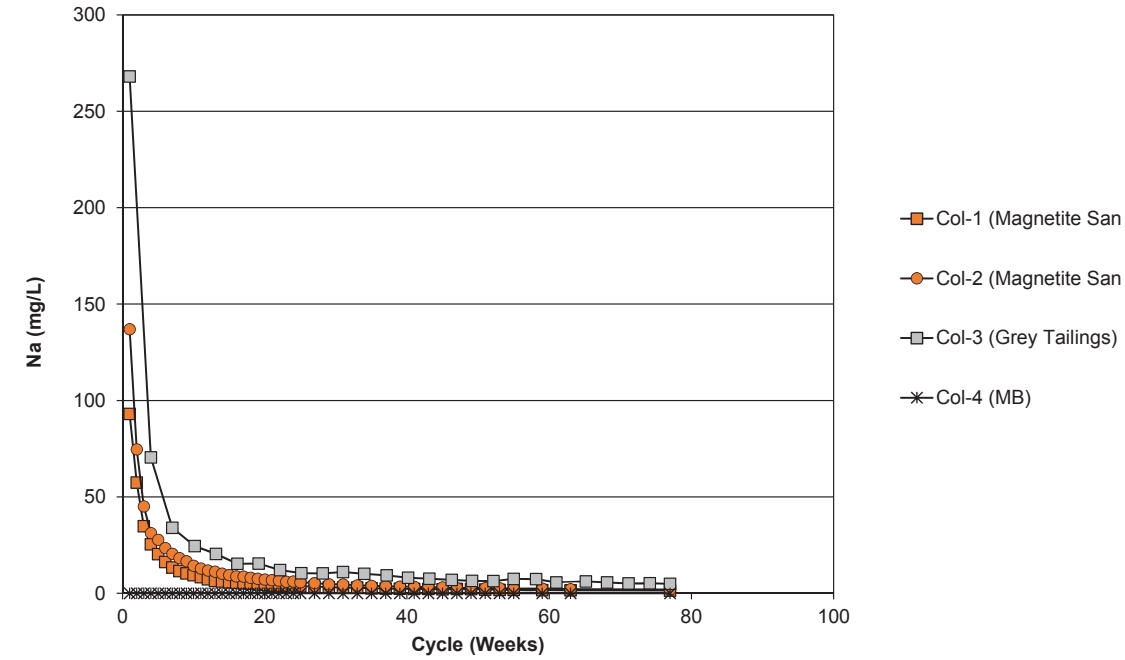

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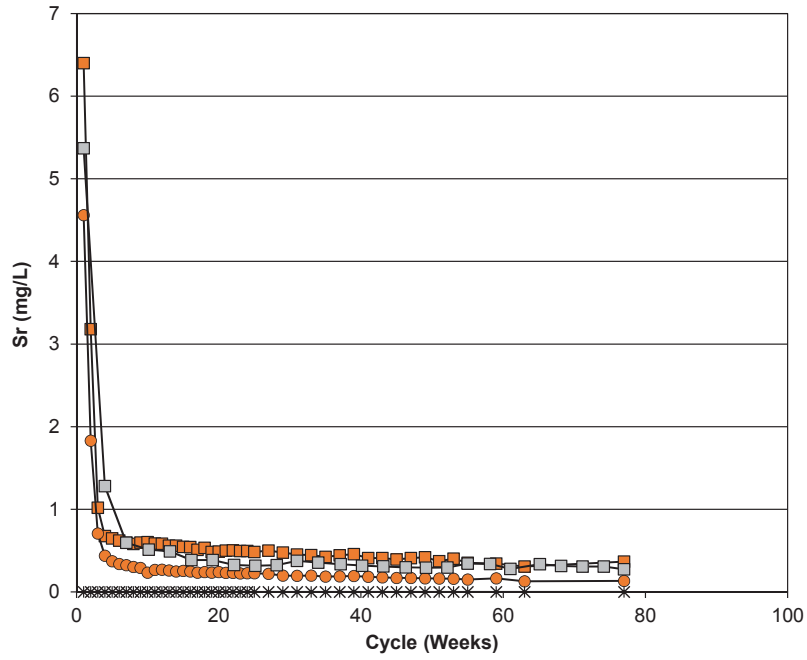

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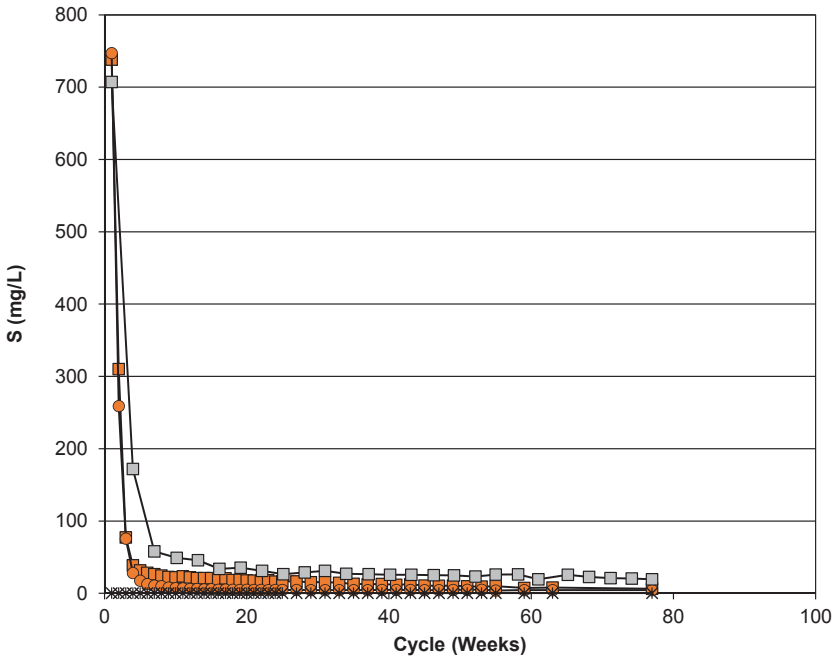

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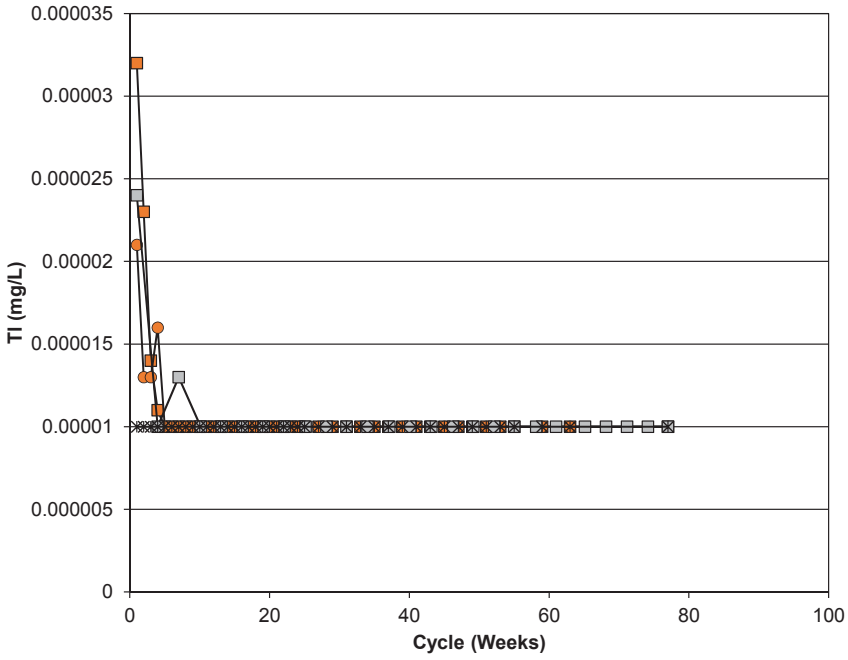

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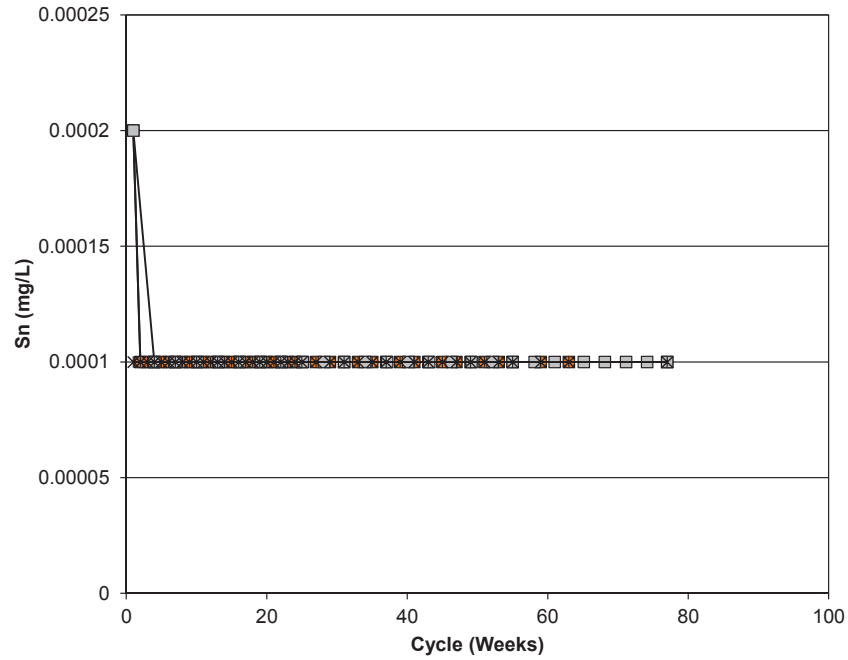

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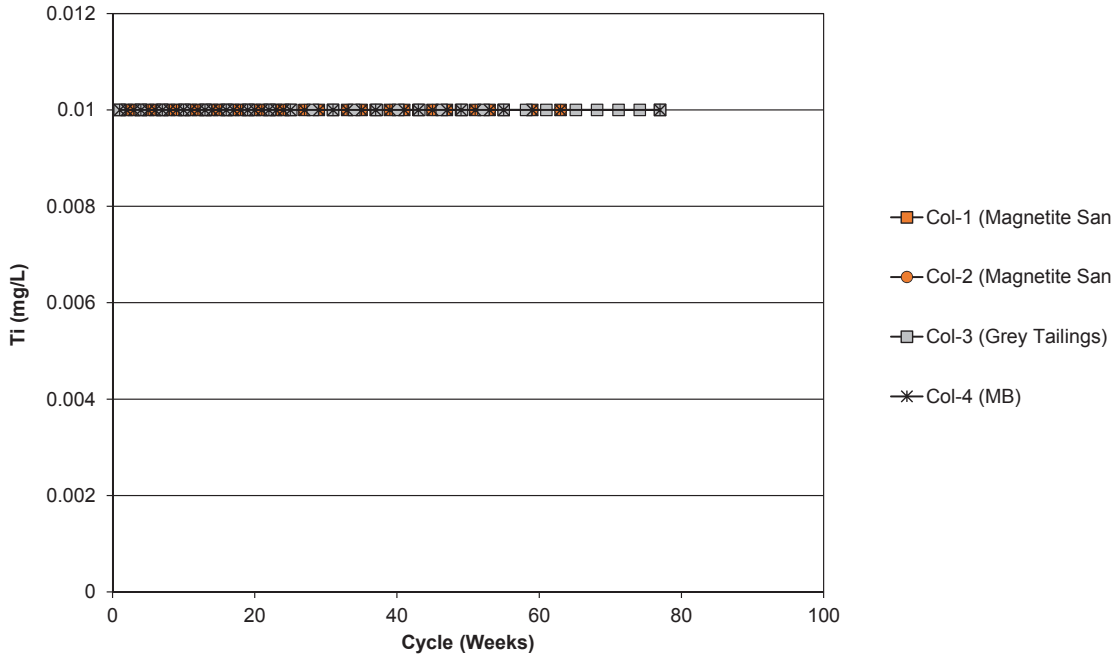

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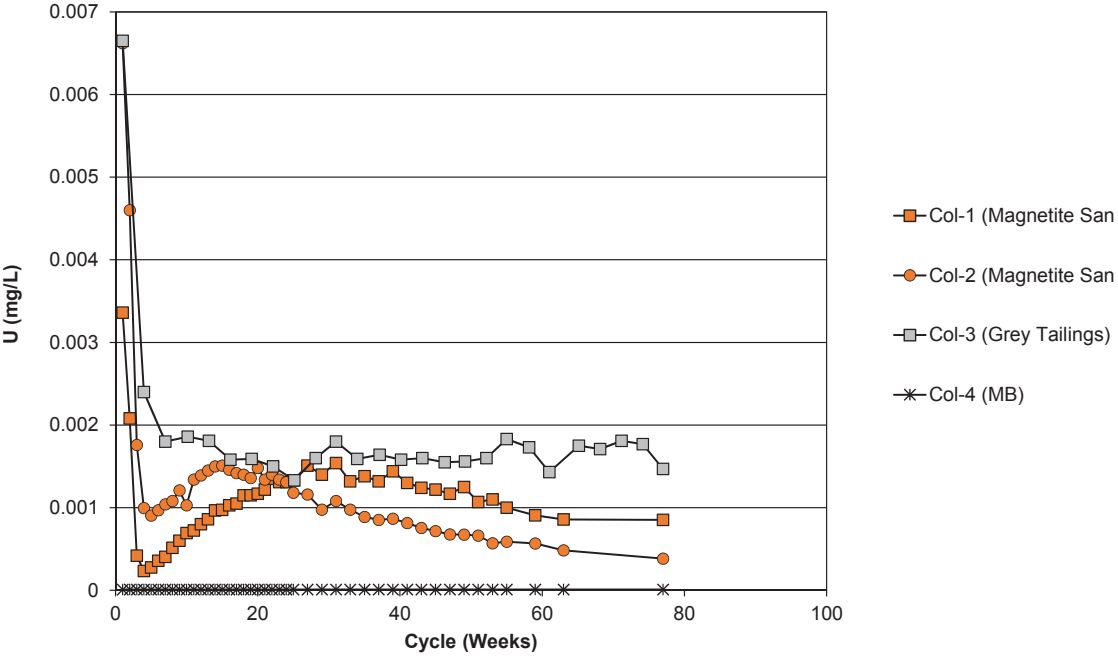

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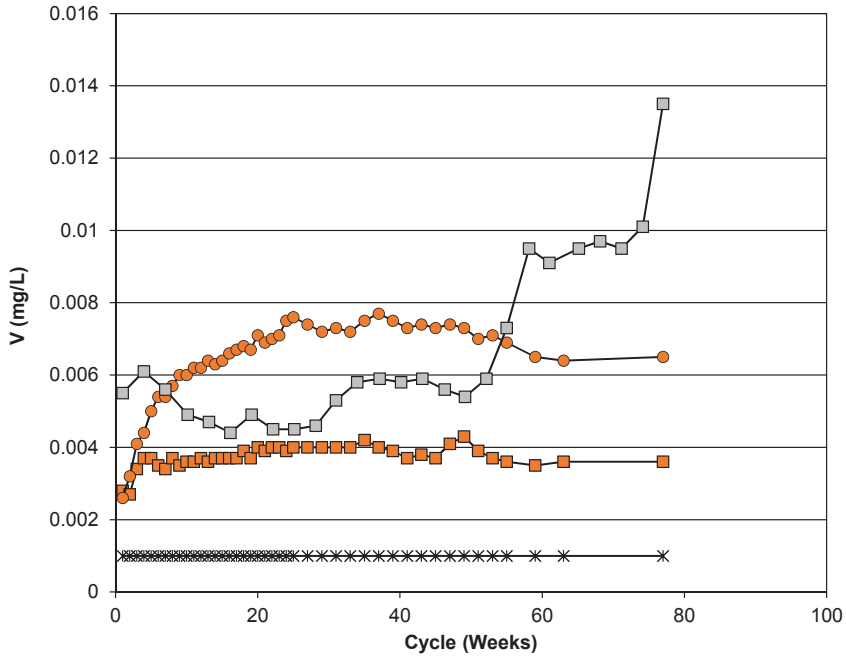

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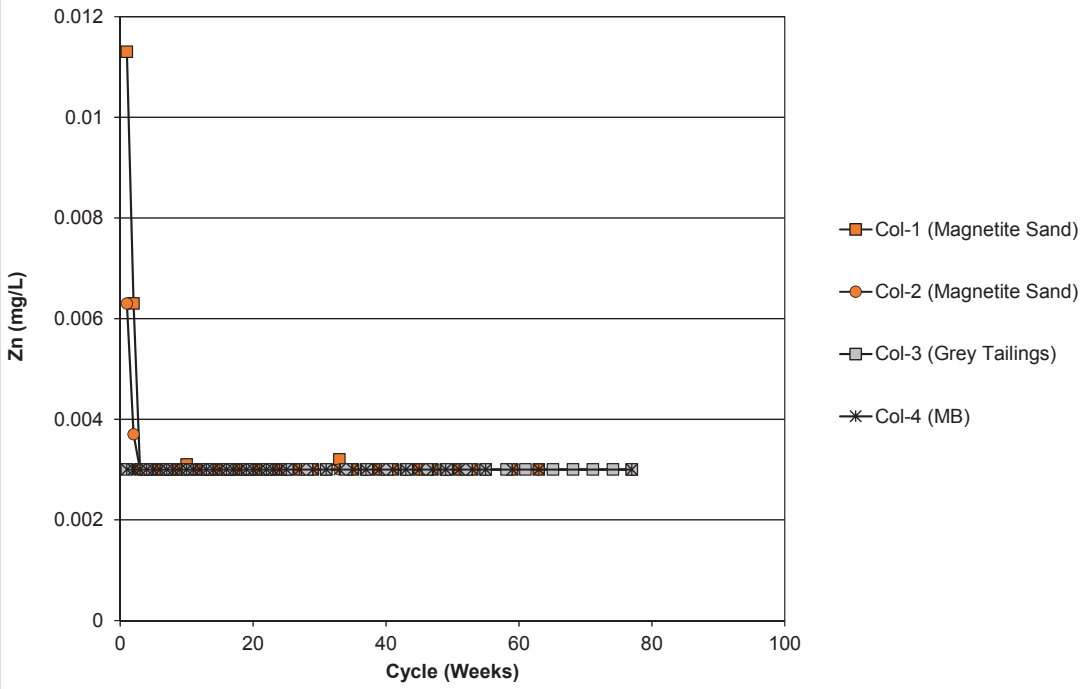

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APPENDIX A-3

SRK Polley Flats Geochemical Conceptual Model

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Memo

To:	Colleen Hughes	**Client:**	Mount Polley Mining Corp.
From:	Chris Kennedy, SRK Pierre Stecko, Minnow Environmental Cheryl Wiramanaden, Minnow Environmental	**Project No:**	1CI008.003
Cc:	'Lyn Anglin, Imperial Metals Stephen Day, SRK	**Date:**	December 23, 2016
Subject:	Mount Polley Spilled Tailings: Polley Flats Copper Geochemical Conceptual Model – FINAL		

1 Introduction

This memo presents a geochemical conceptual model (GCM) to explain the dissolved concentrations of copper in ditches and various ponds and pools that are collecting contact water from tailings materials in the upper Hazeltine Creek area (also referred to as the Polley Flats or Polley Plug area). The tailings were released during the tailings dam breach on August 4, 2014 at the Mount Polley Mine (MPM), located approximately 55 km north-east of Williams Lake, BC. Note that what is referred to as tailings in this document is a mixture of tailings, native soils, glacial sediment including till, and vegetation debris.

Mount Polley Mining Corporation (MPMC) requested that SRK and Minnow Environmental develop the GCM presented herein to help explain and evaluate the current and future copper concentrations that may impact water quality in Hazeltine Creek. This memo has been prepared for internal use by MPMC and its consulting team in response to a request from the BC Ministry of Environment (BC MOE, letter to Dale Reimer dated June 20, 2016) for the MPM to manage copper leaching impacts on Hazeltine Creek from the Polley Flats area. SRK and Minnow understand that this memo may also be provided to the BC MOE, Williams Lake Indian Band, Soda Creek First Nation, and others including the public.

The Polley Flats Copper GCM provides a basis for the following components:

- Source of copper leaching;
- Solubility control of copper;
- Influence of suboxic conditions;
- Influence of organic acids on leaching; and

- A prediction of future copper concentrations.

Following the GCM, this memo also provides general inputs into reclamation planning based on the GCM, to limit copper loadings from the Polley Flats tailings (and sub-aerial tailings in general).

The GCM focuses mainly on copper, pH, and dissolved organic carbon (DOC) at this time given the need to specifically address the concerns raised by the BC MOE and the respective Indian Bands. Iron is also included in the latter part of the assessment to assist with data interpretation. More complete assessment of other parameters will be provided in a kinetic testing completion report to be provided at a later date.

2 Background

As part of investigations of the tailings materials that spilled from the August 2014 tailings dam breach, geochemical characterization studies were completed by SRK (2015a, 2015b) to determine the composition, mineralogy, and leaching rates of the spilled tailings.

The main geochemical finding of these previous studies was that the MPM tailings are not potentially acid rock drainage (ARD) generating, which is consistent with the mineralogy of the tailings, the historical understanding of the tailings, and the low sulphur nature of the ore deposit (SRK 2015a). Weathering and leaching of the tailings would be expected to occur under neutral to basic pH conditions only, which results in low mineral and metal-specific solubility compared to acidic conditions. This is fundamental to understanding the long term copper leaching from the spilled tailings at Mount Polley, as release rates and copper concentrations will be constrained at neutral pH conditions.

Examples of copper concentration control are seen in available data sets from waste rock seepage monitoring at MPM and a number of other copper porphyry mine sites in British Columbia (Day and Rees 2006) (Figure 2-1), where copper concentrations are constrained around an average of 0.01 mg/L at pH 8. As the MPM tailings have an excess of carbonate that will neutralize any acidity produced from sulphide oxidation, pH is not predicted to ever go below 7; and the much higher copper concentrations associated with lower pH in Figure 2-1 will not develop at Mount Polley. The Day and Rees (2006) dataset is for waste rock, which will have coarser particles along with fine-grained material, but the study illustrates the first principle relationship between copper and pH from mine sites. Given that the tailings from the MPM are crushed rock, SRK considers that the Day and Rees (2006) dataset is applicable to the GCM for the MPM.

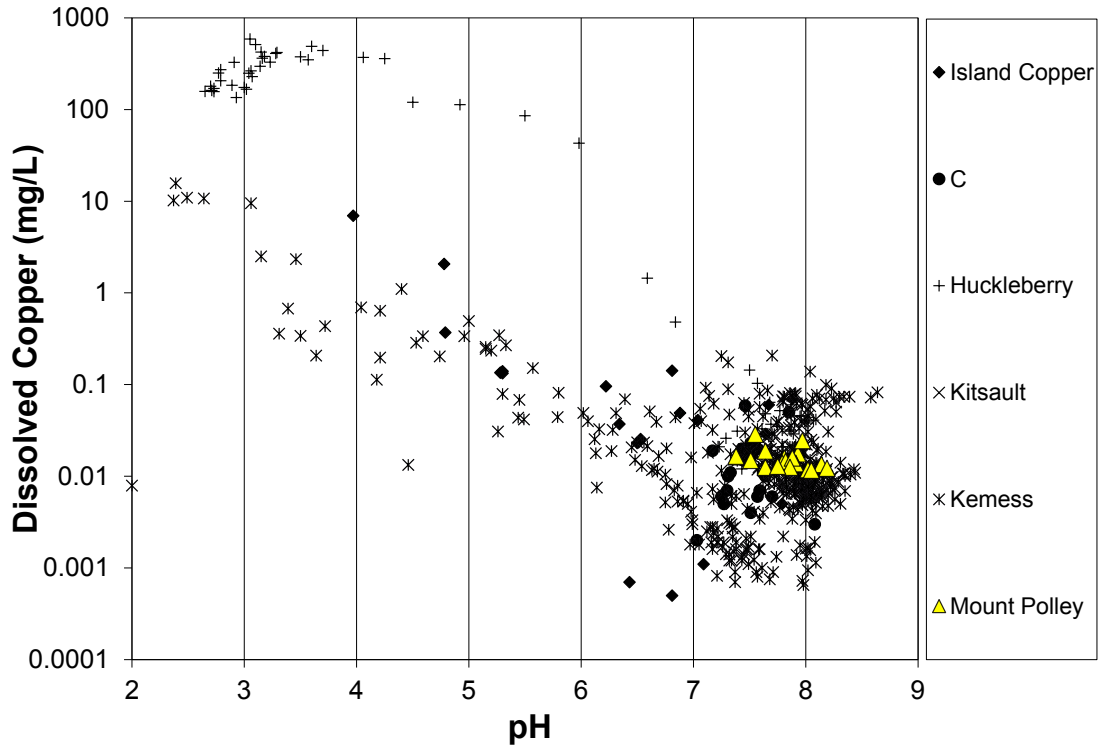

Figure 2-1: Copper concentrations in waste rock seepage from BC Copper Porphyry Mines.

Source: Modified from Day and Rees (2006)

MPM tailings are enriched in copper when compared to typical crustal rocks (basalt) (Price 1997). Previous work at MPM (SRK 2015a, b) indicates that the leachable or reactive portion of copper is only associated with sulphide minerals and requires oxidation to be leached. A significant portion of the copper in the tailings (often greater than 50%) is associated with a relatively inert non-sulphide phase.

MPM and the BC MOE have found dissolved copper concentrations upwards of 0.05 mg/L in the ditches and pools alongside the upper reaches of Hazeltine Creek. The ditches were created partly as temporary water diversion structures, but also to collect tailings contact water during the initial restoration efforts of Hazeltine Creek. Restoration efforts have included removing tailings down to native materials (i.e. glacial till) along the engineered flow path of Hazeltine Creek and rock-armoring the channel with low sulphur waste rock from the MPM.

SRK understands that the BC MOE has requested a plan from MPM to address copper leaching from the Polley Flats area. Before a remediation plan can be prepared, the source and fate of copper needs to be understood. The conceptual model presented herein provides input in support of effective seep management decisions.

3 Approach

An initial GCM was developed for the tailings (SRK 2015a) and the model presented herein builds from the initial work, but is more specific to the Polley Flats area. The initial GCM was based on

the current understanding of the site geology, ore processing, tailings deposition, and characterization results of tailings collected along the banks of Hazeltine Creek and within Quesnel Lake and Polley Lake.

Since the initial GCM, some of the tailings in the Polley Flats area have been excavated to natural ground as part of the remediation work on Hazeltine Creek. Additional data, including site monitoring data and over a year of laboratory column testing (i.e. a weathering test) are also available. The new configuration of the Polley Flats area and the additional data has been used to further develop the GCM model and confirm or revise previous assumptions. Data used in this GCM is presented in Section 4.

4 Supporting Information

4.1 Polley Flats Area

The Polley Flats (POF) area is located between the Tailings Storage Facility (TSF) and the upper portion of Hazeltine Creek immediately below Polley Lake but upstream of the water discharge location from the MPM water treatment plant (i.e. up to the HAC-13 monitoring location). This area is approximately 1 km at its widest (east-west) and extends from Polley Lake downstream (north-south) to HAC-13, over a distance of approximately 0.85 km, or a total surface area of 85 ha (Figure 4-1). Tailings in this area were also the deepest observed of the depositional areas downstream of the TSF and are typically over 1 metre, but less than 5 metres deep. Intermixed with the tailings materials are construction materials from the tailings dam and natural sediments (e.g. peat and soils as well as glacial sediments) and vegetation debris such as trees.

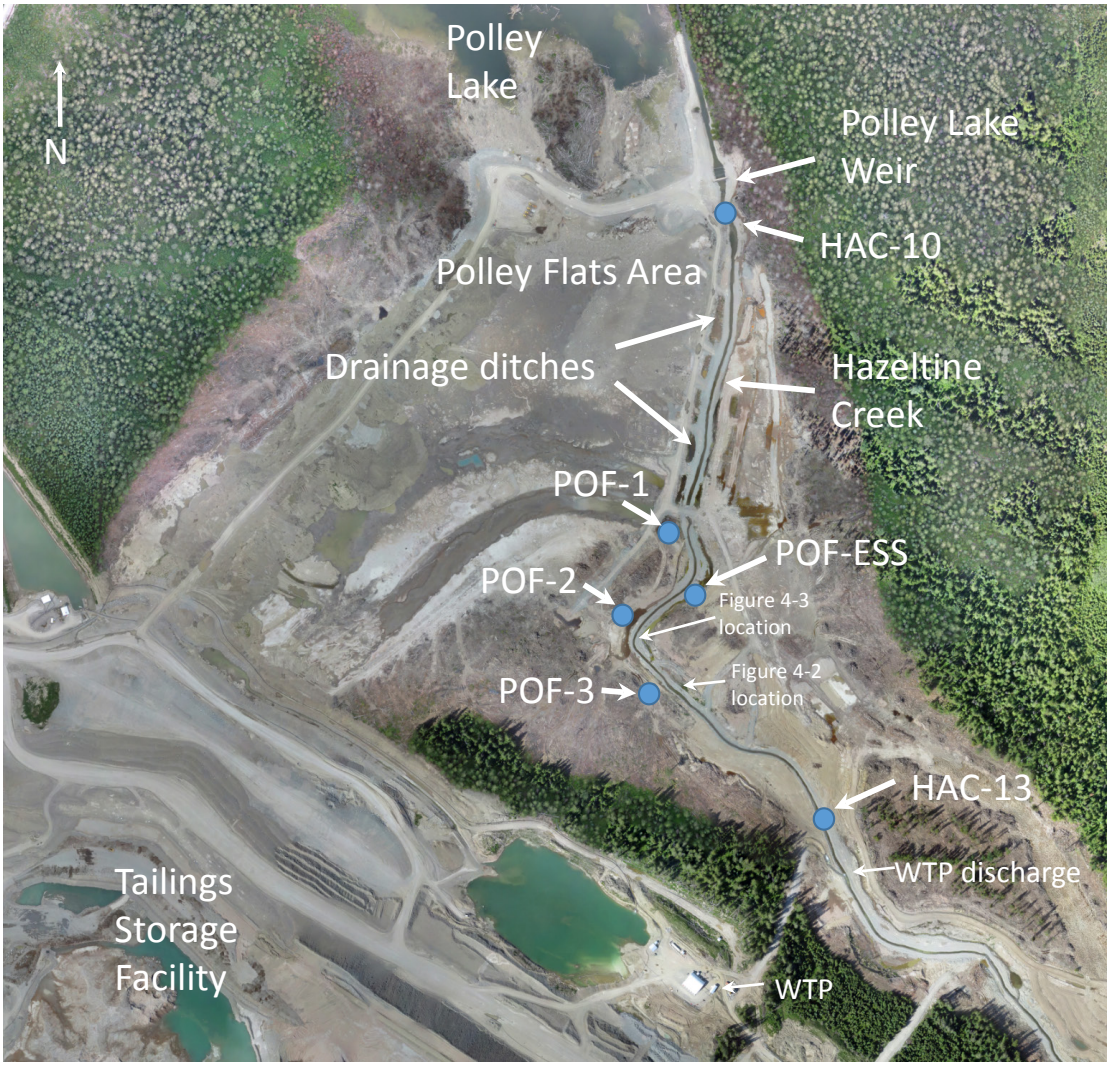

Figure 4-1: Aerial view of Polley Flats Area.

Source: Aerial image taken in June 2016 by MPMC.

Notes: Reclamation progress since the photo was taken has resulted in removal of POF-3, and POF-2 now flows to the water treatment plant (WTP) discharge location.

Crossing through the Polley Flats area from Polley Lake is Hazeltine Creek. As previously described (Section 2), the Hazeltine Creek flow path was created by excavating the tailings down to natural ground and lining the channel with low sulphur non-acid generating waste rock from the MPM. Water collection ditches have been established parallel to Hazeltine Creek, with some eventually draining into Hazeltine Creek, and others remaining isolated on the surface (although infiltration to groundwater is expected). Groundwater seeps can be seen in some of the locations and some are stained orange-red, likely due to neutral pH iron hydroxide precipitation. A photograph of one segment of Hazeltine Creek and a small drainage ditch is provided in Figure 4-2. A photograph of one of the larger pools of water beside Hazeltine Creek is provided in Figure 4-3. The locations of Figure 4-2 and Figure 4-3 are shown in Figure 4-1.

Figure 4-2: Photograph of Hazeltine Creek, drainage ditch, and excavated tailings.

Source: Image taken by SRK Geochemist Chris Kennedy during May 12, 2016 site visit.

Figure 4-3: Polley Flats area drainage ditch/pond at POF-2 beside Hazeltine Creek.

Source: Image taken by Shauna Litke during SRK May 12, 2016 site visit.

4.2 Field Monitoring

A large number of locations around the MPM are being monitored for water chemistry. Dissolved metal concentrations are being used rather than total metal concentrations because totals are affected by suspended sediment whereas dissolved concentrations provide a better measure of the metal fraction associated with leaching.

Six locations were chosen for use in this assessment to help understand copper concentrations in seeps associated with tailings prior to entering Hazeltine Creek and also within Hazeltine Creek itself. The locations are shown in Figure 4-1 and summarized in Table 4-1. Of note are the POF-2 and POF-3 locations, which were locations of water draining a cedar swamp that was passing through (and over) the tailings. These two locations no longer exist due to 2016 reclamation activities and the water now drains to the water treatment plant discharge location as opposed to through the tailings.

Table 4-1: Field sampling locations used in GCM.

		Location (UTM Zone 10U)	
Sample ID	**Sample Description**	**Easting**	**Northing**
HAC-10	Outlet of Polley Lake at weir	595754	5820776
HAC-13	Hazeltine Creek upstream of discharge	595924	5819913
POF-1	Contact water from tailings	595736	5820295
POF-2	Cedar swamp water passing through tailings	595663	5820169
POF-3	Cedar swamp water passing through tailings	595703	5820102
POF-ESS	East side contact water from tailings	595775	5820258

Source:
MPM and Z:\01_SITES\Mt_Polley\1CI008.003_Privileged_and_Confidential\500_Reporting\6.PolleyFlats_GCM\memo\[Tables_POF_GCM_1CI008.003_REV00_CBK.xlsx]

Monitoring results forwarded by BC MOE and MPMC for pH, copper, and DOC in 2015 and 2016 are provided in Figure 4-4, Figure 4-5, and Figure 4-6, respectively. SRK did not review the data for quality assurance or quality control, but samples collected by MPMC were subject to their internal QA/QC manual and SRK assumed the data were valid. Flow volumes were not available so it is not possible to present chemical loading. Relevant monitoring chemistry is provided as Attachment A.

Hazeltine Creek and the Polley Flats contact water have remained pH neutral to alkaline since the tailings spill. This is consistent with the geochemical characterization of the MPM solids which indicated that the potential for ARD from these tailings is negligible (SRK 2015a). A slight increase in pH (7.6 to 8.3) in the Polley Flats waters was noted from the early spring (March 2016) to the most recent sampling date (October 2016 (Figure 4-4)).

Higher copper concentrations in the Polley Flats seep waters, compared to Hazeltine Creek were not unexpected as the seep waters effectively represent tailings contact/pore water with minimal dilution. Hazeltine Creek is likely dominated by drainage from Polley Lake given that it is primarily acting as a drainage conduit to Quesnel Lake. Generally, copper concentrations in Hazeltine Creek were relatively stable. An increase at HAC-13 in March 2016 was noted at the same time that concentrations in the Polley Flats waters were also highest. Given that Hazeltine Creek is passing through nearly a 1 km stretch surrounded by tailings with many of the ditches draining

into Hazeltine Creek, the increase in HAC-13 was not unexpected. Two additional small increases in copper and DOC were also noted at HAC-13 in August and September 2016. These increases are believed to be a result of the extensive reclamation works on-going in Hazeltine Creek at that time which likely resulted in some of the suspended sediment passing through the field filter (0.45 µm) and subsequently getting reported as a dissolved number, when in fact the preserving agents likely partially digested sediment. The sluice gate at the Polley Lake weir was also closed during reclamation activities, resulting in a higher proportion of POF water contributing to the quality of Hazeltine Creek.

Copper concentrations at most stations decreased or were similar from March to June coincident with the observed increase in pH, but POF-2 was a clear exception (later supported by POF-3) (Figure 4-5). At these two locations, copper concentrations continued to increase despite pH being relatively unchanged. The most significant difference in these waters compared to POF-1 or HAC sites was the concentration of DOC at upwards of 40 mg/L as compared to 10 mg/L at the other sites (Figure 4-6). The high DOC at these locations is believed to be a result of a drainage from a cedar swamp. The potential impact of DOC and overall interpretation of the field monitoring results is provided in the GCM (Section 5).

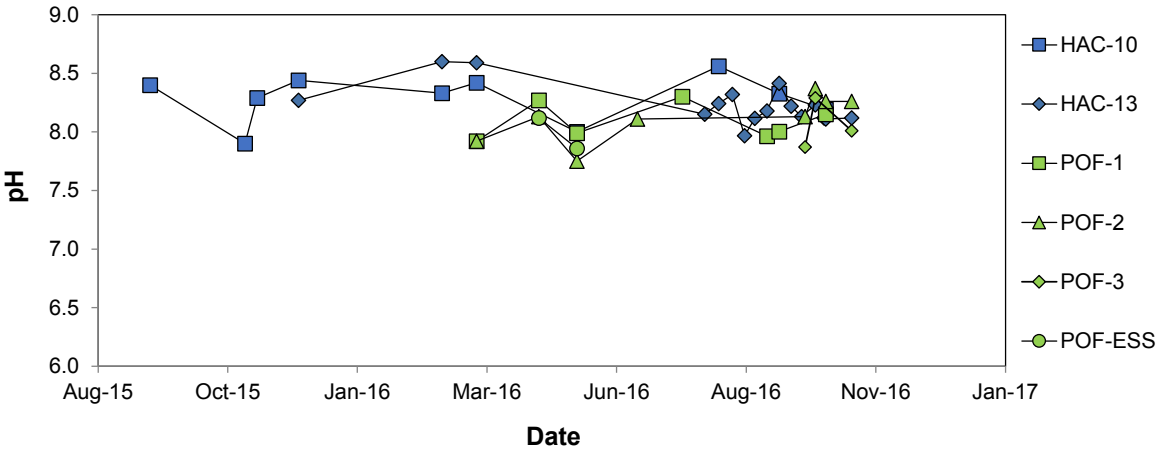

Figure 4-4: pH monitoring data in upper Hazeltine Creek and Polley Flats.

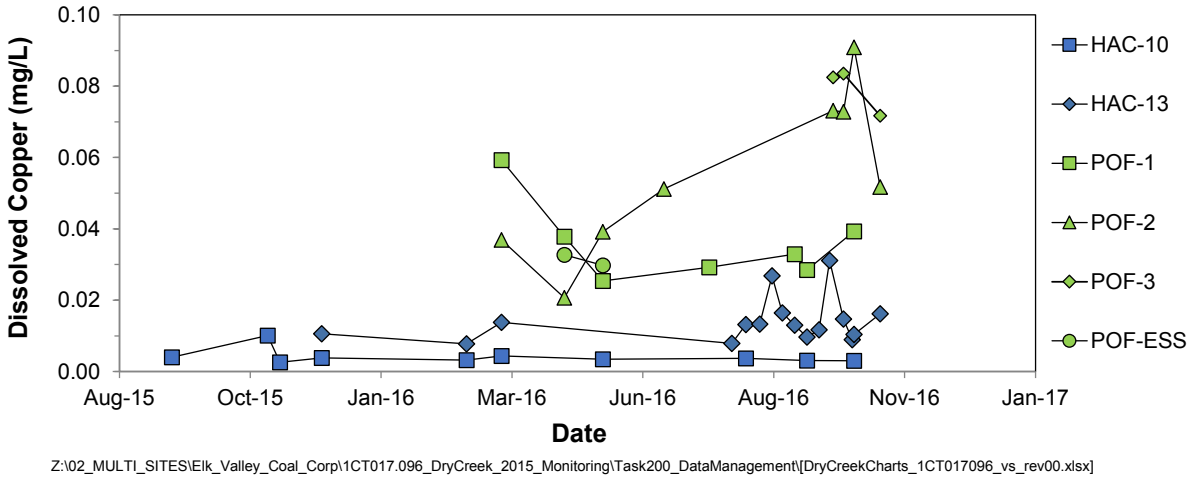

Figure 4-5: Copper (dissolved) monitoring data in upper Hazeltine Creek and Polley Flats.

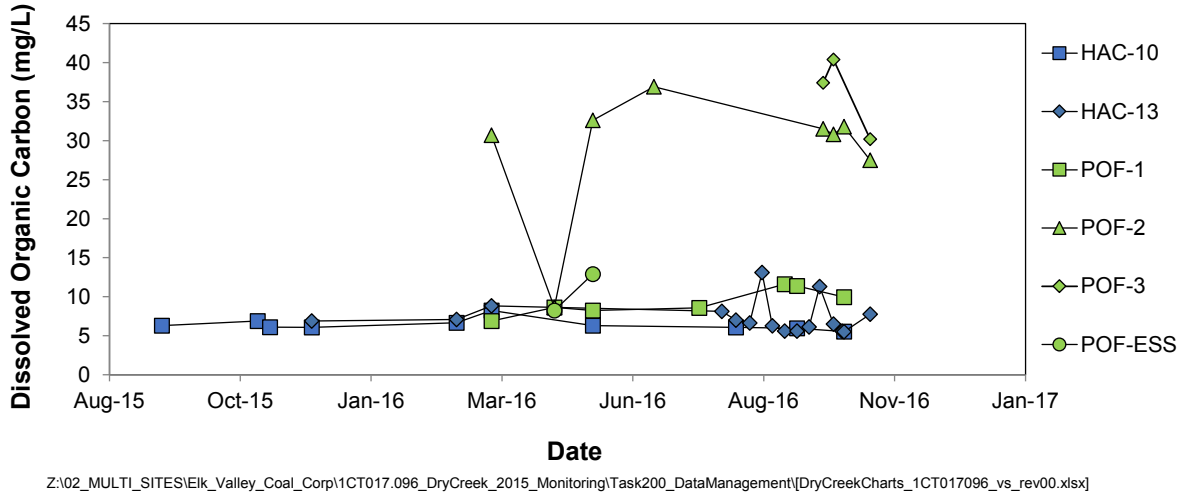

Figure 4-6: Dissolved organic carbon monitoring data in upper Hazeltine Creek and Polley Flats.

4.3 Laboratory Column Testing Data

Complete details of testing set-up are provided in SRK (2015b), but for ease of reference the key components of the test are provided below.

Three column tests have been running since April 2015. Columns one and two are magnetite sands while the third is grey tailings. Eighty-one (81) weeks of data had been received as of the date of this memo. The grey tailings sample is finer grained than the magnetite sand samples and it takes several weeks to collect enough water to perform an analysis, as opposed to one week per magnetite sands samples, resulting in fewer data points for the grey tailings. The samples being tested represent the mean and upper (i.e. ~95th percentile) range of solid phase copper

content identified during the initial characterization work on the samples collected along Hazeltine Creek (i.e. between 900 and 1200 mg/kg Cu).

The intent of the column tests is to establish weathering rates under atmospheric conditions and to evaluate the effect of longer water flow paths and lower water to solids ratios than are represented by the standard humidity cells. The lower water to solids ratios were specifically chosen to simulate field conditions as closely as possible in order to evaluate reasonable worse-case concentrations expected from the tailings. Biasing the tests to worse-case concentrations also provided the basis to evaluate whether a concentration maximum would be reached through attenuation processes such as secondary mineral formation.

Leachates showed an initial increase in pH from around 7.5 to 8.2 (Figure 4-7) during the first five weeks of testing with a coincident copper concentration decrease in all tests from a maximum of 0.054 mg/L to 0.013 mg/L in COL-1, which is the test containing approximately 1200 mg/kg solid phase copper (Figure 4-8). The pH changes and related copper concentrations are similar to what were measured in the POF-1 samples. Concentrations of DOC were relatively low compared to the field and more typical of pore water in mine waste material (Figure 4-9). The interpretation of these concentrations is provided in the GCM (Section 5).

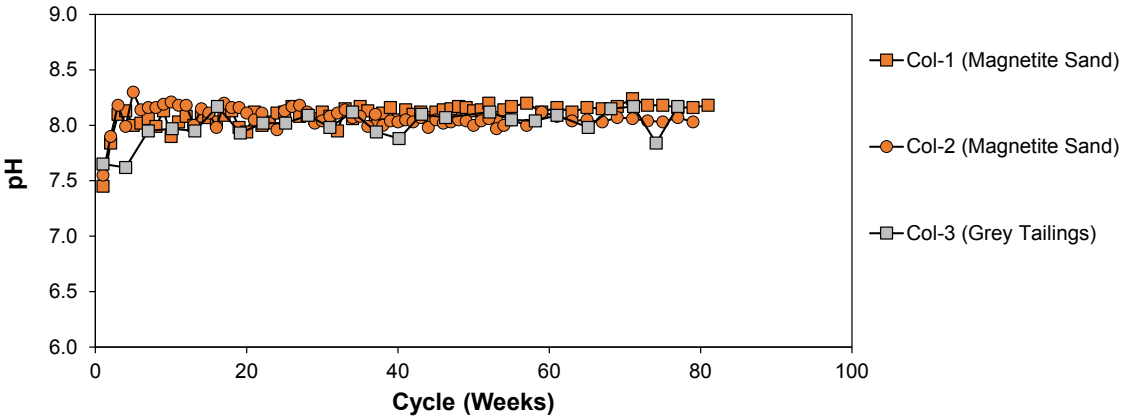

Figure 4-7: pH in laboratory column tests.

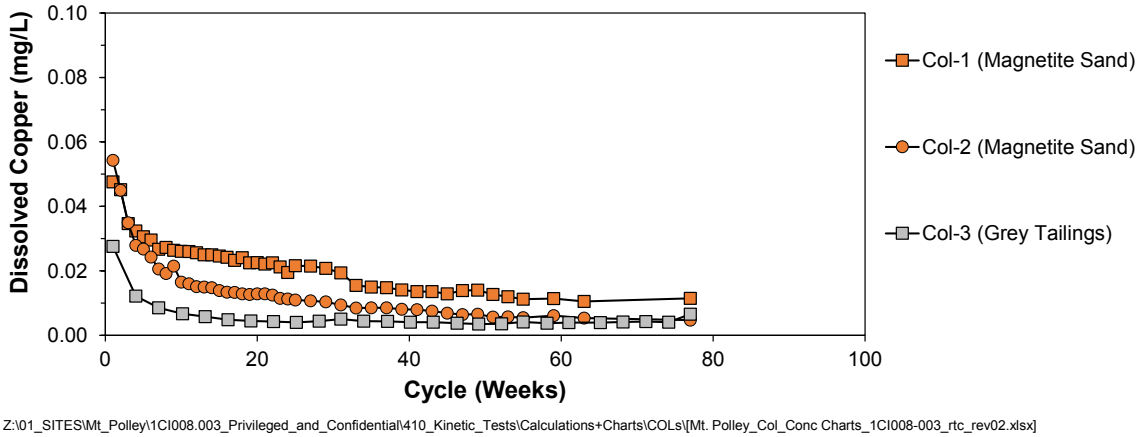

Figure 4-8: Copper concentrations in laboratory column tests.

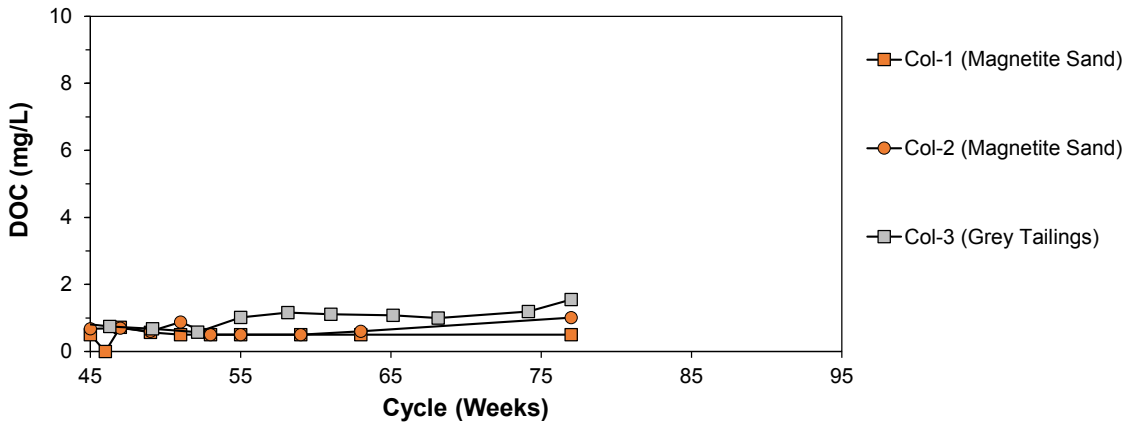

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Figure 4-9: Dissolved organic carbon concentrations in laboratory column tests.

Note: data shown starts at week 45 due to laboratory filtering equipment contamination prior to this date.

5 Polley Flats Copper Geochemical Conceptual Model

5.1 Introduction

A number of hydrogeological and geochemical processes contribute to the leaching of copper from the tailings along Hazeltine Creek and specifically in the Polley Flats area. A summary of the main processes is provided below, with more specifics in the following sub-section. Letters refer to specific processes identified in the GCM, as illustrated in Figure 5-1.

The main processes are:

- Oxidation of the tailings and release of copper (A). Atmospheric oxygen diffusion may be limited to the near surface (black dashed line in Figure 5-1) with a portion of the tailings not reactive due to sub-oxic conditions.
- Weathering of organics (B), with copper complexation by dissolved organic carbon.
- Precipitation, infiltration, and transport of copper and other oxidation products (C), including neutralization of sulphide acidity by carbonates and release of carbon dioxide.
- Run-off along the surface of the tailings (D) and collection in ditches along Hazeltine Creek, with some ditches draining into the creek.
- The till/tailings interface which may direct water laterally (E) and create seepage due to a lower hydraulic conductivity in the glacial till as compared to the tailings. A possible ground water table is depicted by the blue dashed line in Figure 5-1. If the materials below the sediment were at least as permeable as the tailings then infiltration would continue to groundwater.
- Contact water from tailings in the Polley Flats area may partially drain to Hazeltine Creek or contribute to groundwater (F). The weathered waste rock from the MPM used to rock armour Hazeltine Creak may have leached copper initially.

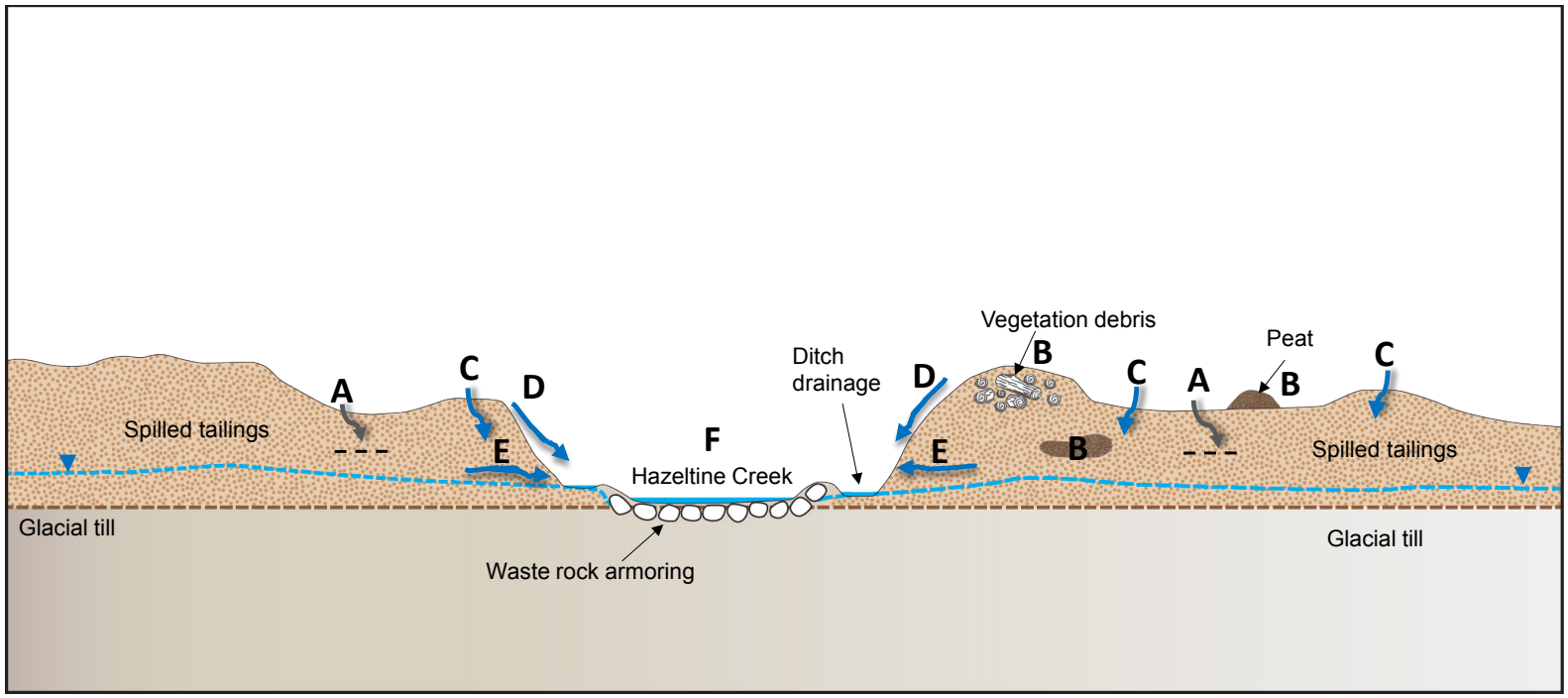

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Figure 5-1: Geochemical conceptual model overview of Polley Flats copper leaching pathways.

5.2 Weathering of Tailings by Oxygen

Some of the tailings in the Polley Flats area are now exposed to atmospheric conditions. As a result, sulphide minerals (e.g. pyrite (FeS_2) and chalcopyrite ($CuFeS_2$)) will react in the presence of atmospheric oxygen, produce acid, and leach copper. The acid produced is present in micro-environments (grain scale) but as water moves through the tailings, this acid will interact with carbonate minerals and be neutralized. Macro-scale acidity (i.e. acidic seepage) is not predicted as there is an excess of carbonate neutralization potential over acid potential in the tailings (SRK 2015a). Any copper that is leached from the tailings will be subject to an upper limit in terms of concentrations, as secondary minerals (e.g. malachite ($Cu_2CO_3(OH)_2$)) will precipitate from solution and provide mineral solubility control (Section 5.3).

The lower pH measured at the start of the column test, and in the Polley Flats drainage ditches in March 2016, is attributed to grain-scale acidity around oxidizing sulphide minerals before it is flushed and neutralized by carbonate minerals. The samples for the column test were collected and stored in the laboratory for several months before testing began. During this time, the sulphide minerals would still have been oxidizing but the acidity formed could not be neutralized by the available carbonate minerals as there was no flow of water through the sample. As the column test started and water was passed through the tailings, pH increased and copper concentrations decreased, reflecting the flushing of the (micro) grain-scale acidity (Figure 4-7 and Figure 4-8). The accumulation of sulphide oxidation products was also confirmed by sulphate concentrations in the column tests which started out relatively high (upwards of 2,000 mg/L) during the first few weeks of testing and decreased to less than 100 mg/L over the same time period as copper concentrations declined SRK (2015b).

A similar process is expected to occur in the Polley Flats tailings. During the winter, the majority of tailings are no longer receiving infiltration due to snow and ice cover allowing oxidation products and acidity to accumulate around the sulphide grains as most of the tailings are expected to remain above freezing temperatures and continue to oxidize. Once freshet begins, these oxidation products and acidity will be neutralized and get flushed from the tailings, with pH increasing while copper concentrations decrease each spring (Figure 4-4 and Figure 4-5). This process is also expected after prolonged periods of dry weather followed by precipitation, which could occur in the fall. This may present a bi-modal copper concentration in the Polley Flats waters of higher concentrations at the very beginning of freshet and early fall, with a repeating pattern year over year.

As sulphide weathering continues, oxidation products (e.g. iron hydroxides) will also build-up around the sulphide grains, which may limit oxygen diffusion and therefore sulphide reaction rates and result in lower rates of copper leaching. Over time, as the tailings age and weather, tailings contact waters are predicted to exhibit a slightly downward trending, oscillating curve. Seasonal precipitation and temperature variations year over year would also be expected to result in concentrations varying in magnitude, but overall the trend is expected to be downward as conceptually depicted in Figure 5-2. The role of DOC and mineral solubility controls on copper concentrations are discussed in the following sections.

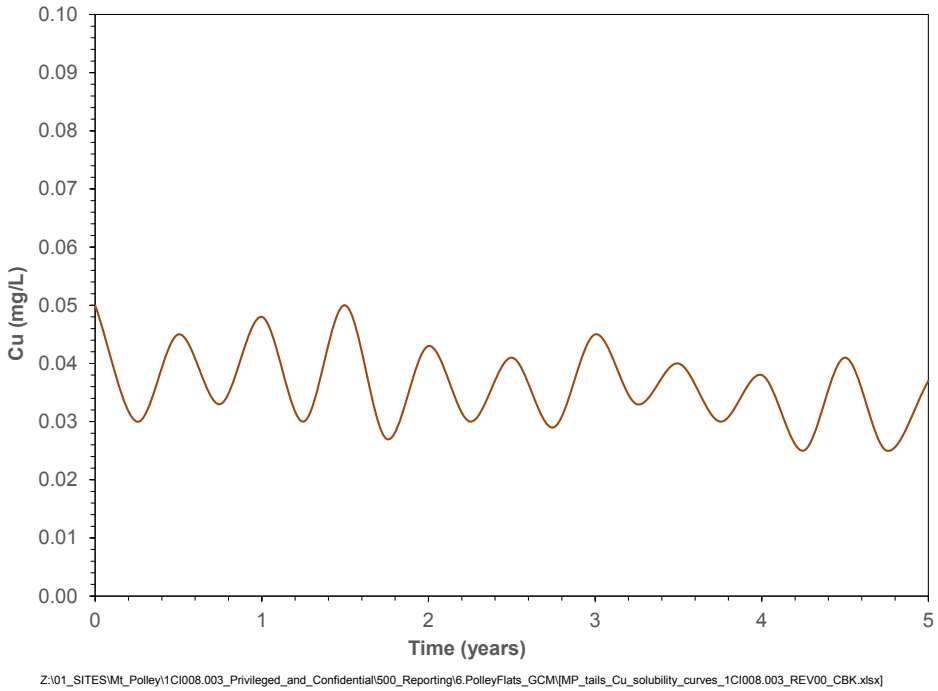


Figure 5-2: Conceptual copper concentration curve from Polley Flats tailings contact waters.

5.3 Mineral Solubility Control of Copper Concentrations

As acidic conditions are not predicted to develop in the spilled tailings, copper leaching at the MPM is considered only under neutral to basic pH.

In many mine settings, secondary minerals like malachite ($Cu_2CO_3(OH)_2$), tenorite (CuO), and copper hydroxides ($Cu(OH)_2$) control the solubility of copper, and hence the copper concentration in water, through reactions that either dissolve or precipitate these minerals, depends primarily on pH. What this means is that if these minerals are present, the concentration of copper (the ionic or non-complexed form) in water cannot exceed their solubility. If the copper concentration is below the solubility limit, the mineral can dissolve. At higher copper concentrations exceeding the solubility limit the mineral may precipitate from the water.

The potential for a mineral to dissolve or precipitate is determined by its saturation index (SI), which is calculated based on the total chemistry of the water. SI is the ratio of the product of activities (approximately equivalent to concentrations) of the dissolved ions of the mineral (ion activity product, IAP) to the thermodynamically-determined solubility product (K_{sp}):

$$SI = \log(IAP/K_{sp})$$

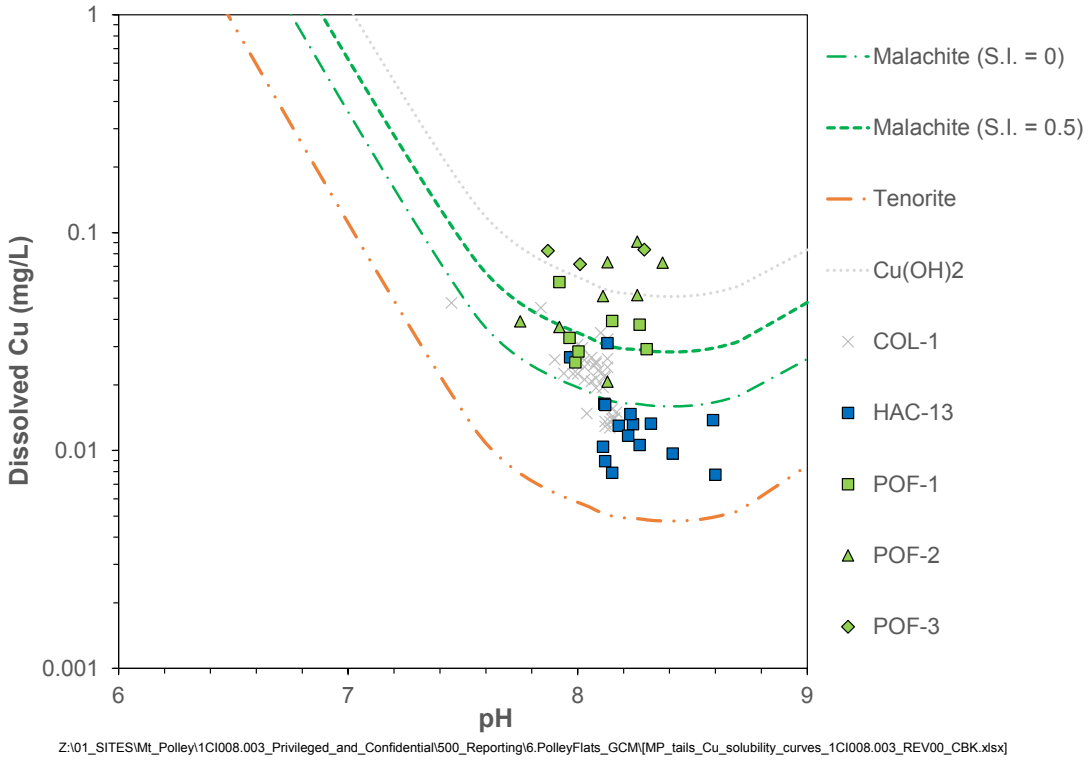
Geochemical equilibrium models like PHREEQC (Parkhurst and Appelo 1999) are often used to calculate SIs as they can conveniently access mineral thermodynamic data. In the interpretation of mineral SIs, positive values indicate that the given mineral phase is “oversaturated” and could precipitate whereas negative values indicate that the mineral phase could dissolve

("under saturated"). SIs close to zero ("saturation") indicate that the mineral will neither precipitate nor dissolve and that the concentration would be expected to show little fluctuation provided the concentrations of other ions do not change.

While solubility of secondary copper minerals under basic pH is low when compared to acidic conditions, even small changes in pH from 7.5 to 8.2 can impact solubility resulting in copper concentrations that can change by two to three times. To illustrate this effect, solubility curves of malachite, tenorite, and $Cu(OH)_2$ from pH 6 to 9 are provided in Figure 5-3. The curves were created using the geochemical equilibrium model PHREEQC (version 3.0.6.7757) (Parkhurst and Appelo 1999) with the thermodynamic database MINTEQ v8 for waters containing sulphate (585 mg/L), alkalinity (212 mg/L), and major cations (Ca, Mg, Na, K at 223 mg/L, 42 mg/L, 41 mg/L, and 4 mg/L, respectively) as reported in POF-1 waters on March 15, 2016 at 10°C. The pH was adjusted by adding sulphuric acid in the model and ionically balancing the solution with calcium under conditions assumed to allow instantaneous exchange with atmospheric gases. This latter assumption primarily affects how much carbon dioxide dissolves in the water which in turn affects the SI for carbonate-containing minerals such as malachite.

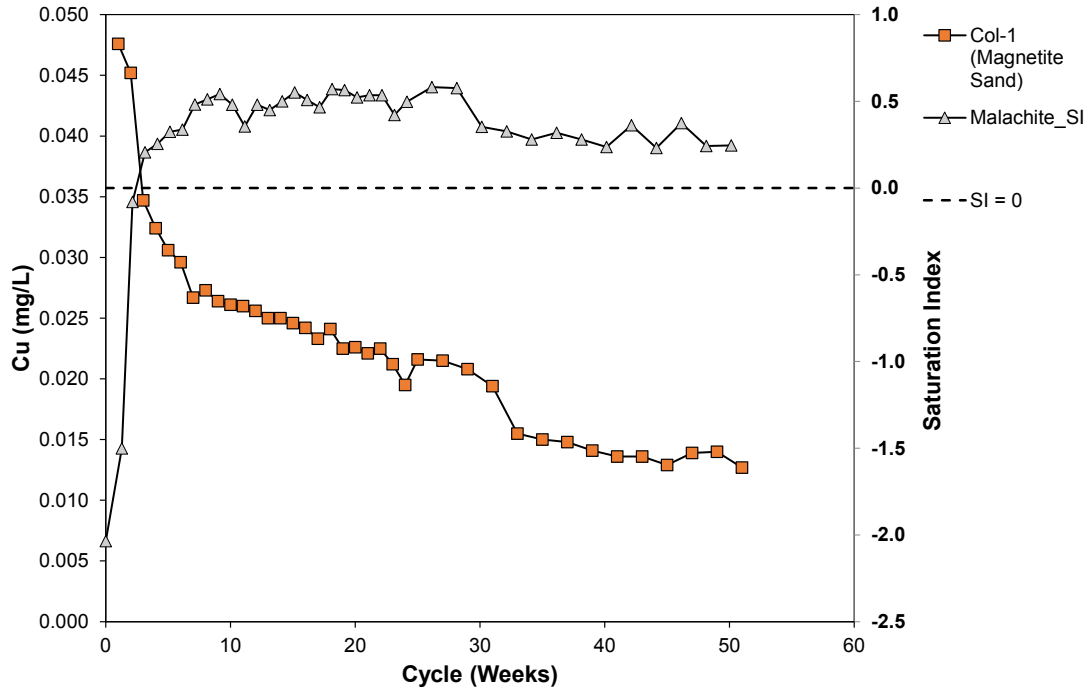
A saturation index of zero was used for all three secondary copper minerals, but a saturation index of 0.5 was also used for malachite. While theoretically minerals will precipitate at zero, often activation energy barriers need to be overcome before a mineral can precipitate, which requires a higher degree of saturation. Malachite was chosen to evaluate a range as it is the most likely mineral control based on its presence in the tailings (SRK 2015a) and it was slightly oversaturated in the column test once pH stabilized (Figure 5-4). Malachite is also present in the ore at MPM, and while it could be primary (i.e. formation during alteration of the ore before it was mined), the ability of this copper mineral to form as a secondary mineral is well established at this mine site (SRK 2015a).

Shown in Figure 5-3 are copper concentrations and pH from the laboratory column test (COL-1) (containing material with the 95th percentile copper solids concentration), Polley Flats sampling results, and the HAC-13 monitoring site. There is a reasonable fit for samples from the column test, POF-1 and HAC-13, but the fit for POF-2 and POF-3 is poor compared to the predicted concentrations based on laboratory pH and mineral solubility. The results from POF-2 and POF-3 are also not consistent with the relationship shown by Day and Rees (2006) (Figure 2-1).



Z:\01_SITES\Mt_Polley\1CI008.003_Privileged_and_Confidential\500_Reporting\6.PolleyFlats_GCM\[MP_tails_Cu_solubility_curves_1CI008.003_REV00_CBK.xlsx]

Figure 5-3: Secondary copper mineral solubility curves and monitoring results.



Z:\01_SITES\Mt_Polley\1CI008.003_Privileged_and_Confidential\410_Kinetic_Tests\Calculations+Charts\COLs\[Mt. Polley_Col_Conc Charts_1CI008-003_rtc_rev01.xlsx]

Figure 5-4: Saturation index for malachite during humidity cell testing.

5.4 Influence of Organics on Copper Leaching

Concentrations of copper in water samples collected from Polley Flats and Hazeltine Creek often exceeded the hardness-based BC MOE water quality guideline (Attachment A). Closer examination of the copper concentrations revealed higher concentrations than expected based on mineral phase solubility data (Figure 5-3) and that the elevated copper concentrations appear to coincide with elevated concentrations of DOC (Figure 4-5 and Figure 4-6). Somewhat elevated concentrations (i.e. greater than 0.1 mg/L) of iron were also found in the same samples (Appendix A), which is not typical of neutral pH waters where dissolved iron is typically below 0.01 mg/L. One hypothesis is that the solubility of copper (and potentially of iron) is enhanced by metal binding with DOC. Copper and iron are known to bind strongly with organic ligands in aquatic environments (Millero 1975; Tipping 2002), and copper speciation in the water column is often dominated by copper-organic complexes that are generally not bioavailable (Stumm and Morgan 1996). Because inorganic copper and the free (hydrated) ion (Cu^{2+}) are the most toxic forms of copper, copper binding by aquatic ligands such as DOC decreases copper bioavailability and toxicity (e.g., Grosell 2012). Therefore, organic complexation of copper would have two effects: 1) to increase the apparent solubility of copper bound in mineral phases; and 2) to decrease the bioavailability and toxicity of dissolved copper (Stumm and Morgan 1996; Grosell 2012).

Copper and iron speciation, and potential copper toxicity in these water samples, were investigated. Concentrations of appropriate parameters for the water samples from Hazeltine Creek and Polley Flats were input to two models: 1) a geochemical model called Visual MINTEQ; and 2) a biotic ligand model called the HydroQual BLM. The speciation of copper and iron can be modelled using the thermodynamic equilibrium model Visual MINTEQ and provides the predicted chemical forms (including organic forms) of each metal and their concentrations. These concentrations may then be applied to the existing geochemical model being used to understand copper concentrations in these creeks on the basis of mineral phase solubility products (Section 5.3). Biotic ligand models (BLM) account for key factors that influence the bioavailability and toxicity of metals (e.g., DiToro et al. 2001; Niyogi and Wood 2004; USEPA 2007; Erickson 2013). The models treat organisms as “biotic ligands” that are in competition for metal binding (and uptake) with other ligands (such as dissolved organic matter), and account for competition between metals and major ions for both abiotic and biotic ligands. BLMs are particularly well accepted for copper due to the strong affinity of copper and aquatic ligands (e.g., Santore et al. 2001; USEPA 2007; Peters et al. 2011). Although several BLM software tools are available, the HydroQual BLM (HydroQual 2007) was selected due to its broad use and its adoption by the United States Environmental Protection Agency as the basis for ambient water quality criteria for copper in freshwater (USEPA 2007).

Included in this section are brief summaries of the capabilities of the software tools that were used, followed by the methods and input data used. Results summarize the model outputs, and provide context for interpretation, and conclusions.

5.4.1 Models

Visual MINTEQ ver 3.1

Visual MINTEQ is a software tool that uses established thermodynamic equilibrium constants to numerically solve metal chemical speciation in a given system or water sample (Gustafsson 2014). The model assumes thermodynamic equilibrium for the final results, and requires all input parameters that will influence metal speciation, including all major cations and anions, pH, and concentrations of the metal of interest. In addition, DOC can be entered as a parameter. Briefly, the binding of a metal by DOC is modelled using the Stockholm Humic Model (SHM; Gustafsson 2001) which describes organic-metal binding and competitive interactions over a wide range of conditions. The SHM assumes metal complexation via two functional groups (phenolic acid and carboxylic acid), where each functional group has four sites, each with a slightly different acidity and affinity for the metal. The affinity for the metal is based on an acidity of the functional group which is distributed around the median acidity of the functional group.

Precipitation of solid phases was also allowed as a modelling option, and is particularly important for iron. If, after the first iteration of modelling, the remaining concentration of inorganic iron, (that which is not bound to DOC), is found to be supersaturated, then the model would recalculate the species distribution assuming that the solution is in equilibrium with respect to the solid (i.e., some of the inorganic iron would precipitate). The final concentrations of each species are solved iteratively, refining the amount of free ion with each iteration, and the component with the strongest binding affinity (in the case of copper and iron, this is DOC) for the metal taking priority in each iteration. However, allowing for precipitation may effectively remove iron from the system (the aqueous environment), which may not be representative of actual water samples, given that these high iron concentrations were measured as dissolved concentrations (e.g., if the high iron concentrations were stabilized by the presence of low abundance high affinity ligands, or if precipitation is hindered due to kinetic considerations). Therefore, as a worst case scenario, all samples were also modelled under a scenario where no precipitation was allowed. This may not necessarily reflect conditions of a thermodynamic equilibrium but it would provide an understanding of the variability in modelling results, ranging from assuming that precipitation occurs to not allowing for any iron to leave the system (i.e., by providing a lower bound [worst case] estimate of copper complexation by organic matter in the presence of higher than anticipated free iron concentrations).

Visual MINTEQ assumes thermodynamic equilibrium in order to predict a species distribution. Therefore, if the model predicts precipitation, it would mean that the sample (input dissolved concentration data) could not have been at thermodynamic equilibrium or that the modelling parameters are not representative of the water sample. If the water sample was not at thermodynamic equilibrium when collected, the lack of precipitation is likely due to kinetic constraints, and the water sample would have been supersaturated. These kinetic considerations would explain differences between *in-situ* water samples (with no precipitate) and their corresponding predictions (with precipitate). An alternative explanation is that the relative amounts of organic binding sites in the model are not representative of the DOC in the water sample.

HydroQual ver 2.2.3

The HydroQual BLM software tool was developed and maintained by HydroQual[1] (HydroQual 2007). It uses an acute toxicity endpoint, LA_{50} (i.e., the lethal accumulation of copper on the biotic ligand that results in 50% mortality during an acute exposure) and calculates the total dissolved concentration of copper that will result in 50% mortality of an exposed population (DiToro et al. 2001). Toxicity data is based on comprehensive studies of fathead minnows (*Pimephales promelas*), rainbow trout (*Oncorhynchus mykiss*), and Cladoceran species (e.g., *Ceriodaphnia dubia*). The model considers the free ion, Cu^{2+}, to be the only toxic species (chemical form) of copper. As Cu^{2+} is the important copper species, competition by Ca^{2+}, for example, at the biotic ligand receptor site has a strong influence on the final calculated acute toxicity threshold. HydroQual data inputs include major ions (calcium, magnesium, sodium, potassium, sulphate, and chloride), pH, and dissolved organic carbon (DOC) concentrations. The HydroQual BLM incorporates earlier equilibria models (CHESS- chemical equilibria of soils and solutions and WHAM- Windermere Humic Aqueous Model) which allow modelling of chemical and electrostatic interactions of organic molecules and use humic acids as the model organic molecules. If the humic acid (HA) component of the DOC is unknown, a 10% HA content of DOC is assumed (HydroQual 2007). This is likely a lower proportion of humic acid content than would be expected; typically, humic acids make up between 40 and 99% of the total DOC (Morel and Hering 1983). This lower proportion would result in an under-estimate of the amount of copper or iron that was complexed by DOC.

The HydroQual BLM has a US EPA Instantaneous Water Quality Criteria (EPA IWQC) calculation function for copper. The acute toxicity output for the EPA IWQC is the Final Acute Value (FAV), a concentration of copper that is an estimate of the 5th percentile of a sensitivity distribution represented by average LC_{50}'s and EC_{50}'s of the tested genera, (i.e., a hypothetical genus that is more sensitive than 95% of the tested genera). The criterion maximum concentration (CMC) is calculated as half the FAV, and is presented in order to provide a safety factor for effect concentrations. The criterion continuous concentration (CCC), a chronic value, is calculated from the FAV using a Final Acute-to-Chronic Ratio (FACR) of 3.22 (US EPA 2007).

5.4.2 Model Development

The Visual MINTEQ input parameters were selected from available water quality sampling results provided by BC MOE and MPMC (Attachment A) on the basis of three criteria: 1) if they contributed toward charge balance, 2) if they were deemed to directly influence copper or iron speciation, and 3) if they potentially influenced copper or iron speciation through competition for binding sites (e.g., aluminum is known to compete for organic binding sites). All input parameters provided in Attachment A were included in the model. There were two instances where input data were adjusted; this was because potassium concentrations for two samples were reported at 1,000x the concentrations of all other samples. In these two cases (POF-1 12-JUL-2016 BC MOE, and HAC-10 08-Sep-2015 BC MOE), it was assumed that a unit error had been made and the samples were run using assumed potassium concentrations at 1,000x less than the reported

[1] The HydroQual BLM is now maintained by Windward Environmental, LLC.

concentration. The temperature was input at a standard 15°C on the basis that the samples collected had a mean temperature of 13.4°C and a median temperature of 16.0°C.

HydroQual BLM input parameters were temperature, pH, DOC, alkalinity, calcium, magnesium, sodium, potassium, sulphate, chloride, and copper, with an assumed percent humic acid of 10% (conservative). An assumed negligible concentration of sulphide is also a required input. HydroQual input temperature data were the same as assumed for Visual MINTEQ and all samples were input at 15°C.

5.4.3 Model Results

Iron Speciation Distribution (Visual MINTEQ)

The iron speciation results, for all water samples, showed that at least 99.95% of iron was organically complexed (Attachment B, Appendix Tables B.3 and B.4). The remaining iron was predicted to be inorganically complexed. In all cases, iron was predicted to precipitate as an iron oxide. High concentrations of DOC had the effect of stabilizing high concentrations of iron that would otherwise have precipitated on the basis of the low solubility of iron (III) (Pullin and Cabaniss 2003). However, iron concentrations were sufficiently high that, despite the stabilizing effect of DOC, iron was still predicted to precipitate. The effect of the stabilization of high iron concentrations by DOC is well known in aquatic environments (Stumm and Morgan 1996; Tipping et al. 2002).

The discrepancy between prediction of iron precipitation in all samples, and the fact that *in-situ* samples did not contain solid phases (the input data were dissolved concentrations) may suggest that iron concentrations in the water were not at thermodynamic equilibrium, and kinetic constraints would be preventing iron from precipitating. Under this regime, it is possible that iron precipitation will occur in these receiving environments further downstream or later in time. An alternative explanation for the discrepancy between modelled and actual iron concentrations, is an actual higher proportion of the low abundance high affinity iron binding sites (i.e., the phenolic binding sites) in humic matter relative to that which was modelled in Visual MINTEQ which models lower concentrations of the four phenolic sites compared to the weaker carboxylic sites.

As the *in-situ* samples did not contain solid phases, the input data were also modelled with the constraint of not allowing precipitation. In this case, where more dissolved iron was present, a slightly lower proportion of iron was complexed to organic carbon (i.e., a minimum 98% complexation by DOC in a POF-ESS sample (Appendix Tables A.5 and A.6), compared to a minimum 99.99% complexation by DOC when precipitation was modelled (Attachment B)). These results show that precipitation of iron (and/or the presence of low abundance high affinity binding sites) does not have a large effect on the proportion of iron that is organically complexed.

Copper Speciation Distribution (Visual MINTEQ)

Speciation distribution for the water samples, showed that in all cases, 99 to 100% of the total dissolved copper at Hazeltine Creek and Polley Flats, was complexed by organic ligands when precipitation of iron was allowed (Attachment B). The remaining proportion of copper that was not organically bound was mostly inorganically complexed, with the free copper ion present at

concentrations at least an order of magnitude lower than the inorganic copper. These results are in keeping with the understanding that the majority of copper in natural surface waters is organically complexed if sufficient organic ligands are present (Millero 1975; USEPA 2007; Grosell 2012).

When iron was not allowed to precipitate in the model, the proportion of copper that was organically complexed was lower due to greater competition from iron for organic binding sites (Attachment C, Tables C.5 and C.6). When precipitation was allowed, the range of the proportion of organically complexed copper was 99 to 100%; this range decreased to 93 to 100% when precipitation was not allowed. The minimum of 93% was for one POF-ESS sample. This is explained by the competition of iron with copper for binding sites on organic carbon - when iron is allowed to precipitate, the total dissolved iron concentration decreases, resulting in decreased competition by iron for organic binding sites. Iron competition with copper for binding sites is well known (Peters et al. 2001). Under either scenario (with precipitate or no precipitate of iron allowed by the model), a high proportion of copper (≥93%) is organically bound.

The impact on the mineral solubility assessment of only using free copper and assuming an average carbon complexation of 95% is shown in Figure 5-5. All of the concentration data plot below the mineral tenorite, which is the most insoluble mineral used in the assessment and the mineral solubility control of free copper, appears to be well constrained and consistent with first principles and other mine sites.

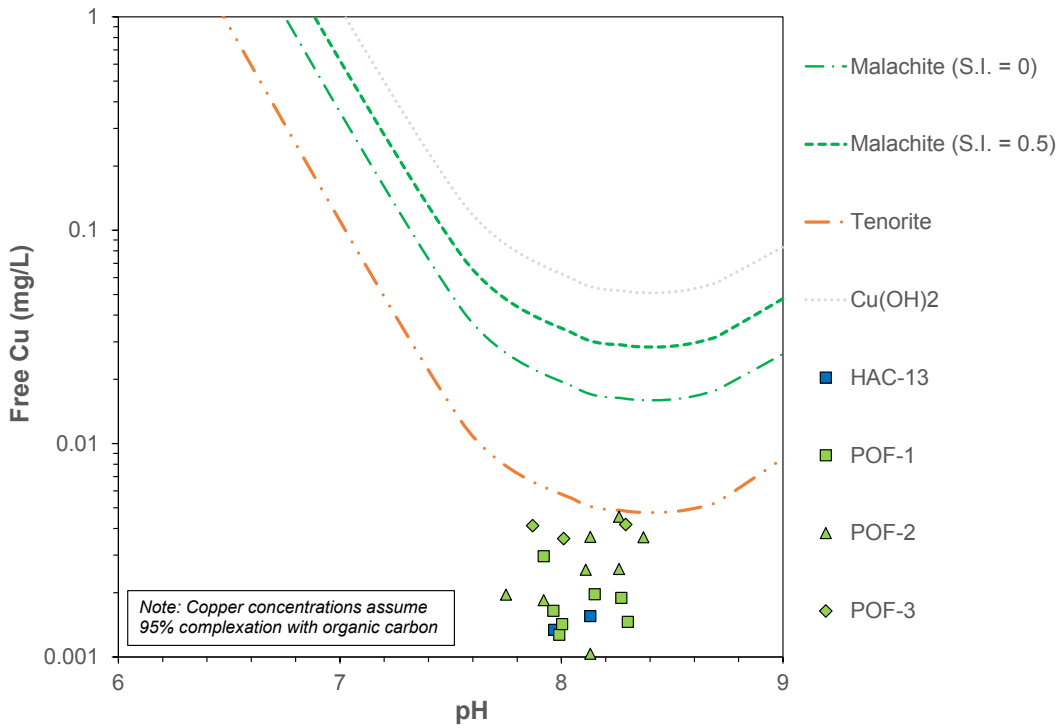


Figure 5-5: Secondary copper mineral solubility curves after removal of DOC complexed copper.

Copper Biotic Ligand Model (HydroQual)

The US EPA Instantaneous Water Quality Criteria (IWQC) calculation mode was used to calculate the CCC and the Criterion Maximum Concentration (CMC) for copper. There was one sample that exceeded the (chronic) CCC, and no samples exceeded the (acute) CMC (Attachment D). The one exceedance (of the CCC only) was a sample collected from Polley Flats (POF-1 15-Mar-2016).

5.4.4 Modelling Conclusions

The Visual MINTEQ modelling showed that, in all cases, 93 to 99% of copper was organically complexed whether or not precipitation by iron oxides were modelled. Iron was modelled to be 99 to 100% organically complexed. However, when allowed by the model, some iron was predicted to precipitate, suggesting that the water samples were not at thermodynamic equilibrium, or that the proportion of low abundance high affinity organic binding sites was under-represented by the model.

As an extension to the substantial organic complexation documented using Visual MINTEQ, application of the BLM (which accounts for complexation [including organic] and competition for copper uptake by aquatic organisms) showed that, despite copper concentrations of up to 0.091 mg/L, no water samples (seep or creek) exceeded the USEPA (2007) CMC (i.e., the IWQC acute concentration). No samples of Hazeltine Creek water exceeded the USEPA (2007) CCC (i.e. the IWQC chronic concentration), while only one sample from Polley Flats seeps exceeded the CCC. The tailings contact water POF samples are not considered to be representative of receiving environment water quality.

5.5 Weathering Effects under Sub-Oxic Conditions

A number of iron-oxide precipitating seeps have been observed along the base of the tailings alongside Hazeltine Creek. Since the pH of the seep waters are near neutral, iron is expected to be precipitating due to oxidation of dissolved ferrous iron to ferric iron as shown in Section 5.4.3. Ferrous iron formation is not unexpected as it forms by dissolution of iron-bearing minerals in natural soils and the tailings when oxygen concentrations are low, which has been observed by Golder (2016) within and below the fine-grained tailings near the forest edge along Hazeltine Creek. Carbon from overlying peat and vegetation debris can also provide an organic carbon source for microorganisms that facilitate the conversion of natural ferric oxides in the tailings and natural sediments to readily-soluble ferrous forms.

The sequential extraction work previously completed (SRK 2015a) showed that copper minerals are not susceptible to the same dissolution reactions as those for iron under low oxygen conditions. These low oxygen conditions actually help limit sulphide oxidation and therefore the release of copper.

The seeps may have one potential impact to slightly depress pH. A depression in pH may be caused by an excess of carbon dioxide in the water that has accumulated from carbonate mineral dissolution and that has not had a chance to off-gas to the atmosphere. This has been confirmed by comparing field and laboratory pH as well as PHREEQC modeling on the POF-1 samples,

which were calculated by the model to be oversaturated with respect to carbon dioxide by nearly an order of magnitude. Another possible impact on pH could be from the oxidation of ferrous iron and subsequent hydrolysis of ferric iron to form oxyhydroxides (i.e. the fluffy iron precipitates) as this process will release some acidity. While the Polley Flats ditch water had a slightly lower pH at times compared to Hazeltine Creek, it was always neutral and the acidity from iron precipitation is not likely an important process of copper leaching in the Polley Flats area. If iron hydrolysis acidity was controlling pH, then it might be expected that pH would remain below 8.0 and would not increase, unlike what is observed in the monitoring data. The flushing of the tailings during freshet (or other precipitation events) would also likely lower carbon dioxide oversaturation, which is what is observed in the alkalinity data from March to May 2016 in the POF samples.

5.6 Copper Concentration Predictions

The concentrations of copper measured at POF-1 in 2016 likely represent the upper end concentrations for free copper that can be expected at present and in the future from the Polley Flats. While this location is still impacted by DOC concentrations that are complexing copper, this site had the lowest amount of DOC compared to POF-2 and POF-3. The pH is not expected to change significantly other than potential minor fluctuations (e.g. between 7.5 and 8.3) during the beginning of freshet and following other extended dry times of the year. As a result, copper concentrations, especially free copper, will be well constrained.

The 99th and 95th percentile copper concentrations for porewater in unsaturated (i.e. drained) tailings predicted by SRK (2016) as part of other studies for the MPM were 0.05 and 0.04 mg/L, respectively. These concentrations are consistent with malachite solubility with an SI of between 0 and 0.5, upper end concentrations at POF-1 (even without considering carbon complexation), and other mine sites (e.g. Figure 2-1). During later stages of freshet or times of year when precipitation is infiltrating the tailings, porewater concentrations are expected to decrease as pH goes above 8.0. Conservatively, it should be assumed that these upper end predictions are reached each season, but long term downward trends are probable, as discussed in Section 5.1.

6 Inputs to Reclamation Planning

The presence of a secondary mineral control on copper concentrations is an important finding for reclamation planning. This is because any efforts to encourage surface run-off of precipitation from the Polley Flats (i.e. grading) or evapotranspiration through soil covers and vegetation growth will likely result in a decreased loading of copper to the receiving environment. Mineral solubility control will maintain free copper concentrations at a fixed level, so despite steady upper limit copper concentrations, with less water moving through the tailings, less copper can be transported. The establishment of vegetation on the top of the tailings will also help slow down oxygen diffusion into the tailings and probably result in lower rates of sulphide oxidation and therefore primary copper leaching rates, although penetration of the tailings by roots may limit this potential benefit.

Since the time of writing this memo, SRK and Minnow Environmental understand that the high DOC containing water at POF-2 has been redirected away from the Polley Flats towards the water treatment discharge location to avoid contact with the tailings. Monitoring of this water is

continuing under the site location name of the ‘Cedar Swamp Ditch’ (CSD). As a result, POF-3 has stopped flowing and less copper will likely be complexed with carbon from this location. Continued monitoring will help confirm this understanding and where possible, diversion of high DOC water away from direct interaction with the tailings will likely result in lower copper complexation with carbon.

7 Closing

The copper concentrations observed in the Polley Flats area in ditches and pooled water can be explained from geochemical first principles considering processes that release copper to solution then constrain the resulting copper concentrations by the solubility of copper oxides, as described in the GCM. Copper concentrations that were not constrained by mineral solubility were shown to be predominantly complexed with DOC. The resulting free copper concentrations are low and typical for waters in contact with non-acidic carbonate-containing materials with copper concentrations expected to be stable in the long term.

Application of water quality criteria that account for organic complexation indicate no exceedances of chronic guidelines for copper in any of the Hazeltine Creek samples. This is encouraging because copper concentrations in Hazeltine Creek are expected to decrease over time due to the aging processes discussed in this memo and MPM’s ongoing rehabilitation of Hazeltine Creek and its watershed.

Field monitoring should continue to help validate or, if necessary, revise the existing model. The GCM presented herein may also be considered for inclusion in a broader model for the spilled tailings incorporating hydrogeology and geochemistry processes to assess future water quality in Hazeltine Creek.

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Attachment A – Polley Flats and Hazeltine Creek Water Quality Monitoring Data

Table A.1: Water quality parameters of water samples collected from Hazeltine Creek (HAC) from September 2015 to October 2016.

	Analyte	Site	HAC-10										HAC-12
		Date	8-Sep-15	2-Nov-15	9-Nov-15	3-Dec-15	24-Feb-16	15-Mar-16	12-May-16	2-Aug-16	6-Sep-16	3-Oct-16	18-Oct-16
		Source	BCMOE	BCMOE	BCMOE	BCMOE	BCMOE	BCMOE	BCMOE	MPMC	MPMC	MPMC	MPMC
		Units											
Non-Metals	Alkalinity (as $CaCO_3$)	mg/L	104	115	99.3	104	95.4	90.5	97.3	93.9	97.2	98.3	86.2
	pH (pH)	pH	8.40	7.90	8.29	8.44	8.33	8.42	8.00	8.56	8.33	8.19[a]	7.96
	Dissolved Organic Carbon	mg/L	6.31	6.90	6.10	6.08	6.66	8.23	6.31	6.08	5.96	5.53	6.01
	Sulphate	mg/L	48.8	51.8	48.2	47.9	47.8	44.4	45.7	45.3	46.6	45.9	355
	Nitrate (as N)	mg/L	0.009	0.642	0.084	0.083	0.189	0.195	0.0015	0.0025	0.0025	0.0025	5.14
	Chloride (Cl)	mg/L	1.38	1.55	1.34	1.40	1.36	1.27	1.29	1.23	1.28	1.24	7.8
	Fluoride (F)	mg/L	-	-	-	-	-	-	-	0.089	0.090	0.084	0.420
Dissolved Metals	Aluminum (Al)	mg/L	0.00375	0.00986	0.00136	0.00139	0.00691	0.02540	0.00447	0.0072	0.0044	0.0015	0.0312
	Antimony (Sb)	mg/L	0.00013	0.00014	0.00010	0.00009	0.00011	0.00011	0.00011	0.00011	0.00010	0.00010	0.00105
	Arsenic (As)	mg/L	0.00125	0.00094	0.00087	0.00147	0.00090	0.00093	0.00080	0.00103	0.00088	0.00083	0.00090
	Barium (Ba)	mg/L	0.0138	0.0290	0.0116	0.0154	0.0115	0.0108	0.0112	0.0138	0.0123	0.0112	0.0525
	Boron (B)	mg/L	0.0396	0.0390	0.0368	0.0608	0.0357	0.0292	0.0279	0.0250	0.0260	0.0240	0.0860
	Calcium (Ca)	mg/L	47.1	39.4	34.3	35.3	36.3	41.0	44.8	42.0	38.9	38.1	106
	Copper (Cu)	mg/L	0.00401	0.01010	0.00259	0.00380	0.00319	0.00435	0.00345	0.00372	0.00309	0.00302	0.00744
	Iron (Fe)	mg/L	0.0206	0.0034	0.0054	0.0089	0.0201	0.0382	0.0078	0.015	0.015	0.015	0.037
	Lithium (Li)	mg/L	0.00089	0.00084	0.00067	0.00114	0.00076	0.00091	0.00081	0.0005	0.0005	0.0005	0.0083
	Magnesium (Mg)	mg/L	6.16	7.64	5.75	4.95	5.84	5.86	5.69	5.82	5.78	5.23	21.10
	Manganese (Mn)	mg/L	0.0313	0.0002	0.0072	0.0361	0.0079	0.0085	0.0253	0.0192	0.0128	0.0082	0.0610
	Molybdenum (Mo)	mg/L	0.0104	0.0144	0.0139	0.0170	0.0096	0.0090	0.0089	0.0092	0.0092	0.0088	0.0955
	Nickel (Ni)	mg/L	0.00019	0.00027	0.00017	0.00013	0.00019	0.00031	0.00019	0.00025	0.00025	0.00025	0.00055
	Phosphorus (P)	mg/L	0.0062	0.0090	0.0149	0.0198	0.0302	0.0239	0.0045	0.0045	0.0052	0.0057	0.0048
	Potassium (K)	mg/L	1.43[b]	1.58	1.41	1.62	1.31	1.28	1.35	1.45	1.32	1.25	10.2
	Selenium (Se)	mg/L	0.00093	0.00144	0.00078	0.00060	0.00083	0.00075	0.00062	0.00063	0.000709	0.000739	0.0192
	Sodium (Na)	mg/L	10.0	11.3	10.1	11.2	9.5	9.1	9.2	9.9	9.4	8.7	38.1
	Strontium (Sr)	mg/L	0.336	0.285	0.285	0.262	0.270	0.297	0.305	0.304	0.302	0.295	1.560
	Zinc (Zn)	mg/L	0.00086	0.00025	0.00078	0.00455	0.00116	0.00176	0.00220	0.00330	0.0015	0.0015	0.0015

Value was reported at the method detection limit (MDL), input to model is half the MDL.

[a] Laboratory measured pH, in situ pH not available.

[b] Original value of 1,430 mg/L likely a unit error. Input to model was 1.43 mg/L.

Table A.1: Water quality parameters of water samples collected from Hazeltine Creek (HAC) from September 2015 to October 2016.

	Analyte	Site	HAC-13														
		Date	3-Dec-15	24-Feb-16	15-Mar-16	25-Jul-16	2-Aug-16	10-Aug-16	17-Aug-16	23-Aug-16	30-Aug-16	6-Sep-16	13-Sep-16	19-Sep-16	27-Sep-16	2-Oct-16	3-Oct-16	18-Oct-16
		Source	BCMOE	BCMOE	BCMOE	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC
		Units																
Non-Metals	Alkalinity (as $CaCO_3$)	mg/L	143	105	105	106	119	119	177	122	108	106	126	148	118	106	108	119
	pH (pH)	pH	8.27	8.60	8.59	8.15	8.24	8.32	7.97	8.12	8.18	8.41	8.22[a]	8.13[a]	8.23[a]	8.12[a]	8.11[a]	8.12
	Dissolved Organic Carbon	mg/L	6.88	7.10	8.84	8.13	6.99	6.63	13.1	6.26	5.61	5.59	6.14	11.3	6.49	5.56	5.51	7.77
	Sulphate	mg/L	106	63.1	75.4	55.6	78.7	75.7	75.5	60.1	54.5	59.1	96.2	225	74.9	55.1	58.8	83.8
	Nitrate (as N)	mg/L	0.225	0.169	0.181	0.012	0.059	0.113	0.006	0.134	0.042	0.043	1.220	1.220	0.100	0.011	0.025	0.053
	Chloride (Cl)	mg/L	2.59	1.59	1.71	1.39	1.83	1.72	2.44	1.47	1.39	1.47	2.18	3.90	1.59	1.36	1.42	1.78
	Fluoride (F)	mg/L	-	-	-	0.100	0.137	0.132	0.165	0.131	0.106	0.105	0.149	0.180	0.103	0.092	0.096	0.114
Dissolved Metals	Aluminum (Al)	mg/L	0.0014	0.0079	0.0282	0.0074	0.0078	0.0149	0.0311	0.0219	0.0259	0.0195	0.0184	0.0125	0.0133	0.0072	0.0064	0.0139
	Antimony (Sb)	mg/L	0.00011	0.00013	0.00013	0.00013	0.00021	0.00030	0.00026	0.00029	0.00019	0.00017	0.00033	0.00042	0.00019	0.00014	0.00015	0.00016
	Arsenic (As)	mg/L	0.00050	0.00086	0.00086	0.00091	0.00095	0.0010	0.00202	0.0010	0.00087	0.00080	0.00089	0.00086	0.00071	0.00077	0.00069	0.00073
	Barium (Ba)	mg/L	0.0283	0.0151	0.0163	0.0172	0.0271	0.0330	0.0503	0.0401	0.0335	0.0324	0.0434	0.0633	0.0316	0.0191	0.0229	0.0240
	Boron (B)	mg/L	0.073	0.037	0.032	0.029	0.032	0.030	0.034	0.029	0.026	0.025	0.034	0.042	0.031	0.027	0.027	0.028
	Calcium (Ca)	mg/L	54.5	40.3	54.0	47.5	58.3	54.4	79.5	44.4	42.6	43.2	58.1	97.5	56.0	47.9	46.1	53.8
	Copper (Cu)	mg/L	0.0106	0.0077	0.0138	0.0079	0.0132	0.0133	0.0268	0.0164	0.0130	0.0097	0.0117	0.0311	0.0147	0.0089	0.0104	0.0162
	Iron (Fe)	mg/L	0.015	0.060	0.118	0.015	0.015	0.015	0.108	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.0320
	Lithium (Li)	mg/L	0.0016	0.0010	0.0013	0.0012	0.0013	0.0011	0.0016	0.001	0.0005	0.0010	0.0005	0.0025	0.0013	0.0005	0.0005	0.0005
	Magnesium (Mg)	mg/L	10.20	7.29	7.96	6.63	9.02	8.17	12.1	7.50	6.67	6.88	9.08	15.30	8.55	6.60	6.57	8.63
	Manganese (Mn)	mg/L	0.0991	0.0755	0.1260	0.0405	0.0228	0.0259	0.2150	0.0001	0.00014	0.00019	0.0381	0.1980	0.0190	0.0204	0.0044	0.1040
	Molybdenum (Mo)	mg/L	0.0214	0.0124	0.0157	0.0126	0.0167	0.0176	0.0228	0.0152	0.0130	0.0130	0.0231	0.0552	0.0168	0.0118	0.0119	0.0156
	Nickel (Ni)	mg/L	0.00030	0.00032	0.00046	0.00025	0.00025	0.00025	0.00078	0.0005	0.00025	0.00025	0.00025	0.00062	0.00025	0.00025	0.00025	0.00025
	Phosphorus (P)	mg/L	0.0058	0.0252	0.0163	0.0059	0.0033	0.0052	0.0281	0.0070	0.0068	0.0045	0.0049	0.0062	0.0074	0.0051	0.0044	0.0067
	Potassium (K)	mg/L	1.85	1.43	1.54	1.49	2.02	1.77	5.28	1.77	1.59	1.53	1.94	3.00	1.83	1.44	1.45	1.74
	Selenium (Se)	mg/L	0.00111	0.00087	0.00092	0.00079	0.00090	0.00123	0.00104	0.00125	0.00103	0.00097	0.00182	0.00301	0.00089	0.00076	0.00086	0.00084
	Sodium (Na)	mg/L	19.4	10.1	11.4	10.8	14	12.4	18.5	11.4	10.4	10.9	14.0	21.3	12.3	10.3	10.4	12.5
	Strontium (Sr)	mg/L	0.467	0.335	0.419	0.382	0.454	0.431	0.665	0.355	0.336	0.349	0.449	0.922	0.466	0.386	0.372	0.452
	Zinc (Zn)	mg/L	0.00036	0.00096	0.00145	0.0060	0.0071	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015

Value was reported at the method detection limit (MDL), input to model is half the MDL.

[a] Laboratory measured pH, in situ pH not available.

Table A.2: Water quality parameters of water samples collected from Polley Flats (POF) from March to October, 2016.

	Parameter	Site	POF-1							POF-1A			
		Date	15-Mar-16	20-Apr-16	12-May-16	12-Jul-16	30-Aug-16	6-Sep-16	3-Oct-16	13-Sep-16	19-Sep-16	27-Sep-16	18-Oct-16
		Source	BCMOE	BCMOE	BCMOE	BCMOE	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC
		Units											
Non-Metals	Alkalinity (as $CaCO_3$)	mg/L	212	205	172	201	190	206	315	341	176	257	282
	pH (pH)	pH units	7.92	8.27[a]	7.99	8.30	7.96	8.00	8.15[a]	8.07	8.14[a]	8.20[a]	8.23
	Dissolved Organic Carbon	mg/L	6.89	8.63	8.25	8.59	11.60	11.40	9.95	11.50	7.30	9.40	10.90
	Sulphate	mg/L	585	566	622	518	545	579	508	522	533	467	481
	Nitrate (as N)	mg/L	0.728	0.066	0.036	0.039	0.0125	0.0125	0.049	0.0125	0.595	0.126	0.224
	Chloride (Cl)	mg/L	7.9	7.4	8.1	6.8	8.4	9.0	7.4	11.4	7.3	6.9	7.4
	Fluoride (F)	mg/L	-	-	-	-	0.45	0.45	0.34	0.48	0.32	0.29	0.31
Dissolved Metals	Aluminum (Al)	mg/L	0.0038	0.0032	0.0030	0.0055	0.0065	0.0040	0.0046	0.0056	0.0094	0.0074	0.0053
	Antimony (Sb)	mg/L	0.00038	0.00038	0.00053	0.00039	0.00055	0.00041	0.00027	0.00043	0.00056	0.00036	0.00029
	Arsenic (As)	mg/L	0.00062	0.00081	0.00095	0.00122	0.00162	0.00134	0.00083	0.00126	0.00108	0.00113	0.00070
	Barium (Ba)	mg/L	0.060	0.056	0.050	0.052	0.044	0.042	0.066	0.056	0.050	0.053	0.056
	Boron (B)	mg/L	0.066	0.068	0.077	0.071	0.094	0.097	0.080	0.107	0.062	0.078	0.069
	Calcium (Ca)	mg/L	223	222	228	186	188	189	246	214	182	199	206
	Copper (Cu)	mg/L	0.0593	0.0378	0.0254	0.0292	0.0329	0.0285	0.0393	0.0436	0.0465	0.0352	0.0514
	Iron (Fe)	mg/L	0.0072	0.0098	0.0137	0.0038	0.015	0.015	0.015	0.015	0.015	0.015	0.015
	Lithium (Li)	mg/L	0.0059	0.0051	0.0069	0.0061	0.0075	0.0066	0.0047	0.0054	0.0063	0.0053	0.0050
	Magnesium (Mg)	mg/L	41.7	40.5	38.5	35.1	36.5	39.3	39.2	34.3	28.8	35.3	35.9
	Manganese (Mn)	mg/L	1.40	1.38	0.85	0.82	0.28	0.37	2.68	2.13	0.98	1.81	2.06
	Molybdenum (Mo)	mg/L	0.0905	0.0768	0.0891	0.0636	0.1120	0.0994	0.0792	0.0899	0.1340	0.0953	0.0878
	Nickel (Ni)	mg/L	0.00211	0.00187	0.00138	0.00134	0.00094	0.00109	0.00226	0.00234	0.00132	0.00184	0.00221
	Phosphorus (P)	mg/L	0.0010	0.0010	0.0020	0.0010	0.0047	0.0040	0.001	0.001	0.001	0.001	0.0029
	Potassium (K)	mg/L	3.70	4.49	5.62	6.27[b]	7.87	6.46	5.25	6.20	5.92	5.45	4.26
	Selenium (Se)	mg/L	0.00363	0.00201	0.00139	0.00176	0.00245	0.00181	0.00101	0.00177	0.00365	0.00156	0.00151
	Sodium (Na)	mg/L	40.9	45.0	49.8	44.5	54.7	54.8	50.7	63.2	42.1	52.6	48.1
	Strontium (Sr)	mg/L	2.25	2.17	2.61	1.80	2.25	2.27	2.57	2.26	2.02	2.10	2.17
	Zinc (Zn)	mg/L	0.00399	0.00122	0.00064	0.00079	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015

Value was reported at the method detection limit (MDL), input to model is half the MDL.

[a] Laboratory measured pH, in situ pH not available.

[b] Original value of 6,270 mg/L likely a unit error. Input to model was 6.27 mg/L.

Table A.2: Water quality parameters of water samples collected from Polley Flats (POF) from March to October, 2016.

	Parameter	Site	POF-2								POF-3			POF-ESS*	
		Date	15-Mar-16	20-Apr-16	12-May-16	16-Jun-16	21-Sep-16	27-Sep-16	3-Oct-16	18-Oct-16	21-Sep-16	27-Sep-16	18-Oct-16	20-Apr-16	12-May-16
		Source	BCMOE	BCMOE	BCMOE	BCMOE	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	MPMC	BCMOE	BCMOE
		Units													
Non-Metals	Alkalinity (as $CaCO_3$)	mg/L	236	120	322	304	262	277	323	259	194	201	169	106	150
	pH (pH)	pH units	7.92	8.13[a]	7.75	8.11	8.13[a]	8.37[a]	8.26[a]	8.26	7.87[a]	8.29[a]	8.01	8.12[a]	7.86
	Dissolved Organic Carbon	mg/L	30.7	8.62	32.6	36.9	31.5	30.8	31.8	27.5	37.4	40.4	30.2	8.2	12.9
	Sulphate	mg/L	228	63.9	458	341	246	226	231	170	183	185	97.4	51.1	78.2
	Nitrate (as N)	mg/L	0.025	0.131	0.0075	0.027	0.187	0.176	0.138	0.038	0.0125	0.0125	0.0025	0.0767	0.0015
	Chloride (Cl)	mg/L	5.4	1.61	7.8	7.3	4.2	4.4	5.6	4.1	1.25	1.25	1.49	1.38	2.12
	Fluoride (F)	mg/L	-	-	-	-	0.16	0.17	0.21	0.18	0.12	0.12	0.13	-	-
Dissolved Metals	Aluminum (Al)	mg/L	0.0272	0.0160	0.0077	0.0201	0.0145	0.0137	0.0100	0.0140	0.0372	0.0210	0.0595	0.0338	0.0155
	Antimony (Sb)	mg/L	0.00019	0.00022	0.00019	0.00021	0.00032	0.00030	0.00055	0.00021	0.00021	0.00014	0.00005	0.00015	0.00020
	Arsenic (As)	mg/L	0.00085	0.00078	0.00063	0.00096	0.00111	0.00112	0.00129	0.000780	0.00109	0.00117	0.00070	0.000772	0.000582
	Barium (Ba)	mg/L	0.0587	0.0344	0.0720	0.0592	0.0816	0.0817	0.0827	0.0571	0.0951	0.0952	0.0590	-	-
	Boron (B)	mg/L	0.0300	0.0266	0.0458	0.0529	0.031	0.032	0.037	0.023	0.019	0.022	0.011	0.027	0.029
	Calcium (Ca)	mg/L	133	52.2	230	150	129	140	149	121	106	125	90.9	47.2	64.6
	Copper (Cu)	mg/L	0.0369	0.0207	0.0392	0.0512	0.0731	0.0728	0.0909	0.0517	0.0825	0.0835	0.0717	0.0327	0.0298
	Iron (Fe)	mg/L	1.37	0.058	0.072	0.186	0.126	0.153	0.087	0.206	0.308	0.379	0.802	0.347	0.138
	Lithium (Li)	mg/L	0.00450	0.00138	0.00412	0.00410	0.0033	0.0029	0.0034	0.00270	0.0015	0.0012	0.0011	0.00107	0.00157
	Magnesium (Mg)	mg/L	20.0	8.2	34.8	28.2	18.4	21.7	23.5	18.3	11.3	13.8	9.8	6.5	10.4
	Manganese (Mn)	mg/L	1.490	0.161	2.390	0.788	0.046	0.080	0.139	0.106	0.232	0.165	0.270	0.113	0.244
	Molybdenum (Mo)	mg/L	0.0535	0.0140	0.0443	0.0413	0.0302	0.0397	0.0456	0.0313	0.0103	0.0147	0.0073	0.0102	0.0148
	Nickel (Ni)	mg/L	0.00110	0.00044	0.00263	0.00165	0.00086	0.00122	0.00115	0.00105	0.00105	0.00132	0.00127	0.000433	0.000671
	Phosphorus (P)	mg/L	0.0283	0.0128	0.0010	0.0785	0.0221	0.017	0.0135	0.0151	0.0356	0.0367	0.0266	0.0105	0.0054
	Potassium (K)	mg/L	6.12	2.20	6.69	7.07	7.92	8.84	9.45	5.68	7.16	8.79	4.72	1.41	2.33
	Selenium (Se)	mg/L	0.00124	0.00079	0.00068	0.00093	0.00124	0.00112	0.00226	0.000844	0.000516	0.000512	0.000342	0.000785	0.000799
	Sodium (Na)	mg/L	29.4	11.9	47.8	41.2	25.7	28.6	36.5	23.6	10.9	13.2	9.0	10.4	15.2
	Strontium (Sr)	mg/L	1.25	0.417	1.87	1.47	1.16	1.24	1.41	1.10	0.772	0.929	0.648	0.322	0.536
	Zinc (Zn)	mg/L	0.00140	0.00025	0.00081	0.00051	0.0015	0.0015	0.0015	0.0015	0.0033	0.0015	0.0015	0.00066	0.00031

*East Side Seep

Value was reported at the method detection limit (MDL), input to model is half the MDL.

[a] Laboratory measured pH, in situ pH not available.

Attachment B – Speciation Modelling Results - Precipitation Allowed

Table B.3: Selected results of speciation modelling, with precipitation allowed, using Visual MINTEQ v.3.1 for copper and iron in water samples collected from Hazeltine Creek (September 2015 to October 2016.

Analyte		Site	HAC-10										HAC-12
		Date	8-Sep-15	2-Nov-15	9-Nov-15	3-Dec-15	24-Feb-16	15-Mar-16	12-May-16	2-Aug-16	6-Sep-16	3-Oct-16	18-Oct-16
		Units											
Cu	Free Ion	mg/L	4.26E-09	1.88E-07	2.86E-09	6.80E-09	3.32E-09	3.11E-09	2.08E-08	3.62E-09	4.43E-09	8.55E-09	1.81E-07
	Inorganic (plus free	mg/L	2.59E-07	5.53E-06	1.59E-07	5.22E-07	1.88E-07	1.85E-07	6.18E-07	2.84E-07	2.45E-07	3.78E-07	2.89E-06
	Organic	mg/L	4.01E-03	1.01E-02	2.59E-03	3.80E-03	3.19E-03	4.35E-03	3.45E-03	3.72E-03	3.09E-03	3.02E-03	7.44E-03
Fe	Free Ion	mg/L	3.10E-21	1.08E-19	6.70E-21	2.32E-21	5.05E-21	2.67E-21	5.24E-20	9.97E-22	5.18E-21	1.35E-20	1.03E-19
	Inorganic (plus free	mg/L	1.53E-10	4.18E-10	1.86E-10	1.44E-10	1.73E-10	1.48E-10	3.35E-10	1.22E-10	1.74E-10	2.25E-10	3.82E-10
	Organic	mg/L	4.02E-05	3.84E-05	7.98E-05	1.71E-05	6.49E-05	5.29E-05	7.79E-05	1.50E-05	4.74E-05	5.46E-05	2.35E-05
Cu	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free	%	0.01	0.05	0.01	0.01	0.01	0.00	0.02	0.01	0.01	0.01	0.04
	Organic	%	99.99	99.95	99.99	99.99	99.99	100.00	99.98	99.99	99.99	99.99	99.96
Fe	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Organic	%	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(

Analyte		Site	HAC-13															
		Date	3-Dec-15	24-Feb-16	15-Mar-16	25-Jul-16	2-Aug-16	10-Aug-16	17-Aug-16	23-Aug-16	30-Aug-16	6-Sep-16	13-Sep-16	19-Sep-16	27-Sep-16	2-Oct-16	3-Oct-16	18-Oct-16
		Units																
Cu	Free Ion	mg/L	5.19E-08	6.56E-09	1.76E-08	5.01E-08	1.32E-07	8.42E-08	3.26E-07	2.98E-07	1.88E-07	4.22E-08	1.14E-07	3.91E-07	1.55E-07	1.17E-07	1.66E-07	1.97E-07
	Inorganic (plus free	mg/L	3.12E-06	6.41E-07	1.35E-06	1.98E-06	6.00E-06	4.60E-06	1.14E-05	1.29E-05	8.38E-06	2.80E-06	5.27E-06	1.22E-05	7.03E-06	4.36E-06	6.33E-06	7.64E-06
	Organic	mg/L	1.06E-02	7.74E-03	1.38E-02	7.91E-03	1.32E-02	1.33E-02	2.68E-02	1.64E-02	1.30E-02	9.68E-03	1.17E-02	3.11E-02	1.47E-02	8.93E-03	1.04E-02	1.62E-02
Fe	Free Ion	mg/L	8.67E-21	7.84E-22	8.61E-22	1.84E-20	1.01E-20	5.79E-21	7.16E-20	2.36E-20	1.49E-20	2.87E-21	1.20E-20	2.68E-20	1.08E-20	2.27E-20	2.45E-20	2.39E-20
	Inorganic (plus free	mg/L	1.95E-10	1.17E-10	1.18E-10	2.45E-10	2.05E-10	1.77E-10	3.63E-10	2.63E-10	2.31E-10	1.50E-10	2.14E-10	2.62E-10	2.10E-10	2.60E-10	2.66E-10	2.62E-10
	Organic	mg/L	1.62E-05	1.29E-05	7.91E-06	2.58E-05	7.56E-06	7.90E-06	3.48E-05	8.51E-06	7.60E-06	6.70E-06	9.75E-06	1.17E-05	7.77E-06	1.39E-05	1.13E-05	1.37E-05
Cu	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free	%	0.03	0.01	0.01	0.03	0.05	0.03	0.04	0.08	0.06	0.03	0.05	0.04	0.05	0.05	0.06	0.05
	Organic	%	99.97	99.99	99.99	99.97	99.95	99.97	99.96	99.92	99.94	99.97	99.95	99.96	99.95	99.95	99.94	99.95
Fe	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Organic	%	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(	100.0(

Table B.4: Selected results of speciation modelling, with precipitation allowed, using Visual MINTEQ v.3.1 for copper and iron in water samples collected from Polley Flats (POF) from March 2016 to October 2016.

Analyte		Site	POF-1							POF-1A			
		Date	15-Mar-16	20-Apr-16	12-May-16	12-Jul-16	30-Aug-16	6-Sep-16	3-Oct-16	13-Sep-16	19-Sep-16	27-Sep-16	18-Oct-16
		Units											
Cu	Free Ion	mg/L	1.74E-05	9.58E-07	1.33E-06	4.38E-07	1.06E-06	7.06E-07	9.65E-07	1.00E-06	3.21E-06	6.99E-07	9.75E-07
	Inorganic (plus free ion)	mg/L	2.50E-04	1.73E-05	1.65E-05	1.06E-05	1.75E-05	1.31E-05	2.40E-05	3.28E-05	5.97E-05	1.89E-05	2.92E-05
	Organic	mg/L	5.91E-02	3.78E-02	2.54E-02	2.92E-02	3.29E-02	2.85E-02	3.93E-02	4.36E-02	4.64E-02	3.52E-02	5.14E-02
Fe	Free Ion	mg/L	1.61E-19	1.39E-20	1.02E-19	1.08E-20	1.15E-19	8.93E-20	3.04E-20	5.38E-20	3.29E-20	2.08E-20	1.69E-20
	Inorganic (plus free ion)	mg/L	4.24E-10	2.05E-10	3.65E-10	1.93E-10	3.84E-10	3.54E-10	2.58E-10	3.06E-10	2.64E-10	2.33E-10	2.20E-10
	Organic	mg/L	1.22E-06	2.10E-06	6.70E-06	3.27E-06	1.30E-05	1.43E-05	4.82E-06	8.96E-06	1.52E-06	4.44E-06	3.56E-06
Cu	Free Ion	%	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
	Inorganic (plus free ion)	%	0.42	0.05	0.06	0.04	0.05	0.05	0.06	0.08	0.13	0.05	0.06
	Organic	%	99.58	99.95	99.94	99.96	99.95	99.95	99.94	99.92	99.87	99.95	99.94
Fe	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free ion)	%	0.03	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.02	0.01	0.01
	Organic	%	99.97	99.99	99.99	99.99	100.00	100.00	99.99	100.00	99.98	99.99	99.99

Analyte		Site	POF-2								POF-3			POF-ESS*	
		Date	15-Mar-16	20-Apr-16	12-May-16	16-Jun-16	21-Sep-16	27-Sep-16	3-Oct-16	18-Oct-16	21-Sep-16	27-Sep-16	18-Oct-16	20-Apr-16	12-May-16
		Units													
Cu	Free Ion	mg/L	1.28E-07	2.36E-07	2.82E-07	8.12E-08	2.27E-07	9.00E-08	1.92E-07	8.29E-08	5.65E-07	1.04E-07	3.76E-07	6.92E-07	6.09E-07
	Inorganic (plus free ion)	mg/L	3.83E-06	9.59E-06	5.40E-06	3.82E-06	1.15E-05	6.44E-06	1.37E-05	5.46E-06	1.54E-05	4.97E-06	1.26E-05	2.61E-05	1.70E-05
	Organic	mg/L	3.69E-02	2.07E-02	3.92E-02	5.12E-02	7.31E-02	7.28E-02	9.09E-02	5.17E-02	8.25E-02	8.35E-02	7.17E-02	3.27E-02	2.98E-02
Fe	Free Ion	mg/L	1.20E-19	2.16E-20	4.84E-19	3.48E-20	2.75E-20	5.00E-21	1.10E-20	1.02E-20	1.57E-19	8.31E-21	5.32E-20	2.26E-20	1.52E-19
	Inorganic (plus free ion)	mg/L	4.11E-10	2.56E-10	6.13E-10	2.76E-10	2.62E-10	1.66E-10	2.02E-10	2.01E-10	4.55E-10	1.90E-10	3.31E-10	2.60E-10	4.59E-10
	Organic	mg/L	2.11E-04	1.31E-05	2.89E-04	1.52E-04	5.32E-05	3.05E-05	3.32E-05	5.03E-05	1.10E-04	5.02E-05	5.95E-05	6.02E-06	3.70E-05
Cu	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free ion)	%	0.01	0.05	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.08	0.06
	Organic	%	99.99	99.95	99.99	99.99	99.98	99.99	99.98	99.99	99.98	99.99	99.98	99.92	99.94
Fe	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free ion)	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Organic	%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*East Side Seep

Attachment C – Speciation Modelling - No Precipitation Allowed

Table C.5: Selected results of speciation modelling, with no precipitation allowed, using Visual MINTEQ v.3.1 for copper and iron in water samples collected from Hazeltine Creek (HAC) from September 2015 to October 2016.

Analyte		Site	HAC-10										HAC-12
		Date	8-Sep-15	2-Nov-15	9-Nov-15	3-Dec-15	24-Feb-16	15-Mar-16	12-May-16	2-Aug-16	6-Sep-16	3-Oct-16	18-Oct-16
		Units											
Cu	Free Ion	mg/L	7.74E-08	4.90E-07	2.17E-08	3.60E-08	6.05E-08	8.32E-08	1.32E-07	3.57E-08	6.02E-08	1.01E-07	3.08E-06
	Inorganic (plus free ion)	mg/L	6.61E-06	1.48E-05	1.41E-06	3.47E-06	4.14E-06	6.63E-06	4.27E-06	4.06E-06	4.14E-06	5.17E-06	6.59E-05
	Organic	mg/L	4.00E-03	1.01E-02	2.59E-03	3.80E-03	3.19E-03	4.34E-03	3.45E-03	3.72E-03	3.09E-03	3.01E-03	7.37E-03
Fe	Free Ion	mg/L	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Inorganic (plus free ion)	mg/L	4.09E-06	1.29E-07	1.44E-07	7.59E-07	2.70E-06	9.09E-06	3.77E-07	3.00E-06	1.92E-06	1.87E-06	2.93E-05
	Organic	mg/L	2.06E-02	3.40E-03	5.40E-03	8.90E-03	2.01E-02	3.82E-02	7.80E-03	1.50E-02	1.50E-02	1.50E-02	3.70E-02
Cu	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	Inorganic (plus free ion)	%	0.16	0.15	0.05	0.09	0.13	0.15	0.12	0.11	0.13	0.17	0.89
	Organic	%	99.84	99.85	99.95	99.91	99.87	99.85	99.88	99.89	99.87	99.83	99.11
Fe	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free ion)	%	0.02	0.00	0.00	0.01	0.01	0.02	0.00	0.02	0.01	0.01	0.08
	Organic	%	99.98	100.00	100.00	99.99	99.99	99.98	100.00	99.98	99.99	99.99	99.92

Analyte		Site	HAC-13														
		Date	3-Dec-15	24-Feb-16	15-Mar-16	25-Jul-16	2-Aug-16	10-Aug-16	17-Aug-16	23-Aug-16	30-Aug-16	6-Sep-16	13-Sep-16	19-Sep-16	27-Sep-16	2-Oct-16	3-Oct-16	18-Oct-16
		Units																
Cu	Free Ion	mg/L	2.69E-07	2.87E-07	1.30E-06	2.22E-07	4.65E-07	3.70E-07	7.85E-06	1.19E-06	8.37E-07	2.20E-07	5.48E-07	1.14E-06	6.17E-07	5.57E-07	7.02E-07	1.28E-06
	Inorganic (plus free ion)	mg/L	2.18E-05	3.96E-05	1.69E-04	1.08E-05	2.99E-05	2.88E-05	3.76E-04	6.10E-05	4.47E-05	1.98E-05	3.52E-05	6.23E-05	3.87E-05	2.53E-05	3.18E-05	6.29E-05
	Organic	mg/L	1.06E-02	7.70E-03	1.36E-02	7.90E-03	1.32E-02	1.33E-02	2.64E-02	1.63E-02	1.30E-02	9.66E-03	1.17E-02	3.10E-02	1.47E-02	8.90E-03	1.04E-02	1.61E-02
Fe	Free Ion	mg/L	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Inorganic (plus free ion)	mg/L	1.84E-06	8.55E-05	6.00E-04	1.21E-06	2.47E-06	2.76E-06	7.51E-05	3.14E-06	3.68E-06	3.63E-06	3.07E-06	1.43E-06	2.88E-06	2.75E-06	2.88E-06	8.43E-06
	Organic	mg/L	1.45E-02	6.00E-02	1.17E-01	1.50E-02	1.50E-02	1.50E-02	1.08E-01	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02	3.20E-02
Cu	Free Ion	%	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
	Inorganic (plus free ion)	%	0.21	0.51	1.22	0.14	0.23	0.22	1.40	0.37	0.34	0.20	0.30	0.20	0.26	0.28	0.31	0.39
	Organic	%	99.79	99.49	98.78	99.86	99.77	99.78	98.60	99.63	99.66	99.80	99.70	99.80	99.74	99.72	99.69	99.61
Fe	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free ion)	%	0.01	0.14	0.51	0.01	0.02	0.02	0.07	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.03
	Organic	%	99.99	99.86	99.49	99.99	99.98	99.98	99.93	99.98	99.98	99.98	99.98	99.99	99.98	99.98	99.98	99.97

Table C.6: Selected results of speciation modelling, with no precipitation allowed, using Visual MINTEQ v.3.1 for copper and iron in water samples collected from Polley Flats (POF) from March 2016 to October 2016.

Analyte		Site	POF-1							POF-1A			
		Date	15-Mar-16	20-Apr-16	12-May-16	12-Jul-16	30-Aug-16	6-Sep-16	3-Oct-16	13-Sep-16	19-Sep-16	27-Sep-16	18-Oct-16
		Units											
Cu	Free Ion	mg/L	3.11E-05	2.17E-06	3.42E-06	8.36E-07	2.78E-06	1.98E-06	3.14E-06	3.36E-06	8.48E-06	2.25E-06	2.95E-06
	Inorganic (plus free ion)	mg/L	1.22E-03	1.85E-04	1.28E-04	3.44E-05	1.12E-04	9.29E-05	3.11E-04	3.02E-04	4.79E-04	2.11E-04	3.25E-04
	Organic	mg/L	5.81E-02	3.76E-02	2.53E-02	2.92E-02	3.28E-02	2.84E-02	3.90E-02	4.33E-02	4.60E-02	3.50E-02	5.11E-02
Fe	Free Ion	mg/L	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Inorganic (plus free ion)	mg/L	5.13E-06	2.75E-06	2.81E-06	4.85E-07	1.63E-06	1.52E-06	3.61E-06	2.36E-06	9.10E-06	3.60E-06	3.71E-06
	Organic	mg/L	7.19E-03	9.80E-03	1.37E-02	3.80E-03	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02	1.50E-02
Cu	Free Ion	%	0.05	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01
	Inorganic (plus free ion)	%	2.06	0.49	0.50	0.12	0.34	0.33	0.79	0.69	1.03	0.60	0.63
	Organic	%	97.94	99.51	99.50	99.88	99.66	99.67	99.21	99.31	98.97	99.40	99.37
Fe	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free ion)	%	0.07	0.03	0.02	0.01	0.01	0.01	0.02	0.02	0.06	0.02	0.02
	Organic	%	99.93	99.97	99.98	99.99	99.99	99.99	99.98	99.98	99.94	99.98	99.98

Analyte		Site	POF-2								POF-3			POF-ESS*	
		Date	15-Mar-16	20-Apr-16	12-May-16	16-Jun-16	21-Sep-16	27-Sep-16	3-Oct-16	18-Oct-16	21-Sep-16	27-Sep-16	18-Oct-16	20-Apr-16	12-May-16
		Units													
Cu	Free Ion	mg/L	5.01E-05	2.96E-06	2.37E-06	1.46E-06	2.00E-06	1.22E-06	1.37E-06	2.35E-06	1.31E-05	3.87E-06	3.73E-05	5.05E-05	1.83E-05
	Inorganic (plus free ion)	mg/L	2.52E-03	1.52E-04	9.58E-05	1.05E-04	1.84E-04	2.10E-04	2.09E-04	3.00E-04	5.18E-04	4.11E-04	1.87E-03	2.30E-03	6.05E-04
	Organic	mg/L	3.44E-02	2.05E-02	3.91E-02	5.11E-02	7.29E-02	7.26E-02	9.07E-02	5.14E-02	8.20E-02	8.31E-02	6.98E-02	3.04E-02	2.92E-02
Fe	Free Ion	mg/L	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Inorganic (plus free ion)	mg/L	1.06E-02	3.36E-05	2.70E-06	1.67E-05	1.17E-05	2.67E-05	7.15E-06	6.72E-05	7.84E-05	1.64E-04	2.71E-03	6.61E-03	1.62E-04
	Organic	mg/L	1.36E+00	5.78E-02	7.22E-02	1.86E-01	1.26E-01	1.53E-01	8.70E-02	2.06E-01	3.08E-01	3.79E-01	7.99E-01	3.40E-01	1.38E-01
Cu	Free Ion	%	0.14	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.05	0.15	0.06
	Inorganic (plus free ion)	%	6.84	0.73	0.24	0.20	0.25	0.29	0.23	0.58	0.63	0.49	2.61	7.03	2.03
	Organic	%	93.16	99.27	99.76	99.80	99.75	99.71	99.77	99.42	99.37	99.51	97.39	92.97	97.97
Fe	Free Ion	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Inorganic (plus free ion)	%	0.77	0.06	0.00	0.01	0.01	0.02	0.01	0.03	0.03	0.04	0.34	1.91	0.12
	Organic	%	99.23	99.94	100.00	99.99	99.99	99.98	99.99	99.97	99.97	99.96	99.66	98.09	99.88

*East Side Seep

Attachment D – Biotic Ligand Model Results using HydroQual v.2.2.3 for Copper

Table 5-1: Biotic ligand model results using HydroQual v.2.2.3 for copper concentrations in water samples collected from Hazeltine Creek (HAC), and Polley Flats (POF).

Site	Sample ID	Measured		HydroQual		
		DOC	Cu	CCC[1]	CMC[2]	FAV[3]
		mg/L	mg/L	mg/L	mg/L	mg/L
HAC-10	8-Sep-15	6.31	0.004	0.040	0.064	0.128
HAC-10	2-Nov-15	6.90	0.010	0.027	0.044	0.088
HAC-10	9-Nov-15	6.10	0.003	0.034	0.055	0.109
HAC-10	3-Dec-15	6.08	0.004	0.038	0.062	0.124
HAC-10	24-Feb-16	6.66	0.003	0.039	0.062	0.124
HAC-10	15-Mar-16	8.23	0.004	0.052	0.083	0.167
HAC-10	12-May-16	6.31	0.003	0.027	0.044	0.089
HAC-10	2-Aug-16	6.08	0.004	0.043	0.069	0.138
HAC-10	6-Sep-16	5.96	0.003	0.035	0.056	0.111
HAC-10	3-Oct-16	5.53	0.003	0.028	0.045	0.091
HAC-12	18-Oct-16	6.01	0.007	0.030	0.048	0.097
HAC-13	3-Dec-15	6.88	0.011	0.041	0.066	0.132
HAC-13	24-Feb-16	7.10	0.008	0.052	0.083	0.166
HAC-13	15-Mar-16	8.84	0.014	0.066	0.107	0.213
HAC-13	25-Jul-16	8.13	0.008	0.042	0.067	0.134
HAC-13	2-Aug-16	6.99	0.013	0.040	0.065	0.130
HAC-13	10-Aug-16	6.63	0.013	0.040	0.065	0.129
HAC-13	17-Aug-16	13.10	0.027	0.062	0.100	0.201
HAC-13	23-Aug-16	6.26	0.016	0.031	0.050	0.099
HAC-13	30-Aug-16	5.61	0.013	0.029	0.047	0.093
HAC-13	6-Sep-16	5.59	0.010	0.036	0.057	0.114
HAC-13	13-Sep-16	6.14	0.012	0.035	0.056	0.111
HAC-13	19-Sep-16	11.30	0.031	0.063	0.102	0.204
HAC-13	27-Sep-16	6.49	0.015	0.037	0.059	0.118
HAC-13	2-Oct-16	5.56	0.009	0.028	0.044	0.089
HAC-13	3-Oct-16	5.51	0.010	0.027	0.043	0.087
HAC-13	18-Oct-16	7.77	0.016	0.039	0.063	0.127
POF-1	15-Mar-16	6.89	0.059	0.038	0.061	0.122
POF-1	20-Apr-16	8.63	0.038	0.066	0.106	0.212
POF-1	12-May-16	8.25	0.025	0.048	0.078	0.156
POF-1	12-Jul-16	8.59	0.029	0.065	0.105	0.210
POF-1	30-Aug-16	11.60	0.033	0.065	0.105	0.209
POF-1	6-Sep-16	11.40	0.029	0.066	0.107	0.214
POF-1	3-Oct-16	9.95	0.039	0.071	0.114	0.227
POF-1A	13-Sep-16	11.50	0.044	0.074	0.119	0.239
POF-1A	19-Sep-16	7.30	0.047	0.047	0.075	0.151
POF-1A	27-Sep-16	9.40	0.035	0.067	0.108	0.217
POF-1A	18-Oct-16	10.90	0.051	0.080	0.128	0.257
POF-2	15-Mar-16	30.70	0.037	0.152	0.244	0.488
POF-2	20-Apr-16	8.62	0.021	0.044	0.071	0.142
POF-2	12-May-16	32.60	0.039	0.151	0.243	0.486
POF-2	16-Jun-16	36.90	0.051	0.227	0.365	0.730
POF-2	21-Sep-16	31.50	0.073	0.186	0.299	0.598
POF-2	27-Sep-16	30.80	0.073	0.231	0.372	0.744
POF-2	3-Oct-16	31.80	0.091	0.223	0.359	0.718
POF-2	18-Oct-16	27.50	0.052	0.182	0.293	0.587
POF-3	21-Sep-16	37.40	0.083	0.159	0.256	0.511
POF-3	27-Sep-16	40.40	0.084	0.265	0.427	0.855
POF-3	18-Oct-16	30.20	0.072	0.146	0.235	0.470
POF-ESS	20-Apr-16	8.23	0.033	0.041	0.066	0.131
POF-ESS	12-May-16	12.90	0.030	0.053	0.085	0.170

Copper value exceeds the Hydroqual CCC value.

Copper value exceeds the Hydroqual CCC and CMC values.

[1] Criterion Continuous Concentration (HydroQual)

[2] Criteria Maximum Concentration (HydroQual)

[3] Final Acute Value (HydroQual)

APPENDIX A-4

Groundwater Quality Update Technical Memorandum

TECHNICAL MEMORANDUM

DATE 10 February 2017 **REFERENCE No.** 1662612-024-TM-Rev1-22200

TO Art Frye, Colleen Hughes, and 'Lyn Anglin
Mount Polley Mining Corporation, Imperial Metals Corporation

CC Don Parsons (MPMC)

FROM Evin Zapf-Gilje,Trish Miller, and Reidar Zapf-Gilje **EMAIL** Evin@Zapf-Gilje@golder.com; Trish_Miller@golder.com

UPDATED FACTUAL DATA REPORT ON GROUNDWATER QUALITY HAZELTINE CHANNEL FLOODPLAIN, 2015 & 2016 – MOUNT POLLEY MINE

Golder Associates Ltd. (Golder) is pleased to provide Mount Polley Mining Corporation (MPMC) with this updated technical memorandum for the groundwater quality investigation in support of the Detailed Site Investigation (DSI) and Human Health and Ecological Risk Assessment (HHERA) for the Mount Polley Mine (the Site). The investigation was carried out in accordance with the document entitled *Work Plan for Monitoring in Support of Risk Assessment at the Mount Polley Mine, Mount Polley Mine, BC* (Golder, 2016).

Golder previously undertook groundwater monitoring at the Site in 2015 to confirm the results of the geochemistry investigation conducted by SRK Consulting (SRK 2015), which was reported in *Factual Data Report on Groundwater Quality, Hazeltine Creek Floodplain, August 2015* (Golder, 2015) and included in the DSI report for the Site.

This factual report presents the data collected to date and compares them to the Contaminated Sites Regulation (CSR) standards protective of aquatic life, livestock water, irrigation water and drinking water. Interpretation for the selection of Contaminants of Potential Concern (COPCs) will be presented in subsequent DSI and Risk Assessment reports.

1.0 SCOPE OF WORK

The scope of work related to this groundwater quality update included the following tasks:

- Re-screen existing groundwater quality results from *Factual Data Report on Groundwater Quality, Hazeltine Creek Floodplain, August 2015* (Golder, 2015) against updated CSR standards (see Section 4.0 for details).
- Installation of 18 new groundwater monitoring wells at the Site including:
  - a second deeper well at selected existing mini-piezometers
  - new nested wells along select transects
  - additional reference stations

- Collection of groundwater samples from newly-installed monitoring wells for laboratory analysis of hardness, acidity, Total Suspended Solids (TSS), pH, anions, nutrients and metals.
- Collection of groundwater samples from 2015 monitoring wells, where possible, for laboratory analysis of hardness, acidity, TSS, pH, anions, nutrients and metals.
- Preparation of this technical memorandum.

Groundwater samples were analyzed for dissolved metals for the purposes of groundwater quality characterization, while samples were analyzed for anions, and nutrients in order to support the geochemistry and risk assessment studies. Samples were analyzed for TSS to provide additional information about the sample for interpretation purposes.

A hydrogeological assessment, including analysis of hydraulic conductivity tests and evaluation of groundwater flow directions was also completed in support of the HHERA. The results of the hydrogeological assessment will be presented in the forthcoming supplemental DSI report along with relevant information from investigation work currently being conducted in the vicinity of the Tailings Storage Facility at the Site.

2.0 APPLICABLE REGULATORY CRITERIA

In British Columbia, environmental matters pertaining to contaminated sites generally fall under the jurisdiction of BC Ministry of Environment (MoE), pursuant to the *Environmental Management Act* (EMA, SBC 2003, Chapter 53 assessed 23 October 2003, as amended on 8 July 2004). The two key regulations under the EMA that relate to the assessment and remediation of contaminated sites are the Contaminated Sites Regulation (CSR; BC Reg. 375/96, O.C. 1480/96 and M271/2004, as updated [includes amendments up to BC Reg. 184/2016, updated to 19 July 2016]), and the Hazardous Waste Regulation (HWR; BC Reg. 63/88, O.C. 268/88, as updated [includes amendments up to BC Reg. 63/2009, updated to 1 April 2009]).

The CSR provides Generic Numerical Water Quality Standards for the assessment of groundwater quality at sites subject to investigation. The Water Quality Standards are divided into four categories that provide standards for the protection of aquatic life (AW) and for defined groundwater uses including irrigation water (IW), water for livestock (LW), and drinking water (DW). Standards for the protection of aquatic life (AW) contain subcategories applicable on a site-specific basis where the proximity of the Site to receiving freshwater (F) and marine water (M) bodies must be considered.

Groundwater results for samples presented in the DSI were screened against the CSR groundwater standards (Schedules 6 and 10) for protection of AW-F and DW. Based on comments received following a review of the DSI for the Site, it was determined that a portion of land along Hazeltine Channel is dedicated under the Agricultural Land Reserve (ALR). CSR groundwater standards for the protection of IW and LW have therefore been added for screening of the groundwater results. In this memo, we present the comparisons of both the 2015 and 2016 groundwater results to all four standards, AW-F, DW, IW, and LW.

3.0 METHODS

3.1 Approach and Rationale

The groundwater investigation was designed to assess the impact of the tailings on the groundwater quality in the tailings and the underlying native till. Monitoring wells were installed at a minimum of ten meters away from surface water bodies and the locations were selected in order to provide coverage along tailings impacted portions of the Hazeltine Channel floodplain including new 5 wells in the Polley Flats area. Nested monitoring well pairs (one within the tailings impacted layer and one within the top metre of native till underlying the tailings) were installed at each location except at locations along Hazeltine Channel where tailings material had been removed. A single shallow well was installed in each of the three background locations.

Table 1, below, provides details on each of the monitoring well locations, including the stratigraphy in which monitoring well was screened. Monitoring well locations are shown in Figures 1 through 7, attached to this technical memorandum.

Table 1: Groundwater Monitoring Wells, Mini-Piezometers and Grab Samples

Well Name	Date Installed	Sample Type	Nested Wells Pairs	Screen Stratigraphy
Upper Hazeltine				
MW16-02	16 August 2016	Monitoring Well	-	Tailings
MW16-01S	10 August 2016	Monitoring Well	MW16-01D	Tailings
MW16-01D	10 August 2016	Monitoring Well	MW16-01S	Native underlying tailings
MW16-03S	13 August 2016	Monitoring Well	MW16-03D	Reworked tailings
MW16-03D	13 August 2016	Monitoring Well	MW16-03S	Native underlying tailings
MW16-05S	10 August 2016	Monitoring Well	MW16-05D	Tailings
MW16-05D	10 August 2016	Monitoring Well	MW16-05S	Native underlying tailings
GW15-06	2 August 2015	Mini-Piezometer	-	Tailings
Seep15-01	-	Seep	-	-
Mid-Hazeltine				
GW15-04	4 August 2015	Grab	-	Tailings
GW15-05	3 August 2015	Grab	-	Tailings
MW16-06S	11 August 2016	Monitoring Well	MW16-06D	Reworked tailings
MW16-06D	11 August 2016	Monitoring Well	MW16-06S	Native underlying tailings
MW16-04	11 August 2016	Monitoring Well	GW15-03	Native underlying tailings
GW15-03	3 August 2015	Mini-Piezometer	MW16-04	Tailings
Lower Hazeltine				
GW15-02	2 August 2015	Mini-Piezometer	-	Reworked tailings
MW16-07	11 August 2016	Monitoring Well	GW15-01	Tailings below till cap
GW15-01	3 August 2015	Mini-Piezometer	MW16-07	Reworked tailings
MW16-08S	11 August 2016	Monitoring Well	MW16-08D	Reworked tailings
MW16-08D	11 August 2016	Monitoring Well	MW16-08S	Native underlying tailings
MW16-09	11 August 2016	Monitoring Well	-	Native underlying tailings
MW16-10	11 August 2016	Monitoring Well	-	Reworked tailings

Well Name	Date Installed	Sample Type	Nested Wells Pairs	Screen Stratigraphy
Background				
MW16-11	13 August 2016	Monitoring Well	-	Background (till)
MW16-12	16 August 2016	Monitoring Well	-	Background
MW16-13	16 August 2016	Monitoring Well	-	Background (till)
GW15-BKG-01	4 August 2015	Shallow-pit Well	-	Background

Notes: Reworked tailings—As a part of rehabilitation of the area tailings were either: intermixed with till and organic soils, or mostly removed. It is assumed there is some tailings remaining in these areas but that they comprise less than 50% of the substrate.

Wells are listed from upstream to downstream, top to bottom of Hazeltine Channel.

3.2 Borehole Drilling and Monitoring Well Installation

Between 10 August and 13 August 2016, 14 boreholes were advanced in the Hazeltine Channel floodplain for the purpose of installing groundwater monitoring wells. The boreholes were advanced using a truck-mounted solid stem auger drill rig, operated by Golder. One additional borehole was advanced using the same method in nearby un-impacted areas on 13 August 2016 for the purpose of installing background monitoring wells.

Three additional boreholes were hand drilled on 16 August, 2016 using an AMS Auger Kit attached to a Bosch Power Drill in areas inaccessible with a drill rig. Two background monitoring wells (MW16-12 and MW16-13) were installed using this method as well as one monitoring well in the floodplain (MW16-02). Soil conditions were recorded on borehole logs along with any field observations (i.e., odours, staining, etc.).

The drill augers and sampling equipment were cleaned and/or rinsed between borehole locations. A copy of the borehole logs and monitoring well construction details is included in Attachment 2.

3.3 2016 Groundwater Monitoring

3.3.1 Well Development

Following drilling and monitoring well installation, the newly-installed monitoring wells were developed in order to remove the fine sediments and water that may have been affected by the drilling or well installation and to improve the hydraulic connection between the wells and the surrounding aquifer. Monitoring well development was completed between 14 August and 18 August 2016.

The monitoring wells were developed by purging and removing groundwater using a peristaltic pump (suction lift) with dedicated silicon tubing at the pump head attached to 6 mm (1/4 inch) diameter high-density polyethylene (HDPE) tubing. Approximately ten well volumes were removed from the monitoring wells where possible, or where recharge was insufficient, the monitoring well was purged until dry approximately three times. Field parameters including temperature, electrical conductivity, pH, dissolved oxygen, and redox potential were recorded YSI Pro Plus water quality meter during development and were recorded on dedicated field forms provided in Attachment 3.

3.3.2 Monitoring and Sampling

Prior to sampling, groundwater elevations were measured using an electronic probe. Groundwater was then purged from monitoring wells using a peristaltic pump (suction lift) with dedicated silicon tubing at the pump head attached to 6 mm (1/4 inch) diameter HDPE tubing. During purging, a YSI Pro Plus water quality meter was used to collect field measurements of pH, temperature, dissolved oxygen, redox potential and conductivity. Once these parameters had stabilized (i.e., changes between three successive measurements were less than 10%) and/or the wells had been successively purged dry (due to low flow conditions) and permitted to recharge, groundwater samples were collected.

Groundwater samples were collected from monitoring wells between 30 August and 1 September 2016 in laboratory-supplied, verified clean plastic bottles. The samples were labelled, registered on chain-of-custody forms, stored in a refrigerator until being shipped in a cooler on ice for transport to the laboratory for analysis. Dissolved metals samples were filtered in the field using 0.45 micrometre filters, and then immediately preserved with nitric acid.

Copies of the groundwater sampling forms are included as Attachment 4.

3.4 2016 Laboratory Analysis

ALS Laboratory Group (ALS) of Burnaby, BC performed chemical analyses of groundwater samples collected during the monitoring event. Samples were transported to the laboratory in coolers with ice packs and chain-of-custody forms. Information pertaining to sampling location was not provided to the laboratory to ensure that unbiased analytical procedures were observed, and that the results of the duplicate analyses could be used to assess the quality of the laboratory analyses. The laboratory methods used by ALS to complete the analyses followed accepted national and international methodologies. ALS is accredited by the Canadian Association for Laboratory Accreditation (CALA) for the methods that were used to analyze the groundwater samples.

Copies of the analytical reports, and the corresponding chain-of-custody forms, are presented in Attachment 6.

3.5 Quality Assurance and Quality Control Procedures

To document that the sampling and analytical data were interpretable, meaningful and reproducible, conformance to the Golder quality assurance and quality control (QA/QC) program was followed. This involved using QA/QC measures in both the collection (field program) and analysis (laboratory) of environmental samples.

The following discussion includes a brief summary of the QA/QC measures implemented by Golder during the field program and during our review of the data, as well as the QA/QC measures implemented by the analytical laboratory.

Quality control measures use in the well development, sample collection, preservation and shipment included the following:

- Well development and sampling methods were consistent with established Golder protocols and provincial/federal requirements.
- Field notes were recorded during the investigation and have been stored in the project file.
- Sample locations were recorded and marked in the field.
- Samples were filtered, preserved (where appropriate), put on ice and subsequently transported to the laboratory using MPMC chain-of-custody procedures.

The quality assurance measures for the field program included:

- Submission of blind field duplicate samples for at least one in every ten samples. A blind field duplicate sample is a second sample of a certain media (e.g., soil; water) from the same location that is submitted to the analytical lab under a separate label such that the lab has no prior knowledge that it is a duplicate.
- For duplicate samples, either the relative percent difference (RPD) or difference factor (DF) was used to evaluate the sample result variability, depending on the magnitude of the concentrations. The RPD is a measure of the variability between two outcomes from the same procedure is calculated by:

$$absolute\left(\frac{(x_1 + x_2)}{average(x_1, x_2)}\right) \times 100$$

  Where x_1 is the original sample result and x_2 is the blind field duplicate result. In general, the RPD should not be more than 35% on average, or a maximum of 50%, depending on the parameter and the concentration. A RPD greater than 30% may reflect “in bottle” variability or variation in the test process. RPD is calculated when sample results are equal to or greater than five times the laboratory method detection limit. DF is the absolute difference between the two values divided by the method detection limit and is calculated when sample results are less than five times the method detection limit but not less than the method detection limit. In general, DF should be less than 2.

The following criteria were considered acceptable for laboratory QA/QC samples:

- For organic and inorganic analytes, analytical duplicates should exhibit less than 35% RPD on average, and no more than 50% for a specific analyte.
- Analytical results for reference materials or spiked standards should be within 10% of certified values for inorganic elements or 30% of certified values for organic compounds.
- Analytical blanks should be less than the detection limits used for the specific analysis.
- Certification by the Canadian Association for Laboratory Accreditation Inc. (CALA) for analytical methods used for this program.
- Reports from the laboratory were internally reviewed by MPMC prior to submission to Golder. If internal QA/QC problems are encountered, the field samples and/or internal QA/QC samples are re-analysed.

4.0 GROUNDWATER QUALITY RESULTS

4.1 Field Observations

The condition of both the 2015 and 2016 wells was noted during the field work including recharge rates, volume of water in the well, and visible turbidity in the groundwater during sampling. These observations are summarized in Table 2 below. A photograph log of select photos taken during drilling and installation, development, sampling and surveying is included in Attachment 5.

Table 2: Field Observations of Well Condition, Volume and Groundwater Turbidity in 2016

Well Name	Well Condition	Volume	Sampled in 2016	Turbidity
MW16-02	Fast recharge	Low volume	Yes	Not turbid
MW16-01S	Dry	None	No	-
MW16-01D	Slow recharge	Low volume	Yes	Not turbid
MW16-03S	Dry	None	No	-
MW16-03D	Slow recharge	Low volume	Yes	Slightly turbid
MW16-05S	Dry	None	No	-
MW16-05D	Slow recharge	Low volume	Yes	Turbid
GW15-06	Destroyed	-	No	-
GW15-04	-	-	No	-
GW15-05	-	-	No	-
MW16-06S	Fast recharge	Low to mid volume	Yes	Not turbid
MW16-06D	Slow recharge	Mid volume	Yes	Slightly turbid
MW16-04	Fast recharge	Mid volume	Yes	Clear
GW15-03	Very slow recharge	Low volume	No	Black organic stained water
GW15-02	Fast recharge	Mid volume	Yes	Slightly turbid
MW16-07	Fast recharge	Mid volume	Yes	Slightly turbid
GW15-01	Slow recharge	Very low volume	No	Turbid
MW16-08S	Dry	None	No	-
MW16-08D	Slow recharge	Very low volume	Yes	Slightly turbid
MW16-09	Slow recharge	Low volume	Yes	Slightly turbid
MW16-10	Dry	None	No	-
MW16-11	Slow recharge	Mid to high volume	Yes	Slightly turbid
MW16-12	Dry	None	No	-
MW16-13	Dry	None	No	-
GW15-BKG-01	Destroyed	-	No	-

Notes: Dry – The well did not have any water at the time of monitoring in August 2016. Very low volume – Wells were considered very low volume if they had less than 0.05 litres of water. Low volume – Wells were considered low volume if they had less than 0.5 litres of water.
Mid volume – Wells were considered mid volume if they had between 0.5 litres and 1.5 litres of water.
Slow recharge – Recharge was considered slow where the lowest setting on a peristaltic pump was greater than the well recharge.
Fast recharge – Recharge was greater than the rate the well was pumped; approximately 150-200 mL/min. Well volume did not have an effect on development or sampling.
"-" = Not Applicable.

4.2 Groundwater Chemistry

Groundwater quality results are presented in Table 1-1 in Attachment 1. Results were screened against CSR Schedule 6 Generic Numerical Water Standards for Protection of Freshwater Aquatic Life, Drinking Water, Irrigation and Livestock Watering.

4.2.1 Comparison of Groundwater Quality in Tailings versus "Native Under Tailings"

Groundwater chemistry results from wells screened in tailings and native substrates are shown in Table 3 and Table 4 below. Results are shown for the metals of concern related to tailings (copper, selenium and vanadium) and other metals with one or more exceedances of applicable standards.

Table 3: Groundwater Metal Concentrations from Wells Installed in Tailings

Parameter	Arsenic	Copper	Iron	Manganese	Molybdenum	Selenium	Vanadium
MW16-02	0.0034	0.0013	3.0	3.8	0.056	0.00013	0.0016
GW15-06	0.0031	<0.0010	13.4	9.3	0.0022	<0.0010	<0.030
GW15-05	0.0020	<0.0010	<0.030	0.10	0.0072	<0.0010	<0.030
GW15-04	0.0012	0.0091	<0.030	0.15	0.0079	<0.0010	<0.030
GW15-03	0.0034	0.0028	2.1	13.2	0.0082	<0.0010	<0.030
MW16-06S	0.00064	0.0046	<0.030	0.056	0.00068	0.00028	0.00079
GW15-01	0.029	0.0012	21.6	26.5	0.0036	<0.0010	<0.030
GW15-02	0.0037	0.0036	0.054	1.5	0.065	<0.0010	<0.030
GW15-02	0.0059	0.0014	1.2	2.9	0.082	0.000073	0.00073
MW16-07	0.0060	0.0034	0.19	0.33	0.11	0.000059	<0.00050
Median	0.0034	0.0021	0.67	2.2	0.0081	<0.0010	<0.030

Notes: All concentrations are in mg/L.

Bolding indicates an exceedance of CSR standards protective of freshwater aquatic life.

Red text indicates an exceedance of CSR standards protective of drinking water.

Underlined indicates an exceedance of CSR standards protective of water used for irrigation.

Yellow highlighting indicates an exceedance of CSR standards protective of water used for livestock watering.

Table 4: Groundwater Metal Concentrations from Wells Installed in Native Soils Underlying Tailings

Wells	Arsenic	Copper	Iron	Manganese	Molybdenum	Selenium	Vanadium
MW16-01D	0.00095	0.021	1.9	12.5	0.0068	0.00025	0.0017
MW16-03D	0.00055	0.0030	0.12	0.77	0.000068	0.00011	0.00092
MW16-05D	0.0014	0.00056	1.6	3.1	0.00183	0.00017	<0.00050
MW16-06D	0.00085	0.0025	<0.030	2.6	0.019	<0.000050	<0.00050
MW16-04	0.00089	<0.00050	0.57	0.39	0.0014	0.000075	<0.00050
MW16-08D	0.0025	0.0048	0.081	0.13	0.0013	0.00083	<0.00050
MW16-09	0.00051	0.0024	0.29	3.8	0.0011	0.000052	0.0011
Median	0.00089	0.0025	0.29	2.6	0.0014	0.00011	<0.00050

Notes: All concentrations are in mg/L.

Bolding indicates an exceedance of CSR standards protective of freshwater aquatic life.

Red text indicates an exceedance of CSR standards protective of drinking water.

Underlined indicates an exceedance of CSR standards protective of water used for irrigation.

Yellow highlighting indicates an exceedance of CSR standards protective of water used for livestock watering.

Concentrations of copper in groundwater in wells installed in tailings ranged from <0.0010 to 0.0091 milligrams per litre (mg/L) with a median value of 0.0021 mg/L. This was similar to groundwater from wells installed in native soils underlying tailing which had copper concentrations ranging from <0.00050 to 0.0048 mg/L with a median value oHazf 0.0025 mg/l, and similar to the concentrations measured in two background wells of 0.00084 to 0.0024 mg/l (see Table 9).

Vanadium concentrations in groundwater from wells installed in tailings and wells installed in native soils underlying tailings had a similar range of concentrations, <0.00050 to 0.0016 mg/L and <0.00050 to 0.0017 mg/L, respectively. The median concentration of vanadium in both screened stratigraphy's was less than the method detection limit (MDL), although the detection limit was raised for samples collected in 2015.

Concentrations of selenium in wells installed in tailings and wells installed in native soils underlying tailings had a similar range of concentrations, <0.0010 to 0.00028 mg/L and <0.000050 to 0.00083 mg/L, respectively. The median concentration of selenium in wells screened in tailings was less than the MDL (<0.0010 mg/L), while the median concentration of selenium in wells screened in native soils underlying tailings was 0.0011 mg/L.

Based on a comparison of median concentrations, concentrations of arsenic, iron, and molybdenum were elevated in wells screened in tailings compared to wells screened in native soils underlying tailings (Table 3 and Table 4). Concentrations of manganese in groundwater was similar between wells screened in tailings and wells screened in native soils underlying tailings (Table 3 and Table 4).

4.2.2 Comparing 2015 to 2016 Results

Groundwater chemistry results from samples collected in 2015 and 2016 are shown in Table 5 and Table 6 below. Results are shown for the metals of concern related to tailings (copper, selenium and vanadium) and other metals with one or more exceedances of applicable standards.

Table 5: Metal Results from the 2016 Groundwater Investigation

Wells	Arsenic	Copper	Iron	Manganese	Molybdenum	Selenium	Vanadium
MW16-01D	0.00095	0.021	1.9	12.5	0.0068	0.00025	0.0017
MW16-02	0.0034	0.0013	3.0	3.8	0.056	0.00013	0.0016
MW16-03D	0.00055	0.0030	0.12	0.77	0.000068	0.00011	0.00092
MW16-05D	0.0014	0.00056	1.6	3.1	0.0018	0.00017	<0.00050
MW16-06S	0.00064	0.0046	<0.030	0.056	0.00068	0.00028	0.00079
MW16-06D	0.00085	0.0025	<0.030	2.6	0.019	<0.000050	<0.00050
MW16-04	0.00089	<0.00050	0.57	0.39	0.0014	0.000075	<0.00050
GW15-02	0.0059	0.0014	1.2	2.9	0.082	0.000073	0.00073
MW16-07	0.0060	0.0034	0.19	0.33	0.11	0.000059	<0.00050
MW16-08D	0.0025	0.0048	0.081	0.13	0.0013	0.00083	<0.00050
MW16-09D	0.00051	0.0024	0.29	3.8	0.0011	0.000052	0.0011
Median	0.00095	0.0025	0.29	2.6	0.0018	0.00011	0.00073

Notes: All concentrations are in mg/L.

Bolding indicates an exceedance of CSR standards protective of freshwater aquatic life.

Red text indicates an exceedance of CSR standards protective of drinking water.

Underlined indicates an exceedance of CSR standards protective of water used for irrigation.

Yellow highlighting indicates an exceedance of CSR standards protective of water used for livestock watering.

Table 6: Metal Results from the 2015 Groundwater Investigation

Wells	Arsenic	Copper	Iron	Manganese	Molybdenum	Selenium	Vanadium
GW15-06	0.0031	<0.0010	13.4	9.3	0.0022	<0.0010	<0.030
Seep15-01	0.0016	0.029	0.51	4.3	0.0074	<0.0010	<0.030
GW15-05	0.0020	<0.0010	<0.030	0.10	0.0072	<0.0010	<0.030
GW15-04	0.0012	0.0091	<0.030	0.15	0.0079	<0.0010	<0.030
GW15-03	0.0034	0.0028	2.1	13.2	0.0082	<0.0010	<0.030
GW15-01	0.029	0.0012	21.6	26.5	0.0036	<0.0010	<0.030
GW15-02	0.0037	0.0036	0.054	1.5	0.065	<0.0010	<0.030
Median	0.0033	0.0020	1.1	5.4	0.0076	<0.0010	<0.030

Notes: All concentrations are in mg/L.

Bolding indicates an exceedance of CSR standards protective of freshwater aquatic life.

Red text indicates an exceedance of CSR standards protective of drinking water.

Underlined indicates an exceedance of CSR standards protective of water used for irrigation.

Yellow highlighting indicates an exceedance of CSR standards protective of water used for livestock watering.

Concentrations of copper in groundwater collected in 2015 ranged from <0.0010 to 0.0091 mg/L with a median concentration of 0.0020 mg/L. Groundwater collected in 2016 had copper concentrations ranging from <0.00050 to 0.021 mg/L with a median value of 0.0025 mg/L.

Vanadium was detected in 6 of 11 samples collected in 2016, ranging from <0.00050 to 0.0017 mg/L, while all samples collected in 2015 had concentrations below the MDL (<0.030 mg/L). It was not possible to make a comparison between the concentrations of vanadium in groundwater collected in 2015 and 2016 as all detected concentrations in 2016 were below the MDL for the 2015 samples.

Selenium was detected in 10 of 11 samples collected in 2016, ranging from <0.00050 to 0.00083 mg/L, while all samples collected in 2015 had concentrations below the MDL (<0.0010 mg/L). It was not possible to make a comparison between the concentrations of vanadium in groundwater collected in 2015 and 2016 as all detected concentrations in 2016 were below the MDL for the 2015 samples.

The median concentrations of arsenic, iron, manganese and molybdenum were lower in samples collected in 2016 than samples collected in 2015 (Table 5 and Table 6). However, only GW15-02 was sampled during both events, and the concentrations at this location in 2016 were within two times of the concentrations measured in 2015 for arsenic, iron, manganese and molybdenum. Although this difference is small, it may be a result of a change to a reducing condition at this location as indicated by the change in ORP readings from 35.1 to -69.9 mV (Table 1-1).

Concentrations of copper collected in GW15-02 in 2016 (0.0014 mg/L) was somewhat lower that that measured in 2015 (0.0036 mg/L). Concentrations of selenium and vanadium could not be compared between the two years as the 2015 data was below the MDL. The detected levels of selenium and vanadium in 2016 (0.000073 and 0.00073 mg/L, respectively) was well below the MDL of the 2015 data (<0.0010 mg/L and <0.030 mg/L, respectively).

4.2.3 Summary of Exceedances

4.2.3.1 2016 Monitoring Results

Table 7 below summarizes the 2016 groundwater chemistry results shown for the metals of concern related to tailings (copper, selenium and vanadium) and other metals with one or more exceedances of applicable standards. There were no exceedances of standards for copper, selenium and vanadium.

Table 7: Summary of Exceedances in Groundwater - 2016

Metal	N	Min	Max	Median	AW	DW	IW	LW	Exceedances	#of Exceedances
Arsenic	11	0.0005	0.006	0.00095	0.05	*0.01*	0.1	0.025	None	0
Copper	11	0.0005	0.021	0.0025	0.08–0.09	*1*	0.2	0.3	None	0
Iron	11	0.03	3.04	0.29	-	*6.5*	5	-	None	0
Manganese	11	0.056	12.5	2.6	-	*0.55*	0.2	-	*DW*, IW	*7*, 9
Molybdenum	11	0.00007	0.106	0.0018	10	*0.25*	0.01-0.03	0.05	IW, LW	4, 3
Selenium	11	0.00005	0.0008	0.00011	0.01	*0.01*	0.02	0.05	None	0
Vanadium	11	0.0005	0.0017	0.00073	-	-	0.1	0.1	None	0

Notes: All values are in mg/L unless otherwise noted.

AW = CSR Schedule 6 Standard protective of Freshwater Aquatic life (**bold font**).

DW = CSR Schedule 6 Standard protective of Drinking Water (*italic font*); IW = CSR Schedule 6 Standard protective of Irrigation Water (underlined font); LW = CSR Schedule 6 Standard protective of Livestock Water (thick-underlined font); ' – ' = No standard.

4.2.3.2 2015 Monitoring Results

Table 8 below summarizes the 2015 groundwater chemistry results shown for the metals of concern related to tailings (copper, selenium and vanadium) and other metals with one or more exceedances of applicable standards. There were no exceedances of standards for copper, selenium and vanadium. Other metal concentrations were below applicable standards, except for arsenic, iron, manganese and molybdenum in some samples. Maximum concentrations of arsenic, iron and manganese were observed in GW15-01 which had an ORP of -40.5 mV. It is well understood that reducing environments increase the solubility of naturally occurring metals and therefore the higher concentrations of these metals is likely related to the reducing conditions found in this sample.

Table 8: Summary of Exceedances in Groundwater – 2015

Metal	N	Min	Max	Median	AW	DW	IW	LW	Exceedances	#of Exceedances
Arsenic	6	0.0012	0.029	0.0033	0.05	*0.01*	0.1	0.025	DW, LW	1
Copper	6	0.0010	0.0091	0.002	0.08–0.09	*1*	0.2	0.3	None	0
Iron	6	0.03	21.6	1.1	-	*6.5*	5	-	DW, IW	2
Manganese	6	0.101	26.5	5.4	-	*0.55*	0.2	-	DW, IW	4
Molybdenum	6	0.0022	0.065	0.0076	10	*0.25*	0.01-0.03	0.05	IW, LW	1
Selenium	6	0.0010	0.0010	<0.0010	0.01	*0.01*	0.02	0.05	None	0
Vanadium	6	0.030	0.030	<0.030	-	-	0.1	0.1	None	0

Notes: All values are in mg/L unless otherwise noted.

AW = CSR Schedule 6 Standard protective of Freshwater Aquatic life.

DW = CSR Schedule 6 Standard protective of Drinking Water; IW = CSR Schedule 6 Standard protective of Irrigation Water; LW = CSR Schedule 6 Standard protective of Livestock Water; ' – ' = No standard.

4.2.4 Background Wells

Background groundwater chemistry results for metals with a standard are shown Table 9. As shown, the background concentrations of metals were below applicable standards at both locations. GW-BKG15-01 was sampled in 2015 and MW16-11 in 2016.

Three new background monitoring wells were installed in accordance with the scope outlined in *Work Plan for Monitoring in Support of Risk Assessment at the Mount Polley Mine, Mount Polley Mine, BC* (Golder 2016). Because of access problems, the installation was made by hand rather than using the pick-up mounted auger rig. Two attempts were made when installing MW16-12, both encountering rejection before reaching the reaching an apparent wet zone. It was decided to install a monitoring well with the goal of sampling during the wet season. Similarly, rejection was encountered at MW16-13 before reaching the water table. Both of these background wells (MW16-12 and MW16-13) were dry. The local background groundwater chemistry was collected for comparison of metals that do not exceed the standards to local background conditions. This comparison was of interest for the risk assessment.

Concentrations of copper background wells ranged from 0.00084 mg/L to 0.0024 mg/L (Table 9). The median copper concentration in wells installed in tailings and native soils underlying tailings was 0.0021 mg/L and 0.0025 mg/L, respectively. The range of copper concentrations in wells installed in tailings and native soils underlying tailings was <0.0010 to 0.0091 mg/L and <0.00050 to 0.0048 mg/L, respectively.

Vanadium concentrations in background wells were both below the MDL, although the detection limit for 2015 was considerably higher (Table 9). The median concentration of vanadium in both wells screened in tailings and in native underlying tailings was less than MDL. The range of vanadium concentrations in wells screened in tailings and in native underlying tailings was 0.00050 to 0.0016 mg/L and <0.00050 to 0.0017 mg/L, respectively.

Concentrations of selenium in background wells ranged from <0.0010 to 0.0022 mg/L. In wells installed in tailings and in native soils underlying tailings the selenium concentrations ranged from <0.0010 to 0.00028 mg/L and <0.000050 to 0.00083 mg/L, respectively. The median concentration of selenium in wells screened in tailings was less than the MDL (<0.0010 mg/L), while the median concentration of selenium in wells screened in native soils underlying tailings was 0.0011 mg/L.

Table 9: Groundwater Metal Concentrations in Background Wells

Metal	GW-BKG15-01	MW16-11	Median Tailings	Median Native Under Tailings
Aluminum	0.013	0.020	0.033	0.034
Antimony	<0.00050	0.00030	<0.00050	<0.00010
Arsenic	<0.0010	0.00071	0.0034	0.00089
Barium	0.028	0.064	0.089	0.12
Beryllium	<0.0050	<0.00010	<0.0050	<0.00010
Boron	<0.10	0.056	<0.10	0.036
Cadmium	<0.000050	0.000048	<0.000050	7.3E-05
Chromium	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	<0.00050	0.00040	0.0021	0.0033
Copper	0.0024	0.00084	0.0021	0.0025
Iron	<0.030	0.036	0.67	0.29
Lead	<0.0010	<0.000050	<0.0010	<0.000050
Lithium	<0.050	0.014	<0.050	0.002

Metal	GW-BKG15-01	MW16-11	Median Tailings	Median Native Under Tailings
Magnesium	6.4	25.5	30.6	32.3
Manganese	0.038	0.098	2.2	2.6
Mercury	<0.00020	-	<0.00020	-
Molybdenum	<0.0010	0.0016	0.0081	0.0014
Nickel	<0.0050	0.0021	<0.0050	0.0056
Selenium	<0.0010	0.0022	<0.0010	0.00011
Silver	<0.000050	<0.000010	<0.000050	<0.000010
Sodium	6.4	12.4	35.9	19.5
Thallium	<0.000010	0.000025	<0.000050	0.000018
Titanium	<0.050	<0.010	<0.050	<0.010
Uranium	0.00053	0.0039	0.0026	0.0013
Vanadium	<0.030	<0.00050	<0.030	<0.00050
Zinc	<0.0050	0.031	<0.0050	<0.0030

Note: All concentrations are in mg/L.

4.3 2016 Groundwater Monitoring Event QA/QC Results

Two field duplicates were collected from MW16-06S and MW16-04 and analyzed for physical tests, nutrients and metals, for a total of 16.6 % field duplicate analysis; meeting the data quality objective (DQO) of 10%. The results of the field duplicate analysis are presented in Table 1-2 in Attachment 1.

RPDs and DFs were within acceptable limits as set out in Section 3.5, except for the following:

- Total suspended solids at 41.7% RPD in MW16-04 (119 mg/L in the primary sample and 77.9 mg/L in the duplicate).

Holding times were met for all parameters, except nitrate, nitrite and phosphorous parameters, which exceeded the recommended holding time of three days by three to eight days. Due to the 15-minute hold time for ORP and pH, these parameters were measured in the field, and data reported in Table 5 represent field measurements.

Although one DQO outlier exists, the RPD of 41.7% is lower than the DQO of 50% for a single sample, as such the data from the 2016 groundwater sampling event are considered reliable for interpretation purposes.

5.0 DISCUSSION OF RESULTS

In 2016 Golder undertook a groundwater investigation of the groundwater chemistry conditions along Hazeltine Channel. This included the installation of additional monitoring wells, adding nested well pairs to select existing wells locations and in new locations, sampling 2015 wells that contained sufficient groundwater for sampling, in order to provide a more complete picture of the conditions in the Hazeltine Channel floodplain. Chemistry data from both 2015 and 2016 was screened against CSR Schedule 6 standards for aquatic life, drinking water, irrigation water, and livestock water.

Similar to the 2015 groundwater investigation conducted by Golder (Golder 2015) there were no exceedances in groundwater of CSR Standards protective of aquatic life (Tables 7 and 8).

As part of the 2016 investigation all groundwater data was additionally screened against CSR drinking water, irrigation and livestock water standards. An agricultural land reserve was identified adjacent to and on a small portion of the Site. As such groundwater in all wells on Site were conservatively screened against irrigation and livestock water standards. Concentrations of manganese and molybdenum were found to exceed at least one of these standards in both 2015 and 2016.There was one arsenic and two iron exceedances of these standards in 2015.

Groundwater chemistry results from the 2016 investigation were similar to those in 2015 with a few exceptions; most notably iron which was found to be, on average, almost an order of magnitude higher in 2015. To a lesser degree arsenic, manganese and molybdenum were higher in 2015 groundwater samples than 2016 groundwater samples. It should be noted that, with the exception of samples from GW15-02, samples were taken from different wells / mini-piezometers.

Comparing results from GW15-02 in 2015 and 2016 it was found that copper concentrations were similar. Arsenic, iron and manganese were higher in 2016 but this was likely due to the change from oxidising conditions in 2015 (ORP of 35.1 mV) to reducing conditions in 2016 (ORP of -69.9 mV).

Groundwater chemistry results for copper, selenium and vanadium were similar between wells screened in tailings and wells screened in native soils underlying tailings. Of the metals of interest arsenic, iron, and molybdenum were elevated in wells screened in tailings as compared to wells screened in native soils underlying tailings.

During the 2015 investigation groundwater seepage (Seep15-01) was collected from pooled water in a temporary ditch nearby to GW16-06. Although not a “true” groundwater sample, the sample was collected to provide a more complete picture of water chemistry within the area impacted by tailings. This sample, along with select groundwater wells, as analyzed for nutrients to help with risk assessment and remedial planning. Seep15-01 was screened against CSR Schedule 6 standards. Nitrite and manganese were found to exceed at least one CSR standard.

6.0 CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this memorandum.

We trust that this technical memo provides sufficient information for your present needs. If you have any questions, please do not hesitate to contact the undersigned at 604 787-6707.

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Attachments:
Figure 1: Key Plan Groundwater
Figures 2 to 7: Locations of Monitoring Wells Installed in Hazeltine Channel Floodplain in August 2015 and August 2016
Attachment 1: Tables 1-1 and 1-2 – Chemistry and QA/QC
Attachment 2 Borehole Logs
Attachment 3: Well Development Forms
Attachment 4: Sampling Forms
Attachment 5: Photographs
Attachment 6: Laboratory Reports and Chain of Custody

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STUDY LIMITATIONS

This report was prepared for the exclusive use of MPMC. The report is based on data and information collected during investigations conducted by Golder Associates Ltd. personnel. It is based solely on the conditions of the subject property at the time of the site investigation conducted in August and September, 2016, as described in this technical memorandum. The data presented in this memorandum represent groundwater conditions encountered at the sampling locations tested during this time period. Groundwater conditions may vary with location, depth, time, sampling methodology, analytical techniques and other factors. Golder Associates Ltd. makes no warranty, expressed or implied, and assumes no liability with respect to the use of the information contained in this report at the subject site, or any other site, for other than its intended purpose.

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If new information is discovered during future work Golder should be requested to re-evaluate the conclusions of this report and to provide amendments, as required, prior to any reliance upon the information presented herein. The validity of this report is affected by any change of site conditions, purpose, development plans or significant delay from the date of this report in initiating or completing the project.

LEGEND

- BACKGROUND MONITORING WELL (AUG. / SEPT. 2016)
- GROUNDWATER MONITORING WELL (AUG. / SEPT. 2016)
- GROUNDWATER MONITORING WELL (AUG. 2015)
- ROAD
- WATERCOURSE
- AGRICULTURAL LAND RESERVE
- FIGURE EXTENT

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REFERENCES

1. PROJECT IMAGERY OBTAINED FROM MOUNT POLLEY MINE CORPORATION (JULY, 2016)
2. ROAD AND WATERCOURSE DATA CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE – CANADA
3. IMAGERY COPYRIGHT © 2010 ESRI AND ITS LICENSORS. SOURCE: DIGITAL GLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED.
4. DATUM: NAD 1983 UTM ZONE 10N

CLIENT
MOUNT POLLEY MINING CORPORATION

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION

TITLE
KEY PLAN

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-04
DESIGNED	EZG
PREPARED	SB
REVIEWED	AB
APPROVED	TAM

PROJECT NO.	PHASE/DOC	REV.	FIGURE
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- GROUNDWATER MONITORING WELL (AUG. / SEPT. 2016)
- GROUNDWATER MONITORING WELL (AUG. 2015)
- POST BREACH AFFECTED AREA EXTENT
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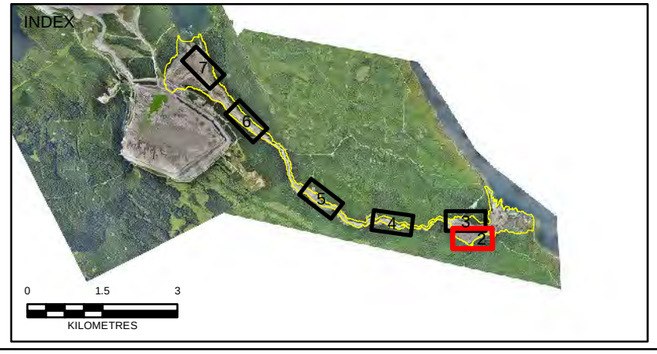
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- DITCH ROAD
- WATERBODY



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REFERENCES
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2. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
3. IMAGERY OBTAINED FROM MPMC, JUNE 2016
4. DATUM: NAD83 PROJECTION: UTM10

CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-04
DESIGNED	EZG
PREPARED	SB
REVIEWED	AB
APPROVED	TAM

TITLE
LOCATIONS OF MONITORING WELLS INSTALLED IN HAZELTINE CHANNEL FLOODPLAIN IN AUGUST 2015 AND AUGUST 2016

PROJECT NO.	PHASE/DOC	REV.	FIGURE
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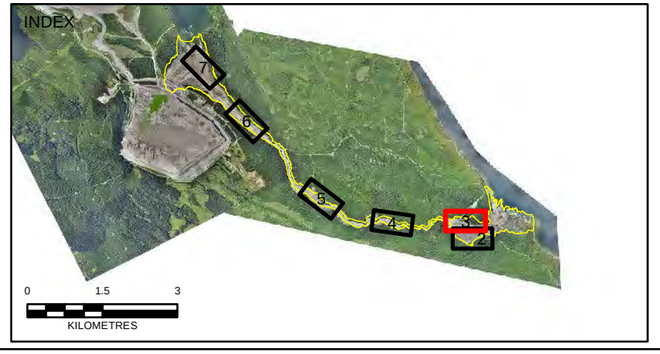
LEGEND

- BACKGROUND MONITORING WELL (AUG. / SEPT. 2016)
- GROUNDWATER MONITORING WELL (AUG. / SEPT. 2016)
- GROUNDWATER MONITORING WELL (AUG. 2015)
- POST BREACH AFFECTED AREA EXTENT
- NEW HAZELTINE CHANNEL (APPROXIMATE)
- DITCH ROAD
- WATERBODY



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3. IMAGERY OBTAINED FROM MPMC, JUNE 2016
4. DATUM: NAD83 PROJECTION: UTM10

CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-04
DESIGNED	EZG
PREPARED	SB
REVIEWED	AB
APPROVED	TAM

TITLE
LOCATIONS OF MONITORING WELLS INSTALLED IN HAZELTINE CHANNEL FLOODPLAIN IN AUGUST 2015 AND AUGUST 2016

PROJECT NO.	PHASE/DOC	REV.	FIGURE
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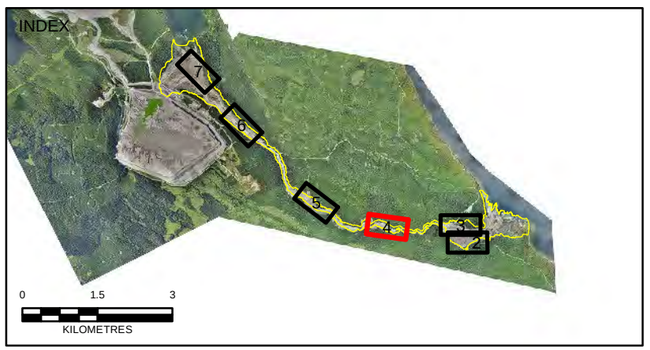
LEGEND

- BACKGROUND MONITORING WELL (AUG. / SEPT. 2016)
- GROUNDWATER MONITORING WELL (AUG. / SEPT. 2016)
- GROUNDWATER MONITORING WELL (AUG. 2015)
- POST BREACH AFFECTED AREA EXTENT
- NEW HAZELTINE CHANNEL (APPROXIMATE)
- WATERBODY



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1:2,000 METRES

REFERENCES
1. WATERBODY, WATERCOURSE AND ROAD DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
2. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
3. IMAGERY OBTAINED FROM MPMC, JUNE 2016
4. DATUM: NAD83 PROJECTION: UTM10

CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-04
DESIGNED	EZG
PREPARED	SB
REVIEWED	AB
APPROVED	TAM

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION

TITLE
LOCATIONS OF MONITORING WELLS INSTALLED IN HAZELTINE CHANNEL FLOODPLAIN IN AUGUST 2015 AND AUGUST 2016

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22200 / 22242	0	**4**

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- NEW HAZELTINE CHANNEL (APPROXIMATE)
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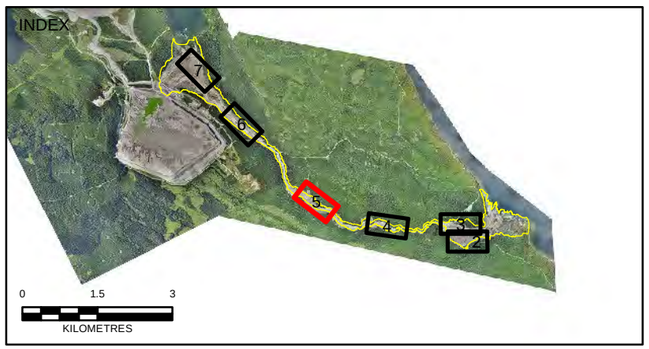

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LOCATIONS OF MONITORING WELLS INSTALLED IN HAZELTINE CHANNEL FLOODPLAIN IN AUGUST 2015 AND AUGUST 2016

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22200 / 22242	0	**5**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

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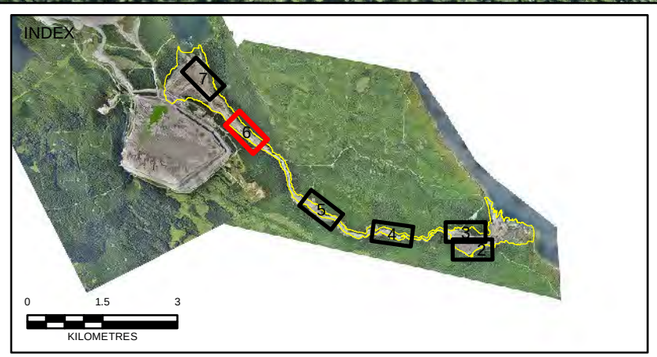
- POST BREACH AFFECTED AREA EXTENT
- NEW HAZELTINE CHANNEL (APPROXIMATE)
- GAVIN LAKE ROAD
- WATERBODY



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IMPERIAL METALS

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION

CONSULTANT
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LOCATIONS OF MONITORING WELLS INSTALLED IN HAZELTINE CHANNEL FLOODPLAIN IN AUGUST 2015 AND AUGUST 2016

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22200 / 22242	0	**6**

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0 25mm

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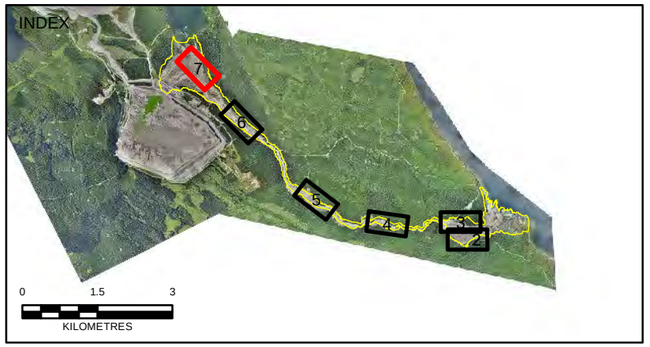

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IMPERIAL METALS

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-04
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TITLE
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PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22200 / 22242	0	**7**

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ATTACHMENT 1
Tables 1-1 and 1-2 – Chemistry and QA/QC

Attachment 1:
Table 1-1 - Results of Groundwater Analysis
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Parameter	Units	BC CSR Schedule 6 Groundwater Standards[1]								G0154-02	G0153-04	G0153-03	471689-07	471689-08	G0154-01	471689-05	471689-06	471689-03	471689-04	G0153-08	G0153-09	G0153-10	G0153-11	G0153-12	471689-01	471689-02	G0153-01	G0153-06	G0153-05	G0153-02	471689-09	G0153-07
										MW16-01D	MW16-02	MW16-03D	GW15-06	Seep15-01	MW16-05D	GW15-05	GW15-04	GW15-03	GW15-03	MW16-06S	MW16-06S	MW16-06D	MW16-04	MW16-04	GW15-01	GW15-02	GW15-02	MW16-07	MW16-08D	MW16-09	GW-BKG15-01	MW16-11
										1-Sep-2016	31-Aug-2016	31-Aug-2016	4-Aug-15	4-Aug-15	30-Aug-2016	3-Aug-15	4-Aug-15	3-Aug-15	3-Aug-15	1-Sep-2016	1-Sep-2016	1-Sep-2016	1-Sep-2016	1-Sep-2016	3-Aug-15	3-Aug-15	31-Aug-2016	1-Sep-2016	1-Sep-2016	31-Aug-2016	4-Aug-15	1-Sep-2016
		Freshwater Aquatic Life	Notes	Drinking Water	Notes	Irrigation	Notes	Livestock	Notes	-	-	-	-	-	-	-	-	FDA	FD	FDA	FD	-	FDA	FD	-	-	-	-	-	-	-	-
										L1824847-14	L1824847-4	L1824847-3	L1652569-7	L1652569-8	L1824847-13	L1652569-5	L1652569-6	L1652569-3	L1652569-4	L1824847-8	L1824847-9	L1824847-10	L1824847-11	L1824847-12	L1652569-1	L1652569-2	L1824847-1	L1824847-6	L1824847-5	L1824847-2	L1652569-9	L1824847-7
Physical Parameters																																
Conductivity (field)	µs/cm	-				-		-		2047	1533	566	1236	1151	1169	244	520	1135	1135	893	893	689	661	661	1323	518	1214	659	1046	636	355	595
Acidity (as CaCO3)	mg/L	-				-		-		-	-	-	12.0	4.8	-	<1.0	1.2	23.7	31.3	-	-	-	-	-	49.4	1.6	-	-	-	-	1.4	-
Hardness (Dissolved)	mg/L	-				-		-		1120	705	253	661	639	519	195	302	615	610	471	453	400	330	328	890	384	442	260	527	305	207	309
Dissolved Oxygen (Field)	mg/L	-				-		-		3.5	2.50	2.31	5.1	4.0	3.2	0.30	0.23	0.60	0.60	4.1	4.1	12.6	0.2	0.2	1.1	6.4	5.4	1.10	3.77	-	3.3	3.4
Total Suspended Solids (lab)	mg/L	-				-		-		-	21.2	137	137	105	-	95.5	142	1900	1150	23.4	18.1	16.5	119	77.9	399	226	205	174	-	25.9	364	55.0
Total Dissolved Solids (field)	mg/L	-				-		-		1330	998	368	800	798	760	150	338	741	741	580	580	545	429	429	852	319	789	130	3730	413	231	387
Water Temp (Field)	°C	-				-		-		12.1	15.9	13	17.0	28.6	14	6.4	9.8	14.1	14.1	15.9	15.9	16	11.8	11.8	19.3	17.6	15.5	10.82	14.5	18	10.3	10.4
ORP (field)	mV	-				-		-		157	-60	56	-48.2	44.4	-621.0	-4.8	116	-20	-20	28	28	-89	-37.9	-37.9	-40.5	35.1	-69.9	10	3.3	41.3	117	31.4
pH (field)	pH Unit	-				-		-		7.5	7.6	7.0	6.8	7.7	-	8.0	7.6	6.8	6.8	7.1	7.1	7.5	7.8	7.8	6.7	7.7	7.87	7.7	8.6	7.0	**7.1**	7.9
pH (lab)	pH Unit	-				-		-		7.7	7.1	7.1	7.1	8.1	8.1	8.1	8.1	7.1	7.1	8.1	7.7	8.1	7.1	8.1	7.0	7.7	7.0	8.1	8.1	7.7	7.7	7.1
Nutrients																																
Ammonia	mg/L (as N)	**3.7-18.4**				-		-		-	0.218	<0.0050	0.0077	0.0223	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.056	0.046	0.0997	0.0680	-	0.0499	<0.0050	0.0315
Total Nitrogen	mg/L (as N)	**400**		10		-		100	N	-	0.544	0.636	-	-	-	-	-	-	-	3.59	3.57	0.063	0.227	0.224	1.2	0.50	0.343	0.253	-	0.157	0.58	0.163
Nitrate (as N)	mg/L	**400**		10		-		100		-	<0.050	<0.025	0.20	0.73	-	0.04	<0.0050	0.040	0.063	3.57	3.64	<0.025	<0.0050	<0.0050	<0.025	0.053	<0.025	<0.025	-	0.0079	0.12	0.0242
Nitrite (as N)	mg/L	**0.2 - 2**	Cl	3.2		-		10		-	<0.010	<0.0050	0.56	**0.87**	-	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0010	<0.0010	0.0013
Dissolved Phosphorus	mg/L	-				-		-		-	<0.020	0.0091	<0.30	<0.30	-	<0.30	<0.30	<0.30	<0.30	0.0038	0.0040	<0.020	<0.0020	<0.0020	<0.30	<0.30	<0.0020	0.0067	-	<0.020	<0.30	0.0075
Total Phosphorus	mg/L	-				-		-		-	0.0220	0.167	0.15	0.194	-	0.13	0.255	2.45	1.70	0.0268	0.0261	0.0128	0.0498	0.0649	0.38	0.29	0.211	0.145	-	0.0556	0.0501	0.0346
Orthophosphate (Dissolved)	mg/L	-				-		-		-	<0.0010	0.0031	<0.0010	<0.0010	-	0.0052	0.0024	<0.0010	<0.0010	0.0025	0.0026	<0.0010	0.0011	<0.0010	<0.0010	0.0021	<0.0010	<0.0010	-	0.0012	0.0018	0.0053
Dissolved Organic Carbon	mg/L	-				-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	92.5	11.4	-	-	-	-	10	-
Anions																																
Bromide	mg/L	-				-		-		-	<0.50	<0.25	<0.25	<0.25	-	<0.050	<0.050	<0.25	<0.25	<0.25	<0.25	<0.25	<0.050	<0.050	<0.25	<0.25	<0.25	<0.25	-	<0.050	<0.050	<0.050
Chloride	mg/L	**1500**		250	AO	100		600		-	11.9	6.1	9.8	7.7	-	1.1	0.95	5.0	5.5	5.8	5.9	3.7	3.11	3.10	4.8	10.3	8.4	11.3	-	1.09	1.67	0.74
Fluoride	mg/L	**3**[a]	H	1.5		1		1	L	-	0.44	<0.10	<0.10	0.13	-	0.16	0.152	0.14	0.15	<0.10	<0.10	0.27	0.040	0.039	0.10	0.36	0.39	0.52	-	0.043	0.054	0.228
Sulfate	mg/L	**1000**		500	AO	-		1000		-	542	13.7	91.1	54.1	-	50.2	63.9	64.3	71.2	241	246	130	63.9	62.9	3.2	222	289	233	-	64.1	18.7	35.9
Dissolved Metals																																
Aluminum	mg/L	-		9.5		5		5		0.0499	0.0068	0.0339	0.048	0.036	0.0163	<0.010	<0.010	0.075	0.076	<0.0030	<0.0030	0.0057	0.0058	0.0059	0.067	0.031	0.0346	0.0562	0.0738	0.179	0.013	0.0200
Antimony	mg/L	**0.2**		0.006		-		-		<0.00020	<0.00010	<0.00010	<0.00050	<0.00050	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	0.00047	<0.00010	<0.00010	<0.00050	<0.00050	<0.00010	<0.00010	0.00014	<0.00010	<0.00050	0.00030
Arsenic	mg/L	**0.05**		0.01		0.1		0.025		0.00095	0.00336	0.00055	0.0031	0.0016	0.00143	0.0020	0.0012	0.0034	0.0030	0.00064	0.00046	0.00085	0.00089	0.00087	0.029	0.0037	0.00594	0.00598	0.00247	0.00051	<0.0010	0.00071
Barium	mg/L	**10**		1		-		-		0.159	0.0619	0.0383	0.17	0.068	0.154	0.029	0.043	0.10	0.097	0.158	0.129	0.117	0.0335	0.0334	0.20	0.078	0.107	0.0382	0.117	0.175	0.028	0.0638
Beryllium	mg/L	**0.053**				0.1		0.1		<0.00020	<0.00010	<0.00010	<0.0050	<0.0050	<0.00010	<0.0050	<0.0050	<0.0050	<0.0050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0050	<0.0050	<0.00010	<0.00010	<0.00010	<0.00010	<0.0050	<0.00010
Bismuth	mg/L	-				-		-		<0.00010	<0.0000050	<0.0000050	<0.20	<0.20	<0.0000050	<0.20	<0.20	<0.20	<0.20	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.20	<0.20	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.20	<0.0000050
Boron	mg/L	**50**		5		0.5-6	Crop	5		0.070	0.169	<0.010	<0.10	<0.10	0.047	<0.10	<0.10	<0.10	<0.10	0.023	0.015	0.027	0.024	0.025	<0.10	0.22	0.255	0.241	0.067	0.036	<0.10	0.056
Cadmium	mg/L	**0.00060**	H	0.005		0.005		0.08		0.000480	0.0000185	0.000133	<0.0000050	<0.0000050	0.0000099	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000825	0.0000845	0.0000732	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000100	0.0000092	0.0000434	0.000211	<0.0000050	0.0000478
Calcium	mg/L	-				-		1000		360	224	78.9	201	183	151	48.6	90.5	184	183	133	135	107	107	107	282	114	132	79.4	142	94.0	72.2	81.7
Chromium	mg/L	**0.010 (IV), 0.090 (III)**	V	0.05		0.008 (IV), 0.005 (III)	V	0.05		0.00127	<0.00050	<0.00050	0.0017	0.0011	<0.00050	<0.00050	<0.00050	0.00059	0.00059	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	<0.00050	<0.00050	0.00057	<0.00050	<0.00050
Cobalt	mg/L	**0.04**				0.05		1		0.0222	0.00182	0.00422	0.0050	0.0034	0.00232	<0.00050	<0.00050	0.0067	0.0065	0.00010	<0.00010	0.00454	0.00014	0.00015	0.014	0.0045	0.00232	0.00038	0.00031	0.00329	<0.00050	0.00040
Copper	mg/L	**0.08-0.09**	H	1	AO	0.2		0.3		0.0212	0.00127	0.00299	<0.0010	0.029	0.00056	<0.0010	0.0091	0.0028	0.0029	0.00459	0.00493	0.00245	<0.00050	<0.00050	0.0012	0.0036	0.00143	0.00340	0.00484	0.00239	0.0024	0.00084
Iron	mg/L	-		6.5	ST8	5	St8	-		1.89	3.04	0.119	13.4	0.51	1.56	<0.030	<0.030	2.1	2.1	<0.030	<0.030	<0.030	0.572	0.571	21.5	0.054	1.15	0.193	0.081	0.293	<0.030	0.036
Lead	mg/L	**0.06-0.16**	H	0.01		0.2		0.1		<0.00010	<0.000050	<0.000050	<0.0010	<0.0010	<0.000050	<0.0010	<0.0010	<0.0010	<0.0010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.0010	<0.0010	<0.000051	<0.000050	0.000078	0.000148	<0.0010	<0.000050
Lithium	mg/L	-				2.5		5		<0.0020	0.0054	0.0041	<0.050	<0.050	0.0012	<0.050	<0.050	<0.050	<0.050	0.0090	0.0109	0.0089	<0.0010	<0.0010	<0.050	<0.050	0.0018	0.0051	0.0086	0.0014	<0.050	0.0142
Magnesium	mg/L	-		100	AO	-		-		54.2	35.6	13.6	38.5	44	34.8	17.8	18.5	37.6	37.1	33.9	28.5	32.3	15.5	15.2	45.3	24.0	27.3	15.1	41.6	17.1	6.4	25.5
Manganese	mg/L	-		0.55	ST8	0.2	St8	-		12.5	3.83	0.767	9.3	4.3	3.09	0.10	0.15	13.2	13.0	0.0562	0.0529	2.61	0.390	0.387	26.5	1.5	2.93	0.334	0.134	3.75	0.038	0.0979
Mercury	mg/L	**0.001**		0.001		0.001		0.002		-	-	-	<0.00020	<0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	-	-	-	-	-	<0.00020	<0.00020	-	-	-	-	<0.00020	-
Molybdenum	mg/L	**10**		0.25		0.01-0.03	C	0.05		0.00681	0.0561	0.000068	0.0022	0.0074	0.00183	0.0072	0.0079	0.0082	0.0092	0.000675	0.000733	0.0185	0.00143	0.00152	0.0036	0.065	0.0822	0.106	0.00133	0.00108	<0.0010	0.00163
Nickel	mg/L	**1.5**	H			0.2		1		0.0086	0.00143	0.00954	<0.0050	<0.0050	0.00228	<0.0050	<0.0050	0.0061	0.0063	0.00096	0.00090	0.00564	<0.00050	<0.00050	0.013	0.011	0.00326	0.00086	0.00331	0.00818	<0.0050	0.00213
Potassium	mg/L	-				-		-		5.36	6.53	0.292	3.5	10	2.84	<2.0	<2.0	5.5	5.5	1.84	1.59	2.88	1.40	1.39	12.7	8.1	7.06	6.77	2.91	1.45	<2.0	3.09
Selenium	mg/L	**0.01**		0.01		0.02	CA	0.05		0.00025	0.000125	0.000110	<0.0010	<0.0010	0.000174	<0.0010	<0.0010	<0.0010	<0.0010	0.000280	0.000273	<0.000050	0.000075	0.000130	<0.0010	<0.0010	0.000073	0.000059	0.000831	0.000052	<0.0010	0.00222
Silicon	mg/L	-				-		-		9.98	13.4	15.3	13.0	10	14.4	8.8	7.9	13.1	12.9	11.4	10.1	6.57	8.30	8.23	21.7	6.9	9.89	7.67	12.1	8.26	5.7	6.98
Silver	mg/L	**0.015**	H			-		-		<0.000020	<0.000010	0.000014	<0.000050	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000010
Sodium	mg/L	-		200	AO	-		-		75.3	92.0	9.01	44.9	58	51.0	19.4	14.5	26.9	27.8	17.2	15.3	19.5	12.5	12.2	18.8	68.5	99.7	82.1	26.4	13.9	6.4	12.4
Sulfur	mg/L	-				-		-		-	-	-	1.3	1.5	-	0.58	0.73	1.4	1.4	-	-	-	-	-	1.2	1.0	-	-	-	-	0.34	-
Tellurium	mg/L	-				-		-		-	-	-	25.6	18	-	16.7	21.3	19.5	21.0	-	-	-	-	-	3.1	75.5	-	-	-	-	5.1	-
Thallium	mg/L	**0.003**				-		-		0.000021	<0.000010	0.000018	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020	<0.000020	<0.000010	<0.000010	0.000016	<0.000010	<0.000010	<0.000050	0.000013	<0.000010	<0.000010	0.000031	0.000030	<0.000010	0.000025
Tin	mg/L	-				-		-		<0.00020	<0.00010	<0.00010	<0.030	<0.030	<0.00010	<0.030	<0.030	<0.030	<0.030	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.030	<0.030	<0.00010	<0.00010	0.00017	<0.00010	<0.030	<0.00010
Titanium	mg/L	**1**				-		-		<0.010	<0.010	<0.010	<0.050	<0.050	<0.010	<0.050	<0.050	<0.050	<0.050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.050	<0.010	<0.010	<0.010	<0.010	<0.050	<0.010
Uranium	mg/L	**3**		0.02		0.01		0.2		0.00623	0.00307	0.000173	0.0014	0.0017	0.00130	<0.00020	0.0035	0.0042	0.0043	0.00206	0.00248	0.00142	0.000079	0.000080	0.0019	0.0036	0.00534	0.00132	0.00230	0.00123	0.00053	0.00390
Vanadium	mg/L	-				0.1		0.1		0.0017	0.00158	0.00092	<0.030	<0.030	<0.00050	<0.030	<0.030	<0.030	<0.030	0.00079	0.00067	<0.00050	<0.00050	<0.00050	<0.030	<0.030	0.00073	<0.00050	<0.00050	0.00105	<0.030	<0.00050
Zinc	mg/L	**0.9-2.4**	H	5	AO	1-5	pH	-		0.0263	<0.0030	<0.0030	0.025	<0.0050	<0.0030	<0.0050	<0.0050	0.015	0.016	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.019	0.016	<0.0030	<0.0030	<0.0030	<0.0030	<0.0050	0.0314

Notes:

All concentrations in milligrams per litre (mg/L), unless otherwise noted.

MPMC = Mount Polley Mining Company FDA = field duplicate available; DUP = duplicate sample; < = below detection limit; "-" = not measured; H = hardness-dependent; pH = pH-dependent; Cl = Chloride-dependent ; V = valence dependent, VI refers to chromium VI and III refers to chromium III; C = Standard varies with crop, soil drainage and Mo:Cu ratio; Crop = Standard applies to all crops; St8 - Refer to CSR Schedule 6 footnotes 58, 59, 60, and 61 for the application of iron and manganese standards; CA = continuous application on crops; N = Standard is for nitrate + nitrite and does not include ammonia; L = Standard varies with type of livestock. AO = Standard to protect against taste and odour concerns

1. Standards from British Columbia Contaminated Sites Regualtion (BC CSR; Updated to July 19, 2016), Schedule 6 Generic Numerical Water Standards.

a) Fluoride standard is hardness dependent. Since all samples had hardness >50 mg/L the applicable standard is 3000 mg/L for protection of freshwater aquatic life.

123	Indicates concentration exceeding the BC CSR Schedule 6 Groundwater Standard Protective of Freshwater Aquatic Life
123	Indicates concentration exceeding the BC CSR Schedule 6 Groundwater Standard Protective of Drinking Water

Attachment 1:
Table 1-2 - Results of Groundwater QA/QC Analysis
MPMC - Detailed Site Investigation
Mount Polley Mine, BC

Location	MW16-06S	MW16-06SD					MW16-04	MW16-04D				
Sample ID	G0153-08	G0153-09	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	G0153-11	G0153-12	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Date Sampled	1-Sep-2016	1-Sep-2016					1-Sep-2016	1-Sep-2016				
ALS Sample ID	L1824847-8	L1824847-9					L1824847-11	L1824847-12				
Physical Tests												
Hardness (as CaCO3)	471	453	0.50	462	3.9%	NA	330	328	0.50	329	0.6%	NA
Total Suspended Solids	23.4	18.1	3.0	21	25.5%	NA	119	77.9	3.0	98.45	**41.7%**	NA
pH	8.1	7.7	0.10	8	4.3%	NA	7.1	8.1	0.10	7.57	13.2%	NA
Nutrients												
Ammonia	<0.0050	<0.0050	0.0050	NC	NC	NC	<0.0050	<0.0050	0.0050	NC	NC	NC
Total Nitrogen	3.59	3.57	0.15	3.58	0.6%	NA	0.227	0.224	0.0	0.2255	1.3%	NA
Nitrate (as N)	3.57	3.64	0.025	3.605	1.9%	NA	<0.0050	<0.0050	0.025	NC	NC	NC
Nitrite (as N)	<0.0050	<0.0050	0.0050	NC	NC	NC	<0.0010	<0.0010	0.0050	NC	NC	NC
Dissolved Phosphorus	0.0038	0.0040	0.002	0.0039	NA	0.1	<0.0020	<0.0020	0.002	NC	NC	NC
Total Phosphorus	0.0268	0.0261	0.02	0.02645	NA	0.035	0.0498	0.0649	0.02	0.05735	NA	0.755
Orthophosphate (Dissolved)	0.0025	0.0026	0.0010	0.00255	NA	0.1	0.0011	<0.0010	0.0010	NC	NC	NC
Anions												
Bromide	<0.25	<0.25	0.25	NC	NC	NC	<0.050	<0.050	0.25	NC	NC	NC
Chloride	5.8	5.9	2.50	5.85	NA	0.04	3.11	3.10	2.50	3.105	NA	0.004
Fluoride	<0.10	<0.10	0.10	NC	NC	NC	0.040	0.039	0.10	0.0395	NA	0.010
Sulfate	241	246	1.50	243.5	2.1%	NA	63.9	62.9	1.50	63.4	1.6%	NA
Dissolved Metals												
Aluminum (Al)-Dissolved	<0.0030	<0.0030	0.0030	NC	NC	NC	0.0058	0.0059	0.0030	0.00585	NA	0.033
Antimony (Sb)-Dissolved	<0.00010	<0.00010	0.00010	NC	NC	NC	<0.00010	<0.00010	0.00010	NC	NC	NC
Arsenic (As)-Dissolved	0.00064	0.00046	0.00010	0.00055	32.7%	NA	0.00089	0.00087	0.00010	0.00088	2.3%	NA
Barium (Ba)-Dissolved	0.158	0.129	0.000050	0.1435	20.2%	NA	0.0335	0.0334	0.000050	0.03345	0.3%	NA
Beryllium (Be)-Dissolved	<0.00010	<0.00010	0.00010	NC	NC	NC	<0.00010	<0.00010	0.00010	NC	NC	NC
Bismuth (Bi)-Dissolved	<0.000050	<0.000050	0.000050	NC	NC	NC	<0.000050	<0.000050	0.000050	NC	NC	NC
Boron (B)-Dissolved	0.023	0.015	0.010	0.019	NA	0.8	0.024	0.025	0.010	0.0245	NA	0.100
Cadmium (Cd)-Dissolved	0.0000825	0.0000845	0.0000050	0.0000835	2.4%	NA	<0.0000050	<0.0000050	0.0000050	NC	NC	NC
Calcium (Ca)-Dissolved	133	135	0.050	134	1.5%	NA	107	107	0.050	107	0.0%	NA
Chromium (Cr)-Dissolved	<0.00050	<0.00050	0.00050	NC	NC	NC	<0.00050	<0.00050	0.00050	NC	NC	NC
Cobalt (Co)-Dissolved	0.00010	<0.00010	0.00010	NC	NC	NC	0.00014	0.00015	0.00010	0.000145	NA	0.100
Copper (Cu)-Dissolved	0.00459	0.00493	0.00050	0.00476	7.1%	NA	<0.00050	<0.00050	0.00050	NC	NC	NC
Iron (Fe)-Dissolved	<0.030	<0.030	0.030	NC	NC	NC	0.572	0.571	0.030	0.5715	0.2%	NA
Lead (Pb)-Dissolved	<0.000050	<0.000050	0.000050	NC	NC	NC	<0.000050	<0.000050	0.000050	NC	NC	NC
Lithium (Li)-Dissolved	0.0090	0.0109	0.0010	0.00995	19.1%	NA	<0.0010	<0.0010	0.0010	NC	NC	NC
Magnesium (Mg)-Dissolved	33.9	28.5	0.10	31.2	17.3%	NA	15.5	15.2	0.10	15.35	2.0%	NA
Manganese (Mn)-Dissolved	0.0562	0.0529	0.00010	0.05455	6.0%	NA	0.390	0.387	0.00010	0.3885	0.8%	NA
Molybdenum (Mo)-Dissolved	0.000675	0.000733	0.00050	0.000704	NA	0.116	0.00143	0.00152	0.00050	0.001475	NA	0.180
Nickel (Ni)-Dissolved	0.00096	0.00090	0.050	0.00093	NA	0.0012	<0.00050	<0.00050	0.050	NC	NC	NC
Potassium (K)-Dissolved	1.84	1.59	0.000050	1.715	14.6%	NA	1.40	1.39	0.000050	1.395	0.7%	NA
Selenium (Se)-Dissolved	0.000280	0.000273	0.050	0.0002765	NA	0.00014	0.000075	0.000130	0.050	0.0001025	NA	0.001
Sillicon (Si)-Dissolved	11.4	10.1	0.000010	10.75	12.1%	NA	8.30	8.23	0.000010	8.265	0.8%	NA
Silver (Ag)-Dissolved	<0.000010	<0.000010	0.050	NC	NC	NC	<0.000010	<0.000010	0.050	NC	NC	NC
Sodium (Na)-Dissolved	17.2	15.3	0.00020	16.25	11.7%	NA	12.5	12.2	0.00020	12.35	2.4%	NA
Thallium (Tl)-Dissolved	<0.000010	<0.000010	0.010	NC	NC	NC	<0.000010	<0.000010	0.010	NC	NC	NC
Tin (Sn)-Dissolved	<0.00010	<0.00010	0.000010	NC	NC	NC	<0.00010	<0.00010	0.000010	NC	NC	NC
Titanium (Ti)-Dissolved	<0.010	<0.010	0.00050	NC	NC	NC	<0.010	<0.010	0.00050	NC	NC	NC
Uranium (U)-Dissolved	0.00206	0.00248	0.0030	0.00227	NA	0.14	0.000079	0.000080	0.0030	0.0000795	NA	0.000
Vanadium (V)-Dissolved	0.00079	0.00067	0.030	0.00073	NA	0.004	<0.00050	<0.00050	0.030	NC	NC	NC
Zinc (Zn)-Dissolved	<0.0030	<0.0030	0.0050	NC	NC	NC	<0.0030	<0.0030	0.0050	NC	NC	NC

Notes:

All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.

FDA = Field Duplicate Available; FD = Field Duplicate; m bgs = metres below ground surface; QA/QC = Quality Assurance/Quality Control

NA = Not Applicable; NC = Not Calculated; Mean = average of two values

Relative percent difference (RPD) = the difference between two values divided by the mean of the two values.

Golders' acceptable RPD is less than or equal to 35%.

RPD is calculated when the concentration is greater than five times the detection limit.

Difference factor (DF) = absolute difference between two values divided by the method detection limit.

Golders' acceptable DF is less than or equal to 2.0.

DF is calculated when the concentration is less than five times the detection limit.

ATTACHMENT 2
Borehole Logs

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5820296.48 E: 595631.30

RECORD OF MONITORING WELL: MW16-01D

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 10, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY %	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
			Ground Surface		920.55										
0	Golder Trailer Mounted Rig	Solid Stem Auger	TAILINGS - (ML) gravelly SILT, some sand; non-cohesive, dry, very loose.		0.00										
					919.78										
			TAILINGS - (GW/ML) GRAVEL and SILT; grey, brown sand, inferred cobbles; moist, loose.		0.76										
1					919.33										Hydrated Bentonite Seal
			TAILINGS - (SW/ML) - gravelly SAND and SILT; grey-brown; non-cohesive, moist.		1.22										
					919.17										
			TAILINNGS - (ML/GP) sandy SILT and GRAVEL, coarse; grey-brown; wet, loose.		1.37										
					919.02										
			NATIVE TILL - (ML) gravelly CLAYEY SILT, some sand, coarse; grey-brown, non-cohesive, moist to wet.		1.52										
2															25mm Diameter Slotted PVC and Filter Sand
					917.80										
			End of Monitoring Well.		2.74										
3															
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5820297.27 E: 595632.19

RECORD OF MONITORING WELL: MW16-01S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 10, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)
0	Golder Trailer Mounted Rig	Solid Stem Auger	Ground Surface		920.51
			TAILINGS - (ML) gravelly SILT, some sand; non-cohesive, dry, very loose.		0.00
					919.74
1			TAILINGS - (GW/ML) GRAVEL and SILT; grey, brown sand, inferred cobbles; moist, loose.		0.76
					919.29
			TAILINGS - (SW/ML) - gravelly SAND and SILT; grey-brown; non-cohesive, moist.		1.22
					919.13
			TAILINGS - (ML/GP) sandy SILT and GRAVEL, coarse; grey-brown, wet, loose.		1.37
					918.98
			End of Monitoring Well.		1.52
2					
3					
4					
5					

SAMPLES: NUMBER | TYPE | RECOVERY % | BLOWS/0.3m

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20 40 60 80

SHEAR STRENGTH Cu, kPa: nat V. + Q - ● ; rem V. ⊕ U - ○ ; Pocket Pen - ■ : 20 40 60 80

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6} 10^{-5} 10^{-4} 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl ; NP - Non-Plastic : 10 20 30 40

ADDITIONAL LAB. TESTING

PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION

Hydrated Bentonite Seal

25mm Diameter Slotted PVC and Filter Sand

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

RECORD OF MONITORING WELL: MW16-02

SHEET 1 OF 1

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
Survey data not available for monitoring well location

DRILLING DATE: August 16, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DATUM: Ground Surface

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface												
0	AMS Hand Auger / Solid Stem Auger	TAILINGS - (ML) SILT; grey, brown sand pockets; moist, loose.		0.00										Hydrated Bentonite Seal
1		TAILINGS - (ML) gravelly SILT and SAND; grey-brown, moist, loose.		0.91										
		TAILINGS - (SW-SM) SAND, some non-plastic fines, trace gravel; brown; wet.		1.07										25mm Diameter Slotted PVC and Filter Sand
2		End of Monitoring Well.		1.83										
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5820164.85 E: 595943.00

RECORD OF MONITORING WELL: MW16-03D

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 13, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		919.83										
0	Golder Trailer Mounted Rig / Solid Stem Auger	REWORKED TAILINGS - (SP/ML) SAND and SILT, roots, rootlets; with wood debris; moist to wet, loose.		0.00										Hydrated Bentonite Seal
1				918.61										
		NATIVE TILL - (ML) CLAYEY SILT, trace sand, trace gravel; brown-grey; cohesive, w<PL.		1.22										25mm Diameter Slotted PVC and Filter Sand
2				917.85										
		End of Monitoring Well.		1.98										
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5820165.22 E: 595942.27

RECORD OF MONITORING WELL: MW16-03S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 13, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		919.85										
0	Golder Trailer Mounted Rig / Solid Stem Auger	REWORKED TAILINGS - (SP/ML) SAND and SILT, roots, rootlets; with wood debris; moist to wet, loose.		0.00										Hydrated Bentonite Seal
1				918.78										25mm Diameter Slotted PVC and Filter Sand
		End of Monitoring Well.		1.07										
2														
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817214.95 E: 599653.52

RECORD OF MONITORING WELL: MW16-04

SHEET 1 OF 1
DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0		Ground Surface		818.99										
	Golder Trailer Mounted Rig / Solid Stem Auger	(ML/SM) gravelly SILT and SAND, fine to medium; grey, inferred cobbles, no staining, no odours; moist, loose.		0.00										Hydrated Bentonite Seal
1														
2				816.85										
		(ML/SM) CLAYEY SILT and SAND, fine and coarse sand, some gravel; grey, no staining, no odours; cohesive, w~PL.		2.13										25mm Diameter Slotted PVC and Filter Sand
				816.24										
		End of Monitoring Well.		2.74										
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5819348.30 E: 596611.56

RECORD OF MONITORING WELL: MW16-05D

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 10, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Golder Trailer Mounted Rig	Solid Stem Auger	Ground Surface		906.94										
			TAILINGS - (OL/ML) ORGANIC SILT and SILT, some fine to coarse sand; grey, inferred cobbles; non-cohesive, moist.		0.00										
1					905.72										
			TAILINGS - (ML) SILT, some sand, some gravel; grey-brown; non-cohesive, moist.		1.22										Hydrated Bentonite Seal
2			at 2.3 m depth: wet.		904.50										
			NATIVE TILL - (MH) SILT, some gravel, trace sand; brown-grey; cohesive, w~PL, firm.		2.44										
3					903.43										25mm Diameter Slotted PVC and Filter Sand
			End of Monitoring Well.		3.51										
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5819349.07 E: 596610.57

RECORD OF MONITORING WELL: MW16-05S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 10, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		906.87										
0	Golder Trailer Mounted Rig / Solid Stem Auger	TAILINGS - (OL/ML) ORGANIC SILT and SILT, some fine to coarse sand; grey, inferred cobbles; non-cohesive, moist.		0.00										
1				905.65										Hydrated Bentonite Seal
		TAILINGS - (ML) SILT, some sand, some gravel; grey-brown; non-cohesive, moist.		1.22										
2		at 2.3 m depth: wet.		904.43										25mm Diameter Slotted PVC and Filter Sand
		End of Monitoring Well.		2.44										
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817327.34 E: 599540.97

RECORD OF MONITORING WELL: MW16-06D

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY %	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Pocket Pen -; Q - ●, U - ○; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
			Ground Surface		823.79										
0	Golder Trailer Mounted Rig	Solid Stem Auger	TILL AND TAILINGS - (SW/GP) SAND and GRAVEL, fine to medium; brown, no staining, no odours; moist, loose.		0.00										
1					822.57										
			TILL AND TAILINGS - (SW/GP) SAND and GRAVEL, fine to medium; brown, no staining, no odours; wet, loose.		1.22										Hydrated Bentonite Seal
2					821.35										
			NATIVE TILL - (SM/ML) gravelly SILT and SAND; grey, inferred cobbles, no staining, no odours; non-cohesive, moist, dense to very dense.		2.44										
3					820.59										25mm Diameter Slotted PVC and Filter Sand
			End of Monitoring Well.		3.20										
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (AUTO) KTanaka 2/2/17

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817326.25 E: 599539.94

RECORD OF MONITORING WELL: MW16-06S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY %	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
			Ground Surface		823.74										
0	Golder Trailer Mounted Rig	Solid Stem Auger	TILL AND TAILINGS - (SW/GP) SAND and GRAVEL, fine to medium; brown, no staining, no odours; moist, loose.		0.00										Hydrated Bentonite Seal
					822.52										
1			TILL AND TAILINGS - (SW/GP) SAND and GRAVEL, fine to medium; brown, no staining, no odours; wet, loose.		1.22										
2					821.41										25mm Diameter Slotted PVC and Filter Sand
			End of Monitoring Well.		2.34										
3															
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817307.02 E: 600700.98

RECORD OF MONITORING WELL: MW16-07

SHEET 1 OF 2

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Golder Trailer Mounted Rig / Solid Stem Auger	Ground Surface		747.19										
		TILL AND TAILINGS - (SM/GM) SILTY SAND and GRAVEL; brown-grey; moist, loose.		0.00										
1														
2														Hydrated Bentonite Seal
				744.60										
		TAILINGS - (ML) SILT; grey, non-cohesive, wet, loose.		2.59										
3														
4														25mm Diameter Slotted PVC Pipe and Filter Sand
5		*CONTINUED NEXT PAGE*												

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (AUTO) KTanaka 2/2/17

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817307.02 E: 600700.98

RECORD OF MONITORING WELL: MW16-07

SHEET 2 OF 2

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
5	Solid Stem Auger	TAILINGS - (ML) SILT; grey, non-cohesive, wet, loose. *(continued)*		741.70										25mm Diameter Slotted PVC Pipe and Filter Sand
		End of Monitoring Well.		5.49										
6														
7														
8														
9														
10														

DEPTH SCALE
1 : 25

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

Golder Associates

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817265.92 E: 601129.75

RECORD OF MONITORING WELL: MW16-08D

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
			Ground Surface		740.00										
0	Golder Trailer Mounted Rig	Solid Stem Auger	(OL) ORGANIC SILT, some sand, roots, rootlets; dark brown, no staining, no odours; non-cohesive, moist.		0.00										Hydrated Bentonite Seal
					739.39										
			(ML/SM) SILT and SAND; grey-brown, organic silt pockets; moist, loose.		0.61										
1			NATIVE TILL - (ML) gravelly CLAYEY SILT, some sand; grey, non-cohesive, moist, loose.		0.91										
					738.33										
			(GP/SW) GRAVEL and SAND; orange-brown; non-cohesive, moist, loose.		1.68										
					738.17										
			(ML) CLAYEY SILT, trace gravel; cohesive, w~PL, stiff.		1.83										25mm Diameter PVC Pipe and Filter Sand
2					737.26										
			End of Monitoring Well.		2.74										
3															
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817264.95 E: 601129.89

RECORD OF MONITORING WELL: MW16-08S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		739.83										
0	Golder Trailer Mounted Rig / Solid Stem Auger	(OL) ORGANIC SILT, some sand, roots, rootlets; dark brown, no staining, no odours; non-cohesive, moist.		0.00										Hydrated Bentonite Seal
				739.22										
		(ML/SM) SILT and SAND; grey-brown, organic silt pockets; moist, loose.		0.61										
				738.92										
1		NATIVE TILL - (ML) gravelly CLAYEY SILT, some sand; grey, non-cohesive, moist, loose.		0.91										25mm Diameter PVC Pipe and Filter Sand
				738.15										
		End of Monitoring Well.		1.68										
2														
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817057.54 E: 601052.11

RECORD OF MONITORING WELL: MW16-09

SHEET 1 OF 1
DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER / TYPE / RECOVERY % / BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		741.88		SHEAR STRENGTH Cu, kPa: nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■ (20 40 60 80)	WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic (10 20 30 40)		
0	Golder Trailer Mounted Rig / Solid Stem Auger	(ML/SP/GP) CLAYEY SILT, SAND and GRAVEL; brown, inferred cobbles, intermixed; moist, loose.		0.00					
				740.66					Hydrated Bentonite Seal
1		(SP-SM/GP-GM) SAND and GRAVEL, some non-plastic fines; orange-brown, no staining, no odours; moist, loose.		1.22					
				740.05					
		(ML/SP/GP) CLAYEY SILT, SAND and GRAVEL; brown, intermixed; cohesive, w~PL.		1.83					
2									
3									
4									25mm Diameter Slotted PVC Pipe and Filter Sand
				737.61					
		(ML) sandy SILT, some gravel; grey, inferred cobbles; non-cohesive, wet, loose.		4.27					
				737.31					
				4.57					
5		End of Monitoring Well.							

DEPTH SCALE
1 : 25

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

Golder Associates

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817127.95 E: 601108.75

RECORD OF MONITORING WELL: MW16-10

SHEET 1 OF 1
DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○, Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		739.88								
0	Golder Trailer Mounted Rig / Solid Stem Auger	(ML/SP/GP) SILT, SAND and GRAVEL; dark brown-black, intermixed, organic-like odours..		0.00								
				738.97								
1		(SM/GM) SILTY SAND and GRAVEL; brown, inferred cobbles; moist, loose.		0.91								Hydrated Bentonite Seal
2				737.75								
		(ML/SP/GP) CLAYEY SILT, SAND and GRAVEL; brown, inferred cobbles; cohesive, w~PL, firm.		2.13								
3				736.83								
		(SM) SILTY SAND, fine to medium; grey-green, no staining, no odours; moist to wet.		3.05								25mm Diameter Slotted PVC Pipe and Filter Sand
4				735.61								
		End of Monitoring Well.		4.27								
5												

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (AUTO) KTanaka 2/2/17

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817036.02 E: 601467.86

RECORD OF MONITORING WELL: MW16-11

SHEET 1 OF 2

DATUM: Geodetic

DRILLING DATE: August 13, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY %	BLOWS/0.3m
0	Golder Trailer Mounted Rig	Solid Stem Auger	Ground Surface		740.44				
			(OL/ML/SP) ORGANIC SILT, SILT and SAND, some gravel; brown, intermixed; dry, loose.		0.00 739.83				
			(OL) ORGANIC SILT, wood debris, roots, rootlets; dark brown; moist.		0.61 739.53				
1			(SP-SM) gravelly SAND, some non-plastic fines; orange-brown; moist, loose.		0.91 739.22				
			NATIVE TILL - (ML) SILT, trace sand; brown-grey, clay nodules; cohesive, w<PL, firm.		1.22 738.92				
			NATIVE TILL - (ML) SILT, some sand, some gravel; brown-grey, clay nodules; cohesive, w<PL.		1.52 738.31				
2			NATIVE TILL - (ML) SILT, some gravel, trace sand; brown, no staining, no odours; cohesive, w<PL, very stiff.		2.13 737.70				
			NATIVE TILL - (ML)SILT, trace sand, trace fine gravel; grey-brown, cohesive, w<PL.		2.74 735.87				
3			NATIVE TILL - (ML) SILT, some sand, some gravel; grey; non-cohesive, dry.		4.57				
4									
5			*CONTINUED NEXT PAGE*						

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20 40 60 80

SHEAR STRENGTH Cu, kPa: nat V. + Q - ● rem V. ⊕ U - ○ Pocket Pen - ■; 20 40 60 80

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6} 10^{-5} 10^{-4} 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10 20 30 40

ADDITIONAL LAB. TESTING

PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION

Hydrated Bentonite Seal

25mm Diameter Slotted PVC Pipe and Filter Sand

DEPTH SCALE
1 : 25

SOIL CLASSIFICATION SYSTEM:

LOGGED: EZG

CHECKED: AB

Golder Associates

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817036.02 E: 601467.86

RECORD OF MONITORING WELL: MW16-11

SHEET 2 OF 2

DATUM: Geodetic

DRILLING DATE: August 13, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
5	Golder Trailer Mounted Rig / Solid Stem Auger	NATIVE TILL - (ML) SILT, some sand, some gravel; grey; non-cohesive, dry. *(continued)*										25mm Diameter Slotted PVC Pipe and Filter Sand
6				734.19								
		End of Monitoring Well.		6.25								
7												
8												
9												
10												

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

RECORD OF MONITORING WELL: MW16-12

SHEET 1 OF 1

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
Survey data not available for monitoring well location

DRILLING DATE: August 18, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DATUM: Ground Surface

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY %	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○, Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface												
0	AMS Hand Auger / Solid Stem Auger	(OL) ORGANIC SILT.		0.00										
		(ML) CLAYEY SILT, trace sand; grey-brown; cohesive, w~PL.		0.10										Hydrated Bentonite Seal
		(ML) CLAYEY SILT, trace coarse sand, trace gravel; grey-brown, cohesive.		0.80										25mm Diameter Slotted PVC Pipe and Filter Sand
1		End of Monitoring Well.		1.00										
2														
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

RECORD OF MONITORING WELL: MW16-13

SHEET 1 OF 1

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
Survey data not available for monitoring well location

DRILLING DATE: August 16, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DATUM: Ground Surface

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface												
0	Golder Trailer Mounted Rig / Solid Stem Auger	(ML) SILT, some fine sand; grey-brown; dry, loose.		0.00										Hydrated Bentonite Seal
		(ML) SILT, fine sand; light brown; dry, loose.		0.30										
1		(SP-SM) SAND, fine, some non-plastic fines; light brown; dry, loose.		0.61										25mm Diameter Slotted PVC Pipe and Filter Sand
		End of Monitoring Well.		1.22										
2														
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

ATTACHMENT 3
Well Development Forms

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development ☐ Purging/Sampling Well No.: MW16-015

Project Name: MP DST
Location: West Boiler Plus
Weather: Sun Temperature: 35°
GPS Coordinates: See Trimble data
Project No.: 1411734
Date: 15 Aug 2016
Completed By: EZP
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 12:30 15:45
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 2.666 m below ☒ TOP Avg. 18
Depth to Bottom of Well (B): 3.531 m below ☐ TOP 2.680 m
Diameter of Standpipe: 25 mm
Well Condition: New 2.678m

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: 0.44L
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geopump

Multimeter Model: ____ ☐ Rental Equipment:
pH/Temp Meter Model: ____
Conductivity Meter Model: ____ ☐ Field Bump
Dissolved Oxygen Meter Model: ____ ☐ pH4 ____ ☐ pH7 ____
ORP (Redex) Meter Model: ____ ☐ pH10 ____
Organic Vapour Meter Model: ____ ☐ 1413 us/cm ____
☐ D.O. Ampoule ☐ Field Calibration ____

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 4.4 litres Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
	1st purge		2 L					
	2nd purge ~500mL							
Aug 17	17:27		purge ~500mL					

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear 1 2 3 4 5 Very Silty
1st 2nd

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____ Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
Field Dup. ____ ☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

Well MW16-015 - Dry

Golder Associates

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☑ Development ☐ Purging/Sampling Well No.: MW16-02

Project Name: MP DS1 Project No.: 1401734
Location: Dolly plug Wgt Num of Depths Date: 16 Aug 2016
Weather: Sun Temperature: 30 Completed By: EZG
GPS Coordinates: 0595644 5820421 ± 3m Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 18:16
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 1.963 m below ☑ TOP
Depth to Bottom of Well (B): 2.562 m below ☑ TOP
Diameter of Standpipe: 25 mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: 0.31 L
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☑ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geopump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: ~
☐ D.O. Ampoule

☐ Rental Equipment: PTFE
☑ Field Bump
☐ pH4 See FZG notes ☐ pH7 ____
☐ pH10 ____
☐ 1413 us/cm ____
☐ Field Calibration ____

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 3.1 litres Start: 18:16 Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☑ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	TDS g/L Remarks
18:24	0.75	17	7.85	3370	-62.1	4.62		2.235
18:27	1.5	16	7.07	1579	-61.9	2.87		1.073
18:33	2	15.5	7.73	1507	-71.1	2.86		0.979
18:35	2.5	15.5	7.55	1492	-76.9	2.82		0.970
18:40	3.0	15.5	7.49	1483	-77.0	2.71		0.964

* Record DO in Mg/L, not percentage

Good recharge

Comments:
Odour: ☐ Yes ☑ No If yes ____
Sheen: ☐ Yes ☑ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear 1 2 3 Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____ Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
Field Dup. ____ ☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

Golder Associates

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development ☐ Purging/Sampling Well No.: MW16-03S

Project Name: MP DS1
Location: Upper HC - Polley plug east
Weather: Sun **Temperature:**
GPS Coordinates:
Project No.: 1411734
Date: 15 Aug 2016
Completed By: EZG
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 11:27 13:21 Aug 18
Depth to Product: m Product Thickness: m 1.91 m 1.953
Depth to Water (A): 1.900 m below ☒ TOP
Depth to Bottom of Well (B): 1.999 m below ☒ TOP
Diameter of Standpipe: 25 mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ppm
One Well Volume: 0.05 L
(B-A)*2.0 = Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geopump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model:
☐ D.O. Ampoule

☒ Rental Equipment: DENE
☒ Field Bump See EZG note ☐ pH4 ☐ pH7
☐ pH10 ☐ 1413 us/cm
☒ Field Calibration SP Cond

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 0.5 litres
Avg. Flow Rate: L/min.
Start: Finish:
Sample intake depth:

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
			purged dry twice					
		13:22	purged dry & clear					
Aug 18 purge ~1.0 mL								

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear 1 2 3 4 5 Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No.
Field Dup.
Consumables: ☐ Waterra Tubing ☐ Silicon Tubing ☐ HDPE/Teflon Tubing ☐ D.O. Ampoules ☐ Groundwater Filter ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development ☐ Purging/Sampling Well No.: MW16-036

Project Name: MP DSI
Location: Upper HC - Polley Plug East
Weather: Sun **Temperature:**
GPS Coordinates:
Project No.: 1411734
Date: 15 Aug 2016
Completed By: EZG
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 11:40 15:27
Depth to Product: m Product Thickness: m
Depth to Water (A): 2.065 m below ~~☐~~ TOP 18 Aug 2.077m
Depth to Bottom of Well (B): 3.004 m below ~~☒~~ TOP 2.123m
Diameter of Standpipe: mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ppm
One Well Volume: 0.48L
(B-A)*2.0 = Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geopump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: 11
Conductivity Meter Model: 11
Dissolved Oxygen Meter Model: 11
ORP (Redex) Meter Model: 11
Organic Vapour Meter Model:
☐ D.O. Ampoule

☒ Rental Equipment: PINE
☒ Field Bump See EZG Note ☐ pH4 ☐ pH7 ☐ pH10 ☐ 1413 us/cm
☒ Field Calibration SP Cond

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 4.8 litres
Avg. Flow Rate: L/min.
Start: Finish:
Sample intake depth:

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
11:47	1	13	8.02	945	47.8	3.69		0.613 TDS
	Purged		&	Slow Recharge				0
11:57	3	14	7.93	497				0.33
12:31		Purged	~0.6L	- Clear				
Aug 18		purge	~1 L					

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear 20 2nd purge 8 Very Silty

Analysis	Type		Container Size 40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No.
Field Dup.
Consumables: ☐ Waterra Tubing ☐ Silicon Tubing ☐ HDPE/Teflon Tubing ☐ D.O. Ampoules ☐ Groundwater Filter ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development ☐ Purging/Sampling Well No.: MW16-04

Project Name: MP DST **Project No.:** 1411734
Location: Transect 6 **Date:** 15 Aug 2016
Weather: Sun **Temperature:** 25 **Completed By:** EZG
GPS Coordinates: **Reviewed By:**

MONITORING WELL INFORMATION

Time of Measurement: 8:40
Depth to Product: m Product Thickness: m
Depth to Water (A): 1.538 m below ☒ TOP
Depth to Bottom of Well (B): 3.547 m below ☒ TOP
Diameter of Standpipe: 25 mm New
Well Condition:

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ppm
One Well Volume: 1.0 L
(B-A)*2.0 = Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geo pump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☒ Rental Equipment: PENE
☒ Field Bump see EZG Notes ☐ pH4 ☐ pH7
☐ pH10 ☐ 1413 us/cm
☒ Field Calibration SP Cond

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 10.0 litres Start: Finish:
Avg. Flow Rate: L/min. Sample Intake depth:

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
8:51	5	12	8.12	702	-44.2	—		0.456 TDS
9:05	6	11.5	7.84	703	-21.8	—		0.457
9:08	8	17.5	7.75	704	-33.2	—		0.46 E
9:09	9	11	7.61	717	-45.3	—		0.466
9:11	10	11	7.50	720	-47.9	—		0.468
9:12	11	11	7.40	727	-43.2	—		0.473
9:13	12	11	7.37	723	-46.2	—		0.470
9:14	13	11	7.34	724	-46.9	—		0.471

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear (1) (2) (3) (4) (5) Very Silty

Analysis	Type		Container Size 40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. Consumables: ☐ Waterra Tubing ☐ HDPE/Teflon Tubing ☐ Groundwater Filter
Field Dup. ☐ Silicon Tubing ☐ D.O. Ampoules ☐ Footvalve

Golder Associates

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development
☐ Purging/Sampling

Well No.: MW6-055

Project Name: MD DSI
Location: Transect 14 - East of HC
Weather: Sun Temperature:
GPS Coordinates:
Project No.: 1411734
Date: 15 Aug 10
Completed By:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 11:11 (15:04)
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 2.255 m below ☒ TOP (2.295 m)
Depth to Bottom of Well (B): 2.366 m below ☐ TOP ~10 cm water
Diameter of Standpipe: 25 mm
Well Condition: New 18 Aug 2.331 m

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: 0.05 L
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump: ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:____) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geopump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redox) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☒ Rental Equipment: PINE
☒ Field Bump: E2G indg
☐ pH4 ☐ pH7
☐ pH10
☐ 1413 us/cm
☒ Field Calibration: Sp Cond

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 0.50 litres Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm *(circle one)*	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
		purged twice until dry				~	30mL	
			slow recharge					
15:04	purge ~50mL							
18 Aug 2016		purge ~10-15mL						

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear | | | | | | | | | | | | | (circled, 5) | | | | | | | | (circled, 5) | | | | | | | Very Silty

Analysis	Type		40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____ Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
Field Dup. ____ ☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development
☐ Purging/Sampling

Well No.: MWG-050

Project Name: MP DSI
Project No.: 1411734
Location: transect 14
Date: 15 Aug 2016
Weather: Sun Temperature: 30
Completed By: EZG
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 10:48
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 2.638 m below ☒ TOP 15:12 3.301 m
Depth to Bottom of Well (B): 3.496 m below ☒ TOP 18 Aug 16:53 2.675 m
Diameter of Standpipe: ____ mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: 0.44
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump: ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☒ Peristaltic ☐ Submersible ☐ Bladder

Pump Details: Geopump

Multimeter Model: YSI556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redox) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☒ Rental Equipment: AFNF
☒ Field Bump: See EZG notes
☐ pH4 ☐ pH7 ☐ pH10 ☐ 1413 us/cm
☒ Field Calibration: Sp cond

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 4.4 litres Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
Purged 1L then was dry								
Slow recharge								
15:13	purged	~150mL						
18 Aug	purged	~400mL						

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear I I I I I I I I I I I I I I I I I I I I I I (I) I I I I I I I I I Very Silty

Analysis	Type		40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____ Field Dup. ____
Consumables: ☐ Waterra Tubing ____ ☒ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development ☐ Purging/Sampling Well No.: MW16-065

Project Name: MP DS1
Location: North of transect 6 - east bank
Weather: Sun Temperature: 30
GPS Coordinates:
Project No.: 1411734
Date: 15 Aug 2016
Completed By: EZG
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 9:41
Depth to Product: m Product Thickness: m
Depth to Water (A): 2.027 m below ☒ TOP
Depth to Bottom of Well (B): 2.963 m below ☒ TOP
Diameter of Standpipe: 25 mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ppm
One Well Volume: 0.48
(B-A)*2.0 = Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:) ☐ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geo Pump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☒ Rental Equipment: PINE
☒ Field Bump EZG Notes
☐ pH4 ☐ pH7
☐ pH10
☐ 1413 us/cm
☒ Field Calibration SP COM

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 4.8 litres
Avg. Flow Rate: L/min.
Start: Finish:
Sample intake depth:

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
9:45	2	15	7.86	1130	406	4.19	—	0.737 Ths
9:52	4	15	7.24	1108	375	3.94		0.720
9:54	5	15	7.12	1095	410	4.25		0.712
9:55	6	15	6.95	1088	423	—		0.707
9:56	7	15	6.94	1082	488	—		0.705

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear 1 2 3 4 5 Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No.
Field Dup.
Consumables: ☐ Waterra Tubing ☐ HDPE/Teflon Tubing ☐ Groundwater Filter
☐ Silicon Tubing ☐ D.O. Ampoules ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development
☐ Purging/Sampling

Well No.: MW16-06D

Project Name: MP DSI
Project No.: 1411BY
Location: North of transect 6 - East bank
Date: 15 Aug 2016
Weather: Sun
Temperature: 30
Completed By: EZG
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 10:00
Depth to Product: ____ m
Product Thickness: ____ m
Depth to Water (A): 1.958 m below ☒ TOP 14:47 2.885m
Depth to Bottom of Well (B): 3.916 m below ☒ TOP 18 Aug 15:14 1.972m
Diameter of Standpipe: 25 mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: 1.0
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump: ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☒ Peristaltic ☐ Submersible ☐ Bladder

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redox) Meter Model: "
Organic Vapour Meter Model: —

☒ Rental Equipment: PINE
☒ Field Bump EZG AOB
☐ pH4 ☐ pH7
☐ pH10
☐ 1413 us/cm
☒ Field Calibration Sp Cond

Pump Details: Geopump
☐ D.O. Ampoule

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 10.0 litres
Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min.
Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
10:03	2	purged		2 than	ran	dry		
		slow	recharge	<10mL/min				
·	0.5							
18 Aug	2016	purge		geopump	cord	broke		
18 Aug	16:35		purged	1L				

2nd purge

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear I(I)IIIIIIIIIIIIIIIIIIIIII(I)IIIIIIII Very Silty

Analysis	Type		40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____
Field Dup. ____
Consumables: ☐ Waterra Tubing ____ ☐ Silicon Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ D.O. Ampoules ____ ☐ Groundwater Filter ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development ☐ Purging/Sampling Well No.: MW16-07

Project Name: MP VDSI
Project No.: 1411734
Location: Transect 3
Date: 14 May 2014
Weather: Sun Temperature: 25°
Completed By: EZW
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 9:45
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 3.549 m below ☒ TOP
Depth to Bottom of Well (B): 6.113 m below ☐ TOP 6.331 after developing
Diameter of Standpipe: 25.5 mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: 1.28L
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra – Attempt – too low recharge ☐ Hydrolift ☐ Bailer (Type: ____) ☒ Peristaltic geopump ☐ Submersible ☐ Bladder
Pump Details: ____

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: ~~"~~
☐ D.O. Ampoule TDS

☒ Rental Equipment: PINE
☒ Field Bump
☐ pH4 see EZW ☐ pH7 Ade
☐ pH10 ____
☐ 1413 us/cm ____
☐ Field Calibration ____

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 12.8 litres
Avg. Flow Rate: ____ L/min.
Start: 9:45 Finish: ____
Sample Intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
10:15	3	13.97	7.62	759	138	8.35	dry	0.492 TDS
10:29	4	12.79	7.60	743	-8.6	5.57	dry	0.483
10:45	5	13.01	7.52	761	-16.2	2.06	dry	0.493
10:55	6	12.91	7.61	749	-21.4	—	dry	0.487
11:05	7	11.	7.67	755	-9.9	3.92	dry	0.489 TDS
	8		Project	additional Litre				

1L purge @ 2 L/min Before

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear 1 2 3 4 5 Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____ Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
Field Dup. ____ ☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development ☐ Purging/Sampling Well No.: MW16-085

Project Name: MP DSI
Location: North transect 2
Weather: Sun Temperature: 30
GPS Coordinates:
Project No.: 1411734
Date: 14 Aug 2016
Completed By: EZ
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 12:30
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): ____ m below ☐ TOP
Depth to Bottom of Well (B): 2.588 m below ☐ TOP
Diameter of Standpipe: ____ mm
Well Condition: DRY!

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume:
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:____) ☐ Peristaltic ☐ Submersible ☐ Bladder
Pump Details:

Multimeter Model: ____ ☐ Rental Equipment:
pH/Temp Meter Model: ____
Conductivity Meter Model: ____ ☐ Field Bump
Dissolved Oxygen Meter Model: ____ ☐ pH4 ____ ☐ pH7 ____
ORP (Redex) Meter Model: ____ ☐ pH10 ____
Organic Vapour Meter Model: ____ ☐ 1413 us/cm ____
☐ D.O. Ampoule ☐ Field Calibration ____

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X ____ = ____ litres Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☐ No If yes ____
Sheen: ☐ Yes ☐ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear I I I I I I I I I I I I I I I I I I I I I I I I I I I I I Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____ Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
Field Dup. ____ ☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development
☐ Purging/Sampling

Well No.: MW16-08D

Project Name: MD DS1
Project No.: 1411734
Location: North transect 2
Date: 14 Aug 2016
Weather: Sun
Temperature: 30
Completed By: EZG
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 12:58
Depth to Product: ____ m
Product Thickness: ____ m
Depth to Water (A): 3.279 m below ☑ TOP — Aug 15 3.285m
Depth to Bottom of Well (B): 3.569 m below ☑ TOP — Aug 18 3.296m
Diameter of Standpipe: ____ mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: 150ML
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump:
- ☐ Waterra
- ☐ Hydrolift
- ☐ Bailer (Type: ____)
- ☑ Peristaltic
- ☐ Submersible
- ☐ Bladder

Pump Details: Geopump

Multimeter Model: YSI 563MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: ——
☐ D.O. Ampoule

☑ Rental Equipment: PDNF
☑ Field Bump: See EZG notes
☐ pH4 ☐ pH7
☐ pH10
☐ 1413 us/cm
☑ Field Calibration: DO & SPCond

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 1.5 litres
Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min.
Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☑ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
13:08	0.6	15	7.40	1250	77.1	~	dry	0.7 [illegible]
	purged approx 2 well volumes							
Aug 15	purged 0.5 L							
Aug 18	14:14 purge 0.5 L							

* Record DO in Mg/L, not percentage — Very slow recharge <10mL/min - 2-3 mL/min

Comments:
Odour: ☐ Yes ☑ No If yes ____
Sheen: ☐ Yes ☑ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear ||||||||(|)|||||||||||||||||||||| Very Silty — 3

Analysis	Type		40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

(Container Size spans 40 mL – 4 L columns)

SCN No. ____
Field Dup. ____
Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development
☐ Purging/Sampling

Well No.: MW16-09

Project Name: MP DSI
Project No.: 1411734
Location: southern transect 2
Date: 14 Aug 2016
Weather: Sun
Temperature: 30
Completed By: EZG
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 11:30
Tidally Influenced: ☐ Yes ☐ No
Depth to Product: ____ m
Product Thickness: ____ m
Pressurized: ☐ Yes ☐ No
Depth to Water (A): 4.394 m below ☒ TOP
Well Headspace: ____ ppm
Depth to Bottom of Well (B): 5.095 m below ☒ TOP
One Well Volume: 0.5L
Diameter of Standpipe: 25 mm
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
Well Condition: New
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump: ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☒ Peristaltic ☐ Submersible ☐ Bladder

Pump Details: Geopump

Multimeter Model: YSI MPS 556
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☒ Rental Equipment: PINE
☒ Field Bump See EZG Notes
☐ pH4 ☐ pH7
☐ pH10
☐ 1413 us/cm SP
☒ Field Calibration DO & SP Cond

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 5L litres
Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min.
Sample intake depth: ____

Time	Volume Removed (L) 0.5	Temp. (°C)	pH (Units)	☒ Cond. ☐ Specific Cond. (μS/cm) or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks g/L
11:45	1.0	15	7.2	1408	-48.8	3.3	dry	0.900 TDS
11:50	2.0	13	7.27	595	-5.0	2.67	dry	0.387
12:00	3.0	15	7.09	585	1.0	2.91	4.7	
12:04	4.0	15	6.78	581	-3.5	—	4.7	0.377 TDS
12:08	4.5	12	6.87	575	14.1		dry	0.374 TDS
12:11	5.0	12	6.81	575	13.6	3.31	dry	0.373
	6.0		purge	dry				

Stable level @ ~150 ml/min

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear ||||||||||||||||||||||||||||||||| Very Silty (marked: F near Clear, S near Very Silty)

Analysis	Type		Container Size 40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____
Field Dup. ____
Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☒ Development ☐ Purging/Sampling Well No.: MW16-10

Project Name: MP DSI
Location: Transect 2 South (Mercier HC)
Weather: Sun **Temperature:** 30
GPS Coordinates:
Project No.: 1411361
Date: 14 Aug 2016
Completed By: EZG
Reviewed By:

MONITORING WELL INFORMATION

DRY!!

Time of Measurement:
Depth to Product: _____ m Product Thickness: _____ m
Depth to Water (A): _____ m below ☐ TOP
Depth to Bottom of Well (B): _____ m below ☐ TOP
Diameter of Standpipe: _____ mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: _____ ppm
One Well Volume:
(B-A)*2.0 = _____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = _____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:_____) ☐ Peristaltic ☐ Submersible ☐ Bladder
Pump Details:

Multimeter Model: _____ ☐ Rental Equipment:
pH/Temp Meter Model: _____
Conductivity Meter Model: _____ ☐ Field Bump
Dissolved Oxygen Meter Model: _____ ☐ pH4 _____ ☐ pH7 _____
ORP (Redex) Meter Model: _____ ☐ pH10 _____
Organic Vapour Meter Model: _____ ☐ 1413 us/cm _____
☐ D.O. Ampoule ☐ Field Calibration _____

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X _____ = _____ litres Start: _____ Finish: _____
Avg. Flow Rate: _____ L/min. Sample intake depth: _____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm *(circle one)*	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☐ No If yes
Sheen: ☐ Yes ☐ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear ||||||||||||||||||||||||||||||||||||||||||| Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. _____ Consumables: ☐ Waterra Tubing _____ ☐ HDPE/Teflon Tubing _____ ☐ Groundwater Filter
Field Dup. _____ ☐ Silicon Tubing _____ ☐ D.O. Ampoules _____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☑ Development ☐ Purging/Sampling Well No.: MW16-11

Project Name: MP DST **Project No.:** 141734
Location: Lower HC Bhy - South **Date:** 14 Aug 2016
Weather: Sun **Temperature:** 30 **Completed By:** EZC
GPS Coordinates: **Reviewed By:**

MONITORING WELL INFORMATION

Time of Measurement: 14:23
Depth to Product: m Product Thickness: m
Depth to Water (A): 3.776 m below ☐ TOP ~~Aug 15 3.985~~
Depth to Bottom of Well (B): 6.456 m below ☐ TOP Aug 18 4.087m
Diameter of Standpipe: mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ppm
One Well Volume: 1.57L
(B-A)*2.0 = Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:) ☑ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geopump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model:
Conductivity Meter Model:
Dissolved Oxygen Meter Model:
ORP (Redex) Meter Model:
Organic Vapour Meter Model:
☐ D.O. Ampoule

☑ Rental Equipment: PLM
☑ Field Bump
☐ pH4 See EZC notes ☐ pH7
☐ pH10 ☐ 1413 us/cm
☑ Field Calibration DGC Sp Cond

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 10 = 15.7 litres
Avg. Flow Rate: L/min.
Start: Finish:
Sample intake depth:

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☑ ~~Specific~~ Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
1357	1	11	8.61	384	420			0.54 TDS
1440	2	10	8.40	766	46.6			0.498
1445	4	9	8.14	734	30.5		dry	0.422
15:15	6	11	8.06	751	52.5		dry	0.475
15 Aug 2016		purged	1.5L	no dry				
18 Aug 2016	14:34	purged	4.5L					

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☑ No If yes
Sheen: ☐ Yes ☑ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No.
Field Dup.
Consumables: ☐ Waterra Tubing ☐ HDPE/Teflon Tubing ☐ Groundwater Filter
☐ Silicon Tubing ☐ D.O. Ampoules ☐ Footvalve

ATTACHMENT 4
Sampling Forms

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development ☑ Purging/Sampling Well No.: MW16-01D

Project Name: Mount Polley MDSI **Project No.:** 1411734

Location: **Date:** 1 Sept 2016

Weather: Overcast **Temperature:** 15 **Completed By:** EZG

GPS Coordinates: **Reviewed By:**

MONITORING WELL INFORMATION

Time of Measurement: 16:58

Depth to Product: ____ m Product Thickness: ____ m

Depth to Water (A): 2.717 m below ☐ TOP Sept 2nd 0.736 m

Depth to Bottom of Well (B): 3.528 m below ☐ TOP

Diameter of Standpipe: 25 mm

Well Condition: New

Tidally Influenced: ☐ Yes ☑ No

Pressurized: ☐ Yes ☑ No

Well Headspace: ____ ppm

One Well Volume: 0.4L

(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well

(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:____) ☑ Peristaltic ☐ Submersible ☐ Bladder

Pump Details: Geopump

Multimeter Model: YSI 556 MPS ☑ Rental Equipment: PINE

pH/Temp Meter Model: 11

Conductivity Meter Model: 11 ☑ Field Bump See EZG nds

Dissolved Oxygen Meter Model: 11 ☐ pH4 ____ ☐ pH7 ____

ORP (Redex) Meter Model: 11 ☐ pH10 ____

Organic Vapour Meter Model: ____ ☐ 1413 us/cm ____

☐ D.O. Ampoule ☑ Field Calibration Sept EZG nds

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 1.2 litres Start: 16:59 Finish: ____

Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☑ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	TDS g/L Remarks
16:59	0.5L	12.1	7.54	2047	154.9	3.51		1.330
		purge	2.0L	Until dry				

* Record DO in Mg/L, not percentage

Comments:

Odour: ☐ Yes ☑ No If yes ____

Sheen: ☐ Yes ☑ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like

Turbidity: Clear (1) (2) (3) (4) (5) Very Silty

Analysis	Type		Container Size 40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
D. Metals	☑ Plastic	☐ Glass			1					☑ Yes	☐ No	Nitric
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. 20154-02 Consumables: ☐ Waterra Tubing ____ ☑ HDPE/Teflon Tubing 4.5m ☑ Groundwater Filter

Field Dup. ____ ☑ Silicon Tubing 70cm ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development
☑ Purging/Sampling

Well No.: MW6-02

Project Name: MP DST
Project No.: 1411734
Location:
Date: 31 Aug 2014
Weather: Sun
Temperature: 20
Completed By: EZG
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 18:05
Tidally Influenced: ☐ Yes ☐ No
Depth to Product: ____ m
Product Thickness: ____ m
Pressurized: ☐ Yes ☐ No
Depth to Water (A): ____ m below ☐ TOP
Well Headspace: ____ ppm
Depth to Bottom of Well (B): ____ m below ☐ TOP
One Well Volume: ~0.3L
Diameter of Standpipe: ____ mm
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
Well Condition:
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump: ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☑ Peristaltic ☐ Submersible ☐ Bladder

Pump Details: Geopump

Multimeter Model: YSI 550MPS
pH/Temp Meter Model: 11
Conductivity Meter Model: 11
Dissolved Oxygen Meter Model: 11
ORP (Redex) Meter Model: 11
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☐ Rental Equipment: PINK
☐ Field Bump
☐ pH4 ____ ☐ pH7 ____
☐ pH10 ____
☐ 1413 us/cm See MW6-06
☑ Field Calibration PH see MW6-06

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 0.9L litres
Start: 18:07
Finish:
Avg. Flow Rate: ____ L/min.
Sample intake depth:

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☑ Specific Cond. (μS/cm) or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
18:08	1.5L	15.5	7.69	1535	-54.1	3.51	Steady	0.996 g/L
18:10	2	15.7	7.66	1530	-60.2	2.75	11	0.994 g/L
18:11	2.2	15.8	7.65	1530	-60.0	2.64	11	0.995 g/L
18:12	2.8	15.9	7.64	1533	-59.7	2.50	1	0.998 g/L

* Record DO in Mg/L, not percentage

Purge 0.5L through Waterra filter

Comments:

Odour: ☐ Yes ☑ No If yes
Sheen: ☐ Yes ☑ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear (1 1 1) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 Very Silty

Analysis	Type		40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
Anions	☑ Plastic	☐ Glass					1			☐ Yes	☐ No	
D Metals	☑ Plastic	☐ Glass			1					☑ Yes	☐ No	Nitric
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
										☐ Yes	☐ No	

(Container Size columns: 40 mL – 4 L)

SCN No. G0158-04
Field Dup.
Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing 2.5m ☑ Groundwater Filter
☑ Silicon Tubing 15cm ☐ D.O. Ampoules ____ ☐ Footvalve

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GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development
☒ Purging/Sampling

Well No.: MW16-03D

Project Name: Mount Polley DSI
Project No.: 1411734
Location: East HL . POlley Mng
Date: 30 Aug 2016
Weather: Sun
Temperature:
Completed By: EZG
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 13:25
Tidally Influenced: ☐ Yes ☒ No
Depth to Product: ____ m
Product Thickness: ____ m
Pressurized: ☐ Yes ☒ No
Depth to Water (A): 2.362 m below ☒ TOP (Aug 31 2.366m)
Well Headspace: ____ ppm
Depth to Bottom of Well (B): 3.006 m below ☒ TOP
One Well Volume:
Diameter of Standpipe: 25 mm
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
Well Condition: New 0.935m Stick up
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☒ Peristaltic ☐ Submersible ☐ Bladder

Multimeter Model: YSI Pro56 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —

☒ Rental Equipment: PSNW
☒ Field Bump: See EZG Notes
☐ pH4 ____ ☐ pH7 ____
☐ pH10 ____
☐ 1413 us/cm ____
Pump Details: ____
☐ D.O. Ampoule
☐ Field Calibration ____

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X ____ = ____ litres
Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min.
Sample Intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
13:33	0.4	14	6.11	564	15.15	4.15		0.368G/L
	0.75	13.5	5.71	852	19.7	2.31		0.55
	0.9							
	1.0							
Aug 31								
16:59	0.25	13	7.03	566	55.7			0.368L

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I Very Silty

Analysis	Type		Container Size 40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
Anions	☒ Plastic	☐ Glass					1			☐ Yes	☐ No	
D. Metals	☒ Plastic	☐ Glass			1					☒ Yes	☐ No	Nitric
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No.: 60153-03
Field Dup.: ____
Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing 3.5m ☒ Groundwater Filter
☒ Silicon Tubing 15cm ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development
☒ Purging/Sampling

Well No.: GW15-03

Project Name: Mount Polley DSR
Project No.: 1411734
Location: Top of Canyon
Date: 1 Sept 2016
Weather:
Temperature:
Completed By:
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 13:04
Depth to Product: ____ m
Product Thickness: ____ m
Depth to Water (A): 1.305 m below ☐ TOP
Depth to Bottom of Well (B): 2.084 m below ☐ TOP
Diameter of Standpipe: 38 mm
Well Condition: 2015 piezometer
Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume:
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = 0.8 Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump: ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☒ Peristaltic ☐ Submersible ☐ Bladder

Pump Details: Geopump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☒ Rental Equipment: PINE
☒ Field Bump: See EZG notes
☐ pH4 ☐ pH7
☐ pH10
☐ 1413 us/cm
☒ Field Calibration: See EZG notes

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 2.4 litres
Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min.
Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks TDS g/L
13:04	1.2	14.6	7.04	977	-86	6.15		0.635
		↳ Purged	dry					
Little to	No		REcharge	in	2	15 min		
	very	different	from	2015				

* Record DO in Mg/L, not percentage

Comments:
Odour: ☒ Yes ☐ No If yes: Swamp like organic smell
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear I I I I I I I I I I I I I I I I I I I I I I I I I I I I I (I) Very Silty — Black

Analysis	Type		40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
			Container Size									
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____
Field Dup. ____
Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development
☒ Purging/Sampling

Well No.: MW16-04

Project Name: Mount Polley DSI
Project No.: 1411734
Location: Transect 6
Date: 1 Sept 2014
Weather: Overcast **Temperature:** 20
Completed By: EZO
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 14:45
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 1.904 m below ☒ TOP
Depth to Bottom of Well (B): 3.545 m below ☐ TOP
Diameter of Standpipe: 25 mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: ~1 L
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☒ Peristaltic ☐ Submersible ☐ Bladder

Pump Details: Geopump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☒ Rental Equipment: DINF
☒ Field Bump See EZO notes
☐ pH4 ☐ pH7
☐ pH10
☐ 1413 us/cm
☒ Field Calibration See EZO notes

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 3 litres Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks TDS g/L
14:45	2	12.6	7.97	670	-6.2	0.66		0.435
14:46	3	12.4	7.92	669	-10.9	0.50		0.435
14:47	3.5	12.2	7.89	671	-18.6	0.38		0.435
14:48	4.0	11.9	7.84	668	-28.5	0.26		0.433
14:49	4.5	11.8	7.80	661	-32.9	0.20		0.429

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: (Clear) I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I Very Silty

Analysis	Type		40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
Anion	☒ Plastic	☐ Glass					2			☐ Yes	☒ No	
D. Metals	☒ Plastic	☐ Glass			2					☒ Yes	☐ No	Nitric
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. 60153-11
Field Dup. 60153-12

Consumables: ☐ Waterra Tubing ____ ☒ HDPE/Teflon Tubing 4.5m ☒ Groundwater Filter
☒ Silicon Tubing 25cm ☐ D.O. Ampoules ____ ☐ Footvalve

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GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development ☑ Purging/Sampling Well No.: MW16-05D

Project Name: Mount Polley DSF **Project No.:** 1411734

Location: Transect 14. **Date:** 30 Aug 2016

Weather: Sun **Temperature:** 20 **Completed By:** EZD

GPS Coordinates: **Reviewed By:**

MONITORING WELL INFORMATION

Time of Measurement: 16:14

Depth to Product: ____ m Product Thickness: ____ m

Depth to Water (A): 2.763 m below ☑ TOP

Depth to Bottom of Well (B): 3.944 m below ☑ TOP

Diameter of Standpipe: ____ mm

Well Condition: New

Tidally Influenced: ☐ Yes ☐ No

Pressurized: ☐ Yes ☑ No

Well Headspace: ____ ppm

One Well Volume: 0.60L

(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well

(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump
- ☐ Waterra
- ☐ Hydrolift
- ☐ Bailer (Type: ____)
- ☑ Peristaltic
- ☐ Submersible
- ☐ Bladder

Pump Details: Geopump

Multimeter Model: YSI 556 MPS ☑ Rental Equipment: PINE

pH/Temp Meter Model: "

Conductivity Meter Model: "

Dissolved Oxygen Meter Model: "

ORP (Redex) Meter Model: "

Organic Vapour Meter Model: ____

☐ D.O. Ampoule

☑ Field Bump See EZD NWs
- ☐ pH4 ____ ☐ pH7 ____
- ☐ pH10 ____
- ☐ 1413 us/cm ____

☐ Field Calibration ____

WELL DEVELOPMENT/PURGING

Purged night before

Purge Volume: Well. Vol. X ____ = ____ litres Start: ____ Finish: ____

Avg. Flow Rate: ____ L/min. Sample Intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
14:14	0.5	14		1661	-62.1	3.15		0.76 g/100 g

* Record DO in Mg/L, not percentage

Comments:

Odour: ☐ Yes ☑ No If yes ____

Sheen: ☐ Yes ☑ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like

Turbidity: Clear |||| (1) |||||||||||||||||||| Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
Anions	☑ Plastic	☐ Glass					1			☐ Yes	☐ No	
D. Metals	☑ Plastic	☐ Glass			1					☑ Yes	☐ No	Nitric
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. 160154-01 Consumables: ☐ Waterra Tubing ____ ☑ HDPE/Teflon Tubing 5m ☐ Groundwater Filter

Field Dup. ____ ☑ Silicon Tubing 20 cm ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development ☒ Purging/Sampling Well No.: MW16-065

Project Name: Mount Polley DSI **Project No.:** 1411734
Location: **Date:** 1 Sept 2016
Weather: overcast **Temperature:** 20 **Completed By:** EZG
GPS Coordinates: **Reviewed By:**

MONITORING WELL INFORMATION

Time of Measurement: 13:23
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 2.057 m below ☒ TOP
Depth to Bottom of Well (B): 2.066 m below ☐ TOP
Diameter of Standpipe: 25 mm
Well Condition: New

Tidally Influenced: ☐ Yes ☒ No
Pressurized: ☐ Yes ☒ No
Well Headspace: ____ ppm
One Well Volume: 0.5L
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:____) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geopump

Multimeter Model: YSI 556 MP ☒ Rental Equipment: PINE
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☒ Field Bump See EZG Nb
☒ pH4 ____ ☒ pH7 ____
☒ pH10 ____
☒ 1413 us/cm ____
☒ Field Calibration pH See EZG Nb

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 1.5 litres Start: 13:28 Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	TDS Remarks
13:28	1.5	15.5	7.97	906	20.2	4.75	Steady	0.542 g/L
13:33	1.8	15.5	7.54	904	22.9	4.20		0.588
13:35	2.2	15.5	7.37	903	24.6	4.04		0.586
13:36	2.5	15.8	7.20	898	26.4	4.10		0.582
13:37	2.8	15.9	7.14	895	27.5	4.06		0.587
13:38	3.0	15.9	2.09	893	27.8	4.07		0.580

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☐ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear (5) (2) Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
D. Metals	☒ Plastic	☐ Glass			1					☒ Yes	☐ No	Nitric
Anions	☒ Plastic	☐ Glass					1			☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. 60153-08
Field Dup. 60153-09

Consumables: ☐ Waterra Tubing ____ ☒ HDPE/Teflon Tubing 4m ☐ Groundwater Filter
☒ Silicon Tubing 20cm ☐ D.O. Ampoules ____ ☐ Footvalve

purge 1L through filter

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development
☒ Purging/Sampling

Well No.: MW16-02D

Project Name: Mount Polley DST
Project No.: 1411734
Location:
Date: 20 Aug 2014
Weather: overcast **Temperature:** 20
Completed By: EBG
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: (A sample date)
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 2.014 m below ☐ TOP (1 Sept
Depth to Bottom of Well (B): 3.914 m below ☐ TOP 2.034m
Diameter of Standpipe: ____ mm
Well Condition:

Tidally Influenced: ☐ Yes ☒ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: ~1L
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☐ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: ____

Multimeter Model: ____
pH/Temp Meter Model: ____
Conductivity Meter Model: ____
Dissolved Oxygen Meter Model: ____
ORP (Redex) Meter Model: ____
Organic Vapour Meter Model: ____
☐ D.O. Ampoule

☐ Rental Equipment:
☒ Field Bump (Aug 30 sec 1E2a rds Aug 31 sec)
☐ pH4 ____ ☐ pH7 ____
☐ pH10 ____
☐ 1413 us/cm 1327
☒ Field Calibration pH Aug 31

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 3 litres
Avg. Flow Rate: ____ L/min.
Start: ____ Finish: ____
Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks (TDS)
11:16	0.8	16	8.26	947	-5.10	3.30		0.55 g/L
	1.1	16.5	7.91	848	-29.9	3.47		
8:18 (Aug 31)	0.4	13	8.48	853	-120.5	1.99		0.555 g/L
	1.1							↳ ORP still dropping Slowly
8:27	1.1		8.40	785	-113.6			0.509 g/L
					1.5 hr sample			
14:00 (Sept 1)		16	7.46	689	-88.8	12.55		0.545

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear |||||||||||||||||||||||||||||||||||| Very Silty

Analysis	Type		Container Size 40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
Anions	☒ Plastic	☐ Glass					1			☐ Yes	☒ No	
D. Metals	☒ Plastic	☐ Glass			1					☒ Yes	☐ No	Nitric
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. G0153-10
Field Dup. ____
Consumables: ☐ Waterra Tubing ____ ☒ HDPE/Teflon Tubing 5m ☒ Groundwater Filter
☒ Silicon Tubing 20cm ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development ☒ Purging/Sampling Well No. GWB-01

Project Name: MP DST **Project No.:** 1411734
Location: Transect 3 Downstream **Date:** 31 Aug 2016
Weather: _____ **Temperature:** _____ **Completed By:** EZG
GPS Coordinates: _____ **Reviewed By:** _____

MONITORING WELL INFORMATION

Time of Measurement: 16:10
Depth to Product: _____ m Product Thickness: _____ m
Depth to Water (A): 1.201 m below ☒ TOP
Depth to Bottom of Well (B): 1.702 m below ☐ TOP
Diameter of Standpipe: _____ mm
Well Condition: _____

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: _____ ppm
One Well Volume:
(B-A)*2.0 = _____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = _____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: _____) ☐ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: _____

Multimeter Model: _____
pH/Temp Meter Model: _____
Conductivity Meter Model: _____
Dissolved Oxygen Meter Model: _____
ORP (Redex) Meter Model: _____
Organic Vapour Meter Model: _____
☐ D.O. Ampoule

☐ Rental Equipment:
☐ Field Bump
☐ pH4 _____ ☐ pH7 _____
☐ pH10 _____
☐ 1413 us/cm _____
☐ Field Calibration _____

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X _____ = _____ litres Start: _____ Finish: _____
Avg. Flow Rate: _____ L/min. Sample intake depth: _____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
								NOT ENOUGH WATER

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☐ No If yes _____
Sheen: ☐ Yes ☐ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear |||||||||||||||||||||||||||||||| Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. _____ Consumables: ☐ Waterra Tubing _____ ☐ HDPE/Teflon Tubing _____ ☐ Groundwater Filter
Field Dup. _____ ☐ Silicon Tubing _____ ☐ D.O. Ampoules _____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development ☒ Purging/Sampling Well No.: GW16-02

Project Name: Mount Polley **Project No.:** 1411734
Location: Ditch road . most-upstream **Date:** 31 Aug 2016
Weather: Sun **Temperature:** 20 **Completed By:** EZG
GPS Coordinates: **Reviewed By:**

MONITORING WELL INFORMATION

Time of Measurement:
Depth to Product: m Product Thickness: m
Depth to Water (A): 1.066 m below ☒ TOP
Depth to Bottom of Well (B): 2.587 m below ☐ TOP
Diameter of Standpipe: mm 1.5" OD
Well Condition: 20L. pigtail

Tidally Influenced: ☐ Yes ☒ No
Pressurized: ☐ Yes ☒ No
Well Headspace: ppm
One Well Volume: 20.8L
(B-A)*2.0 = Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Geopump

Multimeter Model: YSI MPS 556 ☒ Rental Equipment: PCNF
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —

☒ Field Bump ☐ pH4 ☐ pH7 ☐ pH10 ☐ 1413 us/cm see MW16-06
☐ D.O. Ampoule ☒ Field Calibration pH see MW16-06

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 2.4 litres Start: 10:55 Finish:
Avg. Flow Rate: L/min. Sample intake depth:

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	TDS Remarks
10:55	1.8	13.0	8.76	1202	-71.5	4.52		0.781 g/L purge dry
11:05	2.2	16	7.96	1198	-73.2	4.75	1.7m	0.780
11:08	2.5	16	7.92	1210	-70.4	4.75	1.9m	0.787 g/L
11:16	2.8	15.5	7.87	1214	-69.9	5.43	2.15m	0.789 g/L

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear |1|2|3|4|5| Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
Anions/Nutrients	☒ Plastic	☐ Glass					1			☐ Yes	☒ No	
D. Metals	☒ Plastic	☐ Glass			1					☒ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. 16-0135-01 Consumables: ☐ Waterra Tubing ☒ HDPE/Teflon Tubing 3m ☐ Groundwater Filter
Field Dup. ☒ Silicon Tubing 15cm ☐ D.O. Ampoules ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development ☒ Purging/Sampling Well No.: MW16-07

Project Name: Mount Polley DSI **Project No.:** 1411734
Location: **Date:** 1 Sept 2016
Weather: Overcast **Temperature:** 20° **Completed By:** EZO
GPS Coordinates: **Reviewed By:**

MONITORING WELL INFORMATION

Time of Measurement: 10:13
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 3.861 m below ☒ TOP
Depth to Bottom of Well (B): 6.304 m below ☐ TOP
Diameter of Standpipe: 25 mm
Well Condition: New

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume: 1.3
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:____) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: Grapump

Multimeter Model: YSI 556 MPS
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☒ Rental Equipment: PTNE
☐ Field Bump See FTC Note
☐ pH4 ____ ☐ pH7 ____
☐ pH10 ____
☐ 1413 us/cm ____
☒ Field Calibration pH see note

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 3.9 litres Start: 10:13 Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
10:20	2	11.28	7.77	711	24.4	2.7		0.37
10:22		11.17	7.72	688	23.3	1.5		0.18
10:24		10.96	7.70	675	17.4	1.2		0.14
10:26		10.97	7.69	667	13.5	1.2		0.13
10:28	3.5	10.87	7.67	659	10.0	1.1		0.13

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear I I I I I (1) I I I I I I I I I I I I I I I I I I I I I Very Silty

Analysis	Type		Container Size 40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
D. Metals	☒ Plastic	☐ Glass			1					☒ Yes	☐ No	Nitric
Anions	☒ Plastic	☐ Glass					1			☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. GOSS-06 Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing 1.5m ☒ Groundwater Filter
Field Dup. ____ ☒ Silicon Tubing 20cm ☐ D.O. Ampoules ____ ☐ Footvalve

Purge 1L through filter

Golder Associates

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development
☒ Purging/Sampling

Well No.: MW16-08D

Project Name:	Mount Polley	**Project No.:**	1411734
Location:	Transect 2 Main	**Date:**	30 AUG 2016
Weather:	Sun **Temperature:** 25	**Completed By:**	EZG
GPS Coordinates:		**Reviewed By:**	

MONITORING WELL INFORMATION

Time of Measurement: 14:52

Depth to Product: ____ m Product Thickness: ____ m

Depth to Water (A): 3.328 m below ☒ TOP 31 Aug 3.334 m

Depth to Bottom of Well (B): 3.572 m below ☒ TOP

Diameter of Standpipe: 25 mm

Well Condition: NEW

Tidally Influenced: ☐ Yes ☐ No

Pressurized: ☐ Yes ☐ No

Well Headspace: ____ ppm

One Well Volume: 0.12L

(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well

(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump: ☐ Waterra ☐ Hydrolift ☐ Bailer (Type:____) ☒ Peristaltic ☐ Submersible ☐ Bladder

Pump Details: Geopump

Multimeter Model: YSI 556

pH/Temp Meter Model: "

Conductivity Meter Model: "

Dissolved Oxygen Meter Model: "

ORP (Redox) Meter Model: "

Organic Vapour Meter Model:

☐ D.O. Ampoule 31 Aug

☒ Rental Equipment:

☒ Field Bump See EZG NB

☐ pH4 ☐ pH7 ☐ pH10 ☐ 1413 us/cm

☒ Field Calibration pH 31 Aug See MW16-08A

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X ____ = ____ litres Start: ____ Finish: ____

Avg. Flow Rate: ____ L/min. Sample intake depth: ____

	Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☒ Specific Cond. (µS/cm) or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
	14:58	0.3	16.5	6.60	1284	60.6	1.74	dry	6.779 TDS g/L
31 Aug	12:22	0.25	14.5	8.58	1046	3.3	3.77		purged to dry 3.73 g/L

* Record DO in Mg/L, not percentage

Comments:

Odour: ☐ Yes ☒ No If yes ____

Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like

Turbidity: Clear I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I Very Silty

Analysis	Type		40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
D. Metals	☒ Plastic	☐ Glass			1					☒ Yes	☐ No	Nitric
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

Collected Sept 1 @ 9:42

SCN No. 6053-05

Field Dup. ____

Consumables: ☐ Waterra Tubing ____ ☒ HDPE/Teflon Tubing 4m ☒ Groundwater Filter ☒ Silicon Tubing 20 cm ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development
☒ Purging/Sampling

Well No. MW16-09S

Project Name: Mount Polley
Location: transect 2 South
Weather: _____ **Temperature:** _____
GPS Coordinates: _____

Project No.: 1411734
Date: 31 Aug 2016
Completed By: EZL
Reviewed By: _____

MONITORING WELL INFORMATION

Time of Measurement: _____
Depth to Product: _____ m Product Thickness: _____ m
Depth to Water (A): 1.990 m below ☐ TOP
Depth to Bottom of Well (B): 5.29 m below ☐ TOP
Diameter of Standpipe: 025 mm
Well Condition: _____

Tidally Influenced: ☐ Yes ☒ No
Pressurized: ☐ Yes ☒ No
Well Headspace: _____ ppm
One Well Volume: 0.15
(B-A)*2.0 = _____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = _____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: _____) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: _____

Multimeter Model: YSI 556
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —

☐ D.O. Ampoule

☐ Rental Equipment:
☒ Field Bump
☐ pH4 _____ ☐ pH7 _____
☐ pH10 _____
☐ 1413 us/cm _____
☒ Field Calibration pH Spec MW16-06

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 0.45 litres
Avg. Flow Rate: _____ L/min.

Start: _____ Finish: _____
Sample intake depth: _____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks
13:00	0.2		Purge	Dry				
	0.4		Purge	Dry				
	0.6		Purge	Dry				
	0.8		Purge	Dry				
	1.0		Purge	Dry				
14:11	1.2	18	7.03	636	413			0.413 TDS g/L

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☒ No If yes _____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear (1) (2) (3) (4) (5) Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
General Inorganics	☒ Plastic	☐ Glass					1			☐ Yes	☒ No	½ full
B Metals	☒ Plastic	☐ Glass			1					☒ Yes	☐ No	Nitric
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. G0153-02 Consumables: ☐ Waterra Tubing _____ ☐ HDPE/Teflon Tubing GW ☒ Groundwater Filter
Field Dup. _____ ☐ Silicon Tubing 15cm ☐ D.O. Ampoules _____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development
☒ Purging/Sampling

Well No.: MW16-10

Project Name: Mount Polley DSI
Project No.: 1411734
Location:
Date: 31 Aug 2016
Weather: **Temperature:**
Completed By: EBG
GPS Coordinates:
Reviewed By:

MONITORING WELL INFORMATION

Time of Measurement: 12:35
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): ____ m below ☐ TOP
Depth to Bottom of Well (B): 4.831 m below ☐ TOP
Diameter of Standpipe: ____ mm
Well Condition: DRY!

Tidally Influenced: ☐ Yes ☐ No
Pressurized: ☐ Yes ☐ No
Well Headspace: ____ ppm
One Well Volume:
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra
☐ Hydrolift
☐ Bailer (Type: ____)
☐ Peristaltic
☐ Submersible
☐ Bladder

Multimeter Model: ____ ☐ Rental Equipment:
pH/Temp Meter Model: ____
Conductivity Meter Model: ____ ☐ Field Bump
Dissolved Oxygen Meter Model: ____ ☐ pH4 ____ ☐ pH7 ____
ORP (Redex) Meter Model: ____ ☐ pH10 ____
Organic Vapour Meter Model: ____ ☐ 1413 us/cm ____

Pump Details: ____ ☐ D.O. Ampoule ☐ Field Calibration ____

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X ____ = ____ litres Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm *(circle one)*	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	Remarks

* Record DO in Mg/L, not percentage

Comments:
Odour: ☐ Yes ☐ No If yes ____
Sheen: ☐ Yes ☐ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear I I I I I I I I I I I I I I I I I I I I I I I I I I I I I Very Silty

Analysis	Type		Container Size							Filtered		Preservatives
			40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L			
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. ____ Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing ____ ☐ Groundwater Filter
Field Dup. ____ ☐ Silicon Tubing ____ ☐ D.O. Ampoules ____ ☐ Footvalve

GROUNDWATER DEVELOPMENT AND SAMPLING DATA

☐ Development ☒ Purging/Sampling Well No.: MW16-11

Project Name: Mount Polley DSI **Project No.:** 1411734
Location: Lower Hynelline Bldg **Date:** 30 Aug 2016
Weather: Sun **Temperature:** 23 **Completed By:** FJG
GPS Coordinates: **Reviewed By:**

MONITORING WELL INFORMATION

Time of Measurement: 15:15
Depth to Product: ____ m Product Thickness: ____ m
Depth to Water (A): 4.42 m below ☐ TOP Sept 4,927m
Depth to Bottom of Well (B): 6.804 m below ☒ TOP
Diameter of Standpipe: 25 mm
Well Condition: New

Tidally Influenced: ☐ Yes ☒ No
Pressurized: ☐ Yes ☒ No
Well Headspace: ____ ppm
One Well Volume: ~1L
(B-A)*2.0 = ____ Litres - for a 51 mm (2.0 inch) diameter well
(B-A)*1.1 = ____ Litres - for a 38 mm (1.5 inch) diameter well

EQUIPMENT LIST

Pump ☐ Waterra ☐ Hydrolift ☐ Bailer (Type: ____) ☒ Peristaltic ☐ Submersible ☐ Bladder
Pump Details: ____

Multimeter Model: YSI
pH/Temp Meter Model: "
Conductivity Meter Model: "
Dissolved Oxygen Meter Model: "
ORP (Redex) Meter Model: "
Organic Vapour Meter Model: —
☐ D.O. Ampoule

☐ Rental Equipment: FJDWE
☒ Field Bump FJG Note
☐ pH4 ____ ☐ pH7 ____
☐ pH10 ____
☐ 1413 us/cm ____
☐ Field Calibration ____

WELL DEVELOPMENT/PURGING

Purge Volume: Well. Vol. X 3 = 3L litres Start: ____ Finish: ____
Avg. Flow Rate: ____ L/min. Sample intake depth: ____

Time	Volume Removed (L)	Temp. (°C)	pH (Units)	☐ Cond. ☐ Specific Cond. µS/cm or mS/cm (circle one)	Redox (mV)	Diss. O_2* (mg/L)	Water Level (m)	tds Remarks
14:47	0.5	10	10.81	6.6	-.20	.08		.394 G/L
	1.5	9	10.28	5.99	-13.8			0.393 G/L
	2.5	9	8.88	6.09	-8.7	3.88		0.396
	3	9	10.93	6.08	-6.1	3.36		0.395
	4	8.8	8.8	6.01	-6.4			0.390
Sept 1								
11:26	1.7	8.8	8.15	5.99	24.6			0.389
11:56	1.5	10.4	7.91	5.95	31.4			0.387

* Record DO in Mg/L, not percentage

8.56
12.9 pH

W/S I seems to be acting up. Testing W/E & T — Aug 30

Comments:
Odour: ☐ Yes ☒ No If yes ____
Sheen: ☐ Yes ☒ No If yes ☐ Hydrocarbon-like OR ☐ Metallic-like
Turbidity: Clear 1 (2) 3 4 5 Very Silty

Analysis	Type		Container Size 40 mL	120 mL	250 mL	500 mL	1 L	2 L	4 L	Filtered		Preservatives
Anions	☒ Plastic	☐ Glass					1			☐ Yes	☒ No	
D. Metals	☐ Plastic	☐ Glass			1					☒ Yes	☐ No	Nitric
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	
	☐ Plastic	☐ Glass								☐ Yes	☐ No	

SCN No. 6053-07 Consumables: ☐ Waterra Tubing ____ ☐ HDPE/Teflon Tubing 7.5m ☒ Groundwater Filter
Field Dup. ____ ☒ Silicon Tubing 30cm ☐ D.O. Ampoules ____ ☐ Footvalve

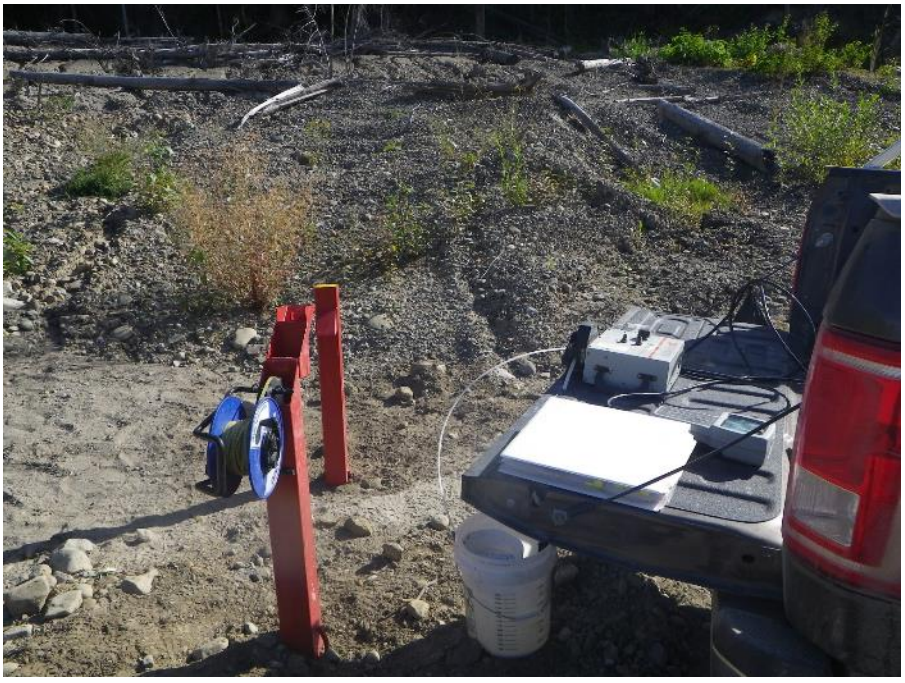
Purge 200mL through filter

ATTACHMENT 5
Photographs

Photograph 1: Drilling MW16-01 in the Polley Plug Flats Using the Truck-Mounted Solid Stem Auger Drill Rig

Photograph 2: Drilling MW16-09 in the Lower Hazeltine Floodplain Using the Truck-Mounted Solid Stem Auger Drill Rig

Photograph 3: Drilling MW16-06 Using the Truck-Mounted Solid Stem Auger Drill Rig



Photograph 4: Developing MW16-06S using a Peristaltic Pump

Photograph 5: Groundwater Sampling Set-Up at MW16-02

Photograph 6: Groundwater Sampling Set-Up at MW16-07

Photograph 7: Groundwater Sampling Of MW16-06S

Photograph 8: Surveying Wells after Sampling Groundwater

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ATTACHMENT 6
Laboratory Reports and Chain of Custody

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 07-SEP-16
Report Date: 16-SEP-16 13:15 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1824847

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0153
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1824847-1 WATER 31-AUG-16 11:20 GW16-02	L1824847-2 WATER 31-AUG-16 14:11 MW16-09D	L1824847-3 WATER 31-AUG-16 17:00 MW16-03D	L1824847-4 WATER 31-AUG-16 18:20 MW16-02	L1824847-5 WATER 01-SEP-16 09:42 MW16-08D
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	442	305	253	705	527
	Total Suspended Solids (mg/L)	205	25.9	137	21.2	
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.0997	0.0499	<0.0050	0.218	
	Bromide (Br) (mg/L)	<0.25 DLDS	<0.050	<0.25 DLDS	<0.50 DLDS	
	Chloride (Cl) (mg/L)	8.4	1.09	6.1	11.9	
	Fluoride (F) (mg/L)	0.39	0.043	<0.10 DLDS	0.44	
	Nitrate (as N) (mg/L)	<0.025 DLDS	0.0079	<0.025 DLDS	<0.050 DLDS	
	Nitrite (as N) (mg/L)	<0.0050 DLDS	<0.0010	<0.0050 DLDS	<0.010 DLDS	
	Total Nitrogen (mg/L)	0.343	0.157	0.636	0.544	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0012	0.0031	<0.0010	
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.020 DLM	0.0091	<0.020 DLM	
	Phosphorus (P)-Total (mg/L)	0.211	0.0556	0.167	0.0220	
	Sulfate (SO4) (mg/L)	289	64.1	13.7	542	
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0346	0.179	0.0339	0.0068	0.0738
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00014
	Arsenic (As)-Dissolved (mg/L)	0.00594	0.00051	0.00055	0.00336	0.00247
	Barium (Ba)-Dissolved (mg/L)	0.107	0.175	0.0383	0.0619	0.117
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.255	0.036	<0.010	0.169	0.067
	Cadmium (Cd)-Dissolved (mg/L)	0.0000100	0.000211	0.000133	0.0000185	0.0000434
	Calcium (Ca)-Dissolved (mg/L)	132	94.0	78.9	224	142
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	0.00057	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.00232	0.00329	0.00422	0.00182	0.00031
	Copper (Cu)-Dissolved (mg/L)	0.00143	0.00239	0.00299	0.00127	0.00484
	Iron (Fe)-Dissolved (mg/L)	1.15	0.293	0.119	3.04	0.081
	Lead (Pb)-Dissolved (mg/L)	0.000051	0.000148	<0.000050	<0.000050	0.000078
	Lithium (Li)-Dissolved (mg/L)	0.0018	0.0014	0.0041	0.0054	0.0086
	Magnesium (Mg)-Dissolved (mg/L)	27.3	17.1	13.6	35.6	41.6
	Manganese (Mn)-Dissolved (mg/L)	2.93	3.75	0.767	3.83	0.134
	Molybdenum (Mo)-Dissolved (mg/L)	0.0822	0.00108	0.000068	0.0561	0.00133
	Nickel (Ni)-Dissolved (mg/L)	0.00326	0.00818	0.00954	0.00143	0.00331
	Potassium (K)-Dissolved (mg/L)	7.06	1.45	0.292	6.53	2.91
	Selenium (Se)-Dissolved (mg/L)	0.000073	0.000052	0.000110	0.000125	0.000831
	Silicon (Si)-Dissolved (mg/L)	9.89	8.26	15.3	13.4	12.1
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	0.000014	<0.000010	<0.000010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1824847-6 WATER 01-SEP-16 10:30 MW16-07	L1824847-7 WATER 01-SEP-16 11:40 MW16-11	L1824847-8 WATER 01-SEP-16 13:40 MW16-06S	L1824847-9 WATER 01-SEP-16 13:40 MW16-06SD	L1824847-10 WATER 01-SEP-16 14:00 MW16-06D
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	260	309	471	453	400
	Total Suspended Solids (mg/L)	174	55.0	23.4	18.1	16.5
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.0680	0.0315	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)	<0.25 DLDS	<0.050	<0.25 DLDS	<0.25 DLDS	<0.25 DLDS
	Chloride (Cl) (mg/L)	11.3	0.74	5.8	5.9	3.7
	Fluoride (F) (mg/L)	0.52	0.228	<0.10 DLDS	<0.10 DLDS	0.27
	Nitrate (as N) (mg/L)	<0.025 DLDS	0.0242	3.57	3.64	<0.025 DLDS
	Nitrite (as N) (mg/L)	<0.0050 DLDS	0.0013	<0.0050 DLDS	<0.0050 DLDS	<0.0050 DLDS
	Total Nitrogen (mg/L)	0.253	0.163	3.59	3.57	0.063
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0053	0.0025	0.0026	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0067	0.0075	0.0038	0.0040	<0.020 DLM
	Phosphorus (P)-Total (mg/L)	0.145	0.0346	0.0268	0.0261	0.0128
	Sulfate (SO4) (mg/L)	233	35.9	241	246	130
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0562	0.0200	<0.0030	<0.0030	0.0057
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00030	<0.00010	<0.00010	0.00047
	Arsenic (As)-Dissolved (mg/L)	0.00598	0.00071	0.00064	0.00046	0.00085
	Barium (Ba)-Dissolved (mg/L)	0.0382	0.0638	0.158	0.129	0.117
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.241	0.056	0.023	0.015	0.027
	Cadmium (Cd)-Dissolved (mg/L)	0.0000092	0.0000478	0.0000825	0.0000845	0.0000732
	Calcium (Ca)-Dissolved (mg/L)	79.4	81.7	133	135	107
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.00038	0.00040	0.00010	<0.00010	0.00454
	Copper (Cu)-Dissolved (mg/L)	0.00340	0.00084	0.00459	0.00493	0.00245
	Iron (Fe)-Dissolved (mg/L)	0.193	0.036	<0.030	<0.030	<0.030
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0051	0.0142	0.0090	0.0109	0.0089
	Magnesium (Mg)-Dissolved (mg/L)	15.1	25.5	33.9	28.5	32.3
	Manganese (Mn)-Dissolved (mg/L)	0.334	0.0979	0.0562	0.0529	2.61
	Molybdenum (Mo)-Dissolved (mg/L)	0.106	0.00163	0.000675	0.000733	0.0185
	Nickel (Ni)-Dissolved (mg/L)	0.00086	0.00213	0.00096	0.00090	0.00564
	Potassium (K)-Dissolved (mg/L)	6.77	3.09	1.84	1.59	2.88
	Selenium (Se)-Dissolved (mg/L)	0.000059	0.00222	0.000280	0.000273	<0.000050
	Silicon (Si)-Dissolved (mg/L)	7.67	6.98	11.4	10.1	6.57
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1824847-11 WATER 01-SEP-16 14:50 MW16-04	L1824847-12 WATER 01-SEP-16 14:50 MW16-04D	L1824847-13 WATER 30-AUG-16 14:14 MW16-05D	L1824847-14 WATER 01-SEP-16 16:55 MW16-01D	
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	330	328	519	1120	
	Total Suspended Solids (mg/L)	119	77.9			
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050			
	Bromide (Br) (mg/L)	<0.050	<0.050			
	Chloride (Cl) (mg/L)	3.11	3.10			
	Fluoride (F) (mg/L)	0.040	0.039			
	Nitrate (as N) (mg/L)	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Total Nitrogen (mg/L)	0.227	0.224			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020			
	Phosphorus (P)-Total (mg/L)	0.0498	0.0649			
	Sulfate (SO4) (mg/L)	63.9	62.9			
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0058	0.0059	0.0163	0.0499	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020 DLA	
	Arsenic (As)-Dissolved (mg/L)	0.00089	0.00087	0.00143	0.00095	
	Barium (Ba)-Dissolved (mg/L)	0.0335	0.0334	0.154	0.159	
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020 DLA	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.00010 DLA	
	Boron (B)-Dissolved (mg/L)	0.024	0.025	0.047	0.070	
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	0.0000099	0.000480	
	Calcium (Ca)-Dissolved (mg/L)	107	107	151	360	
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00127	
	Cobalt (Co)-Dissolved (mg/L)	0.00014	0.00015	0.00232	0.0222	
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	0.00056	0.0212	
	Iron (Fe)-Dissolved (mg/L)	0.572	0.571	1.56	1.89	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.00010 DLA	
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	0.0012	<0.0020 DLA	
	Magnesium (Mg)-Dissolved (mg/L)	15.5	15.2	34.8	54.2	
	Manganese (Mn)-Dissolved (mg/L)	0.390	0.387	3.09	12.5	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00143	0.00152	0.00183	0.00681	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00228	0.0086	
	Potassium (K)-Dissolved (mg/L)	1.40	1.39	2.84	5.36	
	Selenium (Se)-Dissolved (mg/L)	0.000075	0.000130	0.000174	0.00025	
	Silicon (Si)-Dissolved (mg/L)	8.30	8.23	14.4	9.98	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000020 DLA	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1824847-1	L1824847-2	L1824847-3	L1824847-4	L1824847-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	31-AUG-16	31-AUG-16	31-AUG-16	31-AUG-16	01-SEP-16
	Sampled Time	11:20	14:11	17:00	18:20	09:42
	Client ID	GW16-02	MW16-09D	MW16-03D	MW16-02	MW16-08D
Grouping	**Analyte**					
WATER						
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	99.7	13.9	9.01	92.0	26.4
	Strontium (Sr)-Dissolved (mg/L)	1.40	0.610	0.327	2.00	0.796
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000030	0.000018	<0.000010	0.000031
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00017
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00534	0.00123	0.000173	0.00307	0.00230
	Vanadium (V)-Dissolved (mg/L)	0.00073	0.00105	0.00092	0.00158	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1824847-6 WATER 01-SEP-16 10:30 MW16-07	L1824847-7 WATER 01-SEP-16 11:40 MW16-11	L1824847-8 WATER 01-SEP-16 13:40 MW16-06S	L1824847-9 WATER 01-SEP-16 13:40 MW16-06SD	L1824847-10 WATER 01-SEP-16 14:00 MW16-06D
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	82.1	12.4	17.2	15.3	19.5
	Strontium (Sr)-Dissolved (mg/L)	0.811	0.391	1.36	1.48	1.48
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000025	<0.000010	<0.000010	0.000016
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00132	0.00390	0.00206	0.00248	0.00142
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	0.00079	0.00067	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	0.0314	<0.0030	<0.0030	<0.0030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1824847-11 WATER 01-SEP-16 14:50 MW16-04	L1824847-12 WATER 01-SEP-16 14:50 MW16-04D	L1824847-13 WATER 30-AUG-16 14:14 MW16-05D	L1824847-14 WATER 01-SEP-16 16:55 MW16-01D	
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	12.5	12.2	51.0	75.3	
	Strontium (Sr)-Dissolved (mg/L)	0.527	0.529	0.795	3.01	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000021	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00020 DLA	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.000079	0.000080	0.00130	0.00623	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.0017	
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	0.0263	

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1824847-1, -10, -11, -12, -13, -14, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Nitrogen	MS-B	L1824847-1, -10, -11, -12, -2, -3, -4, -6, -7
Matrix Spike	Total Nitrogen	MS-B	L1824847-1, -10, -11, -12, -2, -3, -4, -6, -7
Matrix Spike	Total Nitrogen	MS-B	L1824847-1, -10, -11, -12, -2, -3, -4, -6, -7
Matrix Spike	Total Nitrogen	MS-B	L1824847-8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

F-IC-N-VA	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-T-COL-VA	Water	Total Nitrogen in water by Colour	APHA4500-P(J)/NEMI9171/USGS03-4174

This analysis is carried out using procedures adapted from APHA Method 4500-P (J) "Persulphate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus" and National Environmental Methods Index - Nemi method 5735.

NH3-F-VA	Water	Ammonia in Water by Fluorescence	APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-VA	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-VA	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

P-TD-COL-VA	Water	Total Dissolved P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SO4-IC-N-VA	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0153

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

L1824847-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # G0153

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab_use_only)	[redacted]	ALS Contact: Can Dang	Sampler:

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DISSOLVED METALS	TSS/ANIONS/NUTRIENTS	DOC/NITROGEN/PH	HARDNESS	Number of Containers
[redacted]	GW16-02	31-Aug-16	11:20	Water	X	X	X	X	2
[redacted]	MW16-09D	31-Aug-16	14:11	Water	X	X	X	X	2
[redacted]	MW16-03D	31-Aug-16	17:00	Water	X	X	X	X	2
[redacted]	MW16-02	31-Aug-16	18:20	Water	X	X	X	X	2
[redacted]	MW16-08D	01-Sep-16	9:42	Water	X			X	1
[redacted]	MW16-07	01-Sep-16	10:30	Water	X	X	X	X	2
[redacted]	MW16-11	01-Sep-16	11:40	Water	X	X	X	X	2
[redacted]	MW16-06S	01-Sep-16	13:40	Water	X	X	X	X	2
[redacted]	MW16-06Sd	01-Sep-16	13:40	Water	X	X	X	X	2
[redacted]	MW16-06D	01-Sep-16	14:00	Water	X	X	X	X	2
[redacted]	MW16-04	01-Sep-16	14:50	Water	X	X	X	X	2
[redacted]	MW16-04d	01-Sep-16	14:50	Water	X	X	X	X	2

Short Holding Time
Rush Processing

Special Instructions / Regulations / Hazardous Details

Contact Andrew Bruemmer "abruemmer@golder.com" before analysis.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Evin Zapf-Gilje	21/08/2016 0:00	SE	Sept 1/16	9:25am	5,6,6,8,8C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0153

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only):		ALS Contact: Can Dang	Sampler:

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DISSOLVED METALS	TSS/ANIONS/NUTRIENTS	DOC/NITROGEN	HARDNESS	Number of Containers
	MW16-05D	30-Aug-16	14:14	Water	X	X	X	X	2
	MW16-01D	01-Sep-16	16:55	Water	X			X	1

L1824847-COFC

Short Holding Time
Rush Processing

Special Instructions / Regulations / Hazardous Details

Contact Andrew Bruemmer "abruemmer@golder.com" before analysis.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Evin Zapf-Gilje	21/08/2016 0:00	SC	Sep 17/16	9:25am	5.6, 6.8, 8.8°C			

APPENDIX A-5

Physical Hydrogeological Assessment and Conceptual Site Model Technical Memorandum

11 May 2017
Reference No. 1662612-086-R-Rev0-22392

TECHNICAL MEMORANDUM

DATE 9 February 2017 **REFERENCE No.** 1662612-090-TM-Rev0-22242

TO Art Frye and Colleen Hughes
Mount Polley Mining Corporation

CC Don Parsons (MPMC)

FROM Connie Romano and Reidar Zapf-Gilje **EMAIL** Connie_Romano@golder.com; Reidar_Zapf-Gilje@golder.com

DETAILED SITE INVESTIGATION FOR HAZELTINE CHANNEL– PHYSICAL HYDROGEOLOGICAL ASSESSMENT AND CONCEPTUAL MODEL – MOUNT POLLEY MINE

1.0 INTRODUCTION

This technical memorandum summarizes the physical hydrogeological assessment of the Hazeltine Channel area near the Mount Polley Mine (Mine). This assessment was conducted as part of the Detailed Site Investigation (DSI) of this area in August and September of 2016 and is based on the Mine conditions at the time of the investigation work. Golder Associates Ltd. (Golder) notes that rehabilitation works in the Hazeltine Channel area have been ongoing at the Mine and current site conditions may differ from those described herein.

The focus of this assessment is the Hazeltine Channel corridor, from its headwater at Polley Lake to its mouth at Quesnel Lake. The Mine Tailings Storage Facility (TSF) area is included in this assessment because it lies directly upgradient of Hazeltine Channel. The Mine area, although situated further upgradient relative to the TSF, is also considered because it is also an area which contributes some flow to Hazeltine Channel, as described in the conceptual site model below.

2.0 CONCEPTUAL HYDROGEOLOGICAL MODEL

2.1 Information Sources

The conceptual understanding of groundwater conditions along Hazeltine Channel was interpreted from the field data collected as part of the DSI during August and September of 2016 (i.e., borehole logs, monitoring well water levels, surface water levels, and single-well response tests), the detailed topographic dataset for Hazeltine Channel and the regional geology map.

The conceptual understanding of groundwater conditions near the TSF was previously summarized by Golder (2016a) as part of the groundwater characterization and monitoring review for the Mine. It was interpreted from semi-annual monitoring well data collected by Mount Polley Mining Corporation (MPMC) together with the drilling observations described by Knight Piésold (KP; 1997), the geologic overview report by Golder (2015b), the TSF detailed design report by Golder (2015c), and the hydrogeological assessment and data review for the Mine site by AMEC Americas Ltd. (AMEC; 2013).

2.2 Topography

Hazeltine Channel is situated about 3 kilometres (km) southeast of the mill at the Mine, and about 200 metres (m) to the east of the TSF (Figure 1). Its headwater at Polley Lake is approximately 900 m to the northeast of the TSF and its mouth at Quesnel Lake is approximately 5.5 km to the east-southeast of the TSF. The total length of the Hazeltine Channel is about 8.4 km and the total elevation loss from headwater to mouth is about 190 m (based on surface water level elevations of 920 m above sea level (asl) at Polley Lake and 726 masl at Quesnel Lake in August 2016). The channel lies within a valley that is relatively wide and shallow near the headwater (about 500 m wide) but is progressively narrower and more steeply sloped in the downstream direction (about 100 m wide) before flowing through an approximately 1 km long canyon section. Downstream of the canyon, the channel widens onto the channel fan area before entering Quesnel Lake.

The Mine is situated to the northwest of the Hazeltine Channel. The main Mine area is a topographic high, centred on Polley Mountain, which reaches an elevation of approximately 1,250 masl. This topographic high is adjacent to the Mine's Cariboo Pit and Springer Pit, and is bounded to the northeast by Polley Lake and to the southwest by Bootjack Lake. The TSF is located about 3 km southeast of the mill in a topographically low area with an original ground elevation of approximately 920 masl to 940 masl. The current crest of the TSF dam embankment is approximately 967 masl, except for the area in Corner 1, which has a crest of 959 masl.

2.3 Regional and Local Geology

Based on the regional geology map (Logan et al, 2007), about two-thirds of the Hazeltine Channel corridor (the upstream portion) lies within thick quaternary deposits, while the remaining lower portion (which includes the canyon and the fan area) lies within bedrock (Figure 2). The bedrock consists of the Nicola Group volcanics from the Late Triassic period, except at the canyon and mouth of the channel where bedrock consists of the Kamloops Group volcanics from the Eocene period. The boundary between the Nicola Group and Kamloops Group volcanics is an assumed unconformity.

The surficial soils in the Hazeltine Channel corridor were altered by the TSF breach. The vegetation, topsoil and a large amount of till was carried into Quesnel Lake by the resulting debris flow, leaving behind deposits of tailings and mixed silt/tailings. Subsequent and on-going remediation and rehabilitation work carried out by MPMC has removed portions of the tailings and added soil and vegetation over much of the Hazeltine Channel corridor.

According to the borehole logs for the wells along the channel's banks (MW16-01 to MW16-11), the surficial soils along the entire Hazeltine Channel corridor consist of interbedded finer-grained and coarser-grained sediments (e.g., sand and gravel, clayey silt and silt and sand), with organic-rich sediments found at the mouth of the channel (MW16-8, MW16-10 and MW16-11). Tailings from the TSF embankment breach on 4 August 2014 overlies most of the alluvium along the channel banks as a result of the debris flow, except for the channel bed itself. Tailings were removed from the channel bed as part of rehabilitation works which are ongoing. The tailings deposits near the mouth of the channel and within the floodplain have, in some places, been overlain by up to 2.6 m of alluvium (see logs for MW16-07 and MW16-08) as a result of ongoing remediation works.

The maximum depth of drilling was limited to between 1 m and 6 m depth due to auger refusal at the contact with inferred dense till or bedrock. In the upper Hazeltine Channel corridor (i.e., upstream portion of the valley), the geological units underlying the surficial soils are expected to consist of dense glacial till which overlie bedrock of Nicola Group volcanics, consistent with the geology observed in the area of the TSF (described below). In the lower Hazeltine Channel corridor (i.e., downstream portion of the valley), the geologic units underlying the surficial soils are expected to be bedrock, consistent with the regional geology map.

In the TSF area, the overburden consists predominantly of glacial till with interbeds of glaciofluvial and glaciolacustrine sediments. The overburden ranges in thickness from approximately 5 m along a bedrock knoll near the South Embankment to approximately 50 m along portions of the Main Embankment (Golder 2015b, Figures 6 and 9) (TSF design described below in Section 2.4). The underlying shallow bedrock is weathered and/or fractured and predominantly volcanic conglomerate (IMC 1990). The thickness of this weathered bedrock zone is highly variable and is inferred to range from 2 m to 43 m (based on borehole logs for the 1996 series monitoring wells [KP 1997] and the 2015 series boreholes [Golder 2015d]). Competent bedrock that underlies the weathered zone consists of Nicola Group volcanics that, according to the regional geology map (Logan et al. 2007), likely consist of undivided mafic volcanic and volcanoclastic rocks and/or intrusive rocks (pseudoleucite syenite). The general stratigraphy between the TSF and Hazeltine Channel is shown on cross-section A-A' in Figure 3A.

The surficial geology of the Mine area is predominantly bedrock with a relatively thin overburden. The area of the open pits (e.g., Wight, Boundary, Springer, Cariboo) is underlain by monzonite bedrock that has been intruded by hydrothermal breccias and intersected by northwest–southeast striking faults. The bedrock in the area of the Springer Pit and Cariboo Pit is overlain by a discontinuous and relatively thin (i.e., a few metres) layer of overburden of glaciolacustrine and glaciofluvial origin: primarily silt/clay.

2.4 TSF Design

The TSF includes one dam embankment that is approximately 4.8 km in length and that partially surrounds the facility on the southern and eastern side. The embankment is subdivided into three sections: the Main Embankment, the Perimeter Embankment and the South Embankment. Seepage from the tailings through the embankment and foundation is collected in three seepage collection ponds situated next to the outer perimeter of the facility. During operations prior to the tailings embankment breach, water in the seepage collection ponds (seepage, runoff and precipitation) was pumped back to the TSF as required and/or was recycled to the mill for use in the milling process (MPMC 2009). Currently, seepage is either pumped into the TSF for use as mill process makeup water or otherwise temporarily stored on site prior to treatment and discharge.

The TSF was generally constructed over low permeability glacial till. Where natural surficial glacial till cover was thin (less than two metres) and was underlain by glaciofluvial/glaciolacustrine sediments, a low permeability glacial till basin liner was constructed (KP 1997). The tailings surface currently consists of a large beach area along the embankment and a single free water (reclaim) pond on the northwest side of the facility.

2.5 Hydraulic Conductivity

The results of *in situ* hydraulic conductivity (K) testing along the Hazeltine Channel corridor are summarized in Table 1 below. These results indicate a range in permeability that is in general accordance with soil type and depositional conditions. In order of decreasing permeability, K values were obtained for tailings mixed with till ($K= 2 \times 10^{-4}$ m/s), tailings (6×10^{-6} m/s to 7×10^{-7} m/s) and native till (2×10^{-7} m/s to 3×10^{-8} m/s). The K range for native till lies within the range observed below the TSF area described below.

Table 1: Summary of Hydraulic Conductivity Results

Well ID	Lithology of Screened Interval	K (m/s)
MW16-06S	Till and Re-deposited Tailings (SAND and GRAVEL, fine to medium)	2×10^{-4}
MW16-02	Tailings (SAND, some fines)	6×10^{-6}
MW16-07	Tailings (SILT)	7×10^{-7}
MW16-01D	Till (gravelly clayey SILT; some coarse sand)	2×10^{-7}
MW16-11	Till (SILT, some gravel and sand)	3×10^{-8}

The results of *in situ* hydraulic conductivity testing in the area of the TSF summarized by KP (1990) indicated an average hydraulic conductivity, calculated as a geometric mean of individual tests, for weathered (shallow) and competent (deep) bedrock of approximately 1×10^{-7} m/s and 1×10^{-8} m/s, respectively. Measured hydraulic conductivity values in the overburden, consisting of glacial till with interbeds of glaciofluvial and glaciolacustrine sediments, ranged from 5×10^{-6} m/s to 1×10^{-8} m/s, with a geometric mean of approximately 2×10^{-7} m/s.

The hydraulic conductivity of the monzonite bedrock in the area of the open pits was found to generally decrease with depth, from approximately mid-10^{-7} m/s to 10^{-6} m/s near the bedrock top, to 10^{-8} m/s at greater depth (Golder 2014). These values indicate that this bedrock has a low (and at greater depth very low) capacity to transmit groundwater. The northwest–southeast striking faults in the area of the Cariboo Pit and Springer Pit appear to be well healed and not conductive.

2.6 Recharge and Discharge Areas

The climate and hydrology for the Mine site have been assessed as part of the water management plan for the TSF 970 m design (Golder 2015c). The Mine site experiences high summer precipitation due to summer storms, with the lowest precipitation in February. Precipitation typically occurs as snowfall in November and accumulates until March. Average annual precipitation at the Mine site is estimated to be 670 mm.

Groundwater recharge occurs through the infiltration of precipitation in the topographic high area of Polley Mountain and the surrounding slopes, excluding the existing surface mining pits. Groundwater recharge also occurs as infiltration through the tailings at the TSF, although this recharge (i.e., tailings seepage) is limited because of the basal liner of low permeability glacial till (see TSF design in Section 2.4).

Hazeltine Channel is inferred to be predominantly a groundwater discharge area. This is based on a comparison of the approximate surface water level elevations along the channel with nearby groundwater level elevations (see Figures 3A and 3B), and is supported by an upward hydraulic gradient observed at one of the well pairs next to Hazeltine Channel, as described in Section 3.2 below. The primary groundwater discharge areas are Polley Lake and Bootjack Lake to the northwest and Quesnel Lake to the east. These lakes strongly control regional groundwater flow and act as significant hydrogeological boundaries. Edney Creek to the south has also been inferred to be a groundwater discharge area.

In the Mine area, the open pits act as sinks for groundwater flow when they are dewatered, and as both sinks and sources of groundwater seepage when flooded to the spillover elevation. The recharge rate along the topographic high near the open pits (i.e., Polley Mountain) was estimated during calibration of the groundwater model (Golder 2014) to be approximately 30% of average annual precipitation.

2.7 Groundwater Use Downgradient of the Mine

A search in the British Columbia Ministry of Environment's (MoE) iMapBC online database in January 2017 indicated that there are no mapped aquifers within a radius of 10 km from the Mine. The closest mapped aquifer, Fraser Plateau Lave Aquifer No. 124 IIIB (11), is a laterally extensive bedrock unit that was classified as having low demand and moderate vulnerability. The northern terminus of this aquifer is located more than 15 km south of the Mine and is not considered to be hydraulically connected to groundwater from the Mount Polley Mine area or the Hazeltine Channel corridor. This database search also indicated that water supply wells are not present in the immediate vicinity of the Mine. The closest wells are approximately 6 km east, on the opposite (eastern) shore of Quesnel Lake. The database also contains information on water wells that are located northwest from the Mine (near Little Lake) and southwest from the Mine (near Gavin Lake) at a distance of, at minimum, 7 km. Considering these distances, and the fact that several surface water features are between these wells and the Mine, it is unlikely that seepage from the Mine facilities could reach these wells or the closest mapped aquifer.

Maps of the water well search and aquifer extents are included in Attachment 1.

3.0 GROUNDWATER MONITORING RESULTS

3.1 Water Level Elevations

Figure 4 provides a summary of the groundwater and surface water level elevations in the vicinity of Hazeltine Channel in August–September 2016. The water levels in the monitoring wells along Hazeltine Channel were recorded by Golder as part of the groundwater sampling event for the DSI. The water level data for the monitoring wells at the TSF (GW series wells) was provided by MPMC from their groundwater monitoring program (data file 'SWL 2016 using only 1st purges.xlsx'). MPMC also provided coordinates and 'top of pipe' (casing) elevations for the TSF wells in a separate data file ('GW Well Locations - March 2016.csv'). Surface water level elevations for the surrounding lakes was provided by MPMC in a separate data file. The surface water level elevations along Hazeltine Channel was estimated from a detailed topographic dataset generated by a drone survey by MPMC (May 2016, June 2016).

Based on the water level data presented on Figure 4, water level elevations were highest in Bootjack Lake and the TSF ponds and lowest in Quesnel Lake. Although groundwater levels for the Mine area are not shown on Figure 4, previous assessments for the entire Mine area indicated that the highest groundwater level elevations (approximately 1,100 masl) occurred in the area of Polley Mountain (see Figure 3–24 in Golder 2016c). The surface water level elevations along Hazeltine Channel were estimated to decline from 920 masl at the headwater at Polley Lake to 726 masl at the mouth at Quesnel Lake.

3.2 Groundwater Flow Regime

Based on the inferred water level elevation contours on Figure 4, the overall shallow groundwater flow direction was primarily towards the southeast, from Bootjack Lake and the TSF, towards Hazeltine Channel and Quesnel Lake. Although groundwater flow from the Mine area towards the channel is not as apparent on Figure 4, previous assessments for the entire Mine area indicated some groundwater flow from the Mine area directed towards the channel (see Figure 3–24 in Golder 2016c). The local groundwater regime near the TSF was inferred to be a radial outward flow system because of the high water level in the tailings ponds. Under this regime, some groundwater from below the TSF was inferred to flow towards the east and south towards Hazeltine Channel, and some towards the southwest towards Edney Creek and its tributaries. Deep (regional) groundwater flow in the area was inferred to discharge directly to Quesnel Lake (not shown on Figure 4).

Comparison of the shallow versus deeper groundwater level elevations at the paired well locations around the TSF indicates that the vertical component of groundwater flow was generally directed upward on the west side (and possibly also the northeast side) of the TSF and strongly downward on the southeast side of the TSF.

The approximate surface water level elevation in Hazeltine Channel was compared to the measured groundwater level elevations in the monitoring wells adjacent to the channel at two locations (see cross-sections on Figures 3A and 3B). This comparison indicated that the channel is primarily a "gaining stream" (i.e., groundwater seeps into the channel as baseflow rather than the channel losing surface water to the groundwater environment). This is supported by an upward hydraulic gradient observed at one of the well pairs next to Hazeltine Channel (MW16-06D) which is located between the two cross-section locations.

4.0 CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this memorandum.

We trust that the above information is sufficient for your needs at this time. Should you have any questions or require clarification, please do not hesitate contact the undersigned at 604-296-4200.

GOLDER ASSOCIATES LTD.

Reidar Zapf-Gilje, PhD, PEng
Contaminated Sites Expert

Connie Romano, MSc, PGeo
Associate, Senior Hydrogeologist

AB/RZG/CR/syd/jc/cmm

Attachments: Study Limitations
Figures 1 to 4
Attachment 1: Aquifer and Water Well Mapping
Attachment 2: Borehole Logs

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Golder Associates Ltd. 2016d. Mount Polley Mine Water Balance Model – Operations and Closure. Submitted to Mount Polley Mining Corporation on 17 October 2016; Ref No. 1411734-167-R-Rev0-16000.

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STUDY LIMITATIONS

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LEGEND

EXISTING MONITORING WELLS.

A — A' CROSS SECTION LOCATION

NOTES

1. MW16-XX SERIES WELLS INSTALLED BY GOLDER AS PART OF THE DSI
2. GW SERIES WELLS INSTALLED PREVIOUSLY BY OTHERS TO MONITOR THE TSF.
3. BASE MAP: IMAGERY COPYRIGHT © YYYYMMDD ESRI AND ITS LICENSORS. SOURCE: DIGITAL GLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGE DATE: 2009/07/26

CLIENT
IMPERIAL METALS
MOUNT POLLEY MINING CORPORATION

PROJECT
DETAILED SITE INVESTIGATION UPDATE

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-01-05
PREPARED	CGR
DESIGN	CGR
REVIEW	AB
APPROVED	CGR

TITLE
MONITORING WELLS AND HYDROGEOLOGICAL CROSS-SECTION LOCATIONS

PROJECT No.	PHASE	Rev.	FIGURE
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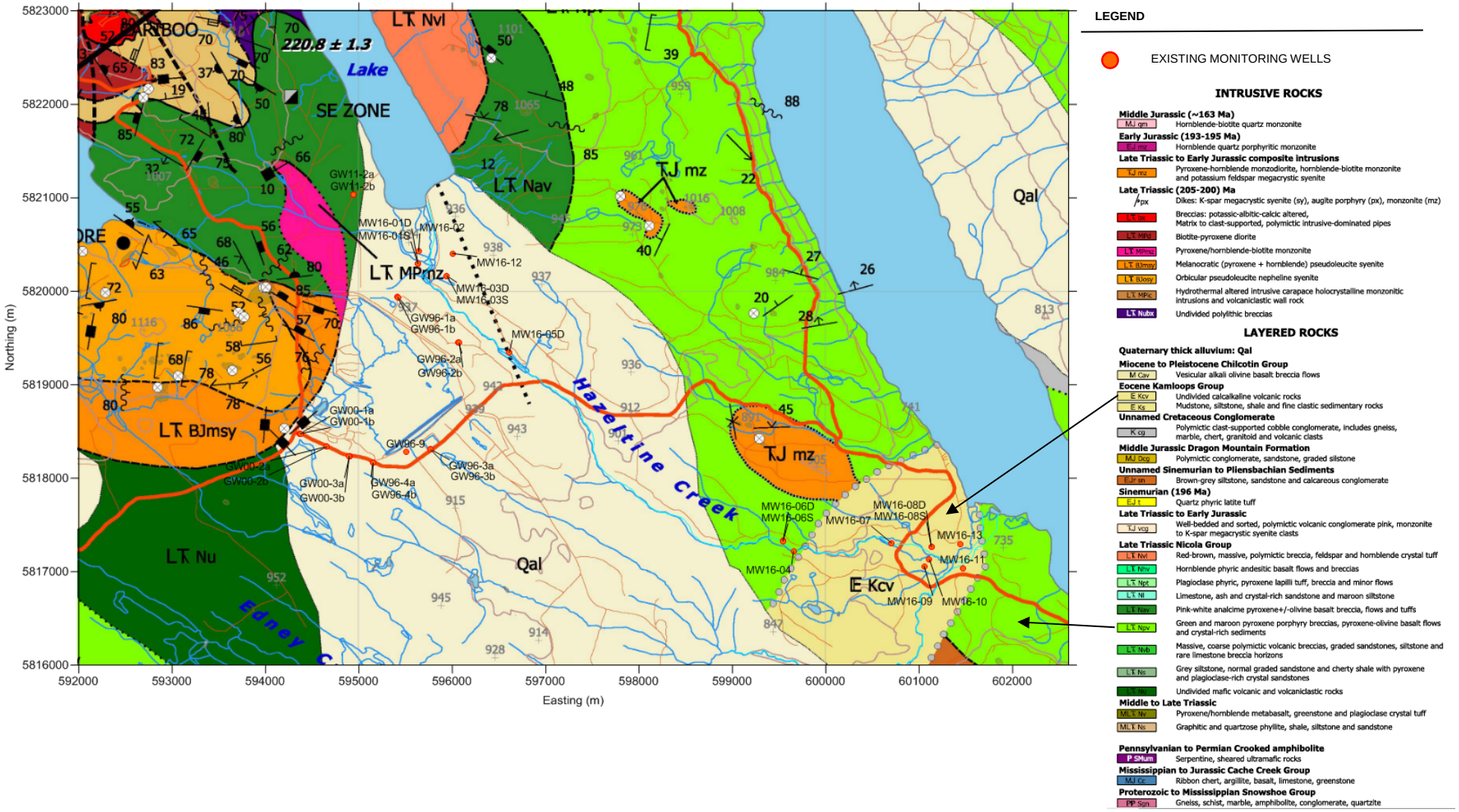

LEGEND

EXISTING MONITORING WELLS

INTRUSIVE ROCKS

Middle Jurassic (~163 Ma)
MJ qm — Hornblende-biotite quartz monzonite

Early Jurassic (193-195 Ma)
EJ mz — Hornblende quartz porphyritic monzonite

Late Triassic to Early Jurassic composite intrusions
TJ mz — Pyroxene-hornblende monzodiorite, hornblende-biotite monzonite and potassium feldspar megacrystic syenite

Late Triassic (205-200) Ma
px — Dikes: K-spar megacrystic syenite (sy), augite porphyry (px), monzonite (mz)
LT bx — Breccias: potassic-albitic-calcic altered, Matrix to clast-supported, polymictic intrusive-dominated pipes
LT Mdd — Biotite-pyroxene diorite
LT MPmz — Pyroxene/hornblende-biotite monzonite
LT BJmsy — Melanocratic (pyroxene + hornblende) pseudoleucite syenite
LT BJosy — Orbicular pseudoleucite nepheline syenite
LT MPic — Hydrothermal altered intrusive carapace holocrystalline monzonitic intrusions and volcaniclastic wall rock
LT Nubx — Undivided polylithic breccias

LAYERED ROCKS

Quaternary thick alluvium: Qal
Miocene to Pleistocene Chilcotin Group
M Cav — Vesicular alkali olivine basalt breccia flows
Eocene Kamloops Group
E Kcv — Undivided calcalkaline volcanic rocks
E Ks — Mudstone, siltstone, shale and fine clastic sedimentary rocks
Unnamed Cretaceous Conglomerate
K cg — Polymictic clast-supported cobble conglomerate, includes gneiss, marble, chert, granitoid and volcanic clasts
Middle Jurassic Dragon Mountain Formation
MJ Dcg — Polymictic conglomerate, sandstone, graded silstone
Unnamed Sinemurian to Pliensbachian Sediments
EJP sn — Brown-grey siltstone, sandstone and calcareous conglomerate
Sinemurian (196 Ma)
EJ t — Quartz phyric latite tuff
Late Triassic to Early Jurassic
TJ vcg — Well-bedded and sorted, polymictic volcanic conglomerate pink, monzonite to K-spar megacrystic syenite clasts
Late Triassic Nicola Group
LT Nvl — Red-brown, massive, polymictic breccia, feldspar and hornblende crystal tuff
LT Nhv — Hornblende phyric andesitic basalt flows and breccias
LT Npt — Plagioclase phyric, pyroxene lapilli tuff, breccia and minor flows
LT Nl — Limestone, ash and crystal-rich sandstone and maroon siltstone
LT Nav — Pink-white analcime pyroxene+/-olivine basalt breccia, flows and tuffs
LT Npv — Green and maroon pyroxene porphyry breccias, pyroxene-olivine basalt flows and crystal-rich sediments
LT Nvb — Massive, coarse polymictic volcanic breccias, graded sandstones, siltstone and rare limestone breccia horizons
LT Ns — Grey siltstone, normal graded sandstone and cherty shale with pyroxene and plagioclase-rich crystal sandstones
LT Nu — Undivided mafic volcanic and volcaniclastic rocks
Middle to Late Triassic
MLT Nv — Pyroxene/hornblende metabasalt, greenstone and plagioclase crystal tuff
MLT Ns — Graphitic and quartzose phyllite, shale, siltstone and sandstone

Pennsylvanian to Permian Crooked amphibolite
P SMum — Serpentine, sheared ultramafic rocks
Mississippian to Jurassic Cache Creek Group
MJ Cc — Ribbon chert, argillite, basalt, limestone, greenstone
Proterozoic to Mississippian Snowshoe Group
PP Sgn — Gneiss, schist, marble, amphibolite, conglomerate, quartzite

NOTES

1. REGIONAL GEOLOGY MAP AND GEOLOGY LEGEND FROM LOGAN ET AL (2007; GSC GEOSCIENCE MAP 2007-1)

CLIENT
IMPERIAL METALS
MOUNT POLLEY MINING CORPORATION

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YYYY-MM-DD	2017-01-05
PREPARED	CGR
DESIGN	CGR
REVIEW	AB
APPROVED	CGR

PROJECT
DETAILED SITE INVESTIGATION UPDATE

TITLE
REGIONAL GEOLOGY

PROJECT No.	PHASE	Rev.	FIGURE
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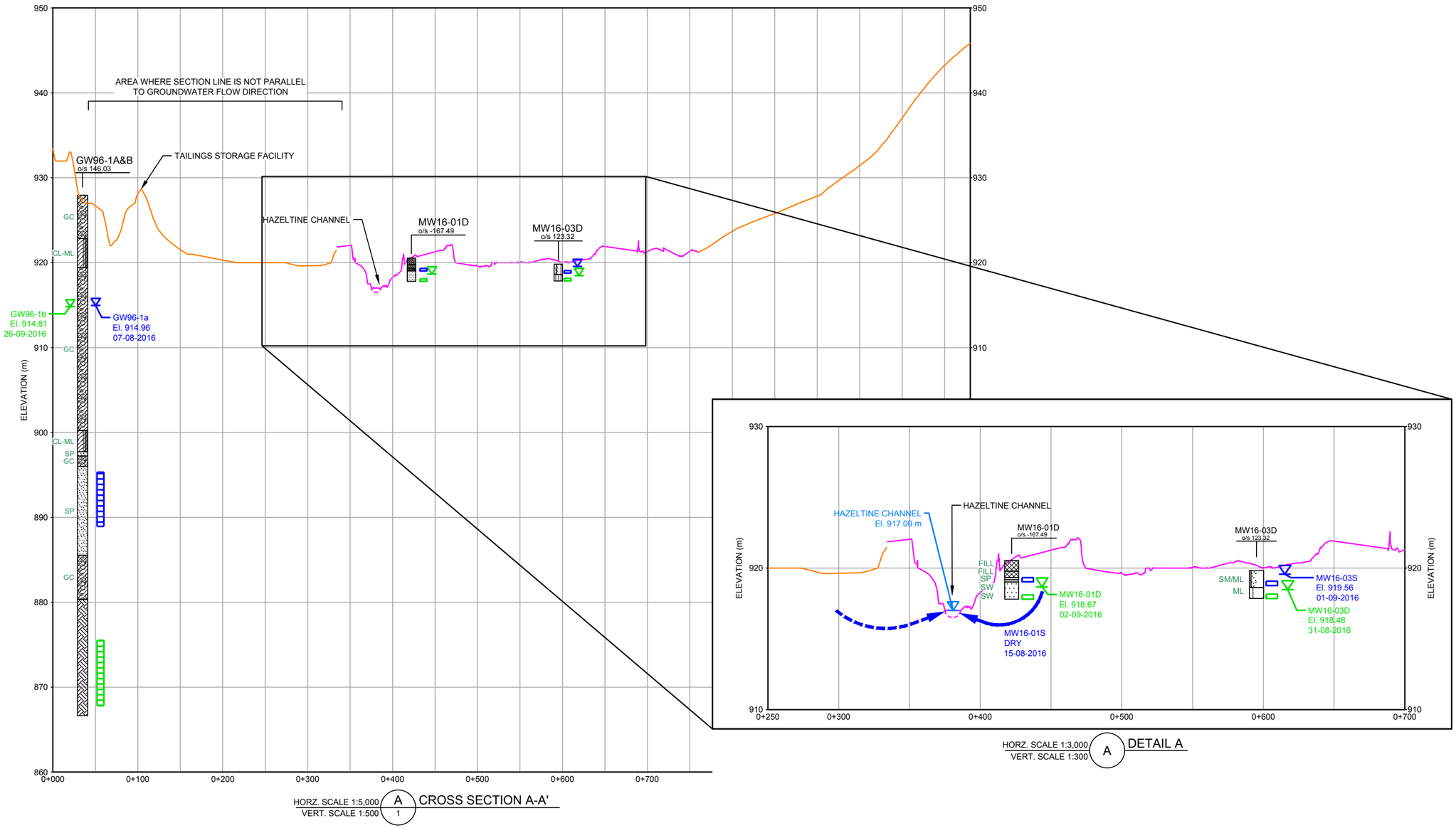
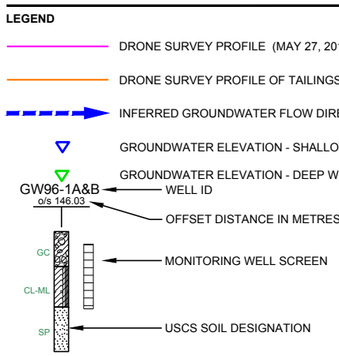


LEGEND

- DRONE SURVEY PROFILE (MAY 27, 2015)
- DRONE SURVEY PROFILE OF TAILINGS STORAGE FACILITY (JUNE 27, 2016)
- INFERRED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION - SHALLOW WELL SCREEN
- GROUNDWATER ELEVATION - DEEP WELL SCREEN



GRAPHICS FOR TEST HOLES

BEDROCK	SAND (SP)	CLAY (CL)
GRAVEL (GP)	SAND (SW)	CLAY (CH)
SILTY SAND (SM)	ORGANICS (OL)	CLAY (CI)
SILT (ML)	SILT (MH)	

* VARIOUS COMBINATIONS OF THE ABOVE SYMBOLS HAVE BEEN USED TO REPRESENT MIXTURES OF THE ABOVE MATERIALS.

NOTES

1. ALL DIMENSIONS AND ELEVATIONS IN METRES UNLESS STATED OTHERWISE.
2. WATER ELEVATIONS IN HAZELTINE CHANNEL ARE APPROXIMATE.
3. SECTION LOCATION SHOWN IN FIGURE 1.

REFERENCE

DRONE SURVEYED TOPOGRAPHY PROVIDED BY MPMC.

0 5 10
1:300 METRES

0 50 100
1:3,000 METRES

0 10 20
1:500 METRES

0 100 200
1:5,000 METRES

CLIENT
MOUNT POLLEY MINING CORPORATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-01-20
DESIGNED	CR
PREPARED	JEF
REVIEWED	AB
APPROVED	CR

PROJECT
MOUNT POLLEY MINE
DETAILED SITE INVESTIGATION

TITLE
CROSS SECTION B-B'

PROJECT NO.	PHASE	REV.	FIGURE
1662612	22200	0	3A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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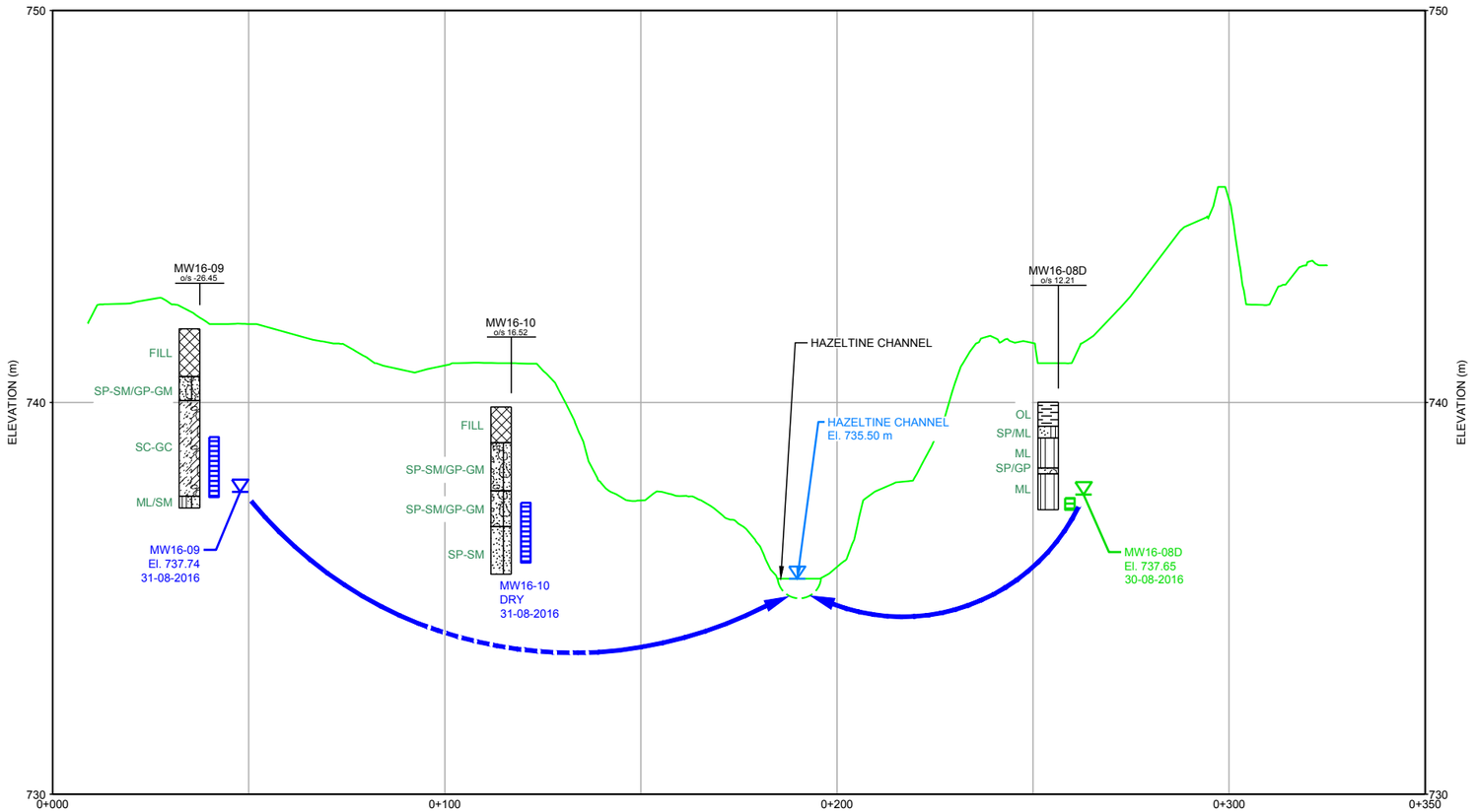


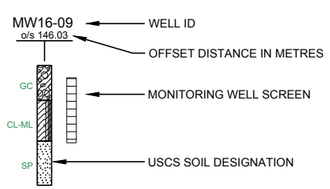
HORZ. SCALE 1:1,500
VERT. SCALE 1:150

B
1

CROSS SECTION B-B'

LEGEND

- DRONE SURVEY PROFILE (JULY 2015)
- INFERRED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION - SHALLOW WELL SCREEN
- GROUNDWATER ELEVATION - DEEP WELL SCREEN



GRAPHICS FOR TEST HOLES

BEDROCK	SAND (SP)	CLAY (CL)
GRAVEL (GP)	SAND (SW)	CLAY (CH)
SILTY SAND (SM)	ORGANICS (OL)	CLAY (CI)
SILT (ML)	SILT (MH)	

* VARIOUS COMBINATIONS OF THE ABOVE SYMBOLS HAVE BEEN USED TO REPRESENT MIXTURES OF THE ABOVE MATERIALS.

NOTES

1. ALL DIMENSIONS AND ELEVATIONS IN METRES UNLESS STATED OTHERWISE.
2. WATER ELEVATIONS IN HAZELTINE CHANNEL ARE APPROXIMATE.
3. SECTION LOCATION SHOWN IN FIGURE 1.

REFERENCE

DRONE SURVEYED TOPOGRAPHY PROVIDED BY MPMC.

0 2.5 5
1:150 METRES

0 25 50
1:1,500 METRES

CLIENT
MOUNT POLLEY MINING CORPORATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-01-20
DESIGNED	CR
PREPARED	JEF
REVIEWED	AB
APPROVED	CR

PROJECT
MOUNT POLLEY MINE
DETAILED SITE INVESTIGATION

TITLE
CROSS SECTION B-B'

PROJECT NO.	PHASE	REV.	FIGURE
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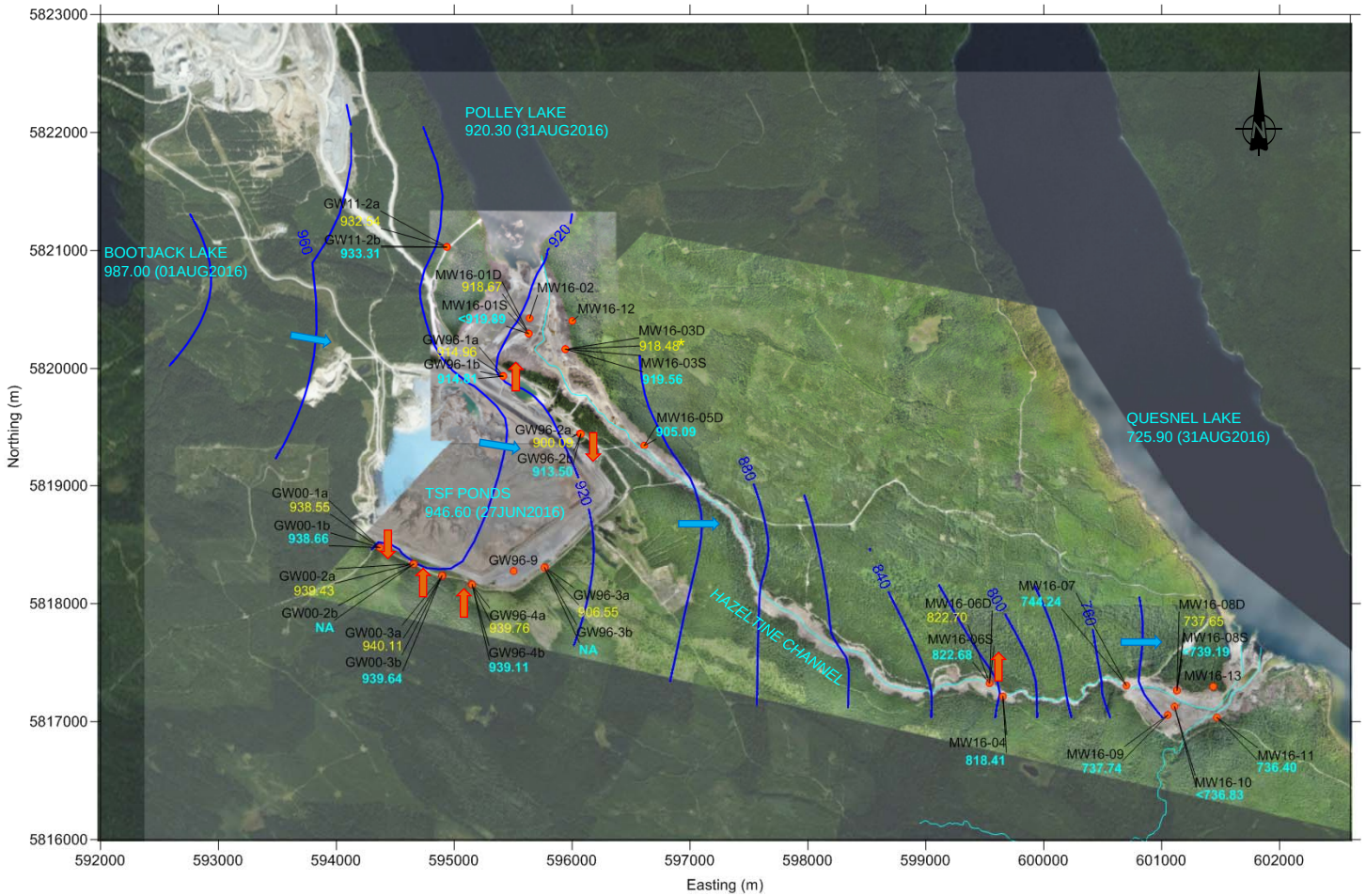

LEGEND

- MONITORING WELLS
- SHALLOW GROUNDWATER LEVEL ELEVATION CONTOURS (mASL)
- INFERRED LATERAL SHALLOW GROUNDWATER FLOW DIRECTION
- INFERRED VERTICAL GRADIENT AT MULTI-LEVEL WELLS
- 744.24 WATER LEVEL ELEVATION SHOWN IN BLUE FOR SHALLOWER WELL AND SHOWN IN YELLOW FOR DEEPER WELL.
- * WATER LEVEL AT MW16-03D NOT CONSIDERED TO BE STATIC.

NOTES

1. WATER LEVELS RECORDED AUG/SEPT 2016 UNLESS INDICATED OTHERWISE.
2. WATER LEVELS ALONG HAZELTINE CREEK BASED ON DETAILED TOPOGRAPHY FROM DRONE SURVEY BY MPMC (MAY 2016 AND JULY 2016).
3. GROUNDWATER LEVEL ELEVATIONS FOR TSF MONITORING WELLS BASED ON MARCH 2016 WELL SURVEY DATA (TOP-OF-PIPE ELEVATIONS) PROVIDED BY MPMC
4. WATER LEVEL CONTOURS BASED ON SURFACE WATER LEVELS AND SHALLOW GROUNDWATER LEVELS.
5. BASE MAP: IMAGERY COPYRIGHT © YYYYMMDD ESRI AND ITS LICENSORS. SOURCE: DIGITAL GLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGE DATE: 2009/07/26

CLIENT
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DESIGN	CGR
REVIEW	AB
APPROVED	CGR

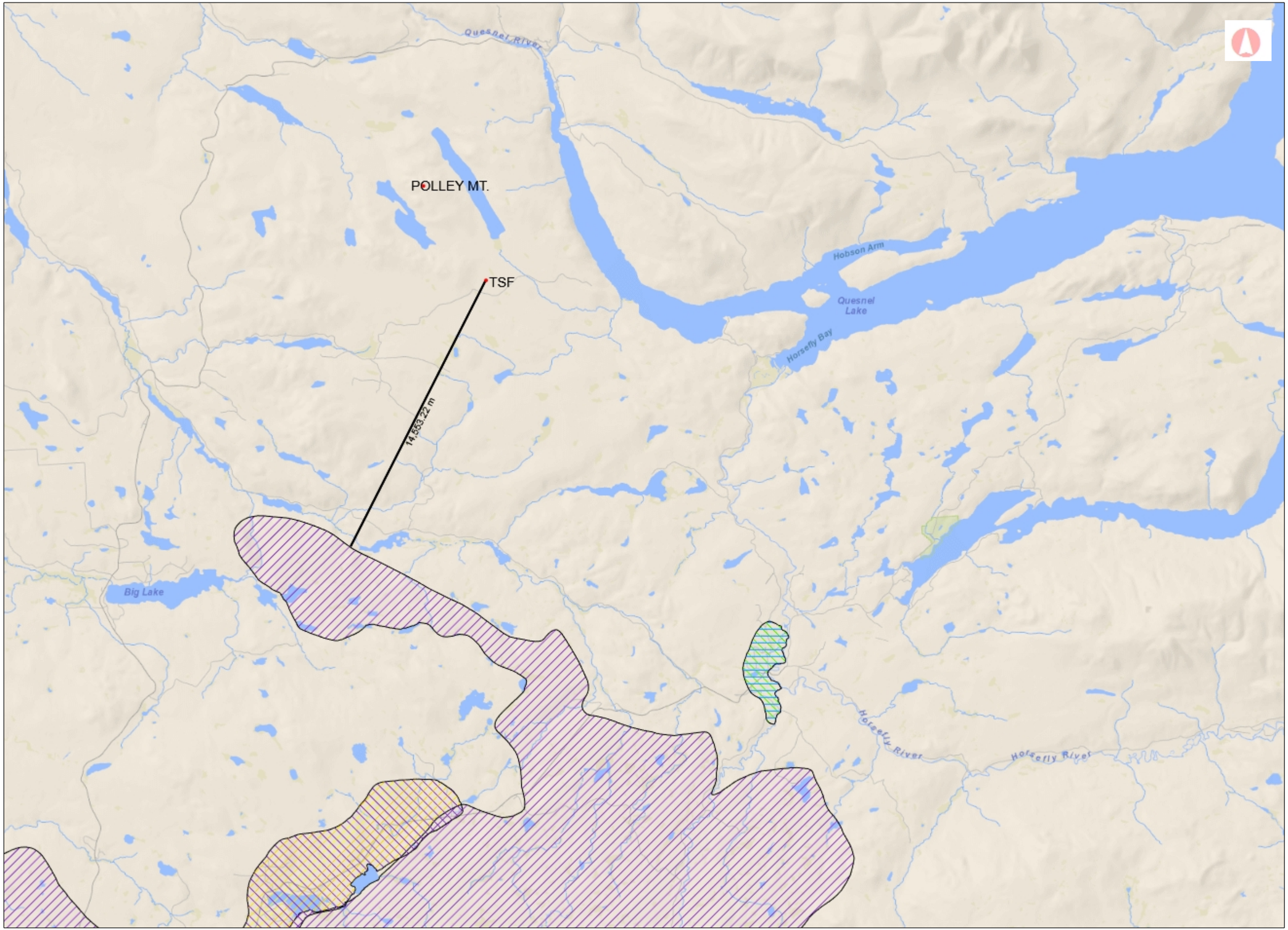
PROJECT
DETAILED SITE INVESTIGATION UPDATE

TITLE
MEASURED WATER LEVEL ELEVATIONS AND GROUNDWATER FLOW DIRECTION

PROJECT No.	PHASE	Rev.	FIGURE
1662612	22200	0	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI A
1 in
0

ATTACHMENT 1
Aquifer and Water Well Mapping



BRITISH COLUMBIA

iMapBC Mapping

Legend

Aquifers - Subtype - BC - Cc

AQUIFER_SUBTYPE_CODE

- 1a
- 1b
- 1c
- 2
- 3
- 4a
- 4b
- 4c
- 5a
- 5b
- 6a
- 6b
- UNK

Aquifers - Vulnerability - BC

VULNERABILITY_CODE

- Bedrock High Vulnerability
- Bedrock Moderate Vulnerability
- Bedrock Low Vulnerability
- Unconsolidated High Vulnerabili
- Unconsolidated Moderate Vulne
- Unconsolidated Low Vulnerabili

Aquifers - Productivity - BC -

PRODUCTIVITY_CODE

- Bedrock High Productivity
- Bedrock Moderate Productivity

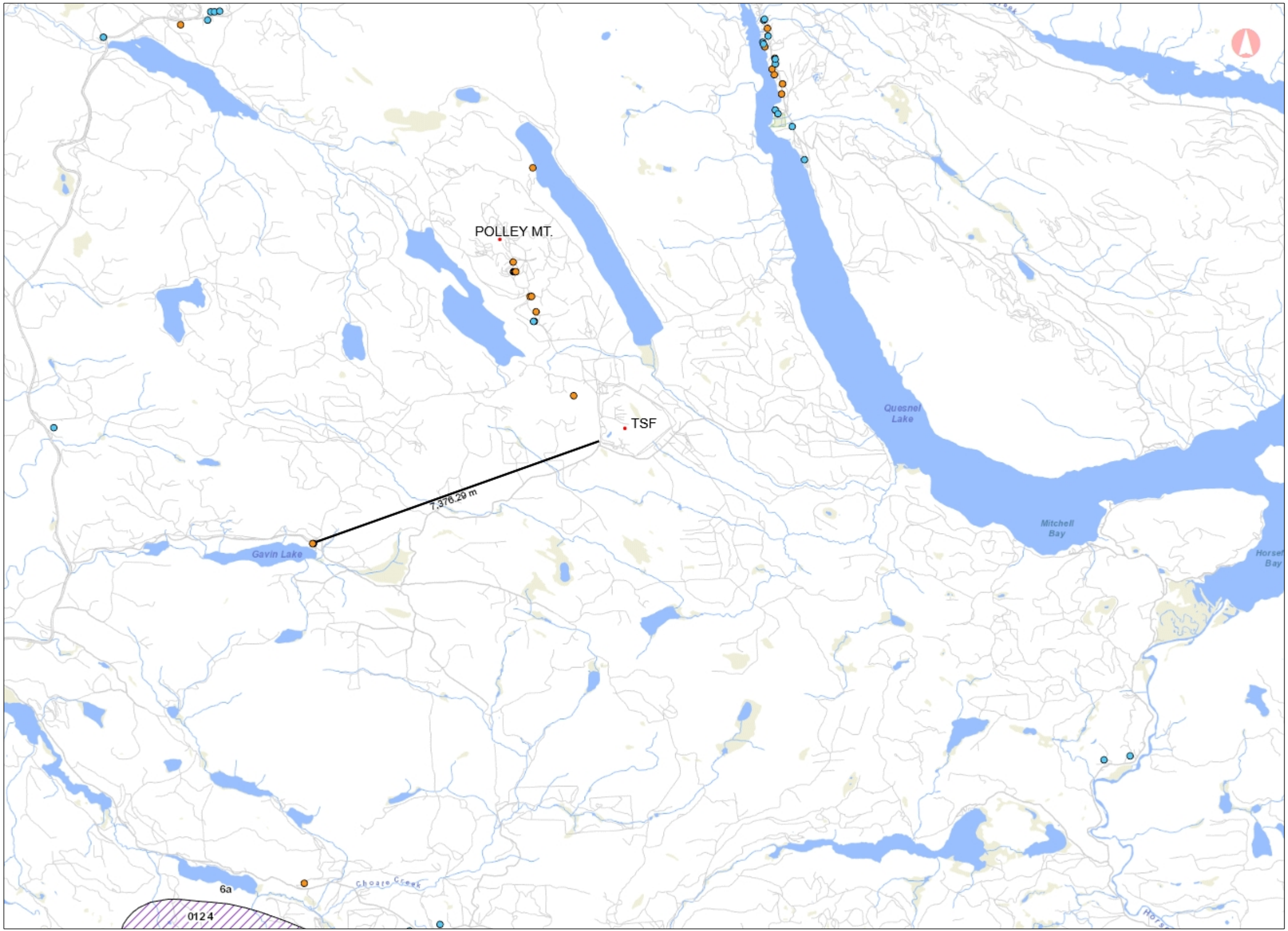
0 3.66 7.3 km

1: 180,000

Copyright/Disclaimer

Datum:	NAD83
Projection:	NAD_1983_BC_Environment_Albers

Key Map of British Columbia



BRITISH COLUMBIA

iMapBC Mapping

Legend

- Water Wells - Private Dome:
- Water Wells - Licensed/Unli
  - WELL_LICENCE_GENERAL_S
  - Licensed
  - Unlicensed
- Aquifers - Subtype - BC - Cc
  - AQUIFER_SUBTYPE_CODE
  - 1a
  - 1b
  - 1c
  - 2
  - 3
  - 4a
  - 4b
  - 4c
  - 5a
  - 5b
  - 6a
  - 6b
  - UNK
- Aquifers - Vulnerability - BC
  - VULNERABILITY_CODE
  - Bedrock High Vulnerability
  - Bedrock Moderate Vulnerability
  - Bedrock Low Vulnerability
  - Unconsolidated High Vulnerabili
  - Unconsolidated Moderate Vulne

0 1.83 3.7 km

1: 90,000

Copyright/Disclaimer

Datum:	NAD83
Projection:	NAD_1983_BC_Environment_Albers

Key Map of British Columbia

ATTACHMENT 2
Borehole Logs

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5820296.48 E: 595631.30

RECORD OF MONITORING WELL: MW16-01D

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 10, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Golder Trailer Mounted Rig	Solid Stem Auger	Ground Surface		920.55										
			TAILINGS - (ML) gravelly SILT, some sand; non-cohesive, dry, very loose.		0.00 919.78										
1			TAILINGS - (GW/ML) GRAVEL and SILT; grey, brown sand, inferred cobbles; moist, loose.		0.76 919.33										Hydrated Bentonite Seal
			(SW/ML) - gravelly SAND and SILT; grey-brown; non-cohesive, moist.		1.22 919.17										
			(ML/GP) sandy SILT and GRAVEL, coarse; grey-brown; wet, loose.		1.37 919.02										
2			NATIVE TILL - (ML) gravelly CLAYEY SILT, some sand, coarse; grey-brown, non-cohesive, moist to wet.		1.52 917.80										25mm Diameter Slotted PVC and Filter Sand
			End of Monitoring Well.		2.74										
3															
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5820297.27 E: 595632.19

RECORD OF MONITORING WELL: MW16-01S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 10, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		920.51					SHEAR STRENGTH Cu, kPa: nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■ (20 40 60 80)	WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic (10 20 30 40)		
0	Golder Trailer Mounted Rig / Solid Stem Auger	TAILINGS - (ML) gravelly SILT, some sand; non-cohesive, dry, very loose.		0.00								Hydrated Bentonite Seal
				919.74								
1		TAILINGS - (GW/ML) GRAVEL and SILT; grey, brown sand, inferred cobbles; moist, loose.		0.76								
				919.29								
		(SW/ML) - gravelly SAND and SILT; grey-brown; non-cohesive, moist.		1.22								25mm Diameter Slotted PVC and Filter Sand
				919.13								
		(ML/GP) sandy SILT and GRAVEL, coarse; grey-brown, wet, loose.		1.37								
				918.98								
		End of Monitoring Well.		1.52								
2												
3												
4												
5												

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

RECORD OF MONITORING WELL: MW16-02

SHEET 1 OF 1

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
Survey data not available for monitoring well location

DRILLING DATE: August 16, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DATUM: Ground Surface

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface												
0	AMS Hand Auger / Solid Stem Auger	TAILINGS - (ML) SILT; grey, brown sand pockets; moist, loose.		0.00										Hydrated Bentonite Seal
1		TAILINGS - (ML) gravelly SILT and SAND; grey-brown, moist, loose.		0.91										
		TAILINGS - (SW-SM) SAND, some non-plastic fines, trace gravel; brown; wet.		1.07										25mm Diameter Slotted PVC and Filter Sand
2		End of Monitoring Well.		1.83										
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5820164.85 E: 595943.00

RECORD OF MONITORING WELL: MW16-03D

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 13, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		919.83										
0	Golder Trailer Mounted Rig / Solid Stem Auger	REWORKED TAILINGS - (SP/ML) SAND and SILT, roots, rootlets; with wood debris; moist to wet, loose.		0.00										Hydrated Bentonite Seal
1				918.61										
		NATIVE TILL - (ML) CLAYEY SILT, trace sand, trace gravel; brown-grey; cohesive, w<PL.		1.22										25mm Diameter Slotted PVC and Filter Sand
2				917.85										
		End of Monitoring Well.		1.98										
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5820165.22 E: 595942.27

RECORD OF MONITORING WELL: MW16-03S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 13, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○, Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl, NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		919.85										
0	Golder Trailer Mounted Rig / Solid Stem Auger	REWORKED TAILINGS - (SP/ML) SAND and SILT, roots, rootlets; with wood debris; moist to wet, loose.		0.00										Hydrated Bentonite Seal
1				918.78										25mm Diameter Slotted PVC and Filter Sand
		End of Monitoring Well.		1.07										
2														
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817214.95 E: 599653.52

RECORD OF MONITORING WELL: MW16-04

SHEET 1 OF 1
DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0			Ground Surface		818.99								
	Golder Trailer Mounted Rig	Solid Stem Auger	(ML/SM) gravelly SILT and SAND, fine to medium; grey, inferred cobbles, no staining, no odours; moist, loose.		0.00								Hydrated Bentonite Seal
1													
2					816.85								
			(ML/SM) CLAYEY SILT and SAND, fine and coarse sand, some gravel; grey, no staining, no odours; cohesive, w~PL.		2.13								25mm Diameter Slotted PVC and Filter Sand
					816.24								
			End of Monitoring Well.		2.74								
3													
4													
5													

DEPTH SCALE
1 : 25

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

Golder Associates

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5819348.30 E: 596611.56

RECORD OF MONITORING WELL: MW16-05D

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 10, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Golder Trailer Mounted Rig	Solid Stem Auger	Ground Surface		906.94										
			TAILINGS - (OL/ML) ORGANIC SILT and SILT, some fine to coarse sand; grey, inferred cobbles; non-cohesive, moist.		0.00										
1					905.72										
			TAILINGS - (ML) SILT, some sand, some gravel; grey-brown; non-cohesive, moist.		1.22										Hydrated Bentonite Seal
2			at 2.3 m depth: wet.		904.50										
			NATIVE TILL - (MH) SILT, some gravel, trace sand; brown-grey; cohesive, w~PL, firm.		2.44										
3					903.43										25mm Diameter Slotted PVC and Filter Sand
			End of Monitoring Well.		3.51										
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5819349.07 E: 596610.57

RECORD OF MONITORING WELL: MW16-05S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 10, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○, Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		906.87										
0	Golder Trailer Mounted Rig / Solid Stem Auger	TAILINGS - (OL/ML) ORGANIC SILT and SILT, some fine to coarse sand; grey, inferred cobbles; non-cohesive, moist.		0.00										Hydrated Bentonite Seal
1				905.65										
		TAILINGS - (ML) SILT, some sand, some gravel; grey-brown; non-cohesive, moist.		1.22										
2		at 2.3 m depth: wet.		904.43										25mm Diameter Slotted PVC and Filter Sand
		End of Monitoring Well.		2.44										
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817327.34 E: 599540.97

RECORD OF MONITORING WELL: MW16-06D

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY %	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Golder Trailer Mounted Rig	Solid Stem Auger	Ground Surface		823.79										
			TILL AND TAILINGS - (SW/GP) SAND and GRAVEL, fine to medium; brown, no staining, no odours; moist, loose.		0.00										
1					822.57										
			TILL AND TAILINGS - (SW/GP) SAND and GRAVEL, fine to medium; brown, no staining, no odours; wet, loose.		1.22										Hydrated Bentonite Seal
2					821.35										
			NATIVE TILL - (SM/ML) gravelly SILT and SAND; grey, inferred cobbles, no staining, no odours; non-cohesive, moist, dense to very dense.		2.44										
3					820.59										25mm Diameter Slotted PVC and Filter Sand
			End of Monitoring Well.		3.20										
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817326.25 E: 599539.94

RECORD OF MONITORING WELL: MW16-06S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0			Ground Surface		823.74										
	Golder Trailer Mounted Rig	Solid Stem Auger	TILL AND TAILINGS - (SW/GP) SAND and GRAVEL, fine to medium; brown, no staining, no odours; moist, loose.		0.00										Hydrated Bentonite Seal
1					822.52										
			TILL AND TAILINGS - (SW/GP) SAND and GRAVEL, fine to medium; brown, no staining, no odours; wet, loose.		1.22										
2					821.41										25mm Diameter Slotted PVC and Filter Sand
			End of Monitoring Well.		2.34										
3															
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817307.02 E: 600700.98

RECORD OF MONITORING WELL: MW16-07

SHEET 1 OF 2

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		747.19										
0	Golder Trailer Mounted Rig / Solid Stem Auger	TILL AND TAILINGS - (SM/GM) SILTY SAND and GRAVEL; brown-grey; moist, loose.		0.00										Hydrated Bentonite Seal
				744.60										
		TAILINGS - (ML) SILT; grey, non-cohesive, wet, loose.		2.59										
1														
2														
3														
4														25mm Diameter Slotted PVC Pipe and Filter Sand
5		*CONTINUED NEXT PAGE*												

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817307.02 E: 600700.98

RECORD OF MONITORING WELL: MW16-07

SHEET 2 OF 2

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY %	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
5	Solid Stem Auger	TAILINGS - (ML) SILT; grey, non-cohesive, wet, loose. *(continued)*		741.70										25mm Diameter Slotted PVC Pipe and Filter Sand
		End of Monitoring Well.		5.49										
6														
7														
8														
9														
10														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817265.92 E: 601129.75

RECORD OF MONITORING WELL: MW16-08D

SHEET 1 OF 1
DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
			Ground Surface		740.00										
0	Golder Trailer Mounted Rig	Solid Stem Auger	(OL) ORGANIC SILT, some sand, roots, rootlets; dark brown, no staining, no odours; non-cohesive, moist.		0.00										Hydrated Bentonite Seal
					739.39										
			(ML/SM) SILT and SAND; grey-brown, organic silt pockets; moist, loose.		0.61										
1			NATIVE TILL - (ML) gravelly CLAYEY SILT, some sand; grey, non-cohesive, moist, loose.		0.91										
					738.33										
			(GP/SW) GRAVEL and SAND; orange-brown; non-cohesive, moist, loose.		1.68										
					738.17										
			(ML) CLAYEY SILT, trace gravel; cohesive, w~PL, stiff.		1.83										
2															25mm Diameter PVC Pipe and Filter Sand
					737.26										
			End of Monitoring Well.		2.74										
3															
4															
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817264.95 E: 601129.89

RECORD OF MONITORING WELL: MW16-08S

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		739.83										
0	Golder Trailer Mounted Rig / Solid Stem Auger	(OL) ORGANIC SILT, some sand, roots, rootlets; dark brown, no staining, no odours; non-cohesive, moist.		0.00										Hydrated Bentonite Seal
				739.22										
		(ML/SM) SILT and SAND; grey-brown, organic silt pockets; moist, loose.		0.61										
				738.92										
1		TAILINGS - (ML) gravelly CLAYEY SILT, some sand; grey, non-cohesive, moist, loose.		0.91										25mm Diameter PVC Pipe and Filter Sand
				738.15										
		End of Monitoring Well.		1.68										
2														
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817057.54 E: 601052.11

RECORD OF MONITORING WELL: MW16-09

SHEET 1 OF 1

DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY %	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Golder Trailer Mounted Rig	Solid Stem Auger	Ground Surface		741.88										
			(ML/SP/GP) CLAYEY SILT, SAND and GRAVEL; brown, inferred cobbles, intermixed; moist, loose.		0.00										
1					740.66										Hydrated Bentonite Seal
			(SP-SM/GP-GM) SAND and GRAVEL, some non-plastic fines; orange-brown, no staining, no odours; moist, loose.		1.22										
					740.05										
2			(ML/SP/GP) CLAYEY SILT, SAND and GRAVEL; brown, intermixed; cohesive, w~PL.		1.83										
3															25mm Diameter Slotted PVC Pipe and Filter Sand
4					737.61										
			(ML) sandy SILT, some gravel; grey, inferred cobbles; non-cohesive, wet, loose.		4.27										
					737.31										
			End of Monitoring Well.		4.57										
5															

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817127.95 E: 601108.75

RECORD OF MONITORING WELL: MW16-10

SHEET 1 OF 1
DATUM: Geodetic

DRILLING DATE: August 11, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		739.88										
0	Golder Trailer Mounted Rig / Solid Stem Auger	(ML/SP/GP) SILT, SAND and GRAVEL; dark brown-black, intermixed, organic-like odours..		0.00										
				738.97										
1		(SM/GM) SILTY SAND and GRAVEL; brown, inferred cobbles; moist, loose.		0.91										Hydrated Bentonite Seal
2				737.75										
		(ML/SP/GP) CLAYEY SILT, SAND and GRAVEL; brown, inferred cobbles; cohesive, w~PL, firm.		2.13										
3				736.83										
		(SM) SILTY SAND, fine to medium; grey-green, no staining, no odours; moist to wet.		3.05										25mm Diameter Slotted PVC Pipe and Filter Sand
4				735.61										
		End of Monitoring Well.		4.27										
5														

DEPTH SCALE
1 : 25

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

Golder Associates

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (AUTO) KTanaka 23/1/17

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817036.02 E: 601467.86

RECORD OF MONITORING WELL: MW16-11

SHEET 1 OF 2

DATUM: Geodetic

DRILLING DATE: August 13, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Golder Trailer Mounted Rig	Solid Stem Auger	Ground Surface		740.44										
			(OL/ML/SP) ORGANIC SILT, SILT and SAND, some gravel; brown, intermixed; dry, loose.		0.00 739.83										
			(OL) ORGANIC SILT, wood debris, roots, rootlets; dark brown; moist.		0.61 739.53										
1			(SP-SM) gravelly SAND, some non-plastic fines; orange-brown; moist, loose.		0.91 739.22										
			NATIVE TILL - (ML) SILT, trace sand; brown-grey, clay nodules; cohesive, w<PL, firm.		1.22 738.92										
			NATIVE TILL - (ML) SILT, some sand, some gravel; brown-grey, clay nodules; cohesive, w<PL.		1.52 738.31										
2			NATIVE TILL - (ML) SILT, some gravel, trace sand; brown, no staining, no odours; cohesive, w<PL, very stiff.		2.13 737.70										Hydrated Bentonite Seal
			NATIVE TILL - (ML)SILT, trace sand, trace fine gravel; grey-brown, cohesive, w<PL.		2.74 735.87										
3			NATIVE TILL - (ML) SILT, some sand, some gravel; grey; non-cohesive, dry.		4.57										25mm Diameter Slotted PVC Pipe and Filter Sand
4															
5			*CONTINUED NEXT PAGE*												

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
N: 5817036.02 E: 601467.86

RECORD OF MONITORING WELL: MW16-11

SHEET 2 OF 2

DATUM: Geodetic

DRILLING DATE: August 13, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
5	Golder Trailer Mounted Rig / Solid Stem Auger	NATIVE TILL - (ML) SILT, some sand, some gravel; grey; non-cohesive, dry. *(continued)*										25mm Diameter Slotted PVC Pipe and Filter Sand
6				734.19								
		End of Monitoring Well.		6.25								
7												
8												
9												
10												

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

RECORD OF MONITORING WELL: MW16-12

SHEET 1 OF 1

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
Survey data not available for monitoring well location

DRILLING DATE: August 18, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DATUM: Ground Surface

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface												
0	AMS Hand Auger / Solid Stem Auger	(OL) ORGANIC SILT.		0.00										
		(ML) CLAYEY SILT, trace sand; grey-brown; cohesive, w~PL.		0.10										Hydrated Bentonite Seal
		(ML) CLAYEY SILT, trace coarse sand, trace gravel; grey-brown, cohesive.		0.80										25mm Diameter Slotted PVC Pipe and Filter Sand
1		End of Monitoring Well.		1.00										
2														
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

PROJECT No.: 1662612 / 22200

RECORD OF MONITORING WELL: MW16-13

SHEET 1 OF 1

CLIENT: Mount Polley Mining Corporation
PROJECT: Mount Polley DSI
LOCATION: Mt. Polley Mine, Likely, B.C.
Survey data not available for monitoring well location

DRILLING DATE: August 16, 2016
DRILLING CONTRACTOR: Golder Associates Ltd.

DATUM: Ground Surface

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY %	BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface												
0	Golder Trailer Mounted Rig / Solid Stem Auger	(ML) SILT, some fine sand; grey-brown; dry, loose.		0.00										
		(ML) SILT, fine sand; light brown; dry, loose.		0.30										Hydrated Bentonite Seal
1		(SP-SM) SAND, fine, some non-plastic fines; light brown; dry, loose.		0.61										25mm Diameter Slotted PVC Pipe and Filter Sand
		End of Monitoring Well.		1.22										
2														
3														
4														
5														

DEPTH SCALE
1 : 25

Golder Associates

SOIL CLASSIFICATION SYSTEM:
LOGGED: EZG
CHECKED: AB

APPENDIX A-6

Surface Water Quality Impact Assessment

APPENDIX A-6.1

Surface Water Quality Impact Assessment Update, March to August 2015

11 May 2017
Reference No. 1662612-086-R-Rev0-22392

TECHNICAL MEMORANDUM

DATE January 26, 2016 **REFERENCE No.** 1411734-106-TM-Rev1-10000

TO Colleen Hughes
Mount Polley Mining Corporation

CC Trish Miller

FROM Jordana Van Geest, Elaine Irving, Jerry Vandenberg **EMAIL** jvangeest@golder.com; eirving@golder.com; jvandenberg@golder.com

MOUNT POLLEY SURFACE WATER QUALITY IMPACT ASSESSMENT UPDATE, MARCH TO AUGUST 2015

Golder Associates Ltd. (Golder) is pleased to provide Mount Polley Mining Corporation (MPMC) with the following update to the Surface Water Quality Impact Assessment (WQIA) that was submitted as part of the Post-Event Environmental Impact Assessment Report (PEEIAR) in June 2015 (Golder 2015a). The 'event' refers to the tailings dam failure that occurred at the Mount Polley Mine on August 4, 2014, when the Tailings Storage Facility (TSF) Perimeter Embankment failed and there was a subsequent debris flow into the receiving environment. The time period considered in the WQIA was August 2014 to April 2015. This update to the WQIA focuses primarily on data generated by post-event water quality monitoring undertaken by MPMC over a six month period between March and August 2015. This period was selected as a cutoff for this update, however, MPMC water quality monitoring is ongoing. Note that there is some overlap in dates covered by the original WQIA and this document because the dataset was being generated during the preparation of the PEEIAR in March and April 2015. Monitoring of post-event receiving environment has also been carried out by the BC Ministry of Environment (BC MoE) for audit purposes; these results are reported elsewhere (http://www.env.gov.bc.ca/epd/mount-polley/).

1.0 INTRODUCTION

The interim findings of the WQIA concluded that there were measured changes in water quality in Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River as a result of the event, but that evidence available at the time of report preparation did not indicate that constituents of the TSF materials had resulted in toxicity in the water column. Post-event monitoring is being undertaken by MPMC to support the continued evaluation of water quality and the potential for toxicity in these waterbodies.

This technical memorandum is intended to provide an update to the interim findings of the PEEIAR WQIA and to characterize water quality conditions relevant to the Detailed Site Investigation (DSI) and Human Health and Ecological Risk Assessment (HHERA). The DSI and HHERA are being undertaken as a requirement of the Pollution Abatement Order issued by the BC MoE in response to the tailings dam failure to satisfy the requirements of the Provincial *Environmental Management Act* and the *Contaminated Sites Regulation* (CSR).

Following consultation with the BC MoE in July 2015[1], Hazeltine Creek is to be considered a receiving environment for the DSI and HHERA, and accordingly, it is considered a receiving environment for this WQIA update. In order of water flow, the receiving environments evaluated are Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River (Attachment 1).

Following initial screening of water quality data using relevant BC water quality guidelines (BC WQGs) and CSR standards, contaminants of potential concern (COPCs) were identified (see Section 3.1) for the receiving environments listed above. Post-event changes in receiving environment water quality, with respect to identified COPCs, were evaluated relative to applicable BC WQGs and CSR standards for the time period from March to August 2015 (Section 3.2). In Section 4, the results from this updated water quality assessment are discussed with reference to whether each COPC will be carried forward for further assessment as contaminants of concern (COCs) in the DSI. In Section 5, COCs are identified for consideration in the problem formulation components of the HHERA.

2.0 METHODS

2.1 Data Collection and Compilation

The assessment relied on water quality data collected by MPMC from March to August 2015 in accordance with the Post TSF-Breach 2015 Monitoring Plan (MPMC 2015), in addition to post-event data previously reported in the PEEIAR WQIA (Golder 2015a). In general, 2015 monitoring focused on routine stations, but some station locations were moved, replaced, added, or removed, consistent with the evolution of the post-event program and in consultation with regulatory agencies (MPMC 2015). A summary of monitoring stations and sampling frequencies for the time period between March and August is presented in Attachment 2.

The monitoring program evolved during the first year following the event in consideration of factors that included, but were not limited to: monitoring results, safety and logistical constraints, recommendations from the BC MoE, and seasonal conditions. A number of stations in Polley Lake, Hazeltine Creek, and Quesnel Lake were consistently monitored, typically either weekly or monthly; while other stations were monitored on a more intermittent basis or were briefly monitored for a specific purpose. A compilation of discrete water sample data collected at stations monitored by MPMC from August 2014 to August 2015, inclusive, are appended at the end of this technical memorandum in Attachment 8.

Between March and August 2015, depth profiles of field parameters were recorded throughout the water column and water samples were collected for chemical analysis at designated stations shown in Attachment 1. At the Polley Lake stations, discrete water samples were taken at 5 m depth intervals from the surface to close to the lake bottom, except when the water column was fully mixed at overturn, when samples were taken at 10 m depth intervals. The depth range sampled in Polley Lake was 0 to 20 m and approximately 2 m from the lake bottom. In Quesnel Lake the depth range sampled was station dependent consistent with previous reported post-event sampling in Golder (2015a) (depths sampled are provided in Attachment 2). Field methods were consistent with those described in Appendix B of the PEEIAR for water quality monitoring undertaken by MPMC between August 2014 and April 2015 (Golder 2015a). Continuous data loggers were installed to record field parameter measurements at station HAC-01b at the outflow of Hazeltine Creek and QUR-1 in the Quesnel River (i.e., conductivity, dissolved oxygen, pH, temperature, and turbidity) at 15 minute intervals.

[1] Verbal communication with the BC MoE Land Remediation Section following their review of the July 15, 2015, DSI and HHERA work plan.

Analytical and field monitoring data verified as reliable based on a quality assurance/quality control (QA/QC) assessment by MPMC, as well as station location information, were uploaded by MPMC to their water quality database. MPMC provided Golder with electronic data collected from March to August 2015 for this WQIA update. These data were used as received from MPMC with an additional check of transcription by Golder prior to use in COPC screening. The process of sample continuity and data quality verification by MPMC is documented in Appendix B of the PEEIAR for post-event data collected prior to March 2015 (Golder 2015a). These QA/QC procedures were followed through August 2015 and a summary of the findings of the MPMC QA/QC program for water quality data collected from March to August 2015 is provided in Attachment 3.

The majority of data collected between March and August 2015 met data quality objectives specified in Appendix B of Golder (2015a). Objectives that were not met mainly related to variability between duplicate samples, possibly due to environmental heterogeneity or interferences in the analytical method. The QA/QC results were considered acceptable because the overall number of data that did not meet objectives was low, and the observed variability did not influence the findings of this WQIA update.

2.2 COPC Identification

Discrete water quality data collected by MPMC at stations monitored between March and August 2015 (shown in Attachment 1) were compiled and screened to identify COPCs. The purpose of the COPC screening shown in Attachment 4 was to identify those parameters that remained elevated as of March 2015, in order to focus the WQIA update on those substances that might be of longer-term consequence regarding potential impacts on water quality. Data compiled for all stations sampled within a given area (i.e., Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River) were evaluated as one dataset for COPC screening. Subsequent data analysis of COPC temporal trends focused on a representative subset of monitoring stations for each area (as described in Section 2.3).

Substances were identified as COPCs if they were greater than pre-event concentrations and applicable guidelines based on the most sensitive receiving environment water use. Golder (2015a) identified the following known environmental uses on Quesnel Lake, particularly with respect to the West Basin, to determine the most sensitive water use for the downstream receiving environment.

- Commercial, recreational, and aboriginal fisheries;
- Recreational uses such as scenery and wildlife viewing, swimming, boating, kayaking, canoeing, waterskiing/tubing/wakeboarding, and in the winter snowmobiling and ice fishing when ice conditions allow; and
- Drinking and residential water use for domestic purposes.

For the WQIA update, maximum and 95th percentile parameter concentrations calculated for each receiving environment area were compared to the following regulatory criteria:

- BC WQGs for aquatic life (or most sensitive end use identified in Table 3-4 of Golder 2015a[2]);
- BC drinking water guidelines (BC MOE 2015a);
- CSR Schedule 6 standards for aquatic life (CSR 2014);
- CSR Schedule 6 drinking water standards (CSR 2014); and
- CSR Schedule 6 livestock water standards (as a surrogate for wildlife water) (CSR 2014).

Based on this screening, COPCs were conservatively identified for the four receiving environment areas for the purpose of evaluating potential water quality impacts to aquatic life, wildlife water, or drinking water. The screening was two-tiered: first, an initial screening stage identified parameters with maximum upper limit concentrations below BC WQGs. These water quality parameters were not carried further in the screening process. Second, for parameters with concentrations above BC WQGs, 95th percentile concentrations were calculated and screened against the regulatory criteria listed above. Water quality parameters were identified as COPCs if 95th percentile concentrations were above the lowest applicable criteria (Attachment 4, Tables 1-5) and were higher than the 95th percentile pre-event baseline concentration provided in Golder (2015a).

Maximum and 95th percentile concentrations represented upper limit concentrations in the post-event water quality dataset. Water quality parameters were not identified as COPCs if post-event upper limit concentrations were below the lowest applicable criteria. The lowest applicable criteria were typically BC WQGs; conservative environmental quality benchmarks with built-in safety factors that represent concentrations below which adverse impacts on water quality are not expected. Pre-event data were available for Polley Lake, Hazeltine Creek, and Quesnel River and these data are summarized in Golder (2015a). As described in Golder (2015a), pre-event data for Quesnel Lake data were limited to nutrient-related monitoring surveys primarily focused around Horsefly Bay just east of Cariboo Island.

Parameters without BC WQGs were not identified as COPCs in the PEEIAR WQIA based on an evaluation of post-event data up to February 2015. Concentrations of these parameters in the weeks and months following the event were not considered to be of environmental concern. Subsequently, the same parameters were not considered to be COPCs in the WQIA update.

[2] With the exception of molybdenum, total aluminum, and pH, the most sensitive receiving environment use was the protection of aquatic life. For molybdenum, the most conservative 30-d BC WQG value was adopted (i.e., irrigation assuming the copper: molybdenum ratio is less than 2:1 *in lieu* of a 30-d value for wildlife). For total aluminum, the most conservative maximum BC WQG was adopted (i.e., water for wildlife) because aquatic life guidelines are based only on dissolved aluminum.

2.3 COPC Evaluation

Changes in COPC concentrations were evaluated qualitatively (see Section 2.3.2) over time at representative stations previously assessed in the PEEIAR WQIA (Golder 2015a), although replacement stations were included as appropriate, consistent with the evolution of the post-event monitoring program.

2.3.1 Representative Station Selection

Ten representative stations in the downstream aquatic receiving environment for the WQIA update were monitored either weekly or monthly from August 2014 to August 2015. Datasets for some monitoring stations were combined to provide a continuous data record[3]. Rationale for the selection of each representative monitoring station is provided below.

- **Two stations on Polley Lake (P1 and P2).** Station P1 located at the north end of Polley Lake and Station P2 located to the south of the lake. These two stations represented the deepest areas of the lake and provided geographical coverage.
- **Three stations in Hazeltine Creek.** One station in upper Hazeltine Creek (HAC-05), one station in lower Hazeltine Creek (HAC-08) above the two sedimentation ponds, and one station at the outflow of Hazeltine Creek (HAC-01) below the sedimentation ponds. These ponds became operational in December 2014 and were designed to reduce loadings of suspended particulate matter in lower Hazeltine Creek and as a consequence inputs to Quesnel Lake. In upper Hazeltine Creek, Station HAC-05 has been the most frequently sampled since the event, and in lower Hazeltine Creek, Station HAC-01 has been the most frequently sampled (Attachment 2). Data from HAC-01 represent water quality at the outflow of Hazeltine Creek below the sedimentation ponds at the confluence with Quesnel Lake. Monitoring at Station HAC-08 began in late January 2015.
    - As described in Attachment 2 and Golder (2015a), the HAC-01 water quality monitoring station in lower Hazeltine Creek was moved slightly over time to adapt to changes in the creek channel due to rehabilitation activities and construction of sedimentation ponds (a change in location was indicated with a subsequent letter in the station code). Samples collected at HAC-01, HAC-01a, HAC-01b, HAC-01c in lower Hazeltine Creek have contiguous sampling periods and for the purposes of this assessment are considered to represent the same location (i.e., HAC-01/a/b/c).
- **Four stations in Quesnel Lake**. One near-field station, two mid-field stations located west of Cariboo Island, and one far-field station located east of Cariboo Island.
    - *Near-field:* Station QUL-66 is located close to the mouth of Hazeltine Creek, and was replaced by stations QUL-55 in March 2015 and QUL-55a in July 2015, when the creek mouth was re-routed. The Pollution Abatement Order 107461 amendment issued June 15, 2015, by the BC MoE (2015b), specified turbidity requirements for this station and surrounding profile data stations.

[3] As described in Golder (2015a) some lake stations were not sampled during the winter months due to health and safety concerns and issues related to access. Hazeltine Creek was a managed system undergoing rehabilitation and so some stations had to be moved over time consistent with activities within the creek.

- *Mid-field:* Station QUL-18 represents one of the deepest points in the West Basin and is located north-west of the Hazeltine Creek mouth, towards the Quesnel River between QUL-66 and QUL-21. The Pollution Abatement Order 107461 amendment issued June 15, 2015, by the BC MoE (2015b) also specified turbidity requirements for this station. Station QUL-2/2a is a mid-field station located east of the Hazeltine Creek mouth west of Cariboo Island. Both stations QUL-2 and QUL-2a were monitored following the event until lake turnover in 2014, but monitoring only at QUL-2a was continued in 2015. Data from stations QUL-2 and QUL-2a were pooled to provide a combined post-event dataset that extended to August 2015.
- *Far-Field:* Station QUL-120/120a is located east of Cariboo Island towards the main body of the lake and was assessed with regards to turbidity measures of the plume. Data from stations QUL-120 and QUL-120a were pooled to provide a combined post-event dataset that extended to August 2015.

- **One Quesnel River station:** Station QUR-1 is located at the Quesnel River Research Centre near the community of Likely and reflects water quality at the outflow of Quesnel Lake. This station was routinely monitored by MPMC during the post-event period.

2.3.2 Changes in COPC Concentrations Over Time

Instantaneous measurements and rolling 30-day (d) average values for each COPC were assessed qualitatively and were compared against applicable provincial guidelines and standards to assess changes in water quality as a result of the event[4].

- Instantaneous measurements were compared against the short-term maximum BC WQGs (where available) for the most sensitive water use to evaluate intermittent or transient impacts on aquatic life. These concentrations were also compared against CSR Schedule 6 standards for aquatic life, CSR Schedule 6 drinking water standards, and CSR Schedule 6 livestock water standards (as a surrogate for wildlife water). CSR standards were shown on relevant graphs where reported concentrations exceeded these standards; otherwise the CSR standards were not shown because they are often much higher than the y-axis maxima and therefore including them would compress the observed data downwards.
- Rolling 30-d average values were calculated and compared against long-term average BC WQGs that are intended to prevent sub-lethal and lethal effects on the most sensitive species and life stage for an indefinite time period. The 30-d mean guidelines are intended to be applied to mean concentrations of a minimum of five samples collected over a 30-d time period (BC MoE 2015a).

Temporal and spatial trends in the concentrations of each COPC were discussed (see Section 3.0) with a focus on those parameters that remained elevated from March to August 2015, under the assumption that these parameters could therefore be of longer-term potential consequence regarding impacts on water quality.

[4] Substitutions were not made for values that were reported as less than the method detection limit (MDL) and these values were set equal to the MDL for purposes of plotting data, calculating 30-d averages.

2.3.3 Turbidity Requirements of Pollution Abatement Order 107461

A Pollution Abatement Order 107461 amendment was issued June 15, 2015, by the BC MoE (2015b) and specified that MPMC must meet the following requirements with respect to water quality.

- Turbidity at the monitoring sites QUL-54, QUL-55, QUL-56 (and subsequently replacement stations QUL-54a, QUL-55a, and QUL-56a) of no greater than 2 NTU rolling average above background (i.e., 1 NTU), at any monitored depth, over a period of 30 days using a minimum of five weekly samples.
- Turbidity at the monitoring site QUL-18 of no greater than 1 NTU above background at any monitored depth.

To assess compliance with amended Pollution Abatement Order 107461, depth profile measurements of turbidity were plotted for near-field stations QUL-54/54a, QUL-55/55a, QUL-56/56a and the western mid-field station QUL-18. The plots were then interpreted to identify time periods where non-compliance was observed.

3.0 RESULTS

3.1 COPC Identification

The screening process described in Section 2.2 for data collected between March and August 2015 identified the following COPCs that required further evaluation of post-event concentrations (bolded in Table 1):

- molybdenum in Polley Lake;
- turbidity in Quesnel Lake and Quesnel River;
- copper in Quesnel Lake; and
- turbidity, TSS, and a number of metals in Hazeltine Creek.

Table 1: Contaminants of Potential Concern Identified in the Receiving Environment Based on Water Quality Monitoring from March through August 2015[1]

Waterbody	COPC: Physical[2,3]	COPC: Total Metals[2]	COPC: Dissolved Metals[2]	COPC: Non-Metal Substances
Polley Lake	*no substances*	**molybdenum**	**molybdenum**	*no substances*
Hazeltine Creek	**turbidity, total suspended solids**	**aluminum**, **arsenic, beryllium,** cadmium, **chromium, cobalt, copper**, **iron, lead, manganese, molybdenum**, titanium, **zinc**	**copper, molybdenum**	*no substances*
Quesnel Lake	**turbidity**	**copper**	*no substances*	*no substances*
Quesnel River	**turbidity[4]**	*no substances*	*no substances*	*no substances*

Notes:
1) Parameters were identified based on 95th percentile of measured values exceeding the BC WQG or CSR standard for the most sensitive end use and exceedance of the pre-event 95th percentile concentration.
2) Bolded COPCs were evaluated further in the WQIA update. Metals not bolded had 95th percentile concentrations that only exceeded CSR standards (i.e., total cadmium, total titanium), but did not exceed BC WQGs (dissolved cadmium concentrations did not exceed BC WQGs). These metals were not evaluated further and were conservatively retained for the HHERA.
3) Background turbidity concentrations are 1.5 NTU in Hazeltine Creek and 1 NTU in Quesnel Lake and Quesnel River.
4) Turbidity was identified as a COPC for Quesnel River based on in-situ data from a continuous logger.

With respect to Hazeltine Creek, suspended particulate matter, measured as TSS and turbidity, and the total forms of 14 metals were identified as COPCs for the period March to August 2015 (Table 1). Of those 14 metals, copper and molybdenum were also identified as COPCs in their dissolved forms. Subsequent evaluation of COPCs identified for Hazeltine Creek focused on those metals that exceeded BC WQGs, while metals that only exceeded CSR standards (i.e., total cadmium, total titanium) were conservatively retained as COPCs in Section 5 for further evaluation in the HHERA. Levels of suspended particulate matter in Hazeltine Creek initially decreased in December and January to those that represented 'clear-flow conditions' in the creek following the commissioning of the sedimentation ponds in December (Golder 2015a) and the onset of low flow freezing conditions. From February to May 2015, particulate matter levels increased in the creek as a result of construction activities along the creek channel that coincided with an early freshet (as illustrated in the photos provided in Attachment 6). These turbid flow episodes were associated with peak concentrations of metal COPCs above BC WQGs and pre-event concentrations in Hazeltine Creek.

In-situ pH values measured when discrete samples were taken from the four waterbodies were mostly within the BC WQG range of 6.5 to 9.0 for aquatic life[5] and the BC WQG range of 6.5 to 8.5 for drinking water[6]. Based on these data, pH was not identified as a COPC consistent with the PEEIAR WQIA.

The PEEIAR WQIA identified dissolved oxygen (DO) as a COPC in Polley Lake, but DO was not of potential concern in Quesnel Lake, Hazeltine Creek, or Quesnel River. From May to June 2015, DO concentrations in Polley Lake were above the minimum BC WQG of 5 mg/L, but in July and August 2015 concentrations at depth were less than 5 mg/L, indicative of hypoxic conditions (as shown for Station P2 in Attachment 5). These late summer DO conditions were similar to those described for Polley Lake prior to the event by Minnow (2014): in late summer the lake underwent thermal stratification and hypoxic conditions were evident at depths greater than 20 m. Given that DO conditions in Polley Lake resemble pre-event conditions, DO was not identified as a COPC for this lake.

3.2 Changes in COPC Concentrations Over Time

The following section describes post-event changes in receiving environment water quality with respect to COPCs identified in Section 3.1. Changes in COPC concentrations over time from March to August 2015 are discussed below relative to relevant BC WQGs and CSR standards. Post-event concentrations from August 2014 to February 2015 previously reported in the PEEIAR WQIA (Golder 2015a) are provided in each figure for context and discussed where appropriate in the text to facilitate interpretation of data collected between March and August 2015. Results are presented according to each group of COPCs (i.e., suspended particulate matter, metals, nutrients), then within each COPC group. Changes in specific COPCs are discussed for each waterbody.

Data shown for Hazeltine Creek and Quesnel River represent discrete surface grab samples collected as described in the PEEIAR WQIA, except where a continuous data logger measured turbidity. Quesnel Lake and Polley Lake data are from discrete grab samples taken at various depths and were categorized as either surface (1-20 m) or deep (>20 m) for the purpose of evaluating changes over time.

[5] With the exception of 4% of samples in Polley Lake and 2% of samples in Quesnel River that exceeded BC WQG upper limit of 9.0 (MPMC unpublished data)

[6] With the exception of: 20% of samples in Polley Lake and 4% of samples in Quesnel Lake that exceeded BC WQG upper limit of 8.5 (MPMC unpublished data)

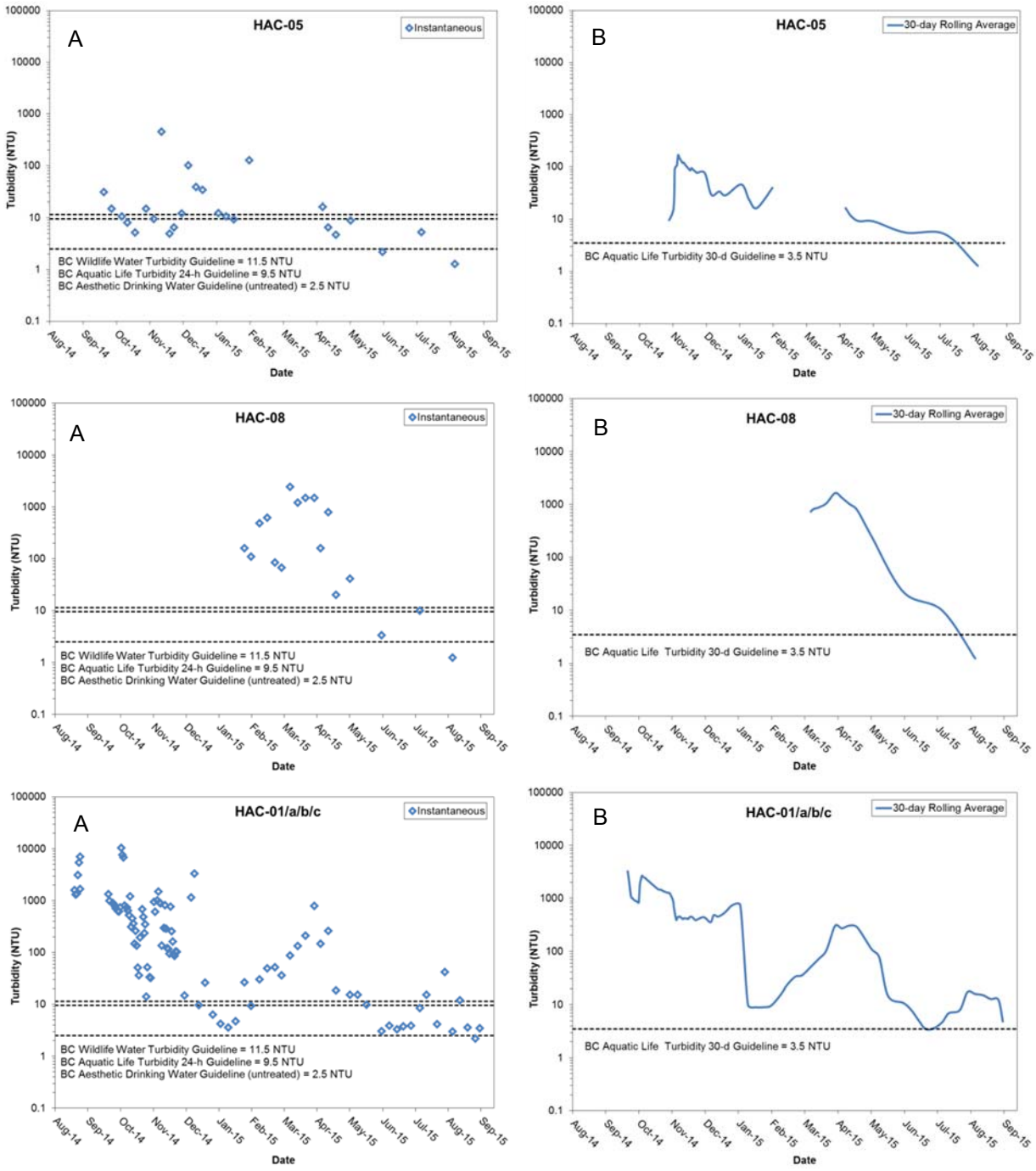
3.2.1 Suspended Particulate Matter (Turbidity/TSS)

Both TSS and turbidity, were identified as COPCs in Hazeltine Creek from March to August 2015, whereas downstream in Quesnel Lake and Quesnel River, only turbidity was identified as a COPC. Larger suspended solids captured in the TSS measurement tend to settle out more quickly that the finer particulates measured by turbidity that might travel further downstream.

3.2.1.1 Hazeltine Creek

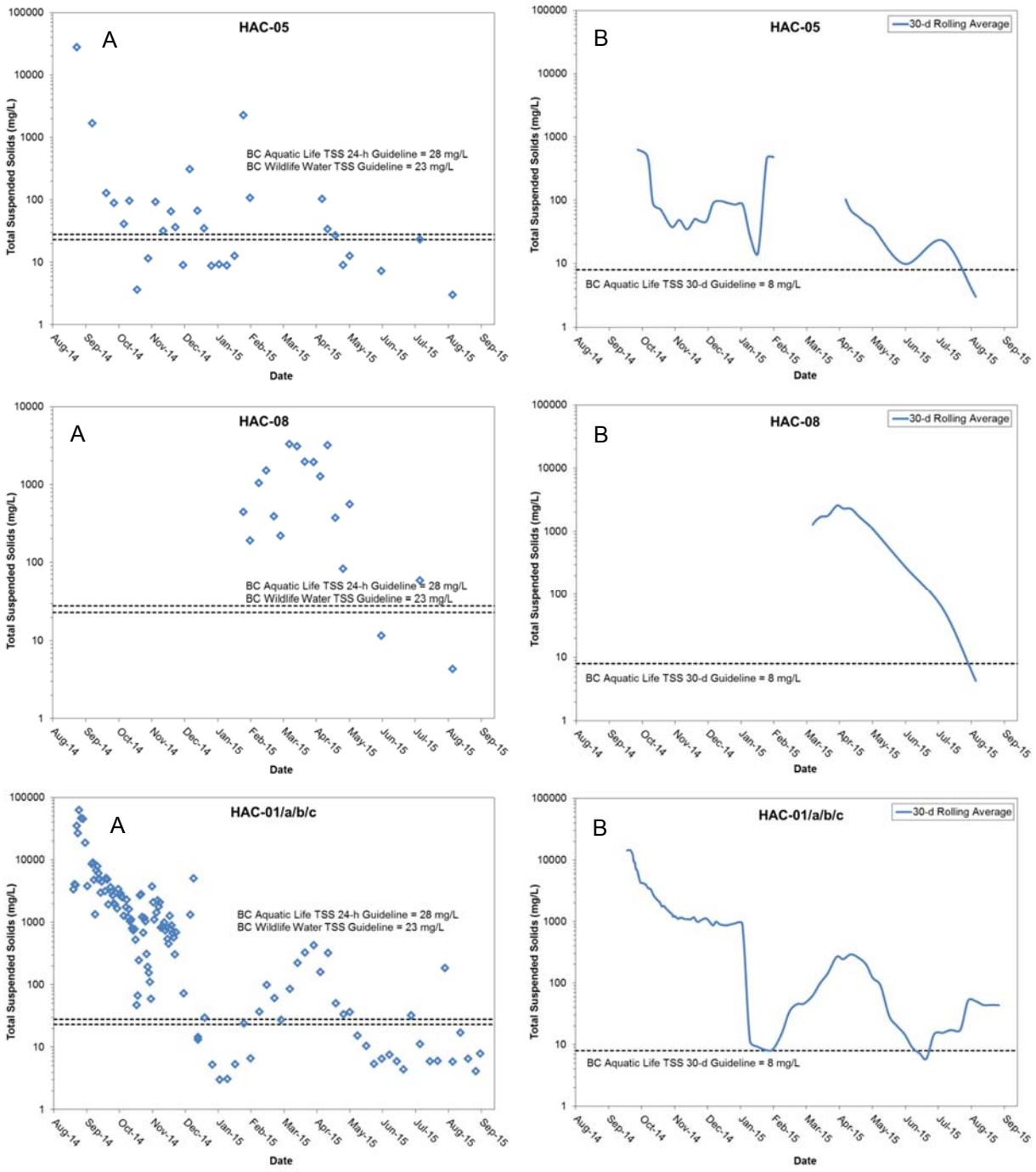
Turbidity and TSS in Hazeltine Creek were measured above BC WQGs following the event and exhibited a general decrease over time at stations HAC-05 and HAC-01/a/b/c from August 2014 through August 2015, and at HAC-08 from April to August 2015 (Figure 1 and Figure 2). Although two sedimentation ponds were commissioned in lower Hazeltine Creek in December 2014, and have been considered to be effective at reducing sediment loads most of the time, spikes in turbidity and TSS were observed downstream at HAC-01/a/b/c between late January and April 2015. This increase in turbidity was attributed to an early freshet and ongoing remediation works along the creek channel. Stabilization and rock armouring of the creek channel was completed on May 11, 2015, which corresponded with a reduction in turbidity. Peaks in turbidity at HAC-01/a/b/c again in late July and mid-August corresponded with construction activities related to a change in discharge location of the creek and maintenance of the sedimentation ponds at that time (pers. comm. S. Litke), rather than due to specific precipitation events (Attachment 6, Figure 5).

In upper Hazeltine Creek (HAC-05) and lower Hazeltine Creek above the sedimentation ponds (HAC-08), turbidity and TSS decreased below the 24-h BC WQG for aquatic life and BC WQG for wildlife water as of May 2015. The corresponding 30-d average concentrations decreased below the 30-d BC WQG for aquatic life in August 2015. As indicated in Figure 1, Station HAC-05 was not sampled between February and April due to active construction activity in the surrounding area. As of May 2015, the majority of measurements of both TSS and turbidity at the outflow of Hazeltine Creek (HAC-01/a/b/c) decreased below the 24-h BC WQGs for aquatic life and BC WQGs for wildlife water, but remained above the 30-d BC WQGs through August 2015. Turbidity at the outflow of Hazeltine Creek remained above the BC aesthetic drinking water guideline for untreated water through August.



Note: Baseline assumed equal to pre-event median turbidity of 1.5 NTU. Gaps represent >30 d between sampling.

Figure 1: Post-event Instantaneous (A) and Rolling 30-day Average (B) Turbidity Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

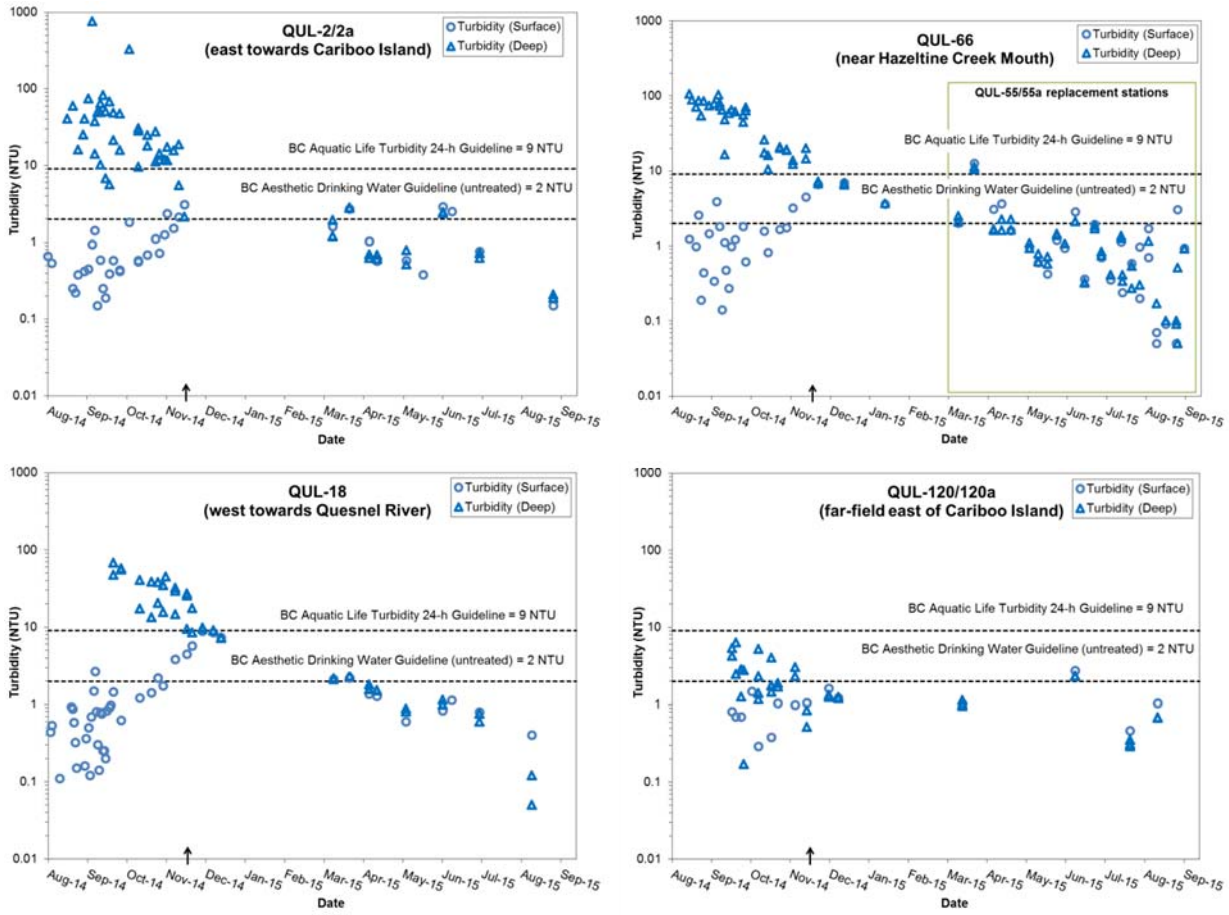


Note: Baseline assumed equal to the MDL of 3 mg/L. Gaps represent >30 d between sampling.

Figure 2: Post-event Instantaneous (A) and Rolling 30-day Average (B) TSS Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

3.2.1.2 Quesnel Lake

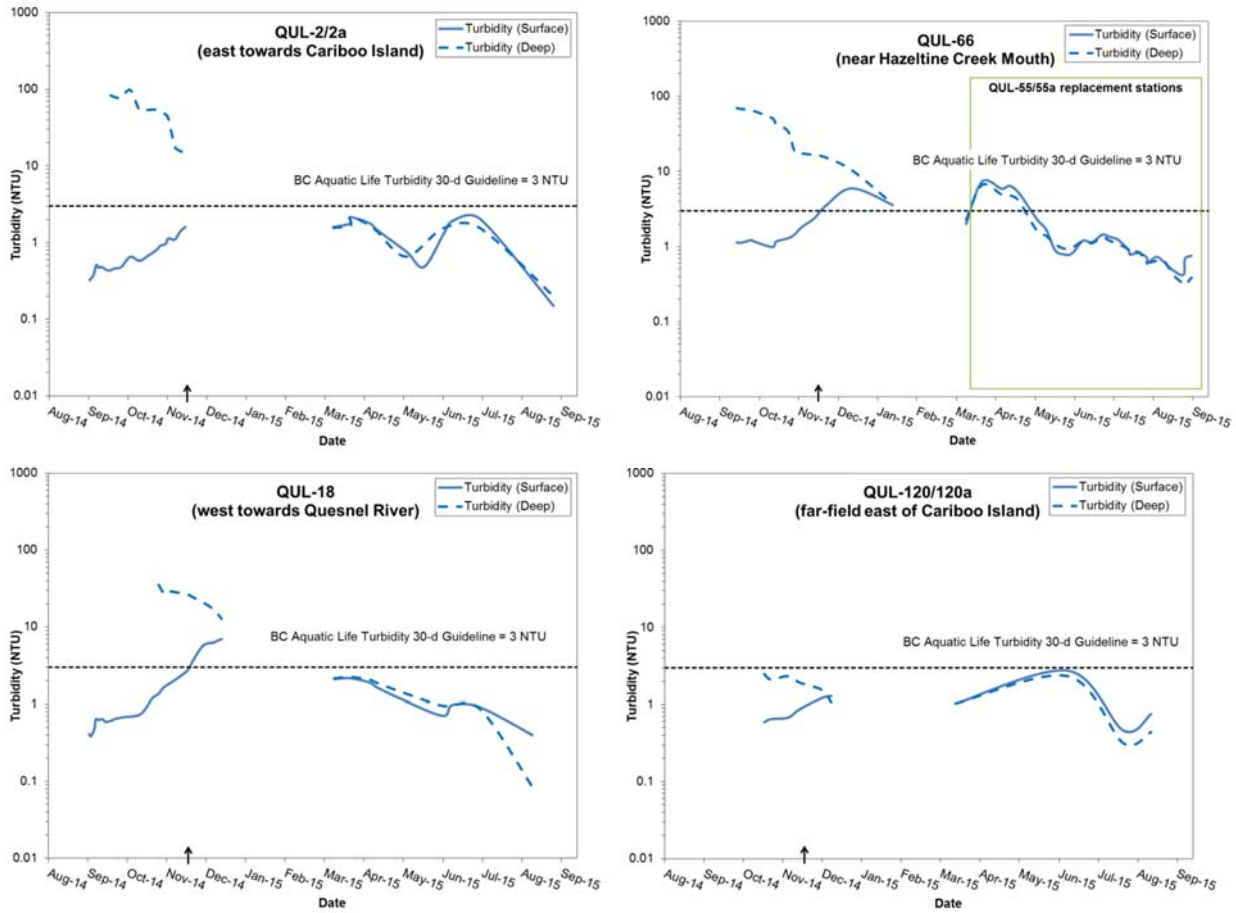
Following the event, turbidity was elevated at depth above 24-h BC WQGs in the West Basin of Quesnel Lake, but was not elevated at the far-field station (QUL-120/120a) east of Cariboo Island (Figure 3). Turbidity concentrations at depth decreased over time at stations QUL-2/2a, QUL-66/55/55a, and QUL-18 and were below or near BC WQGs by April 2015. Concentrations remained below BC WQGs through August 2015. At the surface, turbidity levels generally remained below guideline values with the exception of some exceedances of the aesthetic drinking water guideline for untreated water around the time of fall lake turnover in mid-November 2014 and occasionally into spring (Figure 3). Turbidity was measured above 2 NTU in June at both surface and depth at QUL-2/2a, QUL-66/55/55a, and QUL-120/120a. Given that the increase was observed at several stations including the far-field station, and turbidity in Hazeltine Creek was not abnormally high during that period, the temporary increase in turbidity was likely due to factors besides the mine, such as natural inputs from tributaries. Relative to the changes in turbidity that were observed during fall turnover in 2014, water quality did not appear to be influenced by spring turnover in 2015 as turbidity concentrations were similar at surface and depth during March and April, which is when turnover is expected to occur.



Note: Arrow represents the approximate timing of mid-November turnover in Quesnel Lake. Background assumed equal to 1 NTU.

Figure 3: Post-event Instantaneous Turbidity Concentrations at Stations QUL-2/2a, QUL-66/55/55a, QUL-18, and QUL-120/120a, Quesnel Lake.

Thirty-day average concentrations of turbidity at depth were above the 30-d BC WQG at stations in the West Basin following the event and decreased over time to below the guideline at all four stations by May 2015 (Figure 4). Concentrations at surface were generally below the guideline, except where fall turnover in mid-November 2014 resulted in vertical mixing and elevated turbidity at the surface. At QUL-66/55/55a, near the mouth of Hazeltine Creek, the 30-d average concentrations at surface and at depth were elevated throughout March and April 2015 due to inputs of turbid water from Hazeltine Creek during this period. Turbidity declined from May through August 2015 consistent with a similar general decline in Hazeltine Creek as described in Section 3.2.1.1. For the other stations located further away from the mouth of Hazeltine Creek, 30-d average concentrations remained below the respective guideline from March through August 2015 (Figure 4). Overall, 30-d average concentrations of turbidity at the four Quesnel Lake stations showed a decreasing trend over time to below BC WQGs, from August 2014 to August 2015.



Note: Arrow represents the approximate timing of mid-November turnover in Quesnel Lake. Background assumed equal to 1 NTU. Gaps represent >30 d between sampling.

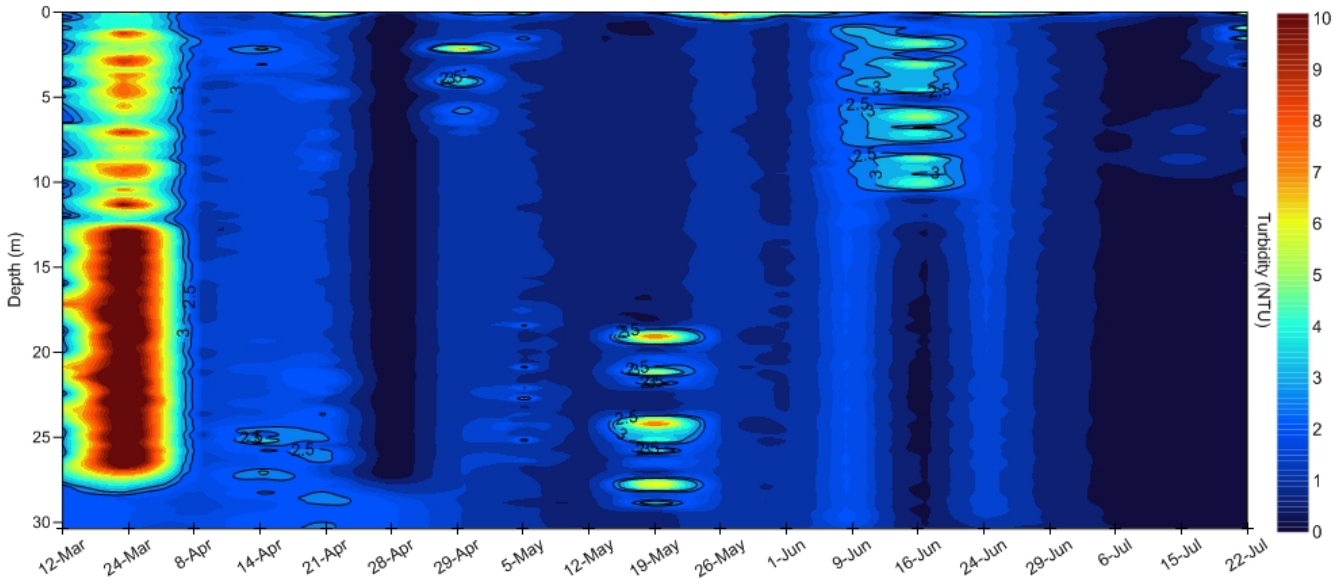
Figure 4: Post-event Rolling 30-day Average Turbidity Concentrations at Stations QUL-2/2a, QUL-66, QUL-18, and QUL-120/120a, Quesnel Lake.

Pollution Abatement Order Requirements: Turbidity

Near-Field Stations

Weekly depth profiles of field parameters were conducted at stations QUL-54, QUL-55, and QUL-56 near the mouth of Hazeltine Creek from March until late July 2015, when the outlet of Hazeltine Creek was redirected. Stations QUL-54a, QUL-55a, and QUL-56a were established near the new outlet to replace the previous stations and monitoring was continued at the same frequency.

- At QUL-55, turbidity was elevated up to 13 NTU throughout the water column on March 24, 2015, but thereafter rarely exceeded 3 NTU (i.e., criterion of 2 NTU above background of 1 NTU) between weekly sampling events (Figure 5). The same trends were observed for QUL-54 and QUL-56 during this period, but at these stations turbidity values in March were typically lower than those reported for QUL-55, remaining below 7 NTU (Attachment 6, Figures 6-7).
- From late July to August 2015 turbidity was less than 3 NTU at stations QUL-54a, QUL-55a, and QUL-56a except for an exceedance of up to 14 NTU around 7 m depth at QUL-56a in late July (Attachment 6, Figures 8-10). It is possible the observed temporary increase in turbidity close to the mouth of Hazeltine Creek was due to sediment mobilization as a result of construction of the new outlet to Quesnel Lake that occurred within this time period.

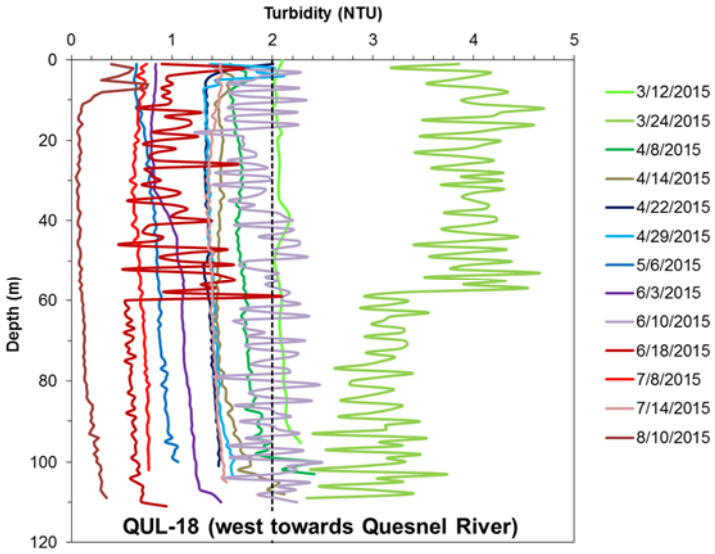


Note: The contour at 3 NTU represents the criterion of 2 NTU above background (1 NTU).

Figure 5: Contours of Turbidity Measured In-situ over Time at Station QUL-55 in Quesnel Lake (March to July 2015).

Western Mid-Field Station

At Station QUL-18, depth profiles of field parameters were recorded on 13 dates between March and August 2015, at a frequency of twice per month. On March 24, 2015, turbidity ranged from 2.5 to 4.5 NTU throughout the water column and exceeded the criterion of 1 NTU above background (Figure 6). This corresponded with observations of elevated turbidity at near-field Quesnel Lake stations on this date (i.e., QUL-55, see Figure 5). At other mid-field stations (QUL-2a east and QUL-21a west) turbidity was 2.8 NTU throughout the water column on this date (data not shown). Other than slight exceedance of this turbidity criterion at QUL-18 on March 12 and June 10, turbidity throughout the water column was below 2 NTU through to August.

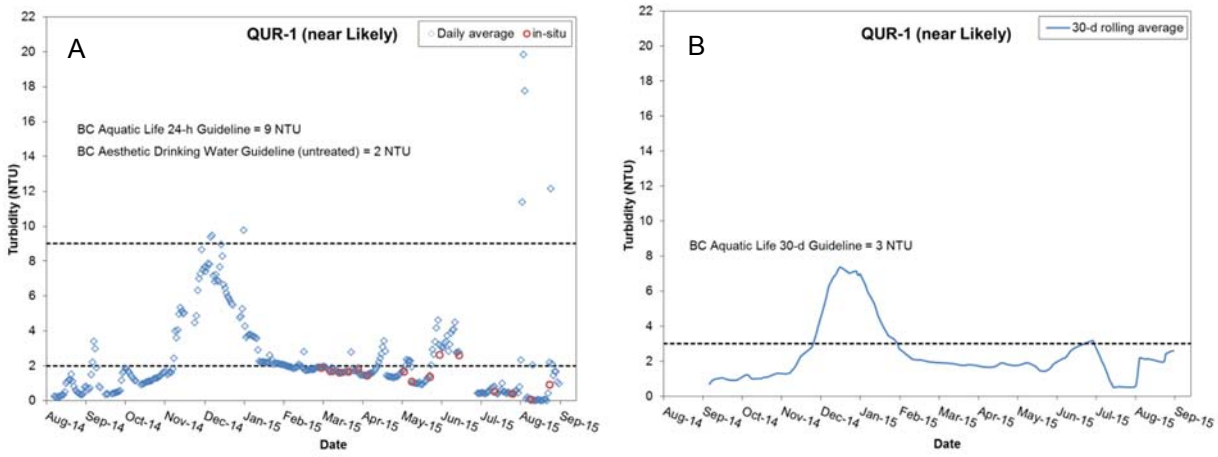


Note: Dotted line indicates criterion of 1 NTU above the background (1 NTU).

Figure 6: Depth Profiles of Turbidity at Station QUL-18 in Quesnel Lake (March to August 2015).

3.2.1.3 Quesnel River

Following the event, turbidity concentrations at Station QUR-1 were below the 24-h BC WQG for aquatic life, with the exception of a few exceedances in December 2014 and July and August 2015 (Figure 7). Turbidity spiked from late November 2014 to late January 2015, due to fall turnover of Quesnel Lake and mixing of deep turbid water, and the 30-d average concentration exceeded the 30-d BC WQG for aquatic life during this period. From mid-February through to the end of August 2015, turbidity concentrations in the river were below the 30-d BC WQG (Figure 7). Turbidity intermittently exceeded the BC aesthetic drinking water guideline for untreated water through to August 2015, but daily averages were typically below this guideline. The higher turbidity values recorded in June and August were not corroborated by in-situ measurements taken with a portable turbidity meter during collection of water samples on an alternating weekly basis (Figure 7). These higher turbidity readings are thought to be attributed to sensor fouling, in addition to the Sonde potentially being exposed from the water in August (pers. comm. S. Litke). The Sonde was moved and redeployed in early September 2015.



Note: Background assumed equal to 1 NTU.

Figure 7: Post-event Instantaneous (A) and Rolling 30-day Average (B) Turbidity Concentrations at Station QUR-1 near Likely, Quesnel River.

3.2.2 Metals

Screening of data collected between March and August 2015 identified molybdenum to be a COPC in Polley Lake and copper to be a COPC in Quesnel Lake. No metals were identified to be of potential concern in Quesnel River. A number of metals were identified to be COPCs in Hazeltine Creek, including copper and molybdenum (Table 1).

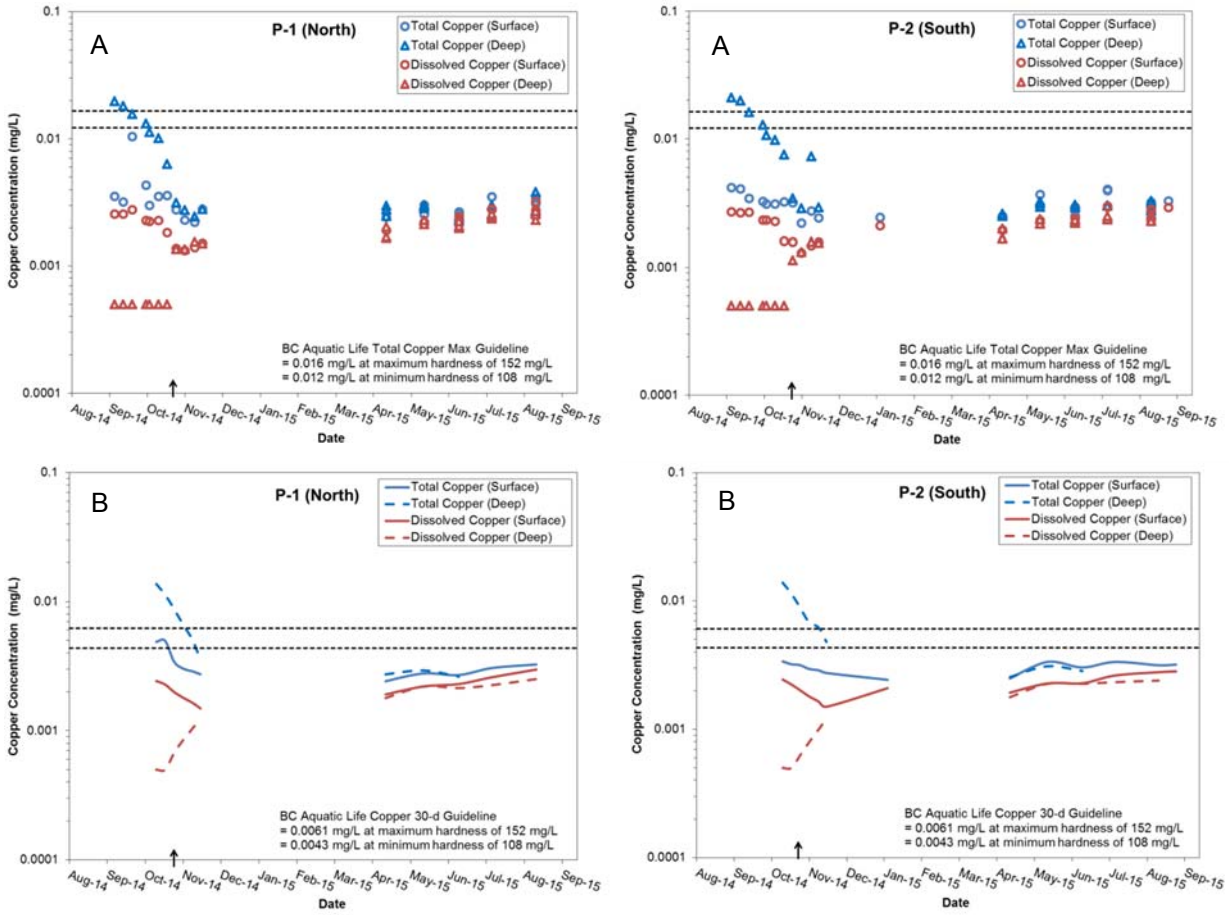
The PEEIAR WQIA identified copper as the COPC of primary interest because total and dissolved forms were reported to be above BC WQGs during the post-event period evaluated from August 2014 to February 2015 (Golder 2015a). It was therefore appropriate in this WQIA update to evaluate post-event changes in copper concentrations over a one-year period until August 2015 in the four monitored waterbodies, regardless of whether copper screened in as a COPC based on concentrations measured from March to August. With respect to other metals identified as COPCs in the PEEIAR WQIA, they were only evaluated further if they screened in as COPCs based on concentrations measured from March to August (Table 1).

Selenium was not identified as a COPC in Table 1 given that concentrations were below guidelines in the monitored waterbodies. However, due to previous concerns regarding a historic selenium source to Polley Lake that has since been mitigated and related monitoring efforts prior to the event (Minnow 2014), trends in selenium concentrations were evaluated further in Polley Lake, Hazeltine Creek, and the near-field area of Quesnel Lake close to the Hazeltine Creek mouth.

3.2.2.1 Polley Lake

Copper

Although initially elevated after the event, total copper concentrations at depth in Polley Lake decreased over time to below applicable BC WQGs by fall turnover in mid-November (Figure 8). Post-event dissolved copper concentrations were consistently below BC WQGs. By April 2015, total and dissolved copper concentrations had converged and stabilized to between 0.002 and 0.003 mg/L through the end of August 2015 (Figure 8).



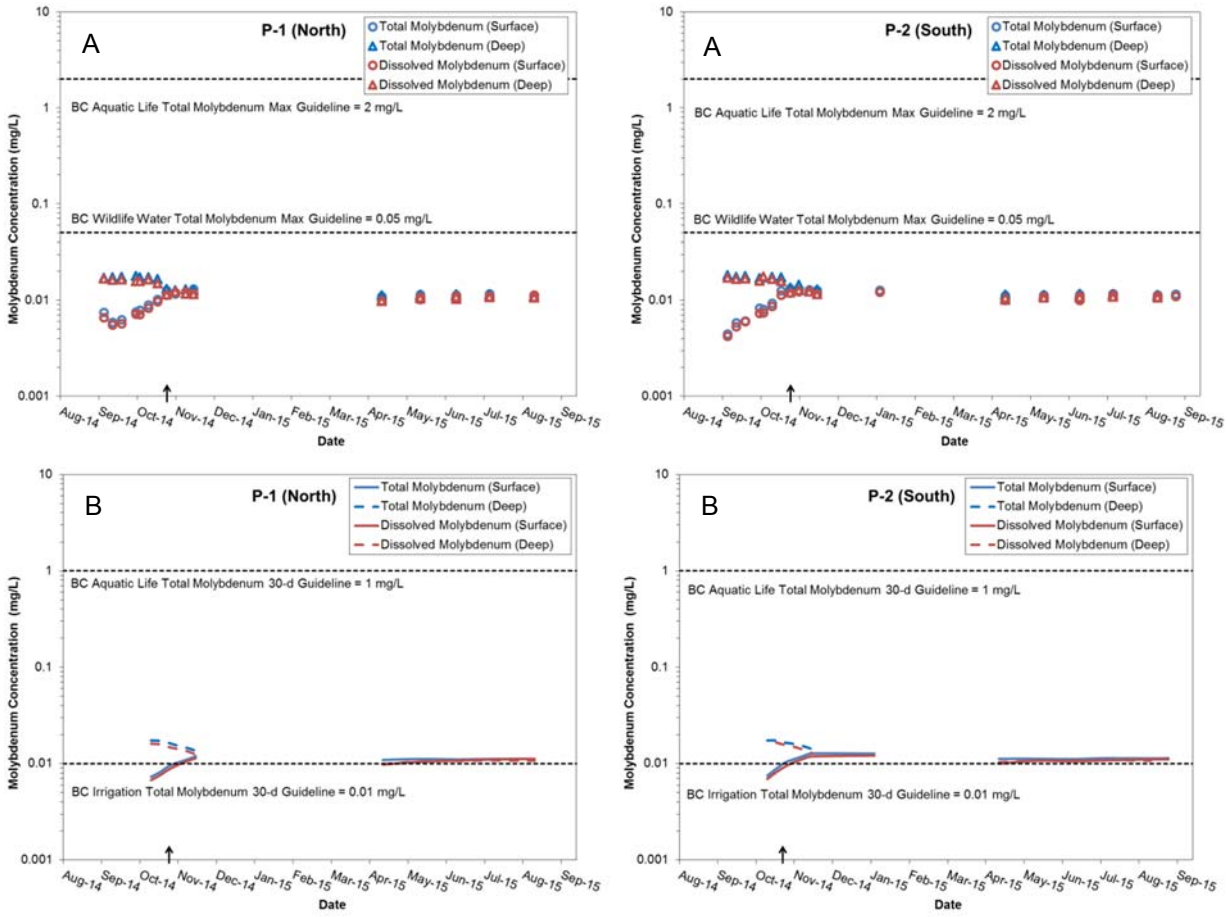
Note: Arrow represents the approximate timing of late-October turnover in Polley Lake. Gaps represent >30 d between sampling.

Figure 8: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Copper Concentrations at Stations P1 and P2, Polley Lake

Molybdenum

Total and dissolved molybdenum concentrations at stations P1 and P2 in Polley Lake were similar and consistently below the maximum BC WQGs for aquatic life and wildlife water following the event through August 2015 (Figure 9). Concentrations at depth were higher than at the surface until fall turnover, when the water column was vertically mixed and concentrations remained stable at around 0.01 mg/L thereafter.

The 30-d average concentrations of molybdenum were consistently below the 30-d BC WQG for aquatic life, but slightly exceeded the 30-d BC WQG for irrigation (Figure 9). The BC WQG for irrigation was considered in the assessment because it is conservatively expected to be protective of ruminant wildlife that might be exposed through dietary uptake from irrigated plant foods. However, only aquatic vegetation along the edges of Polley Lake is expected to be in contact with lake water because the lake is not used as an irrigation source; consequently, there has been little potential for uptake of molybdenum by ruminant wildlife. Additional discussion regarding the potential for molybdenum uptake by ruminant wildlife in Polley Lake is provided in Golder (2015a).



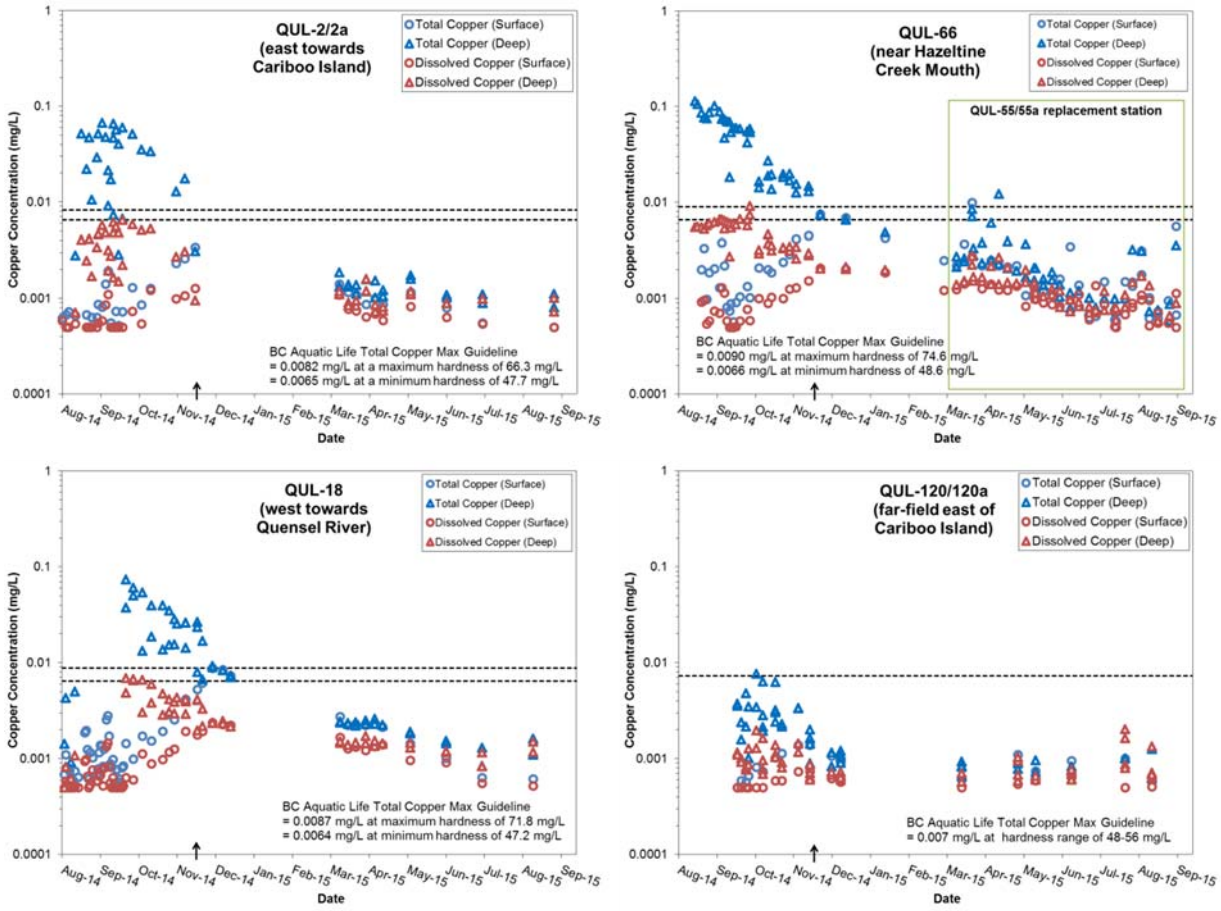
Note: Arrow represents the approximate timing of late-October turnover in Polley Lake. Gaps represent >30 d between sampling.

Figure 9: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Molybdenum Concentrations at Stations P1 and P2, Polley Lake.

3.2.2.2 Quesnel Lake

Copper

Following the event, total copper concentrations at depth were elevated above the maximum BC WQG for aquatic life in the West Basin of Quesnel Lake, but were not elevated at the far-field station (QUL-120/120a) east of Cariboo Island (Figure 10). Dissolved concentrations (surface and depth) and total concentrations at the surface were typically below the maximum BC WQGs. Total copper concentrations at depth decreased over time, converged with surface and dissolved concentrations by early March 2015, and were below the maximum BC WQG by April. As of late August 2015, copper concentrations reported for QUL-66/55/55a (near the mouth of Hazeltine Creek) were generally similar to concentrations reported elsewhere in the lake, including the far-field station (QUL-120/120a) east of Cariboo Island (Figure 10), with the exception of a few measurements that were higher than the norm, but nonetheless below guidelines. These elevated measurements at the near-field stations are likely associated with periods when Hazeltine Creek flows were more turbid and contained higher TSS levels, as a result of rehabilitation and construction work during that period.

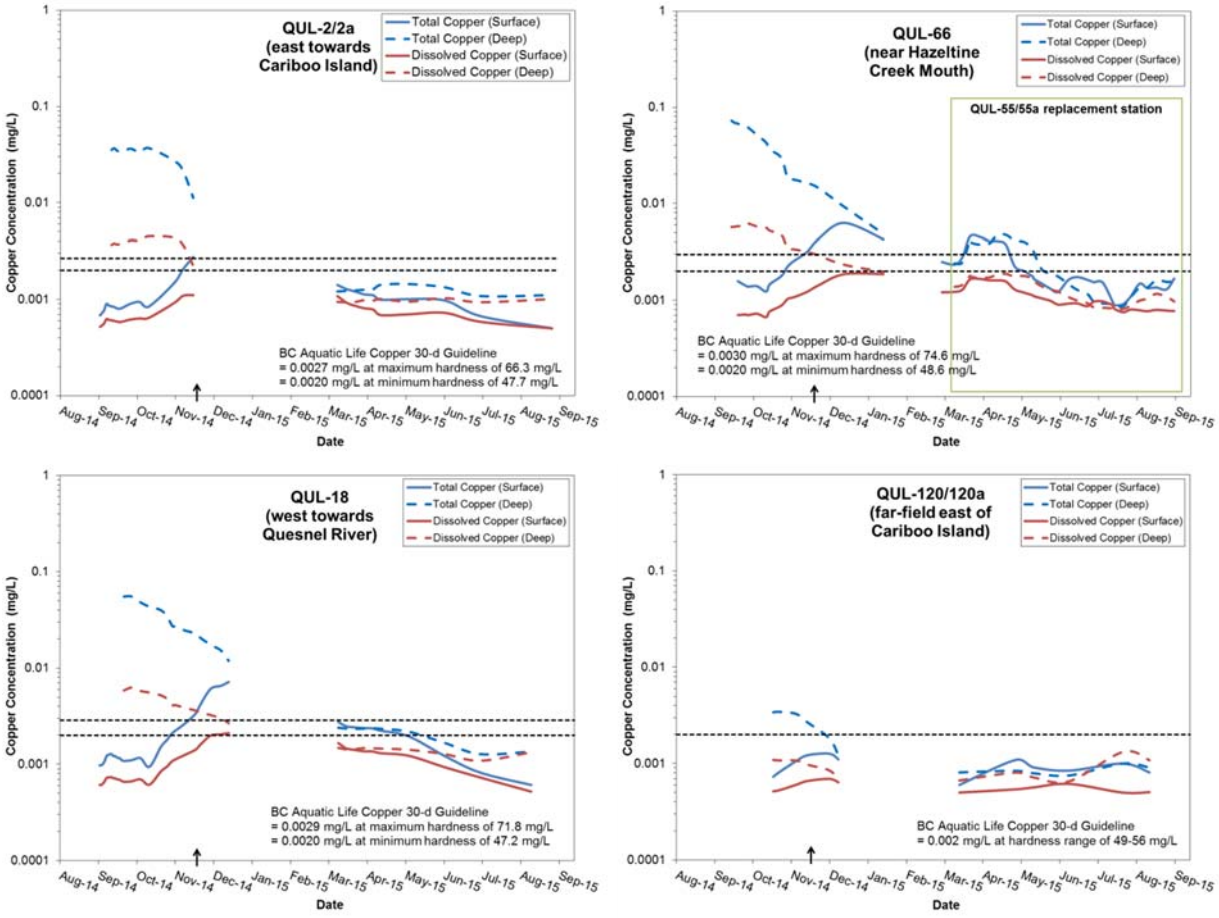


Note: Arrow represents the approximate timing of mid-November turnover in Quesnel Lake.

Figure 10: Post-event Instantaneous Total and Dissolved Copper Concentrations at Stations QUL-2/2a, QUL-66/55/55a, QUL-18, and QUL-120/120a, Quesnel Lake.

Following the event, 30-d average concentrations of total and dissolved copper at depth were elevated above surface concentrations and the 30-d BC WQG for aquatic life at stations in the West Basin (Figure 11). At mid-field stations QUL-2/2a and QUL-18, 30-d average concentrations decreased below the BC WQG by March 2015 (Figure 11). At near-field Station QUL-66/55/55a, near the mouth of Hazeltine Creek, the 30-d average for total copper remained elevated above the BC WQG from March to May 2015, reflective of higher turbidity levels associated with Hazeltine Creek during this period and a concurrent increase in total and dissolved copper concentrations at HAC-01/a/b/c (see Section 3.2.2.4).

Total and dissolved concentrations of copper at each of the four Quesnel Lake stations remained at around 0.001 mg/L by June 2015.



Note: Arrow represents the approximate timing of mid-November turnover in Quesnel Lake. Gaps represent >30 d between sampling.

Figure 11: Post-event Rolling 30-day Average Total and Dissolved Copper Concentrations at Stations QUL-2/2a, QUL-66/55/55a, QUL-18, and QUL-120/120a, Quesnel Lake.

3.2.2.3 Quesnel River

Copper

Total copper concentrations at Station QUR-1 in Quesnel River peaked in December, reflecting increased turbidity during this period, and exceeded the maximum BC WQG until January 2015 (Figure 12). Dissolved copper concentrations were substantially lower than the maximum BC WQG for aquatic life throughout the sampling period. By May 2015, total copper concentrations converged with dissolved concentrations, which would suggest that most of the copper associated with suspended particulate matter had settled out of the water column.

The 30-d average concentrations of total copper declined from a peak in January 2015 to below the 30-d BC WQG for aquatic life by mid-April and continued to decline through August (Figure 12). The 30-d average dissolved concentrations were slightly above the most conservative 30-d BC WQG between December and mid-January, but also declined through to August.

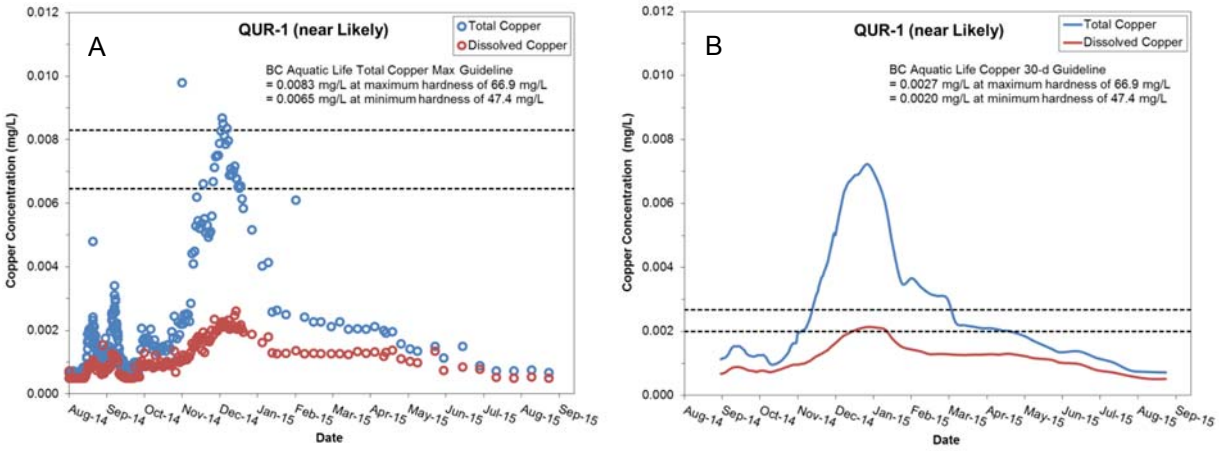


Figure 12: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Copper Concentrations at Station QUR-1 near Likely, Quesnel River.

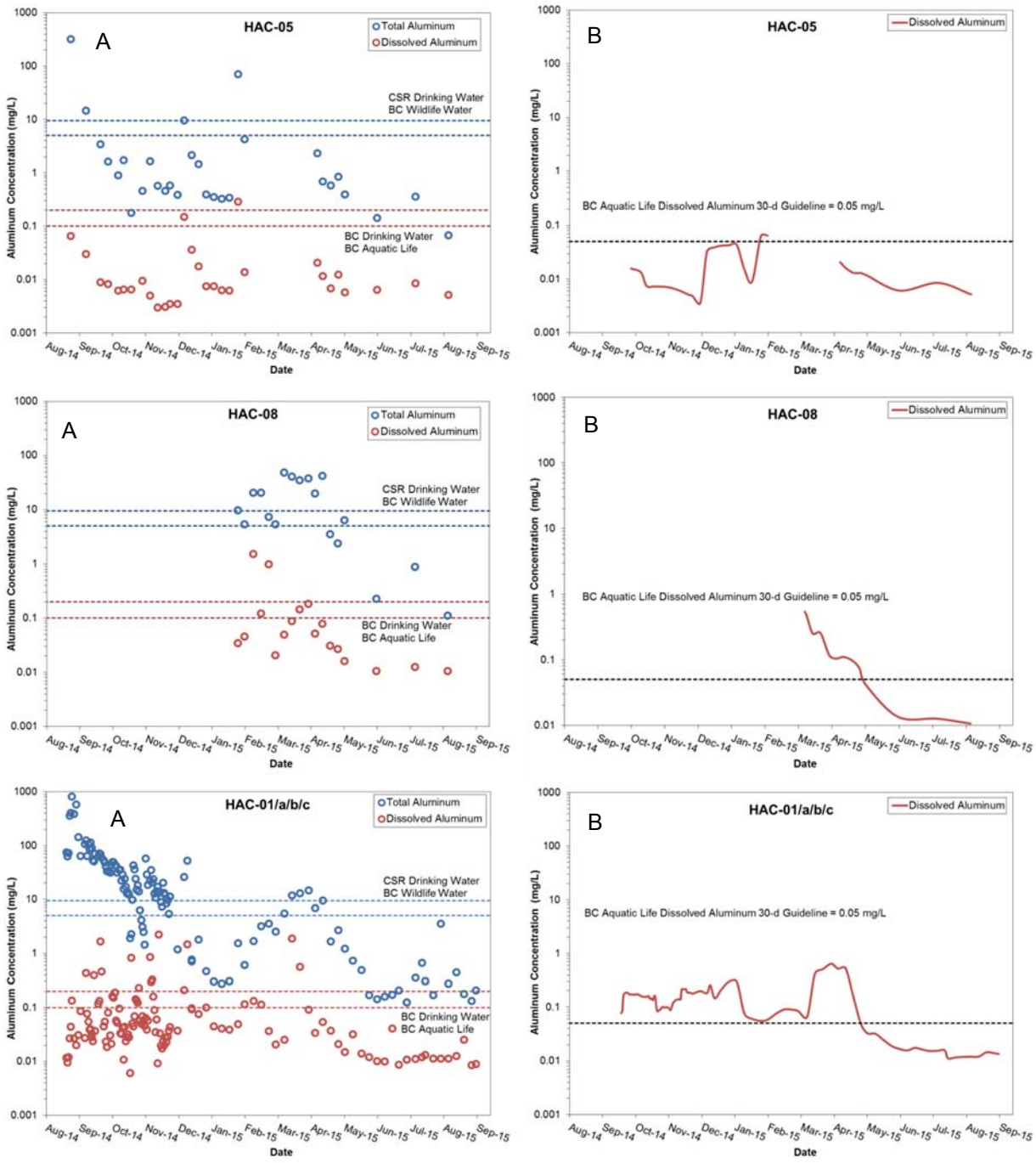
3.2.2.4 Hazeltine Creek

Hazeltine Creek was not defined as a receiving environment in the PEEIAR because the creek was not considered to be fish habitat during the period assessed based on rationale provided in Golder (2015a). For the purpose of the DSI, however, Hazeltine Creek is considered as part of the receiving environment. Spatial and temporal trends in creek water quality are presented graphically for the four metals identified as COPCs in Table 1 that had the largest magnitude of guideline exceedance (i.e., aluminum, copper, chromium, and iron). Trends are shown for Station HAC-05 in upper Hazeltine Creek, Station HAC-08 upstream of the sedimentation ponds, and Station HAC-01/a/b/c downstream of the sedimentation ponds in lower Hazeltine Creek.

Aluminum

In upper Hazeltine Creek (HAC-05), aluminum concentrations remained below BC WQGs or CSR standards for drinking water, wildlife water, and aquatic life following the event through August 2015, with a few exceptions (Figure 13). In the lower creek, total and dissolved aluminum concentrations at HAC-01/a/b/c were above corresponding maximum BC WQGs and CSR standards following the event until December 2014, and again from February to April 2015 (Figure 13). Aluminum concentrations were similarly elevated at HAC-08 during this period in 2015. From May through August 2015, concentrations in lower Hazeltine decreased below maximum guidelines.

The 30-d average dissolved concentrations at stations HAC-05, HAC-08, HAC-01/a/b/c were consistently above the 30-d dissolved aluminum BC WQG for aquatic life until late April 2015 and then decreased below guidelines through August 2015 (Figure 13). Elevated aluminum concentrations at stations in lower Hazeltine Creek reflected the increased turbidity during the same time period.



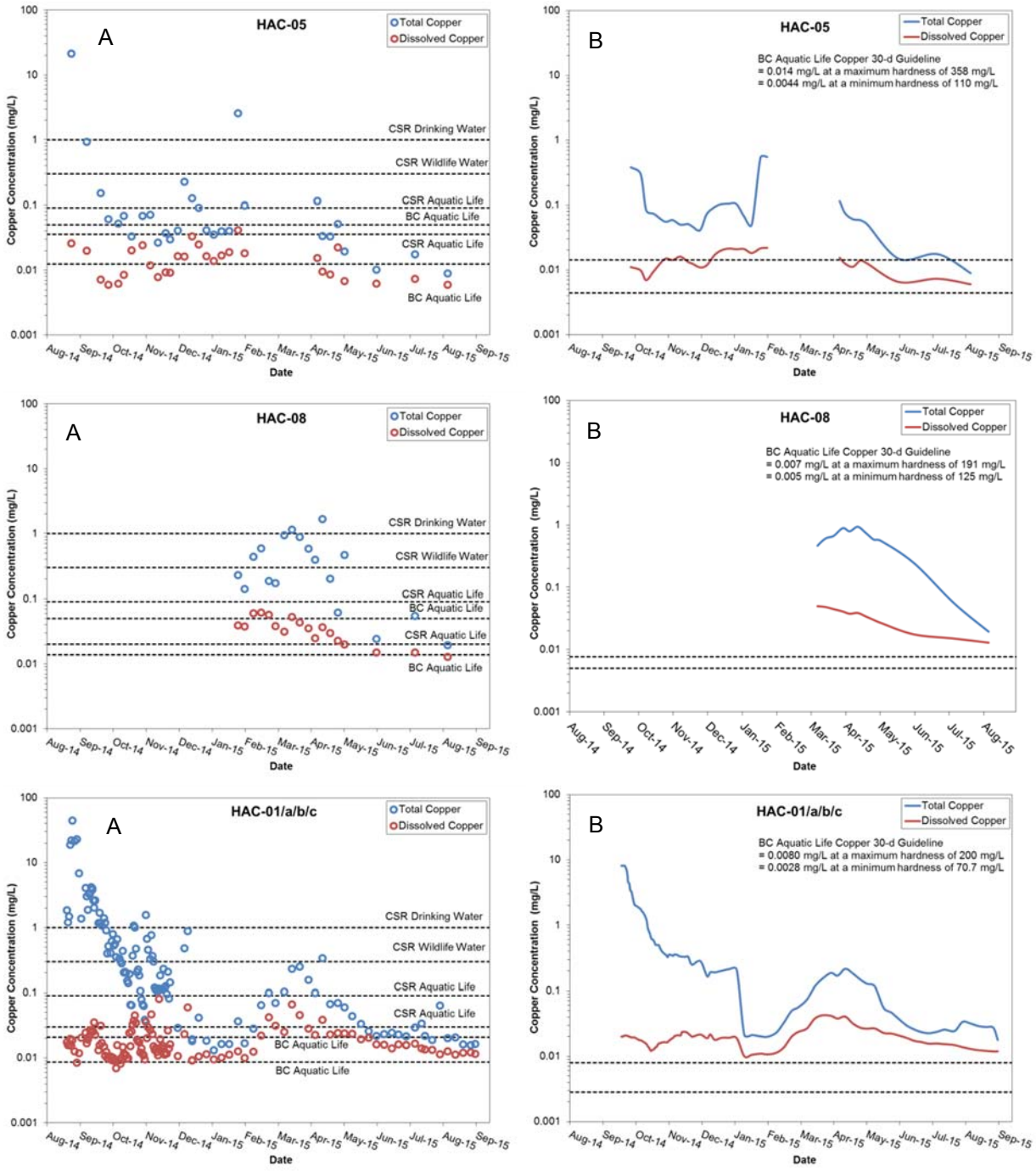
Note: CSR – Schedule 6 Drinking Water Total Aluminum Standard = 9.5 mg/L; BC Wildlife Water Total Aluminum Max Guideline = 5 mg/L; BC Drinking Water Dissolved Aluminum Max Guideline = 0.2 mg/L; BC Aquatic Life Dissolved Aluminum Max Guideline = 0.1 mg/L. Dashed line colour corresponds to total or dissolved values. Gaps represent >30 d between sampling.

Figure 13: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Aluminum Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

Copper

Following the event and until June 2015, total copper concentrations in Hazeltine Creek were typically above BC WQGs and CSR standards for aquatic life (Figure 14). From June to August 2015, total concentrations in the upper creek were mostly below the maximum BC WQG when minimum hardness conditions were considered. Total concentrations at HAC-08 and HAC-01/a/b/c decreased over time, but showed the same trend of peak concentrations in March 2015 that corresponded with increased turbidity and total forms of other metals during turbid flow episodes that occurred during the early freshet and ongoing rehabilitation work in the creek. Total concentrations decreased below CSR standards by May 2015 and remained within the range of BC WQGs based on the range of hardness observed at this station. Dissolved concentrations at HAC-05, HAC-08, and HAC-01/a/b/c were typically below the maximum BC WQG with the exception of several guideline exceedances that occurred between February and April 2015 (Figure 14).

In the upper creek, 30-d average concentrations of total and dissolved copper were mostly above the 30-d BC WQGs for aquatic life based on maximum and minimum hardness, respectively (Figure 14). Thirty-day average concentrations in the lower creek were consistently above the 30-d BC WQG calculated using the reported hardness range, but appear to continue to decline.



Note: CSR – Schedule 6 Drinking Water Total Copper Standard = 1 mg/L; CSR – Schedule 6 Wildlife Water Standard = 0.3 mg/L; CSR – Schedule 6 Aquatic Life Total Copper Standard = 0.03-0.09 mg/L; BC Aquatic Life Total Copper Max Guideline = 0.009-0.04 mg/L. Gaps represent >30 d between sampling.

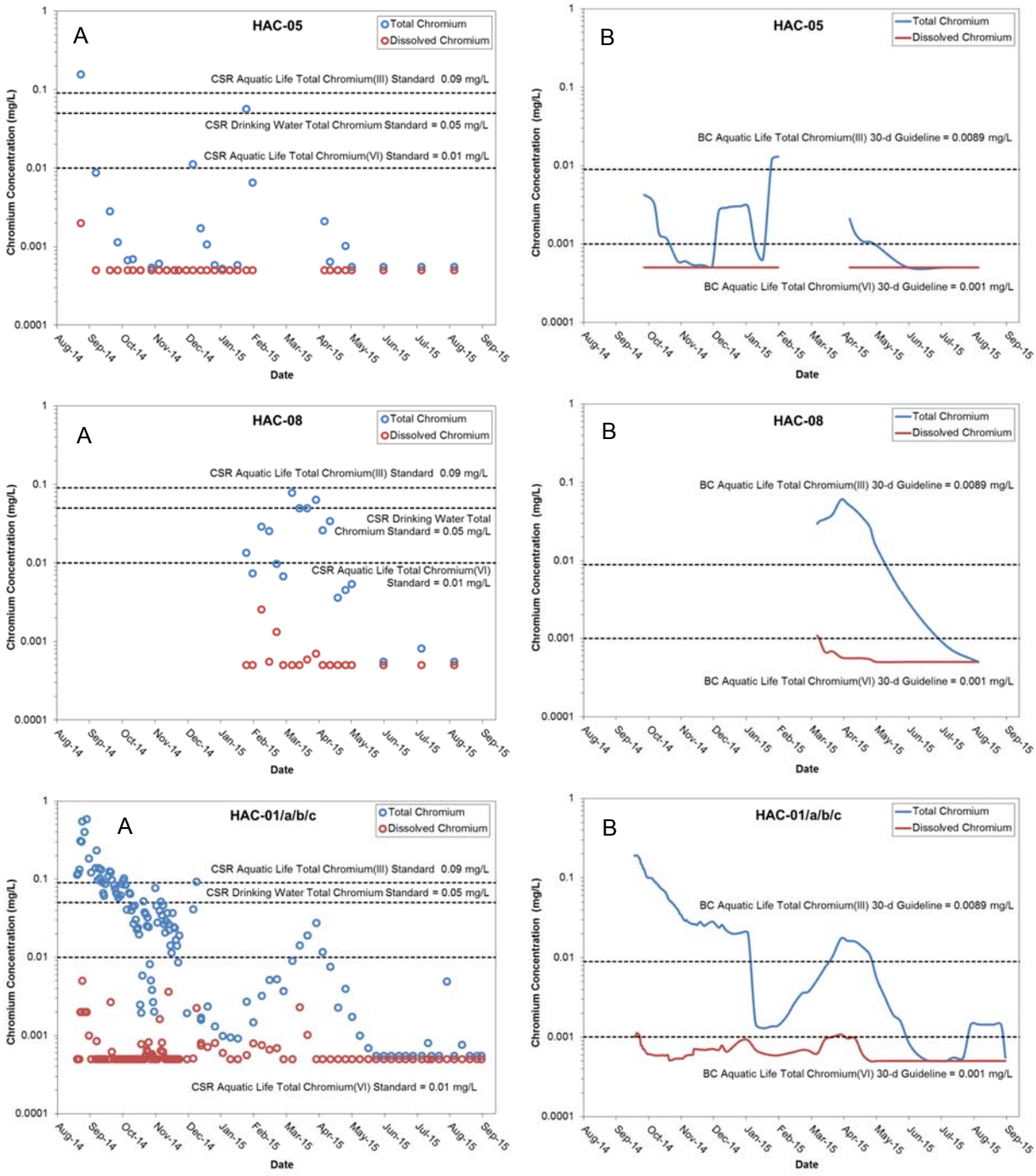
Figure 14: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Copper Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

Chromium

As discussed in Golder (2015a), the available speciation data for Hazeltine Creek indicates the dominant chromium species in Hazeltine Creek was chromium III, which is less toxic than the chromium VI form. However, as a conservative measure, guidelines and standards for both chromium species were considered in this assessment.

At the upper creek station, total concentrations were typically below the CSR Standards for drinking water and aquatic life; however, one sample collected immediately after the event exceeded the Cr-III CSR standard (Figure 15). Total concentrations fluctuated through December 2014 and January 2015, and 30-d average concentrations typically did not exceed the 30-d BC (Cr-III) WQG. In the lower creek, total concentrations at HAC-01/a/b/c were above CSR standards following the event and into early January 2015 and showed the same peak in concentration in March 2015 as was observed for total forms of other metals (Figure 15). The 30-d average concentration of total chromium also exceeded the 30-d BC (Cr-III) WQG during March (Figure 15). Total chromium concentrations were similarly elevated at HAC-08 during this period in 2015. Total concentrations had decreased below CSR standards and the 30-d BC (Cr-III) WQG by May and June 2015, respectively.

Dissolved concentrations in Hazeltine Creek were consistently below the BC WQGs and CSR standards.



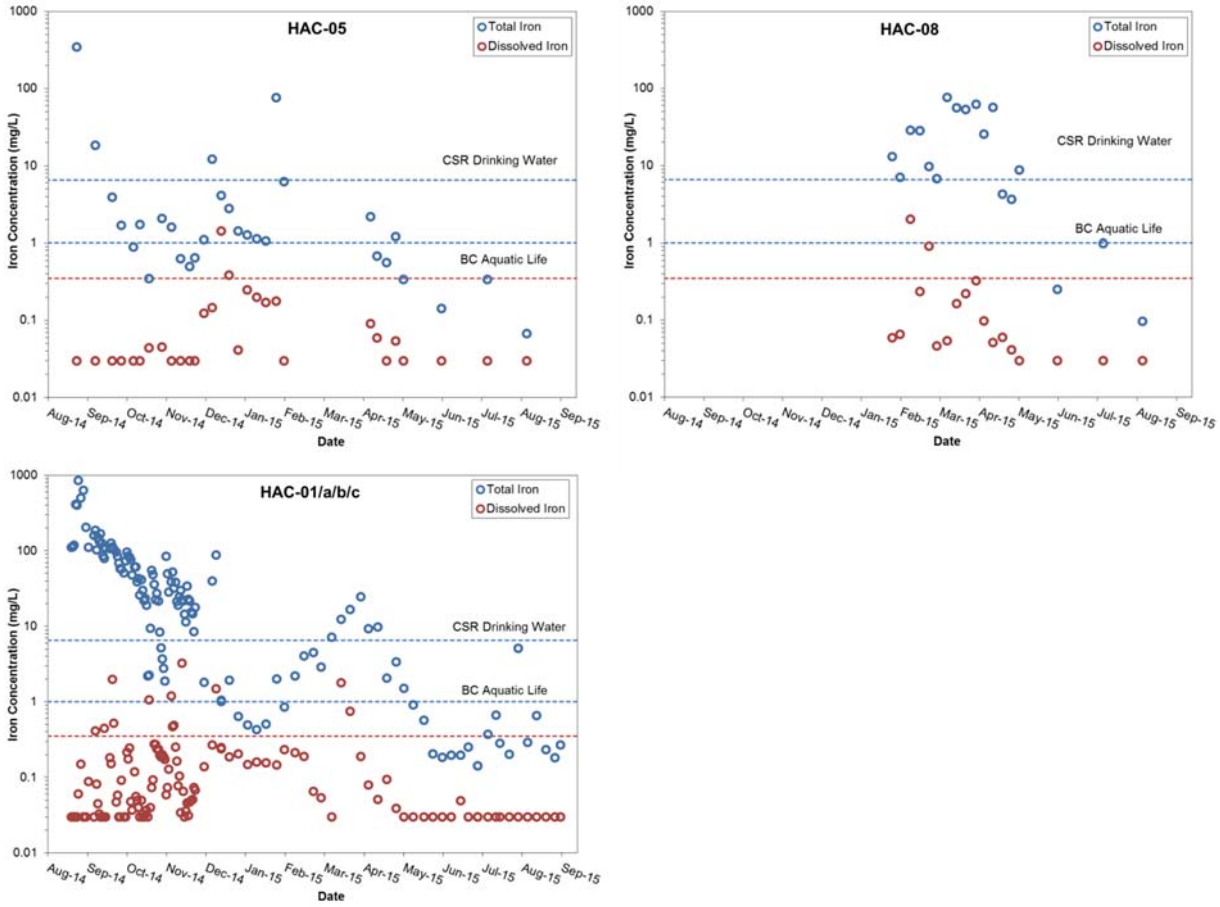
Note: Gaps represent >30 d between sampling.

Figure 15: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Chromium Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

Iron

Total iron concentrations at the upper station HAC-05 exceeded the CSR drinking water standard intermittently following the event and exceeded the BC WQG for aquatic life consistently until May 2015 (Figure 16). Dissolved iron concentrations were typically below the BC WQG for dissolved iron at this station.

In lower Hazeltine Creek, total iron concentrations at HAC-01/a/b/c were elevated immediately following the event and remained so into late November 2014, after which concentrations decreased below guidelines until they peaked again in March 2015. Total iron concentrations were similarly elevated at HAC-08 during this period in 2015. Total iron concentrations showed the same peaks observed for concentrations of total forms of other metals. Total concentrations exceeded the CSR standard and BC WQG during these periods, then decreased below CSR standard and BC WQG by mid-May (Figure 16). The exception was a single event in August in which total values at both lower stations were more than ten times the preceding and subsequent values taken in July and August. Dissolved concentrations were variable after the event through April 2015, but typically did not exceed the BC WQG and were close to the limit of detection after April 2015.



Note: CSR – Schedule 6 Drinking Water Total Iron Standard = 6.5 mg/L; BC Aquatic Life Total Iron Max Guideline = 1 mg/L; BC Aquatic Life Dissolved Iron Max Guideline = 0.35 mg/L. Dashed line colour corresponds to total or dissolved values.

Figure 16: Post-event Instantaneous Total and Dissolved Iron Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

Other Metals

Spatial and temporal trends for other metals identified as COPCs in Table 1 are presented graphically in Attachment 7 and described below. Note that the order of COPCS presented in Attachment 7 follows the order presented below.

Arsenic

Total arsenic concentrations at Station HAC-05 in upper Hazeltine Creek were initially elevated after the event, but were typically below BC WQGs and CSR standards for aquatic life, wildlife water, and drinking water from September 2014 through August 2015 (Attachment 7). Total and dissolved concentrations converged with time and likely resulted from erosion controls in the creek.

In lower Hazeltine Creek, total concentrations at HAC-08 exceeded maximum BC WQGs and CSR standards in January through April 2015 and remained below guidelines thereafter (Attachment 7). Thirty-day average concentrations of total arsenic were consistently above the 30-d BC WQG for aquatic life until June 2015. Total concentrations at HAC-01/a/b/c exceeded maximum BC WQGs and CSR standards following the event until December 2014 (Attachment 7). Total concentrations decreased over time and remained below guidelines from December 2014 through August 2015. Thirty-day average concentrations of total arsenic were consistently above the 30-d BC WQG for aquatic life until January 2015 and slightly exceeded the guideline in April 2015. Since May 2015, 30-d average concentrations have been below the 30-d BC WQG. Dissolved concentrations remained well below guidelines at all three stations and at all times since September 2014.

Molybdenum

Total and dissolved concentrations of molybdenum at stations HAC-05 and HAC-01/a/b/c were elevated above the BC WQG for wildlife water immediately following the event, but were consistently below maximum BC WQGs from September 2014 through August 2015 (Attachment 7). Molybdenum concentrations at HAC-08 were consistently below guidelines during the monitoring period in 2015. Total and dissolved concentrations were similar throughout the sampling period. Thirty-day average concentrations were well below the 30-d BC WQG for aquatic life and only slightly above the most conservative 30-d BC WQG for irrigation through August 2015, similar to that observed for Polley Lake (Section 3.2.2.1).

Cadmium and Titanium

Total forms of these metals were identified as COPCs in Table 1 based on the 95th percentile values exceeding CSR standards. Consequently, total cadmium and total titanium will be retained as COCs in the DSI (Section 5.0). Dissolved cadmium was not identified as a COPC based on comparison to the BC WQG which is a dissolved guideline. There is no BC WQG for titanium.

Beryllium, Cobalt, Lead, and Manganese

Total forms of these metals were identified as COPCs in Table 1 based on 95th percentile values exceeding the corresponding 30-d BC WQGs for aquatic life.

In upper Hazeltine Creek, 30-d average concentrations of these metals did not exceed the 30-d BC WQGs from March through August 2015 (Attachment 7). In lower Hazeltine Creek, peak concentrations of these metals were identified in March and April relative to other months in 2015 (Attachment 7). Thirty-day average concentrations of total beryllium and cobalt were above the 30-d BC WQGs from March to June at HAC-08 and March to May at HAC-01/a/b/c and decreased below guidelines thereafter. With respect to lead and manganese, 30-d average concentrations at HAC-08 exceeded the 30-d BC WQG under the most conservative site-specific hardness scenario (i.e., lowest hardness) from March to May, but did not exceed the 30-d BC WQGs at HAC-01/a/b/c from March through August 2015.

Zinc

Total zinc was identified as a COPC in Table 1 based on 95th percentile values exceeding the maximum and 30-d BC WQGs for aquatic life under the most conservative site-specific hardness scenario (i.e., lowest hardness).

In upper Hazeltine Creek, total zinc did not exceed BC WQGs from March through August 2015 (Attachment 5). In lower Hazeltine Creek, peak concentrations were identified in February and March relative to other months in 2015 (Attachment 7). At these lower creek stations, instantaneous concentrations only exceeded the most conservative maximum BC WQG in February and March at HAC-08 and in March at HAC-01/a/b/c, and then decreased below the guideline thereafter. The 30-d average concentrations at the lower creek stations exceeded the most conservative 30-d BC WQG from February to June 2015 and decreased below the guideline thereafter.

3.2.3 Selenium

Prior to the event, selenium concentration trends in water, sediment, and biota in Polley Lake were being monitored by MPMC in response to the identification of increasing selenium concentrations in the lake attributed to a mine-related source that was controlled through mitigation measures in 2009 (Minnow 2014). Between 2006 and 2009, selenium increased two-fold above baseline in Polley Lake to a maximum concentration of 0.0019 mg/L due to selenium inputs from North Bell Dump seepage and runoff from the eastern side of the mine site. Concentrations then decreased to approximately 0.0007 mg/L from 2009 to 2013 following construction of a runoff collection system (Minnow 2014).

After the event, total and dissolved concentrations of selenium were similar to each other throughout Polley Lake and did not reflect the trend of higher total concentrations at depth that was observed for copper (Attachment 7). Concentrations remained stable at around 0.0009 mg/L from November 2014 through August 2015. In Hazeltine Creek, selenium was measured above guidelines immediately after the event with total concentrations higher than dissolved. Concentrations decreased to below guidelines by October 2014. Total and dissolved concentrations converged by December 2014, and stabilized at around 0.001 mg/L through August 2015. At station QUL-66/55/55a close to the mouth of Hazeltine Creek, total and dissolved concentrations were measured at or near the detection limits from August 2014 through August 2015. Note that the analytical detection limit for selenium was improved in March 2015 (see Attachment 7, Figure 15), which led to an apparent decrease in concentrations in Quesnel Lake.

Overall, post-event selenium concentrations in Polley Lake, Hazeltine Creek, and the near-field environment of Quesnel Lake remained stable below guidelines or decreased to below guidelines shortly after the event and remained stable thereafter. Current BC water quality guidelines are protective of toxicity to aquatic life, including the potential for food chain accumulation. Since the concentrations are below these guidelines, concentrations of selenium in water as a result of the tailings dam failure are not considered to be a risk to aquatic life.

3.2.4 Nutrients: Phosphorus

Phosphorus was not identified as a COPC for Polley and Quesnel lakes based on screening of total phosphorus (TP) data collected in these lakes from March to August 2015 (Table 1). Concentrations of total and dissolved phosphorus and orthophosphate were, however, evaluated further over time to assess event-related changes at representative lake stations. Unlike some of the nitrogen forms (e.g., ammonia and nitrite), phosphorus is not toxic to aquatic biota, but rather phosphorus tends to limit primary productivity in freshwater lake environments (Environment Canada 2004). Instantaneous concentrations of TP at surface and depth in Polley and Quesnel lakes were compared to the BC WQG range for lakes (i.e., 0.005 to 0.015 mg/L; BC MoE 2015a) that is

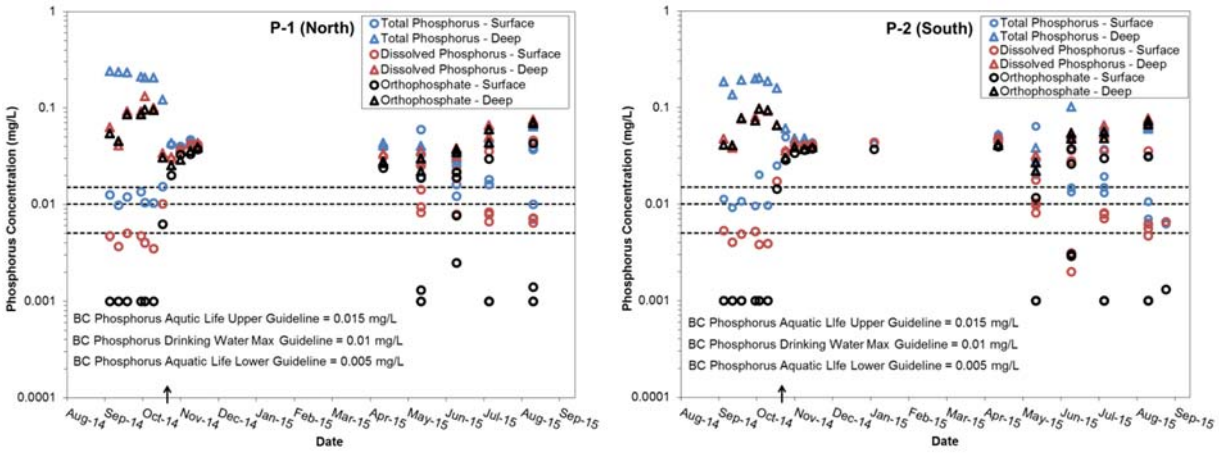
intended to be applied to the spring turnover concentration or the mean epilimnetic growing season concentration (May to September). An assessment of event-related changes in phosphorus and subsequent potential impacts on primary productivity based on this guideline comparison is therefore conservative, as reflected in the discussion of results for each lake. Consistent with the approach taken in the PEEIAR, the evaluation of event-related changes in waterborne phosphorus is intended to be integrated with biological information to assess potential impacts on lake productivity in the HHERA.

3.2.5 Polley Lake

Following the event and through August 2015, concentrations of TP at the surface in Polley Lake were within the pre-event range of concentrations reported in the PEEIAR for Polley Lake. Pre-event TP concentrations were defined as: mean = 0.041 mg/L; 95th percentile = 0.094 mg/L.; minimum = 0.0046 mg/L (Appendix A; Golder 2015a). Both pre-event mean and upper limit concentrations were above the BC WQG range of 0.005 to 0.015 mg/L. This is consistent with the observation by Minnow (2014) that the trophic status of the lake changed from oligotrophic/mesotrophic to mesotrophic/eutrophic in 2012, two years prior to the event. At depth, TP concentrations were elevated above pre-event concentrations prior to fall turnover (Figure 17).

Dissolved phosphorus and orthophosphate were also higher at depth compared to the surface. In deep samples, concentrations of dissolved phosphorus and orthophosphate were similar; but surface samples contained orthophosphate concentrations near or below the detection limit. Pre-event dissolved phosphorus concentrations were defined as: mean = 0.03 mg/L; 95th percentile = 0.08mg/L; minimum = <0.002 mg/L; pre-event orthophosphate concentrations were defined as: mean = 0.03 mg/L; 95th percentile = 0.08mg/L; minimum = <0.001 mg/L (Appendix A; Golder 2015a).

From April through August 2015, a number of total and dissolved phosphorus concentrations and deep orthophosphate concentrations were above the TP BC WQG range (Figure 17). Concentrations were, however, within or below the range of pre-event concentrations reported in the PEEIAR for Polley Lake and so no event-related changes to phosphorus concentrations in Polley Lake were identified from April through August.



Note: Arrow represents the approximate timing of late-October turnover in Polley Lake.

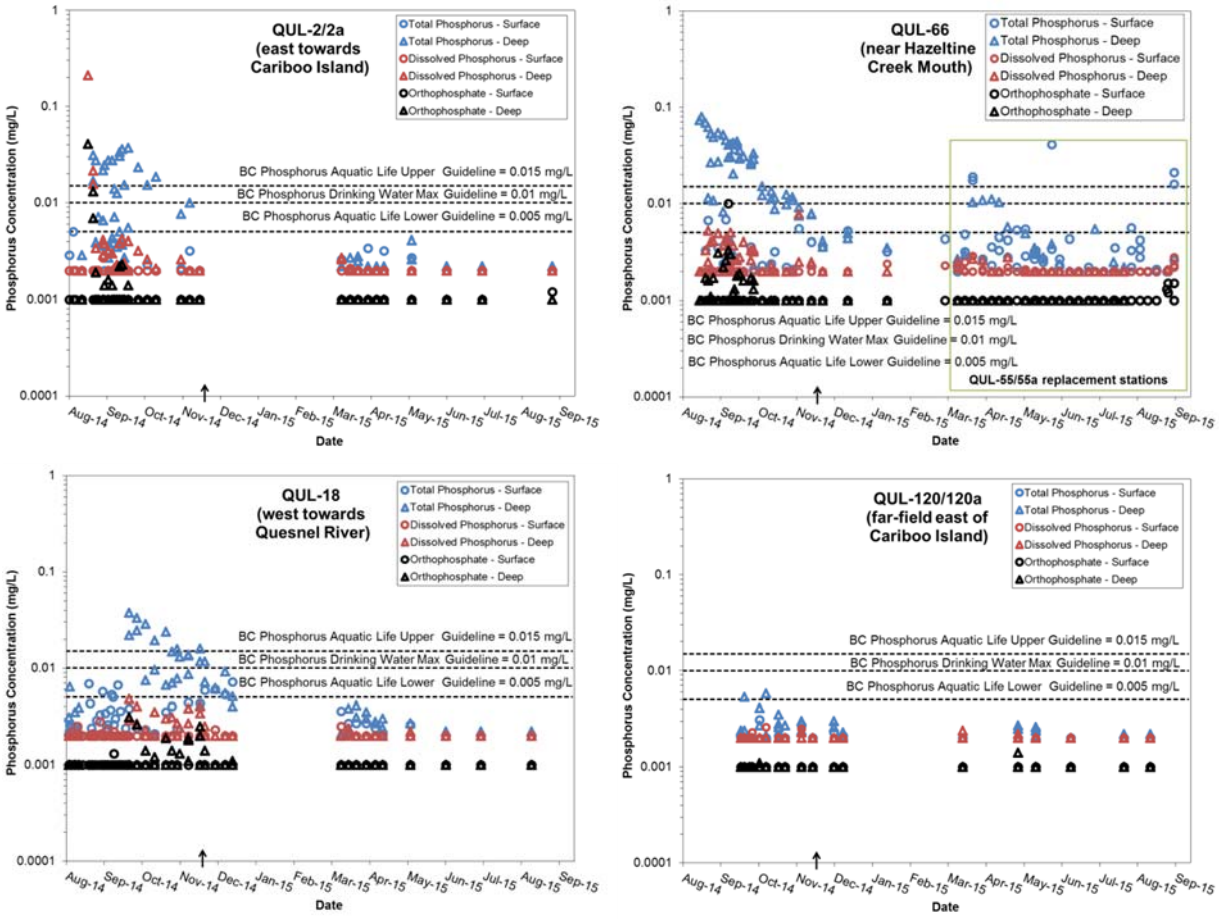
Figure 17: Post-event Instantaneous Total and Dissolved Phosphorus and Orthophosphate at Stations P1 and P2, Polley Lake.

3.2.5.1 Quesnel Lake

After the event, TP concentrations at depth exceeded the BC WQG range in the West Basin of Quesnel Lake, but were not elevated at the far-field station (QUL-120/120a) east of Cariboo Island (Figure 18). By fall turnover, TP concentrations had substantially decreased in the West Basin of Quesnel Lake. Through August 2015, TP concentrations were below the BC WQG range and resembled pre-event concentrations with the exception of a few intermittent exceedances at near-field station QUL-66/55/55a, near the mouth of Hazeltine Creek (Figure 18). Pre-event TP concentrations were defined as: median = 0.004 mg/L; 95th percentile = 0.008 mg/L.; minimum = <0.002 (Appendix A; Golder 2015a).

At the near-field, mid-field, and far-field stations, dissolved phosphorus and orthophosphate concentrations reported between March and August were below pre-event concentrations (Figure 18). Pre-event dissolved phosphorus concentrations were defined as: median = 0.003 mg/L; 95th percentile = 0.004mg/L; minimum= <0.002. Pre-event orthophosphate concentrations were defined as: median = 0.003 mg/L; 95th percentile = 0.005mg/L; minimum = <0.001 (Appendix A; Golder 2015a).

Collectively, an evaluation of the phosphorus data collected between March and August suggest that event-related changes of concern for phosphorus were not evident in Quesnel Lake.



Note: Arrow represents the approximate timing of mid-November turnover in Quesnel Lake.

Figure 18: Post-event Instantaneous Total and Dissolved Phosphorus and Orthophosphate at Stations QUL-2/2a, QUL-66, QUL-18, and QUL-120/120a, Quesnel Lake.

4.0 DISCUSSION OF CONTAMINANTS OF POTENTIAL CONCERN

Following initial screening of water quality data using relevant BC WQGs and CSR standards, COPCs were identified for the receiving environment as described in Section 2.2. In this section, the results presented in Section 3 are discussed with reference to whether each COPC will be carried forward for further assessment as Contaminants of Concern (COCs) in the DSI.

Changes in concentrations of COPCs were evaluated for stations selected to be representative of Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River. Where appropriate, COPCs were assessed with respect to concentrations in the near-field (i.e., close to the Hazeltine Creek mouth), mid-field, and far-field areas of Quesnel Lake to provide a spatial representation of lake concentrations. COPCs in Hazeltine Creek were evaluated in the upper creek near the TSF and in the lower creek both upstream and downstream of the sedimentation ponds. Turbidity and copper were evaluated in Quesnel River near the community of Likely downstream of the outflow from Quesnel Lake.

Post-event changes in COPCs evaluated for the DSI are summarized in Tables 2 and 3, which indicate whether guideline exceedances occurred at surface or at depth during two consecutive time periods; between March and May 2015 and between June and August 2015. These time periods are generally reflective of turbid episodes in Hazeltine Creek (March to May) and clear-flow conditions (June to August) in Hazeltine Creek that influenced the nature of inputs to Quesnel Lake (i.e., higher suspended particulate matter and potentially metal inputs during turbid episodes). Consistent with the PEEIAR WQIA, the updated assessment for the DSI was based on comparison to BC WQGs for the protection of aquatic life, but consideration was also given to whether turbidity levels met the requirements specified in amended Pollution Abatement Order 107461. For comparative purposes, Tables 2 and 3 also shows post-event changes in COPCs documented in the PEEIAR WQIA for two consecutive time periods; between August and November 2014 and between November 2014 and April 2015.

Table 2: Summary of Post-Event Changes in Suspended Particulate Matter over Time in Polley Lake, Quesnel Lake, and Quesnel River in Relation to the PEEIAR WQIA and the WQIA Update for the DSI

		PEEIAR WQIA				WQIA Update for the DSI			
Study Area	**Contaminant of Potential Concern**	**Event to Fall Lake Turnover (August 2014 to November 2014)**		**Fall Lake Turnover to April 2015**		**March to May 2015**		**June to August 2015**	
		Surface	Deep	Surface	Deep	Surface	Deep	Surface	Deep
Polley Lake	Turbidity	●	●	●	●	●	●	●	●
	TSS	●	●	●	●	●	●	●	●
Hazeltine Creek	Turbidity	No PEEIAR receiving environment assessment				●	n/a	●(a)	n/a
	TSS					●	n/a	●(a)	n/a
Quesnel Lake (West Arm)	Turbidity *(near-field and mid-field west)*	●	●	●	●	●	●	●	●
	Turbidity *(mid-field east and far-field)*					●	●	●	●
	TSS	●	●	●	●	●	●	●	●
Quesnel River near Likley	Turbidity	●	n/a	●	n/a	●	n/a	●	n/a

Notes:
near-field: Near to the Hazeltine Creek Mouth; Stations QUL-66, QUL-54/54a, QUL-55/55a, and QUL-56/56a
mid-field: Stations QUL-18 (west) and QUL-2/2a (east)
far-field: Station QUL-120/120a (east)
Surface = 1-10 m depth in Polley Lake, 1-20 m depth in Quesnel Lake; Deep = >10 m depth in Polley Lake, >20 m depth in Quesnel Lake
n/a: Not applicable; only surface water samples were collected from Hazeltine Creek and Quesnel River

(a): With the exception of a few measurements reflective of brief periods of turbidity at the end of July and middle of August, due to change in discharge location of the creek and maintenance activities in the sedimentation ponds

● = Concentrations are below BC WQG(s) at representative stations or meet requirements under the amended Pollution Abatement Order 107461 (issued July 2015)

● = Concentrations exceed the maximum and/or 30-day BC WQG in one or more samples from at least one representative station or requirements under the amended Pollution Abatement Order 107461 (issued July 2015) are not met

Table 3: Summary of Post-Event Changes in Identified Metal and Nutrient Contaminants of Potential Concern over Time in Polley Lake, Quesnel Lake, and Quesnel River in Relation to the PEEIAR WQIA and the WQIA Update for the DSI

Study Area	Contaminant of Potential Concern	PEEIAR WQIA				WQIA Update for the DSI			
		Event to Fall Lake Turnover (August 2014 to November 2014)		Fall Lake Turnover to April 2015		March to May 2015		June to August 2015	
		Surface	Deep	Surface	Deep	Surface	Deep	Surface	Deep
Polley Lake	Total Copper	●	●	●	●	●	●	●	●
	Dissolved Copper	●	●	●	●	●	●	●	●
	Total Phosphorus	●	●	●	●	●	●	●	●
Hazeltine Creek[a]	Total and Dissolved Aluminum	No PEEIAR receiving environment assessment				●	n/a	●	n/a
	Total Chromium [b]					●	n/a	●	n/a
	Total Iron					●	n/a	●[c]	n/a
	Total and Dissolved Copper					●	n/a	●	n/a
Quesnel Lake (West Arm)	Total Chromium	●	●	●	●	●	●	●	●
	Dissolved Chromium	●	●	●	●	●	●	●	●
	Total Copper *(near-field and mid-field west)*	●[d]	●	●	●	●	●	●	●
	Total Copper *(mid-field east and far-field)*					●	●	●	●
	Dissolved Copper	●	●	●	●	●	●	●	●
	Total Iron	●	●	●	●	●	●	●	●
	Dissolved Iron	●	●	●	●	●	●	●	●
	Total Phosphorus *(near-field)*	●	●	●	●	●	●	●	●
	Total Phosphorus *(mid and far-field)*					●	●	●	●
Quesnel River near Likely	Total Copper	●	n/a	●	n/a	●	n/a	●	n/a
	Dissolved Copper	●		●					

Notes:
near-field: Near to the Hazeltine Creek Mouth; Stations QUL-66 and QUL-55/55a
mid-field: Stations QUL-18 (west) and QUL-2/2a (east)
far-field: Station QUL-120/120a (east)
Surface = 1-10 m depth in Polley Lake, 1-20 m depth in Quesnel Lake; Deep = >10 m depth in Polley Lake, >20 m depth in Quesnel Lake
n/a: Not applicable; only surface water samples were collected from Hazeltine Creek and Quesnel River

(a) Focus on the four metals identified as COPCs in Table 1 that had the largest magnitude of guideline exceedance (i.e., aluminum, copper, chromium, and iron). See Section 3.2.2.4 for an assessment of all identified COPCs
(b) Comparison to chromium (III) WQGs
(c) Total iron concentrations were below the total maximum BC WQG except one value recorded in August at HAC-01 (see further discussion in Section 3.2.2.4)
(d) Concentrations began to increase above the 30-d BC WQG range (based on the range of hardness) in October 2014

● = Concentrations are below applicable BC WQGs at representative stations or are below pre-event concentrations

● = Concentrations exceed applicable BC WQGs and are above pre-event concentrations in one or more samples from at least one representative station

4.1 Changes in Water Quality from March to August 2015

4.1.1 Hazeltine Creek

As described in Section 3.2.2.4 and shown in Tables 2 and 3, some COPC guideline exceedances occurred in Hazeltine Creek during February, March, April, and May 2015, when turbid flow periods were evident in the creek due to restoration activities that also coincided with the onset of an early freshet. Turbid flow periods were characterized by elevated concentrations of particulate matter and some metals (mainly total forms) that resulted in increased inputs of these parameters to the near-field environment in Quesnel Lake. Clear-flow conditions, which were defined by instantaneous measures of turbidity less than 9.5 NTU[7], prevailed in Hazeltine Creek during January, June, July, and August of 2015, with the exception of brief periods of turbidity at the end of July and the middle August. The brief turbid periods in late summer did not correspond with rainfall events (Attachment 6, Figure 5), but were likely a result of the change in discharge location of the creek at that time and maintenance activities in the sedimentation ponds (pers. comm. S. Litke). Photographs showing turbid and clear-flow conditions are shown in Attachment 6, Figures 1-4.

Under clear-flow conditions only total and dissolved copper exceeded BC WQGs for the protection of aquatic life (Attachment 4: Table 4-6). Copper therefore remains the primary substance of concern in Hazeltine Creek. When the creek is subject to erosion resulting in turbid flow events, turbidity and TSS and some other metals such as iron, aluminum, and chromium may also exceed BC WQGs.

4.1.2 Polley Lake

Levels of TSS, turbidity, and copper were low in Polley Lake and have remained below guidelines throughout 2015 for the period assessed. Molybdenum concentrations were below the wildlife water maximum guideline, but were near the most conservative chronic BC WQG (irrigation end use) expected to be protective of ruminant wildlife that might be particularly sensitive to dietary exposure. Molybdenum was not included in Table 3 because, as discussed in Section 3.2.2.1, adverse effects to wildlife are not expected due to a low potential for sustained dietary exposure and the low magnitude of exceedance of the most conservative chronic guideline for irrigation. Total phosphorus concentrations remained within the range previously observed in Polley Lake prior to the event.

4.1.3 Quesnel Lake

Levels of TSS and turbidity were low in the far-field area of Quesnel Lake and remained below guidelines throughout 2015 for the period assessed. In the West Basin of Quesnel Lake, TSS levels were also low and below guidelines, with the exception of some higher levels recorded in the near-field area at the mouth of Hazeltine Creek. Pollution Abatement Order requirements for the near-field and mid-field (west) stations were not always met between March and June 2015. In July and August 2015, turbidity levels were below long-term chronic guidelines in Quesnel Lake and Pollution Abatement Order requirements were met.

In the West Basin of Quesnel Lake, iron and chromium continued to be below BC WQGs. Within the West Basin, event-related changes in total copper were still identified close to the mouth of Hazeltine Creek and at the western mid-field station further away from the mouth, but not at the eastern mid-field station or at the far-field station east of Cariboo Island where concentrations were below guidelines.

[7] Equivalent to the 24-h BC WQG of +8 NTU above the median pre-event background of 1.5 NTU

Dissolved copper concentrations remained below the BC WQG for total copper at these stations. Observed trends in total copper concentrations at these lake stations were related to particulate copper inputs from Hazeltine Creek to the lake in March through May, when TSS and turbidity concentrations were higher relative to other months in 2015.

From March through August 2015, instantaneous TP concentrations were below the BC WQG range and resembled pre-event concentrations with the exception of a few higher concentrations recorded at near-field Station QUL-66/55/55a, near the mouth of Hazeltine Creek. At the near-field, mid-field and far-field stations, dissolved phosphorus and orthophosphate concentrations reported during the same time period were below pre-event concentrations. The evaluation of phosphorus water data collected between March and August 2015, suggested that event-related changes that might be of concern with respect to the potential for a change in lake trophic status, were not evident in Quesnel Lake.

The updated evaluation of changes in water quality for the DSI confirmed an overall decreasing trend in COPCs since the event. Guideline exceedances generally occurred within a localised area close to the Hazeltine Creek mouth and likely reflected periodically higher levels of sediment transported to the lake from Hazeltine Creek.

This guidelines-based assessment is reliant on BC WQGs that are conservative in their derivation and should not be used for remediation purposes. As discussed by Golder (2015a), two sedimentation ponds were commissioned in lower Hazeltine Creek in December 2014 to manage erosion from exposed banks in Hazeltine Creek, but peaks in TSS have periodically occurred with a localised influence on Quesnel Lake. Ideally, more direct measures of toxicity should be used that take into consideration the mixture of contaminants and other parameters in the water. The results of the follow-up toxicity testing program (March to August 2015) with water samples sampled throughout the post-event period provided a more realistic assessment of potential impact of changes in water quality to aquatic life. These results are presented and discussed in the problem formulation component of the aquatic risk assessment (Golder 2015b). The findings of the toxicity testing program indicate that, although there were still some localised changes in water quality in Quesnel Lake between March and August 2015, toxicological testing results do not show toxicity in the water column and confirm the interim findings of the PEEIAR WQIA.

4.1.4 Quesnel River

Similar to the eastern far-field area of Quesnel Lake, water quality in Quesnel River between March and August did not exhibit event-related changes that were identified to be of concern with respect to exceedance of water quality guidelines or a departure from pre-event conditions.

5.0 IDENTIFICATION OF CONTAMINANTS OF CONCERN FOR THE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

Based on the evaluation of water quality conditions from March through August 2015, COCs are identified below for consideration in the problem formulation components of the HHERA. The risk assessment will focus on water quality uses related to aquatic life, wildlife water, and drinking water for human consumption. Contaminants of concern are identified separately for each of these uses in Tables 4 through 6 based on the findings of the WQIA update and exceedances of BC WQGs or CSR standards specific to the use under consideration. Consistent with the WQIA update presented above, the influence of turbid flow versus clear-flow conditions in Hazeltine Creek on creek and lake water quality has been considered in the identification of COCs. Pre-event background conditions were also considered.

Table 4: Summary of Contaminants of Concern Identified for Aquatic Life Based on Data Collected from March to August 2015

Study Area	Parameters Identified as Contaminants of Concern for the HHERA[1]
Polley Lake[2]	*no substances*
Hazeltine Creek[2]: turbid episodes	• turbidity, total suspended solids • total metals: aluminum, arsenic, beryllium, cadmium, chromium, cobalt, copper, iron, titanium, zinc, • dissolved aluminum and copper
Hazeltine Creek[2]: clear-flow conditions	• total and dissolved copper
Quesnel Lake: clear-flow conditions in Hazeltine Creek	*no substances*
Quesnel Lake: turbid episodes in Hazeltine Creek	• Near-field: turbidity, total copper • Mid-field west: turbidity, and total copper • Mid-field east: no substances • Far-field: no substances
Quesnel River	*no substances*

Note:
1) Parameters were identified based on exceedance of BC WQGs for aquatic life or CSR aquatic life standards and were above pre-event concentrations in one or more samples from at least one representative station.
2) Molybdenum in Polley Lake and Hazeltine Creek exceeded the 30-d BC WQG for irrigation, but did not exceed the maximum BC WQG for aquatic life or the CSR aquatic life standard; therefore, molybdenum was not retained as a COC for aquatic life.

Table 5: Summary of Contaminants of Concern Identified for Wildlife Water Based on Data Collected from March to August 2015

Study Area	Parameters Identified as Contaminants of Concern for the HHERA[1]
Polley Lake	*no substances*
Hazeltine Creek[2]: turbid episodes	• turbidity, total suspended solids • total metals: aluminum, copper, iron
Hazeltine Creek[2]: clear-flow conditions	• total suspended solids
Quesnel Lake	*no substances*
Quesnel River	*no substances*

Note:
1) Parameters were identified based on exceedance of BC WQGs for wildlife water or CSR wildlife water standards and were above pre-event concentrations in one or more samples from at least one representative station.
2) Molybdenum in Polley Lake and Hazeltine Creek exceeded the 30-d BC WQG for irrigation, but did not exceed the maximum BC WQG for wildlife water or the CSR wildlife water standard; therefore, molybdenum was not retained as a COC for wildlife water.

Table 6: Summary of Contaminants of Concern Identified for Drinking Water Based on Data Collected from March to August 2015

Study Area	Parameters Identified as Contaminants of Concern for the HHERA[1]
Polley Lake	*no substances*
Hazeltine Creek: turbid episodes	• turbidity • total metals: aluminum, arsenic, iron, lead, manganese
Hazeltine Creek: clear-flow conditions	• turbidity – untreated water only
Quesnel Lake	• turbidity – untreated water only
Quesnel River	• turbidity – untreated water only

Note:
1) Parameters were identified based on exceedance of BC drinking WQGs or CSR drinking water standards and were above pre-event concentrations in one or more samples from at least one representative station.

6.0 STATEMENT OF LIMITATIONS

This technical memorandum was prepared for the exclusive use of MPMC. The inferences concerning the data, site and receiving environment conditions contained in this memorandum are based on information obtained during investigations conducted at the site by Golder Associates Ltd. (Golder), other consultants and MPMC, and are based solely on the condition of the site at the time of the site studies and subsequent investigations and remediation and other information obtained by Golder, as described in this memorandum. Soil, surface water and groundwater conditions may vary with location, depth, time, sampling methodology, analytical techniques and other factors.

In evaluating the subject site and water quality data, Golder has relied in good faith on information provided. The factual data, interpretations and recommendations pertain to a specific project as described in this memorandum, based on the information obtained during the assessment by Golder on the dates cited in the memorandum, and are not applicable to any other project or site location. Golder accepts no responsibility for any deficiency or inaccuracy contained in this memorandum as a result of reliance on the aforementioned information.

The findings and conclusions documented in this memorandum have been prepared for the specific application to this project, and have been developed in a manner consistent with that level of care normally exercised by environmental professionals currently practising under similar conditions in the jurisdiction. Golder makes no other warranty, expressed or implied and assumes no liability with respect to the use of the information contained in this memorandum at the subject site, or any other site, for other than its intended purpose.

Any use which a third party makes of this memorandum, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or action based on this memorandum. All third parties relying on this memorandum do so at their own risk. Electronic media is susceptible to unauthorized modification, deterioration and incompatibility and therefore no party can rely upon the electronic media versions of Golder's memorandum or other work product. Golder is not responsible for any unauthorized use or modifications of this memorandum.

MPMC may rely on the information contained in this memorandum subject to the above limitations.

Golder makes no other representation whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this memorandum, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein.

If new information is discovered during future work, including excavations, sampling, soil boring, predictive geochemistry or other investigations, Golder should be requested to re-evaluate the conclusions of this memorandum and to provide amendments, as required, prior to any reliance upon the information presented herein. The validity of this memorandum is affected by any change of site conditions, purpose, development plans or significant delay from the date of this memorandum in initiating or completing the project.

7.0 CLOSURE

We trust that this Technical Memorandum provides sufficient information for your present needs. If you have any questions, please do not hesitate to contact the undersigned at (604) 296-4200.

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Attachments
Attachment 1: Post-event Water Quality Monitoring Stations, March to August 2015
Attachment 2: Summary of Mount Polley TSF Breach Water Quality Monitoring Program, March to August 2015
Attachment 3: QA/QC Summary of Mount Polley TSF Breach Water Quality Monitoring Program, March to August 2015
Attachment 4: Post-event Water Quality in Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River, March to August 2015
Attachment 5: Supporting Information for the Assessment of Dissolved Oxygen in Polley Lake, March to August 2015
Attachment 6: Supporting Information for the Assessment of Turbidity in Hazeltine Creek and Quesnel Lake, March to August 2015
Attachment 7: Supplemental Time Series Plots of Water Quality, March to August 2015
Attachment 8: Tabulated Discrete Water Quality Grab Data Collected from Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River, August 2014 to August 2015

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8.0 REFERENCES

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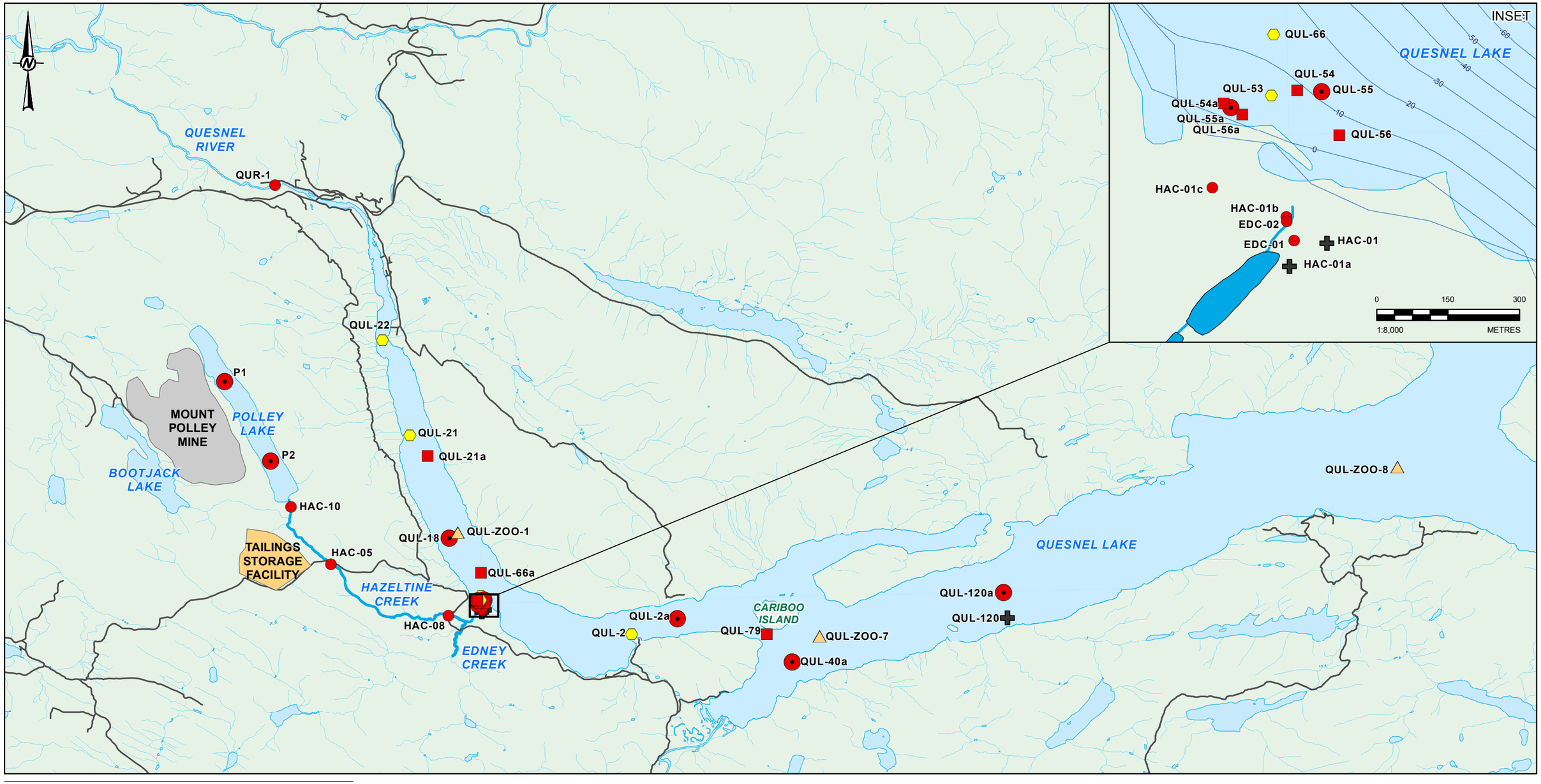
8.2 Personal Communication

Litke S. 2015. Environmental Technologist, Mount Polley Mining Corporation, Likely, BC. Electronic mail to Jordana Van Geest, Golder Associates Ltd. Vancouver, BC. September 15, 2015 (re: Quesnel River) and November 3, 2015 (re: Hazeltine Creek).

ATTACHMENT 1

Post-event Water Quality Monitoring Stations, March to August 2015



LEGEND

POST-EVENT MONITORING STATIONS

- ROUTINE - PROFILE
- ROUTINE - GRAB
- ROUTINE - GRAB + PROFILE
- NON-ROUTINE - PROFILE
- INTERMITTENTLY SAMPLED (SEE ATTACHMENT 2 FOR DETAILS)
- SUPERSEDED PRIOR TO MARCH 2015
- TAILINGS STORAGE FACILITY
- MOUNT POLLEY MINE SITE
- BATHYMETRY
- ROAD
- WATERCOURSE
- SEDIMENTATION PONDS
- WATERBODY

0 3 6
1:120,000 KILOMETRES

REFERENCES

1. WATER MONITORING STATIONS OBTAINED FROM MOUNT POLLEY MINING CORPORATION.
2. WATERCOURSE AND LAKE DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
3. PROJECTION: NAD 1983 UTM ZONE 10

CLIENT
IMPERIAL METALS
MOUNT POLLEY MINING CORPORATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-01-25
DESIGNED	JVG
PREPARED	RH
REVIEWED	JV
APPROVED	JV

PROJECT
MOUNT POLLEY MINE
WATER QUALITY IMPACT ASSESSMENT

TITLE
POST-EVENT WATER QUALITY MONITORING STATIONS MARCH - AUGUST 2015

PROJECT NO.	CONTROL	REV.	FIGURE
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ATTACHMENT 2

Summary of Mount Polley TSF Breach
Water Quality Monitoring Program, March to August 2015

Attachment 2: Summary of Mount Polley TSF Breach Water Quality Monitoring Program, March to August 2015

Area	Station Name	Sample Location Type	Samples - Surface			Samples - Depth			Profiles		Continuous Logger Data	Comments
			Total Number of Samples	Duplicate Samples	Frequency	Total Number of Samples	Duplicate Samples	Frequency	Total Number of Profiles	Frequency	Date Range (mm/dd/yyyy)	
Polley Lake	P1	Routine	5	0	Monthly	5m - 4 10m - 5 15m - 4 20m - 5 Bottom - 5	0	Monthly	8	Bi-monthly	-	
	P2	Routine	6	0	Monthly	5m - 4 10m - 5 15m - 4 20m - 5 Bottom - 5	15m - 1	Monthly	7	Bi-monthly	-	
Upper Hazeltine	HAC-05	Routine	8	1	Weekly-Monthly	N/A	N/A	N/A	N/A	N/A	-	Weekly samples transitioned to monthly
	HAC-10	Routine	8	0	Weekly-Monthly	N/A	N/A	N/A	N/A	N/A	-	Weekly samples transitioned to monthly
Lower Hazeltine	HAC-01b	Routine	23	2	Weekly	N/A	N/A	N/A	N/A	N/A	01/19/15 - 07/23/2015	Continuous monitoring stopped when Edney/Hazeltine redirected; discontinued sampling location 7/25/2015
	HAC-01c	Routine	4	0	Weekly	N/A	N/A	N/A	N/A	N/A	-	Established at new outlet of Hazeltine Creek 7/31/2015
	HAC-08	Routine	13	1	Weekly-Monthly	N/A	N/A	N/A	N/A	N/A	-	Weekly samples transitioned to monthly
	HAC-09	Environmental Monitoring	-	-	-	N/A	N/A	N/A	N/A	N/A	-	Upstream of sedimentation ponds. Environmental monitoring turbidity only
Edney Creek	EDC-01	Routine	12	2	Weekly-Monthly	N/A	N/A	N/A	N/A	N/A	-	Weekly samples transitioned to monthly. Discontinued when Edney redirected 7/25/2015
	EDC-02	Routine	24	0	Weekly	N/A	N/A	N/A	N/A	N/A	-	Downstream of confluence with Hazeltine Creek; discountinued after Edney/Hazeltine redirected 7/25/2015
Hydrology Stations	Upper Hazeltine	Flow monitoring	-	-	-	N/A	N/A	N/A	N/A	N/A	03/18/2015 - Present	Continuous monitoring: turbidity, sp. conductance, and temperature only
	Lower Hazeltine	Flow monitoring	-	-	-	N/A	N/A	N/A	N/A	N/A	03/18/2015 - Present	Continuous monitoring: turbidity, sp. conductance, and temperature only
	Lower Edney	Flow monitoring	-	-	-	N/A	N/A	N/A	N/A	N/A	04/17/2015 - Present	Continuous monitoring: pressure and temperature only
Quesnel River	QUR-1	Routine	20	0	Weekly-Bi-weekly	N/A	N/A	N/A	N/A	N/A	08/12/2014 - Present	Weekly samples transitioned to bi-weekly
Quesnel Lake	QUL-2	Profile only (past routine)	-	-	-	-	-	-	2	-	-	Profiled 4/15/2015 and 6/10/2015 (no subsequent sampling)
	QUL-2a	Routine	10	0	Weekly-Monthly	40m - 10 60m - 10	40m - 1 60m - 1	Weekly-Monthly	16	Bi-monthly	-	Weekly samples transitioned to monthly
	QUL-18	Routine	10	0	Weekly-Monthly	40m - 10 80m - 10	40m-1 80m - 2	Weekly-Monthly	13	Bi-monthly	-	Weekly samples transitioned to monthly
	QUL-21	Profile only (past routine)	-	-	-	-	-	-	1	-		Profiled 4/15/2015 (no subsequent sampling)
	QUL-21a	Routine profile only	-	-	-	-	-	-	9	Bi-monthly	-	
	QUL-22	Profile only (past routine)	-	-	-	-	-	-	3	-	-	Profiled 4/15/2015, 4/29/2015 and 5/13/2015
	QUL-40a	Routine	6	0	Monthly	40m - 6 80m - 6 120 m - 6 140m - 6	120m - 1	Monthly	12	Bi-monthly	-	
	QUL-53	Investigation profile only	-	-	-	-	-	-	1	-		Profiled 3/24/2015 (no subsequent sampling)
	QUL-54	Routine profile only	-	-	-	10m - 1	0	-	21	Weekly	-	Discontinued when Hazeltine redirected 7/25/2015; sampled 3/25/2015
	QUL-54a	Routine profile only	-	-	-	-	-	-	6	Weekly		Established to replace QUL-54 when Hazeltine redirected 7/25/2015
	QUL-55	Routine	22	3	Weekly	15m - 22 30m - 21	0	Weekly	20	Weekly	-	Discontinued when Hazeltine redirected 7/25/2015
	QUL-55a	Routine	6	0	Weekly	5m - 6 11m - 6	0	Weekly	7	Weekly	-	Established to replace QUL-55 when Hazeltine redirected 7/25/2015
	QUL-56	Routine profile only	-	-	-	10m - 1	0	-	21	Weekly	-	Discontinued when Hazeltine redirected 7/25/2015; sampled 3/25/2015
	QUL-56a	Routine profile only	1	0	-	5m - 1 10m - 1	0	-	6	Weekly	-	Established to replace QUL-56 when Hazeltine redirected 7/25/2015; sampled 7/28/2015
	QUL-66	Past routine	1	0	-	-	-	-	1	-		Sampled and profiled 3/2/2015. Monitoring at QUL-66 ceased at the end of February and replaced by nearby stations QUL-54, QUL-55, QUL-56.
	QUL-66a	Routine profile only	-	-	-	-	-	-	11	Bi-monthly	-	
	QUL-79	Routine profile only	-	-	-	-	-	-	15	Bi-monthly	-	
	QUL-120a	Routine	6	0	Monthly	40m - 6 80m - 6 120m - 6 190m - 6	190m - 1	Monthly	9	Bi-monthly	-	
	QUL-ZOO-1	Profile only for zooplankton	-	-	-	-	-	-	2	-	-	Profiled 7/8/2015 and 8/20/2015
	QUL-ZOO-7	Profile only for zooplankton	-	-	-	-	-	-	2	-	-	Profiled 7/8/2015 and 8/20/2015
	QUL-ZOO-8	Profile only for zooplankton	-	-	-	-	-	-	2	-	-	Profiled 7/8/2015 and 8/20/2015

Notes

Routine samples were taken throughout the period according to 2015 Post-Breach Environmental Monitoring Plar

Routine stations are consistently monitored; typically either weekly, bi-weekly (every 2 weeks), monthly, or bi-monthly (twice per month

Continuous logger measures field parameters (i.e., pH, temperature, specific conductivity, DO, and turbidity) every 15 minute:

ATTACHMENT 3

QA/QC Summary of Mount Polley TSF Breach
Water Quality Monitoring Program, March to August 2015

Attachment 3: QA/QC Summary of Mount Polley TSF Breach Water Quality Monitoring Program, March to August 2015

Table 3-1. Summary of Quality Control Samples, March to August 2015

Month	Travel Blanks	Field Blanks	Equipment Blanks[a]	Duplicates	Filter Blanks	Deionized Water Blanks
March	24-Mar-2015 (HAC)	17-Mar-2015 (EDC-02) 19-Mar-2015 (QUL-40a)	25-Mar-15	2-Mar-2015 (EDC-01) 12-Mar-2015 (QUL-18-40m) 17-Mar-2015 (HAC-08) 18-Mar-2015 (QUL-55-0m) 24-Mar-2015 (HAC-01b) 24-Mar-2015 (QUL-2a-60m)	5-Mar-2015	5-Mar-2015
April	none	21-Apr-2015 (QUR-1)	15-Apr-15	1-Apr-2015 (EDC-01) 1-Apr-2015 (QULI-55-0m) 8-Apr-2015 (QUL-18-80m) 14-Apr-2015 (QUL-2a-40m) 15-Apr-2015 (QUL-40a-120m) 21-Apr-2015 (QUL-55-0m) 28-Apr-2015 (HAC-05) 29-Apr-2015 (QUL-120a-90m)	15-Apr-2015	none
May	4-May-2015 (HAC)	5-May-2015 (QUL-55)	13-May-15	7-May-2015 (QUL-18-80m)	none	none
June	none	1-Jun-2015 (QUL-55)	9-Jun-15		none	none
July	7-Jul-2015 (POL)	13-Jul-2015 (QUR-1)	14-Jul-15	7-Jul-2015 (HAC-01B)	14-Jul-2015	14-Jul-2015
August	4-Aug-2015 (QUL)	10-Aug-2015 (QUR-1)	26-Aug-15	11-Aug-2015 (P2-2015m)	none	none
Target	Every Two Months	Every Two Months	Monthly	March-April: 10% May-August: Monthly	Quarterly	Quarterly
Target Achieved	Yes	Yes	Yes	March+April: Yes (total 10%; March 8.7%; April 11%)	Yes	No (Q2 missed)

a) All equipment blanks carried out on MPMC Kemmerer 1 (used for all Polley Lake and Quesnel Lake sampling)

b) Additional duplicate sample was taken as part of another MPMC water quality monitoring program

Table 3-2. Summary of Data Quality Objective Exceedances, March to August 2015

Date	Sample ID	Parameter(s) RPD > DQO	BC WQG Exceedance
5-Mar-2015	De-ionized Water Blank	Dissolved Organic Carbon	No
18-Mar-2015	QUL-55X-0m	Turbidity, Manganese-D	No (turbidity exceedance of chronic guideline in original sample, but not duplicate; no associated 30-d guideline exceedance)
24-Mar-2015	HAC-01bX	Turbidity	Turbidity exceedance in original and duplicate
24-Mar-2015	QUL-2aX-0m	Copper-T	No
1-Apr-2015	EDC-01X	Ammonia, Phosphorus-T, DOC, Aluminum-D, Iron-D	Aluminum-D exceedance in original and duplicate
21-Apr-2015	QUL-55X-0m	Nitrogen-T	No
28-Apr-2015	HAC-05X	Phosphorus-T, Aluminum-T, Cadmium-T, Cobalt-T, Iron-T, Lead-T, Titanium-T, Vanadium-T	Iron-T exceedance in original, but not duplicate

Notes

D - dissolved, T - total

RPD - relative percent difference, DQO - data quality objective

BC WQG - BC water quality guideline

ATTACHMENT 4

Post-event Water Quality in Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River, March to August 2015

Table 4-1: Post-event Water Quality in Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River, March to August 2015

Parameter	Units	BC Water Quality Guidelines for the Protection of Freshwater Aquatic Life[a]				BC Drinking Water Quality Guidelines[b]		CSR-Schedule 6				Polley Lake	Hazeltine Creek	Quesnel Lake	Quesnel River
		Maximum	Notes	30-Day Average	Notes	Maximum	Notes	Aquatic Life[c]	Notes	Drinking Water[d]	Wildlife Water[aa]	Maximum	Maximum	Maximum	Maximum
Physical Parameters															
Conductivity (lab)	µs/cm	-	-	-	-	-	-	-	-	-	-	329	414	153	139
Turbidity (field) [bb]	NTU	+8 NTU, +5 NTU if background 8-50 NTU	A	+2 NTU, +10% if background >50 NTU	A	+5 NTU, +10% if >50 NTU for treated DW or +1 NTU, +5 if >5 for non-treated	A	-	-	-	+10 NTU if background is ≤50 NTU	3.5[w]	***2415***	***48***	2.6[w]
Hardness (Dissolved)	mg/L	-	-	-	-	-	-	-	-	-	-	137	208	62	60
Dissolved Oxygen (Field)	mg/L	5-9	-	A, Min	8-11	-	A, Min	-	-	-	-	**3**	12	8.2	8.2
Total Dissolved Solids	mg/L	-	-	-	-	-	-	-	-	-	3000	218	264	104	89
Total Suspended Solids [cc]	mg/L	+25 mg/L, +10 mg/L if background 25-100 mg/L	A	+5 mg/L, +10% if background >100 mg/L	A	-	-	-	-	-	+20 mg/L from background	5.4	***3290***	***54.1***	3.8
Water Temp (Field)	°C	-	A	-	A	-	-	-	-	-	-	22	23	21	19
pH (Field)	pH Unit	6.5 - 9.0	A	6.5 - 9.0	A	6.5-8.5	A	-	-	-	-	**7.2-9.1**	7.5-8.4	**7.2-11**	7.7-7.9
Major Ions															
Alkalinity, Total (as $CaCO_3$)	mg/L	see note	-	see note	W, s	-	-	-	-	-	-	100	203	57	58
Chloride	mg/L	600	A	150	A	250	A	1500	-	250	600	1.4	2.2	<0.5	<0.5
Fluoride	mg/L	1.13 - 1.61	A, e	-	-	1.5	A	3	z	1.5	1	0.09	0.14	0.039	0.038
Sulphate	mg/L	-	-	218 - 429	A, f	-	-	1000		500	1000	48	54	11	7.8
Nutrients															
Ammonia	mg/L (as N)	0.698 - 8.67	A, g	0.102 - 1.67	A, g	-	-	1.31 - 11.3	x, y	-	-	0.0824	0.132	0.0178	<0.0050
Nitrate	mg/L (as N)	32.8	A	3	A	10	A	400	u	10	100	0.43	0.52	0.15	0.14
Nitrite	mg/L (as N)	0.06 - 0.6	A, h	0.02 - 0.2	A, h	1	A	0.2 - 2	v	-	10	0.017	0.0051	<0.0010	<0.0010
Total Phosphorus	mg/L	-	-	0.005-0.015 in lakes	A	0.01	A, lakes	-	-	-	-	0.1	6.2	0.041	0.017
Total Metals															
Aluminum	mg/L	5	A, WW	-	-	-		-	-	9.5	5	0.052	***48***	0.55	0.067
Antimony	mg/L	-	-	0.009	W	0.014	W	0.2	-	0.006	0.006	0.00026	0.00058	0.00019	<0.00010
Arsenic	mg/L	-	-	0.005	A	0.025	Interim	0.05	-	0.01	0.025	0.0011	*0.032*	0.00042	0.00026
Barium	mg/L	-	-	1	W	-	-	10	-	1	1	0.013	0.61	0.014	0.0079
Beryllium	mg/L	-	-	0.00013	W	0.004	W	0.053	-	-	0.1	<0.00010	0.0017	<0.00010	<0.00010
Boron	mg/L	-	-	1.2	A	5	A	50	-	5	5	0.033	0.051	0.01	<0.010
Cadmium	mg/L	no T-Cd WQG, see D-Cd WQG				-	-	0.0003 - 0.0005	y, z	0.005	0.08	0.00016	0.00067	0.0000072	0.0000061
Calcium	mg/L	no T-Ca WQG, see D-Ca WQG				-	-	-	-	-	1000	45	142	22	20
Chromium	mg/L	-	-	0.001	W, k	-	-	0.01	k	0.05	0.05	<0.00050	*0.078*	0.00091	<0.00050
Cobalt	mg/L	0.11	A	0.004	A	-	-	0.04	-	-	1	<0.00010	0.041	0.00033	<0.00010
Copper	mg/L	0.007 - 0.015	A, l	0.002 - 0.005	A, l	0.5	A	0.03 - 0.06	y, z	1	0.3	0.0040	***1.7***	**0.012**	0.0023
Iron	mg/L	1	A	-	-	-	-	-	-	6.5	-	0.042	**77**	0.56	0.1
Lead	mg/L	0.035 - 0.132	A, m	0.005 - 0.008	A, m	0.05	A	0.05 - 0.06	y, z	0.01	0.1	0.00066	0.028	0.0043	<0.000050
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	0.0013	0.058	0.0017	0.0013
Magnesium	mg/L	-	-	-	-	-	-	-	-	100	100	5.9	40	2.9	2.3
Manganese	mg/L	1.15 - 2.15	A, n	0.85 - 1.25	A, n	-	-	-	-	0.55	-	0.33	1.9	0.021	0.0040
Mercury	mg/L	-	-	0.00001	A, o	0.001	A	0.001	-	0.001	0.002	<0.0000050	0.000012	<0.0000050	<0.0000050
Molybdenum	mg/L	2	A	≤1	A	0.25	A	10	-	0.25	0.05	0.012	0.013	0.0018	0.0012
Molybdenum	mg/L	0.05	A, IR	0.01	A, IR	-	-	10	-	0.25	-	0.012	0.013	0.0018	0.0012
Nickel	mg/L	-	-	0.025 - 0.11	W, p	-	-	0.25 - 1.1	y, z	-	1	<0.00050	0.087	0.0028	<0.00050
Selenium	mg/L	-	-	0.002	A	0.01	A	0.01	-	0.01	0.03	0.0010	0.0025	0.00028	0.00019
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	4.3	71	3.3	2.0
Silver	mg/L	0.0001 - 0.003	A, q	0.0001 - 0.0015	A, q	-	-	0.0005 - 0.015	y, z	-	-	<0.000010	0.00078	<0.000010	<0.000010
Sodium	mg/L	-	-	-	-	-	-	-	-	200	200	11	14	2.1	1.4
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	0.33	0.90	0.15	0.15
Thallium	mg/L	-	-	0.0008	W	0.002	A	0.003	-	-	-	<0.000010	0.00029	0.00001	<0.000010
Tin	mg/L	-	-		-	-	-	-	-	-	-	<0.00010	0.0015	0.00019	<0.00010
Titanium	mg/L	-	-		-	-	-	1	-	-	-	<0.010	2.8	0.025	<0.010
Uranium	mg/L	-	-	0.0085	W, u	-	-	3	-	0.02	0.2	0.00032	0.0034	0.00023	0.00021
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	0.1	0.0013	*0.17*	0.0014	<0.00050
Zinc	mg/L	0.03 - 0.075	A, r	0.0075 - 0.0495	A, r	5	A	0.075 - 0.9	y, z	5	2	0.018	**0.19**	0.0035	<0.0030
Dissolved Metals															
Aluminum	mg/L	0.1	A, i	0.05	A, i	0.2	A	-	-	-	-	0.009	**1.9**	0.033	0.0095
Antimony	mg/L	-	-	0.009	W	0.014	W	-	-	-	-	0.00016	0.0003	<0.00010	<0.00010
Arsenic	mg/L	-	-	0.005	A	0.025	Interim	-	-	-	-	0.0010	0.0017	0.00021	0.00022
Barium	mg/L	-	-	1	W	-	-	-	-	-	-	0.013	0.052	0.0079	0.0063
Beryllium	mg/L	-	-	0.00013	W	0.004	W	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010
Boron	mg/L	-	-	1.2	A	5	A	-	-	-	-	0.031	0.035	<0.010	<0.010
Cadmium	mg/L	0.0003 - 0.0007	A, j	0.0001 - 0.0003	A, j	-	-	-	-	-	-	0.00013	0.000040	0.0000076	<0.0000050
Calcium	mg/L	see note	-	see note	W, t	-	-	-	-	-	-	45	64	21	20
Chromium	mg/L	-	-	0.001	W, k	-	-	-	-	-	-	0.00095	0.0023	<0.00050	<0.00050
Cobalt	mg/L	0.11	A	0.004	A	-	-	-	-	-	-	<0.00010	0.0011	<0.00010	<0.00010
Copper	mg/L	0.007 - 0.015	A, l	0.002 - 0.006	A, l	0.5	A	-	-	-	-	0.0032	**0.067**	0.0028	0.0014
Iron	mg/L	0.35	A	-	-	-	-	-	-	-	-	<0.030	**1.8**	0.059	<0.030
Lead	mg/L	0.03 - 0.12	A, m	0.005 - 0.008	A, m	0.05	A	-	-	-	-	0.00072	0.00069	0.00071	<0.000050
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	0.0012	0.0024	0.0014	0.0011
Magnesium	mg/L	-	-	-	-	-	-	-	-	-	-	5.9	16	2.6	2.3
Manganese	mg/L	1.1 - 2.5	A, n	0.8 - 1.4	A, n	-	-	-	-	-	-	0.21	0.43	0.0089	0.00087
Mercury	mg/L	-	-	0.00001	A, o	0.001	A	-	-	-	-	<0.0000050	<0.0000050	0.0000065	<0.0000050
Molybdenum	mg/L	2	A	≤1	A	0.25	A	-	-	-	-	0.011	0.013	0.0013	0.00100
Molybdenum	mg/L	0.05	A, IR	0.01	A, IR	-	-	-	-	-	-	0.011	0.013	0.0013	0.00100
Nickel	mg/L	-	-	0.025 - 0.11	W, p	-	-	-	-	-	-	<0.00050	0.0035	0.0006	<0.00050
Potassium	mg/L	-	-	-	-	-	-	-	-	-	-	1.5	1.8	0.58	0.55
Selenium	mg/L	-	-	0.002	A	0.01	A	-	-	-	-	0.00099	0.0013	0.00019	0.00016
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	4.2	11	2.3	1.8
Silver	mg/L	0.0001 - 0.003	A, q	0.0001 - 0.0015	A, q	-	-	-	-	-	-	<0.000010	0.000029	<0.000010	<0.000010
Sodium	mg/L	-	-	-	-	-	-	-	-	-	-	11	14	1.8	1.4
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	0.33	0.55	0.15	0.14
Thallium	mg/L	-	-	0.0008	W	0.002	A	-	-	-	-	<0.000010	0.000012	0.000012	<0.000010
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	<0.010	0.12	<0.010	<0.010
Uranium	mg/L	-	-	0.0085	W, u	-	-	-	-	-	-	0.00030	0.0016	0.00022	0.00020
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	0.0012	0.0056	<0.00050	<0.00050
Zinc	mg/L	0.033 - 0.0638	A, r	0.0075 - 0.0383	A, r	5	A	-	-	-	-	0.020	0.0099	0.0053	<0.0030

A = approved guideline, W = working guideline, Min = Minimum concentration requirement based on life stage
nm = not measured
< = reported value is <MDL
CSR-Schedule 6 Generic Numerical Water Standards: Aquatic life standards assume minimum 1:10 dilution available, available at http://www.bclaws.ca/Recon/document/ID/freeside/375_96_08 accessed October 8 201
BC WQGs for total metals substituted where dissolved metal WQGs do not exist

a) BC Water Quality (BCWQ) guidelines for the protection of freshwater aquatic life, except where noted (WW = wildlife water, IR = irrigation), available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines, accessed October 8 2015
b) BC WQ guideline for the protection of drinking water, available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines, accessed October 8 2015
c) CSR Generic Numerical Water Standards for the protection of aquatic life
d) CSR Generic Numerical Water Standards for the protection of drinking water
e) hardness dependent F guideline: BC Max WQG (mg/L) = 0.4 at hardness of 10 mg/L, otherwise = (-51.73 + (92.57 *log(hardness)))*0.01
f) hardness dependent sulphate guideline: BC 30-d WQG (mg/L) = 128 at hardness <30 mg/L, at hardness 31-75 mg/L = 218, at hardness 76-180 mg/L = 309, at hardness 181-250 mg/L = 429, at hardness >250 mg/L determine base on site wat
g) pH and temperature dependent ammonia guideline: values selected from Tables 3 and 4 in BC WQG based on maximum temperature of 20°C and pH 8.2
h) chloride dependent nitrite guideline: BC Max WQG (mg/L) = 0.06 at Cl <2 mg/L, at Cl 2-4 mg/L = 0.12, at Cl 4-6 mg/L = 0.18, at Cl 6-8 mg/L = 0.24, at Cl 8-10 = 0.30, at Cl >10 = 0.
BC 30-d WQG (mg/L) = 0.02 mg/L at Cl <2 mg/L, at Cl 2-4 mg/l = 0.04, at Cl 4-6 mg/L = 0.06, at Cl 6-8 mg/L = 0.08, at Cl 8-10 mg/L = 0.1, at Cl >10 = 0.
i) pH dependent dissolved Al guideline: BC Max WQG (mg/L) = 0.1 at pH ≥6.5, at pH <6.5 = EXP(1.209-2.426*(pH)+0.286*(pH^2)); BC 30-d WQG (mg/L) = 0.05 at pH ≥6.5, at pH <6.5 = EXP(1.6-3.327*(median pH)+0.402*(median pH^2); minimum baseline surface water pH = 5.57
j) hardness dependent dissolved Cd guideline: max BC WQG (mg/L) = (exp(1.03*ln(hardness)-5.274))/1000 BC 30-d WQG (mg/L) = (exp(0.736*ln(hardness)-4.943))/100
k) guideline is for Cr(VI)
l) hardness dependent Cu guideline: BC Max WQG (mg/L) = (0.094(hardness)+2)/1000; BC 30-d WQG (mg/L) = 0.002 at hardness≤50 mg/L , at hardness >50 mg/L = 0.04*hardness/1000
m) hardness dependent Pb
n) hardness dependent Mn guideline: BC Max WQG (mg/L) = 0.01102*(hardness)+0.54; BC 30-d WQG (mg/L) = 0.0044*hardness+0.60
o) BC 30-d WQG (mg/L) = 0.0001/(MeHg/THg), where MeHg is mass (or concentration) of methyl mercury and THg is total mass (or concentration) of mercury in a given water volume; assumed = 0.00001 at 1% MeH
p) hardness dependent Ni guideline: BC 30-d WQG = 0.025 at hardness <60 mg/L, at hardness 60-120 mg/L =0.065, at hardness 120-180 mg/L = 0.11, at hardness >180 mg/L = 0.15
q) hardness dependent Ag guideline: BC Max WQG (mg/L) = 0.0001 at hardness≤100 mg/L, at hardness >100 mg/L = 0.003; BC 30-d WQG (mg/L) = 0.00005 at hardness≤100 mg/L, at hardness > 100 mg/L = 0.0015
r) hardness dependent Zn guideline: BC Max WQG (mg/L) = (33+0.75(hardness-90))/1000; BC 30-d WQG (mg/L) = (7.5+0.75(hardness-90))/100
s) up to 10 - highly sensitive to acid inputs; 10 to 20 - moderately sensitive; over 20 - low sensitivity. Refer to calcium regarding sensitivity to acid inputs, the more restrictive of calcium or alkalinity is applicable.
t) up to 4 - highly sensitive to acid inputs; 4 to 8 - moderately sensitive; over 8 - low sensitivity. Refer to alkalinity, the more restrictive of calcium or alkalinity applies.
u) CSR Standard may not protect all amphibians. Consult director for further advice.
v) CSR Standard varies with chloride concentration. Consult director for further advice.
w) value exceeds BC Drinking Water Quality Guidelines for turbidity only for untreated water
x) CSR Standard varies with pH and temperature. 10°C is assumed.
y) CSR Standard to protect freshwater aquatic life.
z) CSR Standard is hardness dependent.
aa) Wildlife Water values are the lowest of CSR Generic Numerical Water Standards for Livestock Water or the Canadian Water Quality Guidelines for the Protection of Agriculture Water Uses – Livestock. For parameters without these standards or guidelines, either the CSR Schedule 6 Generic Numerical Wate
Standards and Schedule 10 Generic Numerical Soil and Water Standards for Drinking Water were used.
bb) Background turbidity is 1.5 NTU for Hazeltine Creek and 1.0 NTU for Polley Lake, Quesnel Lake, and Quesnel River
cc) Background is equal to MDL of 3.0 mg/L for total suspended solids.

nm - not measured
< reported value is <MDL

123	Indicates concentration exceeding the BC Max WQ Guideline
123	Indicates concentration exceeding the BC 30-d WQ Guideline
123	Indicates concentration exceeding the BC Drinking Water Guideline
123	Indicates concentration exceeding CSR aquatic life
123	Indicates concentration exceeding CSR drinking water
123	Indicates concentration exceeding CSR wildlife water

Parameter	Units	BC Water Quality Guidelines for the Protection of Freshwater Aquatic Life[a]				BC Drinking Water Quality Guidelines[b]		CSR-Schedule 6			Pre-event 95th Percentile	Number of samples	Minimum	Median	95th Percentile	95th Percentile above Pre-event	COPC
		Maximum	Notes	30-Day Average	Notes	Maximum	Notes	Aquatic Life[c]	Drinking Water[d]	Wildlife Water[e]							
Physical Parameters																	
Turbidity (field) [f]	NTU	+8 NTU, +5 NTU if background 8-50 NTU	A	+2 NTU, +10% if background >50 NTU	A	+5 NTU, +10% if >50 NTU for treated DW or +1 NTU, +5 if >5 for non-treated	A	-	-	+10 NTU if background is ≤50 NTU	2.7	51	0.3	0.8	1.7	No	No
Dissolved Oxygen (Field)	mg/L	5-9	A, Min	8-11	A, Min	-	-	-	-	-	7.1	49	**3**	8.2	15	n/a	No
pH (Field)	pH Unit	6.5 - 9.0	A	6.5 - 9.0	A	6.5-8.5	A	-	-	-	9.4	49	7.2	7.8	8.8	No	No
Nutrients																	
Total Phosphorus	mg/L	-	-	0.005-0.015 in lakes	A	0.01	A, lakes	-	-	-	0.094	57	0.006	**0.036**	**0.064**	No	No
Total Metals																	
Molybdenum	mg/L	0.05	A, IR	0.01	A, IR	-	-	10	0.25	0.05	0.0024	57	0.011	0.011	0.012	Yes	Yes
Dissolved Metals																	
Molybdenum	mg/L	0.05	A, IR	0.01	A, IR	-	-	-	-	-	0.0022	57	0.01	0.011	0.011	Yes	Yes

Notes:
A = Approved guideline, Min = Minimum concentration requirement based on life stage
CSR-Schedule 6 Generic Numerical Water Standards: Aquatic life standards assume minimum 1:10 dilution available.
BC WQGs for total metals substituted where dissolved metal WQGs do not exist

a) BC Water Quality (BCWQ) guidelines for the protection of freshwater aquatic life, except where noted (IR = irrigation), available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines, accessed October 8 2015
b) BC WQ guideline for the protection of drinking water, available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines, accessed October 8 201
c) CSR Generic Numerical Water Standards for the protection of aquatic life, available at http://www.bclaws.ca/Recon/document/ID/freeside/375_96_08 accessed October 8 2015
d) CSR Generic Numerical Water Standards for the protection of drinking water, available at http://www.bclaws.ca/Recon/document/ID/freeside/375_96_08 accessed October 8 2015

e) Wildlife Water values are the lowest of CSR Generic Numerical Water Standards for Livestock Water or the Canadian Water Quality Guidelines for the Protection of Agriculture Water Uses – Livestock. For parameters without these standards or guidelines, either the CSR Schedule 6 Generic Numerical Water Standards and Schedule 10 Generic Numerical Soil and Water Standards for Drinking Water were used.

f) Background turbidity is 1.0 NTU

n/a - not applicable

123	Indicates concentration exceeding the BC Max WQ Guideline
123	Indicates concentration exceeding the BC 30-d WQ Guideline
123	Indicates concentration exceeding the BC Drinking Water Guideline
123	Indicates concentration exceeding CSR aquatic life
123	Indicates concentration exceeding CSR drinking water
123	Indicates concentration exceeding CSR wildlife water

Parameter	Units	BC Water Quality Guidelines for the Protection of Freshwater Aquatic Life[a]				BC Drinking Water Quality Guidelines[b]		CSR-Schedule 6			Pre-event 95th Percentile	Number of samples	Minimum	Median	95th Percentile	95th Percentile above Pre-event	COPC
		Maximum	Notes	30-Day Average	Notes	Maximum	Notes	Aquatic Life[j]	Drinking Water[k]	Wildlife Water[l]							
Physical Parameters																	
Turbidity (field) [m]	NTU	+8 NTU, +5 NTU if background 8-50 NTU	A	+2 NTU, +10% if background >50 NTU	A	+5 NTU, +10% if >50 NTU for treated DW or +1 NTU, +5 if >5 for non-treated	A	-	-	+10 NTU if background is ≤50 NTU	4.4	95	0.61	7.0	***514***	Yes	Yes
Total Suspended Solids [m]	mg/L	+25 mg/L, +10 mg/L if background 25-100 mg/L	A	+5 mg/L, +10% if background >100 mg/L	A	-	-	-	-	+20 mg/L from background	8.5	95	1.5	13	***1468***	Yes	Yes
Total Metals																	
Aluminum	mg/L	5	A, WW	-	-	-	-	-	9.5	5	0.35	95	0.045	0.43	***24***	Yes	Yes
Arsenic	mg/L	-	-	0.005	A	0.025	Interim	0.05	0.01	0.025	0.0009	95	0.00021	0.0014	0.014	Yes	Yes
Beryllium	mg/L	-	-	0.00013	W	0.004	W	0.053	-	0.1	<0.0001	95	<0.0001	<0.0001	0.00074	Yes	Yes
Cadmium	mg/L	no T-Cd WQG, see D-Cd WQG				-	-	0.0003 - 0.0006	0.005	0.08	<0.00010	95	2.5E-06	0.000016	{0.00048}	Yes	Yes
Chromium	mg/L	-	-	0.001	W, d	-	-	0.01	0.05	0.05	0.0013	95	0.00025	0.00069	0.029	Yes	Yes
Cobalt	mg/L	0.11	A	0.004	A	-	-	0.04	-	1	<0.00050	95	0.00005	0.00033	0.019	Yes	Yes
Copper	mg/L	0.007 - 0.022	A, e	0.002 - 0.008	A, e	0.5	A	0.02 - 0.09	1	0.3	0.0061	95	0.0037	{0.023}	***0.50***	Yes	Yes
Iron	mg/L	1	A	-	-	-	-	-	6.5	-	0.45	95	0.042	0.45	**34**	Yes	Yes
Lead	mg/L	0.032 - 0.21	A, f	0.005 - 0.011	A, f	0.05	A	0.04 - 0.11	0.01	0.1	<0.0005	95	0.000025	0.00023	0.012	Yes	Yes
Manganese	mg/L	1.1 - 2.8	A, g	0.82 - 1.5	A, g	-	-	-	0.55	-	0.049	95	0.0053	0.075	[1.1]	Yes	Yes
Mercury	mg/L	-	-	0.00001	A, h	0.001	A	0.001	0.001	0.002	0.000029	17	<0.000005	<0.000005	0.0000096	No	No
Molybdenum	mg/L	0.05	A, IR	0.01	A, IR	-	-	10	0.25	0.05	0.0025	95	0.00029	0.010	0.012	Yes	Yes
Selenium	mg/L	-	-	0.002	A	0.01	A	0.01	0.01	0.03	0.00098	95	0.00011	0.00092	0.0014	Yes	No
Titanium	mg/L	-	-	-	-	-	-	1	-	-	0.00023	95	0.005	0.019	1.2	Yes	Yes
Vanadium	mg/L	-	-	-	-	-	-	-	-	0.1	<0.020	81	0.00058	0.0012	0.0021	No	No
Zinc	mg/L	0.03 - 0.12	A, i	0.008 - 0.096	A, i	5	A	0.075 - 1.65	5	2	0.0049	95	0.0015	0.0056	**{[0.081]}***	Yes	Yes
Dissolved Metals																	
Aluminum	mg/L	0.1	A, c	0.05	A, c	0.2	A	-	-	-	0.19	95	0.005	0.016	**0.18**	No	No
Chromium	mg/L	-	-	0.001	W, d	-	-	-	-	-	0.0011	95	<0.0005	<0.0005	0.00089	No	No
Copper	mg/L	0.007 - 0.022	A, e	0.002 - 0.008	A, e	0.5	A	-	-	-	0.0051	95	0.0021	**0.014***	**0.038**	Yes	Yes
Iron	mg/L	0.35	A	-	-	-	-	-	-	-	0.25	95	<0.030	<0.030	0.26	Yes	No
Molybdenum	mg/L	0.05	A, IR	0.01	A, IR	-	-	-	-	-	0.0027	95	0.00023	0.010	0.012	Yes	Yes

Notes:

A = approved guideline, W = working guideline

CSR-Schedule 6 Generic Numerical Water Standards: Aquatic life standards assume minimum 1:10 dilution available, available at http://www.bclaws.ca/Recon/document/ID/freeside/375_96_08 accessed October 8 201

BC WQGs for total metals substituted where dissolved metal WQGs do not exist

a) BC Water Quality (BCWQ) guidelines for the protection of freshwater aquatic life, except where noted (WW = wildlife water, IR = irrigation), available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines, accessed October 8 2015

b) BC WQ guideline for the protection of drinking water, available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines, accessed October 8 201

c) pH dependent dissolved Al guideline: BC Max WQG (mg/L) = 0.1 at pH ≥6.5, at pH <6.5 = EXP(1.209-2.426*(pH)+0.286*(pH^2)); BC 30-d WQG (mg/L) = 0.05 at pH ≥6.5, at pH <6.5 = EXP(1.6-3.327*(median pH)+0.402*(median pH^2); minimum baseline surface water pH = 5.57

d) guideline is for Cr(VI)

e) hardness dependent Cu guideline: BC Max WQG (mg/L) = (0.094(hardness)+2)/1000; BC 30-d WQG (mg/L) = 0.002 at hardness≤50 mg/L , at hardness >50 mg/L = 0.04*hardness/100

f) hardness dependent Pb guideline: BC Max WQG (mg/L) = 0.003 at hardness ≤8 mg/L, at hardness >8 mg/L = (EXP((1.273*ln(hardness))-1.46))/1000; BC 30-d WQG (mg/L) = (3.31+EXP(1.273(ln(hardness))-4.704))/1000 at hardness >8 mg/L, no guideline at hardness ≤8 mg/

g) hardness dependent Mn guideline: BC Max WQG (mg/L) = 0.01102*(hardness)+0.54; BC 30-d WQG (mg/L) = 0.0044*hardness+0.60

h) BC 30-d WQG (mg/L) = 0.0001/(MeHg/THg), where MeHg is mass (or concentration) of methyl mercury and THg is total mass (or concentration) of mercury in a given water volume; assumed = 0.00001 at 1% MeH

i) hardness dependent Zn guideline: BC Max WQG (mg/L) = (33+0.75(hardness-90))/1000; BC 30-d WQG (mg/L) = (7.5+0.75(hardness-90))/100

j) CSR Generic Numerical Water Standards for the protection of aquatic life

k) CSR Generic Numerical Water Standards for the protection of drinking water

l) Wildlife Water values are the lowest of CSR Generic Numerical Water Standards for Livestock Water or the Canadian Water Quality Guidelines for the Protection of Agriculture Water Uses – Livestock. For parameters without these standards or guidelines, either the CSR Schedule 6 Generic Numerical Water Standards and Schedule 10 Generic Numerical Soil and Water Standards for Drinking Water were used

m) Background turbidity is 1.5 NTU and 3.0 mg/L for total suspended solids.

< reported value is <MDL

[] = value-exceeds the most conservative site-specific maximum hardness-dependant BC WQG but does not exceed the least conservative site-specific maximum hardness-dependent BC WQG

* = value-exceeds the most conservative site-specific 30-d average hardness-dependant BC WQG but does not exceed the least conservative site-specific 30-d average hardness-dependent BC WQG

{} = value-exceeds the most conservative site-specific hardness-dependant CSR Schedule 6 Standard for the protection of aquatic life but does not exceed the least conservative site-specific hardness-dependent CSR standard

123	Indicates concentration exceeding the BC Max WQ Guideline
123	Indicates concentration exceeding the BC 30-d WQ Guideline
123	Indicates concentration exceeding the BC Drinking Water Guideline
123	Indicates concentration exceeding CSR aquatic life
123	Indicates concentration exceeding CSR drinking water
123	Indicates concentration exceeding CSR wildlife water

Parameter	Units	BC Water Quality Guidelines for the Protection of Freshwater Aquatic Life[a]				BC Drinking Water Quality Guidelines[b]		CSR-Schedule 6			Pre-event 95th Percentile	Number of samples	Minimum	Median	95th Percentile	95th Percentile above Pre-event	COPC
		Maximum	Notes	30-Day Average	Notes	Maximum	Notes	Aquatic Life[e]	Drinking Water[f]	Wildlife Water[d]							
Physical Parameters																	
Turbidity (field)[h]	NTU	+8 NTU, +5 NTU if background 8-50 NTU	A	+2 NTU, +10% if background >50 NTU	A	+5 NTU, +10% if >50 NTU for treated DW or +1 NTU, +5 if >5 for non-treated	A	-	-	+10 NTU if background is ≤50 NTU	1.0[i]	174	0	0.92	3.1[g]	Yes	Yes
Total Suspended Solids[h]	mg/L	+25 mg/L, +10 mg/L if background 25-100 mg/L	A	+5 mg/L, +10% if background >100 mg/L	A	-	-	-	-	+20 mg/L from background	<3.0[i]	209	<3.0	<3.0	4.0	Yes	No
pH (field)	pH Unit	6.5 - 9.0	A	6.5 - 9.0	A	6.5-8.5	A	-	-	-	nm	174	7.2	7.8	8.4	n/a	No
Nutrients																	
Total Phosphorus	mg/L	-	-	0.005-0.015 in lakes	A	0.01	A, lakes	-	-	-	0.008	209	0.001	0.0022	0.0070	No	No
Total Metals																	
Copper	mg/L	0.0065 - 0.0078	A, c	0.002 - 0.0025	A, c	0.5	A	0.02 - 0.03	1	0.3	nm	209	0.00025	0.0011	0.0037	n/a	Yes
Dissolved Metals																	
Copper	mg/L	0.0065 - 0.0078	A, c	0.002 - 0.0025	A, c	0.5	A	-	-	-	nm	209	0.00025	0.00088	0.0017	n/a	No

Notes:

A = approved guideline

CSR-Schedule 6 Generic Numerical Water Standards: Aquatic life standards assume minimum 1:10 dilution available, available at http://www.bclaws.ca/Recon/document/ID/freeside/375_96_08 accessed October 8 201

BC WQGs for total metals substituted where dissolved metal WQGs do not exist

a) BC Water Quality (BCWQ) guidelines for the protection of freshwater aquatic life, available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines, accessed October 8 201

b) BC WQ guideline for the protection of drinking water, available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines, accessed October 8 201

c) hardness dependent Cu guideline: BC Max WQG (mg/L) = (0.094(hardness)+2)/1000; BC 30-d WQG (mg/L) = 0.002 at hardness≤50 mg/L , at hardness >50 mg/L = 0.04*hardness/100

d) Wildlife Water values are the lowest of CSR Generic Numerical Water Standards for Livestock Water or the Canadian Water Quality Guidelines for the Protection of Agriculture Water Uses – Livestock. For parameters without these standards or guidelines, either the CSR Schedule 6 Generic Numerical Water Standards and Schedule 10 Generic Numerical Soil and Water Standards for Drinking Water were used.

e) CSR Generic Numerical Water Standards for the protection of aquatic life

f) CSR Generic Numerical Water Standards for the protection of drinking water

g) value exceeds BC Drinking Water Quality Guidelines for turbidity only for untreated water

h) Background turbidity is 1.0 NTU and 3.0 mg/L for total suspended solids.

i) Not measured, assumed background turbidity is 1.0 NTU and <3.0 mg/L (MDL) for total suspended solids.

nm - not measured

< reported value is less than the method detection limit

n/a - not applicable

123	Indicates concentration exceeding the BC Max WQ Guideline
123	Indicates concentration exceeding the BC 30-d WQ Guideline
123	Indicates concentration exceeding the BC Drinking Water Guideline
123	Indicates concentration exceeding CSR aquatic life
123	Indicates concentration exceeding CSR drinking water

Parameter	Units	BC Water Quality Guidelines for the Protection of Freshwater Aquatic Life[a]				BC Drinking Water Quality Guidelines[b]		CSR-Schedule 6			Pre-event 95th Percentile	Number of samples	Minimum	Median	95th Percentile	95th Percentile above Pre-event	COPC
		Maximum	Notes	30-Day Average	Notes	Maximum	Notes	Aquatic Life[c]	Drinking Water[d]	Wildlife Water[e]							
Physical Parameters																	
Turbidity (field	NTU	+8 NTU, +5 NTU if background 8-50 NTU	A	+2 NTU, +10% if background >50 NTU	A	+5 NTU, +10% if >50 NTU for treated DW or +1 NTU, +5 if >5 for non-treated	A	-	-	+10 NTU if background is ≤50 NTU	1.0	15	0.05	1.6	2.6[g]	Yes	Yes

Notes:
A = approved guideline
CSR-Schedule 6 Generic Numerical Water Standards: Aquatic life standards assume minimum 1:10 dilution available, available at http://www.bclaws.ca/Recon/document/ID/freeside/375_96_08 accessed October 8 2015

a) BC Water Quality (BCWQ) guidelines for the protection of freshwater aquatic life, available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines, accessed October 8 2015
b) BC WQ guideline for the protection of drinking water, available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines, accessed October 8 2015
c) CSR Generic Numerical Water Standards for the protection of aquatic life
d) CSR Generic Numerical Water Standards for the protection of drinking water

e) Wildlife Water values are the lowest of CSR Generic Numerical Water Standards for Livestock Water or the Canadian Water Quality Guidelines for the Protection of Agriculture Water Uses – Livestock. For parameters without these standards or guidelines, either the CSR Schedule 6 Generic Numerical Water Standards and Schedule 10 Generic Numerical Soil and Water Standards for Drinking Water were used.

f) Background turbidity is 1.0 NTU
g) value exceeds BC Drinking Water Quality Guidelines for turbidity only for untreated water

123	Indicates concentration exceeding the BC Max WQ Guideline
123	Indicates concentration exceeding the BC 30-d WQ Guideline
123	Indicates concentration exceeding the BC Drinking Water Guideline
123	Indicates concentration exceeding CSR aquatic life
123	Indicates concentration exceeding CSR drinking water

Parameter	Units	BC Water Quality Guidelines for the Protection of Freshwater Aquatic Life[a]				BC Drinking Water Quality Guidelines[b]		CSR-Schedule 6			Pre-event 95th Percentile	Number of samples	Minimum	Median	95th Percentile	95th Percentile above Pre-event	COC
		Maximum	Notes	30-Day Average	Notes	Maximum	Notes	Aquatic Life[h]	Drinking Water[i]	Wildlife Water[j]							
Hazeltine Creek clear-flow conditions of turbidity <9.5 NTU (equivalent to BC max WQG of +8 NTU above median background of 1.5 NTU)																	
Physical Parameters																	
Turbidity (field) [k]	NTU	+8 NTU, +5 NTU if background 8-50 NTU	A	+2 NTU, +10% if background >50 NTU	A	+5 NTU, +10% if >50 NTU for treated DW or +1 NTU, +5 if >5 for non-treated	A	-	-	+10 NTU if background is ≤50 NTU	4.4	55	0.73	3.4	8.4	Yes	Yes
Total Suspended Solids [k]	mg/L	+25 mg/L, +10 mg/L if background 25-100 mg/L	A	+5 mg/L, +10% if background >100 mg/L	A	-	-	-	-	+20 mg/L from background	8.5	55	<3	7.1	***37***	Yes	Yes
Total Metals																	
Aluminum	mg/L	5	A, WW	-	-	-		-	9.5	5	0.35	55	0.045	0.21	0.61	Yes	No
Arsenic	mg/L	-	-	0.005	A	0.025	Interim	0.05	0.01	0.025	0.0009	55	0.00021	0.0013	0.0019	Yes	No
Beryllium	mg/L	-	-	0.00013	W	0.004	W	0.053	-	0.1	<0.0001	55	<0.0001	<0.0001	<0.0001	No	No
Cadmium	mg/L	no T-Cd WQG, see D-Cd WQG				-		0.0003 - 0.0006	0.005	0.08	<0.00010	55	<0.000005	0.0000089	0.000027	No	No
Chromium	mg/L	-	-	0.001	W, c	-		0.01	0.05	0.05	0.0013	55	<0.0005	<0.0005	0.0013	No	No
Cobalt	mg/L	0.11	A	0.004	A	-		0.04	-	1	<0.00050	55	<0.0001	0.00016	0.00052	Yes	No
Copper	mg/L	0.007 - 0.022	A, d	0.002 - 0.008	A, d	0.5	A	0.02 - 0.09	1	0.3	0.0061	55	0.0037	**0.019***	**{0.031}**	Yes	Yes
Iron	mg/L	1	A	-	-	-		-	6.5	-	0.45	55	0.042	0.25	0.61	Yes	No
Lead	mg/L	0.032 - 0.21	A, e	0.005 - 0.011	A, e	0.05	A	0.04 - 0.11	0.01	0.1	<0.0005	55	<0.00005	0.00009	0.00028	No	No
Manganese	mg/L	1.1 - 2.8	A, f	0.82 - 1.5	A, f	-		-	0.55	-	0.049	55	0.0053	0.043	0.12	Yes	No
Titanium	mg/L	-	-		-	-		1	-	-	0.00023	55	<0.01	<0.01	0.040	Yes	No
Zinc	mg/L	0.033 - 0.12	A, g	0.008 - 0.096	A, g	5	A	0.075 - 1.65	5	2	0.0049	55	<0.003	<0.003	0.0082	Yes	No
Dissolved Metals																	
Copper	mg/L	0.007 - 0.022	A, d	0.002 - 0.008	A, d	0.5	A	-	-	-	0.0051	55	0.0021	**0.0096***	**0.018**	Yes	Yes

Notes:

A = approved guideline, W = working guideline

CSR-Schedule 6 Generic Numerical Water Standards: Aquatic life standards assume minimum 1:10 dilution available, available at http://www.bclaws.ca/Recon/document/ID/freeside/375_96_08 accessed October 8 201

BC WQGs for total metals substituted where dissolved metal WQGs do not exist

a) BC Water Quality (BCWQ) guidelines for the protection of freshwater aquatic life, except where noted (WW = wildlife water), available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines, accessed October 8 2015

b) BC WQ guideline for the protection of drinking water, available at http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines, accessed October 8 201

c) guideline is for Cr(VI)

d) hardness dependent Cu guideline: BC Max WQG (mg/L) = (0.094(hardness)+2)/1000; BC 30-d WQG (mg/L) = 0.002 at hardness≤50 mg/L , at hardness >50 mg/L = 0.04*hardness/1000

e) hardness dependent Pb guideline: BC Max WQG (mg/L) = 0.003 at hardness≤8 mg/L, at hardness >8 mg/L = (EXP((1.273*ln(hardness))-1.46))/1000; BC 30-d WQG (mg/L) = (3.31+EXP(1.273(ln(hardness))-4.704))/1000 at hardness >8 mg/L, no guideline at hardness ≤8 mg/

f) hardness dependent Mn guideline: BC Max WQG (mg/L) = 0.01102*(hardness)+0.54; BC 30-d WQG (mg/L) = 0.0044*hardness+0.605

g) hardness dependent Zn guideline: BC Max WQG (mg/L) = (33+0.75(hardness-90))/1000; BC 30-d WQG (mg/L) = (7.5+0.75(hardness-90))/100

h) CSR Generic Numerical Water Standards for the protection of aquatic life

i) CSR Generic Numerical Water Standards for the protection of drinking water

j) Wildlife Water values are the lowest of CSR Generic Numerical Water Standards for Livestock Water or the Canadian Water Quality Guidelines for the Protection of Agriculture Water Uses – Livestock. For parameters without these standards or guidelines, either the CSR Schedule 6 Generic Numerical Water Standards and Schedule 10 Generic Numerical Soil and Water Standards for Drinking Water were used.

k) Background turbidity is 1.5 NTU and 3.0 mg/L for total suspended solids.

< reported value is <MDL

[] = value-exceeds the most conservative site-specific maximum hardness-dependant BC WQG but does not exceed the least conservative site-specific maximum hardness-dependent BC WQG

* = value-exceeds the most conservative site-specific 30-d average hardness-dependant BC WQG but does not exceed the least conservative site-specific 30-d average hardness-dependent BC WQG

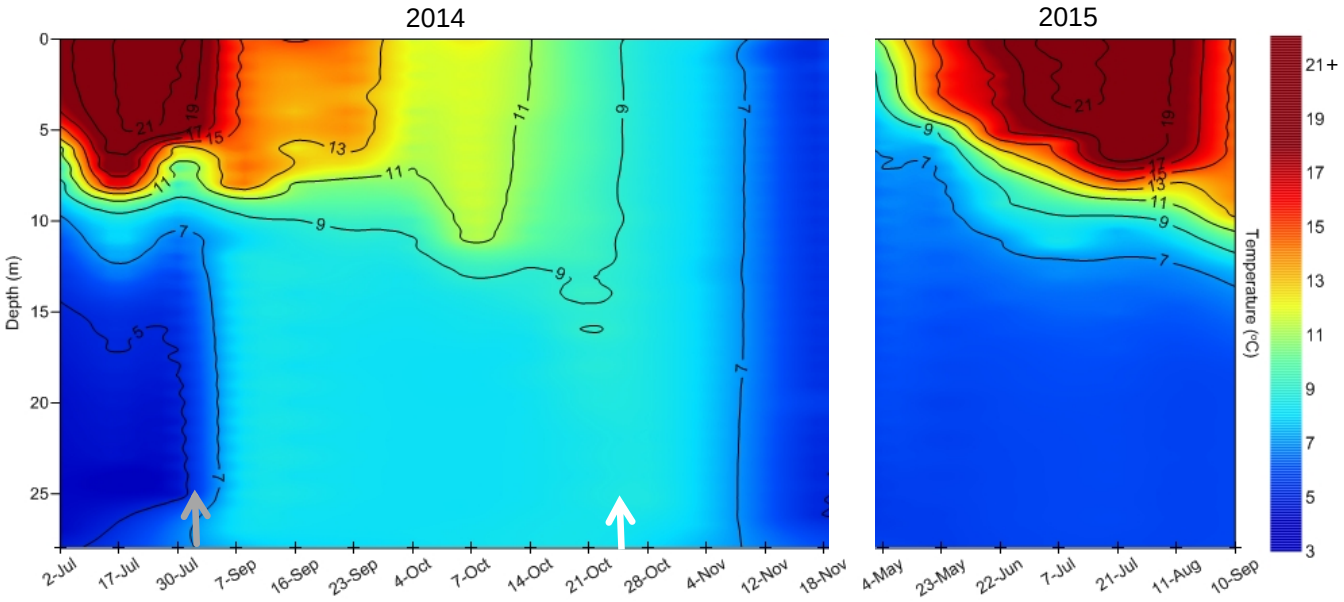
{} = value-exceeds the most conservative site-specific hardness-dependant CSR Schedule 6 Standard for the protection of aquatic life but does not exceed the least conservative site-specific hardness-dependent CSR standard

95th Percentile Values were screened against maximum BC WQGs or CSR standards, minimum and median values were screened against maximum and 30-day BC WQGs and CSR standards

123	Indicates concentration exceeding the BC Max WQ Guideline
123	Indicates concentration exceeding the BC 30-d WQ Guideline
123	Indicates concentration exceeding the BC Drinking Water Guideline
123	Indicates concentration exceeding CSR aquatic life
123	Indicates concentration exceeding CSR drinking water
123	Indicates concentration exceeding CSR wildlife water

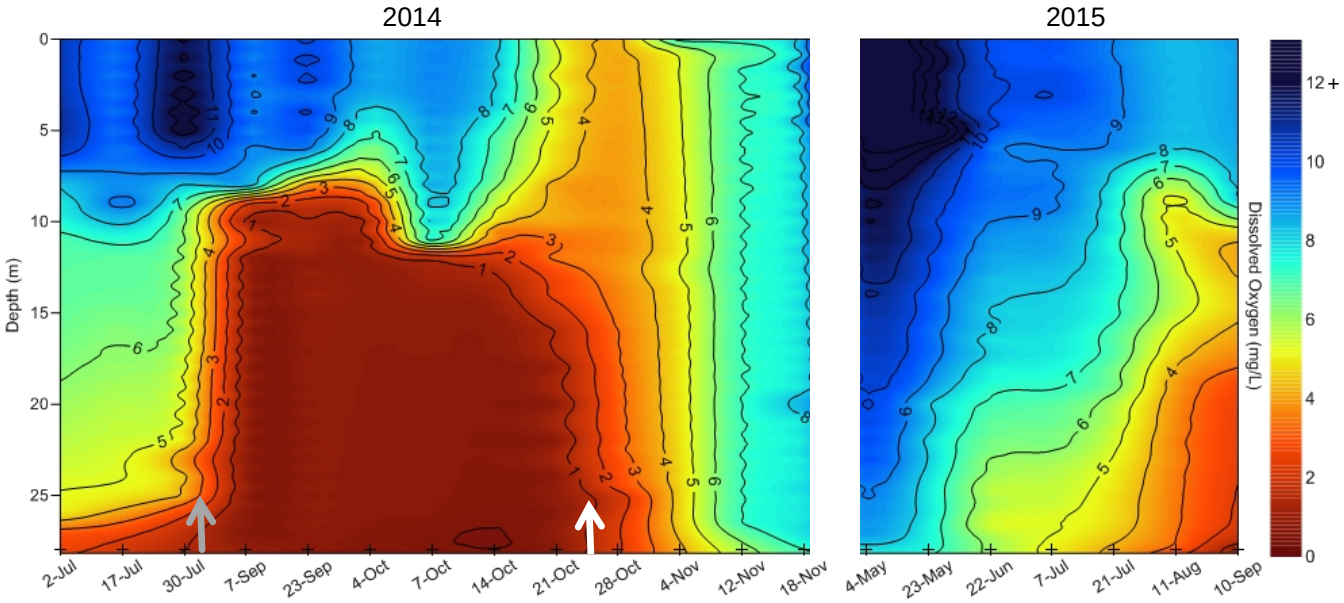
ATTACHMENT 5

Supporting Information for the Assessment of Dissolved Oxygen in Polley Lake, March to August 2015



Note: The grey arrow represents the approximate timing of the event August 2014; the white arrow represents the approximate timing of late-October 2014 turnover in Polley Lake. Sampling did not occur late November 2014 through April 2015 because of unsafe access to the lake during winter conditions.

Figure 1: Contours of Temperature Measured In-situ over Time at Station P-2 in Polley Lake pre-event (July 2014) and post-event (August 2014 to September 2015).



Note: The grey arrow represents the approximate timing of the event August 2014; the white arrow represents the approximate timing of late-October 2014 turnover in Polley Lake. Sampling did not occur late November 2014 through April 2015 because of unsafe access to the lake during winter conditions.

Figure 2: Contours of Dissolved Oxygen Measured In-situ over Time at Station P-2 in Polley Lake pre-event (July 2014) and post-event (August 2014 to September 2015).

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ATTACHMENT 6

Supporting Information for the Assessment of Turbidity in Hazeltine Creek and Quesnel Lake, March to August 2015

Figure 1: Hazeltine Creek April 26, 2015.

Figure 2: Hazeltine Creek April 25, 2015.

Figure 3: Hazeltine Creek July 8, 2015.

Figure 4: Hazeltine Creek July 8, 2015.

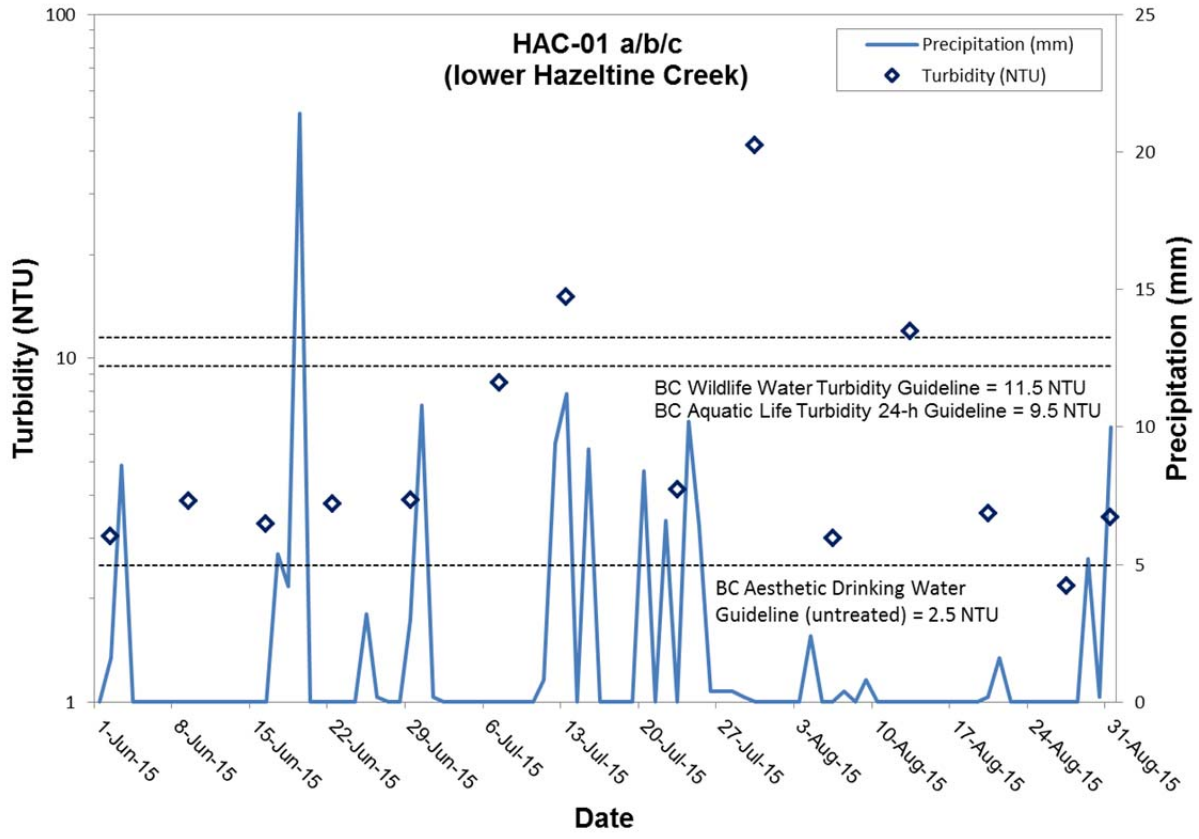

Figure 5: Comparison of Turbidity Measured in Lower Hazeltine Creek (HAC-01a/b/c) with Precipitation Recorded at the Mine Site Weather Station, June to August, 2015. Relevant BC Water Quality Guidelines are also shown.

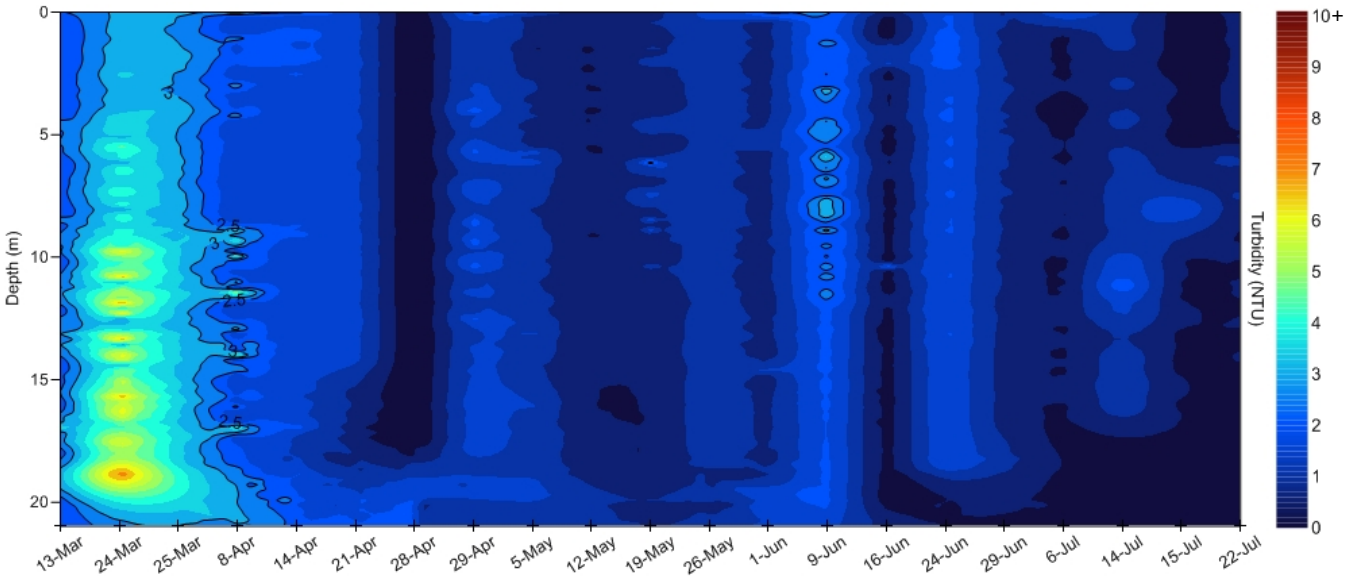

Figure 6: Contours of Turbidity Measured In-situ over Time at Station QUL-54 in Quesnel Lake, March to July 2015. The Contour at 3 NTU Represents the Criterion of 2 NTU above Background (1 NTU).

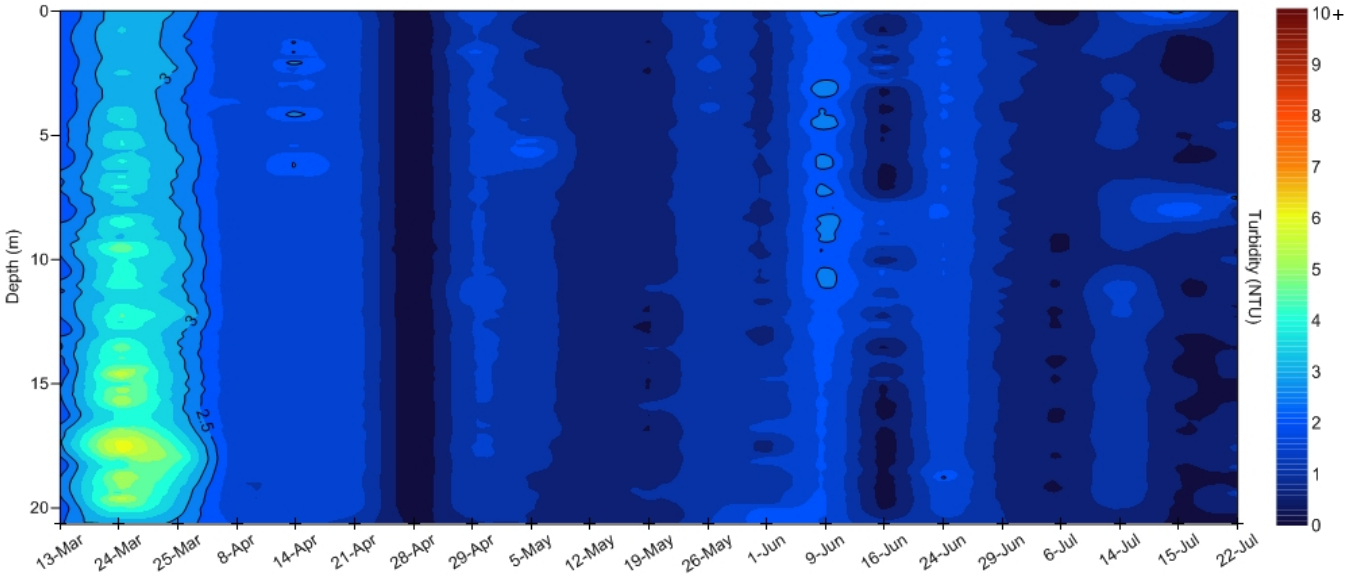

Figure 7: Contours of Turbidity Measured In-situ over Time at Station QUL-56 in Quesnel Lake, March to July 2015. The Contour at 3 NTU Represents the Criterion of 2 NTU above Background (1 NTU).

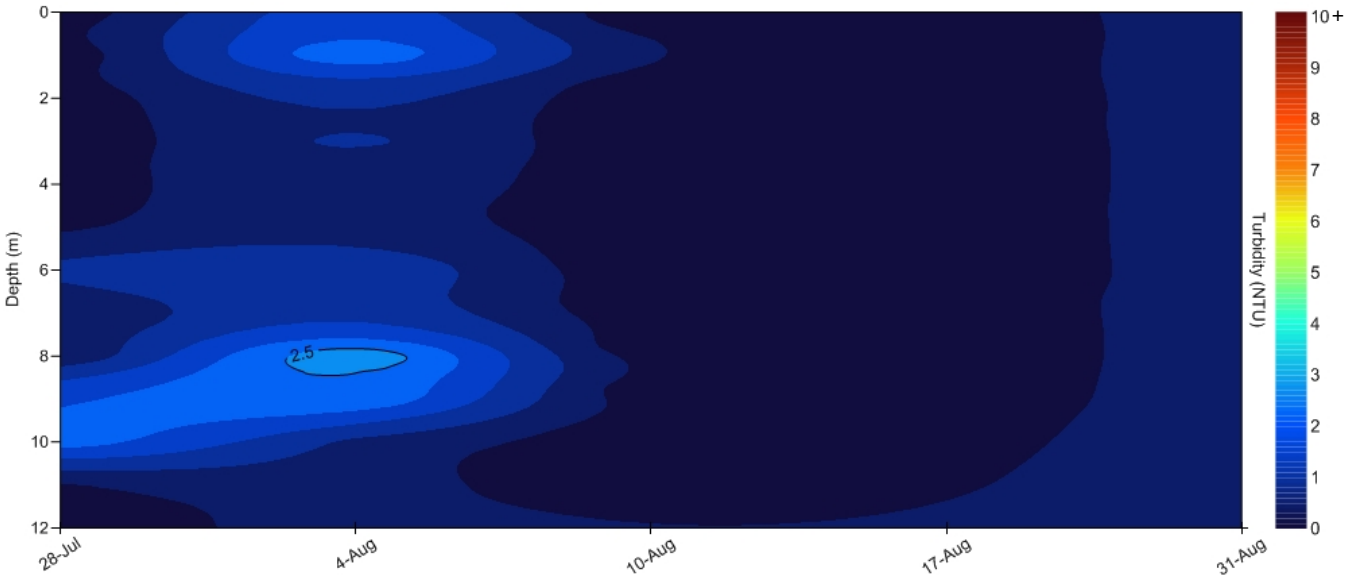

Figure 8: Contours of Turbidity Measured In-situ over Time at Station QUL-54a in Quesnel Lake, July to August 2015. The Contour at 3 NTU Represents the Criterion of 2 NTU above Background (1 NTU).

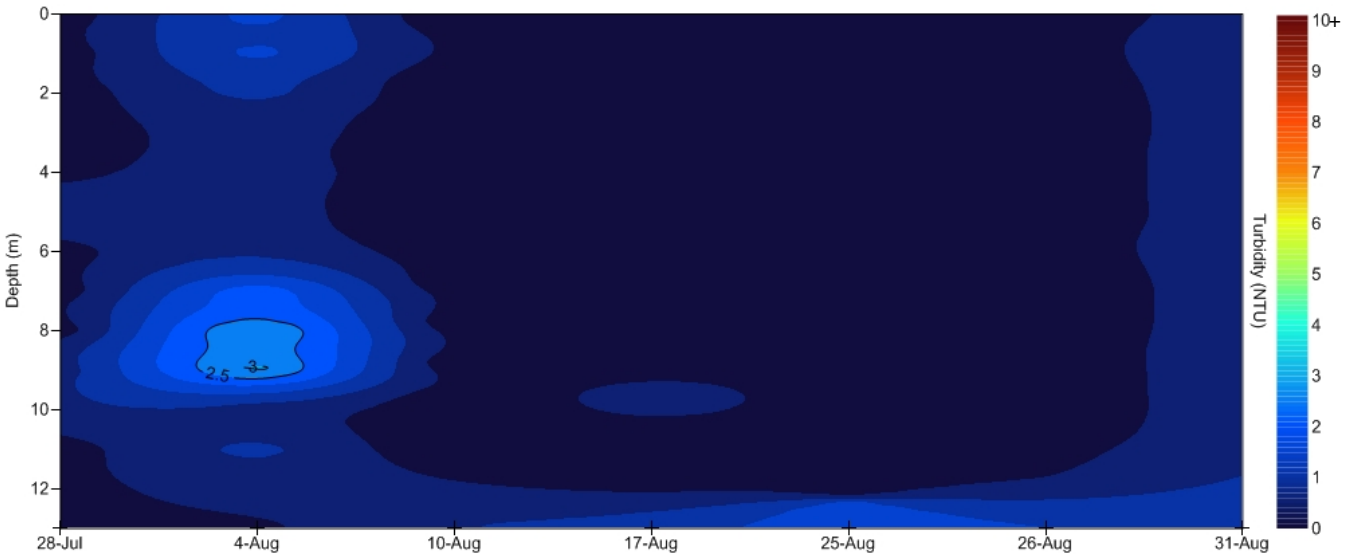

Figure 9: Contours of Turbidity Measured In-situ over Time at Station QUL-55a in Quesnel Lake, July to August 2015. The Contour at 3 NTU Represents the Criterion of 2 NTU above Background (1 NTU).

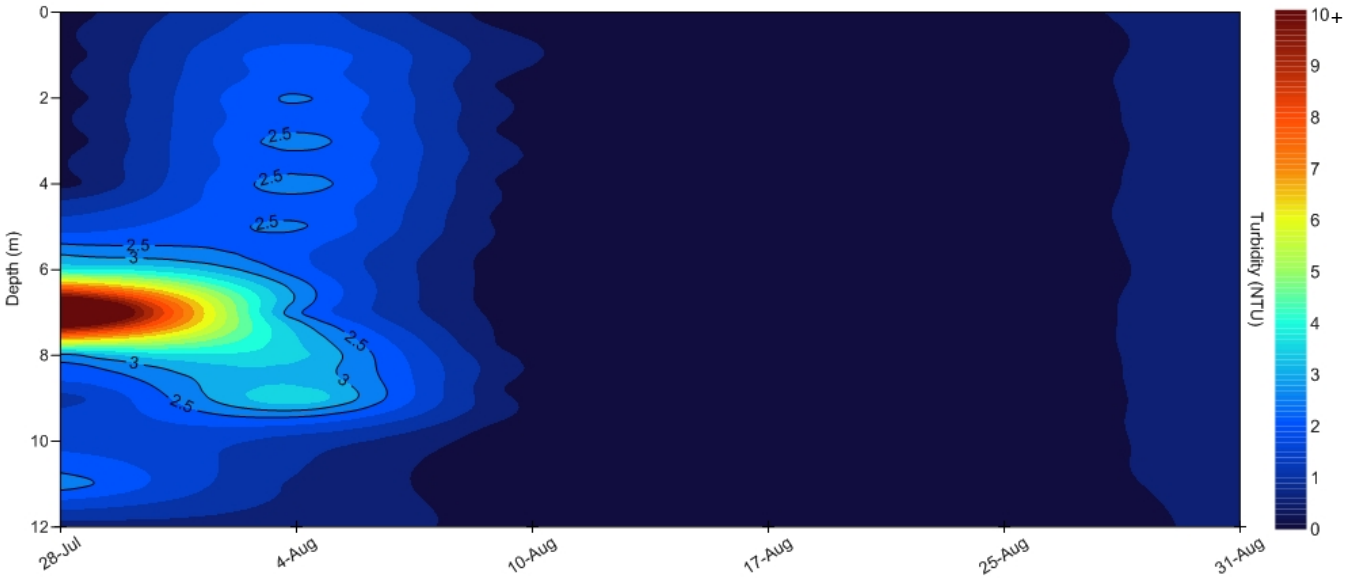

Figure 10: Contours of Turbidity Measured In-situ over Time at Station QUL-56a in Quesnel Lake, July to August 2015. The Contour at 3 NTU Represents the Criterion of 2 NTU above Background (1 NTU).

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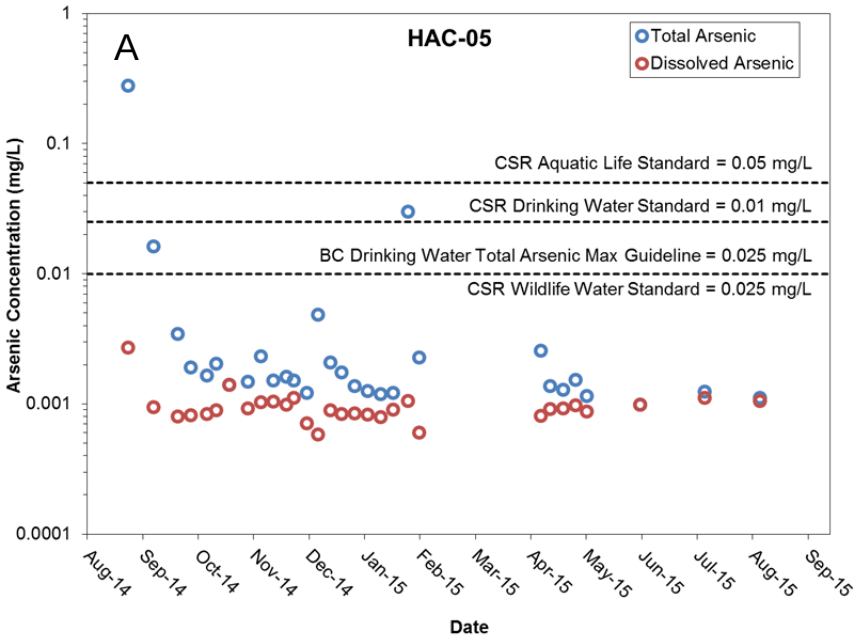
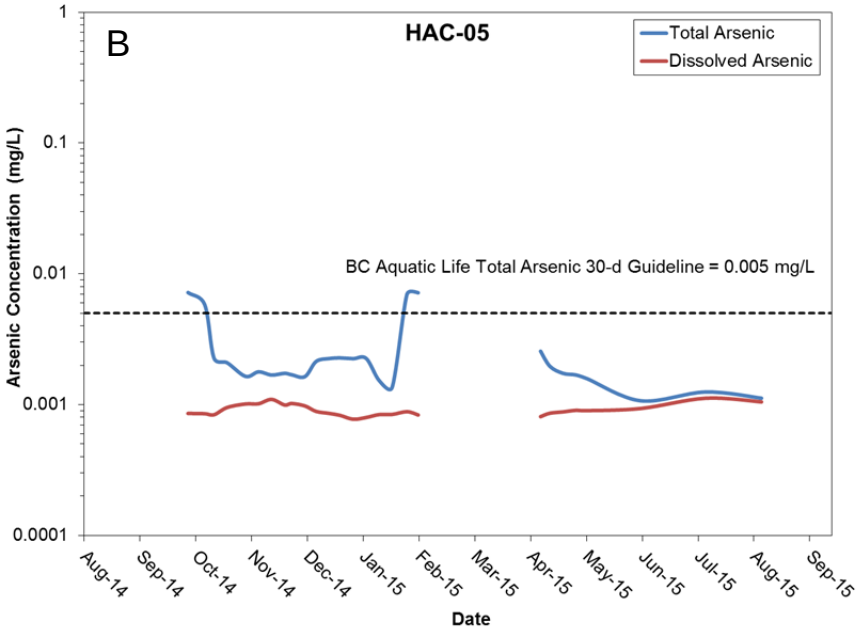
ATTACHMENT 7

Supplemental Time Series Plots of Water Quality, March to August 2015

1.1 Arsenic





Note: Gaps represent >30 d between sampling.

Figure 1: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Arsenic Concentrations at Station HAC-05, Hazeltine Creek.

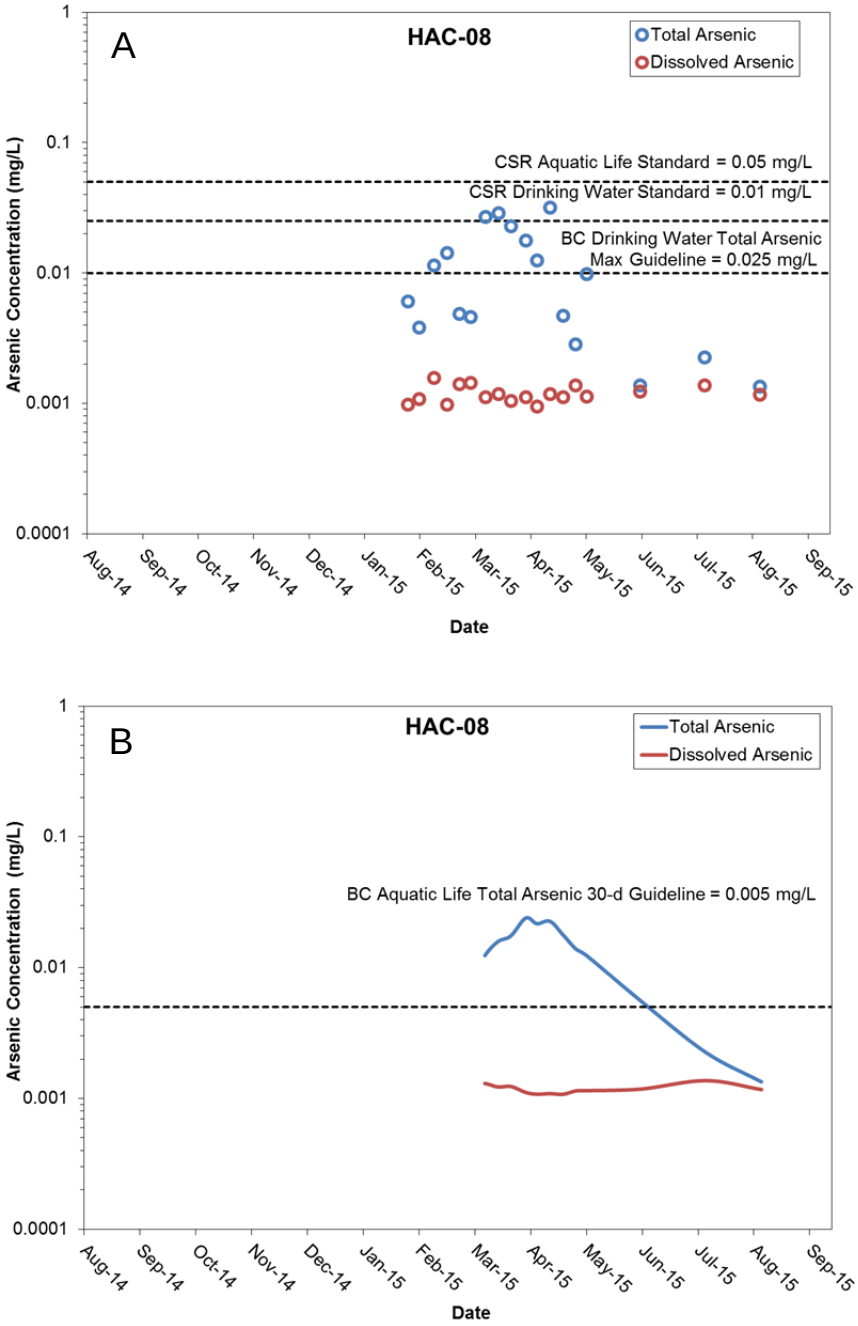


Figure 2: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Arsenic Concentrations at Station HAC-08, Hazeltine Creek.

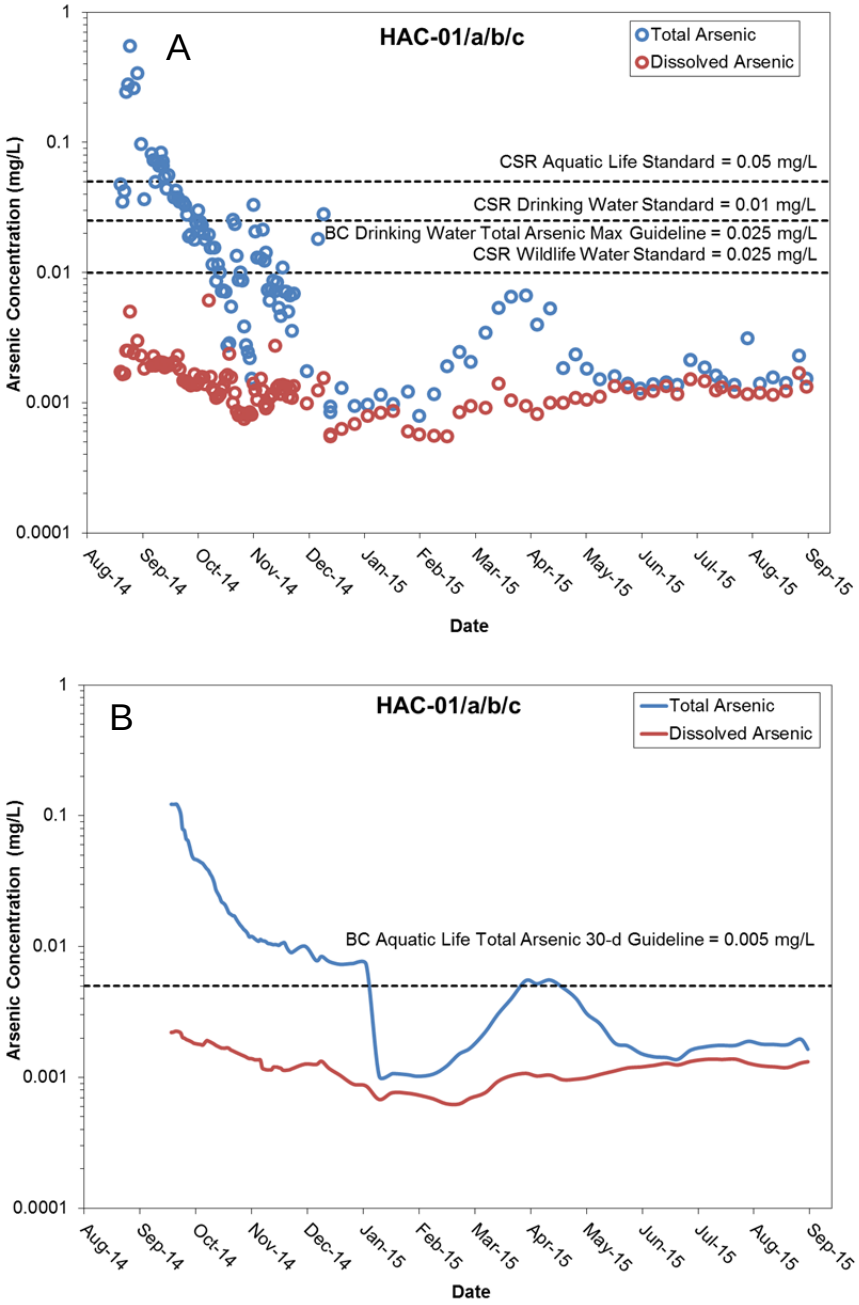
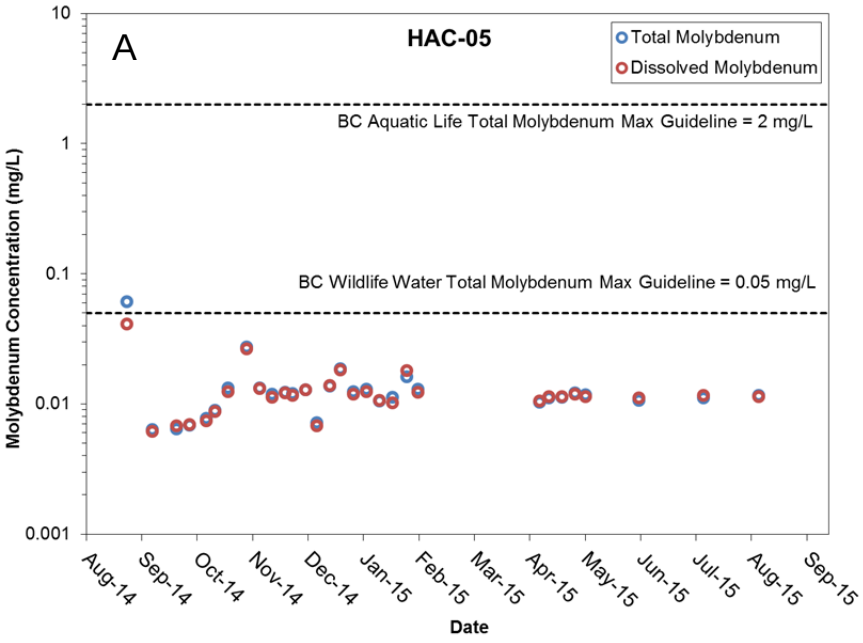
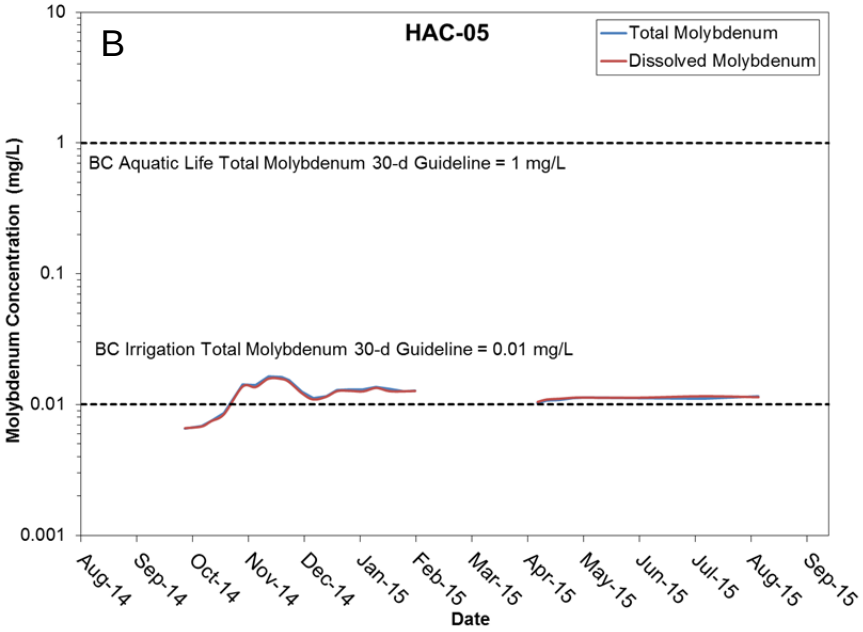


Figure 3: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Arsenic Concentrations at Station HAC-01/a/b/c, Hazeltine Creek.

1.2 Molybdenum





Note: Gaps represent >30 d between sampling.

Figure 4: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Molybdenum Concentrations at Station HAC-05, Hazeltine Creek.

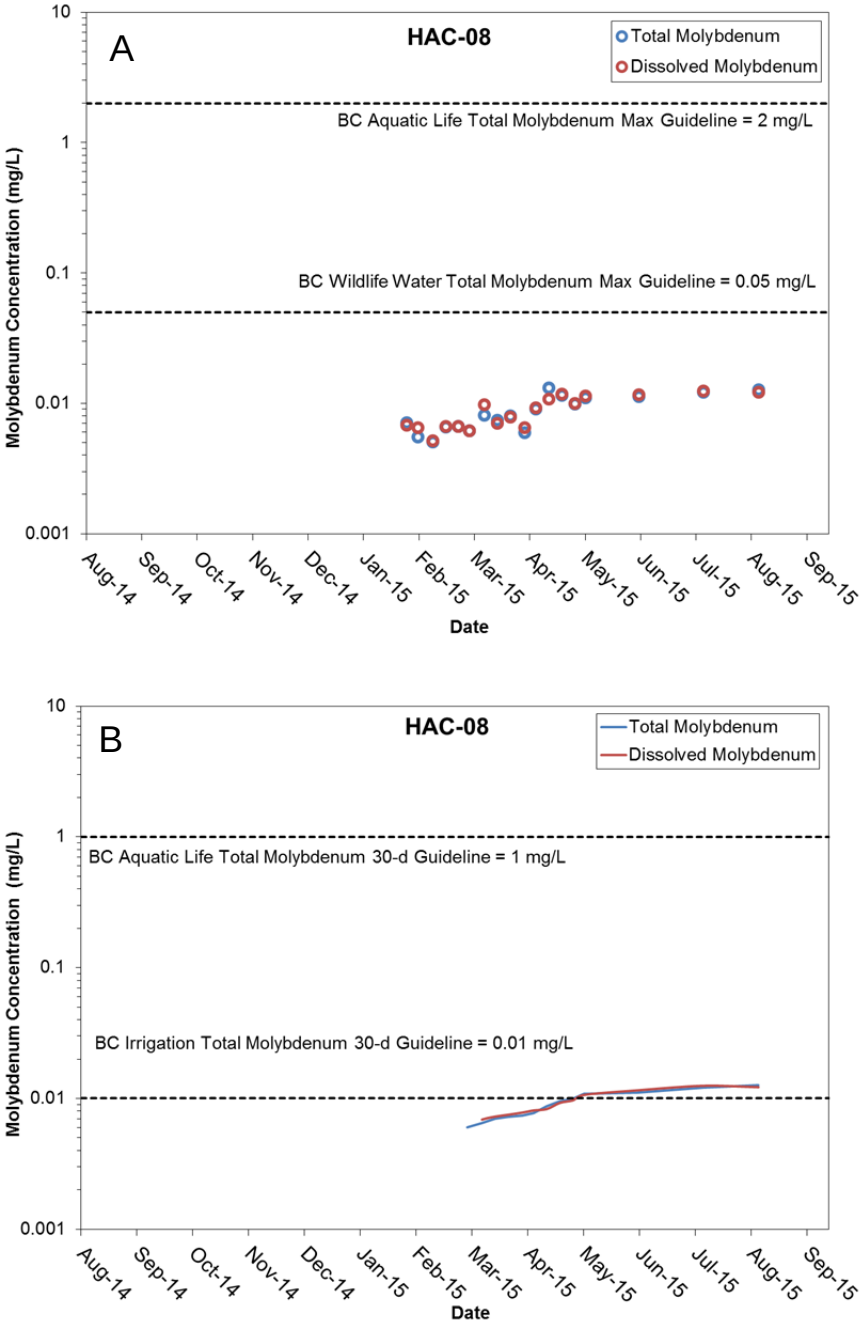


Figure 5: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Molybdenum Concentrations at Station HAC-08, Hazeltine Creek.

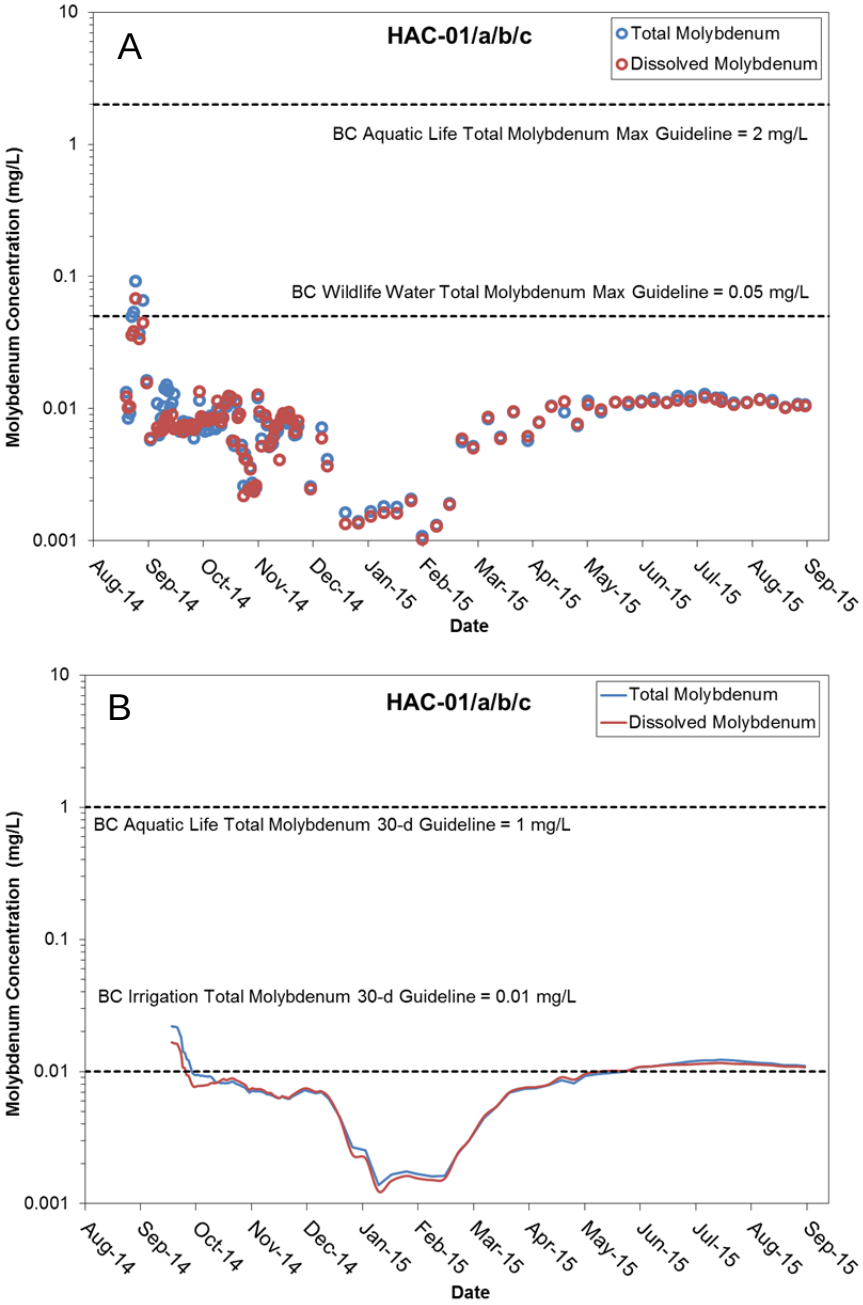
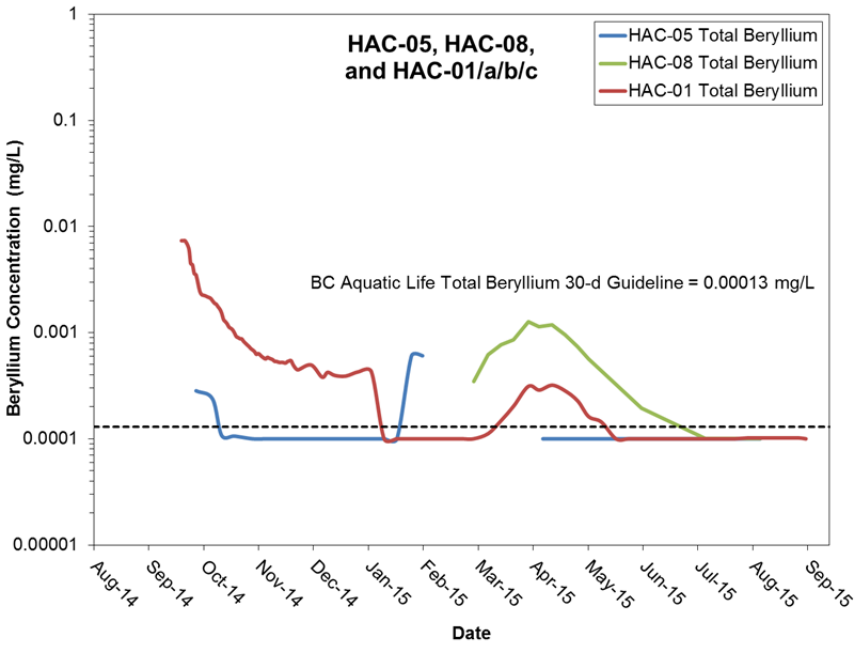


Figure 6: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Molybdenum Concentrations at Station HAC-01/a/b/c, Hazeltine Creek.

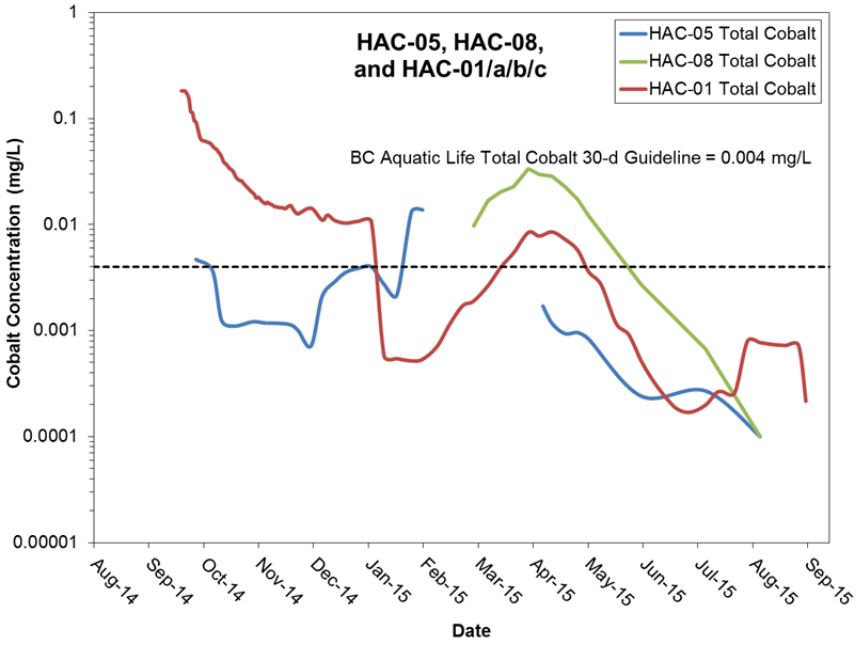
1.3 Beryllium



Note: Gaps represent >30 d between sampling.

Figure 7: Post-event Rolling 30-day Average Total Beryllium Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

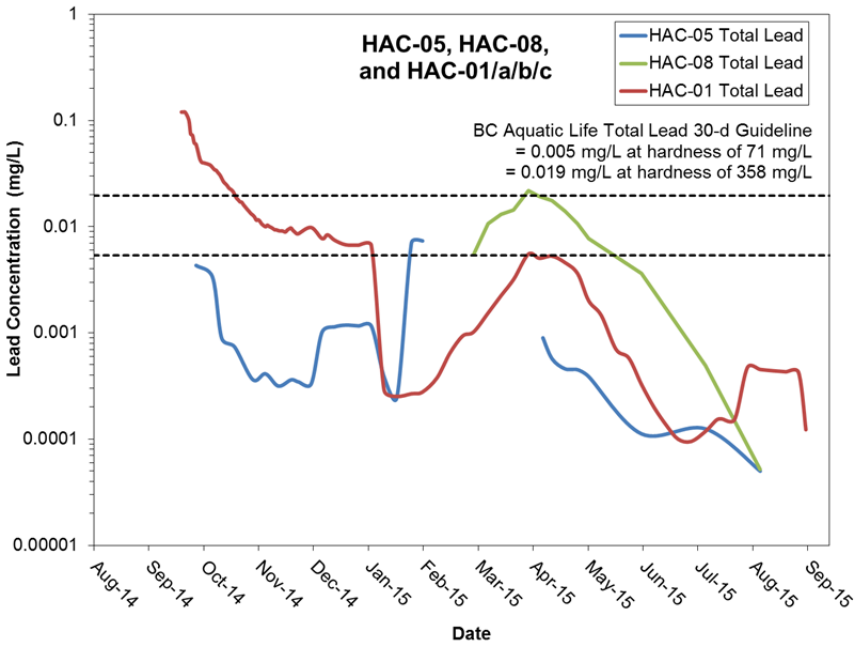
1.4 Cobalt



Note: Gaps represent >30 d between sampling.

Figure 8: Post-event Rolling 30-day Average Total Cobalt Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

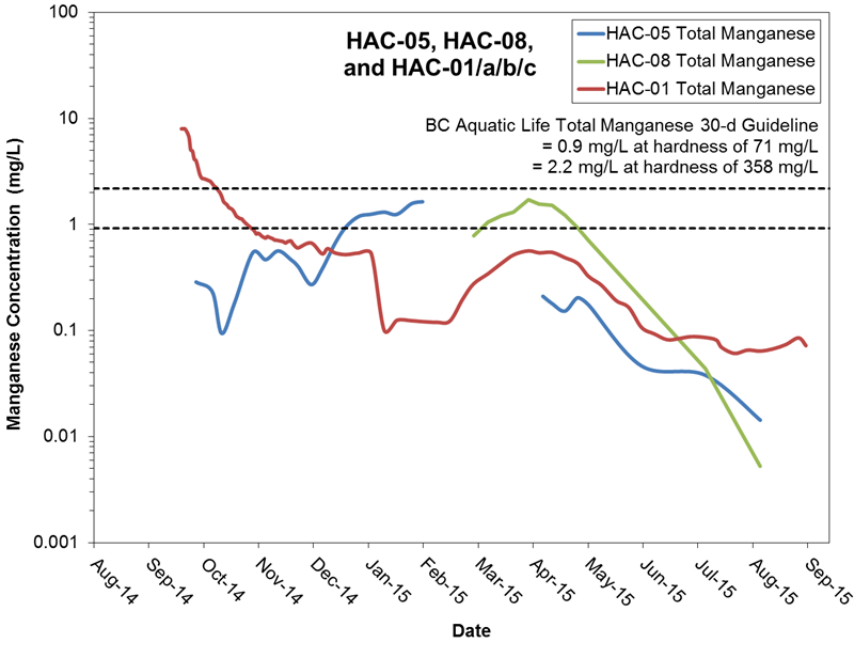
1.5 Lead



Note: Gaps represent >30 d between sampling.

Figure 9: Post-event Rolling 30-day Average Total Lead Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

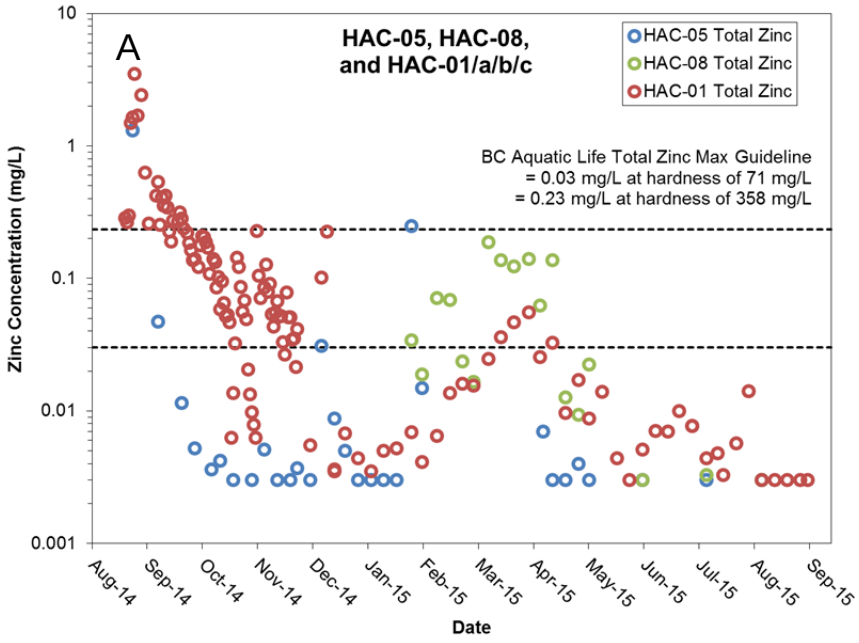
1.6 Manganese

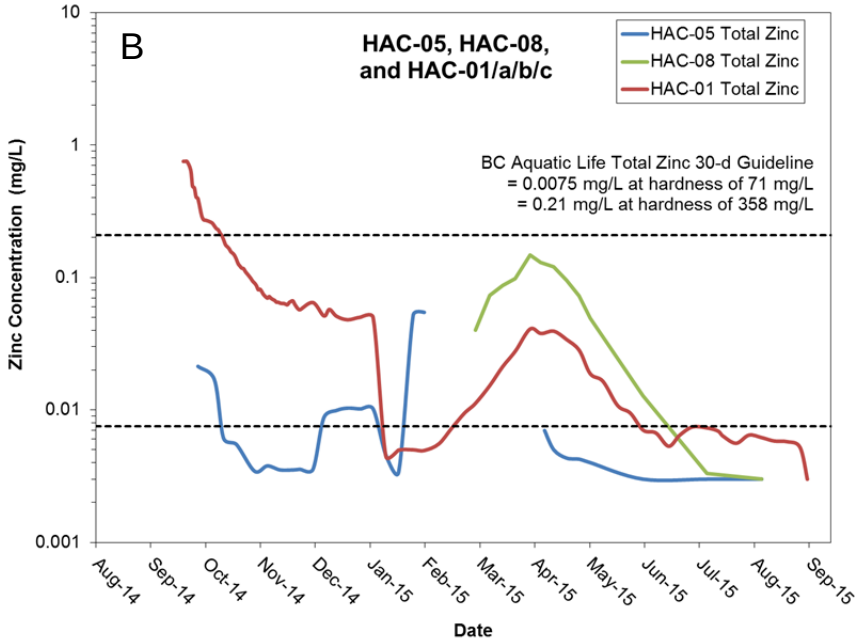


Note: Gaps represent >30 d between sampling.

Figure 10: Post-event Rolling 30-day Average Total Manganese Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

1.7 Zinc

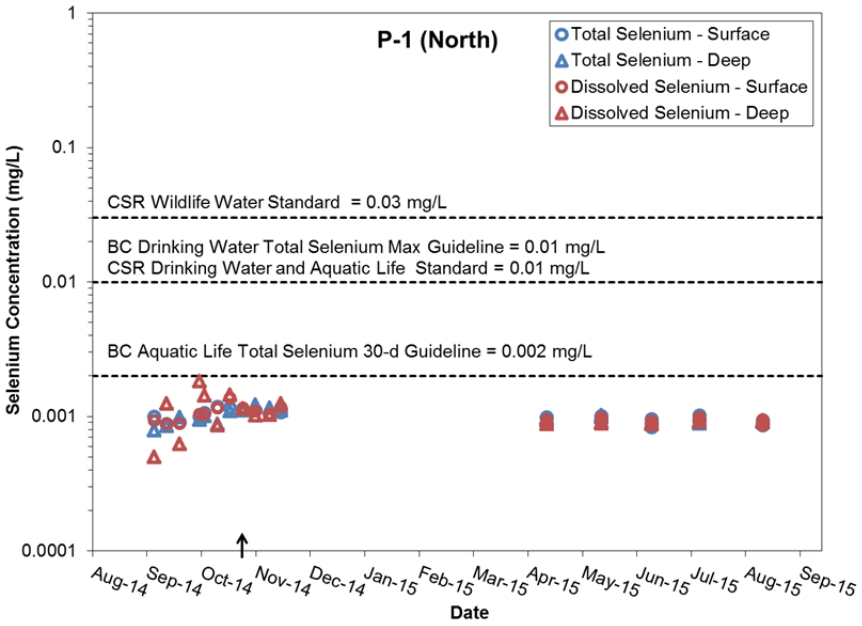


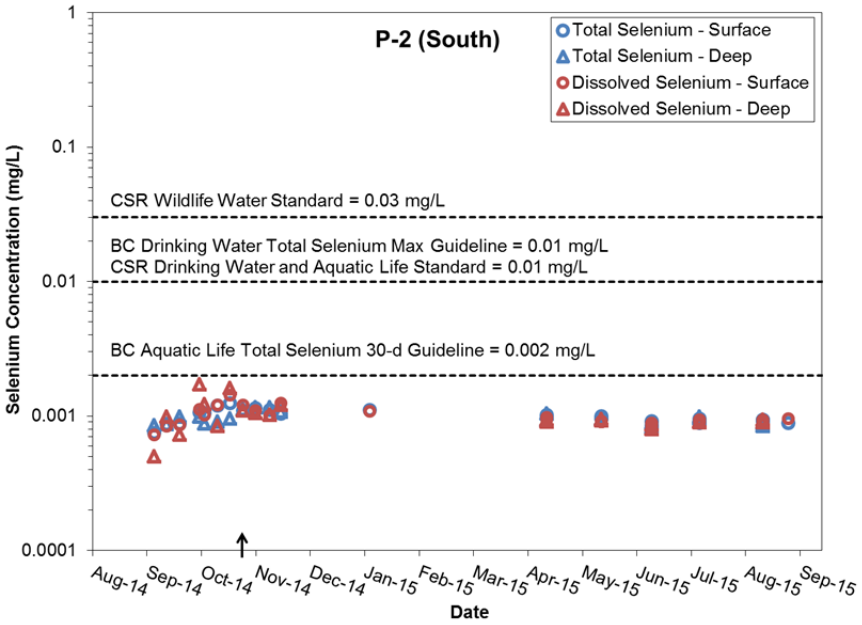


Note: Gaps represent >30 d between sampling.

Figure 11: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Zinc Concentrations at Stations HAC-05, HAC-08, and HAC-01/a/b/c, Hazeltine Creek.

1.8 Selenium





Note: Arrow represents the approximate timing of late-October turnover in Polley Lake.

Figure 12: Post-event Instantaneous Total and Dissolved Selenium Concentrations at Stations P1 and P2, Polley Lake.

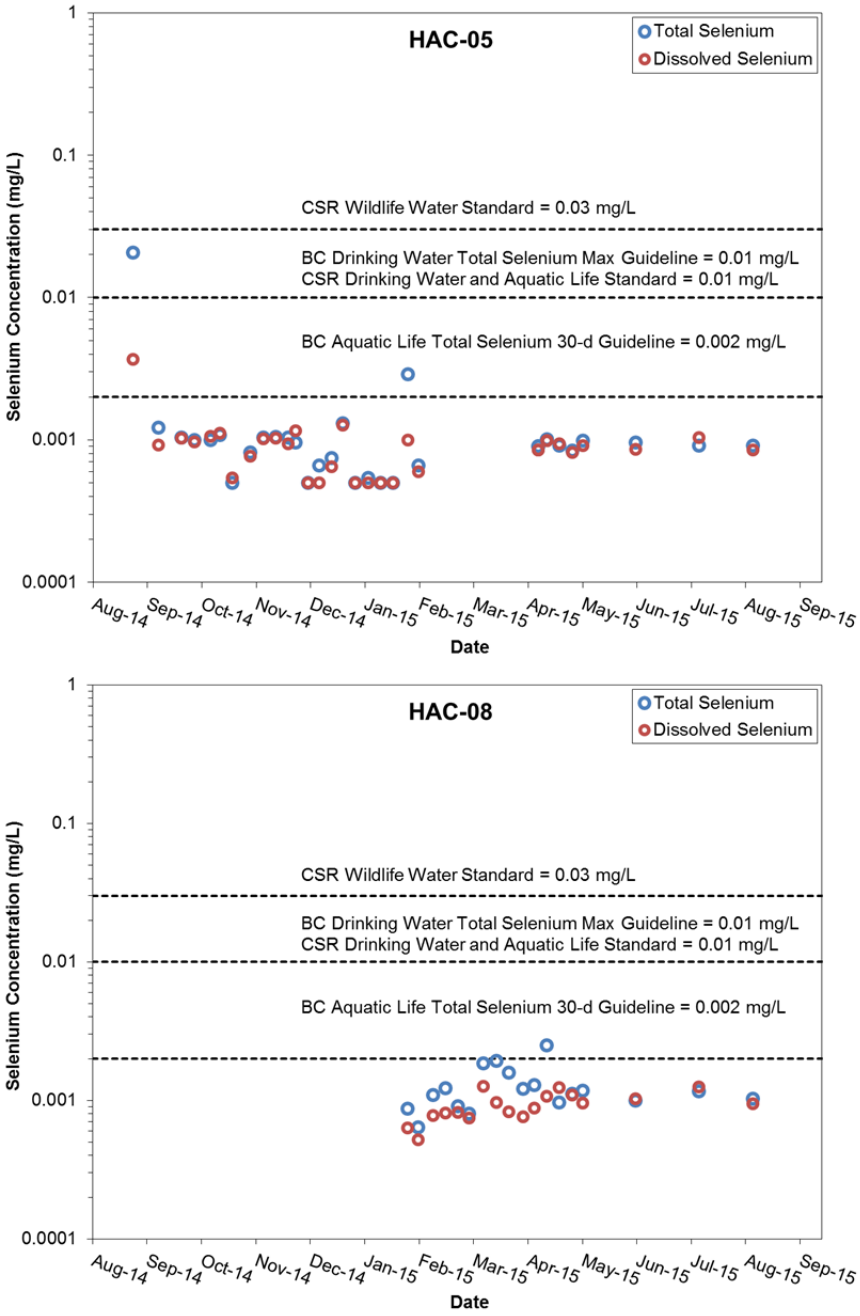


Figure 13: Post-event Instantaneous Total and Dissolved Selenium Concentrations at Stations HAC-05 and HAC-08, Hazeltine Creek.

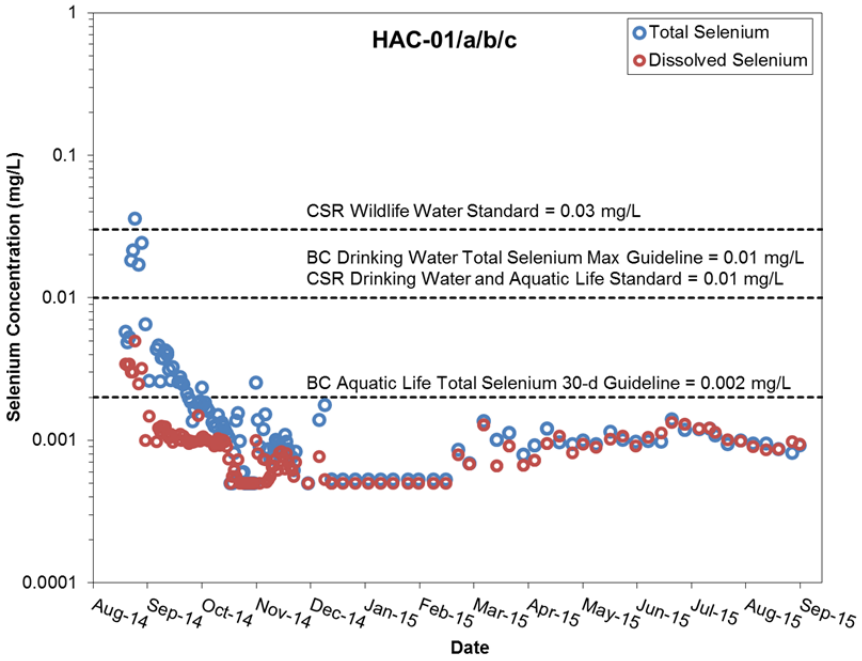
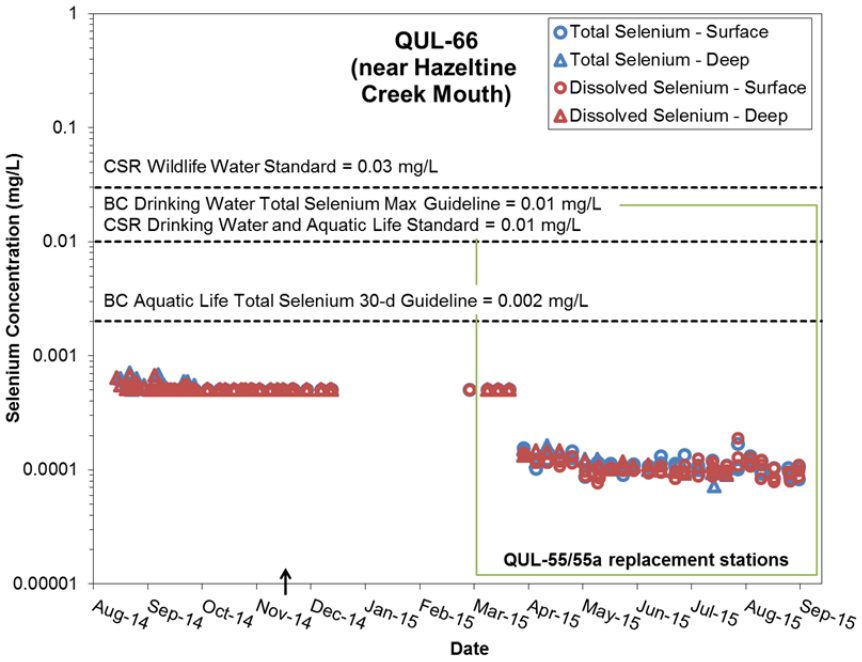


Figure 14: Post-event Instantaneous Total and Dissolved Selenium Concentrations at Station HAC-01/a/b/c, Hazeltine Creek.



Note: Arrow represents the approximate timing of mid-November turnover in Quesnel Lake.

Figure 15: Post-event Instantaneous Total and Dissolved Selenium Concentrations at Station QUL-66/55/55a, Quesnel Lake.

o:\final\2014\1421\1411734\1411734-106-tm-rev0-10000\att\att 7 suppl time series plots rev.docx

ATTACHMENT 8

Tabulated Discrete Water Quality Grab Data Collected from Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River, August 2014 to August 2015

Provided on CD

APPENDIX A-6.2

Addendum to Surface Water Quality Impact Assessment Update Technical Memorandum

11 May 2017
Reference No. 1662612-086-R-Rev0-22392

March 30, 2016 Reference No. 1411734-135-L-Rev1

Colleen Hughes
Mount Polley Mining Corporation
Box 12
Likely.BC
V0L 1N0

ADDENDUM TO MOUNT POLLEY SURFACE WATER QUALITY IMPACT ASSESSMENT UPDATE

Dear Ms. Hughes:

Golder Associates Ltd. (Golder) is pleased to provide Mount Polley Mining Corporation (MPMC) with the following addendum to the Surface Water Quality Impact Assessment (WQIA) update undertaken by Golder (2016). This addendum is intended to provide an update on post-event water quality conditions in Polley Lake, Hazeltine Creek, Lower Edney Creek, Quesnel Lake, and Quesnel River primarily based on water quality monitoring undertaken by MPMC from September to December 2015 and in consideration of 2015 data collected from January through August by MPMC and previously reported by Golder.

1.0 INTRODUCTION

This addendum represents the second update to the original water quality impact assessment (WQIA) for the Post-Event Environmental Impact Assessment Report (PEEIAR) (Golder 2015a). The 'event' refers to the tailings dam failure that occurred at the Mount Polley Mine on August 4, 2014, when the Tailings Storage Facility (TSF) Perimeter Embankment failed and there was a subsequent debris flow into the receiving environment.

A chronology of post-event water quality assessments submitted to MPMC by Golder is summarized below. The assessment approach has involved the progressive evaluation of data collected by MPMC during their post-breach monitoring program that was initiated following the event in August 2014.

- **Original WQIA for the PEEIAR** (Golder 2015a) was based on water quality data collected by MPMC just after the event from August to 2014 to April 2015.

- **Surface WQIA Update** undertaken by Golder (2016) to provide an update to the original PEEIAR WQIA and to inform the Detailed Site Investigation (DSI) for the forthcoming Human Health and Ecological Risk Assessment (HHERA). The HHERA is being completed in 2016 in response to the Pollution Abatement Order (BC MoE 2015a). The WQIA update primarily considered water quality data collected by MPMC from March to August 2015, with consideration of post-event data collected prior to March 2015 as needed to evaluate temporal trends.
- **Addendum to the Surface WQIA Update** presented here is intended to provide an update to the two preceding post-event assessments. The addendum includes previously unreported data collected by MPMC from September to December, 2015.

The objective of the addendum is to evaluate water quality data collected by MPMC in 2015 to assess temporal trends of contaminants of potential concern through to December 2015 in Polley Lake, Hazeltine Creek, Lower Edney Creek, Quesnel Lake and Quesnel River.

2.0 METHODS

Water quality data collected from receiving environments in Polley Lake, Hazeltine Creek (including lower Edney Creek), Quesnel Lake, and Quesnel River were screened using relevant BC water quality guidelines (BC WQGs) (BC MoE 2015b, BC MoE 2015c) and *Contaminated Sites Regulation* (CSR) standards (CSR 2014). For contaminants of potential concern (COPCs) identified for further evaluation as described in Section 2.2, temporal trends were evaluated within the context of applicable BC WQGs and CSR standards. Based on this evaluation contaminants that remained of concern in each receiving environment by the end of 2015 were identified.

2.1 Data Collection and Compilation

The addendum focussed on water quality data collected by MPMC in 2015, including data collected between September and December 2015 that had not previously been evaluated. Data collected from January to August 2015 were reported in the two previous assessments (Golder 2015a, 2016).

From September to December 2015, water quality samples were collected in accordance with the Post TSF-Breach 2015 Monitoring Plan (MPMC 2015); methods are described in Golder (2016). In general, the addendum focused on stations assessed in the WQIA (Golder 2016; Figure 1); however due to the continued evolution of the post-breach monitoring program, a small number of stations were moved, renamed, added, or discontinued. A summary of updated monitoring stations and sampling frequencies is provided in Table A1.

Following completion of quality assurance/quality control (QA/QC) and database entry procedures, MPMC provided Golder with updated electronic data files containing water quality data for September through December 2015 (Table A2). These data were used as received from MPMC with an additional check of transcription by Golder prior to being screened to identify COPCs.

2.2 COPC Identification

To confirm COPCs for the updated assessment, discrete water quality data collected from September through December 2015 were compiled and screened against BC WQGs and CSR standards. Data compiled for all stations sampled within a given area (i.e., Polley Lake, Hazeltine and Edney creeks, Quesnel Lake, and Quesnel River) were evaluated as one dataset per area, for screening purposes. Substances were classified as COPCs based on criteria described in the WQIA (Golder 2016); however, in this addendum maximum concentrations of each substance were used to conservatively identify COPCs.

2.3 COPC Evaluation

Changes in COPC concentrations in 2015 were evaluated qualitatively over time at representative stations previously assessed in the original PEEIAR WQIA (Golder 2015a) and the WQIA update (Golder 2016), as well as at additional representative stations identified during the post-event monitoring program. This updated 2015 assessment included 13 representative stations that are described below with additional details provided in Table A1.

- **Polley Lake**: Station P1 and P2 that have been routinely sampled since August 2014.
- **Hazeltine Creek**: Stations HAC-10, HAC-05/a, HAC-08/a, and HAC-01/a/b/c, listed in order from upstream to downstream.
  - Station HAC-10 is the furthest upstream station in Hazeltine Creek and is located downstream of the Polley Lake inflow. Data collected at this station from April through December 2015 were expected to contribute to a greater spatial representation of water quality conditions in the creek.
  - Station HAC-05 was moved upstream of the Gavin Lake Road bridge to avoid potential water quality impacts associated with the road. HAC-05 and HAC-05a (upstream of the bridge) have contiguous sampling periods and for the purposes of this assessment are considered to represent the same location (i.e., HAC-05/a).
  - Station HAC-08 was temporarily moved downstream of the Ditch Road bridge. HAC-08 and HAC-08a (downstream of the bridge) have contiguous sampling periods and for the purposes of this assessment are considered to represent the same location (i.e., HAC-08/a).
  - HAC-01/a/b/c is located immediately downstream of the sedimentation ponds close to the confluence with Quesnel Lake. This station represents water quality at the outflow of Hazeltine Creek and was the most frequently sampled station in the creek between August 2014 and October 2015. To adapt to changes in the creek channel due to rehabilitation activities and construction of sedimentation ponds HAC-01/a/b/c has been moved slightly over time (a change in location was indicated with a subsequent letter in the station code). Samples collected at HAC-01, HAC-01a, HAC-01b, and HAC 01c in lower Hazeltine Creek have contiguous sampling periods and for the purposes of this assessment are considered to represent the same location (i.e., HAC-01/a/b/c). This station was discontinued in October, 2015 due to lack of flow through the lower sedimentation pond and was replaced by monitoring at HAC-12 in the upper sedimentation pond.

- **Lower Edney Creek**: Stations EDC-01 and EDC-02 are located below the sedimentation ponds close to the confluence with Quesnel Lake.
  - Station EDC-01 was sampled before and after Hazeltine and Edney creeks were re-directed. Data collected at this station from February through December 2015 were expected to contribute to a greater spatial representation of water quality conditions.
  - Station EDC-02 is located downstream of the confluence with Hazeltine Creek. Data collected at this station from February through July 2015 were expected to contribute to a greater spatial representation of water quality conditions.
- **Quesnel Lake**: Stations QUL-2/2/a, QUL-66, QUL-18, and QUL-120/120a.
  - Station QUL-66 was replaced by QUL-55, QUL-55a, and then QUL-58 due to changes in the location of the Hazeltine Creek outflow into the lake. These stations have contiguous sampling periods and for the purposes of this assessment are considered to represent the same location (i.e., are collectively referred to as QUL-66 throughout this addendum).

Stations meeting the following criteria were not included in the COPC evaluation:

- stations not previously assessed as a representative station (Golder 2015a, 2016);
- stations do not contribute to a greater spatial representation of water quality conditions; and
- stations with all parameter concentrations below relevant BC WQGs or CSRs, based on the results of the initial screening step described in Section 2.2.

2.3.1 Changes in COPC Concentrations Over Time

Instantaneous measurements and/or rolling 30-day (d) average values for each COPC were assessed qualitatively and compared to BC WQGs and CSR standards. Data values, guidelines, and standards were plotted and compared based on the methods outline in Section 2.3.2 of the WQIA update (Golder 2016).

Concentrations reported as less than the method detection limit (MDL) were set equal to the MDL for purposes of plotting data and calculating 30-d averages. Typically, 30-d averages would be calculated using, at a minimum, data from at least five samples per 30-d period. If only monthly data were available, and reported concentrations were not stable from month-to-month, plotted 30-d rolling average concentrations were replaced with instantaneous data values (see appended figures 2 to 21). For the relevant figures, instantaneous data shown on the 30-d rolling average plots were identified by open circles connected by dashed lines.

As in the previous WQIA assessments (i.e., Golder 2015a, 2016), water quality trends for identified COPCs were evaluated against hardness-dependent WQGs calculated using hardness concentrations measured during the post-event period. Minimum and maximum hardness concentrations reported for each receiving environment area (i.e., Polley Lake, Hazeltine and Edney creeks, Quesnel Lake, and Quesnel River) during the post-event period were used, rather than station-specific minimums and maximums. With respect to Quesnel Lake and Quesnel River, exposure mean hardness values in 2015 were sufficiently similar to pre-event mean hardness values; for other waterbodies such as Hazeltine Creek and Polley Lake, exposure hardness in 2015 was higher than the pre-event mean hardness value reported prior to the event. Consequently, for Hazeltine Creek and Polley Lake, 2015

data were also compared to WQGs calculated based on mean pre-event hardness concentrations for these waterbodies as previously reported in the original PEEIAR WQIA (Golder 2015a). These guidelines provided conservative lower guideline boundaries for COPCs based on conditions not necessarily reflective of those present in these waterbodies in 2015. It should however be noted that for some receiving environments, such as Hazeltine Creek, the pre-event hardness value was higher than the minimum hardness value measured in 2015 and therefore did not represent the most conservative exposure condition.

3.0 RESULTS

3.1 COPC Identification

Table 1 contains a list of the COPCs identified for this assessment based on the COPCs examined in the PEEIAR (Golder 2015) and the WQIA update (Golder 2016) and confirmed by screening data from September to December 2015 against guidelines and standards. Dissolved aluminum and total and dissolved selenium were identified as COPCs for Hazeltine Creek and Edney Creek, based on elevated concentrations in the September to December 2015 dataset.

Table 1: Contaminants of Potential Concern (COPCs) Identified in the Receiving Environment Based on Water Quality Monitoring in 2015[1]

Waterbody	COPC: Physical[2]	COPC: Total Metals	COPC: Dissolved Metals	COPC: Non-Metal Substances
Polley Lake	*no substances*	**copper**	**copper**	**TP**
Hazeltine Creek and Edney Creek	**turbidity, TSS**	**aluminum**, **arsenic, beryllium**, **chromium, cobalt, copper**, **iron, lead, manganese, selenium, zinc**	**aluminum, copper, selenium**	*no substances*
Quesnel Lake	**turbidity (QUL-66 only)**	**copper**	*no substances*	**TP (QUL-66 only)**
Quesnel River	**turbidity[3]**	*no substances*	*no substances*	*no substances*

Notes: TP = total phosphorus; TSS = total suspended solids; QUL = Quesnel Lake
1. Refer to Golder (2015) (January to April 2015), Golder (2016) (March to August 2015) and Section 2.2 (September to December 2015)
2. Background turbidity concentrations are 1.5 NTU in Hazeltine Creek based on pre-event median value and 1 NTU in Quesnel Lake and Quesnel River.
3. Turbidity was identified as a COPC for Quesnel River based on in-situ data from a continuous logger.

To be conservative in the assessment for Polley Lake, copper was retained as a COPC because it was considered a primary COPC for the PEEIAR (Golder 2015a) and was assessed in the WQIA update (Golder 2016) even though the maximum copper concentration from September to December was below applicable guidelines. Total phosphorus was retained as a COPC for Polley Lake and Quesnel Lake because the maximum concentrations were above the BC WQG range and data are intended to be integrated with biological information to assess potential impacts on lake productivity.

3.2 Changes in COPC Concentrations Over Time

The following section describes post-event changes in receiving environment water quality with respect to COPCs listed in Table 1. Changes in COPC concentrations over time from January through December 2015 are discussed below in comparison to relevant BC WQGs and CSR standards. Results are presented according to each group of COPCs (i.e., suspended particulate matter, metals, nutrients), then within each COPC group. Changes in specific COPCs are discussed for each waterbody.

Data shown for Hazeltine Creek and Quesnel River represent discrete surface grab samples collected as described in the PEEIAR WQIA (Golder 2016), except where a continuous data logger measured turbidity. Quesnel Lake and Polley Lake data are from discrete grab samples taken at various depths and were categorized as either surface (1-20 m) or deep (greater than [>] 20 m) for the purpose of evaluating changes over time.

3.2.1 Suspended Particulate Matter (Turbidity/TSS)

3.2.1.1 Hazeltine Creek and Edney Creek

Turbidity levels in Hazeltine Creek showed a progressive decrease from peak levels in the first few months of 2015 to levels closer to applicable BC WQGs by the end of the year. However, levels in upper Hazeltine Creek (HAC-10 and HAC-05/a) and the lower creek above the sedimentation ponds (HAC-08/a) fluctuated during September-December 2015. During this time monthly concentrations at these stations were occasionally above the maximum and 30-d BC WQGs (Figure 2).

In lower Edney Creek at EDC-01 turbidity levels were typically below maximum and 30-d guideline values, except for a spike in October 2015. Turbidity levels at EDC-02 exhibited a general decrease over time until the station was discontinued in July 2015; however, concentrations were predominantly above the 30-d guideline. Elevated turbidity observed at HAC-01/a/b/c throughout July and August continued through September and October (Figure 2) with reported concentrations above the 24-h aquatic life and/or 30-d guidelines. Turbidity concentrations in Hazeltine Creek and Edney Creek were routinely above the BC WQG for untreated drinking water but were within the turbidity range reported for the creek prior to the event.

A similar progressive decline in TSS concentrations was also observed in Hazeltine Creek from peak concentrations in the first few months of 2015 to concentrations below BC WQGs by the end of the year (with the exception of HAC-08/a). Concentrations of TSS at HAC-10, HAC-05/a, and HAC-01/ab/c in Hazeltine Creek and at EDC-01 in Edney Creek were consistently below the 24-h aquatic life and 30-d guidelines throughout September-December 2015 (Figure 3). Before the station was discontinued in July 2015, TSS concentrations at EDC-02 exhibited a general decrease that was similar to the temporal trend observed at HAC-01/a/b/c (Golder 2016; Figure 3). Concentrations at HAC-08/a were variable throughout September-December 2015 and were intermittently above the 24-h aquatic life and 30-d guidelines.

3.2.1.2 Quesnel Lake

Turbidity concentrations measured at the surface and at depth in Quesnel Lake at stations QUL-2/2a, QUL-66, QUL-18, and QUL-120/120a were below BC WQGs from approximately April through August 2015 (Golder 2016). At the surface at QUL-66, turbidity levels generally remained below guideline values with the exception of a single exceedance of the aesthetic drinking water guideline for untreated water and the 30-d aquatic life guideline in spring 2015. Turbidity at QUL-66 continued to decline through September and remained below guidelines into December 2015 with concentrations close to or below background (1 NTU) (Figure 4).

3.2.1.3 Quesnel River

Daily average and in-situ turbidity concentrations at station QUR-1 in Quesnel River showed a progressive decrease over time throughout 2015. Turbidity levels remained well below guidelines with the exception of a few intermittent spikes measured by the continuous data recorder (Figure 5). The elevated values measured by the

continuous recorder were not corroborated by the in-situ grab sample data and as discussed in Golder (2016) these measurements can be influenced by fouling associated with long-term deployment.

3.2.2 Copper

3.2.2.1 Polley Lake

Copper concentrations measured in Polley Lake were not elevated above BC WQGs during the March-August 2015 period, and so copper was no longer considered a COPC by the WQIA update (Golder 2016). However, as described in Section 3.1, copper was retained in this addendum because it is considered a primary COPC within the overall context of the PEEIAR. Both total and dissolved concentrations were below BC WQGs, with the exception of the total 30-d rolling average concentration associated with surface samples collected at P2 in early November 2015 that approximated the most conservative 30-d guideline based on pre-event hardness (Figure 6).

3.2.2.2 Quesnel Lake

Total and dissolved copper concentrations measured in Quesnel Lake were typically below maximum BC WQGs by the end of April 2015 (Golder 2016). By late August 2015, copper concentrations reported for QUL-66 near the mouth of Hazeltine Creek were similar or only slightly elevated relative to concentrations reported elsewhere in the lake, including the far field station (QUL-120/120a) east of Cariboo Island (Golder 2016). Total and dissolved copper concentrations at QUL-2/2a, QUL-66, QUL-18, and QUL-120/120a were below maximum and 30-d guidelines from September through December 2015, with the exception of a single monthly sample collected at near-field (QUL-66) and far-field (QUL-120/120a) stations in September (Figure 7). The corresponding monthly sample in September at the mid-field west station (QUL-18) approximated the most conservative 30-d guideline based on minimum measured hardness.

3.2.2.3 Quesnel River

No metals were identified as COPCs for the receiving environment in Quesnel River in the original WQIA and the WQIA update; this was also the case for data collected from September to December 2015.

3.2.2.4 Hazeltine Creek and Edney Creek

Discrete Grab Samples (Instantaneous values)

In upper Hazeltine Creek at HAC-05/a, total copper concentrations were above the maximum BC WQG (based on measured maximum hardness) from January to May 2015, after which concentrations decreased to concentrations below the maximum guideline (based on mean pre-event hardness) by the end of the year (Figure 8). From April to December 2015 total concentrations were below applicable CSR standards. Dissolved concentrations at HAC-05/a were within the WQG range based on measured hardness but were above the WQG based on pre-event hardness until May 2015. Dissolved concentrations decreased thereafter and were below the WQG based on pre-event hardness from May to December 2015. At the most upstream station (HAC-10) total and dissolved concentrations followed a similar trends to those described for HAC-05/a.

In lower Hazeltine Creek (HAC-08/a, EDC-01, EDC-02, HAC-01/a/b/c), total concentrations peaked above BC maximum WQGs and at least one CSR standard[1] from February through April (Figure 8). Total concentrations then decreased at all four stations to concentrations within the BC maximum guideline range (based on measured hardness values) by the end of the year and generally remained above the maximum guideline based on pre-event hardness. Dissolved concentrations at HAC-08/a and HAC-01/a/b/c peaked above the maximum guideline and were within the CSR aquatic life standard range based on measured hardness. Dissolved concentrations decreased thereafter at these stations and were below the maximum guideline based on pre-event hardness at both HAC-08/a and HAC-01/a/b/c by the end of the year. The same was true for EDC-01.

Thirty-Day Rolling Average Values

During the months prior to June, total copper concentrations in upper and lower Hazeltine Creek (HAC-05/a, HAC-08/a, EDC-02, HAC-01/a/b/c) peaked above the 30-d BC WQG range based on measured hardness (Figure 8). Concentrations then decreased to values within the 30-d guideline range based on measured hardness and remained above the guideline based on pre-event hardness. Dissolved concentrations in the lower creek (HAC-08/a, HAC-01/a/b/c) only peaked above the 30-d guideline range (based on measured hardness) from March to May, with a subsequent decrease to concentrations within this guideline range. Concentrations remained above the 30-d guideline based on pre-event hardness (Figure 8). Dissolved concentrations at the other Hazeltine Creek stations were within the 30-d guideline range based on measured hardness and either approximated or were above the guideline based on pre-event hardness.

3.2.3 Other Metals

3.2.3.1 Hazeltine Creek and Edney Creek

Aluminum

In upper Hazeltine Creek (HAC-10, HAC-05/a), total and dissolved concentrations remained below maximum guideline values in 2015, with the exception of a single sample in January at HAC-05/a. In lower Hazeltine Creek (HAC-08/a, EDC-01, EDC-02, HAC-01/a/b/c), concentrations peaked in February through April and were above or approximated maximum guideline values; concentrations then decreased below guidelines by May and remained stable until the end of the year. Concentrations at HAC-05/a in upper Hazeltine and HAC-08/a in lower Hazeltine showed slight increases in November and December, based on monthly sampling; in the case of HAC-08/a concentrations approximated maximum guidelines for the protection of aquatic life (Figure 9).

Dissolved concentrations were above the 30-d dissolved guideline in lower Hazeltine Creek until May and June, when they decreased below this guideline and remained relatively stable until November, when concentrations at HAC-05/a and HAC-08/a increased to approach but not exceed the 30-d guideline value (Figure 10).

Arsenic

Total arsenic was evaluated as a COPC in the WQIA update, based on guideline exceedances that occurred in Hazeltine Creek in spring 2015 (Golder 2016; Figure 11). During this time concentrations at HAC-08/a peaked

[1] The CSR standard for aquatic life at the Edney Creek stations; the CSR for wildlife at HAC-01/a/b/c, and the CSR for drinking water at HAC-08/a.

above the CSR drinking water and wildlife standards as well as the BC drinking water maximum guideline. Thirty-day rolling average total concentrations at HAC-08/a also peaked above the 30-d BC WQG during this time, before decreasing to concentrations more typical of the other stations on the creek by August. Total concentrations at the stations in Hazeltine and Edney creeks shown on Figure 11 were typically well below the maximum and 30-d guidelines from June through December, with the exception of two measurements at HAC-08/a upstream of the sediment ponds in September and December.

Beryllium

Thirty-day rolling average total concentrations were elevated above the 30-d WQG at HAC-08/a and HAC-01/a/b/c during spring 2015 (Figure 12). Concentrations at EDC-02 were also elevated during this time. From July through December 2015, total concentrations at the Hazeltine and Edney Creek stations were below guideline values and were at or near the MDL, with the exception of one sample collected at HAC-08/a in December 2015 that was detected above the WQG (Figure 12).

Chromium

As discussed in Golder (2015a), the available speciation data for Hazeltine Creek indicates the dominant chromium species in Hazeltine Creek was chromium (III), which is less toxic than the chromium (VI) form. However, as a conservative measure, guidelines and standards for both chromium species have been considered when assessing water quality in Hazeltine Creek.

Total chromium was evaluated as a COPC in the WQIA update, largely based on guideline exceedances recorded in spring 2015 in Hazeltine Creek at stations HAC-08/a, HAC-05/a, and HAC-01/a/b/c (Golder 2016; Figure 13). However, by June 2015, total concentrations in Hazeltine Creek had decreased below the most conservative guidelines shown on Figure 13. In 2015, concentrations at stations HAC-10 and EDC-01 and EDC-02 in Edney Creek exhibited temporal trends similar to those previously reported for other stations in Hazeltine Creek (Figure 13).

Total chromium concentrations measured at the Hazeltine and Edney creek stations were below applicable maximum guidelines from June to December 2015, and many were at or near the MDL. The same was true for total 30-d rolling average concentrations that were below the Cr(III) and Cr(VI) 30-day guidelines at all stations, with the exception of intermittent exceedances of the Cr(VI) guideline by total concentrations at HAC-08/a and HAC-01/a/b/c that were still below the more applicable Cr(III) 30-day guideline.

Cobalt

Instantaneous total concentrations reported in 2015 for the Hazeltine Creek stations shown on Figure 14 were below the maximum BC WQG. Thirty-day average total concentrations were above the 30-d BC WQG from March to June at HAC-08/a and March to May at HAC-01/a/b/c, then decreased below the 30-d guideline thereafter (Figure 14). Stations EDC-01 and EDC-02 exhibited a similar temporal trend over the time period leading up to the end of August 2015, but did not exceed the guideline. Total concentrations remained stable well below the 30-d guideline from September through December, with the exception of intermittent values in the monthly September and December samples at HAC-08/a that approached or approximated the guideline.

Iron

Total concentrations at stations in lower Hazeltine Creek were consistently above the BC maximum WQG for aquatic life and the CSR drinking water standard until May 2015 (Figure 15). The higher CSR standard was mostly exceeded at HAC-08/a and HAC-01/a/b/c, with only a few exceedances at other stations. From May to December, total concentrations remained below this guideline, with the exception of one sampling event in August, during which total values at HAC-08/a and HAC-01/a/b/c were more than ten times the preceding and subsequent values recorded in July and August (Golder 2016). Intermittent values measured in September and December at station HAC-08/a were above the BC maximum guideline. Concentrations at the other stations monitored in 2015 were below the BC maximum guideline.

Lead

Total lead was assessed as a COPC in the WQIA update (Golder 2016). In upper Hazeltine Creek, instantaneous concentrations were typically below guideline values in 2015 and 30-d average concentrations were below the long-term average guideline, with the exception of a concentration reported for HAC-05/a in January that was also above the CSR drinking water standard (Figure 16). In lower Hazeltine Creek, after peaking in March through April, rolling 30-d average concentrations declined below the 30-d BC WQG in May and remained relatively stable through the end of December. The exception was an intermittent increase at HAC-08/a in December that approached the 30-d guideline range shown on Figure 16.

Manganese

Total concentrations were below BC maximum WQGs and the CSR drinking water standard (Figure 17). The exceptions were total concentrations at HAC-05/a (January and February) and HAC-08/a (February to April) that were within the BC maximum guideline range, and concentrations at HAC-01/a/b/c (February to April) that were below the BC maximum guideline but above the CSR drinking water standard. Rolling-average 30-d manganese concentrations in Hazeltine Creek stations were below the 30-day guideline based on measured hardness and pre-event hardness, with the exception of HAC-08/a (March through May) and HAC-05/a (January and February) (Figure 17).

Selenium

The WQIA update indicated that post-event selenium concentrations in Hazeltine Creek remained stable below applicable guidelines/standards or decreased below these regulatory benchmarks shortly after the event, remaining stable thereafter (Golder 2016). In 2015, instantaneous and rolling 30-day average concentrations remained well below applicable BC WQGs and CSR standards with the exception of the monthly sampling event in December 2015 at HAC-05/a and HAC-08/a located below the authorized discharge of treated effluent that commenced in December 2015 (Figure 18). Continued monitoring of water quality in Hazeltine Creek through March 2016 confirmed that selenium concentrations at HAC-05/a and HAC-08/a are above the BC WQGs and CSR drinking water and aquatic life standards (MPMC, unpublished data). However, concentrations showed a progressive decrease from 0.024 mg/L in December to 0.014 mg/L in March at HAC-05/a and from 0.020 mg/L in December to 0.012 mg/L in March at HAC-08/a. Selenium concentrations reported at these stations between December 2015 and March 2016 are within the range predicted by Golder (2015b) that did not consider Hazeltine Creek to be a receiving environment in the short-term, but rather a conduit to Quesnel Lake, where fish were

present and potential breeding habitat for aquatic feeding birds is more prevalent. Water quality continues to be monitored in Hazeltine Creek, including stations downstream of the authorized discharge of treated effluent.

Zinc

Total and 30-d rolling average concentrations reported for HAC-05/a, HAC-08/a, EDC-02, and HAC-01/a/b/c between January and June were typically within the BC WQG range based on measured hardness and above BC WQGs calculated using mean pre-event hardness (Figure 19). Concentrations reported for the other stations shown on Figure 19 were below the BC maximum guideline range. Between June and December, total and 30-day rolling average concentrations for all stations shown on Figure 19 were below the most conservative BC WQG, with the exception of a few intermittent values for HAC-08/a.

3.2.4 Nutrients: Total Phosphorus

3.2.4.1 Polley Lake

Following the event and through August 2015, concentrations of total phosphorus (TP) at the surface in Polley Lake were within the pre-event range of concentrations reported in the PEEIAR for Polley Lake (Golder 2015a). Pre-event TP concentrations were defined as: mean = 0.041 mg/L; 95th percentile = 0.094 mg/L.; minimum = 0.0046 mg/L. Both pre-event mean and upper limit concentrations were above applicable BC WQGs (i.e., 0.005 to 0.015 mg/L). This is consistent with the observation by Minnow (2014) that the trophic status of the lake changed from oligotrophic/mesotrophic to mesotrophic/eutrophic by 2012, two years prior to the event.

Prior to fall turnover in 2014, concentrations of all three forms of phosphorus at depth were elevated above pre-event concentrations, unlike surface concentrations that were within pre-event concentration ranges (Golder 2016). Pre-event dissolved phosphorus concentrations were defined in Golder (2015) as: mean = 0.03 mg/L; 95th percentile = 0.08mg/L; minimum = <0.002 mg/L; pre-event orthophosphate concentrations were defined as: mean = 0.03 mg/L; 95th percentile = 0.08mg/L; minimum = <0.001 mg/L (Appendix A; Golder 2015a). Several months after the 2014 fall turnover, in April 2015, total and dissolved phosphorus and orthophosphate concentrations measured at depth were within or below these pre-event concentration ranges reported in the PEEIAR (Figure 20).

From July to October, there was a greater degree of disparity in phosphorus concentrations between those measured at the surface and those measured at depth. Higher concentrations above the TP WQG range were reported at depth and these concentrations remained relatively stable over the summer months, whereas surface concentrations decreased to concentrations within or below the TP WQG range. The noted disparity was likely the result of lake stratification during the summer, such that after mixing during fall turnover, concentrations measured at the surface and at depth in November were similar. Sampling in Polley Lake was suspended in November due to the onset of winter conditions.

Golder (2016) concluded that in 2015 there were no event-related changes to phosphorus concentrations in Polley Lake based on an analysis of data collected from April through August 2015. This conclusion is supported by data collected from September through November shown on Figure 20.

3.2.4.2 Quesnel Lake

After the event, TP concentrations at depth exceeded the BC WQG range in the West Basin of Quesnel Lake, but were not elevated at the far-field station (QUL-120/120a) east of Cariboo Island (Golder 2015a). By fall turnover in 2014, TP concentrations had substantially decreased in the West Basin of Quesnel Lake. Through August 2015, TP concentrations were below the BC WQG range and resembled pre-event concentrations with the exception of a few intermittent exceedances at near-field station QUL-66, near the mouth of Hazeltine Creek (Golder 2016; Figure 21). At the near-field, mid-field, and far-field stations, dissolved phosphorus and orthophosphate concentrations reported between March and August were below pre-event concentrations (Golder 2016; Figure 21).

Collectively, an evaluation of the phosphorus data collected between March and August 2015 suggest that event-related changes of concern for phosphorus were not evident in Quesnel Lake (Golder 2016). After September 2015, total phosphorus concentrations were intermittently above the most conservative BC WQG at near-field station QUL-66, near the mouth of Hazeltine Creek, but did not exceed the drinking water BC WQG or the upper boundary of the aquatic life guideline. Dissolved and orthophosphate concentrations remained at or near the MDL through to the end of December 2015 (Figure 21).

4.0 SUMMARY OF CHANGES IN WATER QUALITY IN 2015

Based on the evaluation of water quality trends in this addendum, the following parameters remain as COPCs due to measured concentrations in December 2015 that remain above BC WQGs and CSR Standards (Table 2). A summary of water quality during 2015 in each receiving environment is provided below.

Table 2: Contaminants that Remain of Potential Concern in the Receiving Environment Based on Water Quality Monitoring as of December 2015

Waterbody	COPC: Physical[2]	COPC: Total Metals	COPC: Dissolved Metals	COPC: Non-Metal Substances
Polley Lake	*no substances*	*no substances*	*no substances*	*no substances*
Hazeltine Creek and Edney Creek	**turbidity, TSS**	**copper**, **selenium**	**copper, selenium**	*no substances*
Quesnel Lake	*no substances*	*no substances*	*no substances*	*no substances*
Quesnel River	*no substances*	*no substances*	*no substances*	*no substances*

Notes: TSS = total suspended solids

4.1.1 Hazeltine Creek

As described in Golder (2016), there were exceedances of total metal WQGs and CSR standards in Hazeltine Creek in the first half of 2015, mainly during turbid flow periods typically associated with elevated concentrations of particulate matter. Clear-flow conditions ensued upon the completion of channel stabilization activities that typically resulted in much lower concentrations of particulate matter and subsequently lower concentrations of total forms of various metals.

The majority of metals identified as COPCs by Golder (2016) had decreased to below guideline levels by mid-summer and remained stable through December 2015, with a few noted exceptions (e.g., beryllium, chromium, and cobalt at HAC-08/a). By December 2015, only total and dissolved copper consistently exceeded BC WQGs for the protection of aquatic life. Copper, turbidity and total suspended solids therefore remain the primary substances of concern in Hazeltine Creek.

Concomitant with the initiation of the authorized discharge of treated effluent in December 2015, selenium concentrations increased at HAC-05/a and HAC-08/a, located close to and downstream from the discharge location, respectively. Even though the most sensitive receptors to selenium (i.e., egg laying vertebrates) are either excluded (fish) or are limited in number (aquatic feeding birds), selenium is also conservatively flagged to be of concern in Hazeltine Creek. However, as discussed in Section 3.2.2.4, concentrations appear to have decreased in the first quarter of 2016 by 1- 2 times compared to the concentrations reported in December 2015.

Copper therefore remains the primary substance of concern in Hazeltine Creek based on the 2015 data. When the creek is subject to erosion resulting in turbid flow events, turbidity, TSS, and some other metals also exceed guidelines. Selenium is conservatively flagged to be of concern but concentrations appear to be decreasing following the initial discharge of treated effluent to the creek; and selenium will continue to be monitored as part of routine monitoring programs.

4.1.2 Polley Lake

Levels of TSS, turbidity, and copper were low in Polley Lake and remained below guidelines throughout 2015. With respect to nutrients, total phosphorus concentrations were within the range observed in Polley Lake prior to the event. Therefore no contaminants remained of concern by December 2015 in Polley Lake.

4.1.3 Quesnel Lake

Levels of TSS and turbidity were low in the far-field area of Quesnel Lake as well as in the West Basin and remained below guidelines throughout 2015, with the exception of some higher levels recorded in the near-field area at the mouth of Hazeltine Creek when turbid inflows from Hazeltine Creek were present from March to May 2015. Close to the mouth of Hazeltine Creek, turbidity progressively declined between June and December to levels close to or below background (1 NTU).

Within the West Basin, total copper was below applicable BC WQGs and CSR standards in the near-field, mid-field and far-field stations. Exceptions to this were instances where concentrations were above applicable BC WQGs between March and May in the near-field close to the mouth of Hazeltine Creek and to a lesser extent at the western mid-field station further away from the mouth. These higher total concentrations coincided with turbid flow periods in Hazeltine Creek and dissolved concentrations did not exceed BC WQGs. Other metals monitored at the Quesnel Lake stations in 2015 were below applicable BC WQGs and CSR standards.

In agreement with Golder (2016), phosphorus data collected throughout 2015 suggested that event-related changes of concern with respect to the potential for a change in lake trophic status were not evident in Quesnel Lake.

Based on the evaluation of the 2015 dataset, no contaminants remained of concern by December in Quesnel Lake.

4.1.4 Quesnel River

Similar to the eastern far-field area of Quesnel Lake, water quality in Quesnel River between March and August did not exhibit event-related changes that were identified to be of concern with respect to exceedance of water quality guidelines. Therefore no contaminants remained of concern by December 2015 in Quesnel River.

5.0 STATEMENT OF LIMITATIONS

This technical memorandum was prepared for the exclusive use of MPMC. The inferences concerning the data, site and receiving environment conditions contained in this memorandum are based on information obtained during investigations conducted at the site by Golder Associates Ltd. (Golder), other consultants and MPMC, and are based solely on the condition of the site at the time of the site studies and subsequent investigations and remediation and other information obtained by Golder, as described in this memorandum. Soil, surface water and groundwater conditions may vary with location, depth, time, sampling methodology, analytical techniques and other factors.

In evaluating the subject site and water quality data, Golder has relied in good faith on information provided. The factual data, interpretations and recommendations pertain to a specific project as described in this memorandum, based on the information obtained during the assessment by Golder on the dates cited in the memorandum, and are not applicable to any other project or site location. Golder accepts no responsibility for any deficiency or inaccuracy contained in this memorandum as a result of reliance on the aforementioned information.

The findings and conclusions documented in this memorandum have been prepared for the specific application to this project, and have been developed in a manner consistent with that level of care normally exercised by environmental professionals currently practising under similar conditions in the jurisdiction. Golder makes no other warranty, expressed or implied and assumes no liability with respect to the use of the information contained in this memorandum at the subject site, or any other site, for other than its intended purpose.

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MPMC may rely on the information contained in this memorandum subject to the above limitations.

Golder makes no other representation whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this memorandum, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein.

If new information is discovered during future work, including excavations, sampling, soil boring, predictive geochemistry or other investigations, Golder should be requested to re-evaluate the conclusions of this memorandum and to provide amendments, as required, prior to any reliance upon the information presented herein. The validity of this memorandum is affected by any change of site conditions, purpose, development plans or significant delay from the date of this memorandum in initiating or completing the project.

6.0 CLOSURE

We trust that this Addendum provides sufficient information for your present needs. If you have any questions, please do not hesitate to contact the undersigned at (604) 296-4200.

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Attachments:
Figure 1: Post-event Water Quality Monitoring Stations, March to December 2015
Figure 2: Post-event Instantaneous (A) and Rolling 30-day Average (B)Turbidity Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 3: Post-event Instantaneous (A) and Rolling 30-day Average (B) TSS Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks
Figure 4: Post-event Instantaneous (A) and Rolling 30-day Average (B)Turbidity Concentrations at Stations QUL-66 (i.e., QUL-66/55/55a/66a), Quesnel Lake
Figure 5: Post-event Instantaneous (A) and Rolling 30-day Average (B)Turbidity Concentrations at Stations QUL-1 near Likely, Quesnel River
Figure 6: Post-event Instantaneous (A) and Rolling 30-day Average (B)Total and Dissolved Copper Concentrations at Stations P1 and P2, Polley Lake
Figure 7: Post-event Instantaneous (A) and Rolling 30-day Average (B)Total and Dissolved Copper Concentrations at Stations QUL-2/2a, QUL-66, QUL-18, and qul-120/120a, Quesnel Lake
Figure 8: Post-event Instantaneous (A) and Rolling 30-day Average (B)Total and Dissolved Copper Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 9: Post-event Instantaneous Total and Dissolved Aluminum Concentrations at HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 10: Post-event Rolling 30-day Average Dissolved Aluminum Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 11: Post-event Instantaneous (A) and Rolling 30-Day Average (B) Total Arsenic Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 12: Post-event Rolling 30-Day Average Total Beryllium Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 13: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Chromium Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks

Figure 14: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Cobalt Concentrations at Stations HAC-10, HAC-05/a.
Figure 15: Post-event Instantaneous Total Iron Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 16: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Lead Concentrations Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 17: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Manganese Concentrations Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 18: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Dissolved Selenium Concentrations Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 19: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Zinc Concentrations Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeline and Edney Creeks
Figure 20: Post-event Instantaneous Total Phosphorus Concentrations at Stations P1 and P2, Polley Lake
Figure 21: Post-event Instantaneous Total Phosphorus Concentrations at Station QUL-66, Quesnel Lake

Table A1: Summary of Mount Polley TSF Breach Water Quality Monitoring Program, September to December 2015
Table A2: Tabulated Discrete Water Quality Grab Data Collected from Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River, September to December 2015 (*Provided on CD*)

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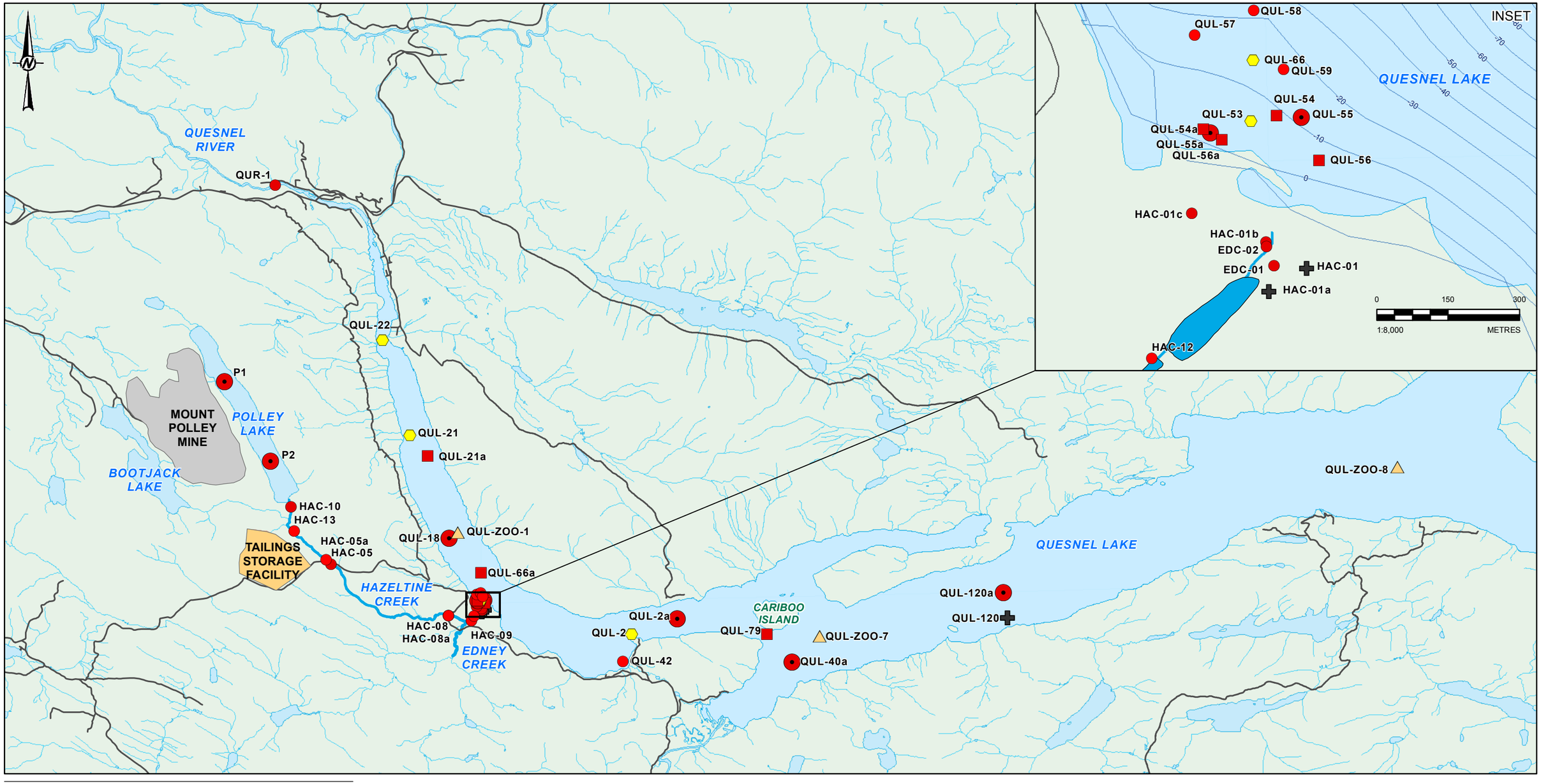


LEGEND

POST-EVENT MONITORING STATIONS
- ROUTINE - PROFILE
- ROUTINE - GRAB
- ROUTINE - GRAB + PROFILE
- NON-ROUTINE - PROFILE
- INTERMITTENTLY SAMPLED
- SUPERSEDED PRIOR TO MARCH 2015
- TAILINGS STORAGE FACILITY
- MOUNT POLLEY MINE SITE
- BATHYMETRY
- ROAD
- WATERCOURSE
- SEDIMENTATION PONDS
- WATERBODY

0 3 6
1:120,000 KILOMETRES

REFERENCES
1. WATER MONITORING STATIONS OBTAINED FROM MOUNT POLLEY MINING CORPORATION.
2. WATERCOURSE AND LAKE DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
3. PROJECTION: NAD 1983 UTM ZONE 10

CLIENT
IMPERIAL METALS
MOUNT POLLEY MINING CORPORATION

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-02-25
DESIGNED	AW
PREPARED	MH
REVIEWED	JV
APPROVED	EI

PROJECT
MOUNT POLLEY MINE
WATER QUALITY IMPACT ASSESSMENT

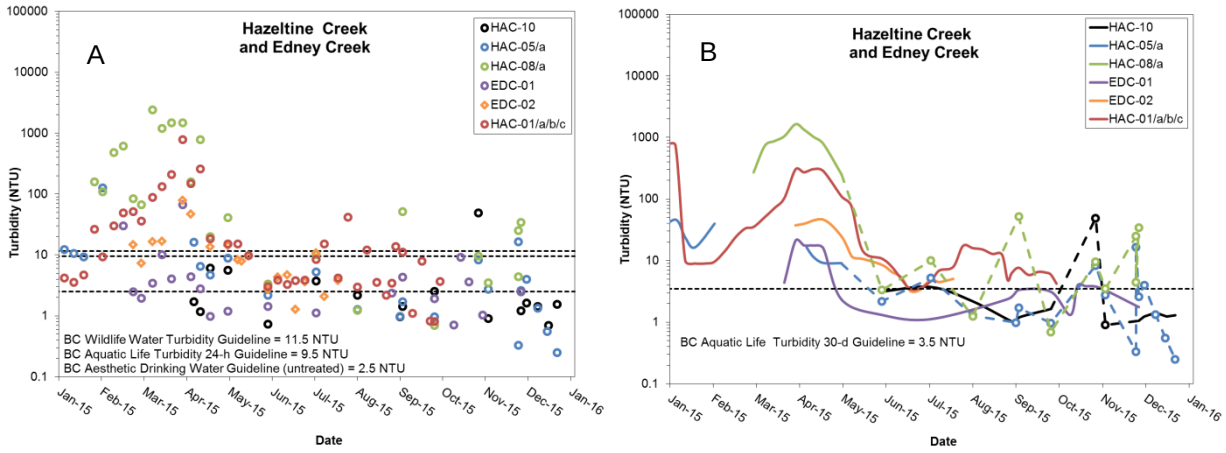
TITLE
POST-EVENT WATER QUALITY MONITORING STATIONS MARCH - DECEMBER 2015

PROJECT NO.	CONTROL	REV.	FIGURE
1411734	12000/2500	0	1

PATH: Y:\burnaby\CAD-GIS\Client\1413803\1411734\PRODUCTION\10000_CEIA\MXD\Report\2000_Water_Quality_Report\Finalized\MOUNT_POLLEY_1411734_Figure_01_MAR_DEC_Post_Event_Water_Quality_Monitoring.mxd

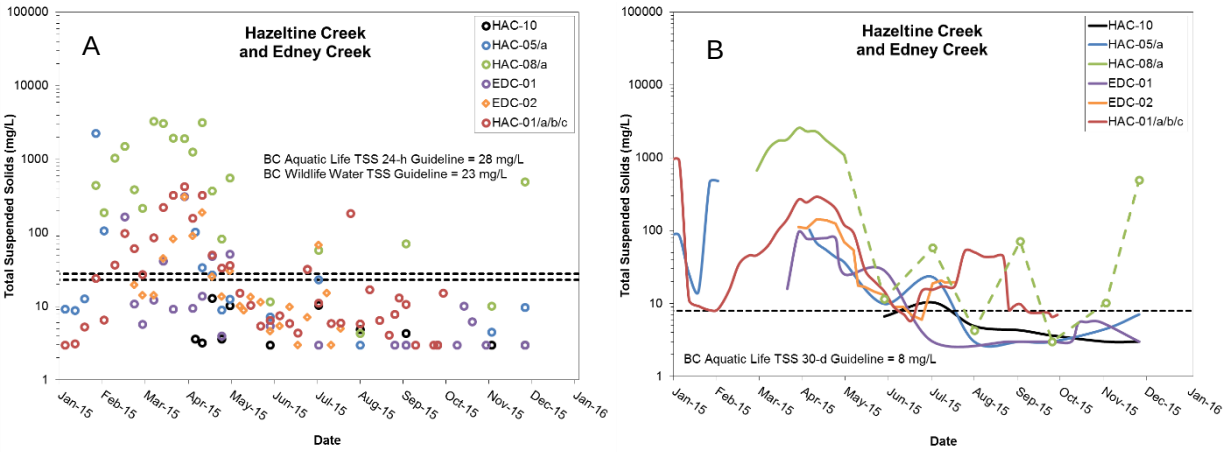
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm



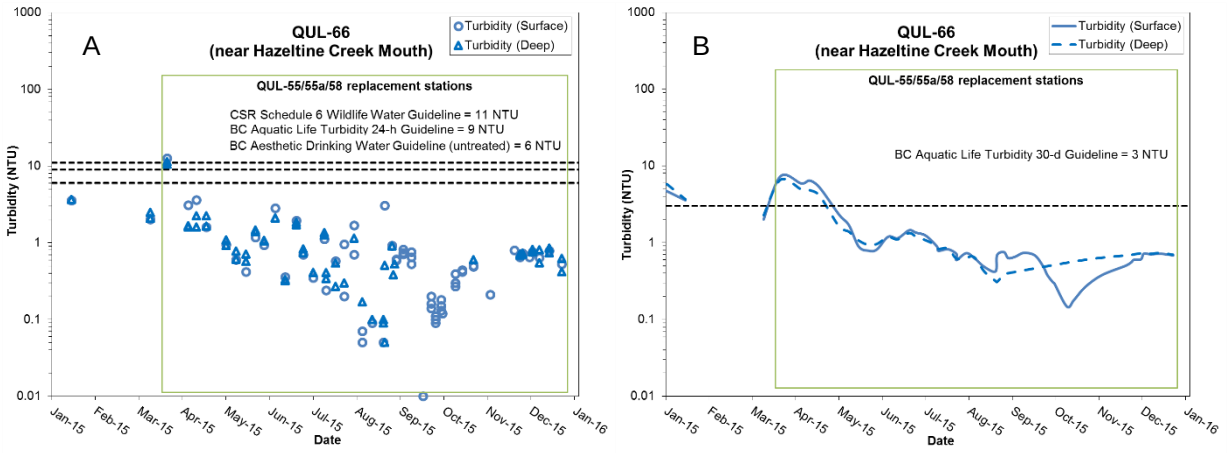
Note: Baseline assumed equal to pre-event median turbidity of 1.5 NTU. Gaps represent >30 d between sampling. Dashed lines and open circles represent series of monthly samples that contained at least one guideline exceedance and had fewer than five data points per 30-d period.

Figure 2: Post-event Instantaneous (A) and Rolling 30-day Average (B) Turbidity Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



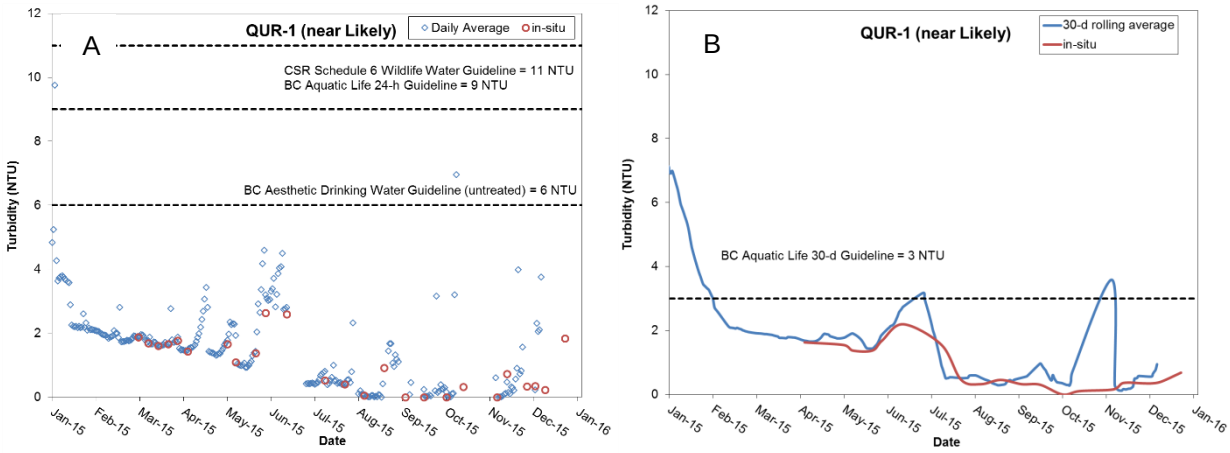
Note: Baseline assumed equal to the MDL of 3 mg/L. Gaps represent >30 d between sampling. Dashed lines and open circles represent series of monthly samples that contained at least one guideline exceedance and had fewer than five data points per 30-d period.

Figure 3: Post-event Instantaneous (A) and Rolling 30-day Average (B) TSS Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



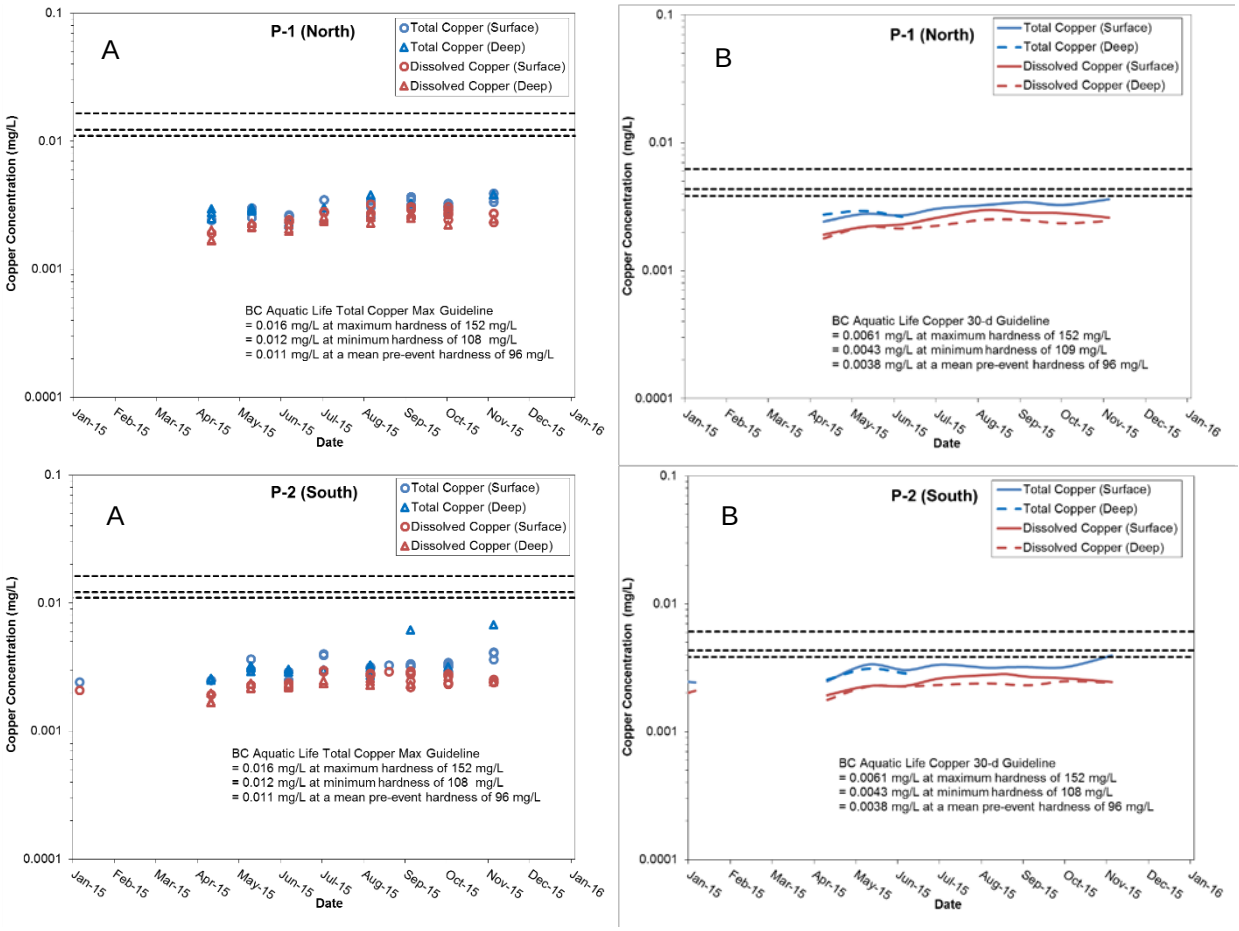
Note: Background assumed equal to 1 NTU. Gaps represent >30 d between sampling.

Figure 4: Post-event Instantaneous (A) and Rolling 30-day Average (B) Turbidity Concentrations at Station QUL-66 (i.e., QUL-66/55/55a/66a), Quesnel Lake.



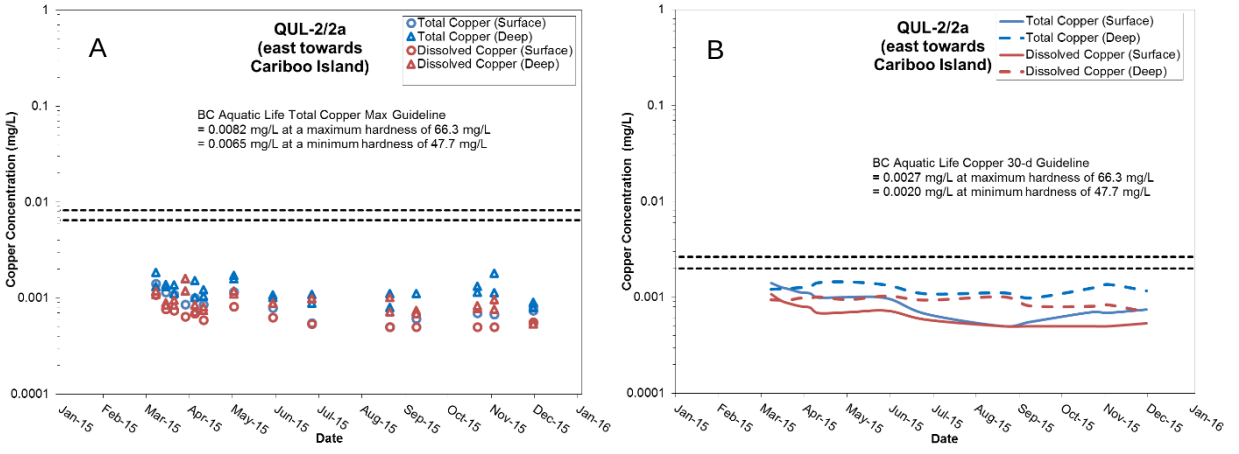
Note: Background assumed equal to 1 NTU.

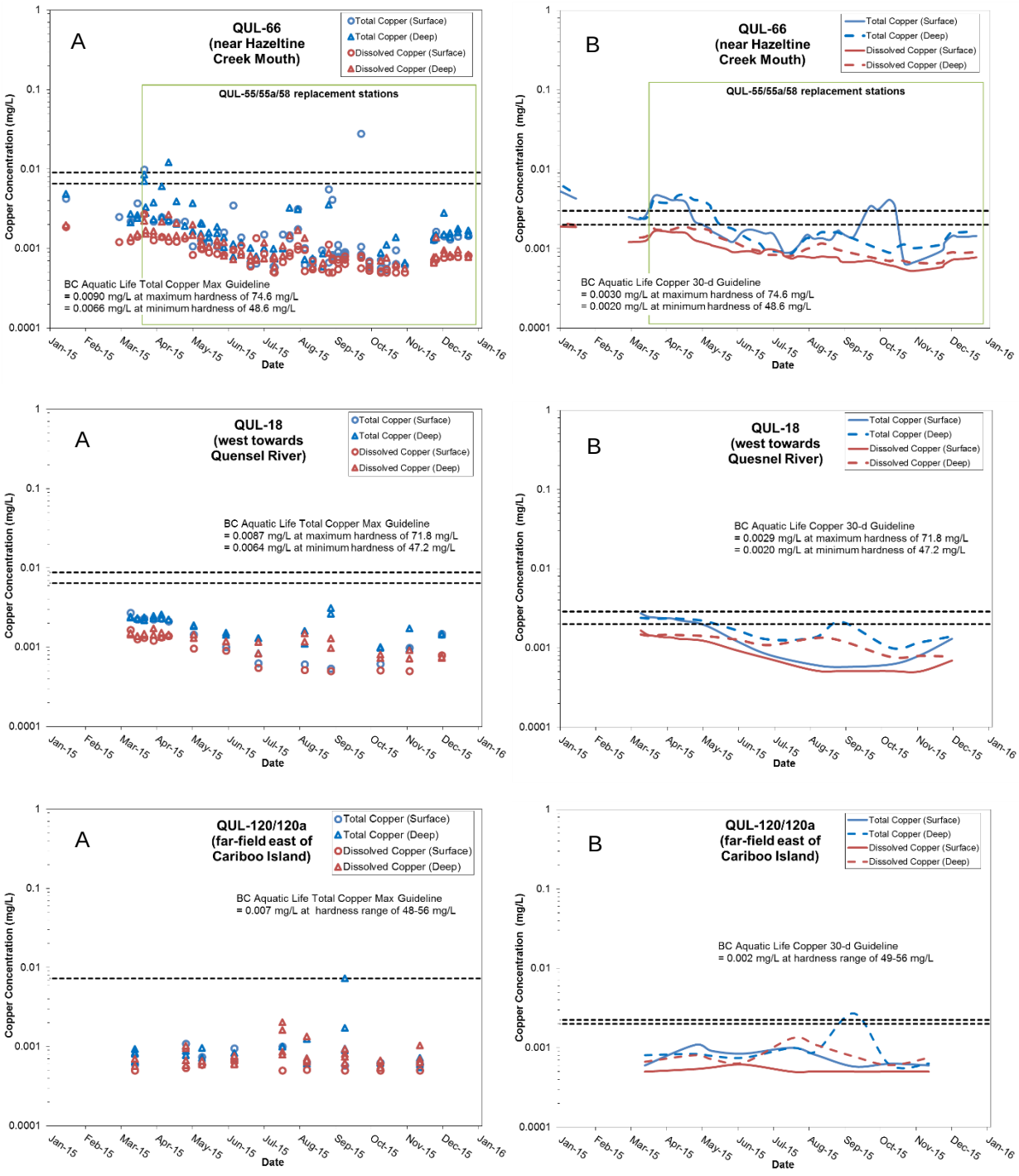
Figure 5: Post-event Instantaneous (A) and Rolling 30-day Average (B) Turbidity Concentrations at Station QUR-1 near Likely, Quesnel River.



Note: Gaps represent >30 d between sampling.

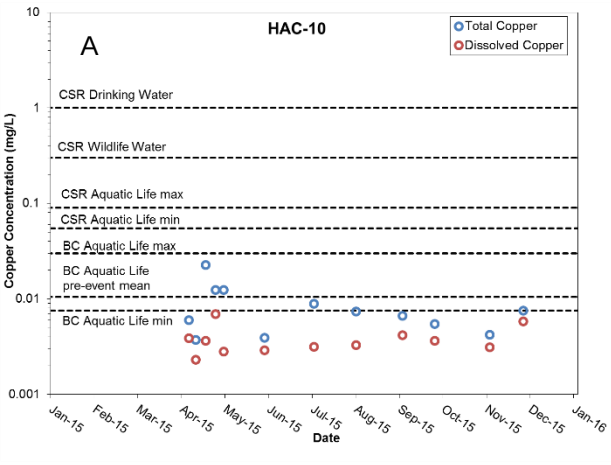
Figure 6: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Copper Concentrations at Stations P1 and P2, Polley Lake

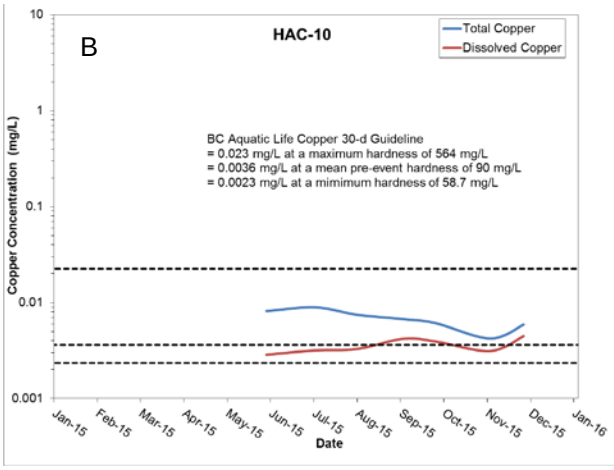


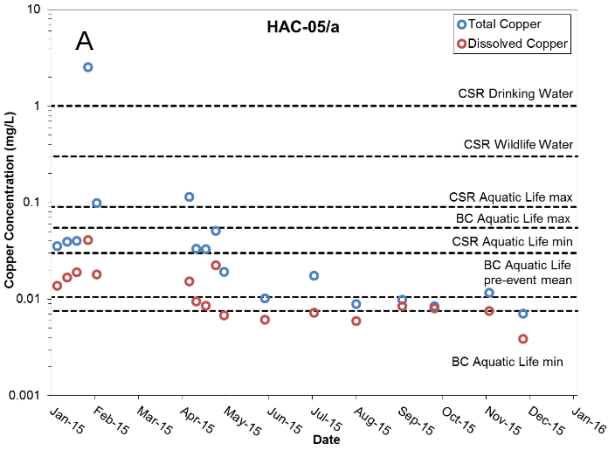


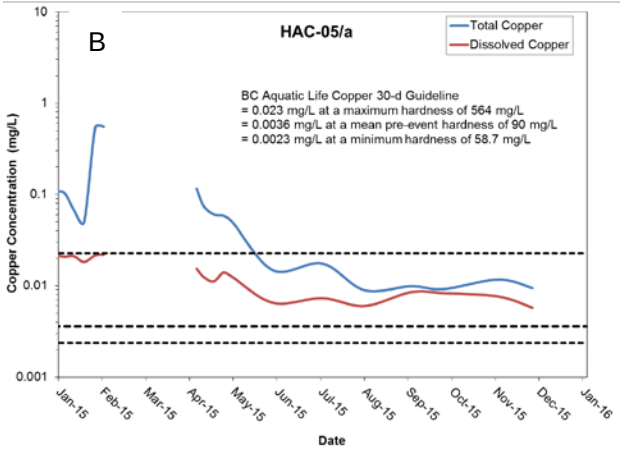
Note: Gaps represent >30 d between sampling.

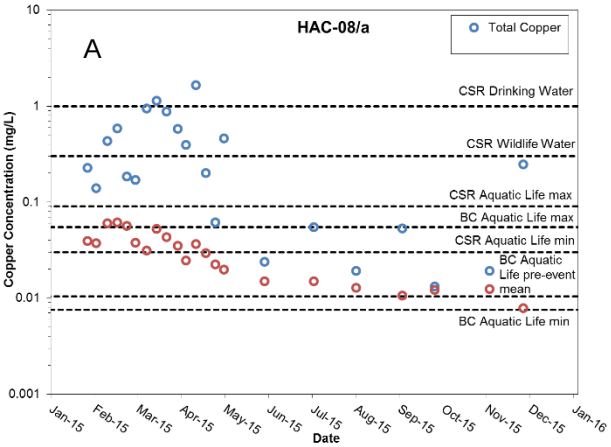
Figure 7: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Copper Concentrations at Stations QUL-2/2a, QUL-66, QUL-18, and QUL-120/120a, Quesnel Lake.

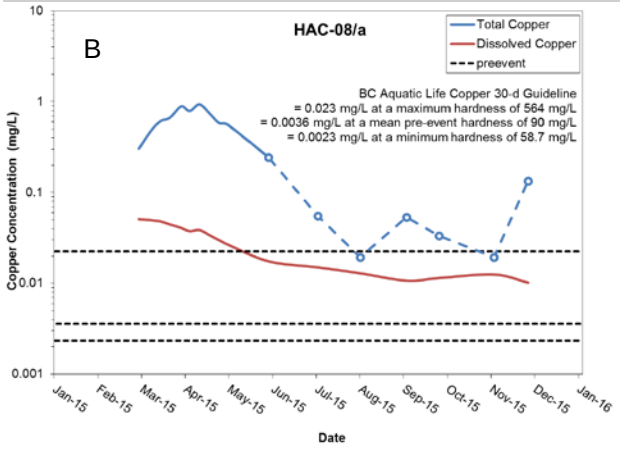

A
HAC-10
Total Copper
Dissolved Copper
CSR Drinking Water
CSR Wildlife Water
CSR Aquatic Life max
CSR Aquatic Life min
BC Aquatic Life max
BC Aquatic Life pre-event mean
BC Aquatic Life min
Copper Concentration (mg/L)
Date

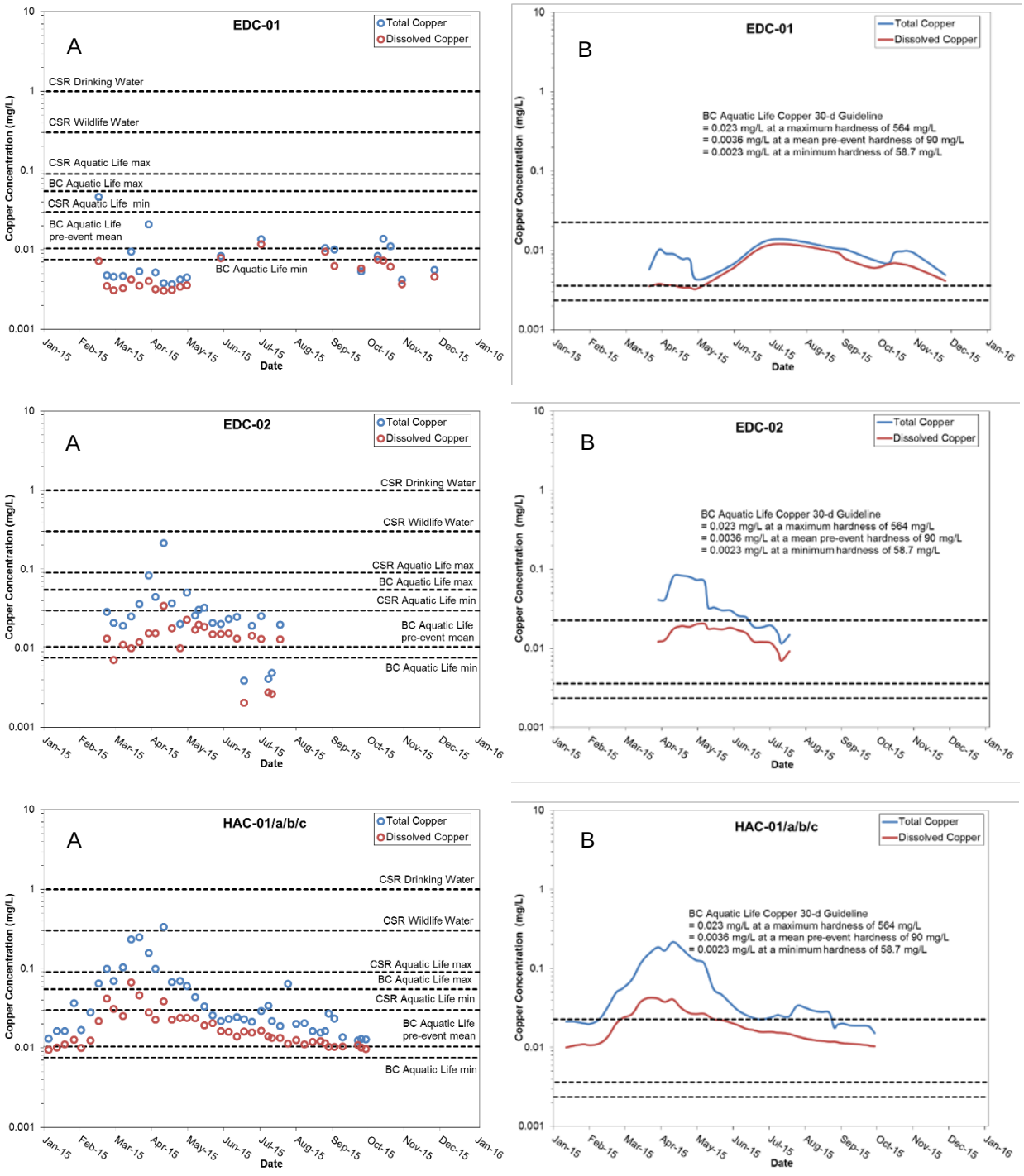

B
HAC-10
Total Copper
Dissolved Copper
BC Aquatic Life Copper 30-d Guideline
= 0.023 mg/L at a maximum hardness of 564 mg/L
= 0.0036 mg/L at a mean pre-event hardness of 90 mg/L
= 0.0023 mg/L at a mimimum hardness of 58.7 mg/L
Copper Concentration (mg/L)
Date


A
HAC-05/a
Total Copper
Dissolved Copper
CSR Drinking Water
CSR Wildlife Water
CSR Aquatic Life max
BC Aquatic Life max
CSR Aquatic Life min
BC Aquatic Life pre-event mean
BC Aquatic Life min
Copper Concentration (mg/L)
Date


B
HAC-05/a
Total Copper
Dissolved Copper
BC Aquatic Life Copper 30-d Guideline
= 0.023 mg/L at a maximum hardness of 564 mg/L
= 0.0036 mg/L at a mean pre-event hardness of 90 mg/L
= 0.0023 mg/L at a minimum hardness of 58.7 mg/L
Copper Concentration (mg/L)
Date

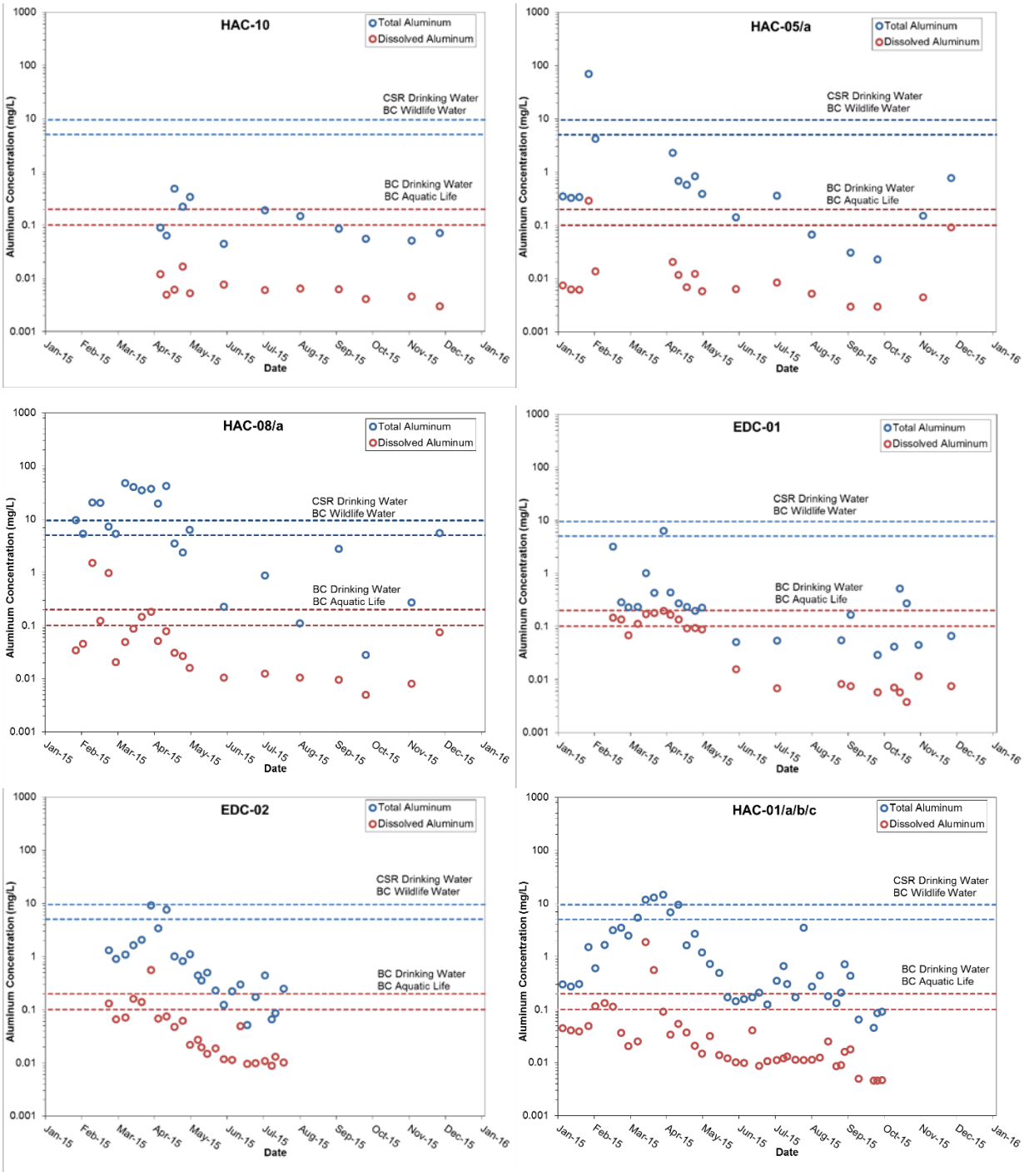

A
HAC-08/a
Total Copper
CSR Drinking Water
CSR Wildlife Water
CSR Aquatic Life max
BC Aquatic Life max
CSR Aquatic Life min
BC Aquatic Life pre-event mean
BC Aquatic Life min
Copper Concentration (mg/L)
Date


B
HAC-08/a
Total Copper
Dissolved Copper
preevent
BC Aquatic Life Copper 30-d Guideline
= 0.023 mg/L at a maximum hardness of 564 mg/L
= 0.0036 mg/L at a mean pre-event hardness of 90 mg/L
= 0.0023 mg/L at a minimum hardness of 58.7 mg/L
Copper Concentration (mg/L)
Date



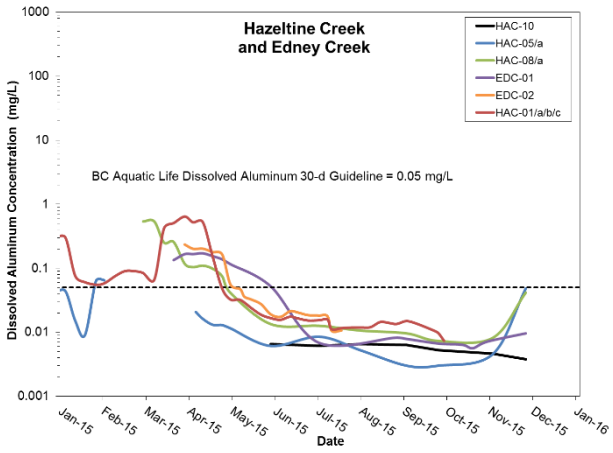
Note: CSR – Schedule 6 Drinking Water Copper Standard = 1 mg/L; BC Wildlife Water Copper Max Guideline = 0.3 mg/L; CSR – Schedule 6 Aquatic Life Total Copper Standard = 0.03-0.09 mg/L; BC Aquatic Life Total Copper Max Guideline = 0.0075-0.055 mg/L. Gaps represent >30 d between sampling. Dashed lines and open circles represent series of monthly samples that contained at least one guideline exceedance and had fewer than five data points per 30-d period.

Figure 8: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Copper Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



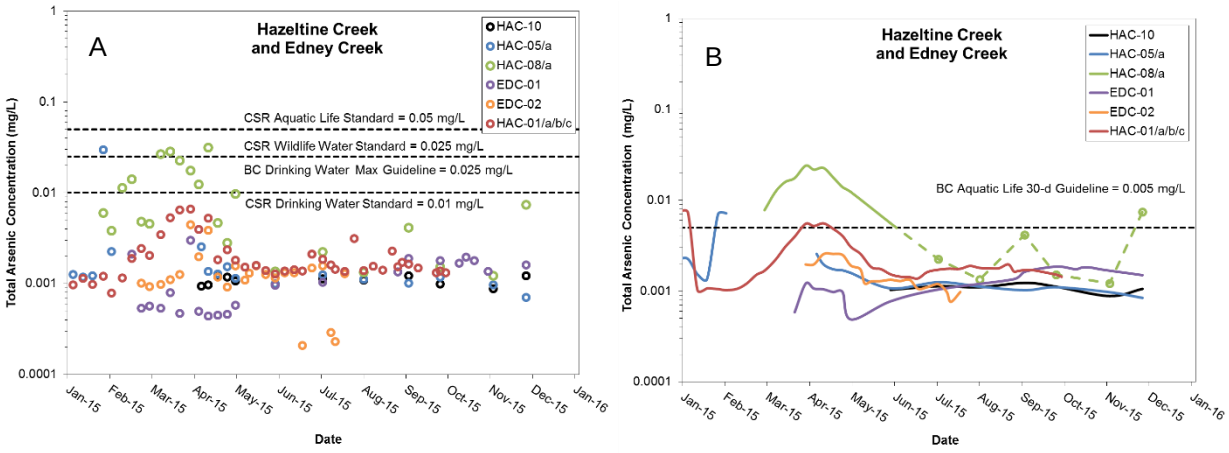
Note: CSR – Schedule 6 Drinking Water Total Aluminum Standard = 9.5 mg/L; BC Wildlife Water Total Aluminum Max Guideline = 5 mg/L; BC Drinking Water Dissolved Aluminum Max Guideline = 0.2 mg/L; BC Aquatic Life Dissolved Aluminum Max Guideline = 0.1 mg/L. Dashed line colour corresponds to total or dissolved values.

Figure 9: Post-event Instantaneous Total and Dissolved Aluminum Concentrations at HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



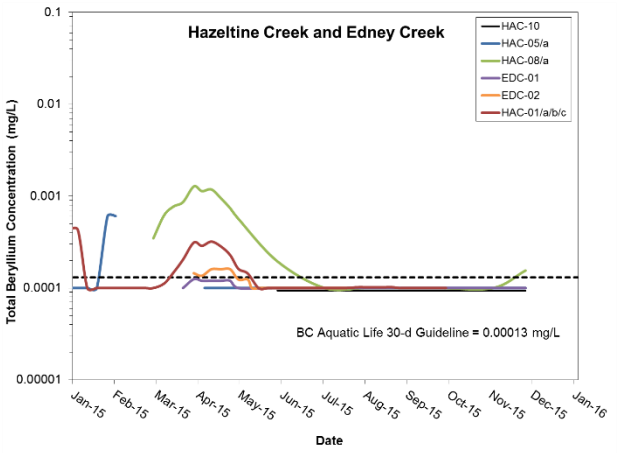
Note: Gaps represent >30 d between sampling.

Figure 10: Post-event Rolling 30-day Average Dissolved Aluminum Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



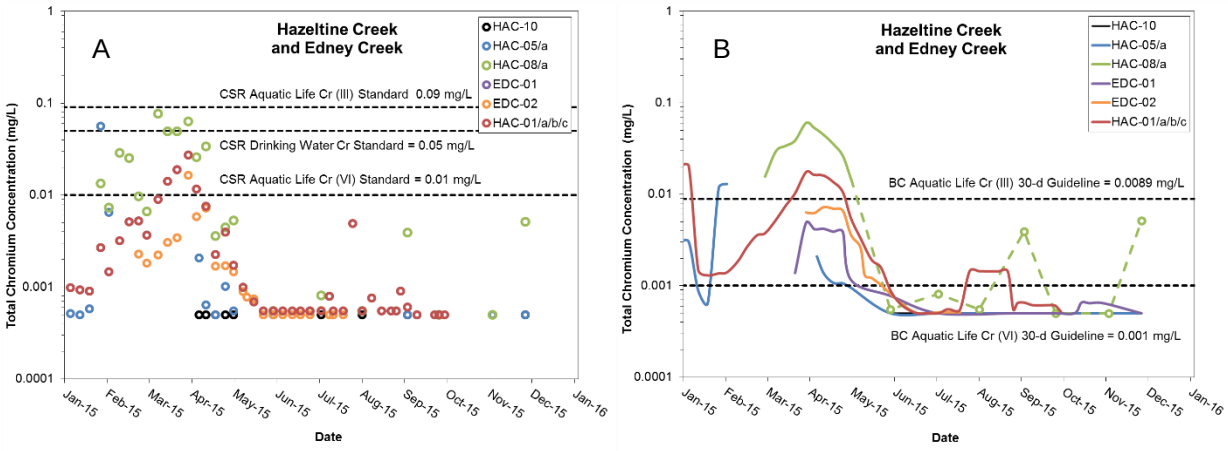
Note: Gaps represent >30 d between sampling. Dashed lines and open circles represent series of monthly samples that contained at least one guideline exceedance and had fewer than five data points per 30-d period.

Figure 11: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Arsenic Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



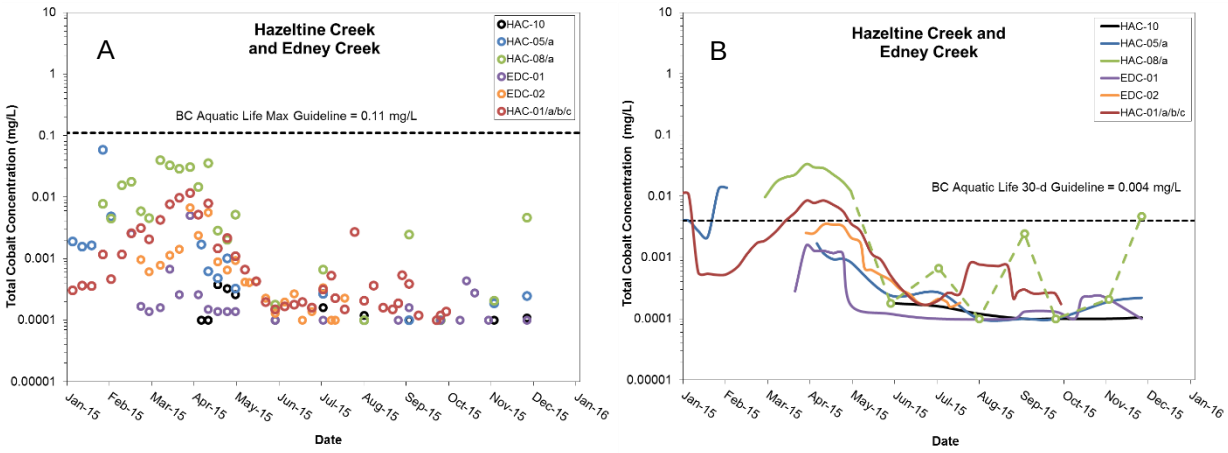
Note: Gaps represent >30 d between sampling.

Figure 12: Post-event Rolling 30-day Average Total Beryllium Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



Note: Gaps represent >30 d between sampling. Dashed lines and open circles represent series of monthly samples that contained at least one guideline exceedance and had fewer than five data points per 30-d period.

Figure 13: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Chromium Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



Note: Gaps represent >30 d between sampling. Dashed lines and open circles represent series of monthly samples that contained at least one guideline exceedance and had fewer than five data points per 30-d period.

Figure 14: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Cobalt Concentrations at Stations HAC-10, HAC-05/a,

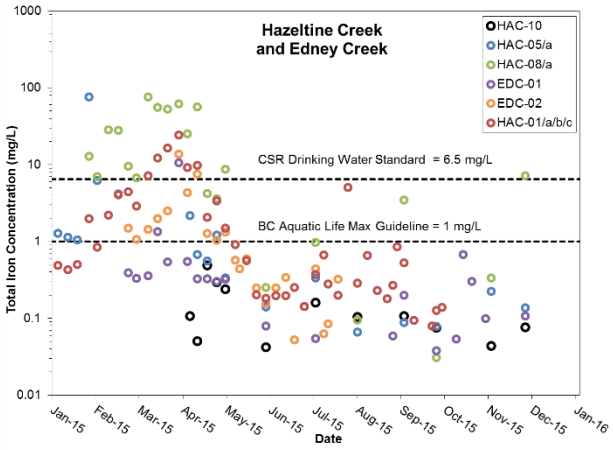
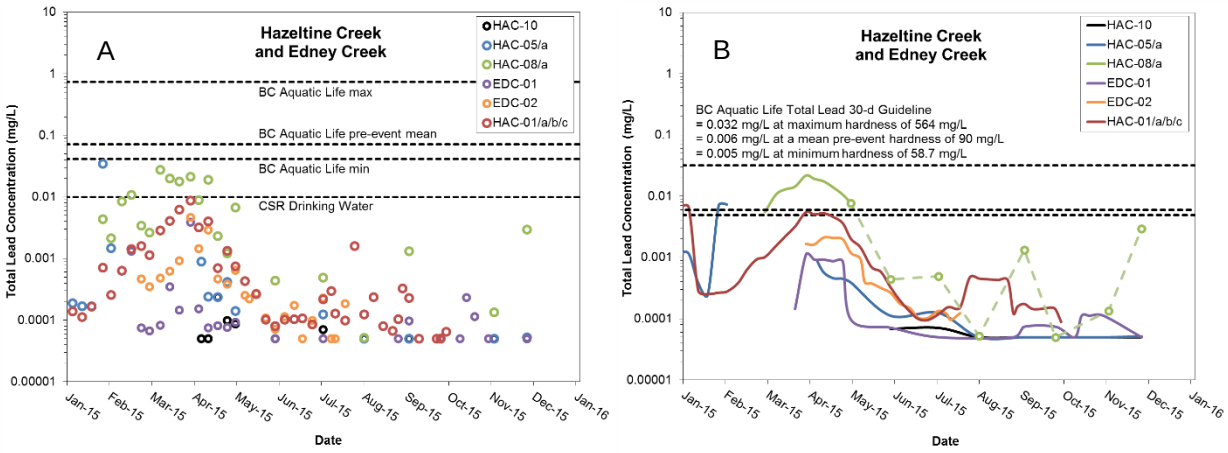
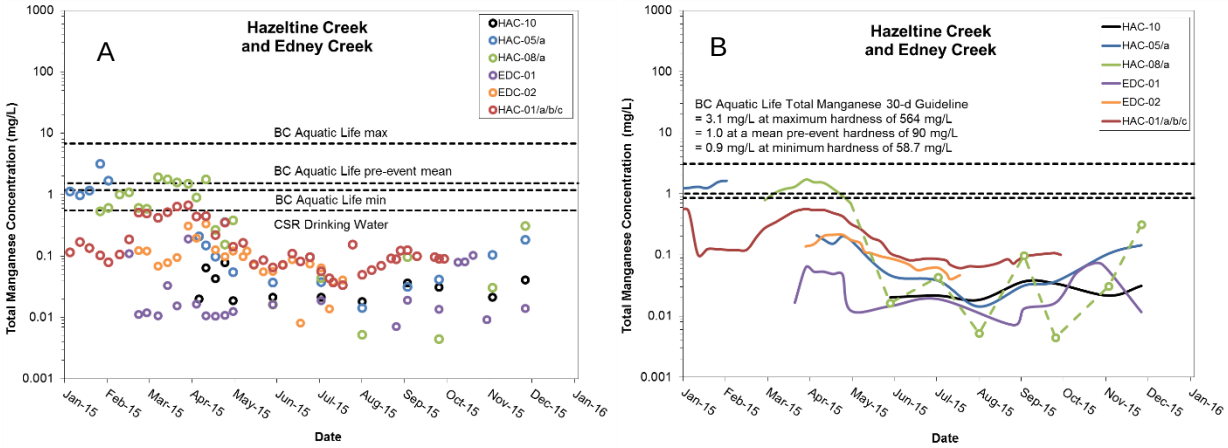


Figure 15: Post-event Instantaneous Total Iron Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



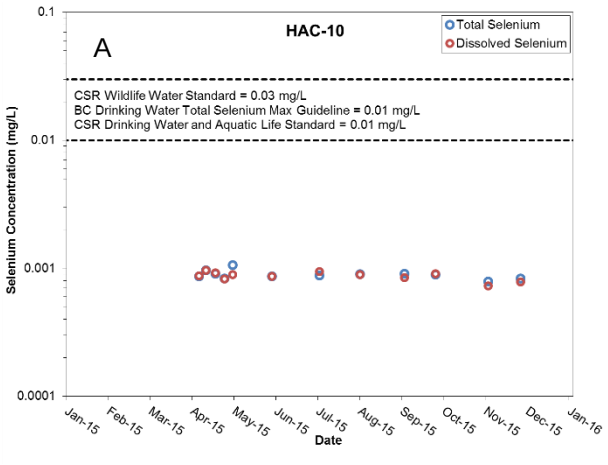
Note: CSR – Schedule 6 Drinking Water Total Lead Standard = 0.01 mg/L; BC Aquatic Life Total Lead Max Guideline = 0.041-0.74 mg/L. Gaps represent >30 d between sampling. Dashed lines and open circles represent series of monthly samples that contained at least one guideline exceedance and had fewer than five data points per 30-d period.

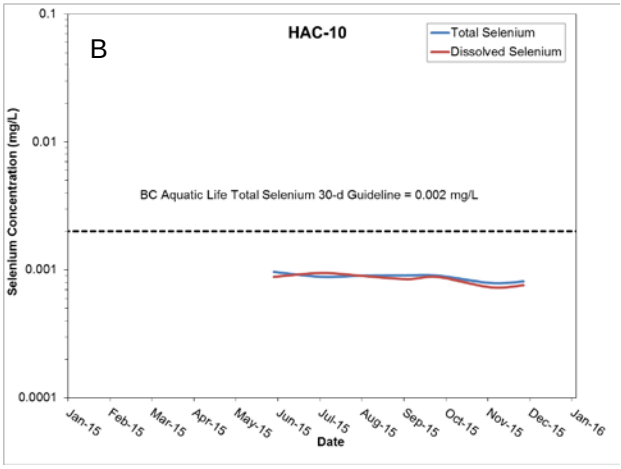
Figure 16: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Lead Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.

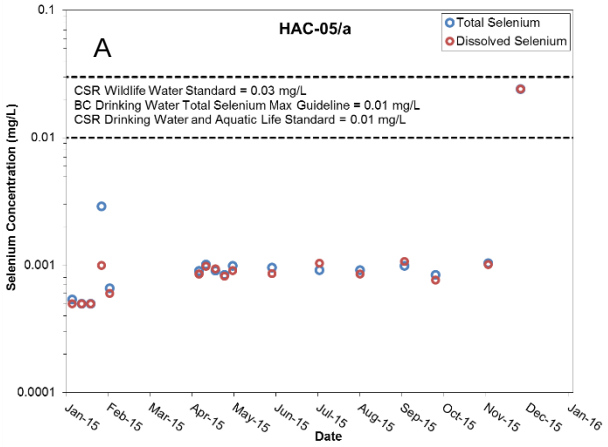


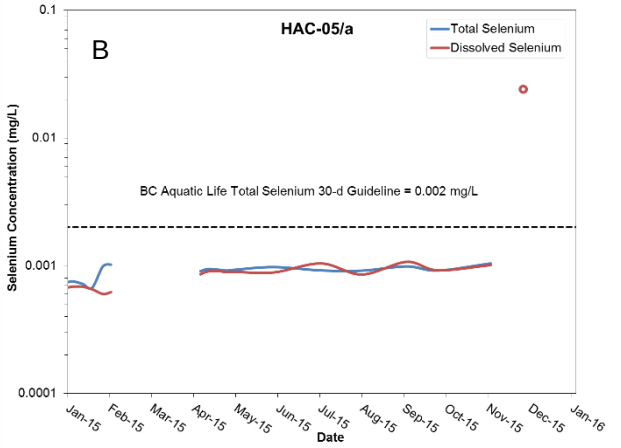
Note: CSR – Schedule 6 Drinking Water Manganese Standard = 0.55 mg/L; BC Aquatic Life Total Manganese Max Guideline = 1.2-6.8 mg/L. Gaps represent >30 d between sampling. Dashed lines and open circles represent series of monthly samples that contained at least one guideline exceedance and had fewer than five data points per 30-d period.

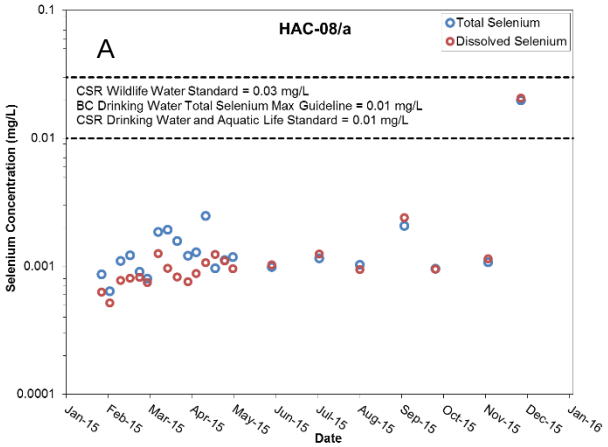
Figure 17: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Manganese Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.

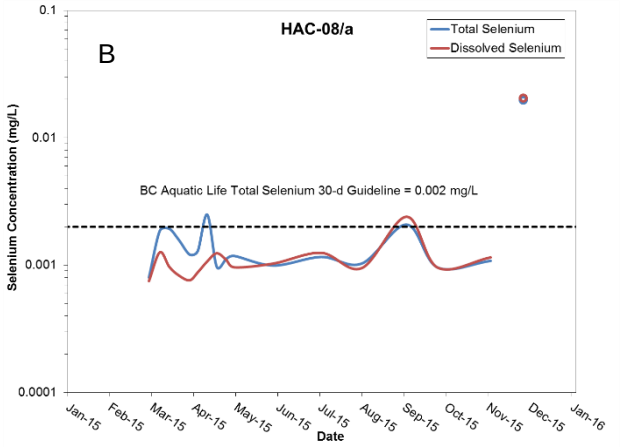

A
HAC-10
Total Selenium
Dissolved Selenium
CSR Wildlife Water Standard = 0.03 mg/L
BC Drinking Water Total Selenium Max Guideline = 0.01 mg/L
CSR Drinking Water and Aquatic Life Standard = 0.01 mg/L
Selenium Concentration (mg/L)
0.1
0.01
0.001
0.0001
Jan-15 Feb-15 Mar-15 Apr-15 May-15 Jun-15 Jul-15 Aug-15 Sep-15 Oct-15 Nov-15 Dec-15 Jan-16
Date

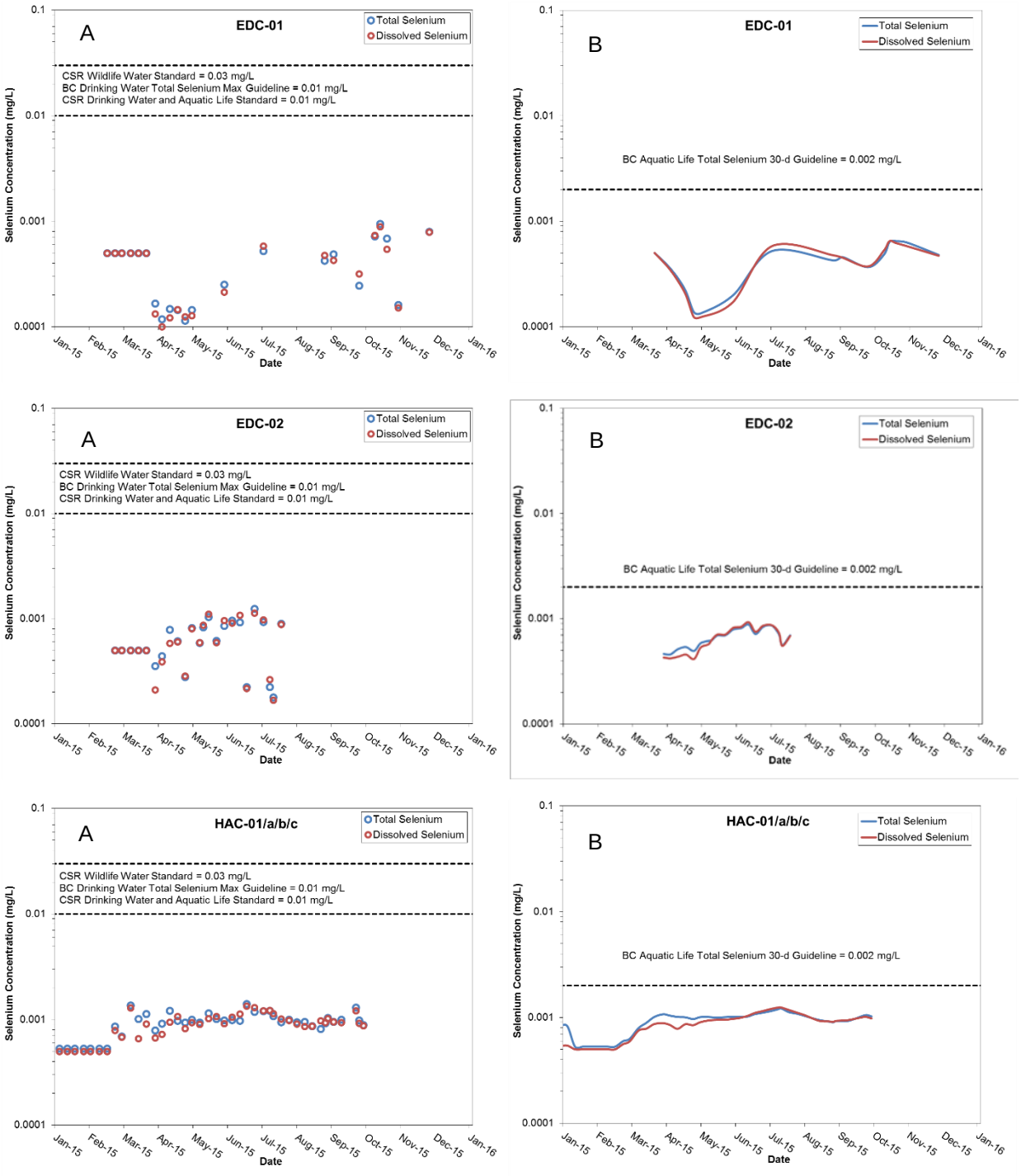

B
HAC-10
Total Selenium
Dissolved Selenium
BC Aquatic Life Total Selenium 30-d Guideline = 0.002 mg/L
Selenium Concentration (mg/L)
0.1
0.01
0.001
0.0001
Jan-15 Feb-15 Mar-15 Apr-15 May-15 Jun-15 Jul-15 Aug-15 Sep-15 Oct-15 Nov-15 Dec-15 Jan-16
Date


A
HAC-05/a
Total Selenium
Dissolved Selenium
CSR Wildlife Water Standard = 0.03 mg/L
BC Drinking Water Total Selenium Max Guideline = 0.01 mg/L
CSR Drinking Water and Aquatic Life Standard = 0.01 mg/L
Selenium Concentration (mg/L)
0.1
0.01
0.001
0.0001
Jan-15 Feb-15 Mar-15 Apr-15 May-15 Jun-15 Jul-15 Aug-15 Sep-15 Oct-15 Nov-15 Dec-15 Jan-16
Date


B
HAC-05/a
Total Selenium
Dissolved Selenium
BC Aquatic Life Total Selenium 30-d Guideline = 0.002 mg/L
Selenium Concentration (mg/L)
0.1
0.01
0.001
0.0001
Jan-15 Feb-15 Mar-15 Apr-15 May-15 Jun-15 Jul-15 Aug-15 Sep-15 Oct-15 Nov-15 Dec-15 Jan-16
Date

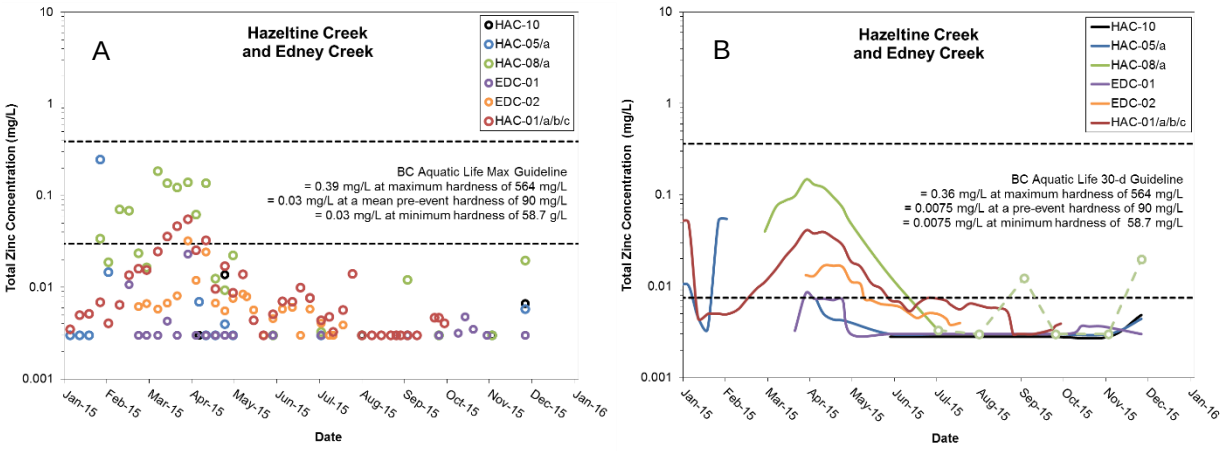

A
HAC-08/a
Total Selenium
Dissolved Selenium
CSR Wildlife Water Standard = 0.03 mg/L
BC Drinking Water Total Selenium Max Guideline = 0.01 mg/L
CSR Drinking Water and Aquatic Life Standard = 0.01 mg/L
Selenium Concentration (mg/L)
0.1
0.01
0.001
0.0001
Jan-15 Feb-15 Mar-15 Apr-15 May-15 Jun-15 Jul-15 Aug-15 Sep-15 Oct-15 Nov-15 Dec-15 Jan-16
Date


B
HAC-08/a
Total Selenium
Dissolved Selenium
BC Aquatic Life Total Selenium 30-d Guideline = 0.002 mg/L
Selenium Concentration (mg/L)
0.1
0.01
0.001
0.0001
Jan-15 Feb-15 Mar-15 Apr-15 May-15 Jun-15 Jul-15 Aug-15 Sep-15 Oct-15 Nov-15 Dec-15 Jan-16
Date



Note: Gaps represent >30 d between sampling.

Figure 18: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total and Dissolved Selenium Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.



Note: Gaps represent >30 d between sampling. Dashed lines and open circles represent series of monthly samples that contained at least one guideline exceedance and had fewer than five data points per 30-d period.

Figure 19: Post-event Instantaneous (A) and Rolling 30-day Average (B) Total Zinc Concentrations at Stations HAC-10, HAC-05/a, HAC-08/a, EDC-01, EDC-02, and HAC-01/a/b/c, Hazeltine and Edney Creeks.

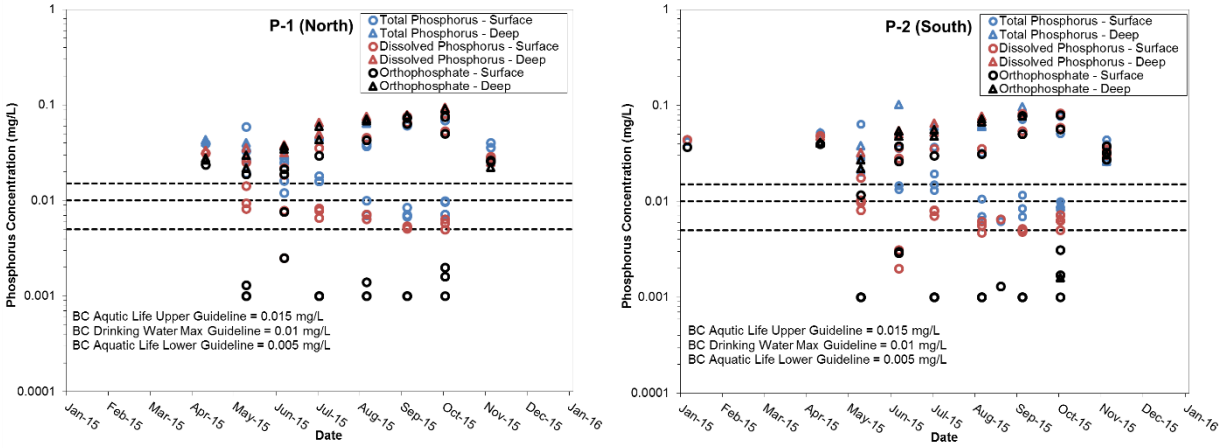


Figure 20: Post-event Instantaneous Total Phosphorus Concentrations at Stations P1 and P2, Polley Lake.

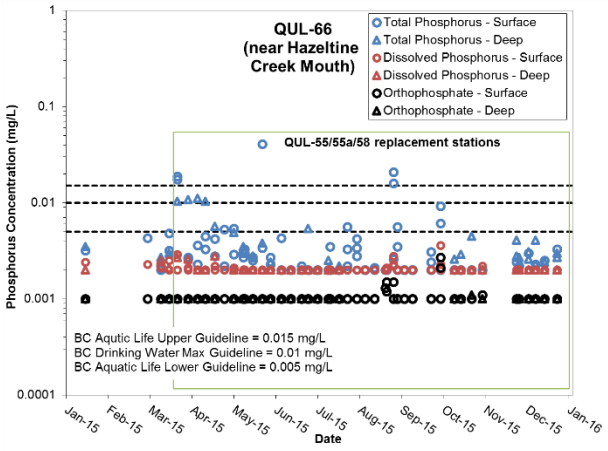


Figure 21: Post-event Instantaneous Total Phosphorus Concentrations at Station QUL-66, Quesnel Lake.

Table A1: Summary of Mount Polley TSF Breach Water Quality Monitoring Program, September to December 2015

Area	Station Name	Sample Location Type	Frequency	Comments
Polley Lake	P1	Routine	Monthly	
	P2	Routine	Monthly	
Upper Hazeltine	HAC-05	Routine	Weekly-Monthly	Weekly samples transitioned to monthly. Replaced by HAC-05a upstream of the bridge after 10/1/2015, except for one sample collected 12/22/2015.
	HAC-05a	Routine	Weekly	Established upstream of the Gavin Lake Road bridge to replace HAC-05 as of 11/2/2015.
	HAC-10	Routine	Weekly-Monthly	Weekly samples transitioned to monthly as of 5/4/2015.
Lower Hazeltine	HAC-01c	Routine	Weekly	Established at new outlet of HAC 7/31/2015. Discontinued 10/5/2015 due to lack of flow through lower sedimentation pond. Replaced by HAC-12.
	HAC-08	Routine	Weekly-Monthly	Temporarily replaced by HAC-08a downstream of the bridge between 8/6/2015 and 10/1/2015.
	HAC-08a	Routine	Weekly-Monthly	Temporarily sampled on 9/8/2015, in place of HAC-08.
	HAC-12	Routine	Weekly	Established 11/2/2015 to replace HAC-01/a/b/c. Located in the upper sedimentation pond.
	HAC-13	Routine	Weekly	Established in upper HAC, upstream of the discharge, on 12/3/2015.
Edney Creek	EDC-01	Routine	Weekly-Monthly	Weekly samples transitioned to monthly.
	EDC-02	Routine	Weekly	Downstream of confluence with HAC; discontinued after HAC/EDC redirected 7/25/2015.
Quesnel River	QUR-1	Routine	Weekly-Bi-weekly	Weekly samples transitioned to bi-weekly.
Quesnel Lake	QUL-2a	Routine	Weekly-Monthly	Weekly samples transitioned to monthly.
	QUL-18	Routine	Weekly-Monthly	Weekly samples transitioned to monthly.
	QUL-21a	Routine profile only	-	
	QUL-40a	Routine	Monthly	
	QUL-42	Routine	Monthly	In Mitchell Bay, east of HAC mouth and just before the sill. Established 9/17/2015.
	QUL-54	Routine profile only	-	Replaced by QUL-54a when HAC redirected 7/25/2015. However, was sampled weekly in October 2015.
	QUL-54a	Routine profile only	-	Established to replace QUL-54 when HAC redirected 7/25/2015. Discontinued after 10/5/2015 and replaced by QUL-57.
	QUL-55	Routine	Weekly	Discontinued and replaced by QUL-55a when HAC redirected 7/25/2015. However, was sampled weekly in October 2015.
	QUL-55a	Routine	Weekly	Established to replace QUL-55 when HAC redirected 7/25/2015. Discontinued 10/5/2015 and replaced with QUL-58.
	QUL-56	Routine profile only	-	Discontinued when HAC redirected 7/25/2015. Sampled weekly in October 2015.
	QUL-56a	Routine profile only	-	Established to replace QUL-56 when HAC redirected 7/25/2015. Sampled 7/28/2015, 10/1/2015, and 10/5/2015 only. Discontinued and replaced by QUL-59.
	QUL-57	Routine	Weekly	Located in the IDZ of the effluent discharge in QUL. Established 12/9/2015 as a replacement for QUL-54/54a.
	QUL-58	Routine	Monthly-Weekly	Located in the IDZ of the effluent discharge in QUL. Established 11/5/2015 to replace QUL-55/55a; transitioned to weekly sampling 12/2/2015.
	QUL-59	Routine	Weekly	Located in the IDZ of the effluent discharge in QUL. Established 12/2/2015 to replace QUL-56/56a.
	QUL-66a	Routine profile only	-	2015 sampling limited to October and November only.
	QUL-79	Routine profile only	-	2015 sampling limited to October and November only.
	QUL-120a	Routine	Monthly	
	QUL-ZOO-1	Profile only for zooplankton	-	Profiled 7/8/2015, 8/20/2015, and 9/10/2015.
	QUL-ZOO-7	Profile only for zooplankton	-	Profiled 7/8/2015, 8/20/2015, and 9/10/2015.
	QUL-ZOO-8	Profile only for zooplankton	-	Profiled 7/8/2015, 8/20/2015, and 9/10/2015.

Notes

Routine samples were taken throughout the period according to 2015 Post-Breach Environmental Monitoring Plan

Routine stations are consistently monitored; typically either weekly, bi-weekly (every 2 weeks), monthly, or bi-monthly (twice per month)

HAC = Hazeltine Creek; EDC = Edney Creek; QUR = Quesnel River; QUL = Quesnel Lake; IDZ = initial dilution zone; ZOO = zooplankton station.

TABLE A2

Tabulated Discrete Water Quality Grab Data Collected from Polley Lake, Hazeltine Creek, Quesnel Lake, and Quesnel River, September to December 2015

Provided on CD

APPENDIX A-7

Minnow Sediment and Sediment Porewater Quality Data Update Technical Memorandum

11 May 2017
Reference No. 1662612-086-R-Rev0-22392

APPENDIX A-7.1

Minnow Sediment Quality Data Report – August 2015 Collections

Memorandum

Date: October 29, 2015
To: Dale Reimer, Mount Polley Mining Corporation
From: Pierre Stecko, Katharina Batchelar, Minnow Environmental Inc.
Cc: Colleen Hughes, Katie McMahen, Mount Polley Mining Corporation
'Lyn Anglin, Imperial Metals Corporation
Trish Miller, Golder Associates

Re: Sediment Quality Data Report - August 2015 Collections

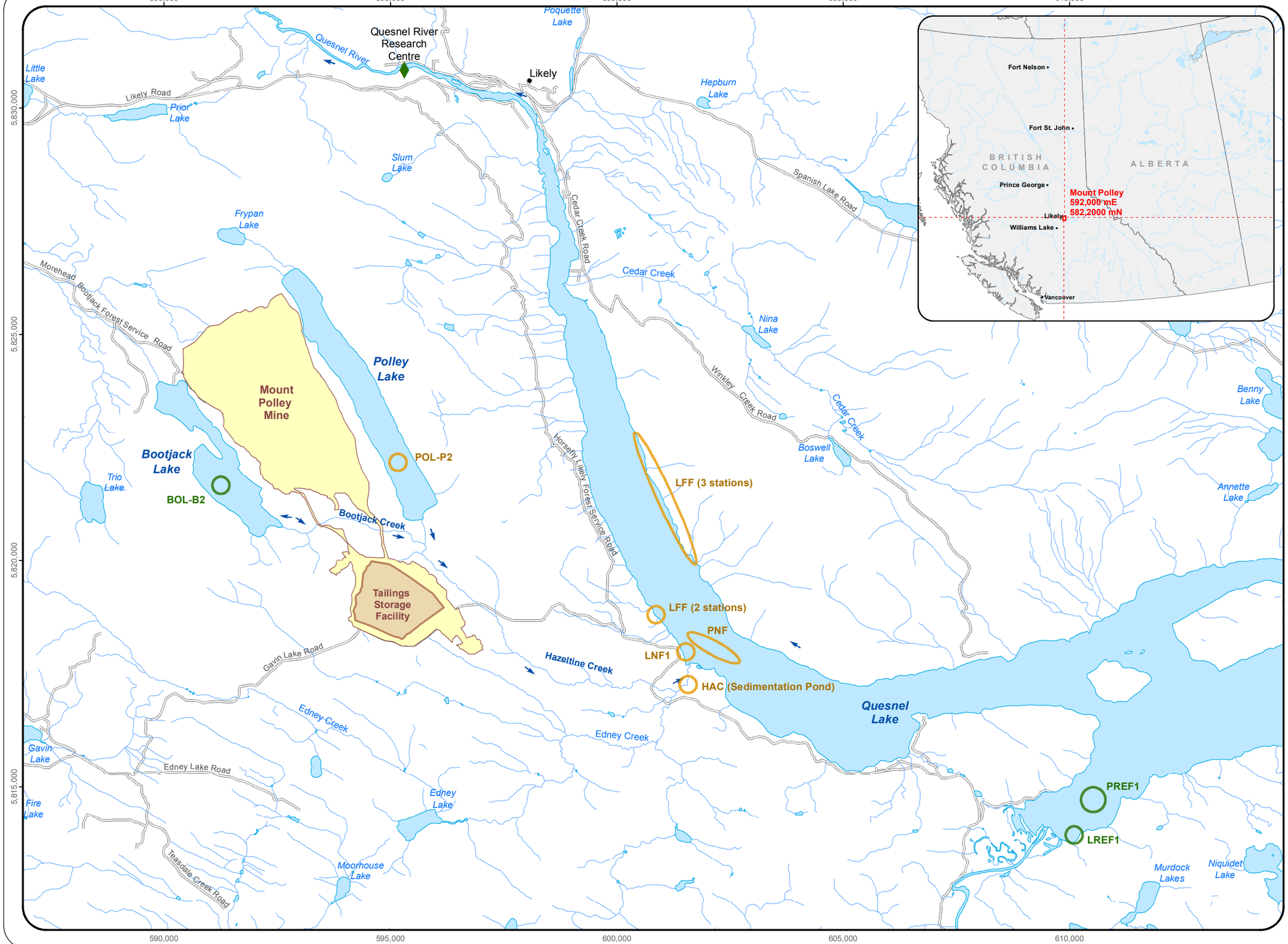
This memorandum provides a brief summary of sediment quality data collected by Minnow Environmental Inc. on behalf of the Mount Polley Mining Corporation (MPMC) in the vicinity of the Mount Polley Mine (Figure 1). Sediment samples were collected in August 2015 from three waterbodies (Polley Lake, Hazeltine Creek and Quesnel Lake) affected by the August 4th 2014 failure of the Mount Polley Tailings Dam and from corresponding reference areas. The purpose of this memorandum is to provide data to be used by Golder Associates in a Detailed Site Investigation Report required under the British Columbia Contaminated Sites Regulation (Government of British Columbia 1996).

Methods

Sediment samples were collected between August 13th and 26th 2015 at stations in Polley Lake, Bootjack Lake, the Hazeltine Creek Sedimentation Pond and Quesnel Lake (Figure 1; Appendix Table A.1). Where possible, samples were collected from the same locations and using the same methods as in 2014 (Minnow 2015).

Sampling

Briefly, in Polley and Bootjack lakes, sediments for the analysis of metals and total organic carbon (TOC) were collected using a Kajak-Brinkhurst (KB) corer in accordance with technical guidance for gravity coring outlined in the British Columbia Field Sampling Manual (BCWLAP 2003) and the federal Technical Guidance Manual for Environmental Effects Monitoring (EEM; Environment Canada 2012). Sediment samples for particle size distribution were collected using a petite ponar grab sampler (15.24 cm x 15.24 cm; 0.023 m^2 sampling area). Five replicate stations were sampled to represent each area (Appendix Table A.1). All core samples were extruded into a core collar and then cut using a core knife to collect the top 3 cm of sediment, which was then transferred into a



Datum: NAD 83 Map Projection: UTM Zone 10U
Data Source: Department of Natural Resources Canada.
Creation Date: October 2015
Project No.: 2574

Figure 1: Mount Polley Sediment Quality Monitoring Areas, August 2015.

minnow environmental inc.
A Trinity Consultants Company

250 mL glass sampling jar labeled with the project number, sample location and collection date. The procedure was then repeated to provide a composite sample of sufficient volume for the required analyses. All sampling equipment was rinsed between stations using site water

In Quesnel Lake, sediment samples from littoral habitats were collected using a stainless steel petite ponar grab sampler and sediment samples from profundal habitats were collected using a stainless steel petite or standard ponar grab sampler (22.86 cm x 22.86 cm; 0.052 m^2 sampling area) in accordance with technical guidance outlined in the British Columbia Field Sampling Manual (BCWLAP 2003) and the federal Technical Guidance Manual for EEM (Environment Canada 2012). Profundal grab samples (mean depth approximately 100 meters) were collected with the assistance of a commercial line hauler (Ace Line Hauler - Brutus Plus 40). Three to five replicate stations were sampled to represent each sampling area (Appendix Table A.1). At each station, composite samples of the top three centimeters of surficial sediment of three to ten acceptable grabs (i.e., full to each edge of the sampler) were collected. Each grab was collected into a plastic tote and observed for completeness and any unusual characteristics. If the sample was deemed acceptable, surficial material to a depth of 3 centimeters was transferred to a second tote using a stainless steel spoon. Remaining sediment was discarded. The procedure was then repeated for all subsequent grabs. The material within the tote was homogenized using a stainless steel spoon and transferred into 250 mL glass sampling jars labeled with the project number, sample location and collection date. All sampling equipment was rinsed between stations using site water.

In the Hazeltine Creek Sedimentation Pond, sediment samples were collected using a stainless steel spoon. Five replicate stations were sampled to represent each sampling area (Appendix Table A.1). At each sampling station, a composite sediment sample was prepared from ten spoons of sediment. Surficial sediment was carefully collected to ensure the capture of a uniform depth (top 3 cm) and to limit disturbance that could result in loss of fines. Each spoonful was placed into a plastic tote. After ten scoops were collected, the material within the tote was homogenized using a stainless steel spoon and transferred into 250 mL glass sampling jars labeled with the project number, sample location and collection date. All sampling equipment was rinsed between stations using site water.

Field duplicate (split) sediment samples were collected at a frequency of 10% for quality assurance/quality control (QA/QC) purposes. Supporting information collected at each

sampling site included GPS (Geographic Positioning System) coordinates, sampling depth, Secchi depth (lakes only), field meter measurements of temperature, specific conductance, dissolved oxygen and pH (using a YSI EXO™ handheld portable field meter equipped with YSI EXO2™ Sonde), site photographs (including photographs of sediment samples), and notes of the presence or absence of aquatic vegetation, and other physical observations (sediment texture, colour, density, etc.). Immediately after collection, samples were placed into a cooler with ice packs, where they were maintained cool prior to transport to the field laboratory where they were placed in a refrigerator and held until shipment to the analytical laboratory. Sediment samples were shipped to the analytical laboratory (ALS Environmental, Burnaby BC) at minimum frequency of weekly. Prior to shipment, samples were placed in a cooler with frozen ice packs and a chain-of custody form was prepared and packed with the samples. Coolers were shipped overnight for next day delivery to ALS Environmental.

Laboratory Analysis

Upon receipt, ALS Environmental opened the coolers, measured temperature to verify the maintenance of cold samples, removed each sample from the coolers, logged the sample, and assigned each sample a unique sample identification code. A sample receipt confirmation was then sent to MPMC and Minnow for verification.

Laboratory analysis included moisture content, pH, particle size distribution, total organic carbon content, total nitrogen concentration, and metal concentrations. Total organic carbon content and metal concentrations were determined in the silt/clay fraction (<63 µm diameter) in accordance with recent recommendations by the British Columbia Ministry of Environment (BCMoE 2012) and because sediment quality characterization conducted in 2014 indicated similar results in <63 µm and <2 mm sediments (Minnow 2015). Upon completion of the analyses, data reports were provided by ALS Environmental to MPMC and Minnow electronically in Adobe Acrobat Portable Document Format (PDF) and as MSExcel files.

Data Analysis

Upon receipt of the analytical data, a Data Quality Assessment (DQA) was completed, including an examination of data completeness, method detection limits achieved, laboratory precision, laboratory accuracy, and field precision. Following the completion of DQA, sediment quality data were summarized by area, by calculating mean, median, standard deviation, standard error, 95% confidence limits, minimum and maximum. Data

were then evaluated in comparison to Contaminated Sites Regulation (CSR) criteria (Government of British Columbia 1996) and reference concentrations.

Environmental matters pertaining to contaminated sites in British Columbia generally fall under the jurisdiction of the BC Ministry of the Environment pursuant to the *Environmental Management Act* (*EMA*; Government of British Columbia 2003). The key regulations under the *EMA* relating to the assessment and remediation of contaminated sites are the Contaminated Sites Regulation (Government of British Columbia 1996) and the Hazardous Waste Regulation (HWR; Government of British Columbia 1988). Within the CSR, numeric criteria for sediment listed in Schedule 9 (Government of British Columbia 1996) are used to determine if sediments are contaminated. CSR criteria have been defined for a limited number of analytes for sensitive and typical sediment environments. Sensitive sediment is defined as sediment at a site with sensitive aquatic habitat (e.g., spawning habitat) and for which sensitive management objectives apply, and typically apply to the ecologically active zone (top one meter) of sediments in an aquatic receiving environment (BCMoE 2013). Typical sediment is defined as any sediment that is not sensitive sediment (BCMoE 2013).

Reference values contained within this memorandum fall into two categories - pre-event data and data collected at reference sites in 2014 and 2015. Pre-event and reference data were compiled and used to calculate reference screening values. For each pre-event or reference dataset, 95th percentile values were calculated and compared. The highest pre-event or reference 95th percentile value was then used to screen the data from the exposed areas to identify analytes present at impacted areas at concentrations greater than pre-event and/or reference.

Results

Data Quality Assessment indicated good sediment data quality, meaning that data can be used with a high level of confidence for interpretation and the derivation of conclusions (Appendix C).

Polley Lake

Sediment collected from Polley Lake in 2015 (from the south side of the lake at Station POL-P2; Figure 1) was predominantly silt and clay, and was similar in particle size distribution to sediments collected in 2014 and from the reference lake (Bootjack Lake; Table 1; Appendix Table D.1). As observed in 2014, total organic carbon (TOC) content was lower in Polley Lake than reference (Table 1).

Table 1: Summary sediment quality data for Polley Lake and Bootjack Lake sampling areas, Mount Polley Mine, 2014 and 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]			Reference				Exposed			
							Bootjack (BOL-B2)				Polley (POL-P2)			
							2014		2015		2014		2015	
		Sensitive	Typical	Historical Polley Lake (POL-P1 and POL-P2)	Bootjack Lake 2014 (BOL-B1 and BOL-B2)	Bootjack Lake 2015 (BOL-B2)	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]
Physical Tests														
Moisture	%	-	-	-	93.8	96.1	93.4	1.3	95.3	2.6	73.9	50.4	87.0	2.9
pH (1:2 soil:water) [1]	pH	-	-	-	5.98	6.46	6.01	0.14	6.58	0.34	7.93	1.41	7.47	0.23
Particle Size														
% Gravel (>2mm)	%	-	-	-	<0.10	<0.10	<0.10	0	<0.10	0	<0.10	0	<0.10	0
% Sand (2.0mm - 0.063mm)	%	-	-	-	21.4	0.21	0.49	0.23	0.26	0.26	0.74	0.82	0.16	0.11
% Silt (0.063mm - 4µm)	%	-	-	-	84.2	83.7	83.5	2.50	82.6	1.76	79.1	3.39	78.8	9.26
% Clay (<4µm)	%	-	-	-	16.7	19.2	16.0	2.25	17.2	1.78	20.1	4.19	21.1	9.27
Organic / Inorganic Carbon (<63µm)														
Total Organic Carbon (TOC)	%	-	-	20.8	16.5	15.5	15.7	2.6	15.1	0.9	7.7	7.2	7.4	2.9
Nutrients (Bulk sediment)														
Total Nitrogen by LECO	%	-	-	-	1.68	1.67	1.54	0.14	1.64	0.09	0.58	1.61	0.94	0.22
Metals (<63µm)														
Aluminum	mg/kg	-	-	20,620	18,525	19,600	17,700	1,972	18,667	2,610	24,100	6,726	28,220	1,636
Antimony	mg/kg	-	-	1.22	0.86	1.04	0.80	0.15	0.96	0.19	0.55	0.29	1.09	0.20
Arsenic	mg/kg	11	20	8.94	6.36	8.38	6.09	0.45	7.72	1.65	**12.6**	3.94	**14.0**	0.95
Barium	mg/kg	-	-	227	248	308	243	17	289	47	254	90	329	22
Beryllium	mg/kg	-	-	0.63	0.70	0.71	0.69	0.02	0.70	0.01	0.86	0.18	1.02	0.05
Bismuth	mg/kg	-	-	0.37	0.15	0.14	0.13	0.05	0.14	0.01	0.12	0.05	0.12	0.01
Boron	mg/kg	-	-	17	17	16	13	1.4	15	3	14	13	14	1.1
Cadmium	mg/kg	2.2	4.2	0.690	0.404	0.591	0.394	0.032	0.529	0.157	0.234	0.277	0.218	0.021
Calcium	mg/kg	-	-	15,890	10,925	9,040	7,420	1,006	8,417	1,571	29,467	16,573	24,500	4,099
Chromium	mg/kg	56	110	67.6	98.5	47.3	61.9	119	45.0	6.6	45.4	126	26.1	6.0
Cobalt	mg/kg	-	-	16.4	11.7	13.9	11.0	2.1	13.3	1.7	21.3	8.4	23.1	2.7
Copper	mg/kg	120	240	380	380	406	340	95.5	382	59	**689**	393	**823**	57
Iron	mg/kg	-	-	39,230	28,300	32,990	26,600	5,170	30,067	7,512	32,700	9,467	29,760	2,270
Lead	mg/kg	57	110	17.7	10.4	11.7	10.1	1.0	10.9	1.9	6.9	3.3	9.3	0.5
Lithium	mg/kg	-	-	17.8	12.1	10.8	11.1	0.25	10.6	0.5	24.0	10.0	25.4	2.5
Magnesium	mg/kg	-	-	12,548	5,538	5,383	4,823	892	5,273	277	14,333	8,375	15,920	1,914
Manganese	mg/kg	-	-	3,310	1,498	3,789	1,303	632	3,327	1,207	855	359	2,574	787
Mercury	mg/kg	0.30	0.58	0.286	0.279	0.326	0.255	0.079	0.302	0.061	0.104	0.082	0.110	0.008
Molybdenum	mg/kg	-	-	6.05	4.32	4.79	3.62	2.24	4.32	1.22	5.63	4.93	10.1	1.56
Nickel	mg/kg	-	-	42.6	74.6	34.6	47.6	90.1	33.3	3.2	34.2	81.4	22.0	3.6
Phosphorus	mg/kg	-	-	3,405	2,605	3,402	2,240	1,205	2,537	2,182	1,317	846	1,200	86
Potassium	mg/kg	-	-	1,591	1,368	1,759	1,253	28.7	1,693	266	2,110	693	2,766	109
Selenium	mg/kg	-	-	5.37	2.60	2.90	2.37	0.43	2.75	0.40	2.14	3.06	4.43	1.07
Silver	mg/kg	-	-	0.415	0.379	0.389	0.355	0.080	0.377	0.031	0.338	0.087	0.348	0.013
Sodium	mg/kg	-	-	560	245	1,065	190	24.8	900	418	1,143	621	1,828	127
Strontium	mg/kg	-	-	125	134	105	89	20	99	14	214	79	289	19
Sulfur (S)-Total	mg/kg	-	-	-	-	7,640	-	-	7,000	1,876	-	-	8,420	2,209
Thallium	mg/kg	-	-	0.112	0.127	0.141	0.115	0.038	0.132	0.029	0.065	0.066	0.058	0.008
Tin	mg/kg	-	-	0.80	1.41	0.77	1.03	1.42	0.70	0.18	2.01	0.45	2.10	0.20
Titanium	mg/kg	-	-	787	784	505	407	69.5	461	157	1,653	1,032	1,832	238
Uranium	mg/kg	-	-	1.47	2.06	2.37	1.93	0.19	2.20	0.43	1.49	0.91	1.46	0.07
Vanadium	mg/kg	-	-	111	66.9	83.6	63.7	0.9	80.3	10.5	120	51.7	115	7.5
Zinc	mg/kg	200	380	99.0	98.5	86.4	80.8	58.7	82.8	9.4	91.0	63.5	86.4	6.5

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported 2015 moisture, pH, and total nitrogen data are based on bulk sediment. Reported 2014 pH data are based on < 63 µm sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996).

[3] Reference 95th percentiles for 2015 data were calculated using data displayed in Appendix Table D.1. For calculation of 2014 and Historical Reference 95th percentiles see Minnow (2015). The 5th percentile is reported for pH.

[4] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

Sediment metal and nitrogen concentrations at Polley Lake (sampling area POL-P2) in 2015 were also very similar to those observed in 2014. Arsenic and copper were the only analytes with concentrations greater than the CSR "sensitive" criteria and reference (Table 1; Appendix Table D.1).

Copper was the only analyte with concentrations greater than the CSR "typical" criterion and reference (Table 1; Appendix Table D.1). However, copper in reference Bootjack Lake and in Polley Lake prior to the dam failure also exceeded the CSR "typical" criterion (Table 1). In 2015, the mean copper concentration in Polley Lake sediment exceeded reference by approximately 2.2-times and the CSR "typical" criterion by approximately 3.4-times (Table 1).

Hazeltine Creek Sedimentation Pond

Sediment collected from the upper Hazeltine Creek Sedimentation Pond in 2015 (Figure 1) was primarily silt and clay (92.5%), and had lower sand content than sediment collected from lower Hazeltine Creek in 2014 (Table 2; Appendix Table D.2). The high fines (silt and clay) content of this sediment was noted during 2015 field collections. Similar to 2014, the TOC content of sediment collected in 2015 was lower than observed in Hazeltine Creek pre-event (Table 2).

Metal concentrations in sediments collected in 2015 were similar to those observed in 2014, as was the nitrogen content. Arsenic and copper were the only analytes to exceed the CSR "sensitive" criteria and pre-event concentrations in Hazeltine Creek in 2015 (Table 2; Appendix Table D.2). In 2014, concentrations of both arsenic and copper exceeded the CSR "sensitive" criteria, but arsenic did not exceed pre-event concentrations (Table 2). The higher arsenic concentrations observed in 2015 are likely due to the finer particle sizes encountered in 2015.

As observed in 2014, concentrations of copper exceeded the CSR "typical" criterion as well as pre-event concentrations (Table 2; Appendix Table D.2). Copper was the only analyte to exceed the "typical" CSR criterion, with the 2015 mean copper concentration exceeding this criterion by approximately 2.0 times on average, and exceeding pre-event concentrations (in lower Hazeltine Creek) by 11.2 times on average (Table 2).

Quesnel Lake Littoral

Sediment collected from the littoral near-field area of Quesnel Lake in 2015 (LNF; Figure 1) was predominantly sand (82.4%), and had a higher sand content than sediment

Table 2: Summary sediment quality data for samples collected in lower Hazeltine Creek in 2014 and collected in the Hazeltine Creek Sedimentation Pond in 2015, Mount Polley Mine. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Historic Hazeltine Creek 95th Percentile [3]		Exposed			
						Lower Hazeltine Creek (ST02) 2014		Hazeltine Creek Sedimentation Pond 2015	
		Sensitive	Typical	Lower Creek	Upper Creek	Mean	t*SE [4]	Mean	t*SE [4]
Physical Tests									
Moisture	%	-	-	-	-	28.8	5.25	41.4	9.5
pH (1:2 soil:water) [1]	pH	-	-	-	-	8.55	0.18	8.43	0.28
Particle Size									
% Gravel (>2mm)	%	-	-	-	33.1	0.1	0.1	0.3	0.5
% Sand (2.0mm - 0.063mm)	%	-	-	-	64.7	30.4	18.9	7.3	12.2
% Silt (0.063mm - 4µm)	%	-	-	-	76.2	60.6	15.6	75.1	6.6
% Clay (<4µm)	%	-	-	-	13.9	8.9	4.5	17.4	10.2
Organic / Inorganic Carbon (<63 µm)									
Total Organic Carbon (TOC)	%	-	-	9.03	12.8	0.12	0.03	0.30	0.05
Nutrients (Bulk sediment)									
Total Nitrogen by LECO	%	-	-	-	-	<0.020	0	0.052	0.009
Metals (<63 µm)									
Aluminum	mg/kg	-	-	12,550	18,000	16,720	3,498	17,900	4,655
Antimony	mg/kg	-	-	1.33	0.37	0.40	0.07	0.52	0.05
Arsenic	mg/kg	11	20	12.1	8.2	11.7	3.0	**14.8**	1.9
Barium	mg/kg	-	-	104	136	166	73	196	42
Beryllium	mg/kg	-	-	0.30	0.46	0.49	0.17	0.62	0.12
Bismuth	mg/kg	-	-	20	16	0.11	0.01	0.13	0.02
Boron	mg/kg	-	-	3.0	5.4	10	0.6	<10	0
Cadmium	mg/kg	2.2	4.2	0.235	0.354	0.191	0.042	0.209	0.024
Calcium	mg/kg	-	-	7,030	13,400	27,880	3,438	29,380	2,115
Chromium	mg/kg	56	110	33.1	40.1	28.4	10.2	28.4	2.1
Cobalt	mg/kg	-	-	11.0	10.4	18.4	3.9	18.3	3.3
Copper	mg/kg	120	240	42	95	**449**	318	**469**	141
Iron	mg/kg	-	-	35,400	29,900	65,980	19,810	50,580	5,970
Lead	mg/kg	57	110	5.6	6.7	7.5	0.6	8.8	1.6
Lithium	mg/kg	-	-	12.9	14.8	16.3	3.7	19.6	5.1
Magnesium	mg/kg	-	-	6,160	6,430	10,428	2,603	10,346	3,051
Manganese	mg/kg	-	-	1,120	1,350	676	137	725	160
Mercury	mg/kg	0.30	0.58	0.140	0.145	0.065	0.017	0.101	0.012
Molybdenum	mg/kg	-	-	0.75	1.50	2.44	1.35	2.47	0.29
Nickel	mg/kg	-	-	24.0	24.4	22.5	9.4	22.5	4.2
Phosphorus	mg/kg	-	-	729	1,380	1,530	317	1,558	112
Potassium	mg/kg	-	-	910	1,450	1,534	457	1,732	477
Selenium	mg/kg	-	-	1.30	3.32	0.89	0.31	0.88	0.14
Silver	mg/kg	-	-	0.100	0.160	0.244	0.119	0.259	0.026
Sodium	mg/kg	-	-	253	350	718	479	718	179
Strontium	mg/kg	-	-	67	118	145	17	165	16
Sulfur (S)-Total	mg/kg	-	-	-	-	-	-	1,260	142
Thallium	mg/kg	-	-	0.051	0.094	0.060	0.017	0.070	0.013
Tin	mg/kg	-	-	1.10	0.70	1.09	0.60	1.33	0.23
Titanium	mg/kg	-	-	701	776	1,309	403	1,502	266
Uranium	mg/kg	-	-	0.73	1.26	1.05	0.20	1.18	0.10
Vanadium	mg/kg	-	-	74.5	65.3	229	96.2	181	24.9
Zinc	mg/kg	200	380	60.2	67.6	68.2	5.3	73.9	15.6

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported 2015 moisture, pH, and total nitrogen data are based on bulk sediment. Reported 2014 pH data are based on < 63 µm sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996).

[3] For calculation of Historic Hazeltine Creek 95th percentiles see Minnow (2015).

[4] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

collected from this location in 2014 (49.2%; Table 3; Appendix Table D.3). This difference in sediment composition was evident during sample collection in the field, and the decrease in the fines (silt and clay) content of sediment (49.7% in 2014, and 15.6% in 2015) may be a result of washing of fine sediment from these locations between August 2014 and August 2015. The particle size distribution of sediment collected in the littoral far-field area (Figure 1) was similar in 2014 and 2015, and was also similar to sediment collected in the Quesnel littoral reference area. As observed in 2014, the TOC content of sediment in 2015 was lower in the near-field area than in the far-field or reference areas (Table 3; Appendix Table D.3).

Concentrations of nitrogen and metals in the <63 µm (silt and clay) fraction of sediment collected from the near-field area were similar in 2014 and 2015 despite the differences in particle size distribution (Table 3). This similarity in sediment chemistry suggests that fines remaining in the near-field area were event-affected. However, aquatic organisms inhabiting this sediment would be exposed to the whole sediment, not solely the fines (<63 µm) fraction. In the far-field area, sediment concentrations of nitrogen and metals were also similar in 2014 and 2015.

As in 2014, arsenic and copper were the only analytes to exceed the CSR “sensitive” criteria as well as reference concentrations in the near-field area (Table 3; Appendix Table D.3). Copper was the only analyte in the near-field area with concentrations exceeding the CSR “typical” criterion and reference concentrations, as was also observed in 2014. The mean copper concentration of Quesnel Lake near-field area sediment exceeded the CSR “typical” criterion by approximately 2.7 times on average, and exceeded reference by approximately 13.2 times on average (Table 3). The concentrations of metals in sediment from the far-field area did not exceed CSR criteria or reference concentrations, and were generally lower than those observed in the near-field area. For instance, mean sediment arsenic and copper concentrations observed in the far-field area were approximately 3.7 and 9.8 times lower, respectively, than in the near-field area in 2015 (Table 3).

Quesnel Lake Profundal

Sediment collected from the Quesnel Lake profundal near-field area (Figure 1) was composed primarily of silt and clay (93%), with a particle size distribution similar to that observed in 2014, but which had a higher clay content (35.5%) and lower sand content (7.0%) than observed in the Quesnel Lake profundal reference area (Table 4; Appendix Table D.4). The TOC content of sediment from the near-field area was lower than that observed at the reference area, as was also observed in 2014 (Table 4).

Table 3: Summary of sediment quality data for Quesnel Lake littoral sampling areas, Mount Polley Mine, 2014 and 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]			Reference				Exposed							
							LREF1				LNF1				LFF			
				LRef1		LRef2 [4] (2014)	2014		2015		2014		2015		2014		2015	
		Sensitive	Typical	2014	2015		Mean	t*SE [5]	Mean	t*SE [5]	Mean	t*SE [5]	Mean	t*SE [5]	Mean	t*SE [5]	Mean	t*SE [5]
Physical Tests																		
Moisture	%	-	-	43.7	43.4	53.4	40.7	3.4	40.8	9.4	32.6	6.0	25.4	7.7	48.0	11.4	44.7	12.1
pH (1:2 soil:water) [1]	pH	-	-	6.32	6.74	6.40	6.54	0.26	6.97	0.58	8.57	0.37	7.95	0.87	6.55	0.38	7.09	0.42
Particle Size																		
% Gravel (>2mm)	%	-	-	1.83	2.05	0.13	1.02	0.80	1.49	1.94	1.15	2.91	2.02	3.72	1.47	1.70	0.76	0.61
% Sand (2.0mm - 0.063mm)	%	-	-	65.8	64.6	59.0	59.7	7.91	60.0	11.5	49.2	2.65	82.4	22.0	65.5	10.3	60.3	17.0
% Silt (0.063mm - 4µm)	%	-	-	42.2	36.3	76.4	35.1	8.04	33.9	9.27	41.7	2.49	14.8	18.2	30.2	9.96	36.5	16.7
% Clay (<4µm)	%	-	-	4.9	6.1	6.3	4.2	0.7	4.6	4.1	8.1	2.3	0.8	0.5	2.9	1.5	2.5	1.9
Organic / Inorganic Carbon (<63 µm)																		
Total Organic Carbon (TOC)	%	-	-	1.35	1.63	1.92	1.12	0.23	1.47	0.53	0.21	0.09	0.35	0.25	1.78	1.50	2.29	2.20
Nutrients (Bulk sediment)																		
Total Nitrogen by LECO	%	-	-	0.071	0.114	0.138	0.066	0.006	0.104	0.023	<0.020	0	0.032	0.007	0.102	0.088	0.112	0.064
Metals (<63 µm)																		
Aluminum	mg/kg	-	-	14,760	13,590	25,540	13,260	1,717	13,133	1,797	17,920	1,101	12,314	2,812	12,440	1,822	13,340	3,313
Antimony	mg/kg	-	-	0.36	0.33	<0.10	0.30	0.06	0.31	0.04	0.43	0.03	0.43	0.06	0.23	0.06	0.26	0.03
Arsenic	mg/kg	11	20	4.92	5.28	2.54	4.08	0.96	4.54	1.94	**13.0**	0.61	**15.0**	1.66	3.09	1.21	4.04	2.21
Barium	mg/kg	-	-	133	122	77	124	10	115	19	195	16	105	26	55	10	69	25
Beryllium	mg/kg	-	-	0.39	0.40	0.69	0.35	0.04	0.37	0.09	0.68	0.06	0.52	0.08	0.30	0.03	0.35	0.06
Bismuth	mg/kg	-	-	0.14	0.12	0.47	0.11	0.02	0.11	0.02	<0.10	0	0.10	0.01	0.10	0.01	0.10	0.01
Boron	mg/kg	-	-	<10	<10	<10	<10	0	<10	0	<10	0	<10	0	<10	0	<10	0
Cadmium	mg/kg	2.2	4.2	0.351	0.357	0.114	0.313	0.042	0.330	0.094	0.133	0.017	0.218	0.058	0.173	0.108	0.194	0.108
Calcium	mg/kg	-	-	7,736	8,077	14,400	7,136	662	7,483	1,498	28,300	2,112	20,300	1,487	8,712	1,368	10,622	2,157
Chromium	mg/kg	56	110	54.2	52.1	58.1	49.5	5.1	49.7	9.1	15.5	2.0	34.7	9.7	43.8	11.4	41.9	10.0
Cobalt	mg/kg	-	-	11.9	11.5	24.2	10.3	1.7	10.8	2.3	20.3	1.1	23.5	7.5	9.3	1.8	10.9	3.4
Copper	mg/kg	120	240	35	34	49	30	4.6	32	8.0	**652**	65	**648**	173	30	4.2	66	52
Iron	mg/kg	-	-	26,180	24,660	48,160	23,680	2,715	23,200	4,245	62,740	9,079	119,880	67,269	23,240	5,315	27,280	8,966
Lead	mg/kg	57	110	6.01	6.26	14.64	5.27	0.76	5.78	1.63	5.76	0.25	6.40	0.82	5.31	1.29	5.50	1.30
Lithium	mg/kg	-	-	13.2	11.7	45.8	11.5	1.8	11.0	2.1	18.2	1.5	13.2	1.9	11.8	2.5	12.3	2.1
Magnesium	mg/kg	-	-	6,950	6,780	12,320	6,360	621	6,420	1,230	11,320	862	6,924	1,387	6,356	1,600	6,752	2,482
Manganese	mg/kg	-	-	365	363	529	309	66	322	103	695	48	750	124	274	60	308	88
Mercury	mg/kg	0.30	0.58	0.0457	0.0480	0.0171	0.0377	0.0076	0.0438	0.0164	0.0773	0.0046	0.101	0.0188	0.0463	0.0188	0.0657	0.0343
Molybdenum	mg/kg	-	-	0.86	0.97	0.44	0.78	0.10	0.83	0.37	3.75	0.25	3.38	0.52	0.73	0.60	0.67	0.35
Nickel	mg/kg	-	-	33.1	32.3	69.1	29.3	4.2	30.7	6.8	12.2	0.6	18.8	3.1	26.1	5.6	26.2	5.7
Phosphorus	mg/kg	-	-	1,230	1,184	1,114	1,136	110	1,143	103	1,660	176	1,946	354	863	311	971	343
Potassium	mg/kg	-	-	1,312	1,297	4,328	1,120	211	1,213	311	1,786	109	920	286	762	165	1,006	294
Selenium	mg/kg	-	-	0.70	0.71	0.32	0.58	0.13	0.64	0.23	1.02	0.04	1.16	0.21	0.53	0.48	0.52	0.37
Silver	mg/kg	-	-	0.166	0.157	0.124	0.144	0.024	0.148	0.030	0.325	0.030	0.368	0.041	0.083	0.051	0.099	0.025
Sodium	mg/kg	-	-	406	478	424	386	21	460	50	1,160	58	526	150	274	122	386	219
Strontium	mg/kg	-	-	70.4	75.1	114	63.3	8.2	68.9	15.7	193	14.3	106	26.1	60.3	14.0	79.3	34.6
Sulfur - Total	mg/kg	-	-	-	<500	-	-	-	<500	0	-	-	1,220	321	-	-	920	821
Thallium	mg/kg	-	-	0.148	0.133	0.310	0.123	0.025	0.120	0.036	<0.050	0	0.050	0	0.056	0.012	0.060	0.017
Tin	mg/kg	-	-	0.40	0.39	0.56	0.35	0.06	0.38	0.02	1.63	0.12	1.31	0.11	0.33	0.11	0.44	0.18
Titanium	mg/kg	-	-	1,084	963	1,071	990	107	936	87	1,690	94.1	1,326	163	956	302	1,085	387
Uranium	mg/kg	-	-	1.15	1.24	1.95	0.99	0.18	1.14	0.34	1.21	0.13	1.08	0.10	0.93	0.25	1.06	0.26
Vanadium	mg/kg	-	-	61.5	59.4	39.9	56.9	5.1	57.0	9.3	235	31.9	461	273	67.9	29.0	85.3	46.6
Zinc	mg/kg	200	380	68.2	65.2	87.6	60.8	8.0	62.3	11.0	63.1	5.4	70.8	11.7	45.1	4.3	49.1	9.8

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported 2015 moisture, pH, and total nitrogen data are based on bulk sediment. Reported 2014 pH data are based on < 63 µm sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996).

[3] Reference 95th percentiles for 2015 data were calculated using data displayed in Appendix Table D.3. For calculation of 2014 Reference 95th percentiles see Minnow (2015). The 5th percentile is reported for pH.

[4] Summary statistics for reference area LRef2 are based only on data from replicates LRef2-01 to LRef2-03 due to high sand content in replicates LRef2-04 and LRef2-52-05 (> 90%).

[5] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

Table 4: Summary of sediment quality for Quesnel Lake profundal sampling areas, Mount Polley Mine, 2014 and 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]			Reference				Exposed			
				PRef1			PRef1				PNF			
						PRef2 (2014)	2014		2015		2014		2015	
		Sensitive	Typical	2014	2015		Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]
Physical Tests														
Moisture	%	-	-	54.1	54.1	70.5	51.8	3.2	53.4	2.0	37.7	9.2	49.2	20.8
pH (1:2 soil:water) [1]	pH	-	-	6.83	6.72	7.21	6.94	0.11	7.02	0.83	8.68	0.08	8.45	0.15
Particle Size														
% Gravel (>2mm)	%	-	-	<0.10	<0.10	<0.10	<0.10	0	<0.10	0	0.10	0.01	<0.10	0
% Sand (2.0mm - 0.063mm)	%	-	-	31.5	26.7	13.2	23.5	9.0	19.5	6.9	7.8	15.7	7.0	14.7
% Silt (0.063mm - 4µm)	%	-		74.1	74.0	74.3	67.4	9.0	69.8	5.9	69.6	13.4	57.5	18.2
% Clay (<4µm)	%	-	-	10.4	11.7	27.2	9.1	1.5	10.7	1.4	22.6	14.7	35.5	24.0
Organic / Inorganic Carbon (<63 µm)														
Total Organic Carbon	%	-	-	1.72	1.96	1.93	1.68	0.06	1.82	0.36	0.17	0.08	0.29	0.21
Nutrients (Bulk sediment)														
Total Nitrogen by LECO	%	-	-	0.148	0.181	0.176	0.140	0.010	0.170	0.030	0.023	0.006	0.043	0.020
Metals (<63 µm)														
Aluminum	mg/kg	-	-	15,380	17,260	25,380	14,780	943	16,567	2,348	20,800	4,903	26,520	10,013
Antimony	mg/kg	-	-	0.44	0.47	0.40	0.42	0.02	0.44	0.08	0.52	0.09	0.55	0.11
Arsenic	mg/kg	11	20	8.51	9.02	20.9	7.75	0.86	8.88	0.52	15.4	2.5	15.4	1.9
Barium	mg/kg	-	-	151	151	220	144	8.07	147	10	225	44	255	72
Beryllium	mg/kg	-	-	0.44	0.52	0.90	0.41	0.03	0.49	0.09	0.79	0.20	0.96	0.31
Bismuth	mg/kg	-	-	0.15	0.17	0.51	0.14	0.01	0.16	0.03	0.10	0.01	0.13	0.04
Boron	mg/kg	-	-	<10	<10	<10	<10	0	<10	0	11	0.7	11	1.7
Cadmium	mg/kg	2.2	4.2	0.414	0.470	0.315	0.384	0.036	0.420	0.138	0.164	0.034	0.197	0.055
Calcium	mg/kg	-	-	8,034	8,834	7,392	7,742	368	8,747	283	33,340	5,031	31,160	3,467
Chromium	mg/kg	56	110	55.8	60.0	52.2	52.0	4.0	57.7	8.9	14.3	3.8	20.9	5.3
Cobalt	mg/kg	-	-	14.0	15.2	25.7	13.3	0.8	14.5	2.5	19.4	3.6	25.5	10.6
Copper	mg/kg	120	240	46.2	59.0	48.3	42.2	4.1	55.1	11.8	**714**	138	**859**	378
Iron	mg/kg	-	-	29,820	32,660	102,460	28,580	1,664	31,300	5,187	37,240	21,694	40,620	6,727
Lead	mg/kg	57	110	7.24	8.01	22.1	7.00	0.29	7.65	0.89	7.09	1.82	9.90	3.70
Lithium	mg/kg	-	-	13.8	15.5	37.4	13.1	0.6	14.4	4.0	20.5	5.2	29.8	13.5
Magnesium	mg/kg	-	-	8,036	8,635	9,344	7,666	475	8,150	1,686	12,958	3,178	17,320	8,586
Manganese	mg/kg	-	-	496	512	7,814	470	39.5	491	55	797	147	1,033	329
Mercury	mg/kg	0.30	0.58	0.0515	0.0624	0.0593	0.0486	0.0030	0.0579	0.0143	0.0697	0.0093	0.0954	0.0239
Molybdenum	mg/kg	-	-	0.96	1.18	2.72	0.91	0.06	1.08	0.27	3.76	0.34	4.05	0.89
Nickel	mg/kg	-	-	37.9	41.1	60.7	35.6	2.57	39.1	6.67	12.9	2.81	20.2	6.84
Phosphorus	mg/kg	-	-	1,126	1,199	1,776	1,094	41	1,180	66	1,706	155	1,352	297
Potassium	mg/kg	-	-	1,370	1,568	3,704	1,312	88	1,517	188	1,942	438	2,640	885
Selenium	mg/kg	-	-	0.94	1.08	0.91	0.86	0.09	0.97	0.29	1.07	0.22	1.23	0.46
Silver	mg/kg	-	-	0.203	0.236	0.189	0.188	0.017	0.214	0.061	0.332	0.050	0.369	0.106
Sodium	mg/kg	-	-	420	518	374	396	29	497	63	1,118	256	1,396	411
Strontium	mg/kg	-	-	78.1	88.5	94.3	74.6	3.9	85.1	8.7	188	36.5	212	45.2
Sulfur (S)-Total	mg/kg	-	-	-	1,390	-	-	-	1,167	799	-	-	1,560	226
Thallium	mg/kg	-	-	0.166	0.192	0.293	0.157	0.011	0.174	0.045	<0.050	0	0.060	0.011
Tin	mg/kg	-	-	0.47	0.49	0.61	0.41	0.07	0.45	0.10	2.05	0.48	1.99	0.53
Titanium	mg/kg	-	-	1,084	1,187	923	1,036	58	1,130	197	1,946	344	1,996	509
Uranium	mg/kg	-	-	1.35	1.56	3.16	1.30	0.06	1.46	0.23	1.43	0.35	1.39	0.24
Vanadium	mg/kg	-	-	66.3	72.9	46.6	62.2	4.4	70.1	11.2	145	84.6	142	32.6
Zinc	mg/kg	200	380	77.1	84.9	95.3	73.7	3.7	79.8	17.8	69.0	13.8	96.0	41.2

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported 2015 moisture, pH, and total nitrogen data are based on bulk sediment. Reported 2014 pH data are based on < 63 µm sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996).

[3] Reference 95th percentiles for 2015 data were calculated using data displayed in Appendix Table D.4. For calculation of 2014 Reference 95th percentiles see Minnow (2015). The 5th percentile is reported for pH.

[4] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

Sediment concentrations of nitrogen and metals observed in the profundal near-field area in 2015 were very similar to those observed in 2014, with arsenic and copper being the only analytes with concentrations whose concentrations exceeded the CSR “sensitive” criteria (Table 4; Appendix Table D.4). Sediment arsenic concentrations exceeded one of the two reference area concentrations (PRef1), but not both, the greater of which exceeded the CSR “typical” criterion (reference area PRef2).

Copper was the only analyte observed in the profundal near-field area to exceed the CSR “typical” criterion, as was also observed in 2014 (Table 4; Appendix Table D.4). In 2015, the mean copper sediment concentration exceeded the CSR “typical” criterion by approximately 3.6 times on average, and exceeded reference concentrations by approximately 14.5 times on average (Table 4).

Summary

Copper was the only analyte observed to exceed the CSR “typical” criterion in sediment from the three waterbodies affected by the Mount Polley Tailings Dam failure (Polley Lake, Hazeltine Creek and Quesnel Lake). Copper also exceeded reference or pre-event concentrations within all three of these waterbodies. Sediment arsenic concentrations exceeded the CSR “sensitive” (but not “typical”) criterion in all 2015 sampling areas except the Quesnel Lake littoral far-field area. These “sensitive” criteria apply to the top one meter of sediments in aquatic receiving environments (BCMoE 2013). Overall, there was little difference in the chemistry of sediment from the three waterbodies affected by the Mount Polley Tailings Dam failure between the 2014 and 2015 sampling events.

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APPENDIX A

SAMPLE LOCATIONS
AND SUPPORTING DATA

Table A.1: Mount Polley sediment quality monitoring - sample locations, August 2015

Location	Area Code	Type	Replicate	GPS Coordinates		Metals and TOC [1]		Particle Size	
				Easting	Northing	Sampling Method	Grabs per Composite	Sampling Method	Grabs per Composite
Polley Lake - South Basin	POL-P2	Exposed	1	595166	5822178	KB corer	3	petite ponar	3
			2	595137	5822146	KB corer	3	petite ponar	3
			3	595191	5822207	KB corer	3	petite ponar	3
			4	595158	5822228	KB corer	3	petite ponar	3
			5	595134	5822204	KB corer	3	petite ponar	3
Bootjack Lake - South Basin	BOL-B2	Reference	1	591265	5821636	KB corer	5	petite ponar	3
			2	591300	5821652	KB corer	5	petite ponar	3
			3	591241	5821684	KB corer	5	petite ponar	3
			4	591287	5821593	KB corer	6	petite ponar	3
			5	591213	5821639	KB corer	6	petite ponar	2

Location	Area Code	Type	Replicate	GPS Coordinates		Metals, TOC [1] and Particle Size	
				Easting	Northing	Sampling Method	Grabs per Composite
Hazeltine Creek Sediment Pond	HAC	Exposed	1	601547	5817200	stainless steel spoon	10
			2	601569	5817262	stainless steel spoon	10
			3	601591	5817297	stainless steel spoon	10
			4	601584	5817298	stainless steel spoon	10
			5	601584	5817298	stainless steel spoon	10
Quesnel Lake - Littoral Near-Field	LNF1	Exposed	1	601524	5817990	petite ponar	5
			2	601457	5818033	petite ponar	5
			3	601451	5818067	petite ponar	5
			4	601555	5817927	petite ponar	5
			5	601479	5818047	petite ponar	5
Quesnel Lake - Littoral Far-Field	LFF	Exposed	1	601680	5820049	petite ponar	5
			2	600441	5822695	petite ponar	6
			3	600932	5818778	petite ponar	5
			4	600861	5818809	petite ponar	5
			5	601035	5821268	petite ponar	6
Quesnel Lake - Littoral Reference	LREF1	Reference	1	610136	5813949	petite ponar	10
			3	610097	5813939	petite ponar	10
			4	610164	5813960	petite ponar	5
Quesnel Lake - Profundal Near-Field	PNF	Exposed	1	601814	5818205	standard ponar	6 [2]
			2	601672	5818297	petite ponar	5
			3	601914	5818113	standard ponar	3
			4	602623	5817818	standard ponar	3
			5	602272	5817946	standard ponar	3
Quesnel Lake - Profundal Reference	PREF1	Reference	1	610434	5814754	standard ponar	3
			2	610294	5814639	standard ponar	3
			3	610613	5814885	standard ponar	5 [2]
			4	610526	5814608	standard ponar	3
			5	610714	5814799	standard ponar	3

[1] Total organic carbon

[2] Additional grabs per composite collected to achieve volume for quality control duplicate

Table A.2: Mount Polley sediment quality monitoring - supporting measures, August 2015

Location	Area Code	Type	Replicate	Station Depth (m)	Secchi Depth (m)	Surface						Bottom					
						Temp. °C	DO mg/L	DO %	SpC µS/cm	pH pH	ORP mV	Temp. °C	DO mg/L	DO %	SpC µS/cm	pH pH	ORP mV
Polley Lake - South Basin	POL-P2	Exposed	1	28	7.18	19.9	8.17	89.7	282	8.03	150	6.0	3.00	24.1	288	7.14	157
			2	28	6.36	19.4	8.16	88.6	282	8.28	147	5.9	3.12	24.9	288	7.22	162
			3	29	6.34	19.4	8.17	88.8	282	7.94	170	5.9	3.10	24.7	288	7.08	168
			4	28	6.23	19.4	8.17	88.8	282	8.32	152	5.9	3.03	24.4	288	7.22	165
			5	28	6.96	19.4	8.22	89.4	282	8.21	160	5.9	3.26	25.4	288	7.18	173
Bootjack Lake - South Basin	BOL-B2	Reference	1	18	6.84	19.6	8.53	93.1	97	7.73	156	8.6	0.16	1.4	102	6.71	154
			2	16	7.15	19.1	8.43	91.1	97	7.59	179	8.5	0.15	1.3	103	6.54	84.6
			3	17	7.53	19.6	8.43	91.9	97	7.62	172	8.6	0.37	3.2	101	6.67	175
			4	15	7.27	19.7	8.40	91.7	97	7.75	169	8.7	0.24	2.2	101	6.67	175
			5	17	6.47	20.0	8.39	92.0	97	7.82	163	8.7	0.30	2.7	101	6.67	175
Hazeltine Creek Sediment Pond	HAC	Exposed	1	0.5	-	17.6	9.34	98.1	393	7.93	168	-	-	-	-	-	-
			2	0.5	-	16.4	9.52	97.6	391	7.71	173	-	-	-	-	-	-
			3	0.5	-	15.6	9.39	94.7	391	7.67	177	-	-	-	-	-	-
			4	0.5	-							-	-	-	-	-	-
			5	0.3	-							-	-	-	-	-	-
Quesnel Lake - Littoral Far-Field	LFF	Exposed	1	1.5	> depth	17.4	9.47	99.2	108	8.16	227	17.8	9.46	99.6	109	8.20	225
			2	1.3	> depth	17.2	9.31	96.7	108	8.19	255	17.2	9.3	96.6	108	8.21	255
			3	1.6	> depth	17.9	9.10	95.8	109	8.03	206	17.7	9.15	95.9	108	8.03	205
			4	1.3	> depth	18.2	9.46	100	108	8.16	190	17.8	9.29	97.7	108	8.10	198
			5	1.5	> depth	16.9	9.47	98.1	108	8.20	240	17.4	9.39	97.7	108	8.22	239
Quesnel Lake - Littoral Reference	LREF1	Reference	1	1.4	> depth	18.5	10.5	112	108	8.77	144	18.7	10.55	113	108	8.81	148
			2	1.1	> depth	20.0	11.9	131	105	8.95	197	19.9	13.19	145	104	9.08	195
			3	1.2	> depth	19.7	10.9	119	105	8.31	205	19.4	10.93	119	105	8.31	204
			4	1.3	> depth	20.1	9.28	102	107	8.54	201	19.4	11.56	125	105	9.27	186
			5	1.4	> depth	19.6	10.7	116	106	8.69	209	19.4	15.46	168	103	9.30	193
Quesnel Lake - Profundal Near-Field	PNF	Exposed	1	112	9.10	19.0	8.83	95.1	105	7.79	159	4.4	10.97	83.4	115	7.46	173
			2	111	9.32	17.9	8.80	92.8	137	7.82	140	4.4	10.32	79.4	146	7.41	166
			3	104	9.96	17.9	8.78	92.6	138	7.93	141	4.3	10.28	79.1	146	7.46	145
			4	97	8.54	17.9	8.79	92.8	138	7.95	154	4.3	10.10	77.8	147	7.51	148
			5	106	10.84	19.6	8.70	95.0	141	8.20	147	4.3	10.15	78.2	151	7.57	148
Quesnel Lake - Profundal Reference	PREF1	Reference	1	115	7.85	19.0	8.90	95.1	106	8.04	160	3.8	11.14	84.5	110	7.51	176
			2	103	7.02	19.2	8.93	96.7	108	7.66	169	3.8	10.98	83.4	110	7.35	169
			3	120	9.94	18.2	9.10	96.5	118	8.09	188	4.5	10.43	81.0	110	7.50	215
			4	102	11.26	18.7	9.16	98.0	111	8.21	206	4.1	10.29	80.0	113	7.66	227
			5	103	11.13	18.7	9.07	97.2	109	8.18	232	4.3	10.40	79.8	112	7.40	251

[1] Total organic carbon

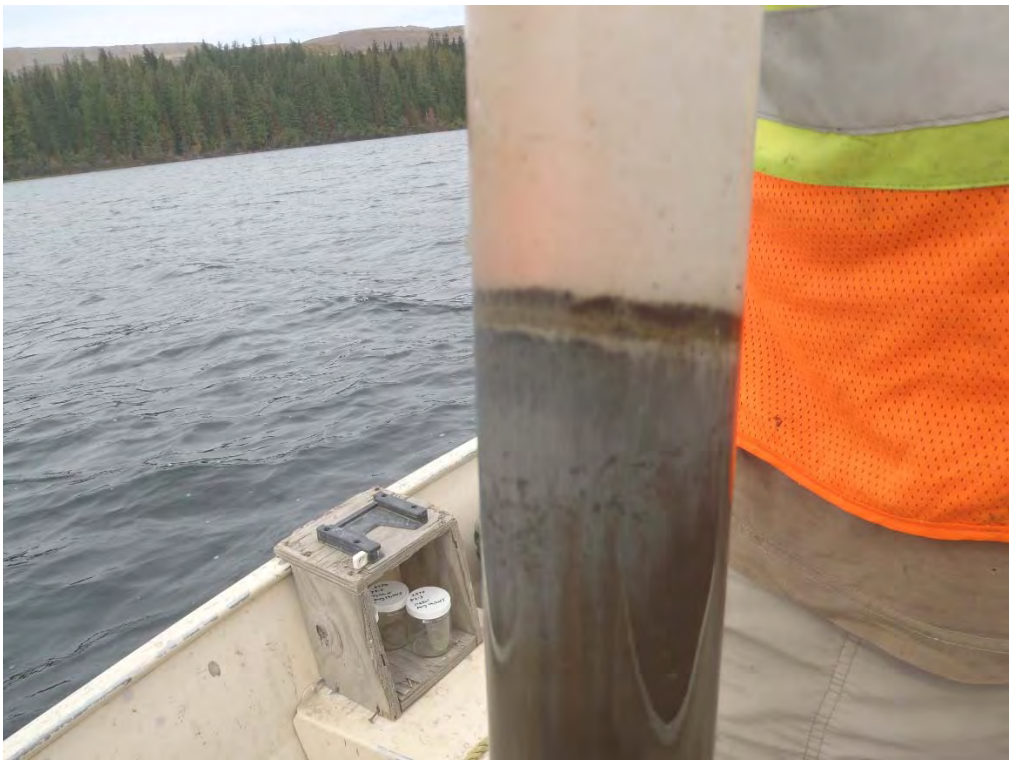

Photo 1: Sediment core from Polley Lake Station P2, Replicate 3, August 14, 2015.

Photo 2: Sediment grab from Polley Lake Station P2, Replicate 3, August 14, 2015.

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Photo 3: Sediment core from Bootjack Lake Station B2, Replicate 3, August 16, 2015.

Photo 4: Sediment grab from Bootjack Lake Station B2, Replicate 3, August 16, 2015.

Photo 5: Sediment collected from Hazeltine Creek Sediment Pond, Replicate 5, August 20, 2015.

Photo 6: Silt/clay substrate at Hazeltine Creek Sediment Pond, August 20, 2015.

Photo 7: Sandy/rocky substrate at Quesnel Lake littoral near-field, August 17, 2015.

Photo 8: Sediment grab from Quesnel Lake littoral far-field, Replicate 2, August 25, 2015.

Photo 9: Sediment grab from Quesnel Lake littoral reference, Replicate 3, August 25, 2015.

Photo 10: Sediment grab from Quesnel Lake profundal near-field, Replicate 2, August 14, 2015.

Photo 11: Sediment grab from Quesnel Lake profundal reference, Replicate 1, August 18, 2015.

APPENDIX B

ANALYTICAL REPORTS

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 21-AUG-15
Report Date: 02-OCT-15 12:45 (MT)
Version: FINAL REV. 3

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1661656

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Comments:

Tessier sequential extraction and AVS/SEM analyses are not included in this report.

23-SEP-2015 Revision 2: The report to company has been modified.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1661656-1 Sediment 17-AUG-15 PNF-01	L1661656-2 Sediment 17-AUG-15 PNF-01X	L1661656-3 Sediment 14-AUG-15 PNF-02	L1661656-4 Sediment 15-AUG-15 PNF-03	L1661656-5 Sediment 15-AUG-15 PNF-04
SOIL						
Physical Tests	Moisture (%)	63.5	64.5	64.7	55.0	33.9
	pH (1:2 soil:water) (pH)	8.26	8.31	8.38	8.51	8.55
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10	<0.10	<0.10	<0.10
	% Sand (2.0mm - 0.063mm) (%)	1.41	1.29	1.67	1.83	1.90
	% Silt (0.063mm - 4um) (%)	44.1	46.4	48.5	54.7	81.7
	% Clay (<4um) (%)	54.5	52.3	49.9	43.5	16.4
	Texture	Silty clay	Silty clay	Silty clay	Silty clay loam	Silt
Anions and Nutrients	Total Nitrogen by LECO (%)	0.064	0.055	0.055	0.043	0.027
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.42	0.50	0.52	0.25	<0.10
Metals	Aluminum (Al) (mg/kg)	33300	33500	34500	28800	17700
	Antimony (Sb) (mg/kg)	0.61	0.63	0.66	0.57	0.43
	Arsenic (As) (mg/kg)	16.2	16.4	17.0	16.1	13.4
	Barium (Ba) (mg/kg)	298	296	306	286	193
	Beryllium (Be) (mg/kg)	1.17	1.18	1.22	1.02	0.69
	Bismuth (Bi) (mg/kg)	0.16	0.16	0.17	0.14	<0.10
	Boron (B) (mg/kg)	12	12	13	12	<10
	Cadmium (Cd) (mg/kg)	0.230	0.242	0.244	0.210	0.144
	Calcium (Ca) (mg/kg)	33000	33400	34900	30700	28100
	Chromium (Cr) (mg/kg)	23.5	23.7	25.0	22.5	14.3
	Cobalt (Co) (mg/kg)	32.7	33.0	35.0	26.1	15.9
	Copper (Cu) (mg/kg)	1110	1130	1190	904	536
	Iron (Fe) (mg/kg)	38700	39100	41200	38600	35100
	Lead (Pb) (mg/kg)	12.3	12.5	12.7	11.1	6.47
	Lithium (Li) (mg/kg)	39.7	40.3	41.2	30.5	18.2
	Magnesium (Mg) (mg/kg)	23100	23800	25000	17900	10200
	Manganese (Mn) (mg/kg)	1250	1280	1310	1090	716
	Mercury (Hg) (mg/kg)	0.116	0.116	0.114	0.0935	0.0751
	Molybdenum (Mo) (mg/kg)	4.64	4.63	4.82	4.15	3.17
	Nickel (Ni) (mg/kg)	24.6	24.9	25.5	22.1	13.4
	Phosphorus (P) (mg/kg)	1080	1130	1180	1310	1650
	Potassium (K) (mg/kg)	3190	3120	3140	3150	1890
	Selenium (Se) (mg/kg)	1.54	1.59	1.61	1.29	0.82
	Silver (Ag) (mg/kg)	0.441	0.447	0.462	0.378	0.269
	Sodium (Na) (mg/kg)	1590	1620	1650	1670	1050
	Strontium (Sr) (mg/kg)	241	240	242	231	172
	Sulfur (S)-Total (mg/kg)	1800	1800	1700	1500	1400

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1661656-6 Sediment 16-AUG-15 PNF-05	L1661656-7 Sediment 18-AUG-15 PREFI-01	L1661656-8 Sediment 19-AUG-15 PREFI-03	L1661656-9 Sediment 19-AUG-15 PREFI-03X	L1661656-10 Sediment 17-AUG-15 LNFI-1
SOIL						
Physical Tests	Moisture (%)	29.0	52.6	53.3	51.6	21.9
	pH (1:2 soil:water) (pH)	8.53	7.36	6.69	6.72	6.70
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10	<0.10	<0.10	0.84
	% Sand (2.0mm - 0.063mm) (%)	28.2	21.1	15.2	11.2	95.9
	% Silt (0.063mm - 4um) (%)	58.7	67.7	73.0	76.9	2.87
	% Clay (<4um) (%)	13.1	11.2	11.8	11.9	0.40
	Texture	Silt loam	Silt loam	Silt loam	Silt loam	Sand
Anions and Nutrients	Total Nitrogen by LECO (%)	0.028	0.169	0.158	0.156	0.027
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.18	1.76	1.71	1.66	0.65
Metals	Aluminum (Al) (mg/kg)	18300	16900	17300	16700	14500
	Antimony (Sb) (mg/kg)	0.50	0.47	0.43	0.42	0.46
	Arsenic (As) (mg/kg)	14.1	8.64	8.98	9.28	14.3
	Barium (Ba) (mg/kg)	190	147	151	150	128
	Beryllium (Be) (mg/kg)	0.70	0.52	0.50	0.50	0.56
	Bismuth (Bi) (mg/kg)	<0.10	0.17	0.15	0.15	0.10
	Boron (B) (mg/kg)	<10	<10	<10	<10	<10
	Cadmium (Cd) (mg/kg)	0.156	0.475	0.422	0.416	0.261
	Calcium (Ca) (mg/kg)	29100	8780	8840	8760	20000
	Chromium (Cr) (mg/kg)	19.1	60.1	59.5	58.5	33.0
	Cobalt (Co) (mg/kg)	17.8	15.2	15.0	14.7	20.4
	Copper (Cu) (mg/kg)	557	59.4	55.8	54.6	890
	Iron (Fe) (mg/kg)	49500	32300	32700	31900	83000
	Lead (Pb) (mg/kg)	6.94	8.06	7.51	7.44	7.16
	Lithium (Li) (mg/kg)	19.2	15.5	15.2	15.0	15.1
	Magnesium (Mg) (mg/kg)	10400	8410	8660	8370	8230
	Manganese (Mn) (mg/kg)	801	477	479	467	852
	Mercury (Hg) (mg/kg)	0.0783	0.0627	0.0515	0.0545	0.123
	Molybdenum (Mo) (mg/kg)	3.47	1.20	1.02	1.05	3.26
	Nickel (Ni) (mg/kg)	15.3	41.2	40.1	39.2	20.5
	Phosphorus (P) (mg/kg)	1540	1150	1190	1200	1730
	Potassium (K) (mg/kg)	1830	1550	1570	1520	1140
	Selenium (Se) (mg/kg)	0.87	1.10	0.93	0.90	1.15
	Silver (Ag) (mg/kg)	0.295	0.238	0.216	0.209	0.405
	Sodium (Na) (mg/kg)	1020	470	520	530	630
	Strontium (Sr) (mg/kg)	172	82.0	84.5	82.8	122
	Sulfur (S)-Total (mg/kg)	1400	1400	1300	1200	1000

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1661656-11 Sediment 17-AUG-15 LNFI-2	L1661656-12 Sediment 17-AUG-15 LNFI-3	L1661656-13 Sediment 17-AUG-15 LNFI-4	L1661656-14 Sediment 17-AUG-15 LNFI-5	L1661656-15 Sediment 13-AUG-15 POL-P2-1
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Physical Tests	Moisture (%)	20.8	26.6	35.7	21.9	86.3
	pH (1:2 soil:water) (pH)	8.21	8.28	8.16	8.39	7.18
Particle Size	% Gravel (>2mm) (%)	0.48	<0.10	7.32	1.37	
	% Sand (2.0mm - 0.063mm) (%)	91.7	82.8	51.9	89.9	
	% Silt (0.063mm - 4um) (%)	7.00	16.7	39.4	7.93	
	% Clay (<4um) (%)	0.85	0.47	1.42	0.79	
	Texture	Sand	Sand	Sandy loam	Sand	
Anions and Nutrients	Total Nitrogen by LECO (%)	0.029	0.031	0.042	0.029	0.702
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.21	0.14	0.35	0.40	3.80
Metals	Aluminum (Al) (mg/kg)	12900	8470	13000	12700	28400
	Antimony (Sb) (mg/kg)	0.46	0.37	0.39	0.47	1.06
	Arsenic (As) (mg/kg)	16.1	16.3	13.1	15.4	14.7
	Barium (Ba) (mg/kg)	105	71.8	113	107	317
	Beryllium (Be) (mg/kg)	0.56	0.41	0.54	0.52	1.05
	Bismuth (Bi) (mg/kg)	<0.10	0.11	<0.10	0.10	0.11
	Boron (B) (mg/kg)	<10	<10	<10	<10	14
	Cadmium (Cd) (mg/kg)	0.268	0.180	0.165	0.214	0.201
	Calcium (Ca) (mg/kg)	22300	19500	20400	19300	28200
	Chromium (Cr) (mg/kg)	33.9	44.0	23.1	39.3	22.0
	Cobalt (Co) (mg/kg)	20.1	33.9	19.4	23.9	24.3
	Copper (Cu) (mg/kg)	634	593	539	583	851
	Iron (Fe) (mg/kg)	92300	213000	89100	122000	32400
	Lead (Pb) (mg/kg)	6.68	6.01	5.47	6.66	9.06
	Lithium (Li) (mg/kg)	13.3	10.8	13.6	13.0	27.1
	Magnesium (Mg) (mg/kg)	7010	5190	7420	6770	16900
	Manganese (Mn) (mg/kg)	756	671	628	842	2400
	Mercury (Hg) (mg/kg)	0.102	0.0940	0.0819	0.105	0.102
	Molybdenum (Mo) (mg/kg)	3.64	3.97	3.04	3.00	8.86
	Nickel (Ni) (mg/kg)	19.2	18.6	14.6	20.9	19.9
	Phosphorus (P) (mg/kg)	2030	2410	1810	1750	1220
	Potassium (K) (mg/kg)	960	530	1020	950	2700
	Selenium (Se) (mg/kg)	1.07	1.44	1.01	1.12	3.94
	Silver (Ag) (mg/kg)	0.360	0.392	0.320	0.361	0.361
	Sodium (Na) (mg/kg)	540	330	620	510	1730
	Strontium (Sr) (mg/kg)	110	69.7	119	110	292
	Sulfur (S)-Total (mg/kg)	1000	1500	1500	1100	6700

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1661656-16	L1661656-17	L1661656-18	L1661656-19	L1661656-20
Description	Sediment	Sediment	Sediment	Sediment	Sediment
Sampled Date	13-AUG-15	14-AUG-15	14-AUG-15	14-AUG-15	14-AUG-15
Sampled Time					
Client ID	POL-P2-1 (PS)	POL-P2-2	POL-P2-2 (PS)	POL-P2-3	POL-P2-3 (PS)
Grouping / **Analyte**					
SOIL					
Physical Tests Moisture (%)		84.1		86.0	
pH (1:2 soil:water) (pH)		7.50		7.49	
Particle Size % Gravel (>2mm) (%)	<0.10		<0.10		<0.10
% Sand (2.0mm - 0.063mm) (%)	<0.10		0.30		<0.10
% Silt (0.063mm - 4um) (%)	69.6		85.4		87.1
% Clay (<4um) (%)	30.3		14.3		12.9
Texture	Silt loam		Silt		Silt
Anions and Nutrients Total Nitrogen by LECO (%)		1.19		0.858	
Organic / Inorganic Carbon Total Organic Carbon (%)		10.1		7.37	
Metals Aluminum (Al) (mg/kg)		28900		27700	
Antimony (Sb) (mg/kg)		1.12		1.06	
Arsenic (As) (mg/kg)		14.1		13.4	
Barium (Ba) (mg/kg)		346		308	
Beryllium (Be) (mg/kg)		1.06		0.97	
Bismuth (Bi) (mg/kg)		0.12		0.12	
Boron (B) (mg/kg)		13		15	
Cadmium (Cd) (mg/kg)		0.201		0.226	
Calcium (Ca) (mg/kg)		24800		22000	
Chromium (Cr) (mg/kg)		21.6		27.8	
Cobalt (Co) (mg/kg)		23.4		22.5	
Copper (Cu) (mg/kg)		855		774	
Iron (Fe) (mg/kg)		29800		30500	
Lead (Pb) (mg/kg)		9.70		9.30	
Lithium (Li) (mg/kg)		26.1		25.1	
Magnesium (Mg) (mg/kg)		16400		15400	
Manganese (Mn) (mg/kg)		3160		2050	
Mercury (Hg) (mg/kg)		0.105		0.115	
Molybdenum (Mo) (mg/kg)		9.09		10.4	
Nickel (Ni) (mg/kg)		19.3		23.0	
Phosphorus (P) (mg/kg)		1160		1180	
Potassium (K) (mg/kg)		2820		2680	
Selenium (Se) (mg/kg)		4.47		4.52	
Silver (Ag) (mg/kg)		0.351		0.353	
Sodium (Na) (mg/kg)		1880		1720	
Strontium (Sr) (mg/kg)		304		265	
Sulfur (S)-Total (mg/kg)		11200		7500	

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID Description Sampled Date Sampled Time Client ID	L1661656-21 Sediment 14-AUG-15 POL-P2-4	L1661656-22 Sediment 14-AUG-15 POL-P2-4 (PS)	L1661656-23 Sediment 15-AUG-15 POL-P2-5	L1661656-24 Sediment 15-AUG-15 POL-P2-5 (PS)	L1661656-25 Sediment 16-AUG-15 BOL-B2-1
SOIL							
Physical Tests	Moisture (%)		89.7		89.1		94.1
	pH (1:2 soil:water) (pH)		7.47		7.70		6.44
Particle Size	% Gravel (>2mm) (%)			<0.10		<0.10	
	% Sand (2.0mm - 0.063mm) (%)			0.21		<0.10	
	% Silt (0.063mm - 4um) (%)			73.8		78.0	
	% Clay (<4um) (%)			26.0		22.0	
	Texture			Silt loam		Silt loam	
Anions and Nutrients	Total Nitrogen by LECO (%)		0.977		0.988		1.60
Organic / Inorganic Carbon	Total Organic Carbon (%)		7.51		8.32		14.8
Metals	Aluminum (Al) (mg/kg)		26300		29800		18700
	Antimony (Sb) (mg/kg)		1.33		0.87		0.93
	Arsenic (As) (mg/kg)		13.0		14.7		7.46
	Barium (Ba) (mg/kg)		349		327		311
	Beryllium (Be) (mg/kg)		0.98		1.02		0.70
	Bismuth (Bi) (mg/kg)		0.12		0.12		0.14
	Boron (B) (mg/kg)		13		13		16
	Cadmium (Cd) (mg/kg)		0.224		0.239		0.492
	Calcium (Ca) (mg/kg)		20400		27100		7970
	Chromium (Cr) (mg/kg)		25.8		33.5		45.4
	Cobalt (Co) (mg/kg)		19.9		25.6		13.1
	Copper (Cu) (mg/kg)		772		864		375
	Iron (Fe) (mg/kg)		28100		28000		33400
	Lead (Pb) (mg/kg)		9.76		8.92		10.6
	Lithium (Li) (mg/kg)		22.1		26.7		10.6
	Magnesium (Mg) (mg/kg)		13500		17400		5230
	Manganese (Mn) (mg/kg)		3320		1940		3850
	Mercury (Hg) (mg/kg)		0.116		0.114		0.291
	Molybdenum (Mo) (mg/kg)		12.0		10.3		3.88
	Nickel (Ni) (mg/kg)		21.3		26.6		32.7
	Phosphorus (P) (mg/kg)		1130		1310		3550
	Potassium (K) (mg/kg)		2740		2890		1760
	Selenium (Se) (mg/kg)		5.75		3.45		2.91
	Silver (Ag) (mg/kg)		0.341		0.334		0.367
	Sodium (Na) (mg/kg)		1960		1850		770
	Strontium (Sr) (mg/kg)		298		285		97.4
	Sulfur (S)-Total (mg/kg)		7600		9100		6200

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1661656-26 Sediment 16-AUG-15 BOL-B2-1 (PS)	L1661656-27 Sediment 16-AUG-15 BOL-B2-2	L1661656-28 Sediment 16-AUG-15 BOL-B2-2 (PS)	L1661656-29 Sediment 16-AUG-15 BOL-B2-3	L1661656-30 Sediment 16-AUG-15 BOL-B2-3 (PS)
SOIL						
Physical Tests	Moisture (%)		96.1		95.7	
	pH (1:2 soil:water) (pH)		6.71		6.60	
Particle Size	% Gravel (>2mm) (%)	<0.10		<0.10		<0.10
	% Sand (2.0mm - 0.063mm) (%)	0.12		0.15		0.22
	% Silt (0.063mm - 4um) (%)	80.6		83.9		81.8
	% Clay (<4um) (%)	19.3		16.0		17.9
	Texture	Silt loam		Silt		Silt loam
Anions and Nutrients	Total Nitrogen by LECO (%)		1.67		1.65	
Organic / Inorganic Carbon	Total Organic Carbon (%)		15.5		15.1	
Metals	Aluminum (Al) (mg/kg)		19700		17600	
	Antimony (Sb) (mg/kg)		1.05		0.91	
	Arsenic (As) (mg/kg)		8.48		7.23	
	Barium (Ba) (mg/kg)		277		280	
	Beryllium (Be) (mg/kg)		0.71		0.70	
	Bismuth (Bi) (mg/kg)		0.14		0.13	
	Boron (B) (mg/kg)		16		14	
	Cadmium (Cd) (mg/kg)		0.602		0.493	
	Calcium (Ca) (mg/kg)		9140		8140	
	Chromium (Cr) (mg/kg)		47.5		42.2	
	Cobalt (Co) (mg/kg)		14.0		12.7	
	Copper (Cu) (mg/kg)		409		363	
	Iron (Fe) (mg/kg)		29300		27500	
	Lead (Pb) (mg/kg)		11.8		10.4	
	Lithium (Li) (mg/kg)		10.8		10.4	
	Magnesium (Mg) (mg/kg)		5400		5190	
	Manganese (Mn) (mg/kg)		2890		3240	
	Mercury (Hg) (mg/kg)		0.330		0.285	
	Molybdenum (Mo) (mg/kg)		4.85		4.23	
	Nickel (Ni) (mg/kg)		34.8		32.4	
	Phosphorus (P) (mg/kg)		1990		2070	
	Potassium (K) (mg/kg)		1750		1570	
	Selenium (Se) (mg/kg)		2.76		2.59	
	Silver (Ag) (mg/kg)		0.391		0.372	
	Sodium (Na) (mg/kg)		1090		840	
	Strontium (Sr) (mg/kg)		106		94.9	
	Sulfur (S)-Total (mg/kg)		7700		7100	

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1661656-31	L1661656-32	L1661656-33		
Description	Sediment	Sediment	Sediment		
Sampled Date	16-AUG-15	16-AUG-15	16-AUG-15		
Sampled Time					
Client ID	BOL-B2-4 (PS)	BOL-B2-5 (PS)	BOL-BX		
Grouping / **Analyte**					
SOIL					
Physical Tests Moisture (%)			94.8		
pH (1:2 soil:water) (pH)			6.39		
Particle Size % Gravel (>2mm) (%)	<0.10	<0.10			
% Sand (2.0mm - 0.063mm) (%)	0.16	0.63			
% Silt (0.063mm - 4um) (%)	83.9	82.6			
% Clay (<4um) (%)	15.9	16.8			
Texture	Silt loam	Silt loam			
Anions and Nutrients Total Nitrogen by LECO (%)			1.67		
Organic / Inorganic Carbon Total Organic Carbon (%)			15.5		
Metals Aluminum (Al) (mg/kg)			18900		
Antimony (Sb) (mg/kg)			0.76		
Arsenic (As) (mg/kg)			6.89		
Barium (Ba) (mg/kg)			286		
Beryllium (Be) (mg/kg)			0.60		
Bismuth (Bi) (mg/kg)			0.11		
Boron (B) (mg/kg)			13		
Cadmium (Cd) (mg/kg)			0.483		
Calcium (Ca) (mg/kg)			6830		
Chromium (Cr) (mg/kg)			40.4		
Cobalt (Co) (mg/kg)			12.8		
Copper (Cu) (mg/kg)			371		
Iron (Fe) (mg/kg)			28300		
Lead (Pb) (mg/kg)			8.87		
Lithium (Li) (mg/kg)			9.3		
Magnesium (Mg) (mg/kg)			5210		
Manganese (Mn) (mg/kg)			2990		
Mercury (Hg) (mg/kg)			0.307		
Molybdenum (Mo) (mg/kg)			3.25		
Nickel (Ni) (mg/kg)			31.8		
Phosphorus (P) (mg/kg)			2270		
Potassium (K) (mg/kg)			1730		
Selenium (Se) (mg/kg)			2.60		
Silver (Ag) (mg/kg)			0.303		
Sodium (Na) (mg/kg)			1040		
Strontium (Sr) (mg/kg)			81.3		
Sulfur (S)-Total (mg/kg)			6700		

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1661656-1 Sediment 17-AUG-15 PNF-01	L1661656-2 Sediment 17-AUG-15 PNF-01X	L1661656-3 Sediment 14-AUG-15 PNF-02	L1661656-4 Sediment 15-AUG-15 PNF-03	L1661656-5 Sediment 15-AUG-15 PNF-04
SOIL						
Metals	Thallium (Tl) (mg/kg)	0.067	0.068	0.065	0.066	<0.050
	Tin (Sn) (mg/kg)	2.31	2.32	2.47	2.01	1.41
	Titanium (Ti) (mg/kg)	2310	2310	2420	2070	1420
	Uranium (U) (mg/kg)	1.54	1.56	1.59	1.42	1.13
	Vanadium (V) (mg/kg)	128	130	136	132	127
	Zinc (Zn) (mg/kg)	125	126	131	100	58.9

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1661656-6	L1661656-7	L1661656-8	L1661656-9	L1661656-10
	Description	Sediment	Sediment	Sediment	Sediment	Sediment
	Sampled Date	16-AUG-15	18-AUG-15	19-AUG-15	19-AUG-15	17-AUG-15
	Sampled Time					
	Client ID	PNF-05	PREFI-01	PREFI-03	PREFI-03X	LNFI-1
Grouping	**Analyte**					
SOIL						
Metals	Thallium (Tl) (mg/kg)	<0.050	0.194	0.171	0.168	<0.050
	Tin (Sn) (mg/kg)	1.76	0.49	0.46	0.45	1.46
	Titanium (Ti) (mg/kg)	1760	1160	1190	1140	1430
	Uranium (U) (mg/kg)	1.27	1.57	1.43	1.41	0.999
	Vanadium (V) (mg/kg)	189	73.0	72.3	70.7	310
	Zinc (Zn) (mg/kg)	65.2	85.1	82.6	81.3	68.5

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1661656-11	L1661656-12	L1661656-13	L1661656-14	L1661656-15
	Description	Sediment	Sediment	Sediment	Sediment	Sediment
	Sampled Date	17-AUG-15	17-AUG-15	17-AUG-15	17-AUG-15	13-AUG-15
	Sampled Time					
	Client ID	LNFI-2	LNFI-3	LNFI-4	LNFI-5	POL-P2-1
Grouping	**Analyte**					
SOIL						
Metals	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	0.050	0.051
	Tin (Sn) (mg/kg)	1.23	1.25	1.34	1.29	2.29
	Titanium (Ti) (mg/kg)	1270	1150	1300	1480	2050
	Uranium (U) (mg/kg)	1.05	1.08	1.07	1.21	1.49
	Vanadium (V) (mg/kg)	350	839	335	470	122
	Zinc (Zn) (mg/kg)	65.8	86.0	61.3	72.5	88.0

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1661656-16	L1661656-17	L1661656-18	L1661656-19	L1661656-20
Description	Sediment	Sediment	Sediment	Sediment	Sediment
Sampled Date	13-AUG-15	14-AUG-15	14-AUG-15	14-AUG-15	14-AUG-15
Sampled Time					
Client ID	POL-P2-1 (PS)	POL-P2-2	POL-P2-2 (PS)	POL-P2-3	POL-P2-3 (PS)
Grouping **Analyte**					
SOIL					
Metals Thallium (Tl) (mg/kg)		0.057		0.067	
Tin (Sn) (mg/kg)		2.18		1.98	
Titanium (Ti) (mg/kg)		1940		1750	
Uranium (U) (mg/kg)		1.45		1.53	
Vanadium (V) (mg/kg)		113		113	
Zinc (Zn) (mg/kg)		86.1		86.9	

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1661656-21	L1661656-22	L1661656-23	L1661656-24	L1661656-25
Description	Sediment	Sediment	Sediment	Sediment	Sediment
Sampled Date	14-AUG-15	14-AUG-15	15-AUG-15	15-AUG-15	16-AUG-15
Sampled Time					
Client ID	POL-P2-4	POL-P2-4 (PS)	POL-P2-5	POL-P2-5 (PS)	BOL-B2-1
Grouping / **Analyte**					
SOIL					
Metals Thallium (Tl) (mg/kg)	0.062		0.053		0.134
Tin (Sn) (mg/kg)	1.89		2.14		0.78
Titanium (Ti) (mg/kg)	1550		1870		487
Uranium (U) (mg/kg)	1.40		1.42		2.14
Vanadium (V) (mg/kg)	107		120		81.4
Zinc (Zn) (mg/kg)	78.2		92.8		82.2

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1661656-26	L1661656-27	L1661656-28	L1661656-29	L1661656-30
Description	Sediment	Sediment	Sediment	Sediment	Sediment
Sampled Date	16-AUG-15	16-AUG-15	16-AUG-15	16-AUG-15	16-AUG-15
Sampled Time					
Client ID	BOL-B2-1 (PS)	BOL-B2-2	BOL-B2-2 (PS)	BOL-B2-3	BOL-B2-3 (PS)
Grouping / **Analyte**					
SOIL					
Metals Thallium (Tl) (mg/kg)		0.142		0.119	
Tin (Sn) (mg/kg)		0.67		0.64	
Titanium (Ti) (mg/kg)		507		389	
Uranium (U) (mg/kg)		2.40		2.07	
Vanadium (V) (mg/kg)		83.8		75.6	
Zinc (Zn) (mg/kg)		86.9		79.4	

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1661656-31	L1661656-32	L1661656-33		
Description	Sediment	Sediment	Sediment		
Sampled Date	16-AUG-15	16-AUG-15	16-AUG-15		
Sampled Time					
Client ID	BOL-B2-4 (PS)	BOL-B2-5 (PS)	BOL-BX		
Grouping / **Analyte**					
SOIL					
Metals					
Thallium (Tl) (mg/kg)			0.104		
Tin (Sn) (mg/kg)			0.52		
Titanium (Ti) (mg/kg)			461		
Uranium (U) (mg/kg)			1.77		
Vanadium (V) (mg/kg)			76.7		
Zinc (Zn) (mg/kg)			79.7		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AVS-COL-VA	Soil	Acid volatile sulphide by colourimetric	EPA 821/R-91-100

This analysis was carried out in accordance with the method described in EPA 821/R-91-100. In summary, hydrochloric acid is added to the sediment samples within a purge and trap system. The evolved hydrogen sulphide (H2S) is carried into a basic zinc acetate (ZnAc) solution by argon gas. The acid volatile sulfide is then determined colourimetrically.

C-TOT-63UM-LECO-SK	Soil	Total Carbon by combustion method (63um)	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

C-TOT-ORG-63UM-SK	Soil	Organic Carbon by combustion method(63um	SSSA (1996) p. 973

Total Organic Carbon (C-TOT-ORG-LECO-SK, C-TOT-ORG-SK)

Total C and inorganic C are determined on separate samples. The total C is determined by combustion and thermal conductivity detection, while inorganic C is determined by weight lass after addition of hydrochloric acid. Organic C is calculated by the difference between these two determinations.

Reference for Total C:
Nelson, D.W. and Sommers, L.E. 1996. Total Carbon, organic carbon and organic matter. P. 961-1010 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

Reference for Inorganic C:
Loeppert, R.H. and Suarez, D.L. 1996. Gravimetric Method for Loss of Carbon Dioxide. P. 455-456 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

HG-63UM-CVAF-VA	Soil	Hg in Soil by CVAFS	EPA 200.2/245.7

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 63 um (230 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Deviation from Reference Method: This procedure deviates from the BC CSR SALM method, which specifies sieving to 2 mm (10 mesh).

HG-SEM-CVAFS-VA	Soil	Simultaneously Extracted Metals in Soil	EPA 821/R-91-100; EPA245.7

This analysis was carried out in accordance with the method described in EPA 821/R-91-100. In summary, hydrochloric acid is added to the sediment samples within a purge and trap system.
The extract produced from the addition of the acid is then analyzed for simultaneously extracted metals (SEM) using atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA 245.7).

MET-63UM-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 63 um (230 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

MET-SEM-ICP-VA	Soil	Simultaneously Extracted Metals (ICPOES)	EPA 821/R-91-100; EPA 6010B

This analysis was carried out in accordance with the method described in EPA 821/R-91-100. In summary, hydrochloric acid is added to the sediment samples within a purge and trap system. The extract produced from the addition of the acid is then analyzed for simultaneously extracted metals (SEM) using inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-TESS-CM-CCMS-VA	Soil	METALS BY CCMS (TESSIER EXTRACTION #2)	Tessier Extraction 1979/EPA 6020A

This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with 5 or 6 (if a pre-liminary water extraction is included) different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For Extraction #2, the extraction solution is 1M Sodium Acetate adjusted to pH 5 and is intended to extract the "Carbonate" metals.

MET-TESS-EA-CCMS-VA	Soil	METALS BY CCMS (TESSIER EXTRACTION #1)	Tessier Extraction 1979/EPA 6020A

Reference Information

This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with 5 or 6 (if a pre-liminary water extraction is included) different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For Extraction #1, the extraction solution is 1M Magnesium Chloride and is intended to extract the "Exchangeable and Adsorbed" metals.

MET-TESS-FEO-CCMS-VA Soil METALS BY CCMS (TESSIER EXTRACTION #3) Tessier Extraction 1979/EPA 6020A

This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with 5 or 6 (if a pre-liminary water extraction is included) different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For Extraction #3, the extraction solution is 0.1 M Hydroxylamine Hydro› Chloride in 25% v/v Acetic Acid and is intended to extract the Easily Reducible Metals and Iron Oxides .

MET-TESS-OB-CCMS-VA Soil METALS BY CCMS (TESSIER EXTRACTION #4) Tessier Extraction 1979/EPA 6020A

"This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with 5 or 6 (if a pre-liminary water extraction is included) different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For Extraction #4, the extraction solution is 0.02 M Nitric Acid followed by 3.2M Ammonium Acetate and is intended to extract the Organic Bound metals.

MET-TESS-RM-CCMS-VA Soil METALS BY CCMS (TESSIER RM EXTRACTION) Tessier Extraction 1979/EPA 6020A

"This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with up to 6 different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For the Tessier "RM" Extraction, the extraction solution is 50/50 mix of 1:1 Nitric Acid along with 1:1 Hydrochloric Acid, and is hot block digested as per the BC SALM procedure. This is intended to extract the Residual metals.

MOISTURE-VA Soil Moisture content ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

N-TOT-LECO-SK Soil Total Nitrogen by combustion method SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where nitrogen in the reduced nitrous oxide gas is determined using a thermal conductivity detector.

PH-1:2-VA Soil pH in Soil (1:2 Soil:Water Extraction) BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PSA-PIPET+GRAVEL-SK Soil Particle size - Sieve and Pipette SSIR-51 METHOD 3.2.1

Particle size distribution is determined by a combination of techniques. Dry sieving is performed for coarse particles, wet sieving for sand particles and the pipette sedimentation method for clay particles.

Reference:

Burt, R. (2009). Soil Survey Field and Laboratory Methods Manual. Soil Survey Investigations Report No. 5. Method 3.2.1.2.2. United States Department of Agriculture Natural Resources Conservation Service.

S-TOT-LECO-SK Soil Total Sulphur by combustion method ISO 15178:2000

The sample is ignited in a combustion analyzer where sulfur in the reduced SO2 gas is determined using a thermal conductivity detector.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1661656 Report Date: 02-OCT-15

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-63UM-SK	**Soil**							
Batch R3279466								
WG2181422-1 DUP		**L1661656-10**						
Total Organic Carbon		0.65	0.69		%	6.9	30	30-SEP-15
WG2181422-4 DUP		**L1661656-27**						
Total Organic Carbon		15.5	15.5		%	0.3	30	30-SEP-15
WG2181422-2 IRM		**08-109_SOIL**						
Total Organic Carbon			0.99		%		0.77-1.43	30-SEP-15
WG2181422-5 IRM		**08-109_SOIL**						
Total Organic Carbon			1.04		%		0.77-1.43	30-SEP-15
WG2181422-3 MB								
Total Organic Carbon			<0.10		%		0.1	30-SEP-15
WG2181422-6 MB								
Total Organic Carbon			<0.10		%		0.1	30-SEP-15
HG-63UM-CVAF-VA	**Soil**							
Batch R3258839								
WG2160206-4 CRM		**VA-NRC-STSD1**						
Mercury (Hg)			103.0		%		70-130	02-SEP-15
WG2160206-5 CRM		**VA-NRC-PACS3**						
Mercury (Hg)			104.8		%		70-130	02-SEP-15
WG2160206-2 DUP		**L1661656-8**						
Mercury (Hg)		0.0515	0.0539		mg/kg	4.5	40	02-SEP-15
WG2160206-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	02-SEP-15
Batch R3259486								
WG2160221-4 CRM		**VA-NRC-STSD1**						
Mercury (Hg)			108.0		%		70-130	03-SEP-15
WG2160221-5 CRM		**VA-NRC-PACS3**						
Mercury (Hg)			112.2		%		70-130	03-SEP-15
WG2160221-2 DUP		**L1661656-25**						
Mercury (Hg)		0.291	0.287		mg/kg	1.5	40	03-SEP-15
WG2160221-3 LCS								
Mercury (Hg)			100.9		%		70-130	03-SEP-15
WG2160221-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	03-SEP-15
MET-63UM-CCMS-VA	**Soil**							
Batch R3259411								
WG2160206-4 CRM		**VA-NRC-STSD1**						
Aluminum (Al)			108.1		%		70-130	02-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3259411								
WG2160206-4 CRM		**VA-NRC-STSD1**						
Antimony (Sb)			112.0		%		70-130	02-SEP-15
Arsenic (As)			106.7		%		70-130	02-SEP-15
Barium (Ba)			95.6		%		70-130	02-SEP-15
Beryllium (Be)			113.8		%		70-130	02-SEP-15
Bismuth (Bi)			103.5		%		70-130	02-SEP-15
Cadmium (Cd)			103.6		%		70-130	02-SEP-15
Calcium (Ca)			106.9		%		70-130	02-SEP-15
Chromium (Cr)			107.0		%		70-130	02-SEP-15
Cobalt (Co)			107.3		%		70-130	02-SEP-15
Copper (Cu)			106.0		%		70-130	02-SEP-15
Iron (Fe)			106.3		%		70-130	02-SEP-15
Lead (Pb)			103.9		%		70-130	02-SEP-15
Lithium (Li)			111.7		%		70-130	02-SEP-15
Magnesium (Mg)			104.9		%		70-130	02-SEP-15
Manganese (Mn)			104.9		%		70-130	02-SEP-15
Molybdenum (Mo)			109.3		%		70-130	02-SEP-15
Nickel (Ni)			107.1		%		70-130	02-SEP-15
Phosphorus (P)			104.4		%		70-130	02-SEP-15
Potassium (K)			115.6		%		70-130	02-SEP-15
Selenium (Se)			104.1		%		70-130	02-SEP-15
Silver (Ag)			108.4		%		70-130	02-SEP-15
Sodium (Na)			117.2		%		70-130	02-SEP-15
Strontium (Sr)			108.4		%		70-130	02-SEP-15
Thallium (Tl)			106.8		%		70-130	02-SEP-15
Tin (Sn)			102.9		%		70-130	02-SEP-15
Titanium (Ti)			125.0		%		70-130	02-SEP-15
Vanadium (V)			111.7		%		70-130	02-SEP-15
Zinc (Zn)			108.3		%		70-130	02-SEP-15
WG2160206-5 CRM		**VA-NRC-PACS3**						
Aluminum (Al)			100.6		%		70-130	02-SEP-15
Antimony (Sb)			102.2		%		70-130	02-SEP-15
Arsenic (As)			96.5		%		70-130	02-SEP-15
Barium (Ba)			94.2		%		70-130	02-SEP-15
Beryllium (Be)			102.0		%		70-130	02-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3259411								
WG2160206-5 CRM		**VA-NRC-PACS3**						
Boron (B)			102.3		%		70-130	02-SEP-15
Cadmium (Cd)			108.5		%		70-130	02-SEP-15
Calcium (Ca)			103.0		%		70-130	02-SEP-15
Chromium (Cr)			98.1		%		70-130	02-SEP-15
Cobalt (Co)			99.8		%		70-130	02-SEP-15
Copper (Cu)			101.3		%		70-130	02-SEP-15
Iron (Fe)			101.4		%		70-130	02-SEP-15
Lead (Pb)			98.6		%		70-130	02-SEP-15
Lithium (Li)			100.0		%		70-130	02-SEP-15
Magnesium (Mg)			105.1		%		70-130	02-SEP-15
Manganese (Mn)			96.8		%		70-130	02-SEP-15
Molybdenum (Mo)			96.4		%		70-130	02-SEP-15
Nickel (Ni)			101.2		%		70-130	02-SEP-15
Phosphorus (P)			97.3		%		70-130	02-SEP-15
Potassium (K)			100.4		%		70-130	02-SEP-15
Selenium (Se)			101.6		%		70-130	02-SEP-15
Silver (Ag)			104.9		%		70-130	02-SEP-15
Sodium (Na)			99.6		%		70-130	02-SEP-15
Strontium (Sr)			101.5		%		70-130	02-SEP-15
Thallium (Tl)			101.9		%		70-130	02-SEP-15
Tin (Sn)			89.7		%		70-130	02-SEP-15
Titanium (Ti)			98.3		%		70-130	02-SEP-15
Uranium (U)			101.7		%		70-130	02-SEP-15
Vanadium (V)			100.7		%		70-130	02-SEP-15
Zinc (Zn)			105.2		%		70-130	02-SEP-15
WG2160206-2 DUP		**L1661656-8**						
Aluminum (Al)		17300	16800		mg/kg	3.0	40	02-SEP-15
Antimony (Sb)		0.43	0.43		mg/kg	1.4	30	02-SEP-15
Arsenic (As)		8.98	9.14		mg/kg	1.8	30	02-SEP-15
Barium (Ba)		151	148		mg/kg	2.3	40	02-SEP-15
Beryllium (Be)		0.50	0.50		mg/kg	0.1	30	02-SEP-15
Bismuth (Bi)		0.15	0.15		mg/kg	0.4	30	02-SEP-15
Boron (B)		<10	<10	RPD-NA	mg/kg	N/A	30	02-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3259411								
WG2160206-2 DUP		**L1661656-8**						
Cadmium (Cd)		0.422	0.396		mg/kg	6.3	30	02-SEP-15
Calcium (Ca)		8840	8880		mg/kg	0.4	30	02-SEP-15
Chromium (Cr)		59.5	56.9		mg/kg	4.5	30	02-SEP-15
Cobalt (Co)		15.0	14.5		mg/kg	3.1	30	02-SEP-15
Copper (Cu)		55.8	54.0		mg/kg	3.2	30	02-SEP-15
Iron (Fe)		32700	31700		mg/kg	3.1	30	02-SEP-15
Lead (Pb)		7.51	7.44		mg/kg	1.1	40	02-SEP-15
Lithium (Li)		15.2	14.9		mg/kg	2.4	30	02-SEP-15
Magnesium (Mg)		8660	8420		mg/kg	2.9	30	02-SEP-15
Manganese (Mn)		479	471		mg/kg	1.6	30	02-SEP-15
Molybdenum (Mo)		1.02	1.01		mg/kg	0.9	40	02-SEP-15
Nickel (Ni)		40.1	38.7		mg/kg	3.7	30	02-SEP-15
Phosphorus (P)		1190	1210		mg/kg	1.9	30	02-SEP-15
Potassium (K)		1570	1510		mg/kg	4.1	40	02-SEP-15
Selenium (Se)		0.93	0.90		mg/kg	2.4	30	02-SEP-15
Silver (Ag)		0.216	0.213		mg/kg	1.2	40	02-SEP-15
Sodium (Na)		520	520		mg/kg	0.3	40	02-SEP-15
Strontium (Sr)		84.5	84.2		mg/kg	0.4	40	02-SEP-15
Thallium (Tl)		0.171	0.168		mg/kg	1.8	30	02-SEP-15
Tin (Sn)		0.46	0.43		mg/kg	7.2	40	02-SEP-15
Titanium (Ti)		1190	1160		mg/kg	2.9	40	02-SEP-15
Uranium (U)		1.43	1.44		mg/kg	0.7	30	02-SEP-15
Vanadium (V)		72.3	70.5		mg/kg	2.6	30	02-SEP-15
Zinc (Zn)		82.6	79.4		mg/kg	3.9	30	02-SEP-15
WG2160206-1 MB								
Aluminum (Al)			<50		mg/kg		50	02-SEP-15
Antimony (Sb)			<0.10		mg/kg		0.1	02-SEP-15
Arsenic (As)			<0.050		mg/kg		0.05	02-SEP-15
Barium (Ba)			<0.50		mg/kg		0.5	02-SEP-15
Beryllium (Be)			<0.10		mg/kg		0.1	02-SEP-15
Bismuth (Bi)			<0.10		mg/kg		0.1	02-SEP-15
Boron (B)			<5.0		mg/kg		5	02-SEP-15
Cadmium (Cd)			<0.050		mg/kg		0.05	02-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3259411								
WG2160206-1 MB								
Calcium (Ca)			<50		mg/kg		50	02-SEP-15
Chromium (Cr)			<0.50		mg/kg		0.5	02-SEP-15
Cobalt (Co)			<0.10		mg/kg		0.1	02-SEP-15
Copper (Cu)			<0.50		mg/kg		0.5	02-SEP-15
Iron (Fe)			<50		mg/kg		50	02-SEP-15
Lead (Pb)			<0.10		mg/kg		0.1	02-SEP-15
Lithium (Li)			<5.0		mg/kg		5	02-SEP-15
Magnesium (Mg)			<10		mg/kg		10	02-SEP-15
Manganese (Mn)			<0.20		mg/kg		0.2	02-SEP-15
Molybdenum (Mo)			<0.10		mg/kg		0.1	02-SEP-15
Nickel (Ni)			<0.50		mg/kg		0.5	02-SEP-15
Phosphorus (P)			<50		mg/kg		50	02-SEP-15
Potassium (K)			<100		mg/kg		100	02-SEP-15
Selenium (Se)			<0.10		mg/kg		0.1	02-SEP-15
Silver (Ag)			<0.050		mg/kg		0.05	02-SEP-15
Sodium (Na)			<100		mg/kg		100	02-SEP-15
Strontium (Sr)			<0.10		mg/kg		0.1	02-SEP-15
Thallium (Tl)			<0.050		mg/kg		0.05	02-SEP-15
Tin (Sn)			<0.20		mg/kg		0.2	02-SEP-15
Titanium (Ti)			<1.0		mg/kg		1	02-SEP-15
Uranium (U)			<0.050		mg/kg		0.05	02-SEP-15
Vanadium (V)			<0.20		mg/kg		0.2	02-SEP-15
Zinc (Zn)			<1.0		mg/kg		1	02-SEP-15
Batch R3260087								
WG2160221-3 LCS								
Aluminum (Al)			91.4		%		70-130	03-SEP-15
Antimony (Sb)			99.4		%		70-130	03-SEP-15
Arsenic (As)			96.7		%		70-130	03-SEP-15
Barium (Ba)			102.1		%		70-130	03-SEP-15
Beryllium (Be)			94.7		%		70-130	03-SEP-15
Bismuth (Bi)			100.7		%		70-130	03-SEP-15
Boron (B)			92.0		%		70-130	03-SEP-15
Cadmium (Cd)			95.5		%		70-130	03-SEP-15
Calcium (Ca)			97.2		%		70-130	03-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3260087								
WG2160221-3 LCS								
Chromium (Cr)			93.1		%		70-130	03-SEP-15
Cobalt (Co)			95.6		%		70-130	03-SEP-15
Copper (Cu)			91.2		%		70-130	03-SEP-15
Iron (Fe)			104.4		%		70-130	03-SEP-15
Lead (Pb)			103.2		%		70-130	03-SEP-15
Lithium (Li)			93.4		%		70-130	03-SEP-15
Magnesium (Mg)			93.3		%		70-130	03-SEP-15
Manganese (Mn)			93.6		%		70-130	03-SEP-15
Molybdenum (Mo)			101.8		%		70-130	03-SEP-15
Nickel (Ni)			92.9		%		70-130	03-SEP-15
Phosphorus (P)			95.0		%		70-130	03-SEP-15
Potassium (K)			92.0		%		70-130	03-SEP-15
Selenium (Se)			97.8		%		70-130	03-SEP-15
Silver (Ag)			102.6		%		70-130	03-SEP-15
Sodium (Na)			88.8		%		70-130	03-SEP-15
Strontium (Sr)			104.2		%		70-130	03-SEP-15
Thallium (Tl)			101.2		%		70-130	03-SEP-15
Tin (Sn)			97.2		%		70-130	03-SEP-15
Titanium (Ti)			91.4		%		70-130	03-SEP-15
Uranium (U)			103.9		%		70-130	03-SEP-15
Vanadium (V)			96.1		%		70-130	03-SEP-15
Zinc (Zn)			90.2		%		70-130	03-SEP-15
Batch R3262020								
WG2160221-4 CRM		**VA-NRC-STSD1**						
Aluminum (Al)			103.4		%		70-130	04-SEP-15
Antimony (Sb)			81.0		%		70-130	04-SEP-15
Arsenic (As)			111.3		%		70-130	04-SEP-15
Barium (Ba)			106.7		%		70-130	04-SEP-15
Beryllium (Be)			87.8		%		70-130	04-SEP-15
Bismuth (Bi)			77.6		%		70-130	04-SEP-15
Cadmium (Cd)			111.2		%		70-130	04-SEP-15
Calcium (Ca)			82.1		%		70-130	04-SEP-15
Chromium (Cr)			113.1		%		70-130	04-SEP-15
Cobalt (Co)			111.8		%		70-130	04-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3262020								
WG2160221-4 CRM		**VA-NRC-STSD1**						
Copper (Cu)			107.9		%		70-130	04-SEP-15
Iron (Fe)			100.7		%		70-130	04-SEP-15
Lead (Pb)			81.7		%		70-130	04-SEP-15
Lithium (Li)			83.8		%		70-130	04-SEP-15
Magnesium (Mg)			101.1		%		70-130	04-SEP-15
Manganese (Mn)			95.5		%		70-130	04-SEP-15
Molybdenum (Mo)			84.0		%		70-130	04-SEP-15
Nickel (Ni)			110.1		%		70-130	04-SEP-15
Phosphorus (P)			108.9		%		70-130	04-SEP-15
Potassium (K)			121.2		%		70-130	04-SEP-15
Selenium (Se)			102.2		%		70-130	04-SEP-15
Silver (Ag)			82.9		%		70-130	04-SEP-15
Sodium (Na)			124.5		%		70-130	04-SEP-15
Strontium (Sr)			89.2		%		70-130	04-SEP-15
Thallium (Tl)			79.5		%		70-130	04-SEP-15
Tin (Sn)			79.5		%		70-130	04-SEP-15
Titanium (Ti)			113.5		%		70-130	04-SEP-15
Vanadium (V)			115.5		%		70-130	04-SEP-15
Zinc (Zn)			108.7		%		70-130	04-SEP-15
WG2160221-5 CRM		**VA-NRC-PACS3**						
Aluminum (Al)			90.5		%		70-130	04-SEP-15
Antimony (Sb)			92.6		%		70-130	04-SEP-15
Arsenic (As)			87.7		%		70-130	04-SEP-15
Barium (Ba)			97.8		%		70-130	04-SEP-15
Beryllium (Be)			100.8		%		70-130	04-SEP-15
Boron (B)			98.0		%		70-130	04-SEP-15
Cadmium (Cd)			99.0		%		70-130	04-SEP-15
Calcium (Ca)			102.5		%		70-130	04-SEP-15
Chromium (Cr)			92.7		%		70-130	04-SEP-15
Cobalt (Co)			93.3		%		70-130	04-SEP-15
Copper (Cu)			93.9		%		70-130	04-SEP-15
Iron (Fe)			90.5		%		70-130	04-SEP-15
Lead (Pb)			99.4		%		70-130	04-SEP-15
Lithium (Li)			91.2		%		70-130	04-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3262020								
WG2160221-5 CRM		**VA-NRC-PACS3**						
Magnesium (Mg)			90.9		%		70-130	04-SEP-15
Manganese (Mn)			80.2		%		70-130	04-SEP-15
Molybdenum (Mo)			93.5		%		70-130	04-SEP-15
Nickel (Ni)			99.4		%		70-130	04-SEP-15
Phosphorus (P)			93.5		%		70-130	04-SEP-15
Potassium (K)			95.1		%		70-130	04-SEP-15
Selenium (Se)			95.1		%		70-130	04-SEP-15
Silver (Ag)			115.5		%		70-130	04-SEP-15
Sodium (Na)			89.0		%		70-130	04-SEP-15
Strontium (Sr)			102.5		%		70-130	04-SEP-15
Thallium (Tl)			95.9		%		70-130	04-SEP-15
Tin (Sn)			86.2		%		70-130	04-SEP-15
Titanium (Ti)			87.8		%		70-130	04-SEP-15
Uranium (U)			96.6		%		70-130	04-SEP-15
Vanadium (V)			93.7		%		70-130	04-SEP-15
Zinc (Zn)			95.3		%		70-130	04-SEP-15
WG2160221-2 DUP		**L1661656-25**						
Aluminum (Al)		18700	18900		mg/kg	0.8	40	04-SEP-15
Antimony (Sb)		0.93	0.92		mg/kg	1.0	30	04-SEP-15
Arsenic (As)		7.46	7.48		mg/kg	0.3	30	04-SEP-15
Barium (Ba)		311	296		mg/kg	5.1	40	04-SEP-15
Beryllium (Be)		0.70	0.72		mg/kg	3.5	30	04-SEP-15
Bismuth (Bi)		0.14	0.14		mg/kg	3.1	30	04-SEP-15
Boron (B)		16	16		mg/kg	3.2	30	04-SEP-15
Cadmium (Cd)		0.492	0.512		mg/kg	4.0	30	04-SEP-15
Calcium (Ca)		7970	7920		mg/kg	0.6	30	04-SEP-15
Chromium (Cr)		45.4	45.8		mg/kg	1.0	30	04-SEP-15
Cobalt (Co)		13.1	13.2		mg/kg	0.8	30	04-SEP-15
Copper (Cu)		375	380		mg/kg	1.4	30	04-SEP-15
Iron (Fe)		33400	32400		mg/kg	3.2	30	04-SEP-15
Lead (Pb)		10.6	10.7		mg/kg	0.8	40	04-SEP-15
Lithium (Li)		10.6	10.9		mg/kg	2.9	30	04-SEP-15
Magnesium (Mg)		5230	5360		mg/kg	2.5	30	04-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3262020								
WG2160221-2 DUP		**L1661656-25**						
Manganese (Mn)		3850	4000		mg/kg	3.7	30	04-SEP-15
Molybdenum (Mo)		3.88	3.88		mg/kg	0.1	40	04-SEP-15
Nickel (Ni)		32.7	33.0		mg/kg	1.0	30	04-SEP-15
Phosphorus (P)		3550	3580		mg/kg	1.0	30	04-SEP-15
Potassium (K)		1760	1780		mg/kg	1.2	40	04-SEP-15
Selenium (Se)		2.91	2.80		mg/kg	4.1	30	04-SEP-15
Silver (Ag)		0.367	0.377		mg/kg	2.5	40	04-SEP-15
Sodium (Na)		770	990		mg/kg	25	40	04-SEP-15
Strontium (Sr)		97.4	96.1		mg/kg	1.3	40	04-SEP-15
Thallium (Tl)		0.134	0.141		mg/kg	5.2	30	04-SEP-15
Tin (Sn)		0.78	0.77		mg/kg	0.7	40	04-SEP-15
Titanium (Ti)		487	479		mg/kg	1.7	40	04-SEP-15
Uranium (U)		2.14	2.14		mg/kg	0.1	30	04-SEP-15
Vanadium (V)		81.4	82.2		mg/kg	0.9	30	04-SEP-15
Zinc (Zn)		82.2	83.4		mg/kg	1.4	30	04-SEP-15
WG2160221-1 MB								
Aluminum (Al)			<50		mg/kg		50	04-SEP-15
Antimony (Sb)			<0.10		mg/kg		0.1	04-SEP-15
Arsenic (As)			<0.050		mg/kg		0.05	04-SEP-15
Barium (Ba)			<0.50		mg/kg		0.5	04-SEP-15
Beryllium (Be)			<0.10		mg/kg		0.1	04-SEP-15
Bismuth (Bi)			<0.10		mg/kg		0.1	04-SEP-15
Boron (B)			<5.0		mg/kg		5	04-SEP-15
Cadmium (Cd)			<0.050		mg/kg		0.05	04-SEP-15
Calcium (Ca)			<50		mg/kg		50	04-SEP-15
Chromium (Cr)			<0.50		mg/kg		0.5	04-SEP-15
Cobalt (Co)			<0.10		mg/kg		0.1	04-SEP-15
Copper (Cu)			<0.50		mg/kg		0.5	04-SEP-15
Iron (Fe)			<50		mg/kg		50	04-SEP-15
Lead (Pb)			<0.10		mg/kg		0.1	04-SEP-15
Lithium (Li)			<5.0		mg/kg		5	04-SEP-15
Magnesium (Mg)			<10		mg/kg		10	04-SEP-15
Manganese (Mn)			<0.20		mg/kg		0.2	04-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3262020								
WG2160221-1 MB								
Molybdenum (Mo)			<0.10		mg/kg		0.1	04-SEP-15
Nickel (Ni)			<0.50		mg/kg		0.5	04-SEP-15
Phosphorus (P)			<50		mg/kg		50	04-SEP-15
Potassium (K)			<100		mg/kg		100	04-SEP-15
Selenium (Se)			<0.10		mg/kg		0.1	04-SEP-15
Silver (Ag)			<0.050		mg/kg		0.05	04-SEP-15
Sodium (Na)			<100		mg/kg		100	04-SEP-15
Strontium (Sr)			<0.10		mg/kg		0.1	04-SEP-15
Thallium (Tl)			<0.050		mg/kg		0.05	04-SEP-15
Tin (Sn)			<0.20		mg/kg		0.2	04-SEP-15
Titanium (Ti)			<1.0		mg/kg		1	04-SEP-15
Uranium (U)			<0.050		mg/kg		0.05	04-SEP-15
Vanadium (V)			<0.20		mg/kg		0.2	04-SEP-15
Zinc (Zn)			<1.0		mg/kg		1	04-SEP-15
MOISTURE-VA	**Soil**							
Batch R3252780								
WG2156408-3 DUP		**L1660910-1**						
Moisture		18.7	16.5		%	13	20	25-AUG-15
WG2156408-2 LCS								
Moisture			100.5		%		90-110	25-AUG-15
WG2156408-1 MB								
Moisture			<0.25		%		0.25	25-AUG-15
Batch R3253576								
WG2157416-3 DUP		**L1661656-2**						
Moisture		64.5	63.6		%	1.4	20	26-AUG-15
WG2157416-2 LCS								
Moisture			98.2		%		90-110	26-AUG-15
WG2157416-1 MB								
Moisture			<0.25		%		0.25	26-AUG-15
Batch R3253583								
WG2157415-3 DUP		**L1662585-2**						
Moisture		13.9	13.7		%	1.6	20	26-AUG-15
WG2157415-2 LCS								
Moisture			97.8		%		90-110	26-AUG-15
WG2157415-1 MB								

Quality Control Report

Workorder: L1661656 Report Date: 02-OCT-15

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-VA	**Soil**							
Batch R3253583								
WG2157415-1 MB								
Moisture			<0.25		%		0.25	26-AUG-15
Batch R3254449								
WG2158259-3 DUP		**L1663552-1**						
Moisture		9.59	9.65		%	0.7	20	27-AUG-15
WG2158259-2 LCS								
Moisture			99.9		%		90-110	27-AUG-15
WG2158259-1 MB								
Moisture			<0.25		%		0.25	27-AUG-15
Batch R3255211								
WG2158880-4 DUP		**L1661656-40**						
Moisture		N/A	50.6		%	3.5	20	28-AUG-15
WG2158880-5 DUP		**L1664041-1**						
Moisture		20.7	20.9		%	1.3	20	28-AUG-15
WG2158880-2 LCS								
Moisture			99.9		%		90-110	28-AUG-15
WG2158880-1 MB								
Moisture			<0.25		%		0.25	28-AUG-15
Batch R3255251								
WG2159322-7 DUP		**L1661656-10**						
Moisture		21.9	22.2		%	1.3	20	28-AUG-15
WG2159322-6 LCS								
Moisture			100.9		%		90-110	28-AUG-15
WG2159322-5 MB								
Moisture			<0.25		%		0.25	28-AUG-15
N-TOT-LECO-SK	**Soil**							
Batch R3257801								
WG2157087-1 DUP		**L1661656-10**						
Total Nitrogen by LECO		0.027	0.022	J	%	0.005	0.04	31-AUG-15
WG2157087-5 DUP		**L1661656-27**						
Total Nitrogen by LECO		1.67	1.67		%	0.2	20	31-AUG-15
WG2157087-2 IRM		**08-109_SOIL**						
Total Nitrogen by LECO			0.116		%		0.085-0.135	31-AUG-15
WG2157087-6 IRM		**08-109_SOIL**						
Total Nitrogen by LECO			0.113		%		0.085-0.135	31-AUG-15
WG2157087-4 MB								
Total Nitrogen by LECO			<0.020		%		0.02	31-AUG-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
N-TOT-LECO-SK	**Soil**							
Batch R3257801								
WG2157087-8 MB								
Total Nitrogen by LECO			<0.020		%		0.02	31-AUG-15
PH-1:2-VA	**Soil**							
Batch R3253920								
WG2156452-2 DUP		**L1660910-1**						
pH (1:2 soil:water)		6.89	6.87	J	pH	0.02	0.3	26-AUG-15
Batch R3255016								
WG2157417-2 DUP		**L1661763-6**						
pH (1:2 soil:water)		7.36	7.38	J	pH	0.02	0.3	27-AUG-15
WG2157418-2 DUP		**L1661656-2**						
pH (1:2 soil:water)		8.31	8.38	J	pH	0.07	0.3	27-AUG-15
Batch R3255558								
WG2158340-2 DUP		**L1656882-64**						
pH (1:2 soil:water)		8.26	8.33	J	pH	0.07	0.3	28-AUG-15
Batch R3256467								
WG2159321-2 DUP		**L1661656-29**						
pH (1:2 soil:water)		6.60	6.56	J	pH	0.04	0.3	30-AUG-15
Batch R3256489								
WG2159308-2 DUP		**L1661656-11**						
pH (1:2 soil:water)		8.21	8.40	J	pH	0.19	0.3	30-AUG-15
PSA-PIPET+GRAVEL-SK	**Soil**							
Batch R3259542								
WG2157165-1 DUP		**L1661656-7**						
% Gravel (>2mm)		<0.10	<0.10	RPD-NA	%	N/A	25	02-SEP-15
% Sand (2.0mm - 0.063mm)		21.1	23.5	J	%	2.36	5	02-SEP-15
% Silt (0.063mm - 4um)		67.7	68.0	J	%	0.30	5	02-SEP-15
% Clay (<4um)		11.2	8.53	J	%	2.66	5	02-SEP-15
WG2157165-2 IRM		**FARM2010**						
% Sand (2.0mm - 0.063mm)			35.7		%		29-39	02-SEP-15
% Silt (0.063mm - 4um)			41.4		%		34-44	02-SEP-15
% Clay (<4um)			22.9		%		22-32	02-SEP-15

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PSA-PIPET+GRAVEL-SK	**Soil**							
Batch R3261842								
WG2157171-1 DUP		**L1664212-1**						
% Gravel (>2mm)		<0.10	<0.10	RPD-NA	%	N/A	25	03-SEP-15
% Sand (2.0mm - 0.063mm)		1.66	2.27	J	%	0.61	5	03-SEP-15
% Silt (0.063mm - 4um)		78.2	77.5	J	%	0.70	5	03-SEP-15
% Clay (<4um)		20.2	20.3	J	%	0.09	5	03-SEP-15
WG2157171-2 IRM		**FARM2010**						
% Sand (2.0mm - 0.063mm)			33.3		%		29-39	03-SEP-15
% Silt (0.063mm - 4um)			40.6		%		34-44	03-SEP-15
% Clay (<4um)			26.1		%		22-32	03-SEP-15
S-TOT-LECO-SK	**Soil**							
Batch R3257801								
WG2157087-1 DUP		**L1661656-10**						
Sulfur (S)-Total		1000	1400		mg/kg	29	30	31-AUG-15
WG2157087-5 DUP		**L1661656-27**						
Sulfur (S)-Total		7700	7600		mg/kg	0.8	30	31-AUG-15
WG2157087-3 IRM		**1646A_SOIL**						
Sulfur (S)-Total			3700		mg/kg		2500-4600	31-AUG-15
WG2157087-7 IRM		**1646A_SOIL**						
Sulfur (S)-Total			3200		mg/kg		2500-4600	31-AUG-15
WG2157087-4 MB								
Sulfur (S)-Total			<500		mg/kg		500	31-AUG-15
WG2157087-8 MB								
Sulfur (S)-Total			<500		mg/kg		500	31-AUG-15

Quality Control Report

Workorder: L1661656 Report Date: 02-OCT-15

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1661656-COFC

COC Number: 14 -

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Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	MOUNT POLLEY MINING CORP.	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Colleen Hughes	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	PO Box 12, Likely, BC, V0L 1N0	☐ Criteria on Report - provide details below if box checked	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	250-790-2617	Email 1 or Fax chughes@mountpolley.com; pstecko@minnow.ca	Specify Date Required for E2,E or P:
		Email 2	Analysis Request

Invoice To		Invoice Distribution	
	Same as Report To ☑ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
	Copy of Invoice with Report ☐ Yes ☐ No		
Company:		Email 1 or Fax chughes@mountpolley.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q51555	Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Can Dang

Sampler: Pierre Stecko / Katharina Batchelar

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-63UM-SED-VA (CCME Metals < 63um	HG-63UM-CVAF-CA (Hg < 63um)	C-TOT-ORG-LECO-SK (TOC) <63um	pH-1:2-VA (pH)	N-TOT-LECO-SK (Total nitrogen)	S-TOT-LECO-SK (Total Sulphur)	PSA-PIPET+GRAVEL-SK (Particle Size)	MOISTURE-VA (Moisture)	MET-TESS-STD-VA (Tessier Extractions)	MET-SEM-ICP-VA (SEM analysis)	HG-SEM-CVAFS-VA (Hg SEM analysis)	AVS-COL-VA (AVS analysis)		Number of Containers
	PNF-01	17-08-15	—	Sediment	X	X	X	X	X	X	X	X	X					4
	PNF-01X	17-08-15	—	Sediment	X	X	X	X	X	X	X	X						4
	PNF-02	14-08-15	—	Sediment	X	X	X	X	X	X	X	X	X					4
	PNF-03	15-08-15	—	Sediment	X	X	X	X	X	X	X	X	X					4
	PNF-04	15-08-15	—	Sediment	X	X	X	X	X	X	X	X	X					4
	PNF-05	16-08-15	—	Sediment	X	X	X	X	X	X	X	X	X					4
	PRef1-01	18-08-15	—	Sediment	X	X	X	X	X	X	X	X	X					4
	PRef1-03	19-08-15	—	Sediment	X	X	X	X	X	X	X	X	X					4
	PRef1-03X	19-08-15	—	Sediment	X	X	X	X	X	X	X	X						3
	LNF1-1	17-08-15	—	Sediment	X	X	X	X	X	X	X	X						2
	LNF1-2	17-08-15	—	Sediment	X	X	X	X	X	X	X	X						2
	LNF1-3	17-08-15	—	Sediment	X	X	X	X	X	X	X	X						2

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐		
Ice packs	Yes ☑	No ☐	Custody seal intact	Yes ☐	No ☒	
Cooling Initiated	☐					

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			6.7, 4	5.7	7.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Katharina Batchelar	Aug 20/15	13:00				Jean	21 Aug	9 AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS-FM-0326e v08 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

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Canada Toll Free: 1 800 668 9878

L1661656-COFC

COC Number: 14 -

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Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	MOUNT POLLEY MINING CORP.	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Colleen Hughes	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	PO Box 12, Likely, BC, V0L 1N0	☐ Criteria on Report - provide details below if box checked	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	250-790-2617	Email 1 or Fax chughes@mountpolley.com; pstecko@minnow.ca	Specify Date Required for E2,E or P:
		Email 2	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:		Email 1 or Fax chughes@mountpolley.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q51555	Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:	Can Dang	Sampler:	Pierre Stecko / Katharina Batchelar

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-63UM-SED-VA (CCME Metals < 63um)	HG-63UM-CVAF-CA (Hg < 63um)	C-TOT-ORG-LECO-SK (TOC) <63um	pH-1:2-VA (pH)	N-TOT-LECO-SK (Total nitrogen)	S-TOT-LECO-SK (Total Sulphur)	PSA-PIPET+GRAVEL-SK (Particle Size)	MOISTURE-VA (Moisture)	MET-TESS-STD-VA (Tessier Extractions)	MET-SEM-ICP-VA (SEM analysis)	HG-SEM-CVAFS-VA (Hg SEM analysis)	AVS-COL-VA (AVS analysis)		Number of Containers
	LNF1-4	17-08-15	—	Sediment	X	X	X	X	X	X	X	X						2
	LNF1-5	17-08-15	—	Sediment	X	X	X	X	X	X	X	X						2
	POL-P2-1	13-08-15	—	Sediment	X	X	X	X	X	X		X	X					2
	POL-P2-1 (PS)	13-08-15	—	Sediment							X							1
	POL-P2-2	14-08-15	—	Sediment	X	X	X	X	X	X		X	X					2
	POL-P2-2 (PS)	14-08-15	—	Sediment							X							1
	POL-P2-3	14-08-15	—	Sediment	X	X	X	X	X	X		X	X					2
	POL-P2-3 (PS)	14-08-15	—	Sediment							X							1
	POL-P2-4	14-08-15	—	Sediment	X	X	X	X	X	X		X	X					2
	POL-P2-4 (PS)	14-08-15		Sediment							X							1
	POL-P2-5	15-08-15	—	Sediment	X	X	X	X	X	X		X	X					2
	POL-P2-5 (PS)	15-08-15	—	Sediment							X							1

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐
Ice packs	Yes ☑	No ☐	Custody seal intact	Yes ☐	No ☑
Cooling Initiated	☐			

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			6.7, 4	5.7	7.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Katharina Batchelar	Aug 20/15	13:00				Jean	21 Aug	9AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1661656-COFC

COC Number: 14 -

Page 3 of 5

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	MOUNT POLLEY MINING CORP.	Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Colleen Hughes	Quality Control (QC) Report with Report	☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	PO Box 12, Likely, BC, V0L 1N0	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	250-790-2617	Email 1 or Fax	chughes@mountpolley.com; pstecko@minnow.ca	Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution		Analysis Request
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:		Email 1 or Fax	chughes@mountpolley.com	
Contact:		Email 2		
Project Information		**Oil and Gas Required Fields (client use)**		
ALS Quote #:	Q51555	Approver ID:	Cost Center:	
Job #:		GL Account:	Routing Code:	
PO / AFE:		Activity Code:		
LSD:		Location:		

ALS Lab Work Order # (lab use only)

ALS Contact: Can Dang **Sampler:**

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-63UM-SED-VA (CCME Metals < 63um)	HG-63UM-CVAF-CA (Hg < 63um)	C-TOT-ORG-LECO-SK (TOC) < 63µm	pH-1:2-VA (pH)	N-TOT-LECO-SK (Total nitrogen)	S-TOT-LECO-SK (Total Sulphur)	PSA-PIPET+GRAVEL-SK (Particle Size)	MOISTURE-VA (Moisture)	MET-TESS-STD-VA (Tessier Extractions)	MET-SEM-ICP-VA (SEM analysis)	HG-SEM-CVAFS-VA (Hg SEM analysis)	AVS-COL-VA (AVS analysis)		Number of Containers
	BOL-B2-1	16-08-15	—	Sediment	X	X	X	X	X	X		X						2
	BOL-B2-1 (PS)	16-08-15	—	Sediment							X							1
	BOL-B2-2	16-08-15	—	Sediment	X	X	X	X	X	X		X						2
	BOL-B2-2 (PS)	16-08-15	—	Sediment							X							1
	BOL-B2-3	16-08-15	—	Sediment	X	X	X	X	X	X		X						2
	BOL-B2-3 (PS)	16-08-15	—	Sediment							X							1
	BOL-B2-4 (PS)	16-08-15	—	Sediment							X							1
	BOL-B2-5 (PS)	16-08-15	—	Sediment							X							1
	BOL-Bx	16-08-15	—	Sediment	X	X	X	X	X	X	X	X						2
	PNF-01 (SEM|AVS)	17-08-15	—	Sediment										X	X	X		1
	PNF-01x (SEM|AVS)	17-08-15	—	Sediment										X	X	X		1
	PNF-02 (SEM|AVS)	14-08-15	—	Sediment										X	X	X		1

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☐ No

Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☒ No ☐ Custody seal intact Yes ☐ No ☑

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			6.7.4	5.7	7.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Katherine Batchelor	Date: Aug 20/15	Time: 13:00	Received by:	Date:	Time:	Received by: Jean	Date: 21 Aug	Time: 9AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1661656-COFC

COC Number: 14 -

Page 4 of 5

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	MOUNT POLLEY MINING CORP.	Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Colleen Hughes	Quality Control (QC) Report with Report	☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	PO Box 12, Likely, BC, V0L 1N0	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	250-790-2617	Email 1 or Fax	chughes@mountpolley.com; pstecko@minnow.ca	Specify Date Required for E2,E or P:
		Email 2		

Invoice To		Invoice Distribution	
	Same as Report To ☑ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☐ Yes ☐ No	Email 1 or Fax	chughes@mountpolley.com
Company:		Email 2	
Contact:		Oil and Gas Required Fields (client use)	

Project Information			
ALS Quote #:	Q51555	Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-63UM-SED-VA (CCME Metals < 63um)	HG-63UM-CVAF-CA (Hg < 63um)	C-TOT-ORG-LECO-SK (TOC) <63µm	pH-1:2-VA (pH)	N-TOT-LECO-SK (Total nitrogen)	S-TOT-LECO-SK (Total Sulphur)	PSA-PIPET+GRAVEL-SK (Particle Size)	MOISTURE-VA (Moisture)	MET-TESS-STD-VA (Tessier Extractions)	MET-SEM-ICP-VA (SEM analysis)	HG-SEM-CVAFS-VA (Hg SEM analysis)	AVS-COL-VA (AVS analysis)		Number of Containers
	PNF-03 (SEM/AVS)	15-08-15	—	Sediment										X	X	X		1
	PNF-04 (SEM/AVS)	15-08-15	—	Sediment										X	X	X		1
	PNF-05 (SEM/AVS)	16-08-15	—	Sediment										X	X	X		1
	PRef1-01 (SEM/AVS)	18-08-15	—	Sediment										X	X	X		1
	PRef1-02 (SEM/AVS)	18-08-15	—	Sediment										X	X	X		1
	PRef1-03 (SEM/AVS)	19-08-15	—	Sediment										X	X	X		1
	POL-P2-01 (SEM/AVS)	13-08-15	—	Sediment										X	X	X		1
	POL-P2-2 (SEM/AVS)	14-08-15	—	Sediment										X	X	X		1
	POL-P2-3 (SEM/AVS)	14-08-15	—	Sediment										X	X	X		1
	POL-P2-4 (SEM/AVS)	14-08-15	—	Sediment										X	X	X		1
	POL-P2-5 (SEM/AVS)	15-08-15	—	Sediment										X	X	X		1
	BOL-B2-1 (SEM/AVS)	16-08-15	—	Sediment										X	X	X		1

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	SEM/AVS samples enclosed in nitrogen filled ziplocs! Extra sample can be used for metals analyses for the same sampling station.
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☑	No ☐	Custody seal intact	Yes ☐	No ☑
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			6.7, 4	5.7	7.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Kalvarina Batchelar	Aug 20/15	13:00				Jean	21 Aug	9AM

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NA-FM-03268-V09 Front/04 January 2014

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Canada Toll Free: 1 800 668 9878

L1661656-COFC

COC Number: 14 -

Page 5 of 5

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
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Address:	PO Box 12, Likely, BC, V0L 1N0	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	250-790-2617	Email 1 or Fax	chughes@mountpolley.com; pstecko@minnow.ca	Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Company:		Email 1 or Fax	chughes@mountpolley.com
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q51555	Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
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LSD:		Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:	Can Dang	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-63UM-SED-VA (CCME Metals < 63um)	HG-63UM-CVAF-GA (Hg < 63um)	C-TOT-ORG-LECO-SK (TOC) <63µm	pH-1:2-VA (pH)	N-TOT-LECO-SK (Total nitrogen)	S-TOT-LECO-SK (Total Sulphur)	PSA-PIPET+GRAVEL-SK (Particle Size)	MOISTURE-VA (Moisture)	MET-TESS-STD-VA (Tessier Extractions)	MET-SEM-ICP-VA (SEM analysis)	HG-SEM-CVAFS-VA (Hg SEM analysis)	AVS-COL-VA (AVS analysis)		Number of Containers
	BOL-B2-2 (SEM/AVS)	16/08/15	—	Sediment										X	X	X		1
	BOL-B2-3 (SEM/AVS)	16/08/15	—	Sediment										X	X	X		1
	BOL-B2-4 (SEM/AVS)	16/08/15	—	Sediment										X	X	X		1
	BOL-B2-5 (SEM/AVS)	16/08/15	—	Sediment										X	X	X		1
	BOL-BX (SEM/AVS)	16/08/15	—	Sediment										X	X	X		1
				Sediment														
				Sediment														
				Sediment														
				Sediment														
				Sediment														
				Sediment														
				Sediment														

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐
Ice packs	Yes ☒	No ☐	Custody seal intact	Yes ☐ No ☒
Cooling Initiated	☐			

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			6.7,4	5.7	7.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Katherine Batchelor	Date: Aug 20/15	Time: 13:00	Received by:	Date:	Time:	Received by: Jean	Date: 21	Time: 9 AM

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MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 28-AUG-15
Report Date: 02-OCT-15 12:30 (MT)
Version: FINAL REV. 3

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1664712

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 1, 2
Legal Site Desc:

Comments: ADDITIONAL 29-SEP-15 10:20
Tessier sequential extraction and AVS/SEM analyses are not included in this report.

24-SEP-2015 Revision 2: This revision includes the Quality Control Reports.

2-OCT-2015 Revision 3: This revision includes Total Organic Carbon analysis.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1664712-1 Sediment 20-AUG-15 HAC-SED1	L1664712-2 Sediment 20-AUG-15 HAC-SED2	L1664712-3 Sediment 20-AUG-15 HAC-SED3	L1664712-4 Sediment 20-AUG-15 HAC-SED4	L1664712-5 Sediment 20-AUG-15 HAC-SED5
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Physical Tests	Moisture (%)	30.9	39.5	44.3	40.4	51.9
	pH (1:2 soil:water) (pH)	8.45	8.27	8.57	8.14	8.70
Particle Size	% Gravel (>2mm) (%)	0.11	1.06	<0.10	<0.10	<0.10
	% Sand (2.0mm - 0.063mm) (%)	23.9	8.40	1.48	2.19	0.29
	% Silt (0.063mm - 4um) (%)	68.3	78.4	76.8	81.1	71.1
	% Clay (<4um) (%)	7.68	12.2	21.7	16.7	28.7
	Texture	Silt loam	Silt	Silt loam	Silt	Silt loam
Anions and Nutrients	Total Nitrogen by LECO (%)	0.046	0.052	0.059	0.044	0.061
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.24	0.34	0.30	0.27	0.34
Metals	Aluminum (Al) (mg/kg)	13300	15100	20700	18100	22300
	Antimony (Sb) (mg/kg)	0.46	0.52	0.54	0.52	0.58
	Arsenic (As) (mg/kg)	12.9	13.6	15.5	15.5	16.6
	Barium (Ba) (mg/kg)	152	172	217	204	235
	Beryllium (Be) (mg/kg)	0.53	0.52	0.70	0.60	0.74
	Bismuth (Bi) (mg/kg)	0.10	0.13	0.13	0.12	0.15
	Boron (B) (mg/kg)	<10	<10	<10	<10	<10
	Cadmium (Cd) (mg/kg)	0.185	0.193	0.232	0.215	0.221
	Calcium (Ca) (mg/kg)	27700	27800	29600	30000	31800
	Chromium (Cr) (mg/kg)	26.8	26.9	30.5	28.2	29.8
	Cobalt (Co) (mg/kg)	15.7	15.7	19.9	18.3	21.8
	Copper (Cu) (mg/kg)	383	347	524	460	630
	Iron (Fe) (mg/kg)	57600	51400	46000	51800	46100
	Lead (Pb) (mg/kg)	7.24	8.35	9.20	8.43	10.7
	Lithium (Li) (mg/kg)	15.3	16.5	22.6	18.6	25.1
	Magnesium (Mg) (mg/kg)	7470	8560	12000	10200	13500
	Manganese (Mn) (mg/kg)	562	655	780	727	903
	Mercury (Hg) (mg/kg)	0.114	0.0932	0.0966	0.0928	0.109
	Molybdenum (Mo) (mg/kg)	2.52	2.17	2.34	2.51	2.79
	Nickel (Ni) (mg/kg)	18.0	20.8	25.4	22.0	26.2
	Phosphorus (P) (mg/kg)	1620	1440	1550	1670	1510
	Potassium (K) (mg/kg)	1310	1360	2040	1800	2150
	Selenium (Se) (mg/kg)	0.80	0.79	0.92	0.83	1.06
	Silver (Ag) (mg/kg)	0.258	0.237	0.259	0.248	0.293
	Sodium (Na) (mg/kg)	580	560	830	740	880
	Strontium (Sr) (mg/kg)	145	161	171	168	179
	Sulfur (S)-Total (mg/kg)	1400	1100	1300	1300	1200

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1664712-6 Sediment 25-AUG-15 LFF-01	L1664712-7 Sediment 25-AUG-15 LFF-02	L1664712-8 Sediment 26-AUG-15 LFF-03	L1664712-9 Sediment 26-AUG-15 LFF-04	L1664712-10 Sediment 25-AUG-15 LFF-05
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Physical Tests	Moisture (%)	59.7	35.9	37.0	42.6	48.3
	pH (1:2 soil:water) (pH)	7.14	6.68	6.87	7.57	7.19
Particle Size	% Gravel (>2mm) (%)	0.47	0.81	1.36	<0.10	1.05
	% Sand (2.0mm - 0.063mm) (%)	59.5	79.6	64.9	42.0	55.6
	% Silt (0.063mm - 4um) (%)	37.2	18.6	32.1	56.0	38.4
	% Clay (<4um) (%)	2.84	0.97	1.56	1.95	4.93
	Texture	Sandy loam	Sand	Loamy sand	Silt loam	Sandy loam
Anions and Nutrients	Total Nitrogen by LECO (%)	0.171	0.074	0.062	0.091	0.164
Organic / Inorganic Carbon	Total Organic Carbon (%)	5.03	2.04	0.78	0.75	2.87
Metals	Aluminum (Al) (mg/kg)	10300	16600	11400	15500	12900
	Antimony (Sb) (mg/kg)	0.30	0.24	0.24	0.27	0.25
	Arsenic (As) (mg/kg)	3.02	2.75	4.82	6.83	2.77
	Barium (Ba) (mg/kg)	58.1	54.5	65.3	104	61.1
	Beryllium (Be) (mg/kg)	0.29	0.38	0.36	0.41	0.31
	Bismuth (Bi) (mg/kg)	<0.10	<0.10	<0.10	<0.10	0.11
	Boron (B) (mg/kg)	<10	<10	<10	<10	<10
	Cadmium (Cd) (mg/kg)	0.318	0.239	0.107	0.123	0.183
	Calcium (Ca) (mg/kg)	10200	12000	9470	12800	8640
	Chromium (Cr) (mg/kg)	31.4	47.8	46.5	48.7	35.2
	Cobalt (Co) (mg/kg)	7.74	14.7	9.32	12.6	10.1
	Copper (Cu) (mg/kg)	39.0	51.8	69.0	136	32.7
	Iron (Fe) (mg/kg)	18400	29900	28900	37000	22200
	Lead (Pb) (mg/kg)	5.23	7.02	4.44	4.74	6.06
	Lithium (Li) (mg/kg)	10.9	12.8	10.5	12.7	14.8
	Magnesium (Mg) (mg/kg)	4900	9800	5490	7700	5870
	Manganese (Mn) (mg/kg)	227	351	298	405	260
	Mercury (Hg) (mg/kg)	0.0669	0.0601	0.0454	0.112	0.0443
	Molybdenum (Mo) (mg/kg)	0.49	0.68	0.84	1.02	0.31
	Nickel (Ni) (mg/kg)	23.9	33.5	21.2	25.7	26.8
	Phosphorus (P) (mg/kg)	711	869	1180	1340	755
	Potassium (K) (mg/kg)	830	760	940	1320	1180
	Selenium (Se) (mg/kg)	0.98	0.59	0.23	0.30	0.50
	Silver (Ag) (mg/kg)	0.125	0.099	0.073	0.110	0.087
	Sodium (Na) (mg/kg)	260	330	410	680	250
	Strontium (Sr) (mg/kg)	55.9	76.5	88.2	122	53.9
	Sulfur (S)-Total (mg/kg)	2100	600	600	700	600

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1664712-11 Sediment 24-AUG-15 PREF1-02 (PS)	L1664712-12 Sediment 24-AUG-15 PREF1-04 (PS)	L1664712-13 Sediment 24-AUG-15 PREF1-05	L1664712-16 Sediment 24-AUG-15 LREF1-01	L1664712-17 Sediment 25-AUG-15 LREF1-03
SOIL						
Physical Tests	Moisture (%)			54.2	43.5	42.4
	pH (1:2 soil:water) (pH)			7.01	7.02	7.17
Particle Size	% Gravel (>2mm) (%)	<0.10	<0.10	<0.10	1.78	0.60
	% Sand (2.0mm - 0.063mm) (%)	28.1	18.7	14.3	57.8	56.8
	% Silt (0.063mm - 4um) (%)	62.5	71.7	74.3	35.8	36.3
	% Clay (<4um) (%)	9.34	9.64	11.4	4.62	6.30
	Texture	Silt loam	Silt loam	Silt loam	Sandy loam	Sandy loam
Anions and Nutrients	Total Nitrogen by LECO (%)			0.182	0.115	0.101
Organic / Inorganic Carbon	Total Organic Carbon (%)			1.98	1.64	1.23
Metals	Aluminum (Al) (mg/kg)			15500	13600	12300
	Antimony (Sb) (mg/kg)			0.41	0.33	0.30
	Arsenic (As) (mg/kg)			9.02	5.37	3.82
	Barium (Ba) (mg/kg)			143	117	107
	Beryllium (Be) (mg/kg)			0.45	0.40	0.33
	Bismuth (Bi) (mg/kg)			0.15	0.12	<0.10
	Boron (B) (mg/kg)			<10	<10	<10
	Cadmium (Cd) (mg/kg)			0.364	0.345	0.287
	Calcium (Ca) (mg/kg)			8620	8170	7040
	Chromium (Cr) (mg/kg)			53.6	51.4	45.5
	Cobalt (Co) (mg/kg)			13.4	11.6	9.78
	Copper (Cu) (mg/kg)			50.0	33.8	27.9
	Iron (Fe) (mg/kg)			28900	24800	21400
	Lead (Pb) (mg/kg)			7.39	6.29	5.04
	Lithium (Li) (mg/kg)			12.6	11.8	10.1
	Magnesium (Mg) (mg/kg)			7380	6800	5860
	Manganese (Mn) (mg/kg)			516	370	299
	Mercury (Hg) (mg/kg)			0.0594	0.0481	0.0362
	Molybdenum (Mo) (mg/kg)			1.01	0.99	0.69
	Nickel (Ni) (mg/kg)			36.1	32.2	27.5
	Phosphorus (P) (mg/kg)			1200	1110	1130
	Potassium (K) (mg/kg)			1430	1300	1070
	Selenium (Se) (mg/kg)			0.88	0.71	0.53
	Silver (Ag) (mg/kg)			0.189	0.158	0.135
	Sodium (Na) (mg/kg)			500	480	440
	Strontium (Sr) (mg/kg)			88.9	76.0	63.9
	Sulfur (S)-Total (mg/kg)			800	<500	<500

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1664712-18	L1664712-19			
	Description	Sediment	Sediment			
	Sampled Date	25-AUG-15	25-AUG-15			
	Sampled Time					
	Client ID	LREF1-03X	LREF1-04			
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	41.3	36.5			
	pH (1:2 soil:water) (pH)	7.12	6.71			
Particle Size	% Gravel (>2mm) (%)	0.65	2.08			
	% Sand (2.0mm - 0.063mm) (%)	53.3	65.3			
	% Silt (0.063mm - 4um) (%)	42.6	29.6			
	% Clay (<4um) (%)	3.49	2.99			
	Texture	Sandy loam	Sandy loam			
Anions and Nutrients	Total Nitrogen by LECO (%)	0.099	0.097			
Organic / Inorganic Carbon	Total Organic Carbon (%)	1.27	1.54			
Metals	Aluminum (Al) (mg/kg)	12300	13500			
	Antimony (Sb) (mg/kg)	0.26	0.30			
	Arsenic (As) (mg/kg)	3.75	4.43			
	Barium (Ba) (mg/kg)	107	122			
	Beryllium (Be) (mg/kg)	0.33	0.37			
	Bismuth (Bi) (mg/kg)	<0.10	0.11			
	Boron (B) (mg/kg)	<10	<10			
	Cadmium (Cd) (mg/kg)	0.314	0.358			
	Calcium (Ca) (mg/kg)	7210	7240			
	Chromium (Cr) (mg/kg)	45.8	52.2			
	Cobalt (Co) (mg/kg)	10.1	11.0			
	Copper (Cu) (mg/kg)	28.6	33.0			
	Iron (Fe) (mg/kg)	21700	23400			
	Lead (Pb) (mg/kg)	5.07	6.02			
	Lithium (Li) (mg/kg)	10.0	11.0			
	Magnesium (Mg) (mg/kg)	5900	6600			
	Manganese (Mn) (mg/kg)	300	298			
	Mercury (Hg) (mg/kg)	0.0376	0.0471			
	Molybdenum (Mo) (mg/kg)	0.75	0.82			
	Nickel (Ni) (mg/kg)	28.4	32.3			
	Phosphorus (P) (mg/kg)	1170	1190			
	Potassium (K) (mg/kg)	1060	1270			
	Selenium (Se) (mg/kg)	0.51	0.67			
	Silver (Ag) (mg/kg)	0.132	0.152			
	Sodium (Na) (mg/kg)	430	460			
	Strontium (Sr) (mg/kg)	64.9	66.9			
	Sulfur (S)-Total (mg/kg)	<500	<500			

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1664712-1	L1664712-2	L1664712-3	L1664712-4	L1664712-5
	Description	Sediment	Sediment	Sediment	Sediment	Sediment
	Sampled Date	20-AUG-15	20-AUG-15	20-AUG-15	20-AUG-15	20-AUG-15
	Sampled Time					
	Client ID	HAC-SED1	HAC-SED2	HAC-SED3	HAC-SED4	HAC-SED5
Grouping	**Analyte**					
SOIL						
Metals	Thallium (Tl) (mg/kg)	0.054	0.080	0.076	0.065	0.076
	Tin (Sn) (mg/kg)	1.15	1.15	1.40	1.37	1.59
	Titanium (Ti) (mg/kg)	1250	1320	1610	1560	1770
	Uranium (U) (mg/kg)	1.06	1.21	1.15	1.20	1.27
	Vanadium (V) (mg/kg)	212	181	169	185	159
	Zinc (Zn) (mg/kg)	59.4	65.0	82.4	72.6	90.2

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1664712-6 Sediment 25-AUG-15 LFF-01	L1664712-7 Sediment 25-AUG-15 LFF-02	L1664712-8 Sediment 26-AUG-15 LFF-03	L1664712-9 Sediment 26-AUG-15 LFF-04	L1664712-10 Sediment 25-AUG-15 LFF-05
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Thallium (Tl) (mg/kg)	0.060	0.057	<0.050	<0.050	0.083
	Tin (Sn) (mg/kg)	0.32	0.43	0.46	0.67	0.32
	Titanium (Ti) (mg/kg)	786	1490	1020	1320	808
	Uranium (U) (mg/kg)	1.42	1.02	0.903	1.04	0.901
	Vanadium (V) (mg/kg)	45.6	98.5	107	129	46.5
	Zinc (Zn) (mg/kg)	41.5	61.2	43.6	52.2	46.9

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1664712-11 Sediment 24-AUG-15 PREF1-02 (PS)	L1664712-12 Sediment 24-AUG-15 PREF1-04 (PS)	L1664712-13 Sediment 24-AUG-15 PREF1-05	L1664712-16 Sediment 24-AUG-15 LREF1-01	L1664712-17 Sediment 25-AUG-15 LREF1-03
Grouping	**Analyte**					
SOIL						
Metals	Thallium (Tl) (mg/kg)			0.158	0.135	0.106
	Tin (Sn) (mg/kg)			0.41	0.38	0.37
	Titanium (Ti) (mg/kg)			1040	945	897
	Uranium (U) (mg/kg)			1.39	1.25	0.985
	Vanadium (V) (mg/kg)			64.9	59.0	52.7
	Zinc (Zn) (mg/kg)			71.6	64.3	57.2

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1664712-18	L1664712-19			
	Description	Sediment	Sediment			
	Sampled Date	25-AUG-15	25-AUG-15			
	Sampled Time					
	Client ID	LREF1-03X	LREF1-04			
Grouping	**Analyte**					
SOIL						
Metals	Thallium (Tl) (mg/kg)	0.104	0.118			
	Tin (Sn) (mg/kg)	0.33	0.39			
	Titanium (Ti) (mg/kg)	891	965			
	Uranium (U) (mg/kg)	0.958	1.18			
	Vanadium (V) (mg/kg)	53.1	59.4			
	Zinc (Zn) (mg/kg)	58.1	65.3			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AVS-COL-VA	Soil	Acid volatile sulphide by colourimetric	EPA 821/R-91-100

This analysis was carried out in accordance with the method described in EPA 821/R-91-100. In summary, hydrochloric acid is added to the sediment samples within a purge and trap system. The evolved hydrogen sulphide (H2S) is carried into a basic zinc acetate (ZnAc) solution by argon gas. The acid volatile sulfide is then determined colourimetrically.

C-TOT-63UM-LECO-SK	Soil	Total Carbon by combustion method (63um)	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

C-TOT-ORG-63UM-SK	Soil	Organic Carbon by combustion method(63um	SSSA (1996) p. 973

Total Organic Carbon (C-TOT-ORG-LECO-SK, C-TOT-ORG-SK)

Total C and inorganic C are determined on separate samples. The total C is determined by combustion and thermal conductivity detection, while inorganic C is determined by weight lass after addition of hydrochloric acid. Organic C is calculated by the difference between these two determinations.

Reference for Total C:
Nelson, D.W. and Sommers, L.E. 1996. Total Carbon, organic carbon and organic matter. P. 961-1010 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

Reference for Inorganic C:
Loeppert, R.H. and Suarez, D.L. 1996. Gravimetric Method for Loss of Carbon Dioxide. P. 455-456 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

HG-63UM-CVAF-VA	Soil	Hg in Soil by CVAFS	EPA 200.2/245.7

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 63 um (230 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Deviation from Reference Method: This procedure deviates from the BC CSR SALM method, which specifies sieving to 2 mm (10 mesh).

HG-SEM-CVAFS-VA	Soil	Simultaneously Extracted Metals in Soil	EPA 821/R-91-100; EPA245.7

This analysis was carried out in accordance with the method described in EPA 821/R-91-100. In summary, hydrochloric acid is added to the sediment samples within a purge and trap system.
The extract produced from the addition of the acid is then analyzed for simultaneously extracted metals (SEM) using atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA 245.7).

MET-63UM-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 63 um (230 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

MET-SEM-ICP-VA	Soil	Simultaneously Extracted Metals (ICPOES)	EPA 821/R-91-100; EPA 6010B

This analysis was carried out in accordance with the method described in EPA 821/R-91-100. In summary, hydrochloric acid is added to the sediment samples within a purge and trap system. The extract produced from the addition of the acid is then analyzed for simultaneously extracted metals (SEM) using inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-TESS-CM-CCMS-VA	Soil	METALS BY CCMS (TESSIER EXTRACTION #2)	Tessier Extraction 1979/EPA 6020A

This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with 5 or 6 (if a pre-liminary water extraction is included) different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For Extraction #2, the extraction solution is 1M Sodium Acetate adjusted to pH 5 and is intended to extract the "Carbonate" metals.

MET-TESS-EA-CCMS-VA	Soil	METALS BY CCMS (TESSIER EXTRACTION #1)	Tessier Extraction 1979/EPA 6020A

Reference Information

This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with 5 or 6 (if a pre-liminary water extraction is included) different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For Extraction #1, the extraction solution is 1M Magnesium Chloride and is intended to extract the "Exchangeable and Adsorbed" metals.

MET-TESS-FEO-CCMS-VA Soil METALS BY CCMS (TESSIER EXTRACTION #3) Tessier Extraction 1979/EPA 6020A

This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with 5 or 6 (if a pre-liminary water extraction is included) different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For Extraction #3, the extraction solution is 0.1 M Hydroxylamine Hydro› Chloride in 25% v/v Acetic Acid and is intended to extract the Easily Reducible Metals and Iron Oxides .

MET-TESS-OB-CCMS-VA Soil METALS BY CCMS (TESSIER EXTRACTION #4) Tessier Extraction 1979/EPA 6020A

"This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with 5 or 6 (if a pre-liminary water extraction is included) different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For Extraction #4, the extraction solution is 0.02 M Nitric Acid followed by 3.2M Ammonium Acetate and is intended to extract the Organic Bound metals.

MET-TESS-RM-CCMS-VA Soil METALS BY CCMS (TESSIER RM EXTRACTION) Tessier Extraction 1979/EPA 6020A

"This analysis is modified from the extraction procedure outlined in the "Sequential Extraction Procedure for the Speciation of Particulate Trace Metals" Analytical Chemistry, (A. Tessier, P.G.C. Campbell, and M. Bisson, June 1979). Initially, the sample is manually homogenized, dried at <60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed for extraction. In summary, the sample is sequentially extracted with up to 6 different extraction solutions. The extract is then centrifuged for 30 minutes and the supernatant is subsequently removed and analysed. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Note: For the Tessier "RM" Extraction, the extraction solution is 50/50 mix of 1:1 Nitric Acid along with 1:1 Hydrochloric Acid, and is hot block digested as per the BC SALM procedure. This is intended to extract the Residual metals.

MOISTURE-VA Soil Moisture content ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

N-TOT-LECO-SK Soil Total Nitrogen by combustion method SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where nitrogen in the reduced nitrous oxide gas is determined using a thermal conductivity detector.

PH-1:2-VA Soil pH in Soil (1:2 Soil:Water Extraction) BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PSA-PIPET+GRAVEL-SK Soil Particle size - Sieve and Pipette SSIR-51 METHOD 3.2.1

Particle size distribution is determined by a combination of techniques. Dry sieving is performed for coarse particles, wet sieving for sand particles and the pipette sedimentation method for clay particles.

Reference:

Burt, R. (2009). Soil Survey Field and Laboratory Methods Manual. Soil Survey Investigations Report No. 5. Method 3.2.1.2.2. United States Department of Agriculture Natural Resources Conservation Service.

S-TOT-LECO-SK Soil Total Sulphur by combustion method ISO 15178:2000

The sample is ignited in a combustion analyzer where sulfur in the reduced SO2 gas is determined using a thermal conductivity detector.

Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1 2

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOT-ORG-63UM-SK	**Soil**							
Batch R3279463								
WG2181419-1 DUP		**L1664712-10**						
Total Organic Carbon		2.87	2.95		%	2.7	30	30-SEP-15
WG2181419-2 IRM		**08-109_SOIL**						
Total Organic Carbon			1.04		%		0.77-1.43	30-SEP-15
WG2181419-3 MB								
Total Organic Carbon			<0.10		%		0.1	30-SEP-15
HG-63UM-CVAF-VA	**Soil**							
Batch R3259486								
WG2160221-4 CRM		**VA-NRC-STSD1**						
Mercury (Hg)			108.0		%		70-130	03-SEP-15
WG2160221-5 CRM		**VA-NRC-PACS3**						
Mercury (Hg)			112.2		%		70-130	03-SEP-15
WG2160221-3 LCS								
Mercury (Hg)			100.9		%		70-130	03-SEP-15
WG2160221-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	03-SEP-15
MET-63UM-CCMS-VA	**Soil**							
Batch R3260087								
WG2160221-3 LCS								
Aluminum (Al)			91.4		%		70-130	03-SEP-15
Antimony (Sb)			99.4		%		70-130	03-SEP-15
Arsenic (As)			96.7		%		70-130	03-SEP-15
Barium (Ba)			102.1		%		70-130	03-SEP-15
Beryllium (Be)			94.7		%		70-130	03-SEP-15
Bismuth (Bi)			100.7		%		70-130	03-SEP-15
Boron (B)			92.0		%		70-130	03-SEP-15
Cadmium (Cd)			95.5		%		70-130	03-SEP-15
Calcium (Ca)			97.2		%		70-130	03-SEP-15
Chromium (Cr)			93.1		%		70-130	03-SEP-15
Cobalt (Co)			95.6		%		70-130	03-SEP-15
Copper (Cu)			91.2		%		70-130	03-SEP-15
Iron (Fe)			104.4		%		70-130	03-SEP-15
Lead (Pb)			103.2		%		70-130	03-SEP-15
Lithium (Li)			93.4		%		70-130	03-SEP-15
Magnesium (Mg)			93.3		%		70-130	03-SEP-15
Manganese (Mn)			93.6		%		70-130	03-SEP-15

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3260087								
WG2160221-3 LCS								
Molybdenum (Mo)			101.8		%		70-130	03-SEP-15
Nickel (Ni)			92.9		%		70-130	03-SEP-15
Phosphorus (P)			95.0		%		70-130	03-SEP-15
Potassium (K)			92.0		%		70-130	03-SEP-15
Selenium (Se)			97.8		%		70-130	03-SEP-15
Silver (Ag)			102.6		%		70-130	03-SEP-15
Sodium (Na)			88.8		%		70-130	03-SEP-15
Strontium (Sr)			104.2		%		70-130	03-SEP-15
Thallium (Tl)			101.2		%		70-130	03-SEP-15
Tin (Sn)			97.2		%		70-130	03-SEP-15
Titanium (Ti)			91.4		%		70-130	03-SEP-15
Uranium (U)			103.9		%		70-130	03-SEP-15
Vanadium (V)			96.1		%		70-130	03-SEP-15
Zinc (Zn)			90.2		%		70-130	03-SEP-15
Batch R3262020								
WG2160221-4 CRM		**VA-NRC-STSD1**						
Aluminum (Al)			103.4		%		70-130	04-SEP-15
Antimony (Sb)			81.0		%		70-130	04-SEP-15
Arsenic (As)			111.3		%		70-130	04-SEP-15
Barium (Ba)			106.7		%		70-130	04-SEP-15
Beryllium (Be)			87.8		%		70-130	04-SEP-15
Bismuth (Bi)			77.6		%		70-130	04-SEP-15
Cadmium (Cd)			111.2		%		70-130	04-SEP-15
Calcium (Ca)			82.1		%		70-130	04-SEP-15
Chromium (Cr)			113.1		%		70-130	04-SEP-15
Cobalt (Co)			111.8		%		70-130	04-SEP-15
Copper (Cu)			107.9		%		70-130	04-SEP-15
Iron (Fe)			100.7		%		70-130	04-SEP-15
Lead (Pb)			81.7		%		70-130	04-SEP-15
Lithium (Li)			83.8		%		70-130	04-SEP-15
Magnesium (Mg)			101.1		%		70-130	04-SEP-15
Manganese (Mn)			95.5		%		70-130	04-SEP-15
Molybdenum (Mo)			84.0		%		70-130	04-SEP-15
Nickel (Ni)			110.1		%		70-130	04-SEP-15

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3262020								
WG2160221-4 CRM		**VA-NRC-STSD1**						
Phosphorus (P)			108.9		%		70-130	04-SEP-15
Potassium (K)			121.2		%		70-130	04-SEP-15
Selenium (Se)			102.2		%		70-130	04-SEP-15
Silver (Ag)			82.9		%		70-130	04-SEP-15
Sodium (Na)			124.5		%		70-130	04-SEP-15
Strontium (Sr)			89.2		%		70-130	04-SEP-15
Thallium (Tl)			79.5		%		70-130	04-SEP-15
Tin (Sn)			79.5		%		70-130	04-SEP-15
Titanium (Ti)			113.5		%		70-130	04-SEP-15
Vanadium (V)			115.5		%		70-130	04-SEP-15
Zinc (Zn)			108.7		%		70-130	04-SEP-15
WG2160221-5 CRM		**VA-NRC-PACS3**						
Aluminum (Al)			90.5		%		70-130	04-SEP-15
Antimony (Sb)			92.6		%		70-130	04-SEP-15
Arsenic (As)			87.7		%		70-130	04-SEP-15
Barium (Ba)			97.8		%		70-130	04-SEP-15
Beryllium (Be)			100.8		%		70-130	04-SEP-15
Boron (B)			98.0		%		70-130	04-SEP-15
Cadmium (Cd)			99.0		%		70-130	04-SEP-15
Calcium (Ca)			102.5		%		70-130	04-SEP-15
Chromium (Cr)			92.7		%		70-130	04-SEP-15
Cobalt (Co)			93.3		%		70-130	04-SEP-15
Copper (Cu)			93.9		%		70-130	04-SEP-15
Iron (Fe)			90.5		%		70-130	04-SEP-15
Lead (Pb)			99.4		%		70-130	04-SEP-15
Lithium (Li)			91.2		%		70-130	04-SEP-15
Magnesium (Mg)			90.9		%		70-130	04-SEP-15
Manganese (Mn)			80.2		%		70-130	04-SEP-15
Molybdenum (Mo)			93.5		%		70-130	04-SEP-15
Nickel (Ni)			99.4		%		70-130	04-SEP-15
Phosphorus (P)			93.5		%		70-130	04-SEP-15
Potassium (K)			95.1		%		70-130	04-SEP-15
Selenium (Se)			95.1		%		70-130	04-SEP-15
Silver (Ag)			115.5		%		70-130	04-SEP-15

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3262020								
WG2160221-5 CRM		**VA-NRC-PACS3**						
Sodium (Na)			89.0		%		70-130	04-SEP-15
Strontium (Sr)			102.5		%		70-130	04-SEP-15
Thallium (Tl)			95.9		%		70-130	04-SEP-15
Tin (Sn)			86.2		%		70-130	04-SEP-15
Titanium (Ti)			87.8		%		70-130	04-SEP-15
Uranium (U)			96.6		%		70-130	04-SEP-15
Vanadium (V)			93.7		%		70-130	04-SEP-15
Zinc (Zn)			95.3		%		70-130	04-SEP-15
WG2160221-1 MB								
Aluminum (Al)			<50		mg/kg		50	04-SEP-15
Antimony (Sb)			<0.10		mg/kg		0.1	04-SEP-15
Arsenic (As)			<0.050		mg/kg		0.05	04-SEP-15
Barium (Ba)			<0.50		mg/kg		0.5	04-SEP-15
Beryllium (Be)			<0.10		mg/kg		0.1	04-SEP-15
Bismuth (Bi)			<0.10		mg/kg		0.1	04-SEP-15
Boron (B)			<5.0		mg/kg		5	04-SEP-15
Cadmium (Cd)			<0.050		mg/kg		0.05	04-SEP-15
Calcium (Ca)			<50		mg/kg		50	04-SEP-15
Chromium (Cr)			<0.50		mg/kg		0.5	04-SEP-15
Cobalt (Co)			<0.10		mg/kg		0.1	04-SEP-15
Copper (Cu)			<0.50		mg/kg		0.5	04-SEP-15
Iron (Fe)			<50		mg/kg		50	04-SEP-15
Lead (Pb)			<0.10		mg/kg		0.1	04-SEP-15
Lithium (Li)			<5.0		mg/kg		5	04-SEP-15
Magnesium (Mg)			<10		mg/kg		10	04-SEP-15
Manganese (Mn)			<0.20		mg/kg		0.2	04-SEP-15
Molybdenum (Mo)			<0.10		mg/kg		0.1	04-SEP-15
Nickel (Ni)			<0.50		mg/kg		0.5	04-SEP-15
Phosphorus (P)			<50		mg/kg		50	04-SEP-15
Potassium (K)			<100		mg/kg		100	04-SEP-15
Selenium (Se)			<0.10		mg/kg		0.1	04-SEP-15
Silver (Ag)			<0.050		mg/kg		0.05	04-SEP-15
Sodium (Na)			<100		mg/kg		100	04-SEP-15
Strontium (Sr)			<0.10		mg/kg		0.1	04-SEP-15

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-63UM-CCMS-VA	**Soil**							
Batch R3262020								
WG2160221-1 MB								
Thallium (Tl)			<0.050		mg/kg		0.05	04-SEP-15
Tin (Sn)			<0.20		mg/kg		0.2	04-SEP-15
Titanium (Ti)			<1.0		mg/kg		1	04-SEP-15
Uranium (U)			<0.050		mg/kg		0.05	04-SEP-15
Vanadium (V)			<0.20		mg/kg		0.2	04-SEP-15
Zinc (Zn)			<1.0		mg/kg		1	04-SEP-15
MOISTURE-VA	**Soil**							
Batch R3256094								
WG2160213-2 LCS								
Moisture			99.6		%		90-110	29-AUG-15
WG2160213-1 MB								
Moisture			<0.25		%		0.25	29-AUG-15
Batch R3257998								
WG2161944-2 LCS								
Moisture			100.4		%		90-110	02-SEP-15
WG2161944-1 MB								
Moisture			<0.25		%		0.25	02-SEP-15
N-TOT-LECO-SK	**Soil**							
Batch R3259135								
WG2162266-1 DUP		**L1664712-8**						
Total Nitrogen by LECO		0.062	0.070		%	11	20	02-SEP-15
WG2162266-2 IRM		**08-109_SOIL**						
Total Nitrogen by LECO			0.123		%		0.085-0.135	02-SEP-15
WG2162266-4 MB								
Total Nitrogen by LECO			<0.020		%		0.02	02-SEP-15
PSA-PIPET+GRAVEL-SK	**Soil**							
Batch R3272014								
WG2162269-1 DUP		**L1664712-7**						
% Gravel (>2mm)		0.81	0.81		%	0.0	25	21-SEP-15
% Sand (2.0mm - 0.063mm)		79.6	80.3	J	%	0.67	5	21-SEP-15
% Silt (0.063mm - 4um)		18.6	18.0	J	%	0.62	5	21-SEP-15
% Clay (<4um)		0.97	0.92	J	%	0.05	5	21-SEP-15
WG2162269-2 IRM		**FARM2010**						
% Sand (2.0mm - 0.063mm)			33.3		%		29-39	21-SEP-15
% Silt (0.063mm - 4um)			39.2		%		34-44	21-SEP-15
% Clay (<4um)			27.5		%		22-32	21-SEP-15

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
S-TOT-LECO-SK	**Soil**							
Batch R3259135								
WG2162266-1 DUP		**L1664712-8**						
Sulfur (S)-Total		600	600		mg/kg	9.0	30	02-SEP-15
WG2162266-3 IRM		**1646A_SOIL**						
Sulfur (S)-Total			3400		mg/kg		2500-4600	02-SEP-15
WG2162266-4 MB								
Sulfur (S)-Total			<500		mg/kg		500	02-SEP-15

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1664712-COFC

COC Number: 14 -

Page 1 of 2

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	MOUNT POLLEY MINING CORP.	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Colleen Hughes	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	PO Box 12, Likely, BC, V0L 1N0	☐ Criteria on Report - provide details below if box checked	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	250-790-2617	Email 1 or Fax chughes@mountpolley.com; pstecko@minnow.ca	Specify Date Required for E2,E or P:
		Email 2	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax chughes@mountpolley.com	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q51555	Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L1664712 **ALS Contact:** Can Dang **Sampler:** KB

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-63UM-SED-VA (CCME Metals < 63um)	HG-63UM-CVAF-CA (Hg < 63um)	C-TOT-ORG-LECO-SK (TOC) <63um	pH-1:2-VA (pH)	N-TOT-LECO-SK (Total nitrogen)	S-TOT-LECO-SK (Total Sulphur)	PSA-PIPET+GRAVEL-SK (Particle Size)	MOISTURE-VA (Moisture)	MET-TESS-STD-VA (Tessier Extractions)	MET-SEM-ICP-VA (SEM analysis)	HG-SEM-CVAFS-VA (Hg SEM analysis)	AVS-COL-VA (AVS analysis)		Number of Containers
	HAC-SED1	20 Aug 15	—	Sediment	X	X	X	X	X	X	X	X						2
	HAC-SED2	20 Aug 15	—	Sediment	X	X	X	✓	X	X	X	X						2
	HAC-SED3	20 Aug 15	—	Sediment	X	X	X	X	X	X	X	X						2
	HAC-SED4	20 Aug 15	—	Sediment	X	X	X	X	X	X	X	X						2
	HAC-SED5	20 Aug 15	—	Sediment	X	X	X	X	X	X	X	X						2
	LFF-01	25 Aug 15	—	Sediment	X	X	X	X	X	X	X	X						2
	LFF-02	25 Aug 15	—	Sediment	X	X	X	X	X	X	X	X						2
	LFF-03	26 Aug 15	—	Sediment	X	X	X	X	X	X	X	X						2
	LFF-04	26 Aug 15	—	Sediment	X	X	X	X	X	X	X	X						2
	LFF-05	25 Aug 15	—	Sediment	X	X	X	X	X	X	X	X						2
	PRef1-02 (PS)	24 Aug 15	—	Sediment							X							1
	PRef1-04 (PS)	24 Aug 15	—	Sediment							X							1

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	Analyse for <63um TOC if sample volume allows. SEM/AVS samples are in nitrogen-filled bags.
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ Custody seal Intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	
8.4	9.5		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Katharina Batchelor	Aug 27/15	8:35	MIKE	8/28	8:50			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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NA-FM-0326a v09 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1664712-COFC

COC Number: 14

Page 2 of 2

Report To		Report Format / Distribution	
Company:	MOUNT POLLEY MINING CORP.	Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Contact:	Colleen Hughes	Quality Control (QC) Report with Report	☑ Yes ☐ No
Address:	PO Box 12, Likely, BC, V0L 1N0	☐ Criteria on Report - provide details below if box checked	
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Phone:	250-790-2617	Email 1 or Fax	chughes@mountpolley.com; pstecko@minnow.ca
		Email 2	

Invoice To		Invoice Distribution	
	Same as Report To ☑ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☐ Yes ☐ No	Email 1 or Fax	chughes@mountpolley.com
Company:		Email 2	
Contact:			

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q51555	Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L1664712 | ALS Contact: Can Dang | Sampler:

Turnaround Time (TAT) (Rush Turnaround Time (TAT) is not available for all tests)

- R ☑ Regular (Standard TAT if received by 3 pm - business days)
- P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
- E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
- E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge

Specify Date Required for E2,E or P:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-63UM-SED-VA (CCME Metals < 63um)	HG-63UM-CVAF-CA (Hg < 63um)	C-TOT-ORG-LECO-SK (TOC) <63µm	pH-1:2-VA (pH)	N-TOT-LECO-SK (Total nitrogen)	S-TOT-LECO-SK (Total Sulphur)	PSA-PIPET+GRAVEL-SK (Particle Size)	MOISTURE-VA (Moisture)	MET-TESS-STD-VA (Tessier Extractions)	MET-SEM-ICP-VA (SEM analysis)	HG-SEM-CVAFS-VA (Hg SEM analysis)	AVS-COL-VA (AVS analysis)		Number of Containers
	PRef1-05	24Aug15	—	Sediment	X	X	X	X	X	X	X	X	X					4
	PRef1-04 (SEM/AVS)	24Aug15	—	Sediment										X	X	X		1
	PRef1-05 (SEM/AVS)	24Aug15	—	Sediment										X	X	X		1
	LRef1-01	24Aug15	—	Sediment	X	X	X	X	X	X	X	X						2
	LRef1-03	25Aug15	—	Sediment	X	X	X	X	X	X	X	X						2
	LRef1-03X	25Aug15	—	Sediment	X	X	X	X	X	X	X	X						2
	LRef1-04	25Aug15	—	Sediment	X	X	X	X	X	X	X	X						2
				Sediment														
				Sediment														
				Sediment														
				Sediment														
				Sediment														

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☐ No

Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

SEM/AVS samples in nitrogen-filled bags. Extra sample can be used for other analyses if needed.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C		
8.4	9.5			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Katharina Batchelar	Aug 27/15	8:35	MIKE	8 28	8:50			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

APPENDIX C

DATA QUALITY ASSESSMENT

APPENDIX C: DATA QUALITY ASSESSMENT

C1.0 INTRODUCTION 1
C1.1 Background 1
C1.2 Types of Quality Control Samples 2

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C1.0 INTRODUCTION

Data Quality Assessment (DQA) was conducted on data collected as part of the Mount Polley Mining Corporation (MPMC) Sediment Quality Data Report. The objective of DQA is to define the overall quality of the data presented in the report, and, by extension, the confidence with which the data can be used to derive conclusions.

C1.1 Background

A variety of factors can influence the physical, chemical and biological measurements made in an environmental study and thus affect the accuracy and/or precision of the data. Depending on the magnitude of the problem, inaccuracy or imprecision have the potential to affect the reliability of any conclusions made from the data. Therefore, it is important to ensure that programs incorporate appropriate steps to control the non-natural sources of data variability (i.e., minimize the variability that does not reflect natural spatial and temporal variability in the environment) and thus assure the quality of the data.

Data quality as a concept is meaningful only when it relates to the intended use of the data. That is, one must know the context in which the data will be interpreted in order to establish a relevant basis for judging whether or not the data set is adequate. DQA involves comparison of actual field and laboratory measurement performance to data quality objectives (DQOs) established for a particular study, such as evaluation of method detection limits, blank sample data, data precision (based on field and laboratory duplicate samples), and data accuracy (based on matrix spike recoveries and/or analysis of standards or certified reference materials). A trusted analytical laboratory certified by Canadian Association for Laboratory Accreditation (CALA) with a rigorous internal quality assurance program was selected to ensure the highest possible quality.

DQOs were established a-priori to reflect reasonable and achievable performance expectations. Programs involving a large number of samples and analytes usually yield some results that exceed the DQOs. This is particularly so for multi-element scans since the analytical conditions are not necessarily optimal for every element included in the scan. Generally, scan results may be considered acceptable if no more than 20% of the parameters fail to meet the DQOs. Overall, the intent of DQA is not to reject any measurement that did not meet a DQO, but to ensure that any questionable data received more scrutiny to determine what effect, if any, this had on interpretation of results within the context of this project.

C1.2 Types of Quality Control Samples

Several types of quality control (QC) samples were assessed based on samples collected (or prepared) in the field and laboratory. These samples include the following:

- **Blanks** are samples of de-ionized water and/or appropriate reagent(s) that are handled and analyzed the same way as regular samples. These samples will reflect any contamination that occurred in the field (in the case of field or trip blanks) or the laboratory (in the case of laboratory or method blanks). Analyte concentrations should be non-detectable, although a data quality objective of twice the method detection limit allows for slight "noise" around the detection limit.

- **Field Duplicates** are sub-sample pairs collected from a randomly selected field station using identical collection and handling methods that are then analyzed separately in the laboratory. The duplicate samples are handled and analyzed in an identical manner in the laboratory. The data from field duplicate samples reflect natural variability, as well as the variability associated with sample collection methods, and therefore provide a measure of field precision.

- **Laboratory Duplicates** are sub-sample pairs created in the laboratory from randomly selected field samples which are sub-sampled and then analyzed independently using identical analytical methods. The laboratory duplicate sample results reflect any variability introduced during laboratory sample handling and analysis and thus provide a measure of laboratory precision.

- **Certified Reference Materials and QC Standards** are samples containing known chemical concentrations that are processed and analyzed along with batches of environmental samples. The sample results are then compared to target results to provide a measure of analytical accuracy. The results are reported as the percent of the known amount that was recovered in the analysis.

C2.0 SEDIMENT SAMPLES

C2.1 Holding Time and General Laboratory Flags

All sediment analyses were conducted within ALS Environmental's recommended hold times. There were no general laboratory flags associated with either analytical report (i.e., ALS Environmental Report L1661656 and L1664712; Appendix B).

C2.2 Method Detection Limits

Analytical laboratory reports (Appendix B) were examined to provide an inventory of analytes for which sample results were less than the method detection limit (MDL). Only seven analytes – percent gravel, percent sand, total organic carbon, bismuth, boron, total sulphur and thallium - had results reported as less than MDL. None of these analytes have applicable CSR criteria (Table C.1), and therefore the achieved MDLs were appropriate for the study and the rare instances of results reported as <MDL did not adversely affect data interpretability.

C2.3 Laboratory Blank Sample Analysis

All of the reported method blank results were non-detectable (Appendix B). Thus, the method blank results for this study suggest no inadvertent sample contamination within the laboratory.

C2.4 Data Precision

Field Duplicate Samples

Four field duplicate samples were collected for quality assurance (Table C.2). Evaluation of precision associated with sediment physical and chemical characteristics indicated excellent precision. The only occurrence of a relative percent difference (RPD) between duplicates of greater than the DQO of 40% was for percent clay in a sample from the littoral reference area (Table C.2). These duplicate samples had a low proportion of clay sized particles (6.3% and 3.5%). Consequently, although the absolute difference was small (2.8%), the relative percent difference was 57.4% (Table C.2). Overall, the precision associated with sediment quality analyses is suitable.

Laboratory Duplicate Samples

Two laboratory duplicate samples were evaluated for metals; and another ten laboratory duplicate samples were evaluated for a combination of moisture, pH, particle size, total

Table C.1: Laboratory method detection limit (MDL) evaluation for basic sediment chemistry analyses relative to generic numerical sediment criteria. Only analytes with <MDL values are reported.

Analyte		Units	BC CSR Criteria [1, 2]		Maximum Method Detection Limit Achieved
			Sensitive	Typical	
Non-metals	% Gravel	%	-	-	0.1
	% Sand	%	-	-	0.1
Organic / Inorganic Carbon	Total Organic Carbon	%	-	-	0.1
Metals	Bismuth	mg/kg	-	-	0.2
	Boron	mg/kg	-	-	10
	Sulphur	mg/kg	-	-	0.05
	Thallium	mg/kg	-	-	0.05

[1] British Columbia Contaminated Sites Regulation - Generic Sediment Quality Criteria for Freshwater Sediment (BCMOE 1996)

[2] Dash indicates there is no BC CSR criterion for the specified analyte

Table C.2: Field duplicate results. Highlighted values did not meet the data quality objective of ≤ 40% Relative Percent Difference (RPD).

	Units	Lab Report L1661656									Lab Report L1664712		
Client Sample ID:		**PNF-01**	**PNF-01X**		**PREFI-03**	**PREFI-03X**		**BOL-B2-3**	**BOL-BX**		**LREF1-03**	**LREF1-03X**	
Date Sampled:		**17-Aug-2015**	**17-Aug-2015**	**RPD (%)**	**19-Aug-2015**	**19-Aug-2015**	**RPD (%)**	**16-Aug-2015**	**16-Aug-2015**	**RPD (%)**	**25-Aug-2015**	**25-Aug-2015**	**RPD (%)**
ALS Sample ID:		**L1661656-1**	**L1661656-2**		**L1661656-8**	**L1661656-9**		**L1661656-29**	**L1661656-33**		**L1664712-17**	**L1664712-18**	
Physical Tests													
Moisture	%	63.5	64.5	1.6	53.3	51.6	3.2	95.7	94.8	0.9	42.4	41.3	2.6
pH (1:2 soil:water)	pH	8.26	8.31	0.6	6.69	6.72	0.4	6.60	6.39	3.2	7.17	7.12	0.7
Particle Size													
% Gravel (>2mm)	%	<0.10	<0.10	0.0	<0.10	<0.10	0.0			-	0.60	0.65	0.0
% Sand (2.0mm - 0.063mm)	%	1.41	1.29	8.9	15.2	11.2	30.3			-	56.8	53.3	6.4
% Silt (0.063mm - 4um)	%	44.1	46.4	5.1	73.0	76.9	5.2			-	36.3	42.6	16.0
% Clay (<4um)	%	54.5	52.3	4.1	11.8	11.9	0.8			-	6.30	3.49	57.4
Texture	-	Silty clay	Silty clay	-	Silt loam	Silt loam	-			-	Sandy loam	Sandy loam	-
Anions and Nutrients													
Total Nitrogen by LECO	%	0.064	0.055	15.1	0.158	0.156	1.3	1.65	1.67	1.2	0.101	0.099	2.0
Organic / Inorganic Carbon													
Total Organic Carbon	%	0.42	0.50	17.4	1.71	1.66	3.0	15.1	15.5	2.6	1.23	1.27	3.2
Metals													
Aluminum	mg/kg	33,300	33,500	0.6	17,300	16,700	3.5	17,600	18,900	7.1	12,300	12,300	0.0
Antimony	mg/kg	0.61	0.63	3.2	0.43	0.42	2.4	0.91	0.76	18.0	0.30	0.26	14.3
Arsenic	mg/kg	16.2	16.4	1.2	8.98	9.28	3.3	7.23	6.89	4.8	3.82	3.75	1.8
Barium	mg/kg	298	296	0.7	151	150	0.7	280	286	2.1	107	107	0.0
Beryllium	mg/kg	1.17	1.18	0.9	0.50	0.50	0.0	0.70	0.60	15.4	0.33	0.33	0.0
Bismuth	mg/kg	0.16	0.16	0.0	0.15	0.15	0.0	0.13	0.11	16.7	<0.10	<0.10	0.0
Boron	mg/kg	12	12	0.0	<10	<10	0.0	14	13	7.4	<10	<10	0.0
Cadmium	mg/kg	0.230	0.242	5.1	0.422	0.416	1.4	0.493	0.483	2.0	0.287	0.314	9.0
Calcium	mg/kg	33,000	33,400	1.2	8,840	8,760	0.9	8,140	6,830	17.5	7,040	7,210	2.4
Chromium	mg/kg	23.5	23.7	0.8	59.5	58.5	1.7	42.2	40.4	4.4	45.5	45.8	0.7
Cobalt	mg/kg	32.7	33.0	0.9	15.0	14.7	2.0	12.7	12.8	0.8	9.78	10.1	3.2
Copper	mg/kg	1110	1130	1.8	55.8	54.6	2.2	363	371	2.2	27.9	28.6	2.5
Iron	mg/kg	38,700	39,100	1.0	32,700	31,900	2.5	27,500	28,300	2.9	21,400	21,700	1.4
Lead	mg/kg	12.3	12.5	1.6	7.51	7.44	0.9	10.4	8.87	15.9	5.04	5.07	0.6
Lithium	mg/kg	39.7	40.3	1.5	15.2	15.0	1.3	10.4	9.3	11.2	10.1	10.0	1.0
Magnesium	mg/kg	23,100	23,800	3.0	8,660	8,370	3.4	5,190	5,210	0.4	5,860	5,900	0.7
Manganese	mg/kg	1,250	1,280	2.4	479	467	2.5	3,240	2,990	8.0	299	300	0.3
Mercury	mg/kg	0.116	0.116	0.0	0.0515	0.0545	5.7	0.285	0.307	7.4	0.0362	0.0376	3.8
Molybdenum	mg/kg	4.64	4.63	0.2	1.02	1.05	2.9	4.23	3.25	26.2	0.69	0.75	8.3
Nickel	mg/kg	24.6	24.9	1.2	40.1	39.2	2.3	32.4	31.8	1.9	27.5	28.4	3.2
Phosphorus	mg/kg	1,080	1,130	4.5	1,190	1,200	0.8	2,070	2,270	9.2	1,130	1,170	3.5
Potassium	mg/kg	3,190	3,120	2.2	1,570	1,520	3.2	1,570	1,730	9.7	1,070	1,060	0.9
Selenium	mg/kg	1.54	1.59	3.2	0.93	0.90	3.3	2.59	2.60	0.4	0.53	0.51	3.8
Silver	mg/kg	0.441	0.447	1.4	0.216	0.209	3.3	0.372	0.303	20.4	0.135	0.132	2.2
Sodium	mg/kg	1,590	1,620	1.9	520	530	1.9	840	1040	21.3	440	430	2.3
Strontium	mg/kg	241	240	0.4	84.5	82.8	2.0	94.9	81.3	15.4	63.9	64.9	1.6
Sulfur (S)-Total	mg/kg	1,800	1,800	0.0	1,300	1,200	8.0	7,100	6,700	5.8	<500	<500	0.0
Thallium	mg/kg	0.067	0.068	1.5	0.171	0.168	1.8	0.119	0.104	13.5	0.106	0.104	1.9
Tin	mg/kg	2.31	2.32	0.4	0.46	0.45	2.2	0.64	0.52	20.7	0.37	0.33	11.4
Titanium	mg/kg	2,310	2,310	0.0	1,190	1,140	4.3	389	461	16.9	897	891	0.7
Uranium	mg/kg	1.54	1.56	1.3	1.43	1.41	1.4	2.07	1.77	15.6	0.985	0.958	2.8
Vanadium	mg/kg	128	130	1.6	72.3	70.7	2.2	75.6	76.7	1.4	52.7	53.1	0.8
Zinc	mg/kg	125	126	0.8	82.6	81.3	1.6	79.4	79.7	0.4	57.2	58.1	1.6

nitrogen, total organic carbon, and total sulfur (Appendix B). All laboratory duplicate results (97 in total) met ALS Environmental's data quality objective of <30% RPD (Appendix B) and thus laboratory precision achieved in this study is considered good.

C2.5 Data Accuracy

Data accuracy was evaluated based on results of certified reference materials (CRM), internal reference materials (IRM) and laboratory control samples (LCS; Appendix B). Specifically, six CRM and two LCS samples were used to evaluate the accuracy of metal analyses, three IRM samples were used to evaluate the accuracy of particle size, total nitrogen, total organic carbon and Sulphur, and another eight LCS samples were evaluated for moisture and pH (Appendix B). All CRM, IRM and LCS results (274 in total) met ALS Environmental's data quality objectives for accuracy (Appendix B) and thus laboratory accuracy achieved in this study is considered good.

C3.0 DATA QUALITY STATEMENT

Data collected for the August 2015 sediment quality survey at the Mount Polley Mine was of good quality as characterized by good detectability, negligible analyte concentrations in method blanks, good field and laboratory precision, and good laboratory accuracy. Therefore, associated data can be used with a high level of confidence in the derivation of conclusions.

APPENDIX D

SEDIMENT QUALITY DATA

Table D.1: Raw sediment quality data for Polley Lake and Bootjack Lake sampling areas, Mount Polley Mine, 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]		Reference (Bootjack Lake - B2)													
						BOL-B2-1	BOL-B2-2	BOL-B2-3	BOL-B2-4	BOL-B2-5	Mean	Median	Standard Deviation	Standard Error	Minimum	Maximum	Lower 95th Confidence Limit	Upper 95th Confidence Limit
Date Sampled		Sensitive	Typical	2014 / Historic [4]	2015 (B2)	16-Aug-15	16-Aug-15	16-Aug-15	16-Aug-15	16-Aug-15								
Physical Tests																		
Moisture	%	-	-	93.8	96.1	94.1	96.1	95.7	-	-	95.3	95.7	1.1	0.6	94.1	96.1	92.7	97.9
pH (1:2 soil:water)	pH	-	-	5.98	6.46	6.44	6.71	6.60	-	-	6.58	6.60	0.14	0.08	6.44	6.71	6.25	6.92
Particle Size																		
% Gravel (>2mm)	%	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0	0	<0.10	<0.10	<0.10	<0.10
% Sand (2.0mm - 0.063mm)	%	-	-	21.4	0.21	0.12	0.15	0.22	0.16	0.63	0.26	0.16	0.21	0.09	0.12	0.63	-0.01	0.52
% Silt (0.063mm - 4µm)	%	-	-	84.2	83.7	80.6	83.9	81.8	83.9	82.6	82.6	82.6	1.4	0.6	80.6	83.9	80.8	84.3
% Clay (<4µm)	%	-	-	16.7	19.2	19.3	16.0	17.9	15.9	16.8	17.2	16.8	1.4	0.6	15.9	19.3	15.4	19.0
Texture	-	-	-	-	-	Silt loam	Silt	Silt loam	Silt loam	Silt loam	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon (<63 µm)																		
Total Organic Carbon	%	-	-	20.8	15.5	14.8	15.5	15.1	-	-	15.1	15.1	0.4	0.2	14.8	15.5	14.3	16.0
Nutrients (Bulk sediment)																		
Total Nitrogen by LECO	%	-	-	1.68	1.67	1.60	1.67	1.65	-	-	1.64	1.65	0.04	0.02	1.60	1.67	1.55	1.73
Metals (<63µm)																		
Aluminum	mg/kg	-	-	20,620	19,600	18,700	19,700	17,600	-	-	18,667	18,700	1,050	606	17,600	19,700	16,057	21,276
Antimony	mg/kg	-	-	1.22	1.04	0.93	1.05	0.91	-	-	0.96	0.93	0.08	0.04	0.91	1.05	0.78	1.15
Arsenic	mg/kg	11	20	8.94	8.38	7.46	8.48	7.23	-	-	7.72	7.46	0.67	0.38	7.23	8.48	6.07	9.38
Barium	mg/kg	-	-	247	308	311	277	280	-	-	289	280	19	11	277	311	243	336
Beryllium	mg/kg	-	-	0.70	0.71	0.70	0.71	0.70	-	-	0.70	0.70	0.01	0.00	0.70	0.71	0.69	0.72
Bismuth	mg/kg	-	-	0.37	0.14	0.14	0.14	0.13	-	-	0.14	0.14	0.01	0.003	0.13	0.14	0.12	0.15
Boron	mg/kg	-	-	17	16	16	16	14	-	-	15	16	1	1	14	16	12	18
Cadmium	mg/kg	2.2	4.2	0.690	0.591	0.492	0.602	0.493	-	-	0.529	0.493	0.063	0.037	0.492	0.602	0.372	0.686
Calcium	mg/kg	-	-	15,890	9,040	7,970	9,140	8,140	-	-	8,417	8,140	632	365	7,970	9,140	6,846	9,987
Chromium	mg/kg	56	110	98.5	47.3	45.4	47.5	42.2	-	-	45.0	45.4	2.7	1.5	42.2	47.5	38.4	51.7
Cobalt	mg/kg	-	-	16.4	13.9	13.1	14.0	12.7	-	-	13.3	13.1	0.7	0.4	12.7	14.0	11.6	14.9
Copper	mg/kg	120	240	380	406	375	409	363	-	-	382	375	24	14	363	409	323	442
Iron	mg/kg	-	-	39,230	32,990	33,400	29,300	27,500	-	-	30,067	29,300	3,024	1,746	27,500	33,400	22,555	37,579
Lead	mg/kg	57	110	17.7	11.7	10.6	11.8	10.4	-	-	10.9	10.6	0.8	0.4	10.4	11.8	9.1	12.8
Lithium	mg/kg	-	-	17.8	10.8	10.6	10.8	10.4	-	-	10.6	10.6	0.2	0.1	10.4	10.8	10.1	11.1
Magnesium	mg/kg	-	-	12,548	5,383	5,230	5,400	5,190	-	-	5,273	5,230	112	64	5,190	5,400	4,996	5,550
Manganese	mg/kg	-	-	3,310	3,789	3,850	2,890	3,240	-	-	3,327	3,240	486	280	2,890	3,850	2,120	4,534
Mercury	mg/kg	0.30	0.58	0.286	0.326	0.291	0.330	0.285	-	-	0.302	0.291	0.024	0.014	0.285	0.330	0.241	0.363
Molybdenum	mg/kg	-	-	6.05	4.79	3.88	4.85	4.23	-	-	4.32	4.23	0.49	0.28	3.88	4.85	3.10	5.54
Nickel	mg/kg	-	-	74.6	34.6	32.7	34.8	32.4	-	-	33.3	32.7	1.3	0.8	32.4	34.8	30.1	36.5
Phosphorus	mg/kg	-	-	3,405	3,402	3,550	1,990	2,070	-	-	2,537	2,070	878	507	1,990	3,550	354	4,719
Potassium	mg/kg	-	-	1,591	1,759	1,760	1,750	1,570	-	-	1,693	1,750	107	62	1,570	1,760	1,428	1,959
Selenium	mg/kg	-	-	5.37	2.90	2.91	2.76	2.59	-	-	2.75	2.76	0.16	0.09	2.59	2.91	2.36	3.15
Silver	mg/kg	-	-	0.415	0.389	0.367	0.391	0.372	-	-	0.377	0.372	0.013	0.007	0.367	0.391	0.345	0.408
Sodium	mg/kg	-	-	560	1,065	770	1,090	840	-	-	900	840	168	97	770	1,090	482	1,318
Strontium	mg/kg	-	-	134	105	97	106	95	-	-	99	97	5.8	3.4	95	106	85	114
Sulfur (S)-Total	mg/kg	-	-	-	7,640	6,200	7,700	7,100	-	-	7,000	7,100	755	436	6,200	7,700	5,124	8,876
Thallium	mg/kg	-	-	0.127	0.141	0.134	0.142	0.119	-	-	0.132	0.134	0.012	0.007	0.119	0.142	0.103	0.161
Tin	mg/kg	-	-	1.06	0.77	0.78	0.67	0.64	-	-	0.70	0.67	0.07	0.04	0.64	0.78	0.51	0.88
Titanium	mg/kg	-	-	787	505	487	507	389	-	-	461	487	63	36	389	507	304	618
Uranium	mg/kg	-	-	2.06	2.37	2.14	2.40	2.07	-	-	2.20	2.14	0.17	0.10	2.07	2.40	1.77	2.64
Vanadium	mg/kg	-	-	111	83.6	81.4	83.8	75.6	-	-	80.3	81.4	4.2	2.4	75.6	83.8	69.8	90.7
Zinc	mg/kg	200	380	99.0	86.4	82.2	86.9	79.4	-	-	82.8	82.2	3.8	2.2	79.4	86.9	73.4	92.2

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported moisture, pH, and total nitrogen data are based on bulk sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996)

[3] 2015 Reference 95th percentiles were calculated using displayed data for BOL-B2. The 5th percentile is reported for pH.

[4] The maximum 95th percentile value from among 2014 data for Bootjack Lake sampling areas B1 and B2, and Historic data for Polley Lake sampling areas P1 and P2, is displayed for each parameter for the 2014/Historic Reference 95th percentiles. Refer to Minnow (2015) for raw data.

Table D.1: Raw sediment quality data for Polley Lake and Bootjack Lake sampling areas, Mount Polley Mine, 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]		Exposed (Polley Lake - P2)													
						POL-P2-1	POL-P2-2	POL-P2-3	POL-P2-4	POL-P2-5	Mean	Median	Standard Deviation	Standard Error	Minimum	Maximum	Lower 95th Confidence Limit	Upper 95th Confidence Limit
Date Sampled		Sensitive	Typical	2014 / Historic [4]	2015 (B2)	13-Aug-15	14-Aug-15	14-Aug-15	14-Aug-15	15-Aug-15								
Physical Tests																		
Moisture	%	-	-	93.8	96.1	86.3	84.1	86.0	89.7	89.1	87.0	86.3	2.3	1.0	84.1	89.7	84.2	89.9
pH (1:2 soil:water)	pH	-	-	5.98	6.46	7.18	7.50	7.49	7.47	7.70	7.47	7.49	0.19	0.08	7.18	7.70	7.24	7.70
Particle Size																		
% Gravel (>2mm)	%	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0	0	<0.10	<0.10	<0.10	<0.10
% Sand (2.0mm - 0.063mm)	%	-	-	21.4	0.21	<0.10	0.30	<0.10	0.21	<0.10	0.16	0.10	0.09	0.04	<0.10	0.30	0.05	0.27
% Silt (0.063mm - 4µm)	%	-	-	84.2	83.7	69.6	85.4	87.1	73.8	78.0	78.8	78.0	7.5	3.3	69.6	87.1	69.5	88.0
% Clay (<4µm)	%	-	-	16.7	19.2	30.3	14.3	12.9	26.0	22.0	21.1	22.0	7.5	3.3	12.9	30.3	11.8	30.4
Texture	-	-	-	-	-	Silt loam	Silt	Silt	Silt loam	Silt loam	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon (<63 µm)																		
Total Organic Carbon	%	-	-	20.8	15.5	3.80	10.1	7.37	7.51	8.32	7.4	7.5	2.3	1.0	3.8	10.1	4.6	10.3
Nutrients (Bulk sediment)																		
Total Nitrogen by LECO	%	-	-	1.68	1.67	0.702	1.19	0.858	0.977	0.988	0.943	0.977	0.180	0.080	0.702	1.19	0.720	1.17
Metals (<63µm)																		
Aluminum	mg/kg	-	-	20,620	19,600	28,400	28,900	27,700	26,300	29,800	28,220	28,400	1,318	589	26,300	29,800	26,584	29,856
Antimony	mg/kg	-	-	1.22	1.04	1.06	1.12	1.06	1.33	0.87	1.09	1.06	0.16	0.07	0.87	1.33	0.88	1.29
Arsenic	mg/kg	11	20	8.94	8.38	**14.7**	**14.1**	**13.4**	**13.0**	**14.7**	**14.0**	**14.1**	0.8	0.3	**13.0**	**14.7**	**13.0**	**14.9**
Barium	mg/kg	-	-	247	308	317	346	308	349	327	329	327	18	8.0	308	349	307	352
Beryllium	mg/kg	-	-	0.70	0.71	1.05	1.06	0.97	0.98	1.02	1.02	1.02	0.04	0.02	0.97	1.06	0.97	1.07
Bismuth	mg/kg	-	-	0.37	0.14	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.004	0.002	0.11	0.12	0.11	0.12
Boron	mg/kg	-	-	17	16	14	13	15	13	13	14	13	0.9	0.4	13	15	12	15
Cadmium	mg/kg	2.2	4.2	0.690	0.591	0.201	0.201	0.226	0.224	0.239	0.218	0.224	0.017	0.007	0.201	0.239	0.197	0.239
Calcium	mg/kg	-	-	15,890	9,040	28,200	24,800	22,000	20,400	27,100	24,500	24,800	3,302	1,476	20,400	28,200	20,401	28,599
Chromium	mg/kg	56	110	98.5	47.3	22.0	21.6	27.8	25.8	33.5	26.1	25.8	4.9	2.2	21.6	33.5	20.1	32.2
Cobalt	mg/kg	-	-	16.4	13.9	24.3	23.4	22.5	19.9	25.6	23.1	23.4	2.1	1.0	19.9	25.6	20.5	25.8
Copper	mg/kg	120	240	380	406	**851**	**855**	**774**	**772**	**864**	**823**	**851**	46	21	**772**	**864**	**766**	**880**
Iron	mg/kg	-	-	39,230	32,990	32,400	29,800	30,500	28,100	28,000	29,760	29,800	1,828	818	28,000	32,400	27,490	32,030
Lead	mg/kg	57	110	17.7	11.7	9.06	9.70	9.30	9.76	8.92	9.35	9.30	0.37	0.17	8.92	9.76	8.88	9.81
Lithium	mg/kg	-	-	17.8	10.8	27.1	26.1	25.1	22.1	26.7	25.4	26.1	2.0	0.9	22.1	27.1	22.9	27.9
Magnesium	mg/kg	-	-	12,548	5,383	16,900	16,400	15,400	13,500	17,400	15,920	16,400	1,542	689	13,500	17,400	14,006	17,834
Manganese	mg/kg	-	-	3,310	3,789	2,400	3,160	2,050	3,320	1,940	2,574	2,400	634	283	1,940	3,320	1,787	3,361
Mercury	mg/kg	0.30	0.58	0.286	0.326	0.102	0.105	0.115	0.116	0.114	0.110	0.114	0.006	0.003	0.102	0.116	0.102	0.118
Molybdenum	mg/kg	-	-	6.05	4.79	8.86	9.09	10.4	12.0	10.3	10.1	10.3	1.25	0.56	8.86	12.0	8.57	11.7
Nickel	mg/kg	-	-	74.6	34.6	19.9	19.3	23.0	21.3	26.6	22.0	21.3	2.9	1.3	19.3	26.6	18.4	25.7
Phosphorus	mg/kg	-	-	3,405	3,402	1,220	1,160	1,180	1,130	1,310	1,200	1,180	70	31	1,130	1,310	1,114	1,286
Potassium	mg/kg	-	-	1,591	1,759	2,700	2,820	2,680	2,740	2,890	2,766	2,740	88	39	2,680	2,890	2,657	2,875
Selenium	mg/kg	-	-	5.37	2.90	3.94	4.47	4.52	5.75	3.45	4.43	4.47	0.86	0.38	3.45	5.75	3.36	5.49
Silver	mg/kg	-	-	0.415	0.389	0.361	0.351	0.353	0.341	0.334	0.348	0.351	0.011	0.005	0.334	0.361	0.335	0.361
Sodium	mg/kg	-	-	560	1,065	1,730	1,880	1,720	1,960	1,850	1,828	1,850	102	46	1,720	1,960	1,701	1,955
Strontium	mg/kg	-	-	134	105	292	304	265	298	285	289	292	15	7	265	304	270	307
Sulfur (S)-Total	mg/kg	-	-	-	7,640	6,700	11,200	7,500	7,600	9,100	8,420	7,600	1,780	796	6,700	11,200	6,211	10,629
Thallium	mg/kg	-	-	0.127	0.141	0.051	0.057	0.067	0.062	0.053	0.058	0.057	0	0	0.051	0.067	0.050	0.066
Tin	mg/kg	-	-	1.06	0.77	2.29	2.18	1.98	1.89	2.14	2.10	2.14	0.16	0.07	1.89	2.29	1.90	2.29
Titanium	mg/kg	-	-	787	505	2,050	1,940	1,750	1,550	1,870	1,832	1,870	192	86	1,550	2,050	1,594	2,070
Uranium	mg/kg	-	-	2.06	2.37	1.49	1.45	1.53	1.40	1.42	1.46	1.45	0.05	0.02	1.40	1.53	1.39	1.52
Vanadium	mg/kg	-	-	111	83.6	122	113	113	107	120	115	113	6.0	2.7	107	122	107	123
Zinc	mg/kg	200	380	99.0	86.4	88.0	86.1	86.9	78.2	92.8	86.4	86.9	5.3	2.4	78.2	92.8	79.9	92.9

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported TN, pH, and moisture data are based on bulk sediment. Data < method detection limit (< MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996)

[3] 2015 Reference 95th percentiles were calculated using displayed data for BOL-B2. The 5th percentile is reported for pH.

[4] The maximum 95th percentile value from among 2014 data for Bootjack Lake sampling areas B1 and B2, and Historic data for Polley Lake sampling areas P1 and P2, is displayed for each parameter for the 2014/Historic Reference 95th percentiles. Refer to Minnow (2015) for raw data.

Table D.2: Raw sediment quality data for Hazeltine Creek Settling Pond sampling areas, Mount Polley Mine, 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]	HAC-SED1	HAC-SED2	HAC-SED3	HAC-SED4	HAC-SED5	Mean	Median	Standard Deviation	Standard Error	Minimum	Maximum	Lower 95th Confidence Limit	Upper 95th Confidence Limit
Date Sampled		Sensitive	Typical	Historic	20-Aug-15	20-Aug-15	20-Aug-15	20-Aug-15	20-Aug-15								
Physical Tests																	
Moisture	%	-	-	-	30.9	39.5	44.3	40.4	51.9	41.4	40.4	7.6	3.4	30.9	51.9	31.9	50.9
pH (1:2 soil:water)	pH	-	-	-	8.45	8.27	8.57	8.14	8.70	8.43	8.45	0.23	0.10	8.14	8.70	8.15	8.71
Particle Size																	
% Gravel (>2mm)	%	-	-	33.1	0.11	1.06	<0.10	<0.10	<0.10	0.29	0.10	0	0	<0.10	1.06	-0.24	0.83
% Sand (2.0mm - 0.063mm)	%	-	-	64.7	23.9	8.40	1.48	2.19	0.29	7.25	2.19	9.82	4.39	0.29	23.9	-4.94	19.4
% Silt (0.063mm - 4µm)	%	-	-	76.2	68.3	78.4	76.8	81.1	71.1	75.1	76.8	5.3	2.4	68.3	81.1	68.6	81.7
% Clay (<4µm)	%	-	-	13.9	7.68	12.2	21.7	16.7	28.7	17.4	16.7	8.19	3.66	7.68	28.7	7.23	27.6
Texture	-	-	-	-	Silt loam	Silt	Silt loam	Silt	Silt loam	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon (<63µm)																	
Total Organic Carbon	%	-	-	12.8	0.24	0.34	0.30	0.27	0.34	0.30	0.30	0.04	0.02	0.24	0.34	0.24	0.35
Nutrients (Bulk sediment)																	
Total Nitrogen by LECO	%	-	-	-	0.046	0.052	0.059	0.044	0.061	0.052	0.052	0.008	0.003	0.044	0.061	0.043	0.062
Metals (<63µm)																	
Aluminum	mg/kg	-	-	18,000	13,300	15,100	20,700	18,100	22,300	17,900	18,100	3,750	1,677	13,300	22,300	13,245	22,555
Antimony	mg/kg	-	-	1.33	0.46	0.52	0.54	0.52	0.58	0.52	0.52	0.04	0.02	0.46	0.58	0.47	0.58
Arsenic	mg/kg	11	20	12.1	**12.9**	**13.6**	**15.5**	**15.5**	**16.6**	**14.8**	**15.5**	1.5	0.7	**12.9**	**16.6**	**12.9**	**16.7**
Barium	mg/kg	-	-	136	152	172	217	204	235	196	204	34	15	152	235	154	238
Beryllium	mg/kg	-	-	0.46	0.53	0.52	0.70	0.60	0.74	0.62	0.60	0.10	0.04	0.52	0.74	0.49	0.74
Bismuth	mg/kg	-	-	20.0	0.10	0.13	0.13	0.12	0.15	0.13	0.13	0.02	0.01	0.10	0.15	0.10	0.15
Boron	mg/kg	-	-	5	<10	<10	<10	<10	<10	<10	<10	0	0	<10	<10	<10	<10
Cadmium	mg/kg	2.2	4.2	0.354	0.185	0.193	0.232	0.215	0.221	0.209	0.215	0.020	0.009	0.185	0.232	0.185	0.234
Calcium	mg/kg	-	-	13,400	27,700	27,800	29,600	30,000	31,800	29,380	29,600	1,704	762	27,700	31,800	27,265	31,495
Chromium	mg/kg	56	110	40.1	26.8	26.9	30.5	28.2	29.8	28.4	28.2	1.7	0.7	26.8	30.5	26.4	30.5
Cobalt	mg/kg	-	-	11.0	15.7	15.7	19.9	18.3	21.8	18.3	18.3	2.7	1.2	15.7	21.8	15.0	21.6
Copper	mg/kg	120	240	95	**383**	**347**	**524**	**460**	**630**	**469**	**460**	113	51	**347**	**630**	**328**	**609**
Iron	mg/kg	-	-	35,400	57,600	51,400	46,000	51,800	46,100	50,580	51,400	4,809	2,150	46,000	57,600	44,610	56,550
Lead	mg/kg	57	110	6.7	7.24	8.35	9.20	8.43	10.7	8.78	8.43	1.28	0.57	7.24	10.7	7.20	10.4
Lithium	mg/kg	-	-	14.8	15.3	16.5	22.6	18.6	25.1	19.6	18.6	4.1	1.8	15.3	25.1	14.5	24.8
Magnesium	mg/kg	-	-	6,430	7,470	8,560	12,000	10,200	13,500	10,346	10,200	2,458	1,099	7,470	13,500	7,295	13,397
Manganese	mg/kg	-	-	1,350	562	655	780	727	903	725	727	129	58	562	903	566	885
Mercury	mg/kg	0.30	0.58	0.145	0.114	0.093	0.097	0.093	0.109	0.101	0.097	0.010	0.004	0.093	0.114	0.089	0.113
Molybdenum	mg/kg	-	-	1.50	2.52	2.17	2.34	2.51	2.79	2.47	2.51	0.23	0.10	2.17	2.79	2.18	2.75
Nickel	mg/kg	-	-	24.4	18.0	20.8	25.4	22.0	26.2	22.5	22.0	3.4	1.5	18.0	26.2	18.3	26.7
Phosphorus	mg/kg	-	-	1,380	1,620	1,440	1,550	1,670	1,510	1,558	1,550	90	40	1,440	1,670	1,446	1,670
Potassium	mg/kg	-	-	1,450	1,310	1,360	2,040	1,800	2,150	1,732	1,800	384	172	1,310	2,150	1,255	2,209
Selenium	mg/kg	-	-	3.32	0.80	0.79	0.92	0.83	1.06	0.88	0.83	0.11	0.05	0.79	1.06	0.74	1.02
Silver	mg/kg	-	-	0.160	0.258	0.237	0.259	0.248	0.293	0.259	0.258	0.021	0.009	0.237	0.293	0.233	0.285
Sodium	mg/kg	-	-	350	580	560	830	740	880	718	740	144	65	560	880	539	897
Strontium	mg/kg	-	-	118	145	161	171	168	179	165	168	13	6	145	179	149	181
Sulfur (S)-Total	mg/kg	-	-	-	1,400	1,100	1,300	1,300	1,200	1,260	1,300	114	51	1,100	1,400	1,118	1,402
Thallium	mg/kg	-	-	0.094	0.054	0.080	0.076	0.065	0.076	0.070	0.076	0.011	0.005	0.054	0.080	0.057	0.083
Tin	mg/kg	-	-	1.10	1.15	1.15	1.40	1.37	1.59	1.33	1.37	0.19	0.08	1.15	1.59	1.10	1.56
Titanium	mg/kg	-	-	776	1,250	1,320	1,610	1,560	1,770	1,502	1,560	214	96	1,250	1,770	1,236	1,768
Uranium	mg/kg	-	-	1.26	1.06	1.21	1.15	1.20	1.27	1.18	1.20	0.08	0.04	1.06	1.27	1.08	1.28
Vanadium	mg/kg	-	-	75	212	181	169	185	159	181	181	20.0	9.0	159	212	156	206
Zinc	mg/kg	200	380	67.6	59.4	65.0	82.4	72.6	90.2	73.9	72.6	12.5	5.6	59.4	90.2	58.4	89.5

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported moisture, pH, and total nitrogen data are based on bulk sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996)

[3] The maximum historic reference 95th percentile value from among upper and lower Hazeltine Creek is displayed for each parameter. For calculation of Historic Reference 95th percentiles see Minnow (2015).

Table D.3: Raw sediment quality data for Quesnel Lake littoral sampling areas, Mount Polley Mine, 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]		Reference (LRef1)										
						LREF1-01	LREF1-03	LREF1-04	Mean	Median	Standard Deviation	Standard Error	Minimum	Maximum	Lower 95th Confidence Limit	Upper 95th Confidence Limit
Date Sampled		**Sensitive**	**Typical**	**2014 [4]**	**2015**	**24-Aug-15**	**25-Aug-15**	**25-Aug-15**								
Physical Tests																
Moisture	%	-	-	53.4	43.4	43.5	42.4	36.5	40.8	42.4	3.8	2.2	36.5	43.5	31.4	50.2
pH (1:2 soil:water)	pH	-	-	6.32	6.74	7.02	7.17	6.71	6.97	7.02	0.23	0.14	6.71	7.17	6.38	7.55
Particle Size																
% Gravel (>2mm)	%	-	-	1.83	2.05	1.78	0.60	2.08	1.49	1.78	0.78	0.45	0.60	2.08	-0.46	3.43
% Sand (2.0mm - 0.063mm)	%	-	-	65.8	64.6	57.8	56.8	65.3	60.0	57.8	4.65	2.68	56.8	65.3	48.4	71.5
% Silt (0.063mm - 4µm)	%	-	-	76.4	36.3	35.8	36.3	29.6	33.9	35.8	3.73	2.15	29.6	36.3	24.6	43.2
% Clay (<4µm)	%	-	-	6.33	6.13	4.62	6.30	2.99	4.64	4.62	1.66	0.96	2.99	6.30	0.52	8.75
Texture	-	-	-	-	-	Sandy loam	Sandy loam	Sandy loam	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon (<63µm)																
Total Organic Carbon	%	-	-	1.92	1.63	1.64	1.23	1.54	1.47	1.54	0.21	0.12	1.23	1.64	0.94	2.00
Nutrients (Bulk sediment)																
Total Nitrogen by LECO	%	-	-	0.138	0.114	0.115	0.101	0.097	0.104	0.101	0.009	0.005	0.097	0.115	0.081	0.128
Metals (<63µm)																
Aluminum	mg/kg	-	-	25,540	13,590	13,600	12,300	13,500	13,133	13,500	723	418	12,300	13,600	11,336	14,931
Antimony	mg/kg	-	-	0.36	0.33	0.33	0.30	0.30	0.31	0.30	0.02	0.01	0.30	0.33	0.27	0.35
Arsenic	mg/kg	11	20	4.92	5.28	5.37	3.82	4.43	4.54	4.43	0.78	0.45	3.82	5.37	2.60	6.48
Barium	mg/kg	-	-	133	122	117	107	122	115	117	7.6	4.4	107	122	96	134
Beryllium	mg/kg	-	-	0.69	0.40	0.40	0.33	0.37	0.37	0.37	0.04	0.02	0.33	0.40	0.28	0.45
Bismuth	mg/kg	-	-	0.47	0.12	0.12	<0.10	0.11	0.11	0.11	0.01	0.01	<0.10	0.12	0.09	0.13
Boron	mg/kg	-	-	<10	<10	<10	<10	<10	<10	<10	0	0	<10	<10	<10	<10
Cadmium	mg/kg	2.2	4.2	0.351	0.357	0.345	0.287	0.358	0.330	0.345	0.038	0.022	0.287	0.358	0.236	0.424
Calcium	mg/kg	-	-	14,400	8,077	8,170	7,040	7,240	7,483	7,240	603	348	7,040	8,170	5,985	8,981
Chromium	mg/kg	56	110	58.1	52.1	51.4	45.5	52.2	49.7	51.4	3.7	2.1	45.5	52.2	40.6	**58.8**
Cobalt	mg/kg	-	-	24.2	11.5	11.6	9.78	11.0	10.8	11.0	0.9	0.5	9.8	11.6	8.5	13.1
Copper	mg/kg	120	240	49.4	33.7	33.8	27.9	33.0	31.6	33.0	3.2	1.8	27.9	33.8	23.6	39.5
Iron	mg/kg	-	-	48,160	24,660	24,800	21,400	23,400	23,200	23,400	1,709	987	21,400	24,800	18,955	27,445
Lead	mg/kg	57	110	14.6	6.26	6.29	5.04	6.02	5.78	6.02	0.66	0.38	5.04	6.29	4.15	7.42
Lithium	mg/kg	-	-	45.8	11.7	11.8	10.1	11.0	11.0	11.0	0.9	0.5	10.1	11.8	8.9	13.1
Magnesium	mg/kg	-	-	12,320	6,780	6,800	5,860	6,600	6,420	6,600	495	286	5,860	6,800	5,190	7,650
Manganese	mg/kg	-	-	529	363	370	299	298	322	299	41	24	298	370	220	425
Mercury	mg/kg	0.30	0.58	0.046	0.048	0.048	0.036	0.047	0.044	0.047	0.007	0.004	0.036	0.048	0.027	0.060
Molybdenum	mg/kg	-	-	0.86	0.97	0.99	0.69	0.82	0.83	0.82	0.15	0.09	0.69	0.99	0.46	1.21
Nickel	mg/kg	-	-	69.1	32.3	32.2	27.5	32.3	30.7	32.2	2.7	1.6	27.5	32.3	23.9	37.5
Phosphorus	mg/kg	-	-	1,230	1,184	1,110	1,130	1,190	1,143	1,130	42	24	1,110	1,190	1,040	1,247
Potassium	mg/kg	-	-	4,328	1,297	1,300	1,070	1,270	1,213	1,270	125	72	1,070	1,300	903	1,524
Selenium	mg/kg	-	-	0.70	0.71	0.71	0.53	0.67	0.64	0.67	0.09	0.05	0.53	0.71	0.40	0.87
Silver	mg/kg	-	-	0.166	0.157	0.158	0.135	0.152	0.148	0.152	0.012	0.007	0.135	0.158	0.119	0.178
Sodium	mg/kg	-	-	424	478	480	440	460	460	460	20	12	440	480	410	510
Strontium	mg/kg	-	-	114	75.1	76.0	63.9	66.9	68.9	66.9	6.3	3.6	63.9	76.0	53.3	84.6
Sulfur (S)-Total	mg/kg	-	-	-	<500	<500	<500	<500	<500	<500	0	0	<500	<500	<500	<500
Thallium	mg/kg	-	-	0.310	0.133	0.135	0.106	0.118	0.120	0.118	0.015	0.008	0.106	0.135	0.083	0.156
Tin	mg/kg	-	-	0.56	0.39	0.38	0.37	0.39	0.38	0.38	0.01	0.01	0.37	0.39	0.36	0.40
Titanium	mg/kg	-	-	1,084	963	945	897	965	936	945	35	20	897	965	849	1,022
Uranium	mg/kg	-	-	1.95	1.24	1.25	0.99	1.18	1.14	1.18	0.14	0.08	0.99	1.25	0.80	1.48
Vanadium	mg/kg	-	-	61.5	59.4	59.0	52.7	59.4	57.0	59.0	3.8	2.2	52.7	59.4	47.7	66.4
Zinc	mg/kg	200	380	87.6	65.2	64.3	57.2	65.3	62.3	64.3	4.4	2.5	57.2	65.3	51.3	73.2

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported moisture, pH, and total nitrogen data are based on bulk sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996)

[3] 2015 Reference 95th percentiles were calculated using displayed data. For calculation of 2014 Reference 95th percentiles see Minnow (2015). The 5th percentile is reported for pH.

[4] The maximum reference 95th percentile value from among reference areas sampled in 2014 (LREF1 and LREF2) is displayed for each parameter. Refer to Minnow (2015) for raw data.

Table D.3: Raw sediment quality data for Quesnel Lake littoral sampling areas, Mount Polley Mine, 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]		Exposed (LNF)												
						LNF1-1	LNF1-2	LNF1-3	LNF1-4	LNF1-5	Mean	Median	Standard Deviation	Standard Error	Minimum	Maximum	Lower 95th Confidence Limit	Upper 95th Confidence Limit
Date Sampled		**Sensitive**	**Typical**	**2014 [4]**	**2015**	**17-Aug-15**	**17-Aug-15**	**17-Aug-15**	**17-Aug-15**	**17-Aug-15**								
Physical Tests																		
Moisture	%	-	-	53.4	43.4	21.9	20.8	26.6	35.7	21.9	25.4	21.9	6.2	2.8	20.8	35.7	17.7	33.1
pH (1:2 soil:water)	pH	-	-	6.32	6.74	6.70	8.21	8.28	8.16	8.39	7.95	8.21	0.70	0.31	6.70	8.39	7.08	8.82
Particle Size																		
% Gravel (>2mm)	%	-	-	1.83	2.05	0.84	0.48	<0.10	7.32	1.37	2.02	0.84	3.00	1.34	<0.10	7.32	-1.70	5.74
% Sand (2.0mm - 0.063mm)	%	-	-	65.8	64.6	95.9	91.7	82.8	51.9	89.9	82.4	89.9	17.7	7.92	51.9	95.9	60.4	104
% Silt (0.063mm - 4µm)	%	-	-	76.4	36.3	2.87	7.00	16.7	39.4	7.93	14.8	7.93	14.7	6.55	2.87	39.4	-3.41	33.0
% Clay (<4µm)	%	-	-	6.33	6.13	0.40	0.85	0.47	1.42	0.79	0.79	0.79	0.40	0.18	0.40	1.42	0.28	1.29
Texture	-	-	-	-	-	Sand	Sand	Sand	Sandy loam	Sand	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon (<63µm)																		
Total Organic Carbon	%	-	-	1.92	1.63	0.65	0.21	0.14	0.35	0.40	0.35	0.35	0.20	0.09	0.14	0.65	0.10	0.60
Nutrients (Bulk sediment)																		
Total Nitrogen by LECO	%	-	-	0.138	0.114	0.027	0.029	0.031	0.042	0.029	0.032	0.029	0.006	0.003	0.027	0.042	0.024	0.039
Metals (<63µm)																		
Aluminum	mg/kg	-	-	25,540	13,590	14,500	12,900	8,470	13,000	12,700	12,314	12,900	2,265	1,013	8,470	14,500	9,502	15,126
Antimony	mg/kg	-	-	0.36	0.33	0.46	0.46	0.37	0.39	0.47	0.43	0.46	0.05	0.02	0.37	0.47	0.37	0.49
Arsenic	mg/kg	11	20	4.92	5.28	**14.3**	**16.1**	**16.3**	**13.1**	**15.4**	**15.0**	**15.4**	1.3	0.6	**13.1**	**16.3**	**13.4**	**16.7**
Barium	mg/kg	-	-	133	122	128	105	71.8	113	107	105	107	21	9	72	128	79	131
Beryllium	mg/kg	-	-	0.69	0.40	0.56	0.56	0.41	0.54	0.52	0.52	0.54	0.06	0.03	0.41	0.56	0.44	0.60
Bismuth	mg/kg	-	-	0.47	0.12	0.10	<0.10	0.11	<0.10	0.10	0.10	0.10	0	0	<0.10	0.11	0.10	0.11
Boron	mg/kg	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	0	0	<10	<10	<10	<10
Cadmium	mg/kg	2.2	4.2	0.351	0.357	0.261	0.268	0.180	0.165	0.214	0.218	0.214	0.046	0.021	0.165	0.268	0.160	0.275
Calcium	mg/kg	-	-	14,400	8,077	20,000	22,300	19,500	20,400	19,300	20,300	20,000	1,198	536	19,300	22,300	18,813	21,787
Chromium	mg/kg	56	110	58.1	52.1	33.0	33.9	44.0	23.1	39.3	34.7	33.9	7.8	3.5	23.1	44.0	24.9	44.4
Cobalt	mg/kg	-	-	24.2	11.5	20.4	20.1	33.9	19.4	23.9	23.5	20.4	6.0	2.7	19.4	33.9	16.0	31.0
Copper	mg/kg	120	240	49.4	33.7	**890**	**634**	**593**	**539**	**583**	**648**	**593**	140	62	**539**	**890**	**475**	**821**
Iron	mg/kg	-	-	48,160	24,660	83,000	92,300	213,000	89,100	122,000	119,880	92,300	54,185	24,232	83,000	213,000	52,611	187,149
Lead	mg/kg	57	110	14.6	6.26	7.16	6.68	6.01	5.47	6.66	6.40	6.66	0.66	0.30	5.47	7.16	5.58	7.21
Lithium	mg/kg	-	-	45.8	11.7	15.1	13.3	10.8	13.6	13.0	13.2	13.3	1.5	0.7	10.8	15.1	11.2	15.1
Magnesium	mg/kg	-	-	12,320	6,780	8,230	7,010	5,190	7,420	6,770	6,924	7,010	1,117	499	5,190	8,230	5,537	8,311
Manganese	mg/kg	-	-	529	363	852	756	671	628	842	750	756	100	45	628	852	626	874
Mercury	mg/kg	0.30	0.58	0.046	0.048	0.123	0.102	0.094	0.082	0.105	0.101	0.102	0.015	0.007	0.082	0.123	0.082	0.120
Molybdenum	mg/kg	-	-	0.86	0.97	3.26	3.64	3.97	3.04	3.00	3.38	3.26	0.42	0.19	3.00	3.97	2.87	3.90
Nickel	mg/kg	-	-	69.1	32.3	20.5	19.2	18.6	14.6	20.9	18.8	19.2	2.5	1.1	14.6	20.9	15.6	21.9
Phosphorus	mg/kg	-	-	1,230	1,184	1,730	2,030	2,410	1,810	1,750	1,946	1,810	285	128	1,730	2,410	1,592	2,300
Potassium	mg/kg	-	-	4,328	1,297	1,140	960	530	1,020	950	920	960	231	103	530	1,140	634	1,206
Selenium	mg/kg	-	-	0.70	0.71	1.15	1.07	1.44	1.01	1.12	1.16	1.12	0.17	0.07	1.01	1.44	0.95	1.36
Silver	mg/kg	-	-	0.166	0.157	0.405	0.360	0.392	0.320	0.361	0.368	0.361	0.033	0.015	0.320	0.405	0.327	0.409
Sodium	mg/kg	-	-	424	478	630	540	330	620	510	526	540	121	54	330	630	376	676
Strontium	mg/kg	-	-	114	75.1	122	110	69.7	119	110	106	110	21	9	70	122	80	132
Sulfur (S)-Total	mg/kg	-	-	-	<500	1,000	1,000	1,500	1,500	1,100	1,220	1,100	259	116	1,000	1,500	899	1,541
Thallium	mg/kg	-	-	0.310	0.133	<0.050	<0.050	<0.050	<0.050	0.050	0.050	0.050	0	0	<0.050	0.050	0.050	0.050
Tin	mg/kg	-	-	0.56	0.39	1.46	1.23	1.25	1.34	1.29	1.31	1.29	0.09	0.04	1.23	1.46	1.20	1.43
Titanium	mg/kg	-	-	1,084	963	1,430	1,270	1,150	1,300	1,480	1,326	1,300	132	59	1,150	1,480	1,163	1,489
Uranium	mg/kg	-	-	1.95	1.24	0.999	1.05	1.08	1.07	1.21	1.08	1.07	0.08	0.03	1.00	1.21	0.98	1.18
Vanadium	mg/kg	-	-	61.5	59.4	310	350	839	335	470	461	350	220	98	310	839	187	734
Zinc	mg/kg	200	380	87.6	65.2	68.5	65.8	86.0	61.3	72.5	70.8	68.5	9.4	4.2	61.3	86.0	59.1	82.5

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported moisture, pH, and total nitrogen data are based on bulk sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996)

[3] 2015 Reference 95th percentiles were calculated using displayed data. For calculation of 2014 Reference 95th percentiles see Minnow (2015). The 5th percentile is reported for pH.

[4] The maximum reference 95th percentile value from among reference areas sampled in 2014 (LREF1 and LREF2) is displayed for each parameter. Refer to Minnow (2015) for raw data.

Table D.3: Raw sediment quality data for Quesnel Lake littoral sampling areas, Mount Polley Mine, 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]		Exposed (LFF)													
						LFF-01	LFF-02	LFF-03	LFF-04	LFF-05	Mean	Median	Standard Deviation	Standard Error	Minimum	Maximum	Lower 95th Confidence Limit	Upper 95th Confidence Limit
Date Sampled		**Sensitive**	**Typical**	**2014 [4]**	**2015**	**25-Aug-15**	**25-Aug-15**	**26-Aug-15**	**26-Aug-15**	**25-Aug-15**								
Physical Tests																			
Moisture	%	-	-	53.4	43.4	59.7	35.9	37.0	42.6	48.3	44.7	42.6	9.7	4.4	35.9	59.7	32.6	56.8
pH (1:2 soil:water)	pH	-	-	6.32	6.74	7.14	6.68	6.87	7.57	7.19	7.09	7.14	0.34	0.15	6.68	7.57	6.67	7.51
Particle Size																			
% Gravel (>2mm)	%	-	-	1.83	2.05	0.47	0.81	1.36	<0.10	1.05	0.76	0.81	0.49	0.22	<0.10	1.36	0.15	1.37
% Sand (2.0mm - 0.063mm)	%	-	-	65.8	64.6	59.5	79.6	64.9	42.0	55.6	60.3	59.5	13.7	6.13	42.0	79.6	43.3	77.3
% Silt (0.063mm - 4µm)	%	-	-	76.4	36.3	37.2	18.6	32.1	56.0	38.4	36.5	37.2	13.5	6.02	18.6	56.0	19.8	53.2
% Clay (<4µm)	%	-	-	6.33	6.13	2.84	0.97	1.56	1.95	4.93	2.45	1.95	1.54	0.69	0.97	4.93	0.53	4.37
Texture	-	-	-	-	-	Sandy loam	Sand	Loamy sand	Silt loam	Sandy loam	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon (<63µm)																			
Total Organic Carbon	%	-	-	1.92	1.63	5.03	2.04	0.78	0.75	2.87	2.29	2.04	1.77	0.79	0.75	5.03	0.09	4.49
Nutrients (Bulk sediment)																			
Total Nitrogen by LECO	%	-	-	0.138	0.114	0.171	0.074	0.062	0.091	0.164	0.112	0.091	0.051	0.023	0.062	0.171	0.049	0.176
Metals (<63µm)																			
Aluminum	mg/kg	-	-	25,540	13,590	10,300	16,600	11,400	15,500	12,900	13,340	12,900	2,669	1,194	10,300	16,600	10,027	16,653
Antimony	mg/kg	-	-	0.36	0.33	0.30	0.24	0.24	0.27	0.25	0.26	0.25	0.03	0.01	0.24	0.30	0.23	0.29
Arsenic	mg/kg	11	20	4.92	5.28	3.02	2.75	4.82	6.83	2.77	4.04	3.02	1.78	0.80	2.75	6.83	1.83	6.25
Barium	mg/kg	-	-	133	122	58.1	54.5	65.3	104	61.1	68.6	61.1	20.2	9.0	54.5	104	43.5	93.7
Beryllium	mg/kg	-	-	0.69	0.40	0.29	0.38	0.36	0.41	0.31	0.35	0.36	0.05	0.02	0.29	0.41	0.29	0.41
Bismuth	mg/kg	-	-	0.47	0.12	<0.10	<0.10	<0.10	<0.10	0.11	0.10	0.10	0	0	<0.10	0.11	0.10	0.11
Boron	mg/kg	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	0	0	<10	<10	<10	<10
Cadmium	mg/kg	2.2	4.2	0.351	0.357	0.318	0.239	0.107	0.123	0.183	0.194	0.183	0.087	0.039	0.107	0.318	0.086	0.302
Calcium	mg/kg	-	-	14,400	8,077	10,200	12,000	9,470	12,800	8,640	10,622	10,200	1,738	777	8,640	12,800	8,465	12,779
Chromium	mg/kg	56	110	58.1	52.1	31.4	47.8	46.5	48.7	35.2	41.9	46.5	8.0	3.6	31.4	48.7	32.0	51.9
Cobalt	mg/kg	-	-	24.2	11.5	7.74	14.7	9.32	12.6	10.1	10.9	10.1	2.8	1.2	7.7	14.7	7.5	14.3
Copper	mg/kg	120	240	49.4	33.7	39.0	51.8	69.0	**136**	32.7	65.7	51.8	41.7	18.6	32.7	**136**	14.0	117
Iron	mg/kg	-	-	48,160	24,660	18,400	29,900	28,900	37,000	22,200	27,280	28,900	7,222	3,230	18,400	37,000	18,314	36,246
Lead	mg/kg	57	110	14.6	6.26	5.23	7.02	4.44	4.74	6.06	5.50	5.23	1.05	0.47	4.44	7.02	4.20	6.80
Lithium	mg/kg	-	-	45.8	11.7	10.9	12.8	10.5	12.7	14.8	12.3	12.7	1.7	0.8	10.5	14.8	10.2	14.5
Magnesium	mg/kg	-	-	12,320	6,780	4,900	9,800	5,490	7,700	5,870	6,752	5,870	1,999	894	4,900	9,800	4,270	9,234
Manganese	mg/kg	-	-	529	363	227	351	298	405	260	308	298	71	32	227	405	220	396
Mercury	mg/kg	0.30	0.58	0.046	0.048	0.067	0.060	0.045	0.112	0.044	0.066	0.060	0.028	0.012	0.044	0.112	0.031	0.100
Molybdenum	mg/kg	-	-	0.86	0.97	0.49	0.68	0.84	1.02	0.31	0.67	0.68	0.28	0.13	0.31	1.02	0.32	1.02
Nickel	mg/kg	-	-	69.1	32.3	23.9	33.5	21.2	25.7	26.8	26.2	25.7	4.6	2.1	21.2	33.5	20.5	31.9
Phosphorus	mg/kg	-	-	1,230	1,184	711	869	1,180	1,340	755	971	869	276	123	711	1,340	628	1,314
Potassium	mg/kg	-	-	4,328	1,297	830	760	940	1,320	1,180	1,006	940	237	106	760	1,320	712	1,300
Selenium	mg/kg	-	-	0.70	0.71	0.98	0.59	0.23	0.30	0.50	0.52	0.50	0.30	0.13	0.23	0.98	0.15	0.89
Silver	mg/kg	-	-	0.166	0.157	0.125	0.099	0.073	0.110	0.087	0.099	0.099	0.020	0.009	0.073	0.125	0.074	0.124
Sodium	mg/kg	-	-	424	478	260	330	410	680	250	386	330	176	79	250	680	167	605
Strontium	mg/kg	-	-	114	75.1	55.9	76.5	88.2	122	53.9	79.3	76.5	27.9	12.5	53.9	122	44.7	114
Sulfur (S)-Total	mg/kg	-	-	-	<500	2,100	600	600	700	600	920	600	661	296	600	2,100	99	1,741
Thallium	mg/kg	-	-	0.310	0.133	0.060	0.057	<0.050	<0.050	0.083	0.060	0.057	0.014	0.006	<0.050	0.083	0.043	0.077
Tin	mg/kg	-	-	0.56	0.39	0.32	0.43	0.46	0.67	0.32	0.44	0.43	0.14	0.06	0.32	0.67	0.26	0.62
Titanium	mg/kg	-	-	1,084	963	786	1,490	1,020	1,320	808	1,085	1,020	312	140	786	1,490	697	1,472
Uranium	mg/kg	-	-	1.95	1.24	1.42	1.02	0.903	1.04	0.901	1.06	1.02	0.21	0.10	0.90	1.42	0.79	1.32
Vanadium	mg/kg	-	-	61.5	59.4	45.6	98.5	107	129	46.5	85.3	98.5	37.5	16.8	45.6	129	38.7	132
Zinc	mg/kg	200	380	87.6	65.2	41.5	61.2	43.6	52.2	46.9	49.1	46.9	7.9	3.5	41.5	61.2	39.3	58.9

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported moisture, pH, and total nitrogen data are based on bulk sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996)

[3] 2015 Reference 95th percentiles were calculated using displayed data. For calculation of 2014 Reference 95th percentiles see Minnow (2015). The 5th percentile is reported for pH.

[4] The maximum reference 95th percentile value from among reference areas sampled in 2014 (LREF1 and LREF2) is displayed for each parameter. Refer to Minnow (2015) for raw data.

Table D.4: Raw sediment quality data for Quesnel Lake profundal sampling areas, Mount Polley Mine, 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]		Reference (PREF1)													
						PREF1-01	PREF1-02	PREF1-03	PREF1-04	PREF1-05	Mean	Median	Standard Deviation	Standard Error	Minimum	Maximum	Lower 95th Confidence Limit	Upper 95th Confidence Limit
Date Sampled		Sensitive	Typical	2014 [4]	2015 (PREF1)	18-Aug-15	24-Aug-15	19-Aug-15	24-Aug-15	24-Aug-15								
Physical Tests																			
Moisture	%	-	-	70.5	54.1	52.6	-	53.3	-	54.2	53.4	53.3	0.8	0.5	52.6	54.2	51.4	55.4
pH (1:2 soil:water)	pH	-	-	6.83	6.72	7.36	-	6.69	-	7.01	7.02	7.01	0.34	0.19	6.69	7.36	6.19	7.85
Particle Size																			
% Gravel (>2mm)	%	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.0	0.0	<0.10	<0.10	<0.10	<0.10
% Sand (2.0mm - 0.063mm)	%	-	-	31.5	26.7	21.1	28.1	15.2	18.7	14.3	19.5	18.7	5.54	2.48	14.3	28.1	12.6	26.4
% Silt (0.063mm - 4µm)	%	-	-	74.3	74.0	67.7	62.5	73.0	71.7	74.3	69.8	71.7	4.79	2.14	62.5	74.3	63.9	75.8
% Clay (<4µm)	%	-	-	27.2	11.7	11.2	9.3	11.8	9.6	11.4	10.7	11.2	1.1	0.5	9.3	11.8	9.3	12.1
Texture	-	-	-	-	-	Silt loam	Silt loam	Silt loam	Silt loam	Silt loam	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon (<63µm)																			
Total Organic Carbon	%	-	-	1.93	1.96	1.76	-	1.71	-	1.98	1.82	1.76	0.14	0.08	1.71	1.98	1.46	2.17
Nutrients (Bulk sediment)																			
Total Nitrogen by LECO	%	-	-	0.176	0.181	0.169	-	0.158	-	0.182	0.170	0.169	0.012	0.007	0.158	0.182	0.140	0.200
Metals (<63µm)																			
Aluminum	mg/kg	-	-	25,380	17,260	16,900	-	17,300	-	15,500	16,567	16,900	945	546	15,500	17,300	14,219	18,915
Antimony	mg/kg	-	-	0.44	0.47	0.47	-	0.43	-	0.41	0.44	0.43	0.03	0.02	0.41	0.47	0.36	0.51
Arsenic	mg/kg	11	20	20.9	9.02	8.64	-	8.98	-	9.02	8.88	8.98	0.21	0.12	8.64	9.02	8.36	9.40
Barium	mg/kg	-	-	220	151	147	-	151	-	143	147	147	4.0	2.3	143	151	137	157
Beryllium	mg/kg	-	-	0.90	0.52	0.52	-	0.50	-	0.45	0.49	0.50	0.04	0.02	0.45	0.52	0.40	0.58
Bismuth	mg/kg	-	-	0.51	0.17	0.17	-	0.15	-	0.15	0.16	0.15	0.01	0.01	0.15	0.17	0.13	0.19
Boron	mg/kg	-	-	<10	<10	<10	-	<10	-	<10	<10	<10	0	0	<10	<10	<10	<10
Cadmium	mg/kg	2.2	4.2	0.414	0.470	0.475	-	0.422	-	0.364	0.420	0.422	0.056	0.032	0.364	0.475	0.282	0.558
Calcium	mg/kg	-	-	8,034	8,834	8,780	-	8,840	-	8,620	8,747	8,780	114	66	8,620	8,840	8,464	9,029
Chromium	mg/kg	56	110	55.8	60.0	60.1	-	59.5	-	53.6	57.7	59.5	3.6	2.1	53.6	60.1	48.8	66.7
Cobalt	mg/kg	-	-	25.7	15.2	15.2	-	15.0	-	13.4	14.5	15.0	1.0	0.6	13.4	15.2	12.1	17.0
Copper	mg/kg	120	240	48	59	59	-	56	-	50	55	56	5	3	50	59	43	67
Iron	mg/kg	-	-	102,460	32,660	32,300	-	32,700	-	28,900	31,300	32,300	2,088	1,206	28,900	32,700	26,113	36,487
Lead	mg/kg	57	110	22.1	8.01	8.06	-	7.51	-	7.39	7.65	7.51	0.36	0.21	7.39	8.06	6.77	8.54
Lithium	mg/kg	-	-	37.4	15.5	15.5	-	15.2	-	12.6	14.4	15.2	1.6	0.9	12.6	15.5	10.5	18.4
Magnesium	mg/kg	-	-	9,344	8,635	8,410	-	8,660	-	7,380	8,150	8,410	678	392	7,380	8,660	6,464	9,836
Manganese	mg/kg	-	-	7,814	512	477	-	479	-	516	491	479	22	13	477	516	436	545
Mercury	mg/kg	0.30	0.58	0.0593	0.0624	0.0627	-	0.0515	-	0.0594	0.0579	0.0594	0.0058	0.0033	0.0515	0.0627	0.0436	0.0722
Molybdenum	mg/kg	-	-	2.72	1.18	1.20	-	1.02	-	1.01	1.08	1.02	0.11	0.06	1.01	1.20	0.81	1.34
Nickel	mg/kg	-	-	60.7	41.1	41.2	-	40.1	-	36.1	39.1	40.1	2.7	1.5	36.1	41.2	32.5	45.8
Phosphorus	mg/kg	-	-	1,776	1,199	1,150	-	1,190	-	1,200	1,180	1,190	26	15	1,150	1,200	1,114	1,246
Potassium	mg/kg	-	-	3,704	1,568	1,550	-	1,570	-	1,430	1,517	1,550	76	44	1,430	1,570	1,329	1,705
Selenium	mg/kg	-	-	0.94	1.08	1.10	-	0.93	-	0.88	0.97	0.93	0.12	0.07	0.88	1.10	0.68	1.26
Silver	mg/kg	-	-	0.203	0.236	0.238	-	0.216	-	0.189	0.214	0.216	0.025	0.014	0.189	0.238	0.153	0.275
Sodium	mg/kg	-	-	420	518	470	-	520	-	500	497	500	25	15	470	520	434	559
Strontium	mg/kg	-	-	94.3	88.5	82.0	-	84.5	-	88.9	85.1	84.5	3.5	2.0	82.0	88.9	76.5	93.8
Sulfur (S)-Total	mg/kg	-	-	-	1,390	1,400	-	1,300	-	800	1,167	1,300	321	186	800	1,400	368	1,965
Thallium	mg/kg	-	-	0.293	0.192	0.194	-	0.171	-	0.158	0.174	0.171	0.018	0.011	0.158	0.194	0.129	0.220
Tin	mg/kg	-	-	0.61	0.49	0.49	-	0.46	-	0.41	0.45	0.46	0.04	0.02	0.41	0.49	0.35	0.55
Titanium	mg/kg	-	-	1,084	1,187	1,160	-	1,190	-	1,040	1,130	1,160	79	46	1,040	1,190	933	1,327
Uranium	mg/kg	-	-	3.16	1.56	1.57	-	1.43	-	1.39	1.46	1.43	0.09	0.05	1.39	1.57	1.23	1.70
Vanadium	mg/kg	-	-	66.3	72.9	73.0	-	72.3	-	64.9	70.1	72.3	4.5	2.6	64.9	73.0	58.9	81.2
Zinc	mg/kg	200	380	95.3	84.9	85.1	-	82.6	-	71.6	79.8	82.6	7.2	4.1	71.6	85.1	61.9	97.6

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported moisture, pH, and total nitrogen data are based on bulk sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996)

[3] 2015 Reference 95th percentiles were calculated using displayed data, for calculation of 2014 Reference 95th percentiles see Minnow (2015). The 5th percentile is reported for pH.

[4] The maximum reference 95th percentile value from among reference areas sampled in 2014 (PREF1 and PREF2) is displayed for each parameter. Refer to Minnow (2015) for raw data.

Table D.4: Raw sediment quality data for Quesnel Lake profundal sampling areas, Mount Polley Mine, 2015. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]		Exposed (PNF1)													
						PNF-01	PNF-02	PNF-03	PNF-04	PNF-05	Mean	Median	Standard Deviation	Standard Error	Minimum	Maximum	Lower 95th Confidence Limit	Upper 95th Confidence Limit
Date Sampled		Sensitive	Typical	2014 [4]	2015 (PREF1)	17-Aug-15	14-Aug-15	15-Aug-15	15-Aug-15	16-Aug-15								
Physical Tests																			
Moisture	%	-	-	70.5	54.1	63.5	64.7	55.0	33.9	29.0	49.2	55.0	16.7	7.5	29.0	64.7	28.4	70.0
pH (1:2 soil:water)	pH	-	-	6.83	6.72	8.26	8.38	8.51	8.55	8.53	8.45	8.51	0.12	0.06	8.26	8.55	8.29	8.60
Particle Size																			
% Gravel (>2mm)	%	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0	0	<0.10	<0.10	<0.10	<0.10
% Sand (2.0mm - 0.063mm)	%	-	-	31.5	26.7	1.41	1.67	1.83	1.90	28.2	7.0	1.8	11.9	5.3	1.4	28.2	-7.7	21.7
% Silt (0.063mm - 4µm)	%	-	-	74.3	74.0	44.1	48.5	54.7	81.7	58.7	57.5	54.7	14.6	6.5	44.1	81.7	39.4	75.7
% Clay (<4µm)	%	-	-	27.2	11.7	54.5	49.9	43.5	16.4	13.1	35.5	43.5	19.4	8.7	13.1	54.5	11.4	59.5
Texture	-	-	-	-	-	Silty clay	Silty clay	Silty clay loam	Silt	Silt loam	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon (<63µm)																			
Total Organic Carbon	%	-	-	1.93	1.96	0.42	0.52	0.25	<0.10	0.18	0.29	0.25	0.17	0.08	<0.10	0.52	0.08	0.51
Nutrients (Bulk sediment)																			
Total Nitrogen by LECO	%	-	-	0.176	0.181	0.064	0.055	0.043	0.027	0.028	0.043	0.043	0.016	0.007	0.027	0.064	0.023	0.064
Metals (<63µm)																			
Aluminum	mg/kg	-	-	25,380	17,260	33,300	34,500	28,800	17,700	18,300	26,520	28,800	8,065	3,607	17,700	34,500	16,507	36,533
Antimony	mg/kg	-	-	0.44	0.47	0.61	0.66	0.57	0.43	0.50	0.55	0.57	0.09	0.04	0.43	0.66	0.44	0.67
Arsenic	mg/kg	11	20	20.9	9.02	16.2	17.0	16.1	13.4	14.1	15.4	16.1	1.5	0.7	13.4	17.0	13.5	17.3
Barium	mg/kg	-	-	220	151	298	306	286	193	190	255	286	58	26	190	306	183	327
Beryllium	mg/kg	-	-	0.90	0.52	1.17	1.22	1.02	0.69	0.70	0.96	1.02	0.25	0.11	0.69	1.22	0.65	1.27
Bismuth	mg/kg	-	-	0.51	0.17	0.16	0.17	0.14	<0.10	<0.10	0.13	0.14	0.03	0.01	<0.10	0.17	0.09	0.17
Boron	mg/kg	-	-	<10	<10	12	13	12	<10	<10	11	12	1.3	0.6	<10	13	10	13
Cadmium	mg/kg	2.2	4.2	0.414	0.470	0.230	0.244	0.210	0.144	0.156	0.197	0.210	0.045	0.020	0.144	0.244	0.141	0.252
Calcium	mg/kg	-	-	8,034	8,834	33,000	34,900	30,700	28,100	29,100	31,160	30,700	2,792	1,249	28,100	34,900	27,693	34,627
Chromium	mg/kg	56	110	55.8	60.0	23.5	25.0	22.5	14.3	19.1	20.9	22.5	4.3	1.9	14.3	25.0	15.6	26.2
Cobalt	mg/kg	-	-	25.7	15.2	32.7	35.0	26.1	15.9	17.8	25.5	26.1	8.6	3.8	15.9	35.0	14.9	36.1
Copper	mg/kg	120	240	48	59	**1,110**	**1,190**	**904**	**536**	**557**	**859**	**904**	304	136	**536**	**1,190**	**482**	**1,237**
Iron	mg/kg	-	-	102,460	32,660	38,700	41,200	38,600	35,100	49,500	40,620	38,700	5,418	2,423	35,100	49,500	33,893	47,347
Lead	mg/kg	57	110	22.1	8.01	12.3	12.7	11.1	6.47	6.94	9.90	11.1	2.98	1.33	6.47	12.7	6.20	13.6
Lithium	mg/kg	-	-	37.4	15.5	39.7	41.2	30.5	18.2	19.2	29.8	30.5	10.9	4.9	18.2	41.2	16.2	43.3
Magnesium	mg/kg	-	-	9,344	8,635	23,100	25,000	17,900	10,200	10,400	17,320	17,900	6,916	3,093	10,200	25,000	8,734	25,906
Manganese	mg/kg	-	-	7,814	512	1,250	1,310	1,090	716	801	1,033	1,090	265	119	716	1,310	704	1,363
Mercury	mg/kg	0.30	0.58	0.0593	0.0624	0.116	0.114	0.0935	0.0751	0.0783	0.0954	0.0935	0.0192	0.0086	0.0751	0.116	0.0715	0.119
Molybdenum	mg/kg	-	-	2.72	1.18	4.64	4.82	4.15	3.17	3.47	4.05	4.15	0.72	0.32	3.17	4.82	3.16	4.94
Nickel	mg/kg	-	-	60.7	41.1	24.6	25.5	22.1	13.4	15.3	20.2	22.1	5.5	2.5	13.4	25.5	13.3	27.0
Phosphorus	mg/kg	-	-	1,776	1,199	1,080	1,180	1,310	1,650	1,540	1,352	1,310	240	107	1,080	1,650	1,055	1,649
Potassium	mg/kg	-	-	3,704	1,568	3,190	3,140	3,150	1,890	1,830	2,640	3,140	713	319	1,830	3,190	1,755	3,525
Selenium	mg/kg	-	-	0.94	1.08	1.54	1.61	1.29	0.82	0.87	1.23	1.29	0.37	0.16	0.82	1.61	0.77	1.68
Silver	mg/kg	-	-	0.203	0.236	0.441	0.462	0.378	0.269	0.295	0.369	0.378	0.086	0.038	0.269	0.462	0.263	0.475
Sodium	mg/kg	-	-	420	518	1,590	1,650	1,670	1,050	1,020	1,396	1,590	331	148	1,020	1,670	985	1,807
Strontium	mg/kg	-	-	94.3	88.5	241	242	231	172	172	212	231	36	16	172	242	166	257
Sulfur (S)-Total	mg/kg	-	-	-	1,390	1,800	1,700	1,500	1,400	1,400	1,560	1,500	182	81	1,400	1,800	1,334	1,786
Thallium	mg/kg	-	-	0.293	0.192	0.067	0.065	0.066	<0.050	<0.050	0.060	0.065	0.009	0.004	<0.05	0.067	0.049	0.071
Tin	mg/kg	-	-	0.61	0.49	2.31	2.47	2.01	1.41	1.76	1.99	2.01	0.42	0.19	1.41	2.47	1.46	2.52
Titanium	mg/kg	-	-	1,084	1,187	2,310	2,420	2,070	1,420	1,760	1,996	2,070	410	183	1,420	2,420	1,487	2,505
Uranium	mg/kg	-	-	3.16	1.56	1.54	1.59	1.42	1.13	1.27	1.39	1.42	0.19	0.09	1.13	1.59	1.15	1.63
Vanadium	mg/kg	-	-	66.3	72.9	128	136	132	127	189	142	132	26	12	127	189	110	175
Zinc	mg/kg	200	380	95.3	84.9	125	131	100	58.9	65.2	96.0	100	33.2	14.8	58.9	131	54.8	137

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion. Values for exposed sites shown in bold text also exceed all Reference 95th Percentile values.

[1] Reported moisture, pH, and total nitrogen data are based on bulk sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Summary statistics are reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996)

[3] 2015 Reference 95th percentiles were calculated using displayed data, for calculation of 2014 Reference 95th percentiles see Minnow (2015). The 5th percentile is reported for pH.

[4] The maximum reference 95th percentile value from among reference areas sampled in 2014 (PREF1 and PREF2) is displayed for each parameter. Refer to Minnow (2015) for raw data.

APPENDIX A-7.2

Minnow Sediment and Sediment Porewater Quality Data Update Memorandum

11 May 2017
Reference No. 1662612-086-R-Rev0-22392

Memorandum

Date: December 6, 2016
To: Dale Reimer, Mount Polley Mining Corporation
From: Pierre Stecko, Katharina Batchelar, Minnow Environmental Inc.
Cc: Colleen Hughes, Mount Polley Mining Corporation
'Lyn Anglin, Imperial Metals Corporation

Re: Sediment and Sediment Porewater Quality Data Report - August 2016 Collections

Sediment quality monitoring is a key component of the ongoing impact assessment of the Mount Polley Mine Tailings Storage Facility (TSF) breach of August 4th 2014. Sediment quality of lakes and creeks affected by the breach was characterized in 2014 and again in 2015, and documented a chemical impact within the debris flow path, particularly at deep (settling) areas of Polley Lake and Quesnel Lake (Minnow 2015a,b). Beyond basic sediment chemistry (i.e., total concentrations of metals in sediment), a number of chemical and biological techniques have been applied to gain understanding of the mobility, bioavailability and potential toxicity of sediment-associated metals (e.g., selective extractions, metal to sulphide ratios, sediment porewater concentrations, labile metal concentrations, sediment toxicity testing, benthic invertebrate community assessment). This memorandum summarizes the results of sediment quality monitoring undertaken in 2016, and includes sediment quality data and sediment porewater quality data.

Methods

Sediment samples were collected between August 4th and 29th 2016 from lakes in the vicinity of the Mount Polley Mine (Polley Lake, Bootjack Lake, and Quesnel Lake) and from the Hazeltine Creek Sedimentation Pond (Figures 1 and 2) for three purposes (Table 1): 1) to characterize/verify sediment and porewater chemistry at locations sampled in 2014 and/or 2015; 2) to provide additional data for mapping the spatial extent of the influence of the TSF breach on sediment quality; and 3) to provide supporting data for a sediment toxicity investigation which will be reported separately.

To address the first purpose, sediment samples were collected from the same stations monitored in 2014 and 2015 (Table 1; Figure 1; Minnow 2015a, 2015b), using the same

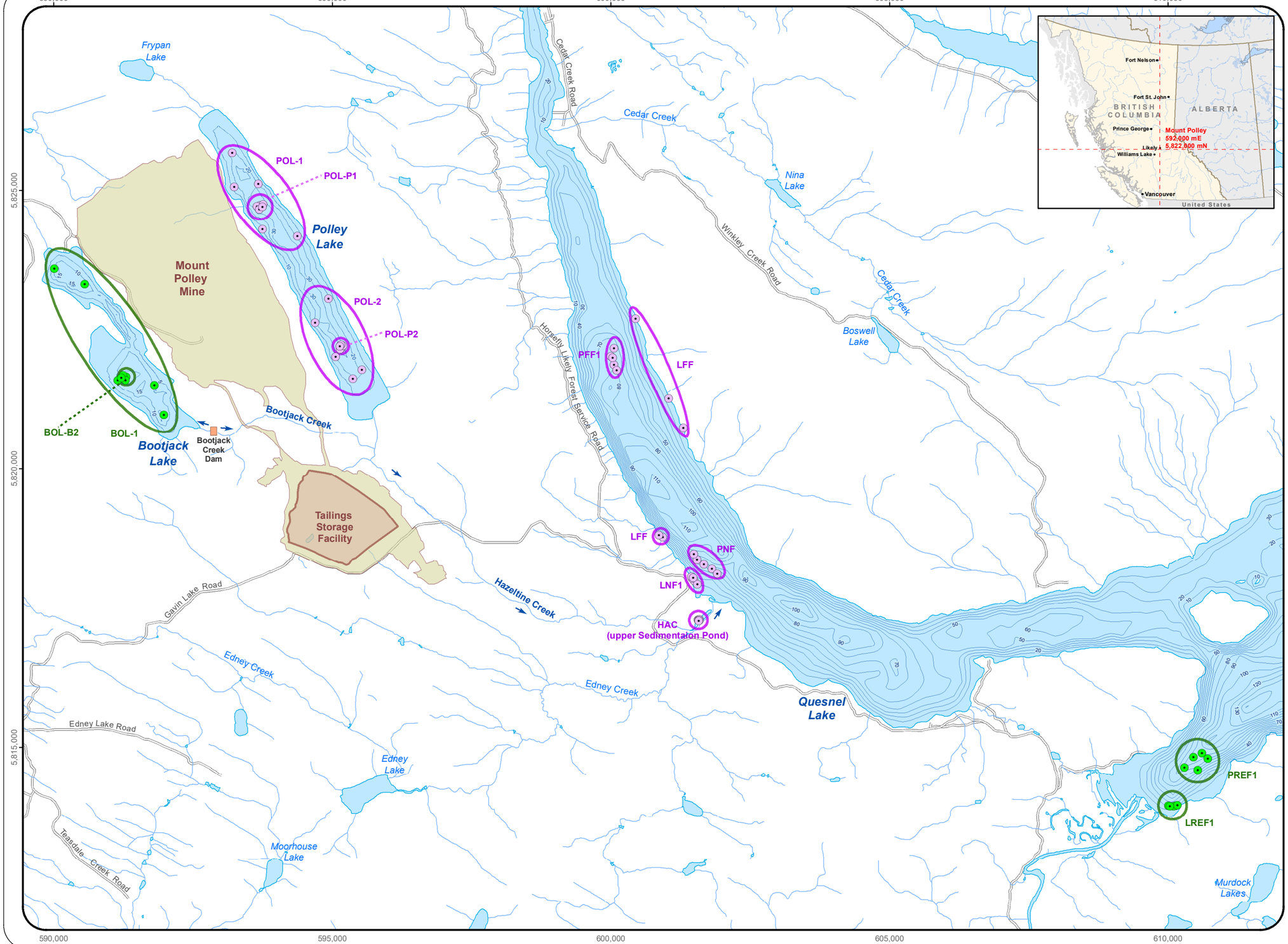
Table 1: Overview of sediment and porewater quality sampling in the vicinity of the Mount Polley Mine, August 2016.

Program Component	Objective	Waterbody Area	Area Type	Area Codes	Analyses
Monitoring	Characterize sediment and porewater quality at locations sampled in 2014 and/or 2015, and provide temporal comparisons of sediment quality among years.	Polley Lake - Deep	Exposed	POL-P1 POL-P2	Sediment Quality (n=5 per area) [1] Porewater Quality (n=3 per area) [2]
		Bootjack Lake - Deep	Reference	BOL-B2	
		Polley Lake - Mid-depth	Exposed	POL-1 POL-2	
		Bootjack Lake - Mid-depth	Reference	BOL-1	
		Quesnel Lake - Deep	Exposed	QUL-PNF QUL-PFF	
			Reference	QUL-PREF1	
		Quesnel Lake - Shallow	Exposed	QUL-LNF QUL-LFF	
			Reference	QUL-LREF1	
		Hazeltine Creek Sedimentation Pond	Exposed	HAC-SED	Sediment Quality (n=5 per area) [1] Porewater Quality (n=5 per area) [2] PAH [3], Oil & Grease content (n=5 per area)
Spatial Extent In-fill	Provide sediment quality data from previously unsampled locations to augment the existing spatial extent characterization	Quesnel Lake - Deep	Exposed	QUL-16	Sediment Quality (n=14) [1]
		Polley Lake	Exposed	POL-16	Sediment Quality (n=3) [2]
Sediment Toxicity Intermediates	Assess influence of sediment physical and chemical characteristics on toxicity by sampling sediments with a range of these characteristics not found in current monitoring locations	Quesnel Lake - Deep	Exposed	QUL-I	Sediment Quality (n=10) [1] Porewater Quality (n=10) [2] (10 stations total)

[1] Sediment Quality analyses included: metals and Total Organic Carbon (TOC) in < 63µm fraction, moisture, particle size, pH, total nitrogen, and total sulphur.

[2] Porewater Quality analyses included: dissolved metals, Dissolved Organic Carbon (DOC), hardness, and anions.

[3] PAH = Polycyclic Aromatic Hydrocarbon.



LEGEND

Sediment Quality Monitoring Station

- Exposed
- Reference

Sediment Quality Monitoring Area

- Exposed
- Reference
- Bootjack Creek Dam
- Tailings Storage Facility
- Active Mine Operation
- Waterbody
- Watercourse
- Bootjack Lake Bathymetry (5 m Intervals)
- Quesnel Lake Bathymetry (10 m Intervals)
- Polley Lake Bathymetry (10 m Intervals)
- Road
- Water Flow Direction

Please note: Quesnel Lake bathymetry lines are an approximate representation only and may not precisely delineate accurate depths at larger scales.

N
W E
S

0 0.5 1 2 3
Kilometers

MAP INFORMATION
Map Projection: UTM Zone 10 NAD 1983
Data Source: Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Creation Date: November 2016
Project : 2574

Figure 1: Mount Polley Sediment and Porewater Monitoring Locations, August 2016

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590,000 595,000 600,000 605,000 610,000

5,825,000 5,820,000 5,815,000

Prior Lake
Slum Lake
Frypan Lake
Polley Lake
Mount Polley Mine
Bootjack Lake
Bootjack Creek
Bootjack Creek Dam
Tailings Storage Facility
Cedar Creek Road
Cedar Creek
Spanish Lake Road
Spanish Lake
Nina Lake
Winkley Creek Road
Cedar Creek
Boswell Lake
Horsefly Lake Forest Service Road
Gavin Lake Road
Hazeltine Creek
Edney Creek
Edney Lake Road
Edney Lake
Quesnel Lake

LEGEND

- 2016 Spatial "In-fill" Sampling Location
- 2016 Toxicity "Intermediate" Sampling Location
- Sampling Location (2014-2016)
- Bootjack Creek Dam
- Tailings Storage Facility
- Active Mine Operation
- Waterbody
- Watercourse
- Bootjack Lake Bathymetry (5 m Intervals)
- Quesnel Lake Bathymetry (10 m Intervals)
- Polley Lake Bathymetry (10 m Intervals)
- Road
- Water Flow Direction

Please note: Quesnel Lake bathymetry lines are an approximate representation only and may not precisely delineate accurate depths at larger scales.

N
W E
S

0 0.5 1 2 3
Kilometers

MAP INFORMATION
Map Projection: UTM Zone 10 NAD 1983

Creation Date: November 2016
Project : 2574

Figure 2: Mount Polley Sediment Quality In-Fill Locations, August 2016

minnow environmental inc.
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methods, where possible [1] (Appendix Table A.1). Data were then used to assess current sediment and porewater quality, and to provide temporal comparisons of sediment quality to previous sampling events (2014 and 2015). Data from impacted areas was compared to reference, but there are no pre-event data from Quesnel Lake representing background. To address the second purpose, a total of 17 new stations (or "in-fill" stations) were sampled to provide greater spatial coverage and resolution within the impacted area (Table 1; Figure 2). The entire sediment quality dataset, including the infill stations, will then be used, working in collaboration with Golder Associates, to produce sediment concentration maps for key parameters in order to depict the spatial extent of sediment quality impact from the TSF breach. The third purpose will be addressed using data for the sediments collected under purpose 1 and with additional data from a total of 10 new stations (or "intermediate" stations; Table 1; Figure 2). Based on previous data, intermediate stations were selected to provide samples with sediment physical and chemical characteristics (particularly in terms of texture, organic content and metal concentrations) that were not well represented in previous monitoring. These samples will be used to strengthen an evaluation of the influence of sediment characteristics on sediment toxicity.

Sampling

In Polley and Bootjack lakes, sediments for the analysis of total metals, moisture, pH, total organic carbon (TOC), total nitrogen, and total sulphur were collected using a Tech Ops corer or Kajak-Brinkhurst (KB) corer, with the exception of two sampling stations where samples were collected using a petite ponar (Appendix Tables A.1 - A.2). All core samples were collected in accordance with technical guidance for gravity coring outlined in the British Columbia Field Sampling Manual (BCWLAP 2003) and the federal Technical Guidance Manual for Environmental Effects Monitoring (EEM; Environment Canada 2012). Briefly, upon collection, core samples were inspected and if deemed acceptable, were extruded into a core collar, cut using a core knife to collect the top 3 cm of sediment, and transferred into a 250 mL glass sampling jar labeled with the project number, sample location and collection date. The procedure was then repeated to provide a composite sample of sufficient volume for the required analyses (Appendix Table A.1). Sediments for the analysis of particle size distribution and porewater were collected using a petite (15.24 cm x 15.24 cm; 0.023 m^2 sampling area) or standard (22.86 cm x 22.86 cm; 0.052 m^2 sampling area) ponar grab sampler in accordance with technical guidance outlined in the British

[1] Four sampling stations were relocated to better match the dominant sediment physical characteristics within respective sampling areas (stations PNF-4 and PNF-5 in the Quesnel Lake deep area, and stations LNF1-1 and LFF-1 in the Quesnel Lake shallow area).

Columbia Field Sampling Manual (BCWLAP 2003) and the federal Technical Guidance Manual for Environmental Effects Monitoring (EEM; Environment Canada 2012). In Polley Lake (mean depth approximately 30 meters), grab samples were collected with the assistance of a commercial line hauler (Ace Line Hauler - Brutus Plus 40). At each station, composite samples of the top three centimeters of surficial sediment of two to ten acceptable grabs (i.e., full to each edge of the sampler) were collected (Appendix Table A.1). Each grab was collected into a plastic tote and observed for completeness and any unusual characteristics. If the sample was deemed acceptable, surficial material to a depth of 3 centimeters was transferred to a second tote using a stainless steel spoon. Remaining sediment was discarded. The procedure was then repeated for all subsequent grabs. The material within the tote was homogenized using a stainless steel spoon and transferred into 250 mL glass sampling jars for particle size analysis or into large sealable bags (double-bagged) for porewater extraction and analysis, with each container labeled with the project number, sample location and collection date. All sampling equipment was rinsed between stations using site water. Replicate stations within each area were sampled as outlined in Table 1.

In Quesnel Lake, sediment samples from deep habitats (mean depth approximately 100 meters) were collected using either a petite or standard ponar grab sampler with the assistance of a commercial line hauler (Ace Line Hauler - Brutus Plus 40). Samples collected from shallow habitats were collected using a petite ponar only (Appendix Table A.1). All grab samples were collected in accordance with technical guidance outlined in the British Columbia Field Sampling Manual (BCWLAP 2003) and the federal Technical Guidance Manual for EEM (Environment Canada 2012). At each station, composite samples of the top three centimeters of surficial sediment of five to twelve acceptable grab samples (i.e., full to each edge of the sampler) were collected as described above for grab sampling in Polley and Bootjack lakes (Appendix Table A.1). Upon collection, the surficial material was homogenized using a stainless steel spoon and transferred into 250 mL glass sampling jars for sediment quality parameters (total metals, particle size, moisture, pH, TOC, total nitrogen, and total sulphur) or into large sealable bags (double-bagged) for porewater extraction and analysis, each labeled with the project number, sample location and collection date. All sampling equipment was rinsed between stations using site water. Replicate stations were sampled to represent each monitoring area (Table 1).

Sediment samples from the upper Sedimentation Pond were collected using a petite ponar grab sampler in accordance with technical guidance outlined in the British Columbia Field

Sampling Manual (BCWLAP 2003) and the federal Technical Guidance Manual for EEM (Environment Canada 2012). Sampling was conducted as described above for Quesnel Lake, with a composite sample of the top three centimeters of surficial sediment of ten to fifteen acceptable grabs collected from each station (Appendix Table A.1). Samples were then transferred into 250 mL glass sampling jars for sediment quality analyses or into large sealable bags (double-bagged) for porewater extraction and analysis, each labeled with the project number, sample location and collection date. As outlined in the Mount Polley Mine Comprehensive Environmental Monitoring Plan (CEMP; MPMC 2016), sediment quality parameters for the Hazeltine Creek Sedimentation Pond included oil & grease and polycyclic aromatic hydrocarbon (PAH) analyses (Table 1). Five replicate stations were sampled to represent the area (Table 1).

Spatial extent “in-fill” samples were collected from locations selected to increase spatial coverage in Quesnel Lake and Polley Lake (Appendix Table A.2) for the purposes of concentration mapping. Samples were collected using the same methods described above for sampling within each of these waterbodies, with the exception that samples from Quesnel Lake consisted of one to two acceptable grabs per composite (Appendix Table A.2). Four of the twenty-one selected locations could not be sampled due to inappropriate substrate type, despite multiple sampling attempts at the sampling location, and in the area immediately surrounding it (Appendix Table A.2). Lastly, sediment toxicity “intermediate” samples were collected as described above from ten deep locations in Quesnel Lake (Table 1) using a petite ponar with the assistance of a commercial line hauler (Ace Line Hauler - Brutus Plus 40). Samples collected for this purpose consisted of five to nine acceptable grabs (Appendix Table A.2).

Field duplicate (split) sediment samples were collected at a frequency of 10% for quality assurance/quality control (QA/QC) purposes. Supporting information collected at each of the monitoring stations (Appendix Tables A.1 to A.3) included GPS (Geographic Positioning System) coordinates, sampling depth, Secchi depth (lakes only), field meter measurements of temperature, specific conductance, dissolved oxygen and pH (using a YSI EXO™ handheld portable field meter equipped with YSI EXO2™ Sonde), site photographs (including photographs of sediment samples), notes of the presence or absence of aquatic vegetation, and other physical observations (sediment texture, colour, density, etc.). Immediately after collection, all sediment samples were placed into a cooler with ice packs, where they were maintained cool prior to transport to the field laboratory, where they were placed in a refrigerator and held until shipment to the analytical laboratory. All sediment

samples were shipped to the analytical laboratory (ALS Environmental, Burnaby BC) at a minimum frequency of bi-weekly. Prior to shipment, samples were placed in a cooler with frozen ice packs and a chain-of custody form was prepared and packed with the samples. Coolers were shipped overnight for next day delivery to ALS Environmental.

Laboratory Analysis

Upon receipt, ALS Environmental opened the coolers, measured temperature to verify the maintenance of cold samples, removed each sample from the coolers, logged the sample, and assigned each sample a unique sample identification code. A sample receipt confirmation was then sent to Mount Polley and Minnow for verification.

Laboratory analysis for sediment quality included moisture content, pH, particle size distribution, TOC, total nitrogen, total sulphur, and total metal concentrations. For sediment samples collected from the upper Hazeltine Creek Sedimentation Pond, laboratory analyses also included oil and grease, and PAHs. Total organic carbon content and total metal concentrations were determined in the silt/clay fraction (<63 µm diameter) in accordance with recent recommendations by the British Columbia Ministry of Environment (BCMoE 2012) and because sediment quality characterization conducted in 2014 indicated similar results in <63 µm and <2 mm sediments (Minnow 2015a).

Sediment samples for porewater extraction and analysis were homogenized and centrifuged (using a ThermoFisher Scientific Sorvall™ ST 40 centrifuge) at 2500 rpm for 10 minutes to separate water and solids. The supernatant (water) was then removed by pipette and subjected to chemical analysis for hardness, dissolved organic carbon, alkalinity, anions (including nitrate, nitrite, and sulphate), and dissolved metals. Supernatant collected for all analytes except alkalinity was filtered using a 0.45µm membrane filter.

Upon completion of the analyses, data reports were provided by ALS Environmental to MPMC and Minnow electronically in Adobe Acrobat Portable Document Format (PDF) and as MSExcel files (Appendix B).

Data Analysis

Upon receipt of the analytical data, a Data Quality Assessment (DQA) was completed, including an examination of data completeness, method detection limits achieved, laboratory precision, laboratory accuracy, and field precision. Following the completion of the DQA, sediment and porewater quality data were summarized by area, by calculating mean, median, standard deviation, standard error, 95% confidence limits, minimum, and

maximum. Sediment quality data from exposed areas were then evaluated in comparison to Contaminated Sites Regulation (CSR) criteria (Government of British Columbia 1996) and reference concentrations, while porewater quality data from exposed areas were evaluated relative to reference concentrations.

CSR criteria have been defined for a limited number of analytes (including seven metals) for sensitive and typical sediment environments (Schedule 9; Government of British Columbia 1996) and are used to determine if sediments are contaminated. Sensitive sediment is defined as sediment at a site with sensitive aquatic habitat (e.g., spawning habitat) and for which sensitive management objectives apply, and typically apply to the ecologically active zone (top one meter) of sediments in an aquatic receiving environment (BCMoE 2013). Typical sediment is defined as any sediment that is not sensitive sediment (BCMoE 2013). For the purposes of this memorandum, sediment from all waterbodies (with the exception of the Hazeltine Creek Sedimentation Pond) were evaluated in comparison to CSR criteria for both sensitive and typical sediments. The Hazeltine Creek Sedimentation Pond is a man-made, regularly maintained waterbody or "maintained watercourse" (BCMoE 2013), therefore sediments from this area were evaluated relative to CSR "typical" criteria.

Reference values for sediment quality data contained within this memorandum fall into two categories - pre-event data (i.e., those collected between 1989 and 2013; available for Polley Lake and Hazeltine Creek) and data collected at reference sites between 2014 and 2016. Pre-event and reference data were compiled separately and used to calculate reference screening values. For each pre-event dataset (for each area; Table 1), 95th percentile values were calculated based on all compiled data from prior to 2014 (Minnow 2015a) [2]. For each reference dataset (i.e., 2014, 2015, or 2016), 95th percentile values were calculated for each reference area. These 95th percentile pre-event values (where available) and reference values were then compared within each area (Table 1), and the highest value for each analyte among them was used to screen data from exposed areas to identify analytes present at concentrations greater than pre-event and/or reference. For porewater samples, reference 95th percentile values were calculated for each area using 2016 data (Table 1). For the majority of areas, porewater samples were collected for the first time in 2016, therefore pre-event data and prior reference data is not available. The calculated reference values were then used to screen data from exposed areas to identify

[2] One pre-event 95th percentile value was calculated for each sampling area type (i.e., Polley Lake mid-depth and deep, and upper and lower Hazeltine Creek) from all compiled pre-event data (i.e. prior to 2014). See Minnow (2015a) for raw data and calculations.

analytes present at concentrations greater than reference, with the exception of the upper Hazeltine Creek Sedimentation Pond for which there is no associated reference area.

Principal component analysis (PCA) was also used to assist with the interpretation of general trends and patterns of variability in sediment and porewater quality data between exposed-reference area pairs, and was completed for all areas with the exception of the Hazeltine Creek Sedimentation Pond. Prior to analysis, data were screened to ensure that any variables with no variation (e.g., those that were not detectable) were removed from the data matrix, and data were log transformed ($log_{10}[x+1]$). Principal component axes were then generated from the correlation matrix of the sediment quality or porewater quality variables using the program PC-ORD© version 6 (McCune and Mefford 2011). Scores for each station were subsequently plotted for inspection.

As a means of evaluating the relative enrichment of metals in sediment and porewater, ratios of mean metal concentrations in each exposed area relative to the associated reference were calculated for both of these media (enrichment factors) and then compared. The relative enrichment factors were considered in light of potential redox changes caused during sampling, sample homogenization, porewater extraction, filtering and analysis.

Results

Data Quality Assessment indicated acceptable sediment and sediment porewater data quality, meaning that data can be used with a high level of confidence for interpretation and the derivation of conclusions (Appendix C).

Polley Lake

Sediment collected from deep monitoring areas of Polley Lake in 2016 (POL-P1 and POL-P2; Figure 1) was almost entirely silt and clay (99.5%). The particle size distribution of these sediments was very similar to those collected in 2014 and 2015, as well as to sediments from deep areas of the reference lake (Bootjack Lake; Table 2; Appendix Table D.1). Sediment collected from mid-depth areas of Polley Lake (POL-1 and POL-2; Figure 1) was also predominantly silt and clay (> 93.0%), with a similar particle size distribution to samples collected in 2014, as well as to associated reference sediments (BOL-1; Figure 1; Table 2; Appendix Table D.2). As observed in previous years, TOC and total nitrogen content were lower in sediments from Polley Lake than in associated reference sediments (Table 2; Appendix Tables D.1 - D.2).

Table 2: Summary sediment quality data for Polley Lake and Bootjack Lake sampling areas, Mount Polley Mine, 2014 - 2016. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Deep																		Mid-Depth									
				Reference 95th Percentile [3]	Reference (Bootjack Lake)							Exposed (Polley Lake)										Reference 95th Percentile [3]	Reference (Bootjack Lake)				Exposed (Polley Lake)				
					BOL-B1		BOL-B2					POL-P1				POL-P2							BOL-1				POL-1				POL-2		
					2014		2014		2015		2016	2014		2016		2014		2015		2016			2014		2016		2014		2016		2014		2016	
		Sensitive	Typical		Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]		Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]
Physical Tests																																	
Moisture	%	-	-	96.1	93.5	0.29	93.4	1.25	95.3	2.63	94.5	0.88	87.8	6.07	87.9	3.04	73.9	50.4	87.0	2.88	85.3	6.53	94.1	93.3	0.85	91.9	3.63	65.5	8.96	62.3	6.54	62.0	19.0	59.7	17.6
pH (1:2 soil:water) [1]	pH	-	-	6.46	6.21	0.25	6.01	0.14	6.58	0.34	6.07	0.29	7.81	-	7.51	0.27	7.93	1.41	7.47	0.23	7.72	0.30	6.19	6.24	0.071	6.35	0.21	-	-	7.85	0.074	7.99	0.29	8.00	0.33
Particle Size																																	
% Gravel (>2mm)	%	-	-	<0.10	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	-
% Sand (2.0mm - 0.063mm)	%	-	-	21.4	11.2	34.5	0.49	0.23	0.26	0.26	0.52	0.22	0.36	0.17	0.51	0.37	0.74	0.82	0.16	0.11	0.44	0.27	9.53	2.58	4.76	2.84	6.16	2.14	1.95	4.85	10.6	**15.8**	8.27	6.93	5.02
% Silt (0.063mm - 4µm)	%	-	-	85.9	76.7	28.3	83.5	2.50	82.6	1.76	84.1	1.99	79.7	8.13	73.6	4.44	79.1	3.39	78.8	9.26	76.6	5.03	88.1	84.5	3.34	84.8	3.20	**91.5**	1.51	82.4	8.03	78.6	6.86	81.0	4.54
% Clay (<4µm)	%	-	-	19.2	12.1	6.51	16.0	2.25	17.2	1.78	15.4	2.11	**19.9**	8.05	**25.9**	4.79	**20.1**	4.19	**21.1**	9.27	**22.9**	4.97	15.6	12.9	3.82	12.3	3.21	6.36	1.33	12.7	3.47	5.64	2.95	12.0	3.98
Organic / Inorganic Carbon (<63µm)																																	
Total Organic Carbon (TOC)	%	-	-	20.8	13.7	4.05	15.7	2.61	15.1	0.87	14.7	0.82	9.15	5.67	7.58	6.52	7.67	7.17	7.42	2.85	5.05	4.28	18.2	17.0	1.68	14.5	1.61	1.88	2.39	1.43	0.83	0.48	0.39	1.42	1.70
Nutrients (Bulk sediment)																																	
Total Nitrogen by LECO	%	-	-	1.68	1.61	0.20	1.54	0.14	1.64	0.090	1.55	0.075	0.63	-	0.94	0.45	0.58	1.61	0.94	0.22	0.78	0.41	1.87	1.69	0.28	1.47	0.34	0.20	0.24	0.21	0.077	0.22	0.32	0.21	0.21
Metals (<63µm)																																	
Aluminum	mg/kg	-	-	20,620	17,333	2,770	17,700	1,972	18,667	2,610	19,100	719	**26,967**	1,597	**25,020**	3,582	**24,100**	6,726	**28,220**	1,636	**26,880**	1,834	19,600	18,000	2,188	18,400	1,570	**21,520**	2,018	18,160	4,094	**20,920**	3,424	19,060	2,521
Antimony	mg/kg	-	-	1.22	0.81	0.075	0.80	0.15	0.96	0.19	0.99	0.099	0.87	0.36	0.81	0.24	0.55	0.29	1.09	0.20	0.83	0.30	1.05	0.91	0.13	0.83	0.058	0.46	0.021	0.41	0.12	0.50	0.067	0.48	0.11
Arsenic	mg/kg	11	20	8.94	5.95	0.99	6.09	0.45	7.72	1.65	6.97	0.58	**12.4**	1.37	**11.5**	2.44	**12.6**	3.94	**14.0**	0.95	**12.7**	1.63	12.9	5.98	0.69	6.43	0.73	12.0	0.51	10.8	3.38	12.7	0.96	12.0	0.99
Barium	mg/kg	-	-	308	199	36.2	243	17.4	289	46.8	269	32.1	288	59.1	263	70.1	254	90.3	**329**	22.2	286	69.5	282	227	34.0	223	57.6	245	18.4	206	57.0	232	24.4	206	22.1
Beryllium	mg/kg	-	-	0.78	0.60	0.18	0.69	0.025	0.70	0.014	0.75	0.034	**0.91**	0.20	**0.84**	0.11	**0.86**	0.18	**1.02**	0.050	**0.89**	0.10	0.78	0.68	0.12	0.63	0.11	0.74	0.063	0.67	0.17	0.75	0.096	0.72	0.080
Bismuth	mg/kg	-	-	0.37	<0.10	-	0.13	0.052	0.14	0.014	0.13	0.011	0.15	0.076	0.12	0.0068	0.12	0.052	0.12	0.0056	0.11	0.015	0.17	0.14	0.027	0.12	0.018	<0.10	-	<0.10	-	0.10	0.011	<0.10	-
Boron	mg/kg	-	-	17.0	16.0	2.48	13.3	1.43	15.3	2.87	15.6	1.42	16.0	4.97	14.2	3.21	14.0	13.1	13.6	1.11	13.4	4.17	16.6	14.6	1.88	13.8	1.62	10.8	0.56	10.4	0.68	11.0	1.52	11.2	2.22
Cadmium	mg/kg	2.2	4.2	0.69	0.35	0.070	0.39	0.032	0.53	0.16	0.41	0.040	0.28	0.21	0.35	0.13	0.23	0.28	0.22	0.021	0.23	0.063	0.66	0.43	0.10	0.40	0.078	0.11	0.018	0.14	0.017	0.15	0.097	0.14	0.037
Calcium	mg/kg	-	-	15,890	10,443	1,789	7,420	1,006	8,417	1,571	8,168	913	**24,667**	10,187	**19,100**	6,289	**29,467**	16,573	**24,500**	4,099	**22,320**	7,563	10,740	9,534	1,462	9,112	1,369	**29,000**	1,100	**24,640**	8,475	**29,240**	4,228	**27,240**	4,024
Chromium	mg/kg	56	110	98.5	39.8	6.47	61.9	119	45.0	6.63	35.2	1.38	35.6	26.2	33.0	9.09	45.4	126	26.1	6.04	32.8	12.0	56.1	42.1	7.18	42.5	12.3	11.7	1.41	14.9	4.92	15.0	9.11	15.0	6.43
Cobalt	mg/kg	-	-	16.4	10.5	0.80	11.0	2.12	13.3	1.65	11.4	0.79	**20.5**	3.76	**18.1**	3.87	**21.3**	8.40	**23.1**	2.66	**20.7**	4.08	13.0	11.0	1.30	11.0	0.91	**15.4**	1.67	**14.2**	3.15	**17.1**	2.86	**16.3**	2.11
Copper	mg/kg	120	240	406	370	15.5	340	95.5	382	59.3	345	23.7	**722**	212	**594**	156	**689**	393	**823**	57.2	**685**	190	510	360	62.7	347	51.0	**539**	28.7	472	164	**556**	73.3	**562**	52.6
Iron	mg/kg	-	-	39,230	23,833	5,213	26,600	5,170	30,067	7,512	28,100	3,911	29,600	3,286	29,660	1,974	32,700	9,467	29,760	2,270	31,420	4,374	28,040	23,400	2,030	25,780	2,093	25,280	2,020	25,680	5,019	**42,240**	12,720	**42,500**	11,704
Lead	mg/kg	57	110	17.7	6.56	0.89	10.1	1.03	10.9	1.88	10.3	1.03	9.69	0.94	7.96	1.17	6.85	3.35	9.35	0.47	8.11	0.67	11.8	10.1	3.13	9.05	2.97	5.75	0.53	5.44	0.90	5.72	1.29	5.55	0.85
Lithium	mg/kg	-	-	17.8	11.3	3.05	11.1	0.25	10.6	0.50	12.9	0.74	**24.3**	6.24	**21.2**	4.77	**24.0**	10.0	**25.4**	2.49	**24.3**	3.56	14.5	12.6	2.12	12.1	1.49	**18.9**	3.48	**17.4**	4.01	**17.3**	4.31	**18.0**	2.68
Magnesium	mg/kg	-	-	12,548	5,370	603	4,823	892	5,273	277	5,280	338	**13,967**	3,204	12,026	3,427	**14,333**	8,375	**15,920**	1,914	**14,620**	3,866	6,300	5,370	744	5,640	330	**10,942**	1,712	**9,864**	2,544	**10,446**	2,424	**10,130**	1,902
Manganese	mg/kg	-	-	3,789	953	301	1,303	632	3,327	1,207	1,274	371	847	216	1,490	700	855	359	2,574	787	3,170	1,351	1,133	820	86.9	813	294	702	32.7	690	117	718	84.0	744	182
Mercury	mg/kg	0.30	0.58	0.34	0.19	0.021	0.26	0.079	0.30	0.061	0.31	0.024	0.12	0.035	0.14	0.048	0.10	0.082	0.11	0.0080	0.13	0.037	0.36	0.30	0.069	0.30	0.066	0.072	0.0054	0.078	0.015	0.080	0.029	0.082	0.0092
Molybdenum	mg/kg	-	-	6.05	3.22	0.58	3.62	2.24	4.32	1.22	3.70	0.79	**6.86**	2.87	**11.4**	2.36	5.63	4.93	**10.1**	1.56	**9.87**	3.14	5.21	3.99	1.19	3.13	0.59	3.24	0.18	3.53	0.92	4.03	1.83	4.42	1.07
Nickel	mg/kg	-	-	74.6	27.8	4.47	47.6	90.1	33.3	3.25	26.8	1.38	29.1	18.1	26.3	6.09	34.2	81.4	22.0	3.64	26.4	7.45	41.8	29.8	5.33	31.2	10.0	10.6	1.38	11.6	1.39	12.2	7.59	11.8	3.66
Phosphorus	mg/kg	-	-	3,405	1,290	301	2,240	1,205	2,537	2,182	1,998	942	1,018	235	1,200	221	1,317	846	1,200	86.5	1,252	176	1,816	1,328	149	1,442	363	1,440	175	1,554	422	1,522	486	1,628	203
Potassium	mg/kg	-	-	1,759	1,287	263	1,253	28.7	1,693	266	1,434	87.2	**2,453**	277	**2,210**	470	**2,110**	693	**2,766**	109	**2,436**	337	1,514	1,354	212	1,366	166	**2,060**	229	**1,640**	492	**2,000**	351	**1,850**	458
Selenium	mg/kg	-	-	5.37	2.48	0.40	2.37	0.43	2.75	0.40	2.67	0.14	3.30	1.78	3.60	0.92	2.14	3.06	4.43	1.07	3.75	1.40	5.99	2.49	0.36	2.52	0.22	1.07	0.12	1.32	0.26	1.38	0.80	1.53	0.72
Silver	mg/kg	-	-	0.41	0.33	0.022	0.36	0.080	0.38	0.031	0.38	0.029	0.35	0.064	0.35	0.050	0.34	0.087	0.35	0.013	0.34	0.013	0.42	0.36	0.070	0.34	0.070	0.24	0.015	0.24	0.066	0.28	0.039	0.30	0.022
Sodium	mg/kg	-	-	1,065	233	37.9	190	24.8	900	418	240	12.4	**1,267**	319	**1,084**	441	**1,143**	621	**1,828**	127	**1,306**	295	264	222	5.55	242	20.4	**1,184**	154	**968**	313	**1,200**	192	**1,076**	293
Strontium	mg/kg	-	-	134	125	31.5	88.9	20.1	99.4	14.5	95.4	8.19	**249**	77.3	**192**	56.7	**214**	79.0	**289**	18.7	**234**	42.0	116	106	12.7	101	12.8	**259**	24.3	**195**	49.5	**230**	21.3	**202**	23.4
Sulfur (S)-Total	mg/kg	-	-	8,820	-	-	-	-	7,000	1,876	7,580	1,146	**-**	-	7,940	2,024	**-**	-	8,420	2,209	**9,840**	9,738	7,480	-	-	6,700	933	**-**	-	2,040	538	**-**	-	2,300	1,407
Thallium	mg/kg	-	-	0.14	0.11	0.011	0.11	0.038	0.13	0.029	0.12	0.012	0.082	0.057	0.078	0.028	0.065	0.066	0.058	0.0081	0.063	0.019	0.14	0.13	0.017	0.12	0.024	<0.050	-	<0.050	-	0.053	0.0083	<0.050	-
Tin	mg/kg	-	-	1.41	0.49	0.14	1.03	1.42	0.70	0.18	0.62	0.075	**3.05**	3.59	1.26	0.59	**2.01**	0.45	**2.10**	0.20	**1.86**	0.36	6.89	5.64	1.53	0.51	0.15	1.75	0.17	1.33	0.54	1.91	0.20	1.68	0.20
Titanium	mg/kg	-	-	787	751	130	407	69.5	461	157	501	20.9	**1,660**	301	**1,278**	486	**1,653**	1,032	**1,832**	238	**1,531**	521	683	554	97.4	550	121	**1,696**	116	**1,385**	431	**1,736**	247	**1,568**	235
Uranium	mg/kg	-	-	2.42	2.02	0.14	1.93	0.19	2.20	0.43	2.22	0.18	1.41	0.23	1.52	0.20	1.49	0.91	1.46	0.065	1.49	0.24	2.59	2.21	0.42	2.12	0.37	1.13	0.018	1.02	0.27	1.28	0.091	1.21	0.13
Vanadium	mg/kg	-	-	111	64.4	7.56	63.7	0.87	80.3	10.5	70.6	2.35	105	8.96	**112**	5.69	**120**	51.7	**115**	7.50	110	8.67	137	65.4	3.57	65.4	5.72	98.1	8.22	97.8	27.7	**160**	54.3	**162**	42.7
Zinc	mg/kg	200	380	99.0	68.3	5.64	80.8	58.7	82.8	9.42	69.4	3.66	**151**	171	80.2	7.98	91.0	63.5	86.4	6.54	78.8	5.46	82.9	71.9	9.90	70.4	5.43	55.6	6.32	50.9	7.47	59.4	18.4	53.7	7.03

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion.

Bolded: Value for exposed site exceeds all Reference 95th Percentile values (< 5th percentile for pH).

[1] Reported moisture, pH, total sulphur and total nitrogen data are based on bulk sediment. Reported 2014 pH data are based on < 63 µm sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Means were reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996).

[3] The maximum reference 95th percentile value of those presented in Tables D.1 and D.2 is displayed for each parameter. For raw 2016 reference data see Appendix Tables D.1 and D.2, for all others see Minnow (2015a) and Minnow (2015b). The 5th percentile is reported for pH.

[4] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

Mean metal concentrations in sediment from the deep areas of Polley Lake were very similar to those observed in previous sampling years (2014 for POL-P1; 2014 and 2015 for POL-P2; Table 2). Manganese concentrations increased between 2014 and 2016 at the south deep sampling area (POL-P2), but were lower than reference (Table 2). Metals identified by the sediment PCA as explaining separation of exposed and reference sediments from deep areas and mid-depth areas (separation primarily along PCA Axis 1; 66.3% and 61.6% variance, respectively) agreed well with the POIs and IPs previously identified for this area (arsenic, copper, iron and zinc; calcium, molybdenum, sodium, strontium tin and titanium; Minnow 2015a), with the exception that iron, molybdenum, and zinc were not identified in the PCA of 2016 data (Appendix Tables D.3 – D.6; Appendix Figures D.1 - D.2).

Arsenic and copper were the only analytes in sediment collected from deep and mid-depth areas of Polley Lake in 2016 with concentrations greater than the CSR “sensitive” criteria (Table 2; Appendix Tables D.1 - D.2). Mean arsenic concentrations exceeded the CSR “sensitive” criterion at all deep sampling areas, and at the south mid-depth area (POL-2; Figure 1), as well as reference concentrations at the deep areas only (Table 2; Figure 3; Appendix Table D.2). Copper was the only analyte with concentrations greater than the CSR “typical” criterion and reference in all Polley Lake areas (deep and mid-depth), except at the mid-depth area POL-1 where it exceeded the CSR “typical” criterion, but not reference (Table 2). It is of note that copper in reference sediment, and in Polley Lake sediment prior to the dam failure (mid-depth and deep areas), naturally exceeded the CSR “typical” criterion (Appendix Tables D.1 - D.2). Mean copper concentrations in sediment collected from Polley Lake in 2016 exceeded the CSR “typical” criterion by up to approximately 2.9 times in deep areas, and up to approximately 2.3 times in mid-depth areas, while associated reference values were exceeded by up to approximately 1.7 and 1.1 times, respectively (Table 2).

Arsenic and copper were also the only analytes to exceed the CSR “sensitive” criterion in sediment collected for the purposes of spatial extent “in-fill” in Polley Lake (3 samples; Figure 2), with exceedances of these criteria occurring in two of the three collected samples (Appendix Table D.7). Copper concentrations also exceeded the CSR “typical” criterion in these two samples by up to approximately 3 times (Appendix Table D.7).

Mean porewater concentrations of arsenic and copper in Polley Lake deep and mid-depth areas also exceeded reference values (Table 3; Appendix Tables E.1 - E.2). Porewater copper concentrations were higher in mid-depth areas than in deep areas (Table 3), which

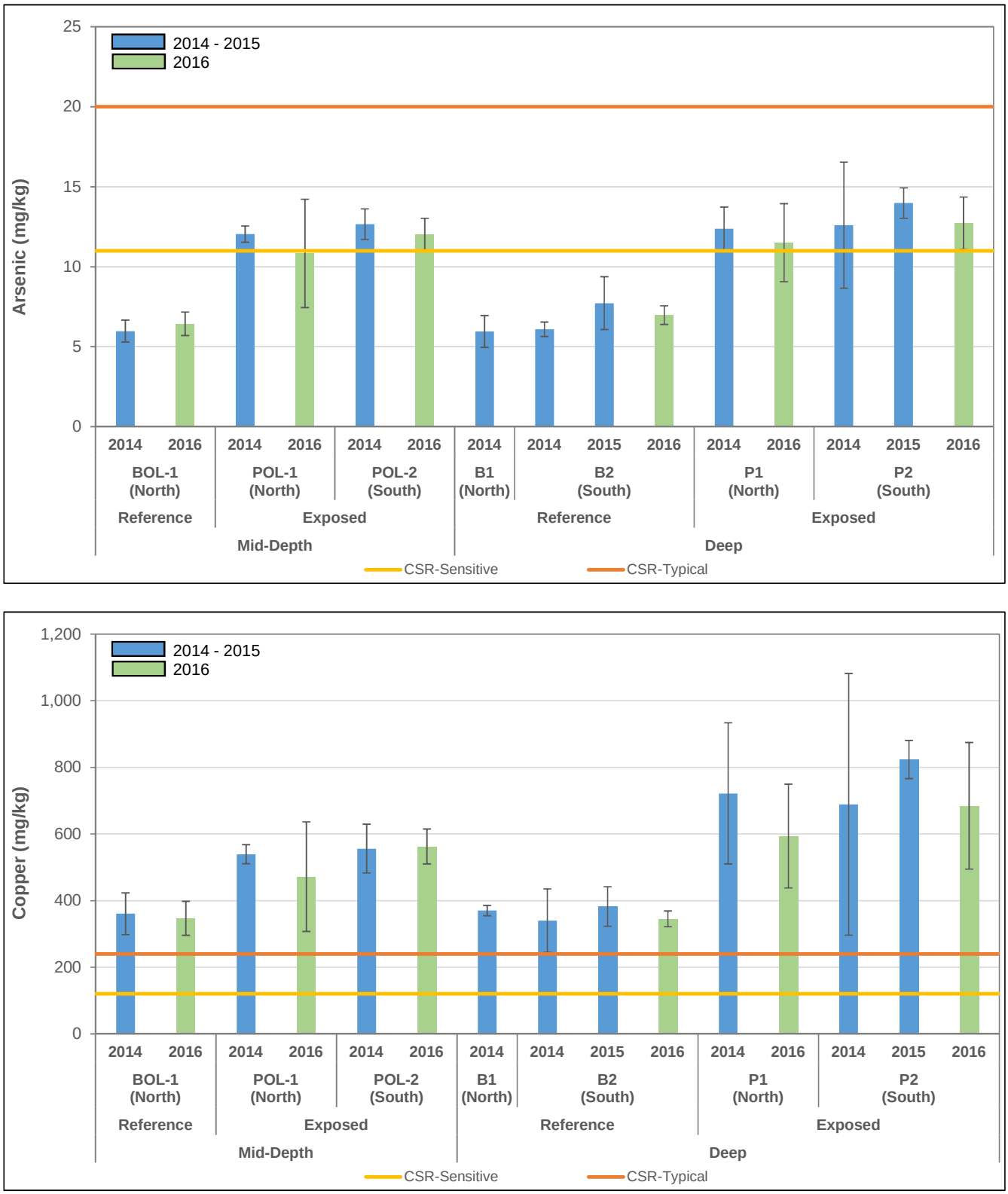


Figure 3: Mean arsenic and copper concentrations (± t*SE) in sediment (< 63µm fraction) from mid-depth and deep sampling areas in Polley Lake and an associated reference area (Bootjack Lake), Mount Polley Mine, 2014 - 2016.

CSR = Contaminated Sites Regulation (Government of British Columbia 1996).

Table 3: Summary porewater quality data for Polley Lake and Bootjack Lake sampling areas, Mount Polley Mine, 2016 [1].

Parameter	Units	Deep							Mid-Depth						
		Reference 95th Percentile [2]	Reference (Bootjack Lake)		Exposed (Polley Lake)				Reference 95th Percentile [2]	Reference (Bootjack Lake)		Exposed (Polley Lake)			
			BOL-B2		POL-P1		POL-P2			BOL-1		POL-1		POL-2	
			Mean	t*SE [3]	Mean	t*SE [3]	Mean	t*SE [3]		Mean	t*SE [3]	Mean	t*SE [3]	Mean	t*SE [3]
Physical Tests															
Hardness (as $CaCO_3$)	mg/L	40.0	36.3	10.1	**225**	98.7	**251**	33.4	53.0	44.3	22.7	**180**	39.0	**201**	59.5
Organic / Inorganic Carbon															
Dissolved Organic Carbon	mg/L	16.2	14.3	4.93	**32.3**	56.8	**30.9**	13.1	28.8	26.2	8.34	19.9	12.4	14.9	18.6
Anions															
Alkalinity, Total (as $CaCO_3$)	mg/L	51.2	42.9	24.7	**176**	38.0	**139**	72.7	45.0	40.1	14.4	**184**	20.1	**195**	76.7
Bromide (Br)	mg/L	<0.050	<0.050	-	<0.050	-	<0.050	-	<0.050	<0.050	-	<0.050	-	<0.050	-
Chloride (Cl)	mg/L	1.35	1.31	0.090	**2.44**	0.86	**1.82**	0.20	1.33	1.31	0.050	**1.76**	0.69	**1.37**	0.072
Fluoride (F)	mg/L	<0.10	<0.10	-	**0.14**	0.046	**0.10**	0.034	0.095	0.066	0.073	0.094	0.036	**0.11**	0.032
Nitrate (as N)	mg/L	0.0053	0.0051	0.00043	**0.014**	0.020	**0.0079**	0.0094	0.043	0.021	0.055	0.0088	0.013	0.0054	0.0019
Nitrite (as N)	mg/L	0.0019	0.0015	0.0013	**0.0060**	0.0083	**0.0097**	0.024	0.011	0.0054	0.014	0.0077	0.019	0.0046	0.013
Sulfate (SO_4)	mg/L	22.1	18.5	14.2	**128**	112	**170**	101	20.7	17.0	10.4	**37.0**	35.8	**42.7**	28.3
Dissolved Metals															
Aluminum	mg/L	0.29	0.21	0.19	**0.38**	1.23	0.15	0.33	0.35	0.28	0.20	**0.47**	0.60	**0.47**	1.06
Antimony	mg/L	0.00073	0.00049	0.00069	0.00051	0.000014	0.00053	0.00064	0.0013	0.00097	0.00096	0.00021	0.00018	0.00025	0.00018
Arsenic	mg/L	0.0026	0.0018	0.0019	**0.0028**	0.0019	0.0015	0.0018	0.0014	0.0011	0.00082	**0.0022**	0.0023	**0.0032**	0.0016
Barium	mg/L	0.060	0.056	0.014	**0.067**	0.037	**0.062**	0.032	0.050	0.042	0.022	0.034	0.0039	0.049	0.032
Beryllium	mg/L	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-
Bismuth	mg/L	<0.000050	<0.000050	-	<0.000050	-	<0.000050	-	<0.000050	<0.000050	-	<0.000050	-	<0.000050	-
Boron	mg/L	0.13	0.11	0.036	0.12	0.080	0.089	0.023	0.13	0.11	0.065	0.042	0.015	0.050	0.033
Cadmium	mg/L	0.0000068	0.0000057	0.0000029	**0.000027**	0.000071	**0.000016**	0.000028	0.000011	0.0000075	0.0000077	**0.000021**	0.0000079	**0.000021**	0.000047
Calcium	mg/L	12.5	11.2	3.78	**69.4**	32.6	**80.6**	8.97	16.6	13.6	7.88	**59.5**	15.2	**65.9**	17.4
Cesium	mg/L	0.000053	0.000047	0.000018	**0.000061**	0.000066	0.000051	0.0000063	0.000049	0.000038	0.000032	**0.00012**	0.00015	**0.00020**	0.00020
Chromium	mg/L	0.00049	0.00034	0.00037	**0.00054**	0.0012	0.00042	0.00062	0.00059	0.00046	0.00035	0.00046	0.00059	0.00038	0.00080
Cobalt	mg/L	0.00016	0.00013	0.000063	**0.00029**	0.00057	**0.00021**	0.00019	0.00032	0.00020	0.00031	**0.00037**	0.00046	**0.00041**	0.00044
Copper	mg/L	0.015	0.012	0.0094	**0.027**	0.070	0.010	0.0088	0.025	0.017	0.021	**0.041**	0.072	**0.046**	0.12
Iron	mg/L	0.36	0.23	0.33	**0.37**	1.32	0.17	0.42	0.18	0.17	0.039	**0.59**	1.20	**0.39**	1.21
Lead	mg/L	0.00015	0.00010	0.00012	**0.00030**	0.0010	0.000096	0.00011	0.00010	0.000086	0.000048	**0.00073**	0.0018	**0.00074**	0.0026
Lithium	mg/L	<0.0010	<0.0010	-	**0.0013**	0.00087	**0.0013**	0.00038	<0.0010	<0.0010	-	**0.0012**	0.00052	**0.0019**	0.00063
Magnesium	mg/L	2.12	2.06	0.17	**12.5**	4.60	**11.9**	2.75	2.80	2.49	0.77	**7.61**	0.39	**8.96**	4.42
Manganese	mg/L	1.11	0.58	1.45	**3.01**	1.91	**5.94**	6.24	0.0039	0.0035	0.0014	**2.62**	2.31	**2.43**	1.39
Molybdenum	mg/L	0.0052	0.0039	0.0034	**0.027**	0.013	**0.030**	0.014	0.0081	0.0065	0.0062	0.0080	0.0024	**0.024**	0.011
Nickel	mg/L	0.00058	0.00055	0.00010	**0.0021**	0.0032	**0.0020**	0.0026	0.0012	0.00081	0.00089	**0.0016**	0.0012	**0.0015**	0.0014
Phosphorus	mg/L	0.091	0.065	0.066	0.059	0.037	0.052	0.0072	0.071	0.058	0.033	**0.19**	0.30	**0.11**	0.23
Potassium	mg/L	1.12	1.06	0.17	**3.23**	1.07	**3.14**	0.92	0.96	0.89	0.19	**2.86**	0.98	**3.95**	1.53
Rubidium	mg/L	0.0017	0.0016	0.00034	**0.0029**	0.00076	**0.0026**	0.00051	0.0013	0.0012	0.00040	**0.0037**	0.0023	**0.0055**	0.0017
Selenium	mg/L	0.00023	0.00020	0.00012	**0.00088**	0.00056	**0.00095**	0.00085	0.00037	0.00027	0.00025	**0.00063**	0.00022	**0.00063**	0.00090
Silicon	mg/L	16.9	16.3	2.11	14.5	3.77	10.8	2.51	14.5	11.3	8.17	12.1	1.90	11.8	3.53
Silver	mg/L	0.000019	0.000014	0.000014	0.000014	0.000016	<0.000010	-	0.000018	0.000015	0.0000090	<0.000010	-	0.000010	0.0000014
Sodium	mg/L	3.13	2.98	0.37	**20.8**	6.93	**16.8**	4.38	3.14	3.00	0.43	**10.5**	1.65	**13.1**	7.13
Strontium	mg/L	0.13	0.12	0.036	**0.54**	0.30	**0.60**	0.15	0.16	0.14	0.075	**0.46**	0.12	**0.55**	0.30
Sulfur	mg/L	7.19	5.97	5.11	**45.1**	39.2	**58.5**	36.2	6.68	5.47	3.34	**12.6**	12.0	**14.7**	9.23
Tellurium	mg/L	<0.00020	<0.00020	-	<0.00020	-	<0.00020	-	<0.00020	<0.00020	-	<0.00020	-	<0.00020	-
Thallium	mg/L	<0.000010	<0.000010	-	<0.000010	-	<0.000010	-	<0.000010	<0.000010	-	<0.000010	-	<0.000010	-
Thorium	mg/L	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-
Tin	mg/L	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-
Titanium	mg/L	0.0051	0.0039	0.0035	**0.0086**	0.029	0.0033	0.0071	0.0073	0.0057	0.0046	**0.0086**	0.011	0.0072	0.018
Tungsten	mg/L	<0.00010	<0.00010	-	**0.00023**	0.000050	**0.00027**	0.00036	<0.00010	<0.00010	-	**0.00025**	0.00037	**0.00051**	0.00017
Uranium	mg/L	0.000080	0.000075	0.000015	**0.00044**	0.00024	**0.00033**	0.00037	0.00011	0.000090	0.000078	**0.00030**	0.00015	**0.00085**	0.0013
Vanadium	mg/L	0.0025	0.0022	0.00088	**0.0078**	0.0077	**0.0036**	0.0046	0.0021	0.0019	0.00049	**0.0028**	0.0024	**0.0026**	0.0046
Zinc	mg/L	<0.0010	<0.0010	-	**<0.0070**	-	**<0.0050**	-	0.0012	0.0011	0.00029	**<0.0040**	-	**<0.0050**	-
Zirconium	mg/L	<0.00030	<0.00030	-	<0.00030	-	<0.00030	-	<0.00030	<0.00030	-	<0.00030	-	<0.00030	-

Bolded: Exceeds 95th percentile of reference data.

[1] Summary statistics were calculated using method detection limit (MDL) values if data were below the MDL. Means were reported as < MDL if all data used in their calculation were < MDL. If MDLs were variable, the mean was reported as < the maximum MDL.

[2] Calculated from 2016 reference data; for raw data see Appendix Tables E.1 and E.2.

[3] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

is the opposite of sediment copper concentrations in these areas (Table 2). Metals identified by PCA as important in explaining the separation of exposed and reference porewater results from deep Polley Lake areas included the nickel, selenium, uranium, vanadium and zinc (Appendix Tables E.3 - E.4; Appendix Figure E.1). In the mid-depth areas, key metals identified by PCA of porewater included arsenic, calcium, cobalt, molybdenum, strontium, and zinc (Appendix Tables E.5 - E.6; Appendix Figure E.2). Results of these two PCAs agreed moderately well with the POIs and IPs identified for these areas in 2014 (Minnow 2015a), as well as with associated sediment PCA results (Appendix Tables D.3 - D.6; Appendix Figures D.1 - D.2). Of the metals that were common in best explaining exposed-reference area variability in porewater (nickel, selenium, uranium, and zinc), zinc was previously identified as a POI for Polley Lake, and both nickel and selenium were identified as POIs or IPs for other sampling areas (Minnow 2015a). Comparison of enrichment factors (exposed concentrations versus reference concentrations) in porewater and sediment indicated that arsenic and copper enrichment in porewater from deep and mid-depth areas of Polley Lake was either lower or similar to enrichment of these metals in sediment (Appendix Table F.1). Higher enrichment factors in porewater than in sediment were observed for a number of POIs, IPs, and parameters identified by porewater PCA (i.e., calcium, iron, molybdenum, nickel, selenium, strontium, uranium, and zinc; Appendix Table F.1). Lower enrichment in porewater (than in sediment) suggests limited mobility, whereas higher enrichment in porewater suggests potential mobility. However, due to the critical importance of changes in redox in influencing porewater chemistry/metal mobility, these findings must be verified by the results of porewater studies that were completed in August 2016 under redox-controlled conditions (to be reported separately).

Quesnel Lake Deep

Sediment was collected from five stations in the Quesnel Lake deep near-field area in 2016 (Figure 1; Table 1). The placement of these stations was supported by previous characterization of the spatial impact of the TSF breach (Minnow 2015a), and further confirmed by a sediment distribution study undertaken in support of the Mount Polley Mine Phase 1 Environmental Effects Monitoring conducted in April, 2016 (Minnow 2016a). The latter confirmed the appropriate placement of the deep near-field area stations, as the success and fullness of grab samples increased with depth. Specifically, fine grained sediment samples could be consistently collected by grab sampling only at lake depths of 70 ± 17 m or more, while sampling attempts at shallower depths returned cobble, woody

debris, coarse sand, and/or only a very small amount of sediment (Appendix Figure A.1 and Appendix Table A.4).

Sediment collected from the Quesnel Lake deep near-field area in 2016 was composed almost entirely of silt and clay (98.2%). Samples collected in 2016 from this area had higher average clay content (51.1%) than those collected in 2014 and 2015 (22.6 and 35.5%, respectively) due to the relocation of two stations in an effort to achieve more uniformity in sediment texture within the area (see Methods section). Sediment collected from the deep far-field area had higher clay content (32.6%) relative to samples from 2014 at this location (15.5%), and higher clay and lower sand (0.39%) content than observed at the reference area (10.9% clay; 19.8% sand). As observed in previous years, the TOC content of sediment from both the deep near-field (0.35%) and far-field (0.15%) sampling areas was lower than in the reference area (1.92%). Total nitrogen was similarly low in the exposed areas (0.039% in near-field, 0.024% in far-field) relative to reference (0.16%; Table 4; Appendix Table D.8).

Mean concentrations of the majority of metals in sediment were higher in 2016 than in 2014 and 2015 in the deep near-field area (Table 4; Figure 4). This difference is due to the relocation of two stations in 2016, which resulted in higher metal concentrations for these stations and higher mean values for the area. In the far-field deep area, sediment metal concentrations were very similar in 2016 and 2014, with the exception of potassium and sodium whose concentrations were approximately 2.0 and 2.1 times those reported in 2014, and more similar to those reported for the deep near-field area (Table 4). These apparent increases may be due to the higher clay content of sediment collected in this area in 2016 relative to 2014, with clay content of these sediments in 2016 being more similar to the near-field area. Metals identified by the sediment PCA as explaining separation of exposed and reference sediments from deep areas of Quesnel Lake (separation primarily along PCA Axis 1; 69.0% variance) agreed well with the POIs and IPs previously identified for this area (copper, calcium, sodium, strontium and tin; Minnow 2015a; Appendix Tables D.9 - D.10; Appendix Figure D.3).

As observed in Polley Lake, arsenic and copper were the only analytes in 2016 to exceed the CSR “sensitive” criteria in sediment from the deep near-field and far-field areas of Quesnel Lake (Table 4; Figure 4; Appendix Table D.8). Mean arsenic concentrations in both areas exceeded results from Reference Area 1 (PREF1; Figure 4); however were similar to results from Reference Area 2 in 2014 (PREF2; Figure 4). The elevated arsenic concentrations at Reference Area 2 suggest that arsenic concentrations may be naturally

Table 4: Summary of sediment quality for Quesnel Lake deep sampling areas, Mount Polley Mine, 2014 - 2016. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]	Reference								Exposed									
					PREF2		PREF1						PNF						PFF1			
					2014		2014		2015		2016		2014		2015		2016		2014		2016	
		Sensitive	Typical		Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]
Physical Tests																						
Moisture	%	-	-	70.5	67.6	5.11	51.8	3.18	53.4	1.99	55.0	1.03	37.7	9.16	49.2	20.8	61.0	2.87	41.9	13.4	48.3	12.8
pH (1:2 soil:water) [1]	pH	-	-	7.21	7.33	0.15	6.94	0.11	7.02	0.83	6.52	0.031	8.68	0.076	8.45	0.15	8.43	0.058	8.31	0.22	8.41	0.15
Particle Size																						
% Gravel (>2mm)	%	-	-	0.10	<0.10	-	<0.10	-	<0.10	-	<0.10	-	**0.10**	0.0056	<0.10	-	<0.10	-	<0.10	-	<0.10	-
% Sand (2.0mm - 0.063mm)	%	-	-	31.5	6.98	6.51	23.5	8.98	19.5	6.88	19.8	8.57	7.75	15.7	7.00	14.7	1.75	1.72	0.37	0.43	0.39	0.47
% Silt (0.063mm - 4µm)	%	-		75.9	72.5	1.88	67.4	8.99	69.8	5.95	69.3	7.66	69.6	13.4	57.5	18.2	47.1	4.99	**84.1**	12.3	67.0	25.2
% Clay (<4µm)	%	-	-	27.2	20.5	7.07	9.08	1.45	10.7	1.38	10.9	1.78	22.6	14.7	**35.5**	24.0	**51.1**	6.07	15.5	12.4	**32.6**	25.2
Organic / Inorganic Carbon (<63 µm)																						
Total Organic Carbon	%	-	-	2.03	1.69	0.30	1.68	0.056	1.82	0.36	1.92	0.19	0.17	0.077	0.29	0.21	0.35	0.10	0.44	0.57	0.15	0.069
Nutrients (Bulk sediment)																						
Total Nitrogen by LECO	%	-	-	0.18	0.15	0.032	0.14	0.010	0.17	0.030	0.16	0.014	0.023	0.0065	0.043	0.020	0.039	0.0075	0.043	0.052	0.024	0.010
Metals (<63 µm)																						
Aluminum	mg/kg	-	-	25,380	23,020	2,641	14,780	943	16,567	2,348	16,060	1,081	20,800	4,903	**26,520**	10,013	**35,340**	1,665	19,540	4,918	23,620	6,416
Antimony	mg/kg	-	-	0.47	0.37	0.038	0.42	0.023	0.44	0.076	0.44	0.027	**0.52**	0.085	**0.55**	0.11	**0.63**	0.022	0.46	0.13	0.47	0.12
Arsenic	mg/kg	11	20	20.9	16.9	4.41	7.75	0.86	8.88	0.52	9.58	1.22	15.4	2.49	15.4	1.90	18.5	0.81	13.2	2.04	13.2	1.30
Barium	mg/kg	-	-	220	195	42.6	144	8.07	147	9.94	163	14.9	**225**	44.4	**255**	72.1	**361**	16.0	204	40.0	**287**	94.3
Beryllium	mg/kg	-	-	0.90	0.83	0.075	0.41	0.028	0.49	0.090	0.46	0.024	0.79	0.20	**0.96**	0.31	**1.12**	0.061	0.69	0.16	0.76	0.17
Bismuth	mg/kg	-	-	0.51	0.46	0.046	0.14	0.0088	0.16	0.029	0.15	0.0068	0.10	0.011	0.13	0.041	0.16	0.010	0.12	0.050	0.11	0.022
Boron	mg/kg	-	-	<10	<10	-	<10	-	<10	-	<10	-	**10.6**	0.68	**11.4**	1.67	**11.8**	0.56	<10	-	10	-
Cadmium	mg/kg	2.2	4.2	0.48	0.30	0.032	0.38	0.036	0.42	0.14	0.44	0.046	0.16	0.034	0.20	0.055	0.26	0.017	0.18	0.100	0.15	0.045
Calcium	mg/kg	-	-	8,834	6,376	1,175	7,742	368	8,747	283	7,900	311	**33,340**	5,031	**31,160**	3,467	**31,840**	1,286	**27,900**	1,093	**23,220**	2,941
Chromium	mg/kg	56	110	60.0	48.4	4.30	52.0	3.98	57.7	8.92	56.7	4.76	14.3	3.75	20.9	5.30	23.9	1.76	18.8	9.84	16.5	4.92
Cobalt	mg/kg	-	-	25.7	23.4	2.91	13.3	0.82	14.5	2.45	14.6	1.12	19.4	3.60	25.5	10.6	**34.6**	2.10	16.1	5.34	16.8	4.59
Copper	mg/kg	120	240	60.8	44.2	5.31	42.2	4.15	55.1	11.8	56.1	6.51	**714**	138	**859**	378	**1,210**	67.4	**481**	120	**567**	189
Iron	mg/kg	-	-	102,460	81,900	22,301	28,580	1,664	31,300	5,187	30,420	1,544	37,240	21,694	40,620	6,727	38,620	1,386	27,680	6,866	23,840	4,155
Lead	mg/kg	57	110	22.1	19.5	2.68	7.00	0.29	7.65	0.89	7.65	0.53	7.09	1.82	9.90	3.70	12.6	0.54	6.97	3.27	7.63	3.33
Lithium	mg/kg	-	-	37.4	33.7	3.30	13.1	0.64	14.4	3.96	13.5	0.74	20.5	5.23	29.8	13.5	36.6	3.21	20.3	6.50	19.0	3.99
Magnesium	mg/kg	-	-	9,344	8,546	807	7,666	475	8,150	1,686	8,082	563	**12,958**	3,178	**17,320**	8,586	**24,740**	1,847	**10,938**	3,155	**11,758**	2,753
Manganese	mg/kg	-	-	7,814	5,222	3,582	470	39.5	491	54.6	470	22.0	797	147	1,033	329	1,348	88.8	725	299	767	253
Mercury	mg/kg	0.30	0.58	0.062	0.052	0.012	0.049	0.0030	0.058	0.014	0.055	0.0030	**0.070**	0.0093	**0.095**	0.024	**0.10**	0.0076	**0.076**	0.022	**0.068**	0.012
Molybdenum	mg/kg	-	-	2.72	2.29	0.64	0.91	0.057	1.08	0.27	1.01	0.079	**3.76**	0.34	**4.05**	0.89	**4.44**	0.19	**2.89**	0.35	**2.76**	0.30
Nickel	mg/kg	-	-	60.7	56.9	4.43	35.6	2.57	39.1	6.67	39.4	3.42	12.9	2.81	20.2	6.84	25.7	2.02	16.9	9.25	15.8	5.42
Phosphorus	mg/kg	-	-	1,776	1,658	172	1,094	40.8	1,180	65.7	1,314	95.2	1,706	155	1,352	297	1,400	130	1,506	228	1,299	411
Potassium	mg/kg	-	-	3,704	3,176	551	1,312	88.0	1,517	188	1,492	108	1,942	438	2,640	885	**4,140**	322	1,842	541	**3,724**	1,866
Selenium	mg/kg	-	-	1.08	0.76	0.19	0.86	0.091	0.97	0.29	0.97	0.071	1.07	0.22	**1.23**	0.46	**1.53**	0.11	0.94	0.43	0.72	0.25
Silver	mg/kg	-	-	0.24	0.17	0.022	0.19	0.017	0.21	0.061	0.22	0.017	**0.33**	0.050	**0.37**	0.11	**0.45**	0.019	**0.26**	0.084	**0.24**	0.049
Sodium	mg/kg	-	-	518	320	57.6	396	28.6	497	62.5	436	33.5	**1,118**	256	**1,396**	411	**2,018**	205	**936**	107	**1,986**	926
Strontium	mg/kg	-	-	94.3	86.7	11.7	74.6	3.93	85.1	8.68	79.3	3.57	**188**	36.5	**212**	45.2	**238**	7.58	**183**	15.0	**237**	52.6
Sulfur (S)-Total	mg/kg	-	-	1,390	-	-	-	-	1,167	799	1,180	239	-	-	**1,560**	226	1,360	68.0	-	-	720	55.5
Thallium	mg/kg	-	-	0.29	0.27	0.028	0.16	0.011	0.17	0.045	0.17	0.0079	<0.050	-	0.060	0.011	0.069	0.0037	0.066	0.039	0.061	0.018
Tin	mg/kg	-	-	0.62	0.53	0.098	0.41	0.067	0.45	0.10	0.47	0.14	**2.05**	0.48	**1.99**	0.53	**2.32**	0.13	**1.52**	0.25	**1.63**	0.25
Titanium	mg/kg	-	-	1,187	848	67.2	1,036	58.4	1,130	197	1,049	70.0	**1,946**	344	**1,996**	509	**2,380**	103	**1,464**	284	**1,606**	269
Uranium	mg/kg	-	-	3.16	2.90	0.30	1.30	0.063	1.46	0.23	1.44	0.078	1.43	0.35	1.39	0.24	1.62	0.054	1.34	0.35	1.18	0.17
Vanadium	mg/kg	-	-	72.9	44.7	2.87	62.2	4.42	70.1	11.2	67.9	4.64	**145**	84.6	**142**	32.6	**140**	6.33	**90.8**	12.6	**86.3**	10.5
Zinc	mg/kg	200	380	95.3	86.8	8.96	73.7	3.66	79.8	17.8	80.4	9.07	69.0	13.8	**96.0**	41.2	**129**	8.62	63.2	23.0	66.2	18.5

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion.

Bolded: Value for exposed site exceeds all Reference 95th Percentile values (< 5th percentile for pH).

[1] Reported moisture, pH, total nitrogen, and total sulphur data are based on bulk sediment. Reported 2014 pH data are based on < 63 µm sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Means were reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996).

[3] The maximum reference 95th percentile value of those presented in Appendix Table D.8 is displayed for each parameter. For raw 2016 reference data see Appendix Table D.8, for all others see Minnow (2015a) and Minnow (2015b). The 5th percentile is reported for pH.

[4] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

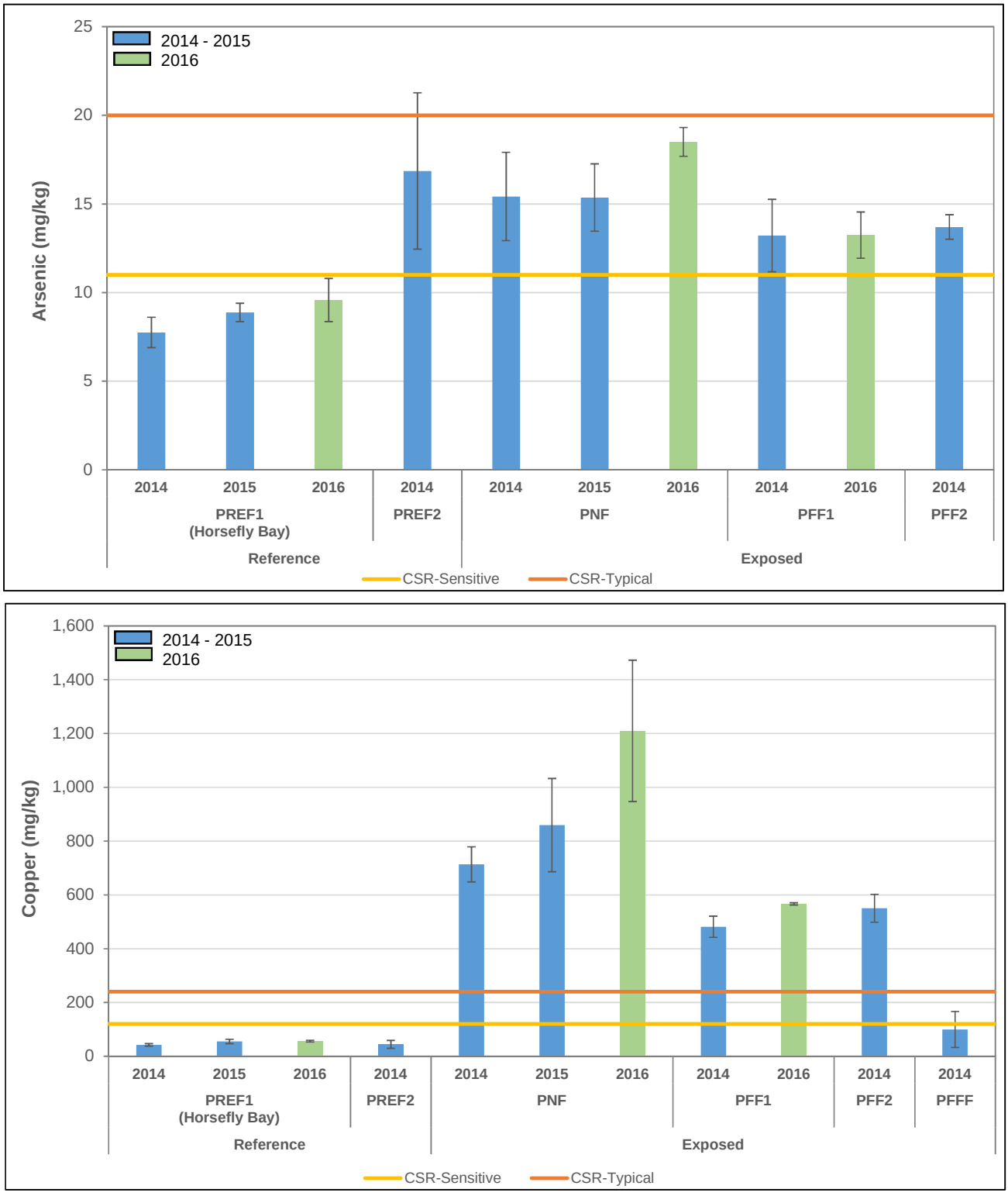


Figure 4: Mean arsenic and copper concentrations (± t*SE) in sediment (< 63µm fraction) from deep sampling areas in Quesnel Lake, Mount Polley Mine, 2014 - 2016.

CSR = Contaminated Sites Regulation (Government of British Columbia 1996).

Note: For ease of display, results from the PFFF area (2014; mean arsenic concentration = 89.2 ± 61.6 mg/kg) have been omitted from the arsenic plot.

elevated at some areas of Quesnel Lake, which is consistent with elevated arsenic concentrations noted in regional stream sediments (MPMC 2015). Similar to 2014, copper exceeded the CSR "typical" criterion and reference in sediment from both the deep near-field and far-field areas; by approximately 5.0 and 2.4 times, and 19.9 and 9.3 times on average, respectively (Table 4). Mean sediment concentrations of most metals in the far-field area were lower than in the near-field area in 2016. In particular, copper was approximately 2.1 times lower in sediment from the far-field than the near-field area, on average, and mean arsenic concentrations were similar between the areas (Table 4; Figure 4).

Arsenic, chromium, and copper were the only analytes in sediment collected for the purposes of spatial extent "in-fill" or sediment toxicity "intermediates" to exceed the CSR criteria (Appendix Tables D.11 - D.12). Specifically, twenty one, five, and fourteen of the twenty four collected samples exceeded the "sensitive" criteria for arsenic, chromium, and copper, respectively. A further nine, one, and ten of these samples also exceeded the "typical" criteria for arsenic, chromium, and copper, by up to 2.4, 1.2, and 5.1 times, respectively (Appendix Tables D.11 - D.12). In all instances except one, if chromium concentrations exceeded either CSR criterion, copper concentrations exceeded neither, suggesting that sediment from locations with elevated chromium concentrations are not substantially affected by the TSF breach.

Porewater copper concentrations in the deep near-field and far-field areas exceeded reference, however arsenic concentrations did not, suggesting low mobility (Table 5; Appendix Table E.7). Despite the approximately 2-fold difference in copper sediment concentrations between the near-field and far-field areas, mean porewater copper concentrations at these two areas were very similar (Table 5). Metals identified by PCA as important in explaining the separation of exposed and reference porewater results from Quesnel Lake deep areas included magnesium, potassium, and uranium (not previously identified as POIs or IPs), and the IPs calcium, sodium and strontium (Appendix Tables E.8 - E.9; Appendix Figure E.3). Porewater enrichment of POIs, IPs and parameters identified by porewater PCA in the deep near-field and far-field areas was generally lower than in sediment (with the exception of sodium; Appendix Table F.2). Of the POIs, IPs, and parameters identified by porewater PCA, higher enrichment factors in porewater than in sediment were only observed for sodium and uranium (Appendix Table F.2). Lower enrichment in porewater (than in sediment) suggests limited mobility, whereas higher enrichment in porewater suggests potential mobility. Limited mobility of POIs and IPs is

Table 5: Summary porewater quality data for Quesnel Lake deep sampling areas, Mount Polley Mine, 2016 [1].

Parameter	Units	Reference 95th Percentile [2]	Reference		Exposed			
			PREF1		PNF1		PFF1	
			Mean	t*SE [3]	Mean	t*SE [3]	Mean	t*SE [3]
Physical Tests								
Hardness (as $CaCO_3$)	mg/L	122	107	39.7	**135**	21.1	**155**	108
Organic / Inorganic Carbon								
Dissolved Organic Carbon	mg/L	30.6	18.3	30.9	6.48	0.52	6.88	5.21
Anions								
Alkalinity, Total (as $CaCO_3$)	mg/L	133	107	73.3	**143**	44.7	**154**	130
Bromide (Br)	mg/L	<0.050	<0.050	-	<0.050	-	<0.050	-
Chloride (Cl)	mg/L	<0.050	<0.50	-	**0.77**	0.58	**0.52**	0.072
Fluoride (F)	mg/L	0.053	0.047	0.015	**0.22**	0.046	**0.15**	0.12
Nitrate (as N)	mg/L	0.10	0.061	0.11	**0.59**	1.12	**0.64**	0.97
Nitrite (as N)	mg/L	0.042	0.021	0.054	**0.087**	0.17	**0.069**	0.23
Sulfate (SO_4)	mg/L	17.7	9.38	21.2	**34.5**	23.4	**30.4**	7.61
Dissolved Metals								
Aluminum	mg/L	0.95	0.42	1.35	0.040	0.032	0.082	0.13
Antimony	mg/L	0.00062	0.00043	0.00047	0.00055	0.00027	**0.00096**	0.00031
Arsenic	mg/L	0.0045	0.0030	0.0036	0.0029	0.0016	0.0019	0.0012
Barium	mg/L	0.037	0.034	0.010	0.035	0.0059	0.029	0.015
Beryllium	mg/L	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-
Bismuth	mg/L	0.000053	0.000051	0.0000043	<0.000050	-	<0.000050	-
Boron	mg/L	0.013	0.011	0.0043	**0.045**	0.0052	**0.028**	0.030
Cadmium	mg/L	0.00021	0.00012	0.00025	0.000011	0.000020	0.000024	0.000013
Calcium	mg/L	41.9	36.5	13.5	**44.3**	7.48	**51.6**	33.9
Cesium	mg/L	0.00014	0.000093	0.00013	0.000065	0.000012	0.000055	0.000030
Chromium	mg/L	0.0026	0.0012	0.0036	<0.00010	-	0.00013	0.00011
Cobalt	mg/L	0.00097	0.00057	0.0010	0.00010	0.000014	0.00030	0.000066
Copper	mg/L	0.024	0.012	0.029	**0.045**	0.010	**0.043**	0.060
Iron	mg/L	2.04	0.86	2.97	0.012	0.010	0.053	0.13
Lead	mg/L	0.0022	0.00089	0.0032	0.000050	-	0.00014	0.00032
Lithium	mg/L	0.0016	0.0013	0.00094	**0.0029**	0.00076	**0.0022**	0.0013
Magnesium	mg/L	4.35	3.73	1.58	**6.03**	0.67	**6.37**	5.78
Manganese	mg/L	0.72	0.44	0.75	0.046	0.15	0.68	0.88
Molybdenum	mg/L	0.0037	0.0031	0.0016	**0.051**	0.040	**0.047**	0.024
Nickel	mg/L	0.0056	0.0032	0.0060	0.00069	0.00047	0.0012	0.00042
Phosphorus	mg/L	0.14	0.091	0.13	<0.050	-	<0.050	-
Potassium	mg/L	1.64	1.54	0.35	**4.95**	0.59	**3.80**	3.47
Rubidium	mg/L	0.0053	0.0047	0.0021	0.0039	0.00023	0.0038	0.0028
Selenium	mg/L	0.00088	0.00067	0.00054	**0.0012**	0.0017	**0.00094**	0.0011
Silicon	mg/L	10.2	9.34	2.64	6.68	0.17	7.50	0.74
Silver	mg/L	0.000060	0.000031	0.000072	<0.000010	-	0.000029	0.000053
Sodium	mg/L	1.81	1.70	0.31	**15.9**	7.44	**9.17**	13.0
Strontium	mg/L	0.32	0.29	0.087	**0.46**	0.11	**0.39**	0.32
Sulfur	mg/L	6.06	3.41	6.78	**12.9**	8.85	**11.1**	2.59
Tellurium	mg/L	<0.00020	<0.00020	-	<0.00020	-	<0.00020	-
Thallium	mg/L	0.000024	0.000018	0.000016	<0.000010	-	<0.000010	-
Thorium	mg/L	0.00022	0.00014	0.00019	<0.00010	-	<0.00010	-
Tin	mg/L	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-
Titanium	mg/L	0.037	0.016	0.052	0.00083	0.00099	0.0028	0.0066
Tungsten	mg/L	<0.00010	<0.00010	-	**0.00031**	0.00029	**0.00024**	0.00020
Uranium	mg/L	0.0011	0.00081	0.00068	**0.0053**	0.0016	**0.0072**	0.011
Vanadium	mg/L	0.0047	0.0027	0.0052	**0.0059**	0.0016	0.0038	0.0039
Zinc	mg/L	0.0073	<0.0080	-	<0.0010	-	<0.0010	-
Zirconium	mg/L	0.0012	0.00071	0.0013	<0.00030	-	<0.00030	-

Bolded: Exceeds 95th percentile of reference data.

[1] Summary statistics were calculated using method detection limit (MDL) values if data were below the MDL. Means were reported as < MDL if all data used in their calculation were < MDL. If MDLs were variable, the mean was reported as < the maximum MDL.

[2] Calculated from 2016 reference data; for raw data see Appendix Table E.7.

[3] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

consistent with the findings of a number of previous evaluations indicating low mobility of metals in tailings and tailings-influenced sediment (e.g., SRK 2015a; SRK 2015b; Minnow 2015a; Minnow 2016b). However, as noted above, due to the critical importance of changes in redox in influencing porewater chemistry/metal mobility, these findings must be verified by the results of porewater studies that were completed in August 2016 under redox-controlled conditions (to be reported separately).

Quesnel Lake Shallow

Sediment collected from the shallow near-field area of Quesnel Lake in 2016 (LNF1; Figure 1) was predominantly sand (89.2%), which, while similar to the sand content of samples collected from this location in 2015, remains higher than observed in 2014 (49.2%), or at the associated reference area in 2016 (64.0%; Table 6; Appendix Table D.13). The high sand content of substrate from this area was visually evident during sample collection in both 2015 and 2016, and is likely a result of continued washing of fine substrates from these shallow sampling locations [3]. The particle size distribution of sediment collected in the littoral far-field area (LFF; Figure 1) was similar in 2016 to the two previous years, and to sediment collected in the shallow reference area. Sediment TOC and total nitrogen content were lower in the near-field area than in the far-field or reference areas, which is consistent with the larger mean particle size in this area, and was also observed during previous sampling years (Table 6; Appendix Table D.13).

Mean sediment metal concentrations in the near-field area were generally similar among the three sampling years (2014-2016) despite the differences in particle size distribution (Table 6). This similarity is likely due to the analysis of metals in the fines fraction (<63 µm) rather than bulk sediment, suggesting that fines remaining in the near-field area were affected by the TSF breach. It is important to note, however, that aquatic organisms inhabiting this sediment would be exposed to the whole sediment, not solely the fines (<63 µm fraction). Mean concentrations of chromium, iron, and vanadium were higher in the near-field area in 2016 relative to 2014 (2.3 times higher, on average), with iron and vanadium concentrations (previously identified as IPs) also exceeding reference values by approximately 2.9 and 9.1 times, respectively (Table 6). Conversely, sediment concentrations of barium, potassium, sodium, and strontium were lower in 2016 relative to

[3] Near-field locations for sediment sampling in 2016 were the same as those sampled in 2014 and 2015, with the exception of station LNF1-1. Whereas sand had been the dominant substrate during 2015 sediment sampling at this location, cobble was the predominant substrate in 2016. Therefore, this station was relocated due to the absence of appropriate substrate for sediment sampling.

Table 6: Summary of sediment quality data for Quesnel Lake shallow sampling areas, Mount Polley Mine, 2014 - 2016. Metals and total organic carbon data are based on the < 63µm fraction of sediment[1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]		Reference 95th Percentile [3]	Reference								Exposed											
					LREF2		LREF1						LNF1						LFF					
					2014		2014		2015		2016		2014		2015		2016		2014		2015		2016	
		Sensitive	Typical		Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]
Physical Tests																								
Moisture	%	-	-	53.4	48.9	12.1	40.7	3.39	40.8	9.35	33.4	4.63	32.6	5.99	25.4	7.68	22.8	6.23	48.0	11.4	44.7	12.1	36.9	12.2
pH (1:2 soil:water) [1]	pH	-	-	6.74	7.06	0.87	6.54	0.26	6.97	0.58	6.14	0.40	8.57	0.37	7.95	0.87	8.54	0.069	**6.55**	0.38	7.09	0.42	6.99	0.82
Particle Size																								
% Gravel (>2mm)	%	-	-	3.39	0.11	0.043	1.02	0.80	1.49	1.94	1.81	1.52	1.15	2.91	2.02	3.72	**3.54**	5.61	1.47	1.70	0.76	0.61	2.19	5.77
% Sand (2.0mm - 0.063mm)	%	-	-	76.1	37.5	55.2	59.7	7.91	60.0	11.5	64.0	21.4	49.2	2.65	**82.4**	22.0	**89.2**	5.61	65.5	10.3	60.3	17.0	61.6	22.6
% Silt (0.063mm - 4µm)	%	-	-	76.4	58.6	52.1	35.1	8.04	33.9	9.27	30.8	20.4	41.7	2.49	14.8	18.2	6.67	4.41	30.2	10.0	36.5	16.7	32.5	19.3
% Clay (<4µm)	%	-	-	6.33	3.91	6.31	4.17	0.73	4.64	4.11	3.39	2.01	**8.07**	2.26	0.79	0.50	0.63	0.16	2.86	1.52	2.45	1.92	3.73	3.26
Organic / Inorganic Carbon (<63 µm)																								
Total Organic Carbon (TOC)	%	-	-	1.92	1.63	0.41	1.12	0.23	1.47	0.53	1.19	0.17	0.21	0.088	0.35	0.25	0.12	0.098	1.78	1.50	**2.29**	2.20	1.41	1.10
Nutrients (Bulk sediment)																								
Total Nitrogen by LECO	%	-	-	0.14	0.11	0.070	0.066	0.0062	0.10	0.023	0.053	0.014	<0.020	-	0.032	0.0074	<0.020	-	0.10	0.088	0.11	0.064	0.068	0.049
Metals (<63 µm)																								
Aluminum	mg/kg	-	-	25,540	21,140	4,120	13,260	1,717	13,133	1,797	11,294	2,143	17,920	1,101	12,314	2,812	10,632	2,788	12,440	1,822	13,340	3,313	12,460	1,884
Antimony	mg/kg	-	-	0.36	<0.10	-	0.30	0.064	0.31	0.043	0.26	0.027	**0.43**	0.029	**0.43**	0.058	**0.36**	0.068	0.23	0.059	0.26	0.032	0.22	0.057
Arsenic	mg/kg	11	20	5.28	2.27	0.25	4.08	0.96	4.54	1.94	3.95	0.80	**13.0**	0.61	**15.0**	1.66	**14.6**	1.88	3.09	1.21	4.04	2.21	4.25	2.64
Barium	mg/kg	-	-	133	51.7	23.8	124	9.63	115	19.0	109	11.8	**195**	15.8	105	25.6	97.2	42.4	55.4	10.3	68.6	25.1	69.9	26.6
Beryllium	mg/kg	-	-	0.69	0.53	0.15	0.35	0.044	0.37	0.087	0.32	0.042	0.68	0.059	0.52	0.078	0.49	0.087	0.30	0.026	0.35	0.061	0.35	0.067
Bismuth	mg/kg	-	-	0.47	0.30	0.15	0.11	0.022	0.11	0.025	0.10	-	<0.10	-	0.10	0.0056	0.11	0.022	0.10	0.0056	0.10	0.0056	0.11	0.011
Boron	mg/kg	-	-	<10	<10	-	<10	-	<10	-	<10	-	<10	-	<10	-	<10	-	<10	-	<10	-	<10	-
Cadmium	mg/kg	2.2	4.2	0.36	0.092	0.022	0.31	0.042	0.33	0.094	0.30	0.035	0.13	0.017	0.22	0.058	0.17	0.039	0.17	0.11	0.19	0.11	0.17	0.12
Calcium	mg/kg	-	-	14,400	8,698	5,211	7,136	662	7,483	1,498	6,420	689	**28,300**	2,112	**20,300**	1,487	**20,920**	2,476	8,712	1,368	10,622	2,157	**28,318**	49,025
Chromium	mg/kg	56	110	58.1	46.5	10.8	49.5	5.10	49.7	9.09	47.8	7.33	15.5	1.96	34.7	9.73	35.9	12.8	43.8	11.4	41.9	10.0	39.1	13.9
Cobalt	mg/kg	-	-	24.2	17.5	6.10	10.3	1.75	10.8	2.30	9.60	1.21	20.3	1.06	23.5	7.51	**25.2**	7.68	9.32	1.80	10.9	3.43	11.1	1.62
Copper	mg/kg	120	240	49.4	33.1	14.8	30.3	4.58	31.6	7.95	27.8	3.32	**652**	65.3	**648**	173	**659**	263	30.1	4.16	**65.7**	51.7	**69.7**	67.0
Iron	mg/kg	-	-	48,160	39,860	7,451	23,680	2,715	23,200	4,245	22,240	2,256	**62,740**	9,079	**119,880**	67,269	**142,020**	60,514	23,240	5,315	27,280	8,966	30,620	11,251
Lead	mg/kg	57	110	14.6	11.9	2.56	5.27	0.76	5.78	1.63	5.06	0.49	5.76	0.25	6.40	0.82	5.92	1.25	5.31	1.29	5.50	1.30	5.42	1.22
Lithium	mg/kg	-	-	45.8	38.2	7.31	11.5	1.77	11.0	2.11	11.1	1.85	18.2	1.51	13.2	1.92	12.3	2.21	11.8	2.48	12.3	2.14	14.0	3.28
Magnesium	mg/kg	-	-	12,320	10,306	1,876	6,360	621	6,420	1,230	5,892	795	11,320	862	6,924	1,387	6,210	1,348	6,356	1,600	6,752	2,482	7,374	1,174
Manganese	mg/kg	-	-	529	366	147	309	66.1	322	103	254	27.9	**695**	47.7	**750**	124	**630**	119	274	60.3	308	88.3	344	112
Mercury	mg/kg	0.30	0.58	0.048	0.015	0.0023	0.038	0.0076	0.044	0.016	0.036	0.0087	**0.077**	0.0046	**0.10**	0.019	**0.10**	0.032	0.046	0.019	**0.066**	0.034	0.039	0.0046
Molybdenum	mg/kg	-	-	0.97	0.38	0.070	0.78	0.10	0.83	0.37	0.80	0.15	**3.75**	0.25	**3.38**	0.52	**3.17**	0.68	0.73	0.60	0.67	0.35	**1.65**	2.70
Nickel	mg/kg	-	-	69.1	52.1	15.6	29.3	4.22	30.7	6.81	28.2	3.27	12.2	0.57	18.8	3.11	17.6	4.92	26.1	5.57	26.2	5.70	27.1	4.59
Phosphorus	mg/kg	-	-	1,230	1,006	143	1,136	110	1,143	103	1,055	73.2	**1,660**	176	**1,946**	354	**2,024**	322	863	311	971	343	958	538
Potassium	mg/kg	-	-	4,328	2,590	1,594	1,120	211	1,213	311	992	129	1,786	109	920	286	736	265	762	165	1,006	294	1,010	344
Selenium	mg/kg	-	-	0.71	0.27	0.044	0.58	0.13	0.64	0.23	0.56	0.063	**1.02**	0.040	**1.16**	0.21	**1.07**	0.33	0.53	0.48	0.52	0.37	**0.94**	1.60
Silver	mg/kg	-	-	0.17	0.082	0.040	0.14	0.024	0.15	0.030	0.14	0.012	**0.32**	0.030	**0.37**	0.041	**0.41**	0.12	0.083	0.051	0.099	0.025	0.091	0.026
Sodium	mg/kg	-	-	478	362	71.0	386	20.8	460	49.7	348	26.9	**1,160**	57.6	**526**	150	444	132	274	122	386	219	334	214
Strontium	mg/kg	-	-	114	81.2	30.4	63.3	8.17	68.9	15.7	55.7	7.42	**193**	14.3	106	26.1	91.5	26.3	60.3	14.0	79.3	34.6	**124**	120
Sulfur - Total	mg/kg	-	-	955	**-**	-	**-**	-	<500	-	680	239	**-**	-	**1,220**	321	520	56	**-**	-	920	821	**3,400**	5,528
Thallium	mg/kg	-	-	0.31	0.18	0.12	0.12	0.025	0.12	0.036	0.10	0.011	<0.050	-	0.050	-	0.051	0.0039	0.056	0.012	0.060	0.017	0.067	0.031
Tin	mg/kg	-	-	0.56	0.42	0.13	0.35	0.058	0.38	0.025	0.35	0.14	**1.63**	0.12	**1.31**	0.11	**1.07**	0.20	0.33	0.11	0.44	0.18	0.41	0.19
Titanium	mg/kg	-	-	1,084	721	320	990	107	936	86.8	864	141	**1,690**	94.1	**1,326**	163	1,074	287	956	302	**1,085**	387	964	326
Uranium	mg/kg	-	-	1.95	1.64	0.30	0.99	0.18	1.14	0.34	1.04	0.096	1.21	0.13	1.08	0.097	1.02	0.23	0.93	0.25	1.06	0.26	1.03	0.45
Vanadium	mg/kg	-	-	61.5	30.6	8.65	56.9	5.07	57.0	9.34	53.4	6.55	**235**	31.9	**461**	273	**561**	251	**67.9**	29.0	**85.3**	46.6	**86.0**	59.2
Zinc	mg/kg	200	380	87.6	74.5	12.0	60.8	8.00	62.3	11.0	54.3	5.96	63.1	5.40	70.8	11.7	67.0	13.9	45.1	4.27	49.1	9.79	46.0	5.11

Value is > Contaminated Sites Regulation (CSR) Sensitive Criterion.

Value is > Contaminated Sites Regulation (CSR) Typical Criterion.

Bolded: Value for exposed site exceeds all Reference 95th Percentile values (< 5th percentile for pH).

[1] Reported 2015 moisture, pH, and total nitrogen data are based on bulk sediment. Reported 2014 pH data are based on < 63 µm sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Means were reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996).

[3] The maximum reference 95th percentile value of those presented in Appendix Table D.13 is displayed for each parameter. For raw 2016 reference data see Appendix Table D.13, for all others see Minnow (2015a) and Minnow (2015b). The 5th percentile is reported for pH.

[4] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

2014 (2.0 - 2.6 times lower). These differences may be indicative of the continued movement of fines from the shallow near-field area as discussed above. In the shallow far-field area, mean metal concentrations were generally similar among sampling years, with the exception of increases in copper, calcium, molybdenum, and strontium relative to 2014 (approximately 2.1 to 3.3 times higher than 2014 concentrations), all of which were identified either as POIs or IPs in 2014 (Minnow 2015a). Concentrations of these four analytes exceeded reference in 2016, but did not exceed reference in 2014 or 2015 (Table 6; Appendix Table D.13). Metals identified by the sediment PCA as explaining separation of exposed and reference sediments from shallow areas of Quesnel Lake (separation primarily along PCA Axis 1; 47.2% variance) generally agreed with the POIs (arsenic, copper, iron and manganese) and moderately well with the IPs identified for this area (barium, calcium, mercury, molybdenum, selenium, silver, sodium, strontium, tin and vanadium; Minnow 2015a; Appendix Tables D.14 - D.15; Appendix Figure D.4).

As observed in both Polley Lake and in the Quesnel Lake deep exposed areas, mean arsenic and copper concentrations in sediment from the shallow near-field area of Quesnel Lake exceeded CSR “sensitive” criteria and reference. Copper concentrations also exceeded the CSR “typical” criterion (by approximately 2.7 times on average; Table 6). Results from 2016 for arsenic and copper are consistent with those from both 2014 and 2015 in the near-field sampling area (Table 6; Figure 5; Appendix Table D.13). Mean sediment metal concentrations in the shallow far-field area in 2016 did not exceed CSR criteria, although copper concentrations were higher than reference, as also observed in 2015 (Table 6). Sediment metal concentrations were generally lower in the far-field area in 2016 than in the near-field, with mean arsenic and copper concentrations being approximately 3.4 and 9.5 times lower, respectively (Table 6; Figure 5).

Similar to the Quesnel Lake deep areas, porewater copper concentrations from the shallow near-field area exceeded reference, but arsenic concentrations did not, suggesting low arsenic mobility in this area. In the far-field area, porewater concentrations of both copper and arsenic exceeded reference (Table 7; Appendix Table E.11). Metals identified by PCA as important in explaining separation of exposed and reference porewater results from shallow Quesnel Lake areas included the copper, silver, selenium, and tin (Appendix Tables E.12 - E.13; Appendix Figure E.4), which agreed well with the POIs and IPs identified for this area in 2014 (Minnow 2015a) and with sediment PCA results for the same areas (Appendix Tables D.14 - D.15; Appendix Figure D.4). Despite elevation of porewater copper concentrations above reference in both shallow exposed areas of Quesnel Lake

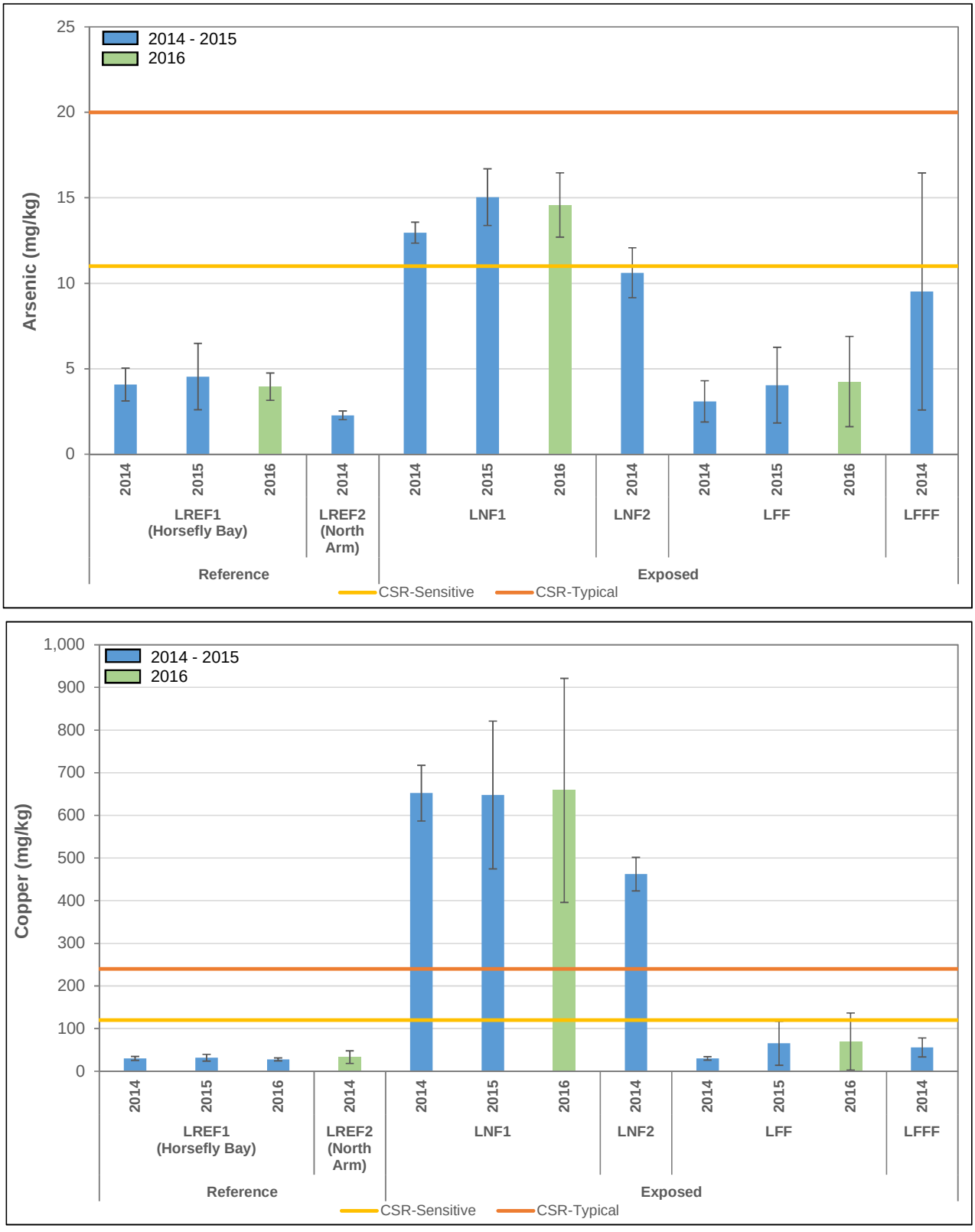


Figure 5: Mean arsenic and copper concentrations (± t*SE) in sediment (< 63µm fraction) from shallow sampling areas in Quesnel Lake, Mount Polley Mine, 2014 - 2016.

CSR = Contaminated Sites Regulation (Government of British Columbia 1996).

Table 7: Summary porewater quality data for Quesnel Lake shallow sampling areas, Mount Polley Mine, 2016 [1].

Parameter	Units	Reference 95th Percentile [2]	Reference		Exposed			
			LREF1		LNF1		LFF	
			2016		2016		2016	
			Mean	t*SE [3]	Mean	t*SE [3]	Mean	t*SE [3]
Physical Tests								
Hardness (as $CaCO_3$)	mg/L	88.0	79.7	28.7	**99.4**	63.8	**206**	205
Organic / Inorganic Carbon								
Dissolved Organic Carbon	mg/L	14.4	12.6	5.58	2.78	1.41	11.0	12.0
Anions								
Alkalinity, Total (as $CaCO_3$)	mg/L	90.7	67.6	66.4	84.0	58.1	**170**	167
Bromide (Br)	mg/L	0.050	<0.050	-	<0.050	-	<0.050	-
Chloride (Cl)	mg/L	3.78	3.40	0.97	<0.50	-	1.97	3.18
Fluoride (F)	mg/L	0.076	0.055	0.052	**0.11**	0.16	0.062	0.087
Nitrate (as N)	mg/L	0.0087	0.0064	0.0059	**0.078**	0.19	0.0062	0.0052
Nitrite (as N)	mg/L	0.0015	0.0012	0.00086	**0.0018**	0.0033	0.0013	0.00090
Sulfate (SO_4)	mg/L	28.9	18.1	28.6	8.73	5.31	**45.5**	145
Dissolved Metals								
Aluminum	mg/L	0.29	0.17	0.29	**1.04**	1.04	**0.45**	0.58
Antimony	mg/L	0.00027	0.00019	0.00019	**0.00032**	0.00037	**0.00061**	0.0017
Arsenic	mg/L	0.0033	0.0026	0.0019	0.0017	0.00072	**0.0073**	0.020
Barium	mg/L	0.079	0.045	0.087	0.036	0.0023	0.067	0.092
Beryllium	mg/L	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-
Bismuth	mg/L	<0.000050	<0.000050	-	<0.000050	-	<0.000050	-
Boron	mg/L	0.038	0.024	0.036	<0.010	-	**<0.060**	-
Cadmium	mg/L	0.000053	0.000042	0.000032	0.000037	0.000032	0.000048	0.000067
Calcium	mg/L	27.1	25.0	8.15	**34.3**	23.4	**65.8**	62.4
Cesium	mg/L	0.000076	0.000046	0.000075	**0.00015**	0.000089	**0.00011**	0.00010
Chromium	mg/L	0.00096	0.00058	0.00098	**0.0013**	0.0015	**0.0013**	0.0016
Cobalt	mg/L	0.00033	0.00023	0.00030	**0.00053**	0.00046	**0.00057**	0.00061
Copper	mg/L	0.0051	0.0040	0.0030	**0.096**	0.059	**0.012**	0.032
Iron	mg/L	2.16	0.97	2.98	0.93	1.05	0.96	2.09
Lead	mg/L	0.00045	0.00024	0.00053	**0.00083**	0.00083	**0.00062**	0.0016
Lithium	mg/L	0.0016	0.0014	0.00050	**0.0017**	0.00063	**0.0027**	0.0017
Magnesium	mg/L	5.26	4.22	2.66	3.30	1.25	**10.2**	18.9
Manganese	mg/L	0.36	0.15	0.54	0.060	0.093	0.28	0.51
Molybdenum	mg/L	0.0029	0.0016	0.0032	**0.0033**	0.0067	**0.040**	0.17
Nickel	mg/L	0.0033	0.0023	0.0033	0.0014	0.0012	**0.0041**	0.00036
Phosphorus	mg/L	0.050	0.050	0	<0.050	-	**0.056**	0.023
Potassium	mg/L	3.29	2.90	1.17	1.30	0.54	2.15	0.49
Rubidium	mg/L	0.0049	0.0045	0.0014	0.0031	0.00077	0.0045	0.0021
Selenium	mg/L	0.00054	0.00038	0.00046	**0.0011**	0.0017	0.00047	0.00035
Silicon	mg/L	7.80	7.60	0.82	4.81	1.23	6.72	3.43
Silver	mg/L	0.000021	0.000016	0.000014	**0.000083**	0.000085	0.000017	0.000022
Sodium	mg/L	7.27	4.18	7.78	2.16	1.33	4.54	7.26
Strontium	mg/L	0.19	0.17	0.049	**0.23**	0.12	**0.41**	0.32
Sulfur	mg/L	9.48	5.91	9.47	2.74	1.73	**14.8**	47.1
Tellurium	mg/L	<0.00020	<0.00020	-	<0.00020	-	<0.00020	-
Thallium	mg/L	0.000014	0.000011	0.0000057	0.000013	0.0000066	<0.000010	-
Thorium	mg/L	0.00016	0.00012	0.00010	0.00014	0.00013	0.00011	0.000057
Tin	mg/L	<0.00010	<0.00010	-	**0.00038**	0.00056	<0.00010	-
Titanium	mg/L	0.013	0.0082	0.011	**0.031**	0.034	**0.018**	0.025
Tungsten	mg/L	<0.00010	<0.00010	-	<0.00010	-	<0.00010	-
Uranium	mg/L	0.00022	0.00014	0.00023	**0.00050**	0.00022	**0.0014**	0.0041
Vanadium	mg/L	0.0011	0.00078	0.00093	**0.0033**	0.0029	**0.0024**	0.0039
Zinc	mg/L	0.0027	0.0016	0.0027	**0.0029**	0.0029	**0.0088**	0.012
Zirconium	mg/L	0.00044	0.00035	0.00022	**0.00078**	0.0010	<0.00030	-

Bolded: Exceeds 95th percentile of reference data.

[1] Summary statistics were calculated using method detection limit (MDL) values if data were below the MDL. Means were reported as < MDL if all data used in their calculation were < MDL. If MDLs were variable, the mean was reported as < the maximum MDL.

[2] Calculated from 2016 reference data; for raw data see Appendix Table E.11.

[3] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

(near-field and far-field), copper enrichment in porewater (exposed / reference) was similar to that in sediment, as was porewater enrichment of most of the remaining POIs, IPs and parameters identified by porewater PCA in the near-field area (Appendix Table F.3). Of the POIs, IPs, and parameters identified by porewater PCA, higher enrichment factors in porewater than in sediment were observed at the far-field area for arsenic, barium, and molybdenum (Appendix Table F.3), but the absence of similar enrichments in the shallow near-field area suggest that the far-field enrichment may not be related to the TSF breach.

Hazeltine Creek Sedimentation Pond

Sediment collected from the Hazeltine Creek Sedimentation Pond in 2016 (Figure 1) was primarily silt and clay (93.2%), with particle size distribution similar to sediment collected from this monitoring area in 2015 (Table 8; Appendix Table D.16). TOC content was slightly higher than in previous sampling years (2014 and 2015), but remained much lower than observed in Hazeltine Creek prior to the TSF breach (Table 8; Appendix Table D.16)

Sediment metal concentrations in 2016 were generally similar to those observed in 2014 (Hazeltine Creek shortly after the TSF breach) and 2015 (sedimentation pond), while total nitrogen was slightly higher than in the two previous sampling years. Concentrations of selenium and thallium were higher in 2016 than in 2014 and 2015 by approximately 2.5 to 2.6 times (Table 8). Slight temporal increases in three additional analytes were also observed (aluminum, chromium, and nickel), with concentrations of these metals exceeding pre-event concentrations in 2016 only (Table 8).

The Hazeltine Creek Sedimentation Pond is a man-made, regularly maintained waterbody or “maintained watercourse” (BCMoE 2013), and is not currently fish habitat. Therefore, sediments from this area were evaluated only relative to CSR “typical” criteria. Copper was the only analyte in 2016 to exceed the CSR “typical” criterion and reference (pre-event) concentrations, by approximately 1.6 and 4.1 times, respectively, on average (Table 8; Appendix Table D.16).

Porewater chemistry of the Hazeltine Creek Sedimentation Pond in 2016 differed from that of Lower Hazeltine Creek in 2014 (Table 9; Appendix Table E.14). Porewater concentrations of some analytes (i.e. aluminum, arsenic, copper, molybdenum, potassium, and selenium) were higher than in 2014. However, sediment present in the Hazeltine Creek Sedimentation Pond in 2016 differed substantially from sediment that was present in Lower Hazeltine Creek in 2014. Specifically, samples collected in 2014 represented freshly

Table 8: Summary sediment quality data for samples collected in lower Hazeltine Creek (2014) and Hazeltine Creek Sedimentation Pond (2015-2016), Mount Polley Mine. Metals and total organic carbon data are based on the < 63µm fraction of sediment [1].

Parameter	Units	Contaminated Sites Regulation Criteria [2]	Reference 95th Percentile [3]	Exposed					
				Lower Hazeltine Creek (ST02) 2014		Hazeltine Creek Upper Sedimentation Pond 2015		Hazeltine Creek Upper Sedimentation Pond 2016	
		Typical		Mean	t*SE [4]	Mean	t*SE [4]	Mean	t*SE [4]
Physical Tests									
Moisture	%	-	-	28.8	5.25	41.4	9.49	48.2	3.88
pH (1:2 soil:water) [1]	pH	-	-	8.55	0.18	8.43	0.28	8.16	0.060
Particle Size									
% Gravel (>2mm)	%	-	33.1	0.13	0.078	0.29	0.53	1.57	1.37
% Sand (2.0mm - 0.063mm)	%	-	64.7	30.4	18.9	7.25	12.2	5.28	2.18
% Silt (0.063mm - 4µm)	%	-	76.2	60.6	15.6	75.1	6.57	66.0	3.12
% Clay (<4µm)	%	-	13.9	8.91	4.54	**17.4**	10.2	**27.2**	2.68
Organic / Inorganic Carbon (<63 µm)									
Total Organic Carbon (TOC)	%	-	12.8	0.12	0.032	0.30	0.054	0.56	0.11
Nutrients (Bulk sediment)									
Total Nitrogen by LECO	%	-	-	<0.020	-	0.052	0.0094	0.11	0.015
Metals (<63 µm)									
Aluminum	mg/kg	-	18,000	16,720	3,498	17,900	4,655	**23,620**	2,437
Antimony	mg/kg	-	1.33	0.40	0.073	0.52	0.054	0.70	0.062
Arsenic	mg/kg	20	12.1	11.7	2.95	**14.8**	1.89	**15.3**	2.06
Barium	mg/kg	-	136	**166**	72.9	**196**	41.8	**210**	23.0
Beryllium	mg/kg	-	0.46	**0.49**	0.17	**0.62**	0.12	**0.69**	0.066
Bismuth	mg/kg	-	20.0	0.11	0.014	0.13	0.023	0.19	0.021
Boron	mg/kg	-	5.40	**10.2**	0.56	<10	-	<10	-
Cadmium	mg/kg	4.2	0.35	0.19	0.042	0.21	0.024	0.28	0.032
Calcium	mg/kg	-	13,400	**27,880**	3,438	**29,380**	2,115	**24,140**	2,717
Chromium	mg/kg	110	40.1	28.4	10.2	28.4	2.08	**41.1**	3.40
Cobalt	mg/kg	-	11.0	**18.4**	3.90	**18.3**	3.30	**20.0**	2.13
Copper	mg/kg	240	94.6	**449**	318	**469**	141	**391**	77.8
Iron	mg/kg	-	35,400	**65,980**	19,810	**50,580**	5,970	**46,440**	3,144
Lead	mg/kg	110	6.70	**7.53**	0.65	**8.78**	1.59	**10.9**	1.11
Lithium	mg/kg	-	14.8	**16.3**	3.69	**19.6**	5.13	**28.1**	2.36
Magnesium	mg/kg	-	6,430	**10,428**	2,603	**10,346**	3,051	**12,860**	1,246
Manganese	mg/kg	-	1,350	676	137	725	160	885	117
Mercury	mg/kg	0.58	0.14	0.065	0.017	0.10	0.012	0.093	0.0064
Molybdenum	mg/kg	-	1.50	**2.44**	1.35	**2.47**	0.29	**3.74**	0.56
Nickel	mg/kg	-	24.4	22.5	9.43	22.5	4.19	**38.6**	4.60
Phosphorus	mg/kg	-	1,380	**1,530**	317	**1,558**	112	1,188	129
Potassium	mg/kg	-	1,450	**1,534**	457	**1,732**	477	**2,570**	330
Selenium	mg/kg	-	3.32	0.89	0.31	0.88	0.14	2.33	0.42
Silver	mg/kg	-	0.16	**0.24**	0.12	**0.26**	0.026	**0.22**	0.025
Sodium	mg/kg	-	350	**718**	479	**718**	179	**688**	126
Strontium	mg/kg	-	118	**145**	17.1	**165**	15.9	**179**	11.9
Sulfur (S)-Total	mg/kg	-	-	-	-	1,260	142	940	208
Thallium	mg/kg	-	0.094	0.060	0.017	0.070	0.013	**0.15**	0.021
Tin	mg/kg	-	1.10	1.09	0.60	**1.33**	0.23	0.90	0.17
Titanium	mg/kg	-	776	**1,309**	403	**1,502**	266	**1,234**	188
Uranium	mg/kg	-	1.26	1.05	0.20	1.18	0.10	1.03	0.10
Vanadium	mg/kg	-	74.5	**229**	96.2	**181**	24.9	**120**	13.9
Zinc	mg/kg	380	67.6	**68.2**	5.33	**73.9**	15.6	**90.8**	7.97

Value is > Contaminated Sites Regulation (CSR) Typical Criterion.

Bolded: Value for exposed site exceeds all Reference 95th Percentile values (< 5th percentile for pH).

[1] Reported 2015 moisture, pH, and total nitrogen data are based on bulk sediment. Reported 2014 pH data are based on < 63 µm sediment. Data reported as less than the method detection limit (MDL) were used at the MDL for the calculation of summary statistics. Means were reported as < MDL if all the data used in their calculation were < MDL.

[2] Contaminated Sites Regulation (Government of British Columbia 1996).

[3] The maximum reference 95th percentile value of those presented in Table D.16 is displayed for each parameter. For raw 2016 reference data see Appendix Table D.16, for all others see Minnow (2015a) and Minnow (2016b). The 5th percentile is reported for pH.

[4] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

Table 9: Summary porewater quality data for Hazeltine Creek Sedimentation Pond sampling areas, Mount Polley Mine, 2016 [1].

Parameter	Units	Exposed			
		Lower Hazeltine Creek (ST02)		HAC-SED	
		2014		2016	
		Mean	t*SE [2]	Mean	t*SE [2]
Physical Tests					
Hardness (as $CaCO_3$)	mg/L	318	185	430	8.62
Organic / Inorganic Carbon					
Dissolved Organic Carbon	mg/L	-	-	14.2	1.15
Anions					
Alkalinity, Total (as $CaCO_3$)	mg/L	-	-	226	62.7
Bromide (Br)	mg/L	-	-	<0.25	-
Chloride (Cl)	mg/L	-	-	8.38	0.48
Fluoride (F)	mg/L	-	-	0.44	0.032
Nitrate (as N)	mg/L	-	-	<0.025	-
Nitrite (as N)	mg/L	-	-	0.040	0.031
Sulfate (SO_4)	mg/L	-	-	301	53.4
Dissolved Metals					
Aluminum	mg/L	0.0052	0.0062	0.089	0.10
Antimony	mg/L	0.00079	0.00057	0.00028	0.00010
Arsenic	mg/L	0.0030	0.0035	0.0077	0.0021
Barium	mg/L	0.065	0.031	0.078	0.027
Beryllium	mg/L	<0.00040	-	<0.00010	-
Bismuth	mg/L	<0.0020	-	<0.000050	-
Boron	mg/L	0.078	0.077	0.11	0.0051
Cadmium	mg/L	0.000034	0.000030	0.000041	0.000030
Calcium	mg/L	101	63.1	129	2.86
Cesium	mg/L	-	-	0.000030	0.000011
Chromium	mg/L	<0.00050	-	0.00030	0.00024
Cobalt	mg/L	0.0011	0.0021	0.00024	0.00010
Copper	mg/L	0.014	0.013	0.080	0.042
Iron	mg/L	<0.060	-	0.15	0.21
Lead	mg/L	<0.00020	-	0.00045	0.00031
Lithium	mg/L	0.0053	0.0073	0.0073	0.00094
Magnesium	mg/L	15.7	7.35	25.9	0.77
Manganese	mg/L	0.62	1.49	0.024	0.021
Molybdenum	mg/L	0.065	0.13	0.14	0.044
Nickel	mg/L	0.0030	0.0021	0.00093	0.00041
Phosphorus	mg/L	-	-	0.31	0.24
Potassium	mg/L	5.04	6.18	12.6	1.14
Rubidium	mg/L	-	-	0.0066	0.00078
Selenium	mg/L	0.0011	0.0011	0.0071	0.0037
Silicon	mg/L	5.05	3.36	6.90	1.03
Silver	mg/L	<0.000040	-	0.00015	0.00010
Sodium	mg/L	41.3	68.4	44.4	1.79
Strontium	mg/L	1.12	1.01	1.90	0.047
Sulfur	mg/L	-	-	105	18.1
Tellurium	mg/L	-	-	<0.00020	-
Thallium	mg/L	<0.000040	-	0.000015	0.0000055
Thorium	mg/L	-	-	0.00024	0.00021
Tin	mg/L	<0.00040	-	<0.00010	-
Titanium	mg/L	0.020	-	0.016	0.026
Tungsten	mg/L	-	-	0.00015	0.000060
Uranium	mg/L	0.0048	0.0018	0.0029	0.00052
Vanadium	mg/L	0.0021	0.0015	0.0019	0.00044
Zinc	mg/L	0.0037	0.00078	0.0012	0.00043
Zirconium	mg/L	-	-	0.00035	0.00014

[1] Summary statistics were calculated using method detection limit (MDL) values if data were below the MDL. Means were reported as < MDL if all data used in their calculation were < MDL. If MDLs were variable, the mean was reported as < the maximum MDL.

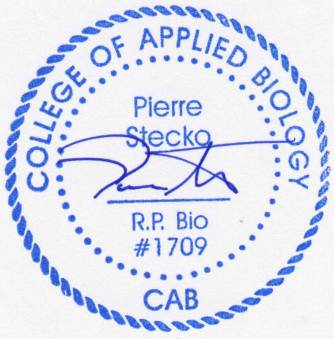
[2] t*SE = [T distribution critical value]*[Standard error]. The t*SE value, when added or subtracted from the mean, results in the upper and lower 95% confidence limits of the mean, respectively.

deposited tailings-influenced material, and had higher sand content than those collected in 2016 which represented depositing fines from the Hazeltine Creek drainage (Table 8).

Sediment collected from the Hazeltine Creek Sedimentation Pond was evaluated for content of oil and grease as well as PAHs as a requirement of the MPMC 2016 CEMP (MPMC 2016). In all cases, concentrations of both oil and grease and PAHs were well below the CSR "typical" criteria, as well as below the method detection limits established by the analytical laboratory (Appendix Table D.17).

Summary

Sediment quality monitoring undertaken in 2016 at lake areas affected by the Mount Polley Mine TSF breach, and at the Hazeltine Creek Sedimentation Pond verified the results of two previous sampling events (2014 and 2015). Overall, only minor differences in sediment quality were observed relative to 2014 and/or 2015 results. Copper remained the only analyte to exceed the CSR "typical" criterion in sediment of exposed sampling areas in Polley Lake, Quesnel Lake (with the exception of the shallow far-field area), and the Sedimentation Pond, and also exceeded reference or pre-event concentrations in the majority of areas. Sediment arsenic concentrations exceeded the CSR "sensitive" (but not "typical") criterion in all 2016 sampling areas except the shallow far-field area of Quesnel Lake, but were lower than reference in more than half of the areas, and did not exceed the CSR "typical" criterion in the Sedimentation Pond. Elevated arsenic concentrations at reference areas suggest naturally elevated background concentrations, which is consistent with regional elevations noted previously (e.g., MPMC 2015). At locations where sediment copper (and/or arsenic) were observed to be greater than reference, enrichment in porewater (exposed concentrations / reference concentrations) was generally lower than or similar to sediment enrichment, suggesting low mobility to be confirmed by the results of sediment porewater studies that were completed in August 2016 under redox controlled conditions.



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APPENDIX A-8

2016 Co-located Soil Samples – Laboratory Certificates of Analysis

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 07-SEP-16
Report Date: 23-SEP-16 14:39 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1824887

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: F0205
Legal Site Desc:

Comments:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1824887-1	L1824887-2	L1824887-3	L1824887-4	L1824887-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16
Sampled Time	11:02	10:40	10:23	10:23	10:15
Client ID	WILLOW-LHAC-4-16	WILLOW-LHAC-3-16	WILLOW-LHAC-2X-16	WILLOW-LHAC-2-16	WILLOW-LHAC-1-16
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.06	8.16	8.13	8.23	8.27
Organic / Inorganic Carbon Inorganic Carbon (%)	0.357	0.509	0.365	0.490	0.266
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.97	4.24	3.04	4.09	2.21
Total Carbon by Combustion (%)	0.51	0.63	0.60	0.67	0.62
Total Organic Carbon (%)	0.16	<0.13	0.23	0.18	0.35
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Available Phosphate-P (mg/kg)	<2.0	3.2	2.9	2.7	7.9
Available Potassium (mg/kg)	66	45	66	59	54
Metals Antimony (Sb) (mg/kg)	0.51	0.54	0.48	0.52	0.71
Arsenic (As) (mg/kg)	10.7	8.09	8.91	7.90	13.8
Barium (Ba) (mg/kg)	131	61.1	80.9	71.6	104
Beryllium (Be) (mg/kg)	0.50	0.29	0.36	0.32	0.41
Cadmium (Cd) (mg/kg)	0.227	0.260	0.218	0.189	0.259
Chromium (Cr) (mg/kg)	29.6	29.0	28.4	26.7	41.6
Cobalt (Co) (mg/kg)	14.3	11.2	12.1	10.7	15.1
Copper (Cu) (mg/kg)	224	55.0	181	120	76.4
Lead (Pb) (mg/kg)	7.11	5.70	6.33	6.17	8.59
Mercury (Hg) (mg/kg)	0.128	0.068	0.071	0.077	0.086
Molybdenum (Mo) (mg/kg)	1.63	0.78	1.49	1.00	1.21
Nickel (Ni) (mg/kg)	27.4	26.6	25.7	23.4	37.2
Selenium (Se) (mg/kg)	0.50	0.44	0.53	0.43	0.31
Silver (Ag) (mg/kg)	0.17	0.13	0.16	0.15	0.14
Thallium (Tl) (mg/kg)	0.100	0.108	0.103	0.101	0.154
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium (U) (mg/kg)	0.847	0.540	0.619	0.557	0.574
Vanadium (V) (mg/kg)	98.9	60.2	76.4	66.0	69.3
Zinc (Zn) (mg/kg)	58.4	46.4	48.8	43.8	64.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1824887-6	L1824887-7	L1824887-8	L1824887-9	L1824887-10
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	16-AUG-16	03-AUG-16	03-AUG-16	16-AUG-16	16-AUG-16
Sampled Time	11:11	14:05	13:45	13:45	14:30
Client ID	WILLOW-LHAC-5-16	SPRUCE-REF-1-16	SPRUCE-UHAC-1-16	SPRUCE-UHAC-1X-16	SPRUCE-UHAC-2-16
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.20	5.86	7.57	8.55	6.18
Organic / Inorganic Carbon Inorganic Carbon (%)	0.305	0.208	0.297	0.359	0.287
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.54	1.73	2.47	2.99	2.39
Total Carbon by Combustion (%)	0.37	11.0	17.1	0.51	9.43
Total Organic Carbon (%)	<0.073	10.8	16.8	0.15	9.14
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<2.0 DLR	<3.0 DLR	<1.0	32.6 DLR
Available Phosphate-P (mg/kg)	<2.0	5.4	8.5	<2.0	4.9
Available Potassium (mg/kg)	139	188	245	126	187
Metals Antimony (Sb) (mg/kg)	0.37	0.41	0.39	0.38	0.45
Arsenic (As) (mg/kg)	12.3	6.03	8.60	12.0	8.49
Barium (Ba) (mg/kg)	166	180	163	168	298
Beryllium (Be) (mg/kg)	0.59	0.76	0.53	0.63	1.22
Cadmium (Cd) (mg/kg)	0.134	1.08	0.188	0.149	1.09
Chromium (Cr) (mg/kg)	11.9	43.5	17.9	11.4	62.9
Cobalt (Co) (mg/kg)	16.5	12.7	13.8	16.9	15.7
Copper (Cu) (mg/kg)	770	53.7	492	902	111
Lead (Pb) (mg/kg)	5.34	8.12	4.93	5.03	11.8
Mercury (Hg) (mg/kg)	0.087	0.064	0.085	0.082	0.077
Molybdenum (Mo) (mg/kg)	3.52	0.72	3.26	4.15	1.24
Nickel (Ni) (mg/kg)	9.97	35.6	11.6	9.80	56.6
Selenium (Se) (mg/kg)	0.90	<0.20	0.89	1.08	0.30
Silver (Ag) (mg/kg)	0.35	0.37	0.26	0.41	0.56
Thallium (Tl) (mg/kg)	<0.050	0.120	<0.050	<0.050	0.160
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium (U) (mg/kg)	0.882	1.04	1.03	0.941	1.57
Vanadium (V) (mg/kg)	175	67.0	185	198	89.4
Zinc (Zn) (mg/kg)	54.1	110	49.8	55.5	137

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1824887-11 Soil/Sediment 16-AUG-16 15:20 SPRUCE-LHAC-1-16	L1824887-12 Soil/Sediment 16-AUG-16 13:45 BERRIES-LHAC-2-16	L1824887-13 Soil/Sediment 16-AUG-16 15:42 BERRIES-LHAC-3-16	L1824887-14 Soil/Sediment 16-AUG-16 12:28 BERRIES-LHAC-1-16	L1824887-15 Soil/Sediment 03-AUG-16 15:15 RYEGRASS-UHAC-1-16
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	8.23	7.11	6.86	7.51	8.19
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.381	0.292	0.380	0.263	0.418
	Inorganic Carbon (as CaCO3 Equivalent) (%)	3.18	2.43	3.16	2.19	3.48
	Total Carbon by Combustion (%)	0.49	0.31	0.38	3.86	1.75
	Total Organic Carbon (%)	0.110	<0.063	<0.076	3.60	1.33
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<2.0 DLR	<1.0
	Available Phosphate-P (mg/kg)	<2.0	<2.0	<2.0	6.7	<2.0
	Available Potassium (mg/kg)	128	75	123	117	213
Metals	Antimony (Sb) (mg/kg)	0.37	0.19	0.19	0.34	0.46
	Arsenic (As) (mg/kg)	11.7	3.97	3.72	9.32	10.8
	Barium (Ba) (mg/kg)	166	697	339	123	175
	Beryllium (Be) (mg/kg)	0.60	0.20	0.15	0.42	0.67
	Cadmium (Cd) (mg/kg)	0.140	3.44	1.39	0.138	0.128
	Chromium (Cr) (mg/kg)	10.9	13.2	13.8	19.6	13.8
	Cobalt (Co) (mg/kg)	16.3	7.16	5.57	13.0	17.5
	Copper (Cu) (mg/kg)	833	91.1	42.0	463	688
	Lead (Pb) (mg/kg)	4.76	11.1	8.93	4.74	4.89
	Mercury (Hg) (mg/kg)	0.080	0.123	0.255	0.080	0.072
	Molybdenum (Mo) (mg/kg)	5.04	1.38	1.21	2.85	4.47
	Nickel (Ni) (mg/kg)	9.03	12.5	10.4	11.9	10.1
	Selenium (Se) (mg/kg)	0.96	0.38	0.25	0.71	0.97
	Silver (Ag) (mg/kg)	0.35	0.75	0.22	0.24	0.33
	Thallium (Tl) (mg/kg)	<0.050	0.100	0.056	<0.050	<0.050
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Uranium (U) (mg/kg)	0.937	0.398	0.269	0.751	1.22
	Vanadium (V) (mg/kg)	189	36.2	33.1	187	163
	Zinc (Zn) (mg/kg)	52.6	552	187	44.9	57.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1824887-16
	Description	Soil/Sediment
	Sampled Date	03-AUG-16
	Sampled Time	15:35
	Client ID	RYEGRASS-UHAC-2-16
Grouping	**Analyte**	
SOIL		
Physical Tests	pH (1:2 soil:water) (pH)	8.22
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.552
	Inorganic Carbon (as CaCO3 Equivalent) (%)	4.60
	Total Carbon by Combustion (%)	0.61
	Total Organic Carbon (%)	<0.12
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR
	Available Phosphate-P (mg/kg)	<2.0
	Available Potassium (mg/kg)	387
Metals	Antimony (Sb) (mg/kg)	0.50
	Arsenic (As) (mg/kg)	14.1
	Barium (Ba) (mg/kg)	224
	Beryllium (Be) (mg/kg)	0.84
	Cadmium (Cd) (mg/kg)	0.169
	Chromium (Cr) (mg/kg)	10.5
	Cobalt (Co) (mg/kg)	22.6
	Copper (Cu) (mg/kg)	953
	Lead (Pb) (mg/kg)	6.52
	Mercury (Hg) (mg/kg)	0.083
	Molybdenum (Mo) (mg/kg)	5.55
	Nickel (Ni) (mg/kg)	9.67
	Selenium (Se) (mg/kg)	1.16
	Silver (Ag) (mg/kg)	0.41
	Thallium (Tl) (mg/kg)	<0.050
	Tin (Sn) (mg/kg)	<2.0
	Uranium (U) (mg/kg)	1.34
	Vanadium (V) (mg/kg)	162
	Zinc (Zn) (mg/kg)	77.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

F0205

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

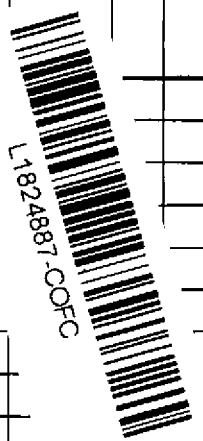
Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # F0205

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: GH,KM

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	Willow-LHAC-4-16	16-Aug-16	11:02	Tissue	X	1
	Willow-LHAC-3-16	16-Aug-16	10:40	Tissue	X	1
	Willow-LHAC-2X-16	16-Aug-16	10:23	Tissue	X	1
	Willow-LHAC-2-16	16-Aug-16	10:23	Tissue	X	1
	Willow-LHAC-1-16	16-Aug-16	10:15	Tissue	X	1
	Willow-LHAC-5-16	16-Aug-16	11:11	Tissue	X	1
	Spruce-REF-1-16	03-Aug-16	14:05	Tissue	X	1
	Spruce-UHAC-1-16	03-Aug-16	13:45	Tissue	X	1
	Spruce-UHAC-1X-16	03-Aug-16	13:45	Tissue	X	1
	Spruce-UHAC-2-16	16-Aug-16	14:30	Tissue	X	1
	Spruce-LHAC-1-16	16-Aug-16	15:20	Tissue	X	1
	Berries-LHAC-2-16	16-Aug-16	13:45	Tissue	X	1



Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Teresa Snodgrass	Sept. 6/16 15:30	SE	Sept 7/16	9:25am	5, 6, 6, 8, 8			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # F0205

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: GH,KM

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	Berries-LHAC-3-16	16-Aug-16	15:42	Tissue	X	1
	Berries-LHAC-1-16	16-Aug-16	12:28	Tissue	X	1
	Ryegrass-UHAC-1-16	03-Aug-16	15:15	Tissue	X	1
	Ryegrass-UHAC-2-16	03-Aug-16	15:35	Tissue	X	1

L1824887-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Teresa Snodgrass	Sept. 6/16 15:30	SC	Sept 7/16	9:25am	5,6,6,8,8C			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 31-OCT-16 10:44 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826516

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0148
Legal Site Desc:

Comments: ADDITIONAL 25-OCT-16 18:04

31-OCT-2016 Revision 2: As requested, additional analyses were performed on the samples ALS identify as l1826516-45 and L1826516-46.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-1	L1826516-2	L1826516-3	L1826516-4	L1826516-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	17-AUG-16	17-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-02	CSS16-03	CSS16-04	CSS16-05	CSS16-06
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	7.35	6.22	7.06	7.69	6.83
Organic / Inorganic Carbon Inorganic Carbon (%)	0.244	0.124	0.235	0.255	0.126
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.03	1.03	1.96	2.13	1.05
Total Carbon by Combustion (%)	2.28	4.31	13.5	1.97	2.87
Total Organic Carbon (%)	2.04	4.19	13.3	1.72	2.74
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	<2.0 DLR	2.5	10.9
Available Phosphate-P (mg/kg)	4.5	13.1	4.7	2.8	5.4
Available Potassium (mg/kg)	127	127	92	132	118
Metals Aluminum (Al) (mg/kg)	15400	19100	12200	11900	16700
Antimony (Sb) (mg/kg)	0.35	0.30	0.33	0.27	0.30
Arsenic (As) (mg/kg)	9.12	7.78	9.02	8.54	9.09
Barium (Ba) (mg/kg)	146	118	184	135	160
Beryllium (Be) (mg/kg)	0.54	0.45	0.48	0.51	0.60
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	6.9	<5.0	7.7	6.3	7.2
Cadmium (Cd) (mg/kg)	0.170	0.139	0.254	0.161	0.206
Calcium (Ca) (mg/kg)	18500	7090	20600	19200	14000
Chromium (Cr) (mg/kg)	18.0	35.9	13.1	12.8	21.9
Cobalt (Co) (mg/kg)	13.8	10.8	13.2	13.3	15.9
Copper (Cu) (mg/kg)	677	148	472	574	458
Iron (Fe) (mg/kg)	48400	31900	49000	53700	56500
Lead (Pb) (mg/kg)	5.15	7.88	4.99	4.56	5.49
Lithium (Li) (mg/kg)	12.3	17.8	12.0	12.8	15.5
Magnesium (Mg) (mg/kg)	7280	6530	6650	6670	8010
Manganese (Mn) (mg/kg)	525	574	573	433	624
Mercury (Hg) (mg/kg)	0.102	0.075	0.093	0.070	0.075
Molybdenum (Mo) (mg/kg)	3.56	1.22	3.30	3.57	2.97
Nickel (Ni) (mg/kg)	12.2	21.6	9.89	9.11	14.5
Phosphorus (P) (mg/kg)	1080	752	1440	1260	1390
Potassium (K) (mg/kg)	1300	1560	950	1090	1360
Selenium (Se) (mg/kg)	0.84	0.27	0.76	0.86	0.61
Silver (Ag) (mg/kg)	0.34	0.29	0.28	0.33	0.32
Sodium (Na) (mg/kg)	742	231	648	674	681
Strontium (Sr) (mg/kg)	131	56.7	139	132	127
Thallium (Tl) (mg/kg)	<0.050	0.105	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-6	L1826516-7	L1826516-8	L1826516-9	L1826516-10
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	03-SEP-16	03-SEP-16	03-SEP-16
Sampled Time					
Client ID	CSS16-14	CSS16-15	CSS16-23	CSS16-24	CSS16-25
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	7.32	7.59	8.10	7.77	8.05
Organic / Inorganic Carbon Inorganic Carbon (%)	0.230	0.268	0.237	0.241	0.315
Inorganic Carbon (as CaCO3 Equivalent) (%)	1.92	2.23	1.97	2.01	2.63
Total Carbon by Combustion (%)	8.65	3.19	0.39	1.02	0.53
Total Organic Carbon (%)	8.42	2.92	0.155	0.779	0.22
Plant Available Nutrients Available Nitrate-N (mg/kg)	<2.0 DLR	<1.0	<1.0	<1.0	<1.0
Available Phosphate-P (mg/kg)	5.8	5.1	3.2	10.9	2.2
Available Potassium (mg/kg)	136	90	59	113	43
Metals Aluminum (Al) (mg/kg)	13600	13500	10900	14200	8310
Antimony (Sb) (mg/kg)	0.39	0.36	0.31	0.33	0.24
Arsenic (As) (mg/kg)	7.41	9.03	8.39	8.86	4.76
Barium (Ba) (mg/kg)	147	160	90.7	155	58.6
Beryllium (Be) (mg/kg)	0.53	0.52	0.37	0.51	0.26
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	7.3	7.5	<5.0	5.9	<5.0
Cadmium (Cd) (mg/kg)	0.245	0.179	0.133	0.196	0.104
Calcium (Ca) (mg/kg)	18100	21200	14700	18200	15900
Chromium (Cr) (mg/kg)	17.5	14.8	14.6	19.9	18.6
Cobalt (Co) (mg/kg)	11.9	13.4	10.3	13.6	6.61
Copper (Cu) (mg/kg)	392	541	395	546	48.3
Iron (Fe) (mg/kg)	40700	50800	29700	37600	20200
Lead (Pb) (mg/kg)	5.10	4.52	4.10	5.95	4.02
Lithium (Li) (mg/kg)	13.1	12.3	11.7	14.7	7.3
Magnesium (Mg) (mg/kg)	6210	6930	6660	7990	4040
Manganese (Mn) (mg/kg)	509	518	465	600	350
Mercury (Hg) (mg/kg)	0.097	0.082	0.070	0.066	<0.050
Molybdenum (Mo) (mg/kg)	3.50	3.30	2.30	2.93	0.43
Nickel (Ni) (mg/kg)	12.8	10.1	10.4	12.3	12.2
Phosphorus (P) (mg/kg)	1150	1320	935	1060	828
Potassium (K) (mg/kg)	1240	1150	720	1050	490
Selenium (Se) (mg/kg)	0.85	0.74	0.53	0.69	<0.20
Silver (Ag) (mg/kg)	0.30	0.31	0.18	0.24	<0.10
Sodium (Na) (mg/kg)	569	760	629	543	669
Strontium (Sr) (mg/kg)	152	152	100	122	86.4
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-11	L1826516-12	L1826516-13	L1826516-14	L1826516-15
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
Sampled Time					
Client ID	CSS16-26	CSS16-27	CSS16-27D	CSS16-28	CSS16-29
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.43	7.84	7.86	8.34	8.34
Organic / Inorganic Carbon Inorganic Carbon (%)	0.423	0.227	0.213	0.087	0.234
Inorganic Carbon (as CaCO3 Equivalent) (%)	3.52	1.89	1.78	0.72	1.95
Total Carbon by Combustion (%)	0.56	3.69	2.05	0.22	0.48
Total Organic Carbon (%)	0.14	3.46	1.84	0.130	0.247
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<2.0 DLR	<1.0	<1.0	<1.0
Available Phosphate-P (mg/kg)	<2.0	10.8	11.0	2.8	6.2
Available Potassium (mg/kg)	42	146	135	46	64
Metals Aluminum (Al) (mg/kg)	7420	12200	12200	9180	12200
Antimony (Sb) (mg/kg)	0.22	0.29	0.32	0.37	0.35
Arsenic (As) (mg/kg)	4.67	8.61	8.79	4.96	6.63
Barium (Ba) (mg/kg)	49.0	127	129	72.9	113
Beryllium (Be) (mg/kg)	0.22	0.46	0.49	0.29	0.38
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	<5.0	7.0	7.3	<5.0	<5.0
Cadmium (Cd) (mg/kg)	0.095	0.161	0.168	0.085	0.181
Calcium (Ca) (mg/kg)	16000	18200	18300	6940	13300
Chromium (Cr) (mg/kg)	19.5	14.0	16.3	19.3	26.2
Cobalt (Co) (mg/kg)	7.47	13.3	13.2	7.79	10.8
Copper (Cu) (mg/kg)	52.5	649	620	74.0	114
Iron (Fe) (mg/kg)	19800	49600	48700	22900	29400
Lead (Pb) (mg/kg)	4.18	4.95	5.91	3.84	6.12
Lithium (Li) (mg/kg)	9.7	12.5	13.1	8.3	13.0
Magnesium (Mg) (mg/kg)	5290	6430	6380	4250	6420
Manganese (Mn) (mg/kg)	321	532	536	317	524
Mercury (Hg) (mg/kg)	<0.050	0.095	0.094	0.058	0.065
Molybdenum (Mo) (mg/kg)	0.48	3.32	3.11	0.49	0.74
Nickel (Ni) (mg/kg)	17.5	9.89	10.8	14.1	19.9
Phosphorus (P) (mg/kg)	596	1120	1090	627	839
Potassium (K) (mg/kg)	660	1100	1120	510	880
Selenium (Se) (mg/kg)	0.24	0.83	0.84	<0.20	0.26
Silver (Ag) (mg/kg)	<0.10	0.31	0.32	0.16	0.12
Sodium (Na) (mg/kg)	197	583	546	147	445
Strontium (Sr) (mg/kg)	89.3	121	135	53.5	95.3
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	0.054
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-16	L1826516-17	L1826516-18	L1826516-19	L1826516-20
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-30	CSS16-32	CSS16-33	CSS16-34	CSS16-35
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.48	8.67	8.59	8.31	8.43
Organic / Inorganic Carbon Inorganic Carbon (%)	0.320	0.304	0.224	0.232	0.225
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.67	2.53	1.87	1.93	1.87
Total Carbon by Combustion (%)	0.51	0.40	0.31	0.48	0.42
Total Organic Carbon (%)	0.19	0.094	0.083	0.252	0.192
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<1.0	1.0
Available Phosphate-P (mg/kg)	<2.0	2.4	2.2	6.0	3.6
Available Potassium (mg/kg)	77	56	68	52	56
Metals Aluminum (Al) (mg/kg)	16100	12500	13100	12100	12000
Antimony (Sb) (mg/kg)	0.40	0.35	0.38	0.32	0.31
Arsenic (As) (mg/kg)	7.46	6.87	8.22	8.57	7.73
Barium (Ba) (mg/kg)	107	101	135	80.5	114
Beryllium (Be) (mg/kg)	0.40	0.36	0.43	0.41	0.42
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	<5.0	<5.0	11.1	5.5	6.1
Cadmium (Cd) (mg/kg)	0.165	0.157	0.149	0.131	0.116
Calcium (Ca) (mg/kg)	14900	15800	13100	13400	16300
Chromium (Cr) (mg/kg)	37.5	24.5	21.9	22.2	14.7
Cobalt (Co) (mg/kg)	12.7	10.4	12.2	11.2	10.7
Copper (Cu) (mg/kg)	80.8	107	324	401	487
Iron (Fe) (mg/kg)	30800	27900	32400	34100	31200
Lead (Pb) (mg/kg)	7.76	6.13	5.23	5.49	3.89
Lithium (Li) (mg/kg)	16.4	12.9	13.4	11.9	11.2
Magnesium (Mg) (mg/kg)	7640	6420	7670	6560	6220
Manganese (Mn) (mg/kg)	587	507	567	516	449
Mercury (Hg) (mg/kg)	0.069	0.075	0.071	0.067	0.061
Molybdenum (Mo) (mg/kg)	0.75	0.72	1.35	2.48	2.53
Nickel (Ni) (mg/kg)	29.0	18.7	16.3	13.3	11.1
Phosphorus (P) (mg/kg)	709	790	897	878	865
Potassium (K) (mg/kg)	1340	890	890	830	930
Selenium (Se) (mg/kg)	0.28	0.24	0.40	0.52	0.57
Silver (Ag) (mg/kg)	0.11	0.12	0.13	0.19	0.24
Sodium (Na) (mg/kg)	285	639	387	489	683
Strontium (Sr) (mg/kg)	101	114	89.3	91.7	122
Thallium (Tl) (mg/kg)	0.082	0.052	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-21 Soil/Sediment 04-SEP-16 CSS16-36	L1826516-22 Soil/Sediment 04-SEP-16 CSS16-37	L1826516-23 Soil/Sediment 04-SEP-16 CSS16-38	L1826516-24 Soil/Sediment 04-SEP-16 CSS16-39	L1826516-25 Soil/Sediment 04-SEP-16 CSS16-39D
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.82	7.83	7.84	7.71	7.67
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.164	0.232	0.293	0.263	0.261
	Inorganic Carbon (as CaCO3 Equivalent) (%)	1.36	1.93	2.44	2.19	2.17
	Total Carbon by Combustion (%)	0.79	2.07	2.50	3.13	2.85
	Total Organic Carbon (%)	0.630	1.84	2.21	2.87	2.59
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<2.0 DLR	1.6	1.6
	Available Phosphate-P (mg/kg)	9.4	3.7	2.9	3.3	3.9
	Available Potassium (mg/kg)	98	98	98	88	86
Metals	Aluminum (Al) (mg/kg)	9970	15000	15300	14700	15000
	Antimony (Sb) (mg/kg)	0.24	0.35	0.39	0.39	0.37
	Arsenic (As) (mg/kg)	6.75	8.53	10.0	8.92	8.82
	Barium (Ba) (mg/kg)	82.0	163	170	163	160
	Beryllium (Be) (mg/kg)	0.36	0.54	0.58	0.53	0.54
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	7.0	7.9	7.9	7.7
	Cadmium (Cd) (mg/kg)	0.103	0.232	0.185	0.211	0.226
	Calcium (Ca) (mg/kg)	11800	19900	22600	20800	20900
	Chromium (Cr) (mg/kg)	14.1	17.2	16.2	16.6	17.2
	Cobalt (Co) (mg/kg)	9.84	13.3	14.7	13.6	13.6
	Copper (Cu) (mg/kg)	449	537	597	539	547
	Iron (Fe) (mg/kg)	32500	42800	54000	49200	47500
	Lead (Pb) (mg/kg)	3.68	4.72	4.86	4.66	4.74
	Lithium (Li) (mg/kg)	10.3	12.8	13.3	12.3	12.5
	Magnesium (Mg) (mg/kg)	5330	6650	7350	6600	6560
	Manganese (Mn) (mg/kg)	397	528	543	520	521
	Mercury (Hg) (mg/kg)	0.057	0.101	0.093	0.103	0.110
	Molybdenum (Mo) (mg/kg)	2.10	3.45	4.50	3.96	3.69
	Nickel (Ni) (mg/kg)	9.42	13.0	11.6	12.0	12.5
	Phosphorus (P) (mg/kg)	747	1170	1370	1220	1210
	Potassium (K) (mg/kg)	720	1240	1280	1230	1230
	Selenium (Se) (mg/kg)	0.53	0.83	0.83	0.82	0.77
	Silver (Ag) (mg/kg)	0.23	0.29	0.33	0.29	0.31
	Sodium (Na) (mg/kg)	438	709	786	714	696
	Strontium (Sr) (mg/kg)	78.3	153	163	158	157
	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID / Description / Sampled Date / Sampled Time / Client ID				
		L1826516-26 Soil/Sediment 04-SEP-16 CSS16-40	L1826516-27 Soil/Sediment 04-SEP-16 CSS16-41	L1826516-28 Soil/Sediment 05-SEP-16 CSS16-42	L1826516-29 Soil/Sediment 19-AUG-16 CSS16-BKG-01	L1826516-30 Soil/Sediment 19-AUG-16 CSS16-BKG-07
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.81	7.78	8.34	5.33	4.88
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.274	0.298	0.411	0.201	0.120
	Inorganic Carbon (as CaCO3 Equivalent) (%)	2.28	2.48	3.42	1.67	1.00
	Total Carbon by Combustion (%)	1.49	2.04	0.49	18.6	13.1
	Total Organic Carbon (%)	1.22	1.74	<0.098	18.4	13.0
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	1.9	<1.0	17.2 DLR	<3.0 DLR
	Available Phosphate-P (mg/kg)	3.7	4.0	<2.0	2.2	25.9
	Available Potassium (mg/kg)	93	95	164	224	173
Metals	Aluminum (Al) (mg/kg)	13100	14200	15900	31200	19700
	Antimony (Sb) (mg/kg)	0.33	0.34	0.35	0.29	0.23
	Arsenic (As) (mg/kg)	8.13	9.65	11.2	3.39	3.93
	Barium (Ba) (mg/kg)	138	154	158	191	182
	Beryllium (Be) (mg/kg)	0.49	0.53	0.63	0.93	0.64
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	6.8	7.6	8.8	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.150	0.155	0.156	0.542	0.438
	Calcium (Ca) (mg/kg)	19300	21900	25900	6010	5710
	Chromium (Cr) (mg/kg)	14.0	13.9	10.5	53.5	34.5
	Cobalt (Co) (mg/kg)	12.3	13.9	16.3	21.8	9.60
	Copper (Cu) (mg/kg)	511	573	821	54.6	39.9
	Iron (Fe) (mg/kg)	47800	51700	45700	27600	24500
	Lead (Pb) (mg/kg)	4.16	4.29	4.92	8.73	8.86
	Lithium (Li) (mg/kg)	11.6	12.3	16.1	18.7	13.1
	Magnesium (Mg) (mg/kg)	6000	6850	9670	6940	4760
	Manganese (Mn) (mg/kg)	442	517	583	1380	980
	Mercury (Hg) (mg/kg)	0.089	0.095	0.085	0.205	0.129
	Molybdenum (Mo) (mg/kg)	3.40	3.84	5.60	1.35	0.65
	Nickel (Ni) (mg/kg)	9.74	10.1	9.15	33.7	23.0
	Phosphorus (P) (mg/kg)	1050	1320	1190	1540	1130
	Potassium (K) (mg/kg)	1100	1210	1400	2000	1170
	Selenium (Se) (mg/kg)	0.80	0.80	0.93	0.46	<0.20
	Silver (Ag) (mg/kg)	0.28	0.33	0.37	0.64	0.73
	Sodium (Na) (mg/kg)	698	788	1080	125	109
	Strontium (Sr) (mg/kg)	146	158	169	60.0	54.2
	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	0.154	0.105
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-31 Soil/Sediment 03-SEP-16 CSS16-BKG-08	L1826516-32 Soil/Sediment 03-SEP-16 CSS16-BKG-09	L1826516-33 Soil/Sediment 03-SEP-16 CSS16-BKG-10	L1826516-34 Soil/Sediment 03-SEP-16 CSS16-BKG-11	L1826516-35 Soil/Sediment 03-SEP-16 CSS16-BKG-12
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	8.38	6.21	6.65	5.60	5.46
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.345	0.082	0.077	0.073	0.064
	Inorganic Carbon (as CaCO3 Equivalent) (%)	2.87	0.68	0.64	0.61	0.54
	Total Carbon by Combustion (%)	0.67	1.62	0.42	2.57	0.97
	Total Organic Carbon (%)	0.32	1.54	0.348	2.50	0.905
Plant Available Nutrients	Available Nitrate-N (mg/kg)	1.3	<1.0	<1.0	<1.0	<1.0
	Available Phosphate-P (mg/kg)	3.4	136 DLHC	8.1	73 DLHC	9.9
	Available Potassium (mg/kg)	67	131	66	96	44
Metals	Aluminum (Al) (mg/kg)	18500	14600	15600	14200	15700
	Antimony (Sb) (mg/kg)	0.44	0.28	0.35	0.27	0.23
	Arsenic (As) (mg/kg)	8.24	4.73	5.50	4.59	4.46
	Barium (Ba) (mg/kg)	104	79.3	86.6	86.8	78.7
	Beryllium (Be) (mg/kg)	0.44	0.35	0.40	0.35	0.35
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.204	0.246	0.226	0.215	0.096
	Calcium (Ca) (mg/kg)	14300	4030	4260	4370	3200
	Chromium (Cr) (mg/kg)	41.9	33.6	38.8	34.8	32.5
	Cobalt (Co) (mg/kg)	16.2	11.3	13.6	9.38	11.4
	Copper (Cu) (mg/kg)	61.6	24.9	32.3	37.6	19.7
	Iron (Fe) (mg/kg)	35900	25300	27300	25800	25300
	Lead (Pb) (mg/kg)	12.2	6.94	7.92	6.46	7.30
	Lithium (Li) (mg/kg)	26.2	18.8	17.6	15.6	22.0
	Magnesium (Mg) (mg/kg)	9040	5870	6720	4860	5900
	Manganese (Mn) (mg/kg)	619	456	556	484	390
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	0.58	0.48	0.49	0.50	0.53
	Nickel (Ni) (mg/kg)	42.4	25.1	30.1	18.7	24.4
	Phosphorus (P) (mg/kg)	704	1070	546	934	468
	Potassium (K) (mg/kg)	1580	1240	1440	980	1100
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.13	0.18	<0.10	0.13	<0.10
	Sodium (Na) (mg/kg)	192	110	152	118	130
	Strontium (Sr) (mg/kg)	72.7	33.0	38.0	40.5	32.6
	Thallium (Tl) (mg/kg)	0.120	0.083	0.093	0.061	0.088
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-36	L1826516-37	L1826516-38	L1826516-39	L1826516-40
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-BKG-13	CSS16-BKG-13D	CSS16-BKG-14	CSS16-BKG-15	CSS16-BKG-16
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	5.48	5.53	5.23	5.70	5.12
Organic / Inorganic Carbon Inorganic Carbon (%)	0.157	0.155	0.187	0.242	0.098
Inorganic Carbon (as CaCO3 Equivalent) (%)	1.30	1.29	1.56	2.02	0.81
Total Carbon by Combustion (%)	17.6	18.0	22.4	19.2	7.41
Total Organic Carbon (%)	17.4	17.8	22.2	19.0	7.31
Plant Available Nutrients Available Nitrate-N (mg/kg)	<4.0 DLR	<4.0 DLR	6.0 DLR	6.0 DLR	<2.0 DLR
Available Phosphate-P (mg/kg)	55.5 DLM	48.9	5.5 DLM	4.8 DLM	4.8
Available Potassium (mg/kg)	267 DLM	252	275 DLM	152 DLM	89
Metals Aluminum (Al) (mg/kg)	14500	14200	39200	43200	11400
Antimony (Sb) (mg/kg)	0.51	0.26	0.32	0.45	0.21
Arsenic (As) (mg/kg)	4.22	3.61	4.89	6.11	2.42
Barium (Ba) (mg/kg)	176	162	255	282	73.9
Beryllium (Be) (mg/kg)	0.40	0.42	1.15	1.22	0.26
Bismuth (Bi) (mg/kg)	<0.20	<0.20	0.22	0.29	<0.20
Boron (B) (mg/kg)	5.8	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd) (mg/kg)	0.519	0.448	0.281	0.961	0.322
Calcium (Ca) (mg/kg)	8650	8200	3920	11500	3320
Chromium (Cr) (mg/kg)	28.9	29.7	43.3	57.8	26.7
Cobalt (Co) (mg/kg)	12.4	11.9	7.53	15.6	5.63
Copper (Cu) (mg/kg)	40.4	36.8	69.2	96.2	17.8
Iron (Fe) (mg/kg)	21500	22800	19400	35200	17600
Lead (Pb) (mg/kg)	7.84	7.78	12.2	12.8	5.73
Lithium (Li) (mg/kg)	15.3	14.8	18.0	29.1	10.7
Magnesium (Mg) (mg/kg)	5820	5540	3590	8310	3270
Manganese (Mn) (mg/kg)	1290	1100	86.1	493	126
Mercury (Hg) (mg/kg)	0.114	0.120	0.248	0.206	0.052
Molybdenum (Mo) (mg/kg)	1.60	1.38	0.69	1.01	0.56
Nickel (Ni) (mg/kg)	24.3	22.1	52.8	72.8	15.5
Phosphorus (P) (mg/kg)	934	873	1540	1390	337
Potassium (K) (mg/kg)	1380	1370	2620	2620	780
Selenium (Se) (mg/kg)	0.35	<0.20	0.41	0.72	<0.20
Silver (Ag) (mg/kg)	0.27	0.23	0.74	0.95	0.19
Sodium (Na) (mg/kg)	89	131	102	121	97
Strontium (Sr) (mg/kg)	58.5	60.2	43.8	111	38.0
Thallium (Tl) (mg/kg)	0.098	0.109	0.214	0.221	0.061
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-41	L1826516-42	L1826516-43	L1826516-45	L1826516-46
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	04-SEP-16	05-SEP-16	05-SEP-16	19-AUG-16	03-SEP-16
Sampled Time					
Client ID	CSS16-BKG-17	CSS16-BKG-23D	CSS16-BKG-24	CSS16-16	CSS16-31
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	5.74	6.78	5.22	7.59	8.69
Organic / Inorganic Carbon Inorganic Carbon (%)	0.224	0.078	0.091	0.238	0.468
Inorganic Carbon (as CaCO3 Equivalent) (%)	1.87	0.65	0.76	1.98	3.90
Total Carbon by Combustion (%)	16.8	1.29	7.35	4.10	0.69
Total Organic Carbon (%)	16.6	1.21	7.26	3.86	0.23
Plant Available Nutrients Available Nitrate-N (mg/kg)	<4.0 DLR	<1.0	<1.0	1.4	1.4
Available Phosphate-P (mg/kg)	10.0	16.3	42.4	4.7	3.2
Available Potassium (mg/kg)	343	108	104	114	98
Metals Aluminum (Al) (mg/kg)	44300	10700	7540	14100	18400
Antimony (Sb) (mg/kg)	0.42	0.36	0.16	0.41	0.48
Arsenic (As) (mg/kg)	5.71	7.14	2.73	9.53	8.76
Barium (Ba) (mg/kg)	280	67.8	139	179	126
Beryllium (Be) (mg/kg)	1.13	0.31	0.20	0.52	0.46
Bismuth (Bi) (mg/kg)	0.25	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	<5.0	<5.0	<5.0	8.1	5.2
Cadmium (Cd) (mg/kg)	0.619	0.159	0.325	0.203	0.182
Calcium (Ca) (mg/kg)	9880	4990	3360	20900	22400
Chromium (Cr) (mg/kg)	64.0	38.0	20.1	15.2	37.9
Cobalt (Co) (mg/kg)	17.5	9.06	7.29	13.6	14.1
Copper (Cu) (mg/kg)	81.2	38.7	12.1	522	67.0
Iron (Fe) (mg/kg)	39100	24700	16600	48800	32200
Lead (Pb) (mg/kg)	10.9	5.54	5.94	5.09	7.59
Lithium (Li) (mg/kg)	28.6	10.9	9.2	12.4	18.5
Magnesium (Mg) (mg/kg)	8630	5570	2410	7100	8970
Manganese (Mn) (mg/kg)	969	429	1250	576	649
Mercury (Hg) (mg/kg)	0.204	0.061	0.058	0.091	0.059
Molybdenum (Mo) (mg/kg)	1.37	0.58	0.58	3.33	0.69
Nickel (Ni) (mg/kg)	58.7	22.1	11.8	11.6	32.3
Phosphorus (P) (mg/kg)	1570	686	589	1270	828
Potassium (K) (mg/kg)	2970	920	700	1380	1910
Selenium (Se) (mg/kg)	0.50	<0.20	<0.20	0.78	0.31
Silver (Ag) (mg/kg)	0.94	<0.10	0.16	0.30	0.10
Sodium (Na) (mg/kg)	113	162	54	663	544
Strontium (Sr) (mg/kg)	89.8	43.2	29.3	161	147
Thallium (Tl) (mg/kg)	0.215	0.077	0.056	<0.050	0.126
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826516-47				
	Description					
	Sampled Date	05-SEP-16				
	Sampled Time					
	Client ID	CSS16-BKG-25				
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	5.75				
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.077				
	Inorganic Carbon (as CaCO3 Equivalent) (%)	0.64				
	Total Carbon by Combustion (%)	8.35				
	Total Organic Carbon (%)	8.27				
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<3.0 DLR				
	Available Phosphate-P (mg/kg)	15.6				
	Available Potassium (mg/kg)	127				
Metals	Aluminum (Al) (mg/kg)	15000				
	Antimony (Sb) (mg/kg)	0.24				
	Arsenic (As) (mg/kg)	4.76				
	Barium (Ba) (mg/kg)	137				
	Beryllium (Be) (mg/kg)	0.51				
	Bismuth (Bi) (mg/kg)	<0.20				
	Boron (B) (mg/kg)	<5.0				
	Cadmium (Cd) (mg/kg)	0.289				
	Calcium (Ca) (mg/kg)	5310				
	Chromium (Cr) (mg/kg)	33.1				
	Cobalt (Co) (mg/kg)	8.84				
	Copper (Cu) (mg/kg)	32.2				
	Iron (Fe) (mg/kg)	23400				
	Lead (Pb) (mg/kg)	6.42				
	Lithium (Li) (mg/kg)	14.6				
	Magnesium (Mg) (mg/kg)	4590				
	Manganese (Mn) (mg/kg)	462				
	Mercury (Hg) (mg/kg)	0.094				
	Molybdenum (Mo) (mg/kg)	0.62				
	Nickel (Ni) (mg/kg)	22.7				
	Phosphorus (P) (mg/kg)	709				
	Potassium (K) (mg/kg)	960				
	Selenium (Se) (mg/kg)	<0.20				
	Silver (Ag) (mg/kg)	0.40				
	Sodium (Na) (mg/kg)	91				
	Strontium (Sr) (mg/kg)	60.1				
	Thallium (Tl) (mg/kg)	0.084				
	Tin (Sn) (mg/kg)	<2.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-1 Soil/Sediment 17-AUG-16 CSS16-02	L1826516-2 Soil/Sediment 17-AUG-16 CSS16-03	L1826516-3 Soil/Sediment 19-AUG-16 CSS16-04	L1826516-4 Soil/Sediment 19-AUG-16 CSS16-05	L1826516-5 Soil/Sediment 19-AUG-16 CSS16-06
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	1160	888	1070	799	1010
	Uranium (U) (mg/kg)	0.869	0.762	0.875	0.738	0.892
	Vanadium (V) (mg/kg)	177	95.2	185	205	209
	Zinc (Zn) (mg/kg)	51.0	58.1	59.4	45.0	60.3
	Zirconium (Zr) (mg/kg)	1.8	<1.0	3.6	1.9	1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-6 Soil/Sediment 19-AUG-16 CSS16-14	L1826516-7 Soil/Sediment 19-AUG-16 CSS16-15	L1826516-8 Soil/Sediment 03-SEP-16 CSS16-23	L1826516-9 Soil/Sediment 03-SEP-16 CSS16-24	L1826516-10 Soil/Sediment 03-SEP-16 CSS16-25
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	927	1170	605	950	665
	Uranium (U) (mg/kg)	1.23	0.943	0.508	0.741	0.503
	Vanadium (V) (mg/kg)	147	193	98.2	134	62.0
	Zinc (Zn) (mg/kg)	43.8	48.2	40.8	53.9	31.6
	Zirconium (Zr) (mg/kg)	1.9	2.8	3.2	2.7	5.2

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-11	L1826516-12	L1826516-13	L1826516-14	L1826516-15
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
Sampled Time					
Client ID	CSS16-26	CSS16-27	CSS16-27D	CSS16-28	CSS16-29
Grouping / **Analyte**					
SOIL					
Metals					
Titanium (Ti) (mg/kg)	560	936	934	658	656
Uranium (U) (mg/kg)	0.496	0.812	0.846	0.399	0.527
Vanadium (V) (mg/kg)	49.9	184	180	75.6	83.1
Zinc (Zn) (mg/kg)	32.8	46.1	45.6	33.1	46.4
Zirconium (Zr) (mg/kg)	4.2	2.5	2.2	3.8	2.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-16	L1826516-17	L1826516-18	L1826516-19	L1826516-20
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-30	CSS16-32	CSS16-33	CSS16-34	CSS16-35
Grouping / **Analyte**					
SOIL					
Metals					
Titanium (Ti) (mg/kg)	692	786	719	1020	933
Uranium (U) (mg/kg)	0.668	0.437	0.470	0.615	0.763
Vanadium (V) (mg/kg)	71.0	78.6	106	126	117
Zinc (Zn) (mg/kg)	57.9	48.7	46.5	45.0	40.0
Zirconium (Zr) (mg/kg)	5.8	5.3	4.4	4.4	4.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-21	L1826516-22	L1826516-23	L1826516-24	L1826516-25
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-36	CSS16-37	CSS16-38	CSS16-39	CSS16-39D
Grouping / **Analyte**					
SOIL					
Metals Titanium (Ti) (mg/kg)	796	1030	1250	1170	1110
Uranium (U) (mg/kg)	0.514	1.08	1.04	1.23	1.20
Vanadium (V) (mg/kg)	119	161	210	187	182
Zinc (Zn) (mg/kg)	36.7	45.7	48.7	46.1	45.5
Zirconium (Zr) (mg/kg)	2.5	1.6	2.4	2.0	1.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-26	L1826516-27	L1826516-28	L1826516-29	L1826516-30
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	04-SEP-16	04-SEP-16	05-SEP-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-40	CSS16-41	CSS16-42	CSS16-BKG-01	CSS16-BKG-07
Grouping / **Analyte**					
SOIL					
Metals					
Titanium (Ti) (mg/kg)	1060	1190	1310	247	504
Uranium (U) (mg/kg)	0.932	0.963	0.998	1.21	0.670
Vanadium (V) (mg/kg)	179	205	178	57.2	56.2
Zinc (Zn) (mg/kg)	39.4	48.9	56.2	97.1	83.1
Zirconium (Zr) (mg/kg)	1.8	2.3	6.9	<1.0	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-31 Soil/Sediment 03-SEP-16 CSS16-BKG-08	L1826516-32 Soil/Sediment 03-SEP-16 CSS16-BKG-09	L1826516-33 Soil/Sediment 03-SEP-16 CSS16-BKG-10	L1826516-34 Soil/Sediment 03-SEP-16 CSS16-BKG-11	L1826516-35 Soil/Sediment 03-SEP-16 CSS16-BKG-12
SOIL						
Metals	Titanium (Ti) (mg/kg)	674	713	899	842	759
	Uranium (U) (mg/kg)	0.804	0.564	0.594	0.453	0.521
	Vanadium (V) (mg/kg)	62.9	57.9	65.1	74.9	57.0
	Zinc (Zn) (mg/kg)	71.4	59.6	58.5	58.7	51.1
	Zirconium (Zr) (mg/kg)	5.3	<1.0	1.8	1.3	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-36 Soil/Sediment 03-SEP-16 CSS16-BKG-13	L1826516-37 Soil/Sediment 03-SEP-16 CSS16-BKG-13D	L1826516-38 Soil/Sediment 04-SEP-16 CSS16-BKG-14	L1826516-39 Soil/Sediment 04-SEP-16 CSS16-BKG-15	L1826516-40 Soil/Sediment 04-SEP-16 CSS16-BKG-16
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	721	806	218	333	397
	Uranium (U) (mg/kg)	0.379	0.418	2.41	3.30	0.497
	Vanadium (V) (mg/kg)	55.1	56.6	32.6	66.3	42.6
	Zinc (Zn) (mg/kg)	143	126	40.9	89.7	32.7
	Zirconium (Zr) (mg/kg)	1.3	1.6	1.7	2.5	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-41 Soil/Sediment 04-SEP-16 CSS16-BKG-17	L1826516-42 Soil/Sediment 05-SEP-16 CSS16-BKG-23D	L1826516-43 Soil/Sediment 05-SEP-16 CSS16-BKG-24	L1826516-45 Soil/Sediment 19-AUG-16 CSS16-16	L1826516-46 Soil/Sediment 03-SEP-16 CSS16-31
SOIL						
Metals	Titanium (Ti) (mg/kg)	401	721	295	1330	951
	Uranium (U) (mg/kg)	2.03	0.464	0.294	1.09	0.772
	Vanadium (V) (mg/kg)	67.3	67.4	38.0	181	82.2
	Zinc (Zn) (mg/kg)	105	44.2	53.3	51.6	61.0
	Zirconium (Zr) (mg/kg)	<1.0	2.0	<1.0	3.3	8.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826516-47				
	Description					
	Sampled Date	05-SEP-16				
	Sampled Time					
	Client ID	CSS16-BKG-25				
Grouping	**Analyte**					
SOIL						
Metals	Titanium (Ti) (mg/kg)	363				
	Uranium (U) (mg/kg)	0.635				
	Vanadium (V) (mg/kg)	56.2				
	Zinc (Zn) (mg/kg)	59.5				
	Zirconium (Zr) (mg/kg)	<1.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Titanium (Ti)	DUP-H	L1826516-18

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

G0148

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

RUSH

Priority processing

please log all highlighted soils for:

- CSR + Full Metals
- TOC/TIC
- Avail N, P, K

"Group A" soils are due Sept 15 with 'P' codes

"Group B" soils are due Sept 21, no priority code

SK sublets should go out Monday.

Group A Tissue

SCN	Tissue ID
G0149-8	BERRY16-11
G0149-9	ANT16-02
G0149-10	BERRY16-12
G0149-11	BERRY16-13
G0149-12	SPRUCE16-02
G0150-1	BERRY16-14
G0150-2	BERRY16-15
G0150-3	ANT16-03
G0150-4	ANT16-03d
G0150-5	SPRUCE16-03
G0150-6	BERRY16-BKG-04
G0150-7	BERRY16-BKG-05
G0150-8	BERRY16-BKG-06
G0150-9	BERRY16-BKG-07
G0150-10	BERRY16-BKG-08
G0150-11	BERRY16-BKG-09
G0150-12	BERRY16-16
G0152-1	BERRY16-17
G0152-6	WILLOW16-06
G0152-7	WILLOW16-07
G0152-8	GRASS16-03
G0152-9	GRASS16-04
G0152-10	WILLOW16-08
G0152-11	GRASS16-05
G0152-12	GRASS16-06
G0156-1	GRASS16-07
G0156-2	GRASS16-08
G0156-3	WILLOW16-09
G0156-4	GRASS16-10
G0156-5	WILLOW16-10
G0156-6	GRASS16-09
G0156-7	SPRUCE16-06
G0156-8	SPRUCE16-07
G0168-3	SPRUCE16-15
G0168-4	ANT16-04
G0168-5	AR16-04
G0168-6	WILLOW16-BKG-07
G0168-7	SPRUCE16-BKG-06
G0168-8	AR16-BKG-01
G0168-9	WILLOW16-BKG-08
G0168-10	SPRUCE16-BKG-07
G0168-11	ANT16-BKG-01
G0168-12	AR16-BKG-02
G0169-1	WORM16-BKG-02
G0169-2	WILLOW16-BKG-09
G0169-3	WILLOW16-BKG-09d
G0169-4	SPRUCE16-BKG-08
G0169-5	SPRUCE16-BKG-08d
G0169-9	WILOW16-21
G0169-10	WILLOW16-22
G0169-11	WILOW16-23
G0169-12	WILLOW16-24
G0170-1	SPRUCE16-16
G0170-2	ANT16-05
G0170-3	AR16-05
G0170-4	BEETLE16-02
G0170-5	WILLOW16-BKG-10
G0170-6	SPRUCE16-BKG-09
G0170-7	ANT16-BKG-02
G0170-8	ANT16-BKG-02d
G0170-9	SPRUCE16-BKG-10
G0170-10	ANT16-BKG-03
G0170-11	ANT16-BKG-03d
G0170-12	WILLOW16-25
G171-1	SPRUCE16-17
G171-2	WORM16-05
G171-3	SPRUCE16-18
G171-4	GRASS16-BKG-09
G171-5	GRASS16-BKG-09d
G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B So

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

B 13
V 36
INV 14

= 63

47 + 23 = 70

L1826516-COFC

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

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Canada Toll Free: 1 800 668 9878
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COC # G0148

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	aatkinson@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only):	[redacted]	ALS Contact:	Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hold	Number of Containers
[redacted]	CSS16-01	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-04	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-01	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-07	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-08	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-09	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-10	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-11	19-Aug-16		Soil/Sediment	x	2

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

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Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-04	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-12	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-13	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-14	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-15	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-16	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-07	19-Aug-16		Soil/Sediment	x	2
[redacted]						

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(4) JC	SEP - 9 2016	9am	3,4,10°c			

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Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	CSS16-17	02-Sep-16		Soil/Sediment	x	2
	CSS16-18	02-Sep-16		Soil/Sediment	x	2
	CSS16-19	02-Sep-16		Soil/Sediment	x	2
	CSS16-20	02-Sep-16		Soil/Sediment	x	2
	CSS16-21	02-Sep-16		Soil/Sediment	x	2
	CSS16-22	02-Sep-16		Soil/Sediment	x	2
	CSS16-23	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-08	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-09	03-Sep-16		Soil/Sediment	x	2
	CSS16-24	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-10	03-Sep-16		Soil/Sediment	x	2
	CSS16-25	03-Sep-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

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Phone:	250-790-2215 Fax:		
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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-11	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-26	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-27	03-Sep-16	FDA - G0162-04	Soil/Sediment	x	2
[redacted]	CSS16-27d	03-Sep-16	FD - G0162-03	Soil/Sediment	x	2
[redacted]	CSS16-BKG-12	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-13	03-Sep-16	FDA - G0162-07	Soil/Sediment	x	2
[redacted]	CSS16-BKG-13d	03-Sep-16	FD - G0162-06	Soil/Sediment	x	2
[redacted]	CSS16-28	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-29	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-30	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-31	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-32	04-Sep-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

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COC # G0148

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		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only):	[redacted]	ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-33	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-34	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-35	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-14	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-15	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-16	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-17	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-36	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-37	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-38	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-39	04-Sep-16	FDA - G0163-12	Soil/Sediment	x	2
[redacted]	CSS16-39d	04-Sep-16	FD - G0163- 11	Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3,4,10'c			

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Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
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Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-40	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-41	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-42	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-18	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-19	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20d	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-44	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-21	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-22	05-Sep-16	FDA- G0165-01	Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3, 4, 10°c			

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		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
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Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-22d	05-Sep-16	FD - G0164-12	Soil/Sediment	x	2
[redacted]	CSS16-45	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-46	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-23	05-Sep-16	FDA-G0165-05	Soil/Sediment	x	2
[redacted]	CSS16-BKG-23d	05-Sep-16	FD-G0165-04	Soil/Sediment	x	2
[redacted]	CSS16-BKG-24	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-25	05-Sep-16		Soil/Sediment	x	2
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-SEP-16 17:02 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826551

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0148
Legal Site Desc:

Comments: Note - The samples 'CSS16-11D' and 'CSS16-BKG-23D' were not received.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-1	L1826551-2	L1826551-3	L1826551-4	L1826551-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-07	CSS16-08	CSS16-09	CSS16-10	CSS16-11
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.39	7.53	7.33	8.42	7.96
Organic / Inorganic Carbon Total Organic Carbon (%)	0.152	6.33	7.88	0.25	1.13
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<2.0 DLR	<2.0 DLR	<1.0	<1.0
Available Phosphate-P (mg/kg)	2.9	3.2	3.6	2.0	4.5
Available Potassium (mg/kg)	155	168	144	141	123
Metals Aluminum (Al) (mg/kg)	16000	15600	14600	14600	13600
Antimony (Sb) (mg/kg)	0.35	0.37	0.39	0.34	0.29
Arsenic (As) (mg/kg)	11.2	10.6	9.44	10.5	9.46
Barium (Ba) (mg/kg)	153	151	139	148	139
Beryllium (Be) (mg/kg)	0.59	0.57	0.51	0.57	0.47
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	7.3	8.3	8.0	6.7	5.2
Cadmium (Cd) (mg/kg)	0.134	0.220	0.306	0.146	0.172
Calcium (Ca) (mg/kg)	23100	24700	20400	22700	17800
Chromium (Cr) (mg/kg)	11.3	11.9	17.2	10.4	13.2
Cobalt (Co) (mg/kg)	15.8	15.3	13.4	15.4	13.9
Copper (Cu) (mg/kg)	819	624	453	819	706
Iron (Fe) (mg/kg)	47400	38100	34900	46500	40600
Lead (Pb) (mg/kg)	4.43	4.60	5.89	4.59	4.38
Lithium (Li) (mg/kg)	14.3	14.3	15.0	13.9	12.4
Magnesium (Mg) (mg/kg)	9460	9460	8010	9010	8120
Manganese (Mn) (mg/kg)	577	611	544	551	555
Mercury (Hg) (mg/kg)	0.069	0.070	0.082	0.079	0.068
Molybdenum (Mo) (mg/kg)	3.28	3.12	2.82	3.57	2.89
Nickel (Ni) (mg/kg)	9.65	10.7	14.4	8.78	10.5
Phosphorus (P) (mg/kg)	1260	1210	1070	1240	1090
Potassium (K) (mg/kg)	1390	1350	1250	1250	1090
Selenium (Se) (mg/kg)	0.97	0.95	0.96	0.94	0.80
Silver (Ag) (mg/kg)	0.34	0.27	0.26	0.34	0.28
Sodium (Na) (mg/kg)	900	776	571	810	732
Strontium (Sr) (mg/kg)	160	157	134	149	126
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti) (mg/kg)	1390	1340	1040	1110	919
Uranium (U) (mg/kg)	0.875	1.26	1.26	0.785	0.709
Vanadium (V) (mg/kg)	181	145	118	175	147

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-7 Soil/Sediment 19-AUG-16 CSS16-12	L1826551-8 Soil/Sediment 19-AUG-16 CSS16-13	L1826551-9 Soil/Sediment 02-SEP-16 CSS16-17	L1826551-10 Soil/Sediment 02-SEP-16 CSS16-18	L1826551-11 Soil/Sediment 02-SEP-16 CSS16-19
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.46	7.15	7.16	8.04	8.18
Organic / Inorganic Carbon	Total Organic Carbon (%)	7.47	6.87	0.636	0.48	0.28
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR	<2.0 DLR	<1.0	<2.0 DLR	<1.0
	Available Phosphate-P (mg/kg)	2.6	6.1	<2.0	<2.0	<2.0
	Available Potassium (mg/kg)	94	137	35	116	63
Metals	Aluminum (Al) (mg/kg)	12600	13800	13200	15500	11900
	Antimony (Sb) (mg/kg)	0.34	0.38	0.31	0.40	0.36
	Arsenic (As) (mg/kg)	7.71	8.71	10.5	12.1	10.4
	Barium (Ba) (mg/kg)	124	150	92.8	160	107
	Beryllium (Be) (mg/kg)	0.44	0.48	0.46	0.55	0.38
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	7.4	8.2	<5.0	7.9	<5.0
	Cadmium (Cd) (mg/kg)	0.209	0.240	0.110	0.178	0.160
	Calcium (Ca) (mg/kg)	19600	19200	6050	25500	17100
	Chromium (Cr) (mg/kg)	17.5	17.1	36.6	13.4	23.8
	Cobalt (Co) (mg/kg)	10.9	12.1	9.74	15.8	11.8
	Copper (Cu) (mg/kg)	379	340	60.1	765	313
	Iron (Fe) (mg/kg)	33400	33000	26600	48600	38600
	Lead (Pb) (mg/kg)	5.36	5.76	6.33	4.70	5.23
	Lithium (Li) (mg/kg)	14.7	15.0	14.3	14.4	11.2
	Magnesium (Mg) (mg/kg)	6440	7130	5550	9460	6660
	Manganese (Mn) (mg/kg)	480	651	365	654	533
	Mercury (Hg) (mg/kg)	0.075	0.082	0.089	0.078	0.061
	Molybdenum (Mo) (mg/kg)	2.63	3.00	1.11	3.87	1.88
	Nickel (Ni) (mg/kg)	14.0	13.9	22.7	10.4	17.7
	Phosphorus (P) (mg/kg)	924	1060	674	1260	992
	Potassium (K) (mg/kg)	1100	1280	800	1330	970
	Selenium (Se) (mg/kg)	0.77	0.66	<0.20	0.98	0.54
	Silver (Ag) (mg/kg)	0.23	0.25	0.13	0.30	0.20
	Sodium (Na) (mg/kg)	520	548	156	877	520
	Strontium (Sr) (mg/kg)	128	133	61.5	137	105
	Thallium (Tl) (mg/kg)	0.051	<0.050	0.072	<0.050	0.056
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	829	985	690	1470	994
	Uranium (U) (mg/kg)	1.17	0.976	1.58	1.01	0.782
	Vanadium (V) (mg/kg)	114	113	71.0	183	130

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-12 Soil/Sediment 02-SEP-16 CSS16-20	L1826551-13 Soil/Sediment 02-SEP-16 CSS16-21	L1826551-14 Soil/Sediment 02-SEP-16 CSS16-22	L1826551-15 Soil/Sediment 05-SEP-16 CSS16-43	L1826551-16 Soil/Sediment 05-SEP-16 CSS16-44
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	8.10	8.49	8.36	8.53	8.18
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.22	0.164	<0.077	0.123	0.469
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<1.0	2.2
	Available Phosphate-P (mg/kg)	<2.0	<2.0	2.5	<2.0	<2.0
	Available Potassium (mg/kg)	68	89	126	140	54
Metals	Aluminum (Al) (mg/kg)	10900	12600	13800	15500	10600
	Antimony (Sb) (mg/kg)	0.44	0.40	0.29	0.34	0.45
	Arsenic (As) (mg/kg)	12.3	12.5	10.0	11.3	12.6
	Barium (Ba) (mg/kg)	102	119	145	153	115
	Beryllium (Be) (mg/kg)	0.37	0.48	0.50	0.57	0.41
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	5.4	5.6	6.8	<5.0
	Cadmium (Cd) (mg/kg)	0.167	0.157	0.160	0.145	0.175
	Calcium (Ca) (mg/kg)	17700	14600	20500	22700	8430
	Chromium (Cr) (mg/kg)	28.0	19.7	11.0	10.9	30.7
	Cobalt (Co) (mg/kg)	12.6	13.1	14.8	16.0	11.0
	Copper (Cu) (mg/kg)	252	454	826	848	121
	Iron (Fe) (mg/kg)	44600	37900	44100	48200	27500
	Lead (Pb) (mg/kg)	5.25	4.87	4.46	4.52	5.26
	Lithium (Li) (mg/kg)	11.2	12.6	13.2	14.0	11.3
	Magnesium (Mg) (mg/kg)	6870	7680	8720	9460	6490
	Manganese (Mn) (mg/kg)	583	578	533	572	730
	Mercury (Hg) (mg/kg)	0.089	0.083	0.070	0.073	0.079
	Molybdenum (Mo) (mg/kg)	1.88	1.99	4.14	3.79	1.48
	Nickel (Ni) (mg/kg)	20.4	14.7	8.90	8.96	26.4
	Phosphorus (P) (mg/kg)	1130	1030	1200	1250	725
	Potassium (K) (mg/kg)	860	1000	1200	1380	740
	Selenium (Se) (mg/kg)	0.69	0.55	0.85	0.97	0.31
	Silver (Ag) (mg/kg)	0.17	0.20	0.34	0.35	0.13
	Sodium (Na) (mg/kg)	501	498	870	896	393
	Strontium (Sr) (mg/kg)	101	91.7	137	156	80.4
	Thallium (Tl) (mg/kg)	0.188	<0.050	<0.050	<0.050	0.070
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	930	981	986	1300	717
	Uranium (U) (mg/kg)	0.873	0.734	0.699	0.847	0.643
	Vanadium (V) (mg/kg)	150	130	167	183	80.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-17 Soil/Sediment 05-SEP-16 CSS16-45	L1826551-18 Soil/Sediment 05-SEP-16 CSS16-46	L1826551-19 Soil/Sediment 17-AUG-16 CSS16-BKG-02	L1826551-20 Soil/Sediment 17-AUG-16 CSS16-BKG-03	L1826551-21 Soil/Sediment 17-AUG-16 CSS16-BKG-04
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.98	8.25	5.49	5.74	6.71
Organic / Inorganic Carbon	Total Organic Carbon (%)	6.23	<0.089	1.99	7.55	8.45
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR	<1.0	<1.0	<2.0 DLR	<2.0 DLR
	Available Phosphate-P (mg/kg)	2.5	<2.0	54.9	64.6	6.0
	Available Potassium (mg/kg)	144	165	95	120	142
Metals	Aluminum (Al) (mg/kg)	19300	16200	9280	6680	13500
	Antimony (Sb) (mg/kg)	0.50	0.34	0.21	0.16	0.24
	Arsenic (As) (mg/kg)	12.3	11.4	3.61	2.64	4.74
	Barium (Ba) (mg/kg)	201	163	66.9	129	49.7
	Beryllium (Be) (mg/kg)	0.64	0.57	0.19	0.15	0.27
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	7.8	7.8	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.269	0.143	0.221	0.840	0.257
	Calcium (Ca) (mg/kg)	21000	23700	2680	4670	9330
	Chromium (Cr) (mg/kg)	25.4	10.7	28.6	19.9	30.9
	Cobalt (Co) (mg/kg)	17.0	16.3	7.89	6.10	9.40
	Copper (Cu) (mg/kg)	455	849	10.5	12.1	27.3
	Iron (Fe) (mg/kg)	40400	48600	22700	14800	23900
	Lead (Pb) (mg/kg)	7.42	4.33	5.85	4.91	5.55
	Lithium (Li) (mg/kg)	19.5	14.3	11.2	6.7	16.2
	Magnesium (Mg) (mg/kg)	10200	9710	3550	2600	6460
	Manganese (Mn) (mg/kg)	817	618	391	1040	448
	Mercury (Hg) (mg/kg)	0.101	0.075	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	3.33	4.14	0.51	0.45	0.74
	Nickel (Ni) (mg/kg)	21.2	8.83	13.6	11.8	22.5
	Phosphorus (P) (mg/kg)	1150	1280	849	674	674
	Potassium (K) (mg/kg)	1620	1420	680	590	960
	Selenium (Se) (mg/kg)	1.00	1.05	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.29	0.37	0.13	0.22	<0.10
	Sodium (Na) (mg/kg)	647	941	71	63	131
	Strontium (Sr) (mg/kg)	161	157	23.5	34.5	60.8
	Thallium (Tl) (mg/kg)	0.065	<0.050	<0.050	<0.050	0.087
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	1290	1420	743	442	719
	Uranium (U) (mg/kg)	1.34	0.894	0.295	0.275	0.631
	Vanadium (V) (mg/kg)	129	183	57.4	34.8	51.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-22 Soil/Sediment 19-AUG-16 CSS16-BKG-05	L1826551-23 Soil/Sediment 19-AUG-16 CSS16-BKG-06	L1826551-24 Soil/Sediment 05-SEP-16 CSS16-BKG-18	L1826551-25 Soil/Sediment 05-SEP-16 CSS16-BKG-19	L1826551-26 Soil/Sediment 05-SEP-16 CSS16-BKG-20
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	6.23	5.23	7.01	6.75	6.46
Organic / Inorganic Carbon	Total Organic Carbon (%)	8.18	38.6	22.2	22.1	41.6
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR	<4.0 DLR	<3.0 DLR	<3.0 DLR	<5.0 DLR
	Available Phosphate-P (mg/kg)	7.7	14.7 DLR	2.8	<2.0	7.5 DLR
	Available Potassium (mg/kg)	82	471 DLR	130	51	170 DLR
Metals	Aluminum (Al) (mg/kg)	10400	3690	10100	11300	3410
	Antimony (Sb) (mg/kg)	0.21	0.22	0.28	0.32	0.28
	Arsenic (As) (mg/kg)	3.47	3.24	3.46	2.86	1.54
	Barium (Ba) (mg/kg)	92.9	83.7	76.9	79.5	58.8
	Beryllium (Be) (mg/kg)	0.20	<0.10	0.27	0.46	0.14
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	6.8	5.7	9.9
	Cadmium (Cd) (mg/kg)	0.488	0.697	0.499	0.645	1.05
	Calcium (Ca) (mg/kg)	6400	17100	23800	33000	35100
	Chromium (Cr) (mg/kg)	21.2	6.07	19.7	23.8	5.66
	Cobalt (Co) (mg/kg)	8.27	3.04	7.21	5.72	2.41
	Copper (Cu) (mg/kg)	13.0	17.9	117	101	33.1
	Iron (Fe) (mg/kg)	19800	4960	17100	15900	4970
	Lead (Pb) (mg/kg)	5.59	4.30	3.86	4.38	4.05
	Lithium (Li) (mg/kg)	9.6	2.0	10.4	10.9	2.4
	Magnesium (Mg) (mg/kg)	4910	1570	4800	3690	2000
	Manganese (Mn) (mg/kg)	844	409	261	214	163
	Mercury (Hg) (mg/kg)	<0.050	0.184	0.101	0.189	0.150
	Molybdenum (Mo) (mg/kg)	0.79	1.91	0.83	0.73	0.90
	Nickel (Ni) (mg/kg)	14.7	5.95	19.2	29.6	10.7
	Phosphorus (P) (mg/kg)	346	710	1040	1220	858
	Potassium (K) (mg/kg)	560	810	800	560	490
	Selenium (Se) (mg/kg)	<0.20	0.56	2.62	3.66	1.45
	Silver (Ag) (mg/kg)	0.15	0.24	0.17	0.39	0.31
	Sodium (Na) (mg/kg)	82	<50	178	89	<50
	Strontium (Sr) (mg/kg)	51.3	136	105	184	224
	Thallium (Tl) (mg/kg)	0.055	<0.050	0.060	0.088	<0.050
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	774	154	345	177	78.3
	Uranium (U) (mg/kg)	0.299	0.346	2.87	8.10	3.12
	Vanadium (V) (mg/kg)	56.5	12.9	36.6	29.9	9.31

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-27 Soil/Sediment 05-SEP-16 CSS16-BKG-20D	L1826551-28 Soil/Sediment 05-SEP-16 CSS16-BKG-21	L1826551-29 Soil/Sediment 05-SEP-16 CSS16-BKG-22	L1826551-30 Soil/Sediment 05-SEP-16 CSS16-BKG-22D	L1826551-31 Soil/Sediment 05-SEP-16 CSS16-BKG-23
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	6.40	6.41	5.55	5.57	6.75
Organic / Inorganic Carbon	Total Organic Carbon (%)	41.8	2.27	6.10	6.12	0.898
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<5.0 DLR	<1.0	<2.0 DLR	<2.0 DLR	<1.0
	Available Phosphate-P (mg/kg)	8.3 DLR	4.2	98 DLHC	98 DLHC	14.6
	Available Potassium (mg/kg)	160 DLR	59	90	86	112
Metals	Aluminum (Al) (mg/kg)	3440	13900	10900	11800	10900
	Antimony (Sb) (mg/kg)	0.24	0.30	0.27	0.24	0.37
	Arsenic (As) (mg/kg)	1.47	7.54	6.56	7.18	6.81
	Barium (Ba) (mg/kg)	58.4	83.5	132	123	65.8
	Beryllium (Be) (mg/kg)	0.12	0.32	0.24	0.22	0.29
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	8.6	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	1.06	0.205	0.390	0.375	0.163
	Calcium (Ca) (mg/kg)	31300	5030	4600	4050	5060
	Chromium (Cr) (mg/kg)	5.71	31.7	30.3	33.4	28.4
	Cobalt (Co) (mg/kg)	2.39	9.30	7.66	8.48	9.01
	Copper (Cu) (mg/kg)	33.1	21.7	24.1	24.8	36.2
	Iron (Fe) (mg/kg)	4920	26600	24900	24600	23600
	Lead (Pb) (mg/kg)	3.58	5.09	5.65	4.81	5.00
	Lithium (Li) (mg/kg)	2.3	15.4	8.5	7.7	9.8
	Magnesium (Mg) (mg/kg)	1990	5760	4530	5620	5670
	Manganese (Mn) (mg/kg)	165	341	404	452	429
	Mercury (Hg) (mg/kg)	0.151	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	0.80	0.44	0.69	0.58	0.48
	Nickel (Ni) (mg/kg)	10.7	22.7	17.6	22.2	21.6
	Phosphorus (P) (mg/kg)	849	499	1060	1060	720
	Potassium (K) (mg/kg)	510	750	650	640	930
	Selenium (Se) (mg/kg)	1.48	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.26	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	<50	102	93	102	177
	Strontium (Sr) (mg/kg)	196	43.1	47.3	36.4	38.3
	Thallium (Tl) (mg/kg)	<0.050	0.075	0.059	0.051	0.073
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	83.4	849	709	750	741
	Uranium (U) (mg/kg)	2.63	0.603	0.348	0.290	0.427
	Vanadium (V) (mg/kg)	9.45	77.1	66.1	72.2	64.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Sample ID	L1826551-1	L1826551-2	L1826551-3	L1826551-4	L1826551-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-07	CSS16-08	CSS16-09	CSS16-10	CSS16-11
Grouping / **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	53.3	59.3	57.6	53.0	54.1
Zirconium (Zr) (mg/kg)	6.2	5.7	2.9	5.4	3.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-7 Soil/Sediment 19-AUG-16 CSS16-12	L1826551-8 Soil/Sediment 19-AUG-16 CSS16-13	L1826551-9 Soil/Sediment 02-SEP-16 CSS16-17	L1826551-10 Soil/Sediment 02-SEP-16 CSS16-18	L1826551-11 Soil/Sediment 02-SEP-16 CSS16-19
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Zinc (Zn) (mg/kg)	54.4	56.5	43.2	56.4	49.6
	Zirconium (Zr) (mg/kg)	3.0	3.1	1.5	6.3	4.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-12	L1826551-13	L1826551-14	L1826551-15	L1826551-16
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	02-SEP-16	02-SEP-16	02-SEP-16	05-SEP-16	05-SEP-16
Sampled Time					
Client ID	CSS16-20	CSS16-21	CSS16-22	CSS16-43	CSS16-44
Grouping **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	50.8	56.7	55.5	53.2	46.9
Zirconium (Zr) (mg/kg)	3.8	4.2	4.8	6.1	2.4

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-17 Soil/Sediment 05-SEP-16 CSS16-45	L1826551-18 Soil/Sediment 05-SEP-16 CSS16-46	L1826551-19 Soil/Sediment 17-AUG-16 CSS16-BKG-02	L1826551-20 Soil/Sediment 17-AUG-16 CSS16-BKG-03	L1826551-21 Soil/Sediment 17-AUG-16 CSS16-BKG-04
SOIL						
Metals	Zinc (Zn) (mg/kg)	70.1	56.1	62.5	119	54.3
	Zirconium (Zr) (mg/kg)	2.8	6.4	1.2	<1.0	1.2

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-22 Soil/Sediment 19-AUG-16 CSS16-BKG-05	L1826551-23 Soil/Sediment 19-AUG-16 CSS16-BKG-06	L1826551-24 Soil/Sediment 05-SEP-16 CSS16-BKG-18	L1826551-25 Soil/Sediment 05-SEP-16 CSS16-BKG-19	L1826551-26 Soil/Sediment 05-SEP-16 CSS16-BKG-20
Sample ID **Description** **Sampled Date** **Sampled Time** **Client ID**						
SOIL						
Metals	Zinc (Zn) (mg/kg)	74.3	46.7	41.2	27.3	65.1
	Zirconium (Zr) (mg/kg)	2.0	1.1	1.7	4.7	1.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-27 Soil/Sediment 05-SEP-16 CSS16-BKG-20D	L1826551-28 Soil/Sediment 05-SEP-16 CSS16-BKG-21	L1826551-29 Soil/Sediment 05-SEP-16 CSS16-BKG-22	L1826551-30 Soil/Sediment 05-SEP-16 CSS16-BKG-22D	L1826551-31 Soil/Sediment 05-SEP-16 CSS16-BKG-23
Sample ID / **Description** / **Sampled Date** / **Sampled Time** / **Client ID**						
SOIL						
Metals	Zinc (Zn) (mg/kg)	63.7	64.5	67.2	66.6	43.8
	Zirconium (Zr) (mg/kg)	1.4	1.1	1.3	1.2	1.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Lithium (Li)	DUP-H,J	L1826551-21, -22, -23, -24, -25, -26, -27, -28, -29, -30, -31

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0148

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

RUSH

Priority processing

Please log all highlighted soils for:

- CSR + Full Metals
- TOC/TIC
- Avail N, P, K

"Group A" soils are due Sept 16 with 'P' codes

"Group B" soils are due Sept 21, no priority code.

SK sublets should go out Monday.

Group A Tissue

SCN	Tissue ID
G0149-8	BERRY16-11
G0149-9	ANT16-02
G0149-10	BERRY16-12
G0149-11	BERRY16-13
G0149-12	SPRUCE16-02
G0150-1	BERRY16-14
G0150-2	BERRY16-15
G0150-3	ANT16-03
G0150-4	ANT16-03d
G0150-5	SPRUCE16-03
G0150-6	BERRY16-BKG-04
G0150-7	BERRY16-BKG-05
G0150-8	BERRY16-BKG-06
G0150-9	BERRY16-BKG-07
G0150-10	BERRY16-BKG-08
G0150-11	BERRY16-BKG-09
G0150-12	BERRY16-16
G0152-1	BERRY16-17
G0152-6	WILLOW16-06
G0152-7	WILLOW16-07
G0152-8	GRASS16-03
G0152-9	GRASS16-04
G0152-10	WILLOW16-08
G0152-11	GRASS16-05
G0152-12	GRASS16-06
G0156-1	GRASS16-07
G0156-2	GRASS16-08
G0156-3	WILLOW16-09
G0156-4	GRASS16-10
G0156-5	WILLOW16-10
G0156-6	GRASS16-09
G0156-7	SPRUCE16-06
G0156-8	SPRUCE16-07
G0168-3	SPRUCE16-15
G0168-4	ANT16-04
G0168-5	AR16-05
G0168-6	WILLOW16-BKG-07
G0168-7	SPRUCE16-BKG-06
G0168-8	AR16-BKG-01
G0168-9	WILLOW16-BKG-08
G0168-10	SPRUCE16-BKG-07
G0168-11	ANT16-BKG-01
G0168-12	AR16-BKG-02
G0169-1	WORM16-BKG-02
G0169-2	WILLOW16-BKG-09
G0169-3	WILLOW16-BKG-09d
G0169-4	SPRUCE16-BKG-08
G0169-5	SPRUCE16-BKG-08d
G0169-9	WILOW16-21
G0169-10	WILLOW16-22
G0169-11	WILOW16-23
G0169-12	WILLOW16-24
G0170-1	SPRUCE16-16
G0170-2	ANT16-05
G0170-3	AR16-05
G0170-4	BEETLE16-02
G0170-5	WILLOW16-BKG-10
G0170-6	SPRUCE16-BKG-09
G0170-7	ANT16-BKG-02
G0170-8	ANT16-BKG-02d
G0170-9	SPRUCE16-BKG-10
G0170-10	ANT16-BKG-03
G0170-11	ANT16-BKG-03d
G0170-12	WILLOW16-25
G171-1	SPRUCE16-17
G171-2	WORM16-05
G171-3	SPRUCE16-18
G171-4	GRASS16-BKG-09
G171-5	GRASS16-BKG-09d
G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B So

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

B 13
V 36 } 63
INV 14

49 + 14 = 70

L1826551-COFC

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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COC # G0148

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: aatkinson@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hold	Number of Containers
[redacted]	CSS16-01	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-04	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-01	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-07	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-08	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-09	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-10	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-11	19-Aug-16		Soil/Sediment	x	2

L1826551-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3, 4, 10°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0148

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD											Number of Containers
[redacted]	CSS16-BKG-02	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-03	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-04	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-05	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-06	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-12	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-13	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-14	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-15	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-16	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-07	19-Aug-16		Soil/Sediment	x											2
[redacted]																

L1826551-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(4) JC	SEP - 9 2016	9am	3,4,10°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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COC # G0148

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-17	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-18	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-19	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-20	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-21	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-22	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-23	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-08	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-09	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-24	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-10	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-25	03-Sep-16		Soil/Sediment	x	2

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0148

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-11	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-26	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-27	03-Sep-16	FDA - G0162-04	Soil/Sediment	x	2
[redacted]	CSS16-27d	03-Sep-16	FD - G0162-03	Soil/Sediment	x	2
[redacted]	CSS16-BKG-12	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-13	03-Sep-16	FDA - G0162-07	Soil/Sediment	x	2
[redacted]	CSS16-BKG-13d	03-Sep-16	FD - G0162-06	Soil/Sediment	x	2
[redacted]	CSS16-28	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-29	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-30	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-31	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-32	04-Sep-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

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		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

[redacted] Sample # [redacted]	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-33	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-34	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-35	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-14	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-15	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-16	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-17	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-36	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-37	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-38	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-39	04-Sep-16	FDA - G0163-12	Soil/Sediment	x	2
[redacted]	CSS16-39d	04-Sep-16	FD - G0163- 11	Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3,4,10'c			

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Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-40	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-41	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-42	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-18	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-19	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20d	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-44	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-21	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-22	05-Sep-16	FDA- G0165-01	Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3, 4, 10°C			

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COC # G0148

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Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	**Analysis Request**
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	**ALS Contact:** Can Dang	**Sampler:** EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-22d	05-Sep-16	FD - G0164-12	Soil/Sediment	x	2
[redacted]	CSS16-45	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-46	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-23	05-Sep-16	FDA-G0165-05	Soil/Sediment	x	2
[redacted]	CSS16-BKG-23d	05-Sep-16	FD-G0165-04	Soil/Sediment	x	2
[redacted]	CSS16-BKG-24	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-25	05-Sep-16		Soil/Sediment	x	2
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

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Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

MOUNT POLLEY MINING CORP.
ATTN: Katie McMahen
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-NOV-16 17:22 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826684

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: F0205
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826684-1 Tissue 16-AUG-16 11:02 WILLOW-LHAC-4-16	L1826684-2 Tissue 16-AUG-16 10:40 WILLOW-LHAC-3-16	L1826684-3 Tissue 16-AUG-16 10:23 WILLOW-LHAC-2X-16	L1826684-4 Tissue 16-AUG-16 10:23 WILLOW-LHAC-2-16	L1826684-5 Tissue 16-AUG-16 10:15 WILLOW-LHAC-1-16
TISSUE						
Physical Tests	% Moisture (%)	62.4	59.9	56.1	60.0	57.3
Metals	Aluminum (Al)-Total (mg/kg)	100	384	426	451	962
	Aluminum (Al)-Total (mg/kg wwt)	37.8	154	187	180	411
	Antimony (Sb)-Total (mg/kg)	0.017	0.032	0.026	0.025	0.043
	Antimony (Sb)-Total (mg/kg wwt)	0.0063	0.0128	0.0115	0.0098	0.0183
	Arsenic (As)-Total (mg/kg)	0.110	0.370	0.439	0.462	0.663
	Arsenic (As)-Total (mg/kg wwt)	0.0412	0.148	0.192	0.185	0.283
	Barium (Ba)-Total (mg/kg)	14.1	10.3	12.3	12.7	18.9
	Barium (Ba)-Total (mg/kg wwt)	5.32	4.13	5.40	5.09	8.07
	Beryllium (Be)-Total (mg/kg)	<0.010	0.011	0.014	0.015	0.026
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0044	0.0061	0.0059	0.0110
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0038
	Boron (B)-Total (mg/kg)	27.9	57.3	98.3	103	25.6
	Boron (B)-Total (mg/kg wwt)	10.5	23.0	43.1	41.2	10.9
	Cadmium (Cd)-Total (mg/kg)	2.60	0.639	0.708	0.658	1.97
	Cadmium (Cd)-Total (mg/kg wwt)	0.978	0.256	0.311	0.263	0.842
	Calcium (Ca)-Total (mg/kg)	12600	25600	25000	24600	24300
	Calcium (Ca)-Total (mg/kg wwt)	4760	10300	11000	9830	10400
	Cesium (Cs)-Total (mg/kg)	0.0478	0.0555	0.0611	0.0638	0.113
	Cesium (Cs)-Total (mg/kg wwt)	0.0180	0.0223	0.0268	0.0255	0.0482
	Chromium (Cr)-Total (mg/kg)	0.287	1.17	0.806	0.996	2.19
	Chromium (Cr)-Total (mg/kg wwt)	0.108	0.467	0.354	0.398	0.933
	Cobalt (Co)-Total (mg/kg)	0.779	2.38	7.27	7.54	1.55
	Cobalt (Co)-Total (mg/kg wwt)	0.293	0.955	3.19	3.01	0.663
	Copper (Cu)-Total (mg/kg)	13.9	9.48	14.6	14.8	12.2
	Copper (Cu)-Total (mg/kg wwt)	5.21	3.80	6.41	5.90	5.19
	Iron (Fe)-Total (mg/kg)	249	880	1200	1320	1810
	Iron (Fe)-Total (mg/kg wwt)	93.7	353	527	527	770
	Lead (Pb)-Total (mg/kg)	0.060	0.256	0.255	0.255	0.499
	Lead (Pb)-Total (mg/kg wwt)	0.0228	0.103	0.112	0.102	0.213
	Lithium (Li)-Total (mg/kg)	<0.50	0.54	0.52	0.54	1.17
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.22	0.23	0.22	0.50
	Magnesium (Mg)-Total (mg/kg)	4060	4000	3180	3190	2930
	Magnesium (Mg)-Total (mg/kg wwt)	1530	1600	1390	1280	1250
	Manganese (Mn)-Total (mg/kg)	109	177	223	238	161
	Manganese (Mn)-Total (mg/kg wwt)	41.1	71.0	97.7	95.3	68.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826684-6	L1826684-7	L1826684-8	L1826684-9	L1826684-10
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	16-AUG-16	03-AUG-16	03-AUG-16	03-AUG-16	16-AUG-16
	Sampled Time	11:11	14:05	13:45	13:45	14:30
	Client ID	WILLOW-LHAC-5-16	SPRUCE-REF-1-16	SPRUCE-UHAC-1-16	SPRUCE-UHAC-1X-16	SPRUCE-UHAC-2-16
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	54.0	54.8	57.0	57.9	52.7
Metals	Aluminum (Al)-Total (mg/kg)	350	19.8	10.0	9.2	35.4
	Aluminum (Al)-Total (mg/kg wwt)	161	8.94	4.29	3.88	16.7
	Antimony (Sb)-Total (mg/kg)	0.025	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0114	0.0033	0.0033	0.0026	0.0037
	Arsenic (As)-Total (mg/kg)	0.479	<0.020	<0.020	<0.020	0.024
	Arsenic (As)-Total (mg/kg wwt)	0.220	0.0057	0.0051	0.0049	0.0115
	Barium (Ba)-Total (mg/kg)	13.2	72.6	136	99.9	53.1
	Barium (Ba)-Total (mg/kg wwt)	6.07	32.8	58.5	42.1	25.1
	Beryllium (Be)-Total (mg/kg)	0.015	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0069	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	75.2	12.3	20.4	17.2	13.4
	Boron (B)-Total (mg/kg wwt)	34.6	5.58	8.78	7.25	6.34
	Cadmium (Cd)-Total (mg/kg)	1.87	0.0106	0.188	0.213	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.860	0.0048	0.0806	0.0896	0.0013
	Calcium (Ca)-Total (mg/kg)	19900	3490	8630	6550	6010
	Calcium (Ca)-Total (mg/kg wwt)	9150	1580	3710	2760	2850
	Cesium (Cs)-Total (mg/kg)	0.0590	0.0972	0.0055	0.0060	0.429
	Cesium (Cs)-Total (mg/kg wwt)	0.0271	0.0440	0.0024	0.0025	0.203
	Chromium (Cr)-Total (mg/kg)	0.815	0.375	0.395	0.544	0.256
	Chromium (Cr)-Total (mg/kg wwt)	0.375	0.169	0.170	0.229	0.121
	Cobalt (Co)-Total (mg/kg)	2.56	0.056	0.152	0.158	0.070
	Cobalt (Co)-Total (mg/kg wwt)	1.18	0.0251	0.0654	0.0663	0.0330
	Copper (Cu)-Total (mg/kg)	22.3	3.60	6.39	7.05	3.67
	Copper (Cu)-Total (mg/kg wwt)	10.3	1.63	2.75	2.97	1.74
	Iron (Fe)-Total (mg/kg)	1140	75.2	28.9	25.6	116
	Iron (Fe)-Total (mg/kg wwt)	525	34.0	12.4	10.8	54.8
	Lead (Pb)-Total (mg/kg)	0.237	<0.020	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	0.109	0.0048	0.0042	<0.0040	0.0074
	Lithium (Li)-Total (mg/kg)	0.79	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	0.36	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	2580	737	763	735	939
	Magnesium (Mg)-Total (mg/kg wwt)	1190	333	328	310	444
	Manganese (Mn)-Total (mg/kg)	320	104	225	195	116
	Manganese (Mn)-Total (mg/kg wwt)	147	47.2	97.0	81.9	55.0

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826684-11 Tissue 16-AUG-16 15:20 SPRUCE-LHAC-1-16	L1826684-12 Tissue 16-AUG-16 13:45 BERRIES-LHAC-2-16	L1826684-13 Tissue 16-AUG-16 15:42 BERRIES-LHAC-3-16	L1826684-14 Tissue 16-AUG-16 12:28 BERRIES-LHAC-1-16	L1826684-15 Tissue 03-AUG-16 15:15 RYEGRASS-UHAC-1-16
TISSUE						
Physical Tests	% Moisture (%)	55.7	77.3	84.0	86.1	17.3
Metals	Aluminum (Al)-Total (mg/kg)	76.1	5.2	<5.0	7.2	747
	Aluminum (Al)-Total (mg/kg wwt)	33.7	1.2	<1.0	1.0	618
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.029
	Antimony (Sb)-Total (mg/kg wwt)	0.0040	<0.0020	<0.0020	<0.0020	0.0243
	Arsenic (As)-Total (mg/kg)	0.054	<0.030	<0.030	<0.030	0.573
	Arsenic (As)-Total (mg/kg wwt)	0.0238	<0.0060	<0.0060	<0.0060	0.474
	Barium (Ba)-Total (mg/kg)	125	5.92	18.1	2.36	16.0
	Barium (Ba)-Total (mg/kg wwt)	55.4	1.34	2.90	0.329	13.3
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.034
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0280
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0039
	Boron (B)-Total (mg/kg)	19.2	26.0	24.6	10.7	19.1
	Boron (B)-Total (mg/kg wwt)	8.50	5.89	3.94	1.48	15.8
	Cadmium (Cd)-Total (mg/kg)	0.102	0.058	0.065	<0.010	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	0.0453	0.0132	0.0104	<0.0020	<0.0040 DLM
	Calcium (Ca)-Total (mg/kg)	6680	1470	3720	5100	3740
	Calcium (Ca)-Total (mg/kg wwt)	2960	335	595	709	3090
	Cesium (Cs)-Total (mg/kg)	0.142	0.0050	<0.0050	0.110	0.118
	Cesium (Cs)-Total (mg/kg wwt)	0.0629	0.0011	<0.0010	0.0153	0.0973
	Chromium (Cr)-Total (mg/kg)	0.104	0.22	<0.20	<0.20	0.68
	Chromium (Cr)-Total (mg/kg wwt)	0.046	0.050	<0.040	<0.040	0.562
	Cobalt (Co)-Total (mg/kg)	0.110	0.047	0.024	<0.020	0.746
	Cobalt (Co)-Total (mg/kg wwt)	0.0488	0.0107	<0.0040	<0.0040	0.617
	Copper (Cu)-Total (mg/kg)	6.21	0.80	6.19	1.90	43.5
	Copper (Cu)-Total (mg/kg wwt)	2.75	0.181	0.991	0.265	36.0
	Iron (Fe)-Total (mg/kg)	255	16.8	26.6	27.4	1530
	Iron (Fe)-Total (mg/kg wwt)	113	3.8	4.3	3.8	1270
	Lead (Pb)-Total (mg/kg)	0.034	<0.050	<0.050	<0.050	0.307
	Lead (Pb)-Total (mg/kg wwt)	0.0151	<0.010	<0.010	<0.010	0.254
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	0.88
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	0.73
	Magnesium (Mg)-Total (mg/kg)	812	581	1130	1010	1360
	Magnesium (Mg)-Total (mg/kg wwt)	359	132	180	141	1130
	Manganese (Mn)-Total (mg/kg)	221	2.26	3.45	3.28	110
	Manganese (Mn)-Total (mg/kg wwt)	97.7	0.514	0.552	0.456	91.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826684-16				
	Description	Tissue				
	Sampled Date	03-AUG-16				
	Sampled Time	15:35				
	Client ID	RYEGRASS-UHAC-2-16				
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	31.2				
Metals	Aluminum (Al)-Total (mg/kg)	1650				
	Aluminum (Al)-Total (mg/kg wwt)	1130				
	Antimony (Sb)-Total (mg/kg)	0.060				
	Antimony (Sb)-Total (mg/kg wwt)	0.0415				
	Arsenic (As)-Total (mg/kg)	1.27				
	Arsenic (As)-Total (mg/kg wwt)	0.875				
	Barium (Ba)-Total (mg/kg)	39.5				
	Barium (Ba)-Total (mg/kg wwt)	27.2				
	Beryllium (Be)-Total (mg/kg)	0.072				
	Beryllium (Be)-Total (mg/kg wwt)	0.0498				
	Bismuth (Bi)-Total (mg/kg)	<0.010				
	Bismuth (Bi)-Total (mg/kg wwt)	0.0063				
	Boron (B)-Total (mg/kg)	27.8				
	Boron (B)-Total (mg/kg wwt)	19.1				
	Cadmium (Cd)-Total (mg/kg)	<0.010				
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0070 DLM				
	Calcium (Ca)-Total (mg/kg)	6910				
	Calcium (Ca)-Total (mg/kg wwt)	4750				
	Cesium (Cs)-Total (mg/kg)	0.307				
	Cesium (Cs)-Total (mg/kg wwt)	0.211				
	Chromium (Cr)-Total (mg/kg)	1.16				
	Chromium (Cr)-Total (mg/kg wwt)	0.800				
	Cobalt (Co)-Total (mg/kg)	1.61				
	Cobalt (Co)-Total (mg/kg wwt)	1.11				
	Copper (Cu)-Total (mg/kg)	88.5				
	Copper (Cu)-Total (mg/kg wwt)	60.9				
	Iron (Fe)-Total (mg/kg)	2880				
	Iron (Fe)-Total (mg/kg wwt)	1980				
	Lead (Pb)-Total (mg/kg)	0.602				
	Lead (Pb)-Total (mg/kg wwt)	0.414				
	Lithium (Li)-Total (mg/kg)	2.28				
	Lithium (Li)-Total (mg/kg wwt)	1.57				
	Magnesium (Mg)-Total (mg/kg)	2530				
	Magnesium (Mg)-Total (mg/kg wwt)	1740				
	Manganese (Mn)-Total (mg/kg)	244				
	Manganese (Mn)-Total (mg/kg wwt)	168				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826684-1 Tissue 16-AUG-16 11:02 WILLOW-LHAC-4-16	L1826684-2 Tissue 16-AUG-16 10:40 WILLOW-LHAC-3-16	L1826684-3 Tissue 16-AUG-16 10:23 WILLOW-LHAC-2X-16	L1826684-4 Tissue 16-AUG-16 10:23 WILLOW-LHAC-2-16	L1826684-5 Tissue 16-AUG-16 10:15 WILLOW-LHAC-1-16
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.386	0.881	0.808	0.815	0.620
	Molybdenum (Mo)-Total (mg/kg wwt)	0.145	0.353	0.354	0.326	0.265
	Nickel (Ni)-Total (mg/kg)	4.19	7.72	10.6	11.2	2.96
	Nickel (Ni)-Total (mg/kg wwt)	1.58	3.10	4.64	4.46	1.26
	Phosphorus (P)-Total (mg/kg)	2250	2440	1550	1530	3440
	Phosphorus (P)-Total (mg/kg wwt)	847	978	680	612	1470
	Potassium (K)-Total (mg/kg)	10300	9190	8440	8880	6200
	Potassium (K)-Total (mg/kg wwt)	3870	3690	3710	3550	2650
	Rubidium (Rb)-Total (mg/kg)	8.22	5.11	3.24	3.43	1.33
	Rubidium (Rb)-Total (mg/kg wwt)	3.09	2.05	1.42	1.37	0.568
	Selenium (Se)-Total (mg/kg)	0.723	0.718	0.374	0.387	0.088
	Selenium (Se)-Total (mg/kg wwt)	0.272	0.288	0.164	0.155	0.037
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	22
	Sodium (Na)-Total (mg/kg wwt)	5.7	6.8	7.6	6.6	9.3
	Strontium (Sr)-Total (mg/kg)	77.7	143	134	134	87.6
	Strontium (Sr)-Total (mg/kg wwt)	29.2	57.4	59.0	53.8	37.4
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0041	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0043	0.0062	0.0067	0.0089
	Thallium (Tl)-Total (mg/kg wwt)	0.00060	0.00174	0.00274	0.00269	0.00379
	Tin (Sn)-Total (mg/kg)	0.18	<0.10	0.11	0.12	0.19
	Tin (Sn)-Total (mg/kg wwt)	0.067	0.033	0.046	0.046	0.082
	Uranium (U)-Total (mg/kg)	0.0077	0.0276	0.0318	0.0340	0.0460
	Uranium (U)-Total (mg/kg wwt)	0.00291	0.0111	0.0139	0.0136	0.0196
	Vanadium (V)-Total (mg/kg)	0.62	1.69	2.94	3.38	3.65
	Vanadium (V)-Total (mg/kg wwt)	0.233	0.678	1.29	1.35	1.56
	Zinc (Zn)-Total (mg/kg)	72.9	33.6	31.4	31.0	65.4
	Zinc (Zn)-Total (mg/kg wwt)	27.4	13.5	13.8	12.4	27.9
	Zirconium (Zr)-Total (mg/kg)	<0.20	0.22	0.43	0.31	0.39
	Zirconium (Zr)-Total (mg/kg wwt)	0.052	0.088	0.191	0.124	0.165

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826684-6	L1826684-7	L1826684-8	L1826684-9	L1826684-10
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	16-AUG-16	03-AUG-16	03-AUG-16	03-AUG-16	16-AUG-16
	Sampled Time	11:11	14:05	13:45	13:45	14:30
	Client ID	WILLOW-LHAC-5-16	SPRUCE-REF-1-16	SPRUCE-UHAC-1-16	SPRUCE-UHAC-1X-16	SPRUCE-UHAC-2-16
Grouping	**Analyte**					
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	5.73	0.123	1.18	1.22	0.584
	Molybdenum (Mo)-Total (mg/kg wwt)	2.64	0.0555	0.508	0.512	0.277
	Nickel (Ni)-Total (mg/kg)	2.23	2.95	1.01	1.14	0.68
	Nickel (Ni)-Total (mg/kg wwt)	1.02	1.33	0.436	0.480	0.320
	Phosphorus (P)-Total (mg/kg)	798	1880	2330	2370	1670
	Phosphorus (P)-Total (mg/kg wwt)	367	848	1000	998	793
	Potassium (K)-Total (mg/kg)	10700	8790	7600	8700	9230
	Potassium (K)-Total (mg/kg wwt)	4930	3980	3270	3660	4370
	Rubidium (Rb)-Total (mg/kg)	4.13	16.7	5.13	5.92	31.1
	Rubidium (Rb)-Total (mg/kg wwt)	1.90	7.56	2.20	2.49	14.7
	Selenium (Se)-Total (mg/kg)	2.67	<0.050	<0.050	<0.050	<0.050
	Selenium (Se)-Total (mg/kg wwt)	1.23	<0.010	<0.010	<0.010	<0.010
	Sodium (Na)-Total (mg/kg)	42	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	19.4	<4.0	<4.0	<4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	177	28.5	56.8	42.3	43.9
	Strontium (Sr)-Total (mg/kg wwt)	81.2	12.9	24.4	17.8	20.8
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	0.0044	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0022	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00099	<0.00040	0.00050	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	0.23	<0.10	0.13	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.105	0.037	0.058	0.031	0.040
	Uranium (U)-Total (mg/kg)	0.0682	<0.0020	<0.0020	<0.0020	0.0024
	Uranium (U)-Total (mg/kg wwt)	0.0314	0.00050	<0.00040	<0.00040	0.00112
	Vanadium (V)-Total (mg/kg)	4.28	0.21	<0.10	<0.10	0.41
	Vanadium (V)-Total (mg/kg wwt)	1.97	0.097	<0.020	<0.020	0.196
	Zinc (Zn)-Total (mg/kg)	66.7	45.2	58.1	51.9	42.4
	Zinc (Zn)-Total (mg/kg wwt)	30.7	20.4	25.0	21.8	20.1
	Zirconium (Zr)-Total (mg/kg)	0.27	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.124	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826684-11 Tissue 16-AUG-16 15:20 SPRUCE-LHAC-1-16	L1826684-12 Tissue 16-AUG-16 13:45 BERRIES-LHAC-2-16	L1826684-13 Tissue 16-AUG-16 15:42 BERRIES-LHAC-3-16	L1826684-14 Tissue 16-AUG-16 12:28 BERRIES-LHAC-1-16	L1826684-15 Tissue 03-AUG-16 15:15 RYEGRASS-UHAC-1-16
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.189	0.059	0.102	0.196	7.68
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0838	0.0134	0.0163	0.0272	6.35
	Nickel (Ni)-Total (mg/kg)	0.79	0.26	0.41	<0.20	0.82
	Nickel (Ni)-Total (mg/kg wwt)	0.350	0.059	0.066	<0.040	0.675
	Phosphorus (P)-Total (mg/kg)	1550	938	3060	1570	339
	Phosphorus (P)-Total (mg/kg wwt)	684	213	490	218	281
	Potassium (K)-Total (mg/kg)	8410	8020	12700	9590	4990
	Potassium (K)-Total (mg/kg wwt)	3720	1820	2030	1330	4120
	Rubidium (Rb)-Total (mg/kg)	15.7	11.8	12.1	17.0	2.66
	Rubidium (Rb)-Total (mg/kg wwt)	6.97	2.68	1.94	2.37	2.20
	Selenium (Se)-Total (mg/kg)	<0.050	<0.10	<0.10	<0.10	1.19
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.020	<0.020	<0.020	0.986
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	57	772
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	8.0	639
	Strontium (Sr)-Total (mg/kg)	54.9	6.84	15.1	19.2	40.2
	Strontium (Sr)-Total (mg/kg wwt)	24.3	1.55	2.41	2.67	33.2
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0031	<0.0020	<0.0020	<0.0020	0.0028
	Thallium (Tl)-Total (mg/kg wwt)	0.00136	<0.00040	<0.00040	<0.00040	0.00234
	Tin (Sn)-Total (mg/kg)	<0.10	2.22	2.30	1.56	1.13
	Tin (Sn)-Total (mg/kg wwt)	0.028	0.504	0.368	0.217	0.935
	Uranium (U)-Total (mg/kg)	0.0039	<0.0020	<0.0020	<0.0020	0.138
	Uranium (U)-Total (mg/kg wwt)	0.00173	<0.00040	<0.00040	<0.00040	0.114
	Vanadium (V)-Total (mg/kg)	0.88	<0.10	<0.10	<0.10	6.34
	Vanadium (V)-Total (mg/kg wwt)	0.389	<0.020	<0.020	<0.020	5.24
	Zinc (Zn)-Total (mg/kg)	54.9	4.5	16.6	5.8	37.9
	Zinc (Zn)-Total (mg/kg wwt)	24.3	1.01	2.66	0.80	31.3
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.043	<0.040	<0.040	<0.040	0.136

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826684-16				
	Description	Tissue				
	Sampled Date	03-AUG-16				
	Sampled Time	15:35				
	Client ID	RYEGRASS-UHAC-2-16				
Grouping	**Analyte**					
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	28.4				
	Molybdenum (Mo)-Total (mg/kg wwt)	19.6				
	Nickel (Ni)-Total (mg/kg)	1.31				
	Nickel (Ni)-Total (mg/kg wwt)	0.900				
	Phosphorus (P)-Total (mg/kg)	1660				
	Phosphorus (P)-Total (mg/kg wwt)	1140				
	Potassium (K)-Total (mg/kg)	12600				
	Potassium (K)-Total (mg/kg wwt)	8670				
	Rubidium (Rb)-Total (mg/kg)	6.75				
	Rubidium (Rb)-Total (mg/kg wwt)	4.64				
	Selenium (Se)-Total (mg/kg)	1.69				
	Selenium (Se)-Total (mg/kg wwt)	1.16				
	Sodium (Na)-Total (mg/kg)	2610				
	Sodium (Na)-Total (mg/kg wwt)	1790				
	Strontium (Sr)-Total (mg/kg)	73.7				
	Strontium (Sr)-Total (mg/kg wwt)	50.7				
	Tellurium (Te)-Total (mg/kg)	<0.020				
	Tellurium (Te)-Total (mg/kg wwt)	0.0069				
	Thallium (Tl)-Total (mg/kg)	0.0068				
	Thallium (Tl)-Total (mg/kg wwt)	0.00469				
	Tin (Sn)-Total (mg/kg)	0.71				
	Tin (Sn)-Total (mg/kg wwt)	0.488				
	Uranium (U)-Total (mg/kg)	0.220				
	Uranium (U)-Total (mg/kg wwt)	0.151				
	Vanadium (V)-Total (mg/kg)	12.0				
	Vanadium (V)-Total (mg/kg wwt)	8.25				
	Zinc (Zn)-Total (mg/kg)	30.2				
	Zinc (Zn)-Total (mg/kg wwt)	20.8				
	Zirconium (Zr)-Total (mg/kg)	0.55				
	Zirconium (Zr)-Total (mg/kg wwt)	0.378				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Magnesium (Mg)-Total	MB-LOR	L1826684-15, -16
Method Blank	Magnesium (Mg)-Total	MB-LOR	L1826684-15, -16

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

F0205

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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Canada Toll Free: 1 800 668 9878
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COC # F0205

Page 1 of 2

Report to:		**Report Format / Distribution**	**Service Requested:** (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Katie McMahen	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	**Analysis Request**
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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	

[redacted] Lab Work Order # [redacted] (lab use only)

ALS Contact: Can Dang **Sampler:** GH,KM

[redacted] Sample # [redacted]	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	Willow-LHAC-4-16	16-Aug-16	11:02	Tissue	X	1
[redacted]	Willow-LHAC-3-16	16-Aug-16	10:40	Tissue	X	1
[redacted]	Willow-LHAC-2X-16	16-Aug-16	10:23	Tissue	X	1
[redacted]	Willow-LHAC-2-16	16-Aug-16	10:23	Tissue	X	1
[redacted]	Willow-LHAC-1-16	16-Aug-16	10:15	Tissue	X	1
[redacted]	Willow-LHAC-5-16	16-Aug-16	11:11	Tissue	X	1
[redacted]	Spruce-REF-1-16	03-Aug-16	14:05	Tissue	X	1
[redacted]	Spruce-UHAC-1-16	03-Aug-16	13:45	Tissue	X	1
[redacted]	Spruce-UHAC-1X-16	03-Aug-16	13:45	Tissue	X	1
[redacted]	Spruce-UHAC-2-16	16-Aug-16	14:30	Tissue	X	1
[redacted]	Spruce-LHAC-1-16	16-Aug-16	15:20	Tissue	X	1
[redacted]	Berries-LHAC-2-16	16-Aug-16	13:45	Tissue	X	1

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Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: GH,KM

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	Berries-LHAC-3-16	16-Aug-16	15:42	Tissue	X	1
[redacted]	Berries-LHAC-1-16	16-Aug-16	12:28	Tissue	X	1
[redacted]	Ryegrass-UHAC-1-16	03-Aug-16	15:15	Tissue	X	1
[redacted]	Ryegrass-UHAC-2-16	03-Aug-16	15:35	Tissue	X	1
[redacted]						
[redacted]						
[redacted]						
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APPENDIX B

Human Health Risk Assessment Supporting Information

APPENDIX B-1

Data Screening for the Human Health Risk Assessment

1.0 INTRODUCTION

In British Columbia (BC), environmental matters pertaining to contaminated sites generally fall under the jurisdiction of the BC Ministry of Environment (MoE), pursuant to the *Environmental Management Act* (EMA, SBC 2003, Chapter 53 assessed 23 October 2003, including BC Reg. 179/2016 amendments effective 19 July 2016). Exceptions include federal lands and waters with migratory fish that fall under the jurisdiction of Environment Canada. The two key regulations under the EMA relating to the assessment and remediation of contaminated sites are the *Contaminated Sites Regulation* (CSR; BC Reg. 375/96, O.C. 1480/96 and M271/2004 including amendments up to BC Reg. 184/2016, effective 19 July 2016), and the *Hazardous Waste Regulation* (BC Reg. 63/88, O.C. 268/88 including amendments up to BC Reg. 179/2016 App 1 amendments effective 19 July 2016).

The CSR provides numerical standards for the evaluation of soil, groundwater, soil vapour and sediment quality that were selected as assessment criteria for the Study Area. Under the CSR, the contaminants of concern evaluated in the risk assessment are those substances that are found to exceed a regulatory standard in the detailed site investigation (DSI) (CSR Section 11[1]).

Substances are identified as contaminants of concern in the DSI based on an exceedance of a standard for protection of either ecological or human health. One of the first steps in the risk assessment is to identify which contaminants are a concern for the ecological receptors and which contaminants are a concern for human health. In the human health risk assessment (HHRA), the contaminants of concern identified in the DSI are compared to standards derived specifically for the protection of human health. If substances are present in concentrations less than the human health-specific standard, then the concentrations are concluded to be acceptable, and risks associated with that substance and that media are concluded to be acceptable.

The contaminant of potential concern (COPC) screening approach is discussed in more detail below in Section 2.0. This appendix presents the data, screening criteria and screening results for soil, groundwater, sediment, surface water, air, vegetation and fish tissue for the HHRA.

2.0 APPROACH FOR FURTHER EVALUATION OF CONTAMINANTS OF POTENTIAL CONCERN FOR HUMAN HEALTH

The starting point for identifying contaminants on a Study Area is the DSI. In the DSI, possible contaminants are tested in relevant environmental media based on their physical/chemical properties and fate when introduced to the environment. Contaminants identified in the DSI (see Table 1 below) were passed along to the risk assessment to determine the significance of the concentrations measured in the environment. In the problem formulation step of the HHRA, contaminants are evaluated in terms of their hazard with respect to human health. The CSR standards for the protection of human health were used as the primary screening criteria for determining if COPCs require assessment in the HHRA in each of the media. Note that under the CSR, only those parameters that exceed a CSR standard are required to be further evaluated in the risk assessment. The CSR does not provide screening criteria protective of human health for sediment, air, vegetation or fish tissue; therefore, COPCs in these media were identified using a slightly different approach (see Sections 5.0 [sediment], 7.0 [air], 8.0 [vegetation] and 9.0 [fish tissue]).

The CSR standards are the first line of assessment in a CSR risk assessment. For many potential contaminants, there are different standards for human health protection and environmental protection. The screening process in the risk assessment sorts the contaminants identified in the DSI into those that are a potential concern for humans, those that are a potential concern for the environment and those that may be a concern for both humans and the environment.

The CSR standards are intended to be protective of all situations for both human and ecological receptors, and incorporate multiple conservative assumptions such as safety factors and conservative exposure conditions. Therefore, comparison to standards represents a conservative evaluation of the potential for the contaminant concentrations to cause adverse effects. Comparison to background concentrations was also included in the screening process. Since the Study Area is located in a highly mineralized area with rich ore deposits, this was considered a reasonable approach to identify and retain the substances that are present at concentrations exceeding what is normal for this area of BC.

The following general approach was used to identify COPCs for the HHRA:

- **Step 1** – Compare the maximum concentrations to the applicable human health-based screening criteria. If the maximum concentration of a parameter exceeds the screening criterion, the substance was retained for further evaluation. A substance was concluded to be present in non-hazardous concentrations and eliminated from further evaluation if the maximum observed concentration was lower than the human health-based screening criteria or the 95th percentile regional background concentration.
- **Step 2** – For the substances retained at the completion of Step 1, calculate the 95% upper confidence limit of the mean (UCLM) concentration as an upper bound estimate of mean exposure and compare to the human health-based screening criteria. A substance was retained for further evaluation in the HHRA if the 95% UCLM was greater than the screening criteria.

The results of the above screening methodology are presented in the sections below. The local reference concentrations are presented for information purposes. The methods for establishing the local background concentrations, where applicable, are also presented below. Aluminum is not regulated in soil under the CSR; however, aluminum was retained for evaluation as a COPC at the request of project reviewers.

Table 1: Contaminants of Concern Identified in the Detailed Site Investigation

Remediation Area	Contaminant	Medium	CSR Schedule
Area 2 – Polley Plug/Polley Flats and Area 4, 5, and 6 – Hazeltine Channel	Copper	Soil	5 – Toxicity to soil invertebrates and plants
	Vanadium	Soil	4 – Parkland and Agricultural
	Sulphur	Soil	4 – Agricultural
	Molybdenum	Soil	4 – Agricultural
	Iron	Groundwater	6 – Irrigation
			6 – Drinking Water
	Manganese	Groundwater	6 – Irrigation
			6 – Drinking Water
	Arsenic	Groundwater	6 – Drinking Water
			6 – Livestock
	Molybdenum	Groundwater	6 – Irrigation
			6 – Livestock
	Sulphate	Groundwater	6 – Drinking Water
	Total and dissolved copper	Surface Water	BC Water Quality Guideline – Aquatic Life
	Copper	Sediment	9 – Typical
Area 3 – Polley Lake	Arsenic	Sediment	9 – Sensitive
	Copper	Sediment	9 – Sensitive
			9 – Typical
Area 7 – Edney Creek Mouth	Total and dissolved copper	Surface Water	BC Water Quality Guideline – Aquatic Life
Area 8 – Quesnel Lake	Copper	Sediment – Littoral and Profundal	9 – Sensitive
			9 – Typical
	Arsenic	Sediment – Littoral and Profundal	9 – Sensitive

3.0 SOIL

3.1 Soil Data

The surficial (less than 1 metres below ground surface) soil samples collected after tailings storage facility (TSF) embankment breach were compiled in the DSI Update (Appendix A). As described in the DSI Update, the term “soil” refers to the following material types that were sampled as part of the investigation:

- tailings
- native soils underlying deposited tailings (native)
- native background soils (local background)

Native soil was further split into native organic soil and native mineral soil. Local background concentrations were developed for both organic and mineral soils. Therefore, native under tailings soil samples were also categorized as organic or mineral in order to screen against the appropriate background concentrations. These datasets were used to identify human health COPCs in soil.

The local background concentrations for native soil were developed in accordance with Protocol 4 (BC MoE 2010) and Technical Guidance 16 (BC MoE 2005). The methods for determining local background soil concentrations, including sample locations and calculation of the 95th percentile local background concentrations, are provided in Appendix A-1 of the DSI Update. The local background data were used to establish which parameters had changed in soil following the breach.

3.2 Soil Screening Criteria

The applicable land use is urban parkland (PL) and agricultural land (AL). The PL and AL standards are considered to be protective of people on a site 24 hours per day, 7 days per week, 52 weeks per year. Soil data were compared to the following CSR PL and AL standards (BC MoE 2016a):

- CSR Schedule 5 – Matrix Numerical Soil Standards, intake of contaminated soil
- CSR Schedule 4 – Generic Numerical Soil Standards
- CSR Schedule 10 – Generic Numerical Soil and Water Standards

The CSR Schedule 5 standards were derived based on a soil allocation factor of 20%, chemical-specific tolerable daily intake, child body weight of 13 kilogram, gut absorption factor of 100%, child ingestion rate of 80 milligrams per day and a land use-specific exposure term (BC MoE 1996). The parkland and agricultural land uses have the same exposure terms (1.0). The CSR Schedule 4 generic soil standards are equivalent to the generic Canadian Council of Ministers of the Environment (CCME) guidelines for most of the parameters. In instances where the CCME have derived a pathway-specific direct contact guideline and the CSR has derived a generic standard, the CSR standard is lower (i.e., more conservative). The CSR Schedule 10 generic soil standards are based on the United States Environmental Protection Agency (US EPA) preliminary remediation goals for residential soils.

3.3 Soil Screening Results

3.3.1 Contaminants of Concern Identified in the Detailed Site Investigation Update

The DSI Update identified the following metals with concentrations greater than the CSR PL or AL standard in soil:

- **Tailings Soil**: copper, molybdenum, sulphur and vanadium
- **Native Organic Soil**: copper, sulphur
- **Native Mineral Soil**: copper, sulphur

If land is used to grow produce for human consumption, the CSR standard for cadmium is 3 mg/kg, if not, the standard is 35 mg/kg. The DSI Update did not identify cadmium as a contaminant of concern based on a comparison to 35 mg/kg. Based on stakeholder feedback that crops may be grown in the Study Area in the future and that people may consume berries and plants from the Study Area, cadmium was carried forward for further evaluation in the HHRA, in addition to the contaminants listed above.

3.3.2 Contaminants of Concern Identified for the Human Health Risk Assessment

The screening results are presented in Table 2 below.

Table 2: Contaminants of Potential Concern in Tailings Soil, Native Organic Soil and Mineral Soil

Parameter	n	Screening Criteria[1] (basis)	95th Percentile Local Background	Maximum	95% UCLM[2]	Retain as a Soil COPC for Human Health?
Tailings						
Aluminum	130	n/a	21,815	24,600	14,984	**Yes**
Cadmium	182	3 (I)	0.3	3.4	0.25	No
Copper	182	15,000 (I)	39	1,560	-	No
Molybdenum	182	5 (G)	0.72	7.34	3.98	No
Sulphur	26	500 (G)	500	3500	1615	No (see text)
Vanadium	182	200 (G)	88.1	289	177	No
Native Organic						
Aluminum	7	n/a	22,075	25,700	17,136	**Yes**
Cadmium	24	3 (I)	1	3.37	0.84	No
Copper	24	11,500 (I)	79	352	-	No
Sulphur	2	500 (G)	nc	7000	nc	No (see text)
Native Mineral						
Aluminum	32	n/a	21,815	26,000	15,634	**Yes**
Cadmium	51	3 (I)	0.3	0.66	-	No
Copper	52	15,000 (I)	39	366	-	No
Sulphur	12	500 (G)	500	1100	855	No (see text)

Notes:

Concentrations are in milligrams per kilogram (mg/kg), unless otherwise noted.

"-" = 95% UCLM not calculated because maximum was below screening criterion; % = percent; COPC = contaminant of potential concern; G = generic standard; I = intake of contaminated soil; n = number of samples; n/a = not available; nc = not calculated, there were insufficient samples to calculate the statistic; UCLM = upper confidence limit of the mean.

[1] If both a CSR AL and PL standard was available, the lower of the two is shown.

[2] The 95% UCLM was calculated using ProUCL (US EPA 2016a). For non-detect values, the full detection limit was assumed for calculating the 95% UCLM.

Aluminum is not regulated in soil under the CSR, but was retained as a COPC at the request of project reviewers.

Maximum concentrations of copper were below the human health screening criterion in all three soil types; therefore, copper was not retained as a soil COPC. Maximum concentrations of cadmium, molybdenum, sulphur, and vanadium exceeded their respective screening criterion and/or 95th percentile background concentration in at least one soil type; therefore, the 95% UCLM concentrations were calculated for these parameters as part of the secondary screening.

With the exception of sulphur, the 95% UCLM concentrations were below their respective screening criteria and/or 95th percentile local background concentration. The 95% UCLM concentration of sulphur in tailings and native mineral soils exceeded the CSR AL standard and the 95th percentile local background concentration. Only two soil samples were collected and analyzed for sulphur in native organic soils. A CSR PL standard is not available for sulphur.

Toxicity data via chronic oral exposure is lacking for sulphur. Supporting information is not available for the derivation of the generic CSR AL standard for sulphur. There is no sulphur CSR standard for other land uses, including residential land use, suggesting that it is not a human health concern. The CSR standard is based on elemental sulphur present in a sample. Soil samples analyzed for sulphur as part of the 2014 and 2015 investigation work were analyzed for total sulphur, and are, therefore, considered to be a conservative estimate of available elemental sulphur in the soil at the Study Area. As discussed in Section 3.2, the generic CSR standards were generally equivalent to the CCME soil quality guidelines for the protection of human and environmental health. Sulphur is considered an essential mineral that is critical for biological function, as it is a component of amino acids, vitamins and insulin. Elemental sulphur is naturally present in the environment and poses low toxicity in humans (US EPA 1991). The BC MoE, Health Canada, the Agency for Toxic Substances and Disease Registry (ATSDR) and the US EPA have not derived toxicity reference values for sulphur. Therefore, based on the lack of toxicity information, sulphur was not evaluated further in this assessment.

4.0 GROUNDWATER

Golder collected groundwater data in 2015 as part of the DSI and in 2016 as part of the DSI Update. The groundwater results from both years of monitoring are presented in Appendix A-4 of the DSI Update and were used to identify COPCs in groundwater.

Golder installed a total of four background monitoring wells, one in 2015 (GW-BKG15-01) and three in 2016 (MW16-11, MW16-12 and MQ16-13). Due to the dry conditions at the Study Area in August 2016, only one of the background wells had sufficient water for sampling.

The DSI Update identified the following metals with concentrations greater than the CSR standard in groundwater:

- Sulphate
- Arsenic
- Iron
- Manganese
- Molybdenum

However, these substances were not retained for further evaluation in the HHRA. The rationale for each substance is provided below.

- The slight exceedance of sulphate in the Polley Flats area (MW16-02) is likely a result of geochemical processes which, according to SRK Consulting (Appendix A), may cause seasonal variation in pH and metal concentrations. The sulphate concentrations in all other monitoring wells were less than the applicable CSR standards.
- The arsenic exceedance was observed at GW15-01 during the 2015 monitoring round and exceeds the CSR standards for DW. GW15-01 was installed within the tailings and is located within the floodplain of the Hazeltine Creek channel. The exceedance is considered to be isolated and delineated, as arsenic concentrations at the other monitoring wells were less than applicable standards during monitoring events in 2015 and in 2016. The arsenic concentration in this well is believed to be related to natural materials and elevated because of reducing conditions (oxidation-reduction potential = -40.5 millivolts).
- Iron concentrations exceeded the CSR DW standard at two monitoring well locations in 2015 (GW15-06 and GW15-01). The monitoring wells installed in 2015 were completed within the tailings; field measurements at the time of sampling noted low dissolved oxygen readings in the groundwater, which may have contributed to precipitation of iron into the shallow groundwater. The exceedances are considered to be isolated and delineated. Dissolved iron concentrations were less than CSR standards for samples that were collected as part of the 2016 monitoring program.
- Manganese exceedances were observed throughout the Study Area in monitoring wells installed within tailings and native under tailings soil. The concentrations exceeded CSR DW standards. Similar to iron, the observed manganese concentrations are likely a result of reducing conditions in the groundwater.
- The maximum measured concentration of molybdenum in groundwater was 0.11 mg/L, which is below the CSR standard of 0.25 mg/L. Therefore, molybdenum was not considered a COPC in groundwater.

The maximum measured concentration of aluminum in groundwater was 0.18 mg/L, which is below the CSR standard of 9.5 mg/L. Therefore, aluminum was not considered a COPC in groundwater.

There are currently no drinking water wells identified in the Hazeltine Creek channel remediation areas, and it is unlikely that drinking water wells will be installed in the future. Therefore, exposure to groundwater as drinking water was not considered an operable exposure pathway in the HHRA (see report Section 3.4).

5.0 SEDIMENT

5.1 Sediment Data

Minnow Environmental Inc. (Minnow) evaluated sediment quality in 2014, 2015 and 2016. The following data were used in the DSI to identify COPCs in sediment:

- Polley Lake (2014, 2015, 2016)
- Lower Hazeltine Creek sedimentation pond (2015, 2016)

- Littoral areas of Quesnel Lake (2014, 2015, 2016)
- Bootjack Lake – Reference (2014, 2015, 2016)
- Quesnel Lake – Reference (2014, 2015, 2016)

The 2014 and 2015 sediment quality results, including the sediment sampling locations, were provided in Minnow (2015[1]). The results from the 2016 sampling program, including the sediment sampling locations, are provided in Appendix A-7 of the DSI Update. Sediment samples from Hazeltine Creek, collected by Minnow in July 2014, were not used for screening because the samples were collected prior to reconstruction of the creek channel, and it is inferred that the material sampled then is no longer present within the Hazeltine Creek channel. The sediment from the sedimentation pond was assumed to represent sediment that has entered the creek channel during and since the completion of channel reconstruction. Sediment collected from the Hazeltine Creek sedimentation pond in 2016 was also analyzed for polycyclic aromatic hydrocarbons (PAHs) as a requirement of the Mount Polley Mining Corporation (MPMC) 2016 Comprehensive Environmental Monitoring Plan. These samples were excluded from the dataset as PAHs were not identified contaminants of concern in the DSI. Concentrations of PAHs were below the laboratory method detection limit. People were not anticipated to come into contact with sediment collected from the deep, profundal areas in Quesnel Lake; therefore, these samples were also excluded from the dataset.

The 95th percentile local reference concentrations were calculated from sediment samples collected pre-dam failure (Minnow 2015[1]) and from sediment samples collected in reference areas in 2014, 2015 and 2016. Based on the interpretation of the impact of the debris flow on Polley Lake, Golder concluded that the tailings-related sediment contamination extends across the entire lake. Therefore, sediment samples collected from Bootjack Lake were used to represent local reference conditions in Polley Lake. Sediment samples were collected from lower and upper Hazeltine Creek prior to the TSF embankment breach. The higher 95th percentile of lower and upper Hazeltine Creek reported in Minnow's 2015 sediment quality report (Minnow 2015[1]) was selected to represent reference conditions in Hazeltine Creek. Sediment samples collected from littoral reference areas in Quesnel Lake were used to represent local reference conditions in littoral areas of Quesnel Lake.

The summary statistics for the local reference samples collected from Bootjack Lake and Quesnel Lake reference locations (all years combined) are presented in Tables C-1-1 and C-1-2, respectively. For non-detect values, the full detection limit was assumed for calculating the 95th percentile reference concentration.

To understand the potential difference between the COPCs in sediment collected from Polley Lake, Hazeltine Creek and Quesnel Lake, the sediment samples from each waterbody were screened separately. The combined data from 2014, 2015 and 2016 for each waterbody were used for screening and to calculate summary statistics, including the 95% UCLMs.

[1] This report was included as Appendix E to the Post-Event Environmental Impact Assessment Report (Mount Polley Mining Corporation 2015) and as Appendix E to the DSI (Golder 2016a).

5.2 Sediment Screening Criteria

The DSI Update identified contaminants of concern in sediment based on a comparison to the CSR Schedule 9 standards, which are protective of aquatic life. The Schedule 9 standards are not considered relevant for human health. The BC MoE recommends the use of the CSR soil standards for identifying sediment COPCs in human health risk assessments. While some differences in exposure may occur, the differences are balanced (e.g., wet sediment sticks onto skin more, but the soles of your feet are thicker and less likely to absorb contaminants) such that the use of soil standard is considered to be appropriate. Therefore, sediment concentrations were compared to health-based soil quality criteria for the direct contact scenario.

Sediment data were compared to the following CSR residential land use (RL)/PL standards:

- CSR Schedule 5 – Matrix Numerical Soil Standards, intake of contaminated soil
- CSR Schedule 4 – Generic Numerical Soil Standards
- CSR Schedule 10 – Generic Numerical Soil and Water Standards

A discussion on the basis of the CSR soil standards is provided in Section 3.2. The CSR AL standards were not considered appropriate for screening sediment data because the AL standards apply to lands where the primary activity is related to food production, such as growing crops and livestock.

5.3 Sediment Screening Results

The sediment screening results, along with summary statistics, are provided in Tables C-1-3 to C-1-5 for Polley Lake, Hazeltine Channel and Quesnel Lake, respectively.

Maximum concentrations of the following substances exceeded the screening criteria and the 95th percentile reference concentration:

- **Polley Lake**: chromium, manganese, molybdenum, selenium and vanadium
- **Hazeltine Channel**: vanadium
- **Quesnel Lake**: selenium and vanadium

These substances were retained for further evaluation, and the results are in Table 3.

Table 3: Identification of Contaminants of Potential Concern in Sediment

Parameter	n	Screening Criteria (basis)	95th Percentile Reference	Maximum	95% UCLM[1]	Retain as a Sediment COPC for Human Health?
Polley Lake						
Aluminum	44	n/a	19,700	29,800	23,864	**Yes**
Chromium	44	100 (I)	57.6	104	29.3	No
Manganese	44	1800 (S)	3188	4340	1610	No
Molybdenum	44	10 (G)	4.82	13.8	7.31	No
Selenium	44	3 (G)	2.79	5.75	2.79	No
Vanadium	44	200 (G)	80.5	219	130	No
Hazeltine Channel						
Aluminum	10	n/a	18,000	26,000	24,149	**Yes**
Vanadium	10	200 (G)	74.5	212	178	No
Quesnel Lake						
Aluminum	40	n/a	22,095	18,600	14,829	**Yes**
Selenium	40	3 (G)	0.70	4.14	1.30	No
Vanadium	40	200 (G)	61.6	869	280	**Yes**

Notes:

Concentrations are in milligrams per kilogram (mg/kg), unless otherwise noted.

% = percent; COPC = contaminant of potential concern; G = generic; I = intake of contaminated soil; n = number of samples; n/a = not available; S = CSR Schedule 10; UCLM = upper confidence limit of the mean.

[1] The 95% UCLM was calculated using ProUCL (US EPA 2016a). For non-detect values, the full detection limit was assumed for calculating the 95% UCLM.

Aluminum is not regulated in soil or sediment under the CSR, but was retained as a COPC at the request of the project reviewers.

With the exception of vanadium in Quesnel Lake, the 95% UCLM concentrations were below the screening criteria and/or 95th percentile local reference concentration. The 95% UCLM concentration of vanadium in Quesnel Lake exceeded the CSR RL/PL standard and the 95th percentile local reference concentration; therefore, vanadium was retained as a COPC in sediment. Minnow noted in their 2016 sediment report (Appendix A-7 of the DSI Update) that the mean vanadium concentration in sediment collected at near-field stations was higher in 2016 than 2014 and 2015 and higher than the 2014, 2015 and 2016 local reference concentrations. These differences may be indicative of the continued movement of fines from the shallow near-field area.

6.0 SURFACE WATER

6.1 Surface Water Data

After the TSF embankment breach, MPMC initiated a water quality monitoring program at several locations in Polley Lake, Hazeltine Creek/Edney Creek, Quesnel Lake and Quesnel River. A number of stations were consistently monitored, either weekly or monthly, while other stations were monitored on a more intermittent basis, or were briefly monitored for a specific purpose. Of the monitoring stations available, 12 representative stations were selected on the basis of adequate spatial representation and sampling frequency (i.e., amount of data available):

- Polley Lake: Station P1 and P2
- Hazeltine Creek: HAC-10, HAC-05/05a, HAC-08/08a and HAC-12 (formerly HAC-01/a/b/c)
- Lower Edney Creek: EDC-01 and EDC-02
- Quesnel Lake: QUL-2/2a, QUL-58 (formerly QUL-55/a and QUL-66/a) and QUL-18
- Quesnel River: QUR-1

Details on the selection of each representative monitoring station and their locations is presented in Appendix A-6 of the DSI Update.

As discussed in the DSI, water quality has changed over the year since the TSF embankment breach occurred. Post-TSF embankment breach changes in surface water quality in near field samples reveal three populations of data, which were representative of the following conditions:

i) immediately following the TSF embankment breach to January 2015, when a spike in turbidity and total metals concentrations was observed, particularly within and near Hazeltine Creek

ii) from January to June 2015 when construction of the creek channel and other restorative activities caused smaller spikes in turbidity and total metals in a localized area near Hazeltine Creek

iii) from June through November 2015, following creek reconstruction when water quality was considered to be representative of longer term conditions

For the purpose of this assessment, the conditions from June through November 2015 were considered representative of current and long term conditions.

The 95th percentile baseline concentrations for Polley Lake, Hazeltine Creek and Quesnel River were determined from the pre-TSF embankment breach surface water data received from the MPMC and BC MoE (Golder 2015[2]). A 95th percentile concentration was not calculated for parameters with less than 10 samples or parameters with greater than 95% non-detect values. Pre-TSF embankment breach data were only available for select substances (e.g., total phosphorus and dissolved silicon) in Quesnel Lake. Therefore, the 95th percentile baseline concentrations for Quesnel Lake were calculated from surface water data measured at QUL-120/120a and QUL-40a, located east of Cariboo Island (Golder 2016a). These reference stations represent the water quality flowing into the West Basin.

[2] This report was included as Appendix D to the DSI (Golder 2016a).

6.2 Surface Water Screening Criteria

Surface water in Quesnel Lake is a source of drinking water. Therefore, surface water data were compared to the CSR Schedule 6 drinking water standards (BC MoE 2016a) to identify COPCs in surface water. The DSI Update did not apply the CSR Schedule 10 Generic Numerical Soil and Water Standards to identify COPCs; therefore, screening against Schedule 10 standards was completed as part of the human health screening. Schedule 10 includes generic drinking water standards for substances that are not included in Schedule 6.

The BC CSR Schedule 6 drinking water standards are generally based on Health Canada's Guidelines for Canadian Drinking Water Quality (Health Canada 2014), which were derived using current, published scientific research related to health effects, aesthetic effects and operational considerations. Health-based guidelines are established on the basis of comprehensive review of the known health effects associated with each contaminant, on exposure levels and on the availability of treatment and analytical technologies (Health Canada 2014). The guidelines (or maximum acceptable concentrations) were generally derived using an average daily intake of 1.5 liters of drinking water by a 70 kilogram adult. However, if appropriate, guidelines were derived based on intake of the most sensitive sub-population (e.g., children). A 20% allocation of the total daily intake to drinking water was generally applied, unless data on the proportion of total intake normally ingested in drinking water was available (Health Canada 1995). The CSR Schedule 10 generic water standards are based on the US EPA preliminary remediation goals for residential tap water.

6.3 Surface Water Screening Results

6.3.1 Contaminants of Concern Identified in the Detailed Site Investigation Update

The DSI Update identified copper as a contaminant of concern in surface water based on exceedance of the BC Water Quality Guideline protective of aquatic life. As discussed above, the DSI Update did not consider CSR Schedule 10; therefore, substances with a Schedule 10 standard were also retained for further evaluation.

6.3.2 Contaminants of Concern Identified for the Human Health Risk Assessment

The screening results are presented in Table 4 below.

Table 4: Identification of Contaminants of Potential Concern in Surface Water

Parameter	n	Screening Criteria (basis)	95th Percentile Reference	Maximum	Retain as a Surface Water COPC for Human Health?
Polley Lake					
Aluminum	69	9.5 (DW)	0.031	0.20	No
Copper	69	1 (DW)	0.0033	0.0068	No
Lithium	69	0.73 (S)	0.0025	0.0013	No
Strontium	69	22 (S)	0.24	0.34	No
Tin	69	22 (S)	0.000091	<0.0001	No
Hazeltine Channel					
Aluminum	62	9.5 (DW)	0.35	3.54	No
Copper	62	1 (DW)	0.0061	0.064	No
Lithium	62	0.73 (S)	0.0025	0.0059	No
Strontium	62	22 (S)	0.29	0.57	No
Tin	62	22 (S)	0.00023	0.00011	No
Quesnel Lake					
Aluminum	110	9.5 (DW)	0.034	0.13	No
Copper	110	1 (DW)	0.0012	0.028	No
Lithium	110	0.73 (S)	0.0012	0.0017	No
Strontium	110	22 (S)	0.14	0.15	No
Tin	110	22 (S)	0.00005	0.00059	No
Quesnel River					
Aluminum	12	9.5 (DW)	0.02	0.067	No
Copper	12	1 (DW)	0.0047	0.0015	No
Lithium	12	0.73 (S)	Not measured	0.0016	No
Strontium	12	22 (S)	Not measured	0.14	No
Tin	12	22 (S)	Not measured	<0.0001	No

Notes:

Concentrations are in milligrams per litre (mg/L), unless otherwise noted.

< = below method detection limit; % = percent; COPC = contaminant of potential concern; DW = drinking water; n = number of samples; S = CSR Schedule 10.

Based on the screening results, no human health contaminants of concern were identified in surface water. The maximum measured concentrations of aluminum, copper, lithium, strontium and tin in Polley Lake, Hazeltine Channel, Quesnel Lake and Quesnel River were below the CSR Schedule 6 and 10 drinking water standards.

7.0 AIR

Further assessment of aluminum, copper and vanadium in ambient air was conducted for at the request of reviewers. It should be noted that copper and vanadium concentrations in soil were below human health-based soil screening criteria and aluminum is not regulated under the CSR.

7.1 Air Data

Ambient air metal concentrations were not measured at the Mine. Therefore, 1-hour, 24-hour and annual ambient concentrations of copper and vanadium in air were predicted using data from the dustfall monitoring stations at the operational area of the Mine and data from the particulate matter monitoring program completed by Golder in 2015 (Appendix C-2). Data from the operational area of the mine were considered to be a very conservative evaluation of air quality due to the relatively high volume of truck traffic in the vicinity of the air quality monitoring stations compared to what occurs along the Hazeltine Channel. The methods used to predict ambient metals concentrations are described in Appendix C-1.

Local reference concentrations for ambient metals were not available. The nearest monitoring station with metals data is located in Quesnel. However, this station is influenced by local urban and industrial sources that are not present at the Mine. Without representative local reference concentrations, air data were compared to the screening criteria only to identify COPCs in air.

7.2 Air Screening Criteria

Several sources were consulted for air screening criteria. A description of each source is provided in this section.

Agency for Toxic Substances and Disease Registry

The ATSDR is a federal public health agency of the United States Department of Health and Human Services. The ATSDR derives Minimal Risk Levels (MRLs) for non-carcinogenic health effects (ATSDR 2016). The MRLs are based on data that identify the target organ(s) of effect or the most sensitive health effect(s) for a specific duration for a given route of exposure to the substance. The ATSDR generally uses the No Observed Adverse Effect Level/Uncertainty Factor approach to derive MRLs. Physiologically-based pharmacokinetic modelling and benchmark dose modelling have also been used in deriving MRLs. Acute MRLs were derived for exposure durations of 1 to 14 days. The chronic MRLs were derived for exposure durations greater than or equal to 365 days.

The ATSDR MRLs are generally based on the most sensitive endpoint considered to be of relevance to humans. The ATSDR applies a protective approach (i.e., application of margins of safety) to address uncertainty in particular for people who might be most sensitive (e.g., infants, elderly and nutritionally or immunologically compromised). Supporting documentation is available for the MRLs used in this assessment.

United States Environmental Protection Agency Regional Screening Levels

The US EPA has developed residential air regional screening levels (RSLs) (US EPA 2016b) for the protection of human health. The RSLs are risk-based concentrations derived from standardized equations combining exposure information assumptions with US EPA toxicity data. The RSLs were adjusted for residential scenario exposure factors based on default assumptions for an adult. The RSLs are considered by the US EPA to be protective for human exposure (including sensitive groups) over a lifetime. Chemical concentrations above the RSL do not automatically constitute a health risk; however, exceeding an RSL indicates that further evaluation of the potential risks is appropriate. The US EPA RSLs for non-carcinogens are based on a hazard quotient (HQ) of 1.0, and for carcinogens are based on a risk level of 1 in 1,000,000. The carcinogenic RSLs were multiplied by a factor of 10 to adjust to a risk level of 1 in 100,000.

World Health Organization

The World Health Organization (WHO) has developed air quality guidelines to provide a basis for protecting public health from adverse effects of air pollution (WHO 2000). The guidelines are intended to provide background information and guidance to governments in making risk management decisions, particularly in setting standards. These guidelines may also be used in planning processes and various management decisions at a community or regional level. Supporting documentation is available for the WHO guidelines. The air quality guidelines for non-carcinogens were based on a HQ of 1.0, and for carcinogens, are provided for a cancer risk level of 1 in 100,000.

Ontario Ministry of Environment

In the province of Ontario, the Ontario Ministry of the Environment (OMOE) has developed Ambient Air Quality Criteria (AAQC), which may be used in environmental assessments to assess air quality (OMOE 2012). An AAQC is a desirable concentration of a contaminant in air, based on protection against adverse effects on health or the environment. The AAQC are set with different averaging times (e.g., 24-hour, 1 hour and 10 minutes) appropriate for the effect that they are intended to protect against. The effects considered may be health, odour, vegetation, soiling, visibility, corrosion or other effects.

The OMOE has also derived air quality standards used to assess emissions from non-mobile sources of air pollution in Ontario. The Ontario air quality standards are desirable concentrations of air contaminants set at levels protective of the natural environment and sensitive populations (e.g., children, the elderly). The OMOE considers available toxicological information and supporting environmental information to establish effects-based air standards based on the limiting or critical effects (health or environmental considerations) of that chemical.

In general, the OMOE air standards for carcinogens were set at an incremental lifetime cancer risk of one incidence in one million individuals; the OMOE standards were multiplied by a factor of 10 to derive a screening value for a risk level of 1 in 100,000 for the purposes of this screening exercise. Air standards for non-carcinogens were generally derived from reference concentrations (chosen based on available peer-reviewed toxicological information and key studies with associated limiting or critical effect[s]). The air standards for non-carcinogens were generally set at a target HQ of 1.0.

California Office of Environmental Health Hazard Assessment

The California Office of Environmental Health Hazard Assessment (Cal OEHHA) Reference Exposure Levels (RELs) are concentrations of a chemical at or below which adverse non-carcinogenic health effects are not anticipated to occur for a specific exposure duration (Cal OEHHA 2016). The RELs are used in risk assessments to evaluate the potential for adverse non carcinogenic public health effects from facility emissions or similar localized sources in the Air Toxics Hot Spots Program, and from widespread exposures in the Toxic Air Contaminants program. The REL is an exposure at or below which adverse non carcinogenic health effects are not expected to occur in a human population, including sensitive subgroups (e.g., infants and children). Supporting documentation is available for most of the RELs. The chronic RELs for non-carcinogens are based on a HQ of 1.0.

The Cal OEHHA does not develop RELs or air quality guidelines or objectives for carcinogens. Rather, the Cal OEHHA has developed inhalation unit risks (IURs) for use in cancer risk assessments (Cal OEHHA 2009). The Cal OEHHA was contacted regarding the use of their inhalation unit risk factors for screening purposes. Mr. Chris Halm of the California Environmental Protection Agency Air Resources Board indicated that IURs can be adjusted based on an applicable cancer risk level and used as screening values (Halm 2010, pers. comm.). The Cal OEHHA IURs are based on a cancer risk level of 1 in 1,000,000; this level was divided by the IUR and multiplied by a factor of 10 to derive a screening value for a risk level of 1 in 100,000.

Texas Commission on Environmental Quality

The Texas Commission on Environmental Quality (TCEQ) has developed acute (1-hour) short-term and long-term Effects Screening Levels (ESLs) that are used in the air permitting process to evaluate short-term and long-term emissions predicted by air dispersion modelling (TCEQ 2016). The TCEQ has developed a guidance document titled “TCEQ Guidelines to Develop Toxicity Factors” (TCEQ 2015) that outlines the approach and methods used to derive the ESLs, and their application. The short-term ESLs are based on health effects, the potential for odours to be a nuisance, effects on vegetation and corrosive effects. The ESLs are used in the air permit review process, for review of air permit applications, where emissions of one constituent from one site are evaluated at a time (emissions from multiple sites or multiple chemicals are not evaluated).

The TCEQ adjusts short-term reference values to a HQ of 0.3 to derive ESLs protective of cumulative and aggregate exposure. Other jurisdictions do not typically use an HQ approach in their derivation of short-term exposure limits or thresholds. The TCEQ ESLs (which are based on an HQ of 0.3) were conservatively used in the screening process without HQ adjustment (to an HQ of 1.0). However, in cases where TCEQ used the same primary study as another jurisdiction in their derivation of an ESL, preference was given to screening criteria that had not been HQ adjusted.

The long-term ESLs are based on data concerning chronic health and vegetation effects. They are not ambient air standards. If predicted airborne levels of a constituent do not exceed the screening level, adverse health effects are not expected. If predicted ambient levels of constituents in air exceed the screening levels, it does not necessarily indicate a problem but rather triggers a more detailed review.

The chronic ESLs for non-carcinogens are based on a HQ of 0.3, and for carcinogens, the ESLs are based on a risk level of 1 in 100,000. The non-carcinogenic ESLs were multiplied by a factor of 1.0/0.3 (i.e., 3.333) to adjust to a HQ of 1.0.

The acute 1-hour and 24-hour health-based criteria were preferentially obtained from the following agencies:

- ATSDR
- WHO

The lowest health-based criteria was generally selected for use in the screening process. Consideration was also given to relevant test species (i.e., human data versus animal data), study endpoint, quality of the data and date of the study.

The chronic annual health-based screening criteria were preferentially obtained from the following agencies:

- ATSDR
- US EPA
- WHO

Where a health-based screening criteria was not available from the agencies listed above, acute 1-hour, 24-hour and chronic annual health-based criteria from the following agencies were used:

- OMOE
- Cal OEHHA
- TCEQ

Specific details on the derivation of the copper and vanadium screening criteria for the 1-hour, 24-hour and annual averaging times are provided in Table 5 to Table 7, respectively. The selected criteria used in the screening process are highlighted in grey and bolded.

Table 5: Acute 1-Hour Screening Criteria

Substance	Cal OEHHA REL	TCEQ ESL	Toxicological Endpoints and Derivations
Aluminum	-	**90**	**TCEQ**: Criterion based on a health endpoint (interim, supporting documentation not available), as aluminum metal and insoluble aluminum (50 µg/m^3).
Copper	100	**10**	**Cal OEHHA**: Criterion based on a NOAEL of 1 mg copper/m^3 in a study where workers indicated exposure to copper dust was detectable by taste but no other symptoms occurred following exposure to 1 to 3 mg/m^3 copper for an unspecified amount of time (Whitman 1957; as cited in Cal OEHHA 2008). No extrapolation for continuous exposure was applied because the exposure duration was not clearly specified in the reports. An uncertainty factor for intraspecies variability (10) was applied.
			TCEQ: Criterion based on a health endpoint (interim, supporting documentation not available), as copper dusts and mists.
Vanadium	30	**20**	**Cal OEHHA**: Criterion based on respiratory effects (increased respiratory mucus production that was cleared by coughing) in humans exposed to vanadium pentoxide for 8 hours. The LOAEL was 0.25 mg/m^3 and the NOAEL was 0.1 mg/m^3 (Zenz and Berg 1967; as cited in Cal OEHHA 2008). The equivalent 1-hour concentration was determined to be 0.3 mg/m^3 using the following equation: $C^2 = [0.1\ mg/m^3]^2 \times 8\ hours)/1\ hour)$. An uncertainty factor of 10 was applied (1 for use of a LOAEL, 1 for interspecies variation, and 10 for intraspecies variation).
			TCEQ: Criterion based on a health endpoint (interim, supporting documentation not available), as vanadium metal and compounds in PM_{10} as a particulate.

Notes:

Concentrations are in micrograms per cubic metre (µg/m^3), unless otherwise noted.

Bold and shaded text indicates selected screening criteria.

"-" = screening criteria not available; Cal OEHHA = California Office of Environmental Health Hazard Assessment.

ESL = Effects Screening Level; LOAEL = lowest observed adverse effect level; mg/m^3 = milligram per cubic metre.

NOAEL = no observed adverse effect level; PM_{10} = particulate matter with a mean aerodynamic diameter of 10 microns or less.

REL = Reference Exposure Level TCEQ = Texas Commission on Environmental Quality.

Table 6: Acute 24-Hour Screening Criteria

Substance	ATSDR MRL	WHO	OMOE AAQC	Toxicological Endpoints and Derivations
Aluminum	-	-	**120**	**OMOE**: Threshold for aluminum oxide, based on a health endpoint for chemical sorbed to particulates (supporting documentation not available).
Copper	-	-	**50**	**OMOE**: Criterion for copper based on a health endpoint (supporting documentation not available).
Vanadium	0.8	**1**	2	**ATSDR**: Criterion based on a LOAEL of 0.56 mg/m^3 for lung inflammation in rats exposed to vanadium pentoxide for 6 hours/day, 5 days/week for 13 days (ATSDR 2012). The LOAEL was adjusted for continuous exposure (0.1 mg/m^3) and to a human equivalent concentration (HEC) (0.073 mg/m^3). An uncertainty factor of 90 (3 for using minimal LOAEL, 3 for animal to human extrapolation and 10 for human variability) was applied to the HEC.
				WHO: Criterion based on human occupational studies indicating that the LOAEL for vanadium can be assumed to be 20 µg/m^3, based on chronic upper respiratory tract symptoms. The adverse nature of the observed effects including irritation, coughing, and effects on the pharynx, were minimal at 20 µg/m^3 compared to the higher exposures of 1 mg/m^3 where more serious effects such as chronic bronchitis and pneumonia were observed. A susceptible subpopulation was not identified and an uncertainty factor of 20 (to account for use of a concentration where only minimal effects to the respiratory tract were seen and for lack of identification of a susceptible subpopulation) was selected. The WHO value was selected because the criteria was based on a human study.
				OMOE: Criterion for vanadium based on a health endpoint (supporting documentation not available).

Notes:

Concentrations are in micrograms per cubic metre (µg/m^3), unless otherwise noted.

Bold and shaded text indicates selected screening criteria.

µg/m^3 = microgram per cubic metre; "-" = screening criteria not available; AAQC = Ambient Air Quality Criteria.

ATSDR = Agency for Toxic Substances and Disease Registry; HEC = human equivalent concentration.

LOAEL = lowest observed adverse effect level; mg/m^3 = milligram per cubic metre; MRL = Minimal Risk Level.

OMOE = Ontario Ministry of the Environment; WHO = World Health Organization.

Table 7: Chronic Annual Screening Criteria

Substance	Carcinogen Classification	ATSDR MRL	US EPA	TCEQ ESL	Toxicological Endpoints and Derivations
Aluminum	NC	-	**5.2**	6.7 (2)	**US EPA**: Threshold based on a provisional reference concentration of 0.005 mg/m^3 for neurotoxic effects (psychomotor and cognitive impairment) in occupationally exposed workers (US EPA 2006). Workers were exposed to a time-weighted average concentration of 4.6 to 11.5 mg/m^3 for an average of 12 years. The lowest observed adverse effect level (LOAEL) of 4.6 mg/m^3 based on an 8-hour exposure was adjusted for continuous exposure and corrected for a human equivalent concentration (HEC). The LOAEL HEC is 1.64 mg/m^3. An uncertainty factor of 300 (10 for intra-human variability, 10 for using a LOAEL and 3 for an incomplete database) was applied. A residential scenario exposure factor was applied to the reference concentration to derive the screening level.
					TCEQ: Threshold based on a health endpoint (supporting documentation not available). The threshold of 2 µg/m^3 is based on aluminum chloride in PM_{10}. The TCEQ also provides a threshold of 5 µg/m^3 for aluminum metals and soluble aluminum salts in PM_{10}; however the more conservative value of 2 µg/m^3 was chosen for screening.
Copper	NC	-	-	**3.3 (1)**	**TCEQ**: Criterion based on a health endpoint (interim, supporting documentation not available), as copper dusts and mists in PM_{10}.
Vanadium	NC	**0.1**	**0.1**	6.7 (2)	**ATSDR**: Criterion based on degeneration of respiratory epithelium of the epiglottis in mice exposed to vanadium pentoxide for 6 hours/day, 5 days/week for 104 weeks (ATSDR 2012). The human equivalent benchmark concentration lower confidence limit corresponding to the lower 10% incidence of effect of 0.003 mg/m^3 was used and an uncertainty factor of 30 (3 for extrapolating from animals to humans and 10 for human variability) was applied to calculate 0.1 µg/m^3 as the criteria for vanadium pentoxide.
					US EPA: Criterion based on the ATSDR study (see above).
					TCEQ: Criterion based on a health endpoint (interim, supporting documentation not available) as vanadium, metal and compounds in PM_{10}.

Notes:

Concentrations are in micrograms per cubic metre (µg/m^3), unless otherwise noted.

Bold and shaded text indicates selected screening criteria.

µg/m^3 = microgram per cubic metre; % = percent; "-" = screening criteria not available.

ATSDR = Agency for Toxic Substances and Disease Registry; ESL = Effects Screening Level; mg/m^3 = milligram per cubic metre.

MRL = Minimal Risk Level; NC = non-carcinogen; PM_{10} = particulate matter with a mean aerodynamic diameter of 10 microns or less.

TCEQ = Texas Commission on Environmental Quality; US EPA = United States Environmental Protection Agency.

7.3 Air Screening Results

The COPC screening summary for aluminum, copper and vanadium for the 1-hour, 24-hour and annual averaging times is provided in Table 8 to Table 10, respectively.

Table 8: Identification of Contaminants of Potential Concern in Air – Acute 1-Hour

Substance	1-Hour Air Screening Criteria	Summary Statistics for Predicted Concentrations			Retain as an Air COPC for Human Health?
		Minimum	Average	Maximum	
Aluminum	90	0	0.24	6.97	No
Copper	10	0	0.014	0.42	No
Vanadium	20	0	0.0028	0.082	No

Notes:

Concentrations are in micrograms per cubic metre (µg/m^3), unless otherwise noted.

COPC = contaminant of potential concern.

Table 9: Identification of Contaminants of Potential Concern in Air – Acute 24-Hour

Substance	24-Hour Air Screening Criteria	Summary Statistics for Predicted Concentrations			Retain as an Air COPC for Human Health?
		Minimum	Average	Maximum	
Aluminum	120	0.0017	0.12	2.1	No
Copper	50	0.00010	0.0070	0.13	No
Vanadium	1	0.000021	0.0014	0.025	No

Notes:

Concentrations are in micrograms per cubic metre (µg/m^3), unless otherwise noted.

COPC = contaminant of potential concern.

Table 10: Identification of Contaminants of Potential Concern in Air – Chronic Annual

Substance	Annual Air Screening Criteria	Predicted Annual Average Concentration	Retain as an Air COPC for Human Health?
Aluminum	5.2	0.24	No
Copper	3.3	0.014	No
Vanadium	0.1	0.0028	No

Notes:

Concentrations are in micrograms per cubic metre (µg/m^3), unless otherwise noted.

COPC = contaminant of potential concern.

The maximum predicted aluminum, copper and vanadium concentrations in ambient air were below the air screening criteria for the 1-hour, 24-hour and annual averaging times. Therefore, risks associated with aluminum, copper and vanadium in ambient air are acceptable.

7.4 Particulate Matter

Golder completed bi-weekly monitoring of particulates between 7 July and 29 September 2015 as part of a fugitive dust management plan for the Mount Polley Mine TSF and the Polley Flats area. Four DustTRAK™ monitoring stations were set up around the TSF (Figure 13 in Appendix C-2). Twenty-four hour total suspended particulate, particulate matter with a mean aerodynamic diameter of 10 microns or less (PM_{10}) and particulate matter with a mean aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$) measurements from these stations were compared to the BC Ambient Air Quality Objectives (AAQOs) (BC MoE 2014[3]). Monitoring data were also compared to 24-hour particulate concentrations from nearby towns, Quesnel and Williams Lake, for context. The Quesnel Lake station was located at Quesnel Senior Secondary, approximately 76 kilometers northwest of the Mine. The Williams Lake station was located at Williams Lake Columneetza School, approximately 60 kilometers southwest of the Mine.

The results of the continuous particulate monitoring program are provided in (Appendix C-2). In summary:

- Of the 82 days monitored, 3 days had PM_{10} and $PM_{2.5}$ concentrations greater than the AAQOs. However, these exceedances were attributed to regional forest fires rather than site activities. Twenty-four-hour particulate concentrations monitored on the Study Area showed similar trends to those measured in Quesnel and Williams Lake, indicating that monitored concentrations were influenced by regional trends as opposed to potential localized emission sources.
- The continuous monitoring data indicated that the dust management measures appear to be effective at managing dust in the TSF and Polley Flats.

Airborne particulate matter is considered to a non-threshold acting substance such that a concentration below which no adverse effects are expected is not likely to exist (WHO 2006). However, the continuous particulate monitoring results from 2015 indicated that elevated particulate concentrations appeared to be related to forest fires and not the TSF embankment breach. Therefore, the dust management measures appeared to be effective at managing dust in the active area of the Mine. Dust production downgradient of the active area of the mine would be expected to be far less than in the active area as there is significantly more truck traffic in and around the active mine area. Therefore, further evaluation of exposure to particulate matter was not conducted as there was no significant exposure pathway to dust.

8.0 VEGETATION

Further assessment of potential contamination in vegetation was conducted for aluminum, copper and vanadium at the request of reviewers.

[3] The 2014 BC MoE AAQOs were superseded by a 2016 update; however, the 24-hour objectives for total suspended particulate, PM_{10} and $PM_{2.5}$ used in the continuous particulate monitoring program did not change.

8.1 Vegetation Data

Vegetation samples (berries, conifers, grasses and shrubs), along with co-located soil samples, were collected in 2015 and 2016 from the floodplain and halo areas around Hazeltine Channel after the TSF embankment breach. Edible plants were collected in support of the human health and ecological risk assessments and included:

- Berries: brambleberry, bunchberry, highbush cranberry, raspberry, Saskatoon berry, thimbleberry
- Conifers: spruce needles
- Grasses: barley, bunchgrass, lolium sp., Poa sp., rye, stiff needle, tufted hairgrass
- Shrubs: willow (MacCalla's, MacKenzie's, pacific, Sitka), devil's club

Background vegetation samples collected in 2015 and 2016 included:

- Berries: baneberry, black currant, black twinberry, bunchberry, false Solomon's seal berry, highbush cranberry, raspberry, thimbleberry
- Conifers: spruce needles
- Grasses: barley, Lolium sp. rye
- Shrubs: willow (Bebb's, MacCalla's, Scouler's, Sitka, variable), devil's club

Baseline vegetation data were also available. Sampling was conducted in 1989, 1995 and 1996 to document pre-mine concentrations of metals in plants on or near the mine site in areas including the Central and West Pits (now the Cariboo and Springer Pits), the Mill Site and the TSF (Golder 2016b). Aluminum and vanadium were not measured in the historic plant samples, and berry samples were not collected in the baseline study. Soil samples were not collected with baseline plant samples.

The 2015 and 2016 co-located soil and vegetation results were used to evaluate whether concentrations of aluminum, copper and vanadium in plant tissue have increased as a result of tailings deposition along the Hazeltine Channel (Appendix E-1).

8.2 Vegetation Screening Approach

Currently, human health-based screening criteria for vegetation are not available. A statistical analysis of aluminum, copper and vanadium in plant tissue was completed to determine if concentrations of these metals in plants had increased as a result of the TSF embankment breach. Concentrations of aluminum, copper and vanadium in plant tissues were compared to reference and baseline plant tissue concentrations. The results of the statistical analysis are provided in Appendix E-1 and summarized below. The analysis was designed to evaluate temporal and spatial differences in metals concentrations in plants. Specifically, the analysis was used to address the following question in support of the HHRA: are metal concentrations in plants collected from exposed areas statistically higher than concentrations measured in plants from background areas and the pre-mine baseline study?

Tissue data were first separated into different populations based on tissue type, sample area (e.g., background, baseline, halo or floodplain), and collection year (baseline data was not separated by year). Background and baseline data were not pooled as the samples were collected at least 19 years apart from different parts of the mine area. Floodplain and halo data were kept as separate populations as there are differences between these two areas, namely; i) growth medium – plants growing in the halo are generally rooted in native soils underlying tailings while floodplain plants have been planted directly into the deposited tailings till mixture, and ii) age of plants – plants growing in the halo are generally well established and have been growing for several years, while all plants in the floodplain have been planted post-TSF embankment breach as part of restoration efforts.

Aluminum, copper and vanadium concentrations in plant tissue were also compared to the co-located soil samples to determine tissue to soil ratios (i.e., bioaccumulation factors).

8.3 Vegetation Results

There were no statistical differences between 2015 and 2016 data, with the exception of selenium concentrations in floodplain grasses. However, there was no environmental or geochemical reason to suggest that selenium concentrations would differ between the two years. Therefore, data collected in both years were pooled for the same area and tissue type to evaluate whether aluminum, copper and vanadium concentrations in plant tissues were elevated in areas impacted by tailings deposition.

The results for aluminum, copper and vanadium are summarized as follows:

- Copper concentrations in grass and shrubs from the floodplain were statistically higher than concentrations in background and baseline samples, although the concentrations measured in the floodplain samples were generally within the range of normal for copper concentrations in plants. Copper concentrations in conifers from the halo were statistically higher than concentrations in background samples, but were not statistically higher than in baseline samples. Copper concentrations in berries from the halo were not statistically higher than in background samples (no baseline data was available for berries).
- Vanadium concentrations in grass and shrubs from the floodplain were significantly higher than background samples. Vanadium concentrations in conifers and berries from the halo area were significantly higher than background samples. Vanadium was not analyzed in baseline samples.
- In general, plant tissue concentrations of aluminum were highest in the floodplain, and were higher in the halo than the background forest. However, the range of aluminum concentrations in plants from the halo and background area overlapped. The generally greater concentrations observed in floodplain than halo plants may be attributed to their younger age and the lower organic matter of the substrate they were planted into.
- Soil to plant bioaccumulation factors for copper and vanadium were below one and decreased with increasing soil concentration, indicating a non-linear relationship between copper concentrations in soil and plants. Soil to plant bioaccumulation factors for aluminum were also below one.

Based on the above results, aluminum, copper and vanadium were retained as COPCs in vegetation and carried forward in the HHRA.

9.0 FISH TISSUE

Fish tissue samples (carcass, gills, kidney, liver, muscle, ovary and whole body) were collected from several fish species (burbot [*Lota lota*], kokanee [*Oncorhynchus nerka*], lake trout [*Salvelinus namaycush*], largescale sucker [*Catostomus macrocheilus*], longnose dace [*Rhinichthys cataractae*], longnose sucker [*Catostomus catostomus*], mountain whitefish [*Prosopium williamsoni*], northern pikeminnow [*Ptychocheilus oregonensis*], peamouth chub [*Mylocheilus caurinus*], rainbow trout [*Oncorhynchus mykiss*], redside shiner [*Richardsonius balteatus*] and sockeye salmon [*Oncorhynchus nerka*]) after the TSF embankment breach. The tissue chemistry results from 2014, 2015 and a subset from spring 2016 are presented Appendix D-1. The data were divided into exposure and reference sites, and subdivided by species, tissue type and year to help determine if there has been a change in metal concentrations in fish as a result of the TSF embankment breach. The results are summarized as follows:

- Copper concentrations in lake trout muscle samples (2014) and rainbow trout muscle samples (2014 and 2015) were similar among reference and exposed sites.
- Vanadium concentrations in lake trout and rainbow trout muscle tissue were generally below the detection limit.
- For copper and vanadium, concentrations in fish tissues did not appear to be different in exposed compared to reference sites.

Minnow also collected fish tissue samples in 2016, and the results are reported in Appendix D-2[4].

Fish tissue screening criteria are currently not available. Therefore, the COPCs retained in other media were also retained for fish tissue. Lake trout and rainbow trout were considered to be representative fish species consumed by people. The summary statistics for lake trout and rainbow trout are presented in Table 11.

Table 11: Fish Tissue Summary Statistics

COPC	Waterbody	n	95th Percentile Reference[1]	Maximum
Lake trout				
Aluminum	Quesnel Lake	61	0.76	3.96
Copper	Quesnel Lake	61	0.63	0.95
Vanadium	Quesnel Lake	61	0.020	0.030
Rainbow trout				
Aluminum	Quesnel Lake	2	0.40	0.88
Copper	Quesnel Lake	2	0.36	0.32
Vanadium	Quesnel Lake	2	0.02	0.16
Aluminum	Polley Lake and Frypan Creek	40	0.40	16
Copper	Polley Lake and Frypan Creek	40	0.36	0.99

[4] Will be included with the terrestrial ecological risk assessment and aquatic ecological risk assessment submission.

COPC	Waterbody	n	95th Percentile Reference[1]	Maximum
Vanadium	Polley Lake and Frypan Creek	40	0.02	0.086
Aluminum	Quesnel River	20	0.40	4.7
Copper	Quesnel River	20	0.36	9.35
Vanadium	Quesnel River	20	0.02	0.42

1) The reference samples for lake trout were collected from Quesnel Lake-East. The reference samples for rainbow trout were collected from Bootjack Lake and Trio Lake (the lower of the two is presented).

COPC = contaminant of potential concern; n = number of samples.

10.0 SUMMARY OF CONTAMINANTS OF POTENTIAL CONCERN

Based on the results of the DSI Update and the human health screening completed for soil, groundwater, sediment and surface water, vanadium was identified as a COPC in sediment and retained for further analysis in the HHRA. Aluminum was evaluated at the request of project reviewers and was retained as a COPC in the HHRA. Further assessment of potential contamination in air and vegetation was conducted for aluminum, copper and vanadium at the request of reviewers. Concentrations of copper and vanadium in grass and shrubs were statistically greater in the Study Area than background. Concentrations of aluminum were generally higher in halo than in background. Therefore, aluminum, copper and vanadium were retained for further analysis in the HHRA.

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LIST OF ACRONYMS AND ABBREVIATIONS

%	Percent
µg/m^3	microgram per cubic metre
AAQC	Ambient Air Quality Criteria
AAQO	Ambient Air Quality Objective
AL	Agricultural Land
ATSDR	Agency for Toxic Substances and Disease Registry
BC	British Columbia
BC MoE	British Columbia Ministry of the Environment
Cal OEHHA	California Office of Environmental Health Hazard Assessment
CCME	Canadian Council of Ministers of the Environment
COPC	contaminant of potential concern
CSR	Contaminated Sites Regulation
DSI	Detailed Site Investigation
DW	Drinking Water
EMA	Environmental Management Act
ESL	Effects Screening Level
Golder	Golder Associates Ltd.
HEC	Human Equivalent Concentration
HHRA	human health risk assessment
HQ	hazard quotient
IUR	inhalation unit risk
LOAEL	lowest observed adverse effect level
mg/kg	milligrams per kilogram
mg/kg/day	milligrams per kilogram per day
mg/L	milligrams per liter
mg/m^3	milligram per cubic metre
Minnow	Minnow Environmental Inc.
MPMC	Mount Polley Mining Corporation
MRL	Minimum Risk Level
nc	not calculated
NC	non carcinogen
NOAEL	no observed adverse effect level
OMOE	Ontario Ministry of Environment
RL	Residential Land
PAH	Polycyclic Aromatic Hydrocarbon
PL	parkland
$PM_{2.5}$	particulate matter with a mean aerodynamic diameter of 2.5 microns
PM_{10}	particulate matter with a mean aerodynamic diameter of 10 microns
REL	Reference Exposure Level

RSL	Regional Screening Level
TCEQ	Texas Commission on Environmental Quality
TSF	Tailings Storage Facility
UCLM	Upper Confidence Limit of the Mean
US EPA	United States Environmental Protection Agency
WHO	World Health Organization

ATTACHMENT 1
Sediment Data

Table B-1-1: Local Reference Concentrations - Bootjack Lake
MPMC - Human Health Risk Assessment

Parameter	n	% Det	Minimum	Average	Standard Deviation	95th Percentile Reference	Maximum
Aluminum (Al)	24	100%	15,600	18,275	1192	19,700	20,000
Antimony (Sb)	24	100%	0.74	0.89	0.096	1.08	1.09
Arsenic (As)	24	100%	5.27	6.51	0.74	7.75	8.48
Barium (Ba)	24	100%	170	241	37.8	298	311
Beryllium (Be)	24	100%	0.48	0.68	0.077	0.78	0.79
Bismuth (Bi)	24	83%	0.11	0.13	0.019	0.15	0.18
Boron (B)	24	100%	12	14.8	1.39	17	17
Cadmium (Cd)	24	100%	0.29	0.42	0.068	0.50	0.60
Calcium (Ca)	24	100%	7020	8871	1191	10,870	11,000
Chromium (Cr)	24	100%	33.4	43.3	16.5	57.6	117
Cobalt (Co)	24	100%	9.7	11.3	1.02	13.0	14
Copper (Cu)	24	100%	293	356	33.6	409	434
Iron (Fe)	24	100%	21,700	26,163	3012	32,065	33,400
Lead (Pb)	24	100%	4.78	9.58	1.96	11.8	11.9
Lithium (Li)	24	100%	9.9	11.9	1.24	13.6	14.9
Magnesium (Mg)	24	100%	4410	5327	393	6000	6340
Manganese (Mn)	24	100%	639	1304	823	3188	3850
Mercury (Hg)	24	100%	0.19	0.28	0.052	0.36	0.37
Molybdenum (Mo)	24	100%	2.75	3.65	0.71	4.82	5.46
Nickel (Ni)	24	100%	22.9	31.9	12.8	42.7	89.5
Phosphorus (P)	24	100%	1110	1752	633	3172	3550
Potassium (K)	24	100%	1090	1395	163	1723	1760
Selenium (Se)	24	100%	2.12	2.55	0.21	2.79	2.91
Silver (Ag)	24	100%	0.25	0.36	0.040	0.42	0.43
Sodium (Na)	24	100%	180	312	228	830	1090
Strontium (Sr)	24	100%	81.2	102	12.8	126	136
Sulfur (S)-Total	13	100%	5900	7108	822	8260	9100
Thallium (Tl)	24	100%	0.083	0.12	0.014	0.14	0.15
Tin (Sn)	24	100%	0.35	1.69	2.10	6.43	6.98
Titanium (Ti)	24	100%	386	537	110	767	786
Uranium (U)	24	100%	1.7	2.13	0.22	2.52	2.65
Vanadium (V)	24	100%	58.9	68.0	5.90	80.5	83.8
Zinc (Zn)	24	100%	61.8	73.1	9.50	86.2	108

Notes:

Units are in milligram per kilogram (mg/kg), unless otherwise noted.

% det = percent detected; n = number of samples.

Table B-1-2: Local Reference Concentrations - Quesnel Lake Littoral
MPMC - Human Health Risk Assessment

Parameter	n	% Det	Minimum	Average	Standard Deviation	95th Percentile Reference	Maximum
Aluminum (Al)	18	100%	9570	14,882	4392	22,095	26,600
Antimony (Sb)	18	72%	0.23	0.23	0.089	0.34	0.37
Arsenic (As)	18	100%	2.07	3.62	1.02	5.05	5.37
Barium (Ba)	18	100%	36.2	98.1	31.3	127	135
Beryllium (Be)	18	100%	0.3	0.39	0.10	0.56	0.73
Bismuth (Bi)	18	56%	0.1	0.16	0.11	0.33	0.51
Boron (B)	18	0%	<10	10	nc	10	<10
Cadmium (Cd)	18	100%	0.069	0.25	0.10	0.35	0.36
Calcium (Ca)	18	100%	5520	7429	2200	10,825	15,500
Chromium (Cr)	18	100%	37.6	48.2	5.62	56.2	60.5
Cobalt (Co)	18	100%	8.66	12.2	4.13	17.9	26.1
Copper (Cu)	18	100%	23.2	30.6	6.43	38.0	53.6
Iron (Fe)	18	100%	20,200	27,694	8206	41,855	50,100
Lead (Pb)	18	100%	4.58	7.14	3.15	12.5	15.3
Lithium (Li)	18	100%	9.8	18.7	12.5	40.4	47.5
Magnesium (Mg)	18	100%	5300	7336	2029	10,760	12,800
Manganese (Mn)	18	100%	233	312	76.3	400	573
Mercury (Hg)	18	100%	0.013	0.032	0.012	0.047	0.048
Molybdenum (Mo)	18	100%	0.31	0.68	0.21	0.94	0.99
Nickel (Ni)	18	100%	25.1	35.6	12.1	53.0	74.1
Phosphorus (P)	18	100%	825	1079	94.4	1230	1230
Potassium (K)	18	100%	900	1508	912	2859	4780
Selenium (Se)	18	100%	0.24	0.50	0.16	0.70	0.71
Silver (Ag)	18	100%	0.053	0.13	0.033	0.16	0.17
Sodium (Na)	18	100%	290	381	48.9	463	480
Strontium (Sr)	18	100%	49.1	67.1	15.8	92.4	120
Sulfur (S)-Total	8	50%	600	613	162	895	1000
Thallium (Tl)	18	100%	0.095	0.13	0.055	0.20	0.34
Tin (Sn)	18	100%	0.27	0.38	0.080	0.56	0.59
Titanium (Ti)	18	100%	505	871	174	1101	1160
Uranium (U)	18	100%	0.86	1.21	0.31	1.84	1.98
Vanadium (V)	18	100%	24.3	48.6	12.2	61.6	61.8
Zinc (Zn)	18	100%	50.1	63.0	9.82	78.0	90.5

Notes:
Units are in milligram per kilogram (mg/kg), unless otherwise noted.
< = below method detection limit; % det = percent detected; n = number of samples; nc = not calculated.

Table B-1-3: Sediment Data Screening - Polley Lake
MPMC - Human Health Risk Assessment

Parameter	CSR RL/PL Standard[1]	Notes	95th Percentile Reference[2]	Polley Lake Summary Statistics[3]						Retain for Further Evaluation?
				n	% Det	Minimum	Average	Standard Deviation	Maximum	
Aluminum (Al)	-		19,700	44	100%	5430	22,801	4762	**29,800**	**Yes**[4]
Antimony (Sb)	20	G	1.08	44	100%	0.13	0.65	0.27	**1.33**	No
Arsenic (As)	100	I	7.75	44	100%	5.31	12.2	1.84	**14.7**	No
Barium (Ba)	6500	I	298	44	100%	57.6	249	57.8	**349**	No
Beryllium (Be)	4	G	0.78	44	100%	0.17	0.80	0.16	**1.06**	No
Bismuth (Bi)	-		0.15	44	48%	0.10	0.11	0.015	**0.18**	No
Boron (B)	-		17.0	44	84%	10	12.4	2.60	**20**	No
Cadmium (Cd)	35	I	0.50	44	100%	0.081	0.20	0.093	**0.54**	No
Calcium (Ca)	-		10,870	44	100%	12,700	29,859	28,414	**213,000**	No
Chromium (Cr)	100	I	57.6	44	100%	9.86	23.6	16.0	**104**	**Yes**
Cobalt (Co)	50	G	13.0	44	100%	3.6	18.1	4.17	**25.6**	No
Copper (Cu)	15,000	I	409	44	100%	69	611	158	**864**	No
Iron (Fe)	-		32,065	44	100%	8920	32,116	9109	**56,600**	No
Lead (Pb)	400	I	11.8	44	100%	1.92	6.93	1.81	10.1	No
Lithium (Li)	1600	S	13.6	44	100%	5.2	20.7	4.69	**28.6**	No
Magnesium (Mg)	-		6000	44	100%	4160	12,195	3093	**19,100**	No
Manganese (Mn)	1800	S	3188	44	100%	481	1322	983	**4340**	**Yes**
Mercury (Hg)	15	I	0.36	44	100%	0.032	0.0994	0.0323	0.2110	No
Molybdenum (Mo)	10	G	4.82	44	100%	1.49	6.44	3.35	**13.8**	**Yes**
Nickel (Ni)	100	G	43	44	100%	7.81	19.0	11.3	**71.8**	No
Phosphorus (P)	-		3172	44	100%	655	1352	295	1980	No
Potassium (K)	-		1723	44	100%	460	2120	479	**2890**	No
Selenium (Se)	3	G	2.79	44	100%	0.94	2.43	1.37	**5.75**	**Yes**
Silver (Ag)	20	G	0.42	44	100%	0.054	0.304	0.064	0.40	No
Sodium (Na)	-		830	44	100%	430	1210	324	**1960**	No
Strontium (Sr)	47,000	S	126	44	100%	111	234	56	**494**	No
Sulfur (S)-Total	-		8260	28	100%	1000	5764	4548	**23,400**	No
Thallium (Tl)	-		0.14	44	45%	0.051	0.060	0.016	0.12	No
Tin (Sn)	50	G	6.43	44	100%	0.26	1.79	0.62	4.68	No
Titanium (Ti)	-		767	44	100%	360	1559	348	**2090**	No
Uranium (U)	16	S	2.52	44	100%	0.39	1.30	0.26	1.91	No
Vanadium (V)	200	G	80.5	44	100%	25	120	36.4	**219**	**Yes**
Zinc (Zn)	10,000	I	86.2	44	100%	15.8	73.0	31.3	**220**	No

Notes:

Units are in milligram per kilogram (mg/kg), unless otherwise noted.

% det = percent detected; "-" = screening criteria not available or not applicable; G = generic; I = intake of contaminated soil; n = number of samples; S = Schedule 10.

1. British Columbia Ministry of Environment (BC MoE). 2016. Contaminated Sites Regulation (CSR) Schedule 5 Matrix Numerical Soil Standards, Schedule 4 Generic Numerical Soil Standards and Schedule 10 Generic Numerical Soil and Water Standards. B.C. Reg. 375/96, O.C. 1480/96 includes amendments up to B.C. Reg. 184/2016, July 19, 2016. The Residential (RL)/Urban Park (PL) land use standards were applied.

2. The reference samples were collected from Bootjack Lake. For non-detect values, the full detection limit was assumed for calculating the 95th percentile.

3. For non-detect values, the full detection limit was assumed for calculating summary statistics.

4. Aluminum is not regulated under the CSR, but was retained as a COPC at the request of the BC MoE.

value = Exceeds screening criteria

value = Exceeds 95th percentile reference

Table B-1-4: Sediment Data Screening - Hazeltine Channel
MPMC - Human Health Risk Assessment

Parameter	CSR RL/PL Standard[1]	Notes	95th Percentile Reference[2]	Hazeltine Channel Summary Statistics[3]						Retain for Further Evaluation?
				n	% Det	Minimum	Average	Standard Deviation	Maximum	
Aluminum (Al)	-		18,000	10	100%	13,300	20,760	3917	**26,000**	**Yes[4]**
Antimony (Sb)	20	G	1.33	10	100%	0.46	0.61	0.097	0.76	No
Arsenic (As)	100	I	12.1	10	100%	12.9	15.1	1.44	**17.3**	No
Barium (Ba)	6500	I	136	10	100%	152	203	25.3	**235**	No
Beryllium (Be)	4	G	0.46	10	100%	0.52	0.66	0.081	**0.76**	No
Bismuth (Bi)	-		20	10	100%	0.10	0.16	0.034	0.2	No
Boron (B)	-		5.4	10	0%	<10	10	nc	<10	No
Cadmium (Cd)	35	I	0.35	10	100%	0.19	0.25	0.042	0.31	No
Calcium (Ca)	-		13,400	10	100%	21,600	26,760	3153	**31,800**	No
Chromium (Cr)	100	I	40.1	10	100%	26.8	34.8	6.66	**43.1**	No
Cobalt (Co)	50	G	11	10	100%	15.7	19.1	2.18	**22.3**	No
Copper (Cu)	15,000	I	94.6	10	100%	339	430	90.6	**630**	No
Iron (Fe)	-		35,400	10	100%	43,000	48,510	4012	**57,600**	No
Lead (Pb)	400	I	6.70	10	100%	7.24	9.82	1.43	**11.6**	No
Lithium (Li)	1600	S	14.8	10	100%	15.3	23.9	5.14	**29.6**	No
Magnesium (Mg)	-		6430	10	100%	7470	11,603	2098	**14,300**	No
Manganese (Mn)	1800	S	1350	10	100%	562	805	129	1030	No
Mercury (Hg)	15	I	0.14	10	100%	0.087	0.097	0.008	0.11	No
Molybdenum (Mo)	10	G	1.50	10	100%	2.17	3.11	0.71	**4.28**	No
Nickel (Ni)	100	G	24.4	10	100%	18.0	30.6	8.67	**41.5**	No
Phosphorus (P)	-		1380	10	100%	1110	1373	204	**1670**	No
Potassium (K)	-		1450	10	100%	1310	2151	513	**2860**	No
Selenium (Se)	3	G	3.32	10	100%	0.79	1.61	0.76	2.85	No
Silver (Ag)	20	G	0.16	10	100%	0.20	0.24	0.028	**0.29**	No
Sodium (Na)	-		350	10	100%	560	703	113	**880**	No
Strontium (Sr)	47,000	S	118	10	100%	145	172	12.5	**190**	No
Sulfur (S)-Total	-		nm	10	100%	800	1100	205	1400	No
Thallium (Tl)	-		0.094	10	100%	0.054	0.11	0.041	**0.17**	No
Tin (Sn)	50	G	1.1	10	100%	0.77	1.12	0.26	**1.59**	No
Titanium (Ti)	-		776	10	100%	1100	1368	213	**1770**	No
Uranium (U)	16	S	1.26	10	100%	0.96	1.10	0.10	**1.27**	No
Vanadium (V)	200	G	74.5	10	100%	113	151	33.8	**212**	**Yes**
Zinc (Zn)	10000	I	67.6	10	100%	59.4	82.4	12.3	**97.5**	No

Notes:

Units are in milligram per kilogram (mg/kg), unless otherwise noted.

< = below method detection limit; % det = percent detected; "-" = screening criteria not available or not applicable; G = generic; I = intake of contaminated soil; n = number of samples; nc = not calculated; nm = not measured; S = Schedule 10.

1. British Columbia Ministry of Environment (BC MoE). 2016. Contaminated Sites Regulation (CSR) Schedule 5 Matrix Numerical Soil Standards, Schedule 4 Generic Numerical Soil Standards and Schedule 10 Generic Numerical Soil and Water Standards. B.C. Reg. 375/96, O.C. 1480/96 includes amendments up to B.C. Reg. 184/2016, July 19, 2016. The Residential (RL)/Urban Park (PL) land use standards were applied.

2. The reference concentrations were based on historical samples. The higher 95th percentile of the Lower Creek and Upper Creek reported in Minnow's 2015 sediment quality report was selected to represent reference conditions.

3. For non-detect values, the full detection limit was assumed for calculating summary statistics.

4. Aluminum is not regulated under the CSR, but was retained as a COPC at the request of the BC MoE.

value = Exceeds screening criteria

value = Exceeds 95th percentile reference

Table B-1-5: Sediment Data Screening - Quesnel Lake Littoral
MPMC - Human Health Risk Assessment

Parameter	CSR RL/PL Standard[1]	Notes	95th Percentile Reference[2]	Quesnel Lake Summary Statistics[3]						Retain for Further Evaluation?
				n	% Det	Minimum	Average	Standard Deviation	Maximum	
Aluminum (Al)	-		22,095	40	100%	8470	13,956	2905	18,600	**Yes**[4]
Antimony (Sb)	20	G	0.34	40	100%	0.17	0.38	0.20	**1.46**	No
Arsenic (As)	100	I	5.05	40	100%	1.8	9.26	5.05	**19.1**	No
Barium (Ba)	6500	I	127.4	40	100%	39.2	105	50.3	**212**	No
Beryllium (Be)	4	G	0.56	40	100%	0.28	0.45	0.13	**0.73**	No
Bismuth (Bi)	-		0.33	40	30%	0.1	0.11	0.012	0.15	No
Boron (B)	-		10	40	0%	<10	10	nc	<10	No
Cadmium (Cd)	35	I	0.35	40	100%	0.083	0.20	0.098	**0.49**	No
Calcium (Ca)	-		10,825	40	100%	7040	18,865	14,687	**98,900**	No
Chromium (Cr)	100	I	56.2	40	100%	13	36.0	15.3	**72.1**	No
Cobalt (Co)	50	G	17.9	40	100%	7.51	16.2	6.48	**35.1**	No
Copper (Cu)	15,000	I	38.0	40	100%	25.6	330	294	**1020**	No
Iron (Fe)	-		41,855	40	100%	17,200	60,723	48,907	**216,000**	No
Lead (Pb)	400	I	12.5	40	100%	3.88	6.09	1.52	11.9	No
Lithium (Li)	1600	S	40.4	40	100%	10.1	14.1	2.56	19.6	No
Magnesium (Mg)	-		10,760	40	100%	4900	7919	2043	**12,200**	No
Manganese (Mn)	1800	S	400	40	100%	205	488	192	**852**	No
Mercury (Hg)	15	I	0.047	40	100%	0.029	0.072	0.026	**0.15**	No
Molybdenum (Mo)	10	G	0.94	40	100%	0.29	2.16	1.40	**5.48**	No
Nickel (Ni)	100	G	53.0	40	100%	11.7	23.4	10.8	**54.2**	No
Phosphorus (P)	-		1230	40	100%	510	1318	530	**2420**	No
Potassium (K)	-		2859	40	100%	530	1102	376	1870	No
Selenium (Se)	3	G	0.70	40	100%	0.15	1.01	0.82	**4.14**	**Yes**
Silver (Ag)	20	G	0.16	40	98%	0.053	0.23	0.13	**0.53**	No
Sodium (Na)	-		463	40	100%	170	520	307	**1220**	No
Strontium (Sr)	47,000	S	92.4	40	100%	50.2	110	54.0	**289**	No
Sulfur (S)-Total	-		895	20	80%	600	1515	2305	**11,300**	No
Thallium (Tl)	-		0.20	40	35%	0.050	0.060	0.019	0.13	No
Tin (Sn)	50	G	0.56	40	100%	0.25	0.95	0.56	**2.83**	No
Titanium (Ti)	-		1101	40	100%	655	1183	307	**1800**	No
Uranium (U)	16	S	1.84	40	100%	0.74	1.06	0.21	1.68	No
Vanadium (V)	200	G	61.6	40	100%	39.7	219	204	**869**	**Yes**
Zinc (Zn)	10000	I	78.0	40	100%	40.1	58.7	12.4	**86**	No

Notes:

Units are in milligram per kilogram (mg/kg), unless otherwise noted.

< = below method detection limit; % det = percent detected; "-" = screening criteria not available or not applicable; G = generic; I = intake of contaminated soil; n = number of samples; nc = not calculated; S = Schedule 10.

1. British Columbia Ministry of Environment (BC MoE). 2016. Contaminated Sites Regulation (CSR) Schedule 5 Matrix Numerical Soil Standards, Schedule 4 Generic Numerical Soil Standards and Schedule 10 Generic Numerical Soil and Water Standards. B.C. Reg. 375/96, O.C. 1480/96 includes amendments up to B.C. Reg. 184/2016, July 19, 2016. The Residential (RL)/Urban Park (PL) land use standards were applied.

2. The reference samples were collected from Quesnel Lake by Minnow in 2014, 2015 and 2016. For non-detect values, the full detection limit was assumed for calculating the 95th percentile.

3. For non-detect values, the full detection limit was assumed for calculating summary statistics.

4. Aluminum is not regulated under the CSR, but was retained as a COPC at the request of the BC MoE.

value = Exceeds screening criteria

value = Exceeds 95th percentile reference

APPENDIX B-2
Berry and Fish Ingestion Rates

Table B-2-1: Berry and Fish Ingestion Rates
MPMC - Human Health Risk Assessment

Gender	95th Percentile Berry Consumption Rate (g/day)							Average Berry Consumption Rate (g/day)						
	Women			Men			Maximum	Women			Men			Maximum
Age	19-50	51-70	71+	19-50	51-70	71+		19-50	51-70	71+	19-50	51-70	71+	
Blue huckleberries	7.33	5.45	5.62	9.71	3.18	0.20	9.71	1.18	0.96	0.65	1.72	0.93	0.04	1.72
Red huckleberries	1.83	1.36	3.75	4.86	1.27	0.69	4.86	0.43	0.18	1.15	0.89	0.31	0.14	1.15
Soapberries	7.33	5.45	7.50	9.71	2.54	0.20	9.71	1.60	1.36	2.24	2.00	0.63	0.02	2.24
Blueberries	7.33	5.45	6.56	5.46	3.18	0.99	7.33	1.26	0.83	1.08	1.19	1.27	0.25	1.27
Low bush cranberries	0.92	1.02	1.87	1.62	0.85	0.39	1.87	0.24	0.21	0.41	0.35	0.21	0.04	0.41
High bush cranberries	0.61	0.91	1.87	1.01	0.85	0.35	1.87	0.21	0.18	0.50	0.24	0.22	0.05	0.50
95th Percentile Adult Berry Consumption Rate							35.35	**Adult Berry Consumption Rate**						7.29

Gender	95th Percentile Freshwater Fish Consumption Rate (g/day)							Average Freshwater Fish Consumption Rate (g/day)						
	Women			Men			Maximum	Women			Men			Maximum
Age	19-50	51-70	71+	19-50	51-70	71+		19-50	51-70	71+	19-50	51-70	71+	
Trout, any	7.18	10.85	2.39	23.26	14.04	4.40	23.26	1.4	2	1.31	3.95	3.43	0.88	3.95
Rainbow trout	2.39	2.89	0.48	8.5	3.51	4.4	8.5	0.56	0.82	0.07	1.39	1.48	0.43	1.48
Lake trout	1.2	2.89	1.91	2.68	3.51	2.20	3.51	0.28	0.28	0.24	0.52	0.54	0.16	0.54
Dolly varden trout	1.5	2.89	0.48	3.8	2.63	2.2	3.8	0.23	0.54	0.09	0.7	0.49	0.26	0.7
Steelhead trout	0.6	0.72	0.48	3.13	3.51	0.55	3.51	0.09	0.23	0.04	0.49	1.14	0.04	1.14
Whitefish	0.3	0.72	0.95	1.12	1.76	1.1	1.76	0.15	0.2	0.13	0.21	0.29	0.16	0.29
Northern pike	0	0	0.95	0.45	0.88	1.1	1.1	0.07	0.06	0.13	0.13	0.21	0.16	0.21
Kokanee trout[1]	0.05	0.14	0.02	0.25	0.08	-	0.25	0.05	0.14	0.02	0.25	0.08	-	0.25
Brook trout[1]	0.09	0.04	-	0.17	0.1	-	0.17	0.09	0.04	-	0.17	0.1	-	0.17
Burbot[1]	0	-	-	0.1	0.09	-	0.1	0	-	-	0.1	0.09	-	0.1
Arctic grayling[1]	0.02	0.004	-	0.02	0.06	0.08	0.08	0.02	0.004	-	0.02	0.06	0.08	0.08
Yellow perch[1]	0.002	-	-	0.004	0.15	-	0.15	0.002	-	-	0.004	0.15	-	0.15
Sturgeon[1]	0.01	0.08	-	0.01	0.01	-	0.08	0.01	0.08	-	0.01	0.01	-	0.08
Sucker[1]	0.003	0.002	0.02	0.02	0.05	-	0.05	0.003	0.002	0.02	0.02	0.05	-	0.05
Cisco[1]	0.01	-	-	-	0.05	-	0.05	0.01	-	-	-	0.05	-	0.05
Brown trout[1]	0.002	-	-	0.01	0.05	-	0.05	0.002	-	-	0.01	0.05	-	0.05
95th Percentile Adult Freshwater Fish Consumption Rate							46.42	**Adult Freshwater Fish Consumption Rate**						9.29

Notes:

"-" = data not available; g = grams per day.

1) 95th percentil consumption rates were not available for these fish species; therefore the average consumption rates were used.

References:

Chan L, O Receveur, D Sharp, H Schwartz, A Ing and C Tikhonov. 2011. First Nations Food, Nutrition and Environment Study (FNFNES): Results from British Columbia (2008/2009). UNBC, Prince George.

APPENDIX B-3

Food Chain Model Inputs and Outputs for Estimating Tissue Concentrations

Food Chain Model Outputs - Mule Deer
MPMC - Human Health Risk Assessment

Mule Deer		Aluminum Channel	Copper Channel	Vanadium Channel
% Diet	Dose (mg/d)			
0.20	Grass	3.79E+02	2.10E+01	2.79E+00
0.80	Leaves	8.40E+02	2.93E+01	4.69E+00
Food Dose (mg/d)		1.22E+03	5.03E+01	7.49E+00
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		1.22E+03	5.03E+01	7.49E+00
Soil Dose (mg/d)		1.05E+03	5.18E+01	1.24E+01
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		1.05E+03	5.18E+01	1.24E+01
Water Dose (mg/d)		3.46E+00	1.46E-01	1.78E-02
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		3.46E+00	1.46E-01	1.78E-02
Food + Soil + Water (mg/d)		2.28E+03	1.02E+02	2.00E+01
BW Adjusted (mg/kg/d)		1.90E+01	8.52E-01	1.66E-01
HR Adjusted (mg/kg/d)		1.90E+01	8.52E-01	1.66E-01
SC Adjusted (mg/kg/d)		1.90E+01	8.52E-01	1.66E-01
Final Daily Dose (mg/kg/day)		1.90E+01	8.52E-01	1.66E-01

Model Parameters		
Body Weight (BW; kg)	1.20E+02	Eder and Pattie (2001); mean body weight
Fraction of Moisture in Food	5.74E-01	
Food Ingestion (kg/d ww)	8.25E+00	US EPA (1993); converted to ww
Water Ingestion (L/d)	7.36E+00	US EPA (1993)
Soil/Sediment Ingestion (kg/d)	7.03E-02	Beyer et al. (1994); Assumed to be 2% of FIR
Habitat Range (ha)	3.00E+01	Environment Canada (2012)
Habitat Range (HR) Factor	1.00E+00	
Soil Cap (SC) Factor	1.00E+00	

References:

Beyer WN, EE Connor and S Gerould. 1994. Estimates of Soil Ingestion by Wildlife. Journal of Wildlife Management, 58(2): 375-382.

Eder T and D Pattie. 2001. Mammals of British Columbia. Lone Pine Publishing. 296 pp.

Environment Canada. 2012. Federal Contaminated Sites Action Plan (FCSAP) Ecological Risk Assessment Guidance. Module 3: Standardization of Wildlife Receptor Characteristics. Prepared by Azimuth Consulting Group Inc, March 2012.

US EPA (United States Environmental Protection Agency). 1993. Wildlife Exposure Factors Handbook, Volume I of II. December 1993. Office of Health and Environmental Assessment, Office of Research and Development. Washington, DC.

Food Chain Model Outputs - Moose
MPMC - Human Health Risk Assessment

Moose		Aluminum Channel	Copper Channel	Vanadium Channel
% Diet	Dose (mg/d)			
0.85	Leaves	2.11E+03	7.38E+01	1.18E+01
0.15	Spruce	6.42E+01	6.37E+00	5.87E-01
Food Dose (mg/d)		2.18E+03	8.01E+01	1.24E+01
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		2.18E+03	8.01E+01	1.24E+01
Soil Dose (mg/d)		2.40E+03	1.18E+02	2.83E+01
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		2.40E+03	1.18E+02	2.83E+01
Water Dose (mg/d)		1.02E+01	4.31E-01	5.26E-02
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		1.02E+01	4.31E-01	5.26E-02
Food + Soil + Water (mg/d)		4.59E+03	1.98E+02	4.08E+01
BW Adjusted (mg/kg/d)		1.15E+01	4.96E-01	1.02E-01
HR Adjusted (mg/kg/d)		5.88E+00	2.55E-01	5.23E-02
SC Adjusted (mg/kg/d)		5.88E+00	2.55E-01	5.23E-02
Final Daily Dose (mg/kg/day)		5.88E+00	2.55E-01	5.23E-02

Model Parameters		
Body Weight (BW; kg)	4.00E+02	Environment Canada (2012)
Fraction of Moisture in Food	5.91E-01	
Food Ingestion (kg/d ww)	1.96E+01	Environment Canada (2012)
Water Ingestion (L/d)	2.18E+01	US EPA (1993)
Soil/Sediment Ingestion (kg/d)	1.60E-01	Beyer et al. (1994); Assumed to be 2% of FIR
Habitat Range (ha)	4.60E+02	Environment Canada (2012)
Habitat Range (HR) Factor	5.13E-01	
Soil Cap (SC) Factor	1.00E+00	

References:

Beyer WN, EE Connor and S Gerould. 1994. Estimates of Soil Ingestion by Wildlife. Journal of Wildlife Management, 58(2): 375-382.

Environment Canada. 2012. Federal Contaminated Sites Action Plan (FCSAP) Ecological Risk Assessment Guidance. Module 3: Standardization of Wildlife Receptor Characteristics. Prepared by Azimuth Consulting Group Inc, March 2012.

US EPA (United States Environmental Protection Agency). 1993. Wildlife Exposure Factors Handbook, Volume I of II. December 1993. Office of Health and Environmental Assessment, Office of Research and Development. Washington, DC.

Food Chain Model Outputs - Grouse
MPMC - Human Health Risk Assessment

Spruce Grouse		Aluminum Channel	Copper Channel	Vanadium Channel
% Diet	Dose (mg/d)			
0.10	Leaves	1.04E+00	3.64E-02	5.84E-03
0.65	Spruce	1.17E+00	1.16E-01	1.07E-02
0.20	Berries	5.28E-01	8.51E-02	3.37E-03
0.05	Ant/Beetle/Spider	4.61E-01	1.60E-01	8.14E-03
Food Dose (mg/d)		3.20E+00	3.98E-01	2.80E-02
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		3.20E+00	3.98E-01	2.80E-02
Soil Dose (mg/d)		9.98E+00	4.91E-01	1.18E-01
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		9.98E+00	4.91E-01	1.18E-01
Water Dose (mg/d)		1.56E-02	6.57E-04	8.04E-05
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		1.56E-02	6.57E-04	8.04E-05
Food + Soil + Water (mg/d)		1.32E+01	8.89E-01	1.46E-01
BW Adjusted (mg/kg/d)		3.11E+01	2.10E+00	3.44E-01
HR Adjusted (mg/kg/d)		3.11E+01	2.10E+00	3.44E-01
SC Adjusted (mg/kg/d)		3.11E+01	2.10E+00	3.44E-01
Final Daily Dose (mg/kg/day)		3.11E+01	2.10E+00	3.44E-01

Model Parameters		
Body Weight (BW; kg)	4.24E-01	Boag & Schroeder (1992); average spruce grouse female in summer
Fraction of Moisture in Food	5.95E-01	
Food Ingestion (kg/d ww)	8.21E-02	US EPA (1993); converted to ww
Water Ingestion (L/d)	3.32E-02	US EPA (1993)
Soil/Sediment Ingestion (kg/d)	6.66E-04	Assumed to be 2% of FIR in dw
Habitat Range (ha)	3.00E+00	Environment Canada (2012)
Habitat Range (HR) Factor	1.00E+00	
Soil Cap (SC) Factor	1.00E+00	

References:

Boag DA and MA Schroeder. 1992. Spruce Grouse (*Falcipennis canadensis*). In: Rodewald PG (Ed.), The Birds of North America. Ithaca: Cornell Lab of Ornithology

Environment Canada. 2012. Federal Contaminated Sites Action Plan (FCSAP) Ecological Risk Assessment Guidance. Module 3: Standardization of Wildlife Receptor Characteristics. Prepared by Azimuth Consulting Group Inc, March 2012.

US EPA (United States Environmental Protection Agency). 1993. Wildlife Exposure Factors Handbook, Volume I of II. December 1993. Office of Health and Environmental Assessment, Office of Research and Development. Washington, DC.

Food Chain Model Outputs - Cattle
MPMC - Human Health Risk Assessment

Cattle		Aluminum Channel	Copper Channel	Vanadium Channel
% Diet	Dose (mg/d)			
1.00	Grass	8.02E+03	4.45E+02	5.91E+01
Food Dose (mg/d)		8.02E+03	4.45E+02	5.91E+01
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		8.02E+03	4.45E+02	5.91E+01
Soil Dose (mg/d)		7.49E+03	3.69E+02	8.85E+01
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		7.49E+03	3.69E+02	8.85E+01
Water Dose (mg/d)		4.11E+01	1.73E+00	2.12E-01
x Bioavailability Factor		1.00E+00	1.00E+00	1.00E+00
= Adjusted Dose		4.11E+01	1.73E+00	2.12E-01
Food + Soil + Water (mg/d)		1.56E+04	8.15E+02	1.48E+02
BW Adjusted (mg/kg/d)		2.22E+01	1.16E+00	2.11E-01
HR Adjusted (mg/kg/d)		4.44E+00	2.33E-01	4.22E-02
SC Adjusted (mg/kg/d)		4.44E+00	2.33E-01	4.22E-02
Final Daily Dose (mg/kg/day)		4.44E+00	2.33E-01	4.22E-02

Model Parameters		
Body Weight (BW; kg)	7.01E+02	CCME (1999); lactating dairy cattle (mid-range)
Fraction of Moisture in Food	4.70E-01	
Food Ingestion (kg/d ww)	3.49E+01	CCME (1999); average food ingestion of lactating dairy cattle
Water Ingestion (L/d)	8.75E+01	CCME (1999); lactating cow (mid-range)
Soil/Sediment Ingestion (kg/d)	5.00E-01	Herlin & Andersson (1996); median for range cattle; Assumed to be 3% of FIR
Habitat Range (ha)	1.18E+03	Assumed to graze only on Site
Habitat Range (HR) Factor	2.00E-01	
Soil Cap (SC) Factor	1.00E+00	

References:

CCME (Canadian Council of Ministers of the Environment).1999. Protocols for Deriving Water Quality Guidelines for the Protection of Agricultural Water Uses (Irrigation and Livestock Water). Available at: http://ceqg-rcqe.ccme.ca/download/en/131.

Herlin AH, Andersson I. 1996. Soil Ingestion in Farm Animals: A Review. Report 105. Available at: http://www.nks.org/download/pdf/NKS-Pub/SLU-105.PDF.

APPENDIX B-4

Human Health Risk Assessment Model Outputs

Model Output - Subsistence and Traditional Land User
MPMC - Human Health Risk Assessment

INFANT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.04207143	0.00071429	n/a	n/a	0.0004878
Dermal contact with sediment	mg/kg/day	0.14313857	0.01458118	n/a	n/a	0.00165965
Incidental ingestion of soil	mg/kg/day	0.02610453	0.0012831	n/a	n/a	0.00030749
Dermal contact with soil	mg/kg/day	0.00060824	0.00017938	n/a	n/a	7.1645E-06
Inhalation of soil particulates	mg/kg/day	1.9164E-05	1.1179E-06	n/a	n/a	2.3955E-07
Ingestion of surface water	mg/kg/day	0.00113415	6.9512E-05	n/a	n/a	2.0488E-05
Dermal contact with surface water	mg/kg/day	9.7753E-06	5.9913E-07	n/a	n/a	1.7659E-07
Ingestion of fish muscle	mg/kg/day	0	0	n/a	n/a	0
Ingestion of berries	mg/kg/day	0.07836585	0.01268293	n/a	n/a	0.0005122
Ingestion of traditional plants	mg/kg/day	0.0558439	0.00193171	n/a	n/a	0.00031171
Ingestion of deer	mg/kg/day	0	0	n/a	n/a	0
Ingestion of deer liver	mg/kg/day	0	0	n/a	n/a	0
Ingestion of moose	mg/kg/day	0	0	n/a	n/a	0
Ingestion of moose liver	mg/kg/day	0	0	n/a	n/a	0
Ingestion of grouse	mg/kg/day	0	0	n/a	n/a	0
Ingestion of cattle	mg/kg/day	0	0	n/a	n/a	0
Total Dose	mg/kg/day	0.3472956	0.03144381	n/a	n/a	0.00330691
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.04207143	0.00784929	n/a	n/a	0.09756098
Dermal contact with sediment	unitless	0.14313857	0.16023273	n/a	n/a	0.33192927
Incidental ingestion of soil	unitless	0.02610453	0.01410001	n/a	n/a	0.06149826
Dermal contact with soil	unitless	0.00060824	0.00197118	n/a	n/a	0.00143291
Inhalation of soil particulates	unitless	1.9164E-05	1.2284E-05	n/a	n/a	4.7909E-05
Ingestion of surface water	unitless	0.00113415	0.00076387	n/a	n/a	0.00409756
Dermal contact with surface water	unitless	9.7753E-06	6.5838E-06	n/a	n/a	3.5317E-05
Ingestion of fish muscle	unitless	0	0	n/a	n/a	0
Ingestion of berries	unitless	0.07836585	0.13937282	n/a	n/a	0.10243902
Ingestion of traditional plants	unitless	0.0558439	0.02122755	n/a	n/a	0.06234146
Ingestion of deer	unitless	0	0	n/a	n/a	0
Ingestion of deer liver	unitless	0	0	n/a	n/a	0
Ingestion of moose	unitless	0	0	n/a	n/a	0
Ingestion of moose liver	unitless	0	0	n/a	n/a	0
Ingestion of grouse	unitless	0	0	n/a	n/a	0
Ingestion of cattle	unitless	0	0	n/a	n/a	0
Totals						
Sediment exposure pathways	unitless	0.18521	0.16808203	n/a	n/a	0.42949024
Soil and water exposure pathways	unitless	0.02787585	0.01685393	n/a	n/a	0.06711195
Dietary exposure pathways	unitless	0.13420976	0.16060038	0	0	0.16478049
TOTAL HQ - INFANT	unitless	0.3472956	0.34553633	n/a	n/a	0.66138269

Model Output - Subsistence and Traditional Land User
MPMC - Human Health Risk Assessment

TODDLER		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.0836329	n/a	0.00141991	n/a	0.0009697
Dermal contact with sediment	mg/kg/day	0.11744516	n/a	0.01196385	n/a	0.00136174
Incidental ingestion of soil	mg/kg/day	0.05189264	n/a	0.00255065	n/a	0.00061126
Dermal contact with soil	mg/kg/day	0.00044628	n/a	0.00013161	n/a	5.2568E-06
Inhalation of soil particulates	mg/kg/day	3.5931E-05	n/a	2.096E-06	n/a	4.4913E-07
Ingestion of surface water	mg/kg/day	0.00112727	n/a	6.9091E-05	n/a	2.0364E-05
Dermal contact with surface water	mg/kg/day	8.2264E-06	n/a	5.042E-07	n/a	1.4861E-07
Ingestion of fish muscle	mg/kg/day	0.00191515	n/a	0.0008303	n/a	4.0242E-05
Ingestion of berries	mg/kg/day	0.06620727	n/a	0.01071515	n/a	0.00043273
Ingestion of traditional plants	mg/kg/day	0.02621091	n/a	0.00090667	n/a	0.0001463
Ingestion of deer	mg/kg/day	0.00497455	n/a	0.00148364	n/a	7.4182E-05
Ingestion of deer liver	mg/kg/day	0.00644654	n/a	0.00192265	n/a	9.6133E-05
Ingestion of moose	mg/kg/day	0.00919418	n/a	0.00260606	n/a	0.00013552
Ingestion of moose liver	mg/kg/day	0.00991352	n/a	0.00280995	n/a	0.00014612
Ingestion of grouse	mg/kg/day	1.1949E-06	n/a	5.3964E-07	n/a	2.1842E-08
Ingestion of cattle	mg/kg/day	0	n/a	0	n/a	0
Total Dose	mg/kg/day	0.37945172	n/a	0.03741268	n/a	0.00404015
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.0836329	n/a	0.01560344	n/a	0.19393939
Dermal contact with sediment	unitless	0.11744516	n/a	0.13147091	n/a	0.27234788
Incidental ingestion of soil	unitless	0.05189264	n/a	0.02802911	n/a	0.12225108
Dermal contact with soil	unitless	0.00044628	n/a	0.0014463	n/a	0.00105136
Inhalation of soil particulates	unitless	3.5931E-05	n/a	2.3033E-05	n/a	8.9827E-05
Ingestion of surface water	unitless	0.00112727	n/a	0.00075924	n/a	0.00407273
Dermal contact with surface water	unitless	8.2264E-06	n/a	5.5406E-06	n/a	2.9721E-05
Ingestion of fish muscle	unitless	0.00191515	n/a	0.00912421	n/a	0.00804848
Ingestion of berries	unitless	0.06620727	n/a	0.11774892	n/a	0.08654545
Ingestion of traditional plants	unitless	0.02621091	n/a	0.00996337	n/a	0.02926061
Ingestion of deer	unitless	0.00497455	n/a	0.0163037	n/a	0.01483636
Ingestion of deer liver	unitless	0.00644654	n/a	0.02112804	n/a	0.01922652
Ingestion of moose	unitless	0.00919418	n/a	0.02863803	n/a	0.02710303
Ingestion of moose liver	unitless	0.00991352	n/a	0.03087862	n/a	0.02922352
Ingestion of grouse	unitless	1.1949E-06	n/a	5.9301E-06	n/a	4.3685E-06
Ingestion of cattle	unitless	0	n/a	0	n/a	0
Totals						
Sediment exposure pathways	unitless	0.20107806	n/a	0.14707436	n/a	0.46628727
Soil and water exposure pathways	unitless	0.05351035	n/a	0.03026323	n/a	0.12749472
Dietary exposure pathways	unitless	0.12486331	n/a	0.23379081	n/a	0.21424835
TOTAL HQ - TODDLER	unitless	0.37945172	n/a	0.4111284	n/a	0.80803034

Model Output - Subsistence and Traditional Land User
MPMC - Human Health Risk Assessment

ADULT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.00487957	n/a	n/a	8.2845E-05	5.6577E-05
Dermal contact with sediment	mg/kg/day	0.07647167	n/a	n/a	0.00778998	0.00088666
Incidental ingestion of soil	mg/kg/day	0.00302768	n/a	n/a	0.00014882	3.5664E-05
Dermal contact with soil	mg/kg/day	0.00025917	n/a	n/a	7.6433E-05	3.0528E-06
Inhalation of soil particulates	mg/kg/day	1.6771E-05	n/a	n/a	9.7831E-07	2.0964E-07
Ingestion of surface water	mg/kg/day	0.00065771	n/a	n/a	4.0311E-05	1.1881E-05
Dermal contact with surface water	mg/kg/day	5.5248E-06	n/a	n/a	3.3861E-07	9.9802E-08
Ingestion of fish muscle	mg/kg/day	0.00102801	n/a	n/a	0.00044569	2.1601E-05
Ingestion of berries	mg/kg/day	0.01590594	n/a	n/a	0.00257426	0.00010396
Ingestion of traditional plants	mg/kg/day	0.01241414	n/a	n/a	0.00042942	6.9293E-05
Ingestion of deer	mg/kg/day	0.00372475	n/a	n/a	0.00111089	5.5545E-05
Ingestion of deer liver	mg/kg/day	0.00484055	n/a	n/a	0.00144367	7.2184E-05
Ingestion of moose	mg/kg/day	0.00698614	n/a	n/a	0.0019802	0.00010297
Ingestion of moose liver	mg/kg/day	0.00742794	n/a	n/a	0.00210543	0.00010948
Ingestion of grouse	mg/kg/day	9.2027E-07	n/a	n/a	4.156E-07	1.6822E-08
Ingestion of cattle	mg/kg/day	0	n/a	n/a	0	0
Total Dose	mg/kg/day	0.1376465	n/a	n/a	0.01822968	0.0015292
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.00487957	n/a	n/a	0.00058755	0.01131542
Dermal contact with sediment	unitless	0.07647167	n/a	n/a	0.05524811	0.17733296
Incidental ingestion of soil	unitless	0.00302768	n/a	n/a	0.00105545	0.00713275
Dermal contact with soil	unitless	0.00025917	n/a	n/a	0.00054208	0.00061056
Inhalation of soil particulates	unitless	1.6771E-05	n/a	n/a	6.9384E-06	4.1928E-05
Ingestion of surface water	unitless	0.00065771	n/a	n/a	0.00028589	0.00237624
Dermal contact with surface water	unitless	5.5248E-06	n/a	n/a	2.4015E-06	1.996E-05
Ingestion of fish muscle	unitless	0.00102801	n/a	n/a	0.00316089	0.00432023
Ingestion of berries	unitless	0.01590594	n/a	n/a	0.01825714	0.02079208
Ingestion of traditional plants	unitless	0.01241414	n/a	n/a	0.00304553	0.01385856
Ingestion of deer	unitless	0.00372475	n/a	n/a	0.00787866	0.01110891
Ingestion of deer liver	unitless	0.00484055	n/a	n/a	0.01023882	0.01443674
Ingestion of moose	unitless	0.00698614	n/a	n/a	0.01404396	0.02059406
Ingestion of moose liver	unitless	0.00742794	n/a	n/a	0.0149321	0.02189643
Ingestion of grouse	unitless	9.2027E-07	n/a	n/a	2.9475E-06	3.3644E-06
Ingestion of cattle	unitless	0	n/a	n/a	0	0
Totals						
Sediment exposure pathways	unitless	0.08135124	n/a	n/a	0.05583566	0.18864837
Soil and water exposure pathways	unitless	0.00396686	n/a	n/a	0.00189276	0.01018144
Dietary exposure pathways	unitless	0.0523284	n/a	n/a	0.07156006	0.10701037
TOTAL HQ - ADULT	unitless	0.1376465	n/a	n/a	0.12928848	0.30584019

Model Output - Hiker / Camper
MPMC - Human Health Risk Assessment

INFANT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.02524286	0.00042857	n/a	n/a	0.00029268
Dermal contact with sediment	mg/kg/day	0.08588314	0.00874871	n/a	n/a	0.00099579
Incidental ingestion of soil	mg/kg/day	0.01566272	0.00076986	n/a	n/a	0.00018449
Dermal contact with soil	mg/kg/day	0.00036494	0.00010763	n/a	n/a	4.2987E-06
Inhalation of soil particulates	mg/kg/day	1.1498E-05	6.7073E-07	n/a	n/a	1.4373E-07
Ingestion of surface water	mg/kg/day	0.00048606	2.9791E-05	n/a	n/a	8.7805E-06
Dermal contact with surface water	mg/kg/day	5.8652E-06	3.5948E-07	n/a	n/a	1.0595E-07
Ingestion of fish muscle	mg/kg/day	0	0	n/a	n/a	0
Ingestion of berries	mg/kg/day	0.01585613	0.0025662	n/a	n/a	0.00010363
Ingestion of traditional plants	mg/kg/day	0	0	n/a	n/a	0
Ingestion of deer	mg/kg/day	0	0	n/a	n/a	0
Ingestion of moose	mg/kg/day	0	0	n/a	n/a	0
Ingestion of grouse	mg/kg/day	0	0	n/a	n/a	0
Ingestion of cattle	mg/kg/day	0	0	n/a	n/a	0
Total Dose	mg/kg/day	0.14351322	0.01265178	n/a	n/a	0.00158993
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.02524286	0.00470958	n/a	n/a	0.05853659
Dermal contact with sediment	unitless	0.08588314	0.09613964	n/a	n/a	0.19915756
Incidental ingestion of soil	unitless	0.01566272	0.00846001	n/a	n/a	0.03689895
Dermal contact with soil	unitless	0.00036494	0.00118271	n/a	n/a	0.00085975
Inhalation of soil particulates	unitless	1.1498E-05	7.3707E-06	n/a	n/a	2.8746E-05
Ingestion of surface water	unitless	0.00048606	0.00032737	n/a	n/a	0.0017561
Dermal contact with surface water	unitless	5.8652E-06	3.9503E-06	n/a	n/a	2.119E-05
Ingestion of fish muscle	unitless	0	0	n/a	n/a	0
Ingestion of berries	unitless	0.01585613	0.02819996	n/a	n/a	0.02072697
Ingestion of traditional plants	unitless	0	0	n/a	n/a	0
Ingestion of deer	unitless	0	0	n/a	n/a	0
Ingestion of moose	unitless	0	0	n/a	n/a	0
Ingestion of grouse	unitless	0	0	n/a	n/a	0
Ingestion of cattle	unitless	0	0	n/a	n/a	0
Totals						
Sediment exposure pathways	unitless	0.111126	0.10084922	n/a	n/a	0.25769415
Soil and water exposure pathways	unitless	0.01653109	0.00998141	n/a	n/a	0.03956473
Dietary exposure pathways	unitless	0.01585613	0.02819996	0	0	0.02072697
TOTAL HQ - INFANT	unitless	0.14351322	0.13903058	n/a	n/a	0.31798585

Model Output - Hiker / Camper
MPMC - Human Health Risk Assessment

TODDLER		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.05017974	n/a	0.00085195	n/a	0.00058182
Dermal contact with sediment	mg/kg/day	0.0704671	n/a	0.00717831	n/a	0.00081704
Incidental ingestion of soil	mg/kg/day	0.03113558	n/a	0.00153039	n/a	0.00036675
Dermal contact with soil	mg/kg/day	0.00026777	n/a	7.8968E-05	n/a	3.1541E-06
Inhalation of soil particulates	mg/kg/day	2.1558E-05	n/a	1.2576E-06	n/a	2.6948E-07
Ingestion of surface water	mg/kg/day	0.00048312	n/a	2.961E-05	n/a	8.7273E-06
Dermal contact with surface water	mg/kg/day	4.9358E-06	n/a	3.0252E-07	n/a	8.9164E-08
Ingestion of fish muscle	mg/kg/day	0.00037345	n/a	0.00016191	n/a	7.8473E-06
Ingestion of berries	mg/kg/day	0.01355826	n/a	0.0021943	n/a	8.8616E-05
Ingestion of traditional plants	mg/kg/day	0	n/a	0	n/a	0
Ingestion of deer	mg/kg/day	0	n/a	0	n/a	0
Ingestion of moose	mg/kg/day	0	n/a	0	n/a	0
Ingestion of grouse	mg/kg/day	0	n/a	0	n/a	0
Ingestion of cattle	mg/kg/day	0	n/a	0	n/a	0
Total Dose	mg/kg/day	0.16649152	n/a	0.012027	n/a	0.00187432
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.05017974	n/a	0.00936207	n/a	0.11636364
Dermal contact with sediment	unitless	0.0704671	n/a	0.07888255	n/a	0.16340873
Incidental ingestion of soil	unitless	0.03113558	n/a	0.01681747	n/a	0.07335065
Dermal contact with soil	unitless	0.00026777	n/a	0.00086778	n/a	0.00063082
Inhalation of soil particulates	unitless	2.1558E-05	n/a	1.382E-05	n/a	5.3896E-05
Ingestion of surface water	unitless	0.00048312	n/a	0.00032539	n/a	0.00174545
Dermal contact with surface water	unitless	4.9358E-06	n/a	3.3244E-06	n/a	1.7833E-05
Ingestion of fish muscle	unitless	0.00037345	n/a	0.00177922	n/a	0.00156945
Ingestion of berries	unitless	0.01355826	n/a	0.02411323	n/a	0.01772322
Ingestion of traditional plants	unitless	0	n/a	0	n/a	0
Ingestion of deer	unitless	0	n/a	0	n/a	0
Ingestion of moose	unitless	0	n/a	0	n/a	0
Ingestion of grouse	unitless	0	n/a	0	n/a	0
Ingestion of cattle	unitless	0	n/a	0	n/a	0
Totals						
Sediment exposure pathways	unitless	0.12064684	n/a	0.08824462	n/a	0.27977236
Soil and water exposure pathways	unitless	0.03191296	n/a	0.01802778	n/a	0.07579865
Dietary exposure pathways	unitless	0.01393172	n/a	0.02589245	n/a	0.01929268
TOTAL HQ - TODDLER	unitless	0.16649152	n/a	0.13216484	n/a	0.37486369

Model Output - Hiker / Camper
MPMC - Human Health Risk Assessment

ADULT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.00292774	n/a	n/a	4.9707E-05	3.3946E-05
Dermal contact with sediment	mg/kg/day	0.045883	n/a	n/a	0.00467399	0.000532
Incidental ingestion of soil	mg/kg/day	0.00181661	n/a	n/a	8.9291E-05	2.1398E-05
Dermal contact with soil	mg/kg/day	0.0001555	n/a	n/a	4.586E-05	1.8317E-06
Inhalation of soil particulates	mg/kg/day	1.0063E-05	n/a	n/a	5.8699E-07	1.2578E-07
Ingestion of surface water	mg/kg/day	0.00028188	n/a	n/a	1.7276E-05	5.0919E-06
Dermal contact with surface water	mg/kg/day	3.3149E-06	n/a	n/a	2.0317E-07	5.9881E-08
Ingestion of fish muscle	mg/kg/day	0.00020784	n/a	n/a	9.0106E-05	4.3672E-06
Ingestion of berries	mg/kg/day	0.00331298	n/a	n/a	0.00053618	2.1653E-05
Ingestion of traditional plants	mg/kg/day	0	n/a	n/a	0	0
Ingestion of deer	mg/kg/day	0	n/a	n/a	0	0
Ingestion of moose	mg/kg/day	0	n/a	n/a	0	0
Ingestion of grouse	mg/kg/day	0	n/a	n/a	0	0
Ingestion of cattle	mg/kg/day	0	n/a	n/a	0	0
Total Dose	mg/kg/day	0.05459893	n/a	n/a	0.0055032	0.00062047
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.00292774	n/a	n/a	0.00035253	0.00678925
Dermal contact with sediment	unitless	0.045883	n/a	n/a	0.03314887	0.10639977
Incidental ingestion of soil	unitless	0.00181661	n/a	n/a	0.00063327	0.00427965
Dermal contact with soil	unitless	0.0001555	n/a	n/a	0.00032525	0.00036634
Inhalation of soil particulates	unitless	1.0063E-05	n/a	n/a	4.163E-06	2.5157E-05
Ingestion of surface water	unitless	0.00028188	n/a	n/a	0.00012253	0.00101839
Dermal contact with surface water	unitless	3.3149E-06	n/a	n/a	1.4409E-06	1.1976E-05
Ingestion of fish muscle	unitless	0.00020784	n/a	n/a	0.00063905	0.00087344
Ingestion of berries	unitless	0.00331298	n/a	n/a	0.0038027	0.00433069
Ingestion of traditional plants	unitless	0	n/a	n/a	0	0
Ingestion of deer	unitless	0	n/a	n/a	0	0
Ingestion of moose	unitless	0	n/a	n/a	0	0
Ingestion of grouse	unitless	0	n/a	n/a	0	0
Ingestion of cattle	unitless	0	n/a	n/a	0	0
Totals						
Sediment exposure pathways	unitless	0.04881075	n/a	n/a	0.0335014	0.11318902
Soil and water exposure pathways	unitless	0.00226736	n/a	n/a	0.00108664	0.00570151
Dietary exposure pathways	unitless	0.00331298	n/a	n/a	0.0038027	0.00433069
TOTAL HQ - ADULT	unitless	0.05439109	n/a	n/a	0.03839074	0.12322123

Model Output - ATV / Snowmobile User
MPMC - Human Health Risk Assessment

TEEN		Aluminum	Copper-Infant	Copper-Teen	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0	n/a	0	n/a	0
Dermal contact with sediment	mg/kg/day	0	n/a	0	n/a	0
Incidental ingestion of soil	mg/kg/day	0.00071711	n/a	3.5248E-05	n/a	8.447E-06
Dermal contact with soil	mg/kg/day	5.45E-05	n/a	1.6073E-05	n/a	6.4197E-07
Inhalation of soil particulates	mg/kg/day	3.733E-06	n/a	2.1776E-07	n/a	4.6662E-08
Ingestion of surface water	mg/kg/day	7.418E-05	n/a	4.5465E-06	n/a	1.34E-06
Dermal contact with surface water	mg/kg/day	0	n/a	0	n/a	0
Ingestion of fish muscle	mg/kg/day	0	n/a	0	n/a	0
Ingestion of berries	mg/kg/day	0.00414407	n/a	0.00067069	n/a	2.7085E-05
Ingestion of traditional plants	mg/kg/day	0	n/a	0	n/a	0
Ingestion of deer	mg/kg/day	0	n/a	0	n/a	0
Ingestion of moose	mg/kg/day	0	n/a	0	n/a	0
Ingestion of grouse	mg/kg/day	0	n/a	0	n/a	0
Ingestion of cattle	mg/kg/day	0	n/a	0	n/a	0
Total Dose	mg/kg/day	0.00499359	n/a	0.00072677	n/a	3.7561E-05
Hazard Quotient						
Incidential ingestion of sediment	unitless	0	n/a	0	n/a	0
Dermal contact with sediment	unitless	0	n/a	0	n/a	0
Incidental ingestion of soil	unitless	0.00071711	n/a	0.00027974	n/a	0.0016894
Dermal contact with soil	unitless	5.45E-05	n/a	0.00012756	n/a	0.00012839
Inhalation of soil particulates	unitless	3.733E-06	n/a	1.7282E-06	n/a	9.3324E-06
Ingestion of surface water	unitless	7.418E-05	n/a	3.6084E-05	n/a	0.00026801
Dermal contact with surface water	unitless	0	n/a	0	n/a	0
Ingestion of fish muscle	unitless	0	n/a	0	n/a	0
Ingestion of berries	unitless	0.00414407	n/a	0.00532291	n/a	0.00541709
Ingestion of traditional plants	unitless	0	n/a	0	n/a	0
Ingestion of deer	unitless	0	n/a	0	n/a	0
Ingestion of moose	unitless	0	n/a	0	n/a	0
Ingestion of grouse	unitless	0	n/a	0	n/a	0
Ingestion of cattle	unitless	0	n/a	0	n/a	0
Totals						
Sediment exposure pathways	unitless	0	n/a	0	n/a	0
Soil and water exposure pathways	unitless	0.00084952	n/a	0.00044512	n/a	0.00209513
Dietary exposure pathways	unitless	0.00414407	n/a	0.00532291	n/a	0.00541709
TOTAL HQ - TODDLER	unitless	0.00499359	n/a	0.00576803	n/a	0.00751222

Model Output - ATV / Snowmobile User
MPMC - Human Health Risk Assessment

ADULT		Aluminum	Copper-Infant	Copper-Teen	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0	n/a	n/a	0	0
Dermal contact with sediment	mg/kg/day	0	n/a	n/a	0	0
Incidental ingestion of soil	mg/kg/day	0.00060554	n/a	n/a	2.9764E-05	7.1328E-06
Dermal contact with soil	mg/kg/day	5.1834E-05	n/a	n/a	1.5287E-05	6.1056E-07
Inhalation of soil particulates	mg/kg/day	3.3542E-06	n/a	n/a	1.9566E-07	4.1928E-08
Ingestion of surface water	mg/kg/day	9.3958E-05	n/a	n/a	5.7587E-06	1.6973E-06
Dermal contact with surface water	mg/kg/day	0	n/a	n/a	0	0
Ingestion of fish muscle	mg/kg/day	0	n/a	n/a	0	0
Ingestion of berries	mg/kg/day	0.00331752	n/a	n/a	0.00053692	2.1683E-05
Ingestion of traditional plants	mg/kg/day	0	n/a	n/a	0	0
Ingestion of deer	mg/kg/day	0	n/a	n/a	0	0
Ingestion of moose	mg/kg/day	0	n/a	n/a	0	0
Ingestion of grouse	mg/kg/day	0	n/a	n/a	0	0
Ingestion of cattle	mg/kg/day	0	n/a	n/a	0	0
Total Dose	mg/kg/day	0.00407221	n/a	n/a	0.00058792	3.1166E-05
Hazard Quotient						
Incidential ingestion of sediment	unitless	0	n/a	n/a	0	0
Dermal contact with sediment	unitless	0	n/a	n/a	0	0
Incidental ingestion of soil	unitless	0.00060554	n/a	n/a	0.00021109	0.00142655
Dermal contact with soil	unitless	5.1834E-05	n/a	n/a	0.00010842	0.00012211
Inhalation of soil particulates	unitless	3.3542E-06	n/a	n/a	1.3877E-06	8.3855E-06
Ingestion of surface water	unitless	9.3958E-05	n/a	n/a	4.0842E-05	0.00033946
Dermal contact with surface water	unitless	0	n/a	n/a	0	0
Ingestion of fish muscle	unitless	0	n/a	n/a	0	0
Ingestion of berries	unitless	0.00331752	n/a	n/a	0.00380792	0.00433663
Ingestion of traditional plants	unitless	0	n/a	n/a	0	0
Ingestion of deer	unitless	0	n/a	n/a	0	0
Ingestion of moose	unitless	0	n/a	n/a	0	0
Ingestion of grouse	unitless	0	n/a	n/a	0	0
Ingestion of cattle	unitless	0	n/a	n/a	0	0
Totals						
Sediment exposure pathways	unitless	0	n/a	n/a	0	0
Soil and water exposure pathways	unitless	0.00075468	n/a	n/a	0.00036173	0.00189651
Dietary exposure pathways	unitless	0.00331752	n/a	n/a	0.00380792	0.00433663
TOTAL HQ - ADULT	unitless	0.00407221	n/a	n/a	0.00416965	0.00623315

Model Output - Hunter / Trapper
MPMC - Human Health Risk Assessment

TODDLER		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.05017974	n/a	0.00085195	n/a	0.00058182
Dermal contact with sediment	mg/kg/day	0.0704671	n/a	0.00717831	n/a	0.00081704
Incidental ingestion of soil	mg/kg/day	0	n/a	0	n/a	0
Dermal contact with soil	mg/kg/day	0	n/a	0	n/a	0
Inhalation of soil particulates	mg/kg/day	0	n/a	0	n/a	0
Ingestion of surface water	mg/kg/day	0.00048312	n/a	2.961E-05	n/a	8.7273E-06
Dermal contact with surface water	mg/kg/day	0	n/a	0	n/a	0
Ingestion of fish muscle	mg/kg/day	0.00037345	n/a	0.00016191	n/a	7.8473E-06
Ingestion of berries	mg/kg/day	0	n/a	0	n/a	0
Ingestion of traditional plants	mg/kg/day	0	n/a	0	n/a	0
Ingestion of deer	mg/kg/day	0	n/a	0	n/a	0
Ingestion of moose	mg/kg/day	0	n/a	0	n/a	0
Ingestion of grouse	mg/kg/day	0	n/a	0	n/a	0
Ingestion of cattle	mg/kg/day	0	n/a	0	n/a	0
Total Dose	mg/kg/day	0.12150341	n/a	0.00822178	n/a	0.00141544
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.05017974	n/a	0.00936207	n/a	0.11636364
Dermal contact with sediment	unitless	0.0704671	n/a	0.07888255	n/a	0.16340873
Incidental ingestion of soil	unitless	0	n/a	0	n/a	0
Dermal contact with soil	unitless	0	n/a	0	n/a	0
Inhalation of soil particulates	unitless	0	n/a	0	n/a	0
Ingestion of surface water	unitless	0.00048312	n/a	0.00032539	n/a	0.00174545
Dermal contact with surface water	unitless	0	n/a	0	n/a	0
Ingestion of fish muscle	unitless	0.00037345	n/a	0.00177922	n/a	0.00156945
Ingestion of berries	unitless	0	n/a	0	n/a	0
Ingestion of traditional plants	unitless	0	n/a	0	n/a	0
Ingestion of deer	unitless	0	n/a	0	n/a	0
Ingestion of moose	unitless	0	n/a	0	n/a	0
Ingestion of grouse	unitless	0	n/a	0	n/a	0
Ingestion of cattle	unitless	0	n/a	0	n/a	0
Totals						
Sediment exposure pathways	unitless	0.12064684	n/a	0.08824462	n/a	0.27977236
Soil and water exposure pathways	unitless	0.00048312	n/a	0.00032539	n/a	0.00174545
Dietary exposure pathways	unitless	0.00037345	n/a	0.00177922	n/a	0.00156945
TOTAL HQ - TODDLER	unitless	0.12150341	n/a	0.09034923	n/a	0.28308727

Model Output - Hunter / Trapper
MPMC - Human Health Risk Assessment

ADULT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.00292774	n/a	n/a	4.9707E-05	3.3946E-05
Dermal contact with sediment	mg/kg/day	0.045883	n/a	n/a	0.00467399	0.000532
Incidental ingestion of soil	mg/kg/day	0	n/a	n/a	0	0
Dermal contact with soil	mg/kg/day	0	n/a	n/a	0	0
Inhalation of soil particulates	mg/kg/day	0	n/a	n/a	0	0
Ingestion of surface water	mg/kg/day	0.00028188	n/a	n/a	1.7276E-05	5.0919E-06
Dermal contact with surface water	mg/kg/day	0	n/a	n/a	0	0
Ingestion of fish muscle	mg/kg/day	0.00020784	n/a	n/a	9.0106E-05	4.3672E-06
Ingestion of berries	mg/kg/day	0	n/a	n/a	0	0
Ingestion of traditional plants	mg/kg/day	0	n/a	n/a	0	0
Ingestion of deer	mg/kg/day	0	n/a	n/a	0	0
Ingestion of moose	mg/kg/day	0	n/a	n/a	0	0
Ingestion of grouse	mg/kg/day	0	n/a	n/a	0	0
Ingestion of cattle	mg/kg/day	0	n/a	n/a	0	0
Total Dose	mg/kg/day	0.04930046	n/a	n/a	0.00483108	0.0005754
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.00292774	n/a	n/a	0.00035253	0.00678925
Dermal contact with sediment	unitless	0.045883	n/a	n/a	0.03314887	0.10639977
Incidental ingestion of soil	unitless	0	n/a	n/a	0	0
Dermal contact with soil	unitless	0	n/a	n/a	0	0
Inhalation of soil particulates	unitless	0	n/a	n/a	0	0
Ingestion of surface water	unitless	0.00028188	n/a	n/a	0.00012253	0.00101839
Dermal contact with surface water	unitless	0	n/a	n/a	0	0
Ingestion of fish muscle	unitless	0.00020784	n/a	n/a	0.00063905	0.00087344
Ingestion of berries	unitless	0	n/a	n/a	0	0
Ingestion of traditional plants	unitless	0	n/a	n/a	0	0
Ingestion of deer	unitless	0	n/a	n/a	0	0
Ingestion of moose	unitless	0	n/a	n/a	0	0
Ingestion of grouse	unitless	0	n/a	n/a	0	0
Ingestion of cattle	unitless	0	n/a	n/a	0	0
Totals						
Sediment exposure pathways	unitless	0.04881075	n/a	n/a	0.0335014	0.11318902
Soil and water exposure pathways	unitless	0.00028188	n/a	n/a	0.00012253	0.00101839
Dietary exposure pathways	unitless	0.00020784	n/a	n/a	0.00063905	0.00087344
TOTAL HQ - ADULT	unitless	0.04930046	n/a	n/a	0.03426297	0.11508085

Model Output - Sport Fisher
MPMC - Human Health Risk Assessment

TODDLER		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0	n/a	0	n/a	0
Dermal contact with sediment	mg/kg/day	0	n/a	0	n/a	0
Incidental ingestion of soil	mg/kg/day	0	n/a	0	n/a	0
Dermal contact with soil	mg/kg/day	0	n/a	0	n/a	0
Inhalation of soil particulates	mg/kg/day	0	n/a	0	n/a	0
Ingestion of surface water	mg/kg/day	0.00048312	n/a	2.961E-05	n/a	8.7273E-06
Dermal contact with surface water	mg/kg/day	0	n/a	0	n/a	0
Ingestion of fish muscle	mg/kg/day	0.00191515	n/a	0.0008303	n/a	4.0242E-05
Ingestion of berries	mg/kg/day	0	n/a	0	n/a	0
Ingestion of traditional plants	mg/kg/day	0	n/a	0	n/a	0
Ingestion of deer	mg/kg/day	0	n/a	0	n/a	0
Ingestion of moose	mg/kg/day	0	n/a	0	n/a	0
Ingestion of grouse	mg/kg/day	0	n/a	0	n/a	0
Ingestion of cattle	mg/kg/day	0	n/a	0	n/a	0
Total Dose	mg/kg/day	0.00239827	n/a	0.00085991	n/a	4.897E-05
Hazard Quotient						
Incidential ingestion of sediment	unitless	0	n/a	0	n/a	0
Dermal contact with sediment	unitless	0	n/a	0	n/a	0
Incidental ingestion of soil	unitless	0	n/a	0	n/a	0
Dermal contact with soil	unitless	0	n/a	0	n/a	0
Inhalation of soil particulates	unitless	0	n/a	0	n/a	0
Ingestion of surface water	unitless	0.00048312	n/a	0.00032539	n/a	0.00174545
Dermal contact with surface water	unitless	0	n/a	0	n/a	0
Ingestion of fish muscle	unitless	0.00191515	n/a	0.00912421	n/a	0.00804848
Ingestion of berries	unitless	0	n/a	0	n/a	0
Ingestion of traditional plants	unitless	0	n/a	0	n/a	0
Ingestion of deer	unitless	0	n/a	0	n/a	0
Ingestion of moose	unitless	0	n/a	0	n/a	0
Ingestion of grouse	unitless	0	n/a	0	n/a	0
Ingestion of cattle	unitless	0	n/a	0	n/a	0
Totals						
Sediment exposure pathways	unitless	0	n/a	0	n/a	0
Soil and water exposure pathways	unitless	0.00048312	n/a	0.00032539	n/a	0.00174545
Dietary exposure pathways	unitless	0.00191515	n/a	0.00912421	n/a	0.00804848
TOTAL HQ - TODDLER	unitless	0.00239827	n/a	0.0094496	n/a	0.00979394

Model Output - Sport Fisher
MPMC - Human Health Risk Assessment

ADULT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0	n/a	n/a	0	0
Dermal contact with sediment	mg/kg/day	0	n/a	n/a	0	0
Incidental ingestion of soil	mg/kg/day	0	n/a	n/a	0	0
Dermal contact with soil	mg/kg/day	0	n/a	n/a	0	0
Inhalation of soil particulates	mg/kg/day	0	n/a	n/a	0	0
Ingestion of surface water	mg/kg/day	0.00028188	n/a	n/a	1.7276E-05	5.0919E-06
Dermal contact with surface water	mg/kg/day	0	n/a	n/a	0	0
Ingestion of fish muscle	mg/kg/day	0.00102801	n/a	n/a	0.00044569	2.1601E-05
Ingestion of berries	mg/kg/day	0	n/a	n/a	0	0
Ingestion of traditional plants	mg/kg/day	0	n/a	n/a	0	0
Ingestion of deer	mg/kg/day	0	n/a	n/a	0	0
Ingestion of moose	mg/kg/day	0	n/a	n/a	0	0
Ingestion of grouse	mg/kg/day	0	n/a	n/a	0	0
Ingestion of cattle	mg/kg/day	0	n/a	n/a	0	0
Total Dose	mg/kg/day	0.00130988	n/a	n/a	0.00046296	2.6693E-05
Hazard Quotient						
Incidential ingestion of sediment	unitless	0	n/a	n/a	0	0
Dermal contact with sediment	unitless	0	n/a	n/a	0	0
Incidental ingestion of soil	unitless	0	n/a	n/a	0	0
Dermal contact with soil	unitless	0	n/a	n/a	0	0
Inhalation of soil particulates	unitless	0	n/a	n/a	0	0
Ingestion of surface water	unitless	0.00028188	n/a	n/a	0.00012253	0.00101839
Dermal contact with surface water	unitless	0	n/a	n/a	0	0
Ingestion of fish muscle	unitless	0.00102801	n/a	n/a	0.00316089	0.00432023
Ingestion of berries	unitless	0	n/a	n/a	0	0
Ingestion of traditional plants	unitless	0	n/a	n/a	0	0
Ingestion of deer	unitless	0	n/a	n/a	0	0
Ingestion of moose	unitless	0	n/a	n/a	0	0
Ingestion of grouse	unitless	0	n/a	n/a	0	0
Ingestion of cattle	unitless	0	n/a	n/a	0	0
Totals						
Sediment exposure pathways	unitless	0	n/a	n/a	0	0
Soil and water exposure pathways	unitless	0.00028188	n/a	n/a	0.00012253	0.00101839
Dietary exposure pathways	unitless	0	n/a	n/a	0	0
TOTAL HQ - ADULT	unitless	0.00028188	n/a	n/a	0.00012253	0.00101839

Model Output - Hunter / Trapper
MPMC - Human Health Risk Assessment

TODDLER		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0	n/a	0	n/a	0
Dermal contact with sediment	mg/kg/day	0	n/a	0	n/a	0
Incidental ingestion of soil	mg/kg/day	0.01037853	n/a	0.00051013	n/a	0.00012225
Dermal contact with soil	mg/kg/day	8.9255E-05	n/a	2.6323E-05	n/a	1.0514E-06
Inhalation of soil particulates	mg/kg/day	7.1861E-06	n/a	4.1919E-07	n/a	8.9827E-08
Ingestion of surface water	mg/kg/day	0.00016104	n/a	9.8701E-06	n/a	2.9091E-06
Dermal contact with surface water	mg/kg/day	0	n/a	0	n/a	0
Ingestion of fish muscle	mg/kg/day	0.00037345	n/a	0.00016191	n/a	7.8473E-06
Ingestion of berries	mg/kg/day	0	n/a	0	n/a	0
Ingestion of traditional plants	mg/kg/day	0	n/a	0	n/a	0
Ingestion of deer	mg/kg/day	0.00062182	n/a	0.00018545	n/a	9.2727E-06
Ingestion of moose	mg/kg/day	0.00200989	n/a	0.0005697	n/a	2.9624E-05
Ingestion of grouse	mg/kg/day	7.1695E-07	n/a	3.2378E-07	n/a	1.3105E-08
Ingestion of cattle	mg/kg/day	0	n/a	0	n/a	0
Total Dose	mg/kg/day	0.01364189	n/a	0.00146413	n/a	0.00017306
Hazard Quotient						
Incidential ingestion of sediment	unitless	0	n/a	0	n/a	0
Dermal contact with sediment	unitless	0	n/a	0	n/a	0
Incidental ingestion of soil	unitless	0.01037853	n/a	0.00560582	n/a	0.02445022
Dermal contact with soil	unitless	8.9255E-05	n/a	0.00028926	n/a	0.00021027
Inhalation of soil particulates	unitless	7.1861E-06	n/a	4.6065E-06	n/a	1.7965E-05
Ingestion of surface water	unitless	0.00016104	n/a	0.00010846	n/a	0.00058182
Dermal contact with surface water	unitless	0	n/a	0	n/a	0
Ingestion of fish muscle	unitless	0.00037345	n/a	0.00177922	n/a	0.00156945
Ingestion of berries	unitless	0	n/a	0	n/a	0
Ingestion of traditional plants	unitless	0	n/a	0	n/a	0
Ingestion of deer	unitless	0.00062182	n/a	0.00203796	n/a	0.00185455
Ingestion of moose	unitless	0.00200989	n/a	0.00626041	n/a	0.00592485
Ingestion of grouse	unitless	7.1695E-07	n/a	3.558E-06	n/a	2.6211E-06
Ingestion of cattle	unitless	0	n/a	0	n/a	0
Totals						
Sediment exposure pathways	unitless	0	n/a	0	n/a	0
Soil and water exposure pathways	unitless	0.01063601	n/a	0.00600815	n/a	0.02526027
Dietary exposure pathways	unitless	0.00300588	n/a	0.01008115	n/a	0.00935147
TOTAL HQ - TODDLER	unitless	0.01364189	n/a	0.0160893	n/a	0.03461174

Model Output - Hunter / Trapper
MPMC - Human Health Risk Assessment

ADULT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0	n/a	n/a	0	0
Dermal contact with sediment	mg/kg/day	0	n/a	n/a	0	0
Incidental ingestion of soil	mg/kg/day	0.00060554	n/a	n/a	2.9764E-05	7.1328E-06
Dermal contact with soil	mg/kg/day	5.1834E-05	n/a	n/a	1.5287E-05	6.1056E-07
Inhalation of soil particulates	mg/kg/day	3.3542E-06	n/a	n/a	1.9566E-07	4.1928E-08
Ingestion of surface water	mg/kg/day	9.3958E-05	n/a	n/a	5.7587E-06	1.6973E-06
Dermal contact with surface water	mg/kg/day	0	n/a	n/a	0	0
Ingestion of fish muscle	mg/kg/day	0.00020784	n/a	n/a	9.0106E-05	4.3672E-06
Ingestion of berries	mg/kg/day	0	n/a	n/a	0	0
Ingestion of traditional plants	mg/kg/day	0	n/a	n/a	0	0
Ingestion of deer	mg/kg/day	0.00045955	n/a	n/a	0.00013706	6.8529E-06
Ingestion of moose	mg/kg/day	0.00149703	n/a	n/a	0.00042433	2.2065E-05
Ingestion of grouse	mg/kg/day	5.2985E-07	n/a	n/a	2.3929E-07	9.6854E-09
Ingestion of cattle	mg/kg/day	0	n/a	n/a	0	0
Total Dose	mg/kg/day	0.00291963	n/a	n/a	0.00070274	4.2777E-05
Hazard Quotient						
Incidential ingestion of sediment	unitless	0	n/a	n/a	0	0
Dermal contact with sediment	unitless	0	n/a	n/a	0	0
Incidental ingestion of soil	unitless	0.00060554	n/a	n/a	0.00021109	0.00142655
Dermal contact with soil	unitless	5.1834E-05	n/a	n/a	0.00010842	0.00012211
Inhalation of soil particulates	unitless	3.3542E-06	n/a	n/a	1.3877E-06	8.3855E-06
Ingestion of surface water	unitless	9.3958E-05	n/a	n/a	4.0842E-05	0.00033946
Dermal contact with surface water	unitless	0	n/a	n/a	0	0
Ingestion of fish muscle	unitless	0.00020784	n/a	n/a	0.00063905	0.00087344
Ingestion of berries	unitless	0	n/a	n/a	0	0
Ingestion of traditional plants	unitless	0	n/a	n/a	0	0
Ingestion of deer	unitless	0.00045955	n/a	n/a	0.00097204	0.00137058
Ingestion of moose	unitless	0.00149703	n/a	n/a	0.00300942	0.00441301
Ingestion of grouse	unitless	5.2985E-07	n/a	n/a	1.6971E-06	1.9371E-06
Ingestion of cattle	unitless	0	n/a	n/a	0	0
Totals						
Sediment exposure pathways	unitless	0	n/a	n/a	0	0
Soil and water exposure pathways	unitless	0.00075468	n/a	n/a	0.00036173	0.00189651
Dietary exposure pathways	unitless	0.00216494	n/a	n/a	0.00462221	0.00665897
TOTAL HQ - ADULT	unitless	0.00291963	n/a	n/a	0.00498394	0.00855548

Model Output - Quesnel Lake Resident
MPMC - Human Health Risk Assessment

INFANT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.02524286	0.00042857	n/a	n/a	0.00029268
Dermal contact with sediment	mg/kg/day	0.08588314	0.00874871	n/a	n/a	0.00099579
Incidental ingestion of soil	mg/kg/day	0	0	n/a	n/a	0
Dermal contact with soil	mg/kg/day	0	0	n/a	n/a	0
Inhalation of soil particulates	mg/kg/day	1.1498E-05	6.7073E-07	n/a	n/a	1.4373E-07
Ingestion of surface water	mg/kg/day	0.00113415	6.9512E-05	n/a	n/a	2.0488E-05
Dermal contact with surface water	mg/kg/day	5.8652E-06	3.5948E-07	n/a	n/a	1.0595E-07
Ingestion of fish muscle	mg/kg/day	0	0	n/a	n/a	0
Ingestion of berries	mg/kg/day	0.01567317	0.00253659	n/a	n/a	0.00010244
Ingestion of traditional plants	mg/kg/day	0	0	n/a	n/a	0
Ingestion of deer	mg/kg/day	0	0	n/a	n/a	0
Ingestion of moose	mg/kg/day	0	0	n/a	n/a	0
Ingestion of grouse	mg/kg/day	0	0	n/a	n/a	0
Ingestion of cattle	mg/kg/day	0	0	n/a	n/a	0
Total Dose	mg/kg/day	0.12795068	0.01178441	n/a	n/a	0.00141165
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.02524286	0.00470958	n/a	n/a	0.05853659
Dermal contact with sediment	unitless	0.08588314	0.09613964	n/a	n/a	0.19915756
Incidental ingestion of soil	unitless	0	0	n/a	n/a	0
Dermal contact with soil	unitless	0	0	n/a	n/a	0
Inhalation of soil particulates	unitless	1.1498E-05	7.3707E-06	n/a	n/a	2.8746E-05
Ingestion of surface water	unitless	0.00113415	0.00076387	n/a	n/a	0.00409756
Dermal contact with surface water	unitless	5.8652E-06	3.9503E-06	n/a	n/a	2.119E-05
Ingestion of fish muscle	unitless	0	0	n/a	n/a	0
Ingestion of berries	unitless	0.01567317	0.02787456	n/a	n/a	0.0204878
Ingestion of traditional plants	unitless	0	0	n/a	n/a	0
Ingestion of deer	unitless	0	0	n/a	n/a	0
Ingestion of moose	unitless	0	0	n/a	n/a	0
Ingestion of grouse	unitless	0	0	n/a	n/a	0
Ingestion of cattle	unitless	0	0	n/a	n/a	0
Totals						
Sediment exposure pathways	unitless	0.111126	0.10084922	n/a	n/a	0.25769415
Soil and water exposure pathways	unitless	0.00115151	0.00077519	n/a	n/a	0.0041475
Dietary exposure pathways	unitless	0.01567317	0.02787456	0	0	0.0204878
TOTAL HQ - INFANT	unitless	0.12795068	0.12949897	n/a	n/a	0.28232945

Model Output - Quesnel Lake Resident
MPMC - Human Health Risk Assessment

TODDLER		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.05017974	n/a	0.00085195	n/a	0.00058182
Dermal contact with sediment	mg/kg/day	0.0704671	n/a	0.00717831	n/a	0.00081704
Incidental ingestion of soil	mg/kg/day	0	n/a	0	n/a	0
Dermal contact with soil	mg/kg/day	0	n/a	0	n/a	0
Inhalation of soil particulates	mg/kg/day	2.1558E-05	n/a	1.2576E-06	n/a	2.6948E-07
Ingestion of surface water	mg/kg/day	0.00112727	n/a	6.9091E-05	n/a	2.0364E-05
Dermal contact with surface water	mg/kg/day	4.9358E-06	n/a	3.0252E-07	n/a	8.9164E-08
Ingestion of fish muscle	mg/kg/day	0.00037345	n/a	0.00016191	n/a	7.8473E-06
Ingestion of berries	mg/kg/day	0.01363091	n/a	0.00220606	n/a	8.9091E-05
Ingestion of traditional plants	mg/kg/day	0	n/a	0	n/a	0
Ingestion of deer	mg/kg/day	0.00062182	n/a	0.00018545	n/a	9.2727E-06
Ingestion of moose	mg/kg/day	0.00200989	n/a	0.0005697	n/a	2.9624E-05
Ingestion of grouse	mg/kg/day	7.1695E-07	n/a	3.2378E-07	n/a	1.3105E-08
Ingestion of cattle	mg/kg/day	0.00728311	n/a	0.00251519	n/a	0.00011482
Total Dose	mg/kg/day	0.1457205	n/a	0.01373954	n/a	0.00167026
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.05017974	n/a	0.00936207	n/a	0.11636364
Dermal contact with sediment	unitless	0.0704671	n/a	0.07888255	n/a	0.16340873
Incidental ingestion of soil	unitless	0	n/a	0	n/a	0
Dermal contact with soil	unitless	0	n/a	0	n/a	0
Inhalation of soil particulates	unitless	2.1558E-05	n/a	1.382E-05	n/a	5.3896E-05
Ingestion of surface water	unitless	0.00112727	n/a	0.00075924	n/a	0.00407273
Dermal contact with surface water	unitless	4.9358E-06	n/a	3.3244E-06	n/a	1.7833E-05
Ingestion of fish muscle	unitless	0.00037345	n/a	0.00177922	n/a	0.00156945
Ingestion of berries	unitless	0.01363091	n/a	0.02424242	n/a	0.01781818
Ingestion of traditional plants	unitless	0	n/a	0	n/a	0
Ingestion of deer	unitless	0.00062182	n/a	0.00203796	n/a	0.00185455
Ingestion of moose	unitless	0.00200989	n/a	0.00626041	n/a	0.00592485
Ingestion of grouse	unitless	7.1695E-07	n/a	3.558E-06	n/a	2.6211E-06
Ingestion of cattle	unitless	0.00728311	n/a	0.02763943	n/a	0.02296476
Totals						
Sediment exposure pathways	unitless	0.12064684	n/a	0.08824462	n/a	0.27977236
Soil and water exposure pathways	unitless	0.00115377	n/a	0.00077638	n/a	0.00414446
Dietary exposure pathways	unitless	0.0239199	n/a	0.061963	n/a	0.05013441
TOTAL HQ - TODDLER	unitless	0.1457205	n/a	0.150984	n/a	0.33405123

Model Output - Quesnel Lake Resident
MPMC - Human Health Risk Assessment

ADULT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0.00292774	n/a	n/a	4.9707E-05	3.3946E-05
Dermal contact with sediment	mg/kg/day	0.045883	n/a	n/a	0.00467399	0.000532
Incidental ingestion of soil	mg/kg/day	0	n/a	n/a	0	0
Dermal contact with soil	mg/kg/day	0	n/a	n/a	0	0
Inhalation of soil particulates	mg/kg/day	1.0063E-05	n/a	n/a	5.8699E-07	1.2578E-07
Ingestion of surface water	mg/kg/day	0.00065771	n/a	n/a	4.0311E-05	1.1881E-05
Dermal contact with surface water	mg/kg/day	3.3149E-06	n/a	n/a	2.0317E-07	5.9881E-08
Ingestion of fish muscle	mg/kg/day	0.00020784	n/a	n/a	9.0106E-05	4.3672E-06
Ingestion of berries	mg/kg/day	0.00331752	n/a	n/a	0.00053692	2.1683E-05
Ingestion of traditional plants	mg/kg/day	0	n/a	n/a	0	0
Ingestion of deer	mg/kg/day	0.00045955	n/a	n/a	0.00013706	6.8529E-06
Ingestion of moose	mg/kg/day	0.00149703	n/a	n/a	0.00042433	2.2065E-05
Ingestion of grouse	mg/kg/day	5.2985E-07	n/a	n/a	2.3929E-07	9.6854E-09
Ingestion of cattle	mg/kg/day	0.00392167	n/a	n/a	0.00026233	6.1828E-05
Total Dose	mg/kg/day	0.05888597	n/a	n/a	0.00621578	0.00069482
Hazard Quotient						
Incidential ingestion of sediment	unitless	0.00292774	n/a	n/a	0.00035253	0.00678925
Dermal contact with sediment	unitless	0.045883	n/a	n/a	0.03314887	0.10639977
Incidental ingestion of soil	unitless	0	n/a	n/a	0	0
Dermal contact with soil	unitless	0	n/a	n/a	0	0
Inhalation of soil particulates	unitless	1.0063E-05	n/a	n/a	4.163E-06	2.5157E-05
Ingestion of surface water	unitless	0.00065771	n/a	n/a	0.00028589	0.00237624
Dermal contact with surface water	unitless	3.3149E-06	n/a	n/a	1.4409E-06	1.1976E-05
Ingestion of fish muscle	unitless	0.00020784	n/a	n/a	0.00063905	0.00087344
Ingestion of berries	unitless	0.00331752	n/a	n/a	0.00380792	0.00433663
Ingestion of traditional plants	unitless	0	n/a	n/a	0	0
Ingestion of deer	unitless	0.00045955	n/a	n/a	0.00097204	0.00137058
Ingestion of moose	unitless	0.00149703	n/a	n/a	0.00300942	0.00441301
Ingestion of grouse	unitless	5.2985E-07	n/a	n/a	1.6971E-06	1.9371E-06
Ingestion of cattle	unitless	0.00392167	n/a	n/a	0.00186051	0.01236564
Totals						
Sediment exposure pathways	unitless	0.04881075	n/a	n/a	0.0335014	0.11318902
Soil and water exposure pathways	unitless	0.00067109	n/a	n/a	0.0002915	0.00241337
Dietary exposure pathways	unitless	0.00919631	n/a	n/a	0.00965159	0.0224878
TOTAL HQ - ADULT	unitless	0.05867814	n/a	n/a	0.04344449	0.1380902

Model Output - Logger
MPMC - Human Health Risk Assessment

ADULT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0	n/a	n/a	0	0
Dermal contact with sediment	mg/kg/day	0	n/a	n/a	0	0
Incidental ingestion of soil	mg/kg/day	0.01513841	n/a	n/a	0.00074409	0.00017832
Dermal contact with soil	mg/kg/day	0.0025917	n/a	n/a	0.00076433	3.0528E-05
Inhalation of soil particulates	mg/kg/day	3.3946E-05	n/a	n/a	1.9802E-06	4.2433E-07
Ingestion of surface water	mg/kg/day	0.00046979	n/a	n/a	2.8794E-05	8.4866E-06
Dermal contact with surface water	mg/kg/day	0	n/a	n/a	0	0
Ingestion of fish muscle	mg/kg/day	0	n/a	n/a	0	0
Ingestion of berries	mg/kg/day	0.00331752	n/a	n/a	0.00053692	2.1683E-05
Ingestion of traditional plants	mg/kg/day	0	n/a	n/a	0	0
Ingestion of deer	mg/kg/day	0	n/a	n/a	0	0
Ingestion of moose	mg/kg/day	0	n/a	n/a	0	0
Ingestion of grouse	mg/kg/day	0	n/a	n/a	0	0
Ingestion of cattle	mg/kg/day	0	n/a	n/a	0	0
Total Dose	mg/kg/day	0.02155137	n/a	n/a	0.00207611	0.00023944
Hazard Quotient						
Incidential ingestion of sediment	unitless	0	n/a	n/a	0	0
Dermal contact with sediment	unitless	0	n/a	n/a	0	0
Incidental ingestion of soil	unitless	0.01513841	n/a	n/a	0.00527723	0.03566377
Dermal contact with soil	unitless	0.0025917	n/a	n/a	0.00542077	0.00610564
Inhalation of soil particulates	unitless	3.3946E-05	n/a	n/a	1.4044E-05	8.4866E-05
Ingestion of surface water	unitless	0.00046979	n/a	n/a	0.00020421	0.00169731
Dermal contact with surface water	unitless	0	n/a	n/a	0	0
Ingestion of fish muscle	unitless	0	n/a	n/a	0	0
Ingestion of berries	unitless	0.00331752	n/a	n/a	0.00380792	0.00433663
Ingestion of traditional plants	unitless	0	n/a	n/a	0	0
Ingestion of deer	unitless	0	n/a	n/a	0	0
Ingestion of moose	unitless	0	n/a	n/a	0	0
Ingestion of grouse	unitless	0	n/a	n/a	0	0
Ingestion of cattle	unitless	0	n/a	n/a	0	0
Totals						
Sediment exposure pathways	unitless	0	n/a	n/a	0	0
Soil and water exposure pathways	unitless	0.01823385	n/a	n/a	0.01091626	0.04355159
Dietary exposure pathways	unitless	0.00331752	n/a	n/a	0.00380792	0.00433663
TOTAL HQ - ADULT	unitless	0.02155137	n/a	n/a	0.01472418	0.04788822

Model Output - Mine / Rehabilitation Worker
MPMC - Human Health Risk Assessment

ADULT		Aluminum	Copper-Infant	Copper-Toddler	Copper-Adult	Vanadium
Remediation Areas Exposure						
Exposure Dose						
Incidential ingestion of sediment	mg/kg/day	0	n/a	n/a	0	0
Dermal contact with sediment	mg/kg/day	0	n/a	n/a	0	0
Incidental ingestion of soil	mg/kg/day	0.01211073	n/a	n/a	0.00059527	0.00014266
Dermal contact with soil	mg/kg/day	0.00138062	n/a	n/a	0.00040717	1.6263E-05
Inhalation of soil particulates	mg/kg/day	2.7157E-05	n/a	n/a	1.5842E-06	3.3946E-07
Ingestion of surface water	mg/kg/day	0.00037583	n/a	n/a	2.3035E-05	6.7893E-06
Dermal contact with surface water	mg/kg/day	0	n/a	n/a	0	0
Ingestion of fish muscle	mg/kg/day	0.00020784	n/a	n/a	9.0106E-05	4.3672E-06
Ingestion of berries	mg/kg/day	0.00331752	n/a	n/a	0.00053692	2.1683E-05
Ingestion of traditional plants	mg/kg/day	0	n/a	n/a	0	0
Ingestion of deer	mg/kg/day	0	n/a	n/a	0	0
Ingestion of moose	mg/kg/day	0	n/a	n/a	0	0
Ingestion of grouse	mg/kg/day	0	n/a	n/a	0	0
Ingestion of cattle	mg/kg/day	0	n/a	n/a	0	0
Total Dose	mg/kg/day	0.0174197	n/a	n/a	0.00165408	0.0001921
Hazard Quotient						
Incidential ingestion of sediment	unitless	0	n/a	n/a	0	0
Dermal contact with sediment	unitless	0	n/a	n/a	0	0
Incidental ingestion of soil	unitless	0.01211073	n/a	n/a	0.00422179	0.02853102
Dermal contact with soil	unitless	0.00138062	n/a	n/a	0.0028877	0.00325254
Inhalation of soil particulates	unitless	2.7157E-05	n/a	n/a	1.1235E-05	6.7893E-05
Ingestion of surface water	unitless	0.00037583	n/a	n/a	0.00016337	0.00135785
Dermal contact with surface water	unitless	0	n/a	n/a	0	0
Ingestion of fish muscle	unitless	0.00020784	n/a	n/a	0.00063905	0.00087344
Ingestion of berries	unitless	0.00331752	n/a	n/a	0.00380792	0.00433663
Ingestion of traditional plants	unitless	0	n/a	n/a	0	0
Ingestion of deer	unitless	0	n/a	n/a	0	0
Ingestion of moose	unitless	0	n/a	n/a	0	0
Ingestion of grouse	unitless	0	n/a	n/a	0	0
Ingestion of cattle	unitless	0	n/a	n/a	0	0
Totals						
Sediment exposure pathways	unitless	0	n/a	n/a	0	0
Soil and water exposure pathways	unitless	0.01389434	n/a	n/a	0.00728409	0.03320929
Dietary exposure pathways	unitless	0.00352536	n/a	n/a	0.00444697	0.00521007
TOTAL HQ - ADULT	unitless	0.0174197	n/a	n/a	0.01173106	0.03841937

Appendix B-4
Table B-4-1: Summary of Hazard Quotients
MPMC - Human Health Risk Assessment

COPC	Exposure Pathway[1]																Hazard Index
	Incidential ingestion of sediment	Dermal contact with sediment	Incidental ingestion of soil	Dermal contact with soil	Inhalation of soil particulates	Ingestion of surface water	Dermal contact with surface water	Ingestion of fish muscle	Ingestion of berries	Ingestion of traditional plants	Ingestion of deer	Ingestion of deer liver	Ingestion of moose	Ingestion of moose liver	Ingestion of grouse	Ingestion of cattle	
Subsistence and Traditional Land User - Infant																	
Aluminum	0.042	0.14	0.026	0.00061	0.000019	0.0011	0.0000098	n/a	0.078	0.056	n/a	n/a	n/a	n/a	n/a	n/a	0.35
Copper	0.0078	0.16	0.014	0.002	0.000012	0.00076	0.0000066	n/a	0.14	0.021	n/a	n/a	n/a	n/a	n/a	n/a	0.35
Vanadium	0.098	0.33	0.061	0.0014	0.000048	0.0041	0.000035	n/a	0.1	0.062	n/a	n/a	n/a	n/a	n/a	n/a	0.66
Subsistence and Traditional Land User - Toddler																	
Aluminum	0.084	0.12	0.052	0.00045	0.000036	0.0011	0.0000082	0.0019	0.066	0.026	0.0050	0.0064	0.0092	0.0099	0.0000012	n/a	0.38
Copper	0.016	0.13	0.028	0.0014	0.000023	0.00076	0.0000055	0.0091	0.12	0.010	0.016	0.021	0.029	0.031	0.0000059	n/a	0.41
Vanadium	0.19	0.27	0.12	0.0011	0.00009	0.0041	0.00003	0.008	0.087	0.029	0.015	0.019	0.027	0.029	0.0000044	n/a	0.81
Subsistence and Traditional Land User - Adult																	
Aluminum	0.0049	0.076	0.0030	0.00026	0.000017	0.00066	0.0000055	0.0010	0.016	0.012	0.0037	0.0048	0.0070	0.0074	0.0000009	n/a	0.14
Copper	0.00059	0.055	0.0011	0.00054	0.0000069	0.00029	0.0000024	0.0032	0.018	0.003	0.0079	0.01	0.014	0.015	0.0000029	n/a	0.13
Vanadium	0.011	0.18	0.0071	0.00061	0.000042	0.0024	0.00002	0.0043	0.021	0.014	0.011	0.014	0.021	0.022	0.0000034	n/a	0.31
Hiker/Camper - Infant																	
Aluminum	0.025	0.086	0.016	0.00036	0.000011	0.00049	0.0000059	n/a	0.016	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.14
Copper	0.0047	0.096	0.0085	0.0012	0.0000074	0.00033	0.000004	n/a	0.028	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.14
Vanadium	0.059	0.2	0.037	0.00086	0.000029	0.0018	0.000021	n/a	0.021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.32
Hiker/Camper - Toddler																	
Aluminum	0.050	0.07	0.031	0.00027	0.000022	0.00048	0.0000049	0.00037	0.014	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.17
Copper	0.0094	0.079	0.017	0.00087	0.000014	0.00033	0.0000033	0.0018	0.024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.13
Vanadium	0.12	0.16	0.073	0.00063	0.000054	0.0017	0.000018	0.0016	0.018	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.37
Hiker/Camper - Adult																	
Aluminum	0.0029	0.046	0.0018	0.00016	0.000010	0.00028	0.0000033	0.00021	0.0033	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.055
Copper	0.00035	0.033	0.00063	0.00033	0.0000042	0.00012	0.0000014	0.00064	0.0038	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.039
Vanadium	0.0068	0.11	0.0043	0.00037	0.000025	0.001	0.000012	0.00087	0.0043	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.12
ATV/Snowmobile User - Teen																	
Aluminum	n/a	n/a	0.00072	0.000055	0.0000037	0.000074	n/a	n/a	0.0041	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0050
Copper	n/a	n/a	0.00028	0.00013	0.0000017	0.000036	n/a	n/a	0.0053	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0058
Vanadium	n/a	n/a	0.0017	0.00013	0.0000093	0.00027	n/a	n/a	0.0054	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0075
ATV/Snowmobile User - Adult																	
Aluminum	n/a	n/a	0.00061	0.000052	0.0000034	0.000094	n/a	n/a	0.0033	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0041
Copper	n/a	n/a	0.00021	0.00011	0.0000014	0.000041	n/a	n/a	0.0038	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0042
Vanadium	n/a	n/a	0.0014	0.00012	0.0000084	0.00034	n/a	n/a	0.0043	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0062
Boater/Kayaker - Toddler																	
Aluminum	0.050	0.07	n/a	n/a	n/a	0.00048	n/a	0.00037	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.12
Copper	0.0094	0.079	n/a	n/a	n/a	0.00033	n/a	0.0018	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.09
Vanadium	0.12	0.16	n/a	n/a	n/a	0.0017	n/a	0.0016	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.28
Boater/Kayaker - Adult																	
Aluminum	0.0029	0.046	n/a	n/a	n/a	0.00028	n/a	0.00021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.049
Copper	0.00035	0.033	n/a	n/a	n/a	0.00012	n/a	0.00064	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.034
Vanadium	0.0068	0.11	n/a	n/a	n/a	0.001	n/a	0.00087	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.12
Sport Fisher - Toddler																	
Aluminum	n/a	n/a	n/a	n/a	n/a	0.00048	n/a	0.0019	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0024
Copper	n/a	n/a	n/a	n/a	n/a	0.00033	n/a	0.0091	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0094
Vanadium	n/a	n/a	n/a	n/a	n/a	0.0017	n/a	0.008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0098
Sport Fisher - Adult																	
Aluminum	n/a	n/a	n/a	n/a	n/a	0.00028	n/a	0.0010	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0013
Copper	n/a	n/a	n/a	n/a	n/a	0.00012	n/a	0.0032	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0033
Vanadium	n/a	n/a	n/a	n/a	n/a	0.001	n/a	0.0043	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0053

Appendix B-4
Table B-4-1: Summary of Hazard Quotients
MPMC - Human Health Risk Assessment

COPC	Exposure Pathway[1]																Hazard Index
	Incidential ingestion of sediment	Dermal contact with sediment	Incidental ingestion of soil	Dermal contact with soil	Inhalation of soil particulates	Ingestion of surface water	Dermal contact with surface water	Ingestion of fish muscle	Ingestion of berries	Ingestion of traditional plants	Ingestion of deer	Ingestion of deer liver	Ingestion of moose	Ingestion of moose liver	Ingestion of grouse	Ingestion of cattle	
Hunter/Trapper - Toddler																	
Aluminum	n/a	n/a	0.0104	0.000089	0.0000072	0.00016	n/a	0.00037	n/a	n/a	0.0006	n/a	0.0020	n/a	0.00000072	n/a	0.014
Copper	n/a	n/a	0.0056	0.00029	0.0000046	0.00011	n/a	0.0018	n/a	n/a	0.002	n/a	0.0063	n/a	0.0000036	n/a	0.016
Vanadium	n/a	n/a	0.02445	0.00021	0.000018	0.00058	n/a	0.0016	n/a	n/a	0.0019	n/a	0.0059	n/a	0.0000026	n/a	0.035
Hunter/Trapper - Adult																	
Aluminum	n/a	n/a	0.000606	0.000052	0.0000034	0.000094	n/a	0.00021	n/a	n/a	0.00046	n/a	0.0015	n/a	0.00000053	n/a	0.0029
Copper	n/a	n/a	0.000211	0.00011	0.0000014	0.000041	n/a	0.00064	n/a	n/a	0.00097	n/a	0.003	n/a	0.0000017	n/a	0.005
Vanadium	n/a	n/a	0.001427	0.00012	0.0000084	0.00034	n/a	0.00087	n/a	n/a	0.0014	n/a	0.0044	n/a	0.0000019	n/a	0.0086
Quesnel Lake Resident - Infant																	
Aluminum	0.025	0.086	n/a	n/a	0.000011	0.0011	0.0000059	n/a	0.016	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.13
Copper	0.0047	0.096	n/a	n/a	0.0000074	0.00076	0.000004	n/a	0.028	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.13
Vanadium	0.059	0.2	n/a	n/a	0.000029	0.0041	0.000021	n/a	0.02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.28
Quesnel Lake Resident - Toddler																	
Aluminum	0.050	0.07	n/a	n/a	0.000022	0.0011	0.0000049	0.00037	0.014	n/a	0.0006	n/a	0.0020	n/a	0.00000072	0.0073	0.15
Copper	0.0094	0.079	n/a	n/a	0.000014	0.00076	0.0000033	0.0018	0.024	n/a	0.002	n/a	0.0063	n/a	0.0000036	0.028	0.15
Vanadium	0.12	0.16	n/a	n/a	0.000054	0.0041	0.000018	0.0016	0.018	n/a	0.0019	n/a	0.0059	n/a	0.0000026	0.023	0.33
Quesnel Lake Resident - Adult																	
Aluminum	0.0029	0.046	n/a	n/a	0.000010	0.00066	0.0000033	0.00021	0.0033	n/a	0.00046	n/a	0.0015	n/a	0.0000005	0.0039	0.059
Copper	0.00035	0.033	n/a	n/a	0.0000042	0.00029	0.0000014	0.00064	0.0038	n/a	0.00097	n/a	0.003	n/a	0.0000017	0.0019	0.044
Vanadium	0.0068	0.11	n/a	n/a	0.000025	0.0024	0.000012	0.00087	0.0043	n/a	0.0014	n/a	0.0044	n/a	0.0000019	0.012	0.14
Logger - Adult																	
Aluminum	n/a	n/a	0.015	0.0026	0.000034	0.00047	n/a	n/a	0.0033	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.022
Copper	n/a	n/a	0.0053	0.0054	0.000014	0.0002	n/a	n/a	0.0038	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.015
Vanadium	n/a	n/a	0.036	0.0061	0.000085	0.0017	n/a	n/a	0.0043	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.048
Mine/Rehabilitation Worker - Adult																	
Aluminum	n/a	n/a	0.012	0.0014	0.000027	0.00038	n/a	0.00021	0.0033	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.017
Copper	n/a	n/a	0.0042	0.0029	0.000011	0.00016	n/a	0.00064	0.0038	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.012
Vanadium	n/a	n/a	0.029	0.0033	0.000068	0.0014	n/a	0.00087	0.0043	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.038

Notes:
COPC = contaminant of potential concern; n/a = not applicable, this exposure pathway was not applicable for the receptor and COPC combination.
[1] The infant was the most sensitive receptor used to evaluate the ingestion of berry and/or traditional plant pathways. The toddler was the most sensitive receptor used to evaluate the sediment exposure and ingestion of wild game pathways.

APPENDIX B-5
Sample Calculation

1.0 SAMPLE CALCULATION

A sample calculation, including exposure dose and hazard quotient, was conducted for the adult subsistence and traditional land user exposed to vanadium from the remediation area via incidental sediment and soil ingestion, sediment and soil dermal contact, inhalation of soil particulates, ingestion and dermal contact with surface water and traditional food ingestion.

2.0 INCIDENTAL SEDIMENT/SOIL INGESTION DOSE RATE

$$DR_{SI} = \frac{C_S \times IR_S \times RAF_O \times D_1 \times D_2}{BW}$$

Where:

DR_{SI} = estimated dose rate from ingestion of COPC in sediment/soil (mg/kg BW/day)

C_S = COPC concentration in sediment/soil (mg/kg)

IR_S = sediment/soil ingestion rate (kg/day)

RAF_{Oral} = bioavailability via sediment/soil ingestion, i.e., relative absorption factor from the gastrointestinal tract (unitless)

D_1 = days per week exposed / 7 days

D_2 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)

BW = body weight (kg)

Incidental ingestion of vanadium in sediment from the remediation area for the adult subsistence and traditional land user:

$$DR_{SedI} = \frac{280 \text{ mg/kg} \times 0.00002 \text{ kg/day} \times 1 \times 5 \text{ days} / 7 \text{ days} \times 52 \text{ weeks} / 52 \text{ weeks}}{70.7 \text{ kg}}$$

DR_{SedI} = 5.66E-05 mg/kg bw/day

Hazard quotient for inadvertent ingestion of vanadium from sediment in the remediation area for the adult subsistence and traditional land user:

$$HQ = \frac{DR}{RfD}$$

Where:

DR = dose rate (mg/kg bw/day)

RfD = reference dose (mg/kg bw/day)

$$HQ_{SedI} = \frac{5.66E\text{-}05 \text{ mg/kg BW/day}}{5.0E\text{-}03 \text{ mg/kg BW/day}}$$

HQ_{SedI} = 1.13E-02

Incidental ingestion of vanadium in soil from the remediation area for the adult subsistence and traditional land user:

DR_{SI} = 176.5 mg/kg × 0.00002 kg/day × 1 × 5 days / 7 days × 52 weeks / 52 weeks
70.7 kg

DR_{SI} = 6.06E-07 mg/kg bw/day

Hazard quotient for inadvertent ingestion of vanadium from soil in the remediation area for the adult subsistence and traditional land user:

HQ_{SI} = 3.57E-05 mg/kg BW/day
5.0E-03 mg/kg BW/day

HQ_{SI} = 7.13E-03

3.0 INHALATION OF SOIL PARTICULATES

$$DR_{Inh} = \frac{C_A \times IR_A \times RAF_{Inh} \times D_1 \times D_2 \times D_3}{BW}$$

Where:

DR_{Inh} = estimated dose rate from inhalation of COPC in air (mg/kg bw/day)
C_A = COPC concentration in air (mg/m^3)
IR_A = inhalation rate (m^3/day)
RAF_{Inh} = bioavailability via inhalation (unitless)
D_1 = hours per day exposed / 24 hours
D_2 = days per week exposed / 7 days
D_3 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)
BW = body weight (kg)

Inhalation of vanadium in soil particulates from the remediation area for the adult subsistence and traditional land user:

DR_{Inh} = 3E-6 mg/m^3 × 16.6 m^3/day × 1 × 10 hours/ 24 hours × 5 days / 7 days × 52 weeks / 52 weeks
70.7 kg

DR_{Inh} = 2.10E-07 mg/kg bw/day

Hazard quotient for inhalation of vanadium from soil in the remediation area for the adult subsistence and traditional land user:

HQ_{Inh} = 2.10E-07 mg/kg BW/day
5.0E-03 mg/kg BW/day

HQ_{Inh} = 4.19E-05

4.0 SEDIMENT/SOIL DERMAL CONTACT DOSE RATE

$$DR_{DC} = \frac{C_S \times [(SA_H \times SL_H) + \sum(SA_O \times SL_O)] \times RAF_D \times D_1 \times D_2}{BW}$$

Where:

DR_{DC} = estimated dose rate from dermal contact with COPC in sediment/soil (mg/kg BW/day)
C_S = COPC concentration in sediment/soil (mg/kg)
SA_H = skin surface area available for dermal contact (hands) (m^2)
SL_H = sediment/soil loading to exposed skin (hands) ($kg/m^2/day$)
SA_O = skin surface area available for dermal contact (other than hands) (m^2)
SL_O = sediment/soil loading to exposed skin (other than hands) ($kg/m^2/day$)
RAF_{Dermal} = bioavailability via dermal contact (unitless)
D_1 = days per week exposed / 7 days
D_2 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)
BW = body weight (kg)

Dermal contact with vanadium in sediment from the remediation area for the adult subsistence and traditional land user:

$$DR_{DC\text{-}sediment} = \frac{280\ mg/kg \times [(0.089\ m^2 \times 0.0049\ kg/m^2/d) + (0.125\ m^2 \times 0.0017\ kg/m^2/d) + (0.5720 \times 0.007\ kg/m^2/d) + (0.1271\ m^2 \times 0.21\ kg/m^2/d)] \times 0.01 \times 1 \times 5\ days / 7\ days \times 52\ weeks / 52\ weeks}{70.7\ kg}$$

$DR_{DC\text{-}sediment}$ = 8.87E-04 mg/kg BW/day

Hazard quotient for dermal contact with vanadium in sediment from the remediation area for the adult subsistence and traditional land user:

$$HQ_{DC\text{-}sediment} = \frac{8.87E\text{-}04\ mg/kg\ BW/day}{5.0E\text{-}03\ mg/kg\ BW/day}$$

$HQ_{DC\text{-}sediment}$ = 1.77E-01

Dermal contact with vanadium in soil from the remediation area for the adult subsistence and traditional land user:

$$DR_{DC\text{-}soil} = \frac{176.5\ mg/kg \times [(0.089\ m^2 \times 0.001\ kg/m^2/d) + (0.250\ m^2 \times 0.0001\ kg/m^2/d) + (0.5720 \times 0.0001\ kg/m^2/d)] \times 0.01 \times 1 \times 5\ days / 7\ days \times 52\ weeks / 52\ weeks}{70.7\ kg}$$

$DR_{DC\text{-}soil}$ = 3.05E-06 mg/kg BW/day

Hazard quotient for dermal contact with vanadium in soil from the remediation area for the adult subsistence and traditional land user:

$$HQ_{DC\text{-}soil} = \frac{3.05E\text{-}06\ mg/kg\ BW/day}{5.0E\text{-}03\ mg/kg\ BW/day}$$

$HQ_{DC\text{-}soil}$ = 6.11E-04

5.0 FOOD INGESTION EXPOSURE DOSE RATE

$$DR_{FI} = \frac{\sum(C_{Foodi} \times IR_{Foodi}) \times RAF_{O}}{BW}$$

Where:

DR_{FI} = estimated dose rate from ingestion of COPC in food (mg/kg BW/day)

C_{foodi} = COPC concentration in food i (mg/kg ww)

IR_{foodi} = receptor ingestion rate for food i (kg ww/day)

RAF_{Oral} = relative absorption factor from the gastrointestinal tract (i.e., bioavailability via food ingestion) (unitless)

D_i = days per year during which consumption of food i will occur

BW = body weight (kg)

Ingestion of vanadium in fish, berries, plants, deer, moose, grouse, and cattle from the remediation area for the adult subsistence and traditional land user:

$$DR_{FI} = \frac{[(0.0332\ mg/kg \times 0.046\ kg/day) + (0.21\ mg/kg \times 0.035\ kg/day) + (0.71\ mg/kg \times 0.0069\ kg/day) + (0.051\ mg/kg \times 0.077\ kg/day) + (0.069\ mg/kg \times 0.0074\ kg/day) + (0.052\ mg/kg \times 0.14\ kg/day) + (1.27\ mg/kg \times 0.0061\ kg/day) + (0.00036\ mg/kg \times 0.0033\ kg/day) + (0.074\ mg/kg \times 0\ kg/day)] \times 1}{70.7\ kg}$$

DR_{FI} = 5.35E-04 mg/kg BW/day

Hazard quotient for ingestion of vanadium in traditional food for the adult subsistence and traditional land user:

$$HQ_{FI} = \frac{5.35E\text{-}04\ mg/kg\ BW/day}{5.0E\text{-}03\ mg/kg\ BW/day}$$

HQ_{FI} = 1.07E-01

6.0 INGESTION OF SURFACE WATER (AS DRINKING WATER)

$$DR_{WI} = \frac{C_W \times IR_W \times RAF_O \times D_1 \times D_2}{BW}$$

Where:

DR_{WI} = estimated dose rate from ingestion of COPC in surface water (mg/kg bw/day)

C_W = COPC concentration in surface water (mg/L)

IR_W = water ingestion rate (L/day)

RAF_O = bioavailability via water ingestion (i.e., relative absorption factor from the gastrointestinal tract) (unitless)

D_1 = days per week exposed / 7 days

D_2 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)

BW = body weight (kg)

Ingestion of vanadium from surface water in the remediation area used as drinking water for the adult subsistence and traditional land user:

$$DR_{WI} = \frac{0.00056\ mg/L \times 1.5L/d \times 1 \times 7\ days / 7\ days \times 52\ weeks / 52\ weeks}{70.7\ kg}$$

DR_{WI} = 1.19E-05 mg/kg BW/day

Hazard quotient for Ingestion of vanadium from surface water in the remediation area used as drinking water for the adult subsistence and traditional land user:

$$HQ_{WI} = \frac{1.19E\text{-}5\ mg/kg\ BW/day}{5.0E\text{-}03\ mg/kg\ BW/day}$$

HQ_{WI} = 2.37E-03

7.0 DERMAL CONTACT WITH SURFACE WATER (WHILE SWIMMING)

$$DAD = \frac{DA_{event} \times SA \times EF \times D_1 \times D_2}{BW}$$

Where:

DAD = dermally absorbed dose (mg/kg/day)

DA_{event} = absorbed dose per event (mg/cm^2/event); see below for equation

SA = skin surface area (cm^2)

EF = exposure frequency (events/day)

D1 = days per week exposed / seven days

D2 = weeks per year exposed / 52 weeks (assumed to be 52 weeks; no amortization for weeks per year)

$$DA_{event} = k_p \times C_W \times t_{event}$$

Where:

DA_{event} = absorbed dose per event (mg/cm^2/event)

Kp = dermal permeability coefficient (cm/hour)

C_W = COPC concentration in water (mg/cm^3)

t_{event} = event duration (hour/event)

Dermal contact with vanadium in surface water from the remediation area for the adult subsistence and traditional land user:

DA_{event} = 0.001 cm/hour × 5.6E-7 mg/cm^3 ×1 hour/event

DA_{event} = 5.6E-10 mg/cm^2-event

$$DAD = \frac{\text{5.6E-10 mg/cm}^2\text{-event} \times \text{17640 cm}^2 \times \text{1 event/day} \times \text{5 days / 7 days} \times \text{52 weeks / 52 weeks}}{\text{70.7 kg}}$$

DAD = 9.98E-08 mg/kg bw/day

Hazard quotient for Ingestion of vanadium from surface water in the remediation area used as drinking water for the adult subsistence and traditional land user:

$$HQ_{DAD} = \frac{\text{9.98E-8 mg/kg BW/day}}{\text{5.0E-03 mg/kg BW/day}}$$

HQ_{DAD} = 2.0E-05

HAZARD INDEX

Hazard index from exposure to vanadium via ingestion of sediment, dermal contact with sediment and ingestion of traditional food from the remediation area for the adult subsistence and traditional land user:

Hazard Index = $HQ_{SedI} + HQ_{SI} + HQ_{Inh} + HQ_{DC\text{-}sediment} + HQ_{DC\text{-}soil} + HQ_{FI} + HQ_{WI} + HQ_{DAD}$

Hazard Index = 1.13E-02 + 7.13E-03 + 4.19E-05 + 1.79E-01 + 6.11E-04 + 1.07E-01 + 2.4E-03 + 2.05E-05

Hazard Index = 0.31

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APPENDIX B-6
Toxicity Information

Health Canada (2010)	IARC (2016)	US EPA (2016)	Description
Group I	Group 1	Group A	Human carcinogen
Group II	Group 2A	Group B	Probable human carcinogen
		Group B1	Limited human evidence available
		Group B2	Inadequate human evidence, sufficient animal evidence
Group III	Group 2B	Group C	Possible human carcinogen
Group IV	Group 3	Group D	Unclassifiable as to human carcinogenicity/ Unlikely to be a carcinogen (Health Canada only)
Group V	Group 4	Group E	Probably not carcinogenic to humans
Group VI	Does not apply		Unclassifiable as to human carcinogenicity

References:

Health Canada. 2010. Federal Contaminated Sites Risk Assessment in Canada, Part II: Health Canada Toxicity Reference Values (TRVs) and Chemical-Specific Factors, Version 2.0. September 2010. Contaminated Sites Division, Safe Environments Directorate.

IARC. 2016. IARC Monographs o the Evaluation of Carcinogenic Risks to Humans, Agents Classified by the IARC Monographs, Volumes 1-117. Last updated 24 September 2016. Available at: http://monographs.iarc.fr/ENG/Classification/. Accessed January 2017.

US EPA. 2016. Integrated Risk Information System, Online Database. [accessed January 2017]. https://www.epa.gov/iris.

COPC	Carcinogen Classification			Assessed as a Carcinogen?	Oral/Dermal TRV[1]						
	Health Canada (2010)	IARC (2016)	US EPA (2016)		RfD mg/kg/day	SF (mg/kg/day)$^{-1}$	Target Organ/Effect	Source	Oral RAF Sediment/ Soil[2]	Oral RAF Food[3]	Dermal RAF[4]
Aluminum	NC	NC	Group D[5]	No	1	n/a	Neurotoxicity: Decreased forelimb and hindlimb grip strength and decreased thermal sensitivity	ATSDR (2008)	0.12	1	0.01[b]
Copper	NC	NC	Group D	No	0 to 6 months: 0.091 7 months to 4 years: 0.091 5 to 11 years: 0.110 12 to 19 years: 0.126 ≥20 years: 0.141	n/a	Hepatotoxicity, gastrointestinal effects	Health Canada (2010)	0.45	1	0.06
Vanadium	NC	NC	NC	No	0.005[a]	n/a	Decreased hair cysteine	US EPA (1988)	0.017	1	0.01[b]

Notes:

COPC = contaminant of potential concern; IARC = International Agency on Cancer Research; mg/kg/day = milligram per kilogram per day; n/a = not applicable; NC = not classified; RAF = relative absorption factor; RfD = reference dose; SF = slope factor; TRV = toxicity reference value; US EPA = United States Environmental Protection Agency.

[1] Oral TRV adopted as dermal TRV if dermal TRV is not available.

[2] Oral RAFs for the sediment and soil exposure pathways in the remediation's areas were adjusted using the physiologically based extraction test results.

[3] Oral RAFs for the food exposure pathways were assumed to be 1 (Health Canada 2010).

[4] Dermal RAFs were obtained from Health Canada (2010), unless otherwise noted.

[5] US EPA (2008).

[a] The vandium RfD was derived from the oral RfD for vanadium pentoxide (0.009 mg/kg/day) based upon the proportion of the compound that is vanadium metal (i.e., 0.009 mg/kg/day x 56% = 0.005 mg/kg/day).

[b] A default value of 0.01 was assigned as a dermal RAF based on the geometric mean of an analysis of the dermal RAF of other inorganics with sufficient available information (OMOE 2011).

References:

Health Canada. 2010. Federal Contaminated Site Risk Assessment in Canada. Part II: Health Canada toxicological reference values (TRVs) and chemical-specific factors, version 2.0. September 2010. Environmental Health Assessment Services, Safe Environments Program. Health Canada, Ottawa, ON.

IARC (International Agency on Cancer Research). 2016. Agents classified by the IARC monographs, volumes 1-117. Last updated 24 September 2016. Accessed December 2016 from: http://monographs.iarc.fr/ENG/Classification/.

OMOE (Ontario Ministry of the Environment). 2011. Rationale for the development of soil and ground water standards for use at contaminated site in Ontario. Standards Development Branch. April 2011.

US EPA (United States Environmental Protection Agency). 1988. Integrated Risk Information System (IRIS) Profile for Vanadium Pentoxide. Available at: http://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0125_summary.pdf. Accessed December 2016.

US EPA. 2008. Provisional Peer Reviewed Toxicity Values for Aluminum. October 2006. Superfund Health Risk Technical Support Center, National Center for Environmental Assessment, Office of Research and Development.

US EPA. 2016. IRIS Database. Last updated 19 December 2016. Available at: http://www.epa.gov/iris/index.html. Accessed December 2016.

APPENDIX B-7
Physiologically Based Extraction Test Results

Royal Roads
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September 1, 2015

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Re: Determination of the Metal Bioaccessibility in Soil Samples Using Physiological Based Extraction Test (PBET)

Table 1: Results of the Analysis

Sample ID	Bioaccessibility (%)						
	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper
00807-01	13.5	41.2	42.7	14.9	9.8	5.0	38.5
00807-02	10.1	NC	49.4	76.0	NC	24.0	35.1
00807-03	11.8	46.7	39.6	25.4	10.2	4.9	49.3
00807-04	11.2	42.0	31.7	23.0	NC	4.5	42.7
00807-05	12.9	54.5	53.0	16.9	15.0	7.5	70.7
00807-06	12.2	43.5	37.2	12.8	10.4	3.5	35.6
00807-07	12.5	43.3	39.9	16.5	10.5	3.5	38.0
Mean	12.0	45.2	41.9	26.5	11.2	7.5	44.3
St Dev	1.1	4.9	7.2	22.3	2.2	7.4	12.6

NC: Not calculated since concentration in extract is below detection

Table 1: Results of the Analysis (Continued)

Sample ID	Bioaccessibility (%)					
	Iron	Lead	Manganese	Nickel	Vanadium	Zinc
00807-01	2.6	47.8	24.3	8.3	2.2	NC
00807-02	3.5	42.3	54.0	4.6	NC	14.3
00807-03	2.0	53.6	20.6	8.1	1.4	11.0
00807-04	1.1	46.9	21.2	8.2	NC	NC
00807-05	2.7	68.0	21.3	8.7	2.1	15.3
00807-06	1.8	40.9	20.8	6.9	1.4	35.0
00807-07	1.9	43.0	20.8	7.0	1.3	NC
Mean	2.2	48.9	26.2	7.4	1.7	18.9
St Dev	0.8	9.4	12.4	1.4	0.4	10.9

NC: Not calculated since concentration in extract is below detection

Methodology

Sample Preparation

All soil samples received were dried at laboratory ambient temperatures (<40^{O}C) until constant weight and sieved to <250 µm using USA Standard Testing Sieve ASTM E11 series and a Meinzer II Sieve Shaker. Laboratory data is given in Table 2.

Table 2: Mass of Wet, Dried and Sieved Soil Samples

Sample ID	Wet Soil Used (g)	Dry Soil (g)	Moisture (%)	Soil Sieved (g)	<250 um Soil (g)	<250 µm Content (%)
00807-01	486.8	382.0	222.1	382.0	214.7	56.2
00807-02	139.0	106.2	97.3	106.2	43.0	40.5
00807-03	525.4	432.3	251.1	432.3	287.1	66.4
00807-04	409.3	289.8	275.3	289.8	331.1	114.3
00807-05	379.4	325.9	215.7	325.9	188.5	57.8
00807-06	508.8	409.4	227.0	409.4	346.6	84.7
00807-07	516.4	416.8	204.8	416.8	354.1	85.0

Metals in Soil

The sieved soil samples were analyzed at Maxxam Analytics, Burnaby, BC by ICP-MS using an Agilent Model 7500ce Collision Cell ICPMS, United States Environmental Protection Agency (US EPA) Method 200.8 (US EPA, 2005). Soil digestion was accomplished with a nitric-hydrochloric acid mixture which solubilized the solid matter and removed organic material by oxidation and volatilization. The concentrations of metals in the soils are reported in mg/kg and are given in the appended Excel spreadsheet.

PBET Extraction

The extraction protocol was based on the Standard Operating Procedure for an In Vitro Bioaccessibility Assay (IVBA) for Lead in Soil, US EPA Method 9200.1-86 (US EPA, 2008). This IVBA protocol has been validated for arsenic and lead through studies that show good correlation between the in vivo relative bioavailability (RBA) and in vitro assays (Juhasz et al., 2014; US EPA 2007). The relationship for arsenic is expressed by Juhasz et al. (2014) as:

$$\text{As RBA (\%)} = 0.84\ \text{As IVBA (\%)} + 3.56;\ n = 25$$

For lead the relationship based on USEPA (2007) is:

$$\text{Pb RBA} = 0.878\ \text{Pb IVBA (\%)} - 2.8$$

The sieved soil sample was weighed by difference (1.00 ± 0.05 g) into a 125 ml acid cleaned HPDE bottle. An aliquot of 100 ± 0.5 ml of extraction fluid was measured and added to the bottle. This yielded a sample mass to fluid ratio of 1:100. The pH of the soil/extraction fluid mixture was measured. The extraction solution consisted of 30 g/L glycine (Calbiochem) adjusted to a pH of 1.5 with concentrated HCl (Fisher Scientific, trace metal grade). The bottle was then sealed and placed into the extractor in batches of eight and rotated end-over-end in a $37^{O} \pm 2^{O}$ C water bath for 1h. After the extraction was completed, the bottles were removed. Each extract was drawn directly into a disposable 20 ml plastic syringe with a luer slip (National Scientific). A 0.45 µm cellulose acetate filter (25 mm diameter, Cole Palmer) was attached to the syringe and the extract was filtered into a clean 20 ml polyethylene scintillation vial (Wheaton). QA/QC included a procedure blank and a laboratory control sample.

The laboratory batch data is given in Table 3.

Table 3: Laboratory Extraction Batch Summary

Batch 1					
Date of Extraction:					13-Aug-15
Start Time:					10:40 AM
Stop Time:					11:40 AM
Initial temp of water bath (^{o}C):					37.6
Final temp of water bath (^{o}C):					37.6
Sample ID	RRU ID	Weight (g)	Initial pH	Final pH	Comments
00807-01	EXT20-1	1.0142	1.51	1.54	
00807-02	EXT20-2	1.0691	1.48	1.49	
00807-03	EXT20-3	1.0196	1.52	1.53	
00807-04	EXT20-4	1.0060	1.49	1.51	
00807-05	EXT20-5	1.0129	1.52	1.53	
00807-06	EXT20-6	1.0146	1.50	1.53	
00807-07	EXT20-7	1.0099	1.52	1.53	
SR18	SR20	1.0241	1.52	1.55	NIST 2711
BL18	BL20	0.0000	1.48	1.50	Procedure blank

Analysis for Metals in Extracts

The filtered extract was stored at 4^{o}C and subsequently shipped to Maxxam Analytics, Burnaby, BC and analyzed for metals using an Agilent Model 7500ce Collision Cell ICPMS based on US EPA Method 200.8 (US EPA 2005). Metal concentrations in the extracts are expressed in µg/L and presented in the appended Excel spreadsheet.

Bioaccessibility Calculations

Metal bioaccessibility was calculated as follows:

$$Bioaccessibility,\ \% = \frac{(concentration\ in\ extract,\ \mu g/L)\ x\ (vol\ of\ extract,\ L)}{(concentration\ in\ soil,\ mg/kg)\ x\ (mass\ of\ soil\ used,\ g)}\ x\ 100$$

The results of the analysis are given in Table 1.

Quality Assurance/Quality Control (QA/QC)

The QA/QC program comprised a procedure blank (BL20) and a laboratory control sample (SR20). The procedure blank consisted of running an aliquot of the extraction fluid through the complete extraction procedure. Arsenic and lead concentrations in the blanks were within the control limits (Table 4). Lead and arsenic concentrations were also within the control limits for the National Institute of Standards and Technology (NIST) Standard Reference Material (NIST

2711, Montana Soil) that was used as the laboratory control sample. The values for other parameters are not certified.

Table 4: Metal Concentrations (µg/L) and Control Limits for Procedure Blank (BL20) and NIST 2711 Standard Reference Material (SR20)

Total Metals	BL20	Control Limits	SR20	Control Limits
Aluminum (Al)	<50		16500	
Antimony (Sb)	<2.5		14.9	
Arsenic (As)	<2.0	<10	571	590 ±90
Barium (Ba)	<5.0		1230	
Beryllium (Be)	<1.0		4	
Bismuth (Bi)	<5.0		12	
Boron (B)	<500		<500	
Cadmium (Cd)	<0.50		384	
Chromium (Cr)	<10		11	
Cobalt (Co)	<2.5		35.3	
Copper (Cu)	40.1		522	
Iron (Fe)	<100		8380	
Lead (Pb)	<1.0	<50	10200	9220 ±1490
Lithium (Li)	<50		<50	
Manganese (Mn)	<5.0		3580	
Mercury (Hg)	<1.0		1.5	
Molybdenum (Mo)	<5.0		<5.0	
Nickel (Ni)	<5.0		40	
Selenium (Se)	<4.0		<4.0	
Silicon (Si)	<10000		<10000	
Silver (Ag)	<0.50		25.1	
Strontium (Sr)	<5.0		327	
Thallium (Tl)	<0.25		11.1	
Tin (Sn)	<25		<25	
Titanium (Ti)	<50		<50	
Uranium (U)	<0.50		2.25	
Vanadium (V)	<25		48	
Zinc (Zn)	<50		1160	

References

Juhasz, A.L, Herde, P., Herde, C., Boland, J., & Smith, E. (2014) Validation of the predictive capabilities of the SBRC‐G in vitro assay for estimating arsenic relative bioavailability in contaminated soils. Environmental Science & Technology, 48, 12962−12969.

United States Environmental Protection Agency (US EPA). (2005). SW-846. Test Methods for evaluating solid waste. Physical/chemical methods. U.S. Government Printing Office, Washington DC, 20402.

US EPA. (2007). Estimation of Relative Bioavailability of Lead in Soil and Soil-Like Materials Using In Vivo and In Vitro Methods. Office of Solid Waste and Emergency Response 9285.7-77. http://www.epa.gov/superfund/health/contaminants/bioavailability/guidance.htm

US EPA. (2008). Standard Operating Procedure for an In Vitro Bioaccessibility Assay for Lead in Soil, EPA 9200.1-86 (November 2008). Accessed at: http://www.epa.gov/superfund/health/contaminants/bioavailability/pb_ivba_sop_final.pdf

Closure

Please do not hesitate to contact me if you have any questions regarding this report.

Matt Dodd, Ph.D.
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Matt.dodd@royalroads.ca

APPENDIX C

Air Quality

APPENDIX C-1
Air Quality Prediction Methods Memo

TECHNICAL MEMORANDUM

DATE 9 May 2017 **REFERENCE No.** 1662612-067-TM-Rev1-22347

TO 'Lyn Anglin (IMC) and Colleen Hughes
Mount Polley Mining Corporation

CC Don Parsons and Art Frye (MPMC)

FROM Jeffrey Ramkellawan and Rachel Wyles **EMAIL** Jeffrey_Ramkellawan@golder.com; Rachel_Wyles@golder.com

MOUNT POLLEY HEALTH ASSESSMENT – PARTICULATE AND METAL AMBIENT AIR CONCENTRATIONS – MOUNT POLLEY MINE

This memorandum outlines the methods used to establish ambient particulate and metal concentrations for 2015 at the Mount Polley Mine (the Mine) to support the human health assessment.

Particulate sizes of interest include total suspended particulates (TSP), particulates with a nominal aerodynamic diameter of less than 10 microns (PM_{10}), and particulates with a nominal aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$). Metals of interest include aluminum, copper, and vanadium.

1.0 BACKGROUND

In the summer of 2015 (7 July to 29 September 2015), four continuous ambient air particulate monitors (DustTRAKs) were situated at monitoring locations A4, A7, A8 and A9 (Table 1). DustTRAK monitoring at this time was undertaken to determine ambient particulate concentrations in the vicinity of the Tailings Storage Facility (TSF) and the Polly Flats.

Table 1: Particulate Monitoring Station Locations

Station Name	Easting (m)	Northing (m)
A4	595,215	5,821,275
A7	595,146	5,818,104
A8	596,807	5,817,945
A9	595,744	5,820,806

Regional continuous ambient particulate monitoring is undertaken by the BC Ministry of Environment (MOE) at Quesnel Senior Secondary and Williams Lake Columneetza School (Williams Lake). These are the closest continuous government monitoring stations located to the Mine. Data from these stations were included in the assessment to assist in contextualizing the onsite particulate concentration data.

Ambient air concentrations from the DustTRAK monitoring and the regional monitoring datasets have been used to estimate ambient particulate and metals concentrations (aluminum, copper, and vanadium) at the Mine for the 2015 calendar year.

2.0 SUMMARY OF METHODS

This section describes the methods used to establish 1 hour, 24 hour, and annual particulate and metal ambient air concentrations for 2015.

As described in Section 1.0, background particulate concentrations were measured at the Mine from 7 July to 29 September 2015. Based on the observations within Golder Associates Ltd. (Golder) (2015a, 2015b, 2015c, 2015d and 2015e) it was found that PM_{10} concentrations showed similar large scale trends to ambient particulate concentrations recorded at the BC MOE Williams Lake station. Since PM_{10} concentrations exhibited similar trends, the average PM_{10} ratios between the onsite monitoring stations (A4, A7, A8 and A9) and Williams Lake during the summer monitoring period (7 July to 29 September 2015) were established. The average PM_{10} ratios were derived by establishing the ratio between the onsite monitoring stations (A4, A7, A8 and A9) and Williams Lake data for each individual hour over the summer monitoring period. The hourly ratios were then averaged over the entire summer monitoring period which resulted in an average PM_{10} ratio for each onsite monitoring station.

The ratios were used to convert the Williams Lake 2015 calendar year particulate data (PM_{10} and $PM_{2.5}$) into an extrapolated annual dataset for A4, A7, A8 and A9. This allows the on-site data to be extrapolated to an annual dataset that incorporates considerations of likely seasonal trends that will impact ambient particulates concentrations. Concentrations of TSP were not monitored at Williams Lake; therefore, the TSP:PM_{10} ratio from the DustTRAK data for the summer monitoring period at each station was used to convert the 2015 extrapolated annual PM_{10} concentrations into an annual TSP dataset.

The station (A4, A7, A8 and A9) and the method (summer monitoring versus extrapolated 2015 dataset) that resulted in the highest 1-hour and 24-hour particulate concentrations (for TSP, PM_{10} and $PM_{2.5}$) were used to establish the ambient concentrations for the purposes of the health risk assessment.

Annual concentrations were calculated from the 2015 extrapolated datasets for each onsite station; similarly the station that had the highest annual concentration was used to establish ambient annual concentrations for the purposes of the health risk assessment.

Ambient metal concentrations were derived from TSP concentrations for each averaging period (1-hour, 24-hour and annual). It has been assumed that all ambient particulate matter has been emitted from the TSF and Polley Flats; therefore, the metal assay of the tailings was used to derive the ambient metals concentrations. For example, the copper content in tailings is 0.14% by mass; therefore, ambient copper concentrations were calculated by multiplying the ambient TSP concentrations by copper's 0.14% content by mass. The metal assay was provided by the Mount Polley Mining Corporation (MPMC) (Table 2).

Table 2: Metal Composition Provided by MPMC

Metal	Composition (g metal/g tailings)
Aluminum	0.0236
Copper	0.0014
Vanadium	0.0003

3.0 RESULTS

The maximum ambient 1-hour, 24-hour and annual concentrations along with the respective station (A4, A7, A8, and A9) and calculation method (summer 2015 versus composite annual) are provided in Table 3. Statistics provided for the human health assessment including the minimum, maximum, mean and 25th, 50th, 75th, 90th, 95th, 98th and 99th percentile concentrations are provided in Attachment A. The station (A4, A7, A8, and A9) versus Williams Lake 1-hour PM_{10} ratios (ratios used to generate the extrapolated 2015 datasets) are also provided in Attachment A. The stations' 1-hour TSP: PM_{10} ratios (used to generate the TSP extrapolated datasets) are also provided in Attachment A.

Table 3: Maximum Ambient Concentrations

Particulate and Metal	1-hour			24-hour			Annual	
	Concentration (µg/m^3)	Station	Method	Concentration (µg/m^3)	Station	Method	Concentration (µg/m^3)	Station
TSP	295.2	A9	(a)	88.7	A7	(b)	10.1	A9
PM_{10}	284.5	A9	(a)	88.6	A7	(b)	9.8	A9
$PM_{2.5}$	196.2	A9	(b)	88.3	A7	(b)	8.6	A9
Aluminum	6.968	A9	(a)	2.093	A7	(b)	0.240	A9
Copper	0.416	A9	(a)	0.125	A7	(b)	0.014	A9
Vanadium	0.082	A9	(a)	0.025	A7	(b)	0.003	A9

a) Data used from composite 2015 calendar year.

b) Data used from summer of 2015 (7 July to 29 September 2015).

4.0 CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this memorandum.

We trust the above meets your present requirements. If you have any questions or requirements, please contact the undersigned.

GOLDER ASSOCIATES LTD.

Jeffrey Ramkellawan, MSc, PEng
Air Quality Specialist

Rachel Wyles, MEng, PEng.
Associate, Senior Air Quality Specialist

JR/RW/ls/cmm/kp/ah

Attachments: Study Limitations
Attachment A: Particulate Ratios and 1-hour and 24-hour Concentration Statistics

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REFERENCES

Golder Associates Ltd. (Golder). 2015a. Continuous Particulate Monitoring at Mount Polley dated 29 July 2015, Technical Memorandum Reference No. 1411734-043-TM-Rev0-10000.

Golder. 2015b. Continuous Particulate Monitoring at Mount Polley dated 12 August 2015, Technical Memorandum Reference No. 1411734-049-TM-Rev0-10000.

Golder. 2015c. Continuous Particulate Monitoring at Mount Polley dated 27 August 2015, Technical Memorandum Reference No. 1411734-056-TM-Rev0-10000.

Golder. 2015d. Continuous Particulate Monitoring at Mount Polley 19 August to 16 September 2015, Technical Memorandum Reference No. 1411734-079-TM-Rev0-10000.

Golder. 2015e. Continuous Particulate Monitoring at Mount Polley 17 to 29 September 2015: Summary of Particulate Monitoring 7 July to 29 September 2015, Technical Memorandum Reference No. 1411734-091-TM-Rev3-1500.

STUDY LIMITATIONS

Golder Associates Ltd. (Golder) has prepared this document in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practising under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this document. No warranty, express or implied, is made.

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ATTACHMENT A
Particulate Ratios and 1-hour and 24-hour Concentration Statistics

Table 1: PM_{10} Ratios between Onsite Monitoring Stations and Williams Lake

Station	Station PM_{10} to Williams Lake Ratio PM10 Ratio[(a)]
A4	0.23
A7	0.54
A8	0.74
A9	1.02

a) Ratio based on the 1-hour averaging period over the summer (7 July to 29 September 2015) monitoring period.

Table 2: TSP to PM_{10} Ratios at Onsite Monitoring Stations

Station	Station PM_{10} to Williams Lake Ratio PM10 Ratio[(a)]
A4	0.97
A7	0.97
A8	0.99
A9	0.96

a) Ratio based on the 1-hour averaging period over the summer (7 July to 29 September 2015) monitoring period.

Table 3: 1-Hour Averaging Period Statistics

Species	1-Hour Concentration Statistics (µg/m³)									
	Minimum	Maximum	Mean	25th Percentile	50th Percentile	75th Percentile	90th Percentile	95th Percentile	98th Percentile	99th Percentile
TSP	0.0	295.2	10.1	0.8	5.9	13.3	24.6	34.9	51.9	70.1
PM_{10}	0.0	284.5	9.8	0.8	5.7	12.8	23.7	33.7	50.0	67.6
$PM_{2.5}$	0.0	196.2	6.1	1.3	3.1	5.6	10.7	20.9	56.6	67.4
Aluminum	0.0000	6.9678	0.2395	0.0189	0.1389	0.3128	0.5798	0.8247	1.2240	1.6551
Copper	0.0000	0.4163	0.0143	0.0011	0.0083	0.0187	0.0346	0.0493	0.0731	0.0989
Vanadium	0.0000	0.0824	0.0028	0.0002	0.0016	0.0037	0.0069	0.0097	0.0145	0.0196

Table 4: 24-Hour Averaging Period Statistics

Species	24-Hour Concentration Statistics (µg/m³)									
	Minimum	Maximum	Mean	25th Percentile	50th Percentile	75th Percentile	90th Percentile	95th Percentile	98th Percentile	99th Percentile
TSP	0.1	88.7	5.0	1.3	2.1	3.9	6.6	12.6	39.6	56.6
PM_{10}	0.1	88.6	4.9	1.3	2.1	3.8	6.5	12.5	39.4	56.4
$PM_{2.5}$	0.1	88.3	4.5	1.1	1.7	3.5	5.4	11.0	38.0	54.8
Aluminum	0.0017	2.0931	0.1169	0.0310	0.0505	0.0913	0.1548	0.2963	0.9341	1.3366
Copper	0.0001	0.1251	0.0070	0.0019	0.0030	0.0055	0.0092	0.0177	0.0558	0.0799
Vanadium	<0.0001	0.0247	0.0014	0.0004	0.0006	0.0011	0.0018	0.0035	0.0110	0.0158

APPENDIX C-2

Continuous Particulate Monitoring at Mount Polley 17 to 29 September 2015: Summary of Particulate Monitoring 7 July to 29 September 2015

TECHNICAL MEMORANDUM

DATE June 14, 2016 **REFERENCE No.** 1411734-091-TM-Rev3-1500

TO Ralph Adams, Air Quality Meteorologist
Ministry of Environment

FROM Taishi Baba, Jeffrey Ramkellawan, and Rachel Wyles **EMAIL** tbaba@golder.com; jramkellawan@golder.com; rwyles@golder.com

CONTINUOUS PARTICULATE MONITORING AT MOUNT POLLEY SEPTEMBER 17 TO 29, 2015: SUMMARY OF PARTICULATE MONITORING JULY 7 TO SEPTEMBER 29, 2015

Golder Associates Ltd. (Golder) was retained by Mount Polley Mining Corporation (MPMC) to prepare *Fugitive Dust Management Plan* (Dust Management Plan) (Golder 2015a), and to provide interpreted summaries of bi-weekly/monthly monitoring data for the period of July through September, 2015. To date, four technical memoranda have been submitted to the BC Ministry of Environment (MOE), the last dated September 24, 2015. This is the final memorandum, which summarizes monitoring data from September 17 to 29, 2015 and also presents a summary of the data for the entire summer monitoring period from July 7 to September 29, 2015. This memorandum also provides recommended updates to the Dust Management Plan, in consideration of the monitoring data and seasonal conditions observed at the site over the summer monitoring period. The memorandum was updated in June 2016 to include further review and summary of the monitoring data in response to the MOE's review of the document summarized in a memorandum from Mr. Ralph Adams dated January 29, 2016 (MOE 2016a).

The current commitment to undertake continuous monitoring until October 2015 has been fulfilled and the DustTRAK monitors have now been removed from site due to onsite temperatures approaching zero degrees, which is the lower end of the operational range of the monitors. The BC MOE were in agreement with the removal of the monitors.

The memorandum presents the following:

1) A summary of the following for the September monitoring period:
    a) the visual dust observations at the Tailing Storage Facility (TSF) and Plug area;
    b) particulate monitoring data; and
    c) meteorological observations including wind and rainfall data.

2) A summary of the particulate, dustfall, wind speed, and direction, and rainfall data for the summer monitoring period.

3) Recommended updates to the Dust Management Plan for the TSF/Plug area.

The raw monitoring data was forwarded as a separate email attachment to Mr. Ralph Adams (BC MOE), as has been done with the monitoring data to date.

A brief update is also provided on the inclusion of the particulate monitoring data into the human health risk assessment work that is currently ongoing.

1.0 SEPTEMBER MONITORING PERIOD

This section presents a summary of the monitoring and meteorological data for the period September 17 through 29, 2015.

1.1 Visual Observations at the TSF and Plug Area

Visual inspections of Hazeltine Creek and the breach area were undertaken daily and logged using the TSF/Water Management Inspection Checklist (Attachment 1). Visual observations are provided for September 15 to 29, 2015. No dust generation was noted for the monitoring period.

1.2 Particulate Data

The 24-hour average concentrations from DustTRAK Stations A4, A7, A8, and A9 are presented in Figure 1 through Figure 3. For context, PM_{10} and $PM_{2.5}$ concentration data from Quesnel Senior Secondary and Williams Lake Columneetza School (BC MOE 2015) are plotted on Figure 2 and Figure 3. Quesnel Senior Secondary is a shared BC MOE and National Air Pollution Surveillance Program (NAPS) station located 76 km northwest of Mount Polley, and Williams Lake Columneetza School is a BC MOE station located 60 km southwest of Mount Polley. TSP is not monitored in the BC MOE air quality network; therefore, no additional data are plotted on Figure 1.

The red lines on Figure 1 through Figure 3 represent the BC Ambient Air Quality Objectives (AAQO) (BC MOE 2016b) for the 24-hour averaging period for TSP, PM_{10}, and $PM_{2.5}$, respectively. The AAQO have been established by the BC MOE as indications of good air quality; concentrations are frequently measured above the AAQO values at many monitoring stations throughout BC. DustTRAK stations (A4, A7, A8, and A9) are located on an industrial site (a mine) where industrial activities will influence the monitored data, and therefore are not considered compliance measurement locations. The criteria are included for reference purposes only; if the monitored values are above the relevant AAQO, then further assessment may be necessary. For example the $PM_{2.5}$ air quality objective is based on the 24-hour 98^{th} percentile concentration from a year of data, short term (daily) monitored values above the AAQO may be recorded; however, the area may still be considered to have good air quality.

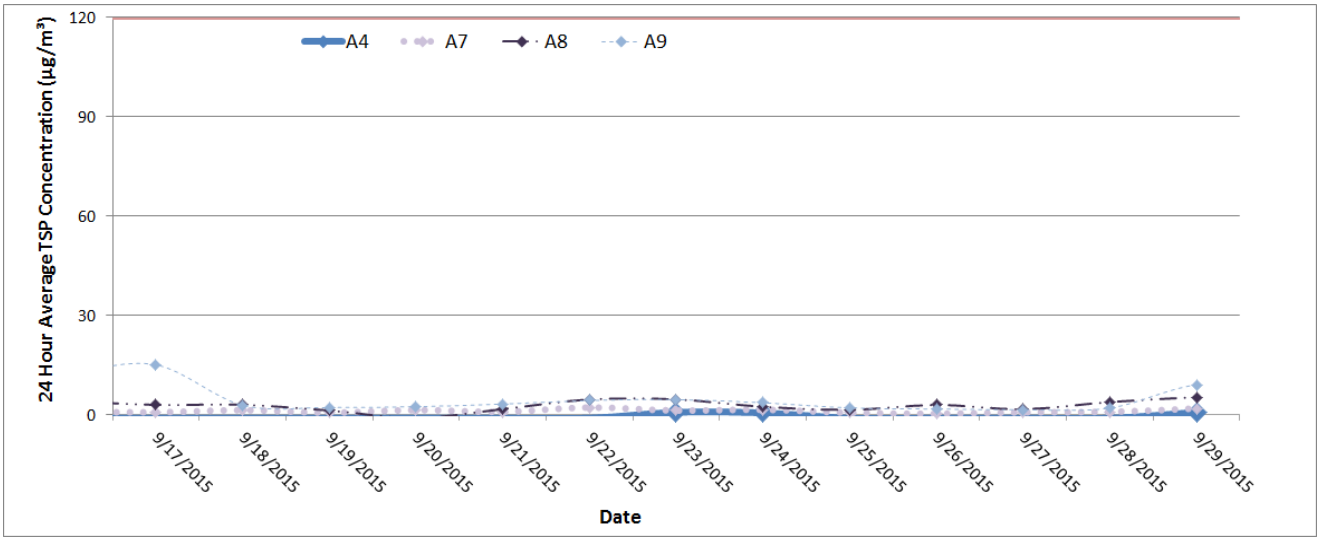


Figure 1: 24-Hour Average TSP Concentrations at MPMC Stations

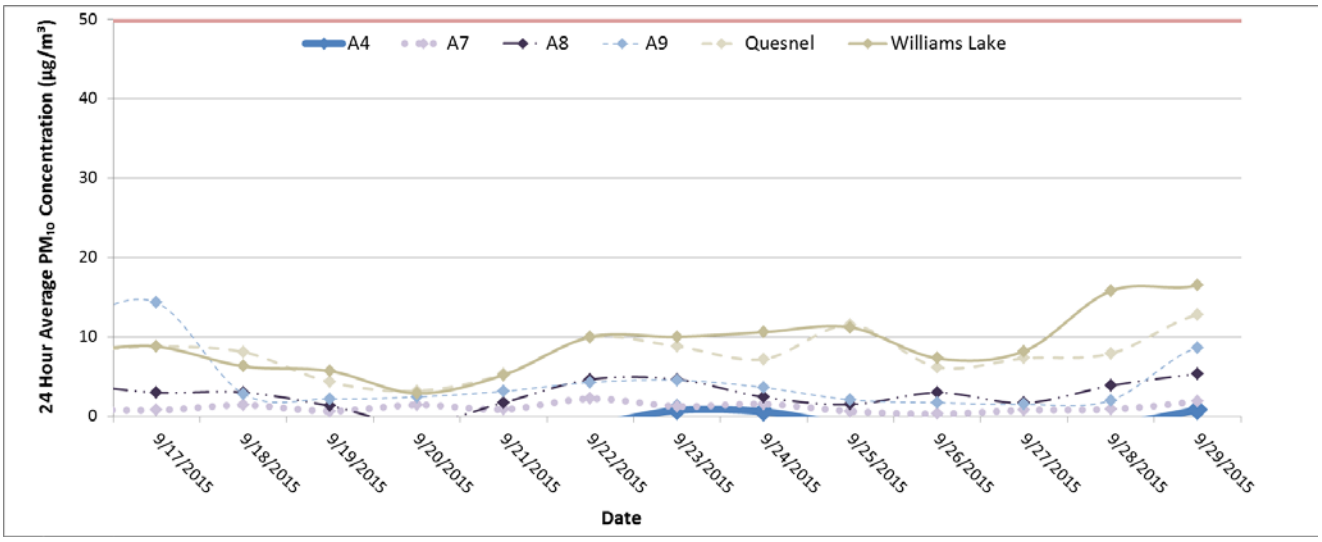


Figure 2: 24-Hour Average PM_{10} Concentrations at MPMC and Surrounding BC MOE Stations

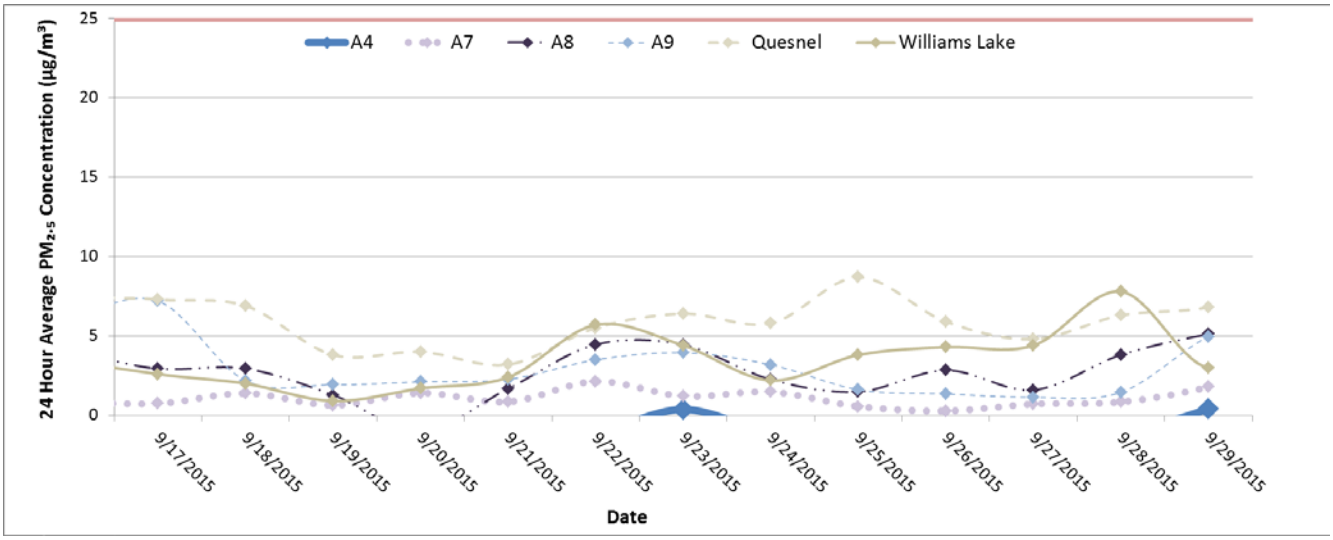


Figure 3: 24-Hour Average $PM_{2.5}$ Concentrations at MPMC and Surrounding BC MOE Stations

As shown in Figures 1 through 3, the monitored values are consistently below the AAQO's for TSP, PM_{10} and $PM_{2.5}$ throughout the September 17 to 29, 2015 monitoring period at the Mount Polley Mine site as well as at Quesnel and Williams Lake (TSP is not available for the latter two stations).

Regional forest fires may result in elevated particulate concentration readings at the DustTRAK and BC MOE monitors. The BC Wildfire Service website provides a list of active wildfires within BC (BC Wildfire Service 2015a). During the monitoring period (September 17 to 29, 2015) no forest fires of note were reported in the Cariboo region (BC Wildfire Service 2015b). However, three small forest fires, all 80 to 150 km east of MPMC (BC Wildfire Service 2015a), were active at some point during the monitoring period. One forest fire, approximately 120 km east of the site, may have been of sufficient size (33 hectares) to influence ambient particulate concentrations. However, the other two fires were likely too small (0.009 hectares) to influence ambient air quality in the vicinity of the site.

A summary of the 2-minute (as collected), hourly average and 24-hour average monitoring data for each DustTRAK station is contained in Attachment 2 of this memorandum. A summary of the data for each time averaging period are presented as box and whisker plots.

A MS Excel file which contains data downloaded from the A4, A7, A8, and A9 DustTRAKs was forwarded as a separate email attachment to BC MOE.

1.3 Meteorological Conditions

This section outlines the wind and rainfall patterns observed on site during the September 17 to 29, 2015 monitoring period.

1.3.1 Winds

Wind data from Meteorological Station #2 (meteorological station adjacent to the TSF) during the monitoring period are illustrated in a wind rose (Figure 4). The wind rose shows a predominance of southerly winds during the monitoring period. Based on the 5-minute data from Station #2 there was a high predominance (67%) of calms, periods with wind speed less than 1 m/s during the September 17 to 29, 2015 period. Calm periods from the previous bi-weekly and monthly monitoring (5-minute averaging periods) reports ranged between 43.8 and 54.8%. This high predominance of calms indicates stagnant wind conditions that are less prone to result in ambient particulate concentrations as a result of wind erosion.

The combined September wind data for 2013 and 2014 generally shows a dominance of northerly winds (winds blowing from the north-north-west and north-north-east for 32.2% of the time) and a secondary dominance of southerly winds (winds blowing from the south-south-west and south-south-east for 25.1% of the time), refer to Figure 8 in Golder (2015a). The predominance of southerly winds observed during the 13 day monitoring period in September 2015 is different from the predominant northerly winds in the combined September wind data for 2013 and 2014 (for reference the wind rose for the entire month of September 2015 is presented in Section 2.3). However, the 2013 and 2014 data for the summer months, specifically August and July, illustrate a predominance of southerly winds. Therefore, the wind patterns during the 13 day monitoring period in September 2015 may be different from the combined September 2013 and 2014 wind patterns, but a predominance of southerly winds is consistent with historical summer wind patterns.

Two DustTRAKs were located north (A4 and A9) and two were located south (A7 and A8) of the TSF. DustTRAKs were located, in part, based on the historical summer wind roses (data from November 2012 to March 2015) from an on-site meteorological station (Station #2); these wind roses were presented in Figure 8 in Golder (2015a). Historical wind patterns show a strong northerly and southerly directionality (refer to Section 2.3); therefore, the DustTRAKs generally always captured up-wind and down-wind conditions of the TSF.

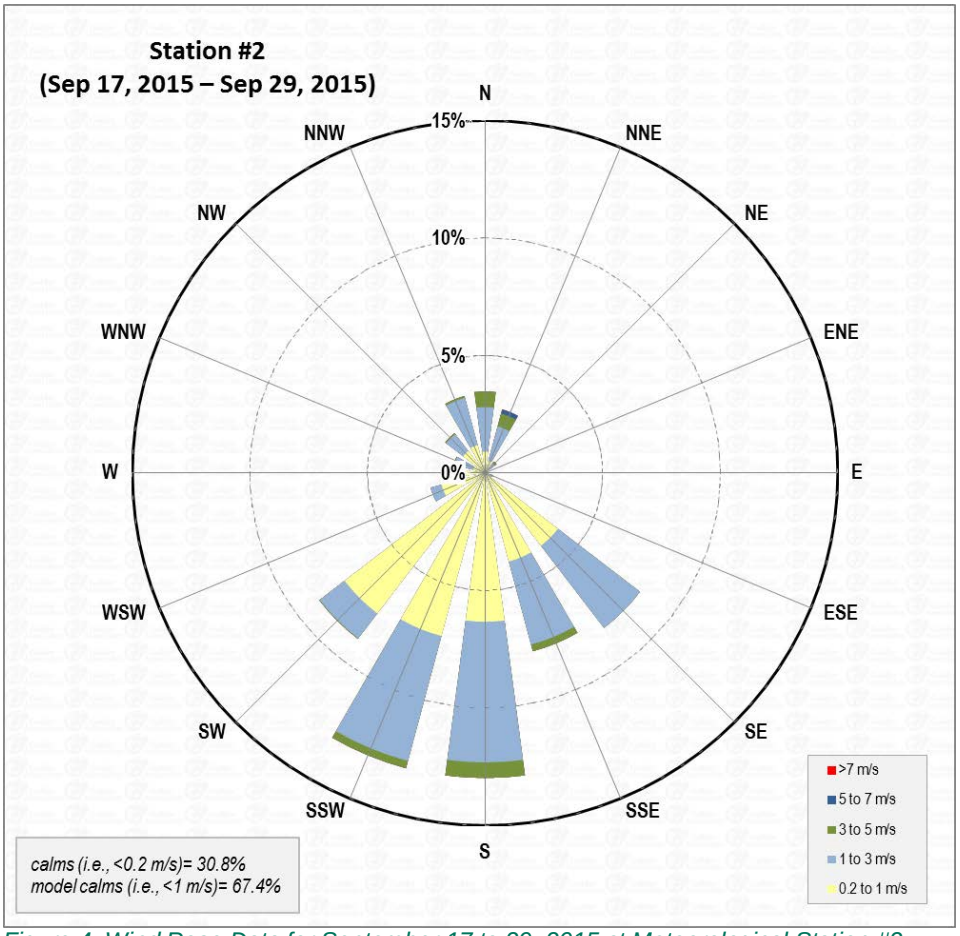


Figure 4: Wind Rose Data for September 17 to 29, 2015 at Meteorological Station #2

1.3.2 Rainfall

Rain acts as a natural dust suppressant, reducing wind erosion effects off of the TSF and Plug area. Rainfall data measured at Meteorological Station #1 (near the Mill area) are summarized in Figure 5. Measureable rainfall was recorded onsite for seven days during the September 17 to 29, 2015 monitoring period. Since seven of the thirteen days had recordable rainfall amounts, there were no extended dry periods (periods greater than a week, 7 days) during September 17 to 29, 2015 where the surface of the TSF may extensively dry and therefore be more prone to wind erosion. During this monitoring period both the absence of extended dry periods and the high predominance of calm periods resulted in meteorological conditions that contributed to the abatement of wind erosion.

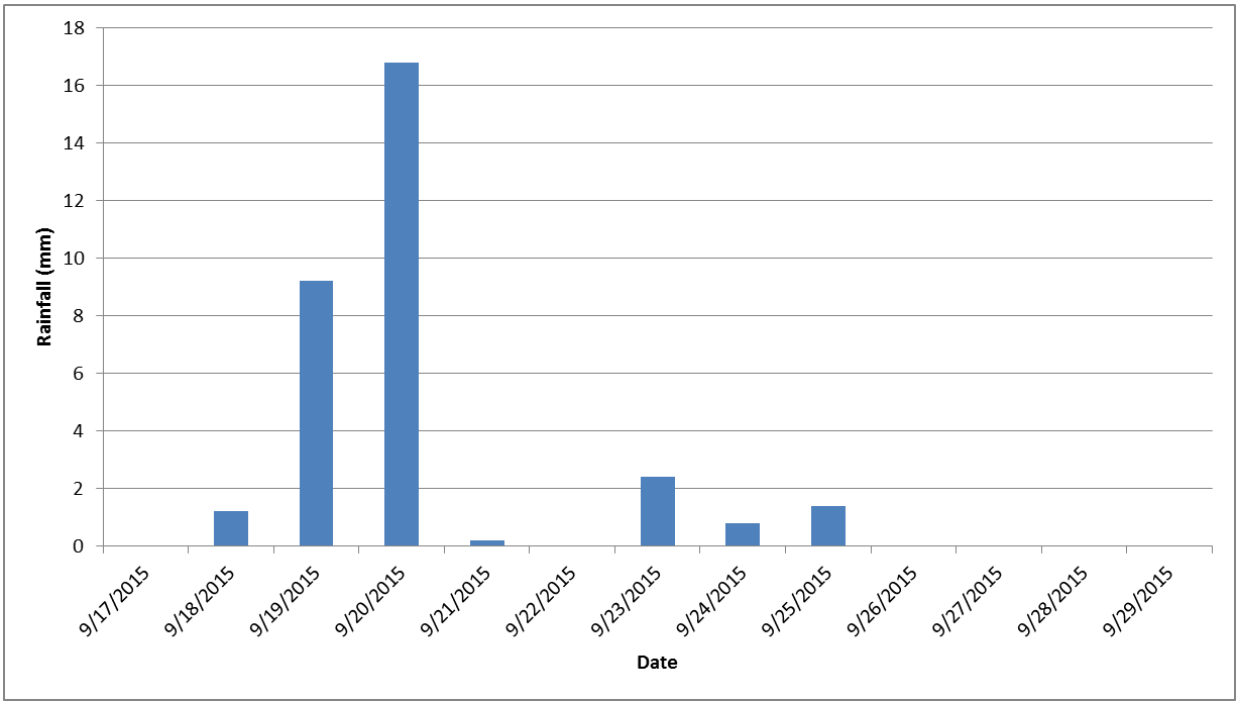


Figure 5: Daily Rainfall for September 17 to 29, 2015 at Station #1

2.0 SUMMER MONITORING PERIOD

This section presents the particulate concentration, dustfall, wind speed and direction, and rainfall data monitored over the summer monitoring period (July 7 to September 29, 2015).

2.1 Particulate Data

The data completeness for all monitoring locations are summarized in Table 1. Due to the monitoring methods used, the data completeness of TSP, PM_{10}, and $PM_{2.5}$ are the same.

Table 1: Particulate Concentration Data Completeness (24-hours)

Location	Data Completeness			
	July	August	September	Entire Monitoring Period
A4	40.0%	54.8%	23.3%	39.5%
A7	60.0%	96.8%	100.0%	87.2%
A8	76.0%	80.6%	86.7%	81.4%
A9	88.0%	100.0%	100.0%	96.5%

Location A4 had a significant amount of data missing over the monitoring period, with a data completeness of 40%, 55%, and 23% for July, August, and September respectively. Within this section summaries and statistics have been presented for location A4, however due to the relatively low data completeness for A4 meaningful statistical comparisons to the other locations (A7, A8, and A9) was not possible.

The 24-hour particulate concentrations for the summer monitoring period are summarized in Figure 6 to Figure 8.

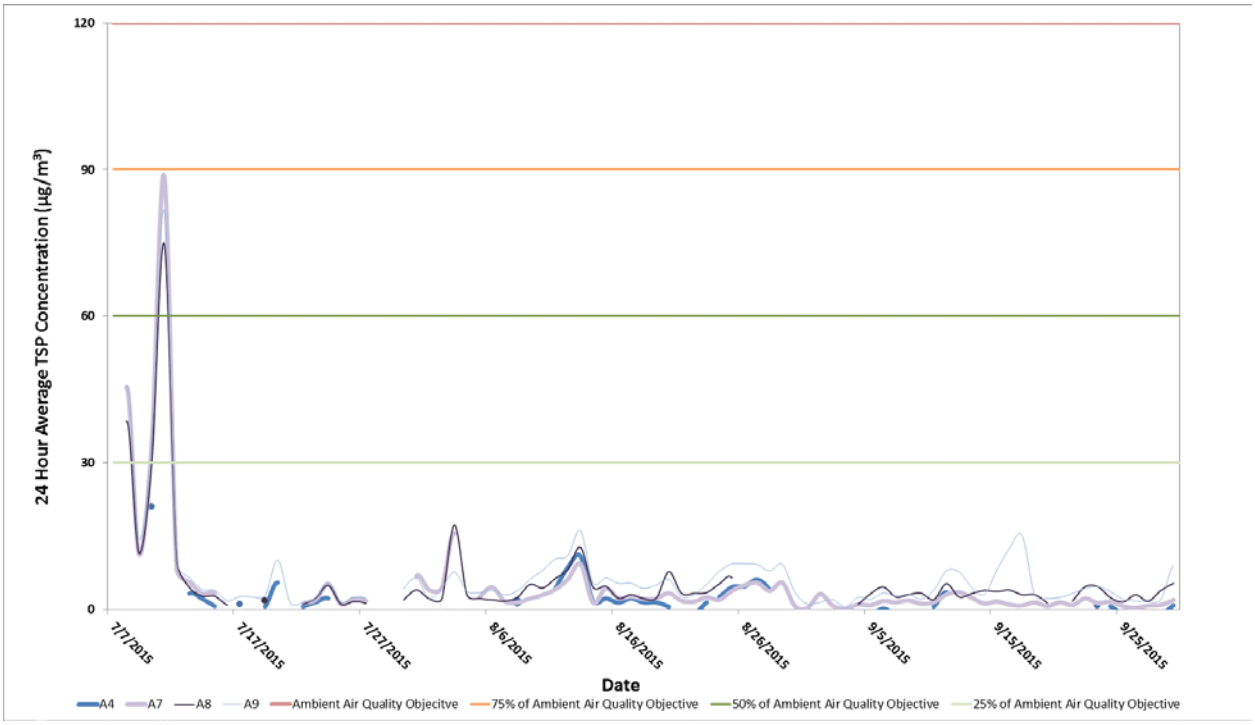


Figure 6: 24-Hour Average TSP Concentrations at MPMC Stations July 7 to September 29, 2015

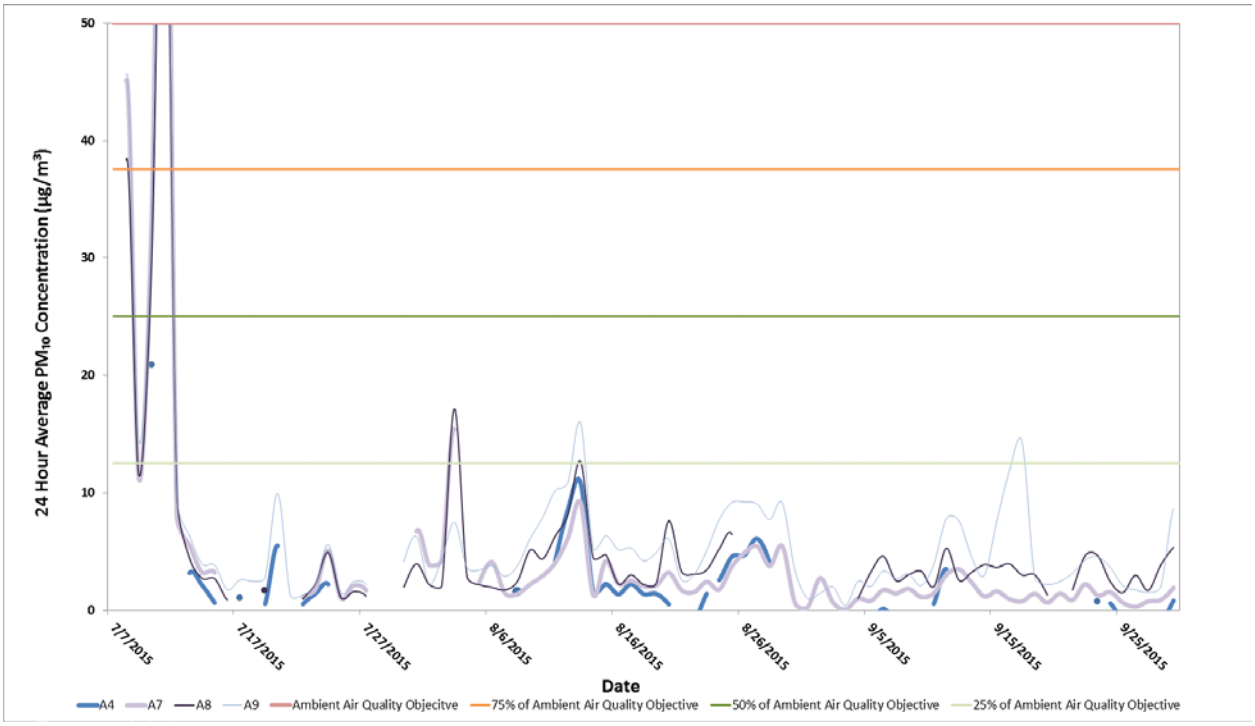


Figure 7: 24-Hour Average PM_{10} Concentrations at MPMC Stations, July 7 to September 29, 2015

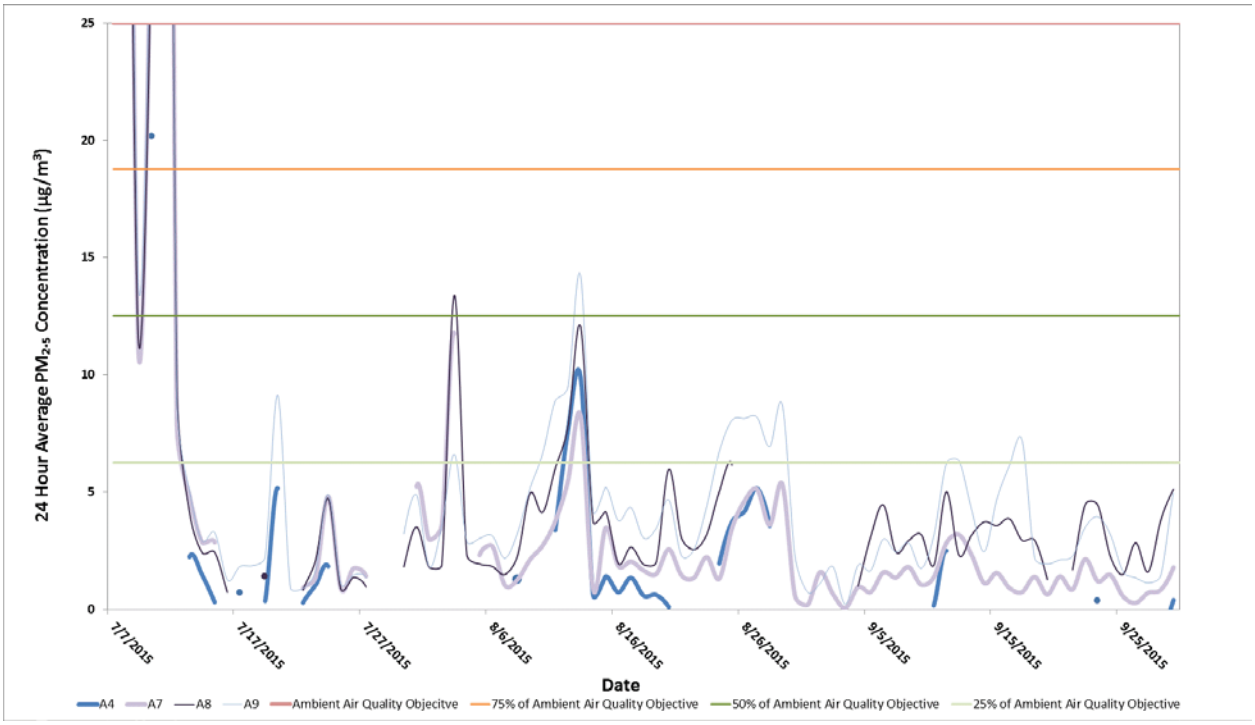
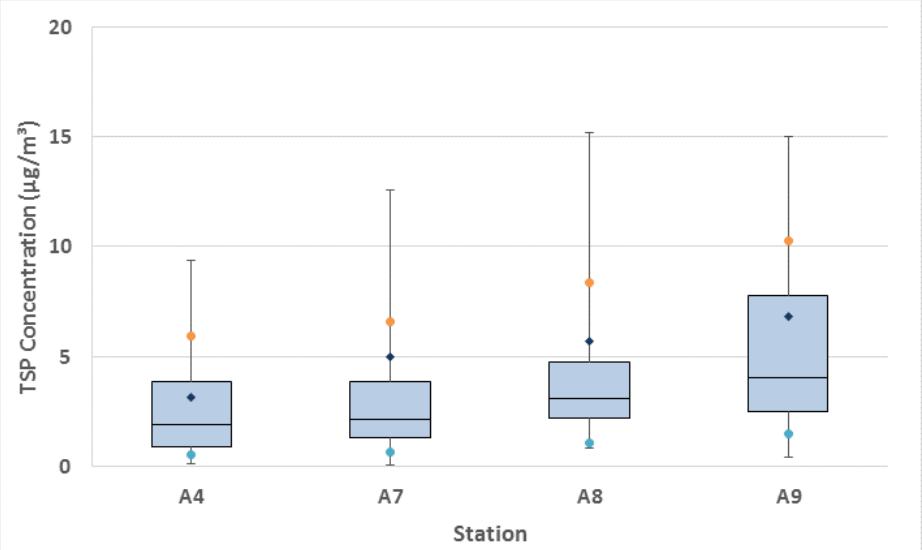
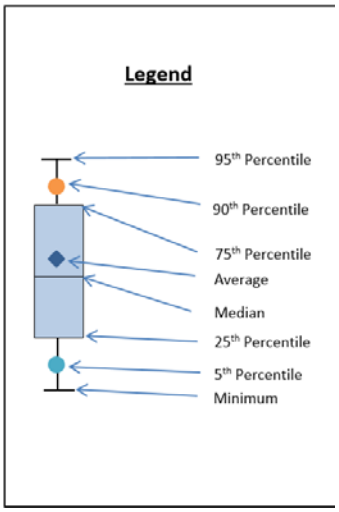


Figure 8: 24-Hour Average $PM_{2.5}$ Concentrations at MPMC Stations, July 7 to September 29, 2015

For all monitoring locations, at least 94% of 24-hour TSP, PM_{10}, and $PM_{2.5}$ concentrations are below 50% of the relevant AAQO. Of the 82 days monitored, only 3 days were found to have PM_{10} and $PM_{2.5}$ concentrations greater than the AAQO's. However, as noted in the July 29, 2015 bi-weekly monitoring memorandum (Golder 2015b) the exceedances in the AAQO are most likely a result of regional forest fires rather than a result of site activities.

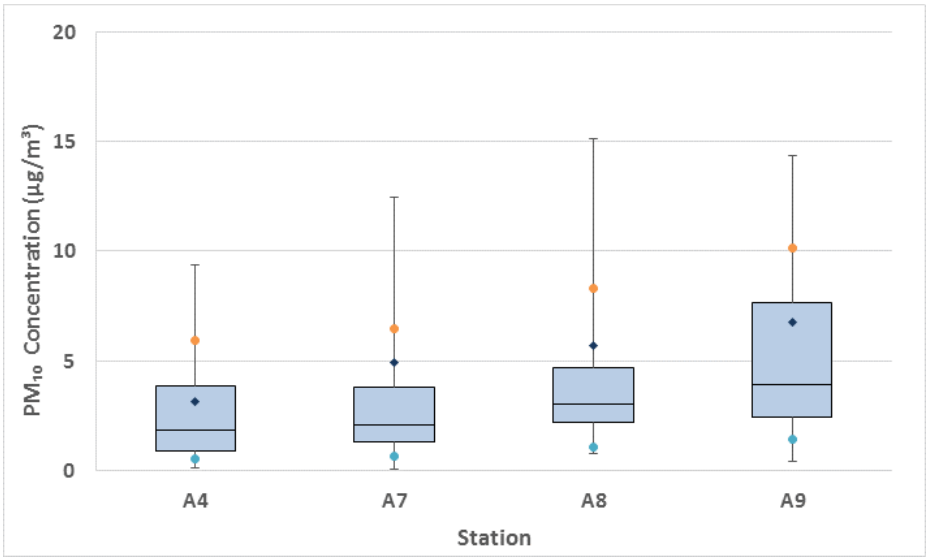
Modified box and whisker plots illustrating the statistical TSP, PM_{10}, and $PM_{2.5}$ concentration data for all locations for the entire monitoring period are illustrated in Figure 9, Figure 10 and Figure 11. For presentation purposes the upper percentile presented on the figures is the 95th percentile. A table follows Figure 9, Figure 10 and Figure 11 that summarizes the maximum, 99th percentile and 98th percentile concentrations; these statistics are presented in tabulated format. Monthly TSP, PM_{10}, and $PM_{2.5}$ statistics (maximum, minimum, mean, standard deviation and 5th, 25th, 50th, 75th, 90th, 98th, and 99th percentile concentrations) for all locations are presented in Attachment 3.

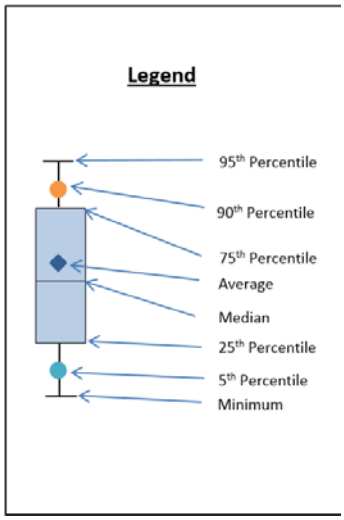




Statistic	A4	A7	A8	A9
Maximum	20.9	88.7	74.8	81.5
99th percentile	17.6	56.6	49.7	52.2
98th percentile	14.3	39.6	35.0	38.5

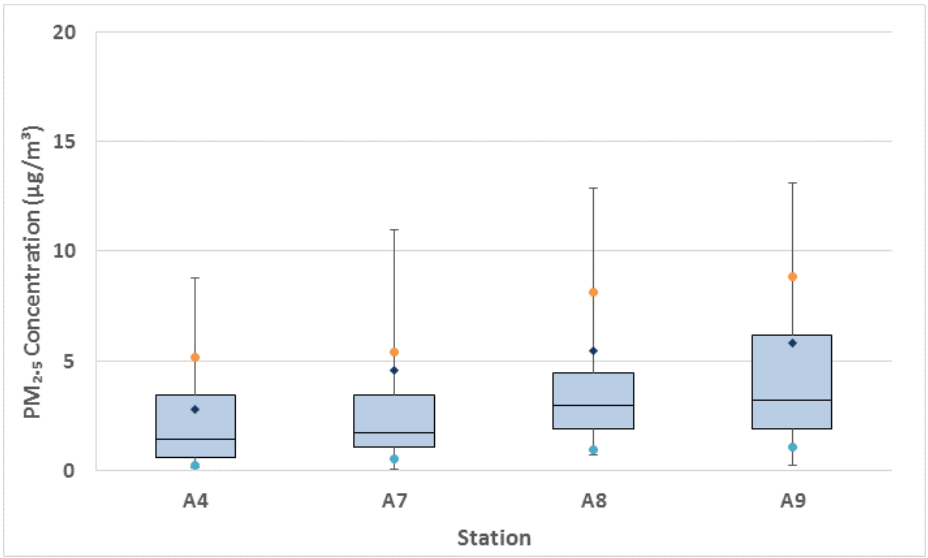
Figure 9: Modified Box and Whisker Plot of TSP Concentrations over the Monitoring Period

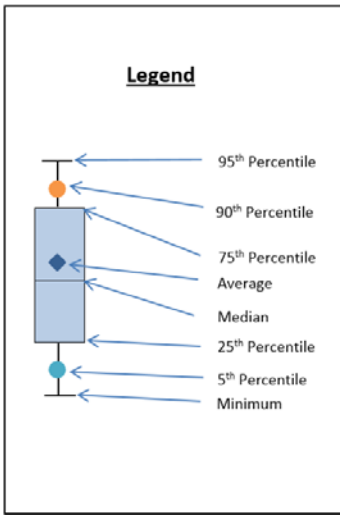




Statistic	A4	A7	A8	A9
Maximum	20.9	88.6	74.8	81.1
99th percentile	17.6	56.4	49.6	51.9
98th percentile	14.3	39.4	35.0	38.4

Figure 10: Modified Box and Whisker Plot of PM_{10} Concentrations over the Monitoring Period





Statistic	A4	A7	A8	A9
Maximum	20.2	88.3	74.5	80.3
99th percentile	17.1	54.8	49.7	50.7
98th percentile	14.0	38.0	34.8	37.2

Figure 11: Modified Box and Whisker Plot of $PM_{2.5}$ Concentrations over the Monitoring Period

The TSP, PM_{10}, and $PM_{2.5}$, concentrations observed at location A7 tend to be lower than those observed at A8 and A9; location A9 generally observed the highest concentrations.

With regards to month to month variability, the tables in Attachment 3 indicate that July was observed to have the highest TSP, PM_{10}, and $PM_{2.5}$ concentrations over the three months across all monitoring locations. Concentrations for all particulate sizes are lower in August than in July, and further decrease in September. In general, location A7 recorded the lowest TSP, PM_{10}, and $PM_{2.5}$ concentrations compared to A8 and A9, with the exception of July; the higher particulates reading for location A7 in July is most likely a result of forest fires. Location A9 was observed to generally have higher TSP, PM_{10}, and $PM_{2.5}$ concentrations for August and September than A7 and A8.

Hourly concentration versus concurrent hourly wind speed are illustrated in Figure 12 for TSP, PM_{10}, and $PM_{2.5}$ for all locations (A4, A7, A8, and A9) over the entire monitoring period. The plots in Figure 12 are comprised of the monitored 1-hour particulate concentration (y-axis) plotted against measured 1-hour Meteorological Station #2 wind speed (x-axis) over the same time period. For the purposes of data presentation, the x-axis (wind speed axis) in the plots presented in Figure 12 have been limited to 5 m/s, because 99% of the 1-hour wind speeds were less than 5 m/s. Similarly, the y-axis (concentration axis) have been limited to 50 µg/m^3 because for all parameters and all stations 97% of the 1-hour average concentrations were less than 50 µg/m^3. The plots in Figure 12 illustrate that for all parameters monitored and for the entire monitoring period there is not a strong correlation between concentration and wind speed (i.e., concentrations do not consistently increase with increasing wind speed).

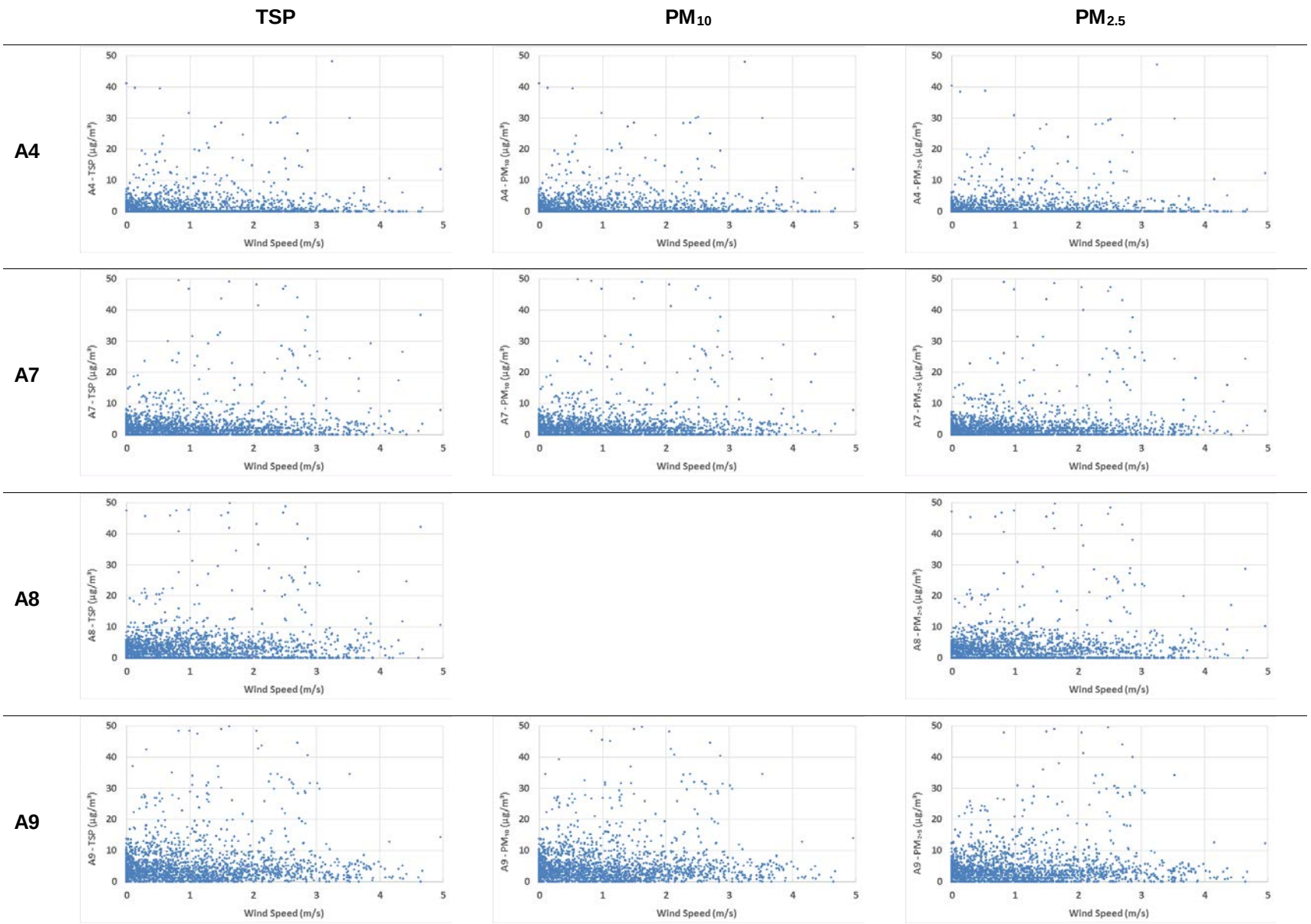


Figure 12: Hourly Average Particulate Concentration versus Hourly Average Wind Speed Plots

Over the entire monitoring period there were six hourly occurrences where the wind speed was greater than 5.4 m/s, the wind erosion threshold as defined in Golder (2015a). The wind speed for these 6 occurrences are shown in Table 2 along with the corresponding TSP, PM_{10}, and $PM_{2.5}$ concentrations monitored at each location.

Table 2: Particulate Concentrations when Hourly Wind Speeds Were Greater than 5.4 m/s

Wind Speed (m/s)		5.5	5.8	6.0	6.5	6.7	8.7
TSP (µg/m³)	A4	—[(a)]	—	—	0.9	0.8	—
	A7	3.1	—	156.1	4.7	8.6	28.4
	A8	—	1.7	245.0	16.7	57.7	10.6
	A9	<0.1	1.6	7.5	6.0	5.8	11.3
PM_{10} (µg/m³)	A4	—	—	—	0.8	0.8	—
	A7	2.9	—	154.2	4.6	8.2	28.0
	A8	—	1.5	243.0	16.6	57.2	10.4
	A9	<0.1	1.5	6.2	5.9	5.7	11.1
$PM_{2.5}$ (µg/m³)	A4	—	—	—	<0.1	<0.1	—
	A7	1.4	—	102.0	3.6	5.9	20.6
	A8	—	0.9	171.8	12.4	40.8	8.9
	A9	<0.1	1.1	3.8	4.7	4.7	9.0

Notes:

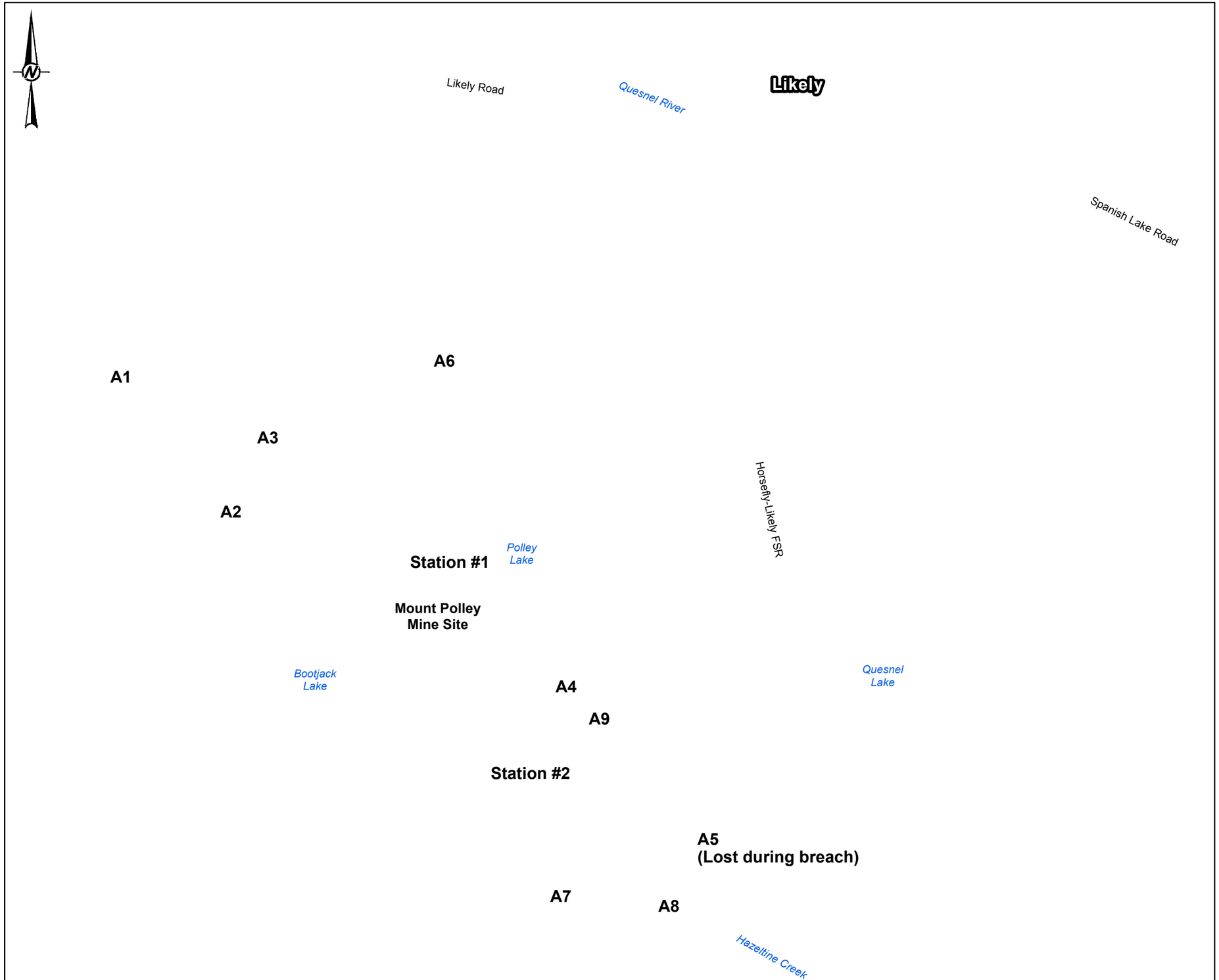
a) "—" indicates no concentration data available

The TSP, PM_{10}, and $PM_{2.5}$ concentrations in Table 2 which correspond to winds speeds greater than 5.4 m/s, are generally greater than the 50th percentile readings for the respective particulate size and station location (Figure 9, Figure 10, and Figure 11). Although a strong correlation is not observed for all concentrations and wind speeds (Figure 12), for wind speeds greater than 5.4 m/s corresponding concentrations tend to be in the upper 50th percentile range of all monitored data, which is what would be expected.

2.2 Dustfall

Dustfall was monitored at eight locations, four of which are in the vicinity of the TSF/Plug area (A4, A7, A8, and A9), as illustrated in Figure 13. The remaining four stations are located in the northern section of the mine, in excess of 3 km from the TSF/Plug area. Despite the distance from the TSF/Plug area, data from these stations have been included here for comparison purposes. For context, dustfall data have been compared to the BC AAQO for dustfall. Since the monitoring locations in the vicinity of the TSF/Plug area are located on an industrial site (a mine) where industrial activities will influence the monitored data, they therefore are not considered compliance measurement locations and hence comparison to the criteria is presented for reference purposes only. The AAQO for mining operations is a range of values between 1.7 and 2.9 mg/dm^2/day; however, MPMC waste discharge permit PA-15087 (BC MOE 1997), specifies a Ministry objective of 2.9 mg/dm^2/day (upper dustfall AAQO) to be used for comparison.

Monitored dustfall values are presented in Table 3; the stations located in the vicinity of the TSF/Plug area are highlighted in grey.



LEGEND

- DUSTFALL MONITORING STATION
- CONTINUOUS PARTICULATE MONITORING STATION (DustTRAK)
- METEOROLOGICAL STATION
- TOWN
- ROAD
- WATERCOURSE
- WATERBODY

Station ID	Description	Station Location (UTM 10) Easting (m)	Northing (m)
A1	Dustfall	588,221	5,826,043
A2	Dustfall	589,906	5,823,978
A3	Dustfall	590,471	5,825,114
A4	Dustfall and DustTRAK	595,215	5,821,275
A5	Lost during breach	597,010	5,819,075
A6	Dustfall	593,170	5,826,290
A7	Dustfall and DustTRAK	595,146	5,818,104
A8	Dustfall and DustTRAK	596,807	5,817,945
A9	Dustfall and DustTRAK	595,744	5,820,806
Station #1	Meteorological Station	592,792	5,823,182
Station #2	Meteorological Station	594,059	5,819,955

0 1 2 3

1:60,000 KILOMETRES

REFERENCES

1. TOWN, ROAD, WATERCOURSE AND WATERBODY DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
2. SITE IMAGERY OBTAINED FROM SNC LAVALIN LTD, DATE 2014. BASE IMAGERY © 20100411 ESRI AND ITS LICENSORS. SOURCE: DIGITAL GLOBE, WV01.

PROJECTION: NAD 1983 UTM ZONE 10N

CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

PROJECT
CUMULATIVE ENVIRONMENTAL IMPACT ASSESSMENT

TITLE
AIR QUALITY MONITORING AND METEOROLOGICAL STATION LOCATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-10-19
DESIGNED	TB
PREPARED	CD
REVIEWED	JR
APPROVED	RW

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Table 3: Summer Dustfall Data for 2015 (mg/dm^2/day)

Location	July	August	September	Summer Average
A1	1.60	0.52	0.18	0.77
A2	1.16	0.28	0.26	0.57
A3	0.30	0.13	0.14	0.19
A4[(b)]	1.10	0.60	0.88	0.86
A6	0.10[(a)]	0.10[(a)]	0.13	0.11
A7	1.26	2.86	0.43	1.52
A8	1.09	0.48	0.10[(a)]	0.56
A9	0.50	0.21	0.18	0.30

Notes:

(a) Deposition monitored at or below detection limit of 0.10 mg/dm^2/day

(b) Grey highlights indicate stations that were co-located with DustTRAK stations.

Dustfall values are generally low and are consistently below the upper dustfall AAQO and the Ministry objective (waste discharge permit PA-15087) of 2.9 mg/dm^2/day.

For five dustfall monitoring stations, historical data was available from summer months from previous years for comparison. However, only one station (A4) in the vicinity of the TSF/Plug area had historical data. Historical data for this station is presented in Figure 14.

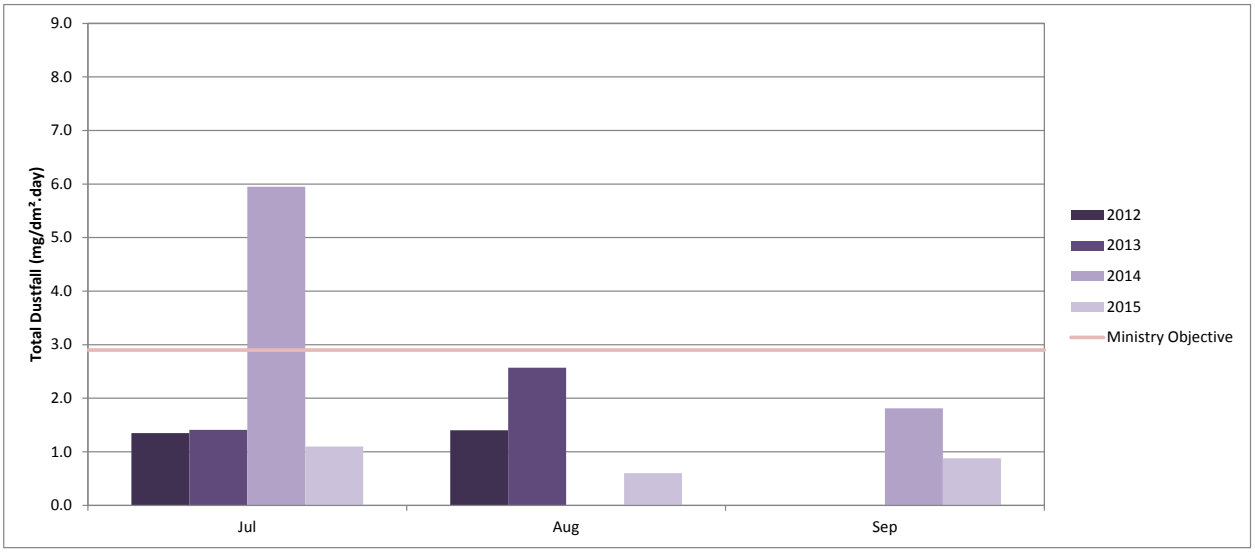

Figure 14: Summer Dustfall Data - Station A4

In general, the limited data shows that dustfall levels are lower in 2015 than in the same months in previous years.

For the dustfall stations with historical data that are located in the northern area of the site (A1, A2, A3, and A6), the year to year data are plotted in Figure 15 to Figure 18.

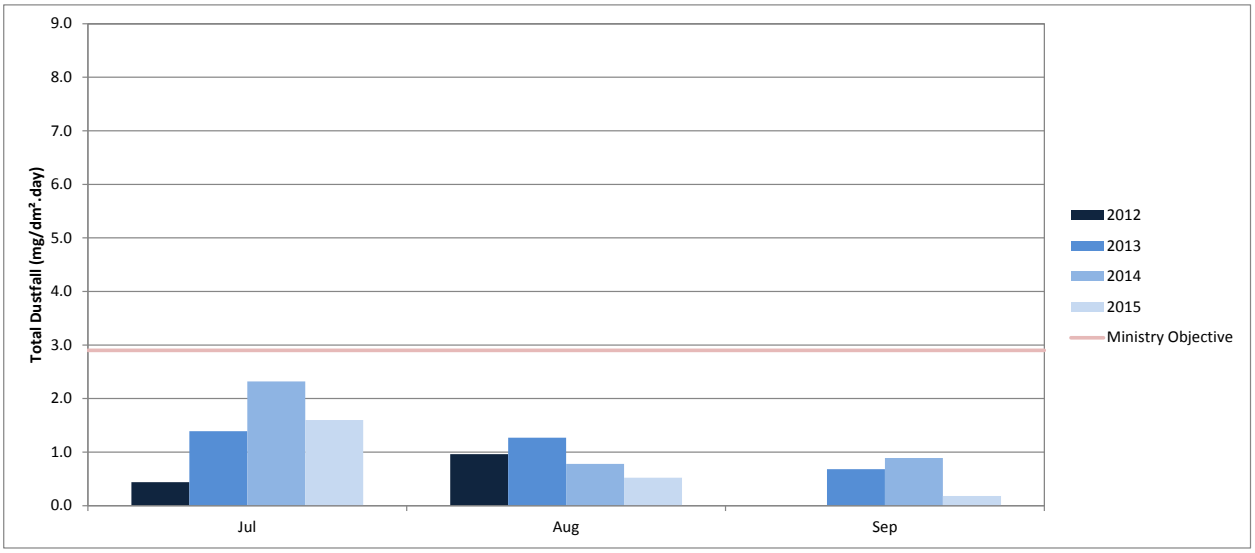

Figure 15: Summer Dustfall Data - Station A1

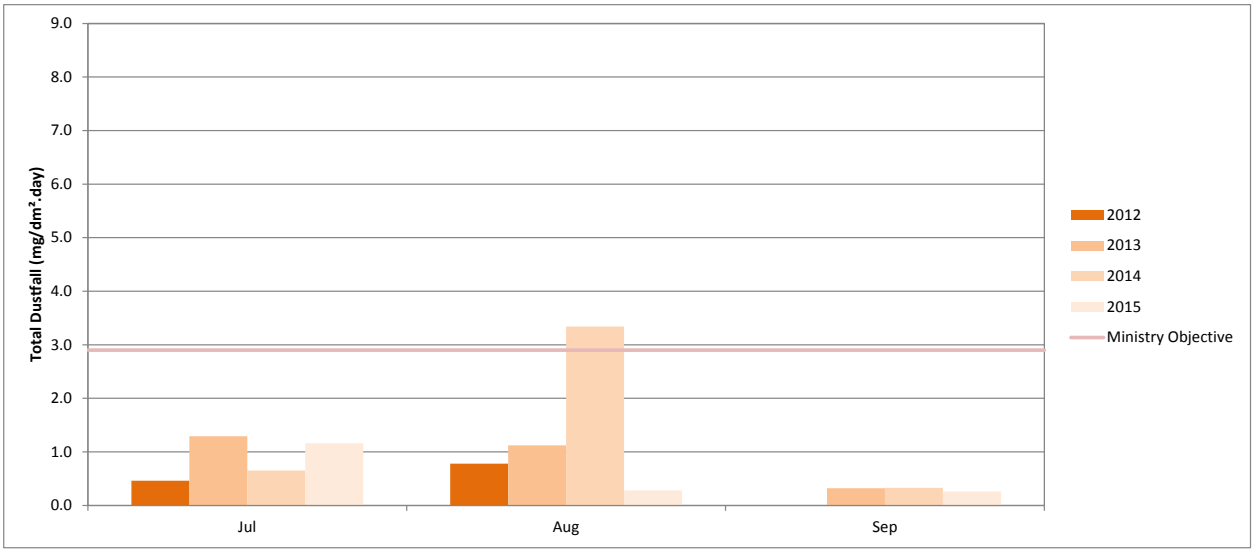

Figure 16: Summer Dustfall Data - Station A2

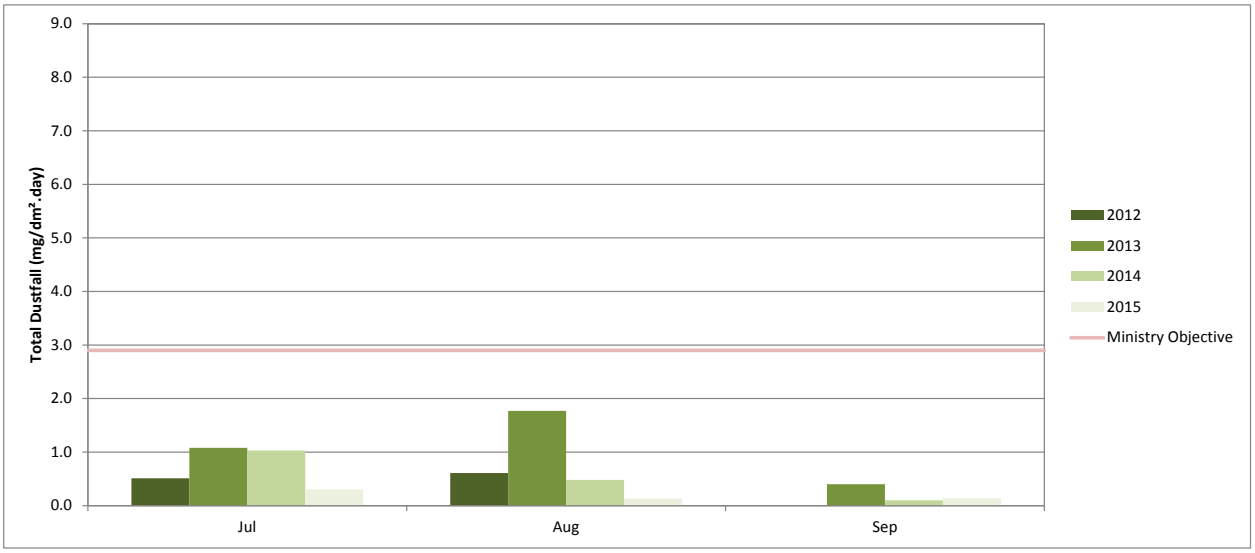

Figure 17: Summer Dustfall Data - Station A3

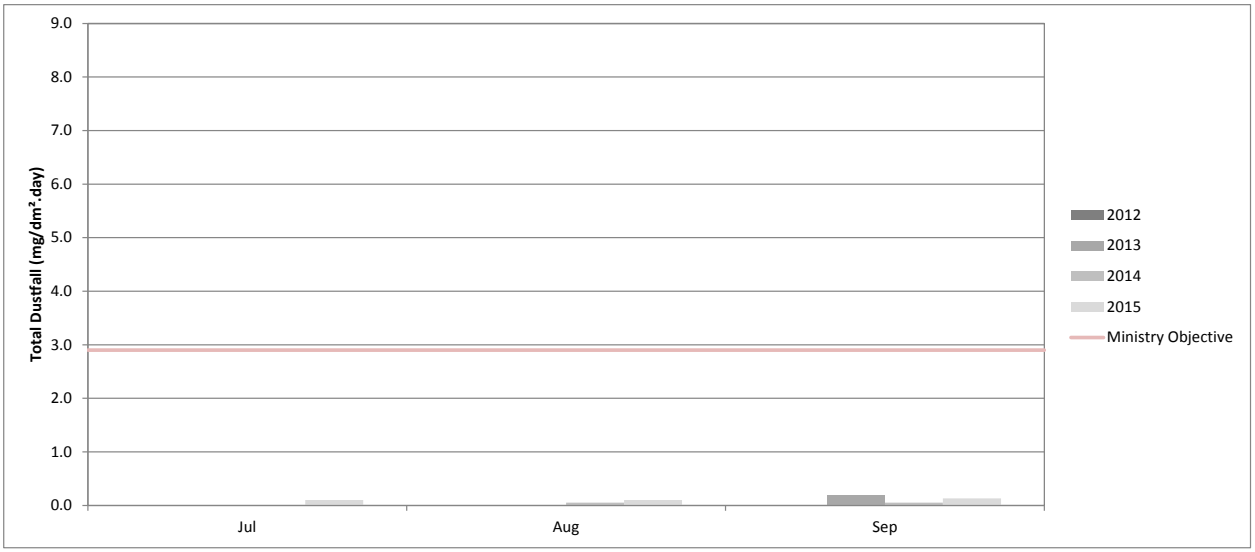

Figure 18: Summer Dustfall Data - Station A6

Similar to the pattern observed in A4, generally dustfall levels in 2015 are lower than in previous years.

2.3 Wind Speed and Direction

Wind roses for Station #2 (meteorological station adjacent to the TSF) based on 1-hour average wind speeds are illustrated for the previous two years combined (July through September 2013 and 2014) in Figure 19 and for the summer monitoring period (July to September 2015) in Figure 20.

The wind roses indicate that while the month to month winds varied between the previous years (2013 and 2014) and the summer monitoring period (2015), the monthly wind roses both indicate dominant northerly and southerly wind directions which is most likely topography driven (Golder 2015a). During the summer of 2015 there was a higher occurrence (76%) of calm winds, wind speeds less than 1 m/s, compared to the previous two years of summer data (45%). This higher predominance of calms indicates stagnant wind conditions, less prone to cause wind erosion.

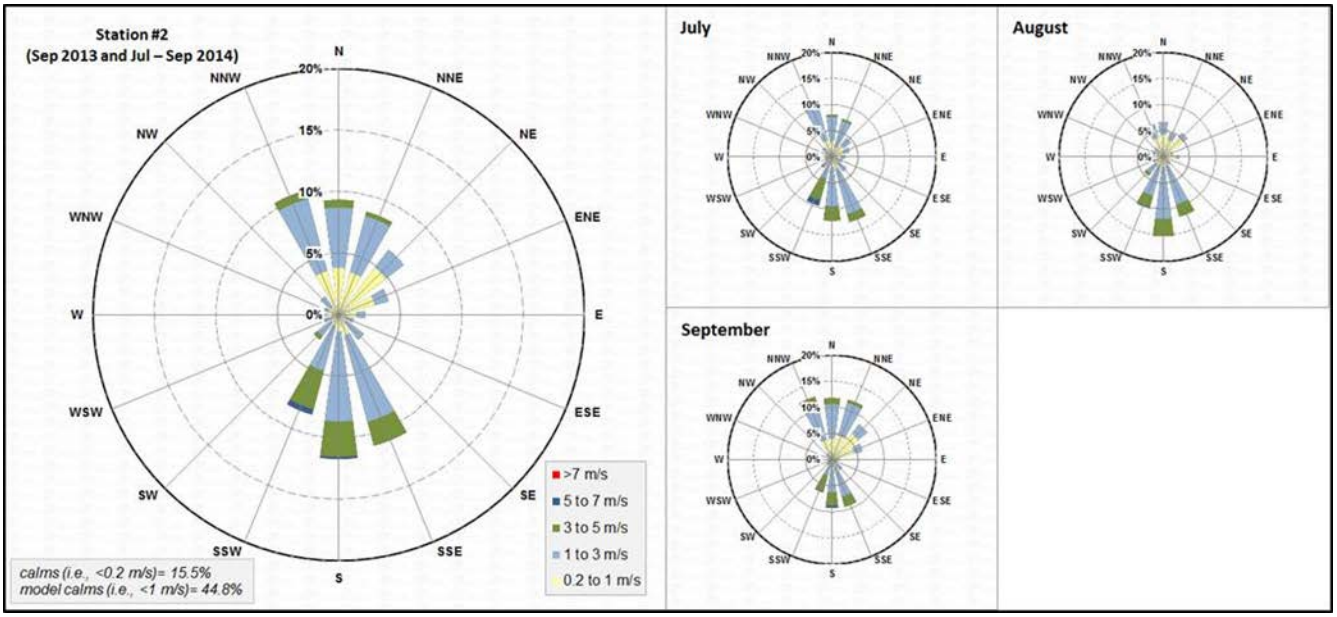

Figure 19: Station #2 Summer (July, August and September) Average and Monthly Wind Roses (2013-2014)

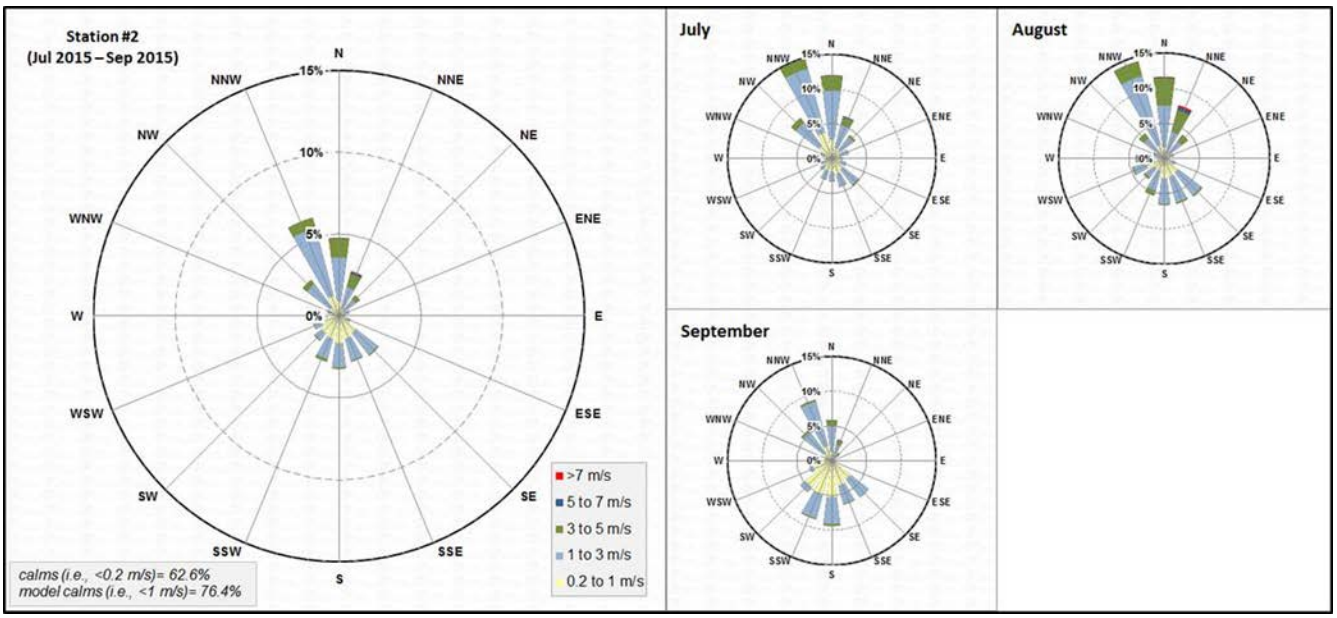

Figure 20: Station #2 Summer (July, August and September) Average and Monthly Wind Roses (2015)

It is expected that when winds reach a threshold velocity, fugitive emissions would result from wind erosion of exposed areas such as stockpiles and exposed tailings. When no source tested data is available, the United States Environment Protection Agency (US EPA) (1988) has used a threshold velocity of 5.4 m/s for aggregate material stockpiles (coal and other exposed materials), which has been applied to the exposed tailings area.

Table 4 and Table 5 present the frequency in which hourly wind speeds were greater than 5.4 m/s at Station #1 and Station #2 from the spring and summer of 2012 to 2015; 2015 includes data both prior to (May and June), and during the monitoring period. Station #2 is considered representative of the TSF and Plug; however, Station #2 was down in May 2015, so data for Station #1 has been provided for reference. Data for May and June have been provided to assist in identifying the potential frequency of wind erosion prior to the commencement of the summer monitoring period. A dash indicates no available data in that month.

Table 4: Frequency of Winds above 5.4 m/s at Station #1

Year	May	Jun	Jul	Aug	Sep
2012	—	—	—	—	11.9%[(a)]
2013	4.8%	0.8%	4.6%	0.7%	10.4%
2014	1.1%	2.8%	2.4%	0.0%	—
2015	1.2%	1.1%	1.6%	5.3%	1.9%

Notes:

(a) Based on a limited dataset comprised of data onwards of September 25, 2012.

Table 5: Frequency of Winds above 5.4 m/s at Station #2

Year	May	Jun	Jul	Aug	Sep
2012	—	—	—	—	—
2013	—	—	—	—	0.1%
2014	0.1%	1.0%	0.8%	0.0%	0.3%
2015	—	0.3%	0.3%	0.7%	0.2%

During the summer monitoring period (July to September 2015), the frequency of winds above 5.4 m/s at Station #1 was lower than in previous years in July and September and higher in August.

The frequency of winds above 5.4 m/s at Station #2 was found to be low (<1%) during all summer months, consistent with the limited amount of data available from previous years.

For the months of May and June 2015, summer months prior to the start of particulate monitoring, both meteorological stations generally observed similar or lower frequency of winds greater than 5.4 m/s in 2015 than in previous years. Wind speeds greater than 5.4 m/s for May and June 2015 are generally in the same order of magnitude as wind speeds greater than 5.4 m/s measured in July to September, 2015; this indicates that wind erosion potential in May and June 2015 is similar to the wind erosion potential during the particulate monitoring period.

2.4 Rainfall

Monthly rainfall amounts measured at Meteorological Station #1 are presented in Table 6. For comparison purposes the monthly 20 year average (1996-2015) rainfall at Mount Polley Mine is provided along with monthly rainfall (historical average) from Environment Canada's Likely station.

Table 6: Monthly Rainfall Data (mm)

Month	Mount Polley Mine Site Station #1 2015	Mount Polley Mine Site 1996-2015	Likely 1974-1993
July	63.8	56.7	59.7
August	20.8	35.3	67.2
September	61.6	46.5	51.6
Total Rainfall	146.2	138.5	178.5

During the summer months (July to September 2015), 146 mm of rainfall was recorded at the site. Between July and September, the Mount Polley Mine on average receives approximately 139 mm of rainfall (based on data from 1996 to 2014). This indicates that the total summer 2015 rainfall amount is consistent with the long term averages.

However, August 2015 was a relatively dry month compared to longer term averages. August received 15 mm less rainfall than the 20 year average, which equates to approximately 40% less rainfall in 2015 than the longer term 20 year average. The historical 20 year average data from the Likely station shows that on average there are 14 days with measurable rainfall (>0.2 mm of rainfall) in August. In August 2015 there were only 6 days with measurable rainfall, which also indicates that August 2015 was a relatively dry month.

2.5 Human Health Risk Assessment

A human health risk assessment problem formation has been conducted of conditions downgradient of the TSF following the tailings dam breach in 2014 (Golder 2016). A sampling and analysis plan was developed and implemented to support a multipathway exposure assessment for people who may use areas impacted by the tailings dam breach (Golder 2015c). Sampling included a range of possible contaminants in soil, sediment, groundwater, surface water, plants and fish tissues and both direct contact and indirect contaminant exposure pathways. A number of potential human health exposure scenarios were evaluated, including:

- Backcountry Recreation User (Hiker/Camper)
- Subsistence and Traditional Land User
- Backcountry Recreation User (ATV/Snowmobile Users)
- Boater/Kayaker
- Sport Fisher
- Hunter/Trapper
- Quesnel Lake Resident
- Logger
- Mine/Rehabilitation Worker

In response to regulatory input, the air quality particulate concentration data collected in the summer of 2015 will be included in the human health risk assessment. The 24-hour PM_{10} and $PM_{2.5}$ concentrations at each station will be screened against the BC's air quality objectives, as well as the background locations (Quesnel and Williams Lake). The results of the particulate matter assessment will be included in the 2016 post-event environmental impact assessment (PEEIA) report.

3.0 UPDATES TO DUST MANAGEMENT PLAN

The following section outlines the recommended updates to the *Fugitive Dust Management Plan, Mount Polley* (Golder 2015a) for the TSP/Plug area (referred as Dust Management Plan), and presents the supporting rationale.

Recommendation #1: Fugitive dust emissions management is continued as outlined in the dust management plan.

Rationale: The continuous monitoring data during the summer period of 2015 indicate that the dust management measures (as outlined in the dust management plan) appear to be effective at managing dust in the TSF and Plug area. The monitored results show that of the 82 days monitored, only 3 days were found to have PM_{10} and $PM_{2.5}$ concentrations greater than the AAQO; however, these exceedances are most likely attributable to local and regional forest fires.

Recommendation #2: Monitoring requirements outlined in the dust management plan are amended to ongoing dustfall monitoring, as required by permit conditions. There is no further requirement for temporary monitoring using DustTRAKs.

Rationale: The continuous monitoring data during the summer period indicates that the dust management measures (as outlined in the dust management plan) appear to be effective at managing dust in the TSF and Plug area.

Particulate concentrations (24-hour) monitored onsite (A4, A7, A8, and A9) and particulate concentrations measured at Quesnel and Williams Lake show similar large scale trends, which indicates that monitored concentrations are influenced by regional trends, not just potential localized emission sources.

Although the focus of the air quality monitoring was to try and capture the effect of wind erosion off of the TSF and Plug, the particulate concentrations monitored by the DustTRAKs could have come from a number of different regional (e.g., forest fires) and local sources, sometimes in close proximity to the monitoring locations, (e.g., construction, material handling, fugitive road dust, and vehicle combustion). Furthermore, meteorological conditions such as rainfall and low wind speeds, and mitigation measures, such as watering during dry and high wind events, would also limit the erodibility of the TSF and Plug material; therefore, establishing definitive links between wind speed and particulate concentration are not necessarily straight forward. A strong correlation was not observed in the monitoring data between wind speed and particulate concentrations at any of the locations; however, for very limited number of hours (6) during the monitoring period where wind speeds were greater than 5.4 m/s, particulate concentrations tended to be in the upper 50^{th} percentile range. Based on this analysis it is concluded that there is not one major source (e.g., the TSF/Plug) that is contributing to the monitored particulate concentrations, and therefore fugitive dust control measures were effective in the TSF and Plug area.

The analysis of the meteorological data over the monitoring period compared to available historical data showed that despite August 2015 being a dry month when compared to historical averages, particulate concentration data showed fugitive dust control measures were effective in the TSF and Plug area. The distribution of wind speeds

observed during the 2015 monitoring period showed similar dominant wind directions (from the north and south) to historic wind data; however, winds from the south were observed less frequently in summer 2015. This is not considered to be significant because monitoring locations were located both to the south and north of the TSF/Plug area. A higher incidence of calm periods was observed in the summer 2015 data than in the historical data (76% compared to 45%). This higher predominance of calms indicates stagnant wind conditions, less prone to cause wind erosion. However, analysis of the frequency of wind greater than 5.4 m/s, the criteria used to determine potential dusting events, measured over the summer 2015 monitoring period appears to be similar to previous years for metrological Station #2, the meteorological station most representative of the TSF and Plug. The difference in wind rose patterns and calm periods could be a result of inter-year variability, particularly since summer 2015 was compared to a very limited (two previous summers) historical dataset.

In addition, it is expected that there are around 108 days during the year where there are either subfreezing ground conditions or days where there is at least 1 cm of snow on the ground (Likely station). Therefore winter conditions will act as natural dust suppression for many months of the year (November to March).

Dustfall monitoring and associated annual reporting to the MOE will continue, and will be used to inform MPMC on the ongoing success of dust mitigation efforts.

Recommendation #3: The TSF/Plug area dust management plan is modified at a future date, prior to the TSF/Plug area becoming operational.

Rationale: Ongoing activities on site are generally the same as those considered as emission sources in the current dust management plan. Significant changes in the fugitive dust emissions sources in the TSF/Plug area are not expected until permitting has been completed, and the area becomes operational. It is anticipated that fugitive emissions from the TSF/Plug area will decrease once operational due to the removal and revegetation of tailings material from the Plug area, and water covering part of the TSF area.

4.0 CLOSURE

We trust that this memorandum meets your present needs. Please do not hesitate to contact us should you have any questions or comments regarding the above.

GOLDER ASSOCIATES LTD.

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June 14, 2016

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Attachments: Attachment 1: Daily Inspection Observations for the TSF and Plug Area
Attachment 2: TSP, PM_{10} and $PM_{2.5}$ Concentrations at A4, A7, A8, and A9
Attachment 3: TSP, PM_{10} and $PM_{2.5}$ Monthly and Monitoring Period Concentration Statistics for A4, A7, A8, and A9

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ATTACHMENT 1
Daily Inspection Observations for the TSF and Plug Area

	
No Dust Generation (**No**)	Minimal or Sporadic Dust Generation (**Minor**)
In between minimal or sporadic and major	
Moderate Dust Generation (**Moderate**)	Major Dust Generation (**Major**)

Important Information to Document:

- Date and time.
- Source of dust (ex., sand cells, traffic along embankment, TSF surface along Main embankment) – photos are helpful, if possible.
- Weather conditions, including wind (ex., calm, light breeze, windy) and precipitation (ex., hot and sunny, dry, heavy rain last night).

Table 1: Summary of Visual Inspections at TSF and Plug Area

Date	Approximate Time	Area Inspected		Comment
		Tailings Storage Facility	Plug Area	
15/Sep/15	8:38	No	No	
15/Sep/15	11:20	No	No	
15/Sep/15	19:32	No	No	
15/Sep/15	21:52	No	No	
16/Sep/15	1:37	No	No	
16/Sep/15	5:22	No	No	
16/Sep/15	8:45	No	No	
16/Sep/15	11:56	No	No	
16/Sep/15	15:30	No	No	
16/Sep/15	19:44			Dust level not noted
16/Sep/15	21:47			Dust level not noted
17/Sep/15	12:47			Dust level not noted
17/Sep/15	2:50			Dust level not noted
17/Sep/15	4:33			Dust level not noted
17/Sep/15	7:20	No	No	
17/Sep/15	11:22	No	No	
17/Sep/15	15:20	No	No	
17/Sep/15	19:11	No	No	
17/Sep/15	22:12			Dust level not noted
17/Sep/15	23:02			Dust level not noted
18/Sep/15	1:40			Dust level not noted
18/Sep/15	5:12			Dust level not noted
18/Sep/15	7:20	No	No	
18/Sep/15	11:25	No	No	
18/Sep/15	14:00	No	No	
18/Sep/15	19:26	No	No	
18/Sep/15	21:23	No	No	
18/Sep/15	23:33	No	No	
19/Sep/15	1:39	No	No	
19/Sep/15	4:25			Dust level not noted
19/Sep/15	7:26	No	No	
19/Sep/15	12:03	No	No	
19/Sep/15	15:59			Dust level not noted
19/Sep/15	19:09			Dust level not noted
19/Sep/15	21:31	No	No	
20/Sep/15	12:07	No	No	

Date	Approximate Time	Area Inspected		Comment
		Tailings Storage Facility	Plug Area	
20/Sep/15	2:15			Dust level not noted
20/Sep/15	4:49	No	No	
20/Sep/15	7:35	No	No	
20/Sep/15	12:26	No	No	
20/Sep/15	15:55	No	No	
20/Sep/15	19:46	No	No	
20/Sep/15	21:39			Dust level not noted
20/Sep/15	23:51			Dust level not noted
21/Sep/15	2:14			Dust level not noted
21/Sep/15	4:51			Dust level not noted
21/Sep/15	7:44	No	No	
21/Sep/15	13:22	No	No	
21/Sep/15	15:08	No	No	
21/Sep/15	19:04	No	No	
21/Sep/15	21:34	No	No	
21/Sep/15	23:36	No	No	
22/Sep/15	1:46			Dust level not noted
22/Sep/15	4:22	No	No	
22/Sep/15	18:57	No	No	
22/Sep/15	21:27	No	No	
22/Sep/15	23:14	No	No	
23/Sep/15	1:42	No	No	
23/Sep/15	4:37	No	No	
23/Sep/15	9:12	No	No	
23/Sep/15	13:38	No	No	
23/Sep/15	16:06	No	No	
23/Sep/15	19:49	No	No	
23/Sep/15	22:11	No	No	
24/Sep/15	3:22	No	No	
24/Sep/15	5:39	No	No	
24/Sep/15	8:12	No	No	
24/Sep/15	12:06			Dust level not noted
24/Sep/15	14:16	No	No	
24/Sep/15	20:52	No	No	
24/Sep/15	23:04	No	No	
25/Sep/15	2:44	No	No	
25/Sep/15	5:29	No	No	

Date	Approximate Time	Area Inspected		Comment
		Tailings Storage Facility	Plug Area	
25/Sep/15	8:24	No	No	
25/Sep/15	11:42	No	No	
25/Sep/15	13:46	No	No	
25/Sep/15	16:39	No	No	
25/Sep/15	19:07	No	No	
25/Sep/15	22:20	No	No	
26/Sep/15	2:15	No	No	
26/Sep/15	6:09	No	No	
26/Sep/15	8:48	No	No	
26/Sep/15	10:52	No	No	
26/Sep/15	11:49	No	No	
26/Sep/15	14:01	No	No	
26/Sep/15	15:50	No	No	
26/Sep/15	19:50	No	No	
26/Sep/15	21:36	No	No	
27/Sep/15	0:51	No	No	
27/Sep/15	4:20	No	No	
27/Sep/15	8:34	No	No	
27/Sep/15	11:16	No	No	
27/Sep/15	13:15	No	No	
27/Sep/15	16:08	No	No	
27/Sep/15	20:36	No	No	
27/Sep/15	22:43	No	No	
28/Sep/15	2:29	No	No	
28/Sep/15	5:15	No	No	
28/Sep/15	7:20	No	No	
28/Sep/15	19:33	No	No	
28/Sep/15	23:08	No	No	
29/Sep/15	2:17	No	No	
29/Sep/15	4:54	No	No	
29/Sep/15	19:48	No	No	
29/Sep/15	22:05	No	No	
30/Sep/15	1:25	No	No	
30/Sep/15	5:26	No	No	

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Daily TSF/Water Management Inspection Checklist

Inspector: _____ Date: _____
Shift (Crew, D or N):_____ Weather Condition (ex. hot, windy): _____

TSF Area

Pumps/Pipes/Sumps	Time Checked	Inspection Gauge Readings
Upstream 1		
TSF Settling Pond		
CCS		RED YELLOW BLACK
South Seepage Pond		RED YELLOW BLACK
Main Seepage Pond		RED YELLOW BLACK
Till Borrow Pond		RED YELLOW BLACK
9KM Sump		RED YELLOW BLACK
NW Sump		RED YELLOW BLACK
Mine Drainage Creek		RED YELLOW BLACK
Bootjack Creek Sump		RED YELLOW BLACK
SERDS Sump		RED YELLOW BLACK
West Ditch Culverts		
Wight Pit Pumps		
Joe's Creek Pipe		
Long Ditch Sumps		
Long Ditch/SERDS Pipe Outlets		
Cariboo Pit Pumps		
Springer Pipes		

Is the TSF Generating Dust?

No Minor Moderate Major

Is the Polley Lake Plug Generating Dust?

No Minor Moderate Major

ADDITIONAL COMMENTS:

_____

_____

_____

_____

_____

ATTACHMENT 2
TSP, PM_{10} and $PM_{2.5}$ Concentrations for A4, A7, A8, and A9

1.0 DUSTTRAK PARTICULATE DATA

This attachment outlines the particulate concentrations observed at DustTRAK stations A4, A7, A8, and A9.

Daily, hourly, and 2-minute data for TSP, PM_{10}, and $PM_{2.5}$ are summarized using a simplified box and whisker plot. The simplified box and whisker plot has been used to present trends and statistical data. The box on the figures represents the bounds of the middle (50th percentile) of the 1 hour data points, with the top of the box representing the 1 hour 75th percentile concentration and the bottom of the of box representing the 1 hour 25th percentile concentration. The green diamond represents the 24-hour average concentration. The "whiskers" extend up to the maximum hourly and down to the minimum hourly concentration. The upper dotted grey line represents the 2-minute maximum data, and the lower dotted grey line represents the minimum 2-minute data; the upper dashed green line represents the 75th percentile for the 2-minute data and the lower dashed green line represents the 25th percentile of the 2-minute data. The legend for Figure 2 through Figure 13 is illustrated in Figure 1.

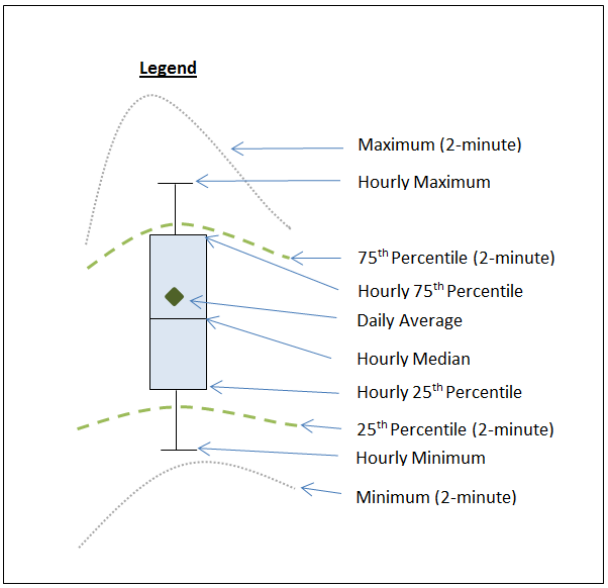

Figure 1: Simplified Box-Whisker Plot Legend

The raw monitored data were screened against the criteria listed below; data that met the following criteria were removed and not presented in the following sections and within the main technical memorandum:

- 2-minute concentrations less than zero;
- data outside of the instrument's monitoring range (0 to 150,000 µg/m^3 for TSP, PM_{10} and $PM_{2.5}$);
- errors indicated within the raw data file including:
  - flow error;
  - laser error; and
  - filter error.

- less than 75% data completeness for hourly and 24-hour averaged values:
  - any hour with less than 23 samples of 2-minute data were was excluded from the hourly dataset (23 samples of 2-minute data over an hour represents a 75% complete hourly dataset); and
  - any 24-hour period with less than 540 samples of 2-minute data were excluded from the 24-hour dataset (540 samples of 2-minute data over 24-hours represents a 75% complete 24-hour dataset).

1.1 A4

Monitored concentrations of TSP, PM_{10}, and $PM_{2.5}$ at A4 are shown in Figure 2 to Figure 4.

Many days' worth of TSP, $PM_{10,}$ and $PM_{2.}5$ concentration data from DustTRAK station A4 met the criteria listed in Section 1.0. Specifically, the 2-minute concentrations were less than zero and hourly and 24-hour data had data completeness of less than 75%. Dates that met the criteria listed in Section 1.0 included September 17 to 22, and 25 to 28, 2015 for TSP and PM_{10}.

Of the valid data, 24-hour concentrations for TSP, PM_{10}, and $PM_{2.5}$ were below BC's ambient air quality objectives (BC AAQO).

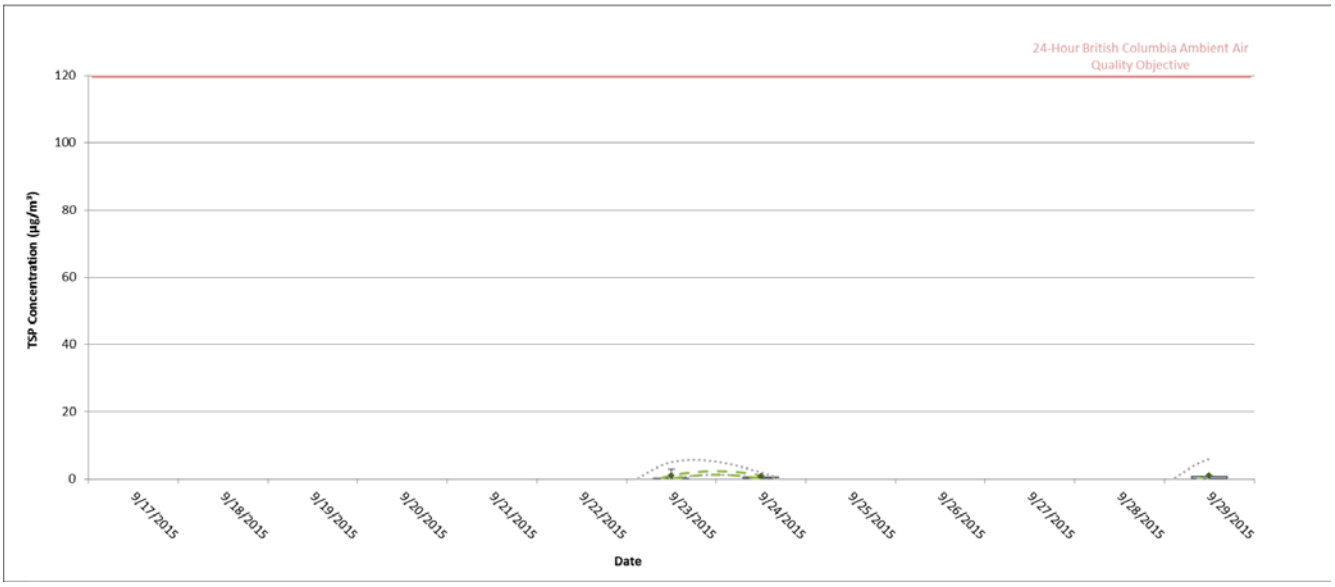

Figure 2: TSP Concentrations at A4, September 17 to 29, 2015

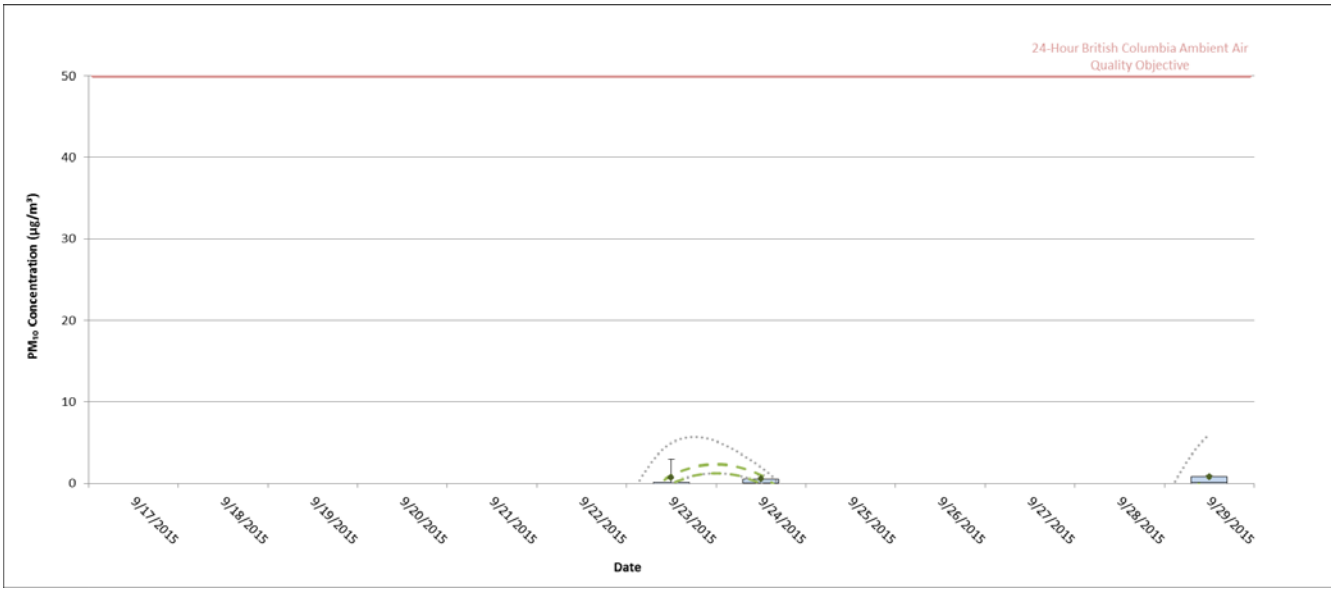

Figure 3: PM_{10} Concentrations at A4, September 17 to 29, 2015

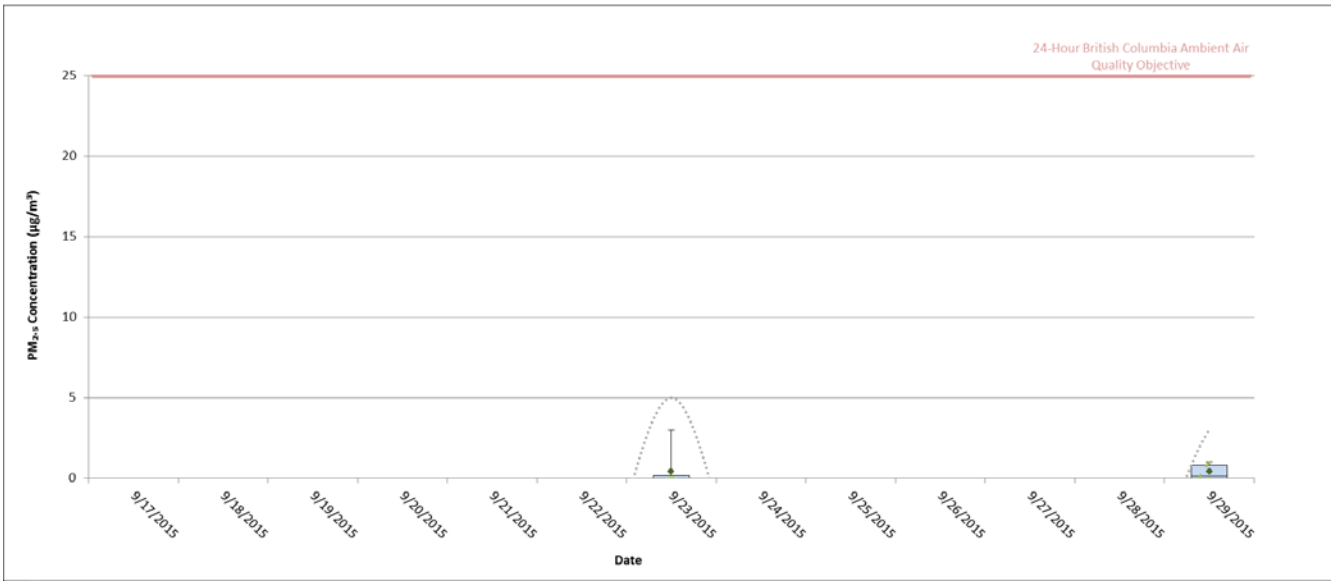

Figure 4: $PM_{2.5}$ Concentrations at A4, September 17 to 29, 2015

1.2 A7

Monitored concentrations of TSP, PM_{10}, and $PM_{2.5}$ measured at A7 are illustrated in Figure 5 to Figure 7.

All monitoring data was considered valid during the September 17 to 29, 2015 monitoring period.

TSP, PM_{10}, and $PM_{2.5}$ 24-hour concentrations were below BC's AAQO throughout the monitoring period.

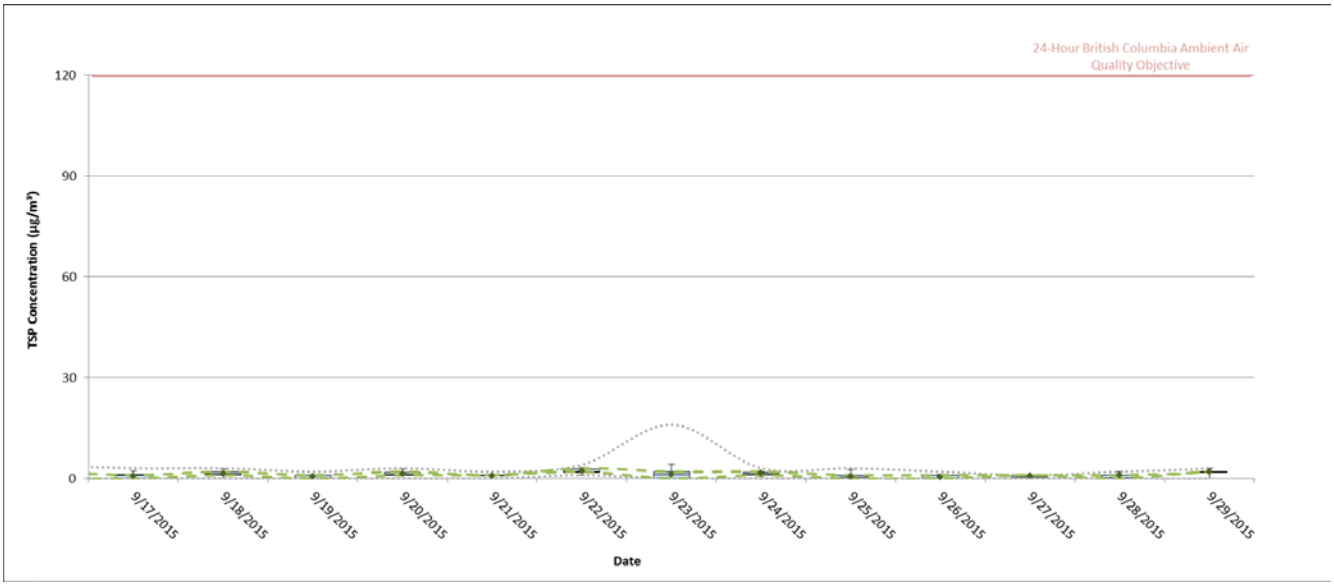

Figure 5: TSP Concentrations at A7, September 17 to 29, 2015

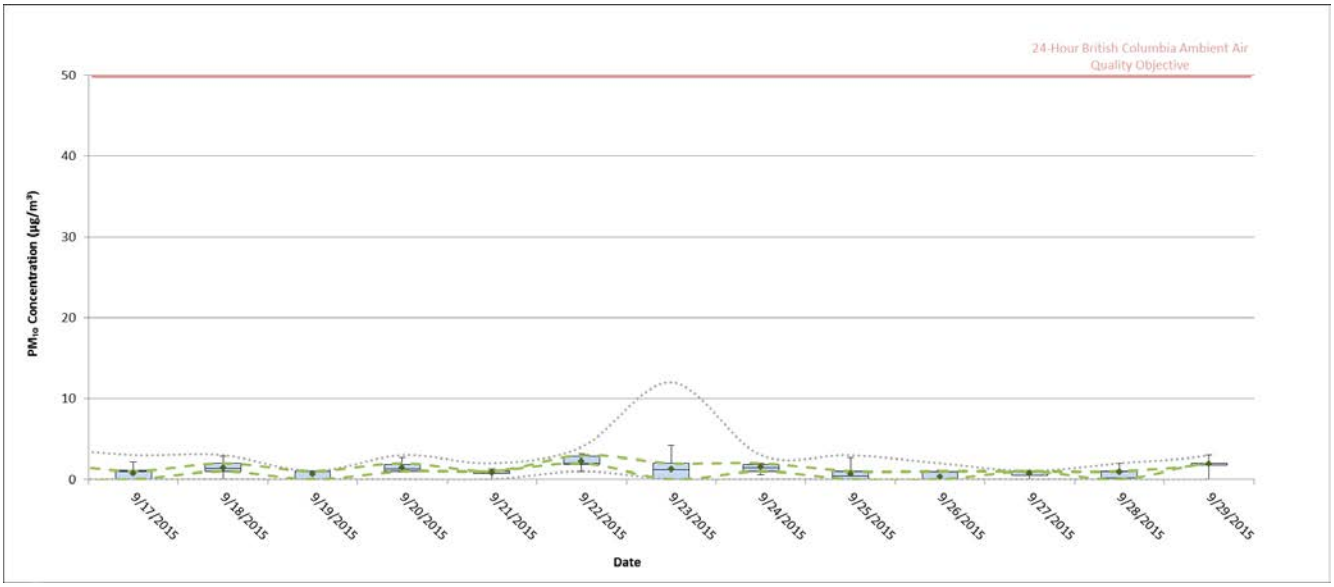

Figure 6: PM_{10} Concentrations at A7, September 17 to 29, 2015

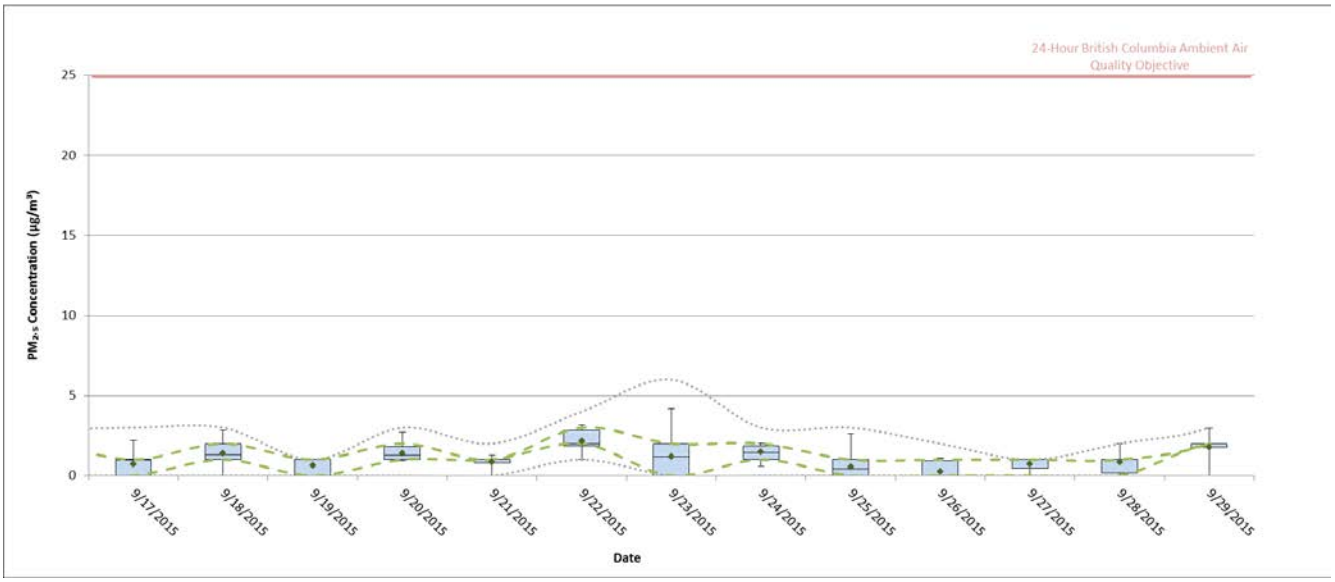

Figure 7: $PM_{2.5}$ Concentrations at A7, September 17 to 29, 2015

1.3 A8

Monitored concentrations of TSP, PM_{10}, and $PM_{2.5}$ measured at A8 are illustrated in Figure 8 to Figure 10.

Concentration data on September 20, 2015 data met the criteria listed in Section 1.0.

Of the valid data, TSP, PM_{10}, and $PM_{2.5}$ 24-hour concentrations were below BC's AAQO for all days monitored.

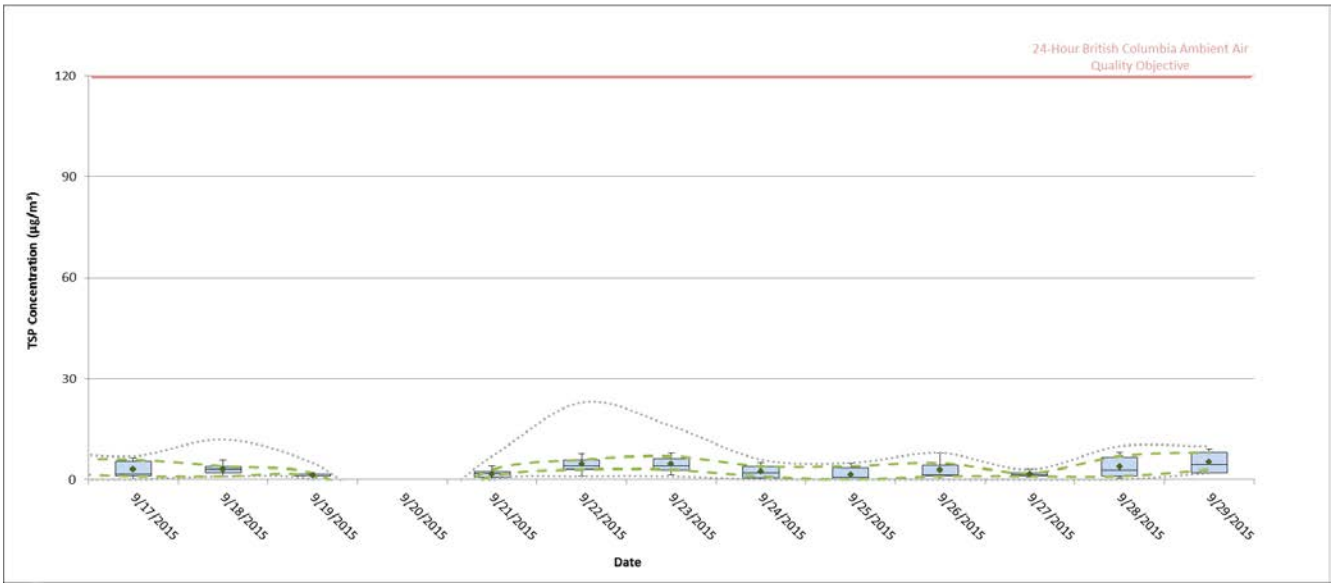

Figure 8: TSP Concentrations at A8, September 17 to 29, 2015

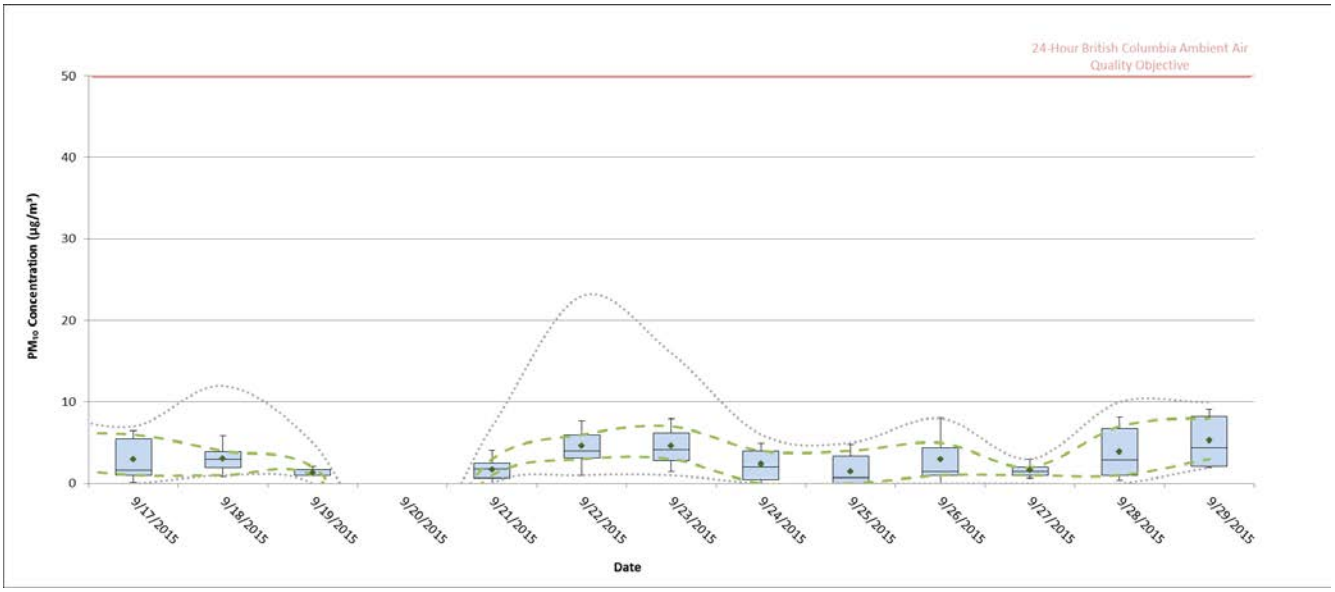

Figure 9: PM_{10} Concentrations at A8, September 17 to 29, 2015

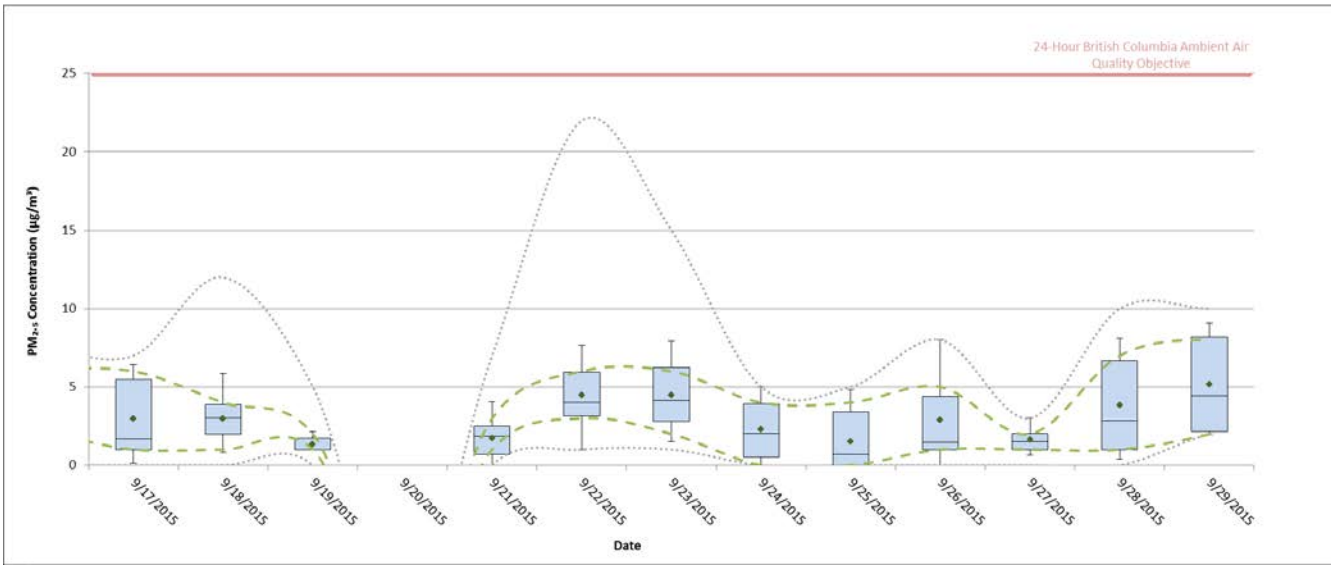

Figure 10: $PM_{2.5}$ Concentrations at A8, September 17 to 29, 2015

1.4 A9

Concentration patterns for TSP, PM_{10}, and $PM_{2.5}$ measured at A9 are illustrated in Figure 11 to Figure 13.

All data were considered to be valid during the September 17 to September 29, 2015 monitoring period.

TSP, PM_{10}, and $PM_{2.5}$ 24-hour concentrations were below BC's AAQO for all days monitored.

Short-term 2-minute TSP concentrations (greater than 120 µg/m³) were measured on September 17, and 29, 2015 for a period of 50, and 22 minutes. Short-term PM_{10} 2-minute concentrations (greater than 50 µg/m³) were monitored on September 17, 18, and 29, 2015 for a period of 130, 4, and 34 minutes respectively. Short term 2-minute $PM_{2.5}$ concentrations (greater than 25 µg/m³) were monitored on September 17, 18, and 29, 2015 for a period of 128, 4, and 32 minutes respectively.

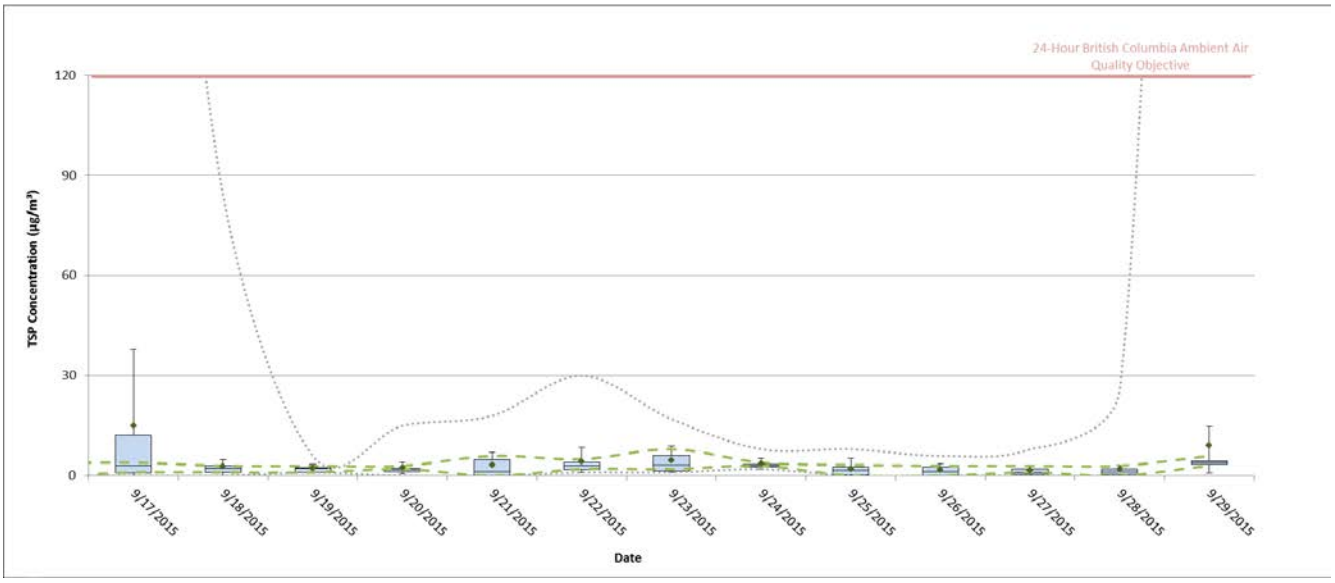

Figure 11: TSP Concentrations at A9, September 17 to 29, 2015

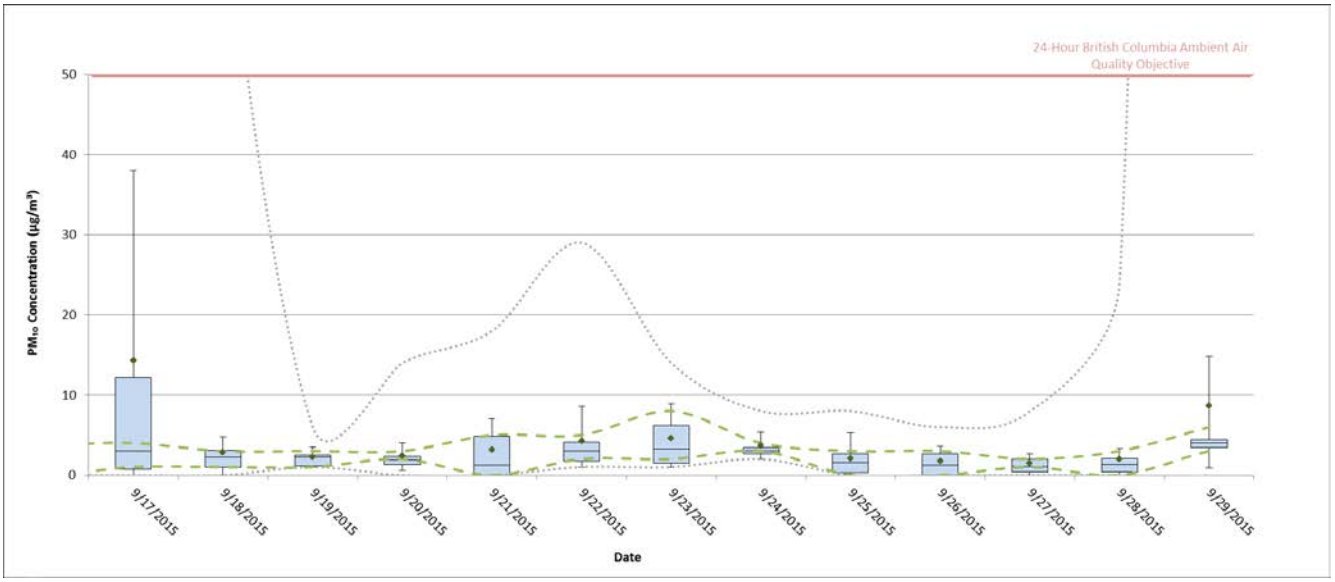

Figure 12: PM_{10} Concentrations at A9, September 17 to 29, 2015

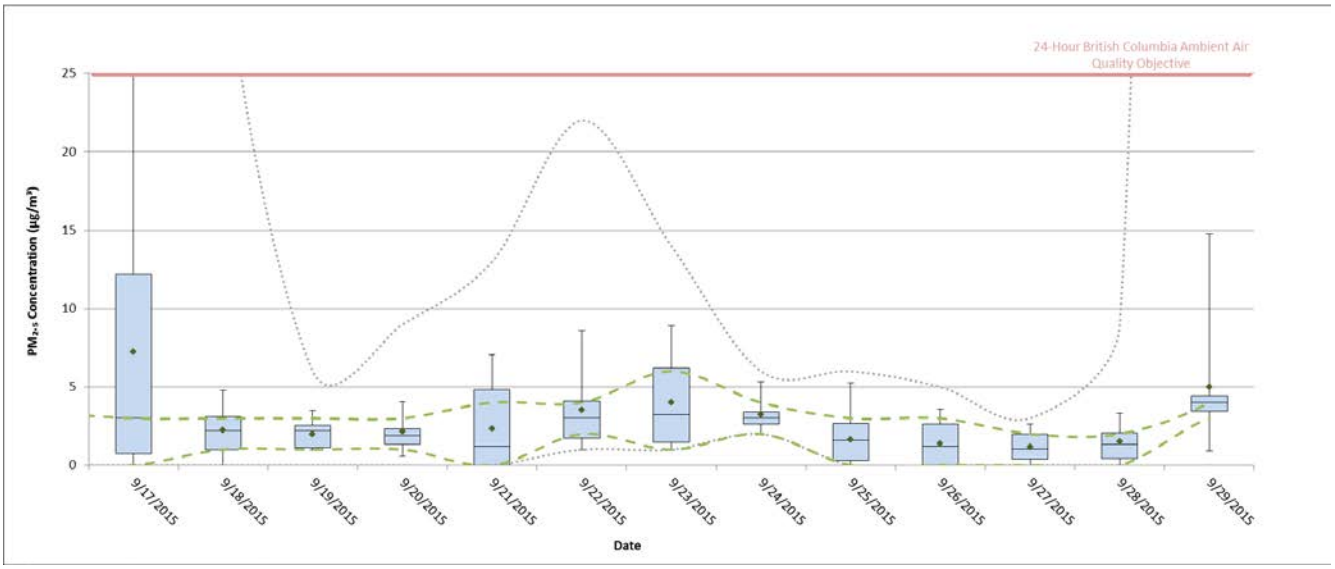

Figure 13: $PM_{2.5}$ Concentrations at A9, September 17 to 29, 2015

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ATTACHMENT 3
TSP, PM_{10} and $PM_{2.5}$ Monthly and Monitoring Period Concentration Statistics for A4, A7, A8, and A9

Table 1: TSP Concentration (µg/m³) Statistics for Each Month and the Entire Monitoring Period

Month	Location	Data Completeness	Maximum	Minimum	Mean	Standard Deviation	Percentiles						
							5	25	50	75	90	98	99
Jul	A4	40%	20.9	0.5	3.8	5.9	0.5	0.7	1.8	3.0	7.0	18.1	19.5
	A7	60%	88.7	1.0	14.6	23.3	1.1	2.0	5.1	9.7	40.5	76.6	82.6
	A8	76%	74.8	0.8	10.3	18.2	0.9	1.4	2.7	7.4	31.3	61.7	68.3
	A9	88%	81.5	1.3	11.2	18.8	1.4	2.3	4.0	8.8	32.4	66.5	74.0
Aug	A4	55%	10.9	0.5	3.5	2.8	1.2	1.4	2.2	4.6	7.1	10.1	10.5
	A7	97%	15.5	0.3	3.6	2.9	1.0	2.0	2.8	4.3	5.6	11.9	13.7
	A8	81%	17.3	1.7	4.7	3.6	2.0	2.2	3.3	5.2	8.0	15.1	16.2
	A9	100%	16.1	1.0	6.1	3.1	2.4	3.8	5.4	7.9	9.3	13.0	14.6
Sep	A4	23%	3.5	0.1	1.4	1.3	0.3	0.6	0.8	2.0	3.3	3.5	3.5
	A7	100%	3.7	0.1	1.5	0.9	0.4	0.8	1.3	1.8	3.0	3.6	3.6
	A8	87%	6.3	1.0	3.3	1.3	1.4	2.4	3.1	3.9	5.0	5.8	6.0
	A9	100%	15.1	0.4	4.4	3.4	1.5	2.1	3.0	4.6	8.5	13.6	14.3
Monitoring Period	A4	40%	20.9	0.1	3.1	3.9	0.5	0.9	1.9	3.9	5.9	14.3	17.6
	A7	87%	88.7	0.1	5.0	11.7	0.6	1.3	2.1	3.9	6.6	39.6	56.6
	A8	81%	74.8	0.8	5.7	10.1	1.0	2.2	3.1	4.7	8.4	35.0	49.7
	A9	97%	81.5	0.4	6.8	10.4	1.5	2.5	4.1	7.8	10.2	38.5	52.2

Table 2: PM_{10} Concentration (µg/m³) Statistics for Each Month and the Entire Monitoring Period

Month	Location	Data Completeness	Maximum	Minimum	Mean	Standard Deviation	Percentiles						
							5	25	50	75	90	98	99
Jul	A4	40%	20.9	0.5	3.8	5.9	0.5	0.7	1.8	2.9	7.0	18.1	19.5
	A7	60%	88.6	1.0	14.5	23.3	1.1	1.9	5.1	9.7	40.3	76.4	82.5
	A8	76%	74.8	0.8	10.3	18.1	0.9	1.4	2.7	7.4	31.3	61.6	68.2
	A9	88%	81.1	1.3	11.1	18.7	1.3	2.3	3.9	8.7	32.3	66.2	73.6
Aug	A4	55%	10.9	0.5	3.5	2.8	1.2	1.4	2.2	4.6	7.1	10.1	10.5
	A7	97%	15.4	0.2	3.6	2.9	0.9	1.8	2.7	4.2	5.5	11.8	13.6
	A8	81%	17.2	1.7	4.7	3.6	2.0	2.2	3.3	5.2	7.9	15.0	16.1
	A9	100%	15.9	1.0	6.0	3.1	2.4	3.7	5.3	7.8	9.2	12.9	14.4
Sep	A4	23%	3.5	0.1	1.4	1.3	0.2	0.6	0.8	2.0	3.3	3.5	3.5
	A7	100%	3.7	0.1	1.5	0.9	0.4	0.8	1.3	1.8	2.8	3.6	3.6
	A8	87%	6.3	1.0	3.2	1.3	1.4	2.4	3.1	3.9	5.0	5.8	6.0
	A9	100%	14.3	0.4	4.2	3.2	1.5	2.1	3.0	4.6	8.4	12.9	13.6
Monitoring Period	A4	40%	20.9	0.1	3.1	3.9	0.5	0.9	1.9	3.9	5.9	14.3	17.6
	A7	87%	88.6	0.1	4.9	11.7	0.6	1.3	2.1	3.8	6.5	39.4	56.4
	A8	81%	74.8	0.8	5.7	10.1	1.0	2.2	3.0	4.7	8.3	35.0	49.6
	A9	97%	81.1	0.4	6.7	10.4	1.4	2.5	3.9	7.7	10.1	38.4	51.9

Table 3: $PM_{2.5}$ Concentration (µg/m^3) Statistics for Each Month and the Entire Monitoring Period

Month	Location	Data Completeness	Maximum	Minimum	Mean	Standard Deviation	Percentiles						
							5	25	50	75	90	98	99
Jul	A4	40%	20.2	0.3	3.4	5.8	0.3	0.4	1.3	2.1	6.7	17.5	18.8
	A7	60%	88.3	0.9	14.0	23.2	0.9	1.6	4.8	9.3	38.8	75.6	81.9
	A8	72%	74.5	0.7	10.5	18.5	0.8	1.4	2.4	8.3	31.8	62.1	68.3
	A9	88%	80.3	0.9	10.4	18.6	0.9	1.5	3.1	8.0	31.4	65.1	72.7
Aug	A4	52%	9.9	0.1	2.9	2.7	0.5	0.7	1.7	3.8	6.4	9.2	9.6
	A7	97%	11.7	0.2	3.0	2.4	0.7	1.5	2.4	3.6	5.3	9.7	10.7
	A8	81%	13.4	1.5	4.2	3.0	1.8	1.9	3.1	5.0	7.1	12.7	13.1
	A9	100%	14.2	0.7	5.1	2.9	2.0	3.0	4.3	6.8	8.7	11.4	12.8
Sep	A4	17%	2.6	0.2	1.2	1.1	0.2	0.4	0.4	2.5	2.6	2.6	2.6
	A7	100%	3.6	0.1	1.4	0.8	0.4	0.8	1.3	1.6	2.4	3.3	3.5
	A8	87%	6.0	1.0	3.1	1.3	1.3	2.3	3.0	3.9	4.7	5.6	5.8
	A9	100%	7.2	0.2	3.1	1.9	1.1	1.8	2.4	4.2	6.2	7.1	7.1
Monitoring Period	A4	36%	20.2	0.1	2.8	3.9	0.2	0.6	1.4	3.5	5.2	14.0	17.1
	A7	87%	88.3	0.1	4.5	11.5	0.6	1.1	1.7	3.5	5.4	38.0	54.8
	A8	80%	74.5	0.7	5.4	10.1	1.0	1.9	2.9	4.5	8.1	34.8	49.7
	A9	97%	80.3	0.2	5.8	10.2	1.1	1.9	3.2	6.2	8.9	37.2	50.7

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APPENDIX D

Fish Tissue Chemistry

APPENDIX D-1

Summary of Available Fish Tissue Chemistry Data (2014-2015) for Assessment of Potential Changes in Concentrations Related to the Mount Polley Tailings Dam Failure

11 May 2017
Reference No. 1662612-086-R-Rev0-22392

Golder Associates

TECHNICAL MEMORANDUM

DATE 3 June 2016 **REFERENCE No.** 1411734-158-TM-Rev0-10000

TO Colleen Hughes
Mount Polley Mining Corporation

CC Lyn Anglin, Ph.D., Imperial Metals

FROM Trish Miller, Golder Associates Ltd. **EMAIL** trish_miller@golder.com

SUMMARY OF AVAILABLE FISH TISSUE CHEMISTRY DATA (2014 – 2015) FOR ASSESSMENT OF POTENTIAL CHANGES IN CONCENTRATIONS RELATED TO THE MOUNT POLLEY TAILINGS DAM FAILURE

1.0 EXECUTIVE SUMMARY

This technical memorandum provides a summary of fish tissue chemistry collected after the release of tailings as a result of a foundation failure of the Tailings Storage Facility at the Mount Polley Mine in British Columbia, Canada, on August 4, 2014. All available fish tissue chemistry data collected subsequent to the tailing release was consolidated into a single data set to facilitate future interpretative efforts, including a small number of samples from the spring of 2016 which were analyzed on a rush basis. Additional 2016 fish tissue samples are still being processed by the analytical laboratory. Golder has prepared the following preliminary summary of the nature of the available fish tissue data (e.g., sample locations, number of species and types of tissues sampled). The data were divided into exposure and reference sites, and subdivided by species, tissue type and year to facilitate a high-level exploratory analysis. Basic descriptive statistics were calculated and boxplots were visually examined to provide a preliminary view of the available data in light of relevant exposure pathways. Based on this visual examination, Golder's preliminary view is:

- Selenium concentrations in Polley Lake rainbow trout ovary tissue in 2015 showed a substantial increase that appeared anomalous relative to other species, locations and years. This increase in selenium concentrations was not present in rainbow trout samples collected in 2016. Further work to validate the potentially anomalous data with the analytical laboratory is on-going. Regardless, measured concentrations in a number of rainbow trout ovary samples from Polley Lake in a number of samples in 2014 and 2016 have exceeded the applicable guideline of 11 mg/kg dw, and whole-body and/or muscle concentrations have also exceeded the applicable guideline of 4 mg/kg dw in a number of samples in all three years. Further evaluation is recommended.
- Arsenic accumulation in fish may also be occurring. There were no exceedances of the applicable guideline observed in tissue samples that would be typically consumed by humans (e.g., muscle samples), but there were increases observed in some organ-specific analysis that may be a precursor for accumulation in muscle tissue over time.
- For other metals, the pattern of accumulation in tissues was inconsistent.

Although a sizeable number of fish have been collected, sampling has been generally opportunistic. Data are also currently limited to two years of sampling and bioaccumulation may change over time for different metals as restoration of the food web continues. Further evaluation of the 2016 fish tissue chemistry as it becomes available is recommended.

Golder emphasizes that the value of this type of a data set is enhanced when it is based on a sampling program that consistently targets specific locations along a representative exposure gradient and focuses on specific species (or functional groups of species) and tissue types with a sufficient number of samples to allow for statistical analysis (i.e., to test specific hypotheses). A minimum sample size of 8 and a preferred sample size of 20 or more should be considered in future sampling programs to support quantitative statistical analyses. These analyses are central to both the initial quantitative risk assessment (i.e., a realistic worst-case exposure concentration is typically based on a 95% upper confidence limit of the mean) as well as future monitoring programs (i.e., trends in fish tissue concentrations over time; statistical differences between exposure and reference sites). Golder cautions that sampling effort for reference sites will need to be reviewed, given that some samples from reference sites were also elevated relative to numerical guidelines (e.g., mercury).

2.0 CONTEXT OF DATA SOURCES

This technical memorandum provides a summary of fish tissue chemistry collected after the release of tailings as a result of the failure of the Tailings Storage Facility (TSF) at the Mount Polley Mine (the Mine) in British Columbia, Canada, on August 4, 2014. Multiple stakeholders collected fish tissue samples following the release of tailings. This technical memorandum is intended to consolidate the data from these multiple sources into a single data set to facilitate future interpretative efforts, and consists of the following three elements:

- A narrative preliminary summary of the nature of the available fish tissue data is provided (e.g., sample locations, number of species and types of tissues sampled). Data were divided into exposure and reference sites, and subdivided by species, tissue type and year.
- Basic descriptive statistics (e.g., sample size (n); mean; standard deviation) and censored boxplots of concentrations) have been calculated for all substances measured in fish tissue data. Each censored boxplot considers one classification of data (e.g., difference in tissue concentration of a metal[1] in a given species by exposure/reference site or by year) resulting in a large number of individual boxplots.
- Observations are summarized for those specific combinations of metals and fish tissues that have been identified for the ecological and human health risk assessment to frame future statistical analyses that may be conducted. A preliminary summary based on the fish tissue chemistry data collected to date and provides important early context about the nature of the available data, and highlights several sources of uncertainty that will need to be considered in greater detail as the monitoring program progresses.

[1] For the purposes of this memo, the tern “metals” includes metalloids (e.g., arsenic) and non-metals (e.g. selenium).

3.0 METHODS

This section provides an overview of the methods used to view the fish tissue chemistry data and the quality assurance/quality control (QA/QC) measures taken by Golder Associates to consolidate the data into a single data set.

- Analytical chemistry reports and field collection notes were provided by Mount Polley Mining Corporation (MPMC) and their consultants, the British Columbia Ministry of Environment (BC MoE), and the Department of Fisheries and Oceans (DFO). Golder has relied on the information provided by others and has not conducted independent verification of those data or field information beyond a QA/QC check that analytical data were correctly transcribed and that there were no obvious errors in fish collection methodology as described in the field notes.
- Fish were collected from multiple locations within the study area by the various parties (Figure 1). Fish were collected by the various stakeholders in coordination with local First Nations groups, lodge owners, and guide outfitters. A wide variety of sampling methods were used, including electrofishing units, multi-panel gill nets, trap nets, gee minnow traps, and angling.
- Fish tissue samples include both whole-body and muscle tissues, as well as specific organs (Tables 1 and 2). Some samples were a composite of multiple individual fish. Species include lake trout (*Salvelinus namaycush*), peamouth chub (*Mylocheilus caurinus*), sockeye salmon (*Oncorhynchus nerka*), rainbow trout (*Oncorhynchus mykiss*), burbot (*Lota lota*), kokanee (*Oncorhynchus nerka*), largescale sucker (*Catostomus macrocheilus*), northern pikeminnow (*Ptychocheilus oregonensis*), redside shiner (*Richardsonius balteatus*), longnose dace (*Rhinichthys cataractae*), longnose sucker (*Catostomus catostomus*), and mountain whitefish (*Prosopium williamsoni*). A general trend was that samples for small-body fish tended to be either composite or whole-body, while samples for large-body fish tended to focus on muscle or other organs. In a limited number of instances, field duplicate samples were available (e.g., two muscle samples from the same fish) as part of QA/QC protocols, but these samples were not included in the data analyses to avoid pseudo-replication.
- Fish tissue samples were submitted to ALS Environmental (ALS) in Burnaby, British Columbia. Detection limits (DL) are summarized in Table 3. All laboratory results, including confirmation of detection limits and parameter lists, were reviewed by Golder upon receipt. Golder conducted a review of the certificates of analysis and examined data distributions to verify the validity of the data. Golder concluded the data are reliable based on consideration of the reported qualifiers related to the laboratory QA/QC methods (i.e., relative percent differences; recovery of certified reference samples) and consistency in data distribution among samples (i.e., no large magnitude differences among samples, or unexplained outliers)[2].
- Tissue chemistry results were reported in milligrams per kilogram (mg/kg) and expressed in terms of wet weight (ww), with the exception of selenium which is expressed in terms of dry weight (dw). Selenium is expressed in terms of dw to allow direct comparisons to the BC MoE selenium guideline, which is presented in dw. If a parameter was reported below the analytical DL, a value of one half the DL was used to calculate summary statistics.
- Data was provided to Golder in electronic form by the various stakeholders and was compiled into a master spreadsheet for data evaluation. Tables containing data summaries (e.g., summary statistics) underwent a 10% QA check by a second, independent person.

[2] One peamouth chub sample was removed as an outlier due to field notes that indicated the sample was contaminated. One northern pikeminnow sample was excluded because the collection site could not be determined.

The primary method for data evaluation was to subdivide the data into location (i.e., exposure versus reference), species and year. Differences amongst each classification (location, species, tissue type, year) were examined visually using boxplots. A key consideration is sample collection was conducted to support a variety of sampling objectives and/or preliminary hypotheses. There was no integrative *a priori* study design or associated objectives regarding sample collection (i.e., target species, fish age, tissue types, or sample sizes). Fish tissue sample collection should be considered as opportunistic, and in many of the sample classifications, there are insufficient data to allow for meaningful comparisons.

Table-1: Site naming convention and classification of sampling locations

Site Name	Description of Location	Fish Species Collected in 2014	Fish Species Collected in 2015	Collecting Agency
Bootjack Lake [A]	Reference site located East of Polley Lake.	Rainbow Trout	Rainbow Trout	MPMC
Hazeltine Creek	Considered a reference site because samples were collected prior to the event.	Rainbow Trout (pre-event)	n/a	MPMC
Horsefly River	Exposed site located South of Quesnel Lake (i.e., migratory exposure as fish moved through Quesnel Lake to this location).	Sockeye Salmon (adult)	n/a	DFO
Polley Lake [A]	Exposed site located North of the TSF.	Longnose Sucker, Rainbow Trout[1], Redside Shiner	Rainbow Trout	MPMC, BC MoE
Quesnel Lake East [B]	Reference site located in the East arm of Quesnel Lake	Sockeye Salmon (juvenile)	Burbot, Lake Trout, Sockeye Salmon	MPMC, DFO
Quesnel Lake Hazeltine Creek Confluence [B]	Exposed site located at the confluence of Hazeltine Creek and Quesnel Lake	Burbot, Lake Trout, Longnose Dace, Longnose Sucker, Mountain Whitefish[2], Northern Pikeminnow, Peamouth Chub, Redside Shiner	Burbot, Lake Trout, Largescale Sucker, Northern Pikeminnow, Peamouth Chub, Redside Shiner	MPMC, BC MoE
Quesnel Lake Horsefly River Confluence [B]	Exposed site located at the confluence of Horsefly River and Quesnel Lake	Burbot, Longnose Dace, Northern Pikeminnow, Peamouth Chub	n/a	MPMC
Quesnel Lake near Quesnel River [B]	Exposed site located in north-west Quesnel Lake near the lake-to-river transition zone	Burbot, Kokanee, Mountain Whitefish, Northern Pikeminnow, Peamouth Chub, Rainbow Trout	Kokanee	MPMC, BC MoE
Quesnel Lake North [B]	Reference site located in the North arm of Quesnel Lake; also includes fish captured at the Wasco Creek and Grain Creek confluences.	Kokanee, Northern Pikeminnow, Peamouth Chub, Sockeye Salmon (juvenile)	Largescale Sucker, Peamouth Chub, Sockeye Salmon	MPMC, BC MoE, DFO
Quesnel Lake Middle [B]	Potentially exposed site, located in Quesnel Lake, east of the Horsefly River Confluence, but west of the North and East Arms	Sockeye Salmon (juvenile)	Sockeye Salmon	DFO
Quesnel Lake West [B]	Exposed site located in Quesnel Lake, NW of the Hazeltine Creek Confluence	Sockeye Salmon (juvenile)	Sockeye Salmon	DFO
Quesnel River [B]	Exposed site located in Quesnel River, downstream of Likely	Rainbow Trout	Rainbow Trout	MPMC
Soda Creek	Reference site	Sockeye Salmon (adult)	n/a	DFO
Trio Lake [A]	Reference site located west of Bootjack Lake	n/a	Rainbow Trout	MPMC

Notes: *BC MoE = British Columbia Ministry of Environment; DFO = Department of Fisheries and Oceans; MPMC = Mount Polley Mining Corporation; n/a = not applicable*

[1] Rainbow trout collected in 2015 were collected from Frypan Creek, a tributary on the north side of Polley Lake. Samples were pooled with Polley Lake because rainbow trout move between the creek and lake, and use Frypan Creek as spawning habitat.

[2] Fish species was not provided, field notes indicated "whitefish"; species was therefore assumed to be Mountain Whitefish.

[A, B] The focus of comparisons between reference and exposed sites are amongst small lake sites (A) or within Quesnel Lake (B)

Table-2: Summary of Fish Tissue Samples Collected from the Study Area for All Sites, Fish Species, and Tissue Types during 2014 and 2015 Sample Collections

Sample Collection Site	Pre-Event	2014																															
	Rainbow Trout	Burbot					Kokanee			Lake Trout			Longnose Dace		Longnose Sucker		Mountain Whitefish				NPM	Peamouth Chub		Rainbow Trout			RS	Sockeye Salmon					
Tissue Type	O	O	L	M	WB	O	L	M	O	L	M	WB	L	M	WB	O	L	M	WB	WB	WB	O	L	M	WB	WB	O	L	M	WB	G	C
Bootjack Lake																						1	8	8								
Horsefly River																												30	30			
Polley Lake														1	16							2	15	15	3	2						
Quesnel Lake East																														10		
Quesnel L - Hazeltine Creek Confluence	8	8	12	12					33	51	51	1	1	1		3	4	4		36	1					2						
Quesnel L - Horsefly River Confluence			1	1								2								10	6										
Quesnel L - near Quesnel River					1	10	10	10											1	7	12		1	1								
Quesnel L - North Arm						10	10	10												31	2							3		10	3	3
Quesnel L – Middle																												3		10	3	3
Quesnel L – West																												6		10	6	6
Quesnel River																						3	12	12								
Soda Creek																											30	30	30			
Trio Lake																																
GRAND TOTAL	**8**	**8**	**13**	**13**	**1**	**20**	**20**	**20**	**33**	**51**	**51**	**3**	**1**	**2**	**16**	**3**	**4**	**4**	**1**	**84**	**21**	**6**	**36**	**36**	**3**	**4**	**30**	**72**	**60**	**40**	**12**	**12**

Sample Collection Site	2015																									GRAND TOTAL
	Burbot			Kokanee				Lake Trout			Largescale Sucker		NPM			Peamouth Chub		Rainbow Trout				RS	Sockeye Salmon				
Tissue Type	O	L	M	O	K	L	M	O	K	L	M	M	O	K	L	M	WB	O	K	L	M	WB	WB	L	G	C	
Bootjack Lake																		8		8	8						**41**
Horsefly River																											**60**
Polley Lake																		8	8	8	8						**86**
Quesnel Lake East		7	7					2	10	10	10												10	3	3	3	**75**
Quesnel L - Hazeltine Creek Confluence	1	4	4					3	9	10	10	8	4	6	4	7	8					8					**322**
Quesnel L - Horsefly River Confluence																											**20**
Quesnel L - near Quesnel River				1	8	8	8																				**78**
Quesnel L - North Arm												8					8					8	10	3	3	3	**125**
Quesnel L – Middle																							10	4	4	4	**41**
Quesnel L – West																							10	7	7	7	**59**
Quesnel River																		1	8	8	8						**52**
Soda Creek																											**90**
Trio Lake																			8	8	8						**24**
GRAND TOTAL	**1**	**11**	**11**	**1**	**8**	**8**	**8**	**5**	**19**	**20**	**20**	**16**	**4**	**6**	**4**	**7**	**16**	**17**	**24**	**32**	**32**	**16**	**40**	**17**	**17**	**17**	**1073**

Notes: NPM = Northern pikeminnow; RS = Redside shiner; O = Ovary; M = Muscle; L = Liver; WB = Whole Body; G = Gill; C = Carcass; K = Kidney.
Ovary Se data from eight additional rainbow trout collected from Polley Lake in spring 2016 have considered in the interpretation. Data for other analytes, species and tissue types have not yet been integrated.

Table 3: Detection Limits for Fish Tissue Samples Collected in 2014 and 2015 from the Quesnel Lake Region

Parameter	Detection Limit
% Moisture	-
Aluminum (Al)-Total	0.2 - 1.0
Antimony (Sb)-Total	0.001 - 0.008
Arsenic (As)-Total	0.004 / 0.006
Barium (Ba)-Total	0.01- 0.04
Beryllium (Be)-Total	0.002 - 0.04
Bismuth (Bi)-Total	0.002 / 0.004
Boron (B)-Total	0.2 - 0.8
Cadmium (Cd)-Total	0.001 - 0.003
Calcium (Ca)-Total	-
Cesium (Cs)-Total	0.001
Chromium (Cr)-Total	0.01 - 0.08
Cobalt (Co)-Total	0.004
Copper (Cu)-Total	-
Iron (Fe)-Total	2
Lead (Pb)-Total	0.002 - 0.01
Lithium (Li)-Total	0.1 / 0.2
Magnesium (Mg)-Total	-
Manganese (Mn)-Total	-
Mercury (Hg)-Total	0.006
Molybdenum (Mo)-Total	0.004 - 0.02
Nickel (Ni)-Total	0.010 - 0.080
Phosphorus (P)-Total	-
Potassium (K)-Total	-
Rubidium (Rb)-Total	-
Selenium (Se)-Total	-
Silicon (Si) – Total	10.0 / 20.0
Silver (Ag)-Total	0.001 - 0.008
Sodium (Na)-Total	-
Strontium (Sr)-Total	-
Sulphur (S) – Total	-
Tellurium (Te)-Total	0.004 / 0.008
Thallium (Tl)-Total	0.0004
Tin (Sn)-Total	0.02 / 0.04
Titanium (Ti)-Total	0.2 / 0.4
Uranium (U)-Total	0.0004
Vanadium (V)-Total	0.02 - 0.08
Zinc (Zn)-Total	-
Zirconium (Zr)-Total	0.04 / 0.08
Methyl Mercury (MeHg) - Total	-
Lipid Content	-

DL = Detection Limit; % = percent; mg/kg ww = milligrams per kilogram wet weight; - = all samples above DL.
Note: Parameters with DL ranges indicate more than two DL were reported.

4.0 SYNTHESIS

4.1 Narrative Summary

A total of 1073 samples were submitted for fish tissue chemistry analysis: 663 samples were collected in 2014, and 286 samples were collected in 2015. The narrative summaries in Tables 1 and 2 highlight that:

- Many samples were collected from the exposure site in Quesnel Lake near the mouth of Hazeltine Creek. Several species/tissue types were collected in both 2014 and 2015 from this location, with sample sizes of more than 10 samples.
- Many of the remainder of the fish tissue data in terms of sample location, fish species, and tissue type had limited number of samples, which will likely reduce statistical power in any future analysis of spatial or temporal patterns. It may be necessary to group data (e.g., a general comparison of exposure to reference in lieu of specific locations correlated by proximity to the tailings release).
- Different types of tissue are used in the ecological and human health risk assessments. The general practice is that ecological risk assessments for piscivores would focus on whole-body and organ-specific tissue chemistry, while human health risk assessment would focus on muscle tissue data. The diversity of tissue types will need to be considered in the calculation of representative worst case concentrations for different receptor groups.

As part of the compilation of the various datasets, it was necessary to make several inferences due to an ambiguity in the accompanying field notes. These assumptions are listed in Attachment 1.

4.2 Basic Descriptive Statistics

4.2.1 Summary Statistics and Magnitude of Difference

Summary statistics for the available fish tissue chemistry data are provided in Attachment 2, and include:

- Number of samples (n);
- Percent of samples with a concentration greater than the detection limit;
- Minimum, median and maximum concentration; and
- Mean concentration, standard deviation, and standard error.

Attachment 2 also includes a comparison between exposure and reference and/or year for a subset of sites, species, and tissue types, where sufficient data was available. The magnitude of the difference (as a percentage of the median) was calculated if:

- Greater than (>) 50 percent (%) of samples were > DL;
- There were at least four samples in each data set available for comparison.

As an example, the magnitude difference between exposure and reference sites was calculated as follows:

$$Magnitude\ Difference\ (\%) = \frac{(Exposure\ Median - \ Reference\ Median)}{Reference\ Median} \times 100$$

4.2.2 Censored Boxplots

Fish tissue chemistry data were plotted for each metal by species, tissue type and waterbody using censored boxplots as described in Barrett et al. (2014). Boxplots are provided in Attachment 3, and focused on the following three broad comparisons:

- Exposure versus reference based on 2014 data;
- Exposure versus reference based on 2015 data; and
- 2014 data versus 2015 data.

Censored boxplots were created as follows:

- Data sets with six or more samples were plotted using censored boxplots. Data sets with less than six samples, or when few samples had concentrations greater than the detection limit were plotted as individual values. This approach was used because boxplots can provide a misleading representation of the data distribution when sample sizes are small.
- The box of the boxplot was defined as the 25th percentile, the 75th percentile, and the median. The lower whisker was defined as the minimum concentration within 1.5 times the interquartile range (IQR) below the 25th percentile; the upper whisker was defined as the maximum concentration within 1.5 times the IQR above the 75th percentile. Concentrations outside of the range of the whiskers were plotted as individual values.
- The boxplots were censored at the DL (Helsel 2005) using the maximum DL if multiple detection limits exist within the dataset. Concentrations below the DL were represented by open symbols at half the DL. The approximate proportion (e.g., <25% or 25% to 50%) of concentrations below DL can be determined by the sections of the boxplot that are censored (and are reported in Attachment 2).

The purpose of these boxplots was to provide a visual representation of the available fish tissue chemistry data in an exploratory format and to identify obvious changes in tissue chemistry. Subdivision of the data by species, sample type, location and year produced a substantial number of boxplots. The boxplots are not considered to be a statistical analysis, but are provided to facilitate a visual inspection of the data. When summarizing the observations from the data, if the boxplots overlapped between reference and exposed sites, this was taken to indicate that the populations were similar. When boxplots did not overlap, this was considered an indication that the populations may be different. Preliminary observations included:

- Boxplots were not created for a number of fish species and/or sites because there was insufficient samples. As noted above in Section 4.1, the available data was collected opportunistically, and as a result, some of the data are insufficient to draw conclusions about metal concentrations for a given location or species.
- Beryllium and lithium concentrations were below DL in greater than 50% of samples in all species, while chromium, lead, nickel, and vanadium were below DL in greater than 50% of samples in many fish species. From a statistical perspective, a large proportion of non-detectable values means that further detailed analysis is unlikely to be defensible. From a toxicological perspective, a large number of non-detectable values in multiple species, and in both reference and exposed locations, suggests that bioaccumulation of those specific metals is limited.
- Silver and titanium were only analyzed for a small subset of samples submitted to the laboratory by BC MoE in 2014; therefore, no comparisons could be made for these metals (and no boxplots were created).

4.2.3 Regression Analysis

Censored boxplots are presented for mercury and selenium in Attachment 2. A linear regression analysis for tissue concentration against fish length as a covariate was conducted (Attachment 4). Regression plots were created in Excel; outliers were removed if the standardized residual was >3. A statistical significance, or P-value (P), of <0.1 was used to identify statistically significant regression relationships. The purpose of performing the regression analyses was to account for variability in fish size as potential source of bias in the comparison of fish tissue chemistry. Both selenium and mercury have the potential to biomagnify in the food web and differences in fish size could reflect differences in fish diet that could influence the apparent difference (or lack thereof) in the comparison between exposure and reference sites. A statistically significant regression relationship between fish length and metal concentration supports the conclusion that differences in fish size would need to be considered as a potential bias. If the size of fish collected overlap, and the regression is significant, the magnitude of the difference between exposure and reference (or between years) in metal concentrations is determined visually by examining the regression plots (Attachment 4). If the size of the fish collected do not overlap between groups, differences in mercury and selenium concentrations cannot be fully assessed. If the size of the fish do overlap, but the regression was not significant, the magnitude of the difference between exposure and reference (or between years) in metal concentrations is determined visually by examining the censored boxplots (Attachment 2), and/or by consideration of the magnitude calculations. General observations of the regression analyses include:

- The mercury-length regression was most often significant in muscle and whole-body tissue samples of piscivorous species (e.g., lake trout and northern pikeminnow). In some instances, mercury-length regressions were also significant in liver and kidney tissue samples of these species.
- The selenium-length regression was not significant in the majority of species and tissue types; selenium-length regressions were only significant in kokanee (muscle, liver and ovary from reference sites only), lake trout (only in kidney tissue), northern pikeminnow (whole body from reference sites only), and sockeye (muscle, and whole body from reference sites only).
- Of those regressions that were significant, both mercury and selenium relationships were positive for the majority of analyses, with the exceptions of kokanee (ovary, exposure sites only), northern pikeminnow (whole body, exposure sites only), and sockeye salmon (muscle, reference sites only).
    - The mercury-length regression relationships were significant (P <0.1) at one or more sites in kokanee (2014 muscle and ovary), lake trout (all years, muscle, liver, and kidney), largescale sucker (2015 muscle), northern pikeminnow (2014 whole body), rainbow trout (all years, muscle, liver and kidney), and sockeye salmon (2014, muscle liver, and whole body).
    - The selenium-length regression relationships were significant (P<0.1) at one or more sampling sites in kokanee (2014 liver and ovary, 2014 and 2015 muscle), lake trout (2015 kidney), northern pikeminnow (2014 whole body), and sockeye salmon (2014 muscle, liver and whole body).
- A regression analysis for peamouth chub collected in 2015 was not conducted because fish length data were not available.

These observations highlight that a definitive conclusion about whether or not mercury or selenium have increased in fish tissue in the study area as a result of the tailings deposit will need to consider the site-specific ecology in the context of the variability between tissues, species, and sites. This level of analysis would typically be conducted in the detailed quantitative risk assessment. Boxplots for selenium and mercury should be considered in this context, and are intended primarily to illustrate if there are gross differences in concentration that would highlight a topic for further evaluation.

4.3 Guideline Comparisons

Fish tissue metal concentrations were compared to provincial and national guidelines when available. There are guidelines for arsenic, mercury and selenium.

- Fish protein is subject to Canadian Food Inspection Agency (CFIA, 2015) guidelines concerning the sale of fishery products for human consumption: arsenic concentrations must be below 3.5 mg/kg ww for human consumption. Golder notes that the Health Canada guideline for protein concentrate is being used to screen intact fish tissues; therefore, it is used for preliminary comparisons only.
- The CFIA and Health Canada guidelines state that fish collected for commercial use may contain a maximum of 0.5 mg/kg ww mercury to be approved for human consumption (CFIA 2015).
- The BC MoE (2014) in collaboration with the Ministry of Health recommended screening values for selenium concentrations in fish for human consumption. The screening values are 7.3 ug/g dw for subsistence consumers, 14.5 ug/g dw for the general population and 75 ug/g dw based on the recommended two servings of fish per week.
- BC MoE also contains tissue-based guidelines for selenium for fish ovary, whole body and muscle (BC MoE 2016) for environmental protection: 11 mg/kg dw for fish ovary and 4 mg/kg dw for whole body and muscle. For the purposes of comparison to the BC MoE guideline, selenium data are presented in mg/kg dw herein. All other metal concentrations are presented in mg/kg ww. From a toxicological perspective, the preferred tissue for evaluating the potential for adverse effects to fish populations will be eggs and ripe ovary tissues (McDonald and Chapman 2007l Janz 2012). BCMOE (2014) derived the guideline of 11 mg/kg dw by applying a 2-fold safety factor to a toxicological effects threshold of approximately 22 mg/kg dw observed for cold-water salmonids such as rainbow trout. This guideline is intended to provide a protective screening value in the absence of a detailed site-specific evaluation. Golder notes that the approach for deriving site-specific science-based benchmarks for quantitative risk assessment of selenium is an evolving topic.

The proportion of samples above guidelines is reported by species (including all species for which data are available) and tissue type. The primary comparison for arsenic and mercury is for muscle tissue because this sample type is the most frequently consumed portion of the fish. However, liver and kidney may be consumed by some populations, and therefore, Golder has conservatively retained those comparisons in this data summary. General observations regarding the number of exceedances of these guideline values are as follows.

- There were no arsenic guideline exceedances observed in lake trout, peamouth chub, rainbow trout, or sockeye salmon from the study area in 2014 or 2015. There was one burbot liver sample (Quesnel Lake Hazeltine Creek Confluence, collected in 2014) with an arsenic concentration of 5.1 mg/kg ww.
- Mercury concentrations exceeded the CFIA guideline of 0.5 mg/kg ww in 30 fish tissue samples collected from the study area in 2014, and in 19 samples collected from the study area in 2015 (Table 4). Some of these exceedances occurred in fish from the reference areas. Mercury concentrations that were greater than the CFIA mercury guideline in 2014 ranged from 0.506 to 2.5 mg/kg ww. This does not necessarily imply a risk to human health: fish consumption advisories consider both the magnitude and frequency of exceedances using an aggregate measure of fish consumption over time.

Table 4: Summary of Mercury Tissue Exceedances

Year	Species	Location	Type and Number
2014	Burbot	Quesnel Lake Horsefly River Confluence (exposure)	1 of 1 muscle
	Burbot	Quesnel Lake Hazeltine Creek Confluence (exposure)	4 of 12 muscle and 2 of 12 liver samples
	Lake trout	Quesnel Lake Hazeltine Creek Confluence (exposure)	5 of 51 muscle, 15 of 51 liver, and 1 of 33 ovary sample
	Rainbow trout	Quesnel Lake near Quesnel River (exposure)	1 of 2 muscle and 1 of 2 liver sample
2015	Burbot	Quesnel Lake East (reference)	1 of 7 muscle
	Lake trout	Quesnel Lake Hazeltine Creek Confluence (exposure)	1 of 10 muscle, 1 of 10 liver, and 2 of 9 kidney
	Lake trout	Quesnel Lake East (reference)	1 of 10 muscle, 2 of 10 liver, and 5 of 10 kidney
	Rainbow trout	Trio Lake (reference)	1 of 8 muscle, 2 of 8 liver, and 3 of 8 kidney

Selenium concentrations that exceed the BC MoE screening values for the protection of First Nation subsistence consumers and the general population are outlined in Table 5. The screening value for the protection of First Nation subsistence consumers of 7.3 ug/g dw was based on a fish ingestion rate of 220 g/day (Health Canada, 2004). The screening value for the protection of the general population of 17.5 ug/g dw was based on a fish ingestion rate of 111 g/day (Health Canada, 2004). Concentrations of selenium in muscle, liver and ovary tissue were compared to the guidelines. Further input is needed from the Williams Lake and Soda Creek First Nations regarding appropriate fish tissue to consider for local consumption.

Table-5: Summary of Selenium Exceedances in Fish Tissue Samples Compared to Screening Values for the Protection of Human Health.

Guideline	Year	Species	Location	Type and Number
Low Fish Intake (75 mg/kg dw) Recreational Fishers	2014	Rainbow Trout	Bootjack Lake (reference)	2 of 8 liver
		Rainbow Trout	Polley Lake (exposure)	3 of 15 liver
		Rainbow Trout	Quesnel Lake near Quesnel River (exposure)	1 of 2 liver
		Rainbow Trout	Quesnel River (exposure)	1 of 12 liver
		Sockeye Salmon (adult)	Horsefly River (exposure)	8 of 30 liver
		Sockeye Salmon (adult)	Soda Creek (reference)	3 of 30 liver
	2015	Kokanee	Quesnel Lake near Quesnel River (exposure)	1 of 8 liver
		Rainbow Trout	Polley Lake (exposure)	3 of 8 liver
Moderate Fish Intake (14.5 mg/kg dw) General Population	2014	Burbot	Quesnel Lake Hazeltine Creek (exposure)	2 of 12 liver
		Kokanee	Quesnel Lake near Quesnel River (exposure)	10 of 10 liver
		Kokanee	Quesnel Lake North Arm (reference)	10 of 10 liver
		Lake Trout	Quesnel Lake Hazeltine Creek (exposure)	1 of 51 liver
		Rainbow Trout	Bootjack Lake (reference)	6 of 8 liver
		Rainbow Trout	Polley Lake (exposure)	14 of 15 liver
		Rainbow Trout	Quesnel Lake near Quesnel River (exposure)	2 of 2 liver
		Rainbow Trout	Quesnel River (exposure)	2 of 3 ovary, 8 of 12 liver, 1 of 12 muscle
		Sockeye Salmon (adult)	Soda Creek (reference)	30 of 30 liver
		Sockeye Salmon (adult)	Horsefly River (exposure)	30 of 30 liver
	2015	Kokanee	Quesnel Lake near Quesnel River (exposure)	8 of 8 liver
		Rainbow Trout	Bootjack Lake (reference)	1 of 8 liver
		Rainbow Trout	Polley Lake (exposure)	8 of 8 ovary, 8 of 8 kidney, 8 of 8 liver
		Rainbow Trout	Quesnel River (exposure)	6 of 8 liver
		Rainbow Trout	Trio Lake	8 of 8 liver
		Sockeye Salmon (juvenile)	Quesnel Lake East (reference)	1 of 3 liver
		Sockeye Salmon (juvenile)	Quesnel Lake North Arm (reference)	1 of 3 liver
		Sockeye Salmon (juvenile)	Quesnel Lake Middle (exposure)	1 of 4 liver
		Sockeye Salmon (juvenile)	Quesnel Lake West (exposure)	1 of 7 liver

Guideline	Year	Species	Location	Type and Number
High Fish Intake (7.3 mg/kg dw) First Nation Subsistence	2014	Burbot	Quesnel Lake Hazeltine Creek (exposure)	1 of 8 ovary, 2 of 12 liver
		Kokanee	Quesnel Lake Quesnel River (exposure)	10 of 10 liver
		Kokanee	Quesnel Lake North Arm (reference)	10 of 10 liver
		Lake Trout	Quesnel Lake Hazeltine Creek (exposure)	36 of 51 liver
		Longnose Sucker	Polley Lake (exposure)	3 of 16 whole body
		Mountain Whitefish	Quesnel Lake Hazeltine Creek (exposure)	3 of 3 ovary, 3 of 4 liver
		Rainbow Trout	Bootjack Lake (reference)	1 of 1 ovary, 8 of 8 liver
		Rainbow Trout	Polley Lake (exposure)	1 of 2 ovary, 14 of 15 liver
		Rainbow Trout	Quesnel Lake near Quesnel River (exposure)	2 of 2 liver
		Rainbow Trout	Quesnel River (exposure)	3 of 3 ovary, 10 of 12 liver, and 1 of 12 muscle
		Sockeye Salmon (adult)	Horsefly River (reference)	30 of 30 liver
		Sockeye Salmon (adult)	Soda Creek (reference)	4 of 30 ovary, 30 of 30 liver
		Sockeye Salmon (juvenile)	Quesnel Lake North Arm (reference)	3 of 3 liver
		Sockeye Salmon (juvenile)	Quesnel Lake Middle (exposure)	1 of 3 liver
		Sockeye Salmon (juvenile)	Quesnel Lake West (exposure)	6 of 6 liver
	2015	Burbot	Quesnel Lake Hazeltine Creek (exposure)	1 of 1 ovary
		Kokanee	Quesnel Lake Quesnel River (exposure)	8 of 8 liver
		Lake Trout	Quesnel Lake Hazeltine Creek (exposure)	2 of 9 kidney, 1 of 10 liver
		Lake Trout	Quesnel Lake East (reference)	3 of 10 kidney, 2 of 10 liver
		Rainbow Trout	Bootjack Lake (reference)	7 of 8 liver
		Rainbow Trout	Polley Lake (exposure)	8 of 8 ovary, 8 of 8 kidney, 8 of 8 liver
		Rainbow Trout	Quesnel River (exposure)	1 of 1 ovary, 7 of 8 kidney, 8 of 8 liver
		Rainbow Trout	Trio Lake	3 of 8 kidney, 8 of 8 liver
		Sockeye Salmon (juvenile)	Quesnel Lake North Arm (reference)	3 of 3 liver
		Sockeye Salmon (juvenile)	Quesnel Lake Middle (exposure)	4 of 4 liver
		Sockeye Salmon (juvenile)	Quesnel Lake West (exposure)	7 of 7 liver
		Sockeye Salmon (juvenile)	Quesnel Lake East (reference)	3 of 3 liver

Note: Samples from Polley Lake rainbow trout in 2015 are potentially anomalous.

Selenium concentrations that exceed the BC MoE guideline for Environmental Protection are outlined in Table 6. Selenium concentrations in 2014 exceeded BC MoE guidelines in 4 ovary samples (12.6 to 18.1 mg/kg dw), 3 muscle samples (4.3 to 18.1 mg/kg dw) and 21 whole body samples (4.2 to 8.5 mg/kg dw). Selenium concentrations in 2015 exceeded BC MoE guidelines in 8 ovary samples (19.3 to 55.7 mg/kg dw), 6 muscle samples (4.6 to 6.9 mg/kg dw) and 1 whole-body sample (4.1 mg/kg dw). Data from eight rainbow trout collected from Polley Lake in the spring of 2016 were also analyzed on a rush basis. Selenium concentrations in these 2016 fish exceeded or met BC MoE guidelines in 3 ovary samples (11 to 14.2 mg/kg dw). Data from other tissues, species and sampling locations are still being processed by the analytical laboratory. Further validation of the 2015 rainbow trout ovary samples is being conducted by the analytical laboratory in light of the potential anomaly (i.e., ovary concentrations in Polley Lake rainbow trout are substantially higher in 2015 than in either 2014 or 2016). Additional context about the potentially anomalous data is provided below in Section 5.3.2.

Table 6: Summary of Selenium Tissue Exceedances for Environmental Protection

Year	Species	Location	Type and Number
2014	Longnose sucker	Polley Lake (exposure)	1 of 1 muscle
	Rainbow trout	Polley Lake (exposure)	1 of 15 muscle and 1 of 2 ovary
	Rainbow trout	Quesnel River (exposure)	1 of 12 muscle and 3 of 3 ovary
	Rainbow trout	Quesnel Lake near Quesnel River (exposure)	1 of 2 muscle
	Longnose Sucker	Polly Lake (exposure)	16 of 16 whole-body
	Northern Pikeminnow	Quesnel Lake Hazeltine Creek Confluence (exposure)	2 of 36 whole-body
	Northern Pikeminnow	Quesnel Lake Horsefly River Confluence (exposure)	1 of 10 whole-body
	Northern Pikeminnow	Quesnel Lake North Arm (reference)	1 of 31 whole-body
	Rainbow trout	Polly Lake (exposure)	1 of 3 whole-body
2015	Largescale Sucker	Quesnel Lake Hazeltine Creek Confluence (exposure)	1 of 8 muscle
	Peamouth Chub	Quesnel Lake Hazeltine Creek Confluence (exposure)	1 of 8 whole-body
	Rainbow trout	Polley Lake (exposure)	5 of 8 muscle and 8 of 8 ovary
2016	Rainbow trout	Polley Lake (exposure)	3 of 8 ovary

Note: Additional fish tissue samples from 2016 are being analyzed. Ovary samples from Polley Lake rainbow trout in 2015 are potentially anomalous.

5.0 FURTHER EVALUATION OF SELECTED SPECIES AND METALS

5.1 Risk Assessment and Toxicological Context

As noted in Section 2, fish tissue chemistry data were reviewed in further detail for selected combinations of metals and fish species and/or sample types to provide early context for how the data will be integrated into the ecological and human health risk assessment. The risk assessment focuses on evaluating source, exposure pathways and receptors that are retained for quantitative analysis at the completion of the problem formulation. Fish tissue chemistry data would typically be used to develop a realistic, worst-case exposure estimate for each receptor being evaluated. This receptor-specific evaluation means that different parts of the fish tissue chemistry data set would be used for each receptor, depending on a variety of factors such as fish ecology, variability in the data, and the strength of association between the chemistry data and the underlying assessment endpoint. Ultimately, fish tissue can be used as part of the following three measurement endpoints:

- Bioaccumulation by fish – Increased accumulation of metals in fish tissue can cause adverse effects to the fish themselves.
- Consumption of fish by humans --- Increased metals concentrations in muscle samples from large bodied fish caught for recreation or sustenance can contribute to risks to human receptors. Further input is needed from the Williams Lake and Soda Creek First Nations regarding appropriate fish tissue to consider for local consumption.
- Consumption of fish by ecological receptors – Increased metals concentrations in whole-body samples from smaller fish can contribute to risks to piscivorous fish and wildlife. Increased metals concentrations in muscle or organ samples can also contribute to increased risk to higher trophic level wildlife such as bears or raptors which might preferentially feed on these parts of this fish instead of consuming the whole body.

Metal uptake varies among fish species and tissue types, and is dependent upon source (i.e., exposure from the water, food, or both), environmental conditions (e.g., water temperature, pH, hardness), exposure frequency, exposure duration (i.e., acute or chronic), and tissue function (e.g., storage versus elimination capacity). Key factors that need to be considered in the risk assessment in terms of selecting specific fish species or tissue types to generate the realistic worst-case exposure estimates include:

- For metals that have the potential to biomagnify (e.g., mercury and selenium), fish age, size, or trophic level will influence tissue concentrations (Jezierska and Witeska 2006). Food-borne metal concentrations will have larger influences on exposure than the concentrations of these metals in the water (Wood et al. 2012).Trophic level is important in selecting species for monitoring and evaluating exposure scenarios.
- For nutritionally essential metals (e.g., copper, selenium, and zinc), physiological mechanisms exist for uptake of the metals from the environment and depuration, because they are required in trace amounts for biological life (i.e., due to their participation in metabolic reactions; Jeffrey 2001 in Wood et al. 2012).
- Some metals are known to accumulate to a greater degree in specific tissues. In some instances, tissue-specific samples are more relevant for evaluating the potential for direct effects to fish than muscle tissue or whole-body samples. Some general considerations include:
  - Arsenic –- The potential for arsenic to be taken up from the water may be substantially different among fish species, varying by orders of magnitude (Wood et al. 2012). Upon uptake by fish, arsenic tends to accumulate primarily in liver, and to a lesser degree in the muscle and kidney tissue (Oladimeji et al. 1979 in Wood et al. 2012).

- Cadmium – Cadmium is rapidly absorbed in fish first by the liver, and then by the kidney (Chowdhury et al. 2003 in Wood et al. 2012); however, the primary organ for long-term storage of cadmium in fish is the kidney. Cadmium has also been shown to accumulate in the gills and intestine, but not significantly in muscle tissue (Wood et al. 2012).
- Copper – Copper primarily accumulates in the liver, accounting for 40%-90% of whole-body copper concentrations in fish (Miller et al., 1992; 1993).
- Mercury - Mercury is primarily accumulated in muscle tissue of fish; however, mercury accumulates first in the gills, intestine, kidney, and liver tissues following water- or food-borne exposures. Mercury is incorporated into the tertiary structure of proteins, so is not easily depurated over time.
- Selenium - Fish primarily accumulate selenium in the liver and kidney, followed by the ovary, muscle and bone (Muscatello et al. 2006 in Wood et al. 2012); however, the most important organ with respect to fish health is the ovary. This is because selenium is maternally transferred to developing eggs, leading to toxicity to developing larvae (BC MoE 2016).

- Fish mobility (i.e., home range size) will also influence bioaccumulation. Fish with large home ranges may avoid impacted areas and thereby reduce their overall exposure. Some species (i.e., adult sockeye salmon) are transitory and would only be in contact with impacted waters as they migrate to their natal streams. Salmon are unlikely to be feeding during their migration which will further reduce their dietary exposure. Conversely, fish with small home range sizes (e.g., small-bodied fish) are more likely to remain in direct contact with the impacted area, and therefore, their exposure will be more closely linked to the water-borne and dietary exposure conditions within their home range. If a fish was captured from an immediately impacted area (e.g., Quesnel Lake at the Hazeltine Creek confluence), they will most reflect the conditions of exposure in that area if they have a small home range size.

5.2 Selection of Representative Fish Species and Locations

For the purposes of this preliminary evaluation, Golder selected a subset of fish species for which there were adequate data (e.g., at least 8 samples in both exposure and reference sites; sampled in both years) and focused on species that represent small-bodied fish that are more likely to reflect local conditions and large bodied fish that likely reflect exposure in a larger area and are valued for human consumption. The following species were selected:

- Peamouth chub and juvenile sockeye salmon were selected as a representative small-bodied fish that are expected to occupy a smaller home range (relative to large-bodied fish such as lake trout or rainbow trout) and would be consumed by piscivorous fish. Definitive data regarding peamouth chub home range size are not currently available, but literature supports this assumption (e.g., Environment Canada 1995). There is also an adequate number of peamouth chub samples from both exposed and reference sites in both years. Juvenile sockeye salmon were also considered to occupy a smaller home range, although they move from their spawning habitats out in to the open lakes as they mature.
- Lake trout and rainbow trout were selected as representative larger-bodied fish that are likely to be consumed by humans (and potentially, by large piscivorous wildlife). There are also adequate numbers of lake trout and rainbow trout samples from both exposed and reference sites in both years.
- Adult sockeye salmon were excluded because the duration and frequency of their time in impacted areas is limited to migration back to their natal streams. Feeding during this time is expected to be minimal. Juvenile sockeye are included because they would be residents within the study area and are of concern to many stakeholders.

The primary focus of the comparison was between locations that shared a similar ecology. For example, fish samples from Polley Lake were compared to samples from Bootjack Lake or Trio Lake. Fish samples from exposed sites in Quesnel Lake were compared to reference sites in Quesnel Lake.

5.3 Findings

5.3.1 Consumption by Humans

Figure 2 provides a summary of the available boxplots for specific metals in the muscle samples from large-bodied fish species. As described above, lake trout, rainbow trout and juvenile sockeye salmon were identified as a reasonable surrogate for the preliminary consideration of this pathway. Individual boxplots with pair-wise comparisons for different sites, species and years are provided in Attachment 2. The purpose of Figure 2 is to highlight whether there are obvious changes in metal accumulation between reference and exposed sites, or between years that would indicate that there has been a change in tissue concentrations. In brief, results are summarized as follows:

- Arsenic concentrations in muscle samples were variable among reference and the exposed sites. Samples from Polley Lake rainbow trout appeared to be similar to Bootjack and Trio Lake rainbow trout, as well as rainbow trout collected from Hazeltine Creek prior to the release of tailings. The boxplots for rainbow trout and lake trout caught in exposed sites in Quesnel Lake overlapped with the boxplots for lake trout collected from the reference sites in Quesnel Lake, indicating that there was not a significant increase in fish tissue concentrations observed. All measured concentrations were less than the tissue guideline.
- Copper concentrations in muscle samples were similar among reference and exposed sites.
- Mercury concentrations in muscle samples appeared to be similar between exposed sites and reference sites. The maximum observed concentrations were observed in Trio Lake[3] and Quesnel Lake (East) which were sampled as reference areas. About 10% lake trout muscle samples from both exposed and reference areas of Quesnel Lake had tissue concentrations that exceeded the muscle tissue guideline for the protection of human health.
- Selenium concentrations in rainbow trout muscle from 2015 Frypan Creek (tributary to Polley Lake) were frequently higher than the tissue guideline for environmental protection, and appear to be elevated relative to the applicable references sites (i.e., Bootjack Lake, Trio Lake). These samples are part of the same certificate of analysis as the anomalous ovary data and data validation has not yet been completed. The selenium concentrations measured in Frypan Creek rainbow trout muscle did not exceed the screening value for First Nation subsistence fish consumers. Selenium concentrations in Polley Lake rainbow trout muscle appear similar to those observed in Hazeltine Creek rainbow trout, which were collected prior to the release of tailings.
- Zinc concentrations in muscle tissue appeared to be generally consistent between exposed and reference sites, and were also lower than the median concentrations measured in Hazeltine Creek rainbow trout, which were collected prior to the release of tailings.

[3] Based on the metals concentrations found in fish tissue from Trio Lake, it was observed that Trio Lake should be reviewed as a reference location

5.3.2 Bioaccumulation by Fish

Figure 3 to 5 provide summaries of the available fish tissue chemistry data for organ-specific samples presented as censored boxplots for the specific metals identified. Individual censored boxplots showing comparisons of exposure and reference sites, species and years are provided in Attachment 2. The purpose of the five summary figures presented herein is to highlight changes in metal concentrations between reference and exposed sites, or between years in tissues that have been associated with metal accumulation. In brief, results are summarized as follows:

- For arsenic and copper, liver concentrations were generally consistent between the exposed and reference sites (e.g., Polley Lake compared to Bootjack and Trio Lakes; Quesnel Lake (Quesnel River) compared to Quesnel Lake (East)). One potential exception is juvenile sockeye salmon from Quesnel Lake (West) which tended to have higher liver arsenic and copper concentrations than those observed in other species. There are no juvenile sockeye salmon liver samples from reference sites, and therefore, it is not clear whether this is a species-specific difference (i.e., sockeye accumulate more arsenic in their liver than rainbow trout) or a potential site-specific influence. For arsenic in kidney samples, there may be an increased concentration in the exposed site (Quesnel River) compared to the relevant reference site (Quesnel Lake – East). This was not observed in the Polley Lake to Trio Lake comparison. Kidney concentrations were generally consistent for other metals (i.e., boxplots tended to overlap).
- Mercury concentrations in fish liver were variable for both the reference sites and exposed sites. Some of these concentrations exceeded the fish tissue guideline. Liver tissue is not commonly consumed, but Golder would welcome input on this from the Williams Lake and Soda Creek First Nations.
- For zinc, a similar pattern was observed in sockeye salmon livers as was observed for arsenic and copper (i.e., zinc concentrations in juvenile sockeye are higher than those observed in other species). There was no relevant reference site for sockeye salmon. There was no visually evident difference in zinc liver concentrations for the other species. There may be an increase in zinc kidney concentrations based on the lack of overlap in the boxplots for Quesnel River versus Quesnel Lake (East); however, the magnitude of this difference is quite low.
- Concentrations of vanadium in fish liver samples were generally consistent between reference and exposed sites and between 2014 and 2015 and many concentrations were below the detection limit.

A potential anomaly for selenium was identified. Specifically, ovary concentrations in rainbow trout collected from Polley Lake (Frypan Creek) in 2015 showed a substantial increase relative to ovary concentrations in rainbow trout collected from Hazeltine Creek or Bootjack Lake in 2014 (Figure 5). A similar increase was noted in rainbow trout kidney (Figure 4) and muscle samples (Figure 2) for the same individual fish. These data was contained in a single certificate of analysis, and therefore, the analytical laboratory was requested to provide further validation (currently in progress). No obvious calculation errors have been found to this point, and further validation checks are underway. These concentrations were considered potentially anomalous based on the magnitude of the increase, the lack of a similar magnitude of increase in water or fish dietary concentrations, and:

- Consideration of rainbow trout muscle and ovary data for a broader range of dates. Data were assembled from monitoring data collected prior to the tailings release, and a rush analysis was requested for rainbow trout samples collected in the spring of 2016. Figure 7 provides plots of the individual fish concentrations grouped by year and sampling location. The 2015 ovary samples were markedly elevated in the context of both pre-tailings monitoring, as well as two of the three years of post-tailings data. The concentrations in 2015 were not duplicated in the 2016 sampling, despite the fact that a number of the 2016 fish were collected from the same location as those collected in 2015.

- Consideration of the ratio of egg:muscle samples. The ratios of concentrations were calculated for individual fish and are summarized in Figure 8. The median ratio for all rainbow trout (excluding the potential anomalous fish) was 2.2, which is consistent with the median ratio of 2.3 observed for rainbow trout measured from a range of selenium-impacted sites (deBruyn and Costa 2015). The median ratio observed for the potentially anomalous fish (i.e., the eight 2015 rainbow trout from Polley Lake) was 7.9. Although site-specific variation in the ratio would be expected, the magnitude of the departure for the specific subset of potentially anomalous fish relative to the overall population of fish throughout the watershed provides further evidence that the rainbow trout data from 2015 may not be representative of the population as a whole.

Golder is also pursuing the alternative hypothesis that the data from 2015 are valid and potentially representative by expanding on the preliminary analysis summarized in Figures 7 and 8. Notwithstanding the potential for anomalous data in a subset of the available data, Golder recommends further evaluation of long-term trends in selenium concentrations and their potential for adverse effects to aquatic populations because there have been several other rainbow trout with an ovary concentration greater than the guideline value of 11 mg/kg, and a number of muscle or whole-body samples from a variety of species with a tissue concentration greater than the guideline value of 4 mg/kg dw. An exceedance of the generic guideline does not necessarily indicate that there is a risk to fish populations because guidelines are based on a conservative evaluation of the available scientific literature. Toxicological thresholds will vary for different species, and the available rainbow trout ovary concentrations (excluding the potential anomalous data) does not exceed the lowest reported species-specific EC10 value of 21 mg/kg dw cited by BCMOE (2014; various re-analysis of Holm et al 2005). Further evaluation of the potential effects of selenium on aquatic communities will need to consider a variety of field- and laboratory-based lines of evidence and establish that there is a cause-effect relationship between increased selenium in the environment from mine influences and a relevant population-level effect for fish (cf. McDonald and Chapman 2007 for an example of a weight-of-evidence framework designed for selenium).

5.3.3 Consumption by Piscivores

Figure 6 provides a summary of the available boxplots for specific metals in the available whole body peamouth chub and juvenile sockeye salmon samples. As described above, peamouth chub and juvenile sockeye salmon were considered reasonable surrogates for the preliminary consideration of potential risks to piscivorous wildlife. Individual boxplots with pair-wise comparisons for different sites, species and years are provided in Attachment 2. The purpose of this summary figure is to highlight whether there are obvious changes in metal accumulation between reference and exposed sites, or between years that would indicate that this pathway is operable. An operable pathway would require further in-depth evaluation as part of the detailed risk assessment.

Cadmium, mercury and selenium concentrations may be elevated in whole body peamouth chub samples collected from Quesnel Lake at Hazeltine Creek relative to Quesnel Lake in the North Arm, based on the lack of overlap in their boxplots. Conversely, the box plots overlapped for zinc and copper, indicating that the concentrations were similar between exposed and reference fish. This comparison is limited to one exposed site (Quesnel Lake – Hazeltine Creek) compared to one reference site (Quesnel Lake – North Arm).

For juvenile sockeye salmon, arsenic concentrations may be higher in whole body samples from exposed compared to reference and also higher in 2015 compared to 2014. For mercury, a difference in fish length did not allow a comparison between exposed and reference fish. There were no apparent spatial or temporal trends in the whole body concentrations of copper, cadmium, selenium and zinc in juvenile sockeye salmon.

6.0 CONCLUSIONS AND NEXT STEPS

The primary objective of this assignment was to integrate fish tissue data collected by a variety of parties into a single data set, and to complete a basic exploratory analyses of the available data to help determine if there has been a change in metal concentrations in fish as a result of the tailings dam failure. The potential for increased metal concentrations to be present in muscle and whole-body samples is relevant to risks to humans and ecological receptors that feed on fish. Concentrations of metals in liver, kidney or ovary tissues may be a concern for human health if these tissue are consumed, but are generally used to indicate exposure and the potential to lead to chronic effects on fish, either as a result of direct toxicological effects, or as an indirect result as an increased proportion of their metabolic energy is spent on detoxification, storage or excretion processes.

Basic descriptive statistics were calculated and boxplots were visually examined to provide early context about the nature of the available data in light of relevant exposure pathways. Based on this visual examination, Golder concluded:

- Selenium in Polley Lake rainbow trout ovary tissue in 2015 was one of the few metal/tissue combinations that suggest a significant increase in metal accumulation may be present; however, a portion of the data set may be anomalous relative to the preponderance of available selenium tissue data and was not duplicated by data collected in the spring of 2016. Golder recommends further evaluation of long-term trends in selenium concentrations and their potential for adverse effects to aquatic populations. Further effort to determine if the potentially anomalous data are valid is on-going.
- About 10% of lake trout muscle samples from both exposed and reference areas of Quesnel Lake had tissue mercury concentrations that exceeded the muscle tissue guideline for the protection of human health.
- These is some indication that arsenic concentrations may be elevated in liver tissue. There were no exceedances of the Food Directorate guideline observed in muscle tissue samples that would be typically consumed by humans, but there were increases observed in some liver and whole body samples (juvenile sockeye salmon) that suggest concentrations should be monitored over time.
- Whole-body concentrations of mercury and selenium appeared to be elevated in whole body peamouth chub samples collected from Quesnel Lake at Hazeltine Creek relative to Quesnel Lake in the North Arm.
- For copper and vanadium, concentrations in fish tissues did not appear to be different in exposed compared to reference sites.
- For other metal and tissue combinations considered in the above evaluation, this preliminary examination of the data did not reveal a trend.

These observations should be considered in the context of the limitations of the data set. Although a sizeable number of fish have been collected, sampling has been opportunistic and not necessarily connected to a specific hypothesis or study design. Opportunistic sampling has the advantages of providing initial coverage for a wider area with a large number of species, and acts to highlight that bioaccumulation is ultimately based on a large number of inter-dependent species- and location-specific factors. Data are also limited to two years of sampling, even though impacted areas have not necessarily been fully recolonized by aquatic invertebrates that interact directly with deposited tailings and form the base of the food web for the fish community.

The value of this type of a data set is enhanced when it is based on a sampling program that targets specific locations along a representative exposure gradient and focuses on specific species (or functional groups of species) and tissue types with a sufficient number of samples to allow for statistical analysis. A minimum sample size of 8 and a preferred sample size of 20 or more should be considered in future sampling programs to support quantitative statistical analyses. These analyses are central to both the quantitative risk assessment (i.e., a realistic worst-case exposure concentration is typically based on a 95% upper confidence limit of the mean) as well as future monitoring programs (i.e., trends in fish tissue concentrations over time; statistical differences between exposure and reference sites). Sampling effort for reference sites will need to be considered, given that some samples from reference sites were also elevated relative to numerical guidelines.

7.0 CLOSURE

We trust that the information contained in this technical memo is sufficient for your needs at this time. If you have any questions or concerns, please do not hesitate contact us.

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Figures:
- Figure 1 - Fish Tissue Sampling Locations
- Figure 2 - Summary of Available Muscle Chemistry Data for Select Fish Species and Sampling Sites (2014, 2015)
- Figure 3 - Summary of Available Liver Chemistry Data for Select Fish Species and Sampling Sites (2014, 2015)
- Figure 4 - Summary of Available Kidney Chemistry Data for Select Fish Species and Sampling Sites (2015 only)
- Figure 5 - Summary of Available Ovary Chemistry Data for Rainbow Trout from Relevant Sampling Sites (2014, 2015)
- Figure 6 - Summary of Available Whole Body and Carcass Chemistry Data for Sockeye Salmon and Peamouth Chub from Relevant Sampling Sites (2014, 2015)
- Figure 7 - Summary of Ovary and Muscle Chemistry Data for Rainbow Trout with Historical and 2016 Data (Ovary) or Historical Data only (Muscle).
- Figure 8 - Paired Ovary and Muscle Chemistry Data for Rainbow Trout with Historical Data

Attachments:
- Attachment 1 - Field Data Assumptions
- Attachment 2 - Summary Statistics
- Attachment 3 - Fish Tissue Chemistry Censored Boxplots
- Attachment 4 - Fish Tissue Chemistry Regression Plots
- Attachment 5 - Laboratory Data Files

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Frypan Creek
Nyland Lake
Quesnel Lake near Quesnel River
Chiaz Lake
Polley Lake
Passe Lake
Maud Lake
Bootjack Lake
Quesnel Lake West
MOUNT POLLEY MINE
Trio Lake
TAILINGS STORAGE FACILITY
Ben Lake
Hazeltine Creek
Quesnel Lake - Hazeltine Creek Confluence
Skelton Lake
5
km

Quesnel River
Quesnel Lake near Quesnel River
Frypan Creek
Polley Lake
Bootjack Lake
Quesnel Lake West
Trio Lake
Quesnel Lake - Hazeltine Creek Confluence
Hazeltine Creek
Quesnel Lake North Arm
Quesnel Lake Middle
Quesnel Lake East
Quesnel Lake - Horsefly River Confluence
Horsefly River
Soda Creek

LEGEND

FISH TISSUE SAMPLING LOCATIONS

- EXPOSED
- REFERENCE
- FISH TISSUE SAMPLING LOCATION BOUNDARIES

BASE DATA

- TOWN
- ROAD
- WATERCOURSE
- WATERBODY

0 7,500 15,000
1:300,000 METRES

NOTE
1. HAZELTINE CREEK IS CONSIDERED A REFERENCE SITE SINCE SAMPLES WERE COLLECTED PRIOR TO THE BREACH

REFERENCES

1. WATERCOURSE DATA OBTAINED FROM IHS ENERGY INC.
2. ROAD, TOWN AND WATERBODY DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED
3.IMAGERY COPYRIGHT © ESRI AND IT'S LICENSORS. SOURCE: DIGITALGLOBE WV01. USED UNDER LICENCE, ALL RIGHTS RESERVED. IMAGERY DATE: 20100411

DATUM: NAD 83. PROJECTION: UTM ZONE 10

CLIENT
IMPERIAL METALS
MOUNT POLLEY MINING CORPORATION

PROJECT
MOUNT POLLEY TAILING STORAGE FACILITY DAM FALIURE

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-03-22
DESIGNED	AA
PREPARED	CD
REVIEWED	LN
APPROVED	LN

TITLE
FISH TISSUE SAMPLING LOCATIONS

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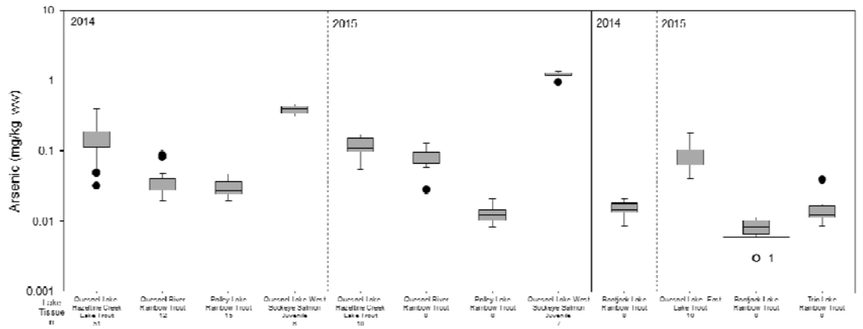
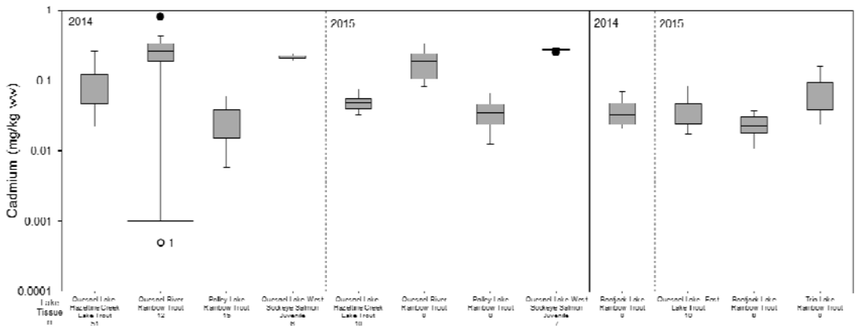
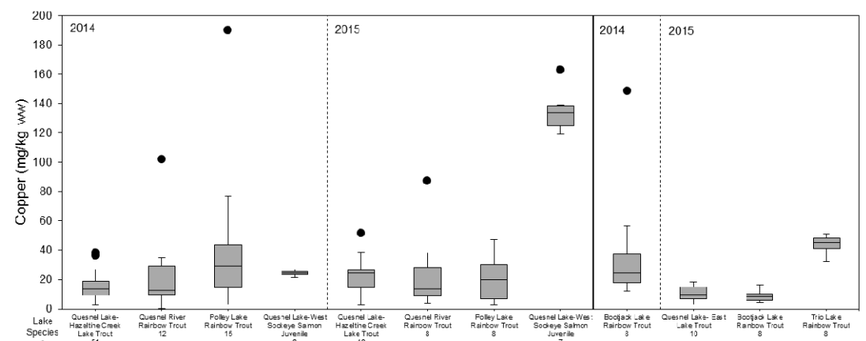
Figure 2. Summary of Available Muscle Chemistry Data for Select Fish Species and Sampling Sites (2014, 2015).

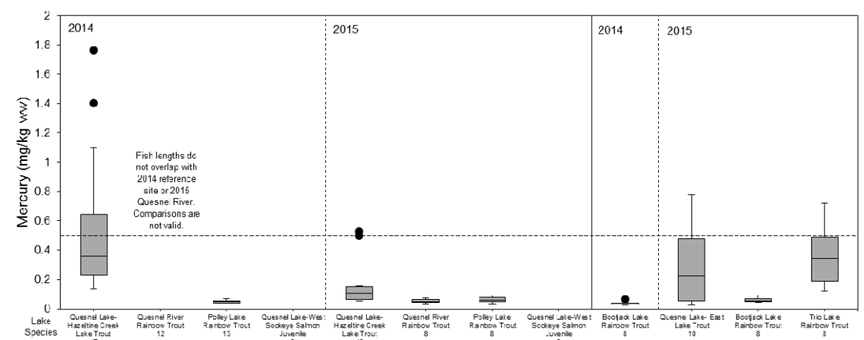
Note: Cadmium and vanadium are not presented because most values were below detection limit with the exception of four samples for cadmium, and one sample for vanadium.
Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.
mg/kg ww = milligrams per kilogram wet weight; mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed vertical lines (- - -) indicate the separation of years; solid vertical lines (−) indicate the separation of exposure and reference; dashed horizontal lines (- - -) indicate guidelines from CFIA (mercury) or BC MoE (selenium).

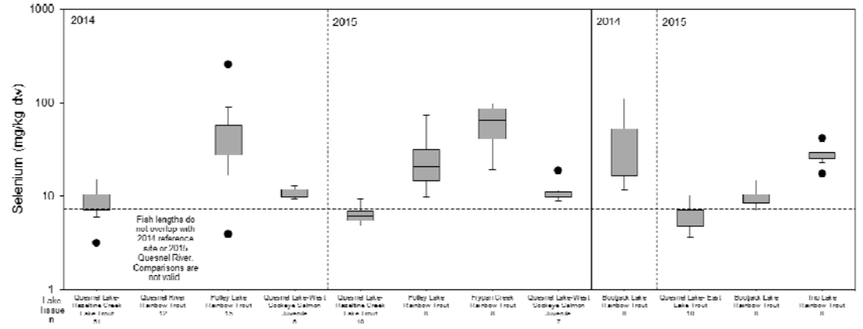
Figure 3. Summary of Available Liver Chemistry Data for Select Fish Species and Sampling Sites (2014, 2015).

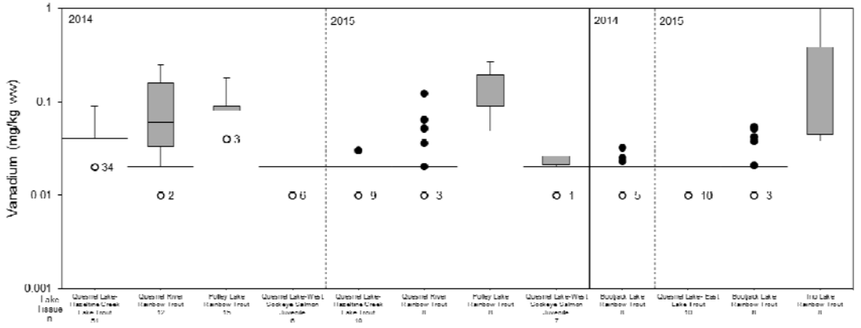


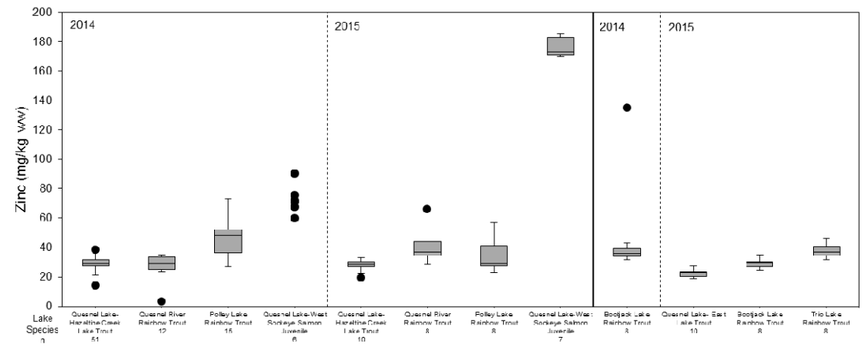






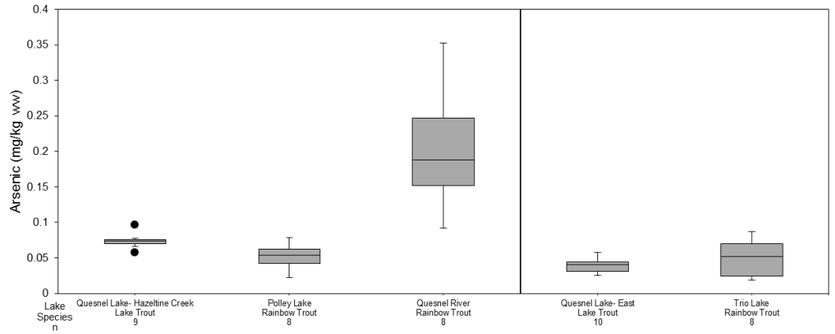


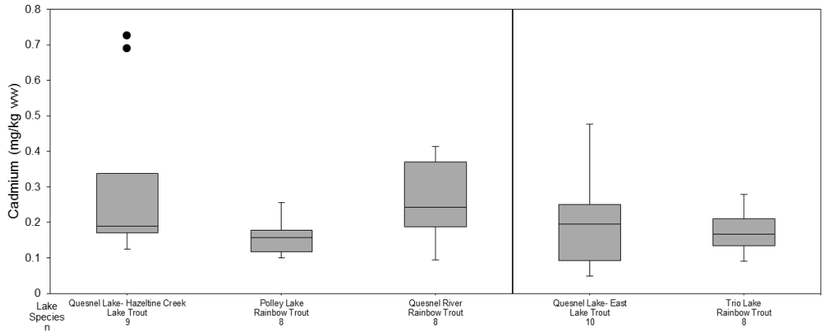


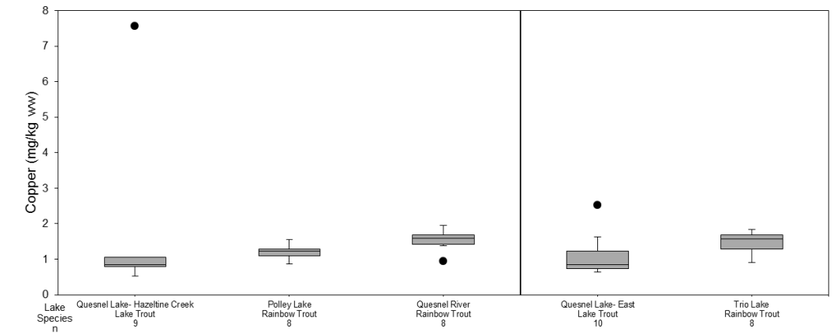


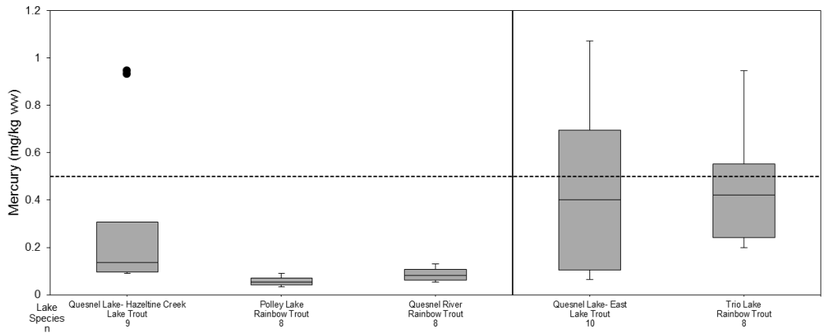
Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.
mg/kg ww = milligrams per kilogram wet weight; mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed vertical lines (- - -) indicate the separation of years; solid vertical lines (–) indicate the separation of exposure and reference; dashed horizontal lines (**- - -**) indicate guidelines from CFIA (mercury) or BC MoE (selenium).

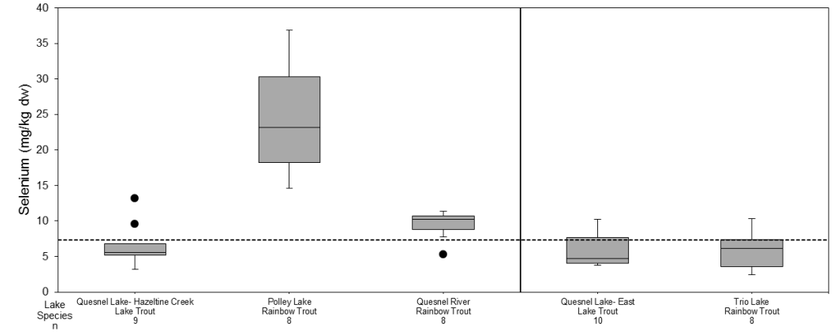
Figure 4. Summary of Available Kidney Chemistry Data for Select Fish Species and Sampling Sites (2015 only)

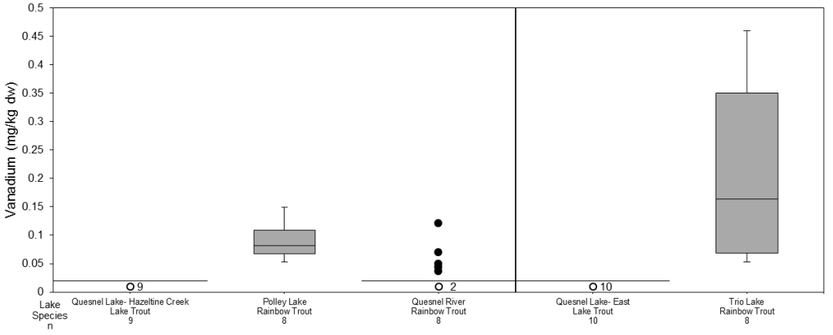


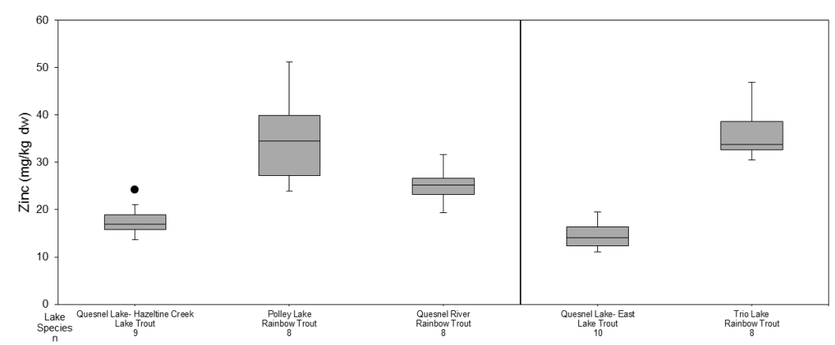






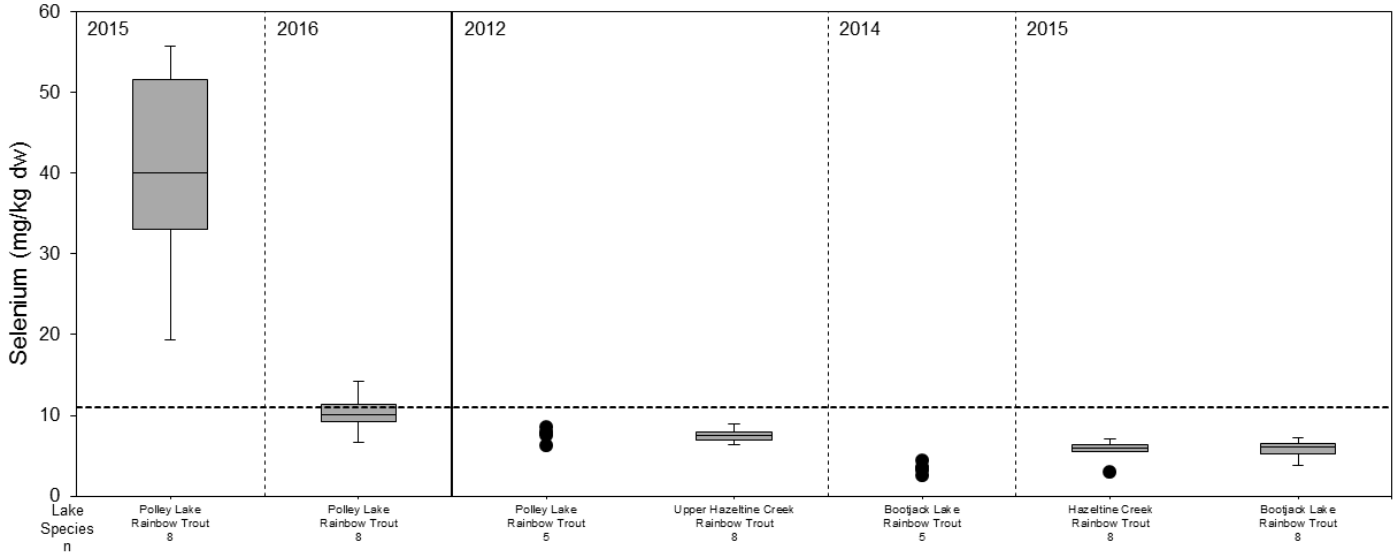






Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.
mg/kg ww = milligrams per kilogram wet weight; mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed vertical lines (- - -) indicate the separation of years; solid vertical lines (−) indicate the separation of exposure and reference; dashed horizontal lines (- - -) indicate guidelines from CFIA (mercury) and BC MoE (selenium).

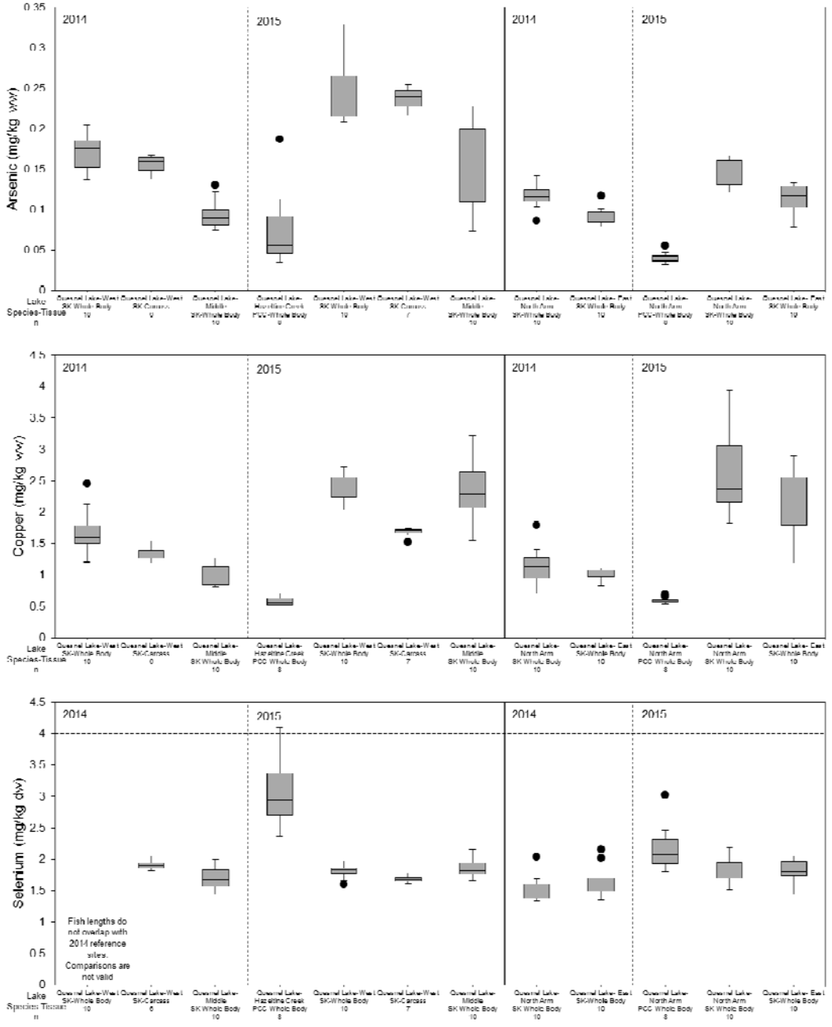
Figure 5. Summary of Available Ovary Chemistry Data for Rainbow Trout from Relevant Sampling Sites.



Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

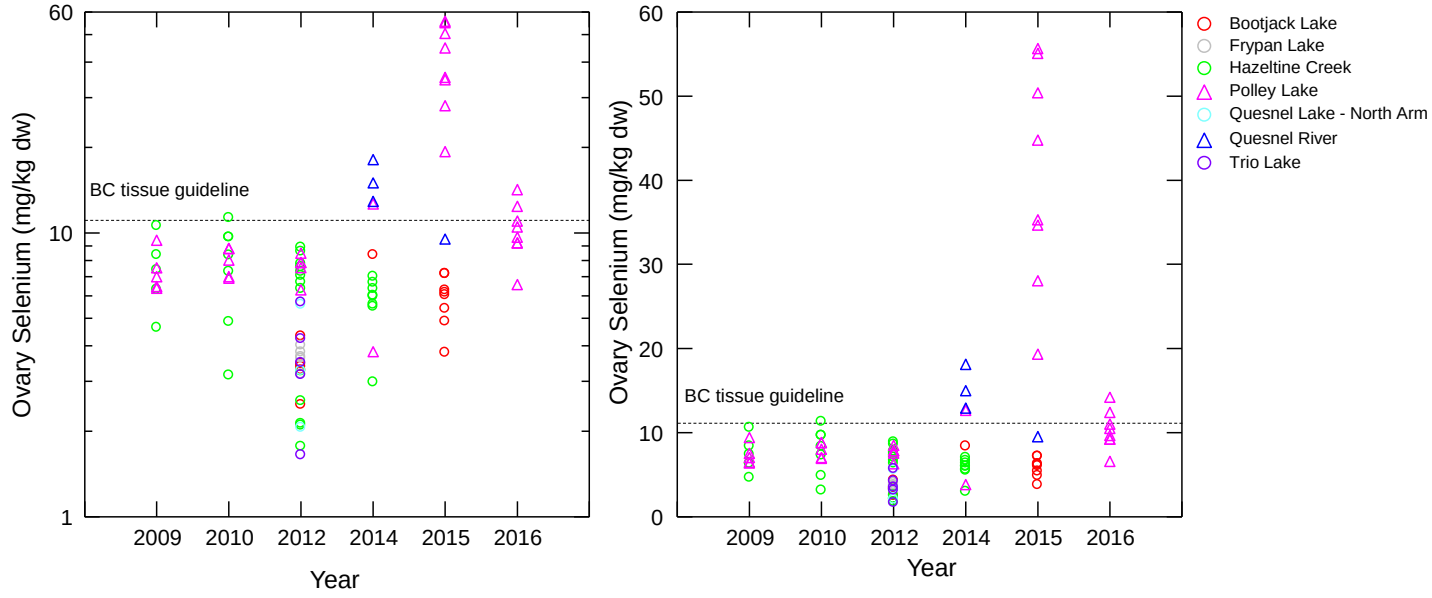
mg/kg ww = milligrams per kilogram wet weight; mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed vertical lines (- - -) indicate the separation of years; solid vertical lines (–) indicate the separation of exposure and reference; dashed horizontal lines (- - -) indicate guidelines from CFIA or BCMoE.

Figure 6. Summary of Available Whole Body and Carcass Chemistry Data for Sockeye Salmon and Peamouth Chub from Relevant Sampling Sites (2014, 2015).



Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.
mg/kg ww = milligrams per kilogram wet weight; mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed vertical lines (- - -) indicate the separation of years; solid vertical lines (−) indicate the separation of exposure and reference; dashed horizontal lines (- - -) indicate guidelines from CFIA (mercury) or BCMoE (selenium).

Figure 7. Summary of Ovary and Muscle Chemistry Data for Rainbow Trout with Historical and 2016 Data (Ovary) or Historical Data only (Muscle).



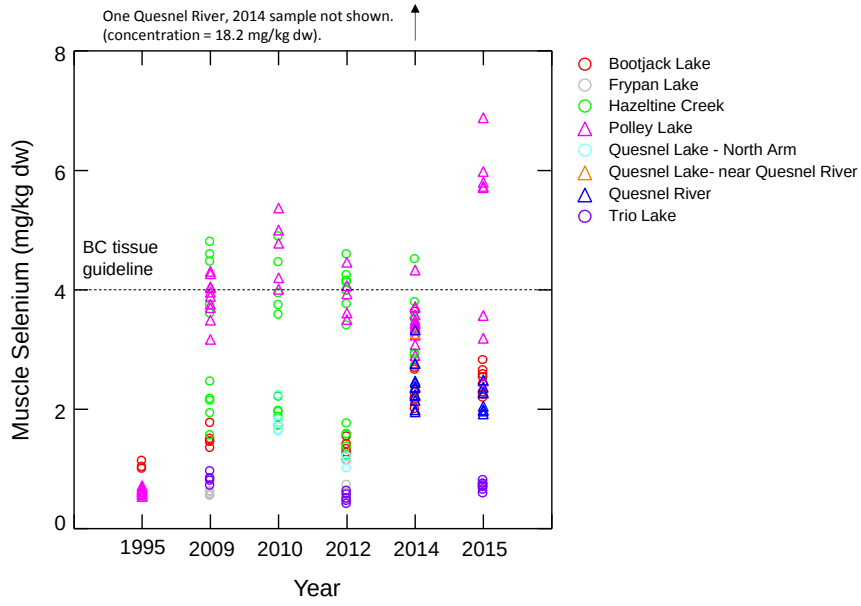
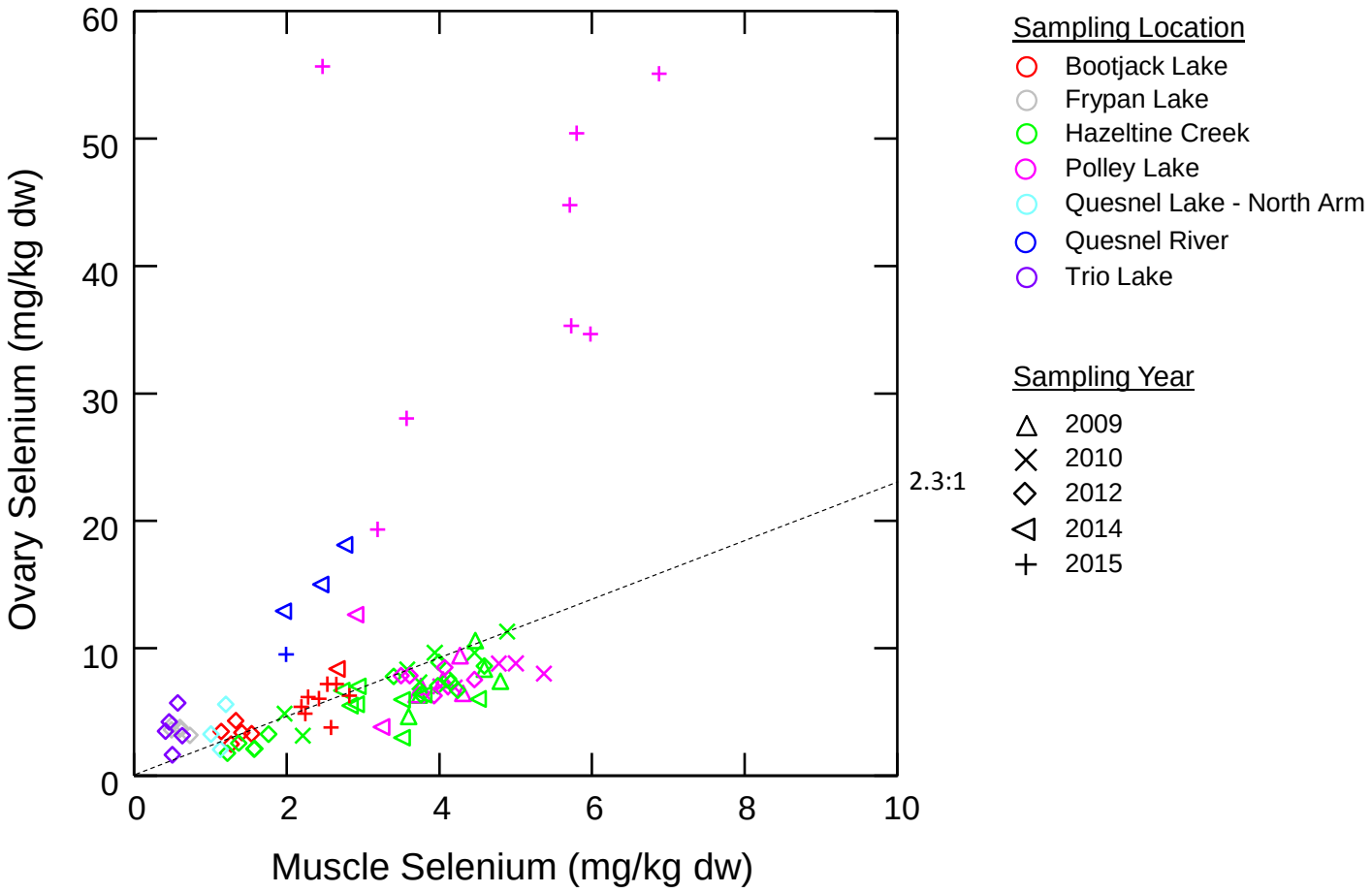


Figure 8. Paired Ovary and Muscle Chemistry Data for Rainbow Trout with Historical Data.



ATTACHMENT 1

FIELD DATA ASSUMPTIONS

1.0 FIELD DATA ASSUMPTIONS

As a result of multiple agencies collecting fish tissue chemistry samples, a number of uncertainties exist regarding details for some of the samples. Where information was uncertain, the following assumptions were made:

- BC MoE data collected on August 9 & 10 2014 was not specific on the sampling location for fish collections, and no effort information could be found for those dates. It was assumed that sampling occurred in the same area that was sampled on August 8 (i.e., near the Hazeltine Creek Confluence).
- BC MoE recorded a sample collected as being “Whitefish”. It was assumed this was a Mountain Whitefish.
- The MPMC sample naming convention was assumed to be in relation to the sampling area (e.g., sample ID “NSC-2, 3 HAZ-2” was sampled near the Hazeltine Creek Confluence). The sampling locations were confirmed with the data sheets wherever possible.
- Any recorded fish lengths that did not have specified fork length or total length were assumed to be fork length, unless the fish species does not have a fork, in which case it is assumed total length (e.g., Burbot).
- Sockeye Salmon lengths and weights were found in an attachment to an ALS sample submission form (i.e., COC); these lengths were assumed to be valid and were used within this technical memo.
- Assumptions were made regarding tissue types collected and submitted for fish tissue chemistry analyses as follows: Largescale Sucker had muscle collected, and Peamouth Chub and Redside Shiner had whole body collected.
- Final age was provided by MPMC and were assumed to be valid; however, age data were not used and are, therefore, not presented.

ATTACHMENT 2

SUMMARY STATISTICS

Table 1: Summary Statistics for Muscle Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Horsefly River									Polley Lake								Polley Lake												Quesnel Lake- Hazeltine Creek							
	Sockeye Salmon									Longnose Sucker								Rainbow Trout												Burbot							
Parameter	n	%>DL	Min	Med	% Magnitude Soda Creek	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Bootjack Lake	% Magnitude Hazeltine Creek	% Magnitude 2015	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	30	100	74.4	76.0	5	80.1	76.1	1.2	0.2	1	100	79.7	--	79.7	--	--	--	15	100	75.4	77.9	1	-1	-4	81.0	78.2	1.6	0.4	12	100	80.8	82.9	84.0	82.9	0.9	0.3
Aluminum	30	87	<0.4	1.3	-	12.3	2.2	2.6	0.5	1	0	<1	--	<1	--	--	--	15	27	<0.2	0.2	-	-	-	0.89	-	-	-	12	42	<0.4	<0.4	2.68	-	-	-
Antimony	30	0	<0.002	<0.002	-	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	15	0	<0.001	<0.002	-	-	-	<0.002	-	-	-	12	8	<0.002	<0.002	0.0021	-	-	-
Arsenic	30	100	0.142	0.235	-48	0.518	0.260	0.093	0.017	1	100	0.0623	--	0.0623	--	--	--	15	100	0.0044	0.0105	7	-11	64	0.0243	0.0126	0.0061	0.0016	12	100	0.0504	0.1007	0.2170	0.1195	0.0556	0.0161
Barium	30	50	<0.01	<0.01	-	0.128	-	-	-	1	100	0.116	--	0.116	--	--	--	15	27	<0.01	<0.01	-	-	-	0.022	-	-	-	12	83	<0.01	0.022	0.062	0.029	0.021	0.006
Beryllium	30	0	<0.002	<0.002	-	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	15	0	<0.002	<0.002	-	-	-	<0.02	-	-	-	12	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	30	0	<0.002	<0.002	-	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	13	0	<0.002	<0.002	-	-	-	<0.002	-	-	-	12	0	<0.002	<0.002	<0.002	-	-	-
Boron	30	0	<0.2	<0.2	-	<0.2	-	-	-	1	0	<0.2	--	<0.2	--	--	--	15	0	<0.2	<0.2	-	-	-	<0.4	-	-	-	12	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	30	100	0.0023	0.0049	-6	0.0088	0.0050	0.0018	0.0003	1	0	<0.002	--	<0.002	--	--	--	15	7	<0.001	<0.001	-	-	-	0.0071	-	-	-	12	42	<0.001	<0.001	<0.001	-	-	-
Calcium	30	100	30.1	34.0	-52	55.6	35.3	5.1	0.9	1	100	410	--	410	--	--	--	15	100	46.5	126.0	-24	-82	-30	793.0	196.2	195.9	50.6	12	100	104	186	444	216	109	31
Cesium	30	100	0.0177	0.0235	21	0.0304	0.0238	0.0028	0.0005	1	100	0.0016	--	0.0016	--	--	--	13	100	0.0056	0.0071	-45	73	-45	0.0135	0.0077	0.0021	0.0006	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	30	100	0.026	0.081	519	0.701	0.142	0.167	0.030	1	0	<0.04	--	<0.04	--	--	--	15	20	<0.01	<0.01	-	-	-	0.086	-	-	-	12	67	<0.01	0.017	0.055	0.021	0.017	0.005
Cobalt	30	100	0.0045	0.0071	22	0.0148	0.0076	0.0027	0.0005	1	0	<0.004	--	<0.004	--	--	--	15	20	<0.004	<0.004	-	-	-	0.0058	-	-	-	12	50	<0.004	<0.004	0.0084	-	-	-
Copper	30	100	0.662	0.876	13	1.120	0.892	0.131	0.024	1	100	0.238	--	0.238	--	--	--	15	100	0.173	0.307	19	-39	-29	0.676	0.324	0.121	0.031	12	100	0.140	0.176	0.341	0.192	0.056	0.016
Iron	30	100	5.22	8.58	53	21.30	9.36	3.31	0.60	1	100	2.4	--	2.4	--	--	--	15	100	2.76	4.14	16	-39	-40	8.10	4.51	1.40	0.36	12	100	1.1	2.5	8.4	3.3	2.1	0.6
Lead	30	30	<0.004	<0.004	-	0.016	-	-	-	1	0	<0.01	--	<0.01	--	--	--	15	0	<0.002	<0.004	-	-	-	<0.01	-	-	-	12	0	<0.004	<0.004	<0.004	-	-	-
Lithium	30	0	<0.1	<0.1	-	<0.1	-	-	-	1	0	<0.1	--	<0.1	--	--	--	13	0	<0.1	<0.1	-	-	-	<0.1	-	-	-	12	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	30	100	228	267	0	287	263	14	2	1	100	275	--	275	--	--	--	15	100	213	289	-2	8	20	402	285	48	12	12	100	195	216	233	217	11	3
Manganese	30	100	0.069	0.112	53	0.407	0.120	0.064	0.012	1	100	0.328	--	0.328	--	--	--	15	100	0.030	0.061	-37	-77	-47	0.211	0.079	0.049	0.013	12	100	0.098	0.188	0.310	0.200	0.067	0.019
Mercury	30	100	0.0344	0.0561	14	0.0864	0.0547	0.0117	0.0021	1	100	0.0331	--	0.0331	--	--	--	13	100	0.0481	0.0781	29	-	-5	0.1030	0.0769	0.0167	0.0046	12	100	0.128	0.356	0.710	0.397	0.176	0.051
Molybdenum	30	100	0.0043	0.0135	174	0.0918	0.0202	0.0210	0.0038	1	0	<0.008	--	<0.008	--	--	--	15	0	<0.004	<0.004	-	-	-	<0.010	-	-	-	12	42	<0.004	<0.004	0.0071	-	-	-
Nickel	30	67	<0.04	0.052	-	0.433	0.088	0.106	0.019	1	0	<0.04	--	<0.04	--	--	--	15	7	<0.01	<0.04	-	-	-	0.026	-	-	-	12	8	<0.04	<0.04	0.059	-	-	-
Phosphorus	30	100	2330	2540	-3	2770	2539	117	21	1	100	1160	--	1160	--	--	--	15	100	1750	2430	-8	-13	-5	3250	2463	366	94	12	100	1650	1830	1930	1817	96	28
Potassium	30	100	3630	4060	8	4510	4058	207	38	1	100	1210	--	1210	--	--	--	15	100	3630	4170	-3	-2	1	5910	4238	531	137	12	100	2910	3135	3470	3189	189	54
Rubidium	30	100	0.882	0.994	8	1.120	0.996	0.058	0.011	1	100	0.624	--	0.624	--	--	--	13	100	1.19	1.49	-35	13	-13	2.48	1.58	0.33	0.09	nd	nd	nd	nd	nd	nd	nd	nd
Selenium*	30	100	0.914	1.069	7	1.362	1.076	0.094	0.017	1	100	4.98	--	4.98	--	--	--	15	100	2.768	3.390	52	5	-41	4.329	3.402	0.368	0.095	12	100	2.031	2.289	2.593	2.322	0.181	0.052
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	0	<10	--	-	-	--	<10	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	50	<0.004	--	-	-	--	0.0077	--	--	--	12	8	<0.001	<0.001	0.0012	-	-	-
Sodium	30	100	287	354	-10	475	352	40	7	1	100	178	--	178	--	--	--	15	100	205	396	81	-14	37	802	412	169	44	12	100	556	741	866	711	114	33
Strontium	30	100	0.036	0.061	-70	0.173	0.067	0.028	0.005	1	100	1.3	--	1.3	--	--	--	15	100	0.049	0.136	-43	-88	-37	1.020	0.244	0.260	0.067	12	100	0.135	0.379	1.050	0.467	0.290	0.084
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	100	1830	--	-	-	--	2110	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	30	0	<0.004	<0.004	-	<0.004	-	-	-	1	0	<0.004	--	<0.004	--	--	--	13	0	<0.004	<0.004	-	-	-	<0.004	-	-	-	12	0	<0.004	<0.004	<0.004	-	-	-
Thallium	30	100	0.00072	0.00114	42	0.00174	0.00118	0.00029	0.00005	1	0	<0.0004	--	<0.0004	--	--	--	13	100	0.00046	0.00080	-64	-38	-2	0.00124	0.00083	0.00021	0.00006	12	100	0.00098	0.00159	0.00384	0.00184	0.00080	0.00023
Tin	30	90	<0.02	0.043	105	0.087	0.044	0.021	0.004	1	0	<0.02	--	<0.02	--	--	--	15	0	<0.02	<0.02	-	-	-	<0.02	-	-	-	12	33	<0.020	<0.020	0.032	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	0	<0.2	--	-	-	--	<0.2	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	30	7	<0.0004	<0.0004	-	0.00054	-	-	-	1	0	<0.0004	--	<0.0004	--	--	--	13	0	<0.0004	<0.0004	-	-	-	<0.0004	-	-	-	12	33	<0.0004	<0.0004	0.00082	-	-	-
Vanadium	30	10	<0.02	<0.02	-	0.063	-	-	-	1	0	<0.02	--	<0.02	--	--	--	15	0	<0.02	<0.02	-	-	-	<0.04	-	-	-	12	0	<0.02	<0.02	<0.02	-	-	-
Zinc	30	100	3.37	3.71	-1	4.31	3.72	0.25	0.04	1	100	8.25	--	8.25	--	--	--	15	100	2.27	3.27	0	-70	-24	9.22	4.00	1.90	0.49	12	100	3.35	4.15	5.08	4.29	0.57	0.16
Zirconium	30	0	<0.04	<0.04	-	<0.04	-	-	-	1	0	<0.04	--	<0.04	--	--	--	13	0	<0.04	<0.04	-	-	-	<0.04	-	-	-	12	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	12	100	0.0427	0.0984	0.5930	0.1820	0.1749	0.0505
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 1: Summary Statistics for Muscle Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Quesnel Lake- Hazeltine Creek									Quesnel Lake- Hazeltine Creek								Quesnel Lake- Hazeltine Creek								Quesnel Lake- Horsefly River confluence							
	Lake Trout									Longnose Sucker								Moutain Whitefish								Burbot							
Parameter	n	%>DL	Min	Med	% Magnitude 2015	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	51	100	74.6	80.0	5	82.8	79.6	1.8	0.2	1	100	80.4	--	80.4	--	--	--	4	100	72.0	74.5	76.7	74.4	2.0	1.0	1	100	81.2	--	81.2	--	--	--
Aluminum	51	33	<0.2	<0.4	-	3.96	-	-	-	1	100	0.45	--	0.45	--	--	--	4	75	<0.2	0.47	2.08	0.78	0.88	0.44	1	100	0.69	--	0.69	--	--	--
Antimony	51	0	<0.001	<0.002	-	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	4	0	<0.001	<0.001	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--
Arsenic	51	100	0.0127	0.0307	-39	0.1370	0.0363	0.0199	0.0028	1	100	0.0463	--	0.0463	--	--	--	4	100	0.015	0.022	0.039	0.025	0.010	0.005	1	100	0.128	--	0.128	--	--	--
Barium	51	22	<0.01	<0.01	-	0.057	-	-	-	1	100	0.047	--	0.047	--	--	--	4	100	0.011	0.021	0.027	0.020	0.007	0.004	1	100	0.01	--	0.01	--	--	--
Beryllium	51	0	<0.002	<0.002	-	<0.02	-	-	-	1	0	<0.002	--	<0.002	--	--	--	4	0	<0.002	<0.02	<0.02	-	-	-	1	0	<0.002	--	<0.002	--	--	--
Bismuth	47	0	<0.002	<0.002	-	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	2	0	<0.002	--	<0.002	--	--	--	1	0	<0.002	--	<0.002	--	--	--
Boron	51	0	<0.2	<0.2	-	<0.4	-	-	-	1	0	<0.2	--	<0.2	--	--	--	4	0	<0.2	<0.2	<0.4	-	-	-	1	0	<0.2	--	<0.2	--	--	--
Cadmium	51	4	<0.001	<0.001	-	0.0021	-	-	-	1	100	0.0056	--	0.0056	--	--	--	4	75	<0.002	0.0030	0.0088	0.0039	0.0035	0.0017	1	0	<0.001	--	<0.001	--	--	--
Calcium	51	100	51.2	124.0	114	998.0	162.1	156.5	21.9	1	100	263	--	263	--	--	--	4	100	194	254	656	339	215	107	1	100	84.2	--	84.2	--	--	--
Cesium	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1	100	0.114	--	0.114	--	--	--
Chromium	51	51	<0.01	0.011	-	0.075	0.014	0.012	0.002	1	100	0.01	--	0.01	--	--	--	4	25	<0.01	<0.04	<0.04	-	-	-	1	0	<0.01	--	<0.01	--	--	--
Cobalt	51	29	<0.004	<0.004	-	0.0081	-	-	-	1	100	0.0251	--	0.0251	--	--	--	4	100	0.0126	0.0158	0.0340	0.0195	0.0098	0.0049	1	0	<0.004	--	<0.004	--	--	--
Copper	51	100	0.182	0.270	-32	0.949	0.286	0.115	0.016	1	100	0.498	--	0.498	--	--	--	4	100	0.13	0.34	0.41	0.31	0.12	0.06	1	100	0.208	--	0.208	--	--	--
Iron	51	100	2.29	3.67	28	11.40	3.85	1.58	0.22	1	100	8.12	--	8.12	--	--	--	4	75	<2	4.02	5.27	3.58	1.92	0.96	1	100	2.78	--	2.78	--	--	--
Lead	51	27	<0.002	<0.004	-	0.032	-	-	-	1	100	0.004	--	0.004	--	--	--	4	25	<0.002	<0.004	<0.004	-	-	-	1	100	0.0076	--	0.0076	--	--	--
Lithium	47	0	<0.1	<0.1	-	<0.1	-	-	-	1	0	<0.1	--	<0.1	--	--	--	2	0	<0.1	--	<0.1	--	--	--	1	0	<0.1	--	<0.1	--	--	--
Magnesium	51	100	150	231	-6	272	229	21	3	1	100	230	--	230	--	--	--	4	100	141	269	324	251	78	39	1	100	254	--	254	--	--	--
Manganese	51	100	0.052	0.090	44	0.217	0.093	0.026	0.004	1	100	0.55	--	0.55	--	--	--	4	100	0.105	0.206	0.649	0.291	0.256	0.128	1	100	0.126	--	0.126	--	--	--
Mercury	47	100	0.132	0.274	99	0.674	0.324	0.142	0.021	1	0	<0.006	--	<0.006	--	--	--	2	100	0.0987	0.1629	0.2270	0.1629	0.0907	0.0642	1	100	0.523	--	0.523	--	--	--
Molybdenum	51	14	<0.004	<0.004	-	0.0322	-	-	-	1	100	0.006	--	0.006	--	--	--	4	25	<0.004	<0.01	<0.01	-	-	-	1	0	<0.004	--	<0.004	--	--	--
Nickel	51	6	<0.01	<0.04	-	0.095	-	-	-	1	0	<0.04	--	<0.04	--	--	--	4	25	<0.01	<0.04	<0.04	-	-	-	1	0	<0.04	--	<0.04	--	--	--
Phosphorus	51	100	1450	2200	-11	2480	2195	191	27	1	100	2010	--	2010	--	--	--	4	100	1320	2565	3110	2390	760	380	1	100	2130	--	2130	--	--	--
Potassium	51	100	2450	3860	-4	4370	3797	327	46	1	100	3380	--	3380	--	--	--	4	100	2010	3920	4450	3575	1083	541	1	100	4030	--	4030	--	--	--
Rubidium	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	--	nd	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	1	100	6.71	--	6.71	--	--	--
Selenium*	51	100	1.039	1.971	4	2.374	1.957	0.252	0.035	1	100	2.214	--	2.214	--	--	--	4	100	1.392	2.391	3.169	2.336	0.732	0.366	1	100	2.782	--	2.782	--	--	--
Silicon	4	0	<10	<10	-	<10	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	2	0	<10	--	<10	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd
Silver	51	0	<0.001	<0.001	-	<0.004	-	-	-	1	100	0.0021	--	0.0021	--	--	--	4	25	<0.001	<0.004	<0.004	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	51	100	307	483	58	693	499	88	12	1	100	630	--	630	--	--	--	4	100	177	456	558	412	170	85	1	100	392	--	392	--	--	--
Strontium	51	100	0.037	0.136	220	1.090	0.177	0.189	0.026	1	100	0.432	--	0.432	--	--	--	4	100	0.335	0.351	0.813	0.462	0.234	0.117	1	100	0.117	--	0.117	--	--	--
Sulphur	4	100	1810	2040	-	2270	2040	212	106	nd	nd	nd	nd	nd	nd	nd	nd	2	100	1920	2190	2460	2190	382	270	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	47	0	<0.004	<0.004	-	<0.004	-	-	-	1	0	<0.004	--	<0.004	--	--	--	2	0	<0.004	--	<0.004	--	--	--	1	0	<0.004	--	<0.004	--	--	--
Thallium	47	100	0.00486	0.00854	-5	0.01570	0.00912	0.00233	0.00034	1	100	0.00089	--	0.00089	--	--	--	2	100	0.00538	0.00564	0.00590	0.00564	0.00037	0.00026	1	100	0.0018	--	0.0018	--	--	--
Tin	51	14	<0.02	<0.02	-	0.042	-	-	-	1	0	<0.02	--	<0.02	--	--	--	4	0	<0.02	<0.02	<0.02	-	-	-	1	100	0.022	--	0.022	--	--	--
Titanium	4	0	<0.2	<0.2	-	<0.2	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	2	0	<0.2	--	<0.2	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	47	0	<0.0004	<0.0004	-	<0.0004	-	-	-	1	0	<0.0004	--	<0.0004	--	--	--	2	50	<0.0004	--	0.00042	--	--	--	1	0	<0.0004	--	<0.0004	--	--	--
Vanadium	51	6	<0.02	<0.02	-	0.03	-	-	-	1	0	<0.02	--	<0.02	--	--	--	4	0	<0.02	<0.02	<0.04	-	-	-	1	0	<0.02	--	<0.02	--	--	--
Zinc	51	100	2.51	3.43	10	5.59	3.58	0.68	0.10	1	100	6.4	--	6.4	--	--	--	4	100	1.93	4.59	14.50	6.40	5.59	2.79	1	100	4.26	--	4.26	--	--	--
Zirconium	47	0	<0.04	<0.04	-	<0.04	-	-	-	1	0	<0.04	--	<0.04	--	--	--	2	0	<0.04	--	<0.04	--	--	--	1	0	<0.04	--	<0.04	--	--	--
Methylmercury	47	100	0.0184	0.1070	-	0.6360	0.1420	0.1222	0.0178	1	100	0.079	--	0.079	--	--	--	2	100	0.0204	--	0.0448	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 1: Summary Statistics for Muscle Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Quesnel Lake- near Quesnel River										Quesnel Lake- near Quesnel River								Quesnel River									
	Kokanee										Rainbow Trout								Rainbow Trout									
Parameter	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	% Magnitude 2015	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Bootjack Lake	% Magnitude Hazeltine Creek	% Magnitude 2015	Max	Mean	SD	SE
% Moisture	10	100	79.7	83.3	2	-1	85.4	83.2	1.8	0.6	2	100	77.5	--	89.8	--	--	--	12	100	71.2	77.6	0	-2	0	80.6	77.4	2.6	0.7
Aluminum	10	40	<0.4	<0.4	-	-	0.89	-	-	-	2	50	<0.4	--	0.88	--	--	--	12	8	<0.4	<0.4	-	-	-	4.7	-	-	-
Antimony	10	40	<0.002	<0.002	-	-	0.0279	-	-	-	2	0	<0.002	--	<0.002	--	--	--	12	0	<0.002	<0.002	-	-	-	<0.002	-	-	-
Arsenic	10	100	0.0066	0.0132	-20	11	0.0188	0.0126	0.0039	0.0012	2	100	0.0149	--	0.0549	--	--	--	12	100	0.0137	0.0626	538	432	93	0.6740	0.1652	0.2360	0.0681
Barium	10	50	<0.01	<0.01	-	-	0.032	-	-	-	2	50	<0.01	--	0.084	--	--	--	12	100	0.011	0.019	16	-44	-23	0.033	0.019	0.008	0.002
Beryllium	10	0	<0.002	<0.002	-	-	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--	12	0	<0.002	<0.002	-	-	-	<0.002	-	-	-
Bismuth	10	10	<0.002	<0.002	-	-	0.0034	-	-	-	2	0	<0.002	--	<0.002	--	--	--	12	0	<0.002	<0.002	-	-	-	<0.002	-	-	-
Boron	10	0	<0.2	<0.2	-	-	<0.2	-	-	-	2	0	<0.2	--	<0.2	--	--	--	12	8	<0.2	<0.2	-	-	-	0.22	-	-	-
Cadmium	10	80	<0.001	0.0011	-	-	0.0018	0.0011	0.0004	0.0001	2	50	<0.001	--	0.0026	--	--	--	12	8	<0.001	<0.001	-	-	-	0.375	-	-	-
Calcium	10	100	104	257	13	96	796	373	271	86	2	100	51.7	--	1530	--	--	--	12	100	87.4	220.5	33	-69	-13	361.0	238.3	84.3	24.3
Cesium	10	100	0.0255	0.0413	6	25	0.0467	0.0384	0.0078	0.0025	2	100	0.0162	--	0.0242	--	--	--	12	100	0.0046	0.0173	34	322	-26	0.0215	0.0160	0.0050	0.0014
Chromium	10	0	<0.01	<0.01	-	-	<0.01	-	-	-	2	100	0.038	--	0.073	--	--	--	12	8	<0.01	<0.01	-	-	-	0.05	-	-	-
Cobalt	10	40	<0.004	<0.004	-	-	0.0056	-	-	-	2	100	0.007	--	0.0119	--	--	--	12	100	0.0072	0.0107	-	61	-25	0.0277	0.0122	0.0057	0.0017
Copper	10	100	0.359	0.507	-6	6	0.667	0.520	0.104	0.033	2	100	0.288	--	0.323	--	--	--	12	100	0.16	0.24	-7	-53	-33	9.35	0.99	2.63	0.76
Iron	10	100	3.82	5.30	0	10	6.66	5.26	1.05	0.33	2	100	10.2	--	17.2	--	--	--	12	100	3.17	4.29	20	-37	13	639.00	56.96	183.30	52.91
Lead	10	10	<0.004	<0.004	-	-	0.0067	-	-	-	2	0	<0.004	--	<0.004	--	--	--	12	17	<0.004	<0.004	-	-	-	0.011	-	-	-
Lithium	10	0	<0.1	<0.1	-	-	<0.1	-	-	-	2	0	<0.1	--	<0.1	--	--	--	12	0	<0.1	<0.1	-	-	-	<0.1	-	-	-
Magnesium	10	100	168	195	-7	-4	217	193	18	6	2	100	129	--	242	--	--	--	12	100	185	291	-1	9	7	304	278	33	9
Manganese	10	100	0.077	0.145	22	64	0.242	0.154	0.049	0.016	2	100	0.047	--	0.332	--	--	--	12	100	0.065	0.105	8	-61	-22	2.370	0.297	0.654	0.189
Mercury	10	100	0.0756	0.1045	11	16	0.1190	0.1002	0.0160	0.0050	2	100	0.0888	--	0.654	--	--	--	12	100	0.0631	0.1300	115	-	100	0.2520	0.1430	0.0582	0.0168
Molybdenum	10	10	<0.004	<0.004	-	-	0.0065	-	-	-	2	0	<0.004	--	<0.004	--	--	--	12	8	<0.004	<0.004	-	-	-	0.478	-	-	-
Nickel	10	0	<0.04	<0.04	-	-	<0.04	-	-	-	2	0	<0.04	--	<0.04	--	--	--	12	0	<0.04	<0.04	-	-	-	<0.04	-	-	-
Phosphorus	10	100	1930	2195	-3	4	2540	2195	187	59	2	100	1270	--	2840	--	--	--	12	100	2280	2650	0	-5	14	3520	2696	298	86
Potassium	10	100	3300	3730	-3	0	4030	3732	249	79	2	100	1910	--	3630	--	--	--	12	100	3010	4300	0	2	12	4610	4223	449	130
Rubidium	10	100	3.22	4.03	3	-10	5.03	3.98	0.52	0.17	2	100	2.11	--	3.44	--	--	--	12	100	2.42	3.70	62	181	-5	5.08	3.75	0.72	0.21
Selenium*	10	100	1.514	1.752	-14	-27	2.521	1.829	0.294	0.093	2	100	2.218	--	3.275	--	--	--	12	100	1.955	2.370	6	-26	10	18.194	3.709	4.577	1.321
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	10	100	712	825	-21	31	1130	874	136	43	2	100	697	--	1810	--	--	--	12	100	205	257	17	-44	-45	972	323	209	60
Strontium	10	100	0.117	0.355	24	111	1.190	0.520	0.400	0.127	2	100	0.042	--	2.04	--	--	--	12	100	0.112	0.264	10	-77	-29	0.508	0.290	0.120	0.035
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	10	0	<0.004	<0.004	-	-	<0.004	-	-	-	2	0	<0.004	--	<0.004	--	--	--	12	0	<0.004	<0.004	-	-	-	<0.004	-	-	-
Thallium	10	100	0.00252	0.00358	-24	-6	0.00646	0.00397	0.00126	0.00040	2	100	0.00315	--	0.0036	--	--	--	12	100	0.00349	0.00559	154	333	35	0.04190	0.00859	0.01059	0.00306
Tin	10	30	<0.02	<0.02	-	-	0.031	-	-	-	2	50	<0.02	--	0.024	--	--	--	12	17	<0.02	<0.02	-	-	-	0.026	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd
Uranium	10	10	<0.0004	<0.0004	-	-	0.00057	-	-	-	2	50	<0.0004	--	0.00061	--	--	--	12	8	<0.0004	<0.0004	-	-	-	0.0038	-	-	-
Vanadium	10	0	<0.02	<0.02	-	-	<0.02	-	-	-	2	50	<0.02	--	0.155	--	--	--	12	8	<0.02	<0.02	-	-	-	0.422	-	-	-
Zinc	10	100	4.55	7.93	-21	57	13.00	8.08	2.33	0.74	2	100	6.47	--	15.10	--	--	--	12	100	2.86	3.50	7	-68	-13	29.60	5.70	7.55	2.18
Zirconium	10	0	<0.04	<0.04	-	-	<0.04	-	-	-	2	0	<0.04	--	<0.04	--	--	--	12	0	<0.04	<0.04	-	-	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 2: Summary Statistics for Muscle Tissues of all Fish Species Captured in the Reference Sites in 2014

	Bootjack Lake								Hazeltine Creek								Quesnel Lake- North Arm								Soda Creek							
	Rainbow Trout								Rainbow Trout								Kokanee								Sockeye Salmon							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	8	100	74.5	77.2	78.0	76.9	1.0	0.4	8	100	76.5	79.0	83.7	79.5	2.2	0.8	10	100	80.5	82.0	83.5	82.0	0.9	0.3	30	100	68.7	72.3	75.3	72.3	1.6	0.3
Aluminum	8	0	<0.4	<0.4	<0.4	-	-	-	8	88	<0.4	0.61	0.90	0.57	0.20	0.07	10	20	<0.4	<0.4	1.03	-	-	-	30	7	<0.4	<0.4	1.96	-	-	-
Antimony	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	10	20	<0.002	<0.002	0.131	-	-	-	30	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	8	88	0.002	0.010	0.015	0.010	0.004	0.001	8	100	0.006	0.012	0.016	0.012	0.003	0.001	10	100	0.0080	0.0164	0.0308	0.0172	0.0070	0.0022	30	100	0.271	0.452	0.884	0.484	0.156	0.029
Barium	8	100	0.01	0.02	0.06	0.02	0.02	0.01	8	100	0.029	0.033	0.044	0.034	0.005	0.002	10	50	<0.01	0.008	0.055	-	-	-	30	10	<0.01	<0.01	0.065	-	-	-
Beryllium	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	30	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	8	13	<0.002	<0.002	0.0046	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	30	0	<0.002	<0.002	<0.002	-	-	-
Boron	8	0	<0.2	<0.2	<0.2	-	-	-	8	0	<0.2	<0.2	<0.2	-	-	-	10	0	<0.2	<0.2	<0.2	-	-	-	30	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	8	0	<0.001	<0.001	<0.001	-	-	-	8	0	<0.001	<0.001	<0.001	-	-	-	10	40	<0.001	<0.001	0.002	-	-	-	30	100	0.0026	0.0052	0.0112	0.0057	0.0021	0.0004
Calcium	8	100	111	166	655	235	178	63	8	100	624	707	1020	751	126	44	10	100	106	226	1970	586	647	205	30	100	49.9	70.7	115.0	73.7	15.1	2.8
Cesium	8	100	0.0086	0.0130	0.0180	0.0131	0.0037	0.0013	8	100	0.0031	0.0041	0.0042	0.0040	0.0004	0.0001	10	100	0.0317	0.0391	0.0517	0.0390	0.0061	0.0019	30	100	0.0143	0.0195	0.0258	0.0196	0.0027	0.0005
Chromium	8	63	<0.01	0.011	0.016	0.010	0.005	0.002	8	100	0.0630	0.1275	0.1750	0.1276	0.0333	0.0118	10	20	<0.01	<0.01	0.014	-	-	-	30	57	<0.01	0.013	0.097	0.017	0.021	0.004
Cobalt	8	13	<0.004	<0.004	0.0043	-	-	-	8	100	0.0054	0.0066	0.0080	0.0067	0.0009	0.0003	10	90	<0.004	0.0052	0.0078	0.0051	0.0014	0.0005	30	93	<0.004	0.0058	0.0081	0.0057	0.0013	0.0002
Copper	8	100	0.192	0.257	0.454	0.271	0.083	0.030	8	100	0.391	0.504	0.608	0.501	0.077	0.027	10	100	0.388	0.538	0.832	0.587	0.129	0.041	30	100	0.537	0.772	1.110	0.810	0.152	0.028
Iron	8	100	2.78	3.58	7.03	3.96	1.34	0.47	8	100	6.05	6.83	9.45	7.41	1.21	0.43	10	100	3.87	5.32	7.36	5.36	1.07	0.34	30	100	4.19	5.60	8.70	5.80	1.22	0.22
Lead	8	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-	10	40	<0.004	<0.004	0.558	-	-	-	30	27	<0.004	<0.004	0.0672	-	-	-
Lithium	8	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	<0.1	-	-	-	10	0	<0.1	<0.1	<0.1	-	-	-	30	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	8	100	263	294	416	309	46	16	8	100	213	268	277	259	20	7	10	100	179	210	278	215	30	10	30	100	235	266	299	267	15	3
Manganese	8	100	0.075	0.098	0.183	0.106	0.035	0.012	8	100	0.239	0.268	0.301	0.267	0.021	0.007	10	100	0.073	0.118	0.439	0.167	0.118	0.037	30	100	0.055	0.073	0.109	0.074	0.013	0.002
Mercury	8	100	0.0354	0.0604	0.0952	0.0610	0.0174	0.0061	nd	nd	nd	nd	nd	nd	nd	nd	10	100	0.0687	0.0942	0.1410	0.1000	0.0244	0.0077	30	100	0.0341	0.0493	0.0659	0.0500	0.0095	0.0017
Molybdenum	8	13	<0.004	<0.004	0.0048	-	-	-	8	100	0.0051	0.0117	0.0157	0.0113	0.0038	0.0014	10	30	<0.004	<0.004	0.0054	-	-	-	30	70	<0.0002	0.0049	0.0142	0.0046	0.0025	0.0004
Nickel	8	0	<0.04	<0.04	<0.04	-	-	-	8	75	<0.04	0.052	0.063	0.046	0.017	0.006	10	0	<0.04	<0.04	<0.04	-	-	-	30	10	<0.04	<0.04	0.061	-	-	-
Phosphorus	8	100	2580	2655	3830	2806	418	148	8	100	2620	2785	3030	2788	150	53	10	100	1890	2265	3520	2375	477	151	30	100	2360	2620	2950	2613	144	26
Potassium	8	100	3870	4315	6450	4540	795	281	8	100	3700	4235	4500	4148	245	87	10	100	3410	3850	4530	3880	365	115	30	100	3330	3745	4150	3744	174	32
Rubidium	8	100	1.80	2.28	3.37	2.43	0.57	0.20	8	100	0.944	1.315	1.440	1.256	0.181	0.064	10	100	3.33	3.91	5.74	4.14	0.77	0.24	30	100	0.809	0.916	1.080	0.919	0.057	0.010
Selenium*	8	100	2.004	2.227	3.632	2.469	0.530	0.188	8	100	2.724	3.221	4.514	3.341	0.612	0.216	10	100	1.625	2.046	2.733	2.044	0.332	0.105	30	100	0.773	0.996	1.238	0.996	0.101	0.018
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	181	219	335	232	48	17	8	100	418	461	531	465	40	14	10	100	885	1045	1540	1081	197	62	30	100	304	396	524	400	51	9
Strontium	8	100	0.115	0.241	1.180	0.364	0.342	0.121	8	100	0.971	1.130	1.560	1.151	0.179	0.063	10	100	0.116	0.285	2.850	0.814	0.941	0.297	30	100	0.121	0.202	0.387	0.215	0.067	0.012
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-	10	0	<0.004	<0.004	<0.004	-	-	-	30	0	<0.004	<0.004	<0.004	-	-	-
Thallium	8	100	0.00153	0.00220	0.00572	0.00291	0.00173	0.00061	8	100	0.00114	0.00129	0.00155	0.00130	0.00012	0.00004	10	100	0.00372	0.00469	0.00744	0.00522	0.00140	0.00044	30	97	<0.0004	0.00080	0.00148	0.00083	0.00032	0.00006
Tin	8	38	<0.02	<0.02	0.024	-	-	-	8	0	<0.02	<0.02	<0.02	-	-	-	10	30	<0.02	<0.02	0.126	-	-	-	30	53	<0.02	0.021	0.039	0.020	0.011	0.002
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	0	<0.0004	<0.0004	<0.0004	-	-	-	8	0	<0.0004	<0.0004	<0.0004	-	-	-	10	0	<0.0004	<0.0004	<0.0004	-	-	-	30	0	<0.0004	<0.0004	<0.0004	-	-	-
Vanadium	8	0	<0.02	<0.02	<0.02	-	-	-	8	0	<0.02	<0.02	<0.02	-	-	-	10	0	<0.02	<0.02	<0.02	-	-	-	30	10	<0.02	<0.02	0.111	-	-	-
Zinc	8	100	3.01	3.27	6.27	3.69	1.08	0.38	8	100	8.88	10.80	17.20	11.51	2.62	0.93	10	100	5.29	10.09	14.30	10.03	3.29	1.04	30	100	3.21	3.73	4.45	3.72	0.31	0.06
Zirconium	8	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-	30	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 3: Summary Statistics for Liver Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Horsefly River									Polley Lake										Quesnel Lake- Hazeltine Creek									Quesnel Lake- Hazeltine Creek								
	Sockeye Salmon									Rainbow Trout										Burbot									Lake Trout								
Parameter	n	%>DL	Min	Med	% Magnitude Soda Creek	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Bootjack Lake	% Magnitude 2015	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude 2015	Max	Mean	SD	SE
% Moisture	30	100	75.7	77.6	0	80.0	77.5	1.4	0.2	15	100	71.1	73.4	-2	-5	78.0	73.8	2.0	0.5	12	100	22.7	59.6	82.2	56.6	16.0	4.6	51	100	69.0	78.5	10	82.4	77.7	2.4	0.3
Aluminum	30	83	<0.4	0.79	-	2.58	0.94	0.61	0.11	15	20	<1	<1	-	-	4.23	-	-	-	12	92	<0.4	1.18	7.89	2.20	2.32	0.67	51	78	<0.4	0.56	-	2.92	0.78	0.53	0.07
Antimony	30	10	<0.002	<0.002	-	0.0103	-	-	-	15	0	<0.002	<0.002	-	-	<0.002	-	-	-	12	100	0.0022	0.0064	0.0283	0.0090	0.0079	0.0023	51	0	<0.001	<0.002	-	<0.005	-	-	-
Arsenic	30	100	0.162	0.283	-35	0.870	0.337	0.156	0.029	15	100	0.0193	0.0271	85	119	0.0480	0.0309	0.0091	0.0024	12	100	0.297	0.892	5.100	1.277	1.297	0.375	51	100	0.0324	0.1510	36	0.3930	0.1593	0.0747	0.0105
Barium	30	60	<0.01	0.013	-	0.049	0.014	0.010	0.002	15	27	<0.01	<0.01	-	-	0.068	-	-	-	12	17	<0.01	<0.01	0.019	-	-	-	51	8	<0.01	<0.01	-	0.034	-	-	-
Beryllium	30	0	<0.002	<0.002	-	<0.002	-	-	-	15	0	<0.002	<0.002	-	-	<0.04	-	-	-	12	0	<0.002	<0.002	<0.002	-	-	-	51	0	<0.002	<0.002	-	<0.02	-	-	-
Bismuth	30	0	<0.002	<0.002	-	<0.002	-	-	-	13	0	<0.002	<0.002	-	-	<0.002	-	-	-	12	42	<0.002	<0.002	0.0093	-	-	-	47	0	<0.002	<0.002	-	<0.002	-	-	-
Boron	30	0	<0.2	<0.2	-	<0.2	-	-	-	15	0	<0.2	<0.2	-	-	<0.8	-	-	-	12	0	<0.2	<0.2	<0.2	-	-	-	51	0	<0.2	<0.2	-	<0.4	-	-	-
Cadmium	30	100	0.58	1.05	-3	3.44	1.25	0.66	0.12	15	100	0.0058	0.0265	-17	-25	0.0596	0.0278	0.0162	0.0042	12	100	0.0447	0.2130	0.7660	0.2668	0.2115	0.0611	51	100	0.0223	0.0936	89	0.2640	0.0939	0.0529	0.0074
Calcium	30	100	32.9	57.1	-28	74.0	53.9	14.3	2.6	15	100	65.8	109.0	57	54	397.0	130.5	83.6	21.6	12	100	20.3	41.5	105.0	54.1	29.6	8.6	51	100	60.2	98.3	37	183.0	107.6	31.2	4.4
Cesium	30	100	0.0028	0.0061	-20	0.0087	0.0061	0.0012	0.0002	13	100	0.0047	0.0063	-2	-38	0.0088	0.0064	0.0013	0.0004	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd
Chromium	30	100	0.061	0.149	482	0.328	0.166	0.070	0.013	15	0	<0.04	<0.04	-	-	<0.08	-	-	-	12	75	<0.01	0.02	0.72	0.08	0.20	0.06	51	86	0.014	0.043	-	0.263	0.068	0.059	0.008
Cobalt	30	100	0.0146	0.0232	-12	0.0419	0.0240	0.0062	0.0011	15	100	0.0121	0.0184	50	-5	0.1460	0.0312	0.0387	0.0100	12	100	0.0381	0.2165	1.5500	0.3408	0.4030	0.1163	51	100	0.0215	0.0312	85	0.0506	0.0322	0.0075	0.0011
Copper	30	100	25.3	115.5	-25	335.0	154.2	106.8	19.5	15	100	3.37	29.40	20	48	190.00	39.60	45.56	11.76	12	100	4.73	7.64	48.30	13.79	13.12	3.79	51	100	2.84	13.80	-43	38.50	14.92	7.69	1.08
Iron	30	100	17.8	45.3	-55	141.0	48.2	26.1	4.8	15	100	177	347	95	-23	631	362	138	36	12	100	30.6	77.0	492.0	146.7	146.8	42.4	51	100	62.8	141.0	122	749.0	189.7	145.8	20.4
Lead	30	10	<0.004	<0.004	-	0.0587	-	-	-	15	7	<0.004	<0.01	-	-	0.0108	-	-	-	12	25	<0.004	<0.004	0.0945	-	-	-	51	33	<0.002	<0.004	-	0.185	-	-	-
Lithium	30	0	<0.1	<0.1	-	<0.1	-	-	-	13	0	<0.1	<0.1	-	-	<0.1	-	-	-	12	0	<0.1	<0.1	<0.1	-	-	-	47	0	<0.1	<0.1	-	<0.1	-	-	-
Magnesium	30	100	145	228	35	256	205	38	7	15	100	148	182	-3	15	232	187	23	6	12	100	61.5	94.2	293.0	110.9	62.0	17.9	51	100	85.3	164.0	14	208.0	166.6	23.5	3.3
Manganese	30	100	1.04	1.36	2	1.78	1.37	0.21	0.04	15	100	1.17	1.96	10	19	3.21	2.09	0.72	0.19	12	100	0.251	0.652	1.800	0.758	0.408	0.118	51	100	0.391	1.000	-1	1.510	0.992	0.217	0.030
Mercury	30	100	0.0451	0.0768	-19	0.1410	0.0803	0.0220	0.0040	13	100	0.0400	0.0516	55	-11	0.0692	0.0507	0.0092	0.0026	12	100	0.037	0.124	0.685	0.194	0.203	0.059	47	100	0.135	0.358	240	1.760	0.468	0.343	0.050
Molybdenum	30	100	0.124	0.192	11	0.504	0.196	0.064	0.012	15	100	0.248	0.458	168	-13	0.740	0.463	0.167	0.043	12	100	0.0493	0.1315	0.5120	0.1700	0.1264	0.0365	51	100	0.044	0.130	19	0.273	0.141	0.047	0.007
Nickel	30	100	0.042	0.107	152	0.220	0.116	0.046	0.008	15	13	<0.02	<0.04	-	-	3.03	-	-	-	12	58	<0.04	0.047	0.512	0.121	0.172	0.050	51	41	<0.01	<0.04	-	0.31	-	-	-
Phosphorus	30	100	2850	3910	21	4520	3697	604	110	15	100	2750	3370	0	13	3800	3339	304	78	12	100	1200	1750	5420	2003	1128	326	51	100	1420	3140	13	4090	3178	419	59
Potassium	30	100	3160	4030	15	4800	4040	509	93	15	100	2590	3170	-5	38	3460	3037	276	71	12	100	1380	1745	6020	2113	1263	365	51	100	1320	2640	22	3760	2657	324	45
Rubidium	30	100	0.862	1.100	17	1.710	1.180	0.249	0.045	13	100	1.18	1.45	-53	4	2.61	1.57	0.36	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Selenium*	30	100	21.32	42.73	-17	115.05	53.99	27.07	4.94	15	100	3.89	40.77	56	-37	253.74	56.44	59.23	15.29	12	100	1.067	2.808	29.273	5.760	8.425	2.432	51	100	3.148	8.945	48	15.242	8.990	2.387	0.334
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	0	<20	--	-	--	<20	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	4	0	<10	<10	-	<10	-	-	-
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	100	0.0724	0.0992	-	-	0.1260	0.0992	0.0379	0.0268	12	100	0.009	0.043	0.204	0.061	0.055	0.016	51	100	0.0291	0.1640	-	0.8250	0.2134	0.1582	0.0221
Sodium	30	100	520	781	-32	1300	834	193	35	15	100	852	1070	24	-8	1370	1086	139	36	12	100	540	646	1950	803	409	118	51	100	685	1310	24	1910	1283	228	32
Strontium	30	100	0.067	0.117	-53	0.222	0.121	0.035	0.006	15	100	0.100	0.235	95	196	0.875	0.290	0.196	0.051	12	100	0.070	0.124	0.276	0.157	0.082	0.024	51	100	0.0898	0.1690	100	0.3330	0.1801	0.0574	0.0080
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	100	2140	2235	-	-	2330	2235	134	95	nd	nd	nd	nd	nd	nd	nd	nd	4	100	1270	2405	-	2610	2173	610	305
Tellurium	30	0	<0.004	<0.004	-	<0.004	-	-	-	13	0	<0.004	<0.004	-	-	<0.004	-	-	-	12	0	<0.004	<0.004	<0.004	-	-	-	47	0	<0.004	<0.004	-	<0.004	-	-	-
Thallium	30	100	0.00192	0.00467	21	0.01430	0.00614	0.00350	0.00064	13	100	0.00214	0.00458	-76	-37	0.00980	0.00473	0.00202	0.00056	12	100	0.00154	0.00399	0.00679	0.00412	0.00150	0.00043	47	100	0.0236	0.0525	-40	0.0903	0.0541	0.0155	0.0023
Tin	30	60	<0.02	0.022	-	0.039	0.020	0.009	0.002	15	0	<0.02	<0.02	-	-	<0.04	-	-	-	12	8	<0.02	<0.02	0.029	-	-	-	51	4	<0.02	<0.02	-	0.109	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	2	0	<0.04	--	-	--	<0.04	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	4	0	<0.2	<0.2	-	0.1	-	-	-
Uranium	30	100	0.00055	0.00115	20	0.00314	0.00132	0.00063	0.00011	13	54	<0.0004	0.00049	-	-16	0.00116	0.00051	0.00035	0.00010	12	83	<0.0004	0.0030	0.0499	0.0078	0.0137	0.0040	47	28	<0.0004	<0.0004	-	0.00123	-	-	-
Vanadium	30	100	0.049	0.093	-29	0.529	0.117	0.089	0.016	15	80	<0.02	0.051	-	-56	0.182	0.070	0.051	0.013	12	83	<0.02	0.04	1.03	0.19	0.29	0.08	51	33	<0.02	<0.02	-	0.079	-	-	-
Zinc	30	100	22.3	31.5	-18	47.7	31.8	6.8	1.2	15	100	27.1	48.1	34	64	73.1	45.5	12.5	3.2	12	100	10.1	19.2	75.4	24.1	17.7	5.1	51	100	14.3	29.5	4	38.1	29.6	4.3	0.6
Zirconium	30	0	<0.04	<0.04	-	<0.04	-	-	-	13	0	<0.04	<0.04	-	-	<0.04	-	-	-	12	0	<0.04	<0.04	<0.04	-	-	-	47	0	<0.04	<0.04	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	12	100	0.028	0.050	0.436	0.096	0.113	0.033	47	100	0.0154	0.1300	-	1.4400	0.2390	0.2613	0.0381
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 3: Summary Statistics for Liver Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Quesnel Lake- Hazeltine Creek								Quesnel Lake- Hazeltine Creek								Quesnel Lake- Horsefly River confluence								Quesnel Lake- near Quesnel River												Quesnel Lake- near Quesnel River							
	Longnose Sucker								Moutain Whitefish								Burbot								Kokanee												Rainbow Trout							
Parameter	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	% Magnitude 2015	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	1	100	85.3	--	85.3	--	--	--	4	100	75.0	78.0	78.5	77.4	1.6	0.8	1	100	43.5	--	43.5	--	--	--	10	100	76.8	79.1	1	3	80.8	79.0	1.2	0.4	2	100	66.9	--	82.8	--	--	--
Aluminum	1	0	<1	--	<1	--	--	--	4	50	0.28	<1	2.37	-	-	-	1	100	1.77	--	1.77	--	--	--	10	0	<0.4	<1	-	-	<1	-	-	-	2	100	2.12	--	4.1	--	--	--
Antimony	1	0	<0.002	--	<0.002	--	--	--	4	25	<0.001	<0.008	<0.008	-	-	-	1	100	0.0062	--	0.0062	--	--	--	10	0	<0.002	<0.002	-	-	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--
Arsenic	1	100	0.0326	--	0.0326	--	--	--	4	100	0.0200	0.0252	0.0326	0.0258	0.0052	0.0026	1	100	1.91	--	1.91	--	--	--	10	100	0.0272	0.0496	19	3	0.0757	0.0486	0.0155	0.0049	2	100	0.0418	--	0.0466	--	--	--
Barium	1	100	0.041	--	0.041	--	--	--	4	25	<0.01	<0.02	0.02	-	-	-	1	0	<0.01	--	<0.01	--	--	--	10	0	<0.01	<0.01	-	-	<0.01	-	-	-	2	50	<0.01	--	0.012	--	--	--
Beryllium	1	0	<0.002	--	<0.002	--	--	--	4	0	<0.002	<0.02	<0.02	-	-	-	1	0	<0.002	--	<0.002	--	--	--	10	0	<0.002	<0.002	-	-	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--
Bismuth	1	0	<0.002	--	<0.002	--	--	--	2	0	<0.002	--	<0.002	--	--	--	1	100	0.0063	--	0.0063	--	--	--	10	0	<0.002	<0.002	-	-	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--
Boron	1	0	<0.2	--	<0.2	--	--	--	4	0	<0.2	<0.2	<0.4	-	-	-	1	0	<0.2	--	<0.2	--	--	--	10	0	<0.2	<0.2	-	-	<0.2	-	-	-	2	0	<0.2	--	<0.2	--	--	--
Cadmium	1	100	0.0106	--	0.0106	--	--	--	4	100	0.0392	0.0562	0.0753	0.0567	0.0177	0.0089	1	100	0.212	--	0.212	--	--	--	10	100	0.0376	0.0718	7	-44	0.1260	0.0780	0.0252	0.0080	2	100	0.296	--	0.496	--	--	--
Calcium	1	100	109	--	109	--	--	--	4	100	67	114	328	156	117	59	1	100	29.8	--	29.8	--	--	--	10	100	57.4	88.6	1	36	137.0	91.0	24.6	7.8	2	100	61	--	198	--	--	--
Cesium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1	100	0.0116	--	0.0116	--	--	--	10	100	0.0115	0.0189	-2	59	0.0230	0.0178	0.0035	0.0011	2	100	0.0067	--	0.0198	--	--	--
Chromium	1	0	<0.04	--	<0.04	--	--	--	4	25	<0.04	<0.04	0.041	-	-	-	1	0	<0.01	--	<0.01	--	--	--	10	20	0.018	<0.04	-	-	<0.04	-	-	-	2	100	0.077	--	0.135	--	--	--
Cobalt	1	100	0.0462	--	0.0462	--	--	--	4	100	0.0872	0.1009	0.1110	0.1000	0.0098	0.0049	1	100	0.154	--	0.154	--	--	--	10	100	0.0216	0.0239	-4	3	0.0313	0.0250	0.0034	0.0011	2	100	0.0191	--	0.0382	--	--	--
Copper	1	100	2.3	--	2.3	--	--	--	4	100	0.943	1.360	1.720	1.346	0.338	0.169	1	100	10	--	10	--	--	--	10	100	23.3	63.5	-34	-33	243.0	82.9	69.4	21.9	2	100	38.9	--	140	--	--	--
Iron	1	100	76	--	76	--	--	--	4	100	41.8	52.2	76.3	55.6	15.0	7.5	1	100	109	--	109	--	--	--	10	100	168	315	-4	3	392	294	72	23	2	100	169	--	819	--	--	--
Lead	1	0	<0.01	--	<0.01	--	--	--	4	50	0.0025	0.0045	<0.01	-	-	-	1	0	<0.004	--	<0.004	--	--	--	10	0	<0.004	<0.01	-	-	<0.01	-	-	-	2	50	<0.01	--	0.0054	--	--	--
Lithium	1	0	<0.1	--	<0.1	--	--	--	2	0	<0.1	--	<0.1	--	--	--	1	0	<0.1	--	<0.1	--	--	--	10	0	<0.1	<0.1	-	-	<0.1	-	-	-	2	0	<0.1	--	<0.1	--	--	--
Magnesium	1	100	95.5	--	95.5	--	--	--	4	100	104	219	252	199	65	33	1	100	99	--	99	--	--	--	10	100	134	164	7	0	195	163	19	6	2	100	129	--	201	--	--	--
Manganese	1	100	0.686	--	0.686	--	--	--	4	100	1.01	1.42	2.13	1.49	0.50	0.25	1	100	0.733	--	0.733	--	--	--	10	100	0.691	0.866	8	-44	1.130	0.876	0.150	0.047	2	100	1.39	--	2.91	--	--	--
Mercury	1	100	0.0332	--	0.0332	--	--	--	2	100	0.129	--	0.174	--	--	--	1	100	0.22	--	0.22	--	--	--	10	100	0.0938	0.1335	-12	40	0.1920	0.1341	0.0333	0.0105	2	100	0.121	--	2.51	--	--	--
Molybdenum	1	100	0.0211	--	0.0211	--	--	--	4	100	0.042	0.106	0.117	0.093	0.035	0.017	1	100	0.157	--	0.157	--	--	--	10	100	0.0956	0.1340	5	-27	0.1740	0.1339	0.0200	0.0063	2	100	0.799	--	0.854	--	--	--
Nickel	1	0	<0.04	--	<0.04	--	--	--	4	75	<0.04	0.065	0.082	0.058	0.028	0.014	1	0	<0.04	--	<0.04	--	--	--	10	0	<0.04	<0.04	-	-	<0.04	-	-	-	2	50	<0.04	--	0.049	--	--	--
Phosphorus	1	100	1550	--	1550	--	--	--	4	100	1630	3175	3760	2935	914	457	1	100	1980	--	1980	--	--	--	10	100	2270	2515	6	-16	2880	2538	181	57	2	100	2520	--	4310	--	--	--
Potassium	1	100	2220	--	2220	--	--	--	4	100	1640	3050	3300	2760	760	380	1	100	1890	--	1890	--	--	--	10	100	2290	2615	3	27	2850	2583	195	62	2	100	1890	--	3060	--	--	--
Rubidium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1	100	2.68	--	2.68	--	--	--	10	100	2.48	2.87	-3	14	3.23	2.85	0.27	0.08	2	100	2.16	--	4.76	--	--	--
Selenium*	1	100	4.0	--	4.0	--	--	--	4	100	5.40	7.61	8.82	7.36	1.43	0.71	1	100	2.28	--	2.28	--	--	--	10	100	14.74	31.61	-9	-44	55.60	31.49	15.76	4.99	2	100	41.7	--	162.8	--	--	--
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	2	0	<10	--	<10	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	1	100	0.0154	--	0.0154	--	--	--	4	50	<0.004	<0.004	0.0075	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	1	100	1090	--	1090	--	--	--	4	100	485	984	1150	901	289	145	1	100	620	--	620	--	--	--	10	100	943	1430	-4	19	1620	1384	192	61	2	100	871	--	1920	--	--	--
Strontium	1	100	0.297	--	0.297	--	--	--	4	100	0.162	0.229	0.521	0.285	0.168	0.084	1	100	0.097	--	0.097	--	--	--	10	100	0.083	0.116	-11	62	0.181	0.123	0.035	0.011	2	100	0.085	--	0.165	--	--	--
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	2	100	1260	--	2390	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	1	0	<0.004	--	<0.004	--	--	--	2	0	<0.004	--	<0.004	--	--	--	1	0	<0.004	--	<0.004	--	--	--	10	0	<0.004	<0.004	-	-	<0.004	-	-	-	2	50	<0.004	--	0.0622	--	--	--
Thallium	1	100	0.00482	--	0.00482	--	--	--	2	100	0.0116	--	0.0135	--	--	--	1	100	0.003	--	0.003	--	--	--	10	100	0.0205	0.0291	-10	-27	0.0573	0.0337	0.0129	0.0041	2	100	0.0190	--	0.0275	--	--	--
Tin	1	0	<0.02	--	<0.02	--	--	--	4	0	<0.02	<0.02	<0.02	-	-	-	1	100	0.025	--	0.025	--	--	--	10	50	<0.02	0.021	-	-70	0.053	-	-	-	2	50	<0.02	--	0.022	--	--	--
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	2	0	<0.2	--	<0.2	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	1	0	<0.0004	--	<0.0004	--	--	--	2	100	0.00315	0.00418	0.00520	0.00418	0.00145	0.00103	1	100	0.00265	--	0.00265	--	--	--	10	0	<0.0004	<0.0004	-	-	<0.0004	-	-	-	2	100	0.00399	--	0.00717	--	--	--
Vanadium	1	0	<0.02	--	<0.02	--	--	--	4	25	<0.02	<0.04	<0.04	-	-	-	1	0	<0.01	--	<0.01	--	--	--	10	10	<0.02	<0.02	-	-	0.024	-	-	-	2	100	0.307	--	0.338	--	--	--
Zinc	1	100	16	--	16	--	--	--	4	100	18.5	35.1	86.2	43.7	29.6	14.8	1	100	22.5	--	22.5	--	--	--	10	100	74.5	98.3	34	53	150.0	102.0	22.1	7.0	2	100	37.6	--	82.8	--	--	--
Zirconium	1	0	<0.04	--	<0.04	--	--	--	2	0	<0.04	--	<0.04	--	--	--	1	0	<0.04	--	<0.04	--	--	--	10	0	<0.04	<0.04	-	-	<0.04	-	-	-	2	0	<0.04	--	<0.04	--	--	--
Methylmercury	1	100	0.0106	--	0.0106	--	--	--	2	100	0.0777	--	0.0850	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 3: Summary Statistics for Liver Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Quesnel River										Quesnel Lake - Middle								Quesnel Lake - West							
	Rainbow Trout										Sockeye Salmon								Sockeye Salmon							
Parameter	n	%>DL	Min	Med	% Magnitude Bootjack Lake	% Magnitude 2015	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude 2015	Max	Mean	SD	SE
% Moisture	12	100	72.3	74.3	-1	6	77.0	74.6	1.6	0.5	3	100	42.5	52.7	59.5	51.6	8.6	4.9	6	100	57.8	60.8	-5	62.3	60.2	2.0	0.8
Aluminum	12	83	<1	3.2	-	47	6.6	2.8	1.9	0.6	3	100	1.7	2.2	6.1	3.3	2.4	1.4	6	67	<1	1.6	19	5.0	2.4	2.1	0.9
Antimony	12	0	<0.002	<0.002	-	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	6	0	<0.002	<0.002	-	<0.002	-	-	-
Arsenic	12	100	0.0191	0.0344	135	-56	0.0890	0.0406	0.0221	0.0064	3	100	0.289	0.303	0.401	0.331	0.061	0.035	6	100	0.313	0.393	-68	0.460	0.390	0.059	0.024
Barium	12	83	<0.01	0.019	-10	-34	0.102	0.027	0.027	0.008	3	100	0.143	0.199	0.363	0.235	0.114	0.066	6	100	0.067	0.090	-46	0.135	0.098	0.029	0.012
Beryllium	12	0	<0.002	<0.002	-	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	6	0	<0.002	<0.002	-	<0.002	-	-	-
Bismuth	12	0	<0.002	<0.002	-	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	6	0	<0.002	<0.002	-	<0.002	-	-	-
Boron	12	8	<0.2	<0.2	-	-	0.22	-	-	-	3	33	<0.2	<0.2	0.23	-	-	-	6	0	<0.2	<0.2	-	<0.2	-	-	-
Cadmium	12	92	<0.001	0.264	721	38	0.818	0.291	0.204	0.059	3	100	0.087	0.101	0.144	0.111	0.030	0.017	6	100	0.193	0.214	-24	0.241	0.217	0.017	0.007
Calcium	12	100	41.4	51.4	-26	-50	182.0	71.7	43.2	12.5	3	100	2090	3400	5140	3543	1530	883	6	100	669	930	-26	1040	899	150	61
Cesium	12	100	0.0031	0.0067	4	-54	0.0194	0.0077	0.0042	0.0012	3	100	0.0315	0.0330	0.0497	0.0381	0.0101	0.0058	6	100	0.0218	0.0240	-16	0.0299	0.0246	0.0031	0.0013
Chromium	12	67	<0.01	0.041	-44	-	0.081	0.041	0.023	0.007	3	100	0.059	0.069	0.495	0.208	0.249	0.144	6	0	<0.04	<0.04	-	<0.04	-	-	-
Cobalt	12	100	0.0132	0.0462	277	-39	0.0807	0.0484	0.0193	0.0056	3	100	0.0427	0.0440	0.0713	0.0527	0.0162	0.0093	6	100	0.0159	0.0185	-14	0.0228	0.0190	0.0026	0.0011
Copper	12	100	0.161	12.850	-47	-7	102.000	23.058	27.099	7.823	3	100	17.9	21.6	24.4	21.3	3.3	1.9	6	100	21.9	24.5	-82	26.9	24.5	1.7	0.7
Iron	12	100	3.27	446.00	151	42	753.00	403.52	218.66	63.12	3	100	77.3	85.2	115	92.5	19.9	11.5	6	100	48.1	51.7	-72	56.7	51.7	3.1	1.3
Lead	12	17	<0.004	<0.01	-	-	0.12	-	-	-	3	67	<0.01	0.015	0.021	0.014	0.008	0.005	6	0	<0.01	<0.01	-	<0.01	-	-	-
Lithium	12	0	<0.1	<0.1	-	-	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-	6	0	<0.1	<0.1	-	<0.1	-	-	-
Magnesium	12	100	147	177	-6	-15	309	193	43	12	3	100	227	244	389	287	89	51	6	100	183	192	-14	204	193	8	3
Manganese	12	100	0.114	2.235	26	-27	4.010	2.344	1.129	0.326	3	100	0.429	0.657	1.460	0.849	0.542	0.313	6	100	0.455	0.560	-1	1.390	0.695	0.359	0.147
Mercury	12	100	0.0302	0.0874	163	72	0.2250	0.1120	0.0682	0.0197	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	12	92	<0.004	0.238	39	-29	0.378	0.230	0.095	0.027	3	100	0.0989	0.1000	0.1440	0.1143	0.0257	0.0149	6	100	0.141	0.165	41	0.189	0.165	0.016	0.007
Nickel	12	0	<0.04	<0.04	-	-	<0.04	-	-	-	3	67	0.020	0.043	0.217	0.093	0.108	0.062	6	0	<0.04	<0.04	-	<0.04	-	-	-
Phosphorus	12	100	2640	3365	0	-16	4050	3438	487	141	3	100	2620	2950	5030	3533	1307	754	6	100	2070	2185	-19	2410	2210	123	50
Potassium	12	100	2730	3145	-5	24	4310	3258	453	131	3	100	3450	3470	5180	4033	993	573	6	100	2620	2775	-25	3300	2893	294	120
Rubidium	12	100	1.94	4.47	46	63	6.45	4.32	1.41	0.41	3	100	4.45	4.55	6.72	5.24	1.28	0.74	6	100	4.27	4.43	-33	5.06	4.51	0.28	0.12
Selenium*	12	100	2.261	16.750	-36	-19	81.413	21.279	20.774	5.997	3	100	6.45	6.81	7.94	7.07	0.78	0.45	6	100	9.36	10.85	6	12.80	10.91	1.36	0.55
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	12	100	247	969	12	-2	1630	954	339	98	3	100	717	760	1110	862	216	124	6	100	582	621	-36	687	628	40	16
Strontium	12	100	0.052	0.087	-28	-59	0.218	0.103	0.051	0.015	3	100	2.98	5.47	8.21	5.55	2.62	1.51	6	100	1.43	1.83	45	2.78	1.98	0.54	0.22
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	12	8	<0.004	<0.004	-	-	0.0153	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-	6	0	<0.004	<0.004	-	<0.004	-	-	-
Thallium	12	100	0.008	0.025	32	-19	0.041	0.023	0.010	0.003	3	100	0.0137	0.0138	0.0213	0.0163	0.0044	0.0025	6	100	0.00888	0.010175	-21	0.0123	0.0104	0.0014	0.0006
Tin	12	42	<0.02	<0.02	-	-	0.172	-	-	-	3	100	0.074	0.081	0.474	0.210	0.229	0.132	6	100	0.027	0.072	50	0.234	0.089	0.075	0.030
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	12	92	<0.0004	0.0024	-	41	0.0109	0.0035	0.0031	0.0009	3	100	0.00052	0.00058	0.00156	0.00089	0.00058	0.00034	6	100	0.00048	0.00059	-71	0.00092	0.00063	0.00015	0.00006
Vanadium	12	83	<0.02	0.061	-	116	0.248	0.092	0.079	0.023	3	0	<0.02	<0.02	<0.02	-	-	-	6	0	<0.02	<0.02	-	<0.02	-	-	-
Zinc	12	100	2.96	29.30	-18	-20	35.10	27.88	8.88	2.56	3	100	79.7	80.2	127.0	95.6	27.2	15.7	6	100	59.6	71.3	-59	90.3	72.5	10.2	4.2
Zirconium	12	0	<0.04	<0.04	-	-	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-	6	0	<0.04	<0.04	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 4: Summary Statistics for Liver Tissues of all Fish Species Captured in the Reference Sites in 2014

	Bootjack Lake								Quesnel Lake- North Arm								Soda Creek								Quesnel Lake - North Arm							
	Rainbow Trout								Kokanee								Sockeye Salmon								Sockeye Salmon							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	8	100	71.9	74.8	76.9	74.8	1.7	0.6	10	100	75.9	78.2	80.7	78.4	1.4	0.5	30	100	75.7	77.8	79.6	77.6	1.0	0.2	3	100	57.0	60.2	63.0	60.1	3.0	1.7
Aluminum	8	0	<1	<1	<1	-	-	-	10	0	<0.4	<1	<1	-	-	-	30	27	<0.4	<0.4	2.44	-	-	-	3	100	1.5	2.2	3.1	2.3	0.8	0.5
Antimony	8	0	<0.002	<0.002	<0.002	-	-	-	10	20	<0.002	<0.002	0.0088	-	-	-	30	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	8	100	0.0086	0.0147	0.0210	0.0150	0.0042	0.0015	10	100	0.0339	0.0416	0.0784	0.0448	0.0141	0.0045	30	100	0.244	0.434	0.716	0.462	0.139	0.025	3	100	0.335	0.395	0.428	0.386	0.047	0.027
Barium	8	75	<0.01	0.021	0.151	0.038	0.049	0.017	10	0	<0.01	<0.01	<0.01	-	-	-	30	0	<0.01	<0.01	<0.01	-	-	-	3	100	0.106	0.148	0.219	0.158	0.057	0.033
Beryllium	8	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	30	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	8	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	30	3	<0.002	<0.002	0.0027	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Boron	8	0	<0.2	<0.2	<0.2	-	-	-	10	0	<0.2	<0.2	<0.2	-	-	-	30	0	<0.2	<0.2	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	8	100	0.0209	0.0321	0.0702	0.0379	0.0175	0.0062	10	100	0.0481	0.0673	0.1810	0.0847	0.0441	0.0139	30	100	0.503	1.085	2.630	1.199	0.497	0.091	3	100	0.103	0.103	0.118	0.108	0.009	0.005
Calcium	8	100	53.1	69.4	86.8	69.1	13.9	4.9	10	100	64.5	87.9	124.0	89.3	18.2	5.7	30	100	61.1	79.7	113.0	80.9	12.1	2.2	3	100	1580	2080	3280	2313	874	504
Cesium	8	100	0.0022	0.0065	0.0086	0.0062	0.0020	0.0007	10	100	0.0164	0.0193	0.0259	0.0198	0.0030	0.0010	30	100	0.0060	0.0077	0.0106	0.0080	0.0013	0.0002	3	100	0.0360	0.0390	0.0391	0.0380	0.0018	0.0010
Chromium	8	75	<0.04	0.074	0.186	0.079	0.056	0.020	10	20	<0.01	<0.04	<0.04	-	-	-	30	90	<0.01	0.03	1.01	0.14	0.26	0.05	3	100	0.222	0.234	0.311	0.256	0.048	0.028
Cobalt	8	100	0.0072	0.0123	0.0143	0.01125	0.0024	0.0008	10	100	0.0164	0.0250	0.0444	0.0278	0.0087	0.0028	30	100	0.0169	0.0265	0.0483	0.0287	0.0081	0.0015	3	100	0.0520	0.0549	0.0607	0.0559	0.0044	0.0026
Copper	8	100	12.2	24.4	149.0	41.3	45.8	16.2	10	100	37.3	96.3	147.0	91.1	36.5	11.5	30	100	47.2	153.0	343.0	170.9	90.9	16.6	3	100	31.8	33.1	34.6	33.2	1.4	0.8
Iron	8	100	120	178	480	226	135	48	10	100	128	327	854	382	225	71	30	100	32.5	100.7	193.0	102.8	34.1	6.2	3	100	89.1	95.6	104.0	96.2	7.5	4.3
Lead	8	0	<0.01	<0.01	<0.01	-	-	-	10	0	<0.004	<0.01	<0.01	-	-	-	30	17	<0.004	<0.004	0.0851	-	-	-	3	33	<0.01	<0.01	0.013	-	-	-
Lithium	8	0	<0.1	<0.1	<0.1	-	-	-	10	0	<0.1	<0.1	<0.1	-	-	-	30	0	<0.1	<0.1	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	8	100	163	189	246	195	26	9	10	100	132	153	177	151	15	5	30	100	144	169	221	177	26	5	3	100	218	242	252	237	17	10
Manganese	8	100	1.40	1.78	4.04	1.99	0.87	0.31	10	100	0.56	0.80	1.11	0.80	0.19	0.06	30	100	1.05	1.33	2.20	1.39	0.25	0.05	3	100	0.552	0.594	0.759	0.635	0.109	0.063
Mercury	8	100	0.0255	0.0332	0.0693	0.0385	0.0148	0.0052	10	100	0.081	0.151	0.219	0.148	0.049	0.015	30	100	0.0501	0.0952	0.1640	0.0933	0.0227	0.0042	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	8	100	0.152	0.171	0.222	0.179	0.026	0.009	10	100	0.0928	0.1275	0.1970	0.1321	0.0275	0.0087	30	100	0.130	0.173	0.281	0.178	0.031	0.006	3	100	0.124	0.130	0.136	0.130	0.006	0.003
Nickel	8	50	<0.04	<0.04	0.082	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-	30	57	<0.04	0.043	0.556	0.086	0.125	0.023	3	100	0.097	0.106	0.113	0.105	0.008	0.005
Phosphorus	8	100	3120	3380	4530	3521	466	165	10	100	2120	2370	2930	2456	256	81	30	100	2860	3235	4010	3345	367	67	3	100	2580	2740	3120	2813	277	160
Potassium	8	100	2990	3320	4220	3439	438	155	10	100	2450	2550	3130	2668	240	76	30	100	2980	3495	4560	3538	360	66	3	100	3340	3590	3660	3530	168	97
Rubidium	8	100	1.83	3.06	3.60	2.91	0.62	0.22	10	100	2.65	2.97	4.09	3.14	0.54	0.17	30	100	0.776	0.940	1.220	0.967	0.127	0.023	3	100	5.35	5.42	5.58	5.45	0.12	0.07
Selenium*	8	100	11.65	26.10	109.45	41.40	36.88	13.04	10	100	22.28	34.7	63.1	36.3	12.8	4.0	30	100	26.17	51.53	98.69	54.14	21.10	3.85	3	100	7.77	9.45	11.90	9.71	2.08	1.20
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	651	865	1100	875	148	52	10	100	1330	1485	1820	1504	139	44	30	100	725	1140	1350	1118	149	27	3	100	735	736	790	754	31	18
Strontium	8	100	0.078	0.121	0.201	0.130	0.043	0.015	10	100	0.104	0.131	0.194	0.138	0.029	0.009	30	100	0.169	0.249	0.469	0.261	0.065	0.012	3	100	2.65	3.41	6.51	4.19	2.04	1.18
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	<0.004	-	-	-	10	0	<0.004	<0.004	<0.004	-	-	-	30	0	<0.004	<0.004	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-
Thallium	8	100	0.0105	0.0187	0.0228	0.0168	0.0049	0.0017	10	100	0.0246	0.0324	0.0456	0.0332	0.0061	0.0019	30	100	0.00196	0.00386	0.01080	0.00441	0.00214	0.00039	3	100	0.0158	0.0158	0.0178	0.0165	0.0012	0.0007
Tin	8	100	0.030	0.044	0.099	0.053	0.023	0.008	10	40	<0.02	<0.02	0.071	-	-	-	30	30	<0.02	<0.02	0.05	-	-	-	3	100	0.053	0.060	0.061	0.058	0.004	0.003
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	37.5	<0.0004	<0.0004	0.00093	-	-	-	10	10	<0.0004	<0.0004	0.00055	-	-	-	30	93	<0.0004	0.00096	0.00274	0.00106	0.00057	0.00010	3	100	0.00053	0.00068	0.00089	0.00070	0.00018	0.00010
Vanadium	8	37.5	<0.02	<0.02	0.032	-	-	-	10	0	<0.02	<0.02	<0.02	-	-	-	30	100	0.042	0.131	1.250	0.239	0.288	0.053	3	0	<0.02	<0.02	<0.02	-	-	-
Zinc	8	100	31.7	35.9	135.0	48.5	35.1	12.4	10	100	48.5	73.4	122.0	80.2	22.8	7.2	30	100	26.0	38.5	80.4	40.9	9.9	1.8	3	100	90.4	90.4	101.0	93.9	6.1	3.5
Zirconium	8	0	<0.04	<0.04	<0.04	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-	30	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation;

SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 5: Summary Statistics for Ovary Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Polley Lake								Quesnel Lake- Hazeltine Creek								Quesnel Lake- Hazeltine Creek								Quesnel Lake- Hazeltine Creek							
	Rainbow Trout								Burbot								Lake Trout								Moutain Whitefish							
Parameter	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	2	100	80	--	83	--	--	--	8	100	76.3	83.8	85.8	83.1	2.9	1.0	33	100	68.6	80.9	83.7	79.0	4.7	0.8	3	100	68.0	73.1	74.3	71.8	3.3	1.9
Aluminum	2	100	0.31	--	5.69	--	--	--	8	88	<0.4	0.69	1.36	0.70	0.36	0.13	33	39	<0.4	<0.4	6.87	-	-	-	3	100	0.66	2.02	11.20	4.63	5.73	3.31
Antimony	2	0	<0.001	--	<0.002	--	--	--	8	25	<0.002	<0.002	0.0037	-	-	-	33	0	<0.001	<0.002	<0.002	-	-	-	3	0	<0.001	<0.004	<0.004	-	-	-
Arsenic	2	100	0.018	--	0.041	--	--	--	8	100	0.177	0.337	0.938	0.378	0.244	0.086	33	100	0.0063	0.0370	0.1000	0.0365	0.0195	0.0034	3	100	0.0180	0.0352	0.0542	0.0358	0.0181	0.0105
Barium	2	100	0.021	--	0.067	--	--	--	8	50	<0.01	<0.01	0.058	-	-	-	33	21	<0.01	<0.01	0.084	-	-	-	3	100	0.025	0.048	0.325	0.133	0.167	0.096
Beryllium	2	0	<0.02	--	<0.04	--	--	--	8	0	<0.002	<0.002	<0.002	-	-	-	33	0	<0.002	<0.002	0.02	-	-	-	3	0	<0.002	<0.02	<0.02	-	-	-
Bismuth	nd	nd	nd	nd	nd	nd	nd	nd	8	0	<0.002	<0.002	<0.002	-	-	-	29	0	<0.002	<0.002	<0.002	-	-	-	2	0	<0.002	--	<0.004	--	--	--
Boron	2	0	<0.4	--	<0.8	--	--	--	8	0	<0.2	<0.2	<0.2	-	-	-	33	0	<0.2	<0.2	<0.8	-	-	-	3	0	<0.2	<0.4	<0.4	-	-	-
Cadmium	2	100	0.0178	--	0.0574	--	--	--	8	100	0.0016	0.0045	0.0086	0.0046	0.0025	0.0009	33	100	0.0028	0.0073	0.0221	0.0102	0.0060	0.0010	3	100	0.0102	0.0246	0.0318	0.0222	0.0110	0.0063
Calcium	2	100	200	--	332	--	--	--	8	100	56.1	104.8	417.0	145.0	117.0	41.4	33	100	41.6	231.0	404.0	222.3	98.1	17.1	3	100	326	453	906	562	305	176
Cesium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	2	0	<0.04	--	<0.08	--	--	--	8	63	<0.01	0.051	0.580	0.161	0.212	0.075	33	76	<0.01	0.022	0.075	0.027	0.018	0.003	3	67	<0.04	<0.04	0.073	0.035	0.033	0.019
Cobalt	2	100	0.0705	--	0.2550	--	--	--	8	100	0.0180	0.0257	0.0495	0.0290	0.0101	0.0036	33	100	0.0083	0.0316	0.0800	0.0378	0.0228	0.0040	3	100	0.140	0.140	0.265	0.182	0.072	0.042
Copper	2	100	1.29	--	4.47	--	--	--	8	100	0.54	0.92	1.18	0.91	0.22	0.08	33	100	0.259	4.000	11.700	4.252	2.922	0.509	3	100	1.04	1.20	1.96	1.40	0.49	0.28
Iron	2	100	24.7	--	105.0	--	--	--	8	100	15.7	23.4	43.5	25.2	9.8	3.5	33	100	15.8	48.2	114.0	49.7	18.6	3.2	3	100	31.2	35.9	46.5	37.9	7.8	4.5
Lead	2	50	<0.002	--	0.0091	--	--	--	8	25	<0.004	<0.004	0.0175	-	-	-	33	27	<0.002	<0.004	0.0429	-	-	-	3	0	<0.002	<0.008	<0.008	-	-	-
Lithium	nd	nd	nd	nd	nd	nd	nd	nd	8	0	<0.1	<0.1	<0.1	-	-	-	29	0	<0.1	<0.1	<0.1	-	-	-	2	0	<0.1	--	<0.2	--	--	--
Magnesium	2	100	75.6	--	167.0	--	--	--	8	100	104	143	168	141	23	8	33	100	110	153	380	184	77	13	3	100	279	323	338	313	31	18
Manganese	2	100	1.1	--	2.2	--	--	--	8	100	0.155	0.214	0.254	0.209	0.038	0.013	33	100	0.126	0.976	2.360	1.056	0.712	0.124	3	100	5.57	6.75	8.67	7.00	1.56	0.90
Mercury	nd	nd	nd	nd	nd	nd	nd	nd	8	100	0.073	0.112	0.196	0.120	0.049	0.017	29	100	0.064	0.184	0.615	0.199	0.122	0.023	2	100	0.039	--	0.049	--	--	--
Molybdenum	2	50	<0.01	--	0.034	--	--	--	8	100	0.0215	0.0422	0.0875	0.0442	0.0227	0.0080	33	94	0.0057	0.0136	0.0629	0.0171	0.0123	0.0021	3	100	0.0133	0.0160	0.0226	0.0173	0.0048	0.0028
Nickel	2	100	0.010	--	0.082	--	--	--	8	63	<0.04	0.116	0.404	0.147	0.143	0.051	33	33	<0.02	<0.04	0.173	-	-	-	3	67	<0.08	0.084	0.132	0.085	0.046	0.027
Phosphorus	2	100	1120	--	2360	--	--	--	8	100	1910	2355	2840	2339	301	106	33	100	1630	2360	5070	2712	996	173	3	100	2760	2770	3390	2973	361	208
Potassium	2	100	1270	--	2890	--	--	--	8	100	2080	3040	3600	2968	478	169	33	100	1900	2820	4500	2941	662	115	3	100	2450	3050	3050	2850	346	200
Rubidium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Selenium*	2	100	3.81	--	12.65	--	--	--	8	100	4.72	5.71	10.00	6.10	1.73	0.61	33	100	1.881	4.821	7.158	4.672	1.134	0.197	3	100	7.70	7.98	8.03	7.90	0.18	0.10
Silicon	2	0	<10	--	<20	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	4	0	<10	<10	<20	-	-	-	1	0	<10	--	<10	--	--	--
Silver	2	0	<0.004	--	<0.008	--	--	--	8	75	<0.001	0.0014	0.0031	0.0015	0.0009	0.0003	33	94	<0.001	0.0071	0.0369	0.0095	0.0076	0.0013	3	67	<0.004	<0.004	0.0154	0.0071	0.0073	0.0042
Sodium	2	100	670	--	1600	--	--	--	8	100	688	918	1220	956	199	71	33	100	845	1370	1910	1349	284	49	3	100	647	791	995	811	175	101
Strontium	2	100	0.502	--	0.694	--	--	--	8	100	0.20	0.31	1.12	0.41	0.30	0.11	33	100	0.072	0.299	0.827	0.327	0.162	0.028	3	100	0.478	0.533	2.990	1.334	1.435	0.828
Sulphur	2	100	975.0	--	1850	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	4	100	1480	1715	1910	1705	186	93	1	100	2170	--	2170	--	--	--
Tellurium	nd	nd	nd	nd	nd	nd	nd	nd	8	0	<0.004	<0.004	<0.004	-	-	-	29	0	<0.004	<0.004	<0.004	-	-	-	2	0	<0.004	--	<0.008	--	--	--
Thallium	nd	nd	nd	nd	nd	nd	nd	nd	8	100	0.00106	0.00200	0.00658	0.00250	0.00178	0.00063	29	100	0.00588	0.01370	0.03890	0.01477	0.00667	0.00124	2	100	0.00527	--	0.00583	--	--	--
Tin	2	0	<0.02	--	<0.04	--	--	--	8	13	<0.02	<0.02	0.037	-	-	-	33	12	<0.02	<0.02	0.036	-	-	-	3	0	<0.02	<0.02	<0.04	-	-	-
Titanium	2	0	<0.2	--	<0.4	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	4	0	<0.2	<0.2	<0.4	-	-	-	1	0	<0.2	--	<0.2	--	--	--
Uranium	nd	nd	nd	nd	nd	nd	nd	nd	8	50	<0.0004	<0.0004	0.00277	-	-	-	29	7	<0.0004	<0.0004	0.00055	-	-	-	2	100	0.00302	--	0.00403	--	--	--
Vanadium	2	0	<0.04	--	<0.08	--	--	--	8	50	<0.02	<0.02	0.079	-	-	-	33	21	<0.02	<0.02	0.103	-	-	-	3	33	<0.02	<0.04	0.067	-	-	-
Zinc	2	100	26.2	--	74.7	--	--	--	8	100	28.2	45.7	52.5	43.4	8.9	3.2	33	100	12.5	33.4	61.2	32.3	11.6	2.0	3	100	40.8	49.9	52.4	47.7	6.1	3.5
Zirconium	nd	nd	nd	nd	nd	nd	nd	nd	8	0	<0.04	<0.04	<0.04	-	-	-	29	0	<0.04	<0.04	<0.04	-	-	-	2	0	<0.04	--	<0.08	--	--	--
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	8	100	0.0138	0.0398	0.0646	0.0376	0.0180	0.0064	29	100	0.0102	0.0661	0.1730	0.0791	0.0493	0.0092	2	100	0.0091	--	0.0092	--	--	--
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 5: Summary Statistics for Ovary Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Quesnel Lake- near Quesnel River									Quesnel River							
	Kokanee									Rainbow Trout							
Parameter	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	10	100	81.1	85.0	6	89.9	85.2	2.8	0.9	3	100	65.4	70.4	72.0	69.3	3.4	2.0
Aluminum	10	0	<0.4	<1	-	<1	-	-	-	3	100	0.70	0.71	0.95	0.79	0.14	0.08
Antimony	10	0	<0.002	<0.002	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	10	100	0.0051	0.0123	-23	0.0259	0.0151	0.0080	0.0025	3	100	0.0146	0.0165	0.0304	0.0205	0.0086	0.0050
Barium	10	30	<0.01	<0.01	-	0.019	-	-	-	3	100	0.183	0.192	0.215	0.197	0.017	0.010
Beryllium	10	0	<0.002	<0.002	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	10	0	<0.002	<0.002	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Boron	10	0	<0.2	<0.2	-	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	10	100	0.0030	0.0134	214	0.0218	0.0123	0.0070	0.0022	3	100	0.0025	0.0031	0.0037	0.0031	0.0006	0.0003
Calcium	10	100	43.7	88.3	36	306.0	115.8	78.1	24.7	3	100	258	350	465	358	104	60
Cesium	10	100	0.0064	0.0152	-10	0.0205	0.0148	0.0046	0.0015	3	100	0.0055	0.0079	0.0086	0.0073	0.0016	0.0009
Chromium	10	0	<0.01	<0.04	-	<0.04	-	-	-	3	100	0.012	0.013	0.032	0.019	0.011	0.007
Cobalt	10	100	0.0051	0.0137	50	0.0218	0.0128	0.0052	0.0017	3	100	0.108	0.109	0.183	0.133	0.043	0.025
Copper	10	100	0.617	1.885	-15	5.820	2.487	1.731	0.547	3	100	8.73	9.00	12.70	10.14	2.22	1.28
Iron	10	100	19.6	40.3	45	62.6	37.5	13.3	4.2	3	100	45.3	47.7	70.1	54.4	13.7	7.9
Lead	10	0	<0.004	<0.01	-	<0.01	-	-	-	3	33	<0.004	<0.004	0.0066	-	-	-
Lithium	10	0	<0.1	<0.1	-	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	10	100	70	104	-12	137	100	23	7	3	100	334	381	445	387	56	32
Manganese	10	100	0.079	0.127	23	0.477	0.185	0.123	0.039	3	100	2.08	2.66	3.19	2.64	0.56	0.32
Mercury	10	100	0.0148	0.0424	83	0.0807	0.0439	0.0215	0.0068	3	100	0.0135	0.0252	0.0254	0.0214	0.0068	0.0039
Molybdenum	10	100	0.0045	0.0149	59	0.0265	0.0140	0.0064	0.0020	3	100	0.0075	0.0084	0.0094	0.0084	0.0010	0.0005
Nickel	10	0	<0.04	<0.04	-	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-
Phosphorus	10	100	1070	1430	-73	6300	2503	1746	552	3	100	2590	3100	3430	3040	423	244
Potassium	10	100	1460	1945	-13	2060	1895	179	56	3	100	1570	1650	1790	1670	111	64
Rubidium	10	100	1.57	1.96	-15	2.61	1.98	0.32	0.10	3	100	1.88	2.07	2.20	2.05	0.16	0.09
Selenium*	10	100	1.217	2.818	96	3.576	2.649	0.793	0.251	3	100	12.91	15.00	18.12	15.34	2.63	1.52
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	10	100	742	1205	-14	1510	1168	256	81	3	100	756	1090	1170	1005	220	127
Strontium	10	100	0.053	0.106	16	0.473	0.158	0.125	0.039	3	100	0.543	0.821	1.210	0.858	0.335	0.193
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	10	0	<0.004	<0.004	-	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-
Thallium	10	100	0.00219	0.00297	-5	0.00517	0.00313	0.00081	0.00026	3	100	0.00172	0.00225	0.00251	0.00216	0.00040	0.00023
Tin	10	60	<0.02	0.022	-	0.094	0.027	0.025	0.008	3	33	<0.02	<0.02	0.023	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	10	0	<0.0004	<0.0004	-	<0.0004	-	-	-	3	100	0.00095	0.00118	0.00145	0.00119	0.00025	0.00014
Vanadium	10	0	<0.02	<0.02	-	<0.02	-	-	-	3	0	<0.02	<0.02	<0.02	-	-	-
Zinc	10	100	27.5	105.1	169	655.0	155.0	185.9	58.8	3	100	41.4	45.0	51.9	46.1	5.3	3.1
Zirconium	10	0	<0.04	<0.04	-	<0.04	-	-	-	3	33	<0.04	<0.04	0.081	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 6: Summary Statistics for Ovary Tissues of all Fish Species Captured in the Reference Sites in 2014

	Bootjack Lake								Hazeltine Creek								Quesnel Lake- North Arm								Soda Creek							
	Rainbow Trout								Rainbow Trout								Kokanee								Sockeye Salmon							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	1	100	65	--	65	--	--	--	8	100	59.7	67.6	91.4	68.4	9.9	3.5	10	100	68.4	80.1	86.7	79.8	5.0	1.6	30	100	54.6	75.1	80.3	67.8	11.5	2.1
Aluminum	1	0	<0.4	--	<0.4	--	--	--	8	13	<0.4	<1	<1	-	-	-	10	0	<0.4	<0.4	<1	-	-	-	30	23	<0.4	<0.4	1.94	-	-	-
Antimony	1	0	<0.002	--	<0.002	--	--	--	8	13	<0.002	<0.002	0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	30	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	1	100	0.0082	--	0.0082	--	--	--	8	75	<0.006	0.0067	0.0085	0.0061	0.0021	0.0007	10	100	0.0089	0.0160	0.0304	0.0163	0.0071	0.0023	30	100	0.115	0.206	0.503	0.242	0.095	0.017
Barium	1	100	0.099	--	0.099	--	--	--	8	88	<0.01	0.038	0.048	0.035	0.014	0.005	10	40	<0.01	<0.01	0.039	-	-	-	30	57	<0.01	0.028	0.168	0.039	0.042	0.008
Beryllium	1	0	<0.002	--	<0.002	--	--	--	8	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	30	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	1	0	<0.002	--	<0.002	--	--	--	8	0	<0.002	<0.002	<0.002	-	-	-	10	10	<0.002	<0.002	0.0023	-	-	-	30	3	<0.002	<0.002	0.0029	-	-	-
Boron	1	0	<0.2	--	<0.2	--	--	--	8	0	<0.2	<0.2	<0.2	-	-	-	10	0	<0.2	<0.2	<0.2	-	-	-	30	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	1	0	<0.001	--	<0.001	--	--	--	8	13	<0.001	<0.002	0.0018	-	-	-	10	100	0.0023	0.0043	0.0873	0.0136	0.0261	0.0083	30	100	0.0112	0.0292	0.0795	0.0305	0.0178	0.0032
Calcium	1	100	453	--	453	--	--	--	8	100	170	427	535	413	113	40	10	100	49.0	64.9	768.0	163.5	228.7	72.3	30	100	44.3	73.9	525.0	229.2	195.2	35.6
Cesium	1	100	0.0049	--	0.0049	--	--	--	8	88	<0.001	0.0018	0.0021	0.0016	0.0005	0.0002	10	100	0.0131	0.0169	0.0195	0.0164	0.0024	0.0008	30	100	0.0076	0.0106	0.0151	0.0109	0.0026	0.0005
Chromium	1	100	0.01	--	0.01	--	--	--	8	0	<0.01	<0.04	<0.04	-	-	-	10	0	<0.01	<0.01	<0.04	-	-	-	30	50	<0.01	<0.01	0.921	-	-	-
Cobalt	1	100	0.0503	--	0.0503	--	--	--	8	100	0.0119	0.0256	0.0318	0.0255	0.0063	0.0022	10	100	0.0058	0.0092	0.0215	0.0117	0.0056	0.0018	30	100	0.0084	0.0213	0.0577	0.0266	0.0133	0.0024
Copper	1	100	6.85	--	6.85	--	--	--	8	100	0.586	2.275	3.360	2.267	0.932	0.330	10	100	0.494	2.210	13.400	3.554	4.003	1.266	30	100	0.525	1.815	96.800	31.450	35.147	6.417
Iron	1	100	39.8	--	39.8	--	--	--	8	100	7.3	15.7	19.3	14.7	3.7	1.3	10	100	11.7	27.8	54.9	28.5	11.1	3.5	30	100	6.14	21.70	42.00	22.24	9.14	1.67
Lead	1	0	<0.004	--	<0.004	--	--	--	8	13	<0.004	<0.01	<0.01	-	-	-	10	0	<0.004	<0.004	<0.01	-	-	-	30	7	<0.004	<0.004	0.0525	-	-	-
Lithium	1	0	<0.1	--	<0.1	--	--	--	8	0	<0.1	<0.1	<0.1	-	-	-	10	0	<0.1	<0.1	<0.1	-	-	-	30	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	1	100	543	--	543	--	--	--	8	100	26.7	479.0	598.0	446.1	183.2	64.8	10	100	91.6	118.0	424.0	165.2	106.5	33.7	30	100	166	210	657	358	196	36
Manganese	1	100	3.07	--	3.07	--	--	--	8	100	0.067	1.695	2.970	1.488	0.843	0.298	10	100	0.084	0.103	0.793	0.245	0.256	0.081	30	100	0.118	0.234	1.580	0.569	0.482	0.088
Mercury	1	100	0.0085	--	0.0085	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	10	100	0.0128	0.0232	0.0473	0.0252	0.0098	0.0031	30	100	0.004	0.013	0.031	0.013	0.006	0.001
Molybdenum	1	100	0.0155	--	0.0155	--	--	--	8	50	<0.008	<0.008	0.0124	-	-	-	10	100	0.0071	0.0094	0.0208	0.0106	0.0043	0.0014	30	97	<0.004	0.008	0.112	0.011	0.019	0.004
Nickel	1	0	<0.04	--	<0.04	--	--	--	8	13	<0.04	<0.04	0.048	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-	30	10	<0.04	<0.04	0.554	-	-	-
Phosphorus	1	100	3960	--	3960	--	--	--	8	100	274	3730	4670	3454	1371	485	10	100	1240	5350	9740	5143	2380	753	30	100	3240	7225	11800	6421	2542	464
Potassium	1	100	2030	--	2030	--	--	--	8	100	147	2580	3240	2378	937	331	10	100	1720	2240	3610	2336	506	160	30	100	1850	3430	4390	3041	946	173
Rubidium	1	100	1.37	--	1.37	--	--	--	8	100	0.044	0.881	1.070	0.803	0.339	0.120	10	100	2.02	2.31	3.81	2.47	0.55	0.17	30	100	0.491	1.025	1.350	0.871	0.336	0.061
Selenium*	1	100	8.37	--	8.37	--	--	--	8	100	2.977	5.993	7.022	5.764	1.239	0.438	10	100	0.815	1.438	4.304	2.101	1.372	0.434	30	100	1.012	1.777	8.321	3.915	2.783	0.508
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	1	100	864	--	864	--	--	--	8	100	614	1020	3050	1273	787	278	10	100	1060	1400	1940	1409	243	77	30	100	571	962	1280	889	235	43
Strontium	1	100	1.19	--	1.19	--	--	--	8	100	0.268	1.175	1.450	1.095	0.350	0.124	10	100	0.072	0.091	1.750	0.339	0.552	0.175	30	100	0.147	0.260	4.140	1.659	1.626	0.297
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	1	0	<0.004	--	<0.004	--	--	--	8	0	<0.004	<0.004	<0.004	-	-	-	10	0	<0.004	<0.004	<0.004	-	-	-	30	0	<0.004	<0.004	<0.004	-	-	-
Thallium	1	100	0.00152	--	0.00152	--	--	--	8	0	<0.0004	<0.0004	<0.0004	-	-	-	10	100	0.00177	0.00311	0.00467	0.00326	0.00091	0.00029	30	90	<0.0004	0.0009	0.0023	0.0011	0.0006	0.0001
Tin	1	100	0.031	--	0.031	--	--	--	8	0	<0.02	<0.02	<0.02	-	-	-	10	30	<0.02	<0.02	0.042	-	-	-	30	20	<0.02	<0.02	0.079	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	1	0	<0.0004	--	<0.0004	--	--	--	8	0	<0.0004	<0.0004	<0.0004	-	-	-	10	10	<0.0004	<0.0004	0.00059	-	-	-	30	47	<0.0004	<0.0004	0.0028	-	-	-
Vanadium	1	0	<0.02	--	<0.02	--	--	--	8	0	<0.02	<0.02	<0.02	-	-	-	10	0	<0.02	<0.02	<0.02	-	-	-	30	20	<0.02	<0.02	0.907	-	-	-
Zinc	1	100	44.6	--	44.6	--	--	--	8	100	5.8	21.1	29.9	20.7	7.5	2.6	10	100	20.5	39.1	187.0	61.2	54.5	17.2	30	100	9.62	24.85	63.40	28.76	17.36	3.17
Zirconium	1	0	<0.04	--	<0.04	--	--	--	8	0	<0.04	<0.04	<0.04	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-	30	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation;

SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 7: Summary Statistics for Gill Tissues of all Fish Species Captured in the Exposure Sites Quesnel Lake West and Middle and the Reference Site Quesnel Lake North Arm in 2014

	Quesnel Lake - West									Quesnel Lake - Middle								Quesnel Lake - North Arm							
	Sockeye Salmon									Sockeye Salmon								Sockeye Salmon							
Parameter	n	%>DL	Min	Med	% Magnitude 2015	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	6	100	66.7	67.3	-2	68.8	67.5	0.7	0.3	3	100	61.5	62.5	64.3	62.8	1.4	0.8	3	100	63.4	63.7	66.0	64.4	1.4	0.8
Aluminum	6	100	1.1	2.2	-66	3.0	2.2	0.6	0.3	3	67	<1	1.0	1.2	0.9	0.4	0.2	3	100	2.1	2.2	2.3	2.2	0.1	0.1
Antimony	6	0	<0.002	<0.002	-	<0.002	-	-	-	3	33	<0.002	<0.002	0.0027	-	-	-	3	33	<0.002	<0.002	0.005	-	-	-
Arsenic	6	100	0.156	0.172	-45	0.190	0.172	0.011	0.004	3	100	0.141	0.155	0.159	0.152	0.009	0.005	3	100	0.171	0.192	0.200	0.188	0.015	0.009
Barium	6	100	0.403	0.446	-55	0.604	0.4705	0.082	0.033	3	100	0.722	0.725	0.815	0.754	0.053	0.031	3	100	0.671	0.745	0.746	0.721	0.043	0.025
Beryllium	6	0	<0.002	<0.002	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	6	0	<0.002	<0.002	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Boron	6	0	<0.2	<0.2	-	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	6	100	0.0389	0.0513	89	0.0598	0.0505	0.0068	0.0028	3	100	0.0350	0.0364	0.0381	0.0365	0.0016	0.0009	3	100	0.0261	0.0284	0.0328	0.0291	0.0034	0.0020
Calcium	6	100	3950	4365	-36	5360	4467	478	195	3	100	10400	10700	11400	10833	513	296	3	100	9310	9320	10400	9677	626	362
Cesium	6	100	0.0236	0.0281	8	0.0291	0.0273	0.0020	0.0008	3	100	0.0343	0.0352	0.0365	0.0353	0.0011	0.0006	3	100	0.0376	0.0390	0.0399	0.0388	0.0012	0.0007
Chromium	6	17	<0.04	<0.04	-	0.041	-	-	-	3	100	0.083	0.086	0.088	0.086	0.003	0.001	3	100	0.127	0.152	0.155	0.145	0.015	0.009
Cobalt	6	100	0.0126	0.0140	-28	0.0156	0.0138	0.0011	0.0005	3	100	0.0446	0.0455	0.0501	0.0467	0.0030	0.0017	3	100	0.0412	0.0461	0.0512	0.0462	0.0050	0.0029
Copper	6	100	2.51	3.24	-41	3.87	3.25	0.45	0.18	3	100	2.34	2.35	2.47	2.39	0.07	0.04	3	100	2.06	2.52	2.52	2.37	0.27	0.15
Iron	6	100	25.6	29.4	-28	36.8	30.1	4.3	1.8	3	100	47.5	50.7	57.9	52.0	5.3	3.1	3	100	43.8	48.6	49.8	47.4	3.2	1.8
Lead	6	100	0.021	0.035	-46	0.160	0.052	0.054	0.022	3	100	0.045	0.049	0.098	0.064	0.030	0.017	3	100	0.093	0.143	0.165	0.134	0.037	0.021
Lithium	6	0	<0.1	<0.1	-	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	6	100	263	300	-10	322	298	22	9	3	100	431	437	441	436	5	3	3	100	389	409	445	414	28	16
Manganese	6	100	1.70	1.95	-21	2.33	2.00	0.25	0.10	3	100	3.02	3.06	3.17	3.08	0.08	0.04	3	100	3.13	3.14	3.52	3.26	0.22	0.13
Mercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	6	100	0.0236	0.0256	39	0.0308	0.0262	0.0025	0.0010	3	100	0.0204	0.0213	0.0216	0.0211	0.0006	0.0004	3	100	0.0205	0.0207	0.0226	0.0213	0.0012	0.0007
Nickel	6	0	<0.04	<0.04	-	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-	3	100	0.058	0.073	0.090	0.074	0.016	0.009
Phosphorus	6	100	4720	5430	-24	6070	5432	514	210	3	100	9610	9800	9900	9770	147	85	3	100	8390	8420	9150	8653	430	248
Potassium	6	100	2740	2895	-17	3080	2918	122	50	3	100	3890	4100	4150	4047	138	80	3	100	3510	3850	3880	3747	206	119
Rubidium	6	100	4.32	4.43	-29	4.85	4.49	0.20	0.08	3	100	4.97	5.21	5.24	5.14	0.15	0.09	3	100	5.51	5.77	5.78	5.69	0.15	0.09
Selenium*	6	100	1.96	2.07	4	2.10	2.05	0.05	0.02	3	100	1.94	1.96	2.03	1.98	0.05	0.03	3	100	1.640	1.760	1.840	1.747	0.101	0.058
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	6	100	678	710	-32	786	718	42	17	3	100	872	922	962	919	45	26	3	100	863	870	903	879	21	12
Strontium	6	100	9.81	11.35	-2	15.70	11.70	2.12	0.87	3	100	19.40	20.60	22.10	20.70	1.35	0.78	3	100	16.8	17.8	20.0	18.2	1.6	0.9
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	6	0	<0.004	<0.004	-	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-
Thallium	6	100	0.00754	0.00813	23	0.00890	0.00813	0.00049	0.00020	3	100	0.0138	0.0142	0.0145	0.0142	0.0004	0.0002	3	100	0.01300	0.01360	0.01470	0.01377	0.00086	0.00050
Tin	6	100	0.043	0.050	14	0.092	0.059	0.020	0.008	3	100	0.039	0.053	0.098	0.063	0.031	0.018	3	100	0.040	0.049	0.076	0.055	0.019	0.011
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	6	100	0.00052	0.00061	-77	0.00082	0.00064	0.00011	0.00004	3	100	0.00064	0.00068	0.00073	0.00068	0.00005	0.00003	3	100	0.0009	0.0010	0.0011	0.0010	0.0001	0.0001
Vanadium	6	0	<0.02	<0.02	-	<0.02	-	-	-	3	0	<0.02	<0.02	<0.02	-	-	-	3	0	<0.02	<0.02	<0.02	-	-	-
Zinc	6	100	54.5	63.4	-32	69.9	62.4	5.3	2.2	3	100	120	121	127	123	4	2	3	100	102	113	117	111	8	4
Zirconium	6	0	<0.04	<0.04	-	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 8: Summary Statistics for Carcass Tissues of all Fish Species Captured in the Exposure Sites Quesnel Lake West and Middle and the Reference Site Quesnel Lake North Arm in 2014

	Quesnel Lake - West									Quesnel Lake - Middle								Quesnel Lake - North Arm							
	Sockeye Salmon									Sockeye Salmon								Sockeye Salmon							
Parameter	n	%>DL	Min	Med	% Magnitude 2015	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	6	100	68.1	69.4	-2	69.6	69.2	0.6	0.2	3	100	70.2	70.5	71.0	70.6	0.4	0.2	3	100	70.6	70.9	71.6	71.0	0.5	0.3
Aluminum	6	100	4.25	7.49	813	8.25	6.88	1.49	0.61	3	100	3.59	3.89	6.17	4.55	1.41	0.81	3	100	5.93	6.07	6.07	6.02	0.08	0.05
Antimony	6	0	<0.002	<0.002	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	6	100	0.138	0.160	-33	0.168	0.156	0.012	0.005	3	100	0.110	0.112	0.112	0.111	0.001	0.001	3	100	0.131	0.132	0.140	0.134	0.005	0.003
Barium	6	100	0.223	0.290	-34	0.339	0.286	0.049	0.020	3	100	0.346	0.417	0.420	0.394	0.042	0.024	3	100	0.356	0.389	0.441	0.395	0.043	0.025
Beryllium	6	0	<0.002	<0.002	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	6	0	<0.002	<0.002	-	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Boron	6	0	<0.2	<0.2	-	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	6	100	0.0391	0.0485	74	0.0587	0.0487	0.0066	0.0027	3	100	0.0268	0.0310	0.0322	0.0300	0.0028	0.0016	3	100	0.0317	0.0322	0.0331	0.0323	0.0007	0.0004
Calcium	6	100	3440	4145	-18	4630	4095	547	223	3	100	4710	4810	4950	4823	121	70	3	100	4890	4970	5420	5093	286	165
Cesium	6	100	0.0197	0.0215	-22	0.0221	0.0211	0.0010	0.0004	3	100	0.0334	0.0335	0.0346	0.0338	0.0007	0.0004	3	100	0.0377	0.0379	0.0380	0.0379	0.0002	0.0001
Chromium	6	100	0.018	0.021	62	0.023	0.021	0.002	0.001	3	100	0.028	0.037	0.073	0.046	0.024	0.014	3	100	0.099	0.101	0.131	0.110	0.018	0.010
Cobalt	6	100	0.0183	0.0201	53	0.0238	0.0205	0.0022	0.0009	3	100	0.0326	0.0402	0.0404	0.0377	0.0044	0.0026	3	100	0.0350	0.0407	0.0441	0.0399	0.0046	0.0027
Copper	6	100	1.19	1.33	-23	1.54	1.34	0.12	0.05	3	100	1.04	1.10	1.12	1.09	0.04	0.02	3	100	1.07	1.13	1.14	1.11	0.04	0.02
Iron	6	100	15.9	20.9	59	24.2	20.5	2.7	1.1	3	100	18.7	19.4	21.7	19.9	1.6	0.9	3	100	21.7	22.9	23.1	22.6	0.8	0.4
Lead	6	100	0.0104	0.0126	5	0.0175	0.0132	0.0027	0.0011	3	100	0.0157	0.0159	0.0170	0.0162	0.0007	0.0004	3	100	0.0147	0.0196	0.0225	0.0189	0.0039	0.0023
Lithium	6	0	<0.1	<0.1	-	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	6	100	283	310	6	331	309	16	7	3	100	320	327	336	328	8	5	3	100	324	334	347	335	12	7
Manganese	6	100	0.92	1.14	12	1.23	1.10	0.12	0.05	3	100	1.20	1.29	1.39	1.29	0.10	0.05	3	100	1.45	1.53	1.69	1.56	0.12	0.07
Mercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	6	100	0.0129	0.0145	53	0.0150	0.0141	0.0009	0.0004	3	100	0.0172	0.0172	0.0222	0.0189	0.0029	0.0017	3	100	0.0236	0.0242	0.0263	0.0247	0.0014	0.0008
Nickel	6	17	<0.04	<0.04	-	0.053	-	-	-	3	100	0.062	0.063	0.093	0.073	0.018	0.010	3	100	0.085	0.090	0.102	0.092	0.009	0.005
Phosphorus	6	100	4270	4875	-2	5140	4785	347	142	3	100	5110	5190	5210	5170	53	31	3	100	4760	4990	5290	5013	266	153
Potassium	6	100	3120	3375	0	3440	3332	123	50	3	100	3340	3390	3570	3433	121	70	3	100	3290	3410	3480	3393	96	55
Rubidium	6	100	4.98	5.33	-8	5.63	5.34	0.21	0.09	3	100	4.32	4.35	4.63	4.43	0.17	0.10	3	100	5.01	5.03	5.07	5.04	0.03	0.02
Selenium*	6	100	1.82	1.90	13	2.05	1.91	0.08	0.03	3	100	1.78	1.97	2.00	1.92	0.12	0.07	3	100	1.540	1.670	1.810	1.673	0.135	0.078
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	6	100	604	638	-17	667	635	26	11	3	100	698	725	767	730	35	20	3	100	663	683	728	691	33	19
Strontium	6	100	5.50	7.25	-16	7.97	6.98	0.95	0.39	3	100	9.42	9.47	10.20	9.70	0.44	0.25	3	100	9.39	10.20	11.20	10.26	0.91	0.52
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	6	0	<0.004	<0.004	-	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-
Thallium	6	100	0.00620	0.00705	11	0.00781	0.00702	0.00065	0.00026	3	100	0.0110	0.0111	0.0115	0.0112	0.0003	0.0002	3	100	0.01080	0.01110	0.01160	0.01117	0.00040	0.00023
Tin	6	83	<0.02	0.026	-	0.043	0.028	0.011	0.005	3	100	0.063	0.078	0.102	0.081	0.020	0.011	3	100	0.066	0.097	0.112	0.092	0.023	0.014
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	6	100	0.00071	0.00086	-39	0.00100	0.00086	0.00010	0.00004	3	100	0.00062	0.00067	0.00077	0.00069	0.00008	0.00004	3	100	0.0008	0.0009	0.0010	0.0009	0.0001	0.0001
Vanadium	6	83	<0.02	0.023	-	0.026	0.021	0.006	0.002	3	0	<0.02	<0.02	<0.02	-	-	-	3	0	<0.02	<0.02	<0.02	-	-	-
Zinc	6	100	40.2	46.0	-11	47.9	44.6	3.1	1.3	3	100	49	50	50	50	1	0	3	100	48.7	48.9	52.6	50.1	2.2	1.3
Zirconium	6	0	<0.04	<0.04	-	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 9: Summary Statistics for Whole Body Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Polley Lake								Polley Lake								Polley Lake								Quesnel Lake- Hazeltine Creek								Quesnel Lake- Hazeltine Creek							
	Longnose Sucker								Rainbow Trout								Redside Shiner								Longnose Dace								Northern Pikeminnow							
Parameter	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	Max	Mean	SD	SE
% Moisture	16	100	77.2	79.0	80.4	78.8	0.9	0.2	3	100	73.7	74.1	74.8	74.2	0.6	0.3	2	100	75.9	--	79.9	--	--	--	1	100	77.4	--	77.4	--	--	--	36	100	68.4	74.3	0	76.6	74.0	1.7	0.3
Aluminum	16	0	<1	<1	<1	-	-	-	3	100	1.53	1.54	1.65	1.57	0.07	0.04	2	100	2.72	--	9.39	--	--	--	1	100	215	--	215	--	--	--	36	92	<0.4	2.5	-50	11.2	2.8	2.5	0.4
Antimony	16	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	2	50	<0.002	--	0.0049	--	--	--	1	100	0.0035	--	0.0035	--	--	--	36	39	<0.002	<0.002	-	0.0096	-	-	-
Arsenic	16	100	0.0257	0.0575	0.0989	0.0558	0.0227	0.0057	3	100	0.0334	0.0477	0.0539	0.0450	0.0105	0.0061	2	100	0.0186	--	0.0417	--	--	--	1	100	0.109	--	0.109	--	--	--	36	100	0.0144	0.0296	123	0.0663	0.0309	0.0117	0.0020
Barium	16	94	<0.01	0.031	0.159	0.044	0.039	0.010	3	100	0.103	0.121	0.132	0.119	0.015	0.008	2	100	0.468	--	0.841	--	--	--	1	100	2.02	--	2.02	--	--	--	36	100	0.116	0.357	19	0.561	0.350	0.116	0.019
Beryllium	16	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--	1	100	0.005	--	0.005	--	--	--	36	0	<0.002	<0.002	-	<0.002	-	-	-
Bismuth	16	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--	1	0	<0.002	--	<0.002	--	--	--	36	0	<0.002	<0.002	-	<0.002	-	-	-
Boron	16	0	<0.2	<0.2	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-	2	0	<0.2	--	<0.2	--	--	--	1	0	<0.2	--	<0.2	--	--	--	36	67	<0.2	0.9	-	28.8	6.3	8.6	1.4
Cadmium	16	0	<0.002	<0.002	<0.002	-	-	-	3	100	0.0058	0.0066	0.0098	0.0074	0.0021	0.0012	2	100	0.0076	--	0.0199	--	--	--	1	100	0.0586	--	0.0586	--	--	--	36	100	0.0062	0.0153	84	0.0362	0.0166	0.0075	0.0013
Calcium	16	100	83.3	297.5	830.0	343.0	210.5	52.6	3	100	2700	2730	5650	3693	1695	978	2	100	9850	--	11100	--	--	--	1	100	9560	--	9560	--	--	--	36	100	3450	9075	1	14700	8535	2949	492
Cesium	16	100	0.0096	0.0121	0.0200	0.0124	0.0025	0.0006	3	100	0.0127	0.0137	0.0142	0.0135	0.0008	0.0004	2	100	0.006	--	0.0063	--	--	--	1	100	0.0341	--	0.0341	--	--	--	36	100	0.0081	0.0153	-60	0.0381	0.0180	0.0078	0.0013
Chromium	16	0	<0.04	<0.04	<0.04	-	-	-	3	100	0.028	0.028	0.039	0.032	0.006	0.004	2	100	0.026	--	0.051	--	--	--	1	100	0.567	--	0.567	--	--	--	36	81	<0.01	0.034	-77	0.496	0.083	0.120	0.020
Cobalt	16	0	<0.004	<0.004	<0.004	-	-	-	3	100	0.0101	0.0149	0.0154	0.0135	0.0029	0.0017	2	100	0.014	--	0.0346	--	--	--	1	100	0.17	--	0.17	--	--	--	36	100	0.0089	0.0182	0	0.0404	0.0200	0.0082	0.0014
Copper	16	100	0.113	0.190	0.481	0.243	0.111	0.028	3	100	0.600	0.608	0.609	0.606	0.005	0.003	2	100	0.532	--	0.769	--	--	--	1	100	2.73	--	2.73	--	--	--	36	100	0.393	0.779	19	1.210	0.794	0.194	0.032
Iron	16	100	1.0	2.4	4.6	2.6	1.1	0.3	3	100	10.8	14.6	15.3	13.6	2.4	1.4	2	100	16.4	--	19.1	--	--	--	1	100	419	--	419	--	--	--	36	100	9.9	12.8	-26	28.7	13.5	3.6	0.6
Lead	16	0	<0.01	<0.01	<0.01	-	-	-	3	33	<0.004	<0.004	0.0094	-	-	-	2	100	0.0043	--	0.0126	--	--	--	1	100	0.0711	--	0.0711	--	--	--	36	81	<0.004	0.012	-4	0.168	0.017	0.029	0.005
Lithium	16	0	<0.1	<0.1	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-	2	0	<0.1	--	<0.1	--	--	--	1	100	0.18	--	0.18	--	--	--	36	0	<0.1	<0.1	-	<0.1	-	-	-
Magnesium	16	100	241	282	341	284	25.0	6.3	3	100	254	286	341	294	44.0	25.4	2	100	361	--	377	--	--	--	1	100	488	--	488	--	--	--	36	100	291	393	2	477	382	54	9
Manganese	16	100	0.086	0.398	0.766	0.408	0.242	0.060	3	100	1.45	1.51	1.61	1.52	0.08	0.05	2	100	2.28	--	2.63	--	--	--	1	100	15	--	15	--	--	--	36	100	0.703	1.685	-21	3.380	1.795	0.718	0.120
Mercury	16	100	0.0415	0.0731	0.1060	0.0734	0.0181	0.0045	3	100	0.0348	0.0364	0.0366	0.0359	0.0010	0.0006	2	100	0.0698	--	0.0789	--	--	--	1	100	0.0521	--	0.0521	--	--	--	36	100	0.0299	0.0558	-26	0.1770	0.0660	0.0322	0.0054
Molybdenum	16	0	<0.008	<0.008	<0.008	-	-	-	3	100	0.0143	0.0163	0.0166	0.0157	0.0013	0.0007	2	100	0.0097	--	0.0240	--	--	--	1	100	0.033	--	0.033	--	--	--	36	100	0.0085	0.0123	-46	0.0677	0.0176	0.0137	0.0023
Nickel	16	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-	2	50	<0.04	--	0.044	--	--	--	1	100	0.326	--	0.326	--	--	--	36	28	<0.04	<0.04	-	0.275	-	-	-
Phosphorus	16	100	1830	2120	2580	2112	200	50	3	100	3350	3550	5240	4047	1038	599	2	100	5760	--	7060	--	--	--	1	100	6580	--	6580	--	--	--	36	100	3710	6795	-2	9570	6513	1637	273
Potassium	16	100	3980	4385	5070	4441	289	72	3	100	3230	3650	3840	3573	312	180	2	100	1100	--	2520	--	--	--	1	100	3450	--	3450	--	--	--	36	100	2850	3340	-7	3830	3373	231	38
Rubidium	16	100	1.56	1.99	3.05	2.10	0.46	0.12	3	100	1.66	1.83	1.84	1.78	0.10	0.06	2	100	1.62	--	1.63	--	--	--	1	100	4.74	--	4.74	--	--	--	36	100	2.6	5.5	-25	10.5	5.6	1.8	0.3
Selenium*	16	100	4.338	5.057	8.480	5.537	1.290	0.323	3	100	3.421	3.647	4.335	3.801	0.476	0.275	2	100	1.965	--	3.581	--	--	--	1	100	2.093	--	2.093	--	--	--	36	100	1.562	2.432	64	4.309	2.496	0.662	0.110
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	16	100	252	370	479	381	70	18	3	100	471	724	729	641	148	85	2	100	523	--	592	--	--	--	1	100	971	--	971	--	--	--	36	100	675	861	0	996	857	82	14
Strontium	16	100	0.044	0.560	2.100	0.672	0.579	0.145	3	100	4.05	4.56	7.73	5.45	1.99	1.15	2	100	17.2	--	22.0	--	--	--	1	100	19.4	--	19.4	--	--	--	36	100	4.49	10.7	-23	21.9	10.8	4.0	0.7
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	16	0	<0.004	<0.004	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-	2	0	<0.004	--	<0.004	--	--	--	1	0	<0.004	--	<0.004	--	--	--	36	0	<0.004	<0.004	-	<0.004	-	-	-
Thallium	16	0	<0.0004	<0.0004	<0.0004	-	-	-	3	100	0.00106	0.00106	0.00111	0.00108	0.00003	0.00002	2	50	<0.0004	--	0.00136	--	--	--	1	100	0.00338	--	0.00338	--	--	--	36	97	<0.0004	0.0015	7	0.0040	0.0017	0.0009	0.0001
Tin	16	44	<0.02	<0.02	0.043	-	-	-	3	33	<0.02	<0.02	0.021	-	-	-	2	100	0.022	--	0.047	--	--	--	1	0	<0.02	--	<0.02	--	--	--	36	11	<0.02	<0.02	-	0.039	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	16	0	<0.0004	<0.0004	<0.0004	-	-	-	3	0	<0.0004	<0.0004	<0.0004	-	-	-	2	100	0.00073	--	0.0028	--	--	--	1	100	0.0163	--	0.0163	--	--	--	36	89	<0.0004	0.0007	-81	0.0032	0.0009	0.0007	0.0001
Vanadium	16	0	<0.02	<0.02	<0.02	-	-	-	3	0	<0.02	<0.02	<0.02	-	-	-	2	100	0.029	--	0.043	--	--	--	1	100	1.32	--	1.32	--	--	--	36	36	<0.02	<0.02	-	0.411	-	-	-
Zinc	16	100	2.16	3.80	13.10	4.48	2.76	0.69	3	100	34.0	36.0	40.2	36.7	3.2	1.8	2	100	20.0	--	28.7	--	--	--	1	100	23.7	--	23.7	--	--	--	36	100	18.0	26.2	-4	40.4	27.2	6.3	1.0
Zirconium	16	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-	2	0	<0.04	--	<0.04	--	--	--	1	100	0.136	--	0.136	--	--	--	36	0	<0.04	<0.04	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	30	100	0.0237	0.0480	-30	0.1780	0.0605	0.0357	0.0065
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 9: Summary Statistics for Whole Body Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Quesnel Lake- Hazeltine Creek								Quesnel Lake- Hazeltine Creek								Quesnel Lake- Horsefly River confluence								Quesnel Lake- Horsefly River confluence									Quesnel Lake- Horsefly River confluence							
	Peamouth Chub								Redside Shiner								Longnose Dace								Northern Pikeminnow									Peamouth Chub							
Parameter	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	1	100	72.3	--	72.3	--	--	--	2	100	69.2	--	75.2	--	--	--	2	100	77.2	--	77.5	--	--	--	10	100	70.6	76.0	3	78.9	75.4	2.5	0.8	6	100	73.8	75.9	77.6	75.8	1.6	0.7
Aluminum	1	100	1.54	--	1.54	--	--	--	2	100	2.15	--	8.58	--	--	--	2	100	12.3	--	19.1	--	--	--	10	70	<0.4	0.65	-87	9.82	2.05	3.18	1.01	6	100	0.53	0.75	1.74	0.89	0.45	0.18
Antimony	1	100	0.0085	--	0.0085	--	--	--	2	50	0.0010	--	0.0126	--	--	--	2	0	<0.002	--	<0.002	--	--	--	10	20	<0.002	<0.002	-	0.004	-	-	-	6	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	1	100	0.0829	--	0.0829	--	--	--	2	100	0.0561	--	0.0608	--	--	--	2	100	0.0502	--	0.116	--	--	--	10	100	0.0093	0.0207	55	0.0492	0.0229	0.0115	0.0036	6	100	0.0336	0.0419	0.0687	0.0485	0.0144	0.0059
Barium	1	100	0.359	--	0.359	--	--	--	2	100	0.577	--	0.912	--	--	--	2	100	0.925	--	1.780	--	--	--	10	100	0.334	0.455	52	0.635	0.480	0.100	0.032	6	100	0.591	0.673	0.893	0.708	0.125	0.051
Beryllium	1	0	<0.002	--	<0.002	--	--	--	2	0	<0.002	--	<0.002	--	--	--	2	0	<0.002	--	<0.002	--	--	--	10	0	<0.002	<0.002	-	<0.002	-	-	-	6	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	1	0	<0.002	--	<0.002	--	--	--	2	0	<0.002	--	<0.002	--	--	--	2	0	<0.002	--	<0.002	--	--	--	10	10	<0.002	<0.002	-	0.0021	-	-	-	6	17	<0.002	<0.002	0.0021	-	-	-
Boron	1	100	26	--	26	--	--	--	2	50	<0.2	--	40.2	--	--	--	2	0	<0.2	--	<0.2	--	--	--	10	0	<0.2	<0.2	-	<0.2	-	-	-	6	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	1	100	0.0258	--	0.0258	--	--	--	2	100	0.0148	--	0.0758	--	--	--	2	100	0.0087	--	0.0183	--	--	--	10	100	0.0083	0.0129	55	0.0243	0.0152	0.0058	0.0018	6	100	0.0222	0.0259	0.0339	0.0273	0.0043	0.0018
Calcium	1	100	6380	--	6380	--	--	--	2	100	5580	--	12100	--	--	--	2	100	11400	--	12900	--	--	--	10	100	8290	11650	30	15700	11422	2357	745	6	100	8580	9875	11700	9978	1209	494
Cesium	1	100	0.0221	--	0.0221	--	--	--	2	100	0.0173	--	0.0378	--	--	--	2	100	0.0109	--	0.0109	--	--	--	10	100	0.0050	0.0103	-73	0.0315	0.0114	0.0075	0.0024	6	100	0.0097	0.0170	0.0247	0.0174	0.0050	0.0021
Chromium	1	100	0.026	--	0.026	--	--	--	2	100	0.011	--	0.051	--	--	--	2	100	0.052	--	0.093	--	--	--	10	60	<0.01	0.014	-90	0.269	0.062	0.094	0.030	6	100	0.011	0.016	0.020	0.016	0.004	0.002
Cobalt	1	100	0.0187	--	0.0187	--	--	--	2	100	0.0208	--	0.0282	--	--	--	2	100	0.0236	--	0.0304	--	--	--	10	100	0.0095	0.0140	-23	0.0213	0.0141	0.0037	0.0012	6	100	0.014	0.024	0.033	0.024	0.007	0.003
Copper	1	100	0.483	--	0.483	--	--	--	2	100	0.618	--	5.390	--	--	--	2	100	0.609	--	0.945	--	--	--	10	100	0.598	0.748	14	0.941	0.743	0.100	0.032	6	100	0.504	0.612	0.679	0.602	0.057	0.023
Iron	1	100	8.84	--	8.84	--	--	--	2	100	18.7	--	19.6	--	--	--	2	100	30.5	--	40.5	--	--	--	10	100	12.1	13.6	-21	24.9	15.2	4.1	1.3	6	100	11.3	13.8	15.1	13.5	1.3	0.5
Lead	1	100	0.0214	--	0.0214	--	--	--	2	100	0.0214	--	0.0241	--	--	--	2	100	0.0082	--	0.0243	--	--	--	10	70	<0.004	0.0048	-60	0.0188	0.0067	0.0056	0.0018	6	67	<0.004	0.005	0.006	0.004	0.002	0.001
Lithium	1	0	<0.1	--	<0.1	--	--	--	2	0	<0.1	--	<0.1	--	--	--	2	0	<0.1	--	<0.1	--	--	--	10	0	<0.1	<0.1	-	<0.1	-	-	-	6	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	1	100	347	--	347	--	--	--	2	100	399	--	406	--	--	--	2	100	422	--	432	--	--	--	10	100	361	413	7	544	423	50	16	6	100	377	412	422	404	20	8
Manganese	1	100	1.49	--	1.49	--	--	--	2	100	2.10	--	5.06	--	--	--	2	100	8.12	--	12.00	--	--	--	10	100	1.46	3.08	45	4.34	3.05	0.82	0.26	6	100	1.89	2.76	3.31	2.71	0.56	0.23
Mercury	1	100	0.0544	--	0.0544	--	--	--	2	100	0.0679	--	0.0876	--	--	--	2	100	0.0477	--	0.0484	--	--	--	10	100	0.0387	0.0547	-28	0.0748	0.0544	0.0123	0.0039	6	100	0.0629	0.0727	0.0837	0.0737	0.0090	0.0037
Molybdenum	1	100	0.0109	--	0.0109	--	--	--	2	100	0.0121	--	0.0185	--	--	--	2	100	0.0218	--	0.0407	--	--	--	10	100	0.0098	0.0118	-49	0.0173	0.0122	0.0022	0.0007	6	100	0.0139	0.0147	0.0224	0.0162	0.0032	0.0013
Nickel	1	0	<0.04	--	<0.04	--	--	--	2	0	<0.04	--	<0.04	--	--	--	2	50	0.020	--	0.063	--	--	--	10	20	<0.04	<0.04	-	0.303	-	-	-	6	0	<0.04	<0.04	<0.04	-	-	-
Phosphorus	1	100	5240	--	5240	--	--	--	2	100	4770	--	7850	--	--	--	2	100	8070	--	8950	--	--	--	10	100	6270	8290	19	10800	8158	1421	449	6	100	6160	6800	8520	6927	851.7	347.7
Potassium	1	100	3420	--	3420	--	--	--	2	100	2910	--	3410	--	--	--	2	100	3390	--	3410	--	--	--	10	100	2980	3505	-3	4070	3532	281	89	6	100	3430	3595	3710	3600	105.8	43.2
Rubidium	1	100	4.6	--	4.6	--	--	--	2	100	5.26	--	7.37	--	--	--	2	100	7.27	--	7.82	--	--	--	10	100	4.38	6.64	-9	10.10	6.84	2.08	0.66	6	100	4.25	4.64	4.90	4.61	0.28	0.11
Selenium*	1	100	1.801	--	1.801	--	--	--	2	100	1.552	--	2.226	--	--	--	2	100	2.035	--	2.364	--	--	--	10	100	1.568	2.359	59	5.024	2.749	1.039	0.329	6	100	2.363	3.437	4.000	3.216	0.678	0.277
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	1	100	735	--	735	--	--	--	2	100	759	--	1150	--	--	--	2	100	915	--	1060	--	--	--	10	100	723	790	-8	937	818	78.8	24.9	6	100	724	841	875	827	57	23
Strontium	1	100	14.1	--	14.1	--	--	--	2	100	11.7	--	21.2	--	--	--	2	100	18.4	--	19.4	--	--	--	10	100	9.9	13.2	-5	18.9	13.6	3.3	1.0	6	100	14.3	17.8	21.8	18.2	2.7	1.1
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	1	0	<0.004	--	<0.004	--	--	--	2	0	<0.004	--	<0.004	--	--	--	2	0	<0.004	--	<0.004	--	--	--	10	0	<0.004	<0.004	-	<0.004	-	-	-	6	0	<0.004	<0.004	<0.004	-	-	-
Thallium	1	100	0.00242	--	0.00242	--	--	--	2	100	0.00123	--	0.00260	--	--	--	2	100	0.00192	--	0.00345	--	--	--	10	100	0.00066	0.00172	21	0.00232	0.00165	0.00053	0.00017	6	100	0.00128	0.00366	0.00389	0.00313	0.00105	0.00043
Tin	1	0	<0.02	--	<0.02	--	--	--	2	50	<0.02	--	0.05	--	--	--	2	0	<0.02	--	<0.02	--	--	--	10	20	<0.02	<0.02	-	0.066	-	-	-	6	67	<0.02	0.025	0.036	0.023	0.011	0.005
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	1	100	0.00053	--	0.00053	--	--	--	2	100	0.00072	--	0.00083	--	--	--	2	100	0.00227	--	0.00292	--	--	--	10	70	<0.0004	0.0006	-84	0.0011	0.0006	0.0003	0.0001	6	100	0.00061	0.00220	0.00307	0.00212	0.00084	0.00034
Vanadium	1	0	<0.02	--	<0.02	--	--	--	2	50	<0.02	--	0.056	--	--	--	2	100	0.044	--	0.078	--	--	--	10	20	<0.02	<0.02	-	0.054	-	-	-	6	83	<0.02	0.072	0.101	0.067	0.031	0.013
Zinc	1	100	24.5	--	24.5	--	--	--	2	100	27.3	--	52.6	--	--	--	2	100	26.2	--	32.4	--	--	--	10	100	24.2	36.5	33	46.4	35.6	6.7	2.1	6	100	24.7	27.2	34.3	28.5	3.5	1.4
Zirconium	1	0	<0.04	--	<0.04	--	--	--	2	0	<0.04	--	<0.04	--	--	--	2	0	<0.04	--	<0.04	--	--	--	10	0	<0.04	<0.04	-	<0.04	-	-	-	6	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	1	100	0.0416	--	0.0416	--	--	--	1	100	0.0937	--	0.0937	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 9: Summary Statistics for Whole Body Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Quesnel Lake- near Quesnel River								Quesnel Lake- near Quesnel River								Quesnel Lake- near Quesnel River									Quesnel Lake- near Quesnel River							
	Burbot								Mountain Whitefish								Northern Pikeminnow									Peamouth Chub							
Parameter	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	1	100	79.7	--	79.7	--	--	--	1	100	75.4	--	75.4	--	--	--	7	100	68.7	74.2	0	77.5	74.1	3.1	1.2	12	100	73.7	75.6	77.9	75.8	1.1	0.3
Aluminum	1	100	6.75	--	6.75	--	--	--	1	100	1.85	--	1.85	--	--	--	7	100	0.44	5.12	3	54.70	12.38	19.58	7.40	12	100	2.54	16.30	49.80	18.49	15.07	4.35
Antimony	1	0	<0.002	--	<0.002	--	--	--	1	0	<0.002	--	<0.002	--	--	--	7	14	<0.002	<0.002	-	0.0066	-	-	-	12	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	1	100	0.334	--	0.334	--	--	--	1	100	0.0674	--	0.0674	--	--	--	7	100	0.0628	0.1510	1035	0.2560	0.1518	0.0692	0.0262	12	100	0.0476	0.0666	0.0850	0.0655	0.0100	0.0029
Barium	1	100	1.18	--	1.18	--	--	--	1	100	0.154	--	0.154	--	--	--	7	100	0.181	0.287	-4	1.370	0.449	0.414	0.157	12	100	0.314	0.526	0.993	0.553	0.201	0.058
Beryllium	1	0	<0.002	--	<0.002	--	--	--	1	0	<0.002	--	<0.002	--	--	--	7	0	<0.002	<0.002	-	<0.002	-	-	-	12	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	1	0	<0.002	--	<0.002	--	--	--	1	0	<0.002	--	<0.002	--	--	--	7	0	<0.002	<0.002	-	<0.002	-	-	-	12	0	<0.002	<0.002	<0.002	-	-	-
Boron	1	0	<0.2	--	<0.2	--	--	--	1	0	<0.2	--	<0.2	--	--	--	7	0	<0.2	<0.2	-	<0.2	-	-	-	12	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	1	100	0.0336	--	0.0336	--	--	--	1	100	0.0171	--	0.0171	--	--	--	7	100	0.0067	0.0225	171	0.0335	0.0223	0.0084	0.0032	12	100	0.0189	0.0301	0.0365	0.0299	0.0057	0.0016
Calcium	1	100	14900	--	14900	--	--	--	1	100	4000	--	4000	--	--	--	7	100	6000	7890	-12	16000	9349	3546	1340	12	100	4480	6425	10800	6947	2199	635
Cesium	1	100	0.0174	--	0.0174	--	--	--	1	100	0.0273	--	0.0273	--	--	--	7	100	0.0075	0.0101	-74	0.0199	0.0124	0.0051	0.0019	12	100	0.0158	0.0203	0.0248	0.0202	0.0027	0.0008
Chromium	1	100	0.048	--	0.048	--	--	--	1	100	0.014	--	0.014	--	--	--	7	71	<0.01	0.023	-84	0.253	0.070	0.091	0.034	12	100	0.053	0.194	0.472	0.222	0.129	0.037
Cobalt	1	100	0.0392	--	0.0392	--	--	--	1	100	0.0623	--	0.0623	--	--	--	7	100	0.0233	0.0474	162	0.1030	0.0581	0.0294	0.0111	12	100	0.0174	0.0334	0.0688	0.0370	0.0159	0.0046
Copper	1	100	1.51	--	1.51	--	--	--	1	100	1.2	--	1.2	--	--	--	7	100	0.575	0.792	21	1.330	0.867	0.236	0.089	12	100	0.446	0.662	0.810	0.658	0.114	0.033
Iron	1	100	20.8	--	20.8	--	--	--	1	100	14.1	--	14.1	--	--	--	7	100	10.2	18.7	8	156.0	38.7	52.3	19.8	12	100	16.1	34.9	91.2	40.7	25.2	7.3
Lead	1	100	0.0062	--	0.0062	--	--	--	1	0	<0.004	--	<0.004	--	--	--	7	86	<0.004	0.007	-43	0.028	0.009	0.009	0.003	12	75	<0.004	0.0082	0.0325	0.0098	0.0087	0.0025
Lithium	1	0	<0.1	--	<0.1	--	--	--	1	0	<0.1	--	<0.1	--	--	--	7	0	<0.1	<0.1	-	<0.1	-	-	-	12	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	1	100	435	--	435	--	--	--	1	100	294	--	294	--	--	--	7	100	349	388	0	495	398	56	21	12	100	264	330	426	337	45	13
Manganese	1	100	3.54	--	3.54	--	--	--	1	100	1.01	--	1.01	--	--	--	7	100	1.09	1.87	-12	10.70	2.99	3.42	1.29	12	100	1.02	2.17	4.59	2.15	0.97	0.28
Mercury	1	100	0.0476	--	0.0476	--	--	--	1	100	0.059	--	0.059	--	--	--	7	100	0.033	0.040	-47	0.072	0.047	0.013	0.005	12	100	0.0702	0.1050	0.1350	0.1016	0.0162	0.0047
Molybdenum	1	100	0.0353	--	0.0353	--	--	--	1	100	0.0049	--	0.0049	--	--	--	7	100	0.0083	0.0103	-55	0.0227	0.0117	0.0050	0.0019	12	100	0.0148	0.0306	0.0513	0.0322	0.0120	0.0035
Nickel	1	100	0.052	--	0.052	--	--	--	1	0	<0.04	--	<0.04	--	--	--	7	71	<0.04	0.044	-69	0.308	0.094	0.109	0.041	12	92	<0.04	0.124	0.266	0.136	0.081	0.023
Phosphorus	1	100	9040	--	9040	--	--	--	1	100	4070	--	4070	--	--	--	7	100	4930	6300	-9	8620	6581	1391	526	12	100	3980	4900	7780	5298	1168	337
Potassium	1	100	3030	--	3030	--	--	--	1	100	3630	--	3630	--	--	--	7	100	3130	3370	-7	3610	3374	170	64	12	100	2500	3150	3410	3083	232	67
Rubidium	1	100	3.74	--	3.74	--	--	--	1	100	3.94	--	3.94	--	--	--	7	100	2.67	3.78	-48	4.82	3.80	0.76	0.29	12	100	3.10	3.71	4.23	3.71	0.31	0.09
Selenium*	1	100	3.542	--	3.542	--	--	--	1	100	2.846	--	2.846	--	--	--	7	100	1.716	2.922	97	3.720	2.826	0.631	0.238	12	100	1.619	2.570	3.699	2.590	0.684	0.197
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	1	100	1250	--	1250	--	--	--	1	100	829	--	829	--	--	--	7	100	844	886	3	1010	903	54	20	12	100	495	643	793	641	75	22
Strontium	1	100	38	--	38	--	--	--	1	100	6.03	--	6.03	--	--	--	7	100	7.44	10.90	-22	29.70	13.97	7.46	2.82	12	100	8.75	13.65	19.70	13.84	4.23	1.22
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	1	0	<0.004	--	<0.004	--	--	--	1	0	<0.004	--	<0.004	--	--	--	7	0	<0.004	<0.004	-	<0.004	-	-	-	12	0	<0.004	<0.004	<0.004	-	-	-
Thallium	1	100	0.00275	--	0.00275	--	--	--	1	100	0.00379	--	0.00379	--	--	--	7	100	0.00212	0.00278	96	0.00430	0.00299	0.00074	0.00028	12	100	0.00147	0.00195	0.00281	0.00198	0.00033	0.00010
Tin	1	0	<0.02	--	<0.02	--	--	--	1	0	<0.02	--	<0.02	--	--	--	7	0	<0.02	<0.02	-	<0.02	-	-	-	12	8	<0.02	<0.02	0.022	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	1	100	0.00274	--	0.00274	--	--	--	1	100	0.00276	--	0.00276	--	--	--	7	100	0.00042	0.00075	-79	0.01900	0.00341	0.00688	0.00260	12	100	0.00134	0.00352	0.00668	0.00349	0.00182	0.00052
Vanadium	1	100	0.103	--	0.103	--	--	--	1	100	0.085	--	0.085	--	--	--	7	57	<0.02	0.032	-73	0.389	0.084	0.139	0.052	12	92	<0.02	0.078	0.252	0.090	0.075	0.022
Zinc	1	100	25	--	25	--	--	--	1	100	21.5	--	21.5	--	--	--	7	100	23.7	27.5	0	55.8	32.2	10.9	4.1	12	100	18.7	22.3	25.6	22.2	2.5	0.7
Zirconium	1	0	<0.04	--	<0.04	--	--	--	1	0	<0.04	--	<0.04	--	--	--	7	0	<0.04	<0.04	-	<0.04	-	-	-	12	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 9: Summary Statistics for Whole Body Tissues of all Fish Species Captured in the Exposure Sites in 2014

	Quesnel Lake- Middle											Quesnel Lake- West										
	Sockeye Salmon											Sockeye Salmon										
Parameter	n	%>DL	Min	Med	% Magnitude Quesnel Lake East	% Magnitude Quesnel Lake North	% Magnitude 2015	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake East	% Magnitude Quesnel Lake North	% Magnitude 2015	Max	Mean	SD	SE
% Moisture	10	100	69.6	71.8	0	-2	-1	74.9	72.1	1.8	0.6	10	100	68.9	72.0	1	-1	1	73.9	71.6	1.9	0.6
Aluminum	10	70	<1	1.9	-24	-77	195	10.3	3.0	3.2	1.0	10	100	2.83	6.06	142	-27	402	12.50	6.16	2.84	0.90
Antimony	10	0	<0.002	<0.002	-	-	-	<0.002	-	-	-	10	20	<0.002	<0.002	-	-	-	0.117	-	-	-
Arsenic	10	100	0.0749	0.0896	-1	-23	-44	0.1300	0.0943	0.0188	0.0059	10	100	0.137	0.176	95	52	-27	0.205	0.171	0.024	0.008
Barium	10	100	0.208	0.483	18	-11	24	0.626	0.472	0.128	0.040	10	100	0.132	0.232	-43	-57	-49	0.386	0.246	0.067	0.021
Beryllium	10	0	<0.002	<0.002	-	-	-	<0.002	-	-	-	10	0	<0.002	<0.002	-	-	-	<0.002	-	-	-
Bismuth	10	0	<0.002	<0.002	-	-	-	<0.002	-	-	-	10	0	<0.002	<0.002	-	-	-	<0.002	-	-	-
Boron	10	0	<0.2	<0.2	-	-	-	<0.2	-	-	-	10	0	<0.2	<0.2	-	-	-	<0.2	-	-	-
Cadmium	10	100	0.0212	0.0291	6	-3	56	0.0536	0.0316	0.0105	0.0033	10	100	0.0248	0.0385	41	29	37	0.0568	0.0393	0.0082	0.0026
Calcium	10	100	3660	5995	5	-1	3	9730	6202	1938	613	10	100	2130	4690	-18	-23	-8	6110	4384	1067	337
Cesium	10	100	0.0310	0.0338	-3	-21	32	0.0367	0.0334	0.0019	0.0006	10	100	0.0203	0.0212	-39	-50	-21	0.0247	0.0216	0.0013	0.0004
Chromium	10	10	0.012	<0.04	-	-	-	<0.04	-	-	-	10	90	<0.01	0.016	-	-27	-	0.028	0.016	0.006	0.002
Cobalt	10	100	0.0188	0.0241	0	-16	112	0.0300	0.0253	0.0036	0.0011	10	100	0.0102	0.0140	-42	-51	12	0.0174	0.0141	0.0022	0.0007
Copper	10	100	0.808	0.978	-6	-14	-57	1.270	1.000	0.168	0.053	10	100	1.20	1.60	55	41	-32	2.46	1.69	0.36	0.11
Iron	10	100	10.7	16.9	4	-30	-13	30.1	17.5	5.5	1.7	10	100	12.8	15.1	-7	-38	1	23.2	16.6	3.5	1.1
Lead	10	50	<0.01	<0.01	-	-	-	0.015	-	-	-	10	100	0.0069	0.0090	-76	-49	-12	0.0147	0.0093	0.0024	0.0008
Lithium	10	0	<0.1	<0.1	-	-	-	<0.1	-	-	-	10	0	<0.1	<0.1	-	-	-	<0.1	-	-	-
Magnesium	10	100	255	320	2	-1	5	387	316	44	14	10	100	248	328	5	1	10	359	320	34	11
Manganese	10	100	0.814	1.760	48	-11	59	3.030	1.751	0.725	0.229	10	100	0.535	1.003	-16	-49	-10	1.410	0.970	0.238	0.075
Mercury	10	100	0.0306	0.0340	-1	5	nd	0.0381	0.0338	0.0026	0.0008	10	100	0.0238	0.0313	-9	-3	nd	0.0435	0.0321	0.0053	0.0017
Molybdenum	10	100	0.0132	0.0150	1	1	42	0.0184	0.0151	0.0017	0.0005	10	100	0.0120	0.0160	8	8	41	0.0235	0.0165	0.0033	0.0010
Nickel	10	10	<0.04	<0.04	-	-	-	0.042	-	-	-	10	10	<0.04	<0.04	-	-	-	0.043	-	-	-
Phosphorus	10	100	3510	4765	-1	-8	-17	6310	4834	863	273	10	100	3320	5010	4	-3	-2	5770	4782	675	213
Potassium	10	100	2780	2985	-2	1	-9	3160	2969	117	37	10	100	3150	3365	11	14	-1	3750	3380	173	55
Rubidium	10	100	4.03	4.37	-2	-16	-18	4.58	4.34	0.18	0.06	10	100	5.31	5.50	24	6	-	6.16	5.56	0.26	0.08
Selenium*	10	100	1.445	1.677	7	16	-8	1.992	1.700	0.186	0.059	10	100	1.860	2.131	35	47	16	2.632	2.153	0.232	0.073
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	10	100	596	640	1	1	-21	674	635	27	9	10	100	603	680	8	7	-17	708	666	37	12
Strontium	10	100	7.4	13.0	35	11	30	18.6	12.6	3.8	1.2	10	100	3.26	7.31	-24	-38	-18	9.87	7.04	1.82	0.58
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	10	0	<0.004	<0.004	-	-	-	<0.004	-	-	-	10	0	<0.004	<0.004	-	-	-	<0.004	-	-	-
Thallium	10	100	0.00959	0.01085	-3	2	39	0.01260	0.01096	0.00116	0.00037	10	100	0.00652	0.00683	-39	-36	5	0.00755	0.00690	0.00030	0.00010
Tin	10	0	<0.02	<0.02	-	-	-	<0.02	-	-	-	10	10	<0.02	<0.02	-	-	-	0.101	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	10	80	<0.0004	0.00048	-13	-54	-41	0.00125	0.00052	0.00029	0.00009	10	90	<0.0004	0.00057	3	-46	-58	0.00079	0.00057	0.00016	0.00005
Vanadium	10	10	<0.02	<0.02	-	-	-	0.035	-	-	-	10	50	<0.02	0.016	-	-	-	0.036	-	-	-
Zinc	10	100	27.6	41.4	2	-3	-29	50.5	40.8	6.9	2.2	10	100	31.5	33.8	-17	-21	-36	51.6	36.9	6.7	2.1
Zirconium	10	0	<0.04	<0.04	-	-	-	<0.04	-	-	-	10	0	<0.04	<0.04	-	-	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 10: Summary Statistics for Whole Body Tissues of all Fish Species Captured in the Reference Sites in 2014

	Quesnel Lake- East								Quesnel Lake- North Arm								Quesnel Lake- North Arm								Quesnel Lake- North Arm							
	Sockeye Salmon								Northern Pikeminnow								Peamouth Chub								Sockeye Salmon							
Parameter	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	10	100	69.4	71.5	74.3	71.6	1.6	0.5	31	100	69.7	74.0	78.1	74.1	2.1	0.4	2	100	75.2	--	76.3	--	--	--	10	100	71.1	73.0	78.9	73.5	2.3	0.7
Aluminum	10	90	<1	2.5	4.9	2.6	1.4	0.5	31	100	1.31	4.98	26.40	6.52	5.71	1.02	2	100	4.19	--	7.01	--	--	--	10	100	3.34	8.35	13.50	7.95	3.33	1.05
Antimony	10	10	<0.002	<0.002	0.0026	-	-	-	31	3	<0.002	<0.002	0.0024	-	-	-	2	0	<0.002	--	<0.002	--	--	--	10	10	<0.002	<0.002	0.0029	-	-	-
Arsenic	10	100	0.0797	0.0904	0.1170	0.0920	0.0111	0.0035	31	100	0.0041	0.0133	0.0630	0.0185	0.0144	0.0026	2	100	0.0302	--	0.0363	--	--	--	10	100	0.0865	0.1160	0.1430	0.1168	0.0156	0.0049
Barium	10	100	0.255	0.411	1.040	0.473	0.257	0.081	31	100	0.173	0.300	1.630	0.403	0.291	0.052	2	100	0.543	--	0.613	--	--	--	10	100	0.337	0.544	0.835	0.569	0.158	0.050
Beryllium	10	0	<0.002	<0.002	<0.002	-	-	-	31	0	<0.002	<0.002	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--	10	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	10	0	<0.002	<0.002	<0.002	-	-	-	31	0	<0.002	<0.002	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--	10	0	<0.002	<0.002	<0.002	-	-	-
Boron	10	0	<0.2	<0.2	<0.2	-	-	-	31	0	<0.2	<0.2	<0.2	-	-	-	2	0	<0.2	--	<0.2	--	--	--	10	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	10	100	0.0172	0.0274	0.0535	0.0295	0.0110	0.0035	31	100	0.0035	0.0083	0.0285	0.0094	0.0048	0.0009	2	100	0.0181	--	0.0221	--	--	--	10	100	0.0184	0.0300	0.0502	0.0315	0.0112	0.0035
Calcium	10	100	3510	5700	9630	5847	1958	619	31	100	4610	8970	15900	8849	2540	456	2	100	9350	--	10400	--	--	--	10	100	4670	6080	8580	6292	1302	412
Cesium	10	100	0.0257	0.0348	0.0399	0.0341	0.0038	0.0012	31	100	0.0165	0.0386	0.0996	0.0398	0.0171	0.0031	2	100	0.0338	--	0.0422	--	--	--	10	100	0.0358	0.0428	0.0465	0.0419	0.0041	0.0013
Chromium	10	30	0.012	<0.04	0.054	-	-	-	31	100	0.021	0.147	5.850	0.548	1.100	0.198	2	100	0.179	--	1.120	--	--	--	10	60	0.013	0.022	0.052	0.027	0.012	0.004
Cobalt	10	100	0.0186	0.0241	0.0345	0.0255	0.0055	0.0017	31	100	0.0083	0.0181	0.1130	0.0243	0.0194	0.0035	2	100	0.0395	--	0.0479	--	--	--	10	100	0.0268	0.0288	0.0365	0.0299	0.0031	0.0010
Copper	10	100	0.83	1.04	1.11	1.00	0.10	0.03	31	100	0.391	0.654	0.982	0.665	0.109	0.020	2	100	0.643	--	0.646	--	--	--	10	100	0.715	1.135	1.790	1.157	0.302	0.095
Iron	10	100	12.5	16.2	24.1	17.1	3.8	1.2	31	100	11.7	17.3	62.1	21.9	11.3	2.0	2	100	17.4	--	21.1	--	--	--	10	100	16.4	24.2	40.0	25.0	7.8	2.5
Lead	10	100	0.024	0.038	0.064	0.040	0.012	0.004	31	100	0.0056	0.0120	0.0398	0.0156	0.0083	0.0015	2	100	0.0237	--	0.0317	--	--	--	10	100	0.0123	0.0177	0.0470	0.0230	0.0127	0.0040
Lithium	10	0	<0.1	<0.1	<0.1	-	-	-	31	0	<0.1	<0.1	<0.1	-	-	-	2	0	<0.1	--	<0.1	--	--	--	10	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	10	100	190	313	361	305	48	15	31	100	323	387	522	392	45	8	2	100	384	--	395	--	--	--	10	100	269	324	363	314	31	10
Manganese	10	100	0.895	1.190	3.000	1.353	0.628	0.199	31	100	0.816	2.120	5.430	2.470	1.060	0.190	2	100	2.38	--	3.21	--	--	--	10	100	1.43	1.98	3.42	2.11	0.68	0.21
Mercury	10	100	0.0319	0.0344	0.0449	0.0370	0.0047	0.0015	31	100	0.0586	0.0757	0.1190	0.0786	0.0148	0.0027	2	100	0.114	--	0.114	--	--	--	10	100	0.0251	0.0323	0.0410	0.0336	0.0063	0.0020
Molybdenum	10	100	0.0113	0.0148	0.0238	0.0156	0.0035	0.0011	31	100	0.0089	0.0229	0.7100	0.0731	0.1324	0.0238	2	100	0.0411	--	0.1480	--	--	--	10	100	0.0122	0.0148	0.0182	0.0154	0.0022	0.0007
Nickel	10	0	<0.04	<0.04	<0.04	-	-	-	31	77	<0.04	0.14	3.50	0.34	0.66	0.12	2	100	0.117	--	0.678	--	--	--	10	40	<0.04	<0.04	0.079	-	-	-
Phosphorus	10	100	3100	4835	6670	4801	1123	355	31	100	4550	6940	10300	6835	1309	235	2	100	6950	--	7320	--	--	--	10	100	3970	5155	5840	5024	560	177
Potassium	10	100	2590	3040	3590	3088	292	92	31	100	3310	3610	4910	3612	279	50	2	100	3540	--	3650	--	--	--	10	100	2690	2955	3270	2955	201	63
Rubidium	10	100	3.64	4.45	4.69	4.37	0.31	0.10	31	100	3.11	7.30	10.50	7.36	1.50	0.27	2	100	6.92	--	7.43	--	--	--	10	100	4.96	5.19	5.63	5.23	0.22	0.07
Selenium*	10	100	1.352	1.573	2.167	1.653	0.256	0.081	31	100	1.038	1.485	5.197	1.682	0.737	0.132	2	100	1.481	--	1.855	--	--	--	10	100	1.343	1.445	2.038	1.526	0.214	0.068
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	10	100	578	632	721	638	45	14	31	100	721	861	1100	877	83	15	2	100	873	--	932	--	--	--	10	100	598	635	681	637	32	10
Strontium	10	100	7.11	9.65	20.60	11.26	4.43	1.40	31	100	6.63	13.90	35.00	14.47	5.70	1.02	2	100	21.5	--	27.4	--	--	--	10	100	9.39	11.70	19.50	13.05	3.70	1.17
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	10	0	<0.004	<0.004	<0.004	-	-	-	31	0	<0.004	<0.004	<0.004	-	-	-	2	0	<0.004	--	<0.004	--	--	--	10	0	<0.004	<0.004	<0.004	-	-	-
Thallium	10	100	0.00804	0.01115	0.01230	0.01081	0.00142	0.00045	31	100	0.0007	0.00142	0.0029	0.0015	0.0005	0.0001	2	100	0.00273	--	0.00308	--	--	--	10	100	0.0097	0.0107	0.0134	0.0111	0.0012	0.0004
Tin	10	10	<0.02	<0.02	0.043	-	-	-	31	35	<0.02	<0.02	0.059	-	-	-	2	50	<0.02	--	0.025	--	--	--	10	0	<0.02	<0.02	<0.02	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	10	90	<0.0004	0.00055	0.00098	0.00064	0.00028	0.00009	31	100	0.00082	0.00353	0.0090	0.0039	0.0021	0.0004	2	100	0.00478	--	0.00492	--	--	--	10	100	0.00067	0.00105	0.00218	0.00116	0.00049	0.00015
Vanadium	10	0	<0.02	<0.02	<0.02	-	-	-	31	74	<0.02	0.120	1.900	0.281	0.430	0.077	2	100	0.185	--	0.664	--	--	--	10	50	<0.02	<0.02	0.028	-	-	-
Zinc	10	100	31.1	40.5	56.0	42.6	8.3	2.6	31	100	21.6	27.4	37.3	27.8	3.8	0.7	2	100	30.9	--	32.00000	--	--	--	10	100	31.1	42.6	58.8	43.0	7.9	2.5
Zirconium	10	0	<0.04	<0.04	<0.04	-	-	-	31	0	<0.04	<0.04	<0.04	-	-	-	2	0	<0.04	--	<0.04	--	--	--	10	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	31	100	0.0436	0.0685	0.1220	0.0716	0.0168	0.0030	2	100	0.0840	--	0.0976	--	--	--	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation;

SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 11: Summary Statistics for Muscle Tissues of all Fish Species Captured in the Exposure Sites in 2015

	Polley Lake										Quesnel Lake- Hazeltine Creek									Quesnel Lake- Hazeltine Creek								
	Rainbow Trout										Burbot									Lake Trout								
Parameter	n	%>DL	Min	Med	% Magnitude Bootjack Lake	% Magnitude Trio Lake	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake East	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake East	Max	Mean	SD	SE
% Moisture	8	100	78.9	80.9	-1	5	85.0	81.3	1.8	0.6	4	100	81.4	82.0	0	83.3	82.2	0.9	0.4	10	100	71.5	76.1	-2	79.1	76.0	2.2	0.7
Aluminum	8	0	<0.4	<0.4	-	-	<0.4	-	-	-	4	0	<0.4	<0.4	-	<0.4	-	-	-	10	0	<0.4	<0.4	-	<0.4	-	-	-
Antimony	8	0	<0.002	<0.002	-	-	<0.002	-	-	-	4	0	<0.002	<0.002	-	<0.002	-	-	-	10	0	<0.002	<0.002	-	<0.002	-	-	-
Arsenic	8	75	<0.004	0.0064	-	-	0.0105	0.0061	0.0032	0.0011	4	100	0.0701	0.0892	88	0.1560	0.1011	0.0382	0.0191	10	100	0.0354	0.0504	55	0.0873	0.0556	0.0168	0.0053
Barium	8	25	<0.01	<0.01	-	-	0.018	-	-	-	4	0	<0.01	<0.01	-	<0.01	-	-	-	10	0	<0.01	<0.01	-	<0.01	-	-	-
Beryllium	8	0	<0.002	<0.002	-	-	<0.002	-	-	-	4	0	<0.002	<0.002	-	<0.002	-	-	-	10	0	<0.002	<0.002	-	<0.002	-	-	-
Bismuth	8	0	<0.002	<0.002	-	-	<0.002	-	-	-	4	0	<0.002	<0.002	-	<0.002	-	-	-	10	0	<0.002	<0.002	-	<0.002	-	-	-
Boron	8	0	<0.2	<0.2	-	-	<0.2	-	-	-	4	0	<0.2	<0.2	-	<0.2	-	-	-	10	0	<0.2	<0.2	-	<0.2	-	-	-
Cadmium	8	13	<0.001	<0.001	-	-	0.0017	-	-	-	4	0	<0.001	<0.001	-	<0.001	-	-	-	10	10	<0.001	<0.001	-	0.001	-	-	-
Calcium	8	100	59.9	179.0	9	14	237.0	176.9	54.5	19.3	4	100	67.7	74.9	-21	98.2	78.9	13.4	6.7	10	100	41.8	58.1	-40	77.8	57.6	11.7	3.7
Cesium	8	100	0.0090	0.0128	-1	92	0.0158	0.0127	0.0024	0.0008	4	100	0.0277	0.0598	3	0.0841	0.0579	0.0245	0.0122	10	100	0.0418	0.0483	-29	0.0784	0.0531	0.0114	0.0036
Chromium	8	0	<0.01	<0.01	-	-	<0.01	-	-	-	4	0	<0.01	<0.01	-	<0.01	-	-	-	10	0	<0.01	<0.01	-	<0.01	-	-	-
Cobalt	8	25	<0.004	<0.004	-	-	0.0042	-	-	-	4	25	<0.004	<0.004	-	0.0041	-	-	-	10	0	<0.004	<0.004	-	<0.004	-	-	-
Copper	8	100	0.220	0.431	-16	99	0.583	0.428	0.109	0.039	4	100	0.263	0.301	28	0.452	0.329	0.085	0.043	10	100	0.210	0.398	-4	0.546	0.395	0.101	0.032
Iron	8	100	4.49	6.88	5	24	11.20	7.20	1.92	0.68	4	100	2.06	3.10	24	4.43	3.17	0.97	0.49	10	100	1.70	2.86	-11	4.28	2.73	0.76	0.24
Lead	8	0	<0.004	<0.004	-	-	<0.004	-	-	-	4	0	<0.004	<0.004	-	<0.004	-	-	-	10	0	<0.004	<0.004	-	<0.004	-	-	-
Lithium	8	0	<0.1	<0.1	-	-	<0.1	-	-	-	4	0	<0.1	<0.1	-	<0.1	-	-	-	10	0	<0.1	<0.1	-	<0.1	-	-	-
Magnesium	8	100	123	241	-1	-7	262	226	45	16	4	100	209	222	6	246	225	16	8	10	100	230	247	6	279	252	17	6
Manganese	8	100	0.036	0.115	-2	86	0.146	0.106	0.034	0.012	4	100	0.116	0.130	-2	0.145	0.130	0.015	0.008	10	100	0.053	0.063	-16	0.072	0.062	0.006	0.002
Mercury	8	100	0.0664	0.08205	1	-77	0.1330	0.0861	0.0216	0.0077	4	100	0.104	0.415	188	0.478	0.353	0.170	0.085	10	100	0.0791	0.1375	-44	0.5330	0.2179	0.1730	0.0547
Molybdenum	8	0	<0.004	<0.004	-	-	<0.004	-	-	-	4	0	<0.004	<0.004	-	<0.004	-	-	-	10	0	<0.004	<0.004	-	<0.004	-	-	-
Nickel	8	0	<0.04	<0.04	-	-	<0.04	-	-	-	4	0	<0.04	<0.04	-	<0.04	-	-	-	10	0	<0.04	<0.04	-	<0.04	-	-	-
Phosphorus	8	100	1240	2550	6	13	2680	2370	484	171	4	100	1780	1895	8	2150	1930	178	89	10	100	2310	2475	25	2780	2508	158	50
Potassium	8	100	2070	4135	1	11	4520	3849	794	281	4	100	3010	3225	10	3420	3220	185	92	10	100	3730	4035	19	4770	4141	307	97
Rubidium	8	100	1.02	1.71	-21	39	1.89	1.64	0.27	0.09	4	100	4.65	5.31	13	5.91	5.29	0.54	0.27	10	100	8.0	9.3	11	11.3	9.2	1.0	0.3
Selenium*	8	100	2.474	5.721	131	710	6.882	4.916	1.596	0.564	4	100	2.274	2.480	13	3.922	2.789	0.765	0.382	10	100	1.565	1.892	21	2.264	1.859	0.219	0.069
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	137	290	44	2	404	289	99	35	4	100	511	585	-17	642	581	54	27	10	100	166	306	-27	399	303	74	23
Strontium	8	100	0.072	0.217	-13	-12	0.290	0.214	0.064	0.023	4	100	0.110	0.142	-38	0.195	0.147	0.036	0.018	10	100	0.028	0.043	-53	0.070	0.044	0.013	0.004
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	-		<0.004	-	-	-	4	0	<0.004	<0.004	-	<0.004	-	-	-	10	0	<0.004	<0.004	-	<0.004	-	-	-
Thallium	8	100	0.00061	0.00082	-67	-78	0.00102	0.00080	0.00014	0.00005	4	100	0.00157	0.00232	39	0.00321	0.00235	0.00075	0.00037	10	100	0.00451	0.00902	44	0.01550	0.00941	0.00343	0.00108
Tin	8	0	<0.02	<0.02	-	-	<0.02	-	-	-	4	0	<0.02	<0.02	-	<0.02	-	-	-	10	10	<0.02	<0.02	-	0.025	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	0	<0.0004	<0.0004	-	-	<0.0004	-	-	-	4	0	<0.0004	<0.0004	-	<0.0004	-	-	-	10	0	<0.0004	<0.0004	-	<0.0004	-	-	-
Vanadium	8	0	<0.02	<0.02	-	-	<0.02	-	-	-	4	0	<0.02	<0.02	-	<0.02	-	-	-	10	0	<0.02	<0.02	-	<0.02	-	-	-
Zinc	8	100	2.19	4.28	-1	-9	5.27	4.13	0.95	0.33	4	100	5.29	5.41	6	7.78	5.97	1.21	0.60	10	100	2.53	3.13	-4	3.51	3.11	0.29	0.09
Zirconium	8	0	<0.04	<0.04	-	-	<0.04	-	-	-	4	0	<0.04	<0.04	-	<0.04	-	-	-	10	0	<0.04	<0.04	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 11: Summary Statistics for Muscle Tissues of all Fish Species Captured in the Exposure Sites in 2015

	Quesnel Lake- Hazeltine Creek									Quesnel Lake- Hazeltine Creek								Quesnel Lake- near Quesnel River								Quesnel River							
	Largescale Sucker									Northern Pikeminnow								Kokanee								Rainbow Trout							
Parameter	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Bootjack Lake	% Magnitude Trio Lake	Max	Mean	SD	SE
% Moisture	8	100	81.8	83.0	2	84.8	83.0	0.9	0.3	7	100	76.7	79.2	79.9	78.9	1.1	0.4	8	100	80.6	84.4	86.7	84.1	2.0	0.7	8	100	76.0	77.6	-5	1	79.8	77.7	1.2	0.4
Aluminum	8	0	0.2	0.2	-	0.2	-	-	-	7	0	<0.4	<0.4	<0.4	-	-	-	8	0	<0.4	<0.4	<0.4	-	-	-	8	0	<0.4	<0.4	-	-	<1	-	-	-
Antimony	8	0	0.001	0.001	-	0.001	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	-	-	<0.002	-	-	-
Arsenic	8	100	0.0100	0.0174	-48	0.0379	0.0190	0.0091	0.0032	7	100	0.0064	0.0131	0.0199	0.0127	0.0046	0.0017	8	100	0.0063	0.0119	0.0173	0.0119	0.0032	0.0011	8	100	0.0101	0.0325	-	-	0.0727	0.0359	0.0190	0.0067
Barium	8	100	0.033	0.061	97	0.083	0.060	0.020	0.007	7	100	0.024	0.030	0.042	0.031	0.006	0.002	8	0	<0.01	<0.01	<0.01	-	-	-	8	88	<0.01	0.024	55	30	0.051	0.025	0.015	0.005
Beryllium	8	0	0.001	0.001	-	0.001	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	-	-	<0.002	-	-	-
Bismuth	8	0	0.001	0.001	-	0.001	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	-	-	<0.002	-	-	-
Boron	8	0	0.1	0.1	-	0.1	-	-	-	7	0	<0.2	<0.2	<0.2	-	-	-	8	0	<0.2	<0.2	<0.2	-	-	-	8	0	<0.2	<0.2	-	-	<0.2	-	-	-
Cadmium	8	37.5	0.0005	0.0005	-	0.019	-	-	-	7	14	<0.001	<0.001	0.0011	-	-	-	8	0	<0.001	<0.001	<0.001	-	-	-	8	25	<0.001	<0.001	-	-	0.0014	-	-	-
Calcium	8	100	316	449	80	793	501	172	61	7	100	308	465	688	467	117	44	8	100	54.8	131.0	222.0	133.7	47.9	16.9	8	100	138	254	55	61	538	269	136	48
Cesium	8	100	0.0093	0.0167	-50	0.0250	0.0157	0.0056	0.0020	7	100	0.0324	0.0428	0.0446	0.0408	0.0041	0.0016	8	100	0.0263	0.0330	0.0478	0.0346	0.0075	0.0026	8	100	0.0158	0.0234	81	251	0.0355	0.0245	0.0077	0.0027
Chromium	8	0	0.005	0.005	-	0.005	-	-	-	7	0	<0.01	<0.01	<0.01	-	-	-	8	25	<0.01	<0.01	0.032	-	-	-	8	13	<0.01	<0.01	-	-	0.02	-	-	-
Cobalt	8	37.5	0.002	0.002	-	0.0088	-	-	-	7	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-	8	100	0.0106	0.0142	-	233	0.0216	0.0152	0.0040	0.0014
Copper	8	100	0.181	0.280	3	0.368	0.273	0.058	0.020	7	100	0.370	0.412	0.695	0.460	0.116	0.044	8	100	0.398	0.478	0.615	0.494	0.077	0.027	8	100	0.167	0.354	-31	64	0.454	0.343	0.088	0.031
Iron	8	100	1.99	2.78	23	3.40	2.70	0.45	0.16	7	100	2.61	3.05	4.51	3.18	0.64	0.24	8	100	3.94	4.82	5.28	4.79	0.42	0.15	8	100	3.40	3.80	-42	-32	4.63	3.90	0.42	0.15
Lead	8	0	<0.004	<0.004	-	<0.004	-	-	-	7	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	-	-	<0.01	-	-	-
Lithium	8	0	<0.1	<0.1	-	<0.1	-	-	-	7	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	-	-	<0.1	-	-	-
Magnesium	8	100	204	229	-17	239	225	12	4	7	100	236	244	283	253	18	7	8	100	183	204	212	201	11	4	8	100	248	272	12	5	315	275	23	8
Manganese	8	100	0.266	0.550	139	0.901	0.513	0.208	0.074	7	100	0.110	0.136	0.235	0.147	0.043	0.016	8	100	0.078	0.088	0.135	0.098	0.023	0.008	8	100	0.077	0.134	15	118	0.207	0.142	0.046	0.016
Mercury	8	100	0.0673	0.1230	19	0.1570	0.1184	0.0279	0.0099	7	100	0.0717	0.2720	0.3530	0.2437	0.1087	0.0411	8	100	0.0667	0.0903	0.1280	0.0921	0.0196	0.0069	8	100	0.0402	0.0652	-19	-82	0.0995	0.0646	0.0208	0.0074
Molybdenum	8	0	<0.004	<0.004	-	<0.004	-	-	-	7	0	<0.004	<0.004	<0.004	-	-	-	8	13	<0.004	<0.004	0.005	-	-	-	8	0	<0.004	<0.004	-	-	<0.008	-	-	-
Nickel	8	0	<0.04	<0.04	-	<0.04	-	-	-	7	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	-	-	<0.04	-	-	-
Phosphorus	8	100	1840	1900	-6	2130	1931	106	37	7	100	1840	1970	2430	2050	221	84	8	100	1990	2110	2330	2156	126	44	8	100	2030	2325	-3	3	2770	2370	234	83
Potassium	8	100	3140	3320	-6	3690	3375	206	73	7	100	2760	3070	3900	3214	366	138	8	100	3470	3740	4310	3814	331	117	8	100	3440	3855	-6	4	4760	3919	425	150
Rubidium	8	100	2.35	3.11	-36	3.93	3.10	0.54	0.19	7	100	6.41	6.66	8.63	7.03	0.77	0.29	8	100	2.61	4.45	5.55	4.38	0.94	0.33	8	100	3.01	3.89	79	217	5.38	4.00	0.83	0.29
Selenium*	8	100	2.455	2.910	97	4.632	3.135	0.737	0.260	7	100	1.622	1.906	2.625	2.021	0.397	0.150	8	100	2.128	2.408	2.932	2.431	0.256	0.091	8	100	1.924	2.163	-13	206	2.485	2.168	0.209	0.074
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	289	314	-34	482	350	76	27	7	100	236	283	410	305	66.2	25.0	8	100	579	631	942	670	116	41	8	100	434	470	134	65	602	489	60	21
Strontium	8	100	0.555	0.643	72	1.170	0.747	0.226	0.080	7	100	0.320	0.612	0.857	0.588	0.174	0.066	8	100	0.061	0.168	0.323	0.174	0.076	0.027	8	100	0.166	0.373	49	51	0.901	0.392	0.234	0.083
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	-	<0.004	-	-	-	7	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	-	-	<0.004	-	-	-
Thallium	8	100	0.00046	0.00117	10	0.00200	0.00117	0.00059	0.00021	7	100	0.00071	0.00185	0.00223	0.00169	0.00053	0.00020	8	100	0.00252	0.00379	0.00594	0.00390	0.00120	0.00042	8	100	0.00282	0.00415	67	11	0.00480	0.00390	0.00082	0.00029
Tin	8	63	<0.02	0.024	0	0.031	0.020	0.008	0.003	7	71	<0.02	0.023	0.042	0.025	0.013	0.005	8	63	<0.02	0.023	0.031	0.020	0.009	0.003	8	38	<0.02	<0.02	-	-	0.029	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	0	<0.0004	<0.0004	-	<0.0004	-	-	-	7	0	<0.0004	<0.0004	<0.0004	-	-	-	8	0	<0.0004	<0.0004	<0.0004	-	-	-	8	0	<0.0004	<0.0004	-	-	<0.0004	-	-	-
Vanadium	8	0	<0.02	<0.02	-	<0.02	-	-	-	7	0	<0.02	<0.02	<0.02	-	-	-	8	0	<0.02	<0.02	<0.02	-	-	-	8	0	<0.02	<0.02	-	-	<0.02	-	-	-
Zinc	8	100	4.23	5.91	-12	6.69	5.80	0.81	0.29	7	100	3.74	5.48	8.79	5.63	1.63	0.62	8	100	3.16	5.05	6.96	4.96	1.43	0.50	8	100	3.18	4.04	-7	-14	6.33	4.28	0.93	0.33
Zirconium	8	0	<0.04	<0.04	-	<0.04	-	-	-	7	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	-	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 12: Summary Statistics for Muscle Tissues of all Fish Species Captured in the Reference Sites in 2015

	Bootjack Lake								Quesnel Lake- East								Quesnel Lake- East								Quesnel Lake- North Arm								Trio Lake							
	Rainbow Trout								Burbot								Lake Trout								Largescale Sucker								Rainbow Trout							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	8	100	79.3	81.4	84.4	81.6	1.5	0.5	7	100	79.1	82.0	85.6	82.2	2.1	0.8	10	100	73.9	77.9	80.1	77.2	2.2	0.7	8	100	80.5	81.2	82.6	81.3	0.7	0.2	8	100	75.1	77.1	82.0	78.0	2.6	0.9
Aluminum	8	0	<0.4	<0.4	<0.4	-	-	-	7	14	<0.4	<0.4	0.66	-	-	-	10	40	<0.4	<0.4	0.89	-	-	-	8	0	<0.4	<0.4	<0.4	-	-	-	8	0	<1	<1	<1	-	-	-
Antimony	8	0	<0.002	<0.002	<0.002	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	8	38	<0.004	<0.004	0.0085	-	-	-	7	100	0.0233	0.0475	0.0867	0.0490	0.0230	0.0087	10	100	0.0199	0.0326	0.0547	0.0346	0.0127	0.0040	8	100	0.0191	0.0333	0.0694	0.0381	0.0181	0.0064	8	38	<0.006	<0.006	0.0171	-	-	-
Barium	8	100	0.012	0.016	0.038	0.019	0.009	0.003	7	29	<0.01	<0.01	0.015	-	-	-	10	0	<0.01	<0.01	<0.01	-	-	-	8	100	0.021	0.031	0.054	0.032	0.011	0.004	8	100	0.010	0.019	0.045	0.022	0.011	0.004
Beryllium	8	0	<0.002	<0.002	<0.002	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	8	13	<0.002	<0.002	0.0023	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	8	38	<0.002	<0.002	0.003	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-
Boron	8	0	<0.2	<0.2	<0.2	-	-	-	7	0	<0.2	<0.2	<0.2	-	-	-	10	0	<0.2	<0.2	<0.2	-	-	-	8	0	<0.2	<0.2	<0.2	-	-	-	8	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	8	0	<0.001	<0.001	<0.001	-	-	-	7	0	<0.001	<0.001	<0.001	-	-	-	10	0	<0.001	<0.001	<0.001	-	-	-	8	13	<0.001	<0.001	0.0011	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-
Calcium	8	100	127	164	357	182	73	26	7	100	87.2	95.3	252.0	124.4	61.1	23.1	10	100	50	96	148	95	30	9	8	100	176	250	434	264	75	27	8	100	115	158	304	173	60	
Cesium	8	100	0.0097	0.0129	0.0145	0.0129	0.0016	0.0006	7	100	0.0446	0.0583	0.0807	0.0610	0.0146	0.0055	10	100	0.0427	0.06765	0.1180	0.0660	0.0220	0.0070	8	100	0.0271	0.0335	0.0496	0.0349	0.0071	0.0025	8	100	0.0055	0.0067	0.0128	0.0080	0.0030	0.0011
Chromium	8	13	<0.01	<0.01	0.061	-	-	-	7	0	<0.01	<0.01	<0.01	-	-	-	10	0	<0.01	<0.01	<0.01	-	-	-	8	0	<0.01	<0.01	<0.01	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-
Cobalt	8	25	<0.004	<0.004	0.0041	-	-	-	7	86	<0.004	0.0056	0.0077	0.0055	0.0019	0.0007	10	30	<0.004	<0.004	0.0131	-	-	-	8	38	<0.004	<0.004	0.0047	-	-	-	8	63	<0.004	0.0043	0.0072	0.0040	0.0020	0.0007
Copper	8	100	0.320	0.512	0.569	0.480	0.087	0.031	7	100	0.205	0.236	0.555	0.287	0.122	0.046	10	100	0.314	0.416	0.659	0.436	0.122	0.039	8	100	0.189	0.271	0.313	0.259	0.044	0.015	8	100	0.136	0.216	0.394	0.231	0.086	0.031
Iron	8	100	5.39	6.54	8.29	6.67	1.19	0.42	7	100	2.03	2.49	7.63	3.81	2.21	0.83	10	100	2.65	3.22	8.71	4.33	2.04	0.64	8	100	1.91	2.25	2.50	2.22	0.22	0.08	8	100	2.6	5.6	7.5	5.3	1.7	0.6
Lead	8	0	<0.004	<0.004	<0.004	-	-	-	7	0	<0.004	<0.004	<0.004	-	-	-	10	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.01	<0.01	<0.01	-	-	-
Lithium	8	0	<0.1	<0.1	<0.1	-	-	-	7	0	<0.1	<0.1	<0.1	-	-	-	10	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	8	100	229	243	286	252	23	8	7	100	173	208	230	206	19	7	10	100	211	234	268	233	15	5	8	100	256	276	292	274	16	6	8	100	235	259	306	261	22	8
Manganese	8	100	0.089	0.117	0.190	0.125	0.031	0.011	7	100	0.081	0.133	0.251	0.140	0.054	0.020	10	100	0.052	0.074	0.088	0.072	0.010	0.003	8	100	0.147	0.231	0.295	0.229	0.053	0.019	8	100	0.047	0.062	0.115	0.069	0.024	0.008
Mercury	8	100	0.0515	0.08085	0.0958	0.0801	0.0130	0.0046	7	100	0.067	0.144	0.511	0.256	0.186	0.070	10	100	0.0434	0.2435	0.5210	0.2625	0.1928	0.0610	8	100	0.0668	0.1035	0.1900	0.1089	0.0391	0.0138	8	100	0.116	0.361	0.668	0.353	0.170	0.060
Molybdenum	8	0	<0.004	<0.004	<0.004	-	-	-	7	0	<0.004	<0.004	<0.004	-	-	-	10	0	<0.004	<0.004	<0.004	-	-	-	8	50	<0.004	<0.004	0.005	-	-	-	8	0	<0.008	<0.008	<0.008	-	-	-
Nickel	8	0	<0.04	<0.04	<0.04	-	-	-	7	0	<0.04	<0.04	<0.04	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-
Phosphorus	8	100	2300	2405	2690	2474	143	51	7	100	1480	1750	1860	1730	124	47	10	100	1870	1980	2140	1989	84	27	8	100	1890	2020	2290	2030	130	46	8	100	1980	2260	2410	2244	126	44
Potassium	8	100	3860	4085	4310	4071	162	57	7	100	2660	2930	3360	2943	231	87	10	100	3190	3395	3680	3406	151	48	8	100	3210	3535	3870	3535	255	90	8	100	3630	3715	4140	3810	204	72
Rubidium	8	100	1.85	2.17	2.50	2.18	0.21	0.07	7	100	3.32	4.70	4.97	4.49	0.59	0.22	10	100	5.63	8.38	9.53	7.69	1.37	0.43	8	100	3.62	4.84	5.29	4.73	0.57	0.20	8	100	0.753	1.225	1.920	1.304	0.426	0.151
Selenium*	8	100	2.193	2.473	2.816	2.463	0.220	0.078	7	100	2.043	2.191	3.438	2.406	0.491	0.186	10	100	1.265	1.569	2.151	1.591	0.253	0.080	8	100	1.033	1.477	2.268	1.587	0.447	0.158	8	100	0.587	0.706	0.808	0.706	0.067	0.024
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	161	201	304	215	51	18	7	100	606	702	813	689	70.5	26.6	10	100	223	418	509	410	100	32	8	100	430	474	567	479	47	17	8	100	228	286	413	293	60	21
Strontium	8	100	0.170	0.250	0.549	0.272	0.118	0.042	7	100	0.191	0.230	0.628	0.299	0.158	0.060	10	100	0.030	0.090	0.158	0.088	0.037	0.012	8	100	0.234	0.374	0.721	0.388	0.148	0.052	8	100	0.145	0.246	0.862	0.310	0.237	0.084
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	<0.004	-	-	-	7	0	<0.004	<0.004	<0.004	-	-	-	10	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-
Thallium	8	100	0.00198	0.00249	0.00407	0.00270	0.00074	0.00026	7	100	0.00102	0.00167	0.00282	0.00177	0.00068	0.00026	10	100	0.00532	0.00625	0.00843	0.00644	0.00093	0.00029	8	100	0.00049	0.00106	0.00174	0.00108	0.00037	0.00013	8	100	0.00219	0.00373	0.00493	0.00373	0.00080	0.00028
Tin	8	0	<0.02	<0.02	<0.02	-	-	-	7	0	<0.02	<0.02	<0.02	-	-	-	10	20	<0.02	<0.02	0.025	-	-	-	8	88	<0.02	0.024	0.030	0.024	0.006	0.002	8	50	<0.02	<0.02	0.072	-	-	-
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	13	<0.0004	<0.0004	0.00106	-	-	-	7	0	<0.0004	<0.0004	<0.0004	-	-	-	10	0	<0.0004	<0.0004	<0.0004	-	-	-	8	0	<0.0004	<0.0004	<0.0004	-	-	-	8	0	<0.0004	<0.0004	<0.0004	-	-	-
Vanadium	8	0	<0.02	<0.02	<0.02	-	-	-	7	0	<0.02	<0.02	<0.02	-	-	-	10	0	<0.02	<0.02	<0.02	-	-	-	8	0	<0.02	<0.02	<0.02	-	-	-	8	0	<0.02	<0.02	<0.02	-	-	-
Zinc	8	100	2.72	4.34	5.78	4.40	0.97	0.34	7	100	4.63	5.08	7.97	5.54	1.20	0.45	10	100	2.32	3.26	3.74	3.20	0.40	0.13	8	100	5.33	6.74	8.06	6.68	1.00	0.35	8	100	3.29	4.69	7.29	5.02	1.70	0.60
Zirconium	8	0	<0.04	<0.04	<0.04	-	-	-	7	0	<0.04	<0.04	<0.04	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 13: Summary Statistics for Liver Tissues of all Fish Species Captured in the Exposure Sites in 2015

	Polley Lake										Quesnel Lake- Hazeltine Creek									Quesnel Lake- Hazeltine Creek								Quesnel Lake- Hazeltine Creek							
	Rainbow Trout										Burbot									Lake Trout								Northern Pikeminnow							
Parameter	n	%>DL	Min	Med	% Magnitude Bootjack Lake	% Magnitude Trio Lake	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake East	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake East	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	8	100	75.2	76.9	0	3	80.9	77.1	1.9	0.7	4	100	29.2	38.9	-28	44.1	37.8	7.0	3.5	10	100	60.8	71.1	2	79.3	71.2	6.0	1.9	4	100	66.0	71.0	75.7	70.9	4.0	2.0
Aluminum	8	0	<1	<1	-	-	<1	-	-	-	4	100	<1	1.46	87	1.52	1.24	0.49	0.25	10	10	<0.4	<1	-	0.55	-	-	-	4	50	<1	1.85	3.6	-	-	-
Antimony	8	0	<0.002	<0.002	-	-	<0.002	-	-	-	4	100	0.0021	0.0034	-	0.0059	0.0037	0.0017	0.0008	10	0	<0.002	<0.002	-	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	8	100	0.0084	0.0124	49	0	0.0209	0.0133	0.0045	0.0016	4	100	0.402	0.496	40	1.560	0.738	0.553	0.277	10	100	0.054	0.111	44	0.173	0.117	0.041	0.013	4	100	0.0322	0.0560	0.0975	0.0604	0.02760	0.01380
Barium	8	13	<0.01	<0.01	-	-	0.012	-	-	-	4	50	<0.01	<0.01	-	0.027	-	-	-	10	10	<0.01	<0.01	-	0.025	-	-	-	4	100	0.016	0.039	0.077	0.043	0.026	0.013
Beryllium	8	0	<0.002	<0.002	-	-	<0.002	-	-	-	4	0	<0.002	<0.002	-	<0.002	-	-	-	10	0	<0.002	<0.002	-	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	8	0	<0.002	<0.002	-	-	<0.002	-	-	-	4	0	<0.002	<0.002	-	<0.002	-	-	-	10	0	<0.002	<0.002	-	<0.002	-	-	-	4	25	<0.002	<0.002	0.002	-	-	-
Boron	8	0	<0.2	<0.2	-	-	<0.2	-	-	-	4	0	<0.2	<0.2	-	<0.2	-	-	-	10	0	<0.2	<0.2	-	<0.2	-	-	-	4	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	8	100	0.0127	0.0354	54	-42	0.0671	0.0360	0.0180	0.0064	4	100	0.0531	0.0816	-33	0.1290	0.0863	0.0364	0.0182	10	100	0.0328	0.0496	44	0.0770	0.0505	0.0145	0.0046	4	100	0.0132	0.0195	0.0344	0.02163	0.00925	0.00462
Calcium	8	100	54.5	70.6	29	5	96.4	72.2	12.8	4.5	4	100	11.2	18.0	-69	31.0	19.6	8.4	4.2	10	100	34.7	71.7	-24	98.6	66.9	19.3	6.1	4	100	106	129	156	130	26	13
Cesium	8	100	0.0065	0.0102	43	343	0.0166	0.0109	0.0032	0.0011	4	100	0.0061	0.0092	-56	0.0128	0.0093	0.0031	0.0015	10	100	0.0165	0.0277	-42	0.0622	0.0321	0.0143	0.0045	4	100	0.0260	0.0339	0.0444	0.0345	0.0078	0.0039
Chromium	8	0	<0.04	<0.04	-	-	<0.04	-	-	-	4	0	<0.01	<0.01	-	<0.01	-	-	-	10	50	<0.4	<0.4	-	0.052	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-
Cobalt	8	100	0.0168	0.0195	54	-19	0.0221	0.0193	0.0022	0.0008	4	100	0.108	0.134	-41	0.256	0.158	0.067	0.034	10	100	0.0143	0.0169	-46	0.0410	0.0202	0.0082	0.0026	4	75	<0.004	0.005	0.008	0.005	0.002	0.001
Copper	8	100	2.76	19.80	133	-56	47.20	21.87	17.42	6.16	4	100	4.14	8.12	-27	13.90	8.57	4.88	2.44	10	100	2.55	24.35	154	51.70	23.01	14.72	4.65	4	100	1.78	2.15	2.54	2.15	0.37	0.19
Iron	8	100	181	453	169	2	771	437	186	66	4	100	34.5	39.7	-56	58.8	43.2	11.4	5.7	10	100	32.9	63.5	-26	315.0	85.6	83.8	26.5	4	100	33.5	41.0	79.1	48.6	20.8	10.4
Lead	8	0	<0.01	<0.01	-	-	<0.01	-	-	-	4	0	<0.004	<0.004	-	<0.004	-	-	-	10	0	<0.004	<0.004	-	<0.01	-	-	-	4	0	<0.01	<0.01	<0.01	-	-	-
Lithium	8	0	<0.1	<0.1	-	-	<0.1	-	-	-	4	0	<0.1	<0.1	-	<0.1	-	-	-	10	0	<0.1	<0.1	-	<0.1	-	-	-	4	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	8	100	133	159	-17	-8	201	160	21	8	4	100	35.9	52.3	-44	79.3	55.0	18.7	9.4	10	100	106	144	-4	219	152	39	12	4	100	140	166	187	165	21	11
Manganese	8	100	1.46	1.65	-10	18	1.79	1.63	0.14	0.05	4	100	0.185	0.536	-34	0.672	0.482	0.215	0.108	10	100	0.674	1.015	2	1.760	1.090	0.341	0.108	4	100	0.486	0.545	1.250	0.707	0.363	0.182
Mercury	8	100	0.0372	0.0578	1	-83	0.0913	0.0623	0.0191	0.0068	4	100	0.0250	0.0656	94	0.0897	0.0615	0.0269	0.0134	10	100	0.0551	0.1054	-54	0.5270	0.1797	0.1801	0.0569	4	100	0.0369	0.0474	0.0808	0.0531	0.0200	0.0100
Molybdenum	8	100	0.273	0.526	190	26	0.655	0.484	0.130	0.046	4	100	0.0413	0.0618	-39	0.1440	0.0772	0.0473	0.0236	10	100	0.0612	0.1090	0	0.1630	0.1110	0.0363	0.0115	4	100	0.0347	0.0493	0.0542	0.0469	0.0085	0.0042
Nickel	8	13	<0.04	<0.04	-	-	0.043	-	-	-	4	0	<0.04	<0.04	-	<0.04	-	-	-	10	0	<0.04	<0.04	-	<0.04	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-
Phosphorus	8	100	2360	2990	-6	-10	3260	2948	301	106	4	100	723	1054	-32	1680	1128	420	210	10	100	2230	2790	7	4460	2998	777	246	4	100	1110	1650	1970	1595	372	186
Potassium	8	100	2100	2295	-7	-3	2980	2351	275	97	4	100	823	1180	-2	1730	1228	380	190	10	100	1900	2170	12	4050	2498	799	253	4	100	1670	1880	2090	1880	175	87
Rubidium	8	100	1.21	1.40	-35	47	2.10	1.45	0.29	0.10	4	100	1.26	1.78	3	2.68	1.88	0.62	0.31	10	100	4.49	6.38	43	19.20	8.15	4.86	1.54	4	100	3.82	4.64	5.18	4.57	0.61	0.30
Selenium*	8	100	19.12	64.58	598	135	97.98	62.63	29.89	10.57	4	100	0.842	1.305	-35	1.767	1.305	0.462	0.231	10	100	4.83	6.05	16	9.36	6.31	1.32	0.42	4	100	2.486	3.318	3.971	3.273	0.635	0.318
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	578	1160	78	19	1450	1120	297	105	4	100	354	513	-31	724	526	159	80	10	100	680	1055	4	1680	1087	318	100	4	100	372	578	627	539	114	57
Strontium	8	100	0.059	0.080	-15	-36	0.108	0.083	0.017	0.006	4	100	0.042	0.064	-59	0.114	0.071	0.031	0.015	10	100	0.049	0.085	-37	0.166	0.098	0.035	0.011	4	100	0.113	0.180	0.196	0.167	0.038	0.019
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	-	-	<0.004	-	-	-	4	0	<0.004	<0.004	-	<0.004	-	-	-	10	0	<0.004	<0.004	-	<0.004	-	-	-	4	0	<0.004	<0.004	<0.004	-	-	-
Thallium	8	100	0.00624	0.00725	-78	-65	0.00801	0.00721	0.00056	0.00020	4	100	0.00109	0.00260	-11	0.00330	0.00240	0.00109	0.00054	10	100	0.024	0.088	13	0.137	0.090	0.037	0.012	4	100	0.00138	0.00354	0.00865	0.00428	0.00312	0.00156
Tin	8	50	<0.02	<0.02	-	-	0.031	-	-	-	4	0	<0.02	<0.02	-	<0.02	-	-	-	10	80	<0.02	0.031	-8	0.079	0.036	0.022	0.007	4	100	0.045	0.056	0.094	0.063	0.023	0.011
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	63	<0.0004	0.00058	33	-38	0.00383	0.00103	0.00123	0.00043	4	75	<0.0004	0.00133	-5	0.00351	0.00159	0.00145	0.00072	10	10	<0.0004	<0.0004	-	<0.0004	-	-	-	4	0	<0.0004	<0.0004	<0.0004	-	-	-
Vanadium	8	100	0.049	0.116	292	-39	0.267	0.143	0.084	0.030	4	75	<0.02	0.042	27	0.072	0.042	0.029	0.015	10	10	<0.02	<0.02	-	0.03	-	-	-	4	50	<0.02	<0.02	0.02	-	-	-
Zinc	8	100	23.3	29.3	-2	-21	57.1	35.3	12.7	4.5	4	100	11.7	15.1	-27	22.4	16.1	5.0	2.5	10	100	19.5	28.5	23	33.0	27.5	4.0	1.3	4	100	14.3	16.6	20.0	16.9	2.4	1.2
Zirconium	8	0	<0.04	<0.04	-	-	<0.04	-	-	-	4	0	<0.04	<0.04	-	<0.04	-	-	-	10	0	<0.04	<0.04	-	<0.04	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 13: Summary Statistics for Liver Tissues of all Fish Species Captured in the Exposure Sites in 2015

	Quesnel Lake- near Quesnel River								Quesnel River										Quesnel Lake - West								Quesnel Lake - Middle							
	Kokanee								Rainbow Trout										Sockeye Salmon								Sockeye Salmon							
Parameter	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Bootjack Lake	% Magnitude Trio Lake	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	8	100	75.3	77.1	78.2	76.9	1.1	0.4	8	100	64.7	69.9	-9	-7	71.9	69.1	2.3	0.8	7	100	61.7	64.3	75.2	65.7	4.4	1.7	4	100	61.8	63.5	65.3	63.5	1.5	0.8
Aluminum	8	0	<1	<1	<1	-	-	-	8	75	<1	2.2	-	-	4.9	2.1	1.4	0.5	7	100	1.2	1.3	1.4	1.3	0.1	0.0	4	100	1.1	1.2	1.2	1.2	0.1	0.0
Antimony	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	-	-	<0.002	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	4	50	<0.002	<0.002	0.0028	-	-	-
Arsenic	8	100	0.0328	0.0480	0.0677	0.0482	0.0104	0.0037	8	100	0.0279	0.0779	838	533	0.1320	0.0809	0.0320	0.0113	7	100	0.954	1.240	1.360	1.213	0.135	0.051	4	100	0.659	1.039	1.300	1.009	0.282	0.141
Barium	8	0	<0.01	<0.01	<0.01	-	-	-	8	100	0.016	0.028	115	155	0.079	0.036	0.023	0.008	7	100	0.113	0.167	0.205	0.167	0.032	0.012	4	100	0.089	0.155	0.256	0.164	0.076	0.038
Beryllium	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	-	-	<0.002	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	-	-	<0.002	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-
Boron	8	0	<0.2	<0.2	<0.2	-	-	-	8	13	<0.2	<0.2	-	-	0.37	-	-	-	7	0	<0.2	<0.2	<0.2	-	-	-	4	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	8	100	0.105	0.129	0.210	0.145	0.039	0.014	8	100	0.0812	0.1905	730	214	0.3360	0.1879	0.0906	0.0320	7	100	0.251	0.283	0.297	0.280	0.014	0.005	4	100	0.219	0.232	0.237	0.230	0.008	0.004
Calcium	8	100	58.7	65.2	101.0	71.2	15.4	5.4	8	100	85.1	103.0	89	53	175.0	121.1	33.8	12.0	7	100	1000	1260	1610	1251	208	79	4	100	1390	1660	2430	1785	475	237
Cesium	8	100	0.0068	0.0119	0.0130	0.0107	0.0024	0.0008	8	100	0.0101	0.0147	106	539	0.0282	0.0163	0.0060	0.0021	7	100	0.0253	0.0284	0.0314	0.0287	0.0020	0.0007	4	100	0.0283	0.0304	0.0336	0.0307	0.0022	0.0011
Chromium	8	13	<0.04	<0.04	0.053	-	-	-	8	0	<0.04	<0.04	-	-	<0.04	-	-	-	7	14	<0.04	<0.04	<0.04	-	-	-	4	75	<0.04	0.041	0.072	0.043	0.021	0.011
Cobalt	8	100	0.0203	0.0232	0.0447	0.0267	0.0084	0.0030	8	100	0.0501	0.0761	504	217	0.1210	0.0840	0.0284	0.0100	7	100	0.0201	0.0216	0.0227	0.0214	0.0008	0.0003	4	100	0.0165	0.0186	0.0220	0.0189	0.0023	0.0011
Copper	8	100	36.7	95.3	137.0	90.0	44.9	15.9	8	100	4.13	13.75	62	-70	87.30	24.91	27.54	9.74	7	100	119	134	163	135	15	6	4	100	114	118	121	118	3	2
Iron	8	100	236	305	516	342	102	36	8	100	142	315	87	-29	431	293	100	35	7	100	162	182	203	183	16	6	4	100	284	295	350	306	31	15
Lead	8	0	<0.01	<0.01	<0.01	-	-	-	8	13	<0.01	<0.01	-	-	0.01	-	-	-	7	14	<0.01	<0.01	0.014	-	-	-	4	0	<0.01	<0.01	<0.01	-	-	-
Lithium	8	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	-	-	<0.1	-	-	-	7	0	<0.1	<0.1	<0.1	-	-	-	4	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	8	100	140	164	177	162	14	5	8	100	180	209	9	22	262	215	31	11	7	100	209	222	228	220	7	3	4	100	216	223	242	226	12	6
Manganese	8	100	1.13	1.56	2.22	1.57	0.31	0.11	8	100	2.78	3.06	67	119	4.30	3.18	0.51	0.18	7	100	0.475	0.565	0.674	0.570	0.073	0.028	4	100	0.655	0.721	0.861	0.740	0.093	0.047
Mercury	8	100	0.0615	0.0954	0.2010	0.1088	0.0504	0.0178	8	100	0.0358	0.0509	-11	-85	0.0757	0.0546	0.0146	0.0052	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	8	100	0.138	0.184	0.299	0.194	0.053	0.019	8	100	0.154	0.338	86	-19	0.399	0.311	0.095	0.034	7	100	0.103	0.117	0.128	0.116	0.010	0.004	4	100	0.130	0.139	0.143	0.138	0.006	0.003
Nickel	8	0	<0.04	<0.04	<0.04	-	-	-	8	50	<0.04	<0.04	-	-	0.064	-	-	-	7	43	<0.04	<0.04	0.055	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-
Phosphorus	8	100	2640	3000	3310	2960	241	85	8	100	2990	4005	26	21	4740	3939	545	193	7	100	2530	2690	2830	2669	98	37	4	100	2720	2780	3300	2895	273	136
Potassium	8	100	1830	2060	2320	2081	157	56	8	100	2360	2530	2	7	2770	2523	131	46	7	100	3560	3710	3750	3663	85	32	4	100	3330	3405	3590	3433	113	56
Rubidium	8	100	1.29	2.52	2.98	2.40	0.55	0.19	8	100	1.78	2.74	27	189	4.15	2.78	0.70	0.25	7	100	6.44	6.62	6.78	6.60	0.14	0.05	4	100	6.11	6.20	6.57	6.27	0.21	0.10
Selenium*	8	100	24.74	56.77	77.52	50.85	21.94	7.76	8	100	9.81	20.74	124	-25	72.76	27.50	21.12	7.47	7	100	8.74	10.20	18.90	11.38	3.42	1.29	4	100	9.16	12.25	20.30	13.49	4.78	2.39
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	868	1205	1580	1209	219	77	8	100	918	985	51	1	1090	984	62	22	7	100	944	974	1010	975	29	11	4	100	874	927	953	920	35	18
Strontium	8	100	0.056	0.072	0.112	0.077	0.020	0.007	8	100	0.162	0.213	129	70	0.501	0.261	0.108	0.038	7	100	1.10	1.26	1.76	1.32	0.22	0.08	4	100	1.67	1.89	3.14	2.15	0.68	0.34
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	-	-	<0.004	-	-	-	7	0	<0.004	<0.004	<0.004	-	-	-	4	0	<0.004	<0.004	<0.004	-	-	-
Thallium	8	100	0.0261	0.0400	0.0499	0.0377	0.0088	0.0031	8	100	0.0129	0.0304	-8	48	0.0447	0.0280	0.0107	0.0038	7	100	0.0105	0.0128	0.0133	0.0125	0.0009	0.0004	4	100	0.0172	0.0182	0.0199	0.0184	0.0012	0.0006
Tin	8	100	0.025	0.068	0.086	0.063	0.019	0.007	8	88	<0.02	0.048	-	4	0.100	0.051	0.028	0.010	7	100	0.028	0.048	0.128	0.057	0.033	0.012	4	100	0.038	0.075	0.116	0.076	0.034	0.017
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	13	<0.0004	<0.0004	0.00049	-	-	-	8	88	<0.0004	0.00171	292	83	0.00247	0.00164	0.00071	0.00025	7	100	0.00182	0.00203	0.00215	0.00198	0.00013	0.00005	4	100	0.00132	0.00186	0.00247	0.00188	0.00053	0.00027
Vanadium	8	13	<0.02	<0.02	0.027	-	-	-	8	63	<0.02	0.028	-5	-85	0.122	0.040	0.039	0.014	7	86	<0.02	0.024	0.026	0.022	0.006	0.002	4	25	<0.02	<0.02	0.02	-	-	-
Zinc	8	100	44.6	64.3	109.0	67.2	19.6	6.9	8	100	28.5	36.7	23	-1	66.1	40.6	11.6	4.1	7	100	170	173	185	177	7	3	4	100	195	204	211	203	7	4
Zirconium	8	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	-	-	<0.04	-	-	-	7	0	<0.04	<0.04	<0.04	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 14: Summary Statistics for Liver Tissues of all Fish Species Captured in the Reference Sites in 2015

	Bootjack Lake								Quesnel Lake-East								Quesnel Lake-East								Trio Lake							
	Rainbow Trout								Burbot								Lake Trout								Rainbow Trout							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	8	100	76.1	77.0	78.9	77.3	1.2	0.4	7	100	47.8	53.9	59.0	52.9	4.6	1.7	10	100	55.9	69.6	86.8	71.0	9.2	2.9	8	100	70.5	74.9	80.4	74.8	3.0	1.1
Aluminum	8	0	<1	<1	<1	-	-	-	7	57	<0.4	0.8	1.2	0.7	0.4	0.1	10	10	<0.4	<1	<1	-	-	-	8	50	<1	<1	6.6	-	-	-
Antimony	8	0	<0.002	<0.002	<0.002	-	-	-	7	14	<0.002	<0.002	0.0027	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	8	25	<0.002	<0.002	0.0034	-	-	-
Arsenic	8	88	<0.006	0.0083	0.0113	0.0081	0.0029	0.0010	7	100	0.133	0.353	0.591	0.344	0.158	0.060	10	100	0.041	0.077	0.182	0.088	0.041	0.013	8	100	0.0085	0.0123	0.0398	0.0162	0.0100	0.0035
Barium	8	75	<0.01	0.013	0.024	0.014	0.007	0.003	7	14	<0.01	<0.01	0.03	-	-	-	10	0	<0.01	<0.01	<0.01	-	-	-	8	63	<0.01	0.011	0.027	0.012	0.008	0.003
Beryllium	8	0	<0.002	<0.002	<0.002	-	-	-	7	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	8	13	<0.002	<0.002	0.0025	-	-	-	7	14	<0.002	<0.002	0.0033	-	-	-	10	10	<0.002	<0.002	0.0033	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-
Boron	8	0	<0.2	<0.2	<0.2	-	-	-	7	0	<0.2	<0.2	<0.2	-	-	-	10	0	<0.2	<0.2	<0.2	-	-	-	8	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	8	100	0.0107	0.0230	0.0375	0.0241	0.0093	0.0033	7	100	0.0316	0.1220	0.3260	0.1476	0.0956	0.0361	10	100	0.0176	0.0345	0.0834	0.0394	0.0209	0.0066	8	100	0.0237	0.0607	0.1590	0.0728	0.0462	0.0163
Calcium	8	100	45.9	54.6	142.0	71.4	38.8	13.7	7	100	21.4	58.3	105.0	61.1	29.6	11.2	10	100	68.8	94.8	128.0	96.8	22.4	7.1	8	100	58.8	67.3	112.0	80.2	22.9	8.1
Cesium	8	100	0.0048	0.0072	0.0084	0.0070	0.0011	0.0004	7	100	0.0102	0.0211	0.0289	0.0212	0.0059	0.0022	10	100	0.0327	0.0475	0.0786	0.0483	0.0138	0.0044	8	100	0.0016	0.0023	0.0054	0.0028	0.0014	0.0005
Chromium	8	0	<0.04	<0.04	<0.04	-	-	-	7	0	<0.01	<0.04	<0.04	-	-	-	10	30	0.014	<0.04	0.075	-	-	-	8	75	<0.04	0.074	0.102	0.065	0.033	0.012
Cobalt	8	100	0.0082	0.0126	0.0150	0.0124	0.0022	0.0008	7	100	0.105	0.226	0.416	0.235	0.101	0.038	10	100	0.0217	0.0315	0.1030	0.0389	0.0235	0.0074	8	100	0.0163	0.0240	0.0446	0.0275	0.0109	0.0038
Copper	8	100	4.42	8.50	16.50	8.65	3.94	1.39	7	100	7.29	11.10	17.90	11.27	3.54	1.34	10	100	3.05	9.60	18.60	10.72	5.19	1.64	8	100	32.3	45.4	71.0	46.5	11.6	4.1
Iron	8	100	136	169	385	208	95	34	7	100	50.2	89.9	116.0	88.1	20.5	7.8	10	100	48.5	85.2	363.0	156.6	136.9	43.3	8	100	126	446	1190	495	332	117
Lead	8	0	<0.01	<0.01	<0.01	-	-	-	7	0	<0.004	<0.01	<0.01	-	-	-	10	0	<0.004	<0.01	<0.01	-	-	-	8	0	<0.01	<0.01	<0.01	-	-	-
Lithium	8	0	<0.1	<0.1	<0.1	-	-	-	7	0	<0.1	<0.1	<0.1	-	-	-	10	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	8	100	164	192	202	187	14	5	7	100	44	94	119	90	23	9	10	100	115	150	260	156	39	12	8	100	139	172	198	166	21	8
Manganese	8	100	1.38	1.83	2.09	1.83	0.21	0.07	7	100	0.324	0.813	1.970	0.983	0.603	0.228	10	100	0.765	0.991	1.490	1.051	0.237	0.075	8	100	0.99	1.40	1.94	1.44	0.34	0.12
Mercury	8	100	0.0437	0.0571	0.0924	0.0625	0.0177	0.0063	7	100	0.0206	0.0338	0.1550	0.0560	0.0485	0.0183	10	100	0.0271	0.2280	0.7760	0.2943	0.2688	0.0850	8	100	0.121	0.346	0.723	0.376	0.230	0.081
Molybdenum	8	100	0.128	0.181	0.235	0.178	0.040	0.014	7	100	0.0503	0.1020	0.1700	0.1063	0.0382	0.0144	10	100	0.039	0.109	0.147	0.102	0.032	0.010	8	100	0.191	0.419	0.776	0.443	0.197	0.070
Nickel	8	0	<0.04	<0.04	<0.04	-	-	-	7	57	<0.04	0.042	0.047	0.034	0.013	0.005	10	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-
Phosphorus	8	100	2970	3170	3330	3168	133	47	7	100	846	1540	1790	1475	296	112	10	100	2080	2600	4250	2668	596	189	8	100	2760	3305	4100	3276	403	142
Potassium	8	100	2290	2470	2700	2495	145	51	7	100	769	1200	1720	1243	289	109	10	100	1760	1935	3010	2021	356	113	8	100	2050	2360	2660	2344	234	83
Rubidium	8	100	1.71	2.16	3.19	2.26	0.51	0.18	7	100	1.28	1.73	2.93	2.07	0.64	0.24	10	100	3.3	4.5	10.4	4.8	2.1	0.7	8	100	0.608	0.947	2.000	1.104	0.449	0.159
Selenium*	8	100	7.00	9.25	14.62	9.76	2.40	0.85	7	100	0.860	2.011	2.877	2.003	0.638	0.241	10	100	3.678	5.202	10.149	5.922	1.988	0.629	8	100	17.31	27.51	41.51	27.62	6.87	2.43
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	568	650	785	668	76	27	7	100	436	748	880	717	136	52	10	100	509	1011	1210	948	209	66	8	100	725	971	1060	937	126	45
Strontium	8	100	0.073	0.093	0.265	0.118	0.065	0.023	7	100	0.100	0.158	0.277	0.180	0.064	0.024	10	100	0.085	0.134	0.210	0.139	0.042	0.013	8	100	0.095	0.125	0.328	0.157	0.080	0.028
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	<0.004	-	-	-	7	0	<0.004	<0.004	<0.004	-	-	-	10	0	<0.004	<0.004	<0.004	-	-	-	8	12.5	<0.004	<0.004	0.0045	-	-	-
Thallium	8	100	0.0224	0.0330	0.0416	0.0329	0.0070	0.0025	7	100	0.00160	0.00293	0.00499	0.00295	0.00105	0.00040	10	100	0.0216	0.0777	0.1320	0.0745	0.0304	0.0096	8	100	0.0132	0.0205	0.0225	0.0190	0.0035	0.0012
Tin	8	38	<0.02	<0.02	0.034	-	-	-	7	29	<0.02	<0.02	0.026	-	-	-	10	100	0.022	0.033	0.069	0.036	0.013	0.004	8	100	0.030	0.046	0.068	0.048	0.013	0.005
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	50	<0.0004	0.00044	0.00212	-	-	-	7	100	0.00113	0.00140	0.00231	0.00162	0.00049	0.00018	10	10	<0.0004	<0.0004	0.00089	-	-	-	8	75	<0.0004	0.00093	0.00845	0.00188	0.00276	0.00098
Vanadium	8	63	<0.02	0.030	0.054	0.030	0.019	0.007	7	71	<0.02	0.033	0.052	0.032	0.016	0.006	10	0	<0.02	<0.02	<0.02	-	-	-	8	100	0.038	0.191	0.998	0.297	0.333	0.118
Zinc	8	100	24.6	29.9	35.0	29.4	3.2	1.1	7	100	13.4	20.5	24.9	20.1	3.6	1.3	10	100	19.0	23.2	27.2	22.6	2.8	0.9	8	100	31.9	36.9	45.7	38.1	5.1	1.8
Zirconium	8	0	<0.04	<0.04	<0.04	-	-	-	7	0	<0.04	<0.04	<0.04	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation;

SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 14: Summary Statistics for Liver Tissues of all Fish Species Captured in the Reference Sites in 2015

	Quesnel Lake - North Arm								Quesnel Lake - East							
	Sockeye Salmon								Sockeye Salmon							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	3	100	61.3	63.9	64.9	63.4	1.9	1.1	3	100	64.6	65.9	66.9	65.8	1.2	0.7
Aluminum	3	100	1.3	2.0	2.3	1.9	0.5	0.3	3	67	<1	1.0	1.1	0.9	0.3	0.2
Antimony	3	67	<0.002	0.0023	0.0034	0.0022	0.0012	0.0007	3	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	3	100	0.636	0.892	0.927	0.818	0.159	0.092	3	100	0.594	0.618	0.827	0.680	0.128	0.074
Barium	3	100	0.093	0.126	0.174	0.131	0.041	0.024	3	100	0.059	0.069	0.099	0.076	0.021	0.012
Beryllium	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Boron	3	0	<0.2	<0.2	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	3	100	0.180	0.206	0.216	0.201	0.019	0.011	3	100	0.109	0.159	0.203	0.157	0.047	0.027
Calcium	3	100	1160	1460	1520	1380	193	111	3	100	1180	1290	1530	1333	179	103
Cesium	3	100	0.0285	0.0299	0.0327	0.0304	0.0021	0.0012	3	100	0.0252	0.0254	0.0290	0.0265	0.0021	0.0012
Chromium	3	100	0.043	0.090	0.595	0.243	0.306	0.177	3	67	<0.04	0.06	0.06	0.05	0.02	0.01
Cobalt	3	100	0.0173	0.0196	0.0227	0.0199	0.0027	0.0016	3	100	0.0162	0.0164	0.0165	0.0164	0.0002	0.0001
Copper	3	100	119	130	137	129	9	5	3	100	75.3	104.0	117.0	98.8	21.3	12.3
Iron	3	100	247	289	293	276	25	15	3	100	205	259	276	247	37	21
Lead	3	0	<0.01	<0.01	<0.01	-	-	-	3	0	<0.01	<0.01	<0.01	-	-	-
Lithium	3	0	<0.1	<0.1	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	3	100	189	202	212	201	12	7	3	100	171	182	195	183	12	7
Manganese	3	100	0.601	0.684	0.807	0.697	0.104	0.060	3	100	0.530	0.595	0.654	0.593	0.062	0.036
Mercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	3	100	0.114	0.126	0.132	0.124	0.009	0.005	3	100	0.0913	0.1160	0.1200	0.1091	0.0155	0.0090
Nickel	3	67	<0.04	0.042	0.284	0.115	0.146	0.085	3	33	<0.04	<0.04	0.047	-	-	-
Phosphorus	3	100	2390	2510	2800	2567	211	122	3	100	2390	2470	2600	2487	106	61
Potassium	3	100	3170	3410	3660	3413	245	141	3	100	3030	3080	3250	3120	115	67
Rubidium	3	100	6.04	6.31	7.03	6.46	0.51	0.30	3	100	5.32	5.35	5.84	5.50	0.29	0.17
Selenium*	3	100	9.35	11.30	14.90	11.85	2.82	1.63	3	100	9.72	11.40	16.50	12.54	3.53	2.04
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	3	100	900	916	1030	949	71	41	3	100	816	867	915	866	50	29
Strontium	3	100	1.59	1.72	1.74	1.68	0.08	0.05	3	100	1.49	1.57	1.81	1.62	0.17	0.10
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	3	0	<0.004	<0.004	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-
Thallium	3	100	0.0163	0.0170	0.0182	0.0172	0.0010	0.0006	3	100	0.0135	0.0153	0.0180	0.0156	0.0023	0.0013
Tin	3	100	0.078	0.082	0.117	0.092	0.021	0.012	3	100	0.102	0.108	0.133	0.114	0.016	0.009
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	3	100	0.00096	0.00143	0.0018	0.00140	0.00042	0.00024	3	100	0.00080	0.00090	0.00125	0.00098	0.00024	0.00014
Vanadium	3	33	<0.02	<0.02	0.021	-	-	-	3	0	<0.02	<0.02	<0.02	-	-	-
Zinc	3	100	188	192	207	196	10	6	3	100	168	177	200	182	17	10
Zirconium	3	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 15: Summary Statistics for Kidney Tissues of all Fish Species Captured in the Exposure Sites in 2015

	Polley Lake									Quesnel Lake- Hazeltine Creek									Quesnel Lake- Hazeltine Creek								Quesnel Lake- near Quesnel River								Quesnel River							
	Rainbow Trout									Lake Trout									Northern Pikeminnow								Kokanee								Rainbow Trout							
Parameter	n	%>DL	Min	Med	% Magnitude Trio	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake East	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Trio Lake	Max	Mean	SD	SE
% Moisture	8	100	79.6	81.15	3	85.4	82.0	2.3	0.8	9	100	73.5	79.8	0	81.4	79.1	2.4	0.8	6	100	53.6	71.6	83.3	71.6	10.5	4.3	8	100	79.7	80.7	83.0	80.9	1.0	0.4	8	100	72.5	74.6	-5	77.2	74.8	1.4	0.5
Aluminum	8	25	<1	<1	-	1.5	-	-	-	9	78	<1	1.2	-50	2.6	1.4	0.7	0.2	6	0	<1	<1	<1	-	-	-	8	0	<1	<1	<1	-	-	-	8	50	<1	<1	-	6	-	-	-
Antimony	8	25	<0.002	<0.002	-	0.0026	-	-	-	9	0	<0.002	<0.002	-	<0.002	-	-	-	6	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	8	25	<0.002	<0.002	-	0.0071	-	-	-
Arsenic	8	100	0.0220	0.0538	4	0.0781	0.0514	0.0199	0.0070	9	100	0.0580	0.0739	82	0.0962	0.0741	0.0103	0.0034	6	100	0.0209	0.0355	0.2500	0.0682	0.0894	0.0365	8	100	0.0422	0.0578	0.0750	0.0583	0.0105	0.0037	8	100	0.0915	0.1880	262	0.3520	0.2097	0.0930	0.0329
Barium	8	100	0.026	0.036	-69	0.044	0.036	0.006	0.002	9	100	0.027	0.035	79	0.065	0.039	0.012	0.004	6	100	0.024	0.039	0.261	0.078	0.091	0.037	8	88	<0.01	0.02	0.04	0.02	0.01	<0.01	8	100	0.062	0.199	70	0.565	0.231	0.157	0.056
Beryllium	8	0	<0.002	<0.002	-	<0.002	-	-	-	9	0	<0.002	<0.002	-	<0.002	-	-	-	6	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	-	<0.002	-	-	-
Bismuth	8	0	<0.002	<0.002	-	<0.002	-	-	-	9	0	<0.002	<0.002	-	<0.002	-	-	-	6	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	-	<0.002	-	-	-
Boron	8	0	<0.2	<0.2	-	<0.2	-	-	-	9	0	<0.2	<0.2	-	<0.2	-	-	-	6	0	<0.2	<0.2	<0.2	-	-	-	8	0	<0.2	<0.2	<0.2	-	-	-	8	0	<0.2	<0.2	-	<0.2	-	-	-
Cadmium	8	100	0.0992	0.1565	-6	0.2560	0.1590	0.0519	0.0183	9	100	0.124	0.190	-2	0.725	0.312	0.233	0.078	6	100	0.0962	0.2215	0.2720	0.2010	0.0796	0.0325	8	100	0.295	0.376	0.523	0.379	0.067	0.024	8	100	0.0952	0.2425	46	0.4140	0.2655	0.1142	0.0404
Calcium	8	100	121	172	-49	779	246	220	78	9	100	79.8	97.5	-20	149.0	107.9	25.2	8.4	6	100	147	168	221	176	28	12	8	100	119	169	211	164	40	14	8	100	202	273	-20	325	269	44	16
Cesium	8	100	0.0086	0.0132	142	0.0182	0.0131	0.0030	0.0010	9	100	0.0320	0.0363	-58	0.0506	0.0402	0.0079	0.0026	6	100	0.0372	0.0535	0.0641	0.0517	0.0089	0.0036	8	100	0.0139	0.0171	0.0265	0.0177	0.0041	0.0014	8	100	0.0139	0.0230	322	0.0400	0.0242	0.0079	0.0028
Chromium	8	13	<0.04	<0.04	-	0.077	-	-	-	9	78	<0.04	0.059	-	0.155	0.066	0.043	0.014	6	0	<0.04	<0.04	<0.04	-	-	-	8	88	<0.04	0.078	0.099	0.071	0.025	0.009	8	63	<0.04	0.045	-82	0.085	0.043	0.023	0.008
Cobalt	8	100	0.0846	0.1420	-54	0.2760	0.1680	0.0676	0.0239	9	100	0.0213	0.0354	-42	0.0974	0.0493	0.0252	0.0084	6	100	0.0398	0.0650	0.1330	0.0793	0.0377	0.0154	8	100	0.080	0.143	0.215	0.141	0.045	0.016	8	100	0.104	0.229	-26	0.462	0.245	0.107	0.038
Copper	8	100	0.868	1.230	-22	1.560	1.204	0.207	0.073	9	100	0.525	0.854	1	7.570	1.579	2.254	0.751	6	100	0.594	0.785	1.260	0.822	0.247	0.101	8	100	2.35	4.24	6.75	4.08	1.48	0.52	8	100	0.947	1.590	1	1.950	1.540	0.302	0.107
Iron	8	100	80.3	115.5	-32	148.0	116.5	20.8	7.3	9	100	56.9	80.2	-43	123.0	83.39	22.12	7.37	6	100	31.4	48.1	92.6	56.4	23.3	9.5	8	100	97.4	111.0	159.0	115.4	19.8	7.0	8	100	138	191	13	270	189	46	16
Lead	8	0	<0.01	<0.01	-	<0.01	-	-	-	9	56	<0.01	0.011	-	0.248	0.036	0.080	0.027	6	0	<0.01	<0.01	<0.01	-	-	-	8	0	<0.01	<0.01	<0.01	-	-	-	8	38	<0.01	<0.01	-	0.015	-	-	-
Lithium	8	0	<0.1	<0.1	-	<0.1	-	-	-	9	0	<0.1	<0.1	-	<0.1	-	-	-	6	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	-	<0.1	-	-	-
Magnesium	8	100	165	182	-10	249	191	28	10	9	100	105	129	-20	143	127	13	4	6	100	147	186	195	181	18	7	8	100	108	142	150	138	13	5	8	100	182	225	11	262	223	29	10
Manganese	8	100	0.308	0.365	-19	0.476	0.379	0.066	0.023	9	100	0.192	0.282	49	0.403	0.283	0.072	0.024	6	100	0.235	0.294	0.507	0.329	0.100	0.041	8	100	0.383	0.442	0.574	0.465	0.073	0.026	8	100	0.662	0.819	82	1.070	0.838	0.140	0.050
Mercury	8	100	0.0330	0.0529	-87	0.0901	0.0562	0.0192	0.0068	9	100	0.0892	0.1360	-66	0.9450	0.3278	0.3545	0.1182	6	100	0.0264	0.0379	0.0576	0.0401	0.0111	0.0045	8	100	0.0772	0.1185	0.1820	0.1222	0.0369	0.0130	8	100	0.0539	0.0824	-80	0.1310	0.0869	0.0292	0.0103
Molybdenum	8	100	0.0732	0.1199	-5	0.1600	0.1182	0.0373	0.0132	9	100	0.0249	0.0501	27	0.0633	0.0460	0.0124	0.0041	6	100	0.0445	0.0606	0.0800	0.0616	0.0154	0.0063	8	100	0.0642	0.0833	0.0934	0.0813	0.0102	0.0036	8	100	0.0391	0.1075	-15	0.1780	0.1113	0.0402	0.0142
Nickel	8	88	<0.04	0.061	-45	0.089	0.059	0.023	0.008	9	89	<0.04	0.079	50	0.188	0.077	0.047	0.016	6	0	<0.04	<0.04	<0.04	-	-	-	8	13	<0.04	<0.04	0.044	-	-	-	8	88	<0.04	0.14	22	0.22	0.14	0.06	0.02
Phosphorus	8	100	2240	2485	2	2780	2491	189	67	9	100	1800	2290	1	2580	2258	260	87	6	100	1950	2245	2790	2317	308	126	8	100	1880	2620	2740	2498	282	100	8	100	2180	2715	11	3170	2738	334	118
Potassium	8	100	2800	2995	15	3510	3109	259	92	9	100	1630	2070	-28	2340	2060	197	66	6	100	2580	2920	3130	2907	209	85	8	100	1700	1965	2600	2063	294	104	8	100	2560	3190	22	3620	3181	339	120
Rubidium	8	100	1.25	1.43	38	1.87	1.51	0.22	0.08	9	100	4.23	5.51	3	7.41	5.62	0.98	0.33	6	100	5.40	6.71	7.58	6.59	0.72	0.29	8	100	1.4	2.3	3.1	2.3	0.5	0.2	8	100	1.96	2.97	187	3.68	2.93	0.60	0.21
Selenium*	8	100	14.56	23.15	279	36.87	24.70	8.15	2.88	9	100	3.155	5.594	19	13.226	6.742	2.979	0.993	6	100	1.168	3.467	4.419	3.126	1.298	0.530	8	100	3.952	5.395	7.043	5.500	0.991	0.351	8	100	5.31	10.22	67	11.39	9.49	2.07	0.73
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	507	858	9	1080	847	183	65	9	100	807	1640	86	1780	1431	364	121	6	100	357	578	728	571	132	54	8	100	1040	1460	1830	1464	278	98	8	100	530	938	20	1110	881	207	73
Strontium	8	100	0.165	0.367	-52	1.410	0.493	0.395	0.139	9	100	0.122	0.170	-8	0.495	0.238	0.141	0.047	6	100	0.120	0.145	0.192	0.151	0.028	0.012	8	100	0.14	0.22	0.28	0.21	0.06	0.02	8	100	0.429	0.733	-4	1.070	0.737	0.212	0.075
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	-	<0.004	-	-	-	9	0	<0.004	<0.004	-	<0.004	-	-	-	6	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-	8	63	<0.004	0.0045	-31	0.0072	0.0043	0.0021	0.0008
Thallium	8	100	0.00813	0.01490	-20	0.02650	0.01538	0.00622	0.00220	9	100	0.0212	0.0281	36	0.0381	0.0291	0.0063	0.0021	6	100	0.00135	0.00255	0.00783	0.00335	0.00234	0.00096	8	100	0.00934	0.01315	0.01510	0.01239	0.00223	0.00079	8	100	0.00764	0.01845	-1	0.03240	0.01909	0.00832	0.00294
Tin	8	63	<0.02	0.033	-85	0.078	0.040	0.031	0.011	9	100	0.098	0.171	107	0.438	0.199	0.103	0.034	6	100	0.14	0.18	0.40	0.22	0.10	0.04	8	100	0.084	0.140	0.244	0.151	0.053	0.019	8	100	0.072	0.103	-52	0.237	0.117	0.056	0.020
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	88	<0.0004	0.00064	-61	0.00233	0.00098	0.00072	0.00025	9	22	<0.0004	<0.0004	-	0.00074	-	-	-	6	100	0.00058	0.00079	0.00161	0.00086	0.00038	0.00015	8	50	<0.0004	0.00035	0.00055	-	-	-	8	100	0.00052	0.00221	35	0.00368	0.00233	0.00103	0.00036
Vanadium	8	100	0.053	0.082	-50	0.149	0.091	0.034	0.012	9	0	<0.02	<0.02	-	<0.02	-	-	-	6	17	<0.02	<0.02	0.022	-	-	-	8	0	<0.02	<0.02	<0.02	-	-	-	8	75	<0.02	0.040	-76	0.121	0.046	0.036	0.013
Zinc	8	100	23.9	34.5	2	51.2	34.8	9.3	3.3	9	100	13.6	16.9	20	24.2	17.5	3.4	1.1	6	100	15.0	19.7	36.9	22.3	8.5	3.5	8	100	27.1	38.1	72.8	42.9	14.7	5.2	8	100	19.3	25.2	-25	31.6	25.2	3.7	1.3
Zirconium	8	0	<0.04	<0.04	-	<0.04	-	-	-	9	0	<0.04	<0.04	-	<0.04	-	-	-	6	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 16: Summary Statistics for Kidney Tissues of all Fish Species Captured in the Reference Sites in 2015

	Quesnel Lake- East								Trio Lake							
	Lake Trout								Rainbow Trout							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	10	100	76.3	79.9	82.0	79.3	1.9	0.6	8	100	69.1	78.7	87.4	78.8	5.6	2.0
Aluminum	10	70	<1	2.4	4.6	2.2	1.5	0.5	8	88	<1	1.6	3.4	1.9	1.1	0.4
Antimony	10	0	<0.002	<0.002	<0.002	-	-	-	8	75	<0.002	0.00275	0.0084	0.0030	0.0023	0.0008
Arsenic	10	100	0.0257	0.0407	0.0576	0.0389	0.0097	0.0031	8	100	0.0182	0.0520	0.0871	0.0501	0.0263	0.0093
Barium	10	80	<0.01	0.020	0.031	0.018	0.009	0.003	8	100	0.082	0.117	0.324	0.149	0.078	0.028
Beryllium	10	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	10	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-
Boron	10	0	<0.2	<0.2	<0.2	-	-	-	8	25	<0.2	<0.2	0.25	-	-	-
Cadmium	10	100	0.0486	0.1945	0.4770	0.19917	0.1329	0.0420	8	100	0.0897	0.1660	0.2780	0.1728	0.0649	0.0230
Calcium	10	100	97.7	122.0	157.0	124.7	22.5	7.1	8	100	218	339	426	336	72	26
Cesium	10	100	0.0621	0.0861	0.1290	0.0876	0.0192	0.0061	8	100	0.0039	0.00545	0.0086	0.0058	0.0018	0.0006
Chromium	10	40	<0.04	<0.04	0.058	-	-	-	8	100	0.135	0.253	0.525	0.270	0.128	0.045
Cobalt	10	100	0.0243	0.0609	0.1590	0.0694	0.0368	0.0116	8	100	0.208	0.311	0.450	0.303	0.076	0.027
Copper	10	100	0.646	0.843	2.530	1.106	0.592	0.187	8	100	0.912	1.570	1.840	1.475	0.311	0.110
Iron	10	100	75.3	141.5	209.0	135.0	43.3	13.7	8	100	147	170	487	245	133	47
Lead	10	0	<0.01	<0.01	<0.01	-	-	-	8	13	<0.01	<0.01	0.01	-	-	-
Lithium	10	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	10	100	106	162	206	157	33	10	8	100	141	202	270	201	39	14
Manganese	10	100	0.128	0.190	0.337	0.199	0.062	0.020	8	100	0.303	0.450	0.836	0.491	0.168	0.059
Mercury	10	100	0.0647	0.4025	1.0700	0.4396	0.3681	0.1164	8	100	0.198	0.421	0.946	0.454	0.256	0.090
Molybdenum	10	100	0.0241	0.0395	0.0452	0.0382	0.0061	0.0019	8	100	0.0822	0.1260	0.1550	0.1194	0.0286	0.0101
Nickel	10	60	<0.04	0.053	0.073	0.045	0.023	0.007	8	100	0.066	0.111	0.263	0.127	0.063	0.022
Phosphorus	10	100	1830	2265	2770	2338	317	100	8	100	2000	2440	2680	2395	243	86
Potassium	10	100	2160	2890	3300	2809	417	132	8	100	2300	2610	3100	2646	286	101
Rubidium	10	100	4.10	5.37	8.07	5.80	1.43	0.45	8	100	0.524	1.034	1.410	1.007	0.318	0.112
Selenium*	10	100	3.783	4.700	10.200	5.837	2.509	0.793	8	100	2.437	6.117	10.292	5.810	2.648	0.936
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	10	100	496	881	1170	882	191	61	8	100	613	784	985	791	143	50
Strontium	10	100	0.155	0.186	0.369	0.219	0.078	0.025	8	100	0.601	0.766	1.230	0.857	0.242	0.086
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	10	0	<0.004	<0.004	<0.004	-	-	-	8	63	<0.004	0.0066	0.0127	0.0061	0.0039	0.0014
Thallium	10	100	0.0116	0.02065	0.0343	0.0226	0.0079	0.0025	8	100	0.00828	0.01870	0.03410	0.01996	0.00784	0.00277
Tin	10	100	0.039	0.083	0.165	0.087	0.035	0.011	8	100	0.039	0.214	0.839	0.270	0.249	0.088
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	10	30	<0.0004	<0.0004	0.00049	-	-	-	8	100	0.00046	0.00164	0.00480	0.00208	0.00153	0.00054
Vanadium	10	0	<0.02	<0.02	<0.02	-	-	-	8	100	0.053	0.164	0.459	0.211	0.160	0.057
Zinc	10	100	11.1	14.1	19.5	14.6	2.8	0.9	8	100	30.5	33.7	46.8	36.1	5.7	2.0
Zirconium	10	0	<0.04	<0.04	<0.04	-	-	-	8	13	<0.04	<0.04	0.047	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median;

Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 17: Summary Statistics for Ovary Tissues of all Fish Species Captured in the Exposure Sites in 2015

	Polley Lake									Quesnel Lake- Hazeltine Creek								Quesnel Lake- Hazeltine Creek								Quesnel Lake- Hazeltine Creek								Quesnel Lake- near Quesnel River								Quesnel River							
	Rainbow Trout									Burbot								Lake Trout								Northern Pikeminnow								Kokanee								Rainbow Trout							
Parameter	n	%>DL	Min	Med	% Magnitude Bootjack Lake	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	8	100	61.0	63.3	1	70.9	64.1	3.3	1.2	1	100	74.3	--	74.3	--	--	--	3	100	64.3	66.5	81.1	70.6	9.1	5.3	4	100	71.8	74	75.6	73.9	1.8	0.9	1	100	62.3	--	62.3	--	--	--	1	100	65.1	--	65.1	--	--	--
Aluminum	8	25	<0.4	<0.4	-	0.6	-	-	-	1	0	<0.4	--	<0.4	--	--	--	3	0	<0.4	<0.4	<1	-	-	-	4	0	<1	<1	<1	-	-	-	1	0	<1	--	<1	--	--	--	1	0	<1	--	<1	--	--	--
Antimony	8	25	<0.002	<0.002	-	0.0078	-	-	-	1	0	<0.002	--	<0.002	--	--	--	3	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	1	0	<0.002	--	<0.002	--	--	--
Arsenic	8	100	0.0042	0.0082	-12	0.0129	0.0081	0.0027	0.0009	1	100	0.174	--	0.174	--	--	--	3	100	0.0272	0.0332	0.0448	0.0351	0.0089	0.0052	4	100	0.0140	0.0275	0.0371	0.0265	0.0118	0.0059	1	100	0.02	--	0.02	--	--	--	1	100	0.0289	--	0.0289	--	--	--
Barium	8	100	0.036	0.057	-70	0.089	0.058	0.016	0.006	1	100	0.091	--	0.091	--	--	--	3	0	<0.01	<0.01	<0.01	-	-	-	4	50	<0.01	<0.01	0.015	-	-	-	1	100	0.068	--	0.068	--	--	--	1	100	0.153	--	0.153	--	--	--
Beryllium	8	0	<0.002	<0.002	-	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	3	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	1	0	<0.002	--	<0.002	--	--	--
Bismuth	8	0	<0.002	<0.002	-	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	3	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-	1	0	<0.002	--	<0.002	--	--	--	1	0	<0.002	--	<0.002	--	--	--
Boron	8	0	<0.2	<0.2	-	<0.2	-	-	-	1	0	<0.2	--	<0.2	--	--	--	3	0	<0.2	<0.2	<0.2	-	-	-	4	0	<0.2	<0.2	<0.2	-	-	-	1	0	<0.2	--	<0.2	--	--	--	1	0	<0.2	--	<0.2	--	--	--
Cadmium	8	25	<0.001	<0.001	-	0.0011	-	-	-	1	100	0.0015	--	0.0015	--	--	--	3	67	<0.001	0.0022	0.0052	0.0026	0.0024	0.0014	4	100	0.0066	0.0103	0.0236	0.0127	0.0075	0.0037	1	0	<0.002	--	<0.002	--	--	--	1	100	0.0088	--	0.0088	--	--	--
Calcium	8	100	378	444	-15	543	462	57	20	1	100	1350	--	1350	--	--	--	3	100	178	376	414	323	127	73	4	100	195	208	219	207	10	5	1	100	380	--	380	--	--	--	1	100	319	--	319	--	--	--
Cesium	8	100	0.0016	0.0070	44	0.0100	0.0066	0.0025	0.0009	1	100	0.0305	--	0.0305	--	--	--	3	100	0.0237	0.0315	0.0646	0.0399	0.0217	0.0125	4	100	0.0379	0.0626	0.0720	0.0588	0.0148	0.0074	1	100	0.0091	--	0.0091	--	--	--	1	100	0.0167	--	0.0167	--	--	--
Chromium	8	75	<0.01	0.0185	-	0.0370	0.0196	0.0098	0.0035	1	0	<0.01	--	<0.01	--	--	--	3	0	<0.01	<0.01	<0.04	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-	1	0	<0.04	--	<0.04	--	--	--	1	0	<0.04	--	<0.04	--	--	--
Cobalt	8	100	0.0194	0.0283	-1	0.0416	0.0301	0.0074	0.0026	1	100	0.0369	--	0.0369	--	--	--	3	100	0.0125	0.0132	0.0432	0.0230	0.0175	0.0101	4	100	0.0084	0.0103	0.0141	0.0108	0.0024	0.0012	1	100	0.0103	--	0.0103	--	--	--	1	100	0.1	--	0.1	--	--	--
Copper	8	100	2.48	2.98	-20	4.02	3.07	0.51	0.18	1	100	3.37	--	3.37	--	--	--	3	100	5.09	5.29	5.74	5.37	0.33	0.19	4	100	0.768	0.894	0.944	0.875	0.083	0.042	1	100	13.7	--	13.7	--	--	--	1	100	12.6	--	12.6	--	--	--
Iron	8	100	13.4	15.8	18	19.6	16.0	2.2	0.8	1	100	11.4	--	11.4	--	--	--	3	100	18.5	18.9	84.1	40.5	37.8	21.8	4	100	26.2	30.2	39.3	31.5	5.6	2.8	1	100	12.9	--	12.9	--	--	--	1	100	60.8	--	60.8	--	--	--
Lead	8	0	0.002	0.002	-	0.005	-	-	-	1	0	<0.004	--	<0.004	--	--	--	3	0	<0.004	<0.004	<0.01	-	-	-	4	0	<0.01	<0.01	<0.01	-	-	-	1	0	<0.01	--	<0.01	--	--	--	1	0	<0.01	--	<0.01	--	--	--
Lithium	8	0	<0.1	<0.1	-	<0.1	-	-	-	1	0	<0.1	--	<0.1	--	--	--	3	0	<0.1	<0.1	<0.1	-	-	-	4	0	<0.1	<0.1	<0.1	-	-	-	1	0	<0.1	--	<0.1	--	--	--	1	0	<0.1	--	<0.1	--	--	--
Magnesium	8	100	299	557	1	583	509	96	34	1	100	129	--	129	--	--	--	3	100	97.1	488.0	517.0	367.4	234.5	135.4	4	100	182	196	222	199	17	8	1	100	517	--	517	--	--	--	1	100	389	--	389	--	--	--
Manganese	8	100	1.01	2.11	49	3.13	2.07	0.71	0.25	1	100	0.301	--	0.301	--	--	--	3	100	0.182	0.226	1.16	0.523	0.552	0.319	4	100	0.68	1.18	1.61	1.16	0.42	0.21	1	100	1.88	--	1.88	--	--	--	1	100	6.12	--	6.12	--	--	--
Mercury	8	100	0.0025	0.0038	1	0.0100	0.0044	0.0023	0.0008	1	100	0.096	--	0.096	--	--	--	3	100	0.0321	0.0716	0.173	0.0922	0.0727	0.0420	4	100	0.0211	0.0285	0.0370	0.0288	0.0068	0.0034	1	100	0.0056	--	0.0056	--	--	--	1	100	0.0141	--	0.0141	--	--	--
Molybdenum	8	100	0.0055	0.0196	34	0.0360	0.0207	0.0099	0.0035	1	100	0.0183	--	0.0183	--	--	--	3	100	0.0050	0.0057	0.0181	0.0096	0.0074	0.0043	4	100	0.0383	0.0434	0.0468	0.0430	0.0035	0.0018	1	100	0.0163	--	0.0163	--	--	--	1	100	0.0137	--	0.0137	--	--	--
Nickel	8	0	<0.04	<0.04	-	<0.04	-	-	-	1	100	0.105	--	0.105	--	--	--	3	0	<0.04	<0.04	<0.04	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-	1	0	<0.04	--	<0.04	--	--	--	1	100	0.084	--	0.084	--	--	--
Phosphorus	8	100	2820	4030	-7	4490	3955	524	185	1	100	2600	--	2600	--	--	--	3	100	1560	3840	4100	3167	1397	807	4	100	2000	2180	2410	2193	180	90	1	100	3640	--	3640	--	--	--	1	100	3120	--	3120	--	--	--
Potassium	8	100	324	2340	-7	2600	2112	751	266	1	100	2320	--	2320	--	--	--	3	100	2150	2170	2200	2173	25	15	4	100	2180	2305	2470	2315	121	60	1	100	2510	--	2510	--	--	--	1	100	1820	--	1820	--	--	--
Rubidium	8	100	0.173	1.200	-18	1.360	1.064	0.376	0.133	1	100	4.76	--	4.76	--	--	--	3	100	4.29	4.56	5.48	4.78	0.62	0.36	4	100	4.84	5.20	5.82	5.27	0.41	0.21	1	100	2.39	--	2.39	--	--	--	1	100	2.18	--	2.18	--	--	--
Selenium*	8	100	19.33	40.05	556	55.67	40.42	13.22	4.68	1	100	7.35	--	7.35	--	--	--	3	100	4.20	4.45	6.51	5.05	1.27	0.73	4	100	4.51	4.94	5.92	5.08	0.65	0.32	1	100	5.36	--	5.36	--	--	--	1	100	9.51	--	9.51	--	--	--
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	470	670	23	2310	864	605	214	1	100	1460	--	1460	--	--	--	3	100	974	1110	1730	1271	403	233	4	100	446	547	693	558	106	53	1	100	550	--	550	--	--	--	1	100	648	--	648	--	--	--
Strontium	8	100	1.05	1.24	-21	1.44	1.23	0.12	0.04	1	100	3.43	--	3.43	--	--	--	3	100	0.166	0.913	0.967	0.682	0.448	0.258	4	100	0.102	0.115	0.159	0.123	0.025	0.013	1	100	1.48	--	1.48	--	--	--	1	100	0.909	--	0.909	--	--	--
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	-	<0.004	-	-	-	1	0	<0.004	--	<0.004	--	--	--	3	0	<0.004	<0.004	<0.004	-	-	-	4	0	<0.004	<0.004	<0.004	-	-	-	1	0	<0.004	--	<0.004	--	--	--	1	0	<0.004	--	<0.004	--	--	--
Thallium	8	0	<0.0004	<0.0004	-	<0.0004	-	-	-	1	100	0.0022	--	0.0022	--	--	--	3	100	0.00677	0.00699	0.01320	0.00899	0.00365	0.00211	4	100	0.00098	0.00222	0.00290	0.00208	0.00082	0.00041	1	100	0.00047	--	0.00047	--	--	--	1	100	0.00491	--	0.00491	--	--	--
Tin	8	13	<0.02	<0.02	-	0.024	-	-	-	1	0	<0.02	--	<0.02	--	--	--	3	33	<0.02	<0.02	0.03	-	-	-	4	100	0.035	0.037	0.058	0.042	0.011	0.006	1	100	0.074	--	0.074	--	--	--	1	100	0.057	--	0.057	--	--	--
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	13	<0.0004	<0.0004	-	0.00179	-	-	-	1	100	0.00222	--	0.00222	--	--	--	3	0	<0.0004	<0.0004	<0.0004	-	-	-	4	25	<0.0004	<0.0004	0.00059	-	-	-	1	0	<0.0004	--	<0.0004	--	--	--	1	100	0.00088	--	0.00088	--	--	--
Vanadium	8	0	<0.02	<0.02	-	<0.02	-	-	-	1	100	0.026	--	0.026	--	--	--	3	0	<0.02	<0.02	<0.02	-	-	-	4	0	<0.02	<0.02	<0.02	-	-	-	1	0	<0.02	--	<0.02	--	--	--	1	0	<0.02	--	<0.02	--	--	--
Zinc	8	100	11.0	21.4	-4	25.8	20.9	4.6	1.6	1	100	23.4	--	23.4	--	--	--	3	100	21.0	21.4	28.2	23.5	4.0	2.3	4	100	26.6	29.4	39.6	31.2	5.7	2.9	1	100	17.7	--	17.7	--	--	--	1	100	65.1	--	65.1	--	--	--
Zirconium	8	0	<0.04	<0.04	-	<0.04	-	-	-	1	0	<0.04	--	<0.04	--	--	--	3	0	<0.04	<0.04	<0.04	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-	1	0	<0.04	--	<0.04	--	--	--	1	0	<0.04	--	<0.04	--	--	--
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 18: Summary Statistics for Ovary Tissues of all Fish Species Captured in the Reference Sites in 2015

	Bootjack Lake								Quesnel Lake - East							
	Rainbow Trout								Lake Trout							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	8	100	61.3	62.6	64.0	62.6	1.1	0.4	2	100	64.1	--	70.2	--	--	--
Aluminum	8	0	<0.4	<0.4	<1	-	-	-	2	50	0.57	--	<1	--	--	--
Antimony	8	0	<0.002	<0.002	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--
Arsenic	8	100	0.0069	0.0094	0.0130	0.0095	0.0020	0.0007	2	100	0.0181	--	0.0262	--	--	--
Barium	8	100	0.151	0.190	0.251	0.199	0.035	0.012	2	0	<0.01	--	<0.01	--	--	--
Beryllium	8	0	<0.002	<0.002	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--
Bismuth	8	0	<0.002	<0.002	<0.002	-	-	-	2	0	<0.002	--	<0.002	--	--	--
Boron	8	0	<0.2	<0.2	<0.2	-	-	-	2	0	<0.2	--	<0.2	--	--	--
Cadmium	8	0	<0.001	<0.001	<0.002	-	-	-	2	0	<0.001	--	<0.002	--	--	--
Calcium	8	100	438	521	575	518	45	16	2	100	303	--	339	--	--	--
Cesium	8	100	0.0040	0.0049	0.0056	0.0047	0.0005	0.0002	2	100	0.0323	--	0.0390	--	--	--
Chromium	8	0	<0.01	<0.01	<0.04	-	-	-	2	0	<0.01	--	<0.04	--	--	--
Cobalt	8	100	0.0158	0.0285	0.0371	0.0275	0.0070	0.0025	2	100	0.0102	--	0.0139	--	--	--
Copper	8	100	2.49	3.71	4.29	3.50	0.65	0.23	2	100	3.60	--	4.62	--	--	--
Iron	8	100	11.0	13.4	15.4	13.4	1.5	0.5	2	100	15.3	--	20.1	--	--	--
Lead	8	0	<0.004	<0.004	<0.01	-	-	-	2	0	<0.004	--	<0.01	--	--	--
Lithium	8	0	<0.1	<0.1	<0.1	-	-	-	2	0	<0.1	--	<0.1	--	--	--
Magnesium	8	100	484	553	628	543	48	17	2	100	373	--	491	--	--	--
Manganese	8	100	0.966	1.415	2.280	1.501	0.482	0.170	2	100	0.172	--	0.950	--	--	--
Mercury	8	100	0.0032	0.0037	0.0049	0.0039	0.0006	0.0002	2	100	0.0308	--	0.0433	--	--	--
Molybdenum	8	100	0.0112	0.0147	0.0164	0.0143	0.0018	0.0007	2	50	0.004	--	<0.008	--	--	--
Nickel	8	0	<0.04	<0.04	<0.04	-	-	-	2	0	<0.04	--	<0.04	--	--	--
Phosphorus	8	100	3550	4335	4500	4155	354	125	2	100	2990	--	3450	--	--	--
Potassium	8	100	2310	2515	2790	2524	187	66	2	100	1760	--	2210	--	--	--
Rubidium	8	100	1.17	1.46	1.66	1.45	0.17	0.06	2	100	3.36	--	4.83	--	--	--
Selenium*	8	100	3.79	6.11	7.18	5.87	1.15	0.41	2	100	2.92	--	3.59	--	--	--
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	450	543	603	540	57	20	2	100	736	--	931	--	--	--
Strontium	8	100	1.26	1.56	1.89	1.56	0.18	0.06	2	100	0.751	--	1.090	--	--	--
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	<0.004	-	-	-	2	0	<0.004	--	<0.004	--	--	--
Thallium	8	0	<0.0004	<0.0004	<0.0004	-	-	-	2	100	0.00731	--	0.01110	--	--	--
Tin	8	25	<0.02	<0.02	0.027	-	-	-	2	0	<0.02	--	<0.02	--	--	--
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	13	<0.0004	<0.0004	0.00041	-	-	-	2	0	<0.0004	--	<0.0004	--	--	--
Vanadium	8	0	<0.02	<0.02	<0.02	-	-	-	2	0	<0.02	--	<0.02	--	--	--
Zinc	8	100	18.9	22.3	33.3	23.9	5.4	1.9	2	100	14.8	--	17.0	--	--	--
Zirconium	8	0	<0.04	<0.04	<0.04	-	-	-	2	0	<0.04	--	<0.04	--	--	--
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median;

Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 19: Summary Statistics for Gill Tissues of all Fish Species Captured in the Exposure Sites Quesnel Lake West and Middle and the Reference Sites Quesnel Lake North Arm and Quesnel Lake East in 2015

	Quesnel Lake - West								Quesnel Lake - Middle								Quesnel Lake - North Arm								Quesnel Lake - East							
	Sockeye Salmon								Sockeye Salmon								Sockeye Salmon								Sockeye Salmon							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	7	100	68.1	68.9	69.9	68.9	0.7	0.3	4	100	70.0	71.1	71.8	71.0	0.9	0.4	3	100	70.4	70.8	71.0	70.7	0.3	0.2	3	100	70.0	70.3	71.6	70.6	0.9	0.5
Aluminum	7	100	5.5	6.4	10.1	7.2	1.6	0.6	4	100	2.4	2.7	3.0	2.7	0.3	0.1	3	100	2.4	2.8	2.8	2.7	0.2	0.1	3	100	1.9	2.0	4.4	2.8	1.4	0.8
Antimony	7	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-	3	33	<0.002	<0.002	0.0037	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	7	100	0.277	0.311	0.347	0.311	0.025	0.009	4	100	0.165	0.195	0.216	0.193	0.021	0.011	3	100	0.165	0.177	0.183	0.175	0.009	0.005	3	100	0.146	0.162	0.175	0.161	0.015	0.008
Barium	7	100	0.918	0.985	1.110	0.996	0.070	0.027	4	100	0.641	0.776	0.882	0.769	0.100	0.050	3	100	0.714	0.726	0.807	0.749	0.051	0.029	3	100	0.612	0.642	0.648	0.634	0.019	0.011
Beryllium	7	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	7	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Boron	7	0	<0.2	<0.2	<0.2	-	-	-	4	0	<0.2	<0.2	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	7	100	0.0258	0.0271	0.0316	0.0278	0.0020	0.0008	4	100	0.0217	0.0242	0.0300	0.0250	0.0041	0.0020	3	100	0.0215	0.0222	0.0227	0.0221	0.0006	0.0003	3	100	0.0176	0.0179	0.0195	0.0183	0.0010	0.0006
Calcium	7	100	6430	6810	7800	6910	476	180	4	100	7910	8155	9030	8313	492	246	3	100	8390	9320	9410	9040	565	326	3	100	8340	8900	9850	9030	763	441
Cesium	7	100	0.0250	0.0259	0.0273	0.0260	0.0007	0.0003	4	100	0.0246	0.0276	0.0306	0.0276	0.0025	0.0013	3	100	0.0281	0.0281	0.0302	0.0288	0.0012	0.0007	3	100	0.0237	0.0251	0.0269	0.0252	0.0016	0.0009
Chromium	7	100	0.057	0.063	0.071	0.063	0.005	0.002	4	100	0.076	0.085	0.098	0.086	0.010	0.005	3	100	0.102	0.144	0.153	0.133	0.027	0.016	3	100	0.086	0.102	0.119	0.102	0.017	0.010
Cobalt	7	100	0.0177	0.0193	0.0219	0.0197	0.0014	0.0005	4	100	0.0155	0.0174	0.0190	0.0173	0.0014	0.0007	3	100	0.0154	0.0166	0.0172	0.0164	0.0009	0.0005	3	100	0.0145	0.0147	0.0184	0.0159	0.0022	0.0013
Copper	7	100	5.11	5.52	6.60	5.62	0.54	0.21	4	100	4.54	5.32	5.40	5.15	0.41	0.20	3	100	4.81	5.13	6.02	5.32	0.63	0.36	3	100	4.25	4.59	5.94	4.93	0.89	0.52
Iron	7	100	36.5	40.9	43.8	40.2	2.4	0.9	4	100	36.5	40.7	43.0	40.2	2.8	1.4	3	100	39.4	41.6	46.3	42.4	3.5	2.0	3	100	33.7	43.2	45.8	40.9	6.4	3.7
Lead	7	100	0.042	0.065	0.125	0.077	0.033	0.012	4	100	0.055	0.142	1.080	0.3548	0.485	0.243	3	100	0.058	0.085	0.107	0.083	0.025	0.014	3	100	0.330	0.421	0.533	0.428	0.102	0.059
Lithium	7	0	<0.1	<0.1	<0.1	-	-	-	4	0	<0.1	<0.1	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	7	100	319	334	351	332	12	5	4	100	323	336	345	335	9	5	3	100	336	347	361	348	13	7	3	100	323	339	341	334	10	6
Manganese	7	100	2.23	2.47	2.74	2.49	0.16	0.06	4	100	2.11	2.35	2.46	2.32	0.15	0.07	3	100	2.33	2.47	2.48	2.43	0.08	0.05	3	100	2.05	2.25	2.40	2.23	0.18	0.10
Mercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	7	100	0.0172	0.0184	0.0189	0.0181	0.0007	0.0003	4	100	0.0173	0.0186	0.0190	0.0184	0.0007	0.0004	3	100	0.0171	0.0176	0.0176	0.0174	0.0003	0.0002	3	100	0.0167	0.0167	0.0178	0.0171	0.0006	0.0004
Nickel	7	14	<0.04	<0.04	0.058	-	-	-	4	25	<0.04	<0.04	0.112	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	0.02	0.02	-	-	-
Phosphorus	7	100	6860	7180	7460	7186	243	92	4	100	7090	7365	7740	7390	268	134	3	100	7660	8080	8370	8037	357	206	3	100	7370	7810	8220	7800	425	245
Potassium	7	100	3280	3470	3610	3473	128	48	4	100	3060	3230	3460	3245	177	88	3	100	3200	3290	3360	3283	80	46	3	100	2990	3080	3120	3063	67	38
Rubidium	7	100	5.84	6.21	6.44	6.16	0.21	0.08	4	100	5.52	5.78	6.19	5.82	0.29	0.14	3	100	5.93	6.00	6.45	6.13	0.28	0.16	3	100	5.10	5.34	5.43	5.29	0.17	0.10
Selenium*	7	100	1.93	1.98	2.10	1.98	0.06	0.02	4	100	1.81	1.82	1.84	1.82	0.01	0.01	3	100	1.75	1.78	2.05	1.86	0.17	0.10	3	100	1.64	1.76	1.96	1.79	0.16	0.09
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	7	100	1030	1040	1110	1051	29	11	4	100	950	970	1020	978	33	16	3	100	958	1040	1060	1019	54	31	3	100	942	943	988	958	26	15
Strontium	7	100	11.1	11.6	13.0	11.8	0.7	0.3	4	100	13.7	14.0	15.5	14.3	0.8	0.4	3	100	14.3	16.0	16.2	15.5	1.0	0.6	3	100	14.3	15.7	16.3	15.4	1.0	0.6
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	7	0	<0.004	<0.004	<0.004	-	-	-	4	0	<0.004	<0.004	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-
Thallium	7	100	0.00629	0.00663	0.00681	0.00658	0.00019	0.00007	4	100	0.00779	0.00821	0.00950	0.00843	0.00079	0.00040	3	100	0.00802	0.00905	0.00924	0.00877	0.00066	0.00038	3	100	0.0083	0.0091	0.0091	0.0088	0.0005	0.0003
Tin	7	100	0.037	0.044	0.053	0.044	0.006	0.002	4	100	0.043	0.052	0.066	0.053	0.010	0.005	3	100	0.069	0.075	0.085	0.076	0.008	0.005	3	100	0.073	0.076	0.084	0.078	0.006	0.003
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	7	100	0.00250	0.00265	0.00295	0.00269	0.00015	0.00005	4	100	0.00170	0.00207	0.00257	0.00210	0.00036	0.00018	3	100	0.0019	0.0019	0.0022	0.0020	0.0002	0.0001	3	100	0.00148	0.00163	0.00174	0.00162	0.00013	0.00008
Vanadium	7	100	0.039	0.043	0.047	0.043	0.003	0.001	4	100	0.026	0.027	0.028	0.027	0.001	<0.001	3	100	0.024	0.026	0.032	0.0273	0.0042	0.0024	3	100	0.021	0.021	0.039	0.027	0.010	0.006
Zinc	7	100	90.5	93.7	104.0	95.5	5.1	1.9	4	100	86.2	92.3	101.0	93.0	6.1	3.1	3	100	90.6	91.2	96.7	92.8	3.4	1.9	3	100	86.0	86.5	89.8	87.4	2.1	1.2
Zirconium	7	0	<0.04	<0.04	<0.04	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 20: Summary Statistics for Carcass Tissues of all Fish Species Captured in the Exposure Sites Quesnel Lake West and Middle and the Reference Sites Quesnel Lake North Arm and Quesnel Lake East

	Quesnel Lake - West								Quesnel Lake - Middle								Quesnel Lake - North Arm								Quesnel Lake - East							
	Sockeye Salmon								Sockeye Salmon								Sockeye Salmon								Sockeye Salmon							
Parameter	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**	**n**	**%>DL**	**Min**	**Med**	**Max**	**Mean**	**SD**	**SE**
% Moisture	7	100	68.8	70.7	72.0	70.6	0.9	0.4	4	100	71.4	72.0	72.9	72.1	0.6	0.3	3	100	72.1	73.2	73.4	72.9	0.7	0.4	3	100	72.2	72.5	73.1	72.6	0.5	0.3
Aluminum	7	100	0.61	0.82	1.62	0.89	0.33	0.13	4	75	<0.4	0.7	1.1	0.7	0.4	0.2	3	100	0.58	0.58	0.74	0.63	0.09	0.05	3	100	0.52	0.72	0.89	0.71	0.19	0.11
Antimony	7	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	7	100	0.217	0.239	0.255	0.237	0.015	0.006	4	100	0.1280	0.1430	0.1710	0.1463	0.0181	0.0091	3	100	0.116	0.143	0.144	0.134	0.016	0.009	3	100	0.112	0.122	0.128	0.121	0.008	0.005
Barium	7	100	0.417	0.439	0.461	0.438	0.014	0.005	4	100	0.334	0.418	0.467	0.409	0.056	0.028	3	100	0.299	0.356	0.387	0.347	0.045	0.026	3	100	0.288	0.308	0.356	0.317	0.035	0.020
Beryllium	7	0	<0.002	<0.002	<0.002	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	7	14	<0.002	<0.002	0.0022	-	-	-	4	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-	3	0	<0.002	<0.002	<0.002	-	-	-
Boron	7	0	<0.2	<0.2	<0.2	-	-	-	4	0	<0.2	<0.2	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-	3	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	7	100	0.0250	0.0278	0.0314	0.0283	0.0026	0.0010	4	100	0.0176	0.0217	0.0286	0.0224	0.0046	0.0023	3	100	0.0162	0.0192	0.0196	0.0183	0.0019	0.0011	3	100	0.0135	0.0149	0.0234	0.0173	0.0054	0.0031
Calcium	7	100	4790	5030	5790	5116	356	134	4	100	5640	5880	6150	5888	275	138	3	100	5220	5290	5610	5373	208	120	3	100	5700	5710	5970	5793	153	88
Cesium	7	100	0.0263	0.0276	0.0292	0.0278	0.0010	0.0004	4	100	0.0253	0.0264	0.0312	0.0273	0.0026	0.0013	3	100	0.0290	0.0306	0.0315	0.0304	0.0013	0.0007	3	100	0.0287	0.0288	0.0308	0.0294	0.0012	0.0007
Chromium	7	86	<0.01	0.013	0.014	0.012	0.003	0.001	4	100	0.018	0.021	0.021	0.020	0.001	0.001	3	100	0.091	0.101	0.129	0.107	0.020	0.011	3	100	0.05	0.05	0.06	0.05	0.01	<0.01
Cobalt	7	100	0.0114	0.0131	0.0145	0.0133	0.0011	0.0004	4	100	0.0108	0.0126	0.0147	0.0127	0.0017	0.0009	3	100	0.0114	0.0132	0.0153	0.0133	0.0020	0.0011	3	100	0.0118	0.0120	0.0139	0.0126	0.0012	0.0007
Copper	7	100	1.53	1.71	1.74	1.68	0.07	0.03	4	100	1.530	1.595	1.700	1.605	0.083	0.042	3	100	1.56	1.61	1.63	1.60	0.04	0.02	3	100	1.37	1.51	1.57	1.48	0.10	0.06
Iron	7	100	11.8	13.1	13.6	12.9	0.7	0.3	4	100	14.10	14.85	15.70	14.88	0.79	0.40	3	100	14.3	14.5	16.4	15.1	1.2	0.7	3	100	14.3	15.1	15.6	15	0.7	0.4
Lead	7	100	0.011	0.012	0.016	0.013	0.002	0.001	4	100	0.014	0.019	0.036	0.022	0.010	0.005	3	100	0.0163	0.0178	0.0299	0.021	0.007	0.004	3	100	0.032	0.036	0.096	0.055	0.036	0.021
Lithium	7	0	<0.1	<0.1	<0.1	-	-	-	4	0	<0.1	<0.1	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-	3	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	7	100	284	292	308	293	9	3	4	100	291	301	310	301	8	4	3	100	281	303	329	304	24	14	3	100	281	294	302	292	11	6
Manganese	7	100	0.93	1.01	1.16	1.02	0.07	0.03	4	100	0.981	1.030	1.060	1.025	0.041	0.020	3	100	0.846	0.890	1.080	0.939	0.124	0.072	3	100	0.884	0.926	0.946	0.919	0.032	0.018
Mercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	7	100	0.0088	0.0095	0.0108	0.0097	0.0007	0.0003	4	100	0.009	0.010	0.011	0.010	0.001	<0.001	3	100	0.0142	0.0157	0.018	0.0160	0.0019	0.0011	3	100	0.0119	0.0120	0.0127	0.0122	0.0004	0.0003
Nickel	7	0	<0.04	<0.04	<0.04	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-	3	100	0.059	0.064	0.079	0.067	0.010	0.006	3	67	<0.04	0.043	0.051	0.038	0.016	0.009
Phosphorus	7	100	4870	4960	5360	5030	169	64	4	100	5650	5675	5720	5680	36	18	3	100	4900	5410	6150	5487	629	363	3	100	4950	5220	5460	5210	255	147
Potassium	7	100	3310	3360	3510	3407	88	33	4	100	3180	3220	3320	3235	60	30	3	100	3170	3350	3600	3373	216	125	3	100	3170	3260	3380	3270	105	61
Rubidium	7	100	5.58	5.81	6.09	5.85	0.17	0.06	4	100	5.59	5.66	5.94	5.71	0.16	0.08	3	100	6.26	6.38	6.38	6.34	0.07	0.04	3	100	5.50	5.78	5.85	5.71	0.19	0.11
Selenium*	7	100	1.61	1.68	1.78	1.69	0.06	0.02	4	100	1.630	1.665	1.700	1.665	0.040	0.020	3	100	1.64	1.65	1.67	1.65	0.02	0.01	3	100	1.66	1.69	1.74	1.70	0.04	0.02
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	7	100	731	766	798	765	22	8	4	100	781	801	812	799	13	7	3	100	802	892	899	864	54	31	3	100	761	780	840	794	41	24
Strontium	7	100	8.11	8.61	9.23	8.62	0.37	0.14	4	100	9.20	9.94	10.40	9.87	0.58	0.29	3	100	8.52	8.59	9.42	8.84	0.50	0.29	3	100	9.19	9.59	9.86	9.55	0.34	0.19
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	7	0	<0.004	<0.004	<0.004	-	-	-	4	0	<0.004	<0.004	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-	3	0	<0.004	<0.004	<0.004	-	-	-
Thallium	7	100	0.00618	0.00636	0.00652	0.00633	0.00014	0.00005	4	100	0.00726	0.00751	0.00869	0.00774	0.00065	0.00032	3	100	0.00725	0.00743	0.00778	0.00749	0.00027	0.00016	3	100	0.0080	0.0081	0.0086	0.0083	0.0003	0.0002
Tin	7	43	<0.02	<0.02	0.025	-	-	-	4	100	0.025	0.029	0.032	0.029	0.003	0.002	3	100	0.049	0.051	0.061	0.054	0.006	0.004	3	100	0.032	0.035	0.042	0.036	0.005	0.003
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	7	100	0.00127	0.00141	0.00152	0.00140	0.00009	0.00004	4	100	0.00073	0.00090	0.00132	0.00096	0.00025	0.00013	3	100	0.00066	0.00077	0.00091	0.00078	0.00013	0.00007	3	100	0.00070	0.00070	0.00089	0.00076	0.00011	0.00006
Vanadium	7	0	<0.02	<0.02	<0.02	-	-	-	4	0	<0.02	<0.02	<0.02	-	-	-	3	0	<0.02	<0.02	<0.02	-	-	-	3	0	<0.02	<0.02	<0.02	-	-	-
Zinc	7	100	50.5	51.5	52.3	51.5	0.7	0.3	4	100	53.60	57.45	59.20	56.93	2.72	1.36	3	100	54.6	56.6	58.5	56.6	2.0	1.1	3	100	48.5	52.8	56.0	52.4	3.8	2.2
Zirconium	7	0	<0.04	<0.04	<0.04	-	-	-	4	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-	3	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median; Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percent

Table 21: Summary Statistics for Whole Body Tissues of all Fish Species Captured in the Exposure Sites in 2015

	Quesnel Lake- Hazeltine Creek									Quesnel Lake - West									Quesnel Lake - Middle									
	Peamouth Chub									Redside Shiner									Sockeye Salmon									
Parameter	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	Max	Mean	SD	SE	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	% Magnitude Quesnel Lake East	Max	Mean	SD	SE
% Moisture	8	100	72.7	75.8	3	77.3	75.2	1.9	0.7	8	100	71.7	76.4	3	79.6	75.7	2.9	1.0	10	100	67.7	71.0	-2	-4	72.6	70.8	1.5	0.5
Aluminum	8	88	<0.4	0.7	-	12.1	2.2	4.0	1.4	8	88	<0.4	0.71	39	9.54	1.84	3.13	1.11	10	90	<1	1.2	141	-	2.1	1.2	0.5	0.2
Antimony	8	0	<0.002	<0.002	-	<0.002	-	-	-	8	13	<0.002	<0.002	-	0.0023	-	-	-	10	0	<0.002	<0.002	-	-	<0.002	-	-	-
Arsenic	8	100	0.0343	0.0559	52	0.1870	0.0776	0.0512	0.0181	8	100	0.0148	0.0340	103	0.0654	0.0358	0.0170	0.0060	10	100	0.208	0.240	62	103	0.329	0.246	0.038	0.012
Barium	8	100	0.613	0.918	14	1.180	0.896	0.207	0.073	8	100	0.572	0.897	59	1.320	0.904	0.262	0.093	10	100	0.353	0.456	36	64	0.544	0.450	0.067	0.021
Beryllium	8	0	<0.002	<0.002	-	<0.002	-	-	-	8	0	<0.002	<0.002	-	<0.002	-	-	-	10	0	<0.002	<0.002	-	-	<0.002	-	-	-
Bismuth	8	0	<0.002	<0.002	-	<0.002	-	-	-	8	13	<0.002	<0.002	-	0.0031	-	-	-	10	0	<0.002	<0.002	-	-	<0.002	-	-	-
Boron	8	0	<0.2	<0.2	-	<0.2	-	-	-	8	0	<0.2	<0.2	-	<0.2	-	-	-	10	0	<0.2	<0.2	-	-	<0.2	-	-	-
Cadmium	8	100	0.0309	0.0406	156	0.0776	0.0468	0.0163	0.0058	8	100	0.0109	0.0228	19	0.0395	0.0238	0.0083	0.0029	10	100	0.0163	0.0282	53	85	0.0449	0.0282	0.0090	0.0029
Calcium	8	100	8240	9840	5	11400	10033	1087	384	8	100	8860	10900	-1	12100	10724	1071	379	10	100	4170	5085	-7	-3	5670	5051	474	150
Cesium	8	100	0.010	0.020	-32	0.024	0.019	0.005	0.002	8	100	0.0066	0.0147	-54	0.0225	0.0148	0.0048	0.0017	10	100	0.0245	0.0268	-9	3	0.0328	0.0275	0.0028	0.0009
Chromium	8	100	0.014	0.032	28	0.138	0.042	0.040	0.014	8	0	<0.01	<0.01	-	<0.01	-	-	-	10	60	<0.04	<0.04	-	-	0.06	0.02	0.01	<0.01
Cobalt	8	100	0.0138	0.0207	-43	0.0372	0.0226	0.0075	0.0027	8	100	0.0050	0.0111	-12	0.0204	0.0112	0.0049	0.0017	10	100	0.009	0.013	-10	10	0.023	0.014	0.004	0.001
Copper	8	100	0.521	0.547	-5	0.715	0.581	0.070	0.025	8	100	0.560	0.626	9	0.689	0.631	0.044	0.016	10	100	2.04	2.37	0	18	2.72	2.38	0.23	0.07
Iron	8	100	13.2	17.5	0	48.7	20.8	11.4	4.0	8	100	10.3	12.9	10	39.9	16.2	9.7	3.4	10	100	12.8	15.0	-25	-17	18.1	14.9	1.7	0.5
Lead	8	100	0.0052	0.0079	0	0.0121	0.0085	0.0026	0.0009	8	100	0.0043	0.0073	28	0.0184	0.0102	0.0060	0.0021	10	80	<0.01	0.0103	-41	-70	0.0336	0.0125	0.0090	0.0029
Lithium	8	0	<0.1	<0.1	-	<0.1	-	-	-	8	0	<0.1	<0.1	-	<0.1	-	-	-	10	0	<0.1	<0.1	-	-	<0.1	-	-	-
Magnesium	8	100	359	391	0	444	391	28	10	8	100	389	456	2	480	443	34	12	10	100	273	297	3	10	348	301	27	8
Manganese	8	100	1.56	2.63	23	3.66	2.62	0.63	0.22	8	100	2.54	2.82	-22	3.89	2.98	0.41	0.15	10	100	0.809	1.110	11	21	1.280	1.101	0.134	0.042
Mercury	8	100	0.0805	0.1205	47	0.1440	0.1174	0.0251	0.0089	8	100	0.0340	0.0479	24	0.0793	0.0521	0.0170	0.0060	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	8	100	0.0178	0.0195	-3	0.0348	0.0216	0.0056	0.0020	8	100	0.0108	0.0134	18	0.0228	0.0145	0.0037	0.0013	10	100	0.0087	0.0113	3	14	0.0128	0.0111	0.0015	0.0005
Nickel	8	38	<0.04	<0.04	-	0.109	-	-	-	8	0	<0.04	<0.04	-	<0.04	-	-	-	10	20	<0.04	<0.04	-	-	0.045	-	-	-
Phosphorus	8	100	6300	7120	5	8220	7230	645	228	8	100	6770	7860	-3	8710	7845	634	224	10	100	4640	5105	-1	5	5890	5189	421	133
Potassium	8	100	3130	3350	3	3460	3323	106	37	8	100	2860	3170	11	3320	3155	146	52	10	100	3060	3400	11	8	3950	3456	247	78
Rubidium	8	100	3.14	3.81	-2	4.57	3.78	0.45	0.16	8	100	3.12	3.99	-8	5.21	4.07	0.76	0.27	nd	nd	nd	nd	-	-	nd	nd	nd	nd
Selenium*	8	100	2.357	2.951	43	4.104	3.083	0.596	0.211	8	100	1.827	2.890	43	3.311	2.724	0.575	0.203	10	100	1.60	1.84	-1	2	1.97	1.81	0.12	0.04
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	846	925	17	981	919	41	14	8	100	530	697	13	753	668	86	30	10	100	658	822	1	7	960	814	101	32
Strontium	8	100	15.3	18.7	0	24.5	19.6	3.1	1.1	8	100	18.5	23.3	-18	27.7	23.0	2.8	1.0	10	100	6.79	8.92	-3	9	9.86	8.75	0.85	0.27
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	-	<0.004	-	-	-	8	0	<0.004	<0.004	-	<0.004	-	-	-	10	0	<0.004	<0.004	-	-	<0.004	-	-	-
Thallium	8	100	0.00067	0.00180	51	0.00207	0.00153	0.00054	0.00019	8	100	0.00050	0.00150	-1	0.00262	0.00156	0.00083	0.00029	10	100	0.00560	0.00651	-16	-17	0.00786	0.00671	0.00075	0.00024
Tin	8	75	<0.02	0.028	-	0.044	0.028	0.012	0.004	8	100	0.033	0.045	22	0.059	0.046	0.010	0.004	10	100	0.024	0.033	-23	-27	0.049	0.034	0.008	0.003
Titanium	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	100	0.00495	0.00865	64	0.01430	0.00853	0.00329	0.00116	8	100	0.00053	0.00117	124	0.00272	0.00134	0.00073	0.00026	10	100	0.00095	0.00134	63	107	0.00180	0.00134	0.00024	0.00007
Vanadium	8	63	<0.02	0.025	14	0.075	0.028	0.022	0.008	8	25	<0.02	<0.02	-	0.111	-	-	-	10	30	<0.02	<0.02	-	-	0.027	-	-	-
Zinc	8	100	22.9	25.9	-8	31.6	26.3	2.9	1.0	8	100	25.4	40.0	-18	50.7	40.5	7.3	2.6	10	100	43.9	52.6	-11	5	61.9	53.7	6.3	2.0
Zirconium	8	0	<0.04	<0.04	-	<0.04	-	-	-	8	0	<0.04	<0.04	-	<0.04	-	-	-	10	0	<0.04	<0.04	-	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	8	100	1.8	2.4	-55	5.7	3.1	1.6	0.6	nd	nd	nd	nd	nd	nd	nd	nd	nd	10	100	4.0	6.5	13	12	10.4	6.9	1.9	0.6

	Quesnel Lake - Middle									
	Sockeye Salmon									
Parameter	n	%>DL	Min	Med	% Magnitude Quesnel Lake North Arm	% Magnitude Quesnel Lake East	Max	Mean	SD	SE
% Moisture	10	100	69.1	72.9	0	-1	75.3	72.6	1.9	0.6
Aluminum	10	70	<0.4	0.6	29	-	1.9	0.8	0.6	0.2
Antimony	10	10	<0.002	<0.002	-	-	0.0023	-	-	-
Arsenic	10	100	0.0739	0.1605	8	36	0.2280	0.1577	0.0545	0.0172
Barium	10	100	0.196	0.388	16	40	0.819	0.460	0.223	0.071
Beryllium	10	0	<0.002	<0.002	-	-	<0.002	-	-	-
Bismuth	10	0	<0.002	<0.002	-	-	<0.002	-	-	-
Boron	10	0	<0.2	<0.2	-	-	<0.2	-	-	-
Cadmium	10	100	0.0118	0.0187	1	23	0.0338	0.0218	0.0076	0.0024
Calcium	10	100	4460	5845	7	11	7420	5983	979	310
Cesium	10	100	0.0221	0.0257	-13	-1	0.0415	0.0271	0.0059	0.0019
Chromium	10	70	0.016	0.024	-80	20	0.062	0.031	0.015	0.005
Cobalt	10	100	0.0088	0.0114	-18	0	0.0199	0.0126	0.0039	0.0012
Copper	10	100	1.55	2.30	-3	15	3.22	2.37	0.52	0.16
Iron	10	100	13.6	19.4	-3	8	23.0	19.0	2.9	0.9
Lead	10	100	0.0057	0.0152	-13	-55	0.0639	0.0192	0.0166	0.0052
Lithium	10	0	<0.1	<0.1	-	-	<0.1	-	-	-
Magnesium	10	100	270	304	6	13	352	305	25	8
Manganese	10	100	0.72	1.11	11	21	1.77	1.11	0.35	0.11
Mercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	10	100	0.0093	0.0106	-4	7	0.0156	0.0111	0.0017	0.0005
Nickel	10	0	<0.04	<0.04	-	-	<0.04	-	-	-
Phosphorus	10	100	5080	5735	12	18	6840	5787	638	202
Potassium	10	100	2860	3295	7	5	3370	3210	181	57
Rubidium	10	100	4.77	5.35	-7	-1	5.83	5.39	0.35	0.11
Selenium*	10	100	1.66	1.82	-2	1	2.16	1.87	0.17	0.06
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	10	100	656	811	0	6	948	799	93	30
Strontium	10	100	7.04	9.98	8	22	14.00	9.99	2.20	0.70
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	10	0	<0.004	<0.004	-	-	<0.004	-	-	-
Thallium	10	100	0.00548	0.00780	1	-1	0.00974	0.00802	0.00135	0.00043
Tin	10	100	0.022	0.035	-17	-21	0.050	0.035	0.008	0.003
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	10	100	0.00048	0.00081	-1	26	0.00178	0.00096	0.00044	0.00014
Vanadium	10	10	<0.02	<0.02	-	-	<0.02	-	-	-
Zinc	10	100	45.8	58.7	-1	17	67.2	58.4	5.5	1.8
Zirconium	10	0	<0.04	<0.04	-	-	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	10	100	3.3	6.0	4	3	9.8	6.3	2.2	0.7

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median

Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percen

Table 22: Summary Statistics for Whole Body Tissues of all Fish Species Captured in the Reference Sites in 2015

	Quesnel Lake- North Arm																Quesnel Lake - North Arm								Quesnel Lake - East							
	Peamouth Chub								Redside Shiner								Sockeye Salmon								Sockeye Salmon							
Parameter	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE	n	%>DL	Min	Med	Max	Mean	SD	SE
% Moisture	8	100	66.8	73.3	74.7	72.4	2.6	0.9	8	100	72.4	74.0	77.1	74.6	1.9	0.7	10	100	70.8	72.7	77.9	73.0	2.0	0.6	10	100	70.8	73.7	75.9	73.4	1.5	0.5
Aluminum	8	25	<0.4	<0.4	19.4	-	-	-	8	75	<0.4	0.51	1.32	0.62	0.39	0.14	10	40	0.2	0.5	2.7	-	-	-	10	50	<1	<1	1.13	-	-	-
Antimony	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-
Arsenic	8	100	0.0319	0.0368	0.0561	0.0402	0.0080	0.0028	8	100	0.0079	0.0167	0.0446	0.0216	0.0127	0.0045	10	100	0.1210	0.1480	0.1670	0.1466	0.0170	0.0054	10	100	0.0786	0.1180	0.1330	0.1128	0.0205	0.0065
Barium	8	100	0.47	0.80	1.08	0.79	0.18	0.06	8	100	0.299	0.5635	0.764	0.548	0.155	0.055	10	100	0.215	0.335	0.714	0.407	0.176	0.056	10	100	0.173	0.278	0.407	0.294	0.082	0.026
Beryllium	8	0	<0.002	<0.002	<0.002	-	-	-	8	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-
Bismuth	8	75	<0.002	0.0024	0.0028	0.0021	0.0007	0.0003	8	0	<0.002	<0.002	<0.002	-	-	-	10	10	<0.002	<0.002	0.003	-	-	-	10	0	<0.002	<0.002	<0.002	-	-	-
Boron	8	0	<0.2	<0.2	<0.2	-	-	-	8	0	<0.2	<0.2	<0.2	-	-	-	10	0	<0.2	<0.2	<0.2	-	-	-	10	0	<0.2	<0.2	<0.2	-	-	-
Cadmium	8	100	0.0139	0.0159	0.0345	0.0190	0.0067	0.0024	8	100	0.0147	0.0192	0.0516	0.0230	0.0120	0.0042	10	100	0.0131	0.0185	0.0346	0.0196	0.0061	0.0019	10	100	0.0112	0.0152	0.0222	0.0162	0.0036	0.0011
Calcium	8	100	7710	9340	14200	10090	2586	914	8	100	6630	11050	14100	10864	2475	875	10	100	4750	5460	7060	5767	846	268	10	100	4010	5245	6550	5178	692	219
Cesium	8	100	0.0240	0.0300	0.0379	0.0300	0.0044	0.0016	8	100	0.0216	0.0317	0.0350	0.0299	0.0052	0.0019	10	100	0.0261	0.0295	0.0377	0.0297	0.0036	0.0011	10	100	0.0228	0.0260	0.0364	0.0276	0.0043	0.0014
Chromium	8	100	0.013	0.025	0.088	0.040	0.031	0.011	8	0	<0.01	<0.01	<0.01	-	-	-	10	100	0.018	0.121	0.432	0.149	0.135	0.043	10	50	0.02	0.02	<0.04	-	-	-
Cobalt	8	100	0.0241	0.0360	0.0425	0.0349	0.0077	0.0027	8	100	0.0052	0.0126	0.0196	0.0122	0.0042	0.0015	10	100	0.0079	0.0139	0.0227	0.0138	0.0045	0.0014	10	100	0.0067	0.0114	0.0222	0.0123	0.0053	0.0017
Copper	8	100	0.541	0.576	0.695	0.594	0.057	0.020	8	100	0.463	0.573	0.685	0.572	0.089	0.031	10	100	1.820	2.370	3.940	2.622	0.652	0.206	10	100	1.19	2.00	2.89	2.06	0.58	0.18
Iron	8	100	14.6	17.5	47.6	21.2	10.9	3.9	8	100	10.3	11.7	15.7	12.5	2.0	0.7	10	100	13.6	19.9	21.0	19.0	2.3	0.7	10	100	14.1	18.0	20.2	17.7	2.1	0.7
Lead	8	100	0.0059	0.0079	0.0132	0.0088	0.0027	0.0009	8	88	<0.004	0.0057	0.0113	0.0063	0.0029	0.0010	10	100	0.013	0.018	0.042	0.022	0.010	0.003	10	100	0.012	0.034	0.099	0.041	0.027	0.009
Lithium	8	0	<0.1	<0.1	<0.1	-	-	-	8	0	<0.1	<0.1	<0.1	-	-	-	10	0	<0.1	<0.1	<0.1	-	-	-	10	0	<0.1	<0.1	<0.1	-	-	-
Magnesium	8	100	350	390	472	399	46	16	8	100	393	446	668	480	92	33	10	100	267	288	330	293	24	8	10	100	249	270	296	269	12	4
Manganese	8	100	1.79	2.14	3.45	2.30	0.54	0.19	8	100	2.52	3.63	5.19	3.85	0.90	0.32	10	100	0.732	1.002	1.400	1.035	0.216	0.068	10	100	0.598	0.921	1.250	0.935	0.209	0.066
Mercury	8	100	0.0457	0.0822	0.1010	0.0793	0.0174	0.0062	8	100	0.0234	0.0387	0.1180	0.0496	0.0336	0.0119	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	8	100	0.0152	0.0201	0.0240	0.0193	0.0032	0.0011	8	100	0.0084	0.0114	0.0151	0.0116	0.0025	0.0009	10	100	0.009	0.011	0.014	0.011	0.002	0.001	10	100	0.0083	0.0100	0.0114	0.0100	0.0010	0.0003
Nickel	8	38	<0.04	<0.04	0.091	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-	10	70	<0.04	0.06	0.25	0.09	0.08	0.03	10	0	<0.04	<0.04	<0.04	-	-	-
Phosphorus	8	100	5600	6800	9480	7254	1467	519	8	100	5310	8110	9470	7765	1386	490	10	100	4830	5135	6640	5413	649	205	10	100	4500	4880	5800	4953	360	114
Potassium	8	100	3100	3255	3330	3248	78	28	8	100	2750	2855	3120	2888	122	43	10	100	2860	3070	3410	3105	179	57	10	100	3010	3145	3410	3161	121	38
Rubidium	8	100	3.44	3.89	5.21	3.99	0.53	0.19	8	100	3.62	4.34	5.03	4.35	0.42	0.15	10	100	5.49	5.75	6.92	5.84	0.43	0.14	10	100	4.99	5.38	6.00	5.40	0.26	0.08
Selenium*	8	100	1.804	2.067	3.033	2.185	0.409	0.145	8	100	1.413	2.018	2.341	1.984	0.285	0.101	10	100	1.52	1.86	2.19	1.84	0.22	0.07	10	100	1.44	1.80	2.05	1.81	0.19	0.06
Silicon	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Silver	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Sodium	8	100	750	789	898	809	59	21	8	100	532	616	681	618	50	18	10	100	599	812	924	801	92	29	10	100	621	768	849	762	62	20
Strontium	8	100	14.8	18.7	30.7	21.3	6.0	2.1	8	100	15.1	28.4	37.6	27.0	7.2	2.5	10	100	7.9	9.2	12.9	9.8	1.9	0.6	10	100	6.08	8.17	11.50	8.60	1.56	0.49
Sulphur	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tellurium	8	0	<0.004	<0.004	<0.004	-	-	-	8	0	<0.004	<0.004	<0.004	-	-	-	10	0	<0.004	<0.004	<0.004	-	-	-	10	0	<0.004	<0.004	<0.004	-	-	-
Thallium	8	100	0.00099	0.00119	0.00171	0.00123	0.00024	0.00008	8	100	0.00084	0.00152	0.00184	0.00143	0.00039	0.00014	10	100	0.00662	0.00771	0.00967	0.00774	0.00098	0.00031	10	100	0.00644	0.00789	0.00979	0.00786	0.00103	0.00033
Tin	8	38	<0.02	<0.02	0.032	-	-	-	8	100	0.023	0.037	0.097	0.046	0.023	0.008	10	100	0.022	0.042	0.212	0.060	0.055	0.017	10	100	0.032	0.045	0.055	0.045	0.009	0.003
Titanium	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Uranium	8	100	0.00396	0.00526	0.00841	0.00587	0.00163	0.00058	8	88	<0.0004	0.00052	0.00101	0.00061	0.00027	0.00010	10	100	0.00055	0.00082	0.00161	0.00093	0.00038	0.00012	10	100	0.00046	0.00065	0.00103	0.00067	0.00017	0.00005
Vanadium	8	63	<0.02	0.022	0.068	0.026	0.019	0.007	8	0	<0.02	<0.02	<0.02	-	-	-	10	0	0.01000	0.01000	0.01000	-	-	-	10	0	<0.02	<0.02	<0.02	-	-	-
Zinc	8	100	22.2	28.0	32.0	28.0	3.2	1.1	8	100	39.6	48.7	64.3	49.1	8.0	2.8	10	100	51.0	59.0	73.0	59.2	6.1	1.9	10	100	42.7	50.0	58.3	49.8	4.6	1.4
Zirconium	8	0	<0.04	<0.04	<0.04	-	-	-	8	0	<0.04	<0.04	<0.04	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-	10	0	<0.04	<0.04	<0.04	-	-	-
Methylmercury	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lipid Content	8	100	2.7	5.3	6.0	4.9	1.1	0.4	nd	nd	nd	nd	nd	nd	nd	nd	10	100	2.7	5.8	8.0	5.6	1.6	0.5	10	100	2.5	5.8	8.1	5.5	1.4	0.4

Units = mg/kg ww except selenium * (i.e., mg/kg dw)

n = sample size; nd = no data collected; < = less than; % > DL = percent of samples greater than detection limit; Min = minimum ; Med = median

Max = maximum; SD = standard deviation; SE = standard error; - = not calculated due to %>DL; -- = not calculated due to small sample size; % = percen

ATTACHMENT 3

FISH TISSUE CHEMISTRY CENSORED BOXPLOTS

Table 1: Fish tissue chemistry summary of changes observed in metal concentrations by fish species by tissue type

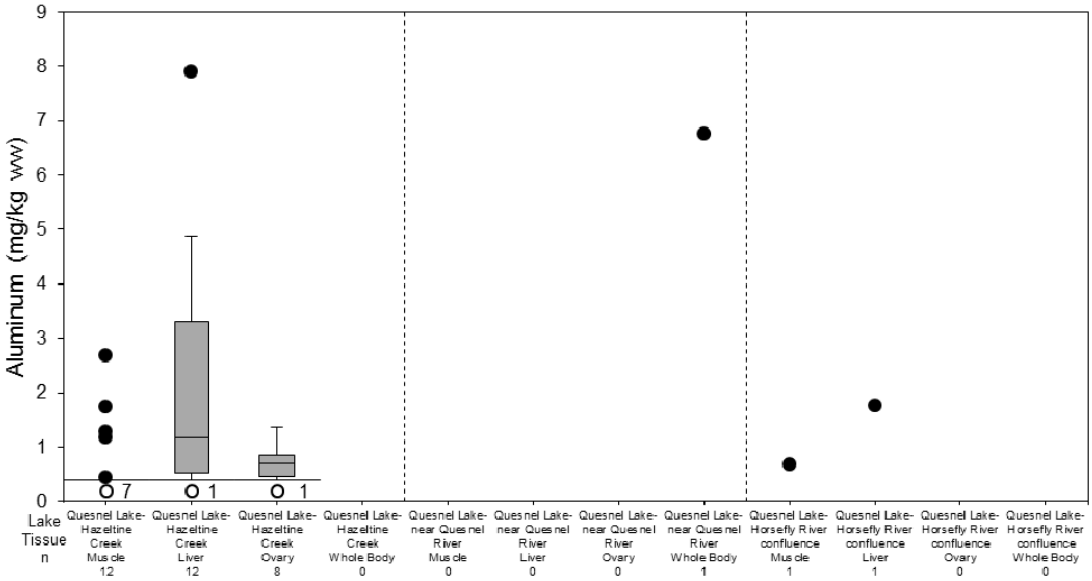
Parameter	Lake Trout		Peamouth Chub		Rainbow Trout			Sockeye Salmon		
	EXP vs REF	2014 vs 2015	EXP vs REF	2014 vs 2015	EXP vs REF	2014 vs 2015		EXP vs REF	2014 vs 2015	
	2015 only	Quesnel Lake Hazeltine Creek Confluence	*2014 + 2015**	Quesnel Lake Hazeltine Creek Confluence	*2014 + 2015**	Quesnel River	Polley Lake	*2014 + 2015**	Quesnel Lake - Middle	Quesnel Lake - West
Aluminum	↓(c)	-	--	↑(f) DL	--	↑(b) ↑(b)	↑(b)	-	↓(f)(e)DL ↑(f)	↑(f)	↑(e)↓(g)
Arsenic	↑(e)	↓(a)↑(b)	--	↑(f)	--	↑(e)	↑(a)↓(b)	(e)	↓(e)(f) ↑(f)	↓(f)	(e)
Barium	↑(c)	-	--	-	--	↓(a) ↓(e)(e)	↓(b)	-	↓(f) ↑(f)	-	↑(e)↓(f)
Beryllium	-	-	--	-	--	-	-	-	- -	-	-
Cadmium	↑(b)	↑(b)	--	↑(f)	--	↑(b) (e)↓(b)	↑(b)	-	↑(f)	(f)	↑(e)
Chromium	-	-	--	-	--	↓(b) ↓(c)	↑(b) DL	-	↑(e) ↓(f)	↓(f)	↑(e)↓(g)
Cobalt	↓(e)	↑(e)	--	↓(f)	--	↑(e) (e)↓(c)	↓(b)	-	↓(f) -	(f)	↑(carcass)
Copper	↑(b)	↓(e)	--	-	--	↓(e) (e)↓(e)	↓(a)	↑(b)	↑(f) -	↓(f)	↓(e)
Iron	↓(c)	↑(b)	--	-	--	↓(a)(b) (b)↓(e)	↑(b)	↓(a)	↓(e)(a) -	-	↑(carc)↓(b)
Lead	-	-	--	-	--	-	-	-	↓(f)	↓(f)	↓(g)
Lithium	-	-	--	-	--	-	-	-	- -	-	-
Manganese	↑(c)	↑(a)	--	-	--	↓(a) ↑(e)	-	↓(a)	↓(f)↑(e) -	(f)	-
Mercury	↓(e)	↑(e)	--	↑(f,i)	--	_(i) ↓(e,k)	_(i,k)	-	(i,k) --	--	--
Molybdenum	-	-	--	-	--	↓(a)(b) (e)	-	-	↑(a) -	(f)	↑(e)
Nickel	↑(c)	↑(b)	--	-	--	- ↓(c)	-	-	↑(e) DL ↓(f)	-	-
Selenium	-(k)	↑(b,k)	--	↑(f,i)	--	_(i,k) ↑(e,k)	_(i,k)	↓(e,i)	-(i,k) -	-	-
Thallium	↑(e)	↓(b)	--	↑(f)	--	↓(e)↑(e) ↓(e)↑(e)	↑(a)	↓(b)	↑(a)↓(f) -	(f)	-
Vanadium	-	-	--	-	--	↑(b) DL (b)↓(e)	↑(b)	↓(b)	- -	-	↑(f)↓(b,g) DL
Zinc	-	-	--	-	--	↓(a)(b) -	-	↑(b)	- -	-	↑(e)

(a) muscle tissue only
(b) liver tissue only
(c) kidney tissue only
(d) ovary tissue only
(e) multiple tissue types
(f) whole body
(g) gills
(h) carcass
(i) fish sizes do not overlap or length data is not available, will not be able to compare statistically; result of visual assessment of concentrations (without length consideration) indicated where appropriate
(k) no regression relationship evident with length
DL based on proportion of samples above DL
¯ / - = direction of difference between exposure and reference sites, or 2014 and 2015 data. E.g., - in the EXP vs REF column indicates the exposure site(s) have a greater concentration of metal than the reference site(s) for the given metal, ¯ in the 2014 vs 2015 column indicates 2014 metal concentration is less than the 2015 concentration for the given metal.
- = no difference
-- = insufficient or no data
* The side to which the arrow is placed in the 2014 + 2015 pcolumn indicates which year the difference was observed, if the arrow is placed in the middle, the results were consistent in both years.
NOTE: limited to no data for titanium or silver (not analyzed by the laboratory)

1.0 BURBOT

1.1 Aluminum

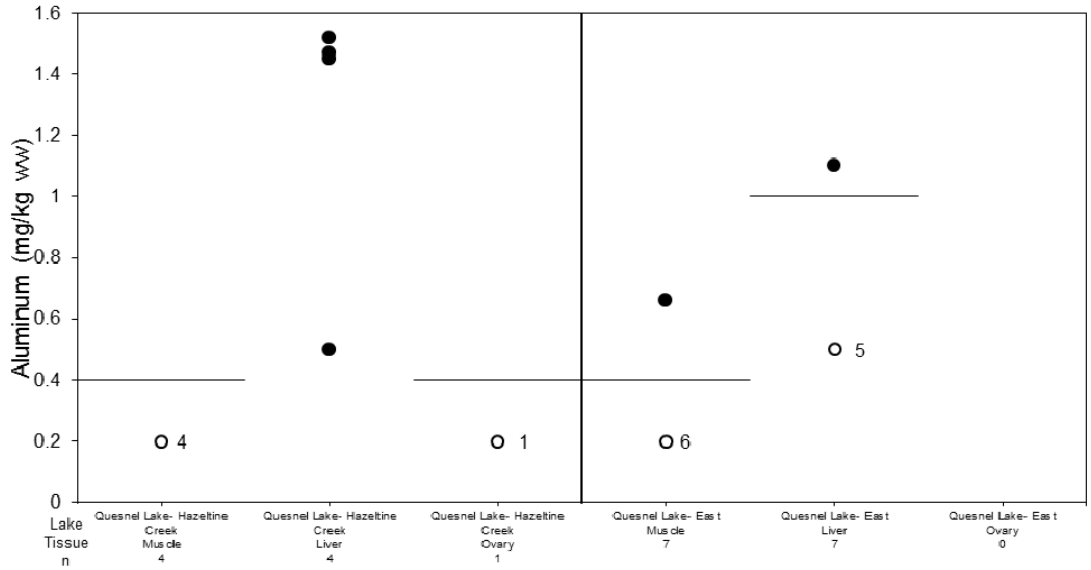
Figure 1: Aluminum Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

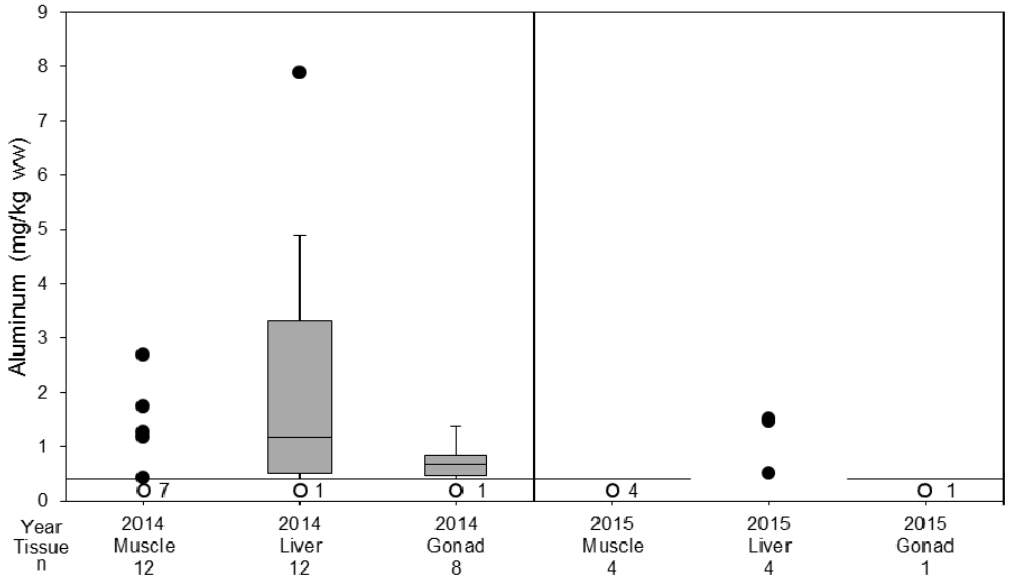
Figure 2: Aluminum Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 3: Aluminum Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

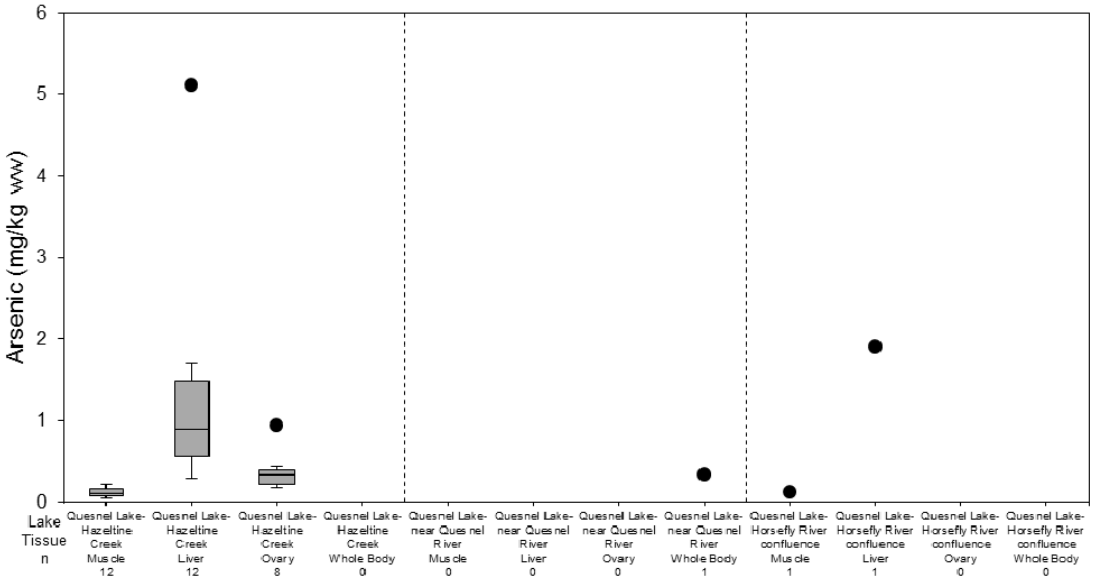


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

1.2 Arsenic

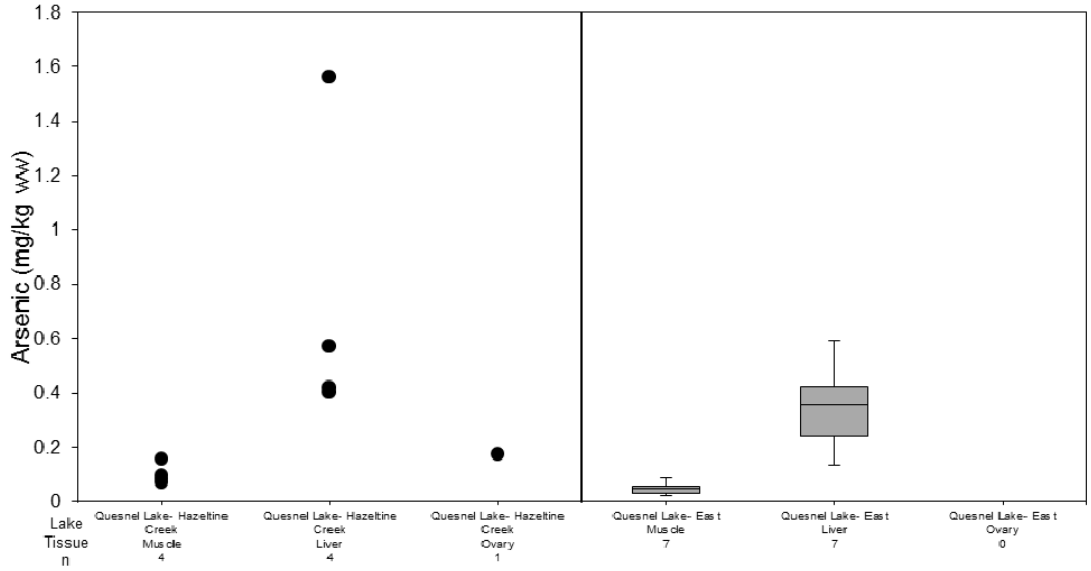
Figure 4: Arsenic Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

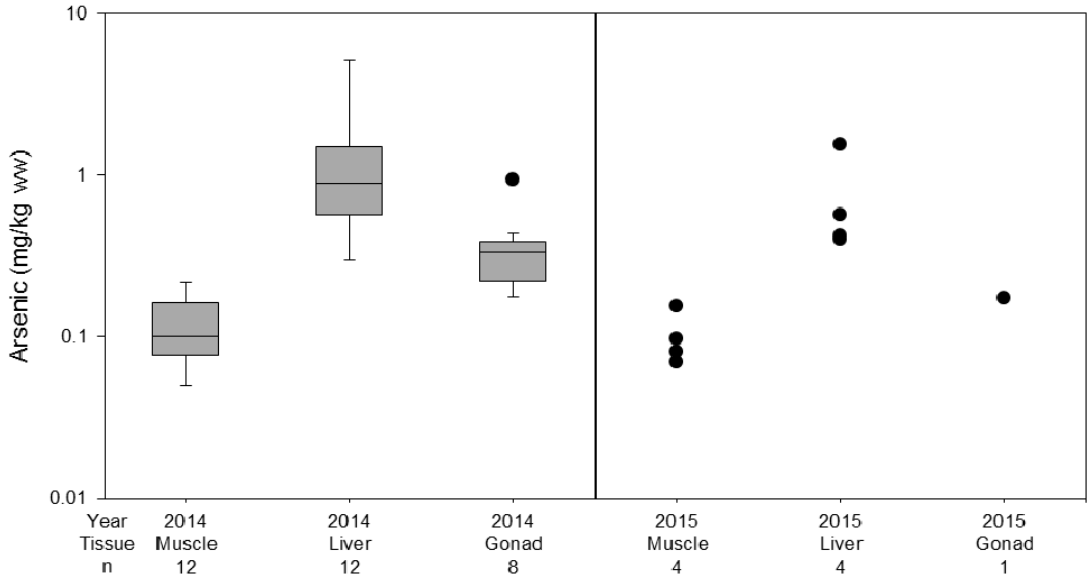
mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 5: Arsenic Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.
mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

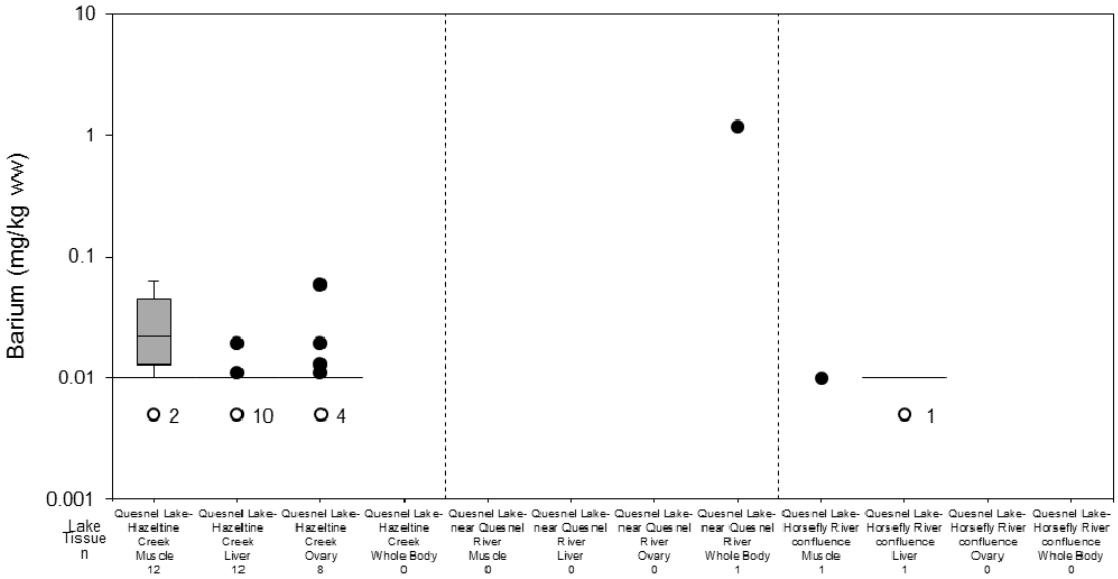
Figure 6: Arsenic Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.
mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

1.3 Barium

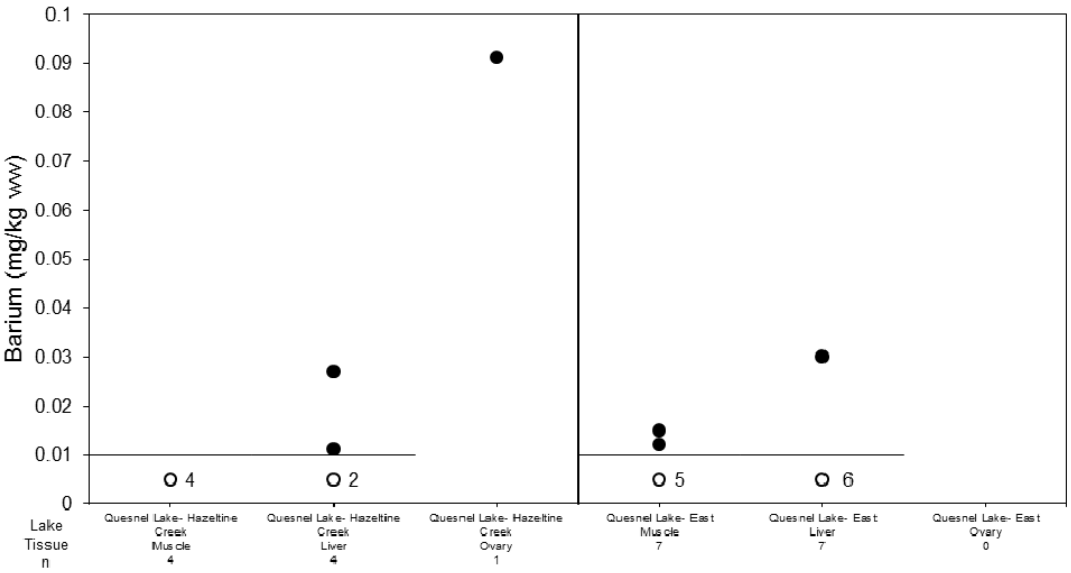
Figure 7: Barium Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

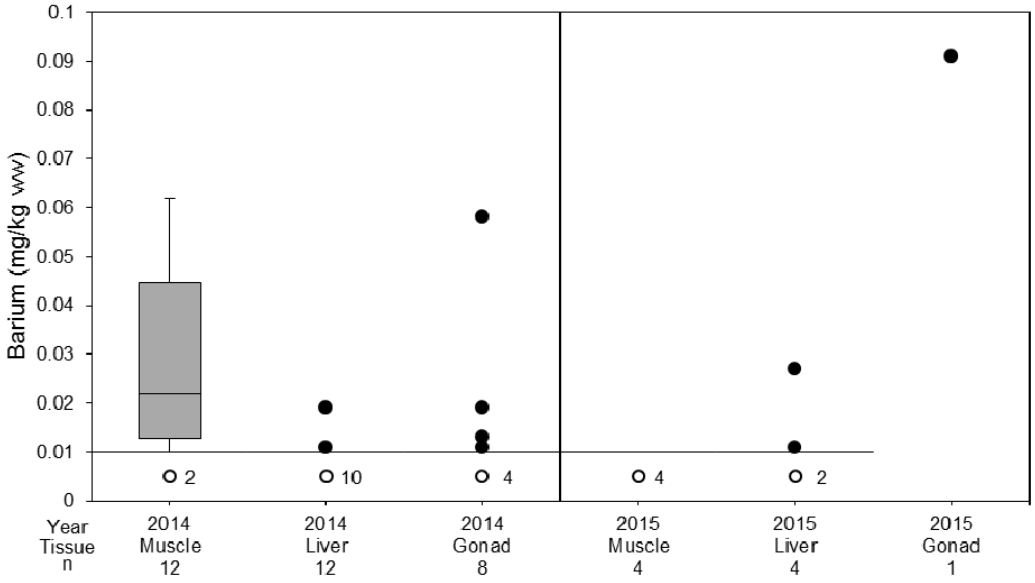
Figure 8: Barium Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 9: Barium Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

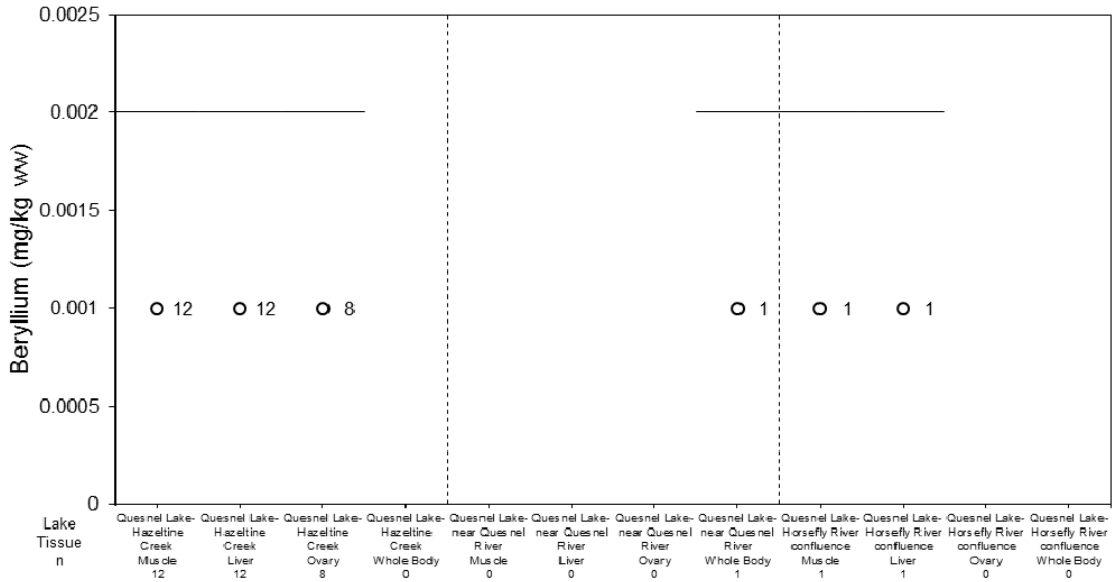


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

1.4 Beryllium

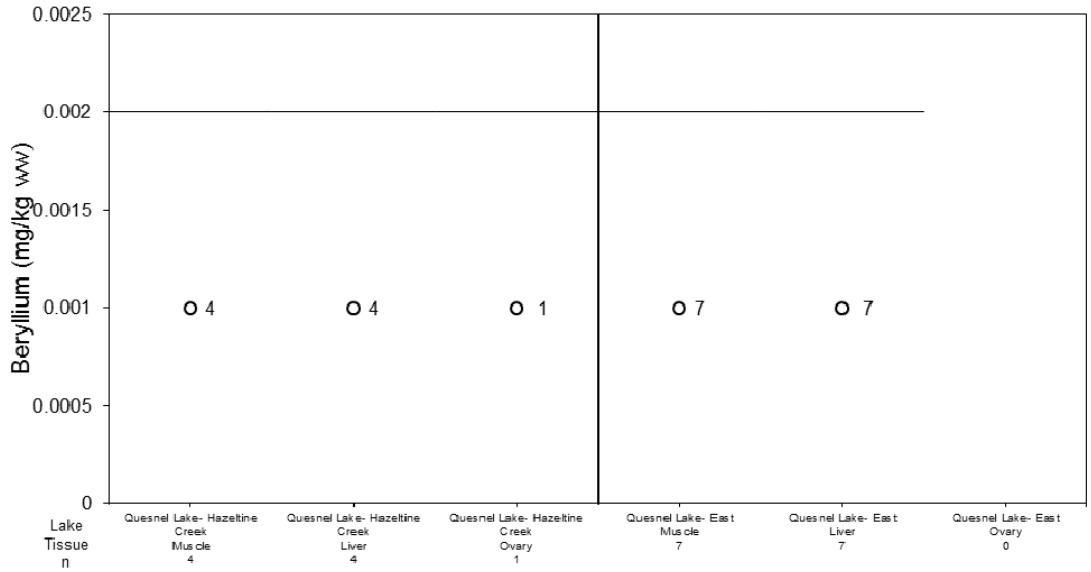
Figure 10: Beryllium Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 11: Beryllium Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

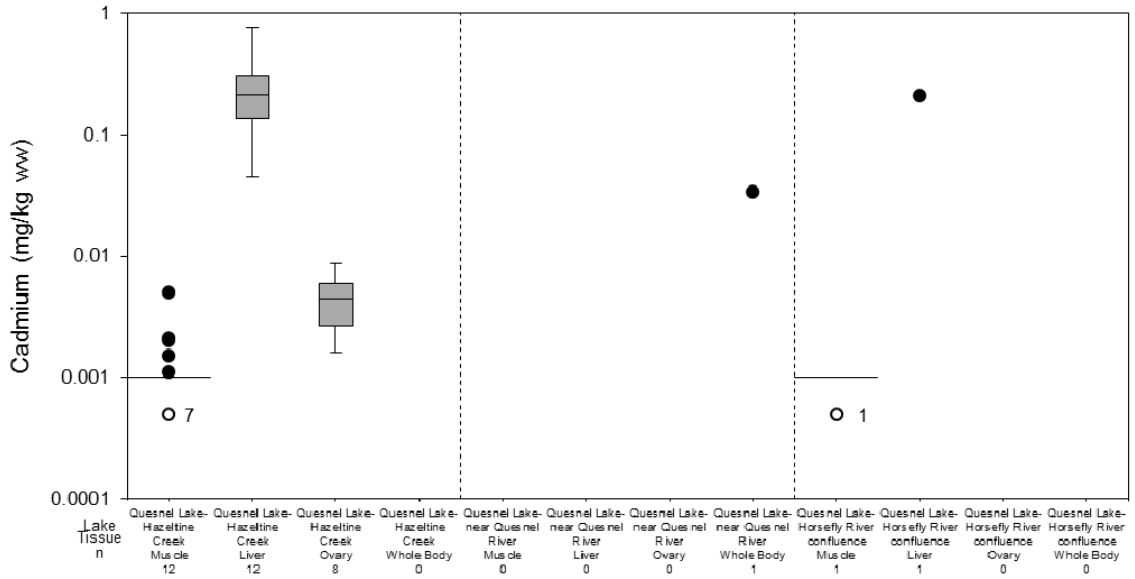
Figure 12: Beryllium Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

1.5 Cadmium

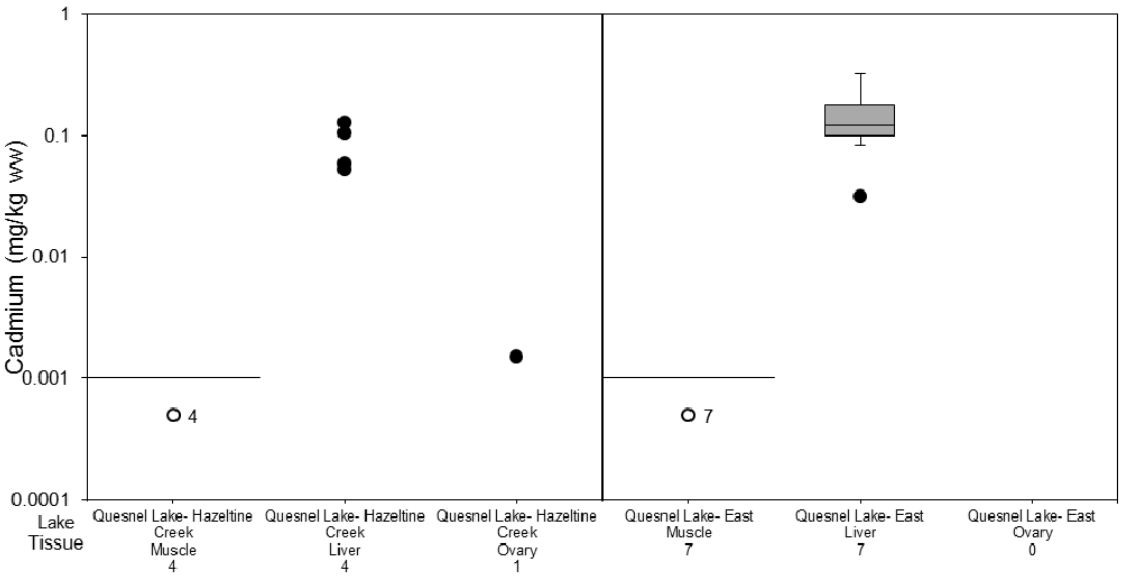
Figure 13: Cadmium Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

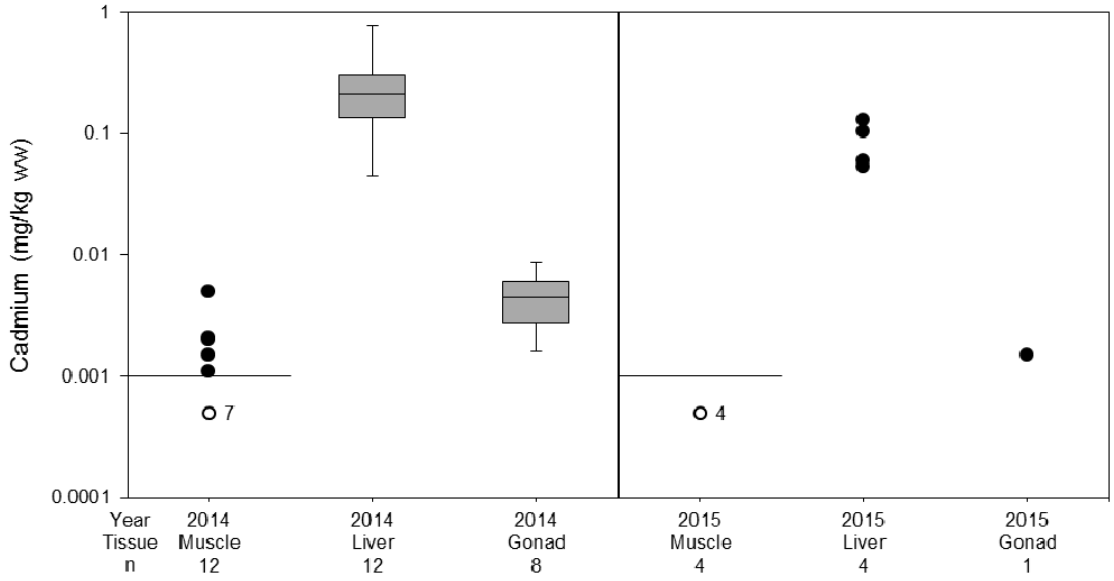
Figure 14: Cadmium Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 15: Cadmium Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

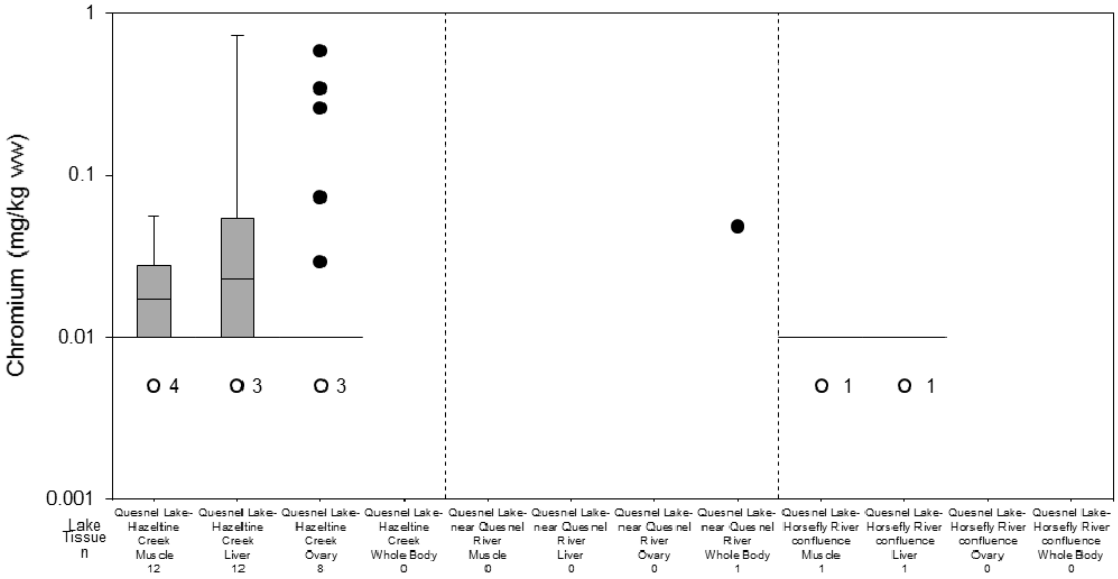


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

1.6 Chromium

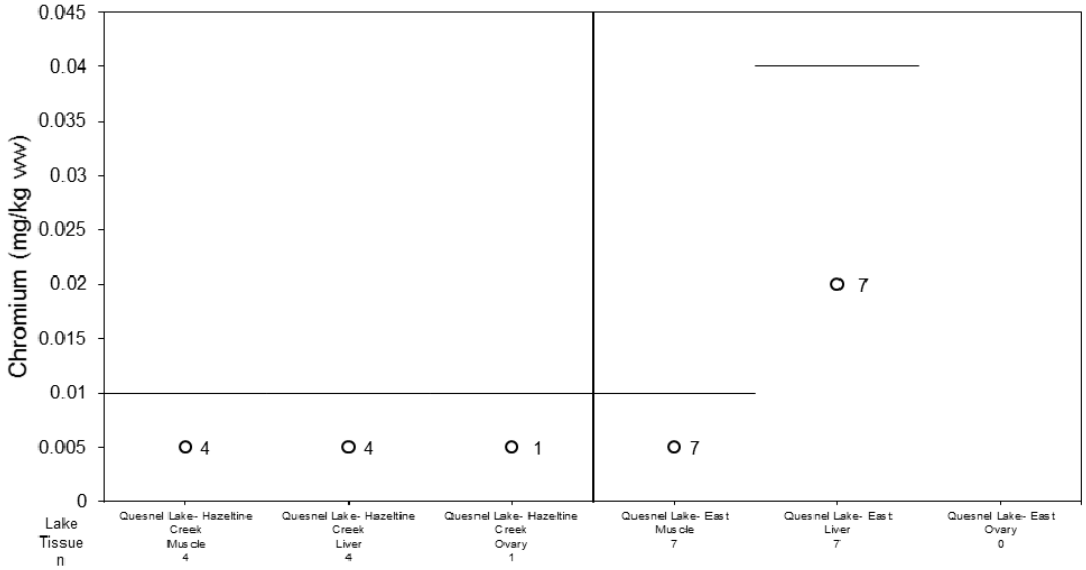
Figure 16: Chromium Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

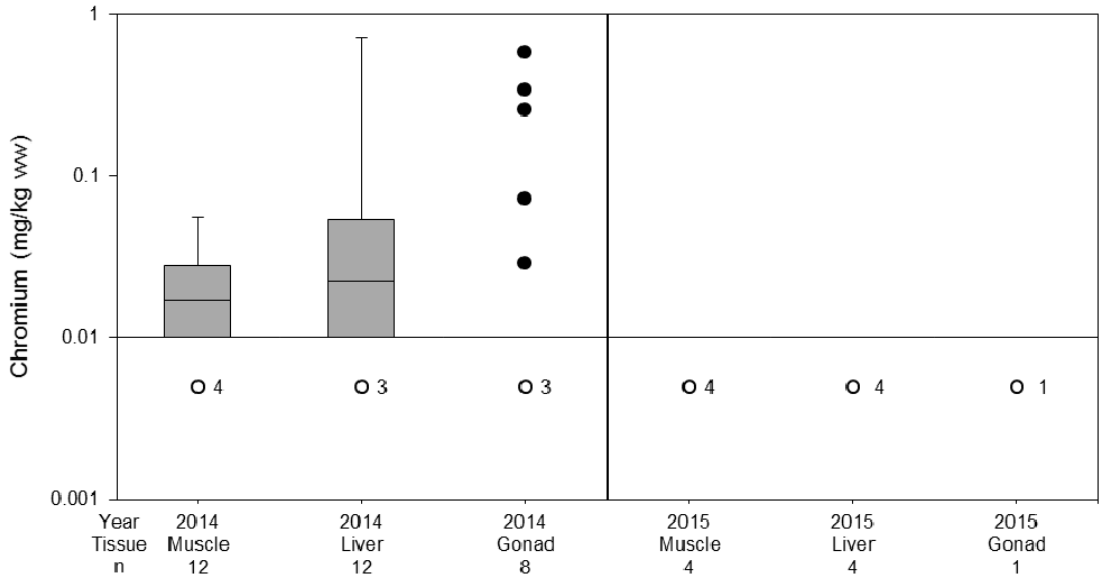
Figure 17: Chromium Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 18: Chromium Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

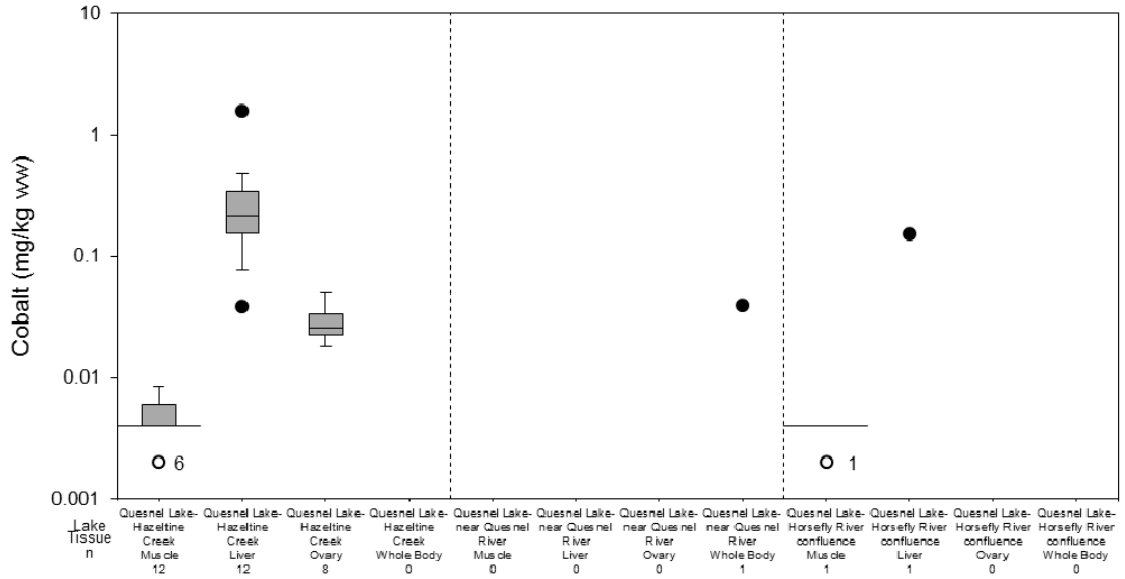


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

1.7 Cobalt

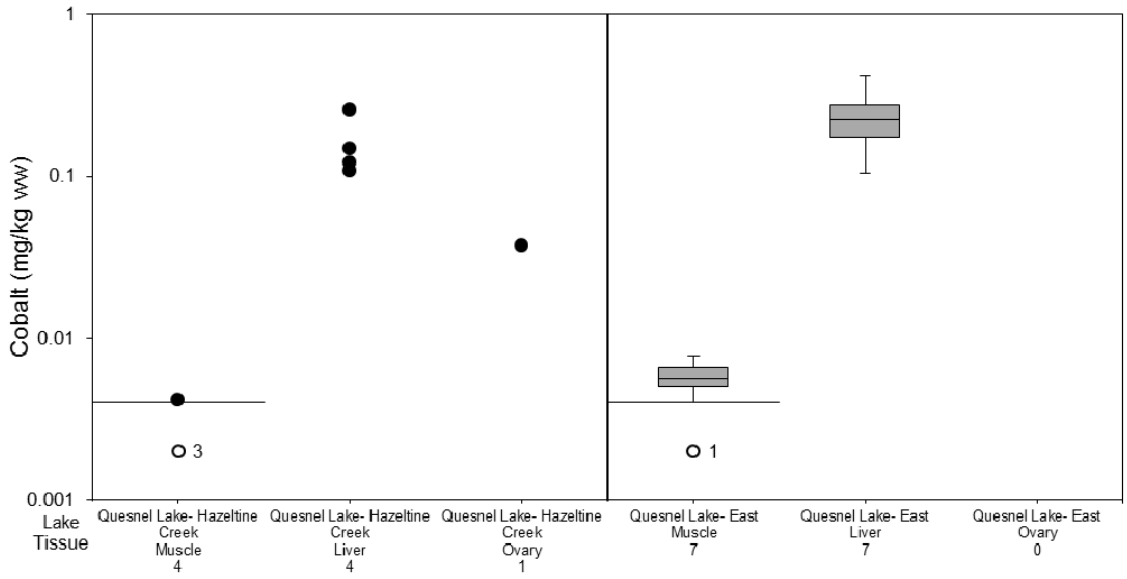
Figure 19: Cobalt Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

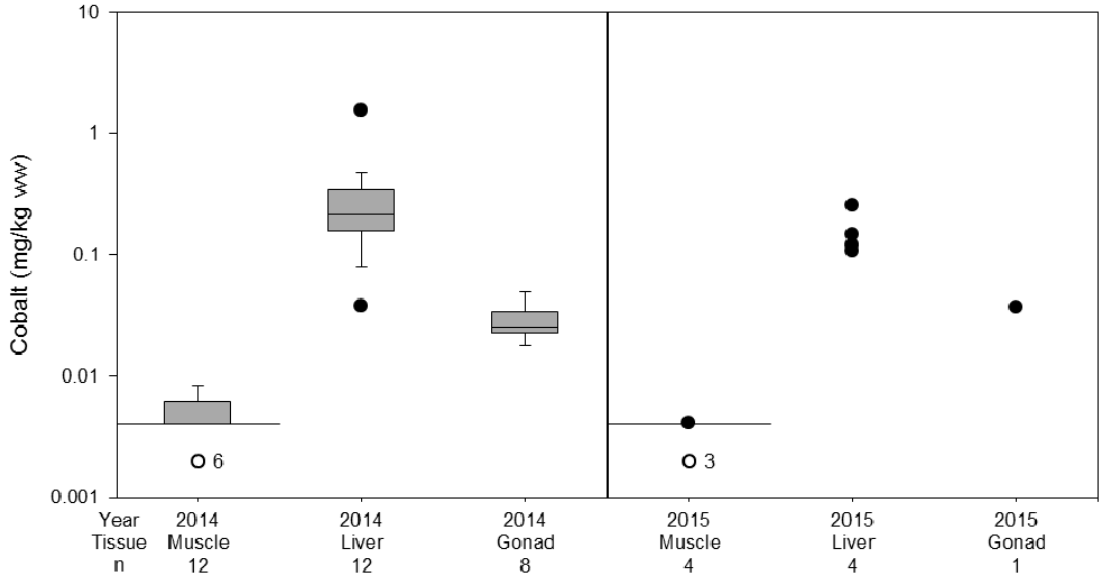
Figure 20: Cobalt Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 21: Cobalt Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

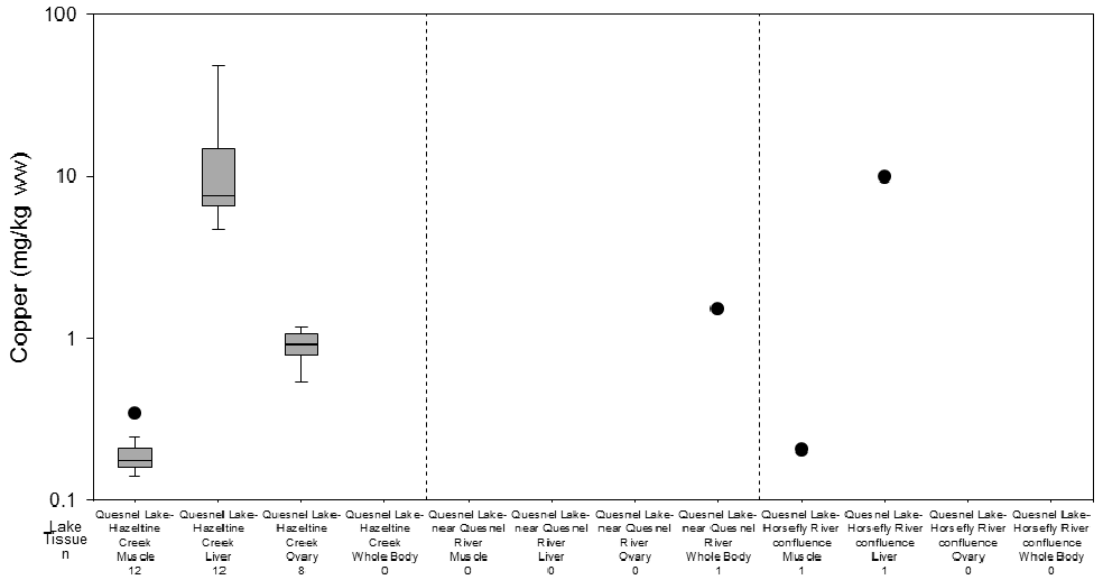


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

1.8 Copper

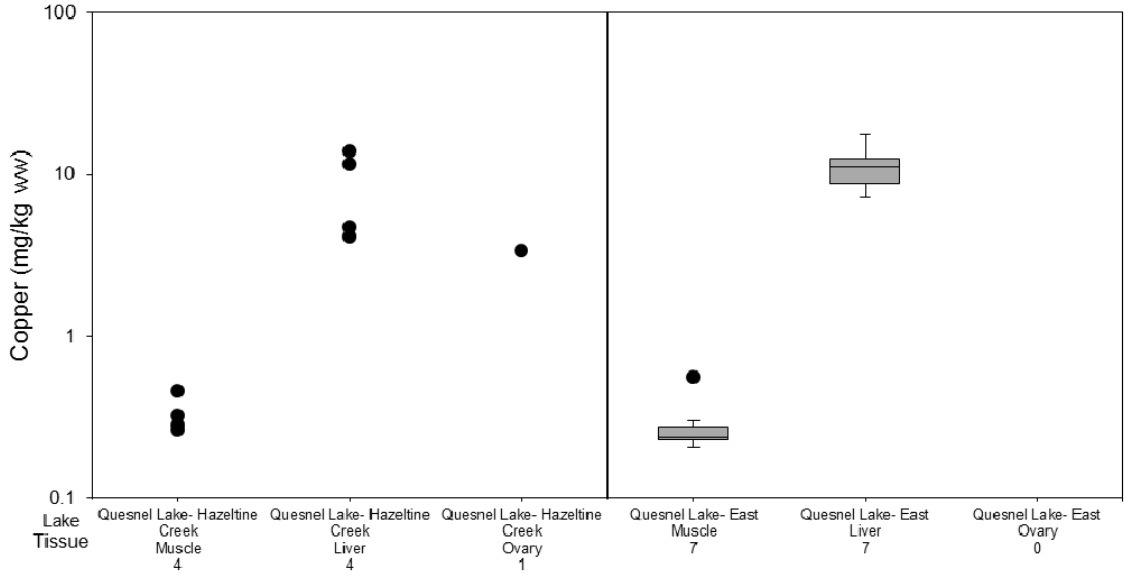
Figure 22: Copper Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

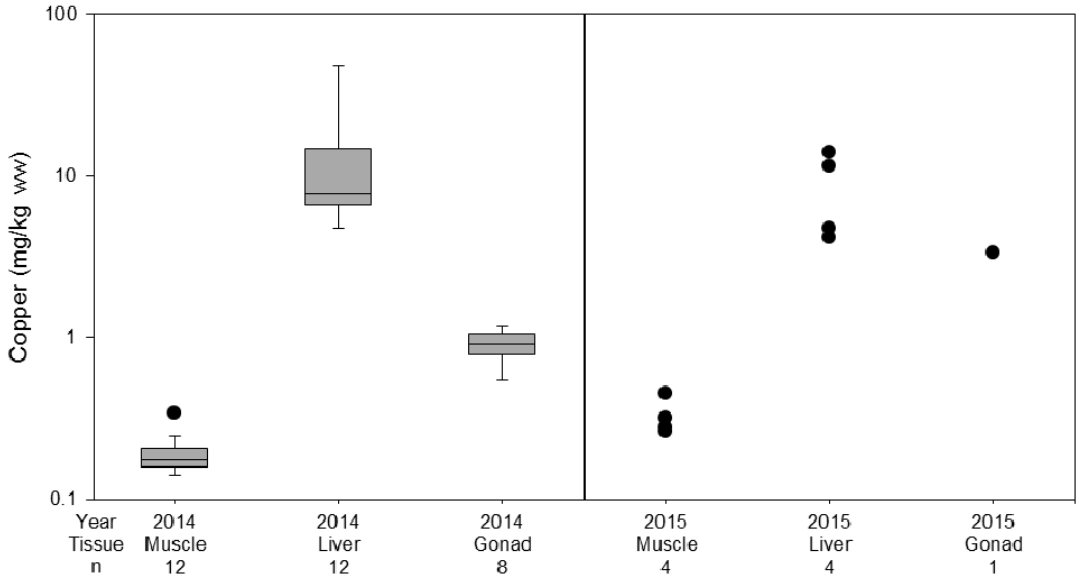
Figure 23: Copper Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 24: Copper Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

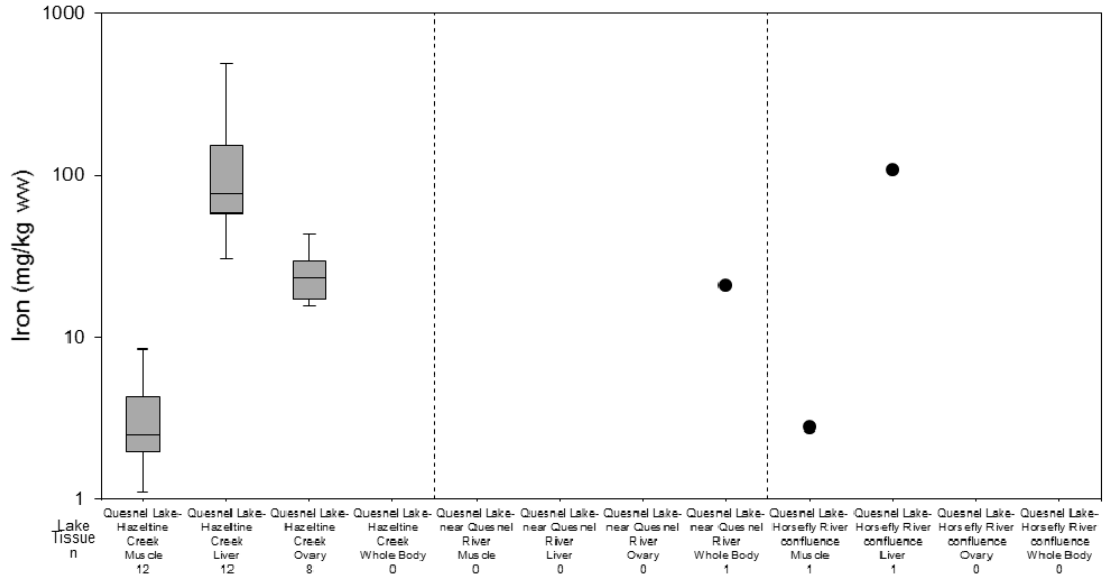


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

1.9 Iron

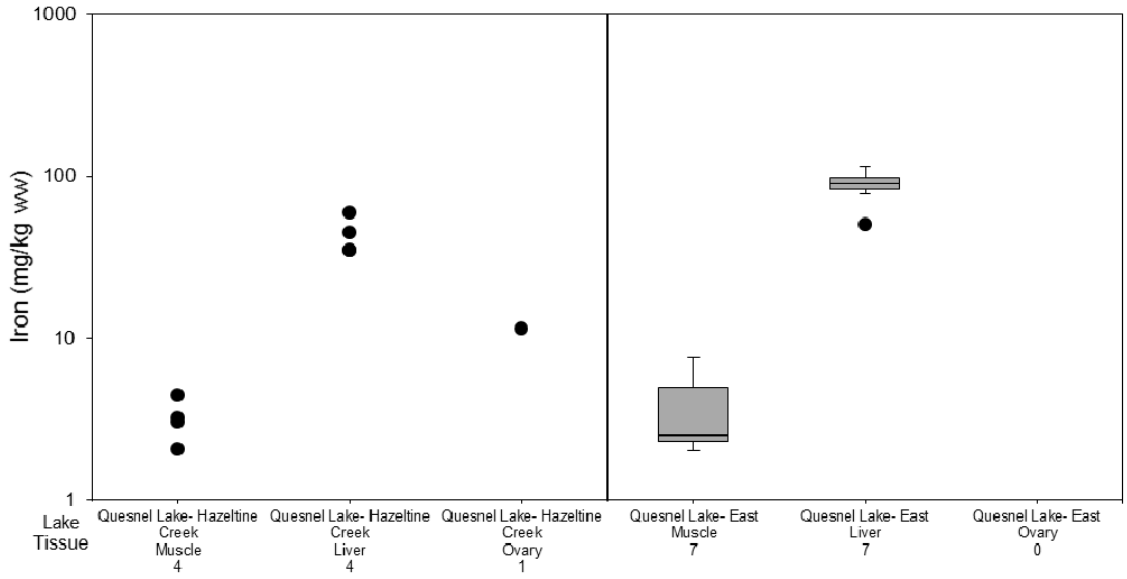
Figure 25: Iron Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

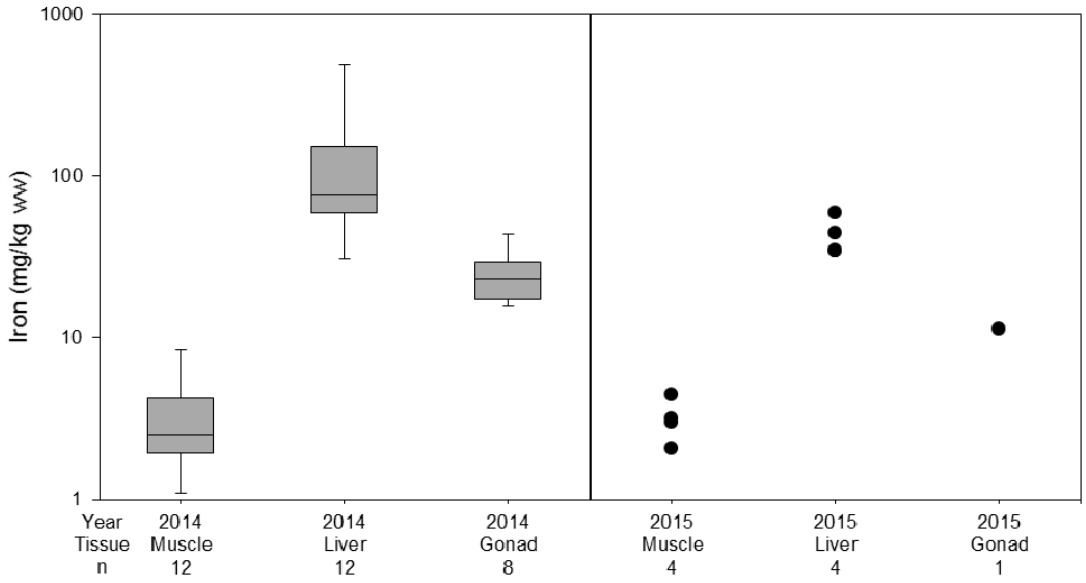
Figure 26: Iron Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 27: Iron Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

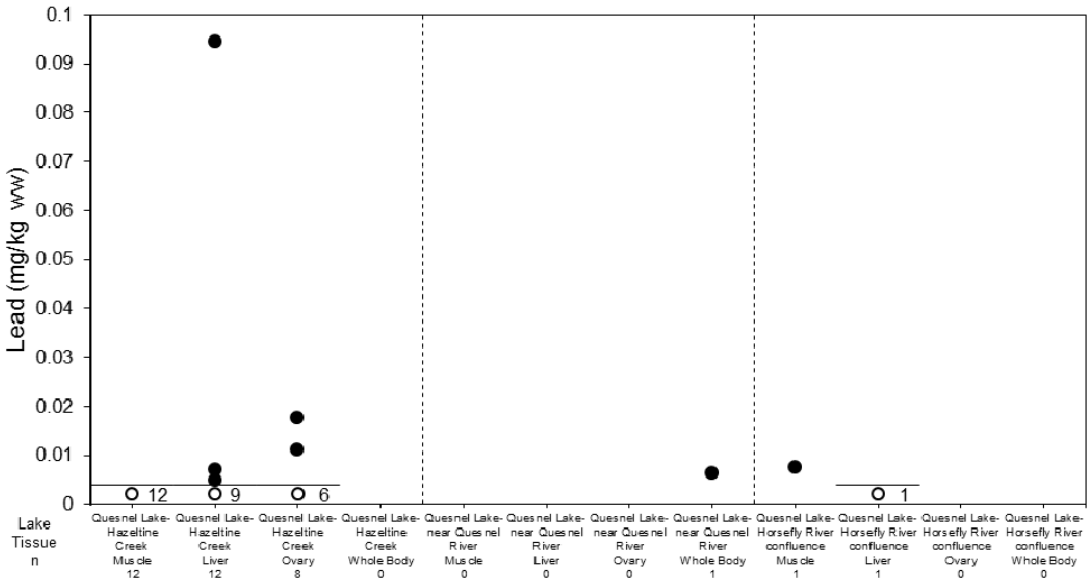


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

1.10 Lead

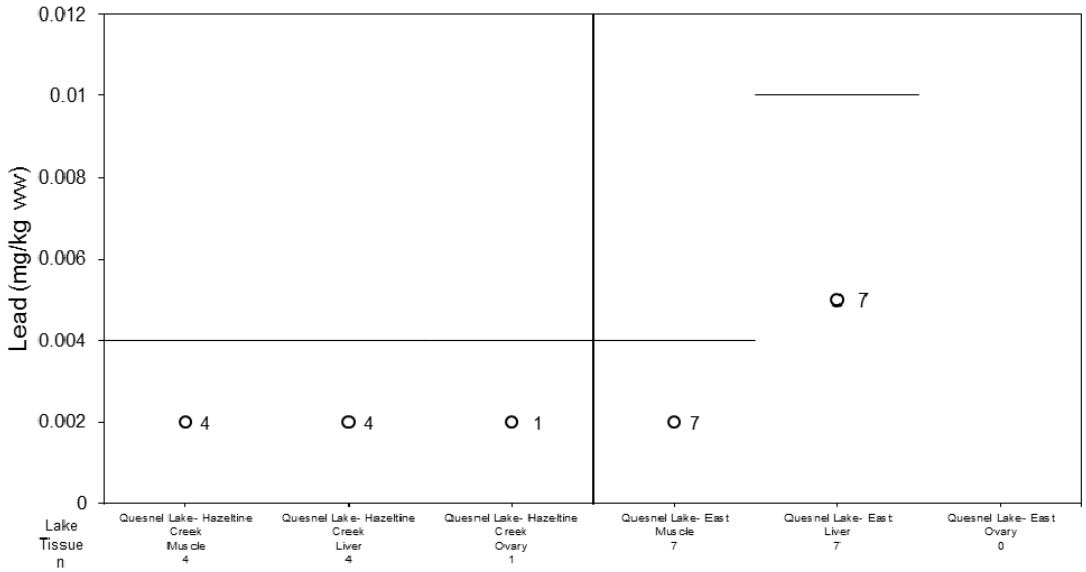
Figure 28: Lead Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

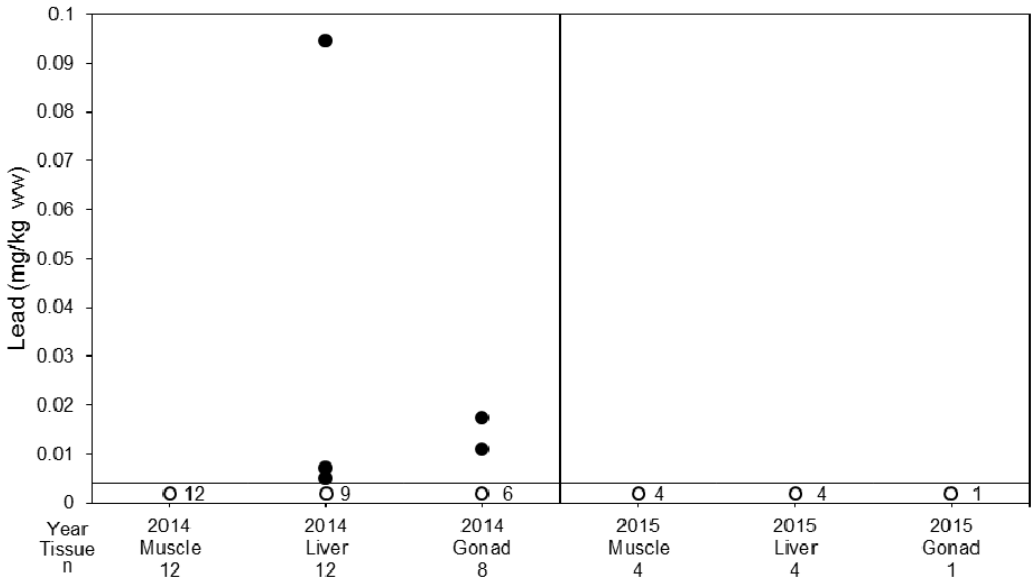
Figure 29: Lead Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 30: Lead Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

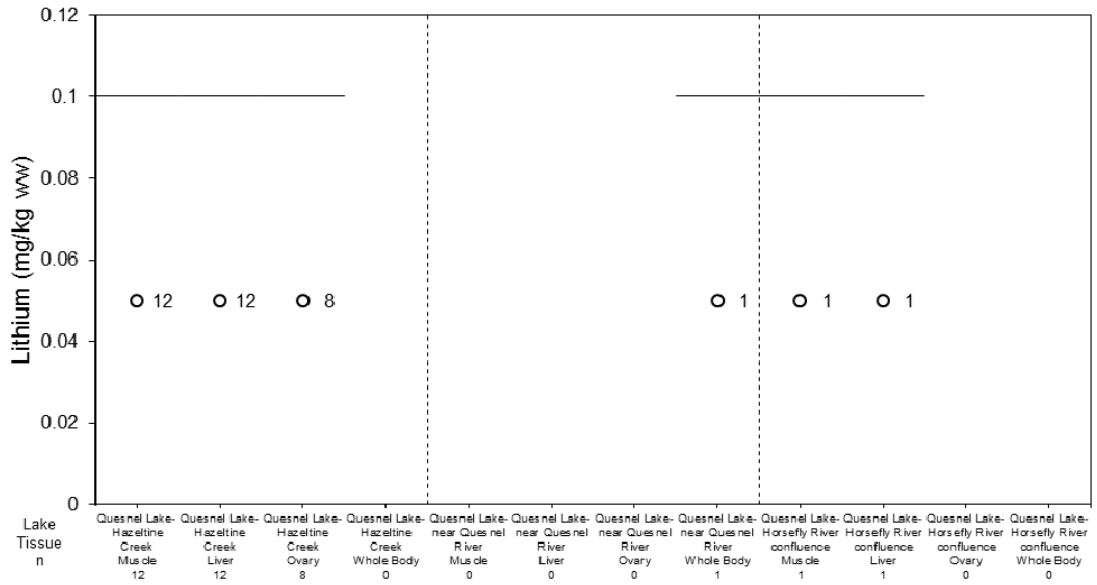


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

1.11 Lithium

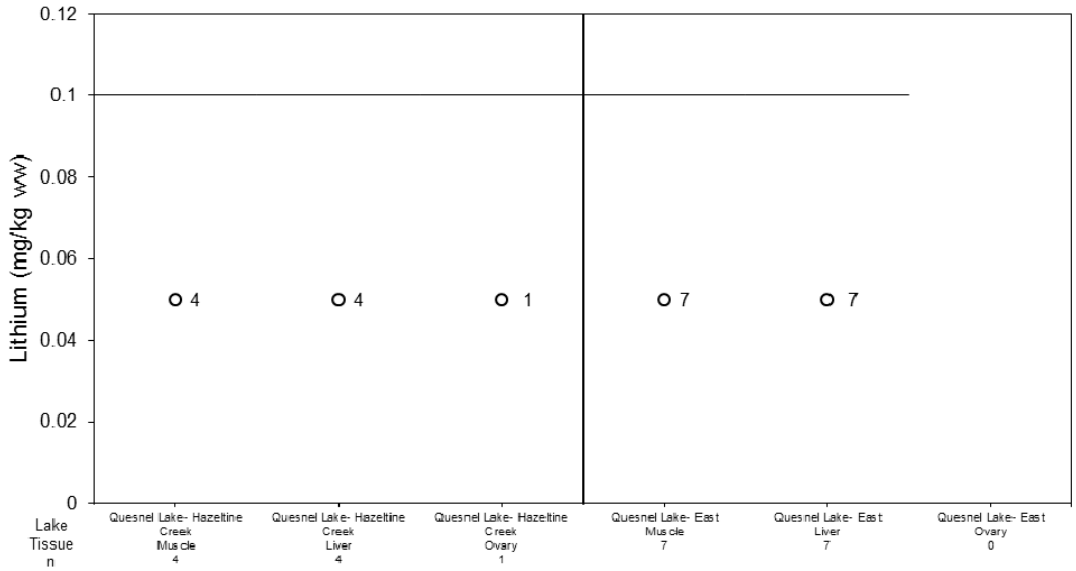
Figure 31: Lithium Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

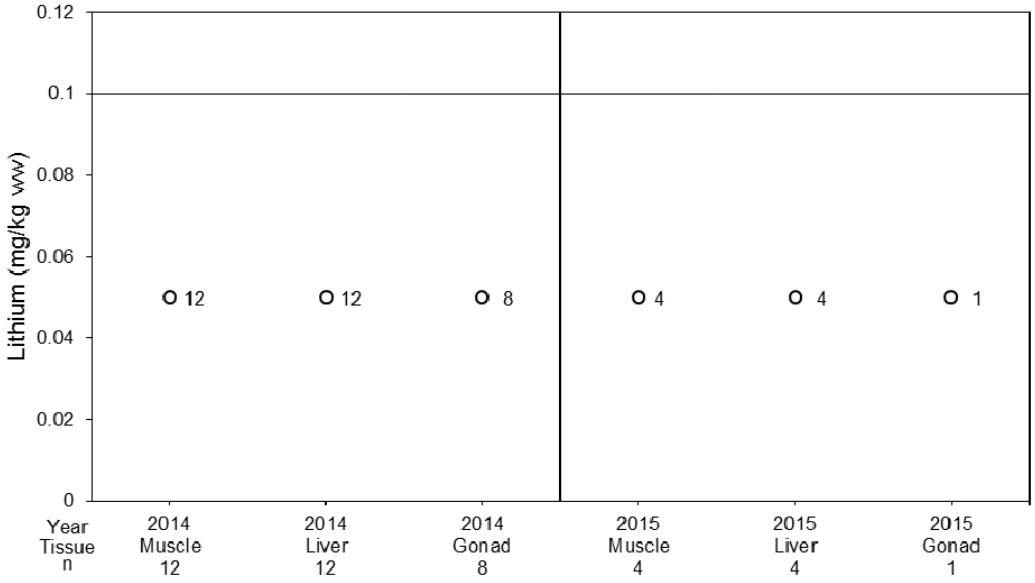
Figure 32: Lithium Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 33: Lithium Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

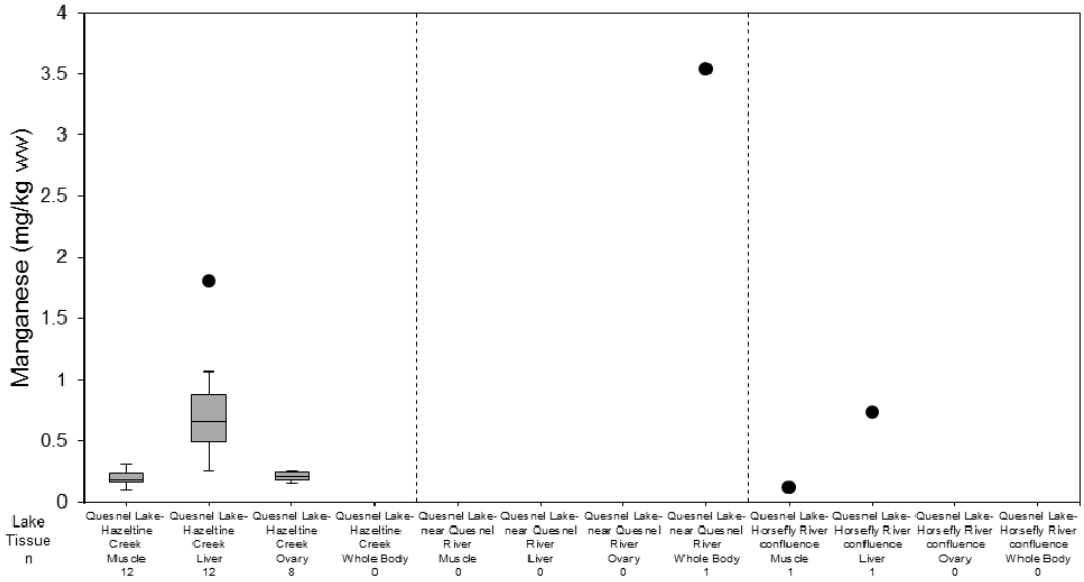


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

1.12 Manganese

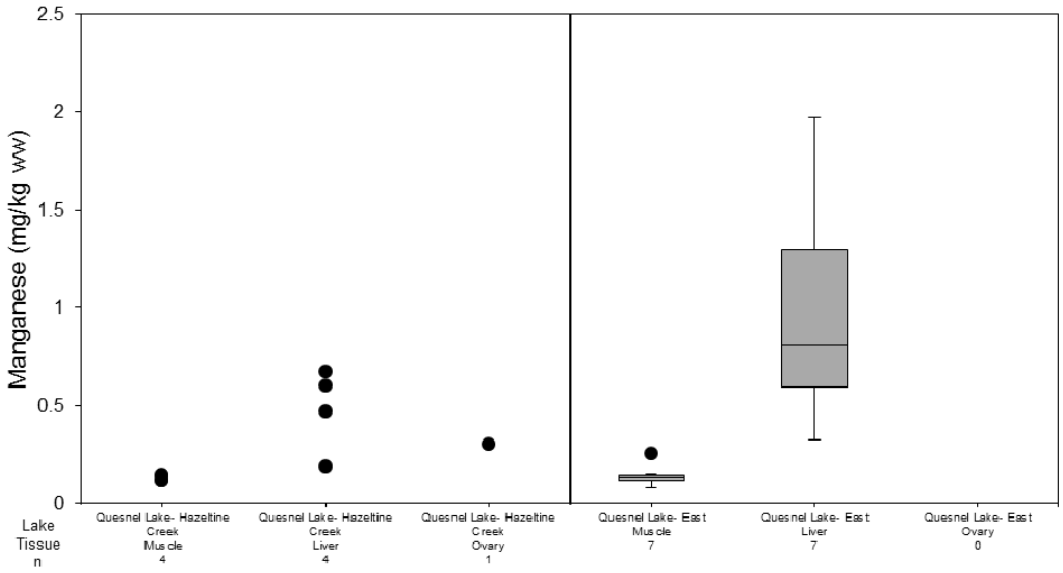
Figure 34: Manganese Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

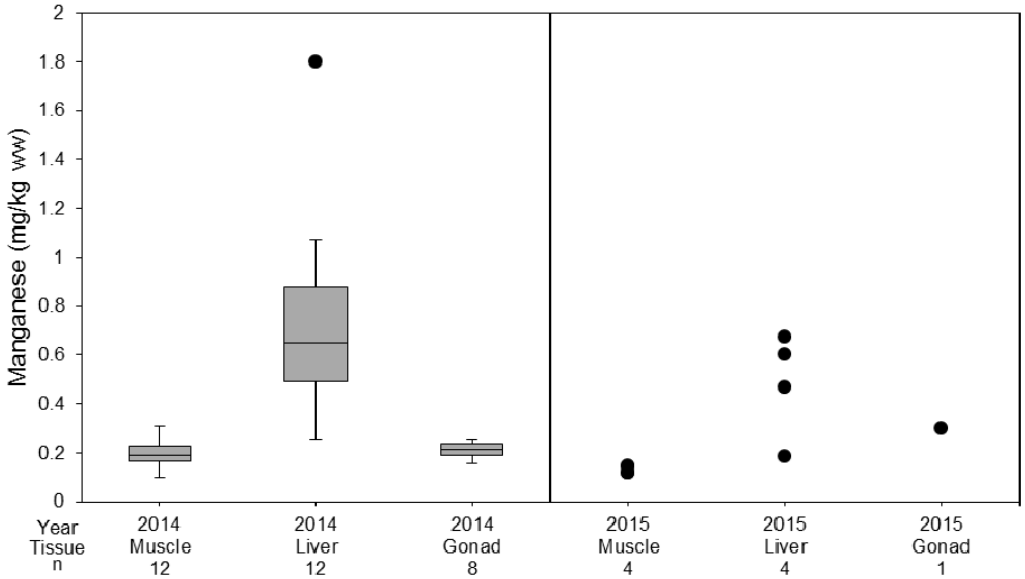
Figure 35: Manganese Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 36: Manganese Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

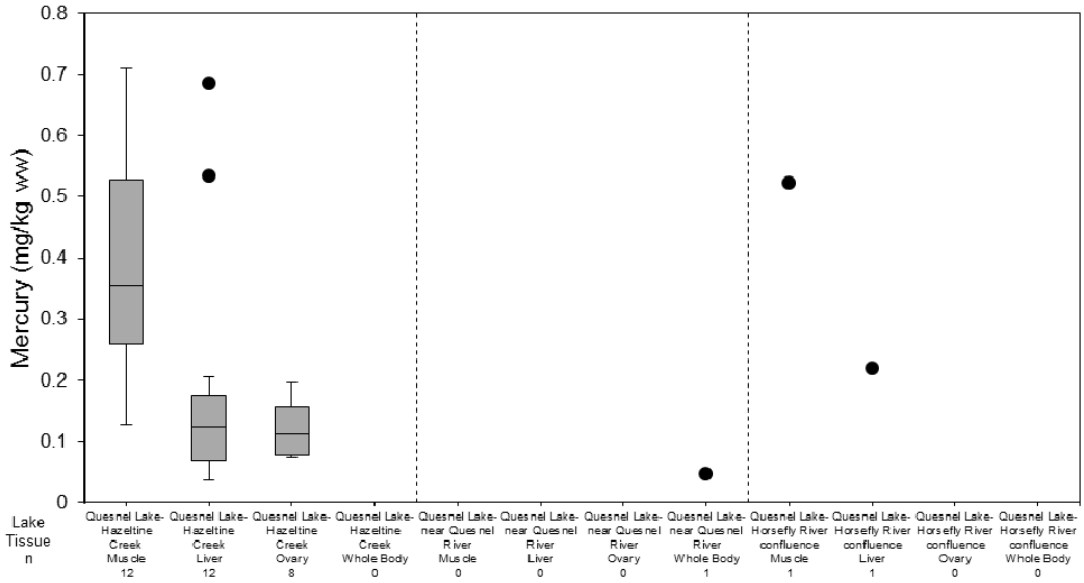


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

1.13 Mercury

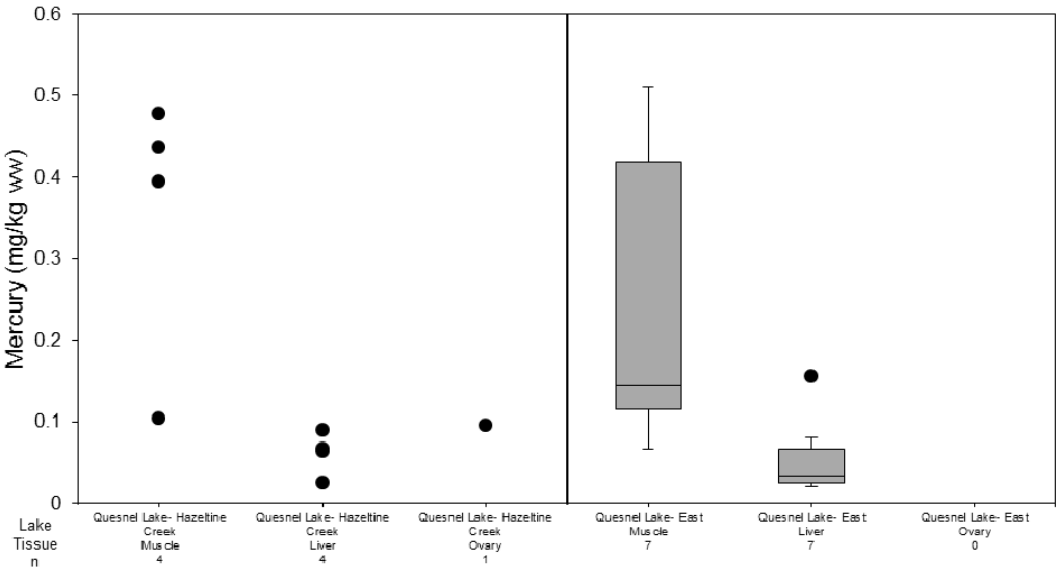
Figure 37: Mercury Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

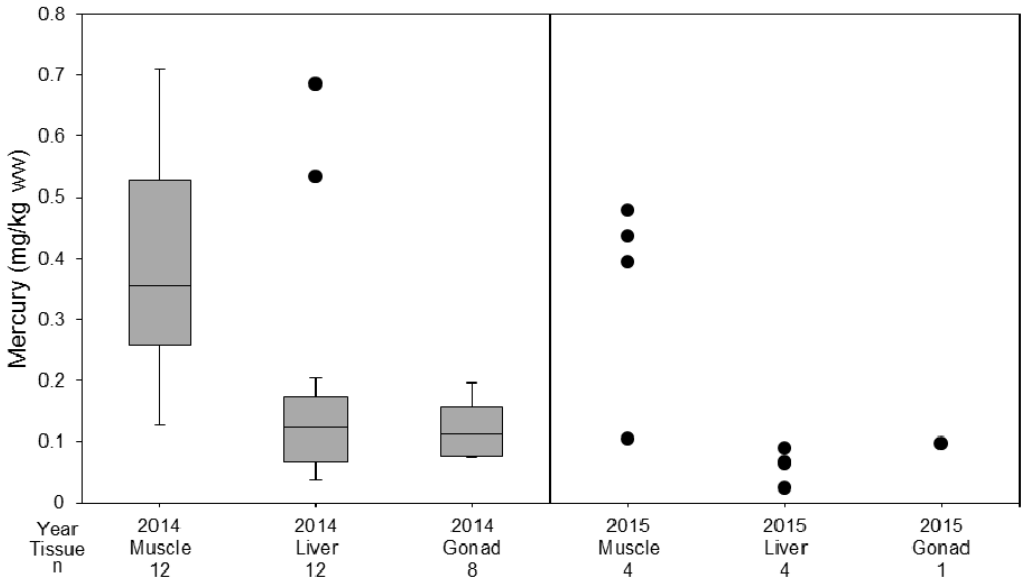
Figure 38: Mercury Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 39: Mercury Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

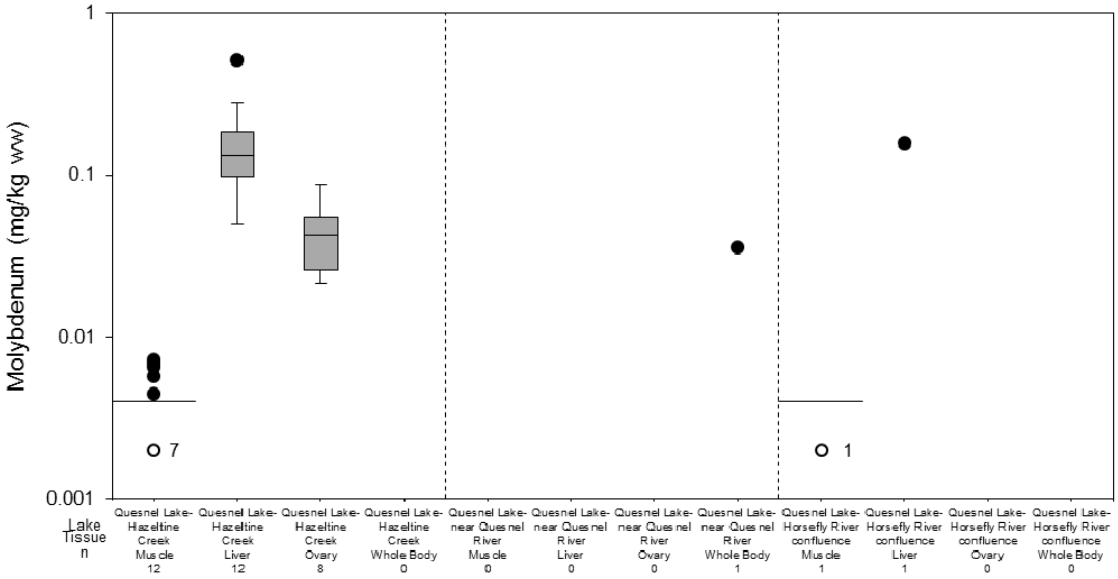


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

1.14 Molybdenum

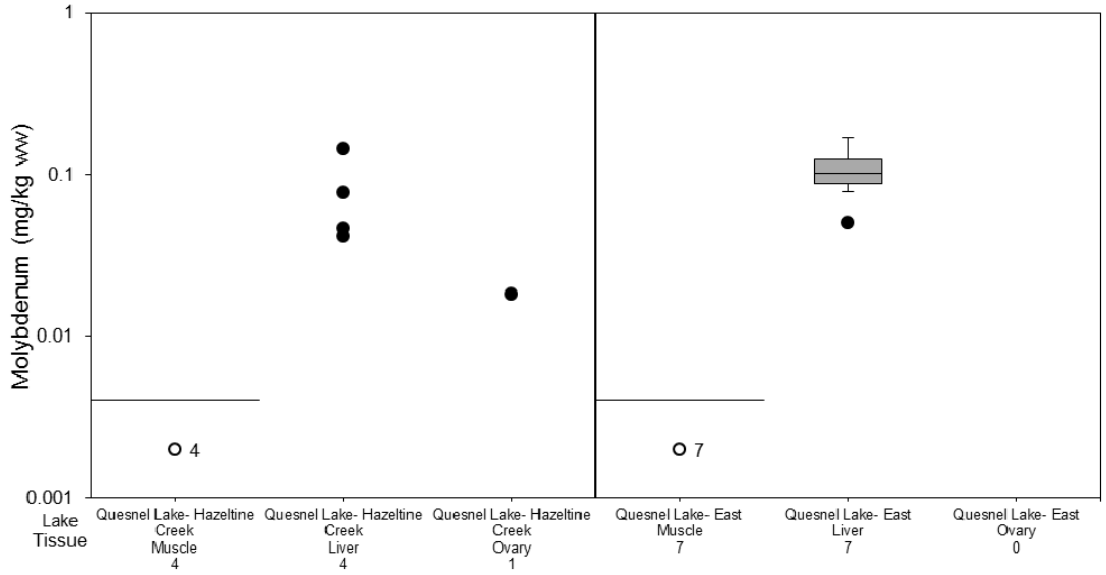
Figure 40: Molybdenum Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

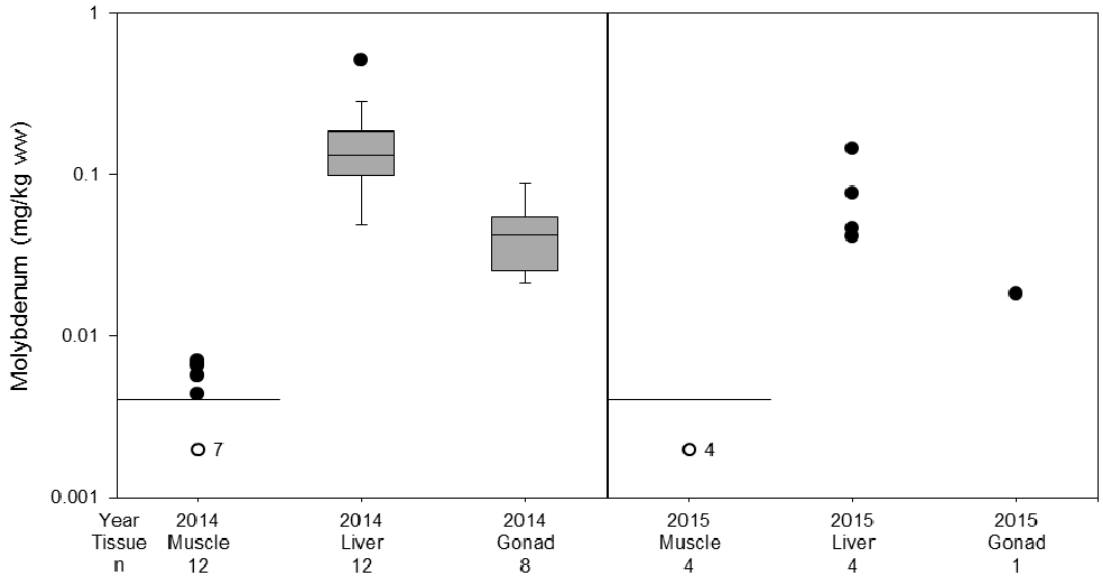
Figure 41: Molybdenum Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 42: Molybdenum Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

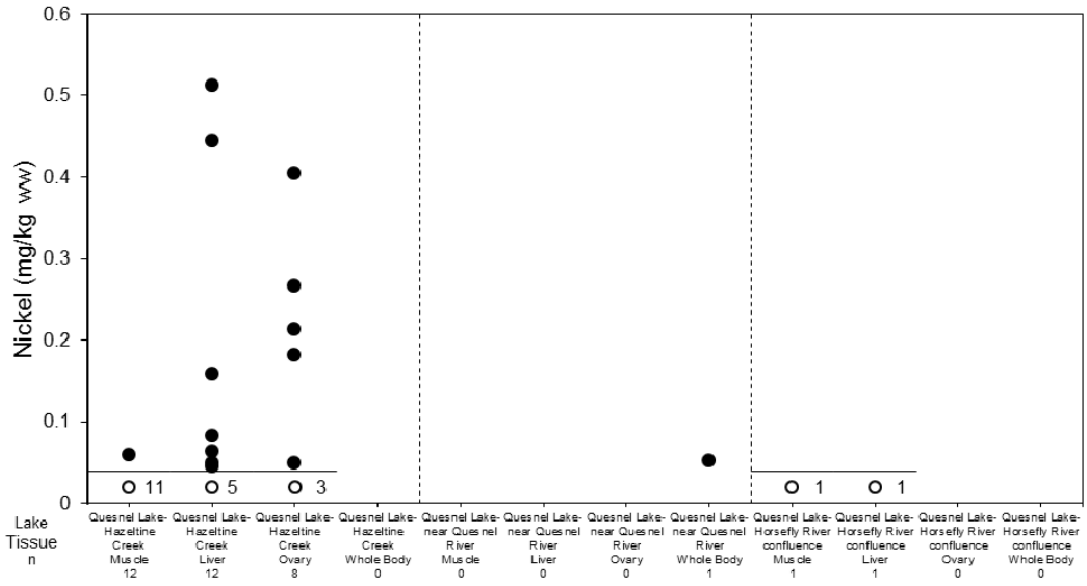


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

1.15 Nickel

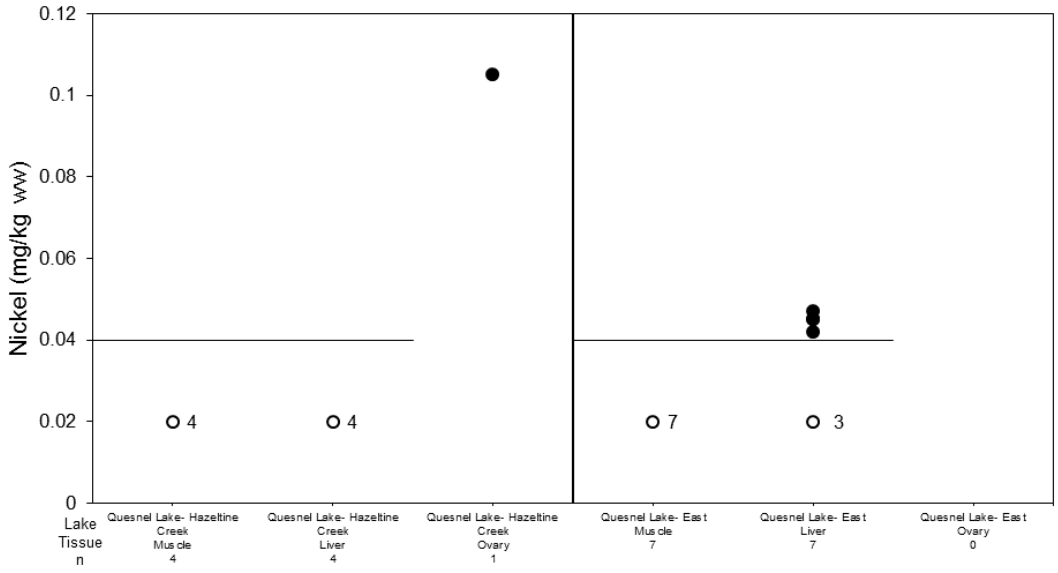
Figure 43: Nickle Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

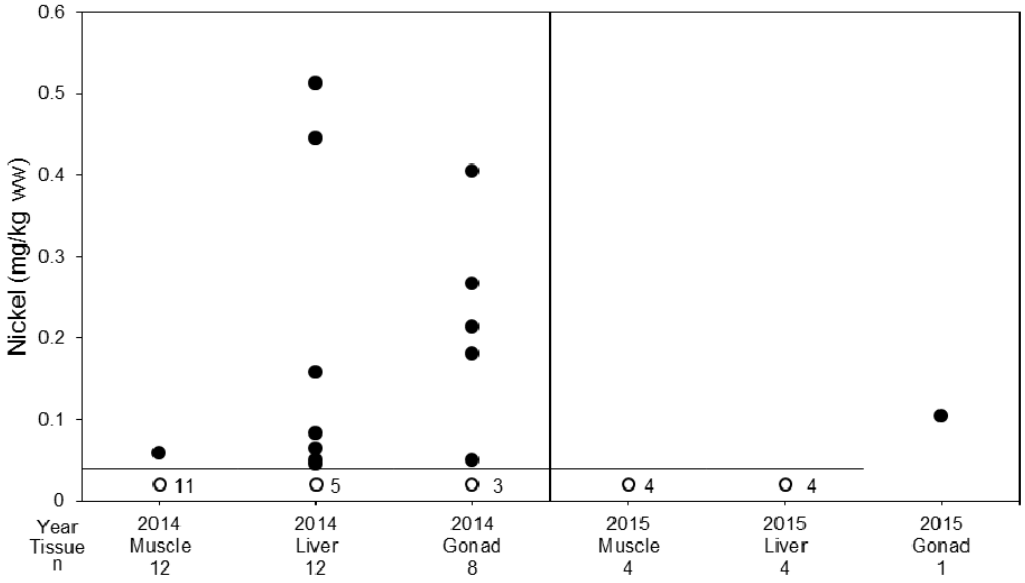
Figure 44: Nickle Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 45: Nickle Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

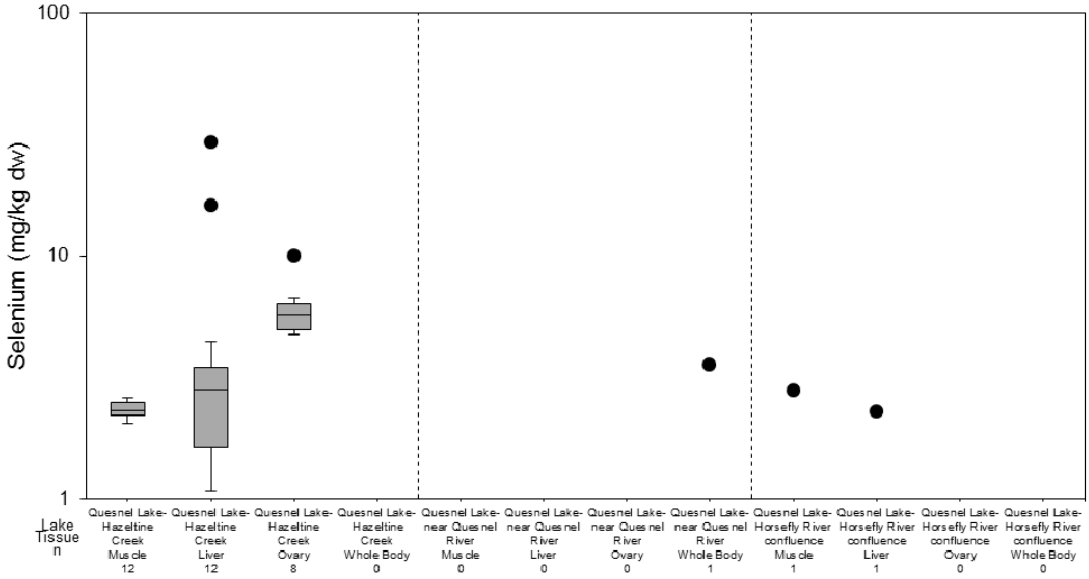


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

1.16 Selenium

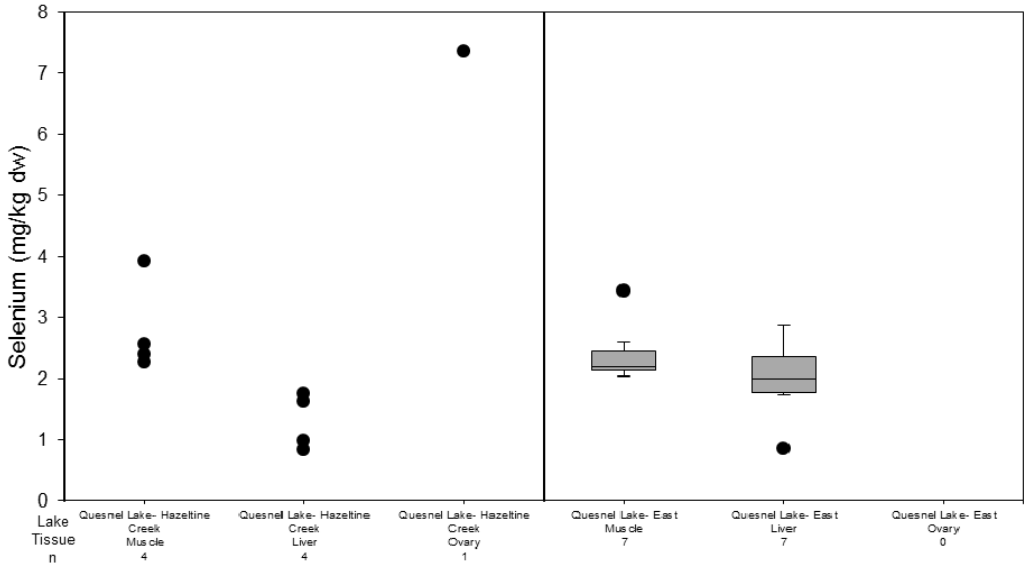
Figure 46: Selenium Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

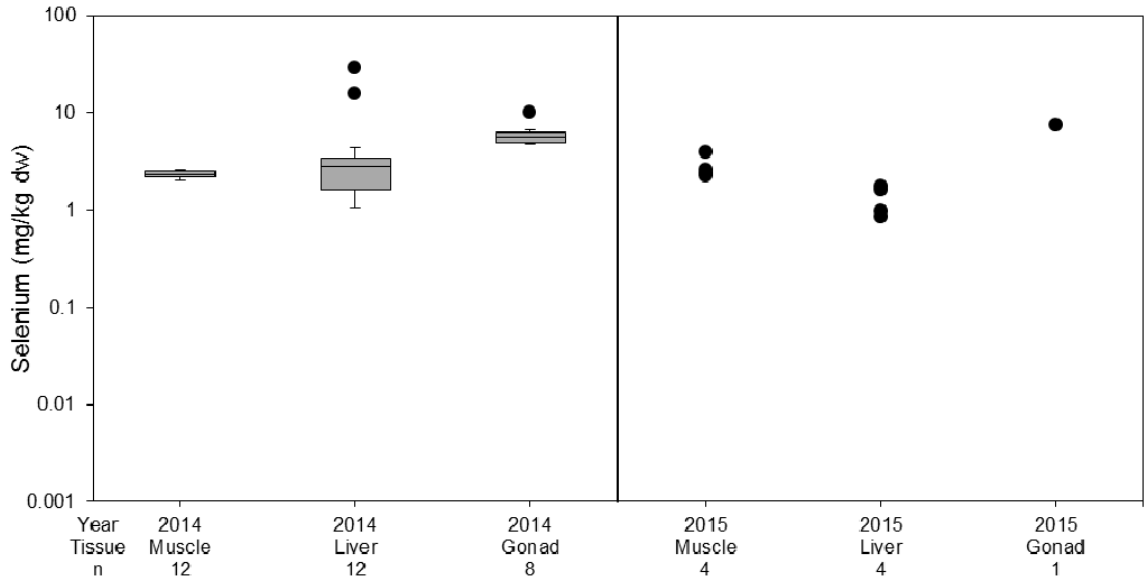
Figure 47: Selenium Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 48: Selenium Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

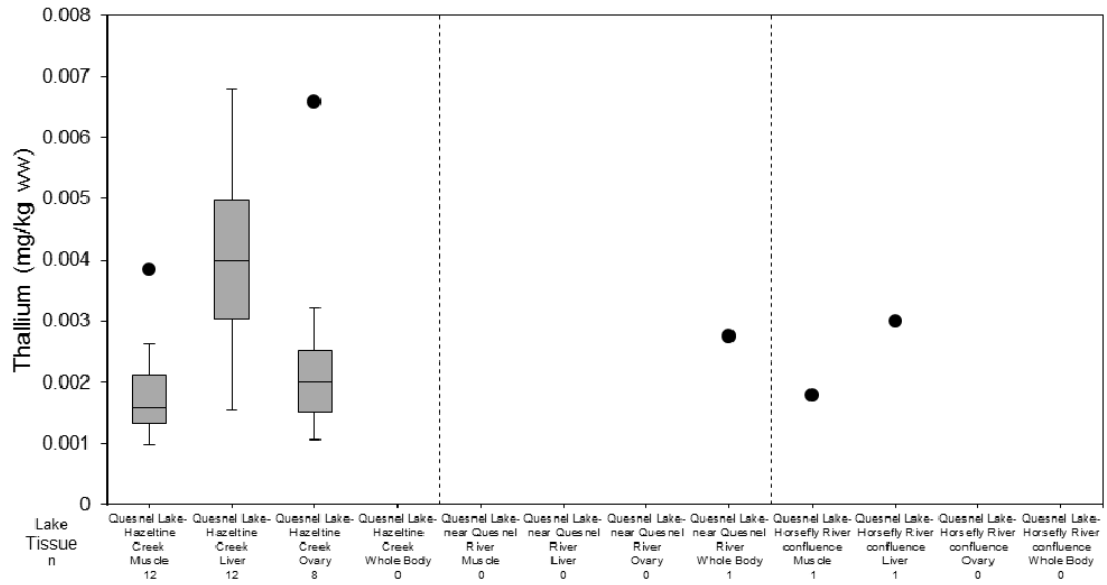


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

1.17 Thallium

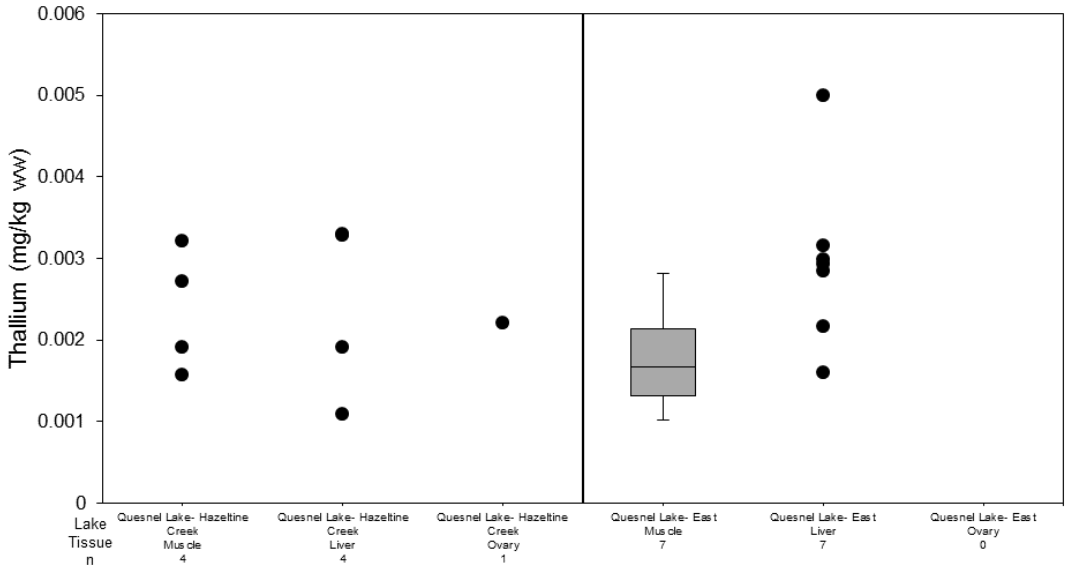
Figure 49: Thallium Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

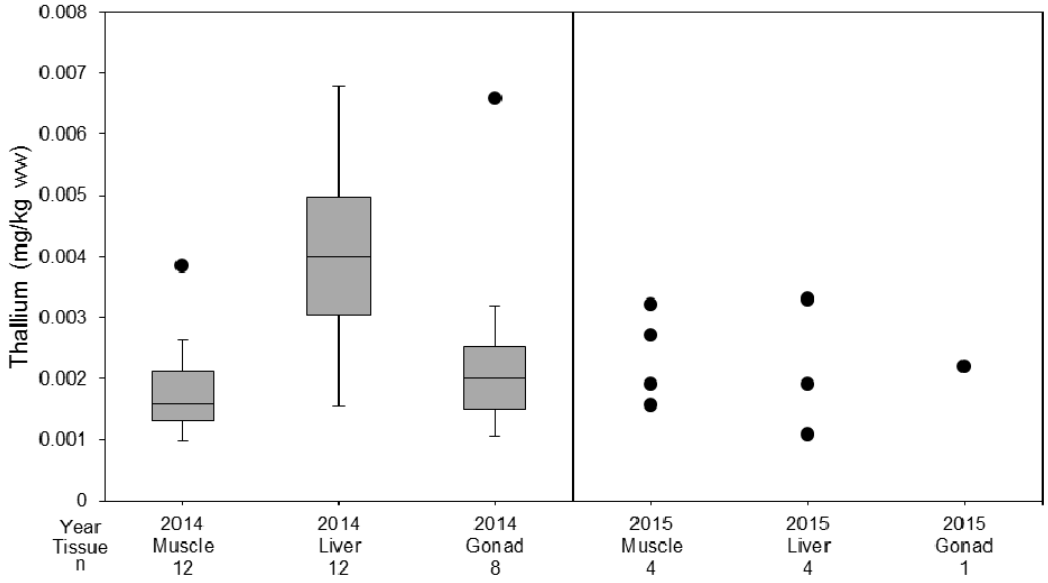
Figure 50: Thallium Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 51: Thallium Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

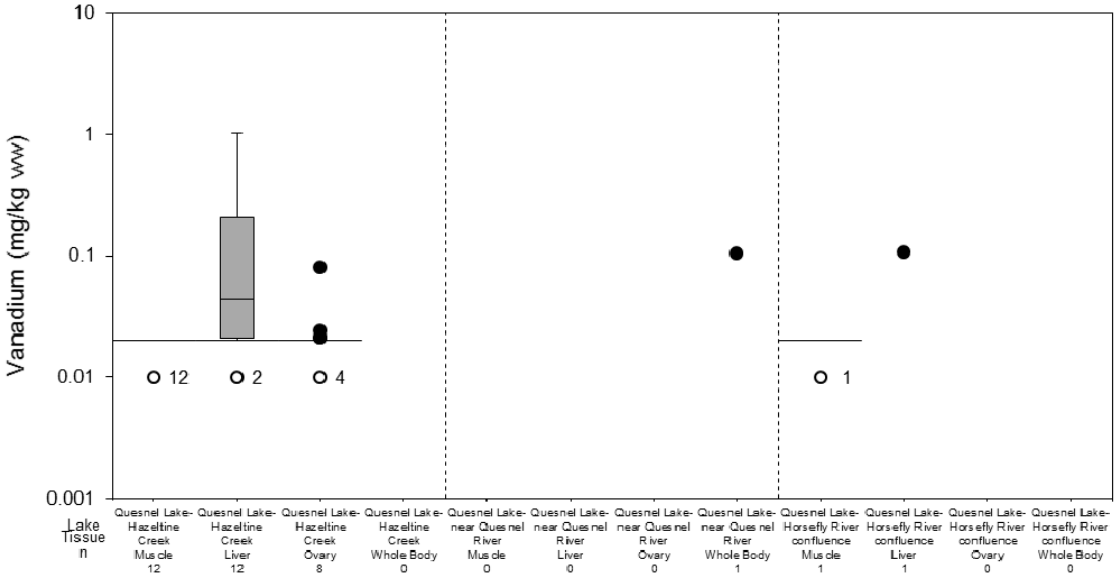


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

1.18 Vanadium

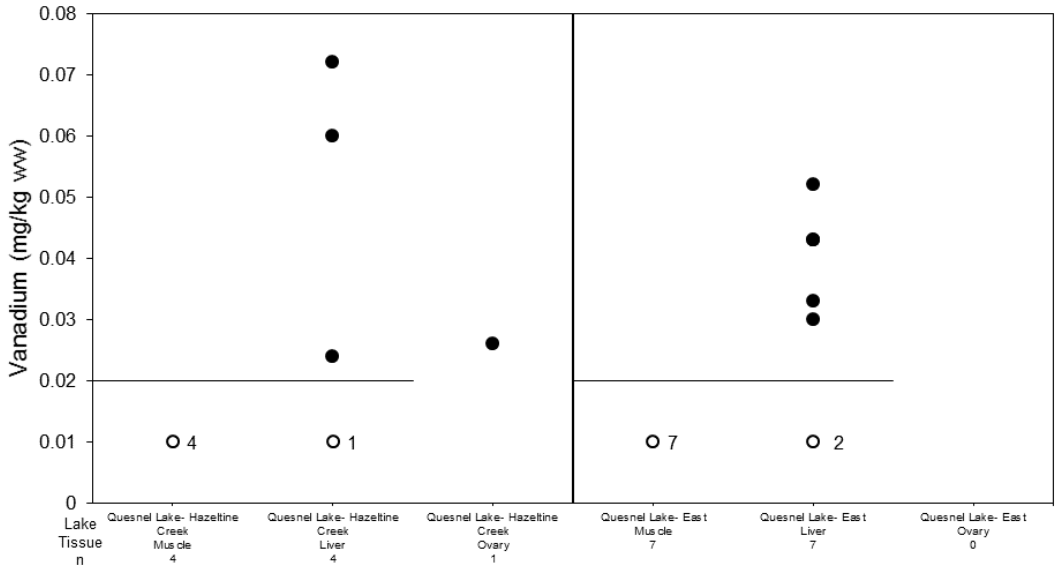
Figure 52: Vanadium Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

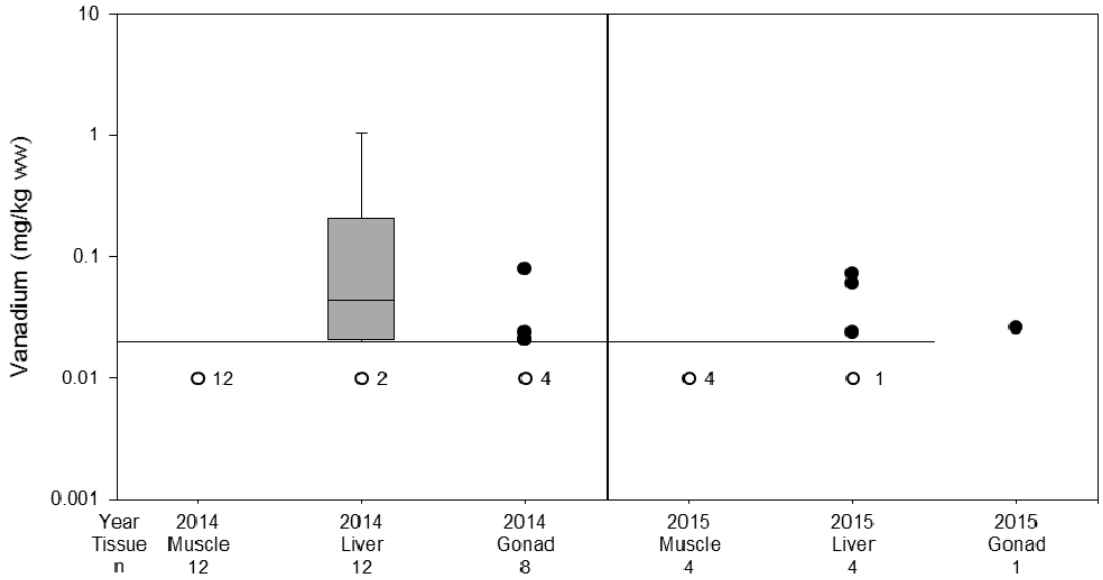
Figure 53: Vanadium Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 54: Vanadium Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

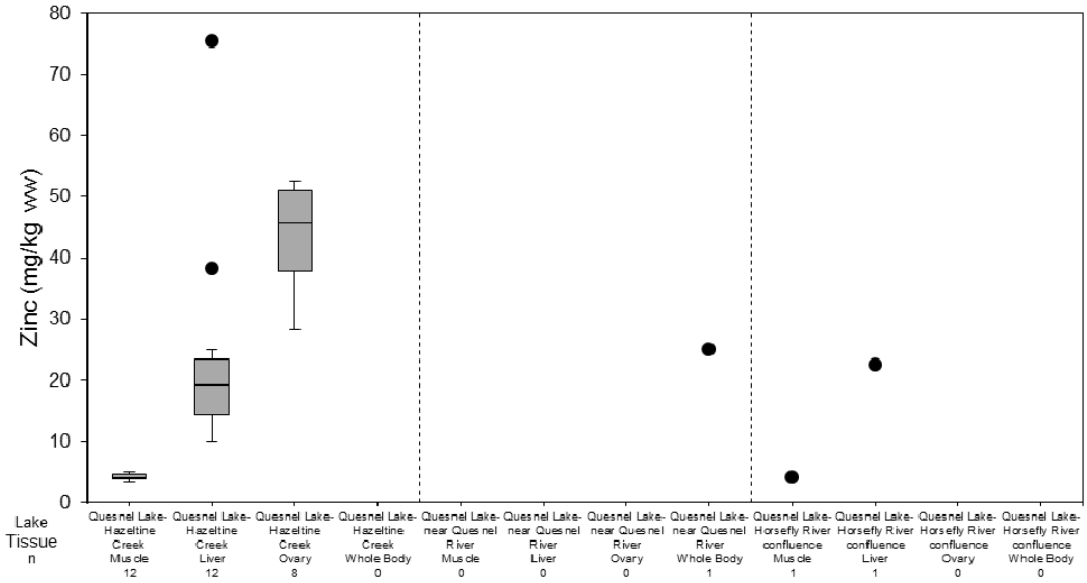


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

1.19 Zinc

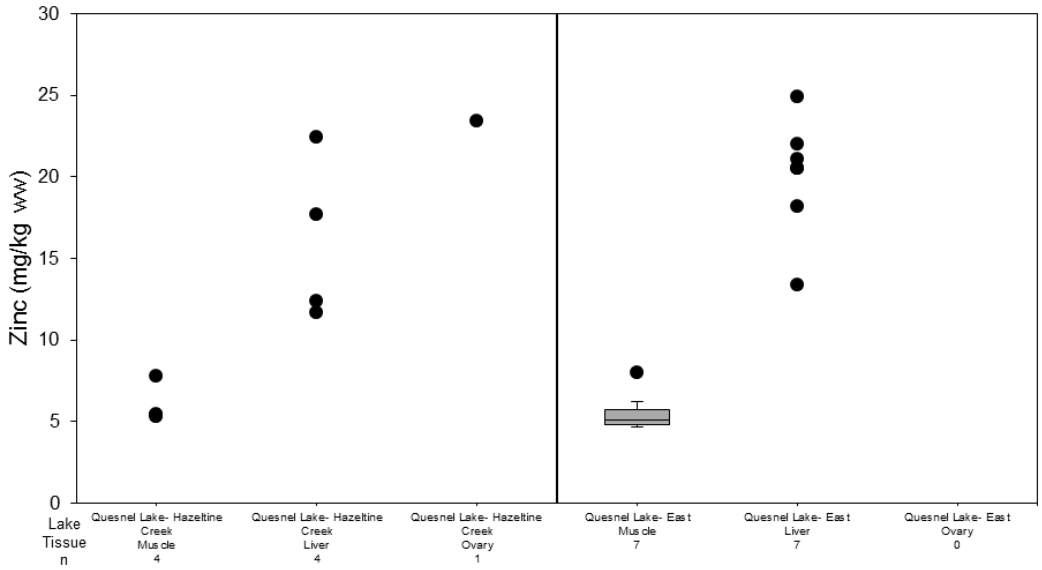
Figure 55: Zinc Concentrations in Burbot Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

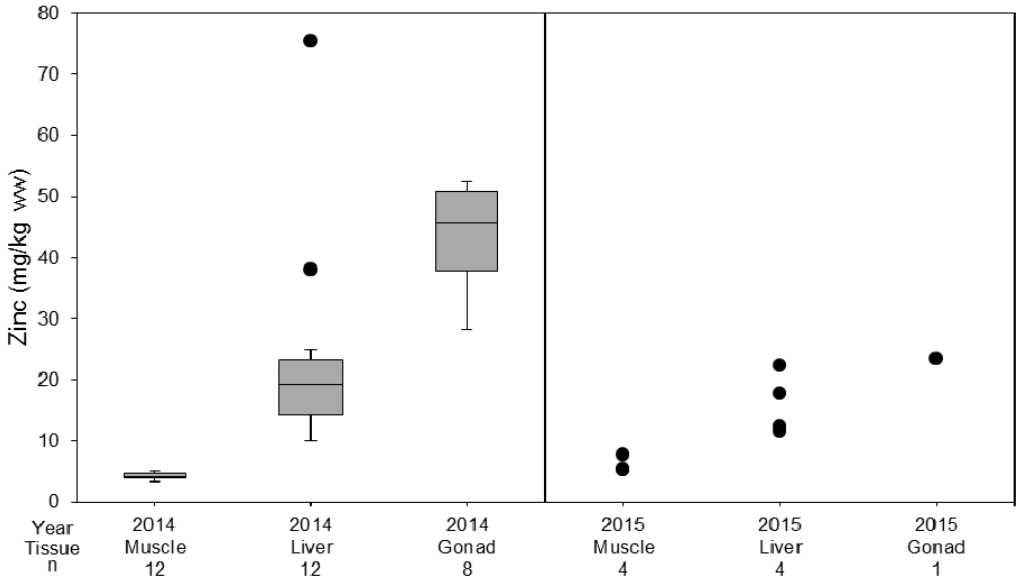
Figure 56: Zinc Concentrations in Burbot Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 57: Zinc Concentrations in Burbot Tissues Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015



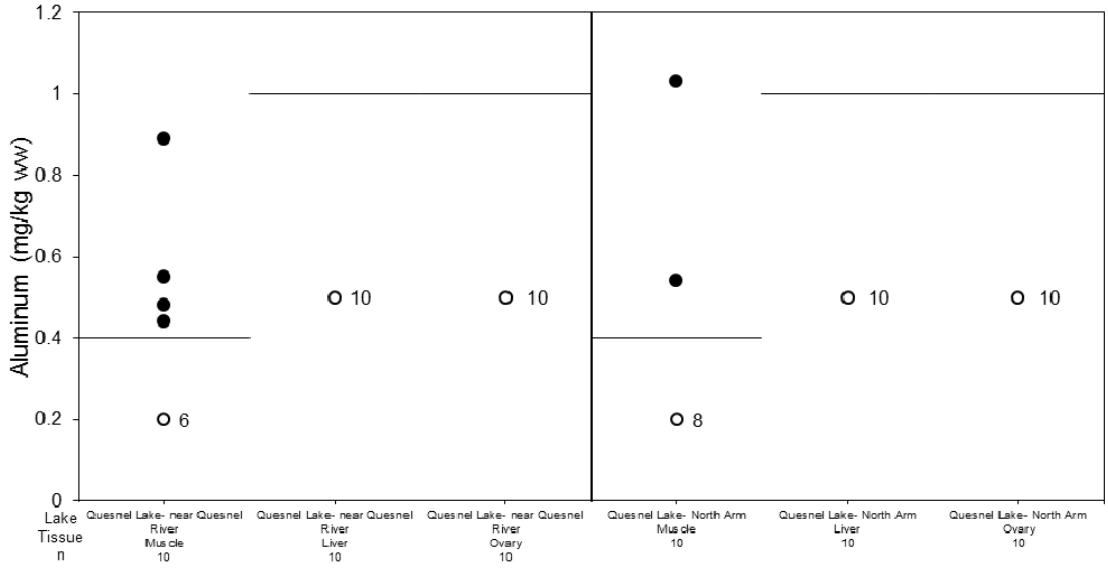
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.0 KOKANEE

2.1 Aluminum

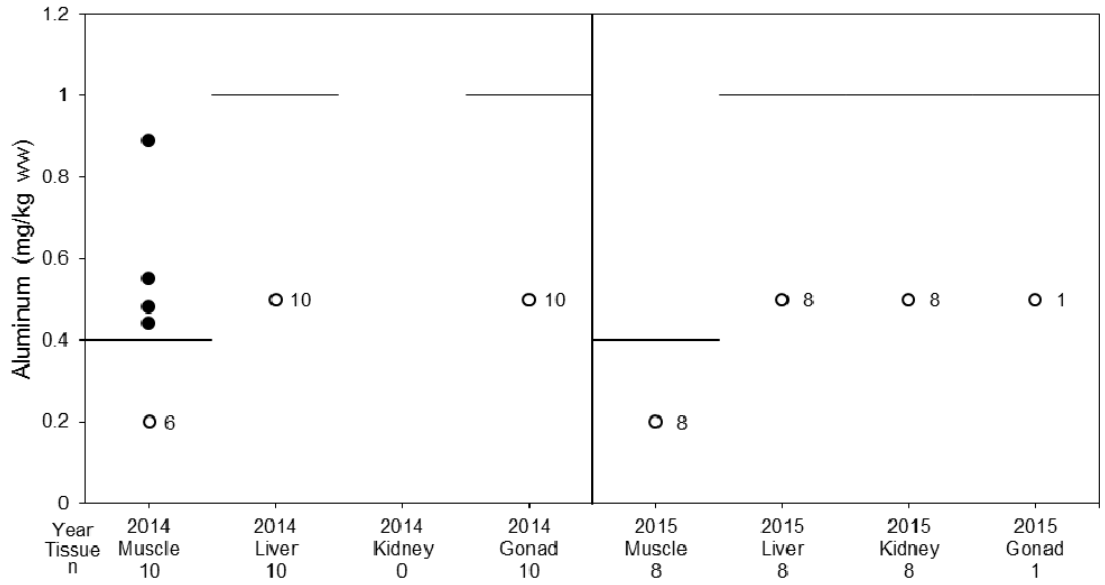
Figure 58: Aluminum Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 59: Aluminum Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

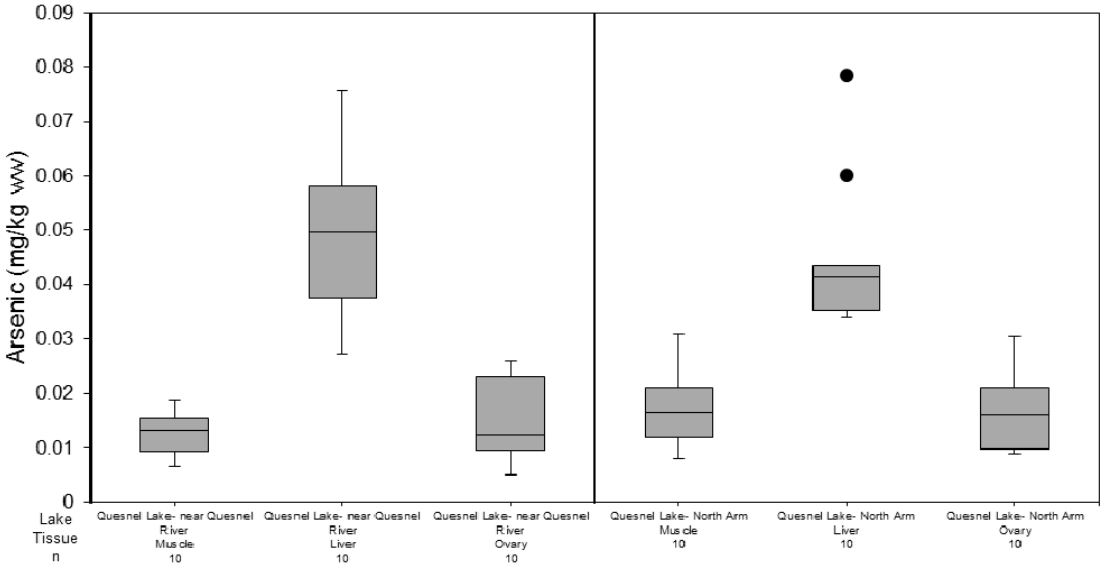


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.2 Arsenic

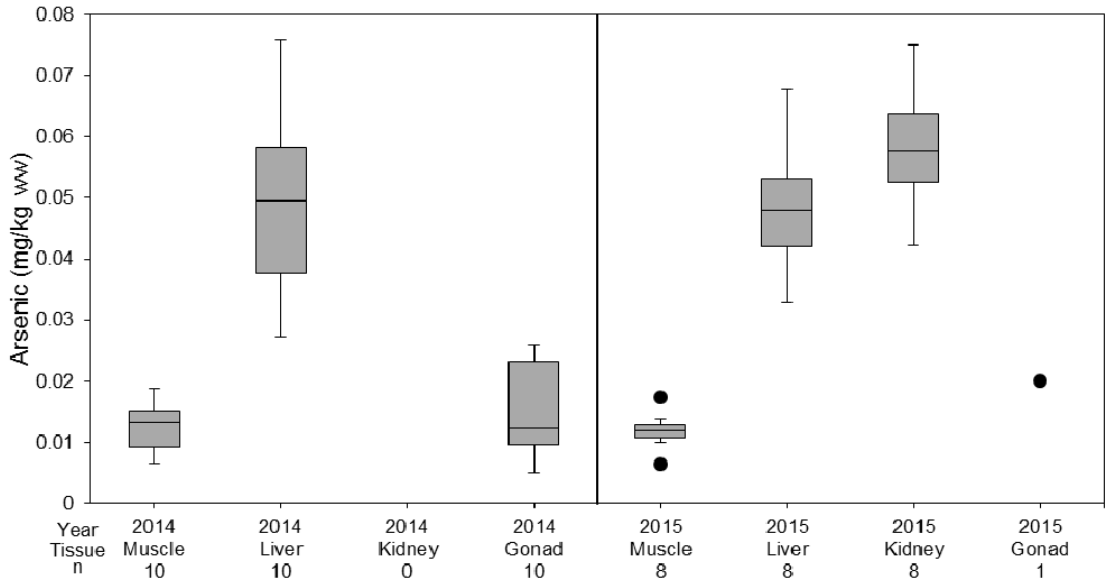
Figure 60: Arsenic Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 61: Arsenic Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

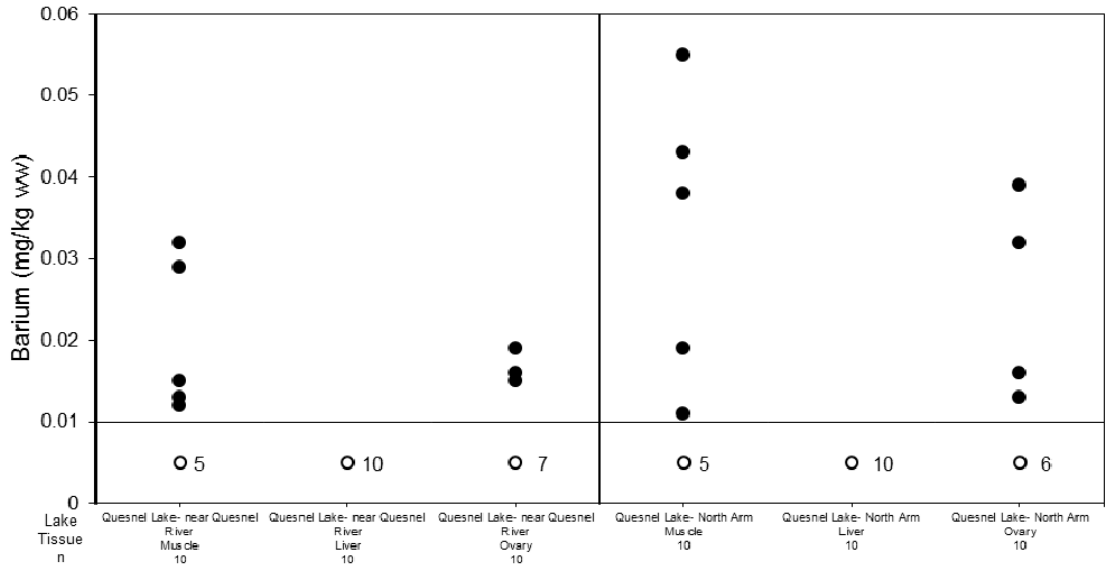


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.3 Barium

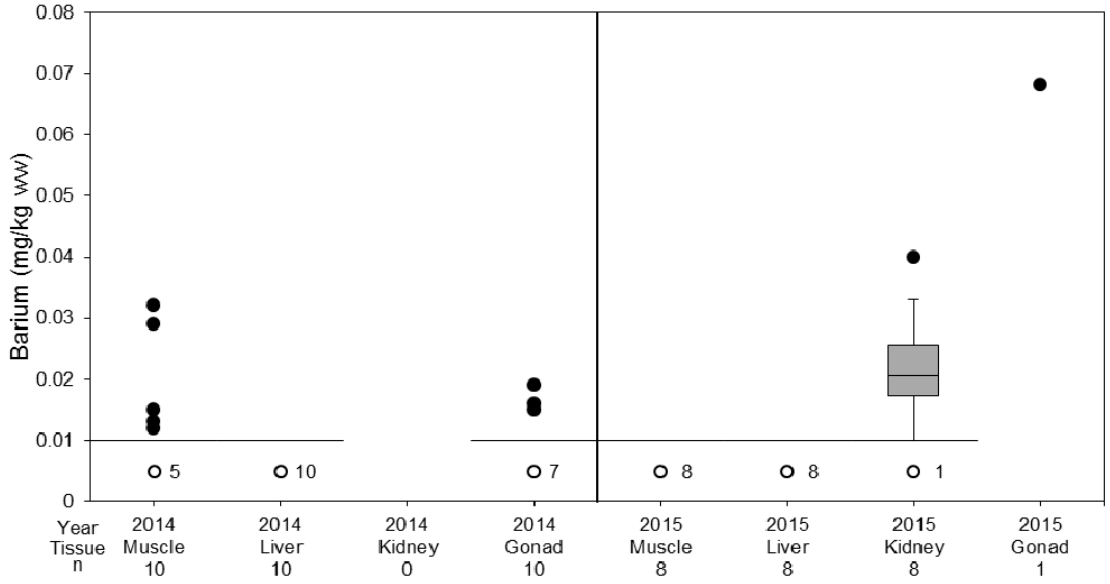
Figure 62: Barium Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 63: Barium Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

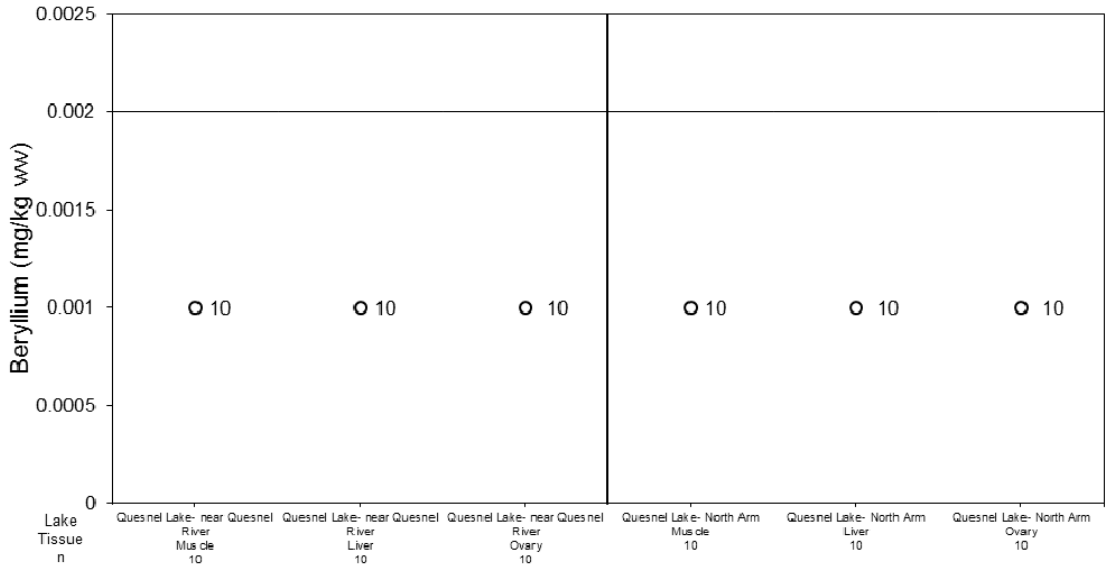


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.4 Beryllium

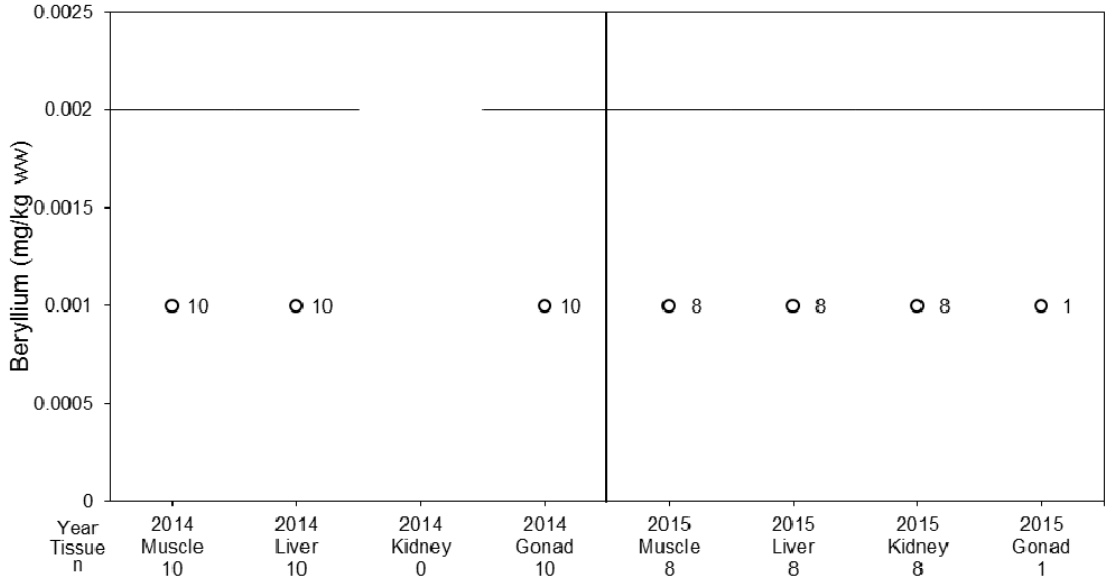
Figure 64: Beryllium Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 65: Beryllium Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

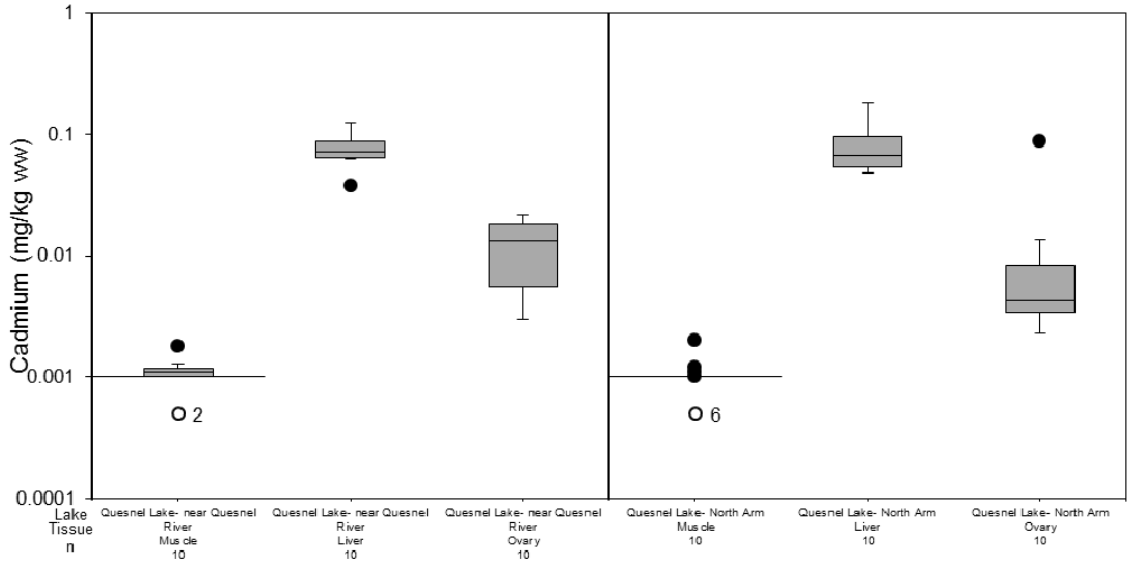


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.5 Cadmium

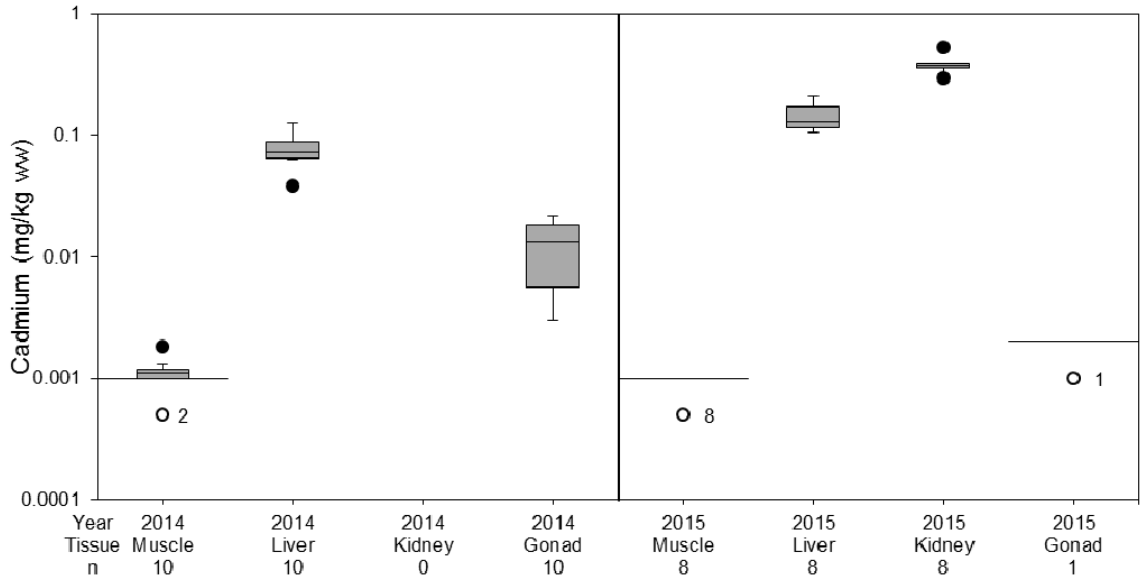
Figure 66: Cadmium Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 67: Cadmium Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

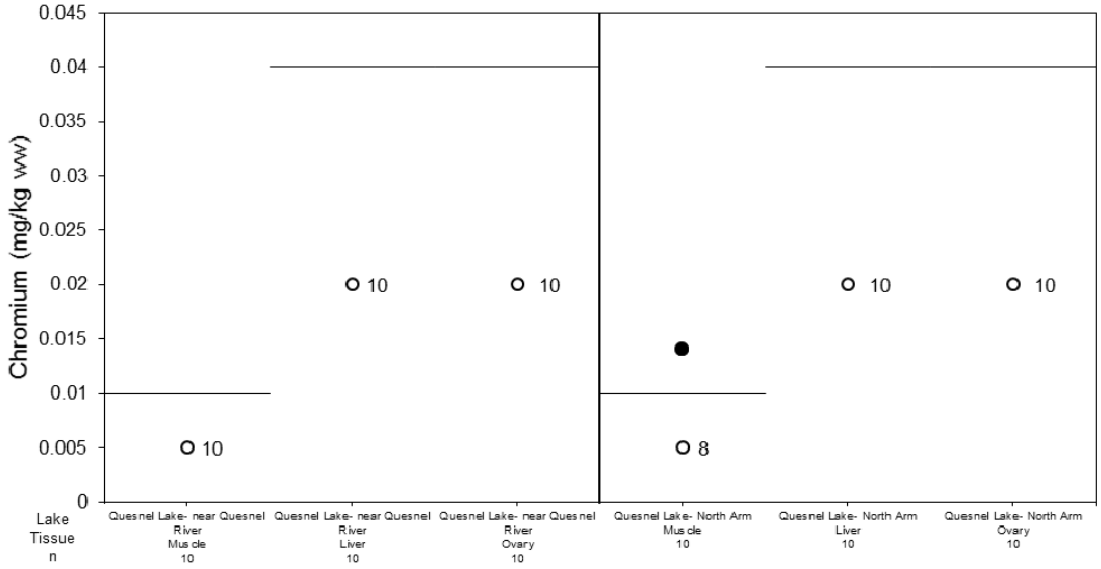


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

2.6 Chromium

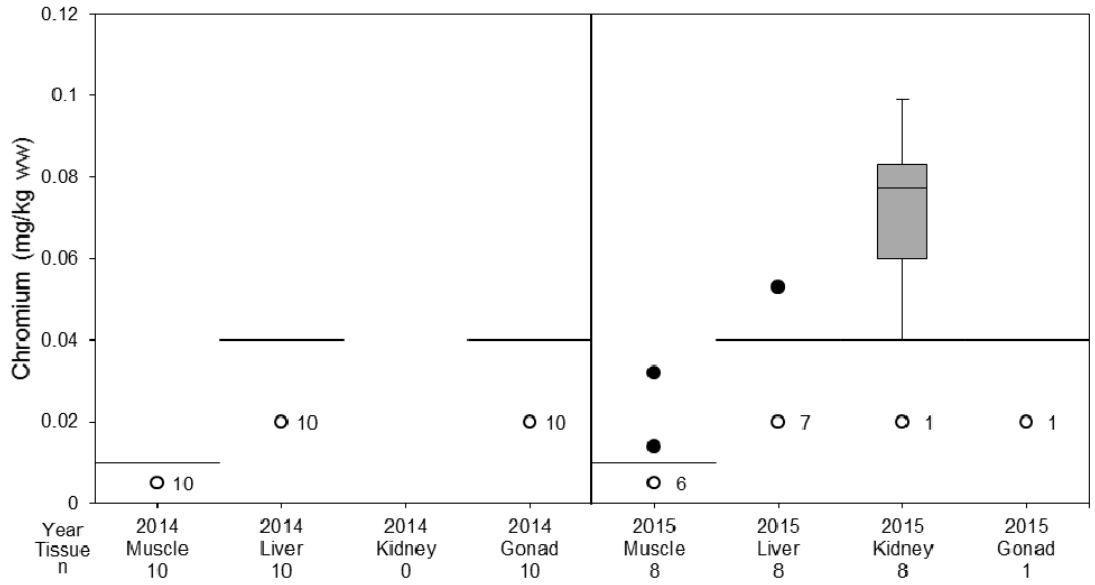
Figure 68: Chromium Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 69: Chromium Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

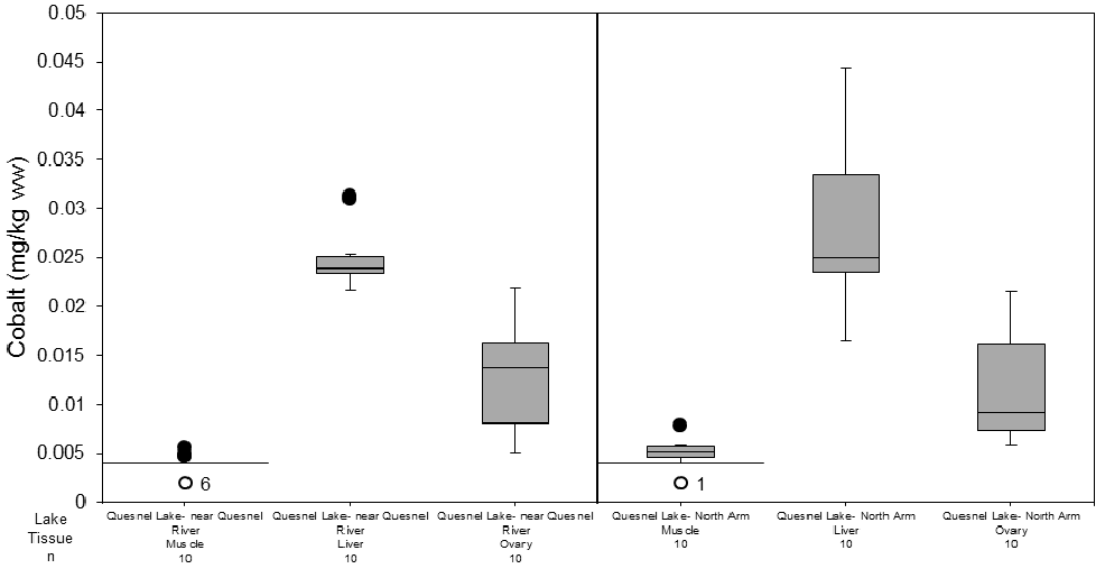


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.7 Cobalt

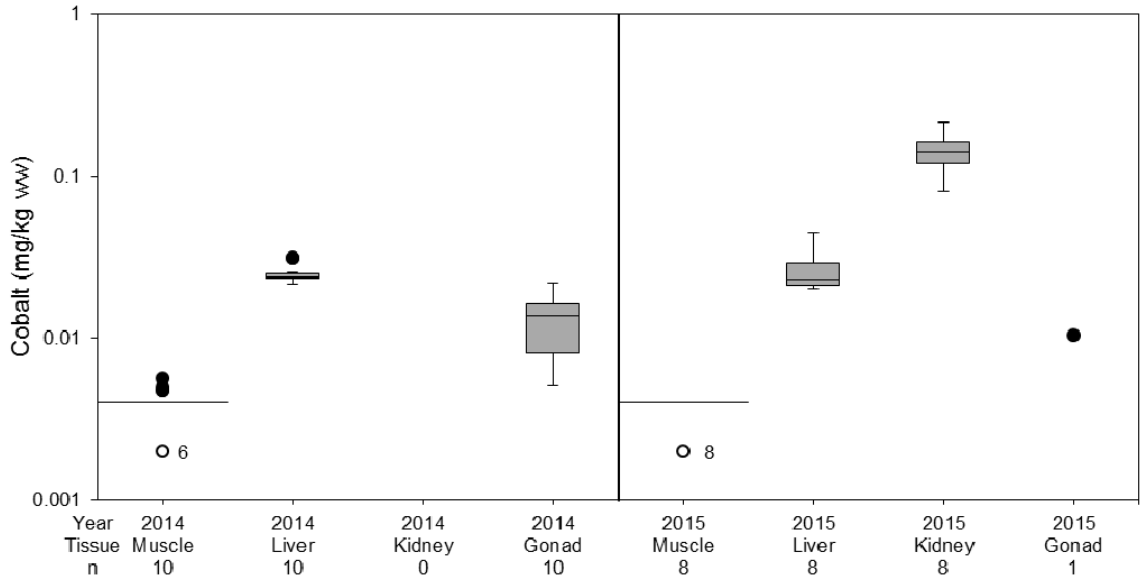
Figure 70: Cobalt Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 71: Cobalt Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

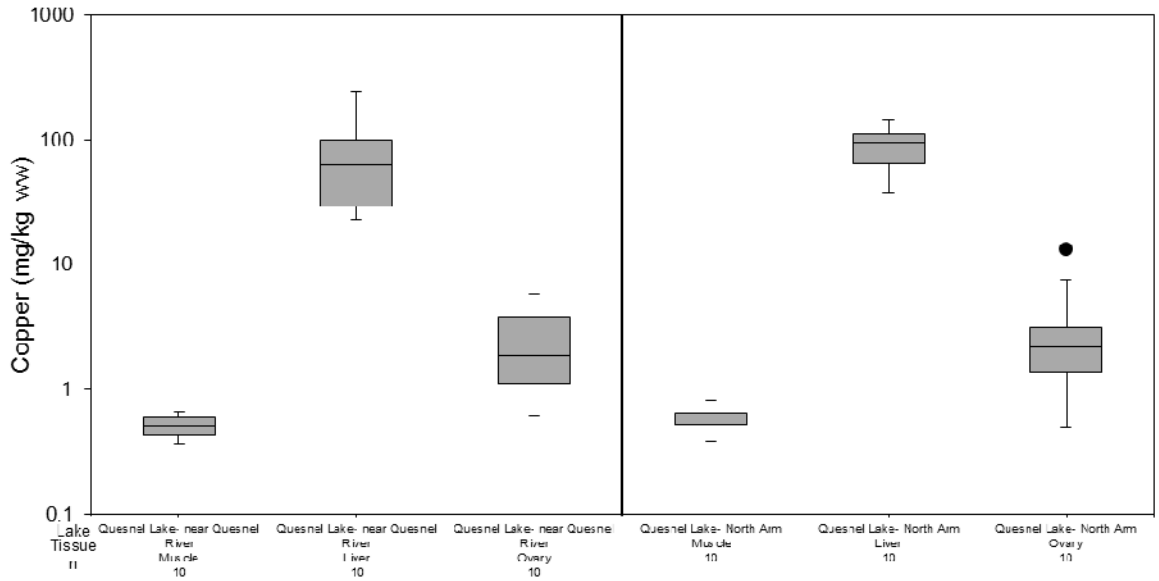


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

2.8 Copper

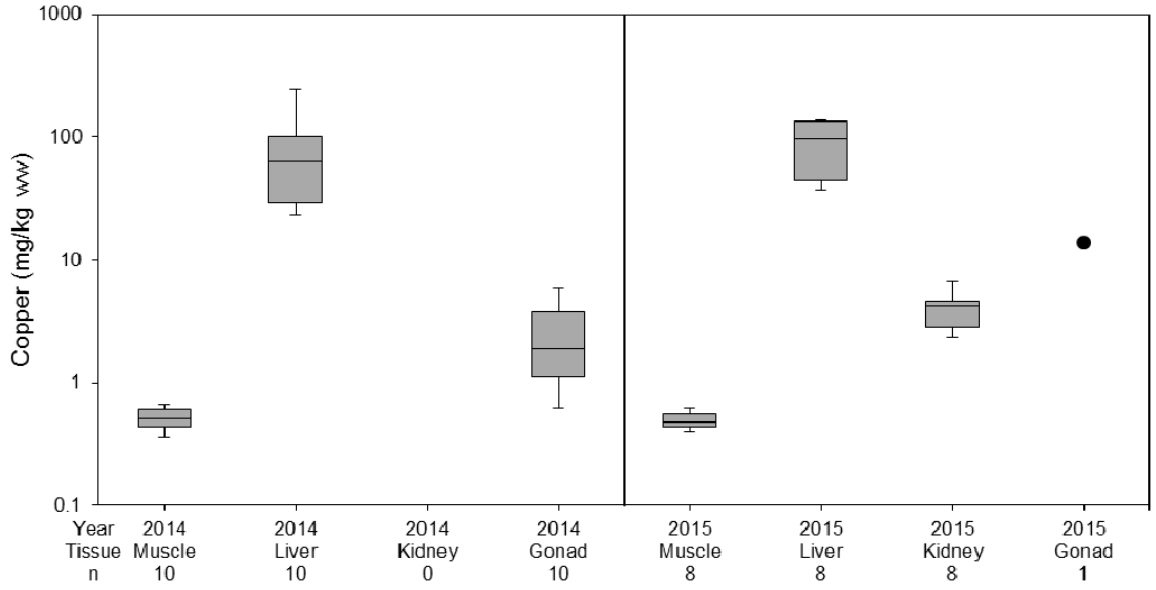
Figure 72: Copper Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 73: Copper Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

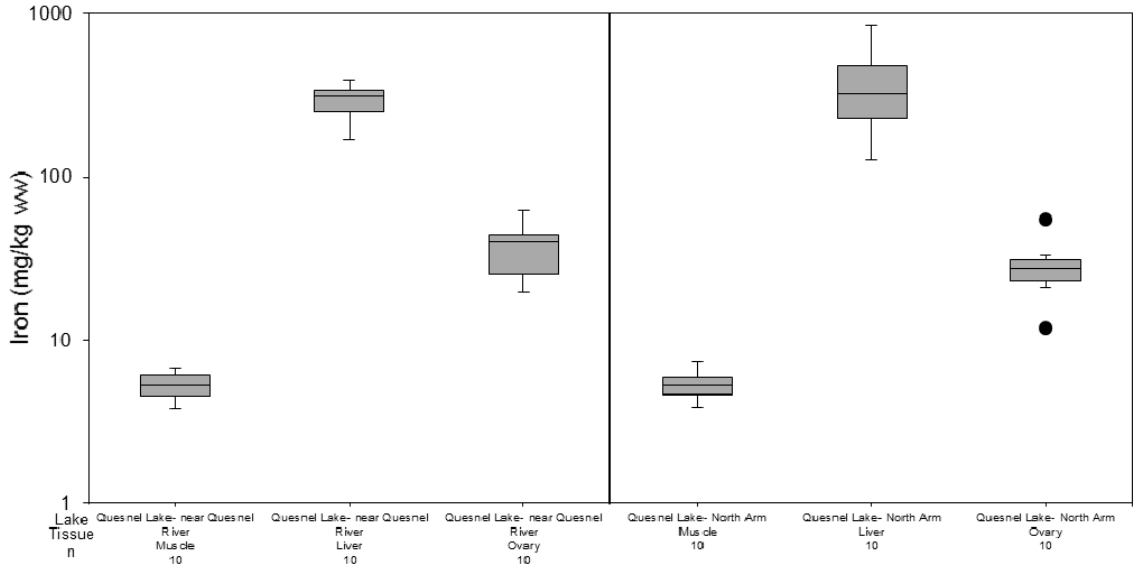


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

2.9 Iron

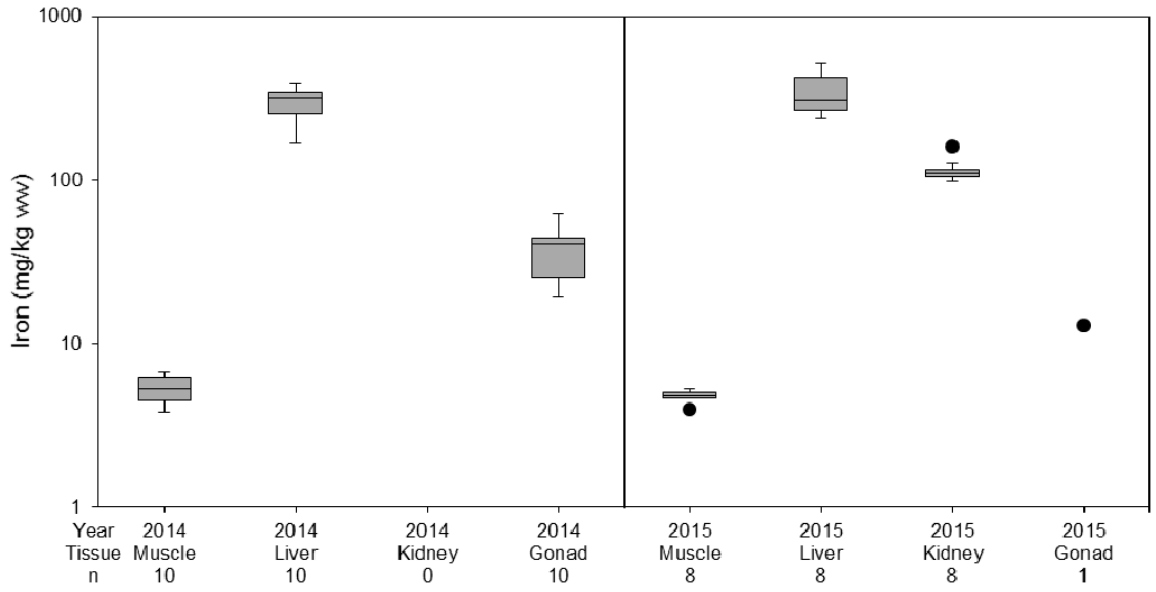
Figure 74: Iron Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 75: Iron Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

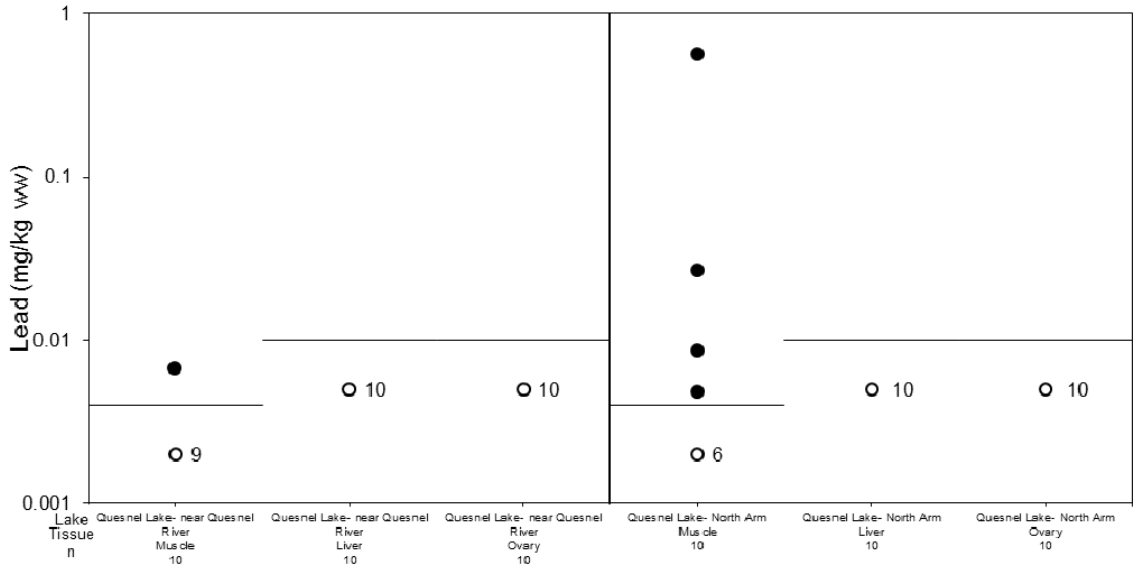


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

2.10 Lead

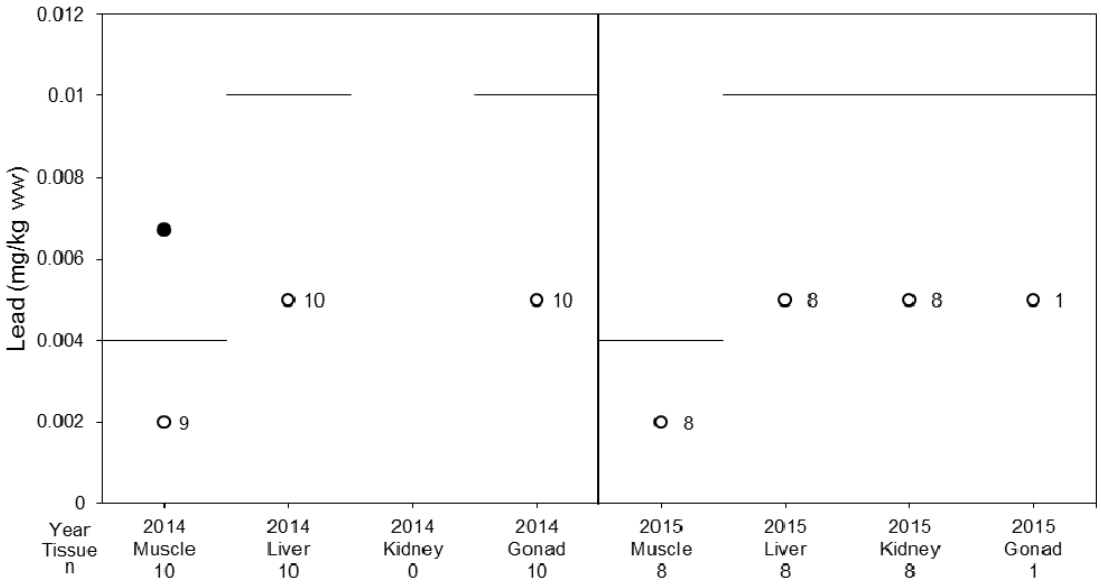
Figure 76: Lead Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 77: Lead Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

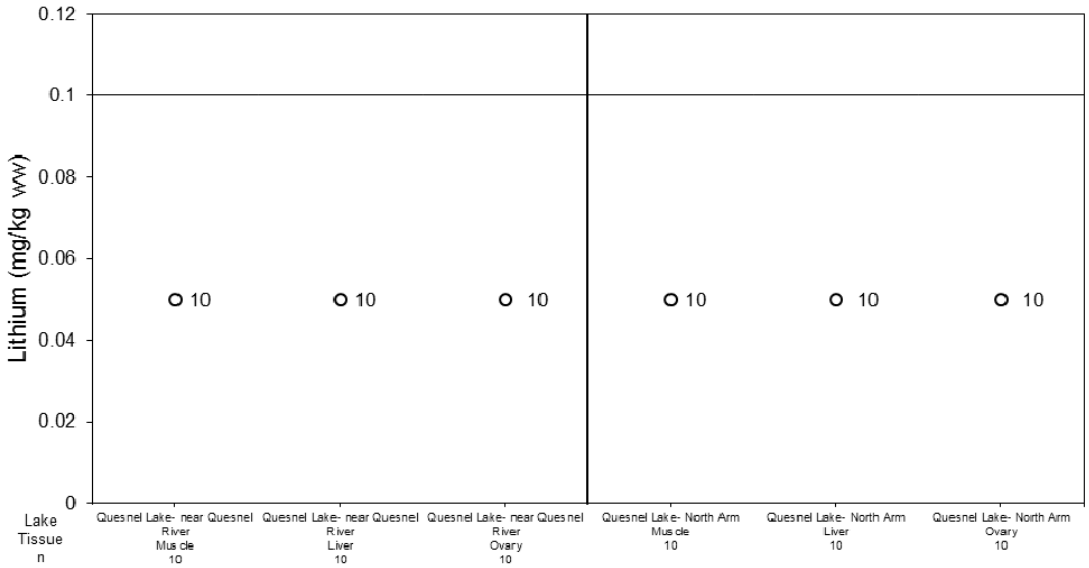


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.11 Lithium

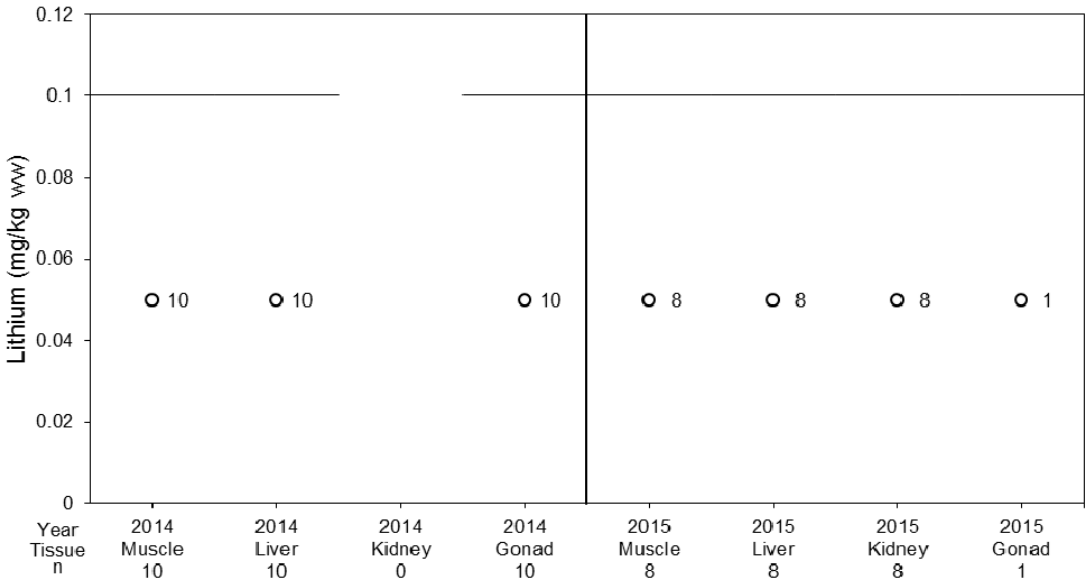
Figure 78: Lithium Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 79: Lithium Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

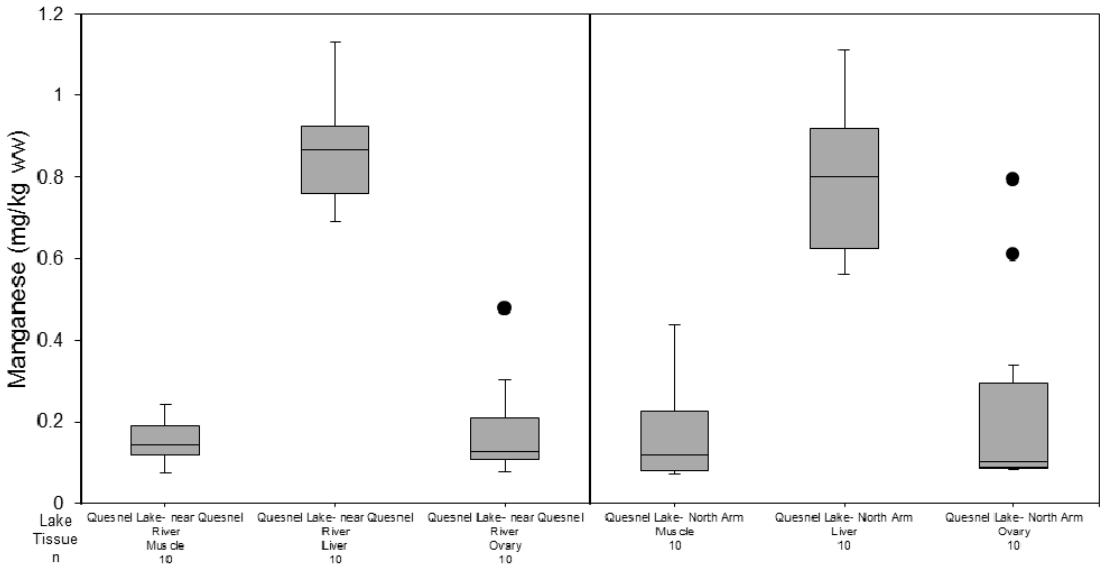


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.12 Manganese

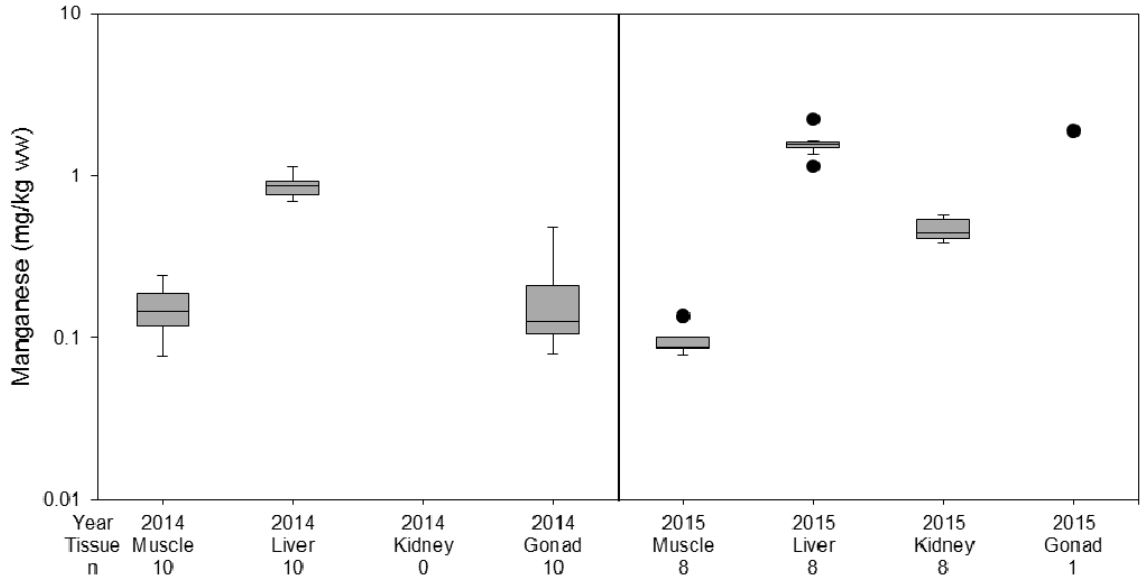
Figure 80: Manganese Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 81: Manganese Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

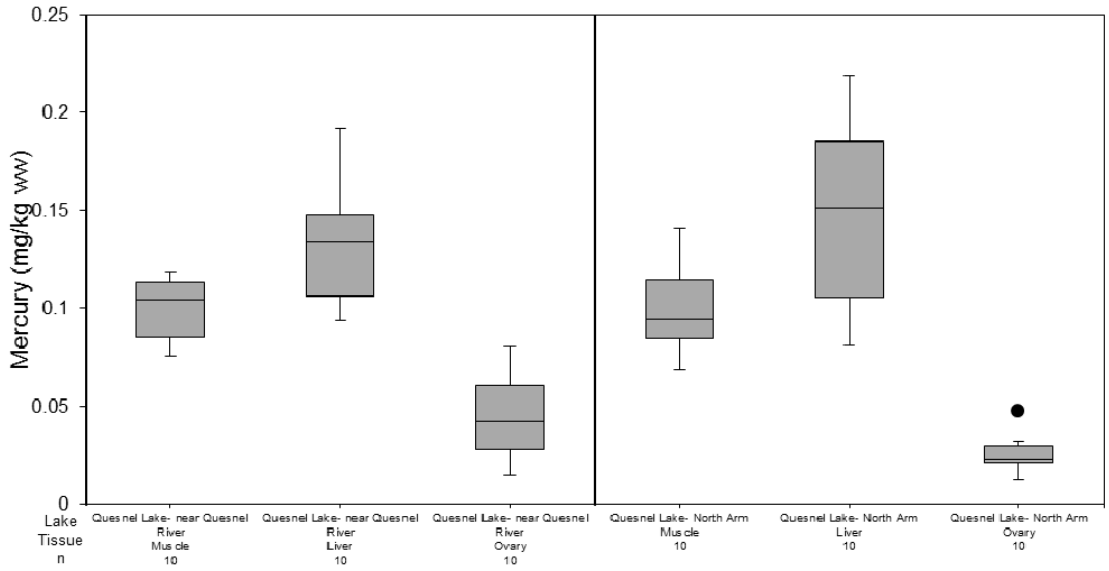


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

2.13 Mercury

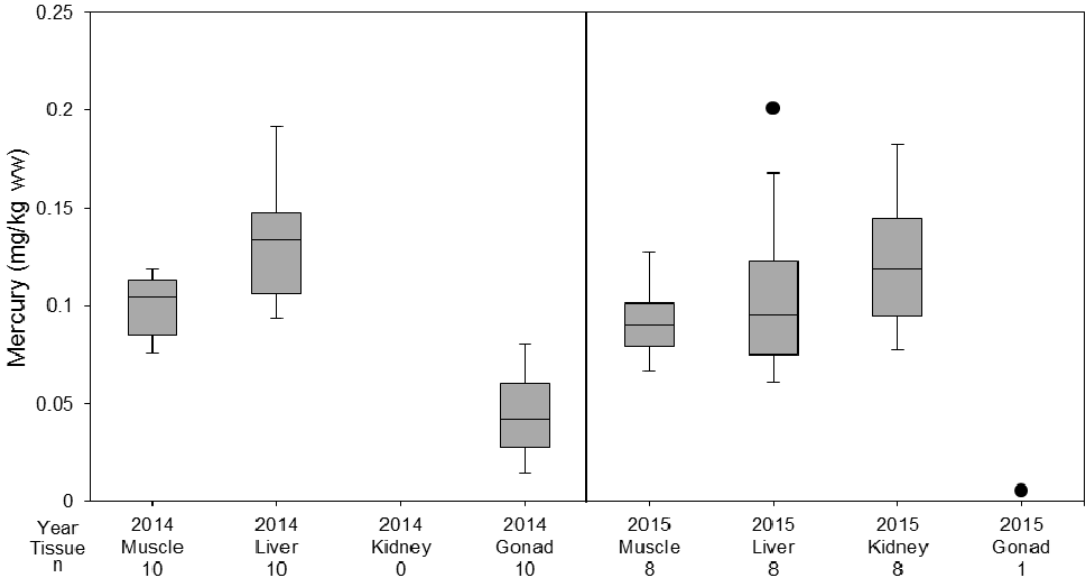
Figure 82: Mercury Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 83: Mercury Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

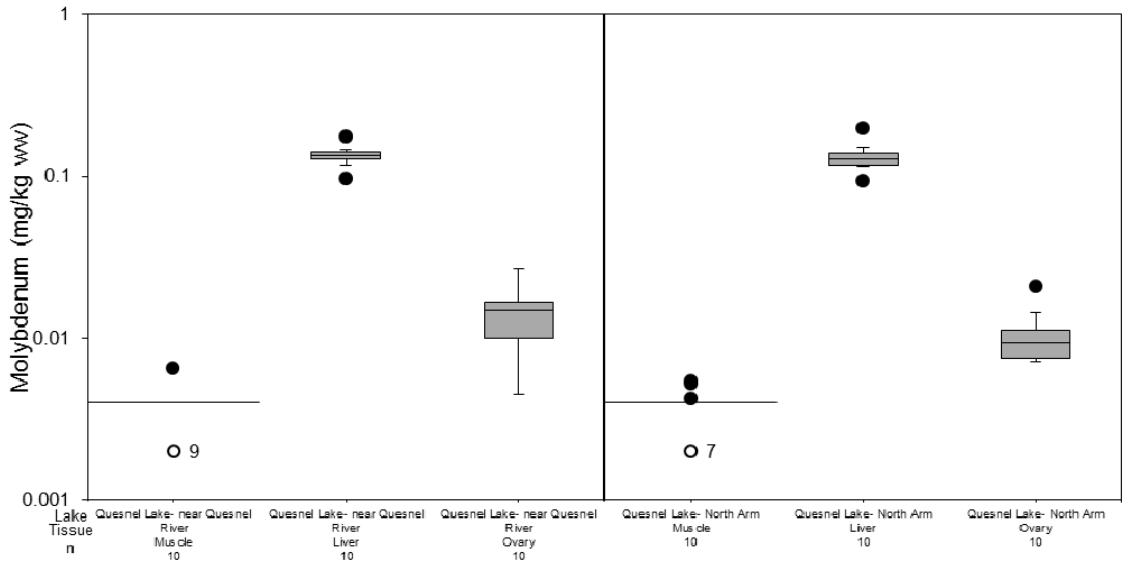


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.14 Molybdenum

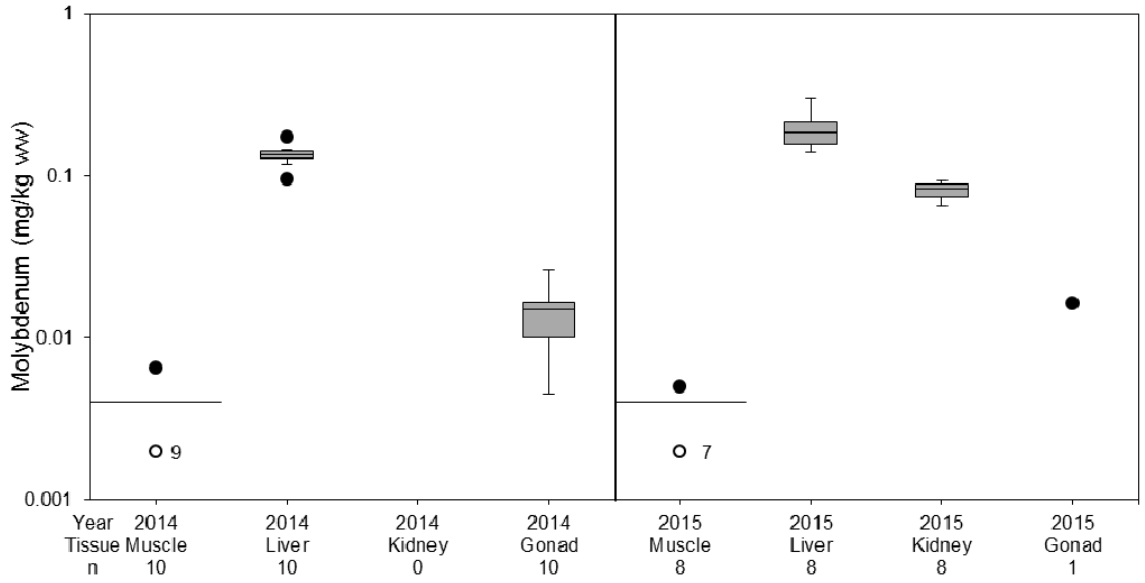
Figure 84: Molybdenum Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 85: Molybdenum Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

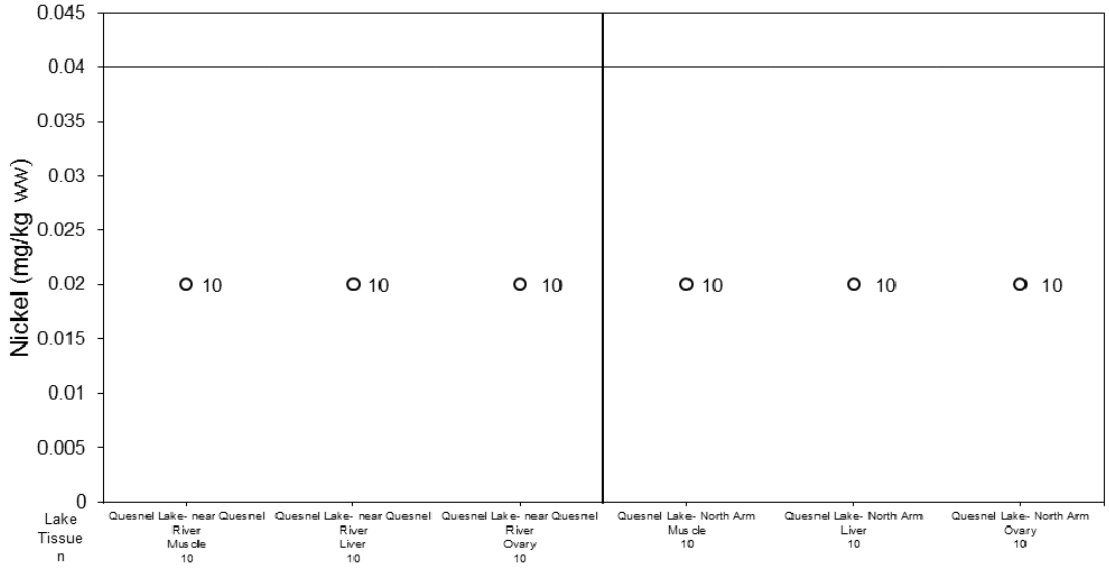


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

2.15 Nickel

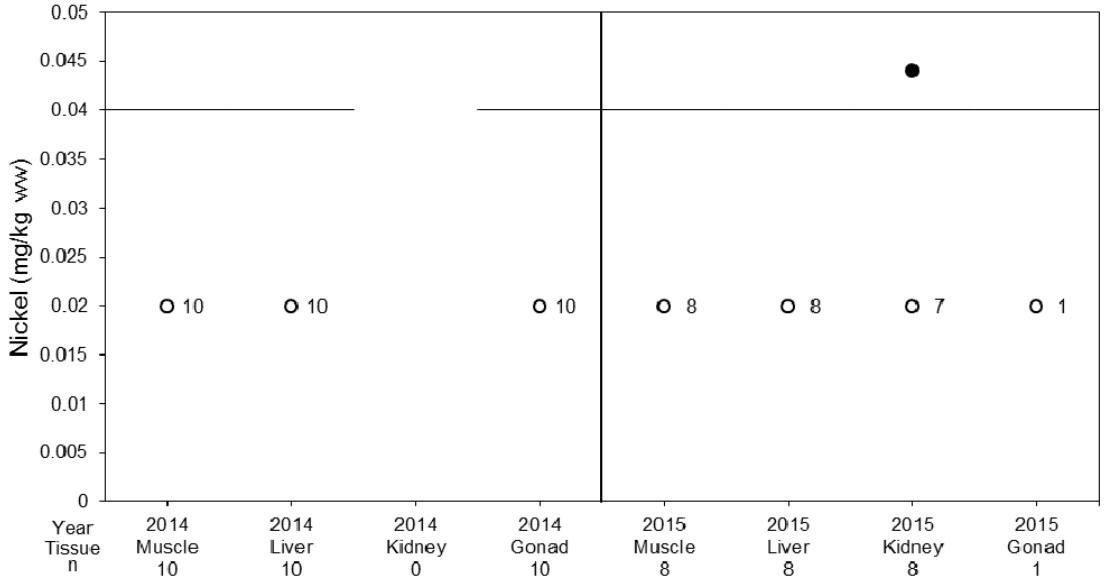
Figure 86: Nickel Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 87: Nickel Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

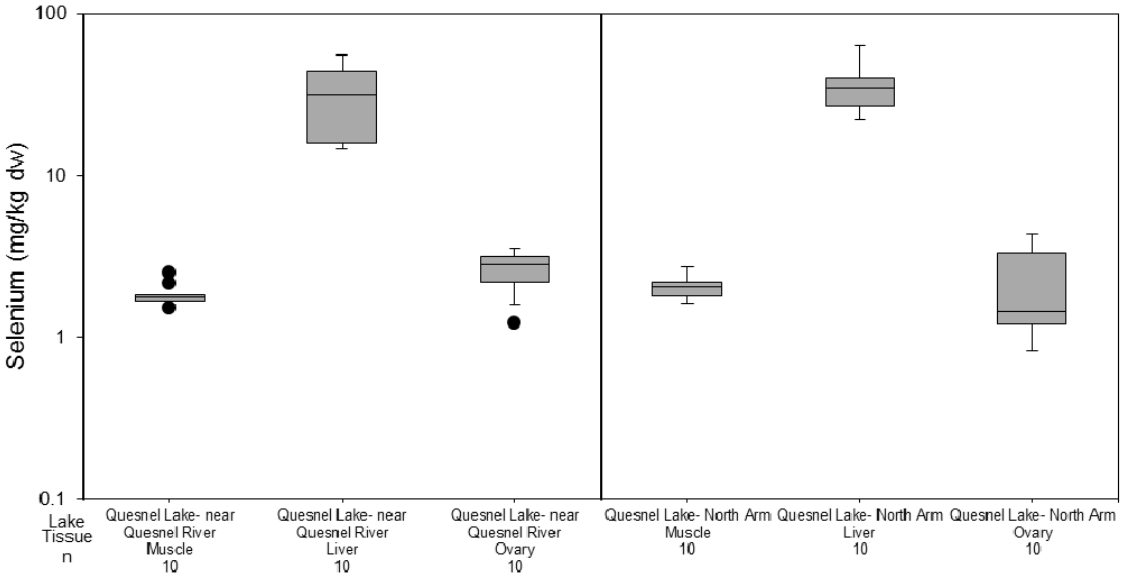


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.16 Selenium

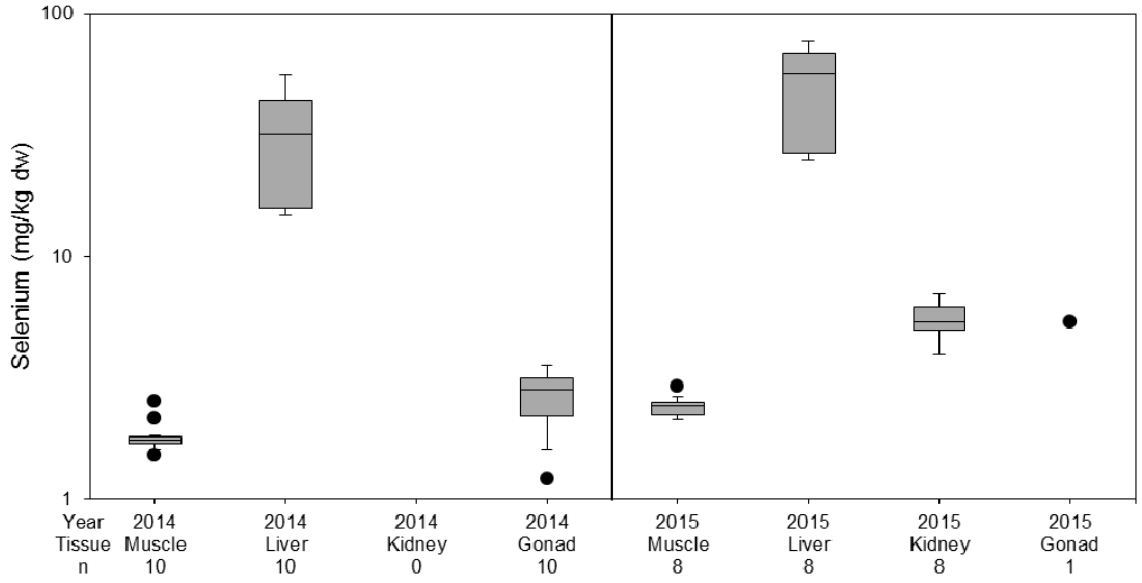
Figure 88: Selenium Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 89: Selenium Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

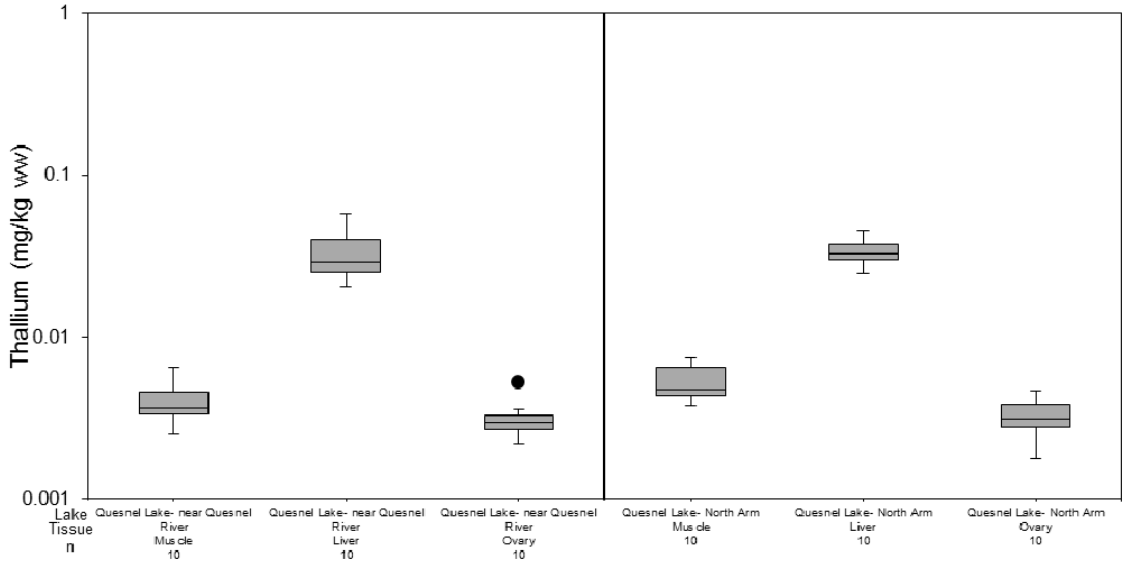


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

2.17 Thallium

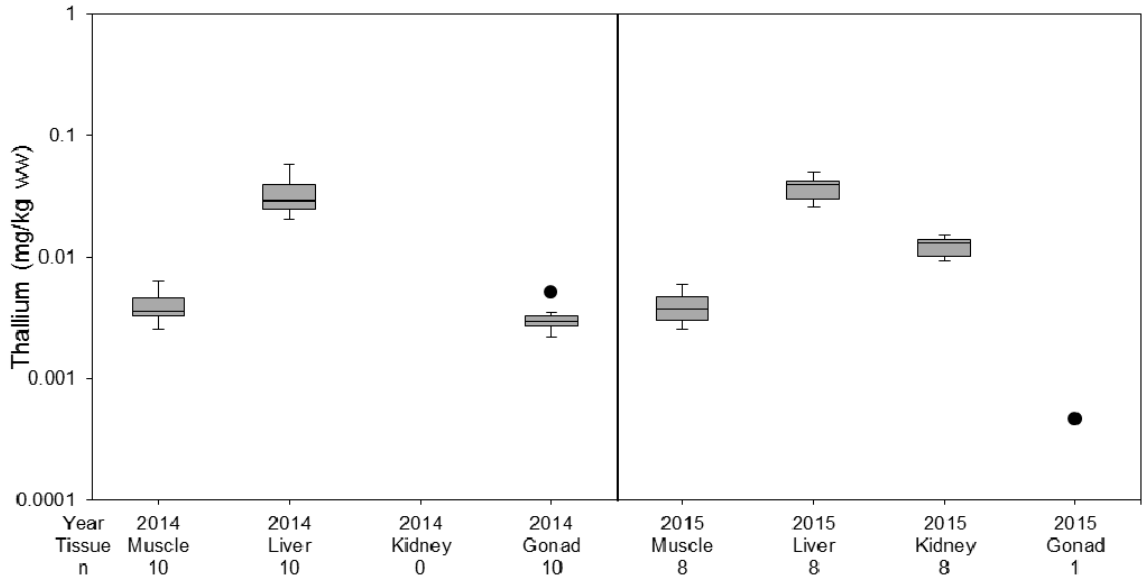
Figure 90: Thallium Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 91: Thallium Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

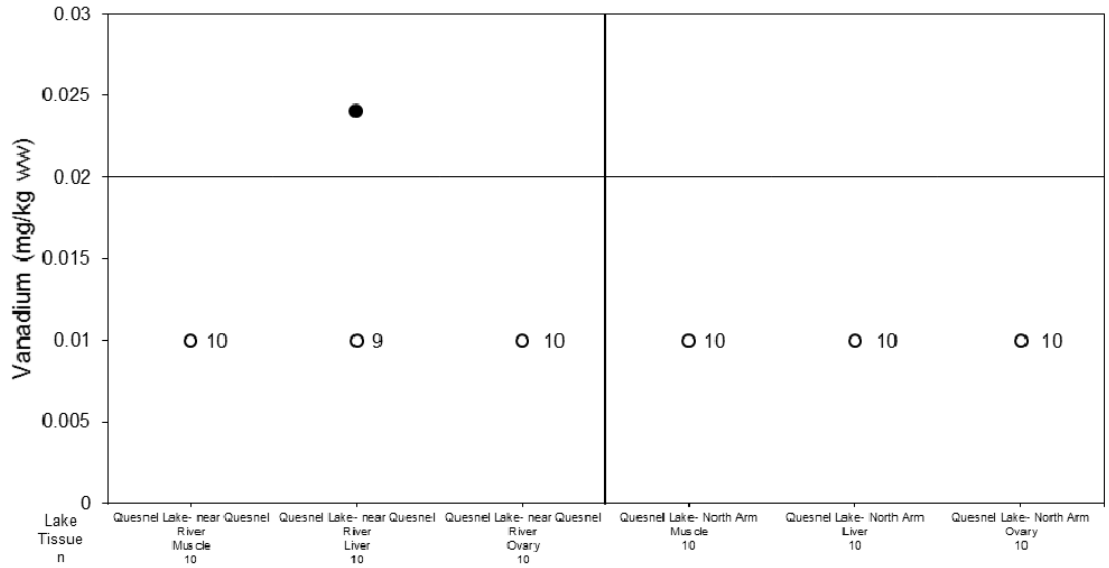


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

2.18 Vanadium

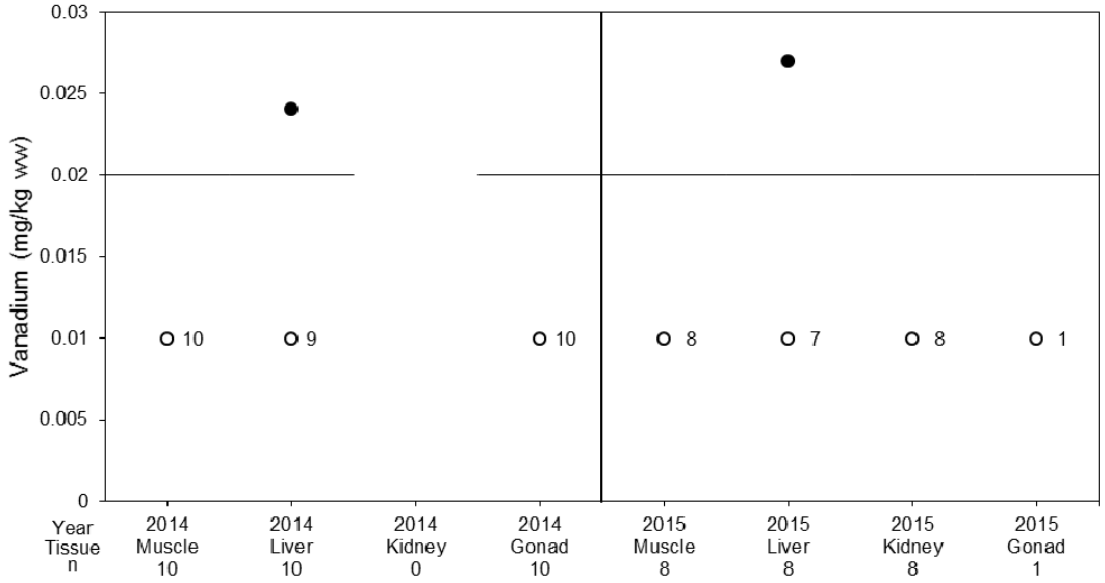
Figure 92: Vanadium Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 93: Vanadium Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015

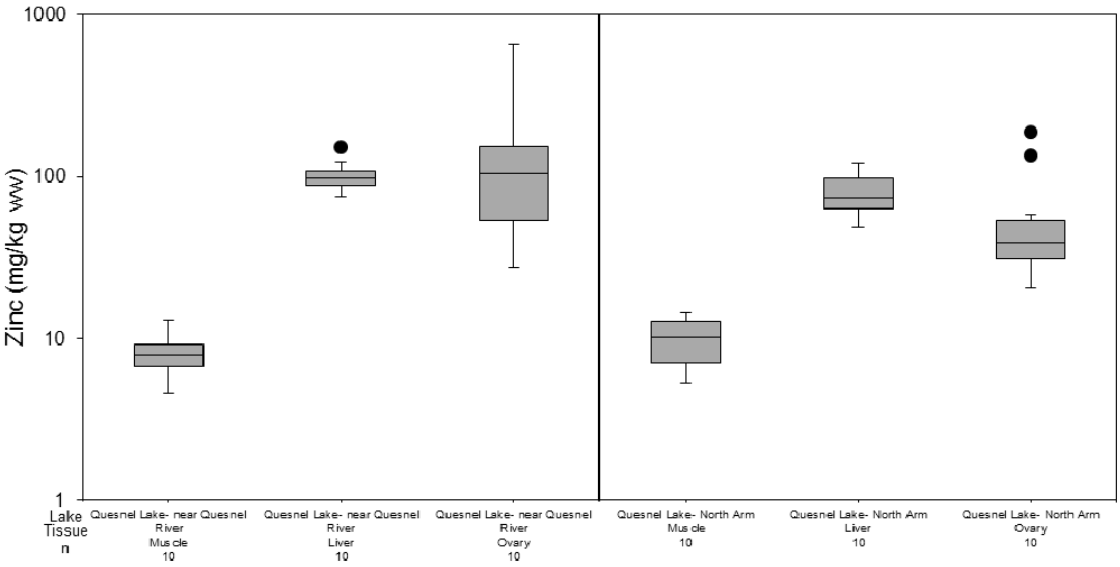


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

2.19 Zinc

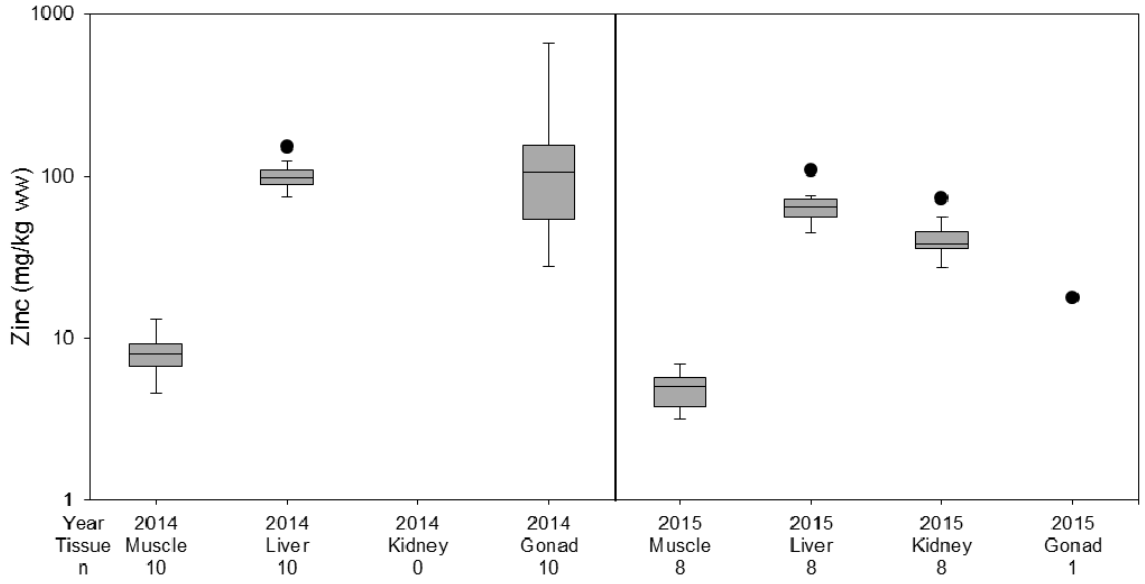
Figure 94: Zinc Concentrations in Kokanee Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 95: Zinc Concentrations in Kokanee Tissues Collected from Quesnel Lake near Quesnel River in 2014 and 2015



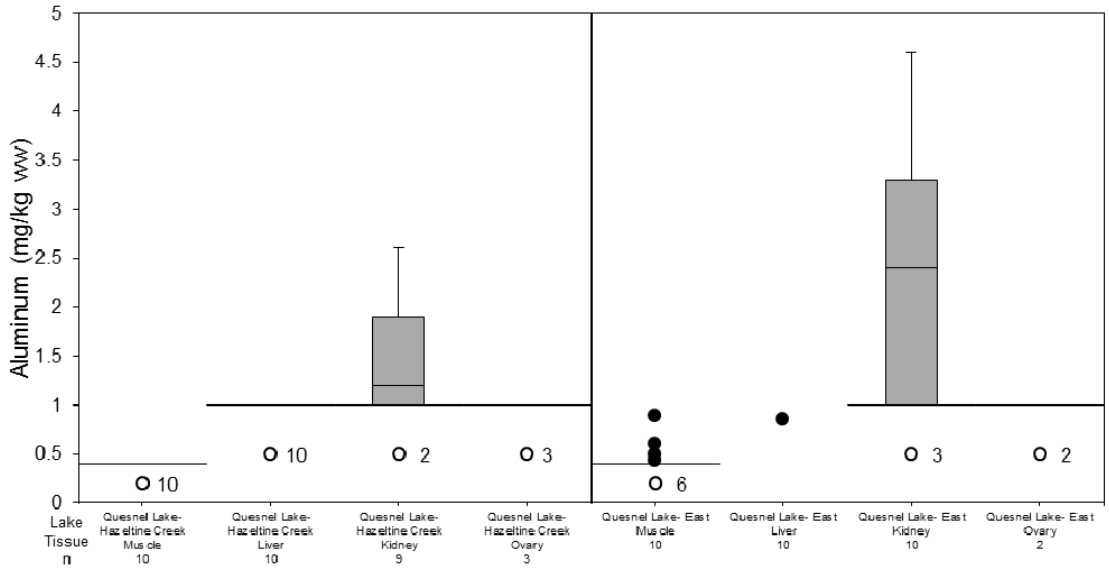
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.0 LAKE TROUT

3.1 Aluminum

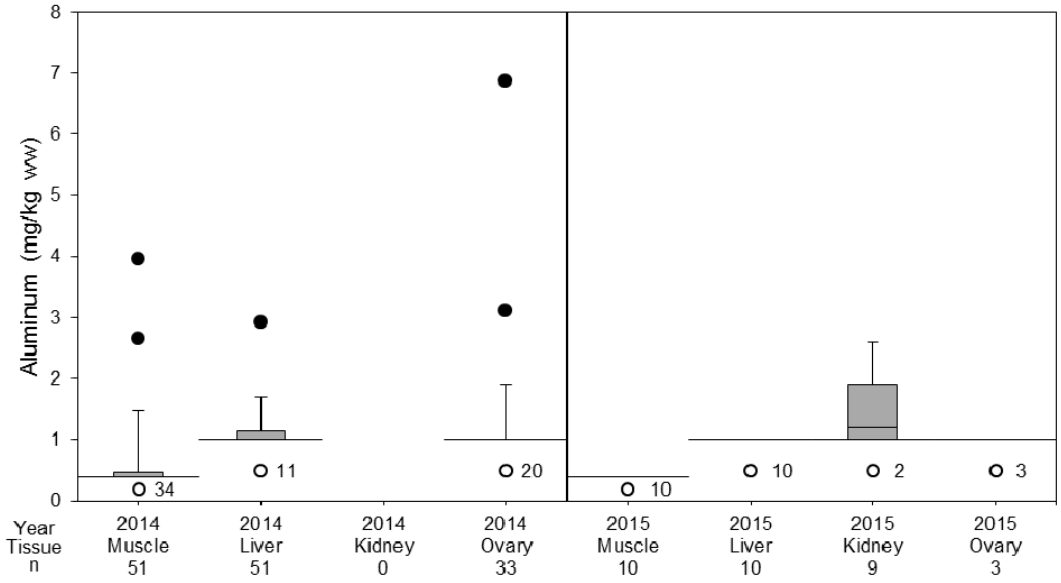
Figure 96: Aluminum Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 97: Aluminum Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

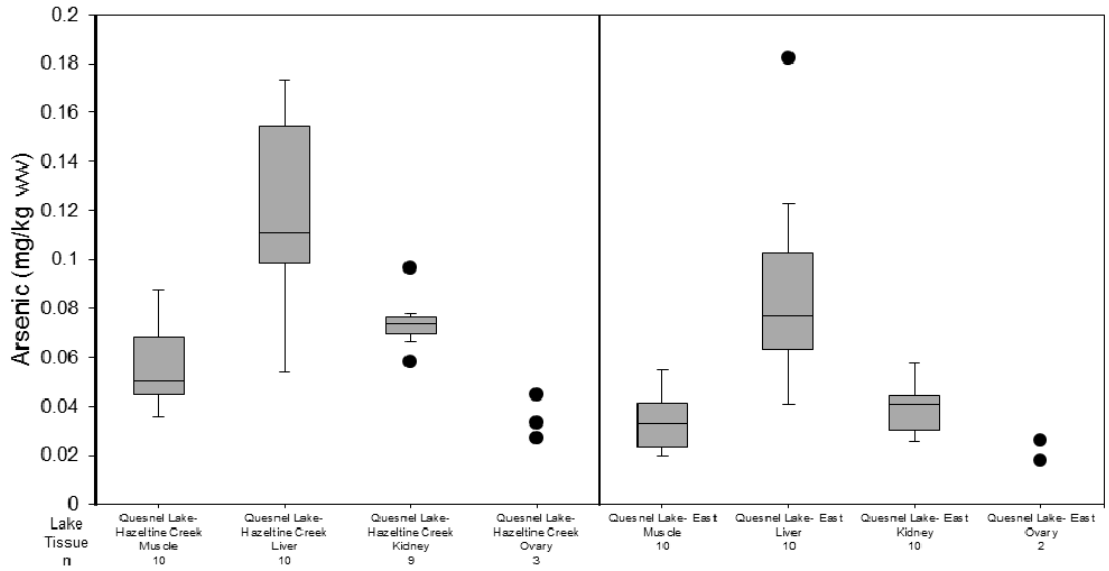


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

3.2 Arsenic

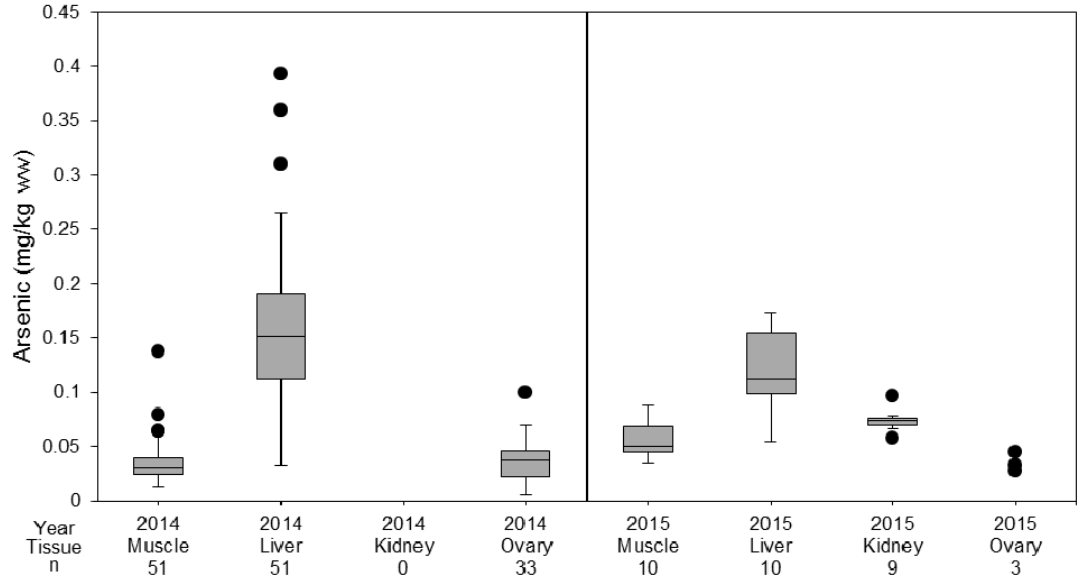
Figure 98: Arsenic Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 99: Arsenic Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

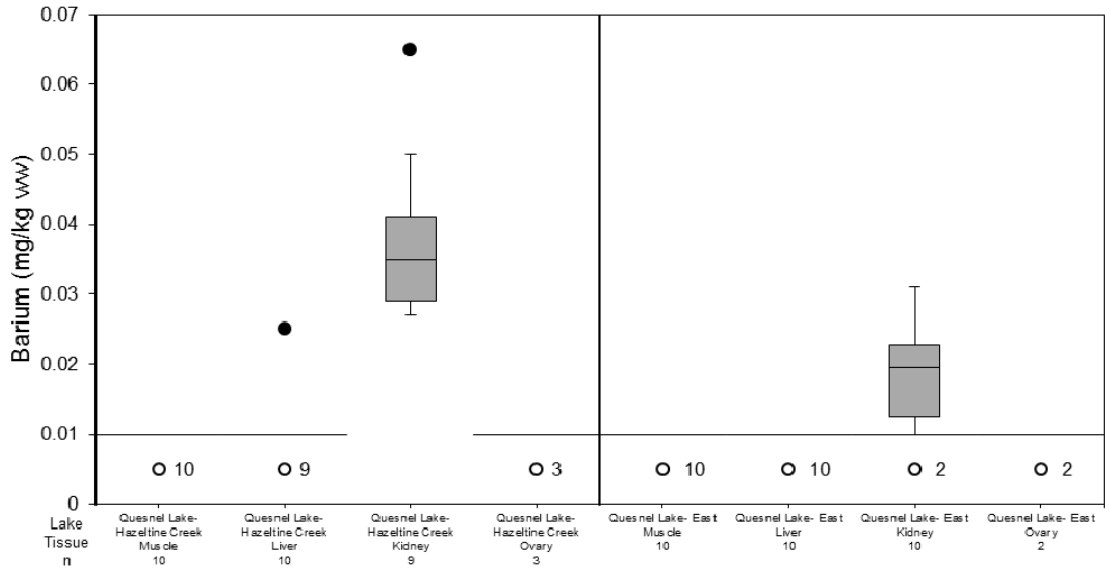


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

3.3 Barium

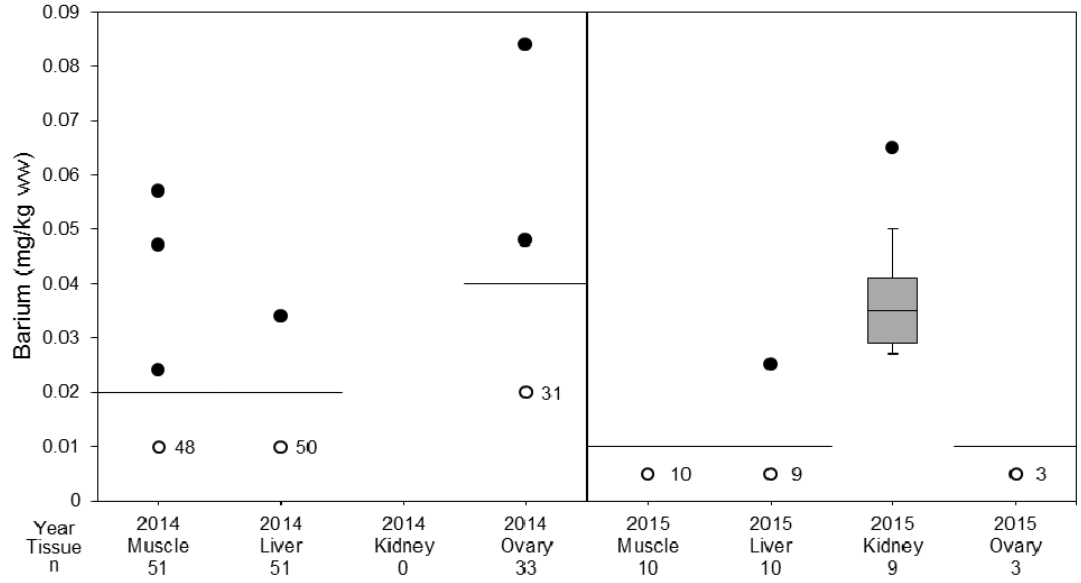
Figure 100: Barium Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 101: Barium Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

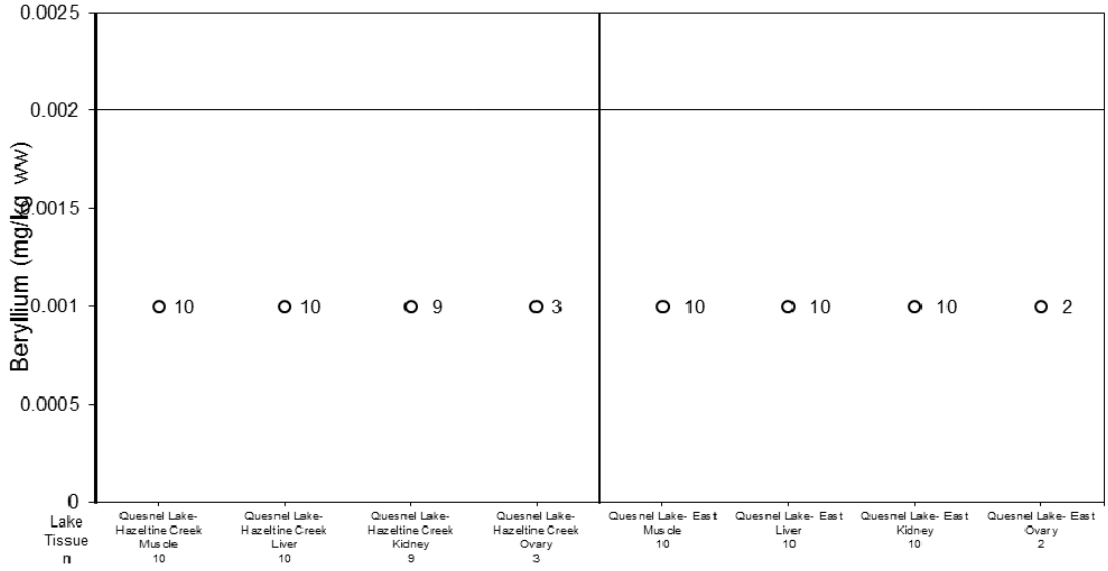


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

3.4 Beryllium

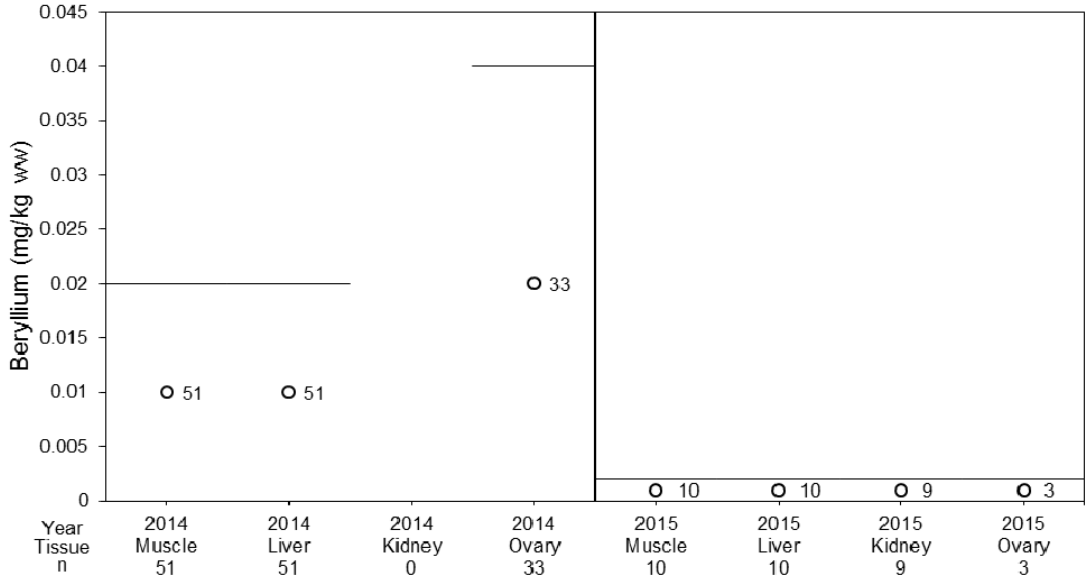
Figure 102: Beryllium Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 103: Beryllium Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

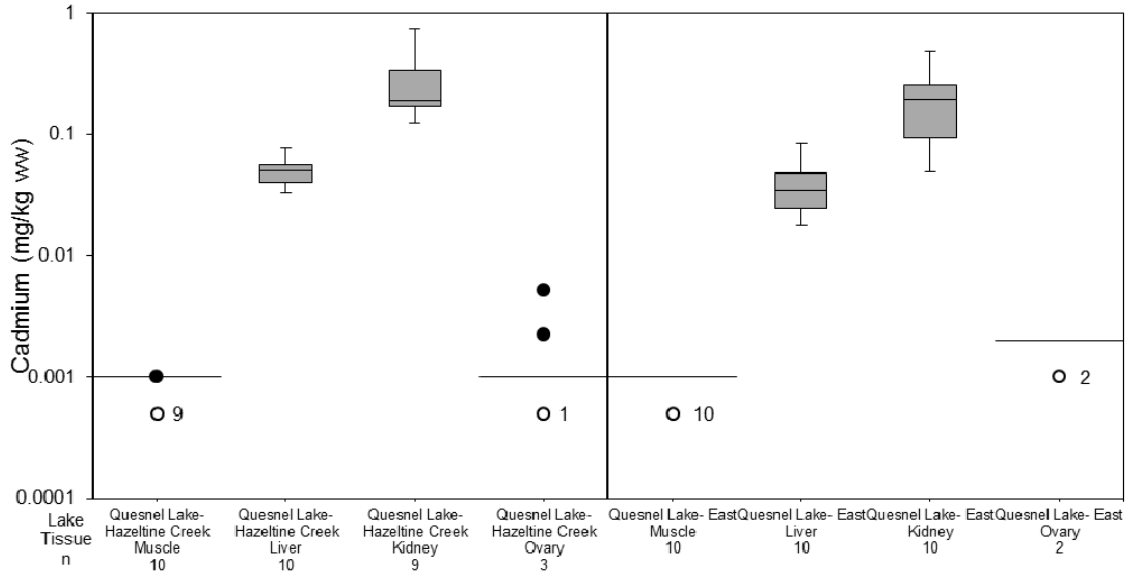


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

3.5 Cadmium

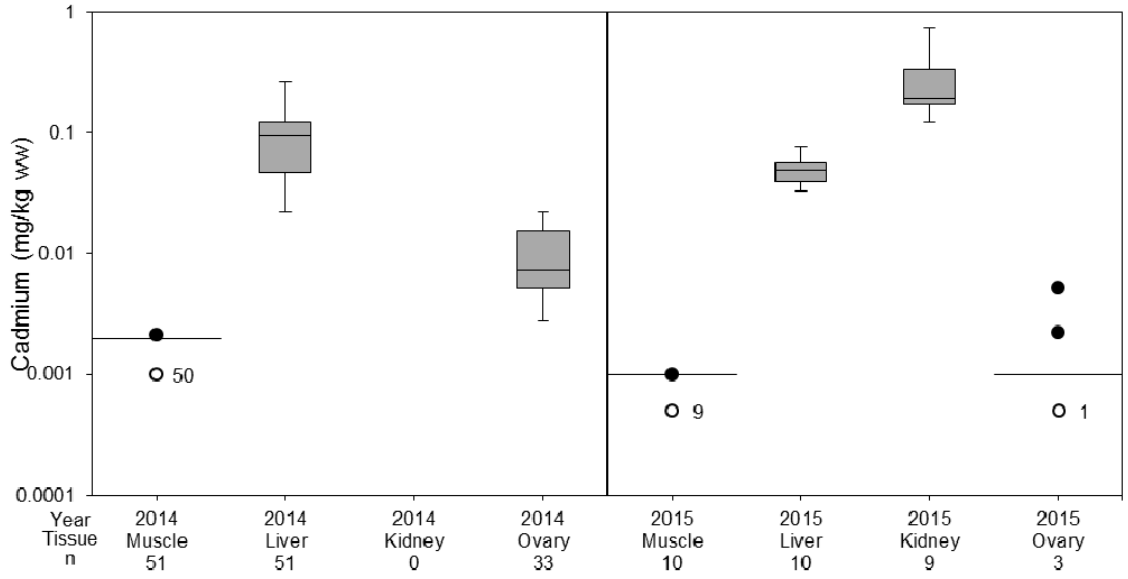
Figure 104: Cadmium Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 105: Cadmium Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

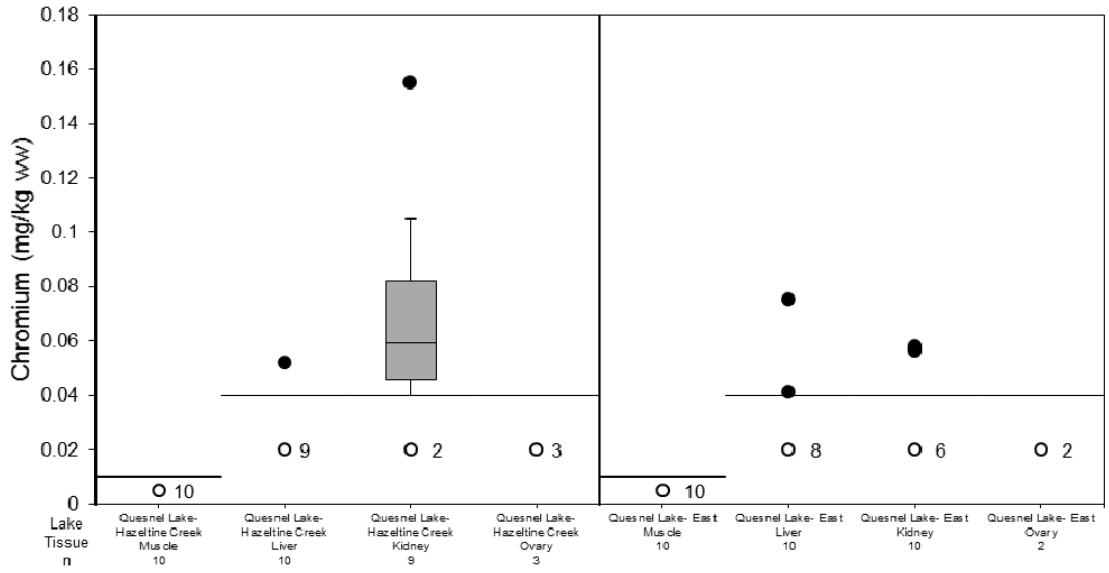


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.6 Chromium

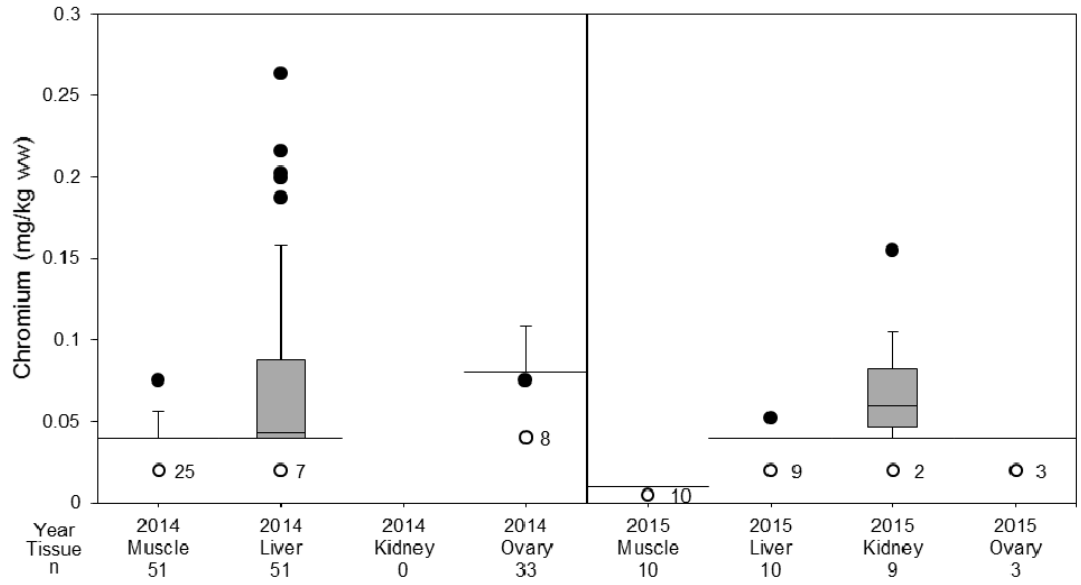
Figure 106: Chromium Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 107: Chromium Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

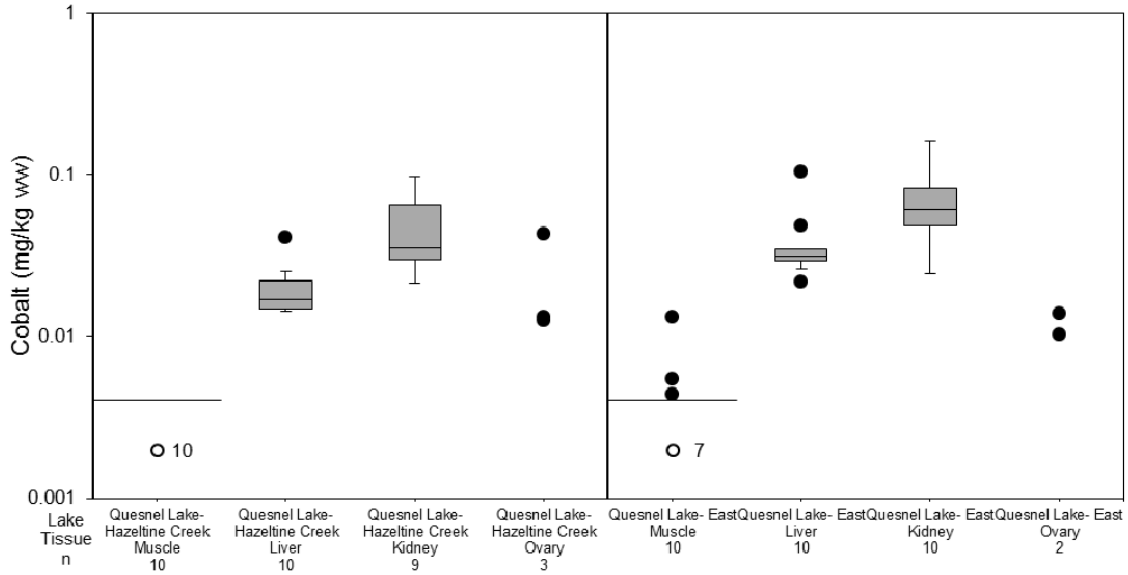


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

3.7 Cobalt

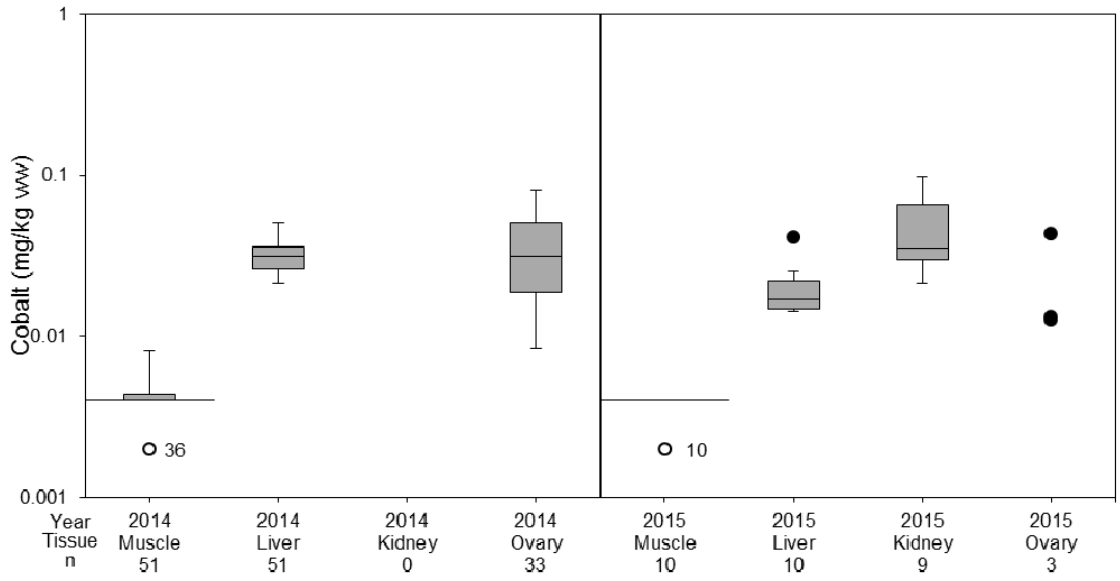
Figure 108: Cobalt Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 109: Cobalt Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

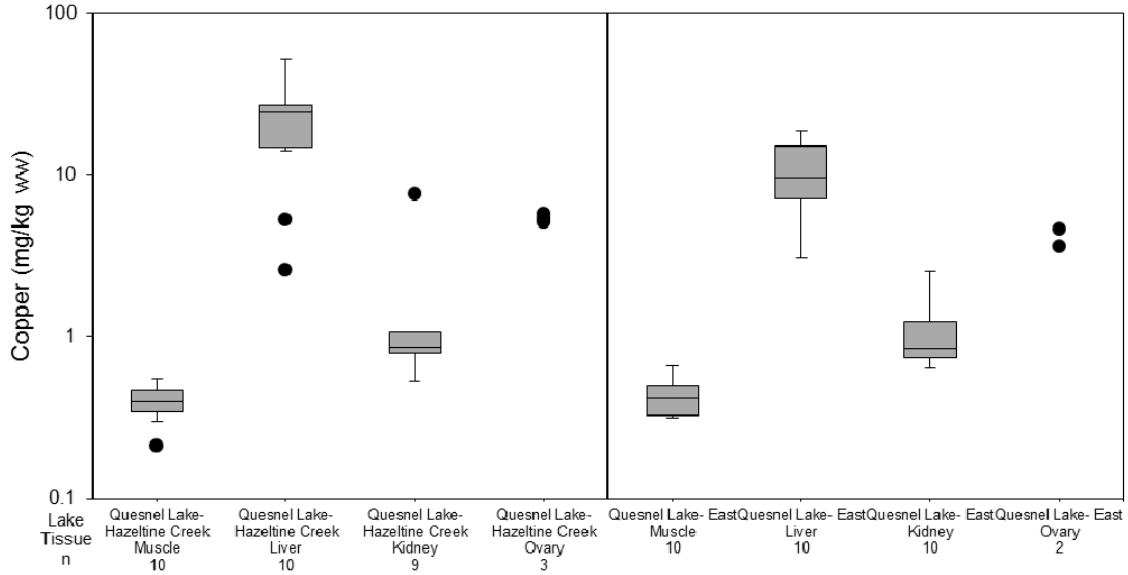


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.8 Copper

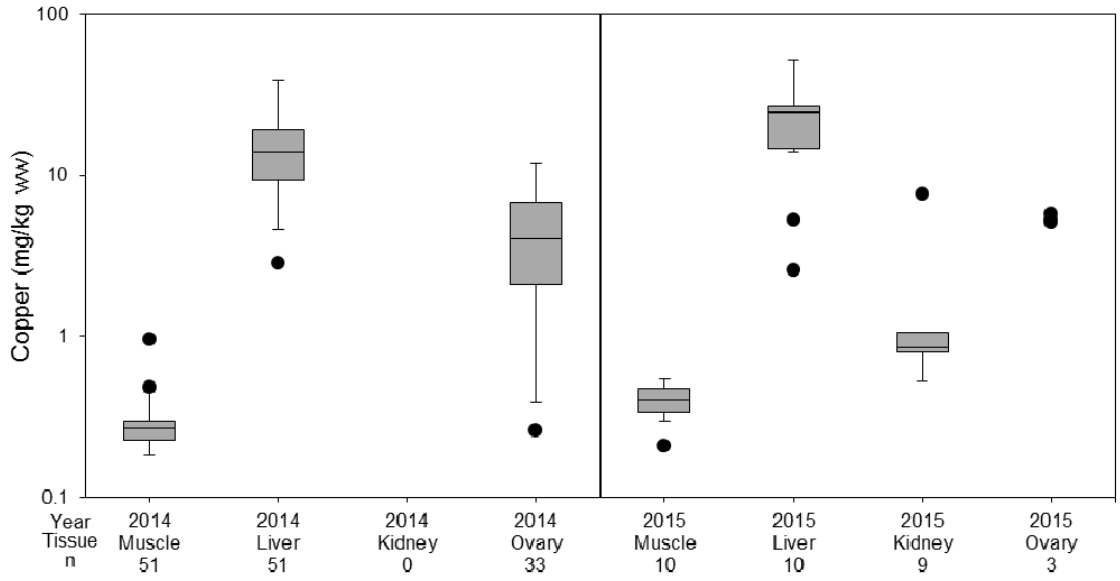
Figure 110: Copper Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 111: Copper Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

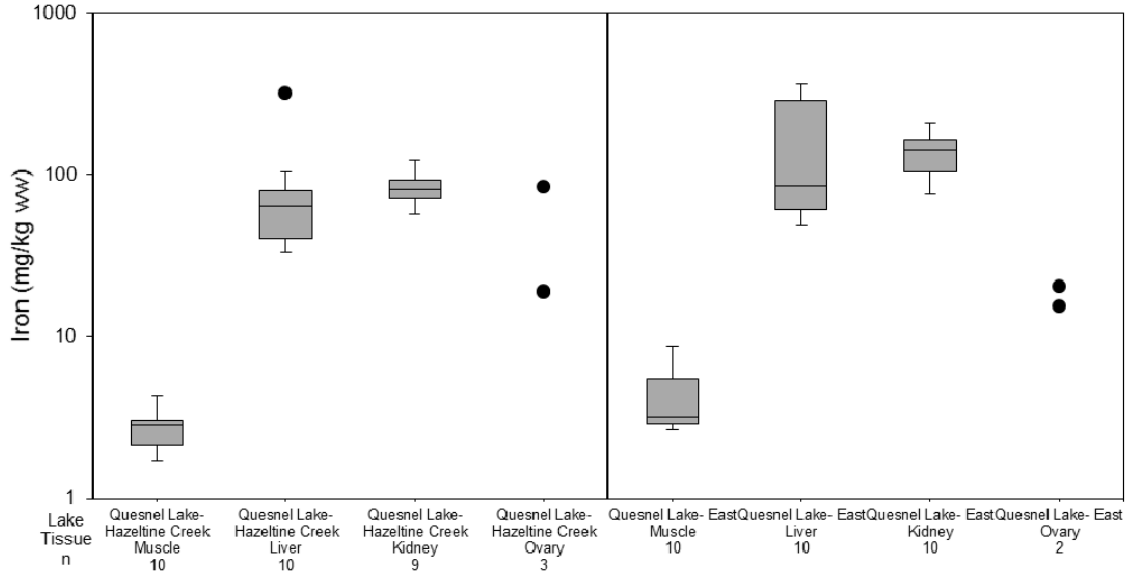


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.9 Iron

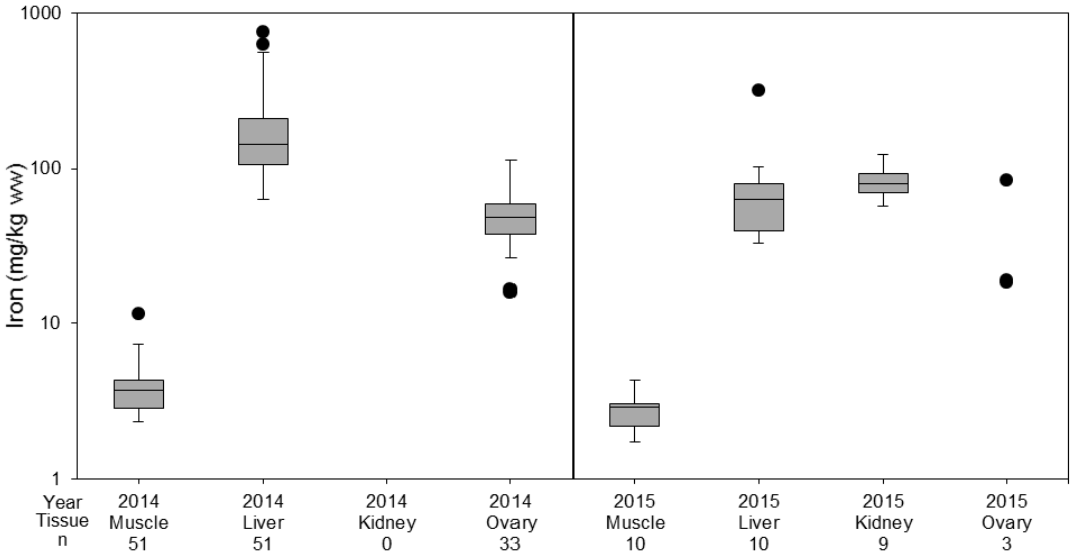
Figure 112: Iron Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 113: Iron Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

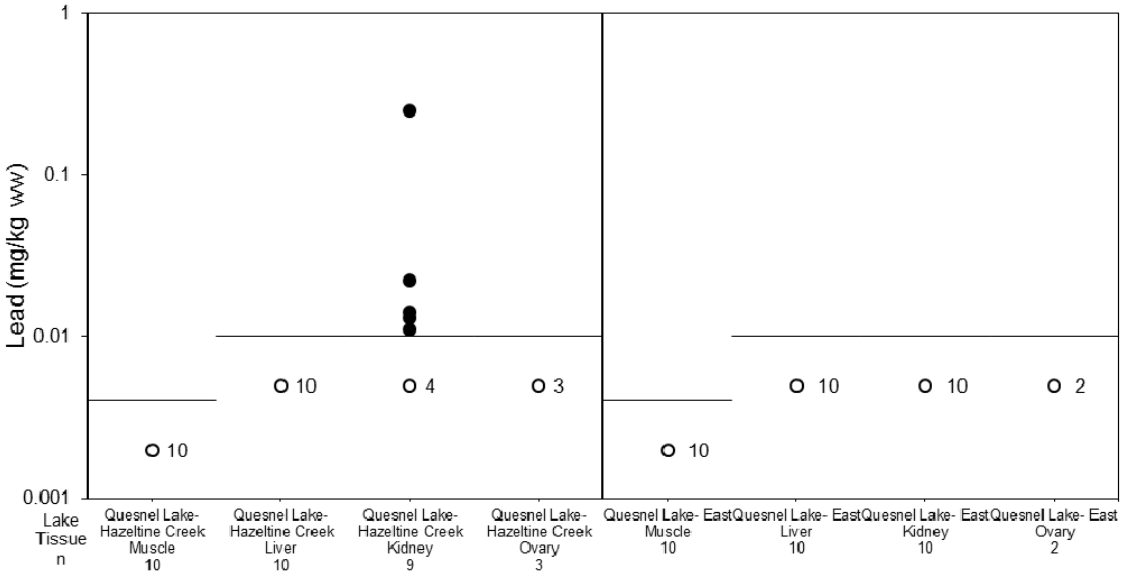


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.10 Lead

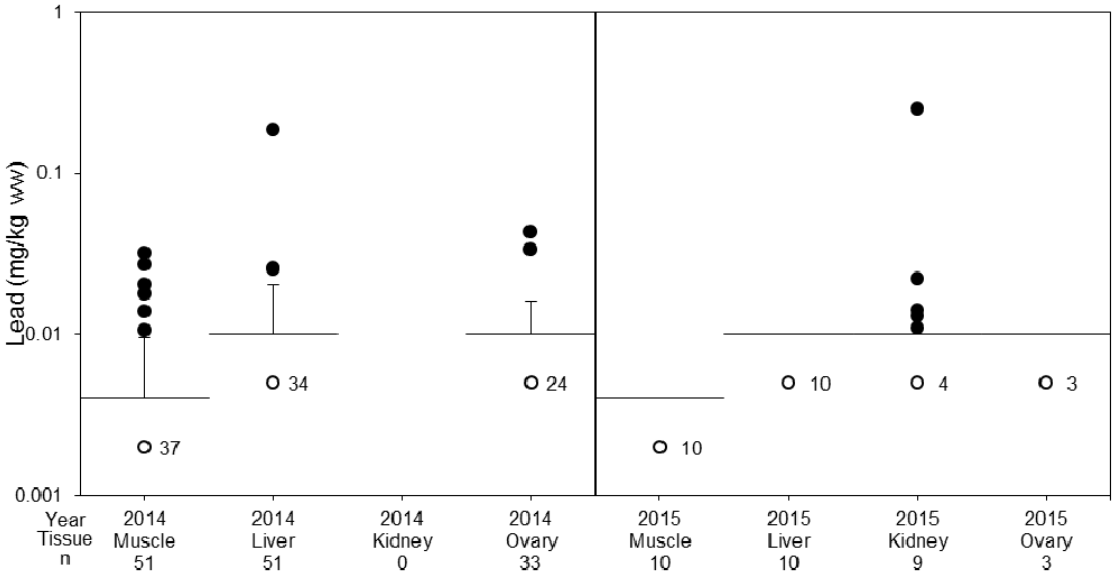
Figure 114: Lead Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 115: Lead Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

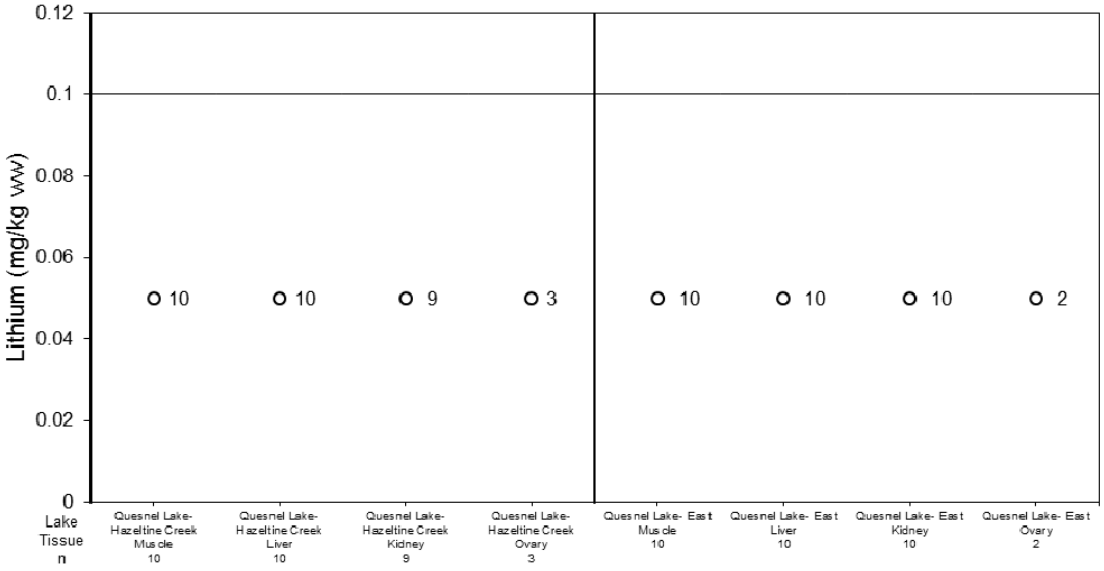


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.11 Lithium

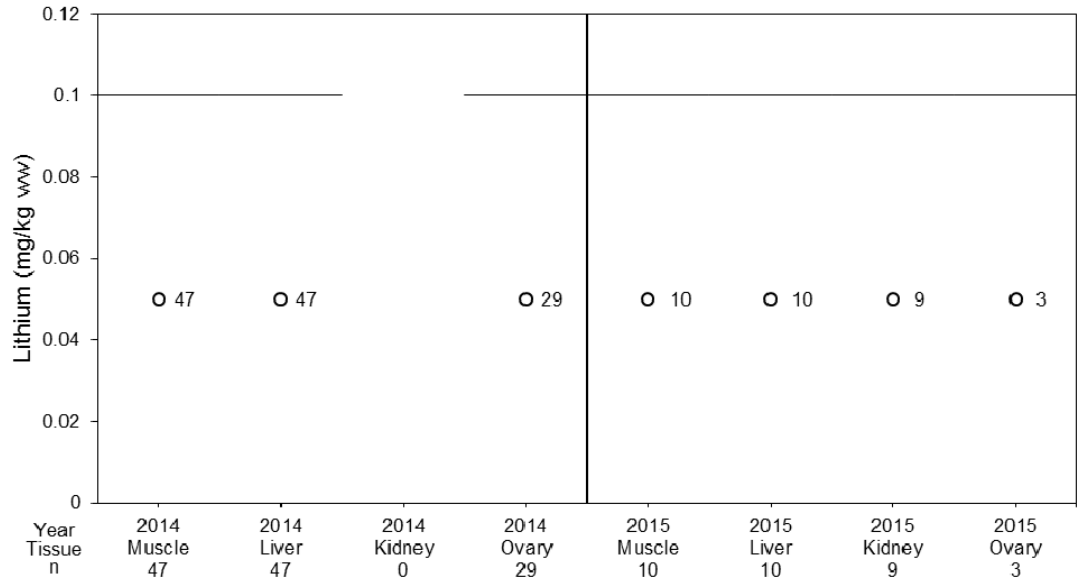
Figure 116: Lithium Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 117: Lithium Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

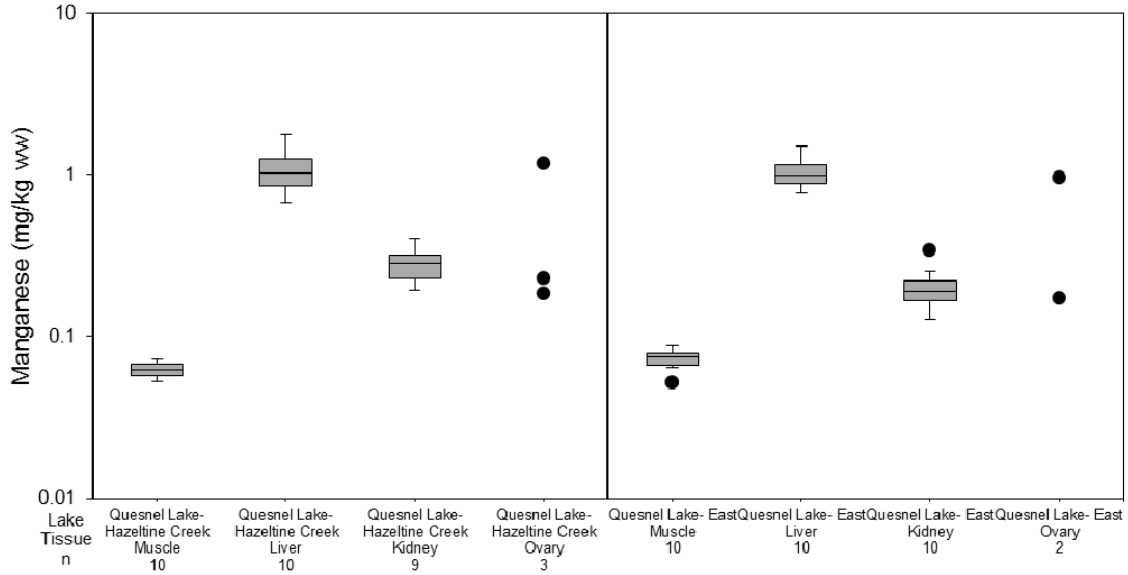


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

3.12 Manganese

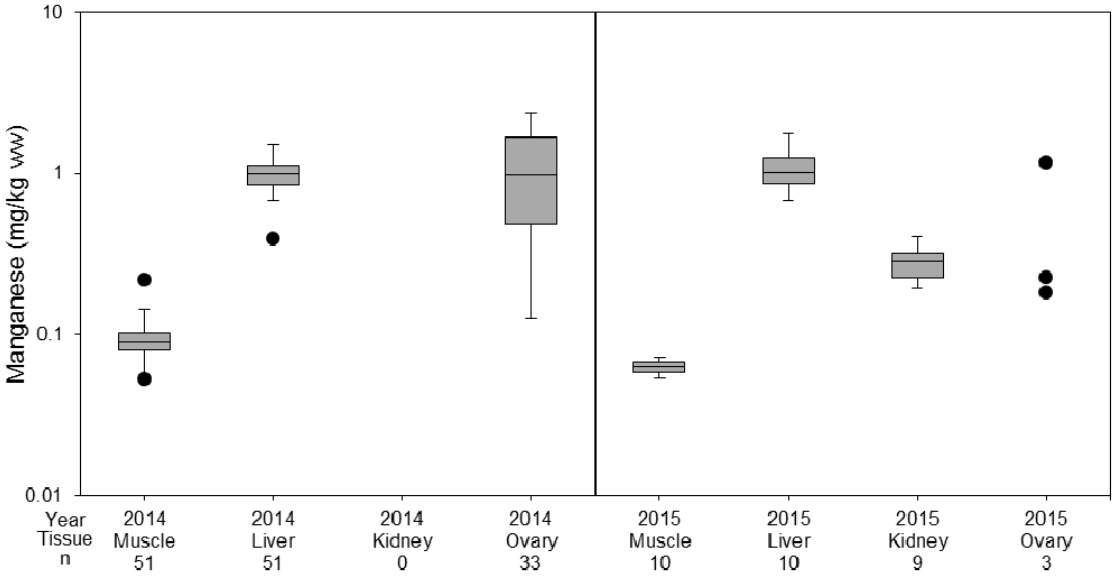
Figure 118: Manganese Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 119: Manganese Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

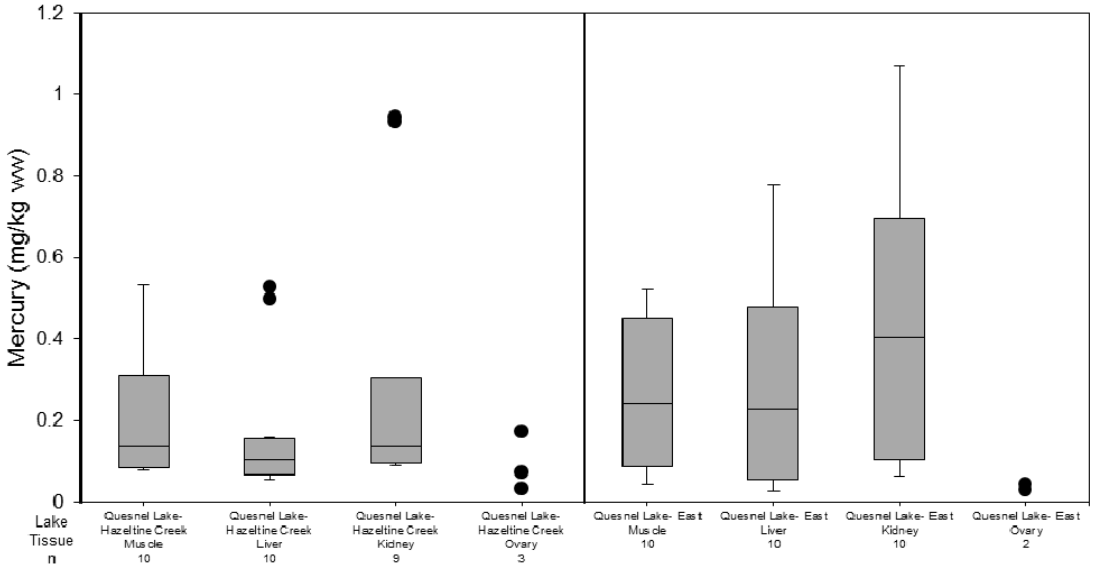


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.13 Mercury

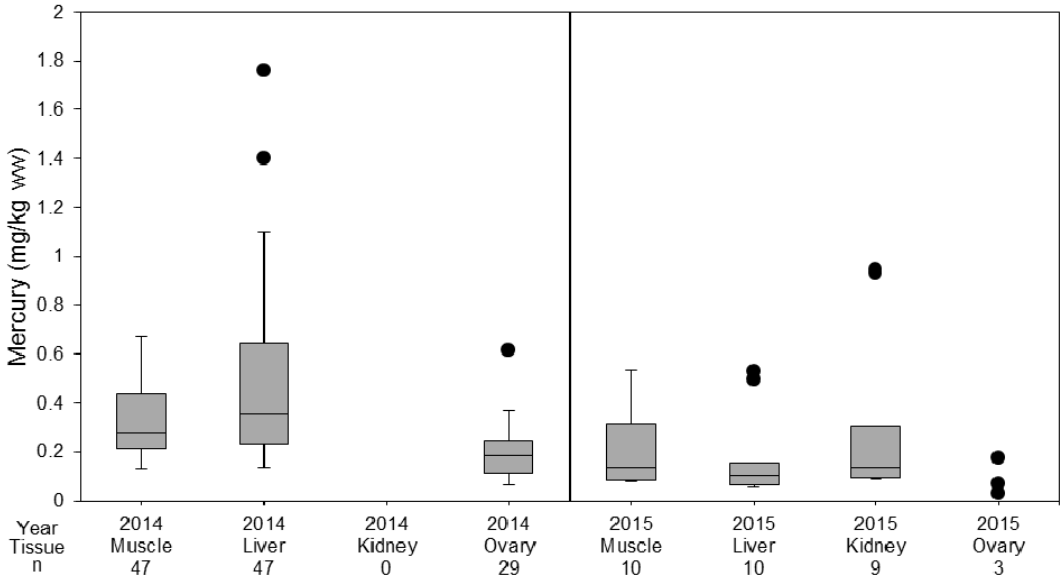
Figure 120: Mercury Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 121: Mercury Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

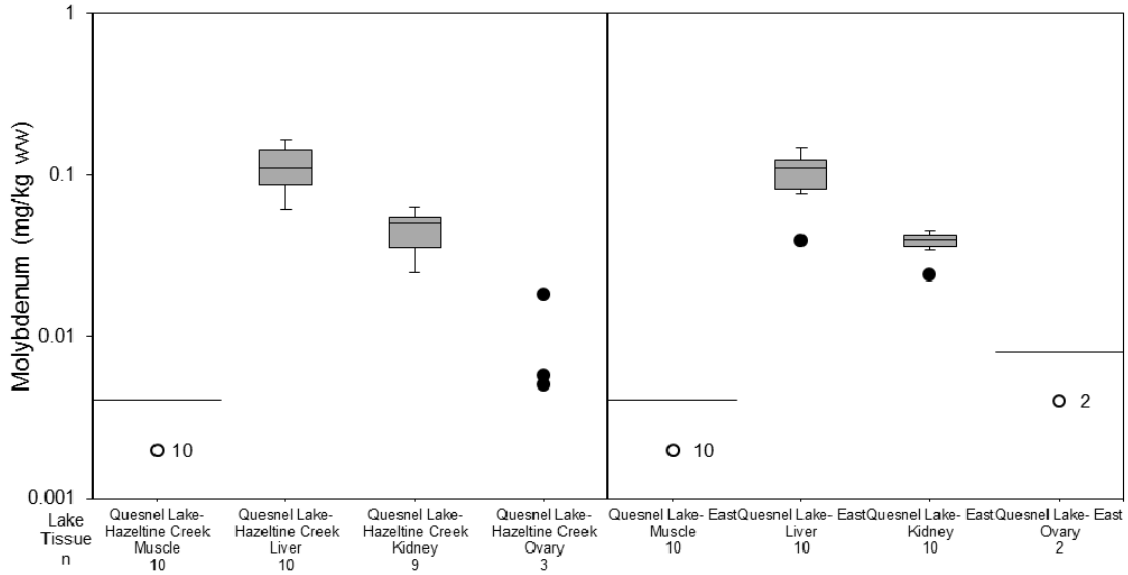


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.14 Molybdenum

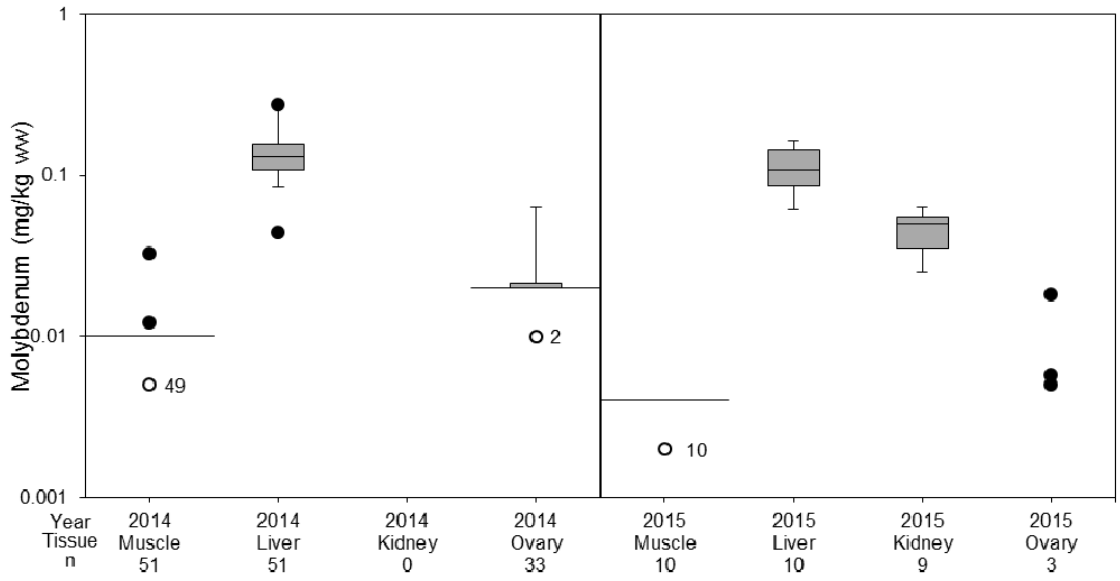
Figure 122: Molybdenum Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 123: Molybdenum Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

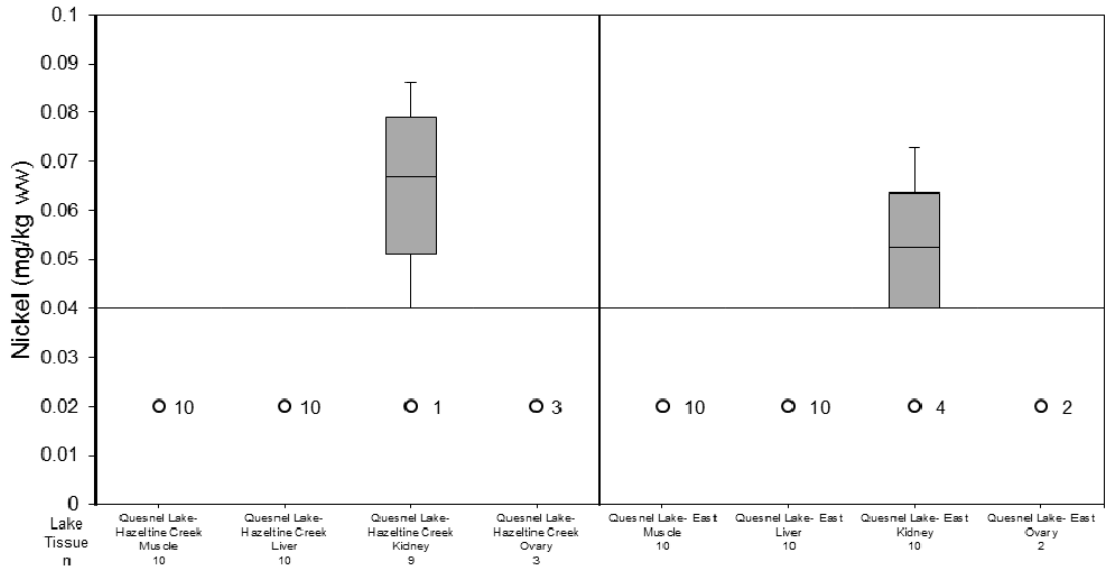


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.15 Nickel

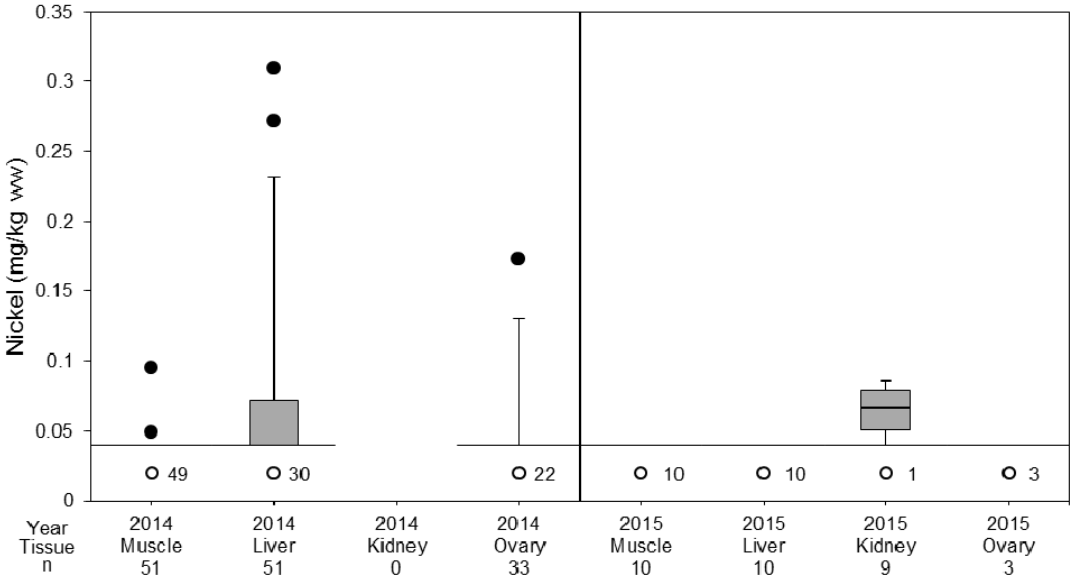
Figure 124: Nickel Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 125: Nickel Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

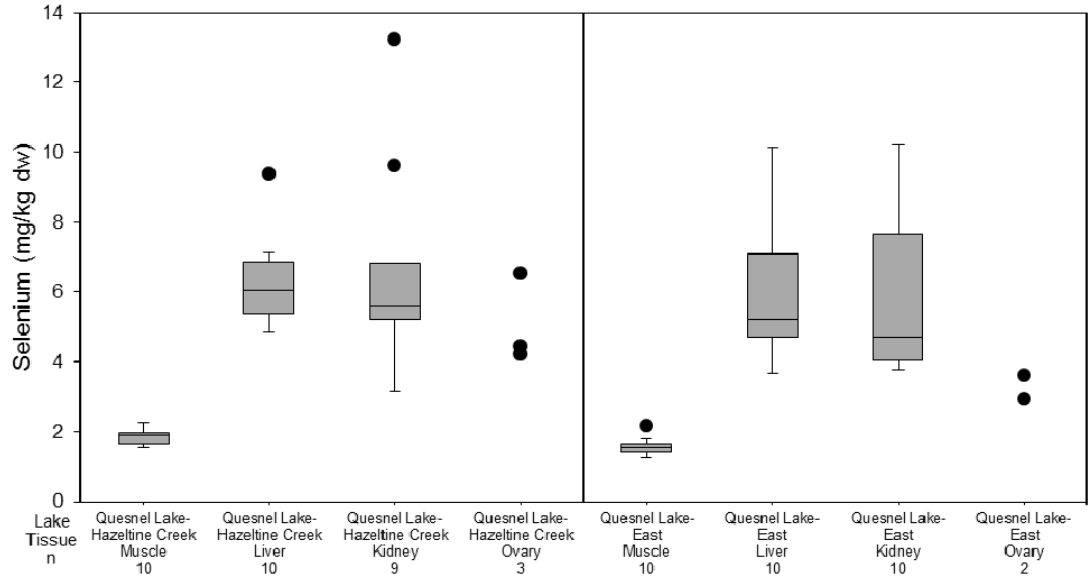


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.16 Selenium

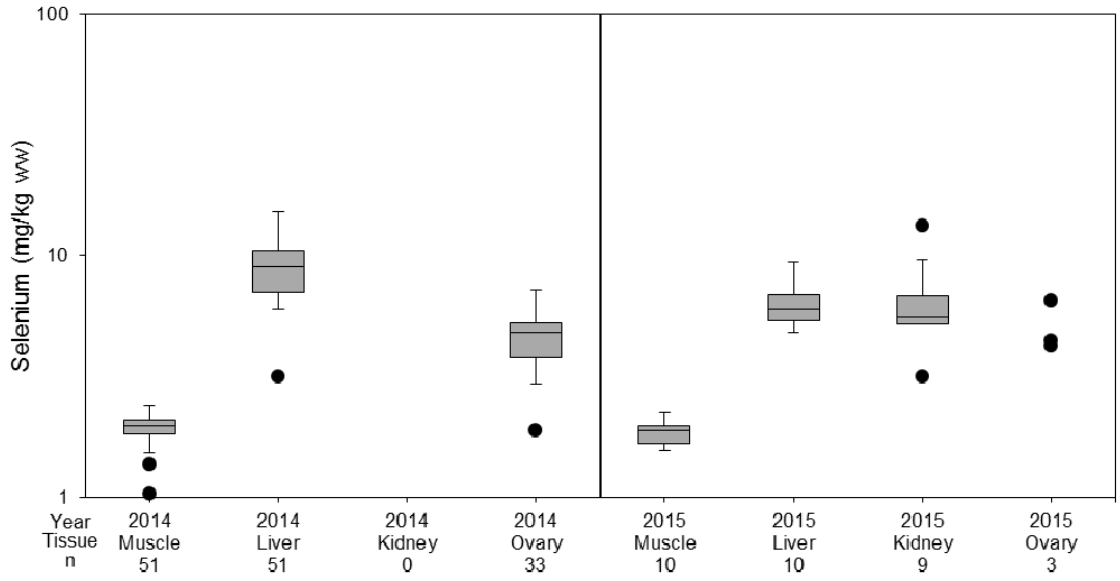
Figure 126: Selenium Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 127: Selenium Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

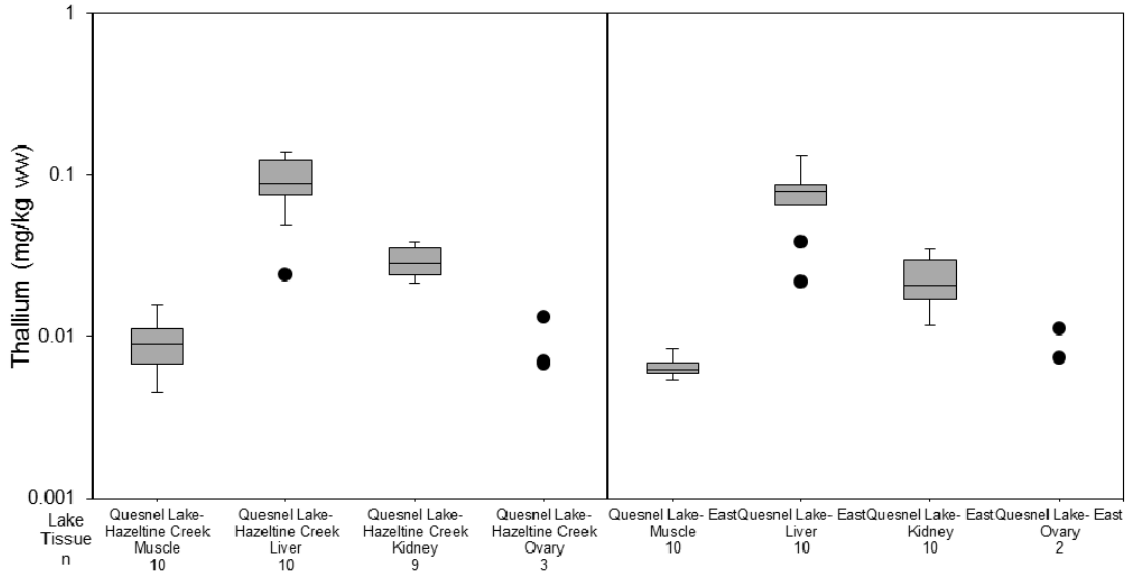


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.17 Thallium

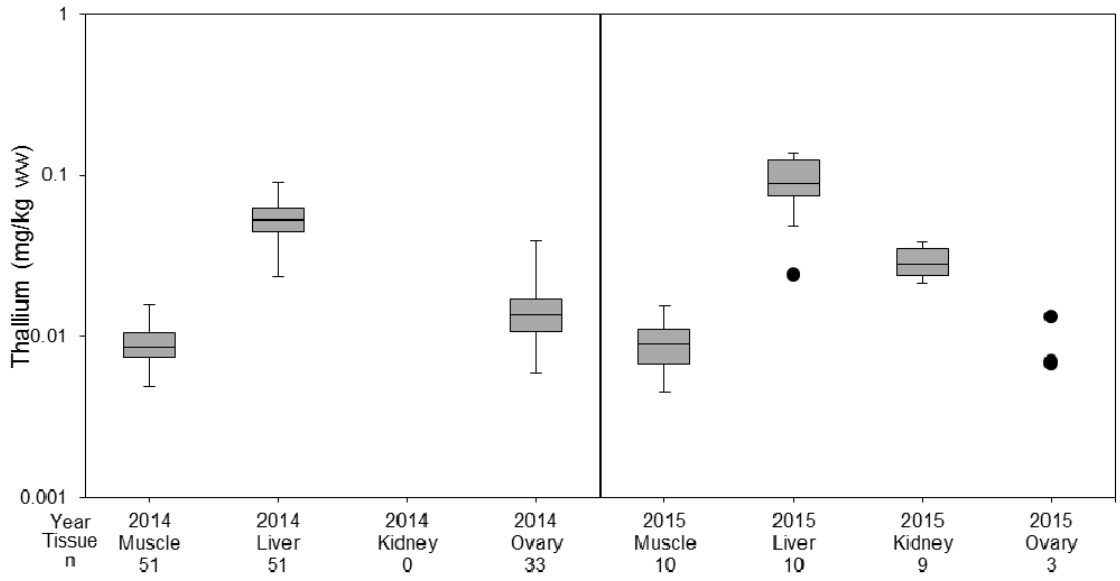
Figure 128: Thallium Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 129: Thallium Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

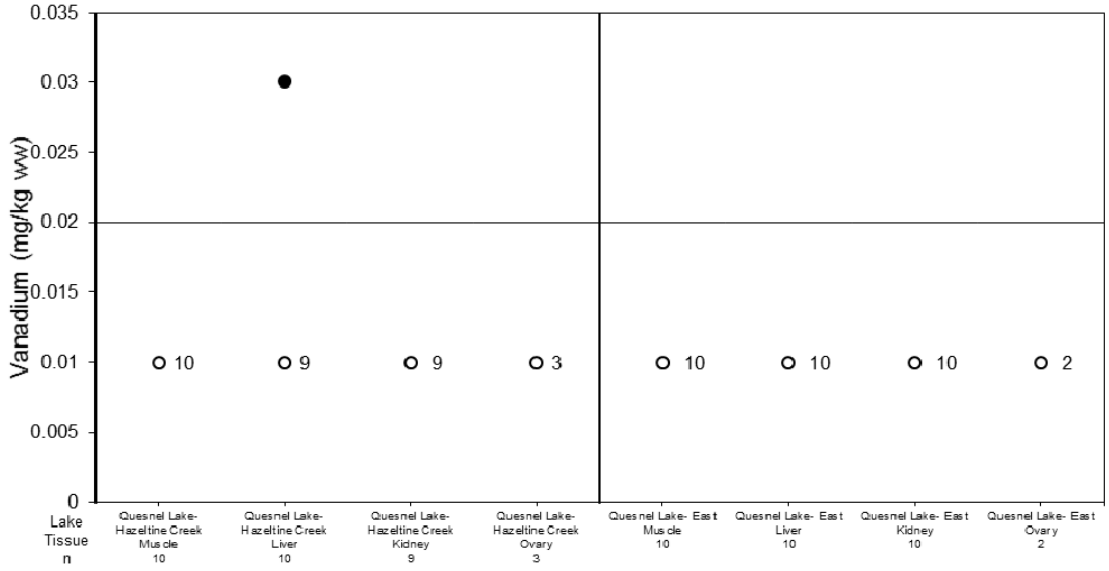


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

3.18 Vanadium

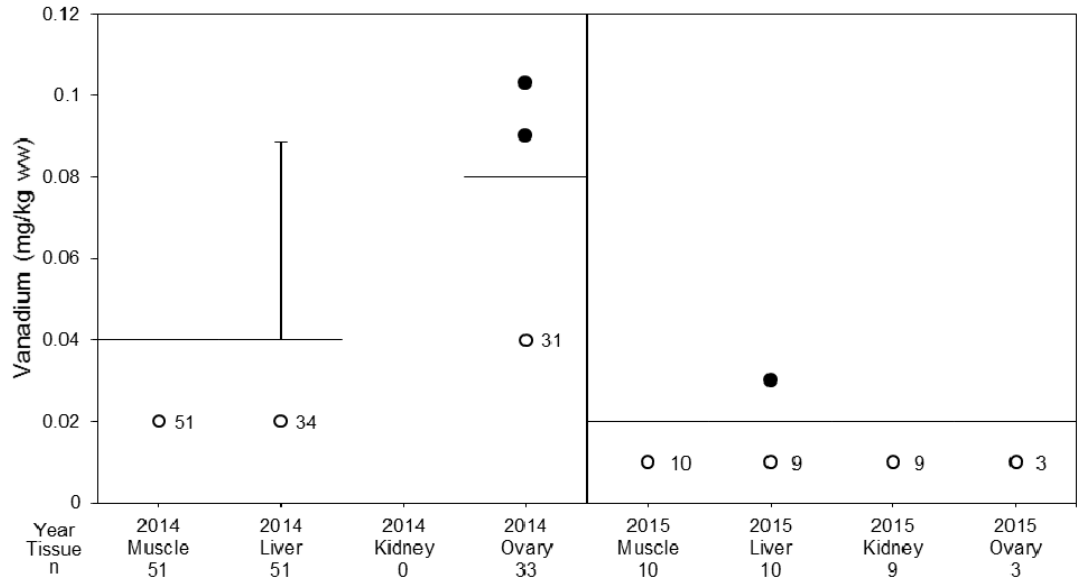
Figure 130: Vanadium Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 131: Vanadium Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

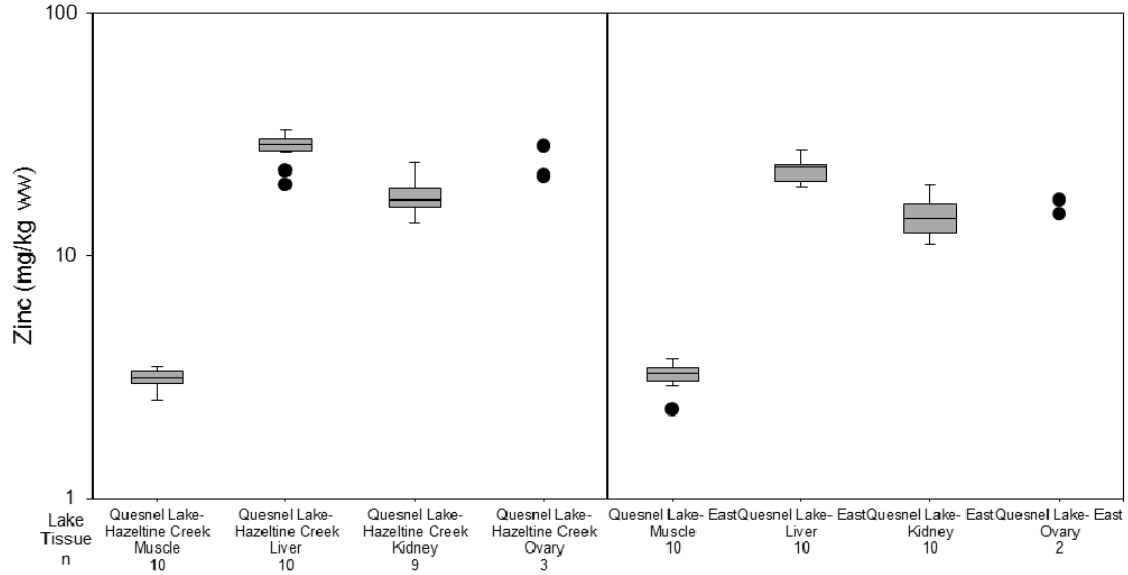


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

3.19 Zinc

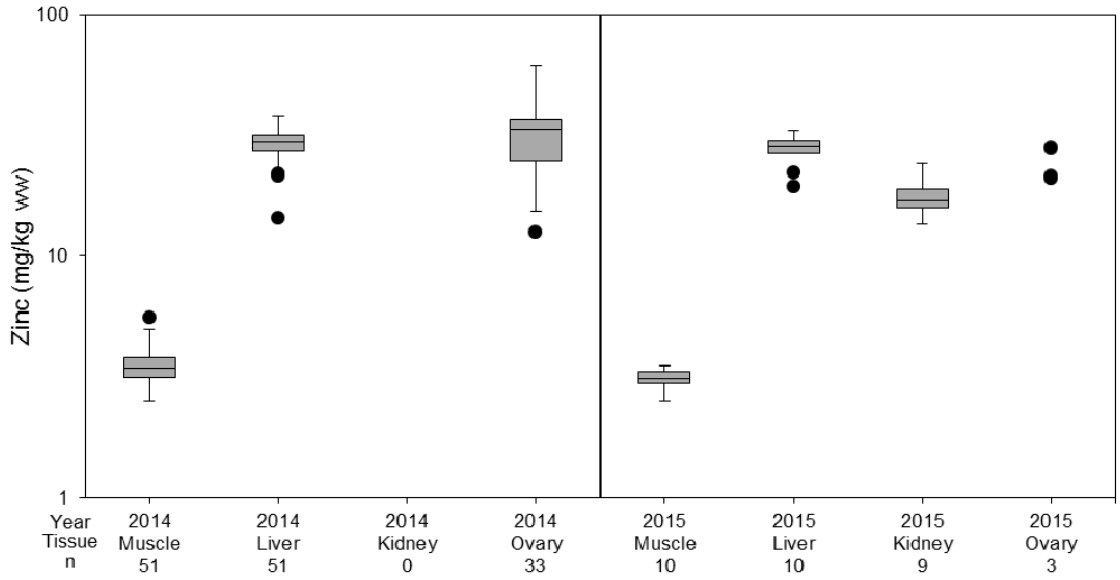
Figure 132: Zinc Concentrations in Lake Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 133: Zinc Concentrations in Lake Trout Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015



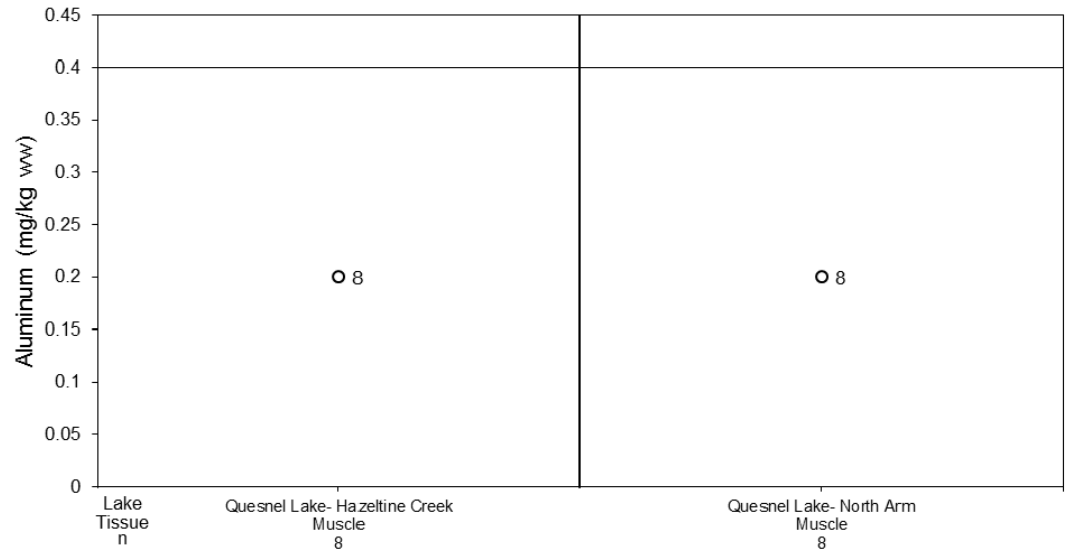
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

4.0 LARGESCALE SUCKER

4.1 Aluminum

Figure 134: Aluminum Concentrations in Largescale Sucker Tissues Collected in 2015

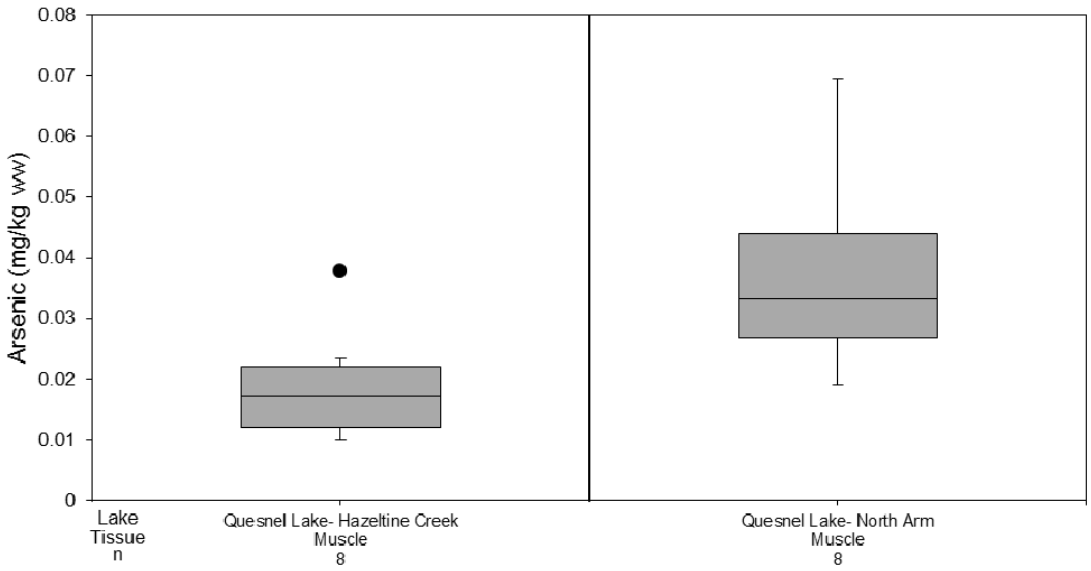


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.2 Arsenic

Figure 135: Arsenic Concentrations in Largescale Sucker Tissues Collected in 2015

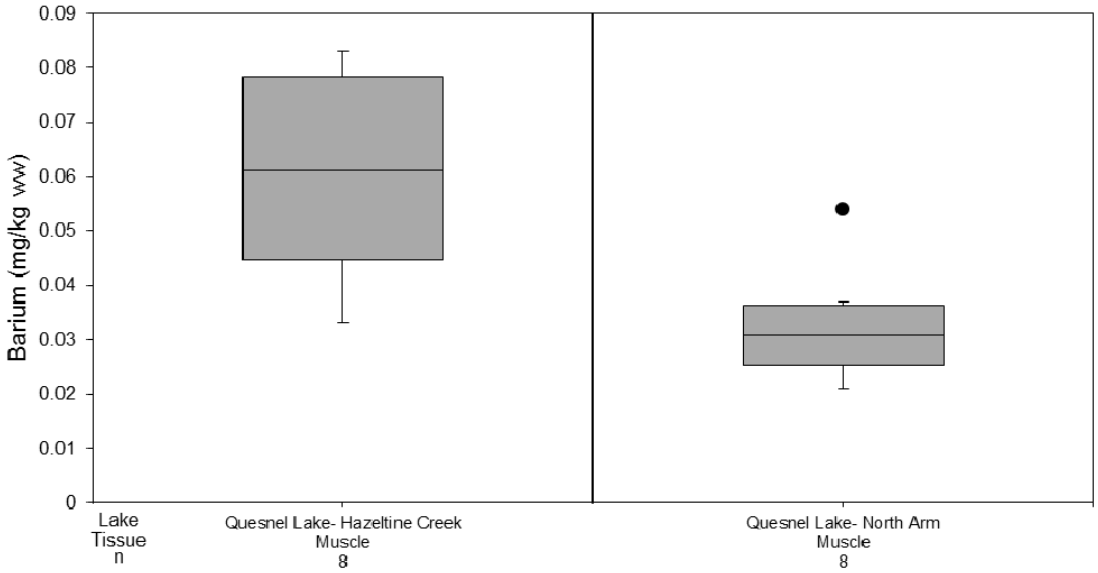


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.3 Barium

Figure 136: Barium Concentrations in Largescale Sucker Tissues Collected in 2015

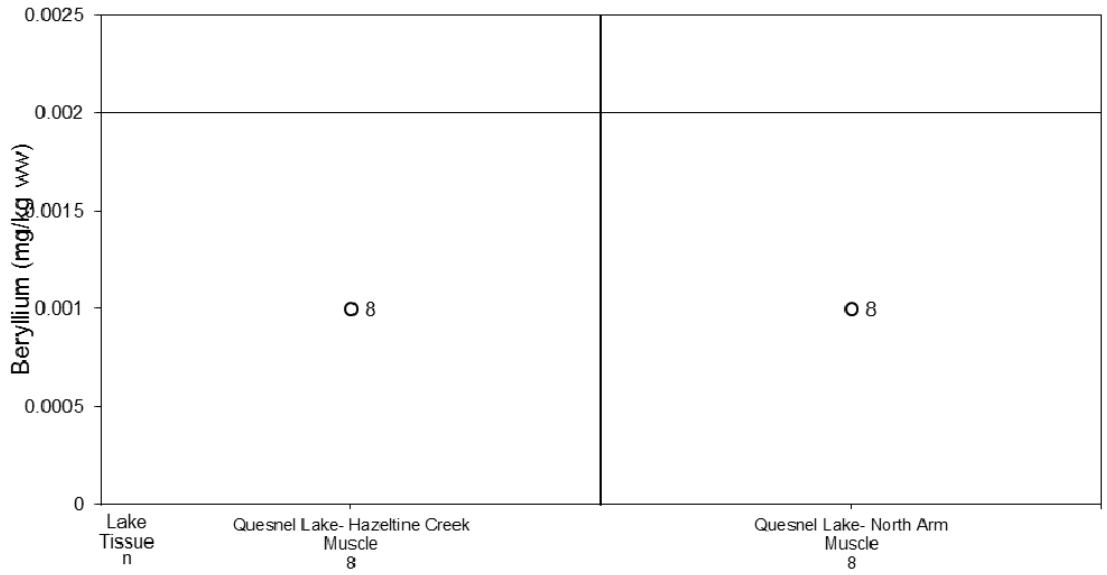


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.4 Beryllium

Figure 137: Beryllium Concentrations in Largescale Sucker Tissues Collected in 2015

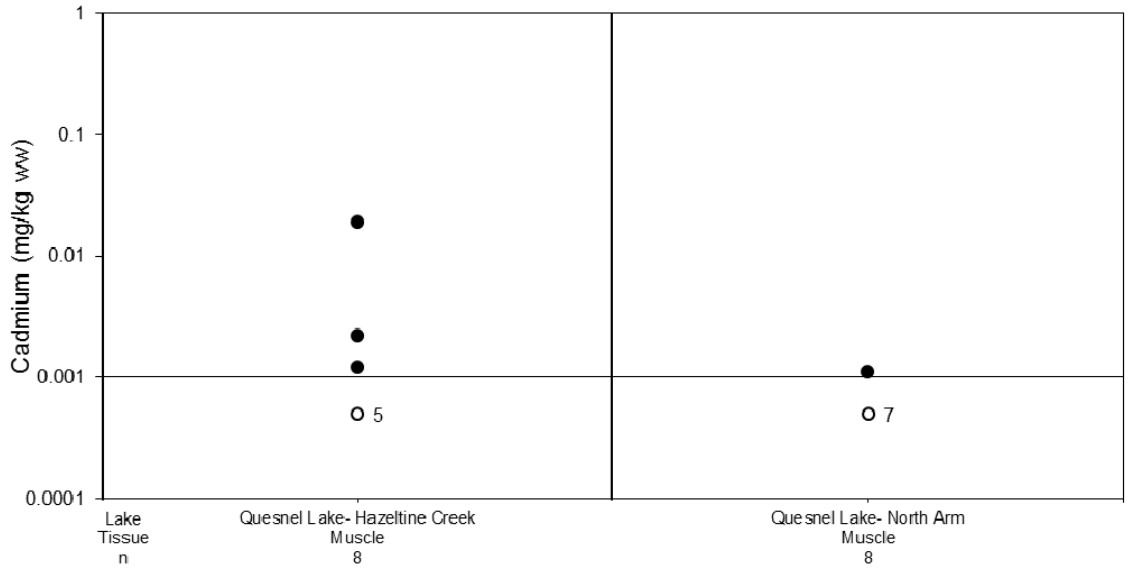


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.5 Cadmium

Figure 138: Cadmium Concentrations in Largescale Sucker Tissues Collected in 2015

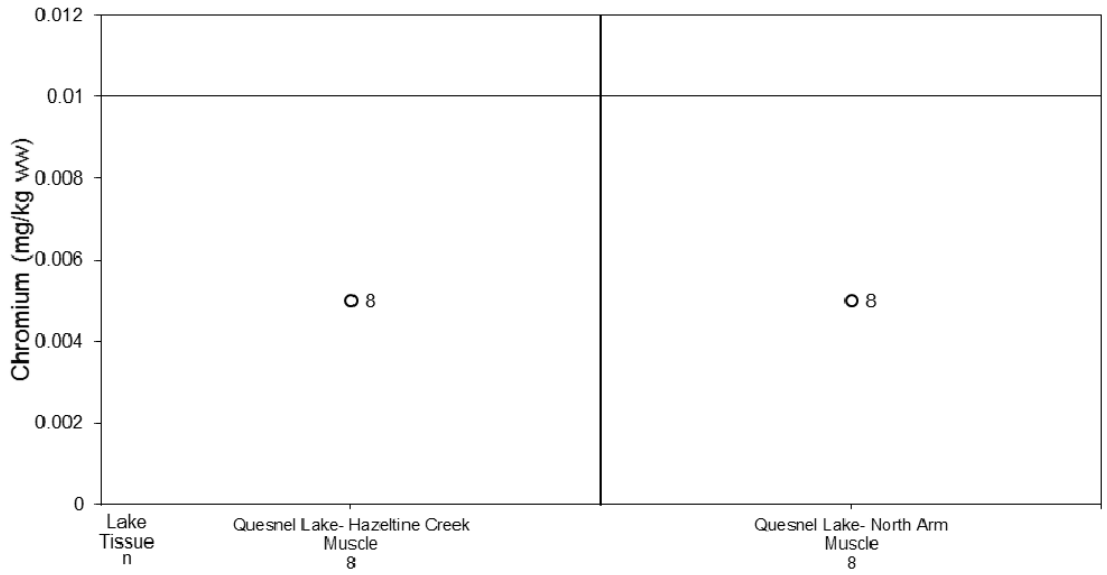


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

4.6 Chromium

Figure 139: Chromium Concentrations in Largescale Sucker Tissues Collected in 2015

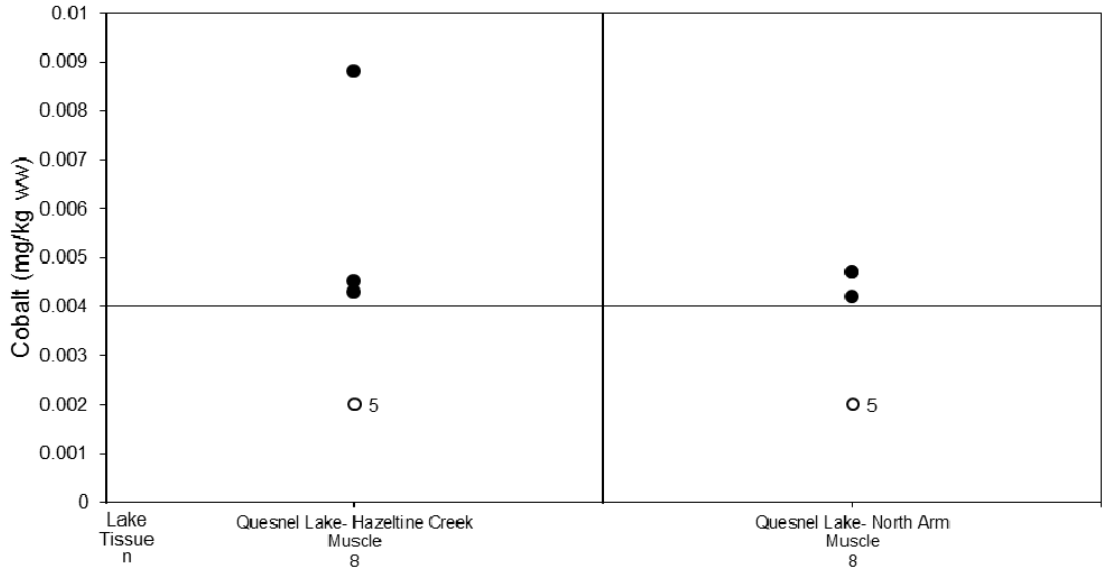


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.7 Cobalt

Figure 140: Cobalt Concentrations in Largescale Sucker Tissues Collected in 2015

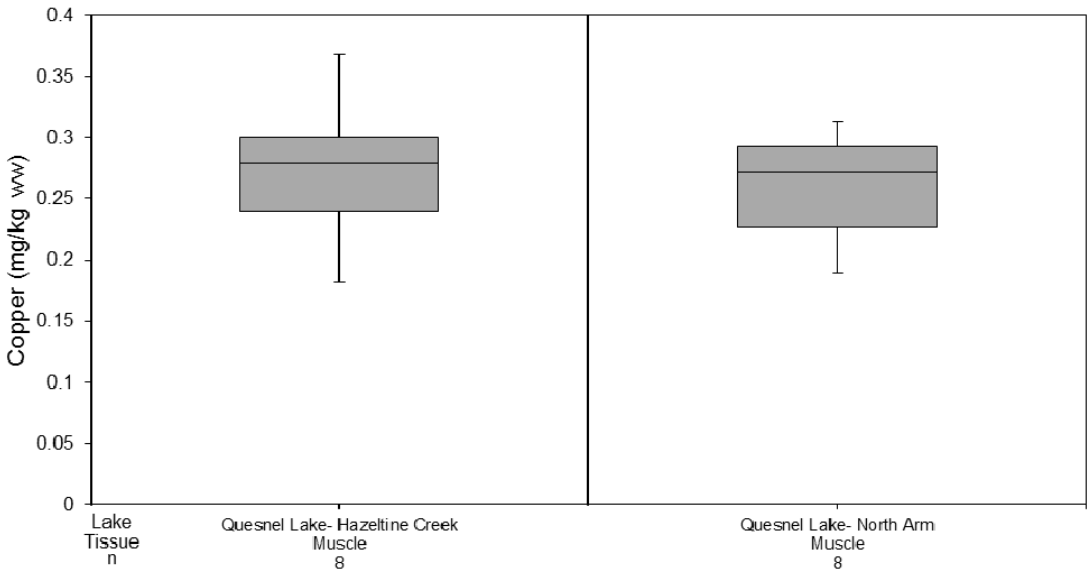


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.8 Copper

Figure 141: Copper Concentrations in Largescale Sucker Tissues Collected in 2015

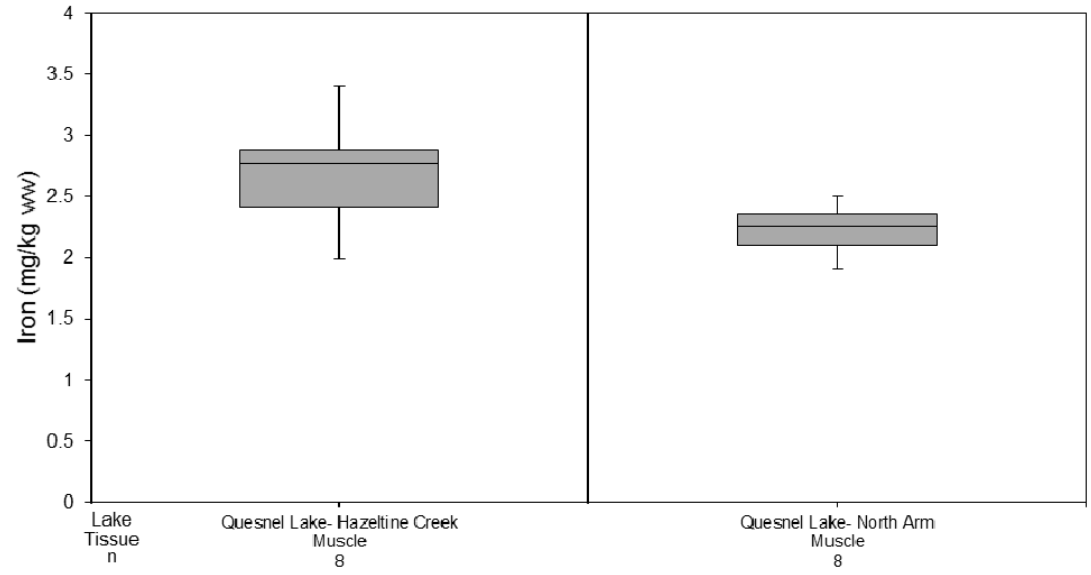


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.9 Iron

Figure 142: Iron Concentrations in Largescale Sucker Tissues Collected in 2015

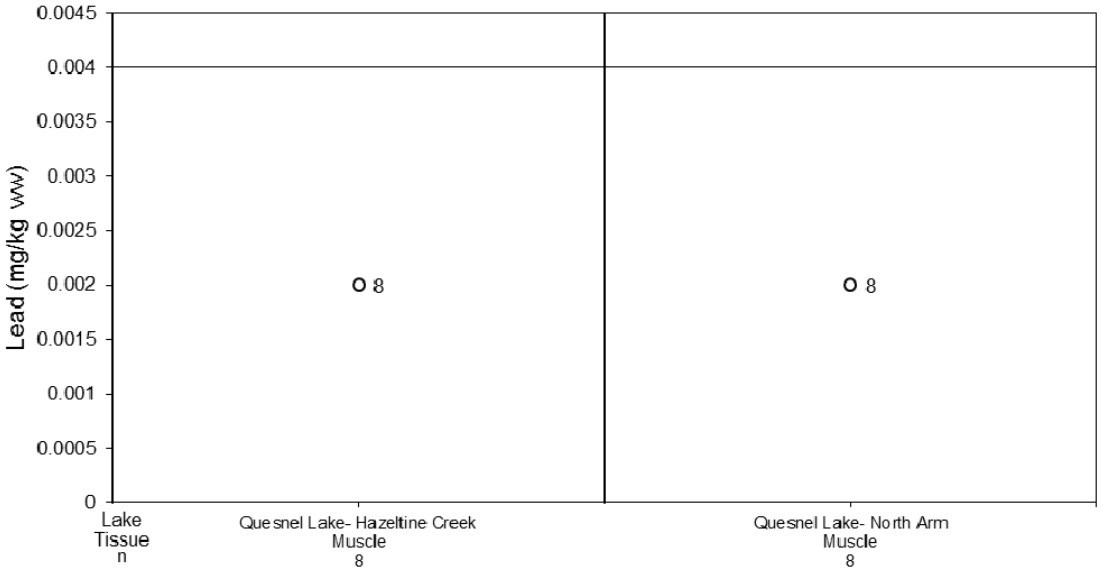


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.10 Lead

Figure 143: Lead Concentrations in Largescale Sucker Tissues Collected in 2015

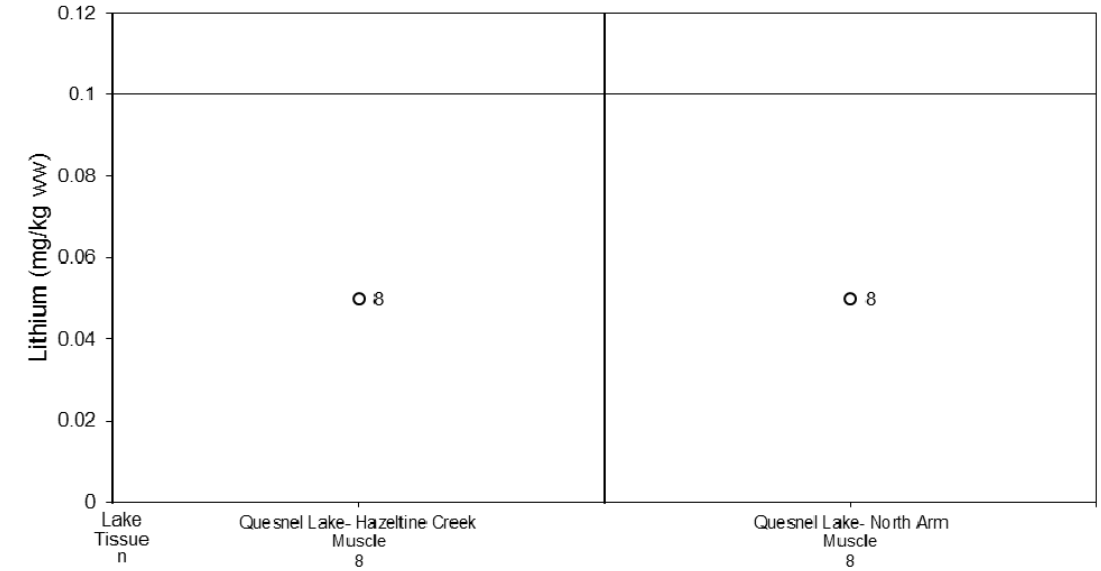


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.11 Lithium

Figure 144: Lithium Concentrations in Largescale Sucker Tissues Collected in 2015

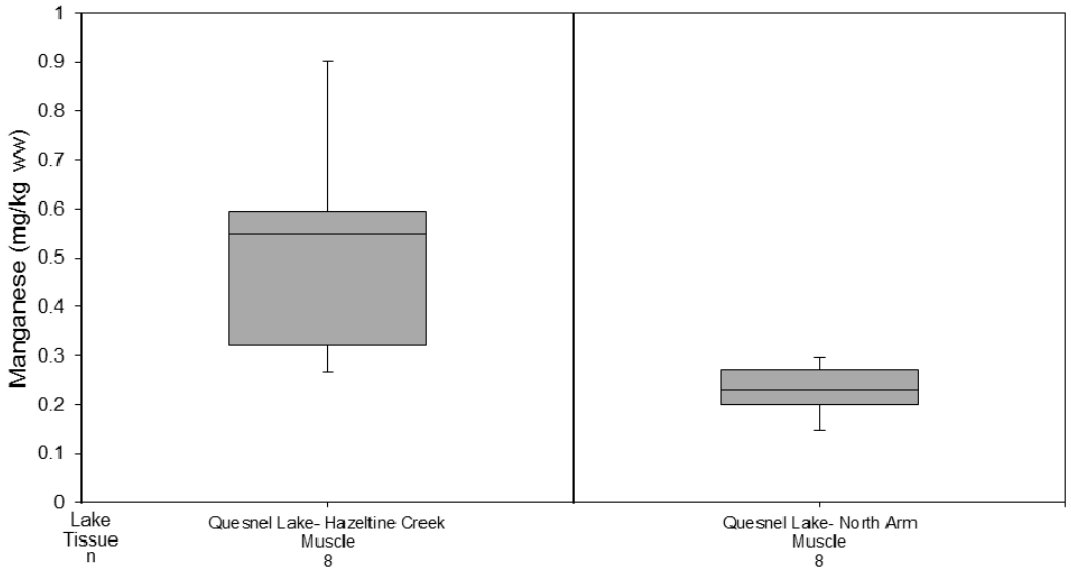


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.12 Manganese

Figure 145: Manganese Concentrations in Largescale Sucker Tissues Collected in 2015

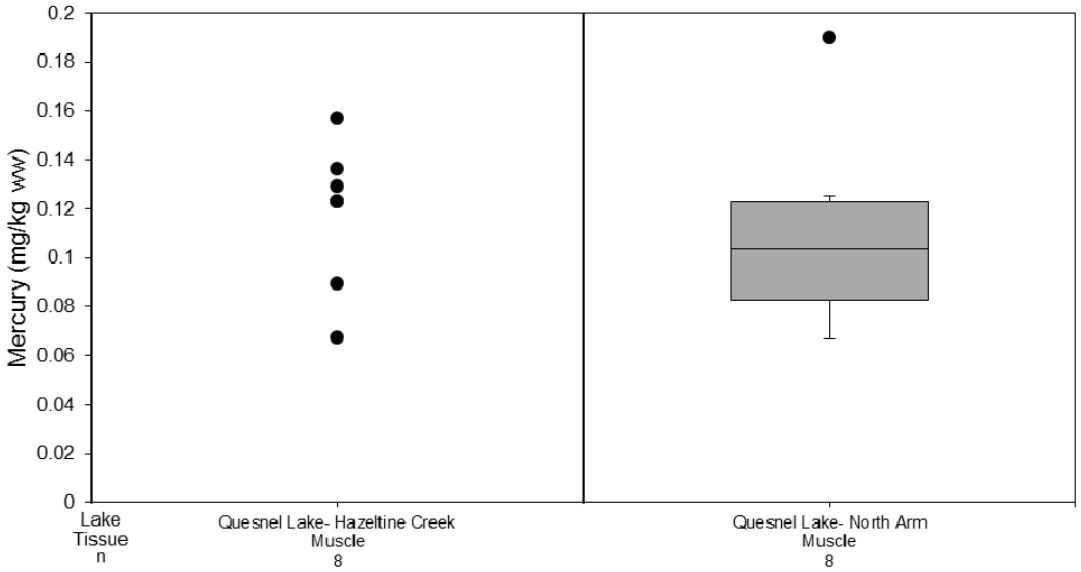


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.13 Mercury

Figure 146: Mercury Concentrations in Largescale Sucker Tissues Collected in 2015

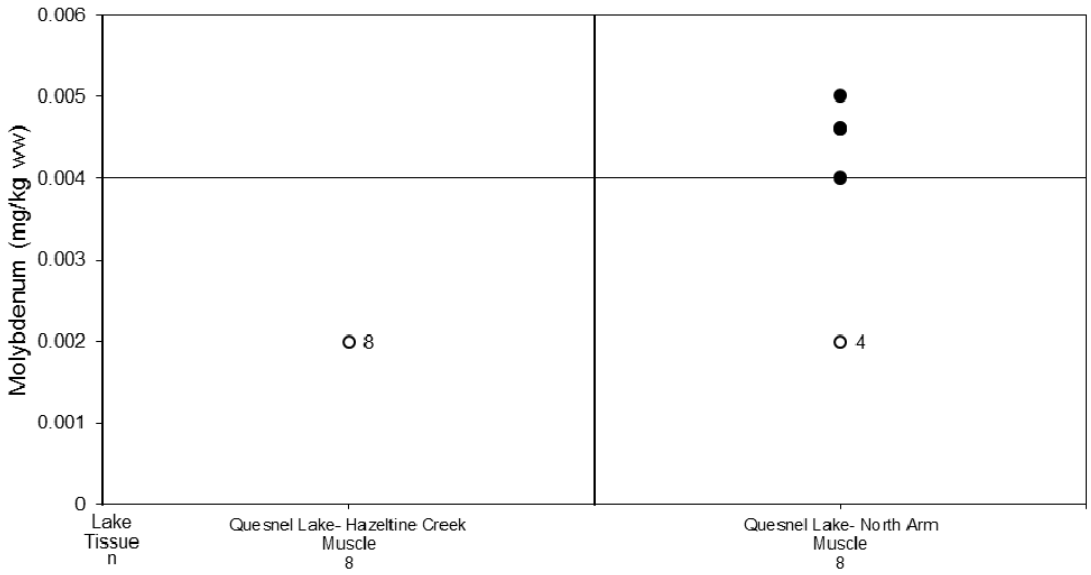


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.14 Molybdenum

Figure 147: Molybdenum Concentrations in Largescale Sucker Tissues Collected in 2015

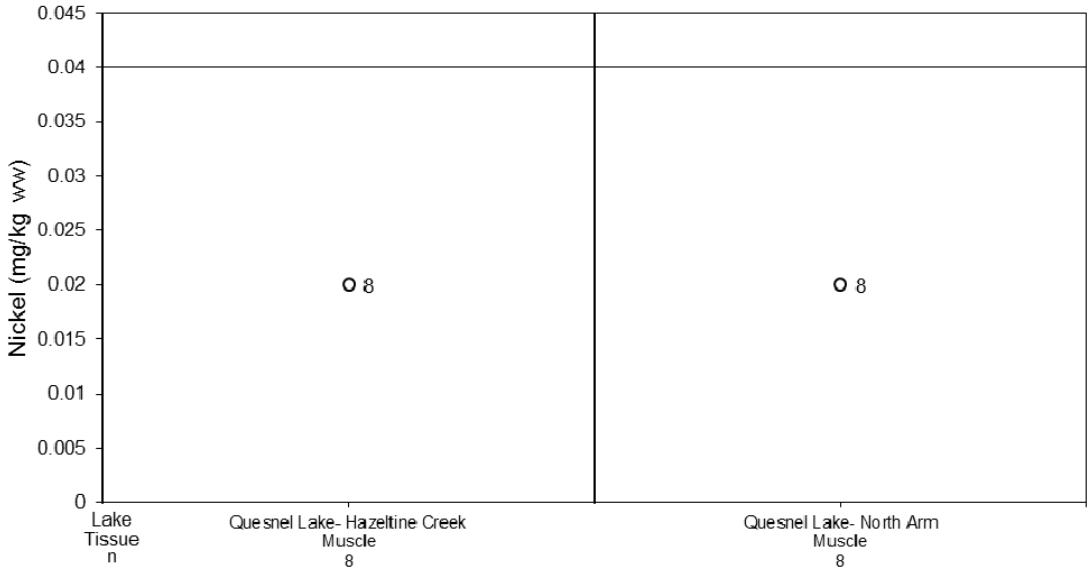


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.15 Nickel

Figure 148: Nickel Concentrations in Largescale Sucker Tissues Collected in 2015

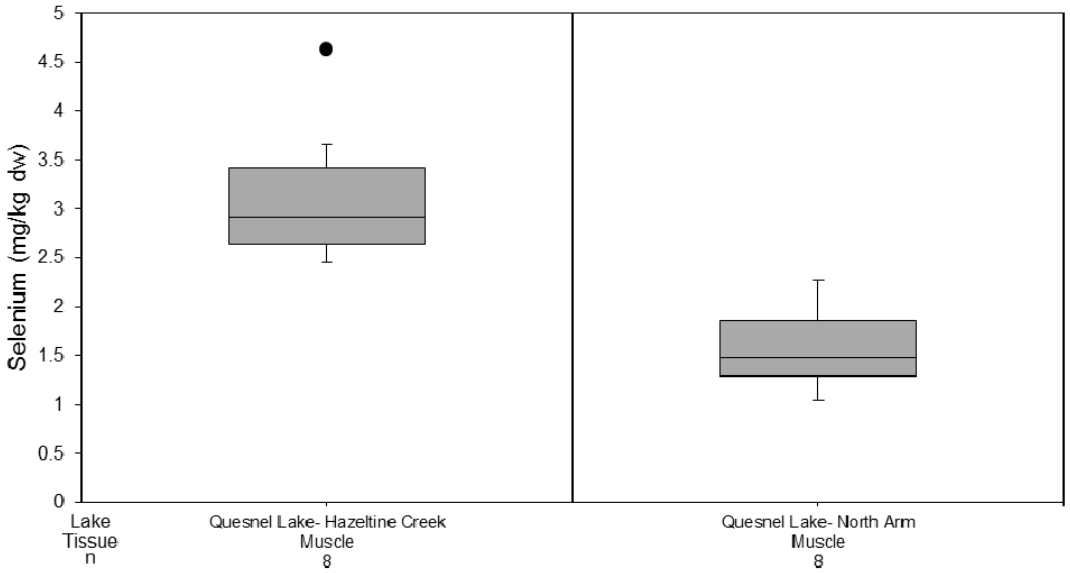


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.16 Selenium

Figure 149: Selenium Concentrations in Largescale Sucker Tissues Collected in 2015

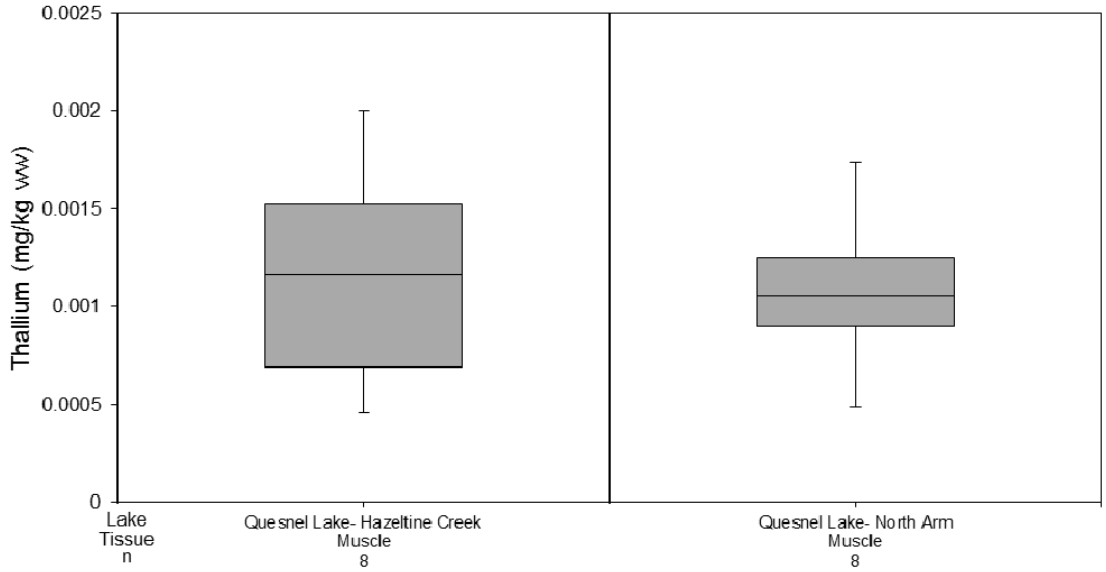


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.17 Thallium

Figure 150: Thallium Concentrations in Largescale Sucker Tissues Collected in 2015

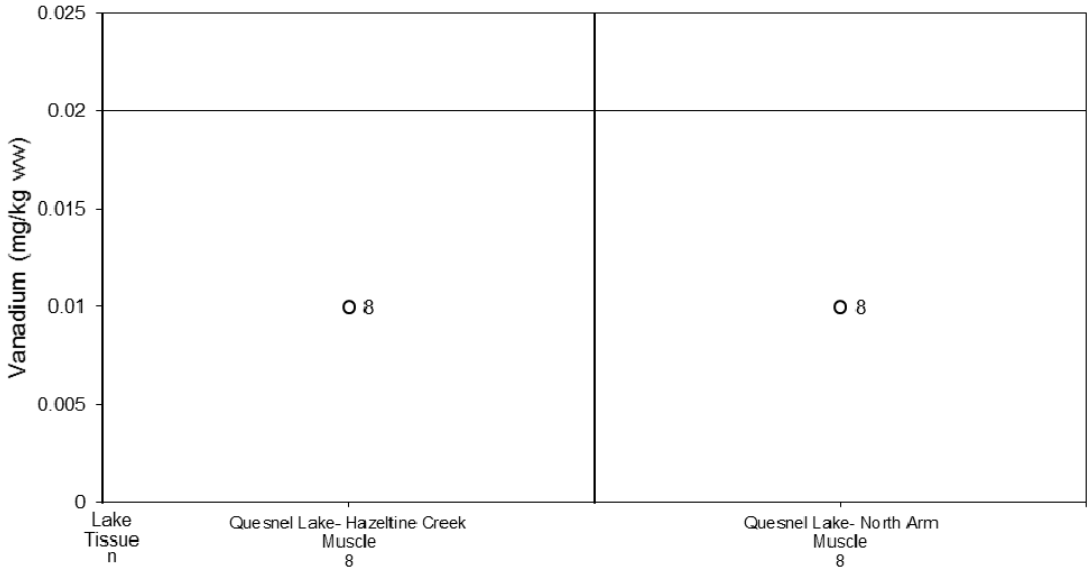


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.18 Vanadium

Figure 151: Vanadium Concentrations in Largescale Sucker Tissues Collected in 2015

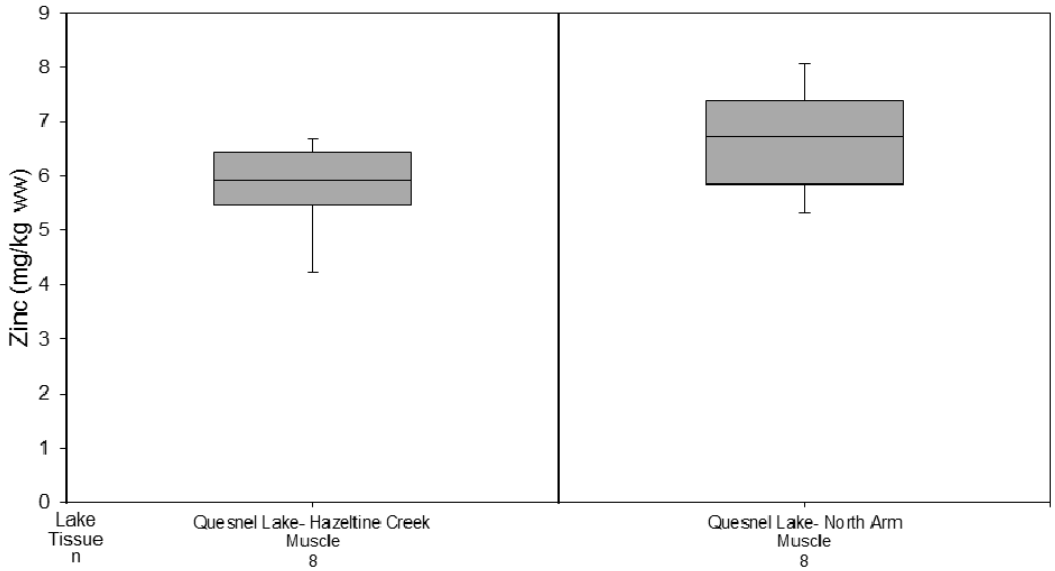


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

4.19 Zinc

Figure 152: Zinc Concentrations in Largescale Sucker Tissues Collected in 2015



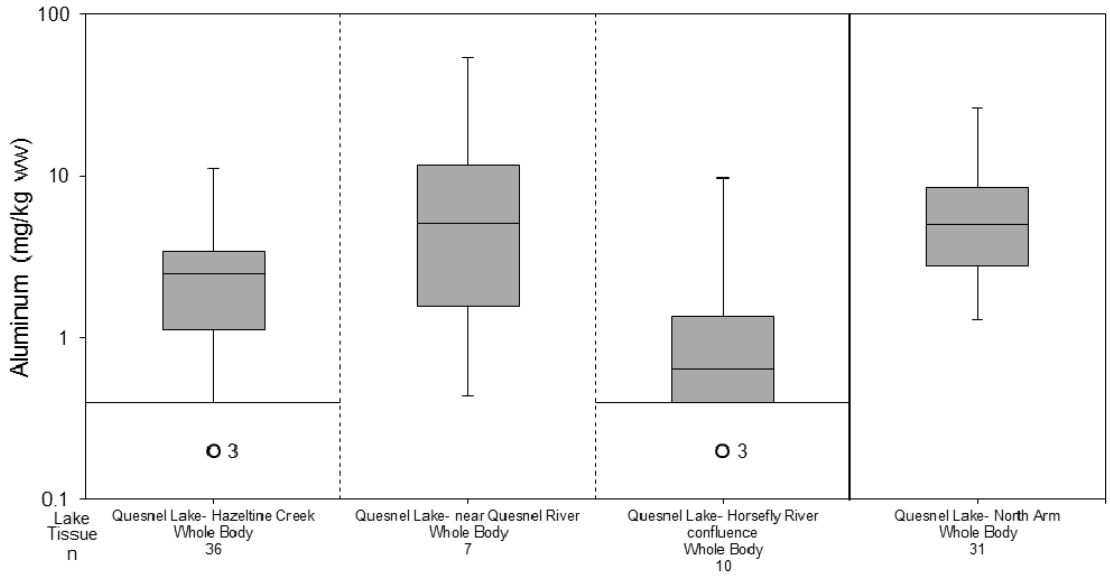
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.0 NORTHERN PIKEMINNOW

5.1 Aluminum

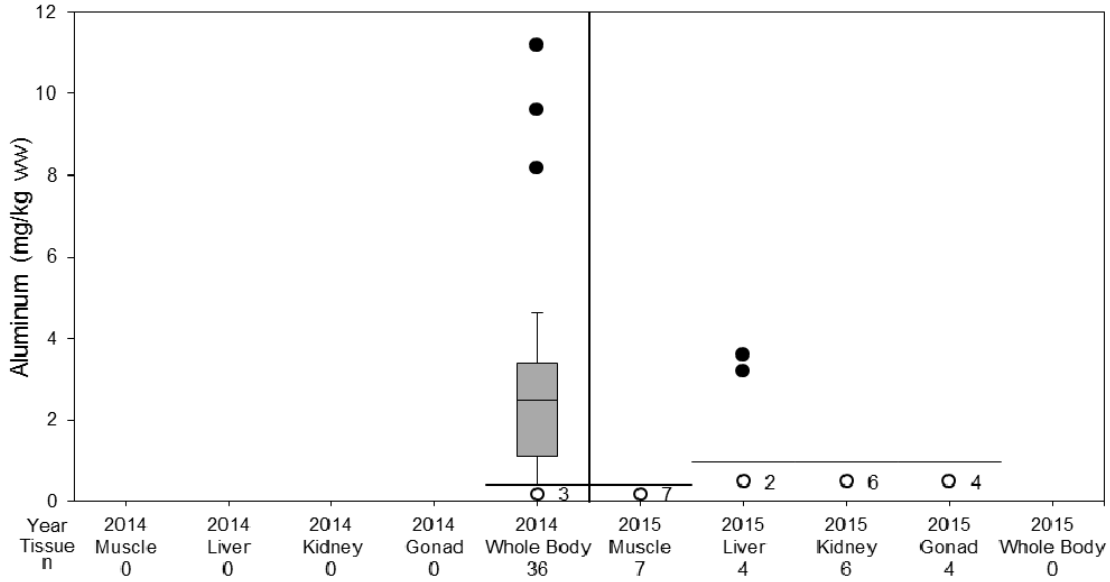
Figure 153: Aluminum Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 154: Aluminum Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

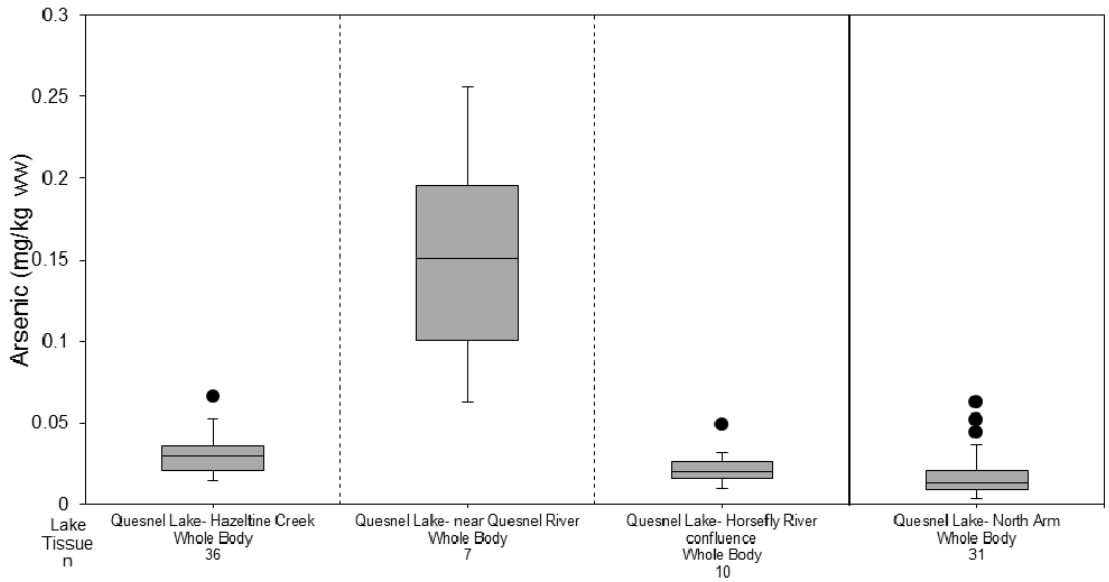


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.2 Arsenic

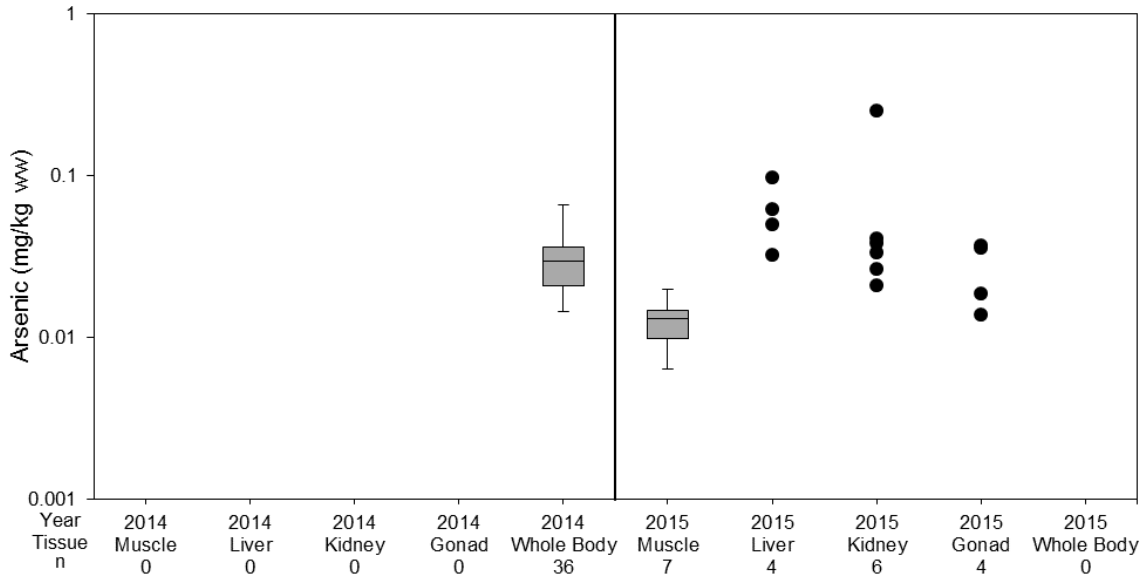
Figure 155: Arsenic Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 156: Arsenic Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

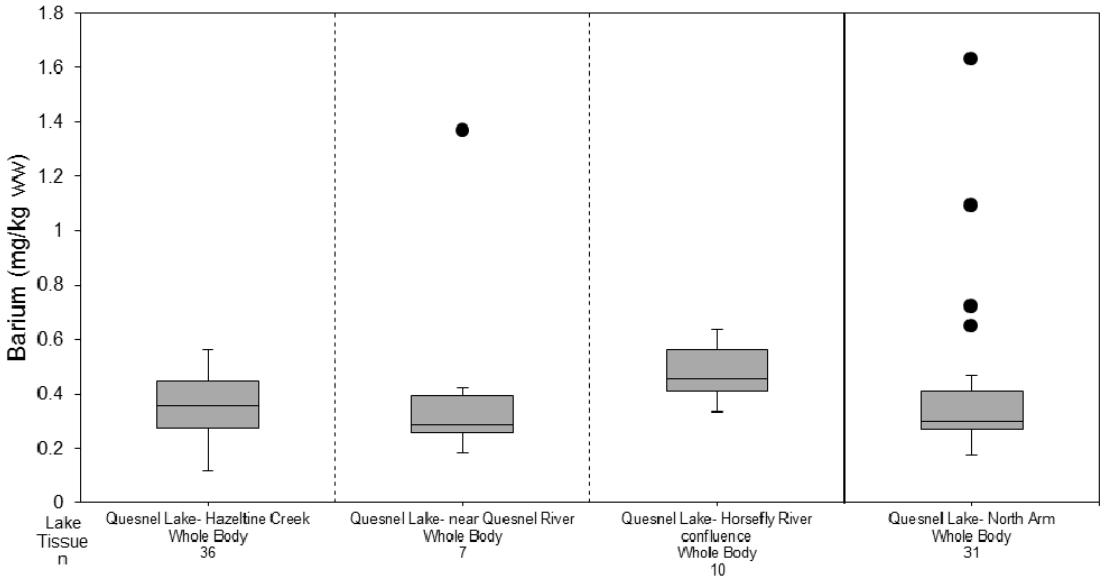


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

5.3 Barium

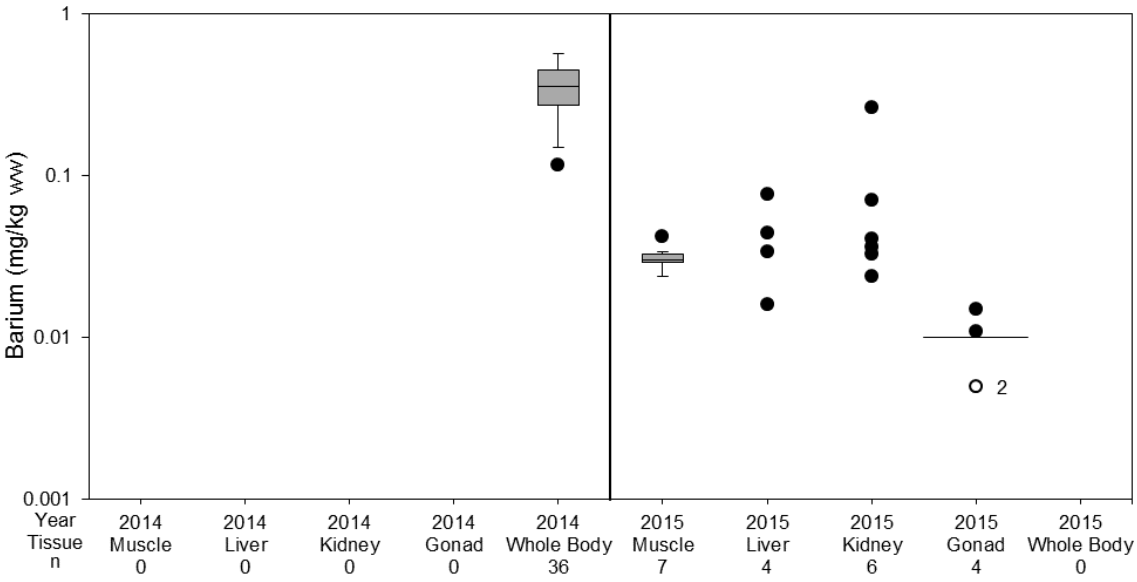
Figure 157: Barium Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 158: Barium Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

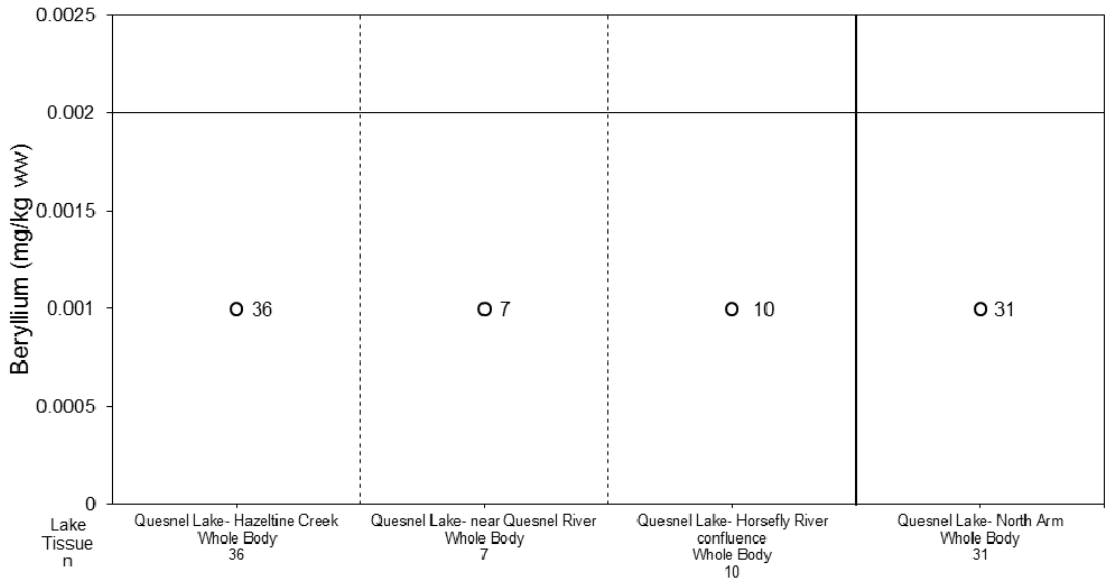


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

5.4 Beryllium

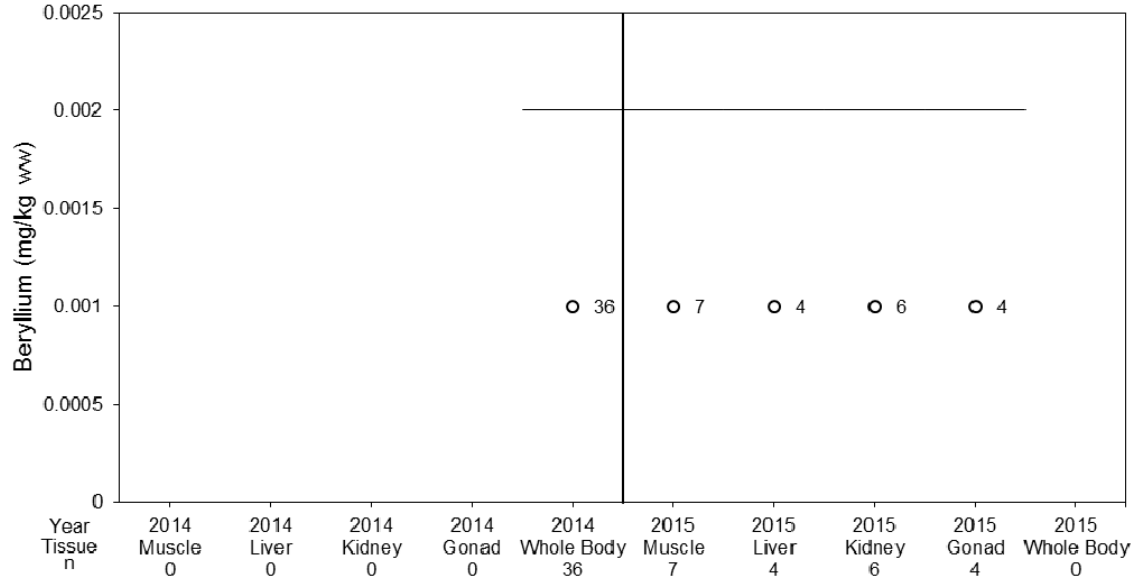
Figure 159: Beryllium Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 160: Beryllium Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

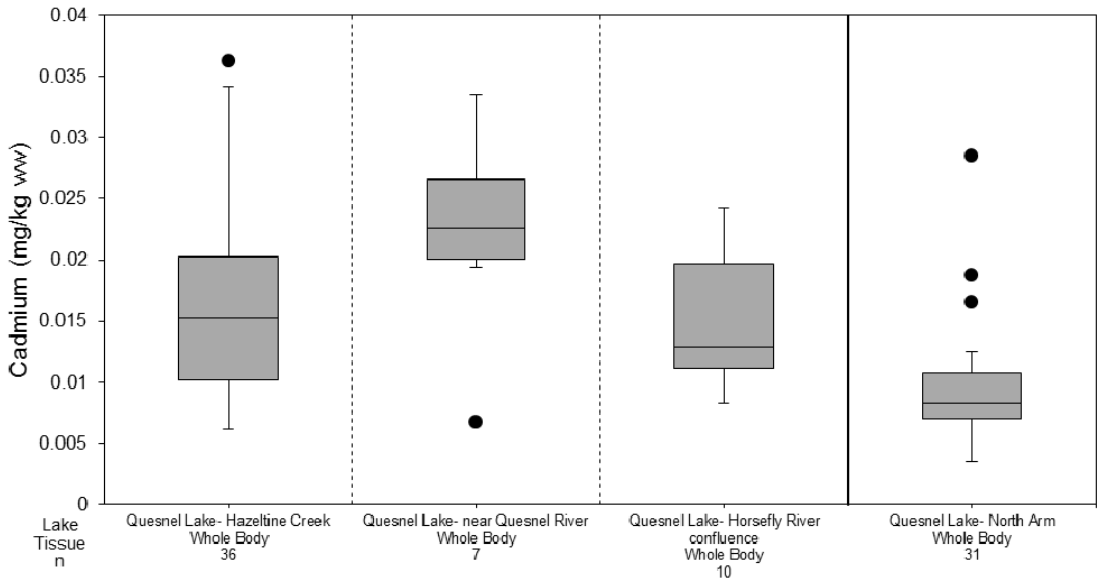


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.5 Cadmium

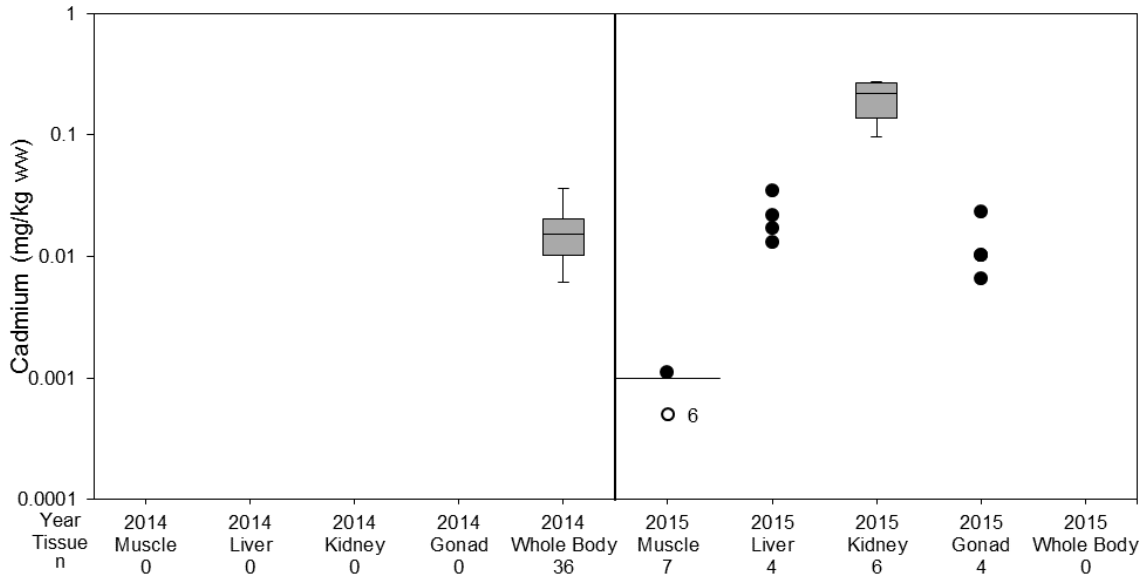
Figure 161: Cadmium Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 162: Cadmium Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

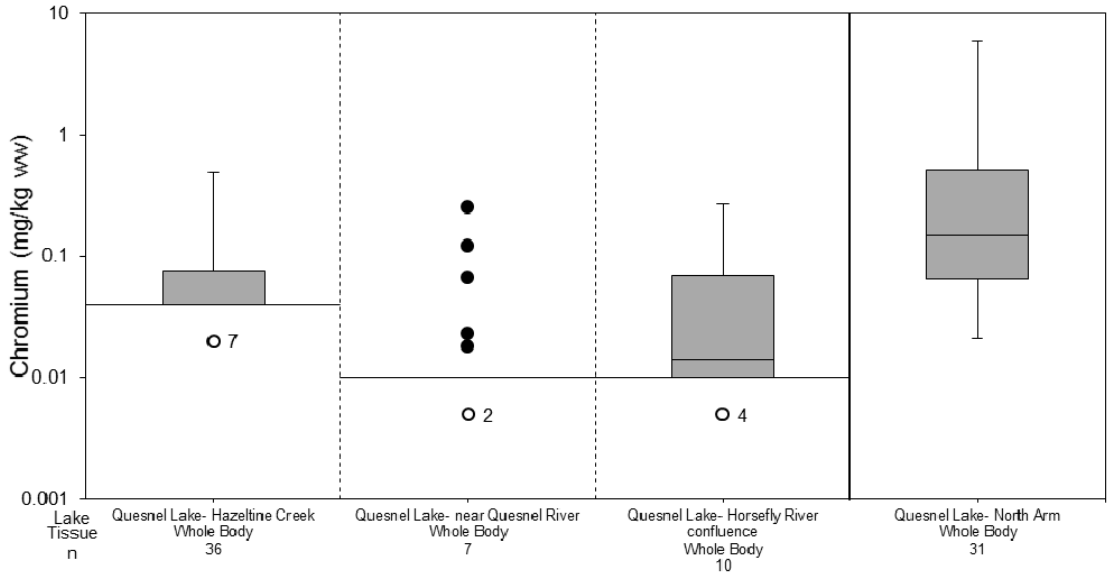


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.6 Chromium

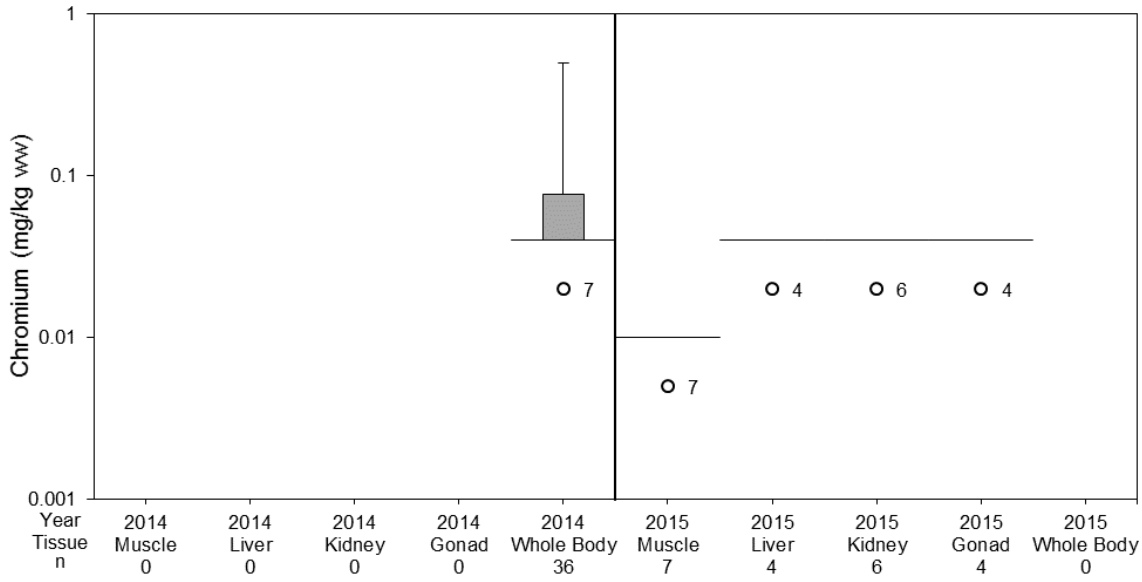
Figure 163: Chromium Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 164: Chromium Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

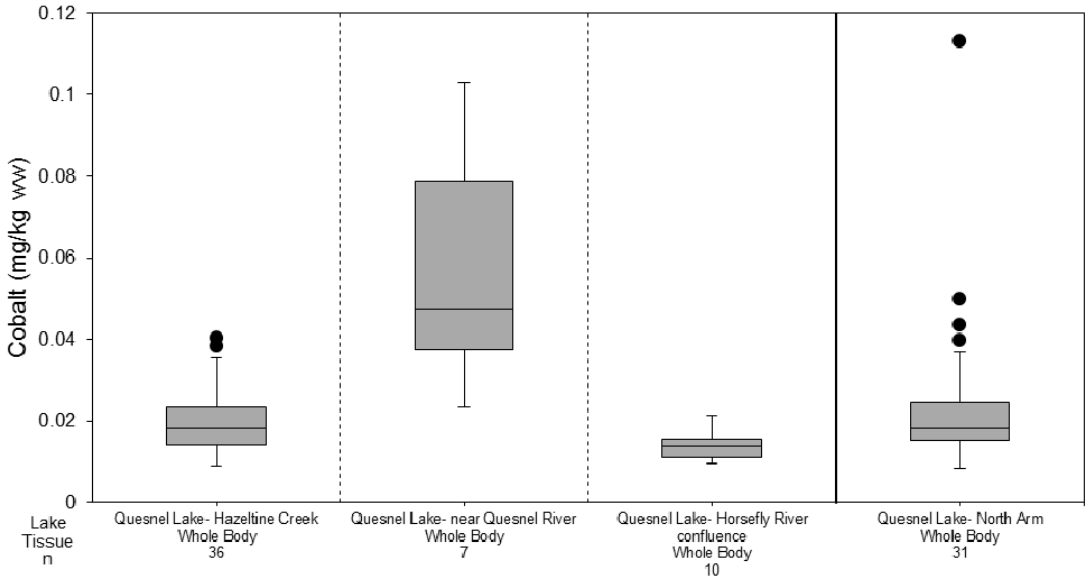


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.7 Cobalt

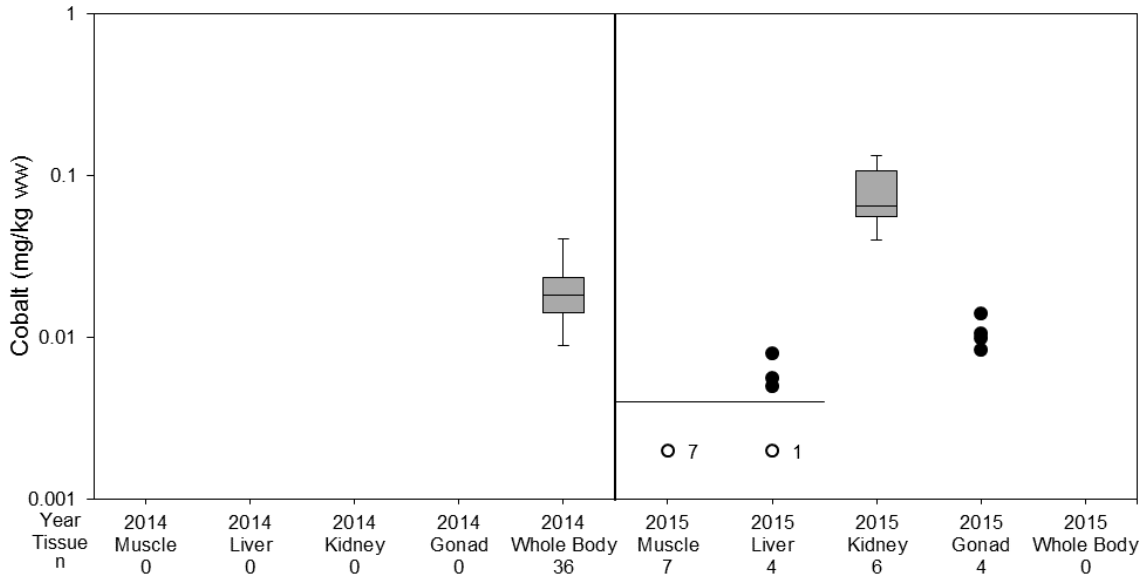
Figure 165: Cobalt Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 166: Cobalt Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

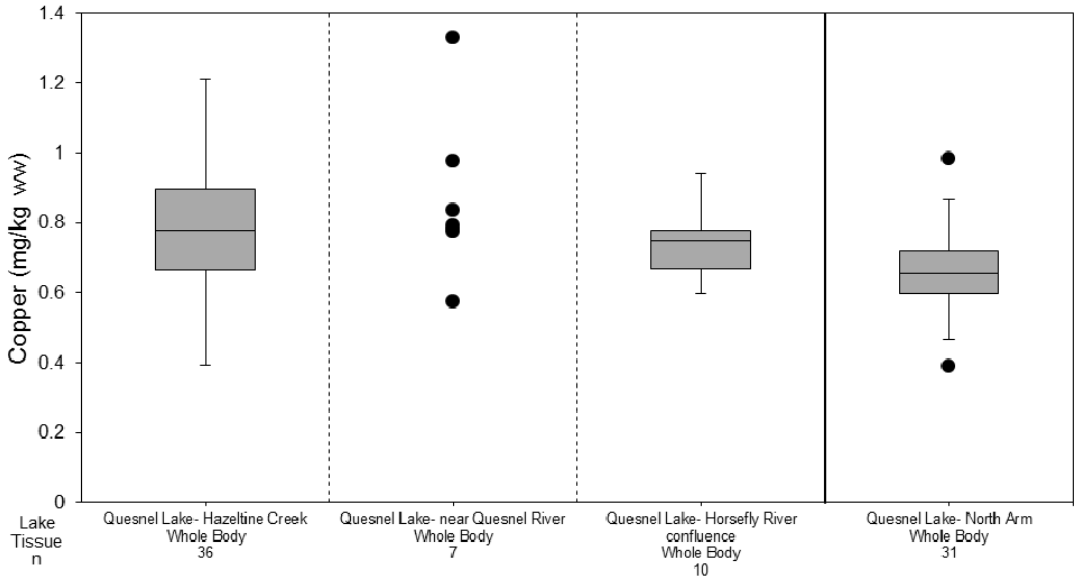


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

5.8 Copper

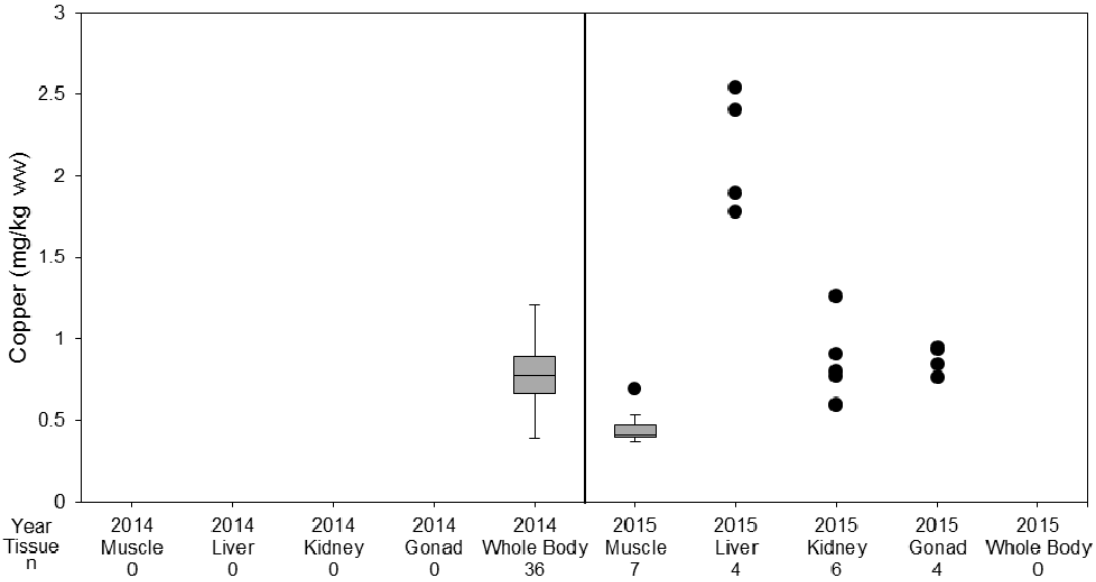
Figure 167: Copper Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 168: Copper Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

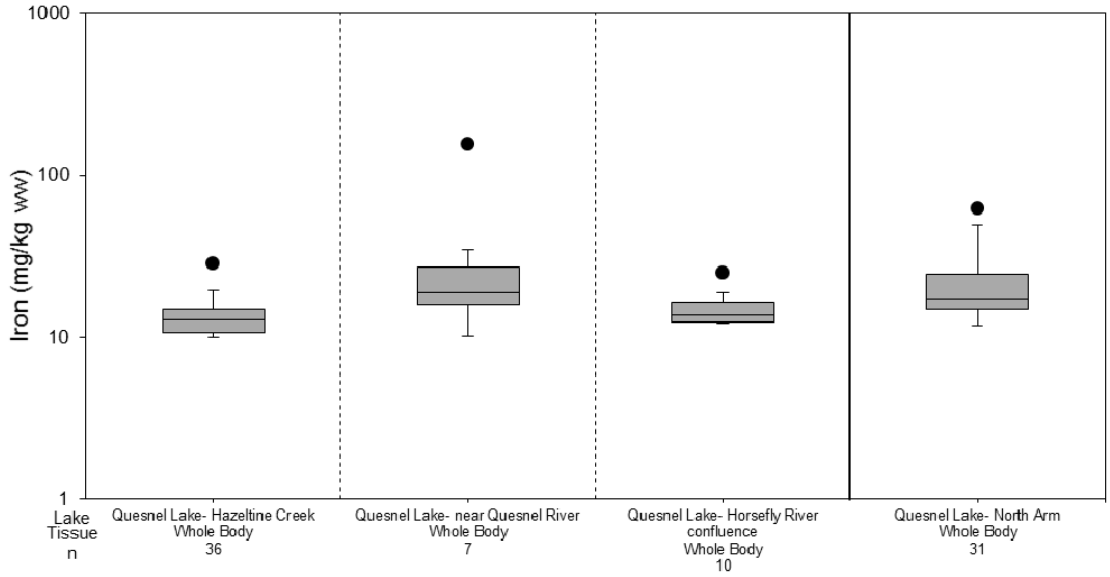


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.9 Iron

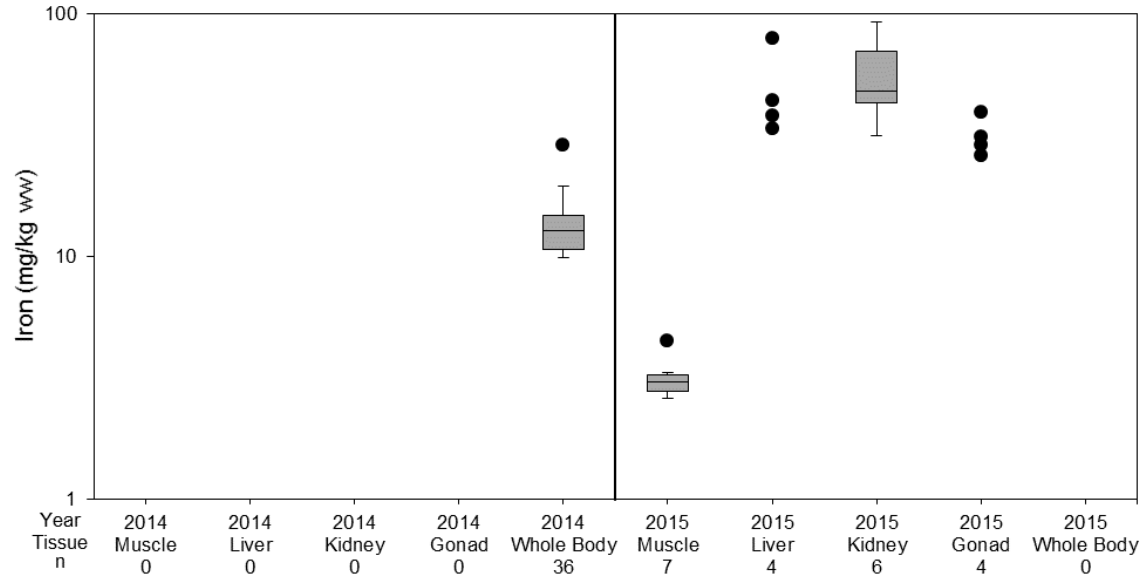
Figure 169: Iron Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 170: Iron Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

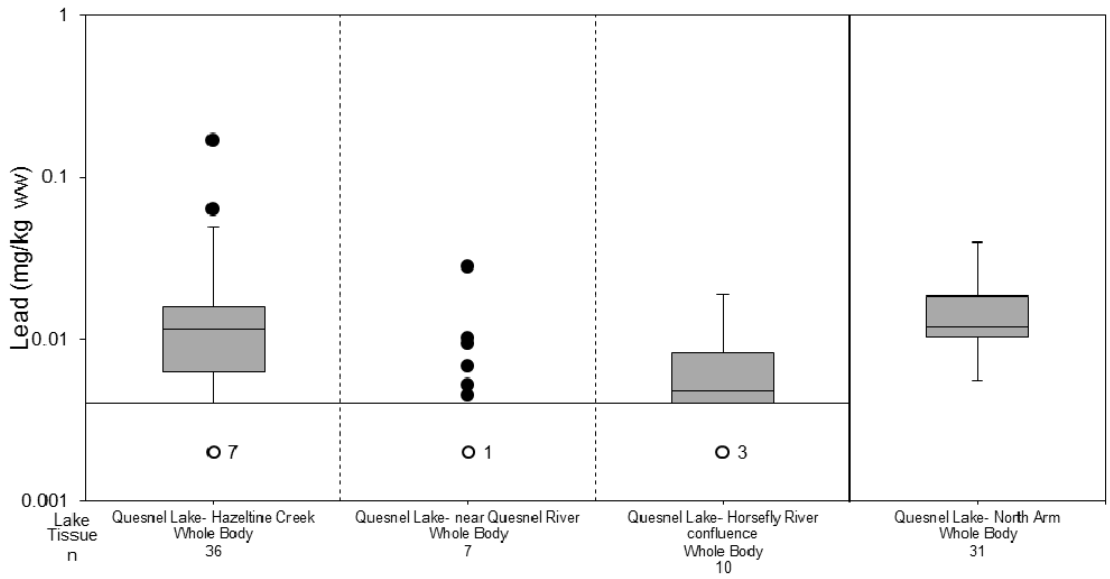


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

5.10 Lead

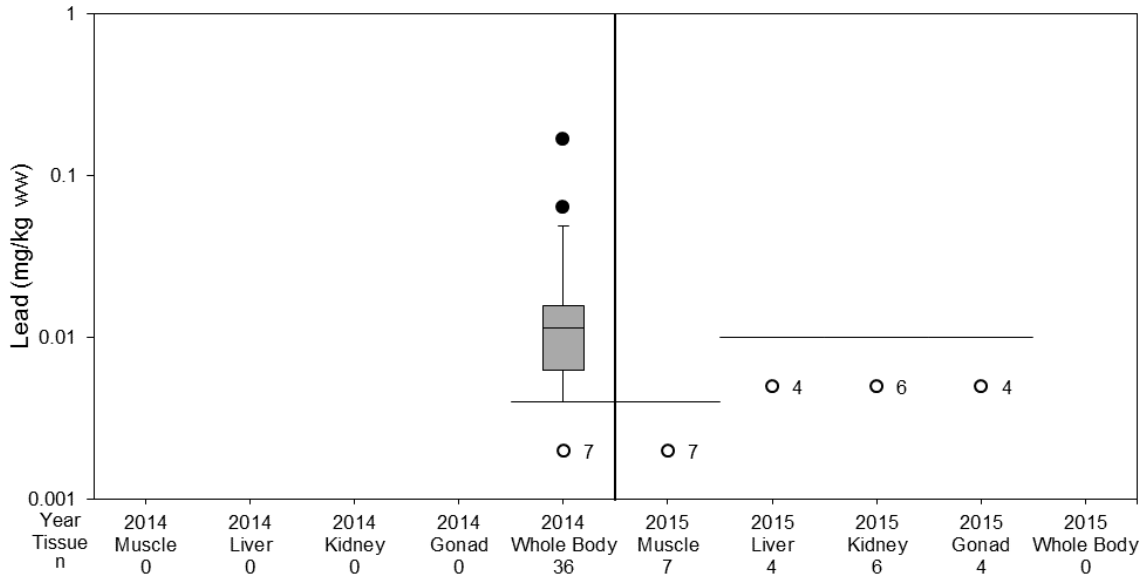
Figure 171: Lead Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 172: Lead Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

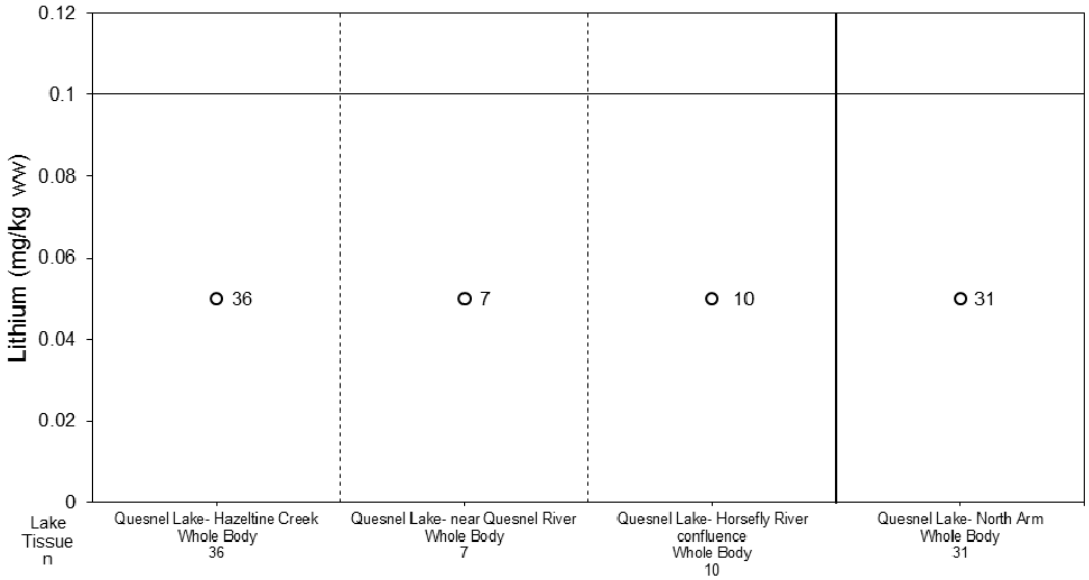


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

5.11 Lithium

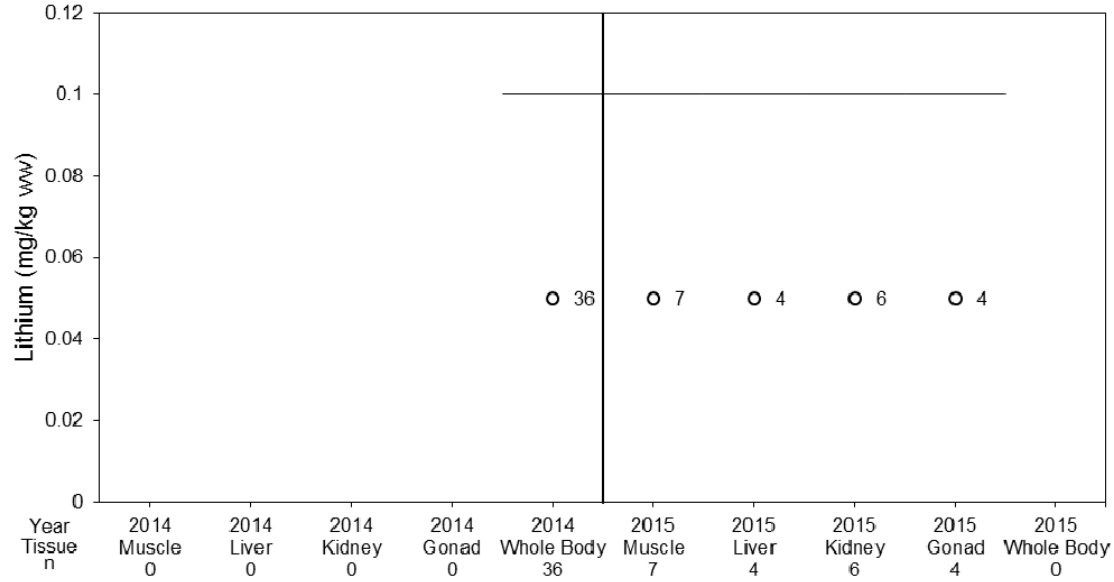
Figure 173: Lithium Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 174: Lithium Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

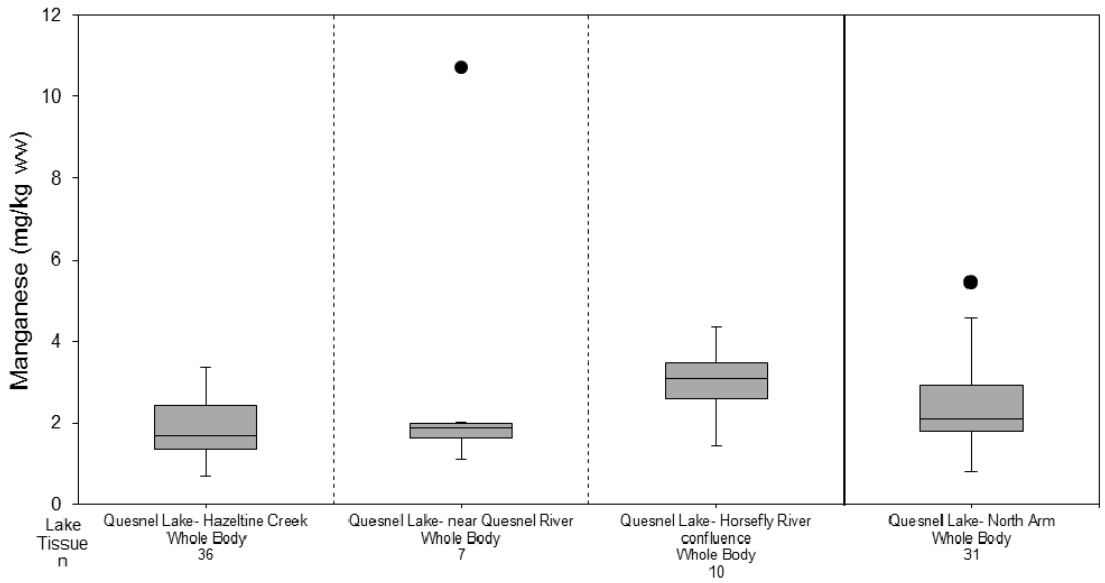


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.12 Manganese

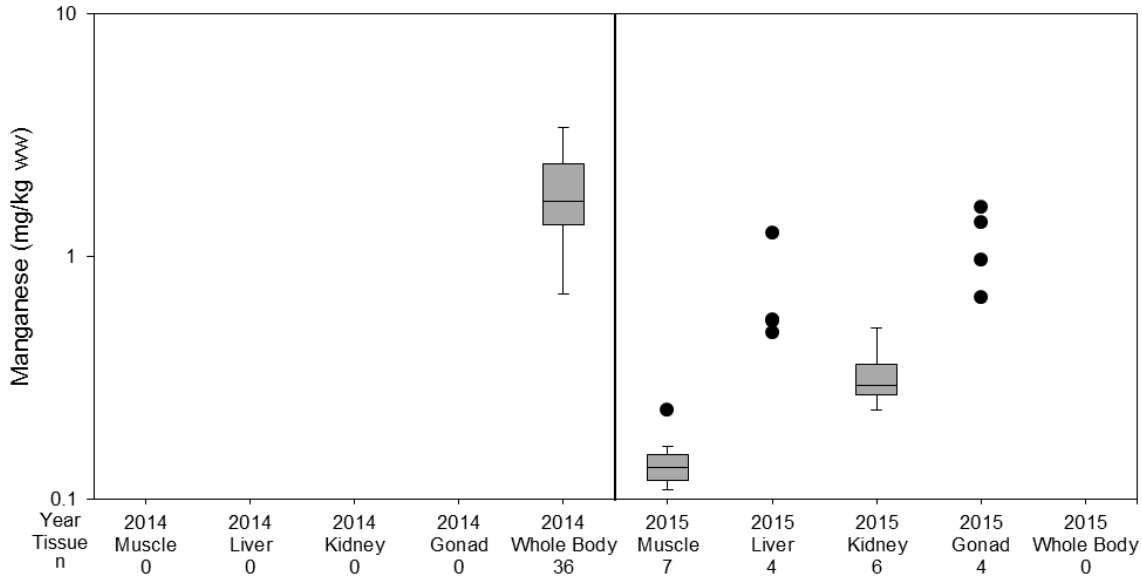
Figure 175: Manganese Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 176: Manganese Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

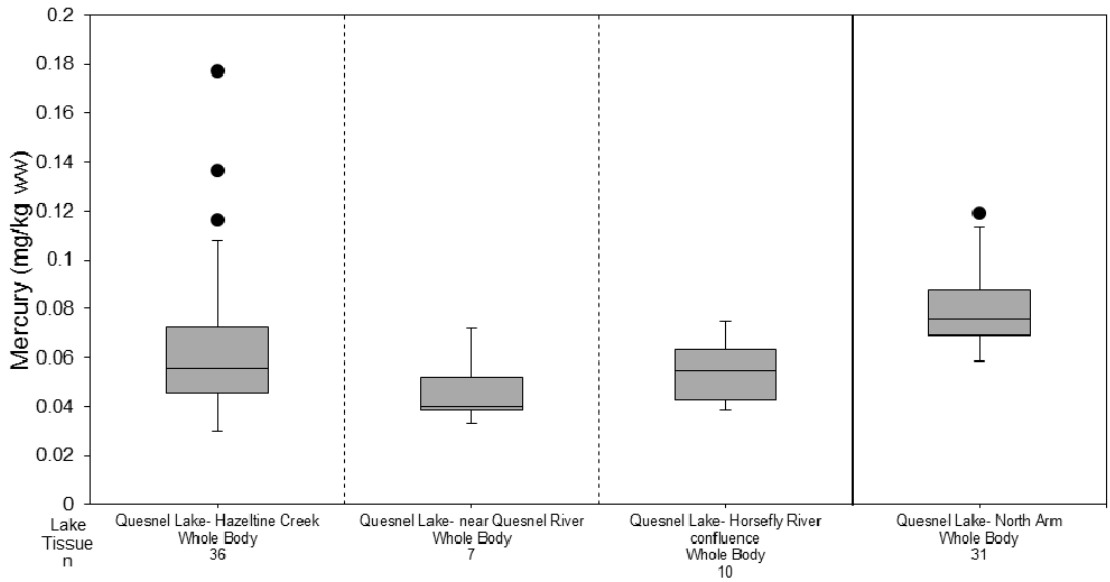


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

5.13 Mercury

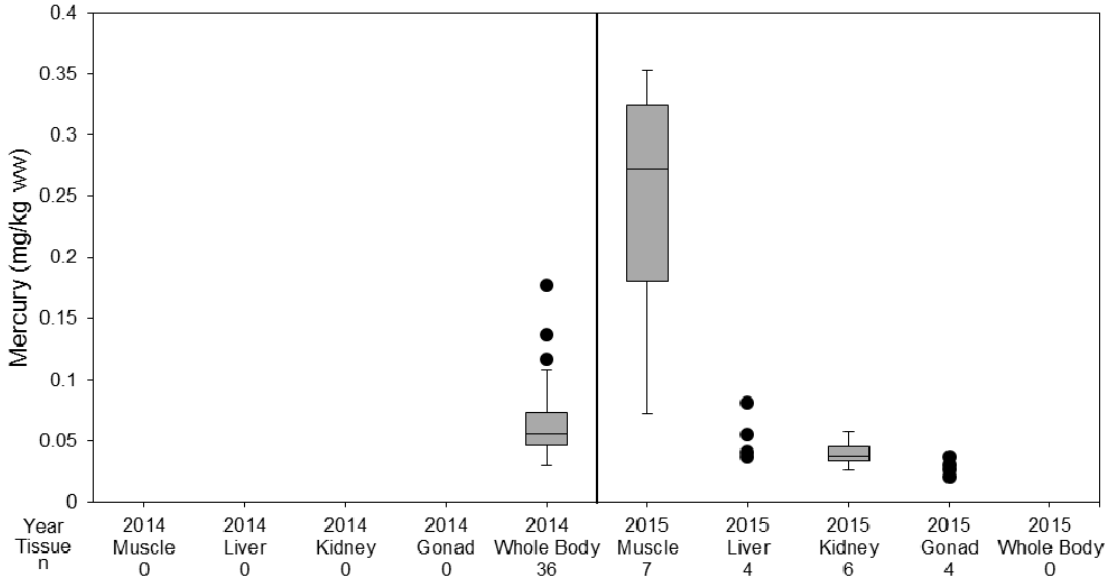
Figure 177: Mercury Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 178: Mercury Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

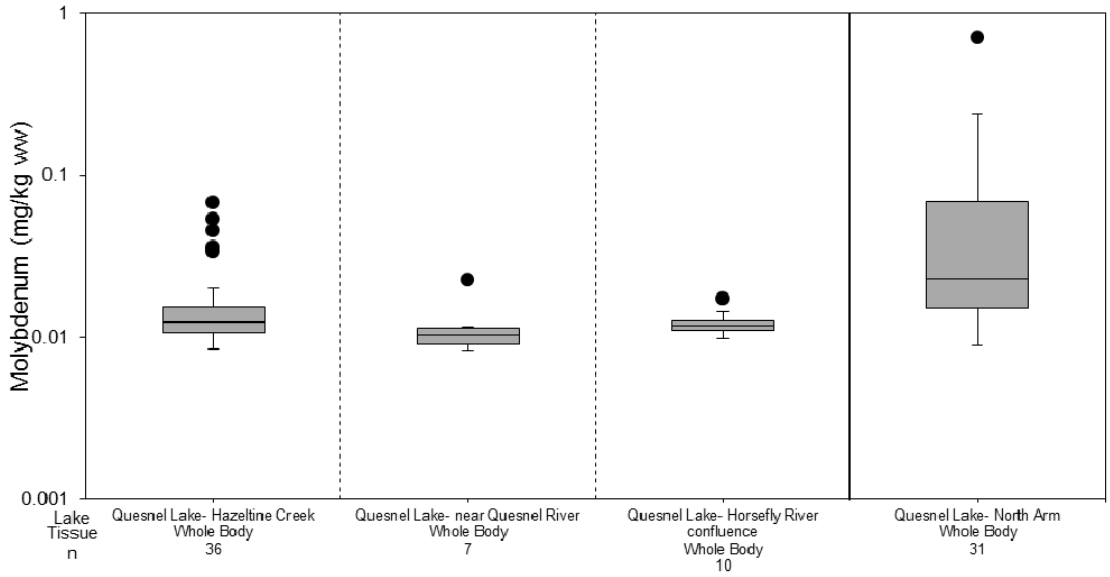


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.14 Molybdenum

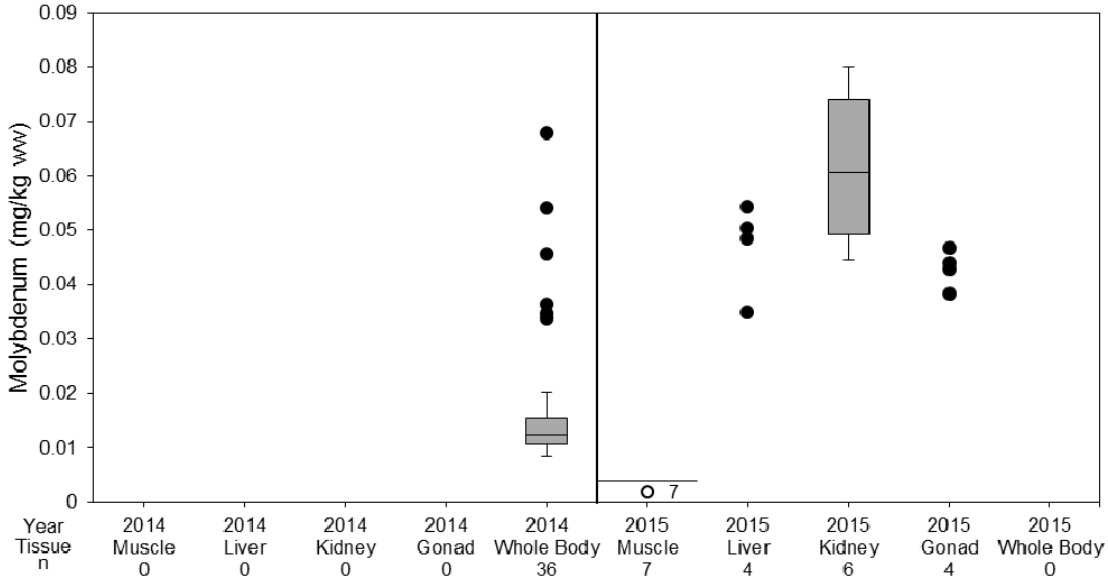
Figure 179: Molybdenum Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 180: Molybdenum Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

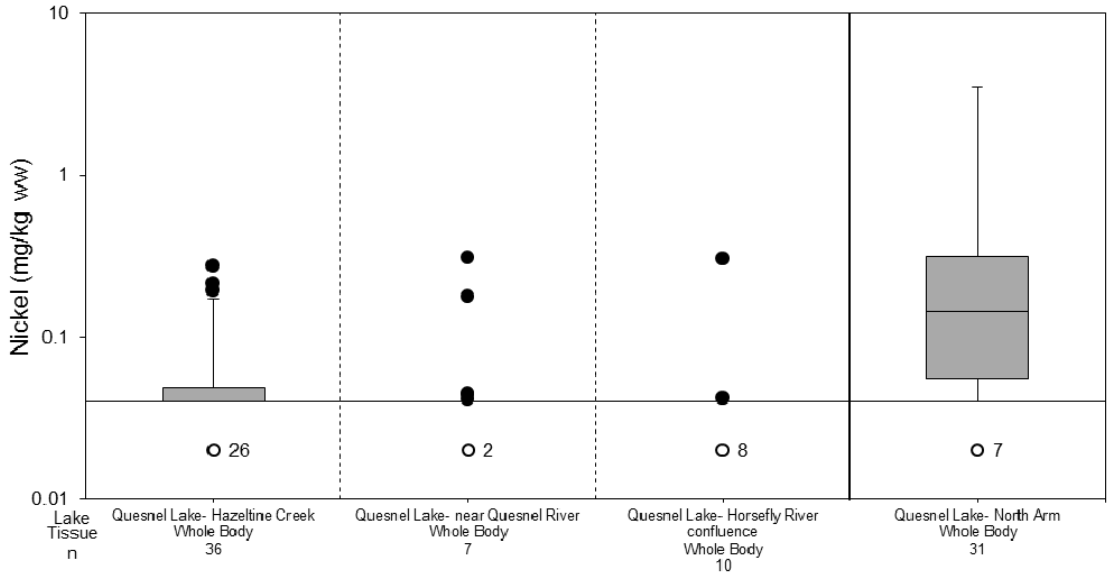


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.15 Nickel

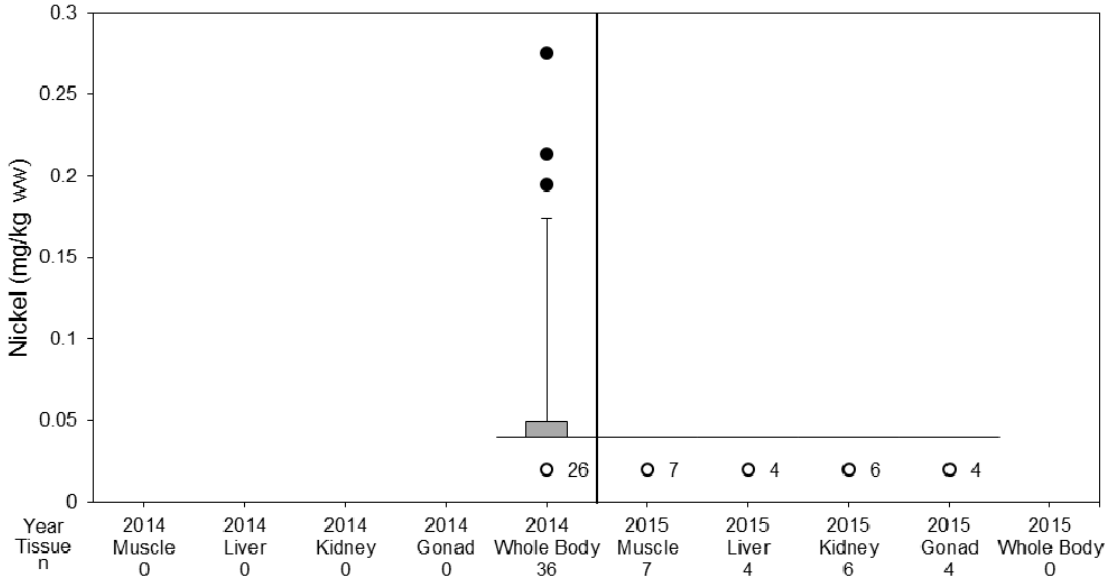
Figure 181: Nickel Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 182: Nickel Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

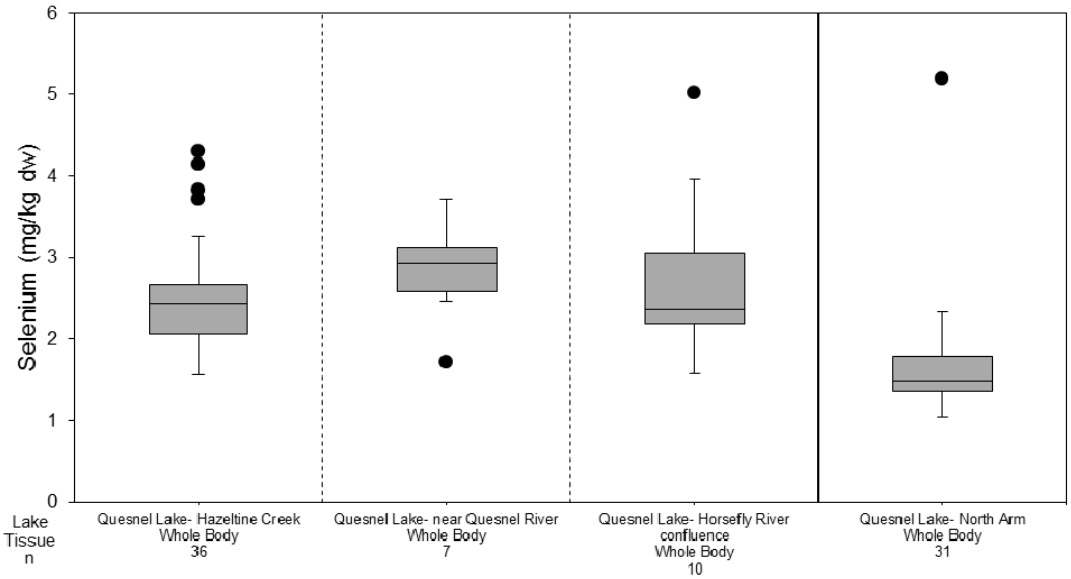


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.16 Selenium

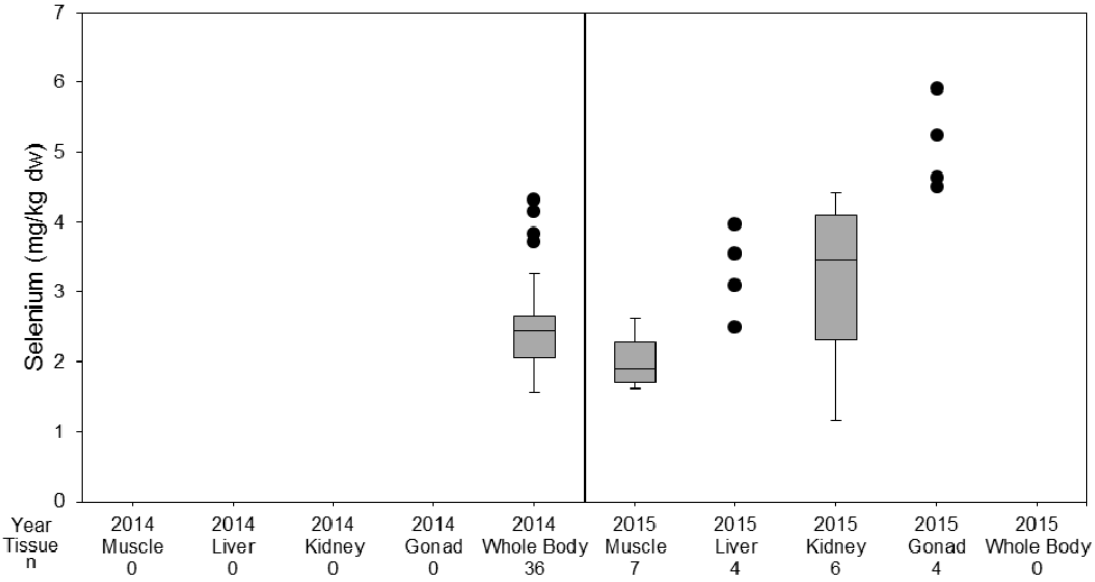
Figure 183: Selenium Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 184: Selenium Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

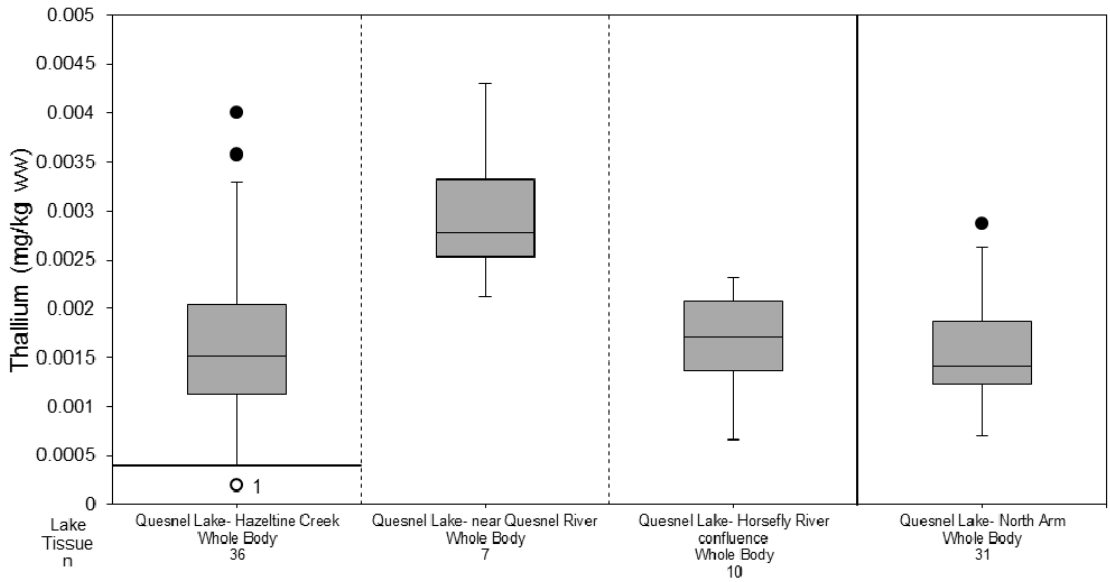


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.17 Thallium

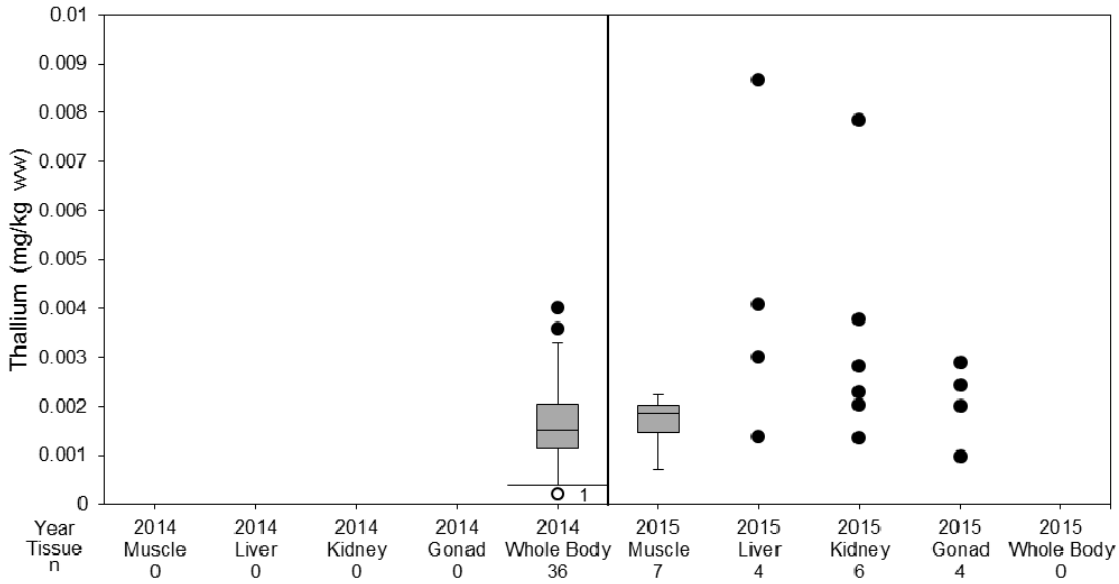
Figure 185: Thallium Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 186: Thallium Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

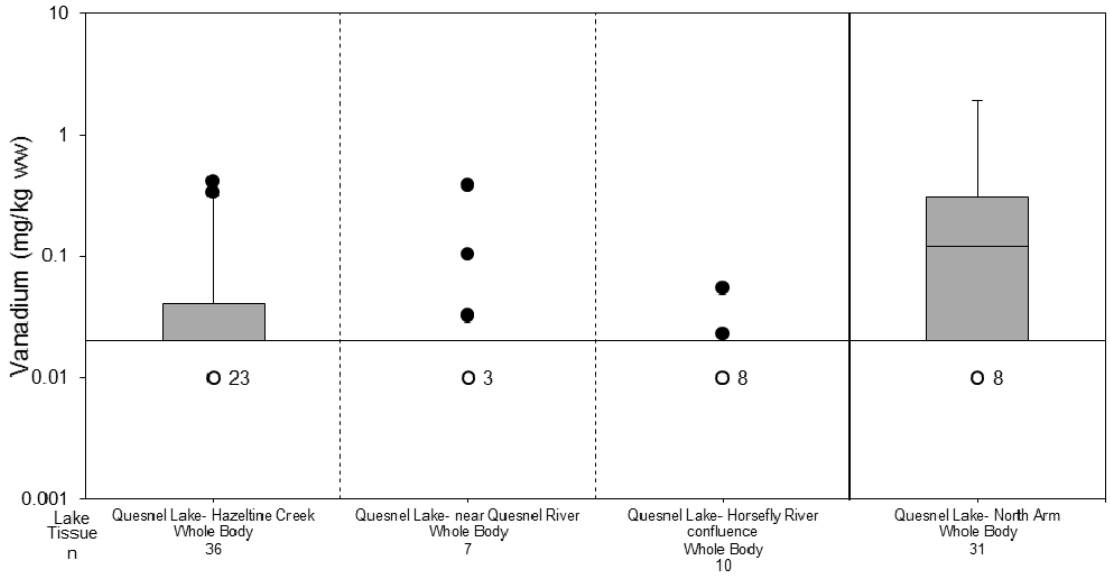


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.18 Vanadium

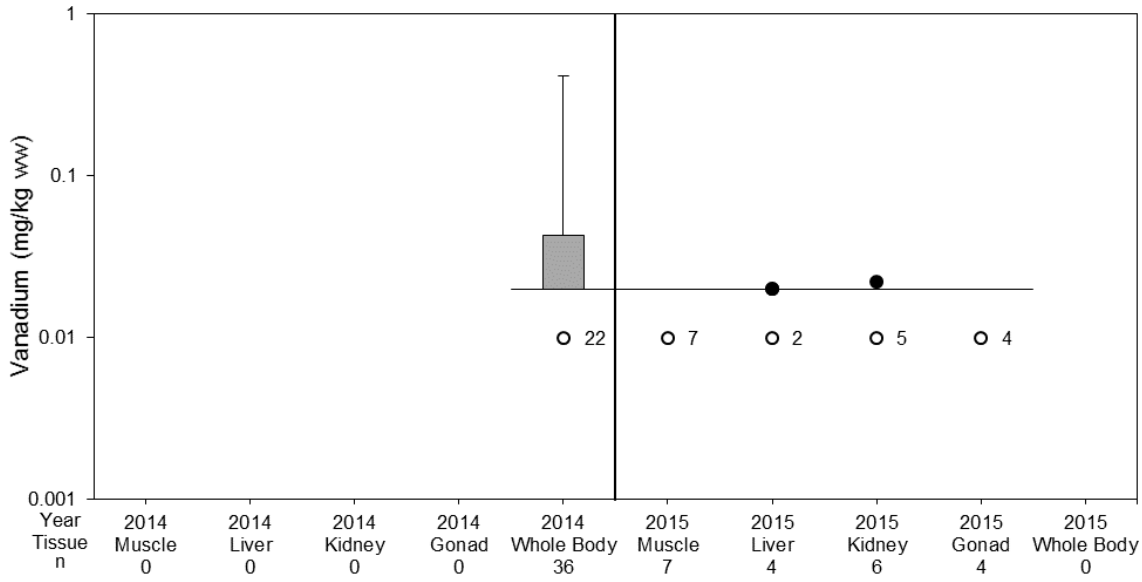
Figure 187: Vanadium Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 188: Vanadium Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

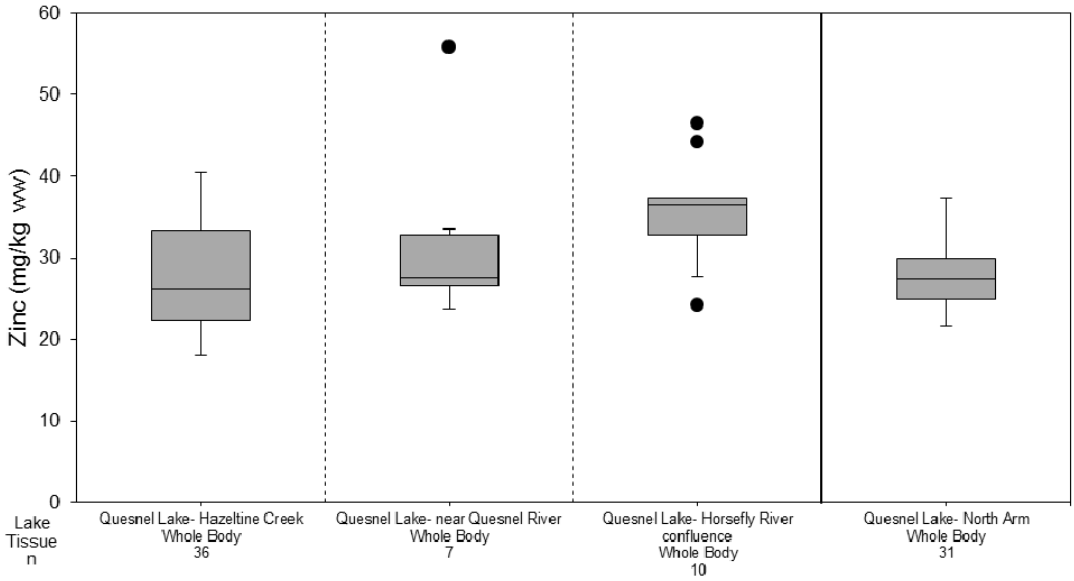


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

5.19 Zinc

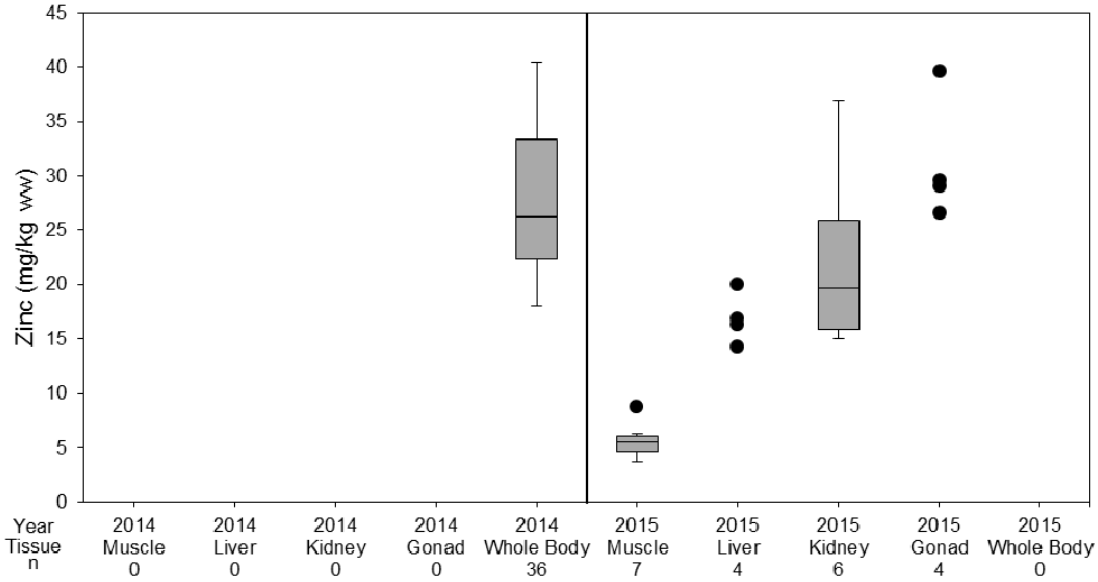
Figure 189: Zinc Concentrations in Northern Pikeminnow Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 190: Zinc Concentrations in Northern Pikeminnow Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015



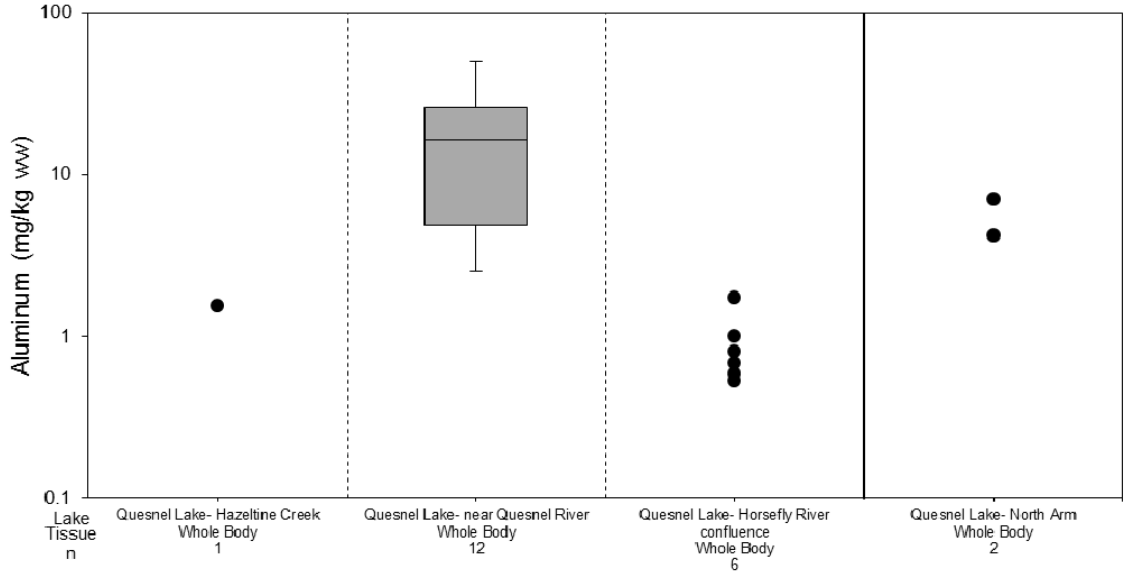
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.0 PEAMOUTH CHUB

6.1 Aluminum

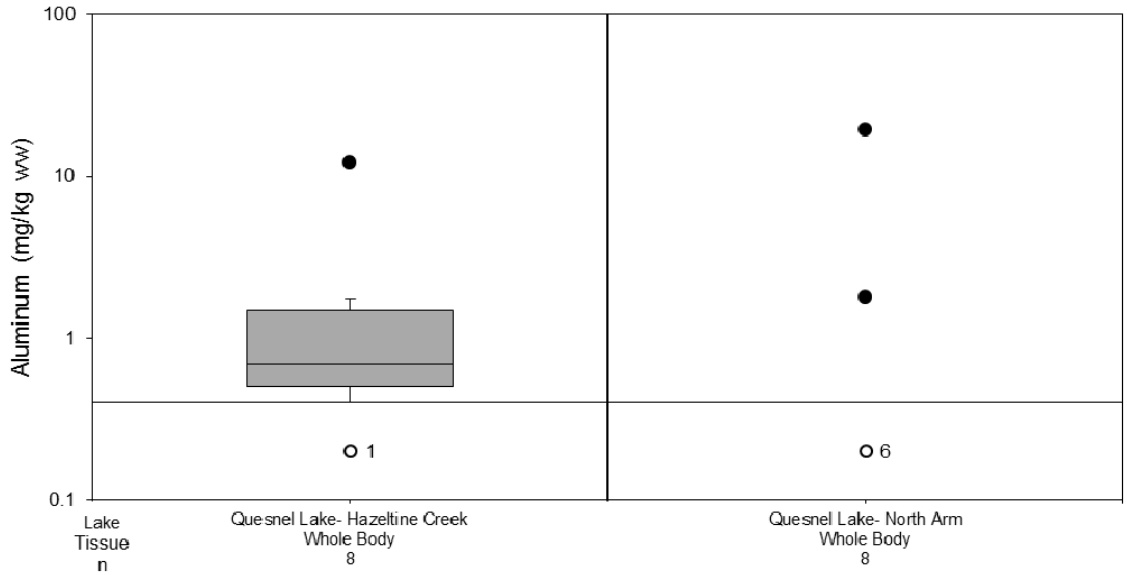
Figure 191: Aluminum Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

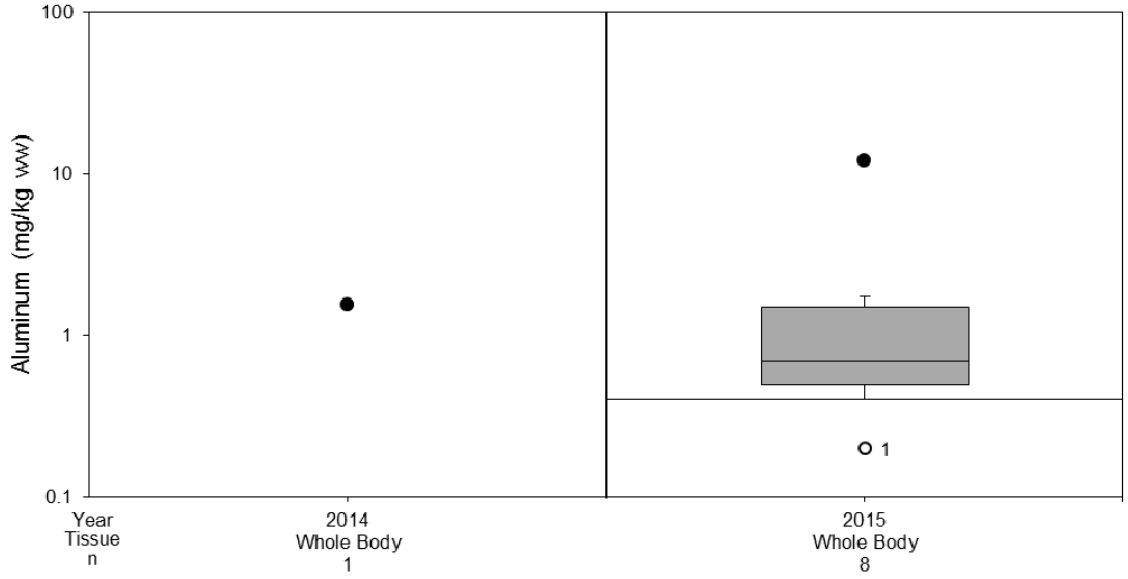
Figure 192: Aluminum Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 193: Aluminum Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

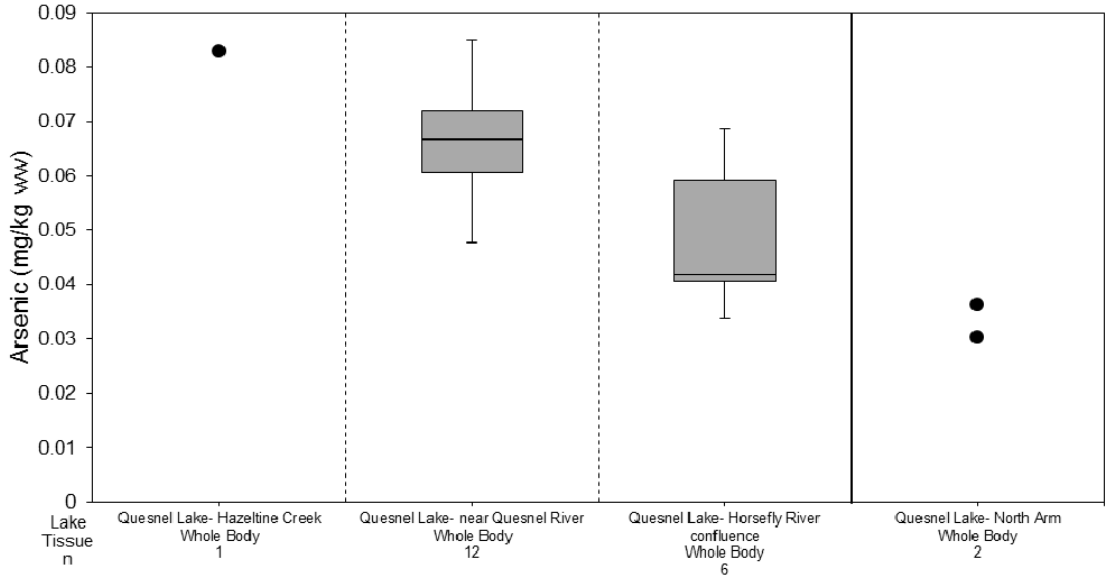


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

6.2 Arsenic

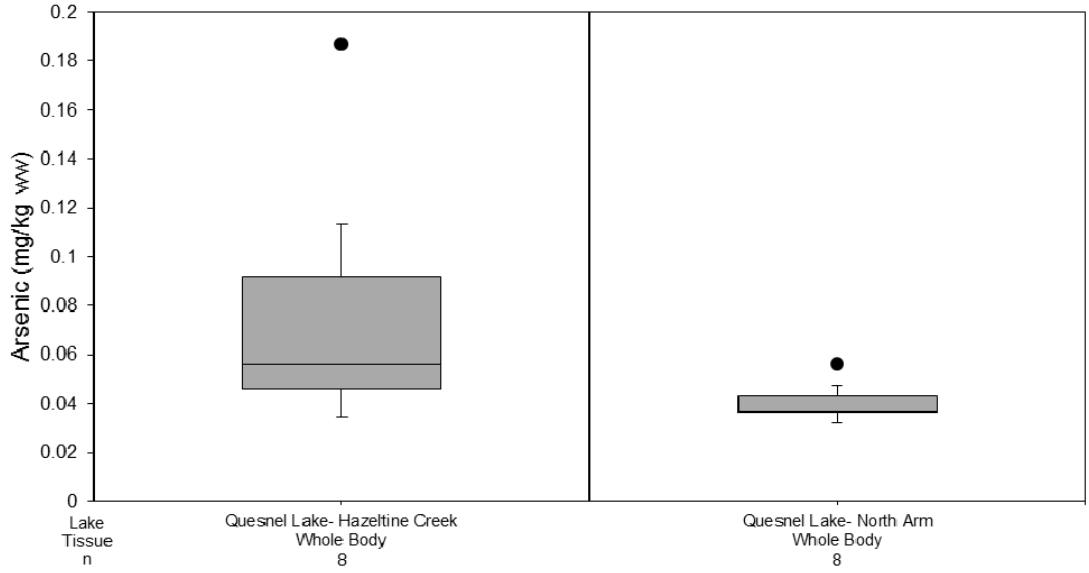
Figure 194: Arsenic Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

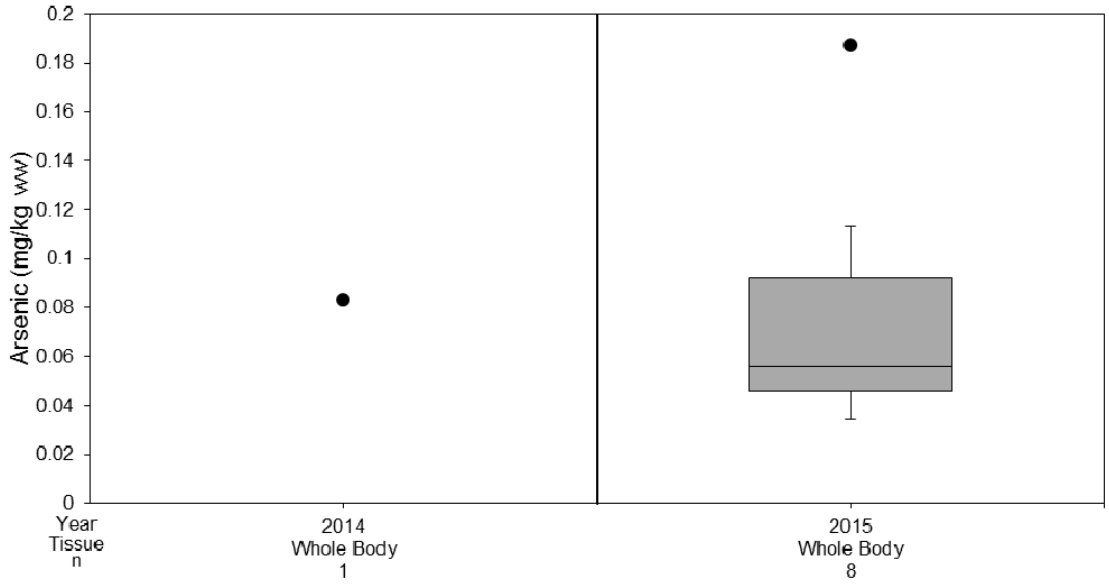
Figure 195: Arsenic Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 196: Arsenic Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

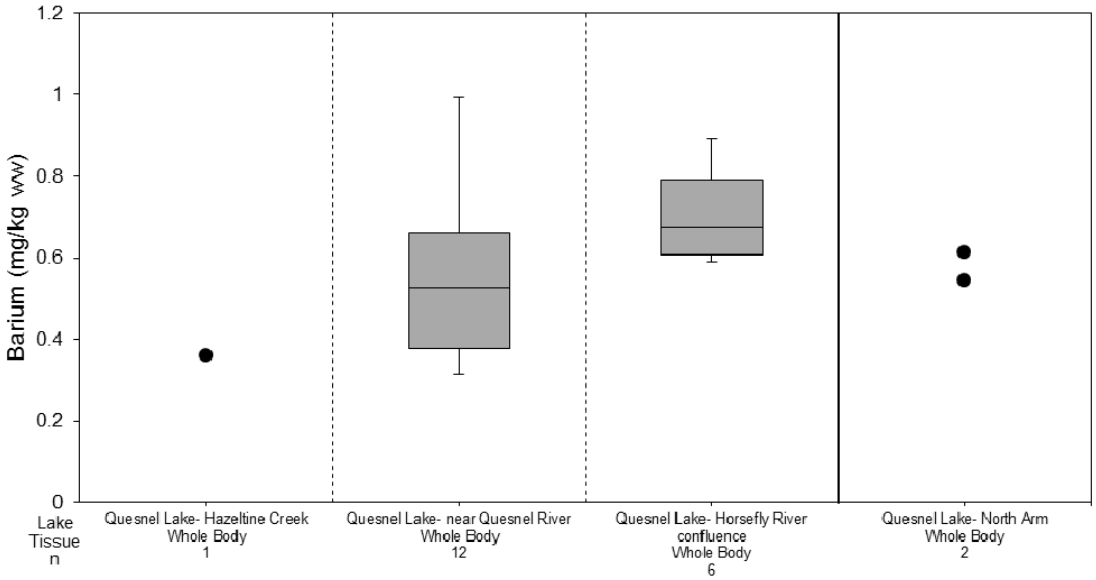


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.3 Barium

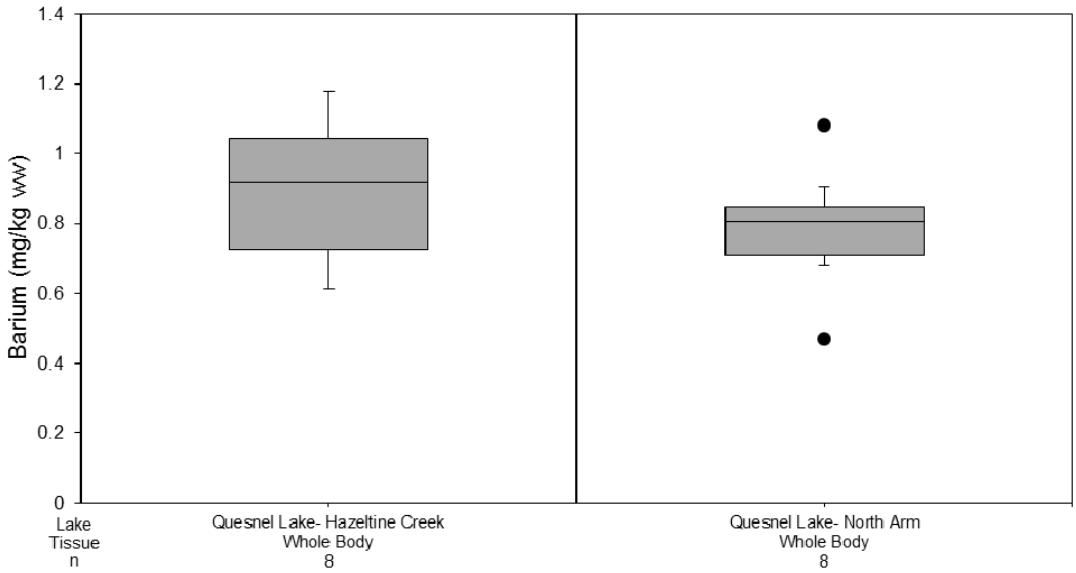
Figure 197: Barium Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

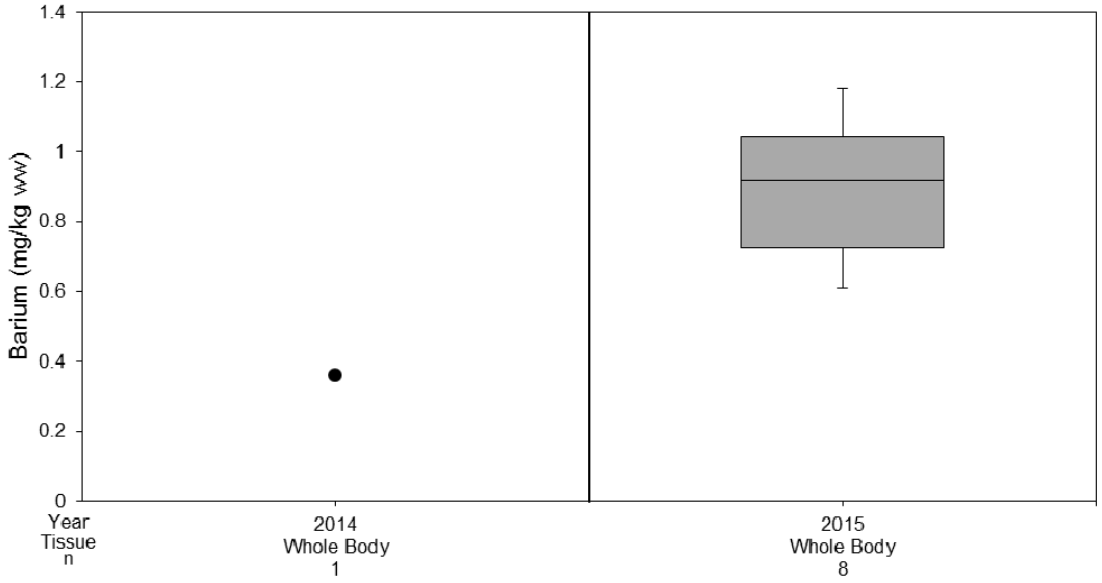
Figure 198: Barium Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 199: Barium Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

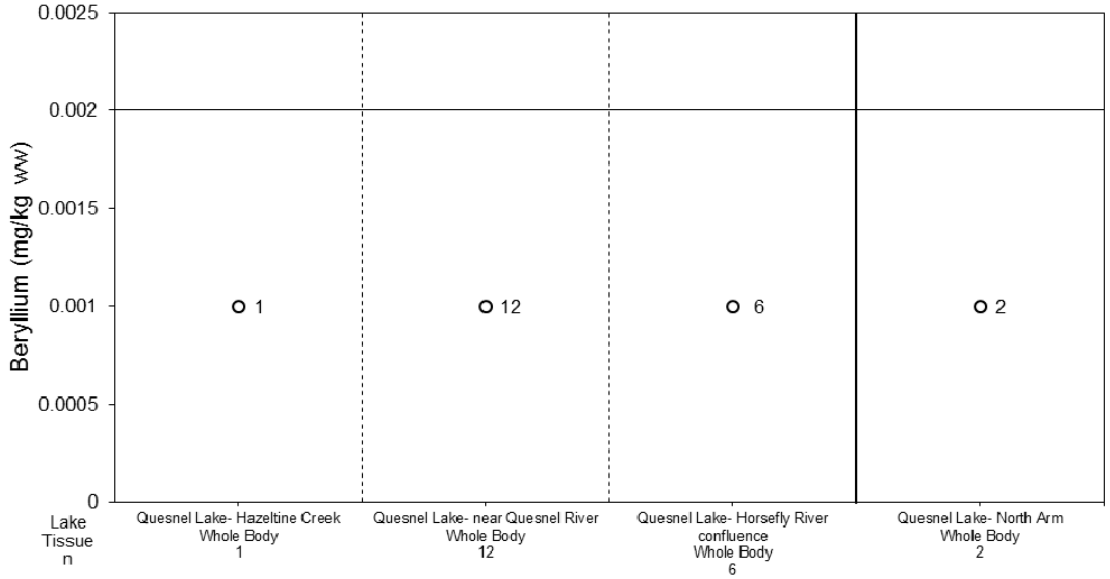


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.4 Beryllium

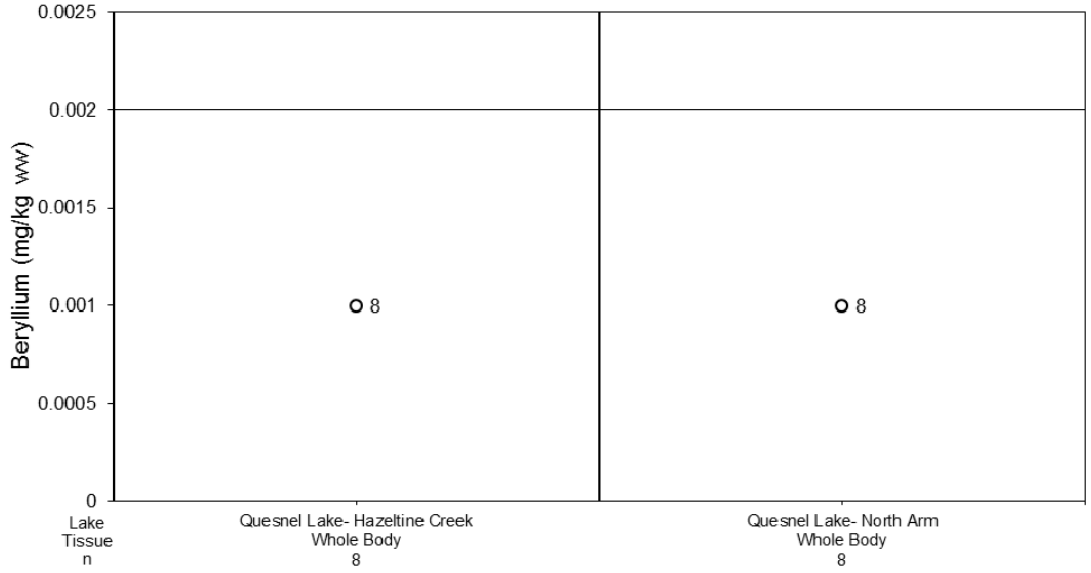
Figure 200: Beryllium Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

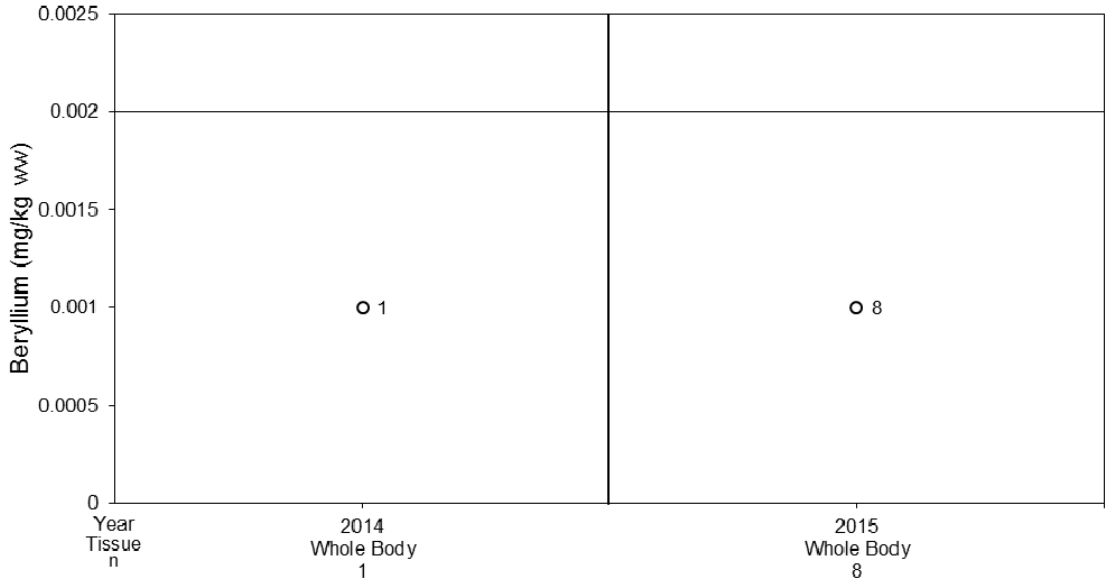
Figure 201: Beryllium Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 202: Beryllium Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

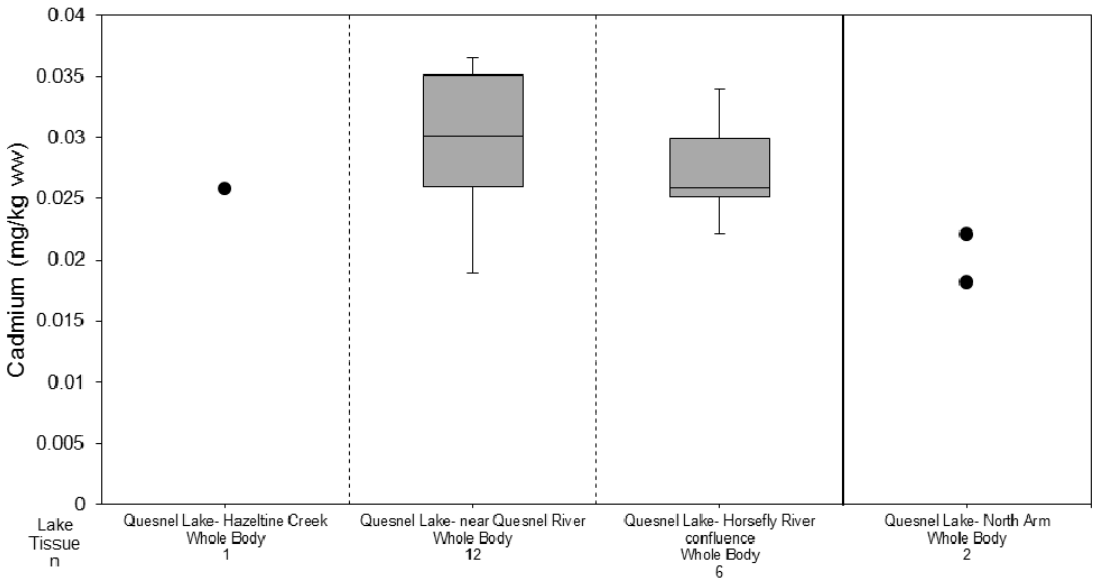


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.5 Cadmium

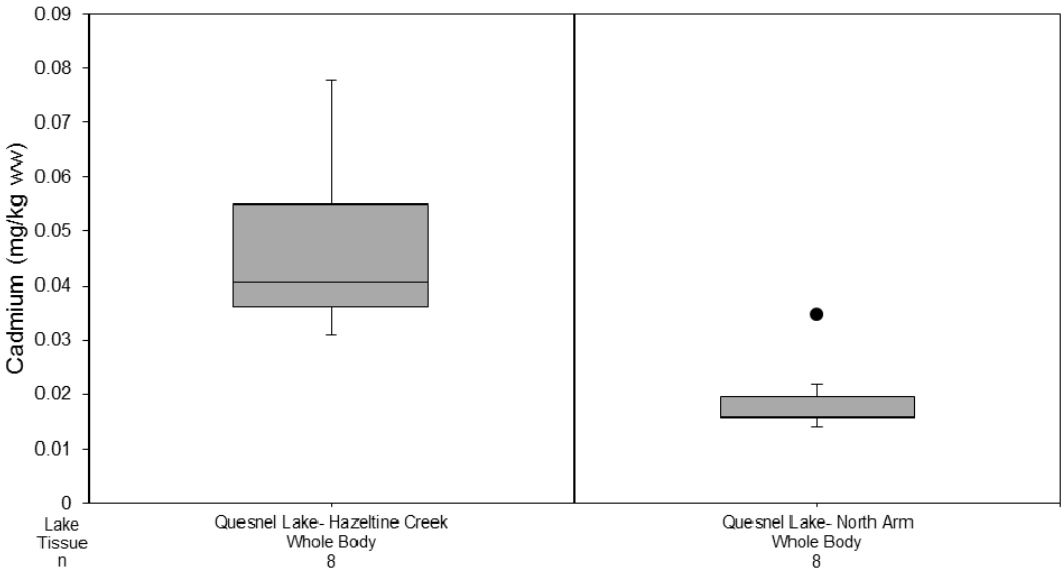
Figure 203: Cadmium Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 204: Cadmium Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

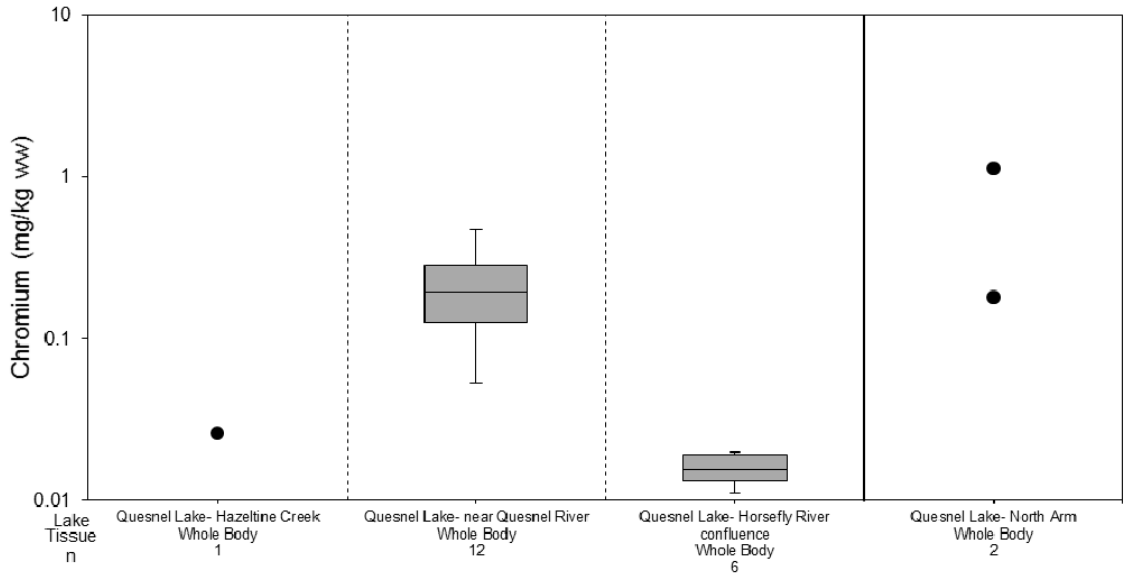
Figure 205: Cadmium Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.6 Chromium

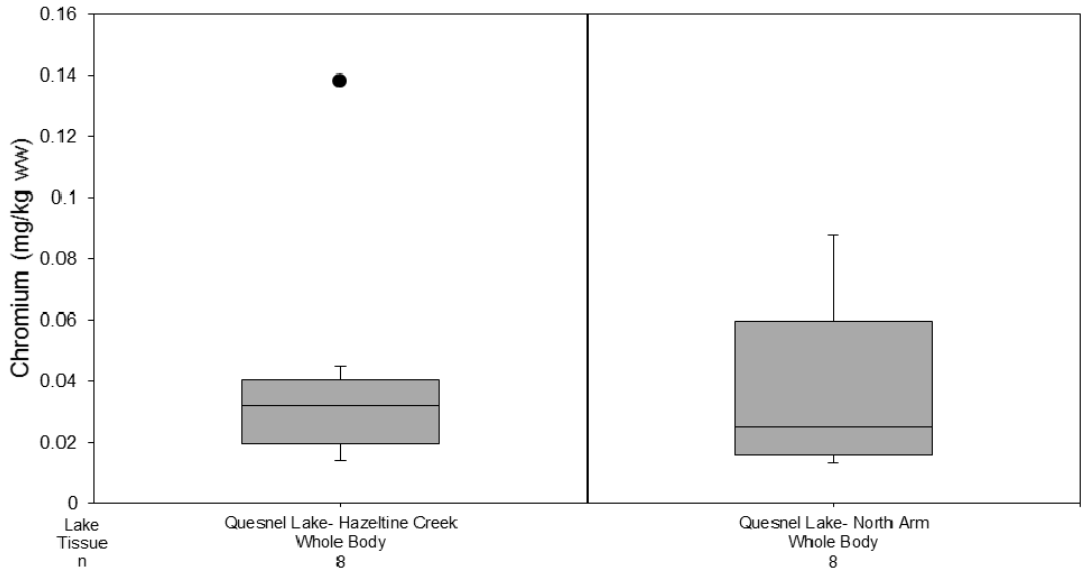
Figure 206: Chromium Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

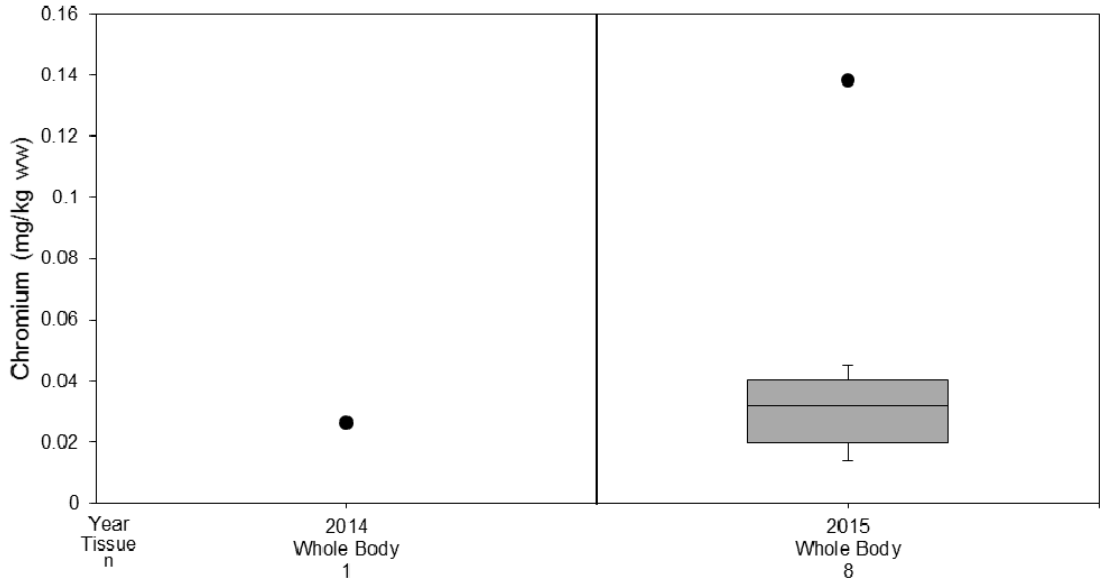
Figure 207: Chromium Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 208: Chromium Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

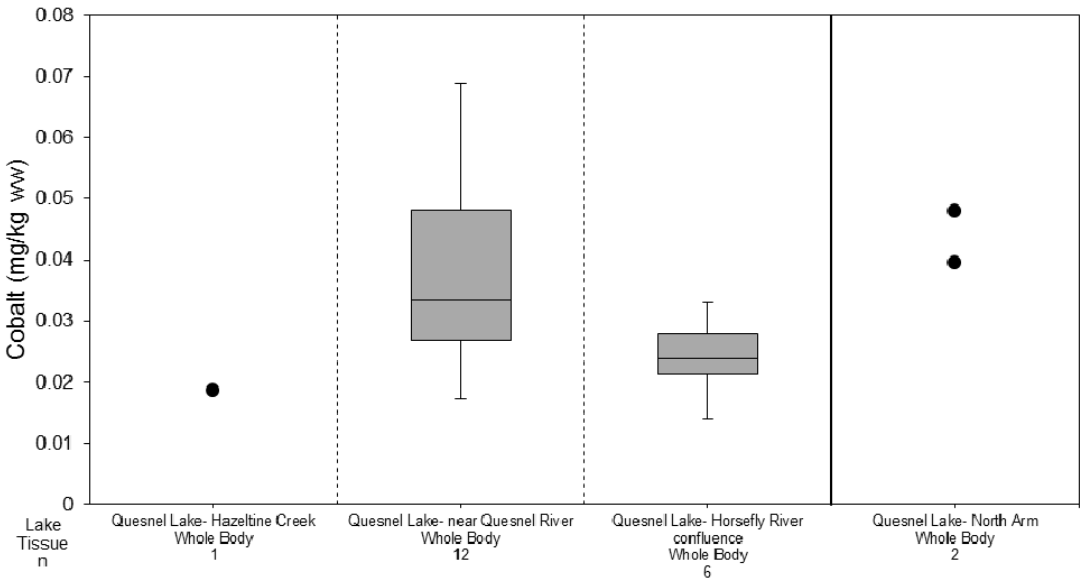


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.7 Cobalt

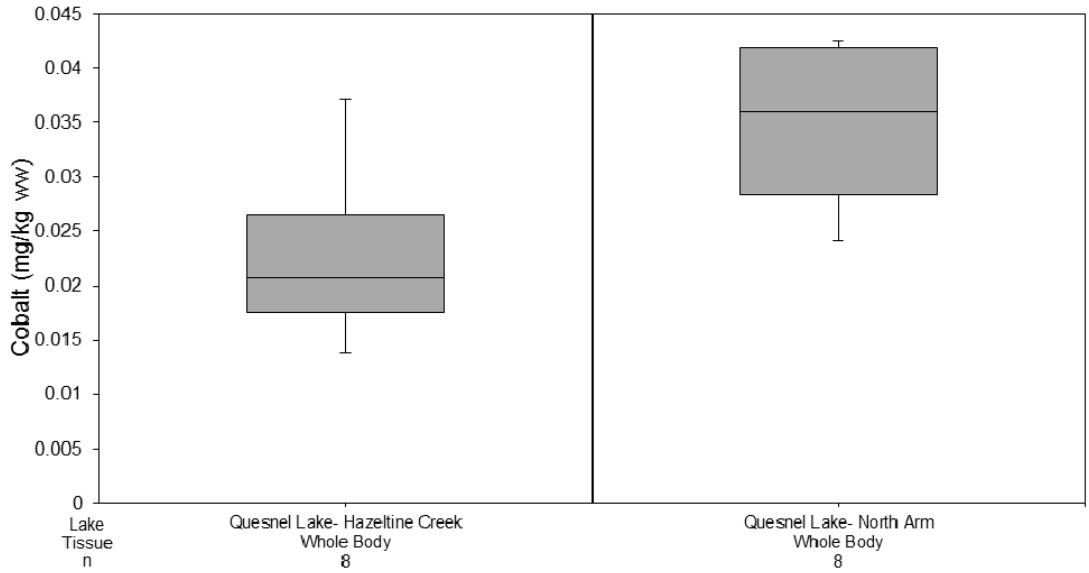
Figure 209: Cobalt Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

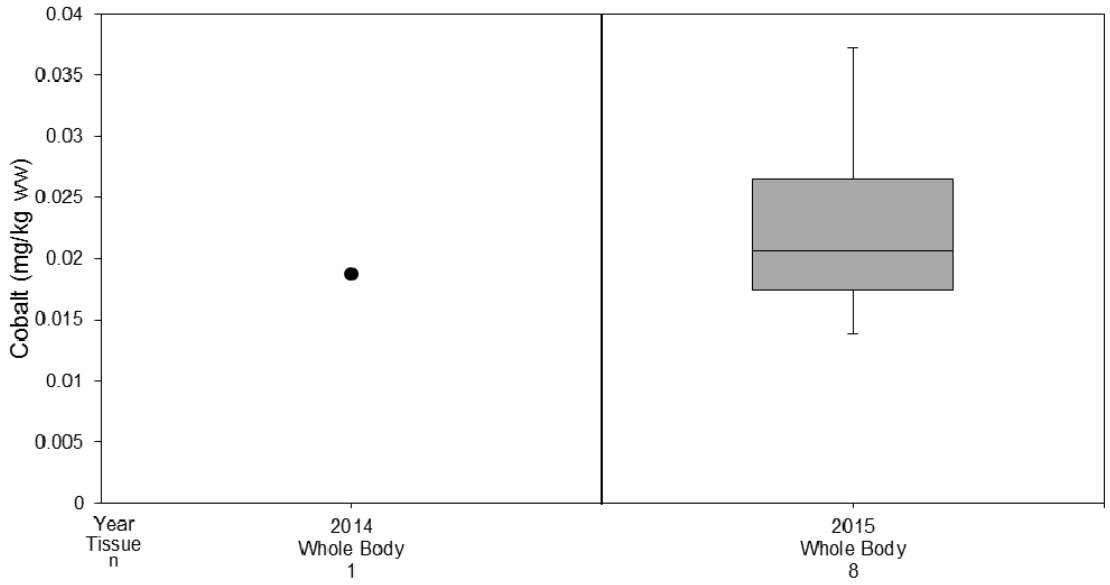
Figure 210: Cobalt Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 211: Cobalt Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

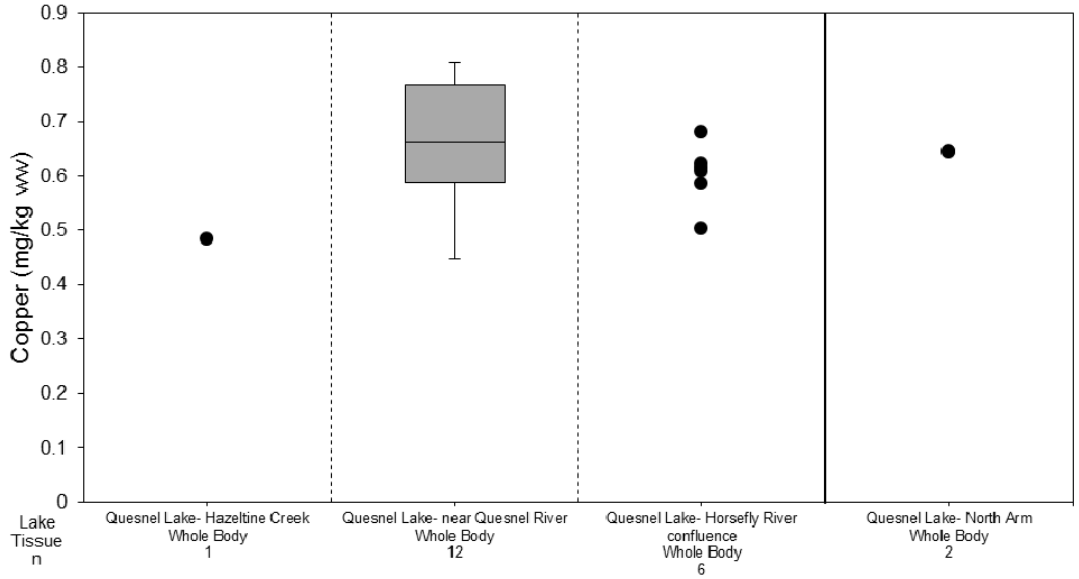


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.8 Copper

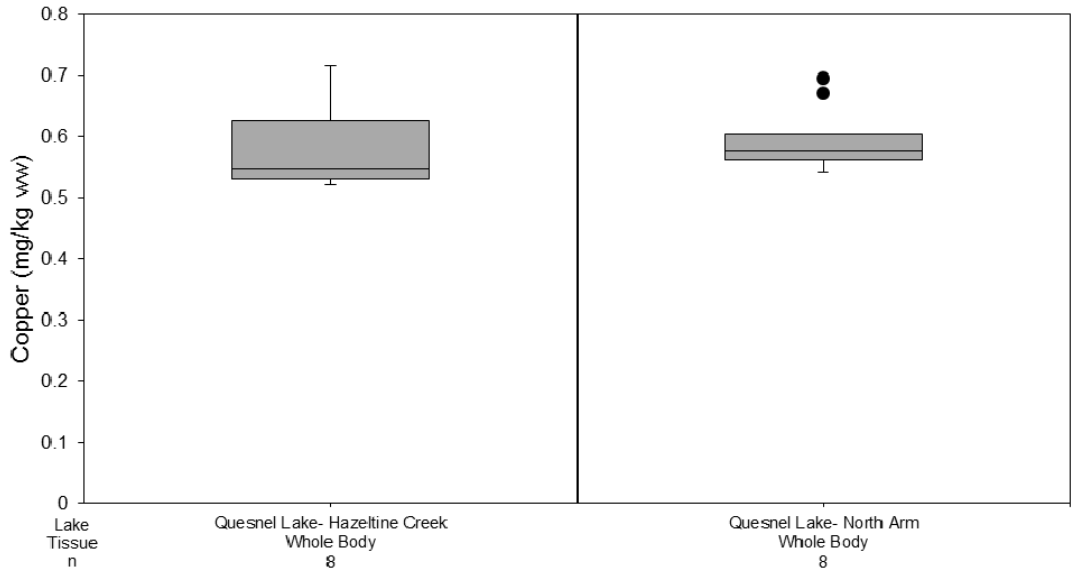
Figure 212: Copper Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

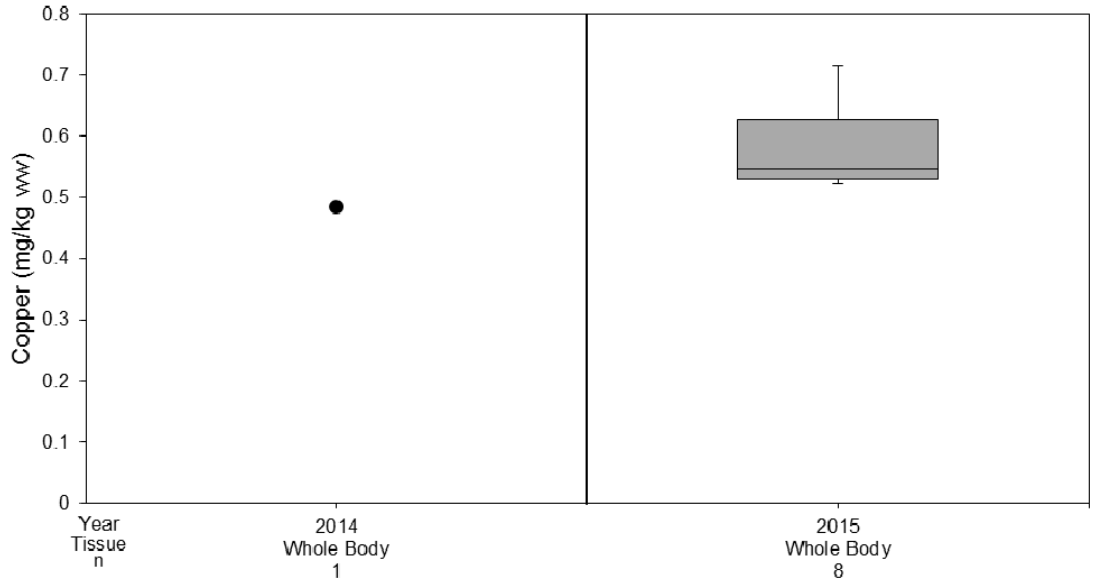
Figure 213: Copper Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 214: Copper Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

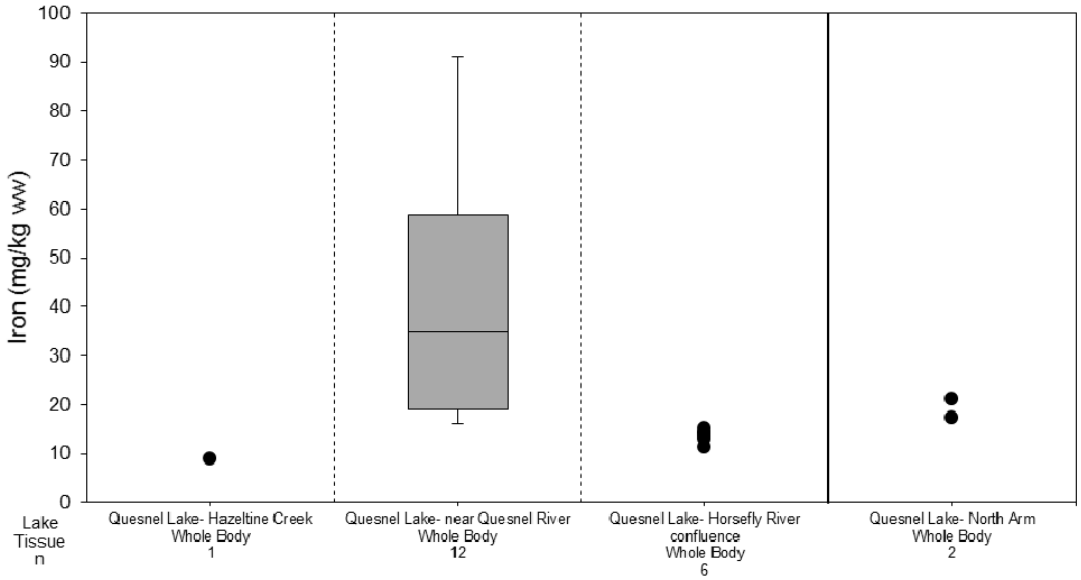


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.9 Iron

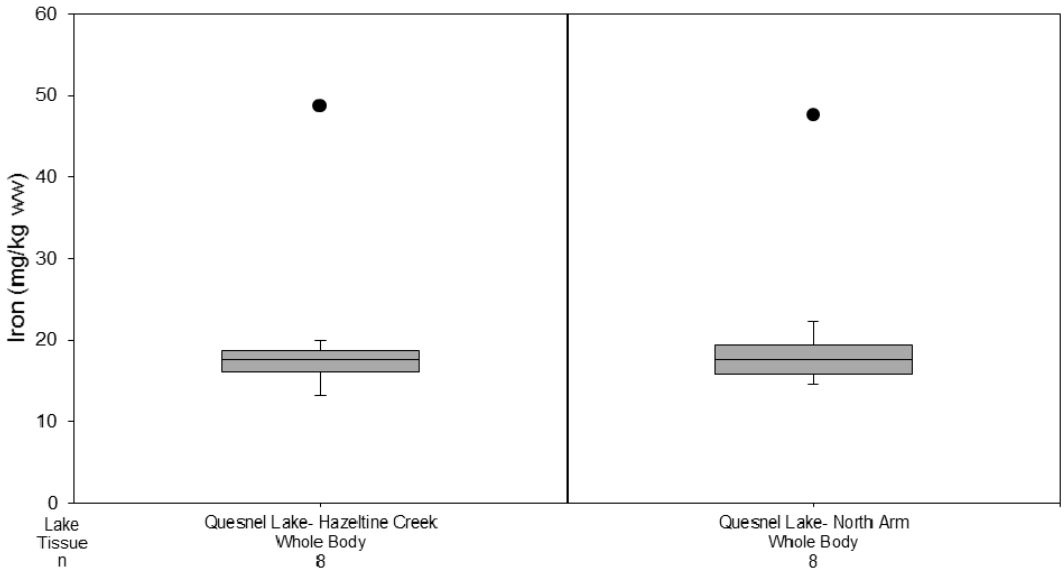
Figure 215: Iron Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

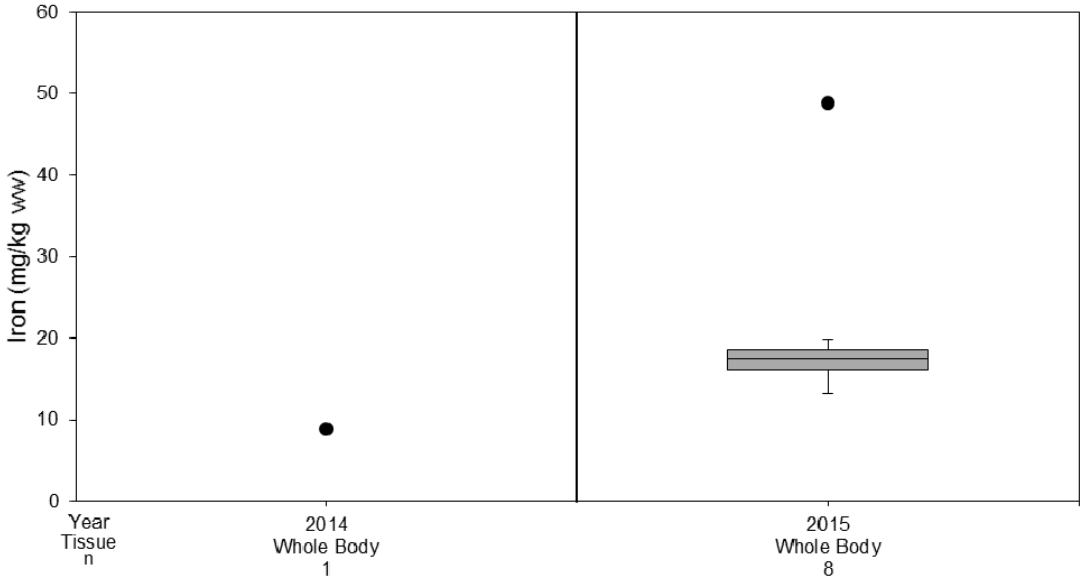
Figure 216: Iron Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 217: Iron Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

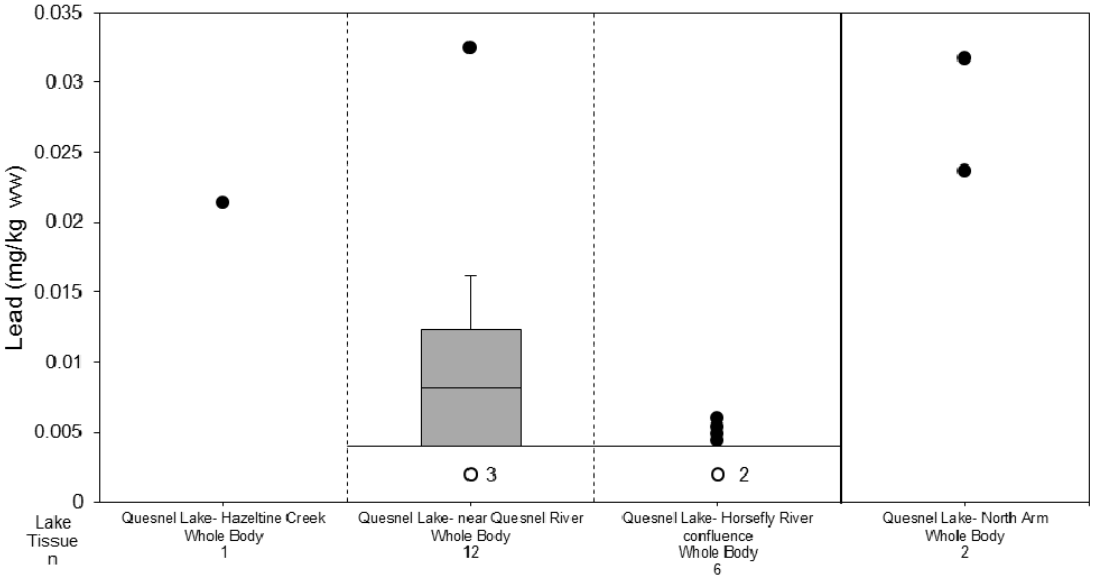


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.10 Lead

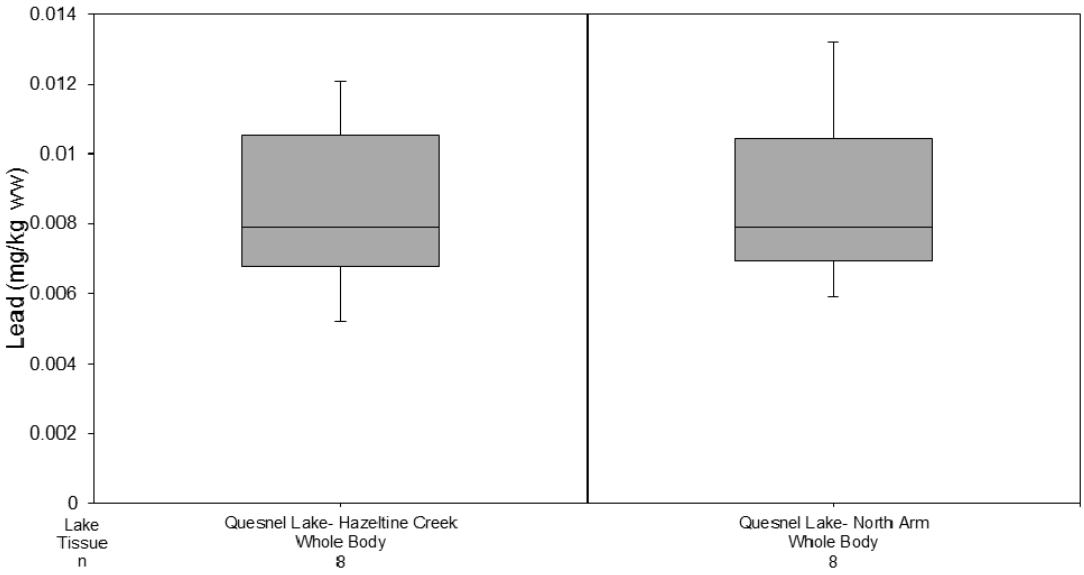
Figure 218: Lead Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 219: Lead Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

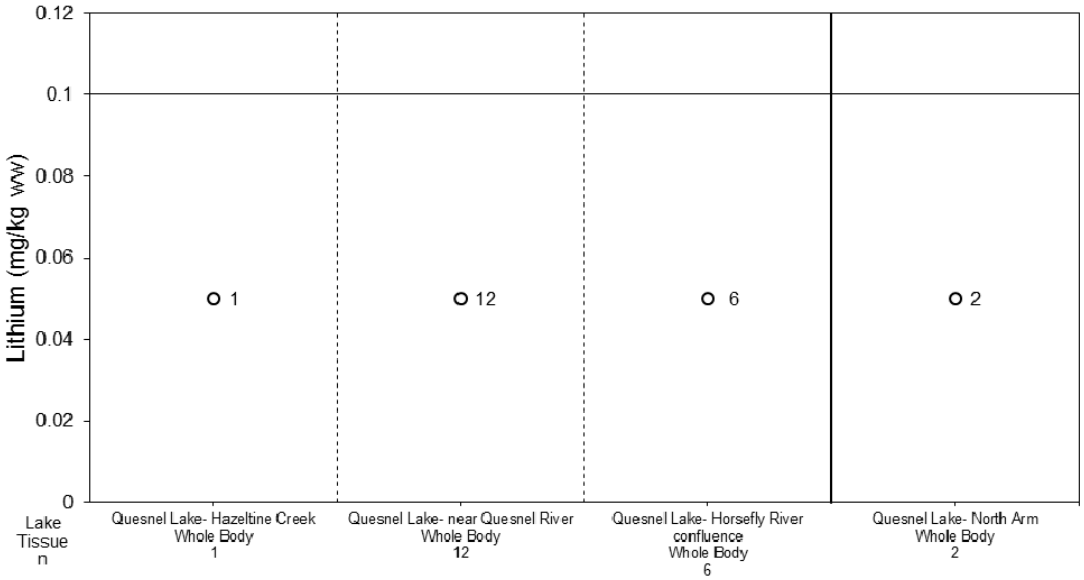
Figure 220: Lead Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.11 Lithium

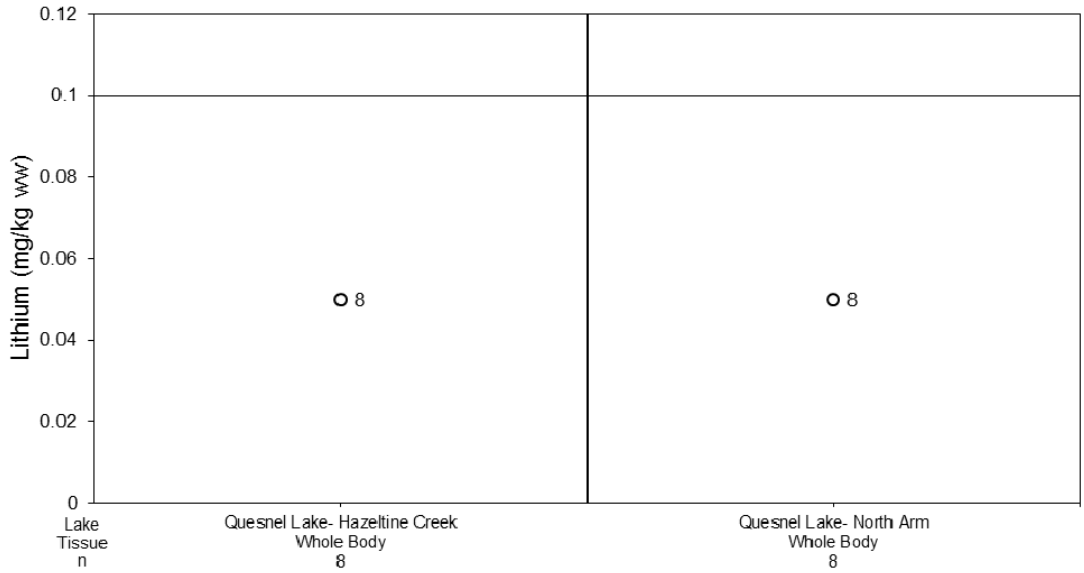
Figure 221: Lithium Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

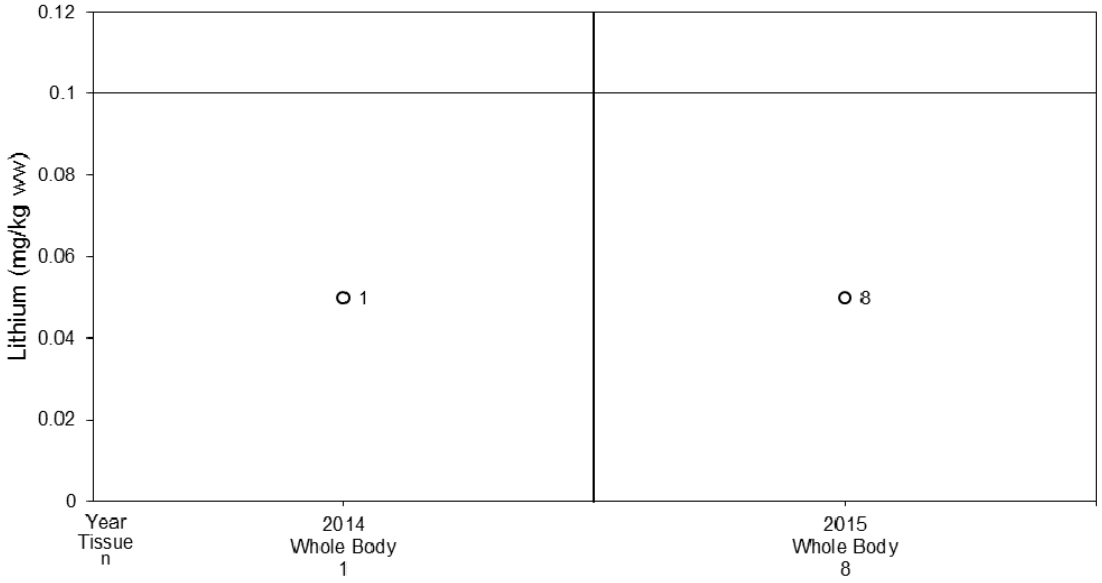
Figure 222: Lithium Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 223: Lithium Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

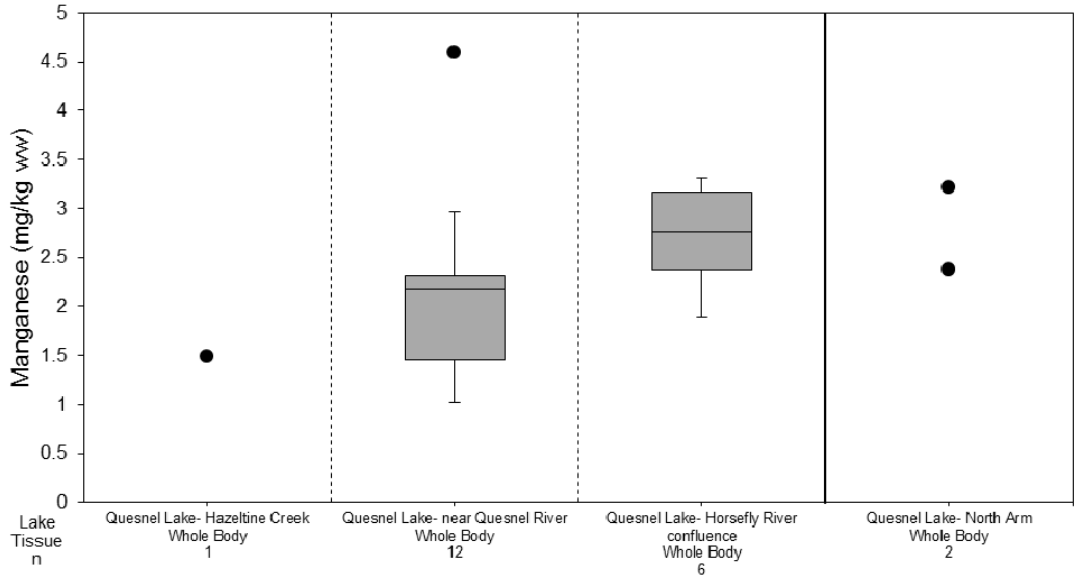


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.12 Manganese

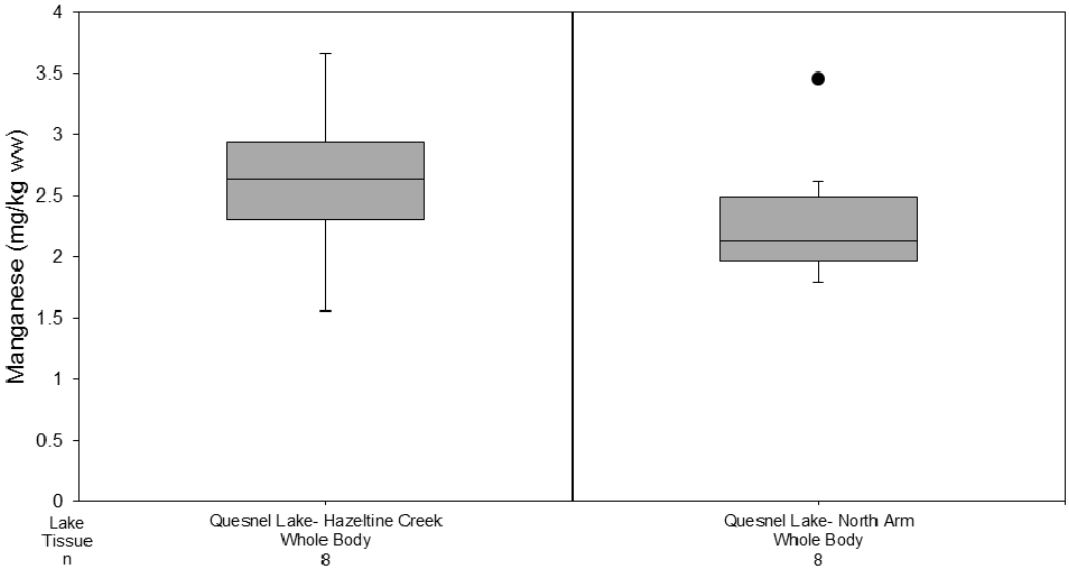
Figure 224: Manganese Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

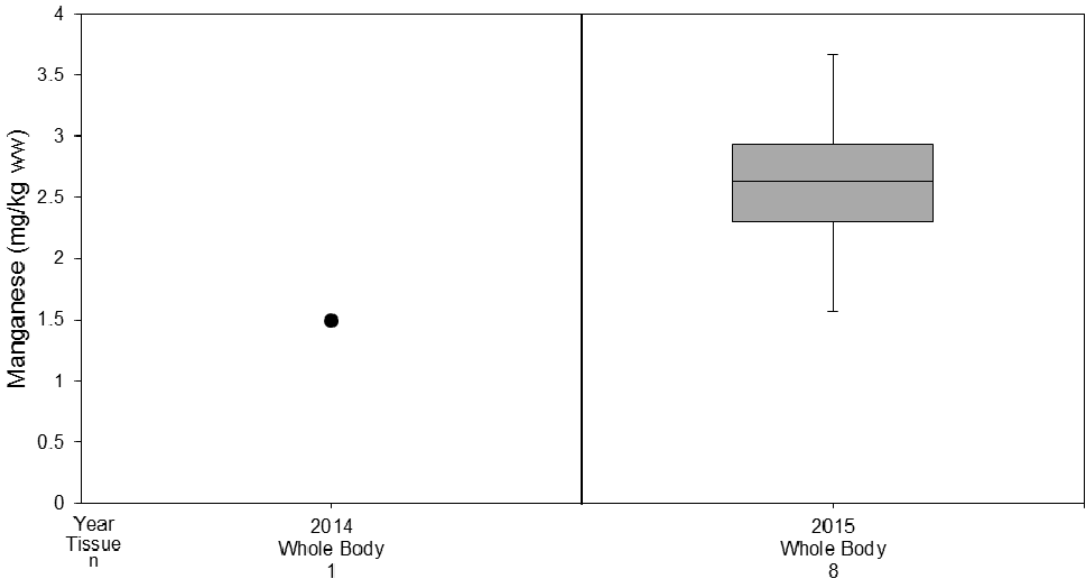
Figure 225: Manganese Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 226: Manganese Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

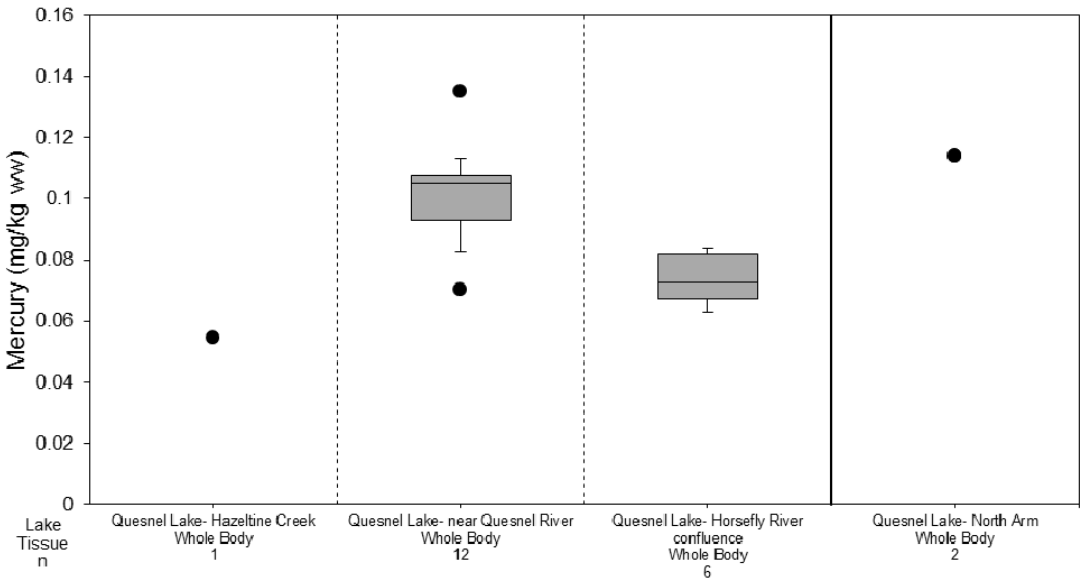


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.13 Mercury

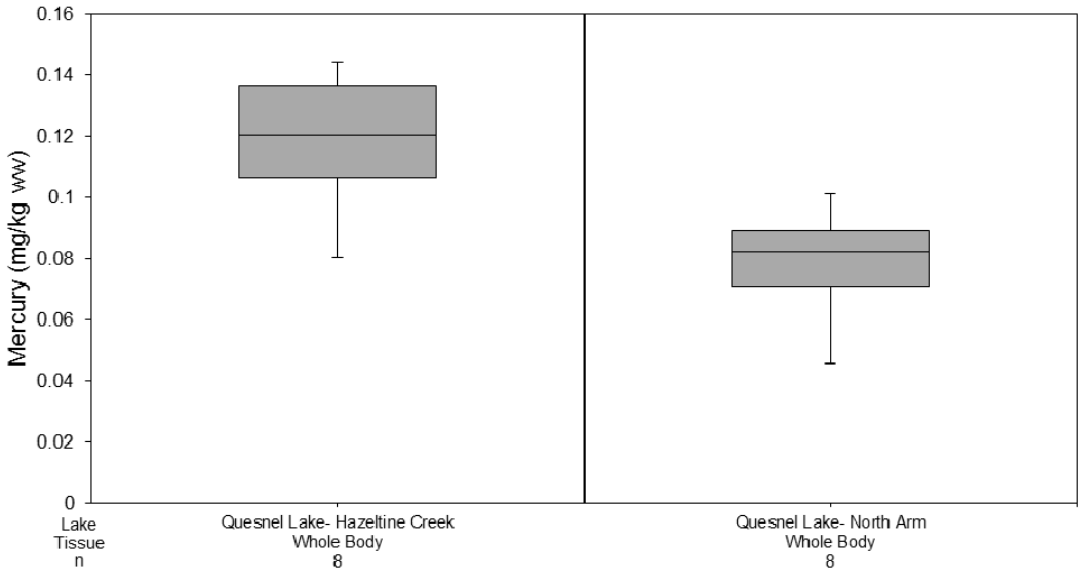
Figure 227: Mercury Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

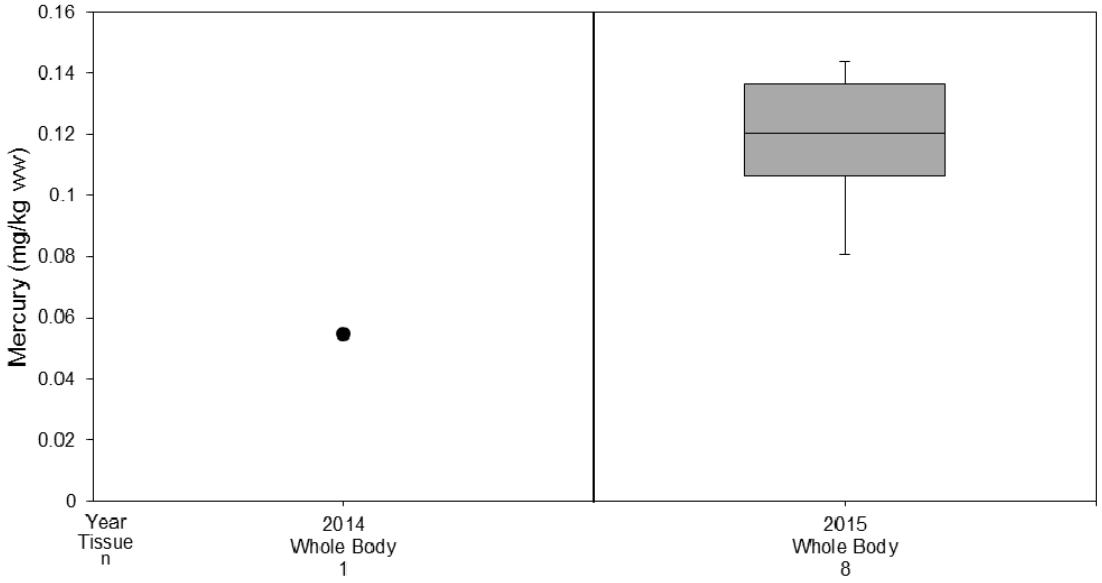
Figure 228: Mercury Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 229: Mercury Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

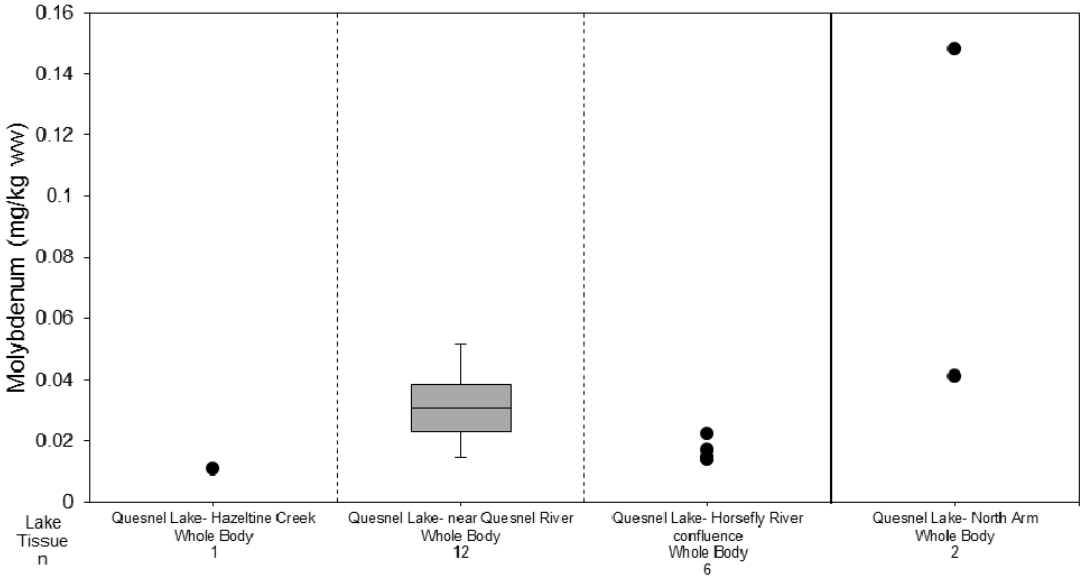


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.14 Molybdenum

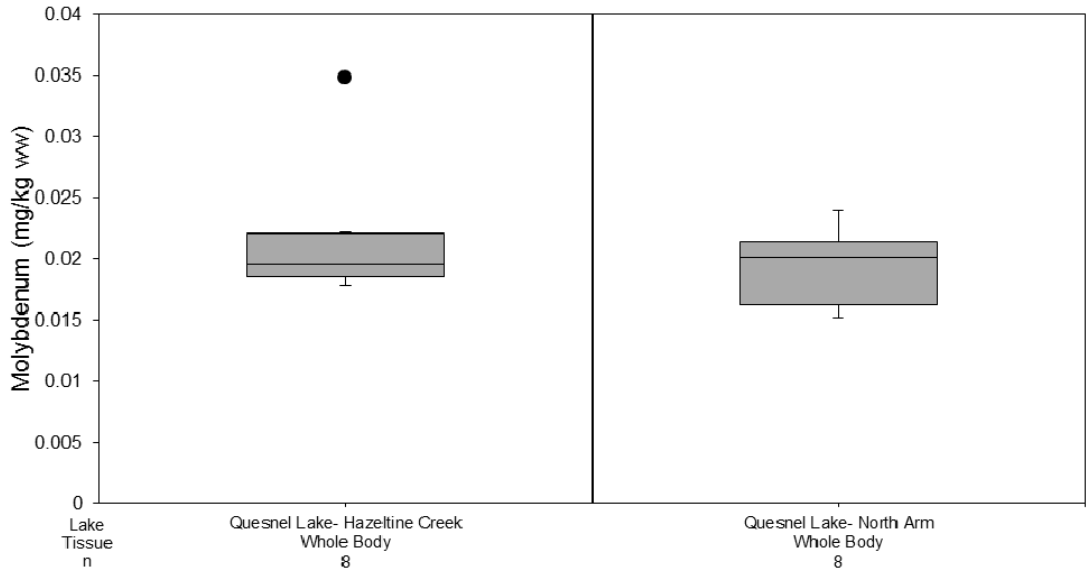
Figure 230: Molybdenum Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

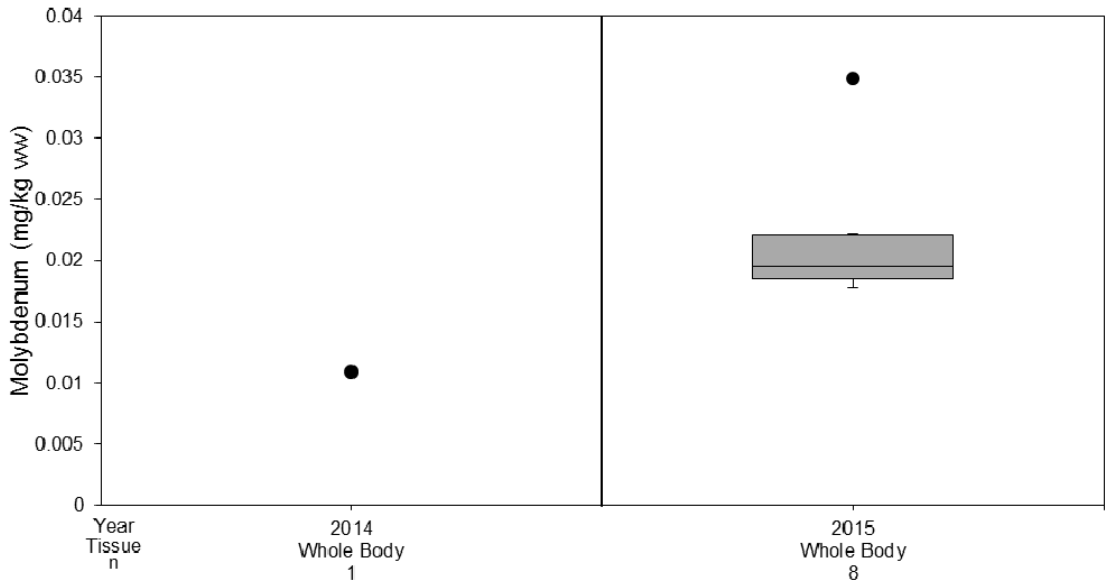
Figure 231: Molybdenum Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 232: Molybdenum Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

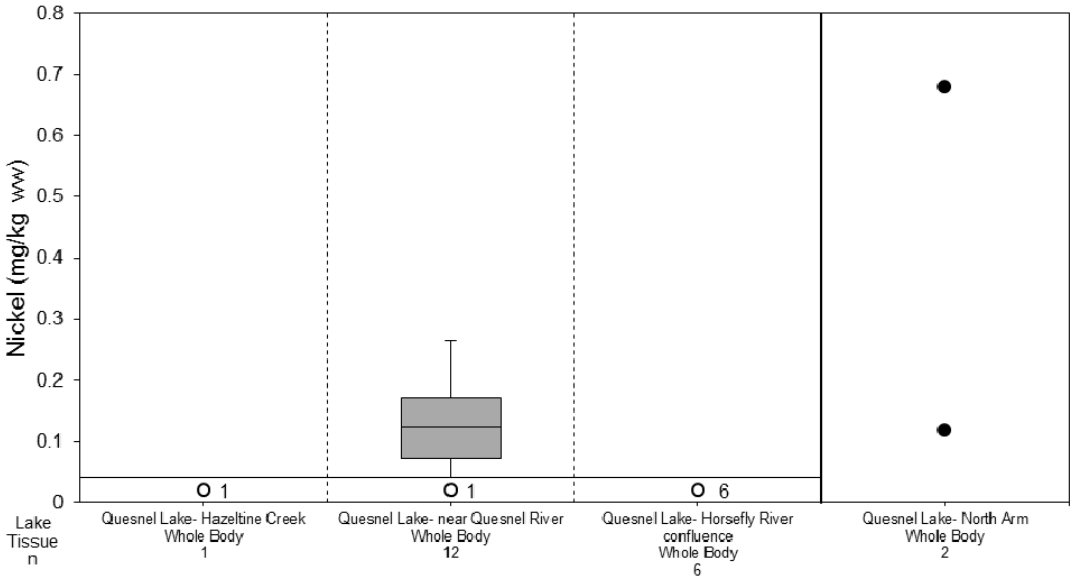


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.15 Nickel

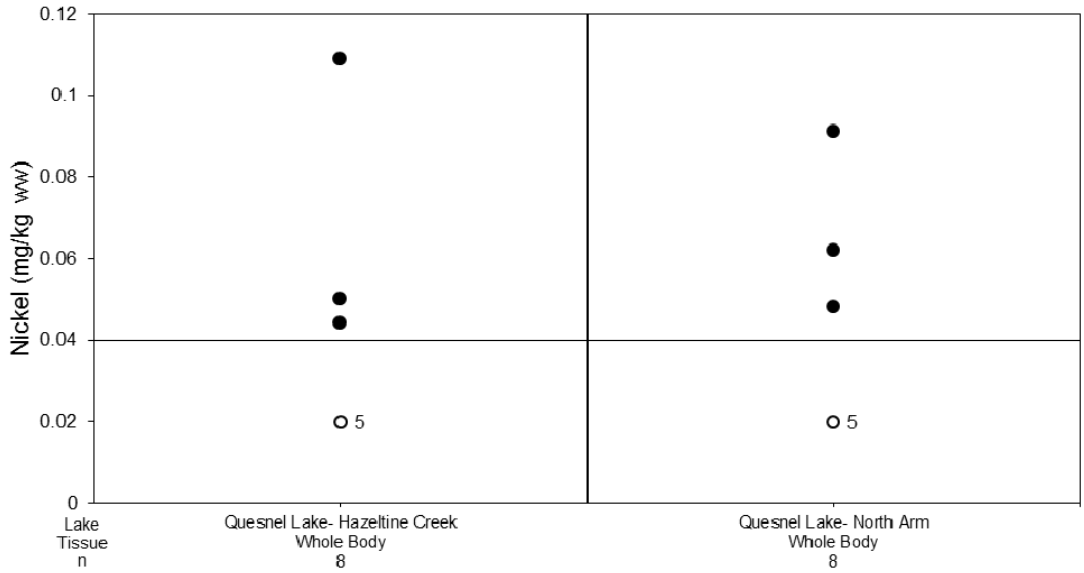
Figure 233: Nickel Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 234: Nickel Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

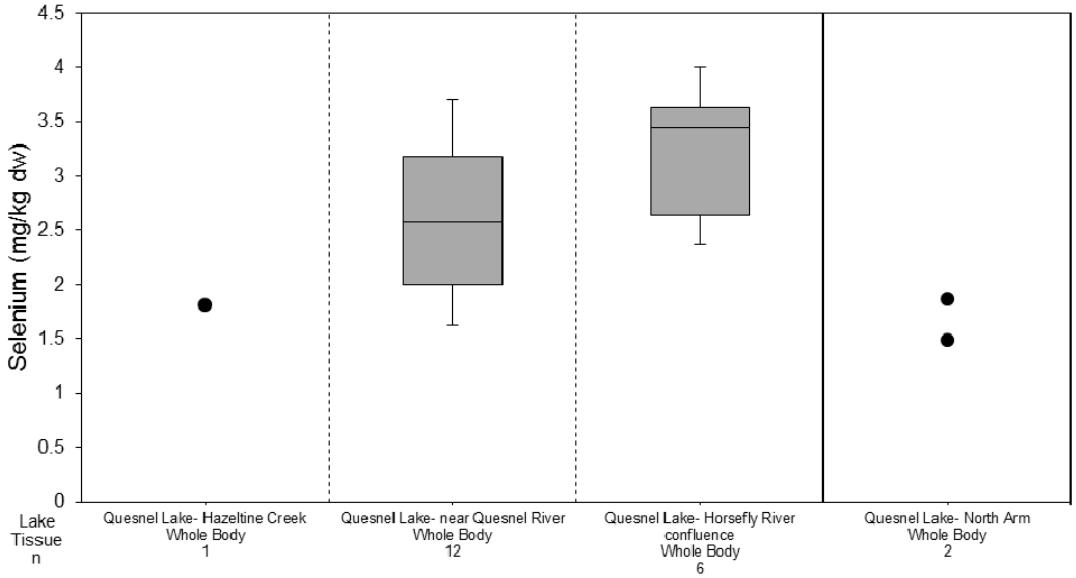
Figure 235: Nickel Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.16 Selenium

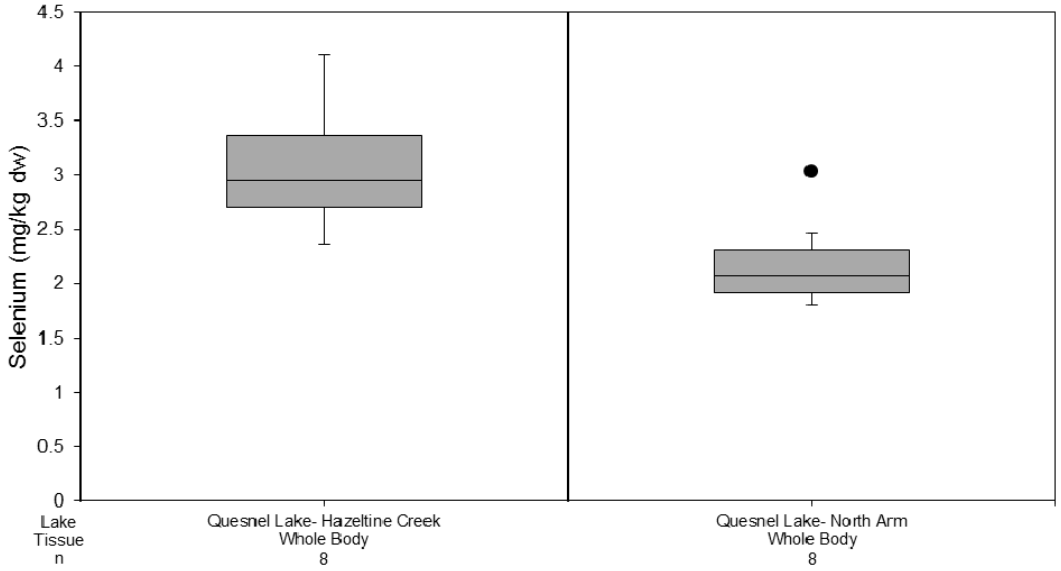
Figure 236: Selenium Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 237: Selenium Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

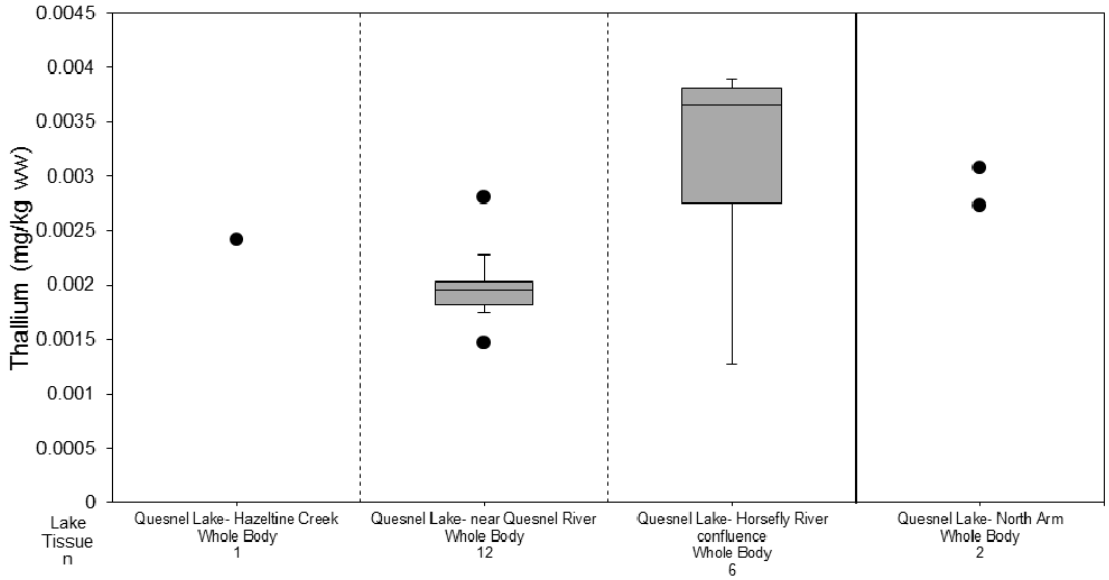
Figure 238: Selenium Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.17 Thallium

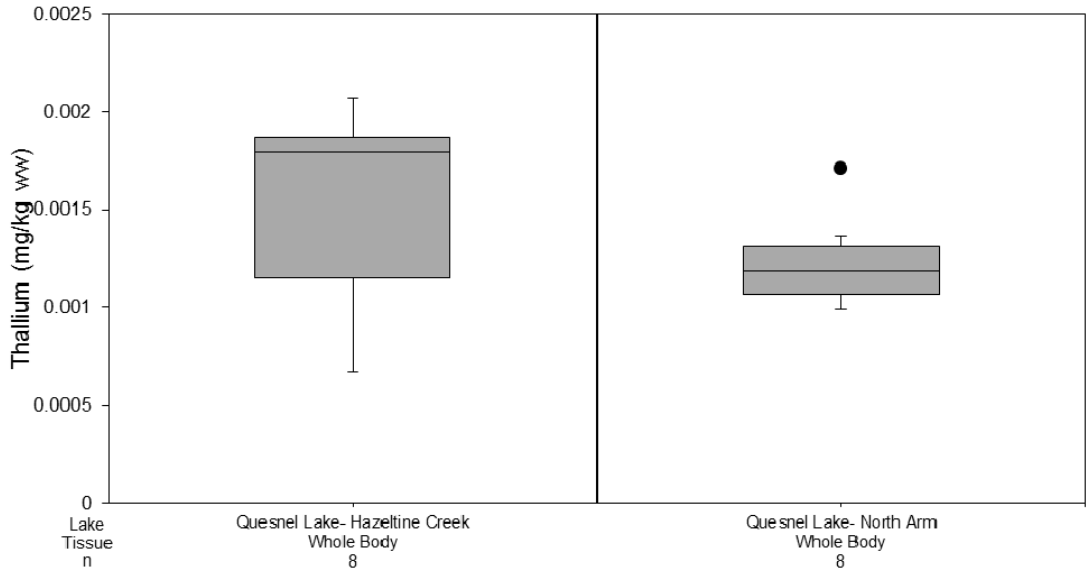
Figure 239: Thallium Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

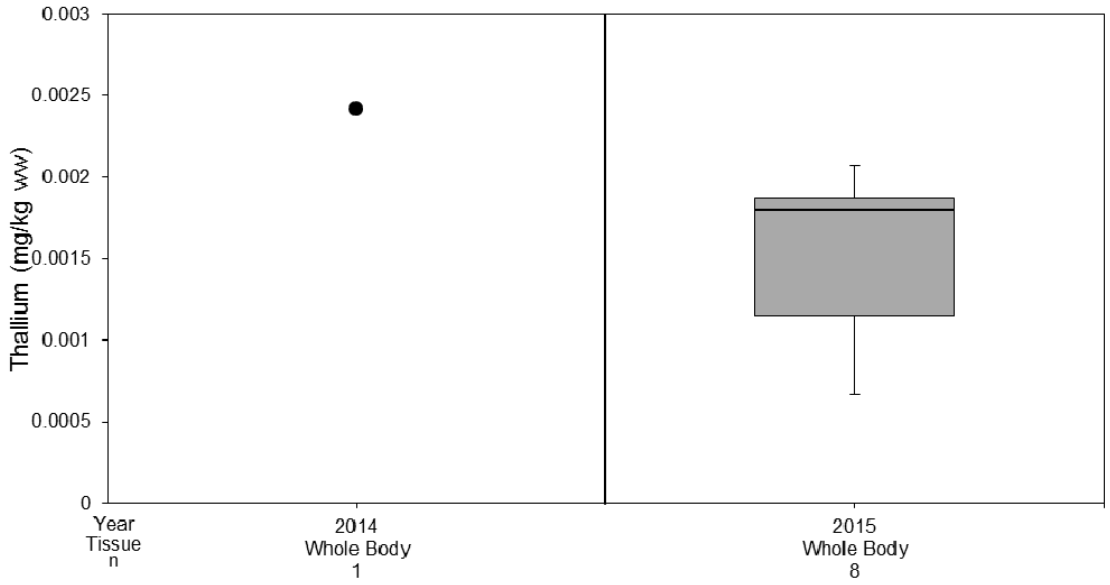
Figure 240: Thallium Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 241: Thallium Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

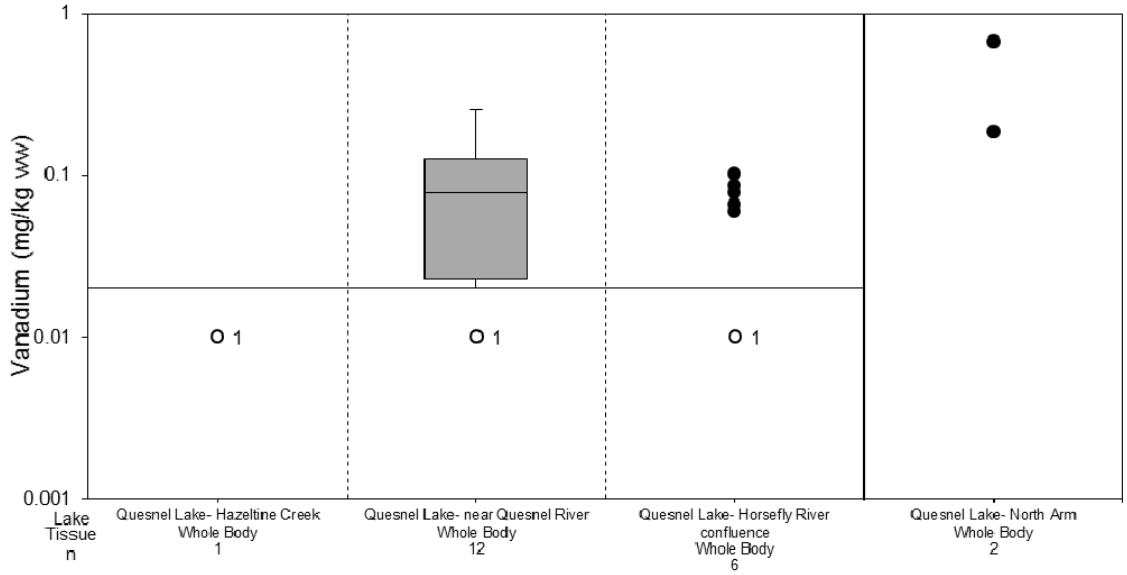


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.18 Vanadium

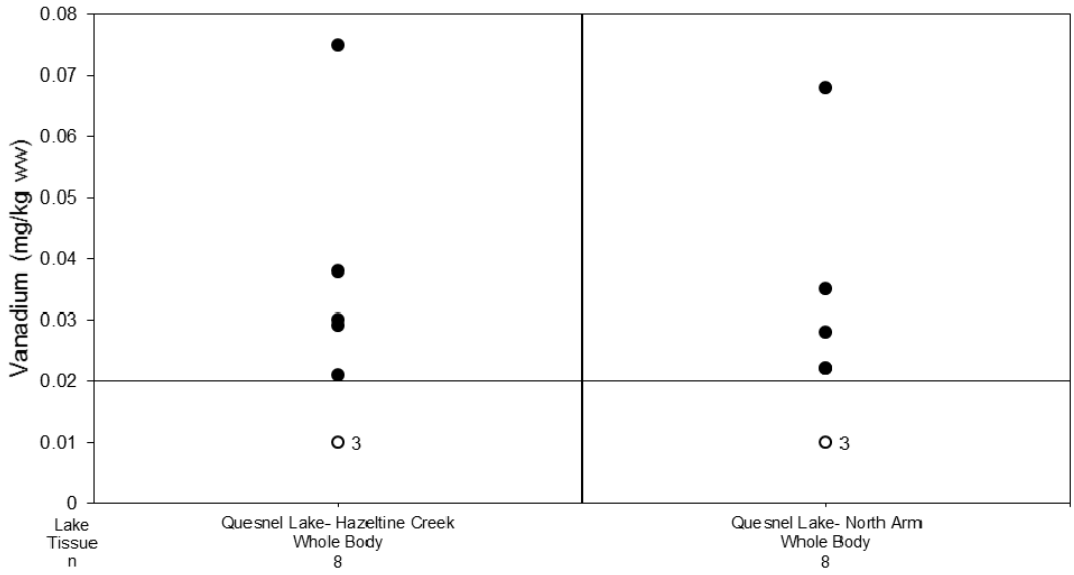
Figure 242: Vanadium Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

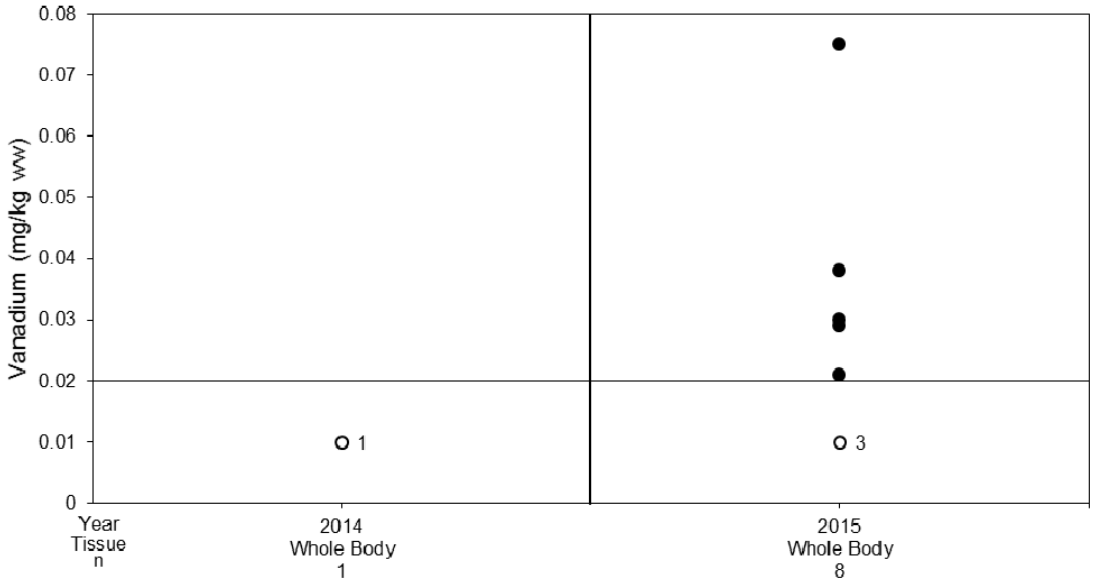
Figure 243: Vanadium Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 244: Vanadium Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015

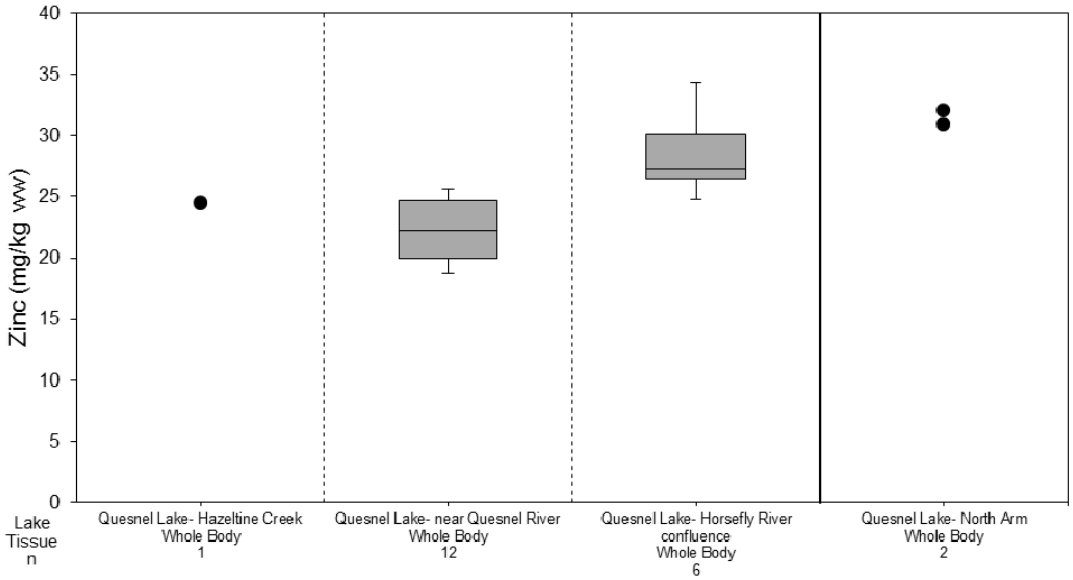


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

6.19 Zinc

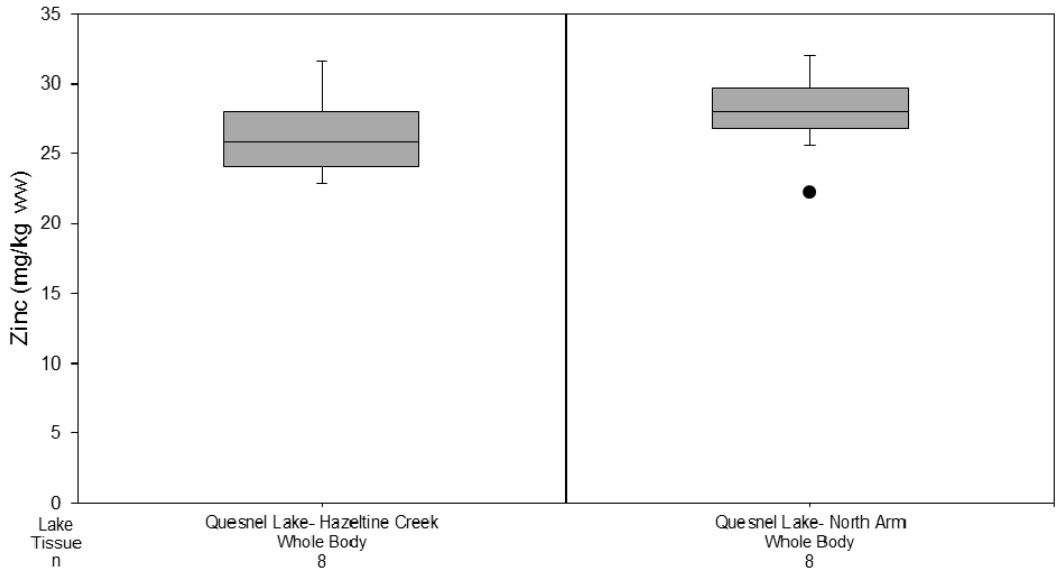
Figure 245: Zinc Concentrations in Peamouth Chub Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

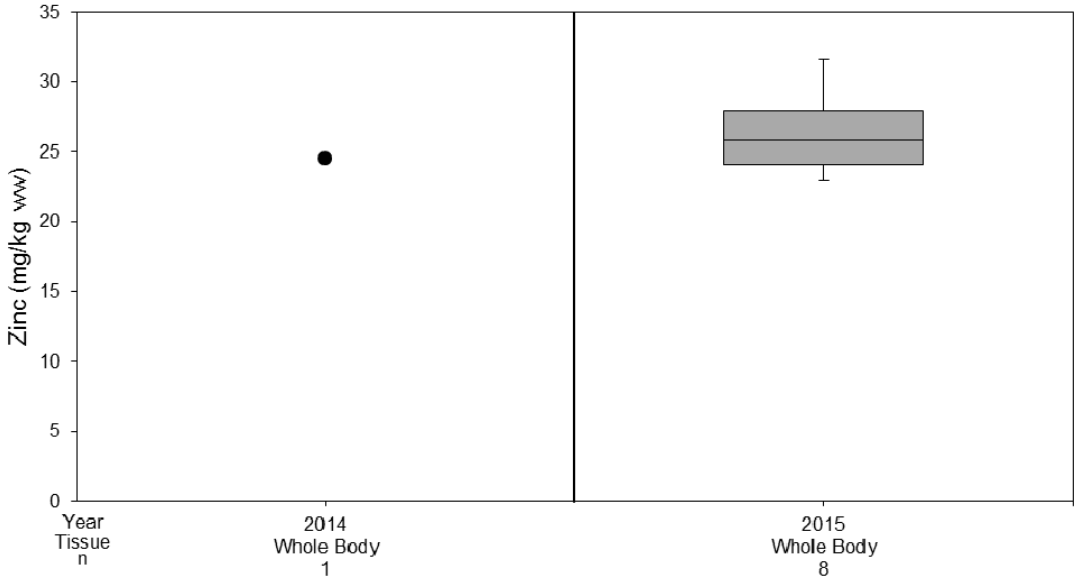
Figure 246: Zinc Concentrations in Peamouth Chub Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 247: Zinc Concentrations in Peamouth Chub Tissues Collected from the Quesnel Lake - Hazeltine Creek Confluence in 2014 and 2015



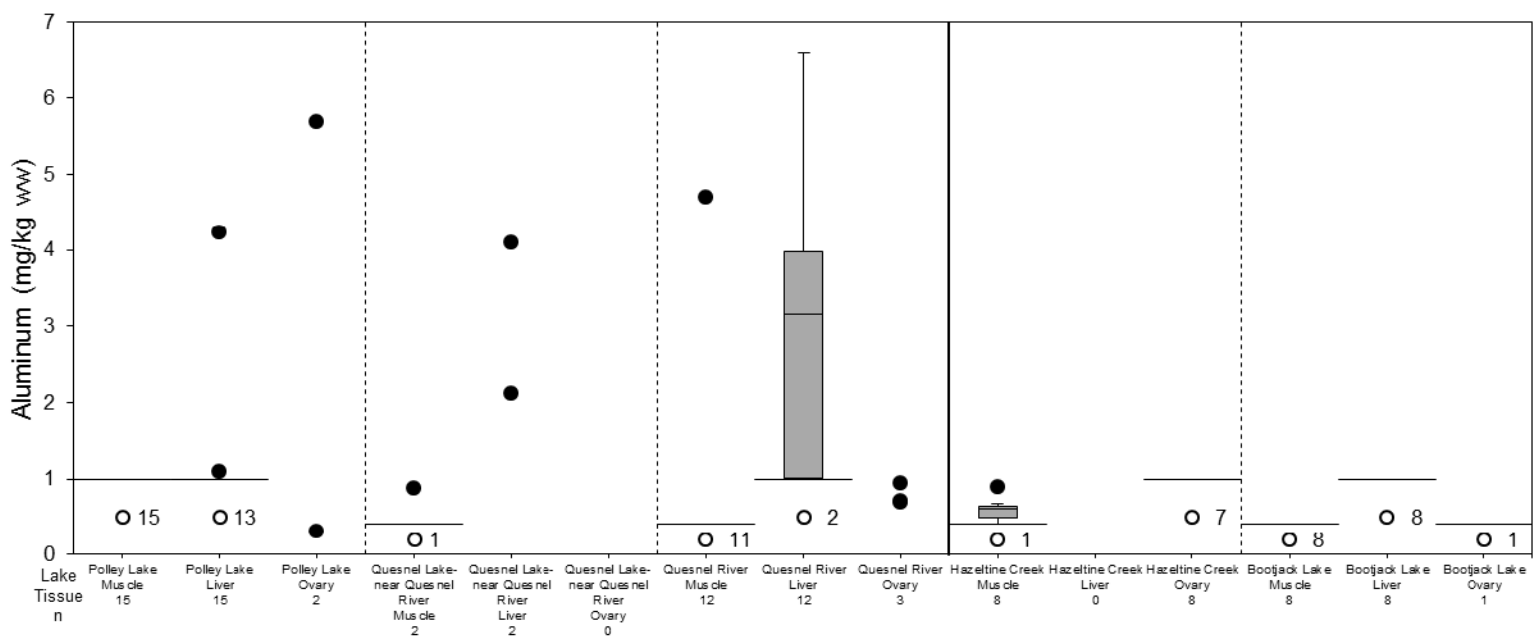
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

7.0 RAINBOW TROUT

7.1 Aluminum

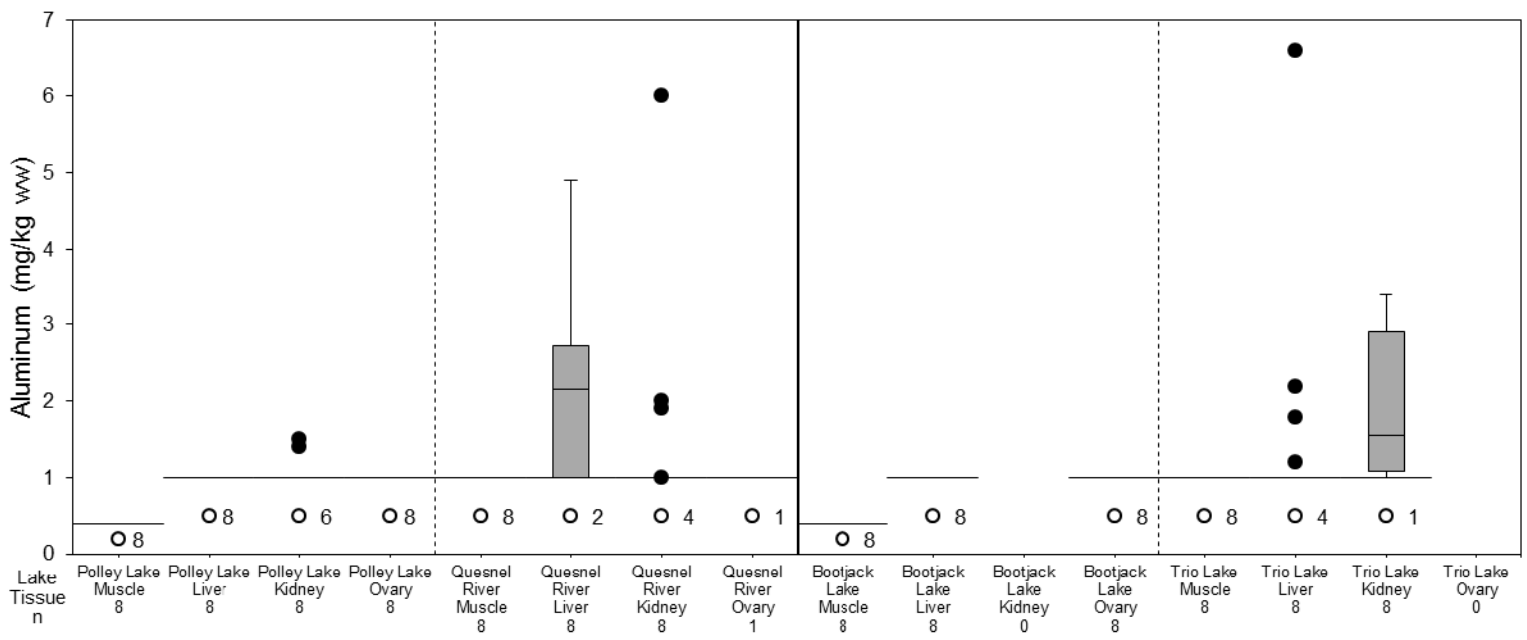
Figure 248: Aluminum Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

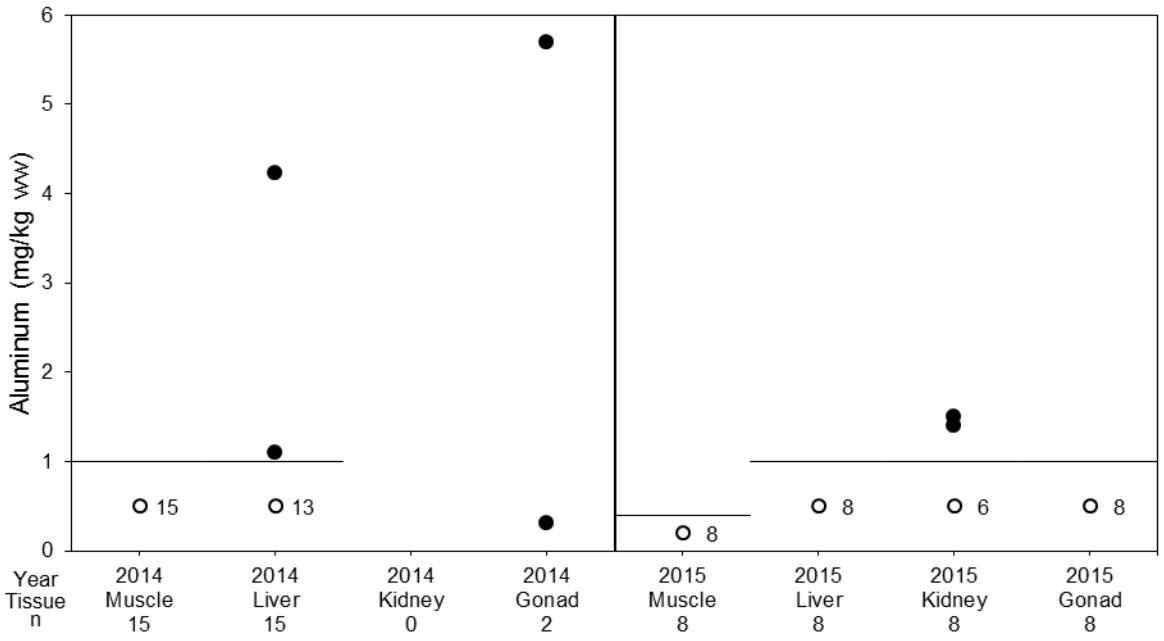
Figure 249: Aluminum Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

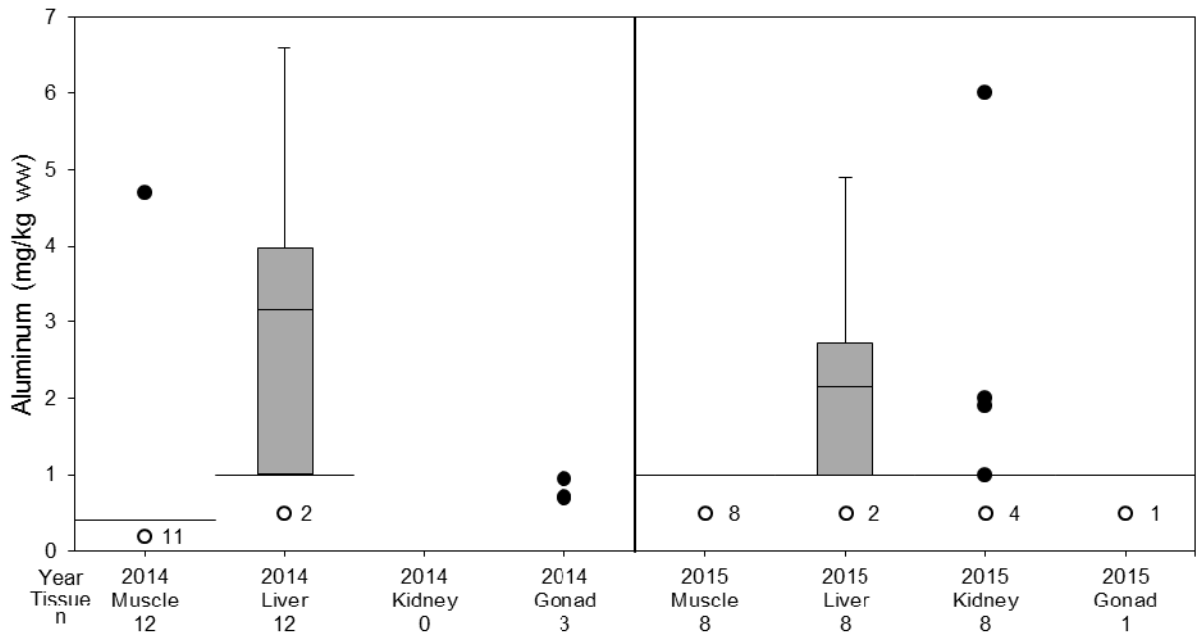
Figure 250: Aluminum Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 251: Aluminum Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

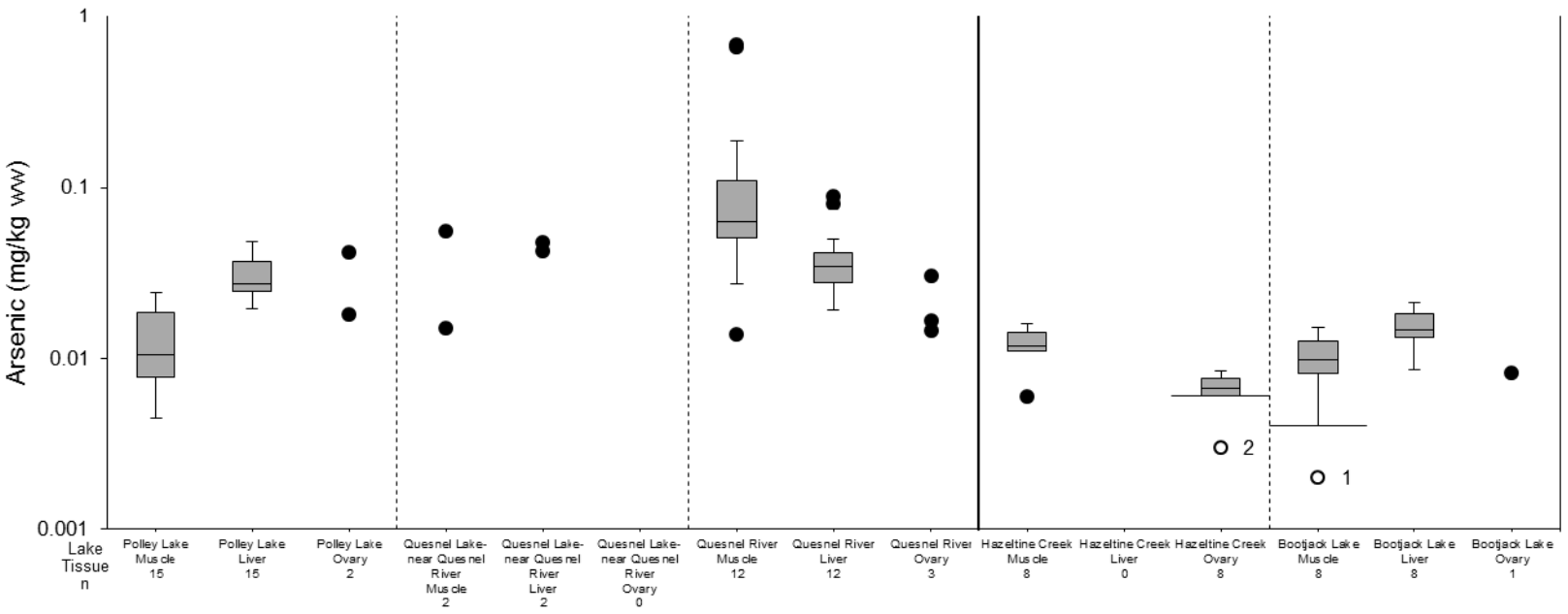


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

7.2 Arsenic

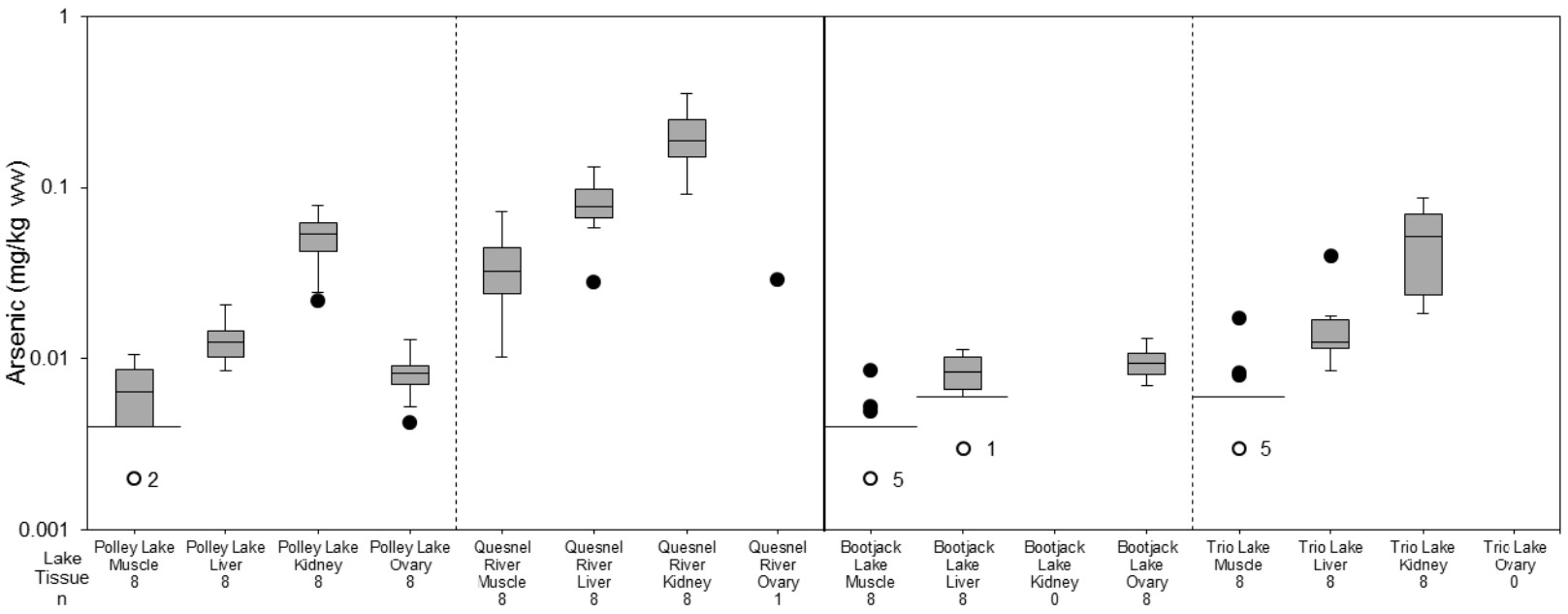
Figure 252: Arsenic Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

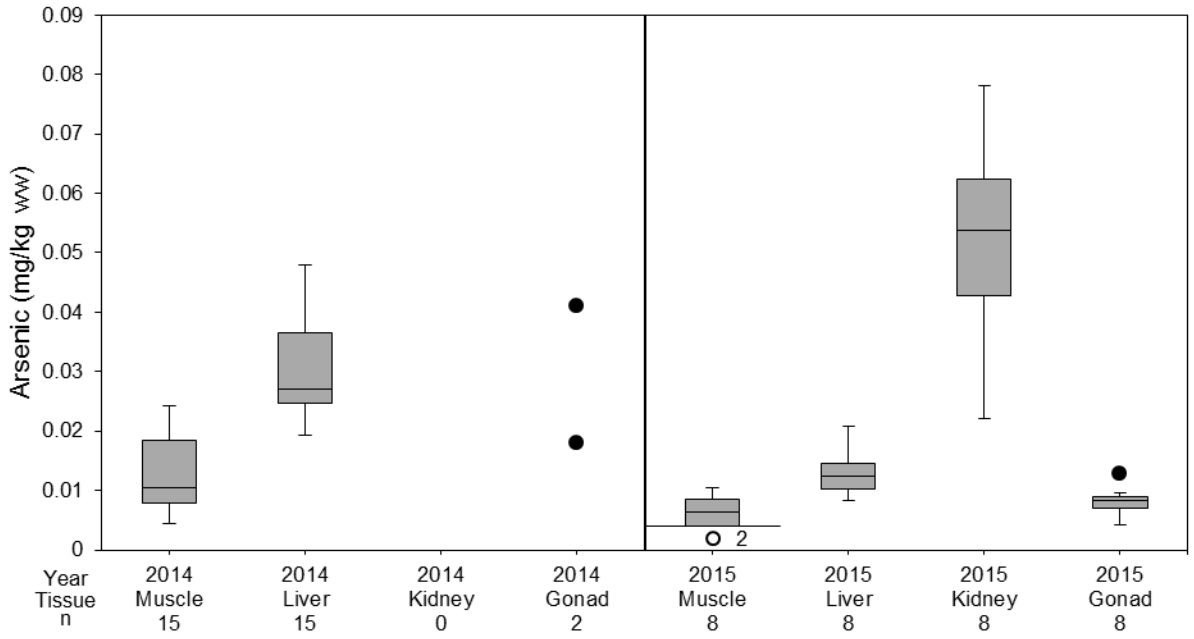
Figure 253: Arsenic Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

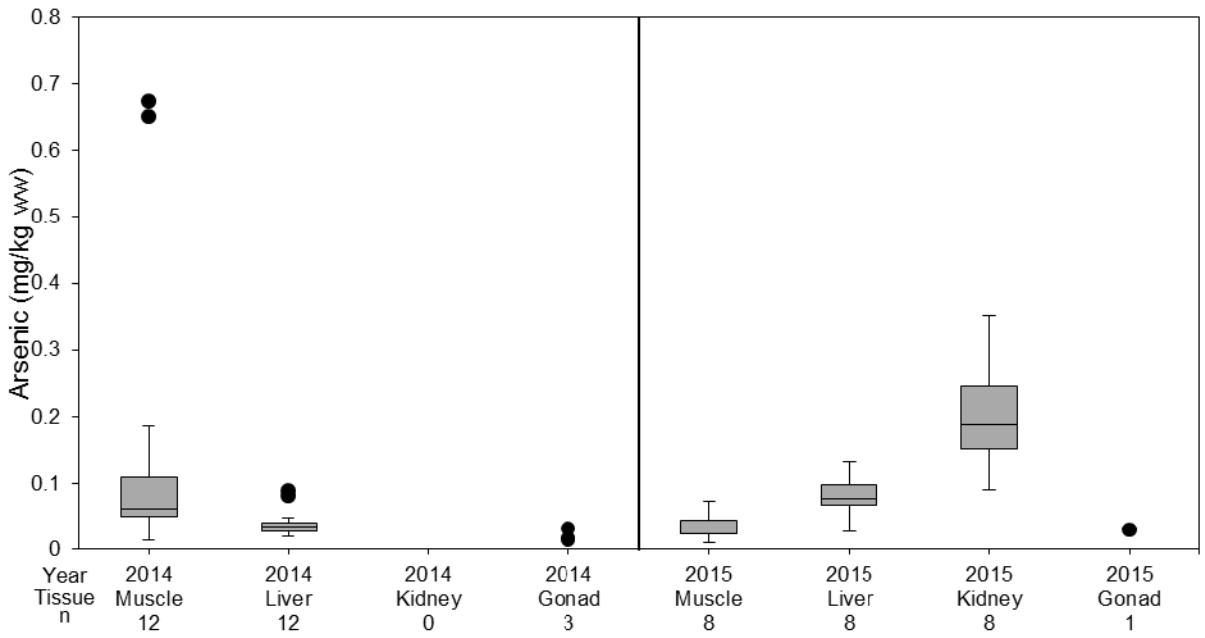
mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 254: Arsenic Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.
mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

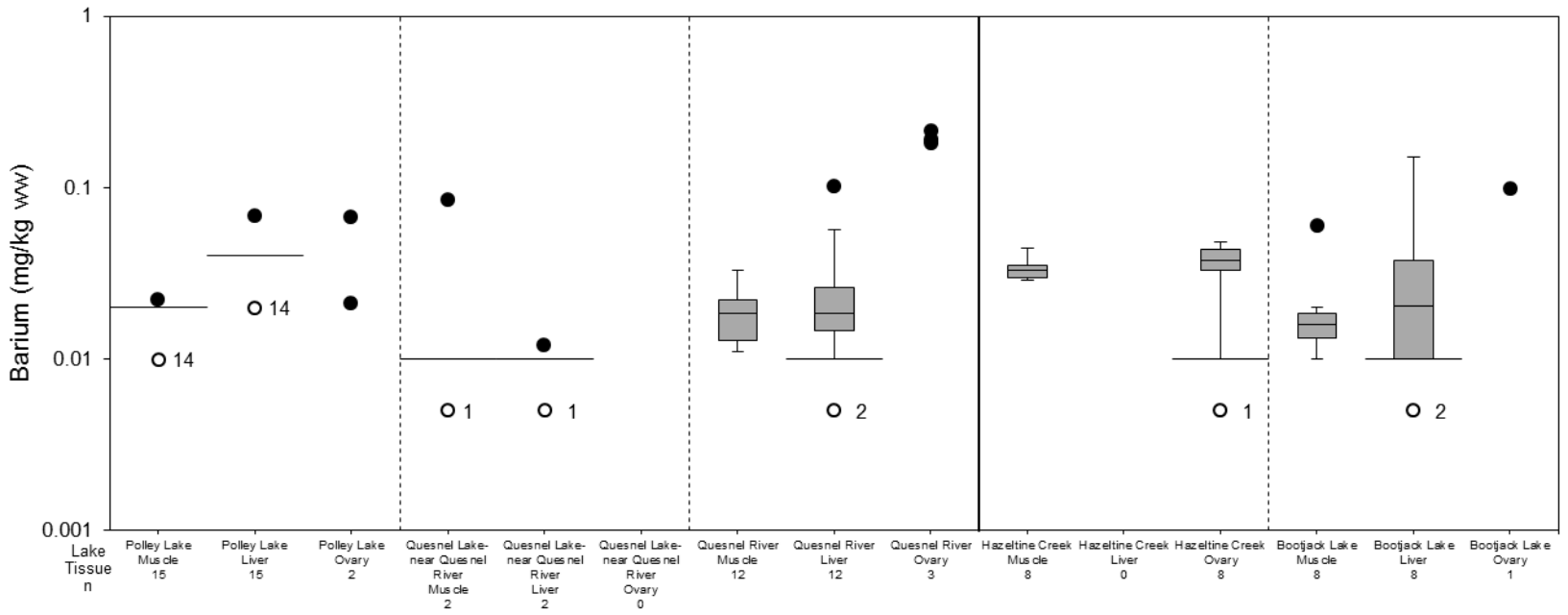
Figure 255: Arsenic Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.
mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

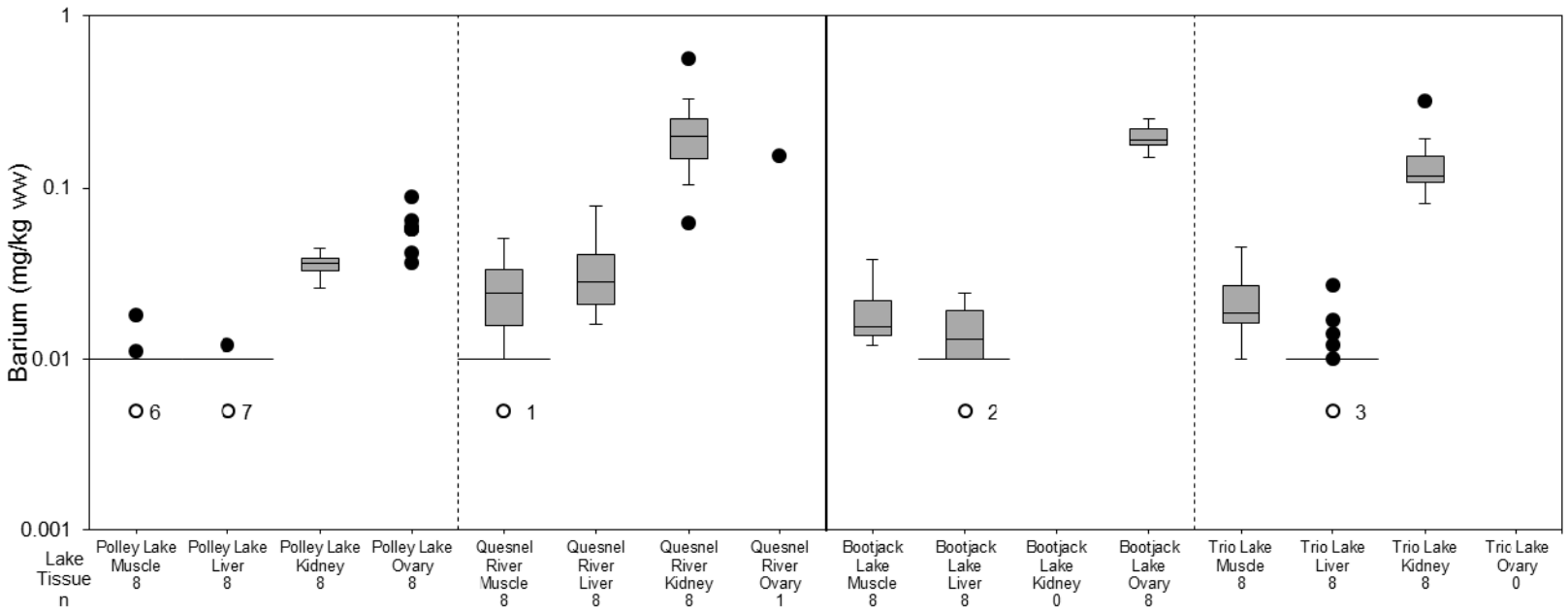
7.3 Barium

Figure 256: Barium Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.
mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

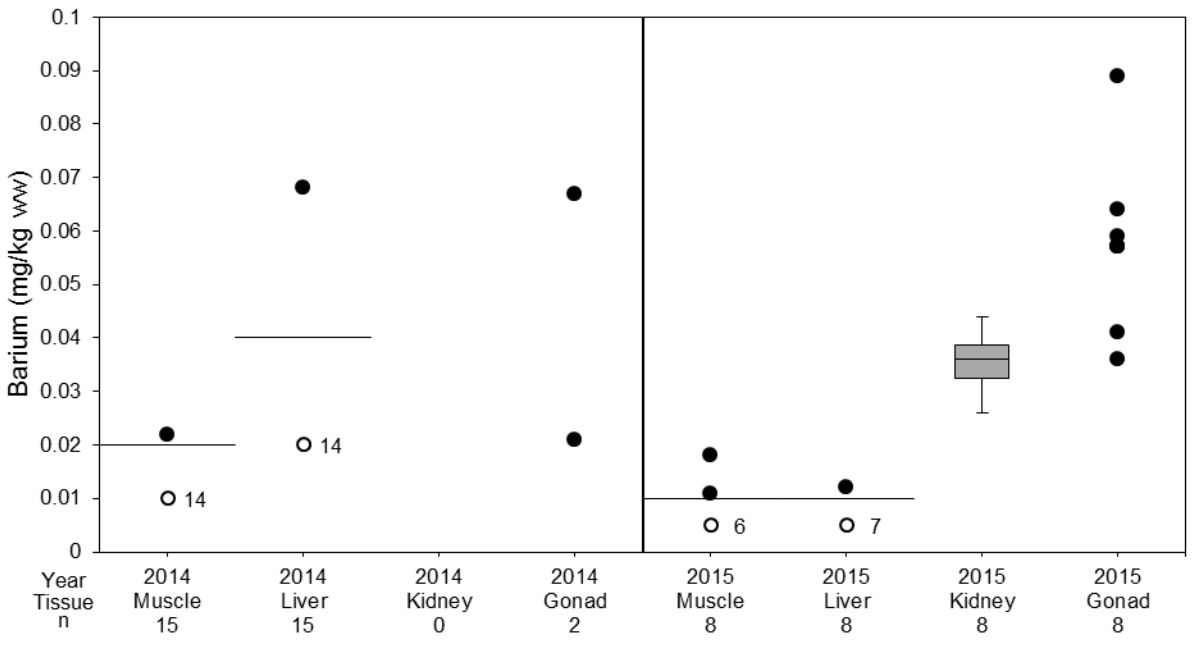
Figure 257: Barium Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

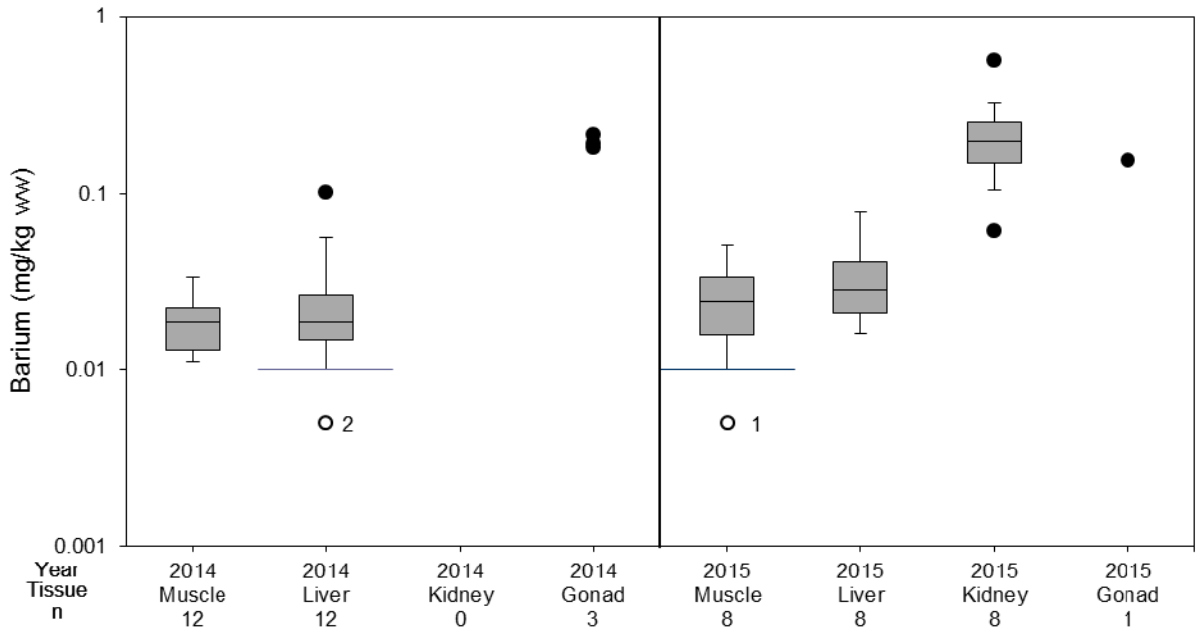
Figure 258: Barium Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 259: Barium Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

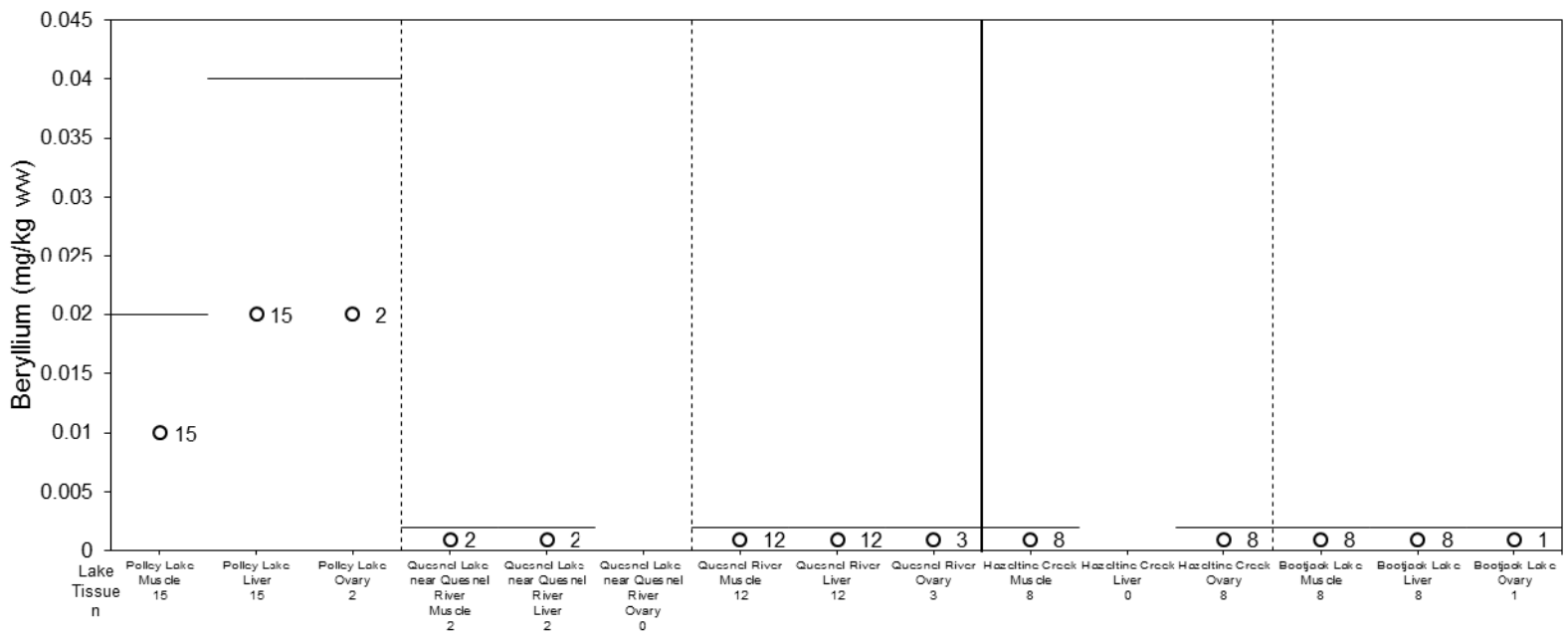


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

7.4 Beryllium

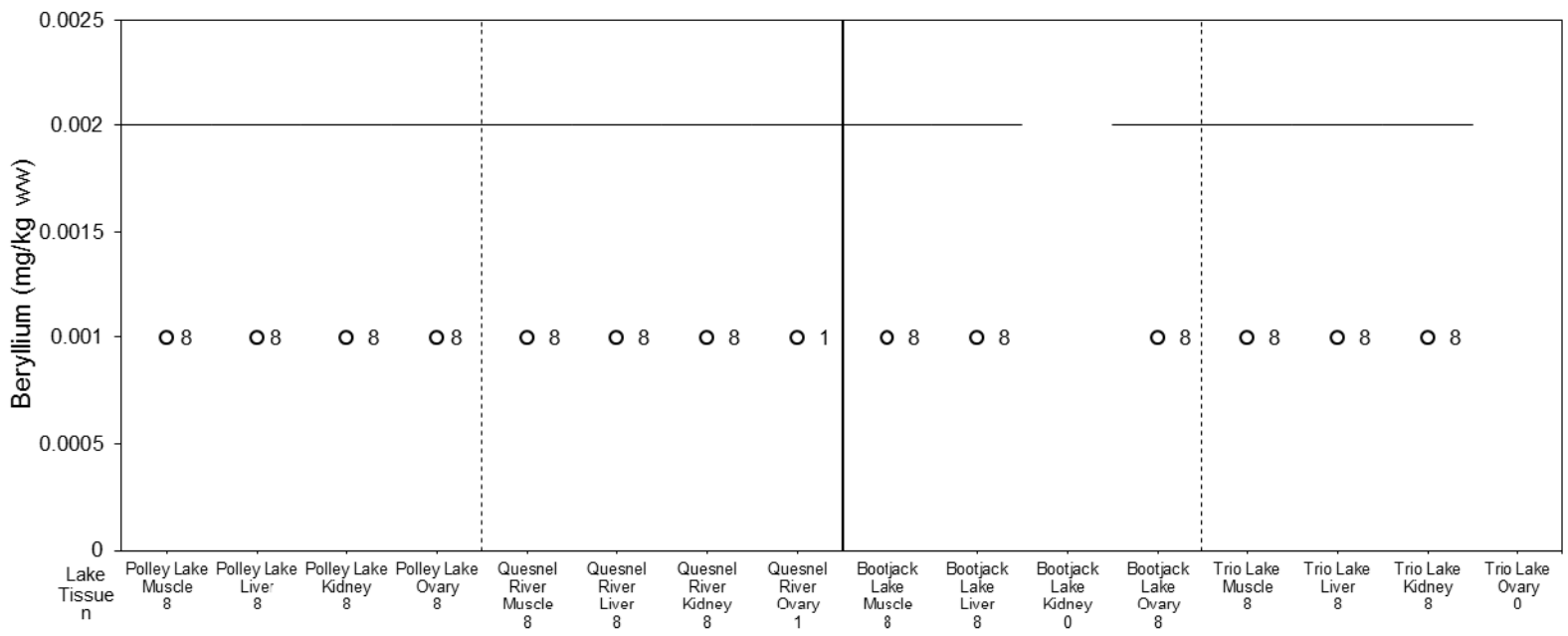
Figure 260: Beryllium Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

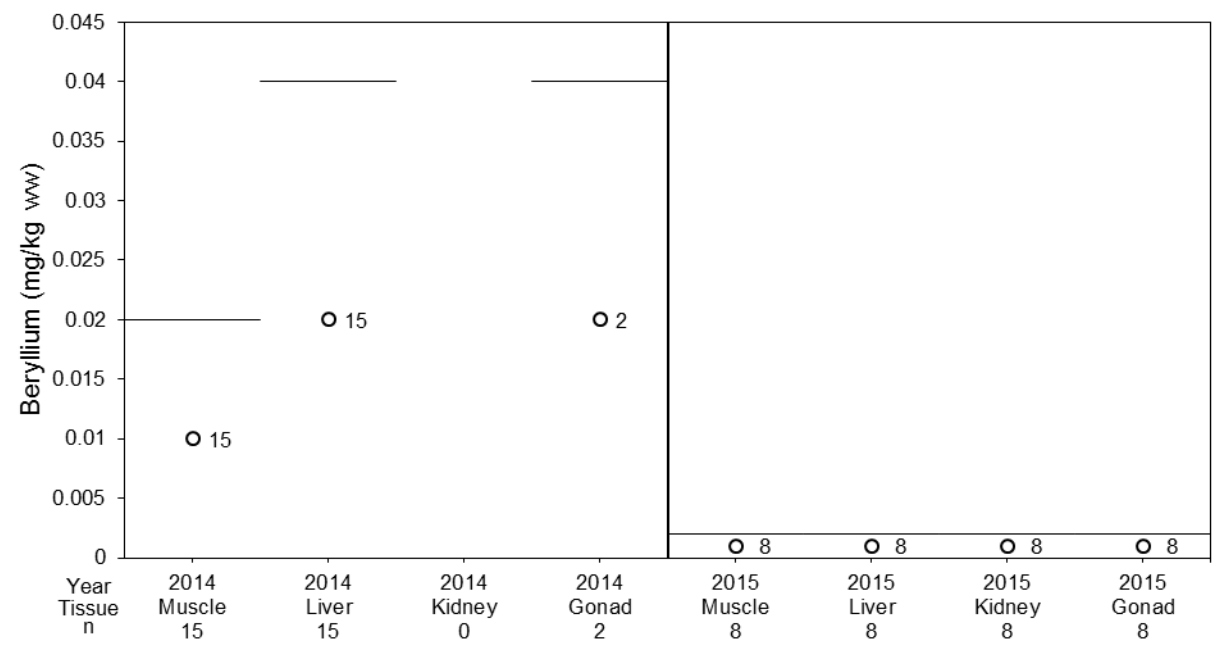
Figure 261: Beryllium Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 262: Beryllium Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

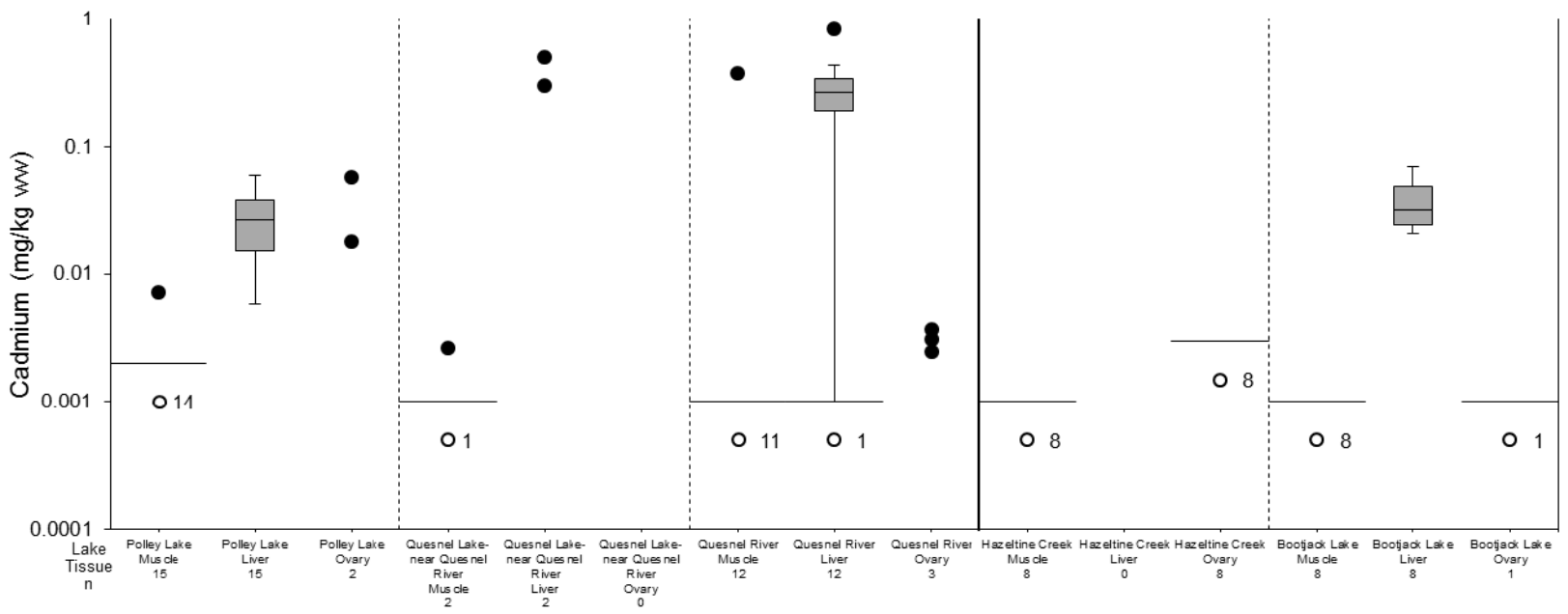
Figure 263: Beryllium Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

7.5 Cadmium

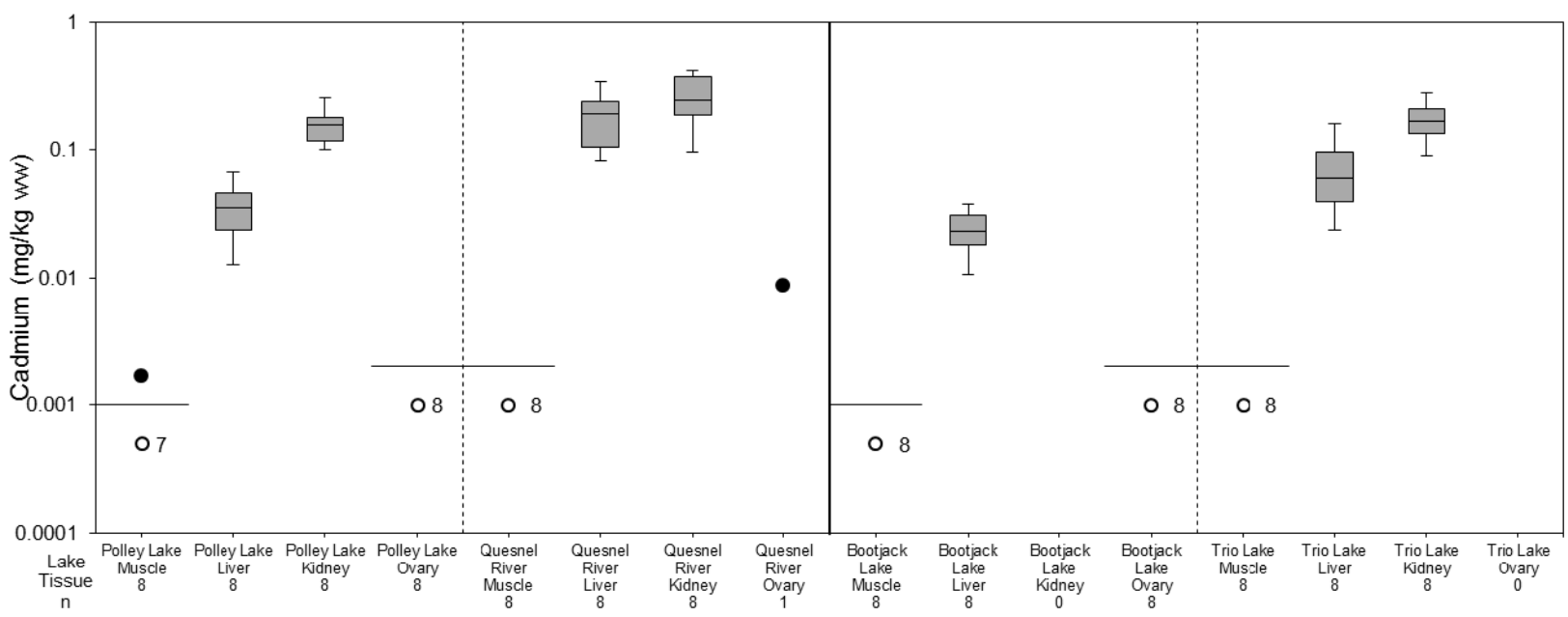
Figure 264: Cadmium Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

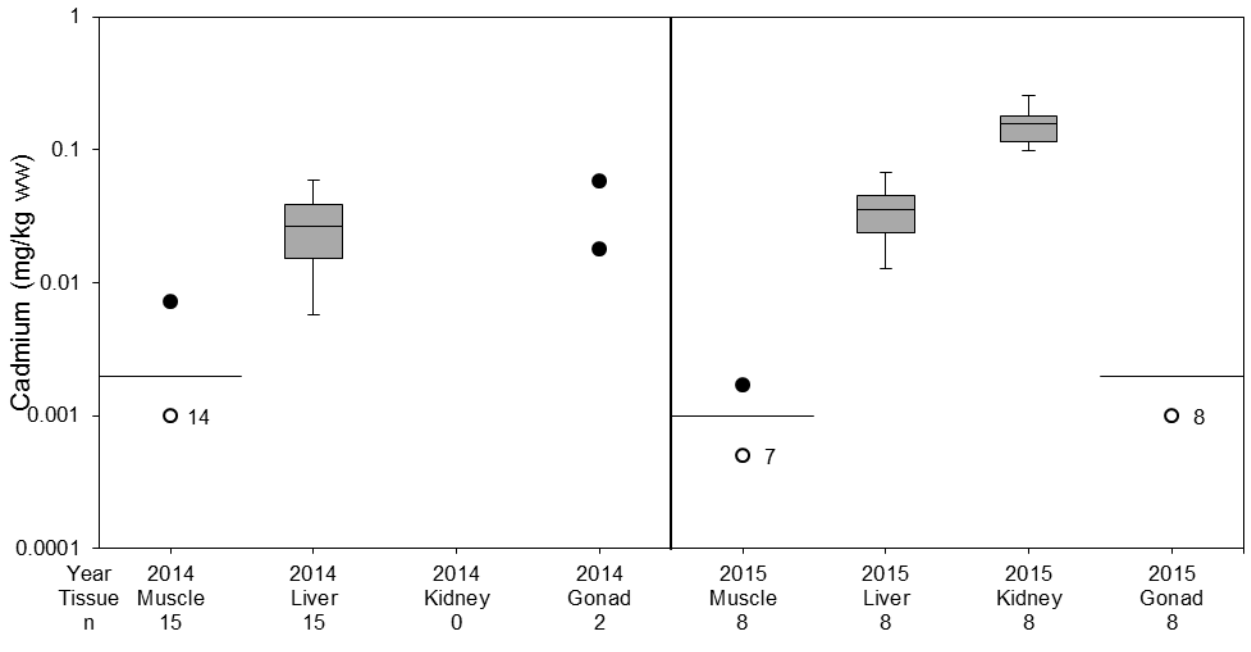
Figure 265: Cadmium Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

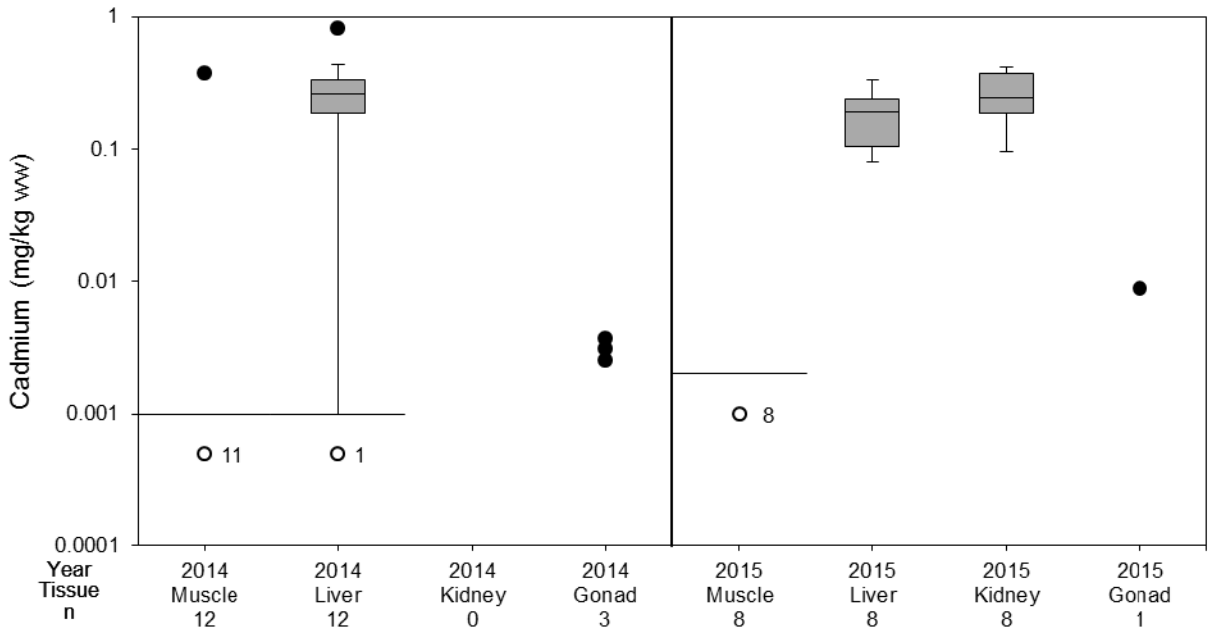
Figure 266: Cadmium Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 267: Cadmium Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

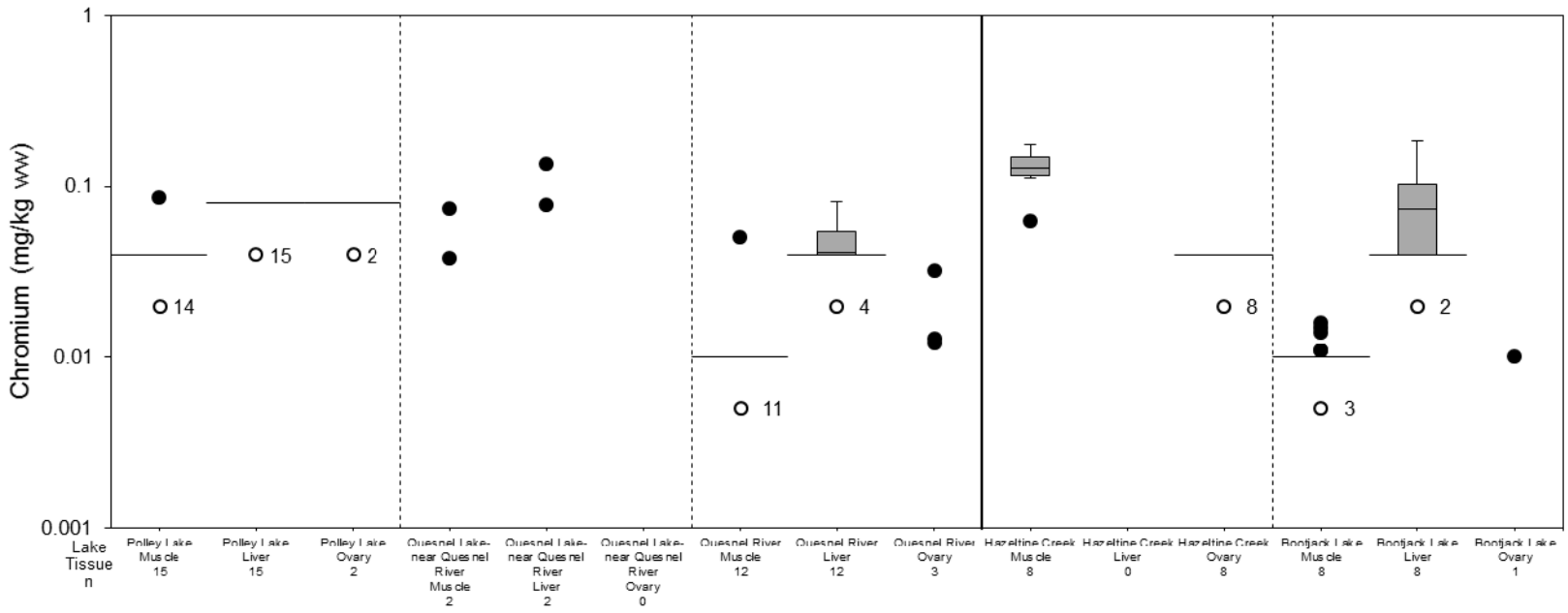


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

7.6 Chromium

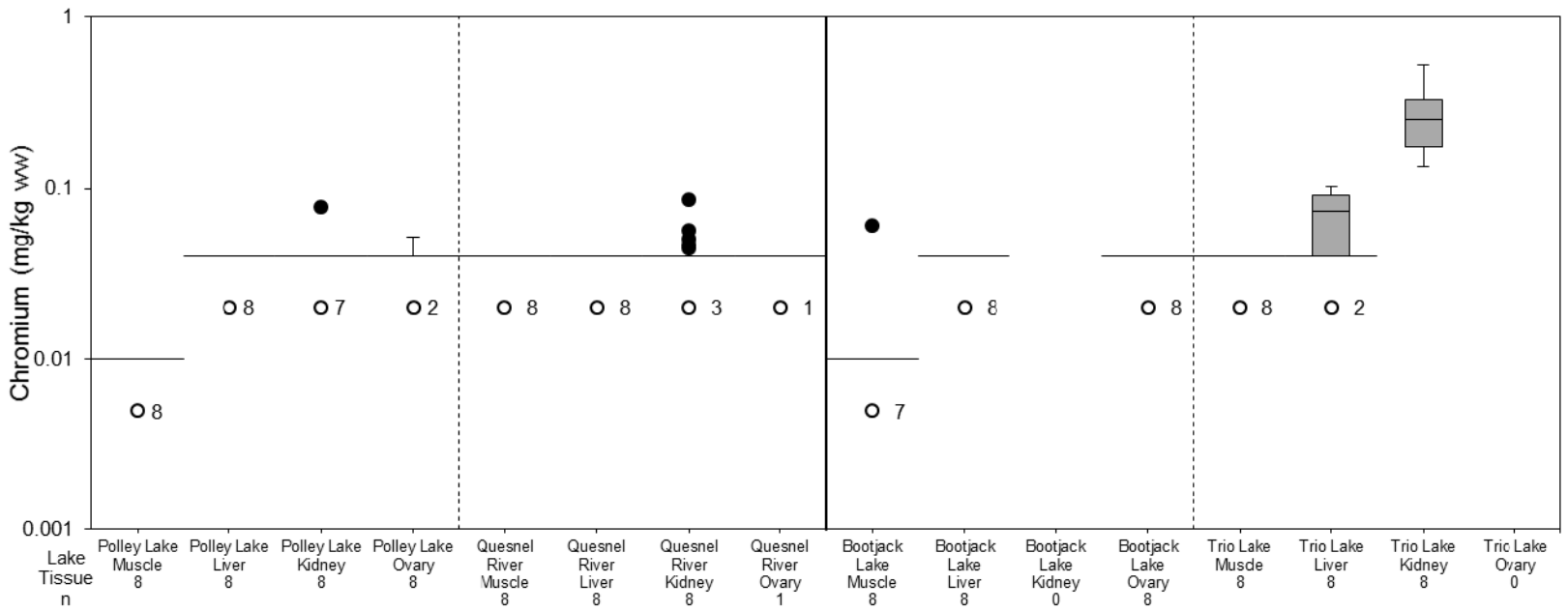
Figure 268: Chromium Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

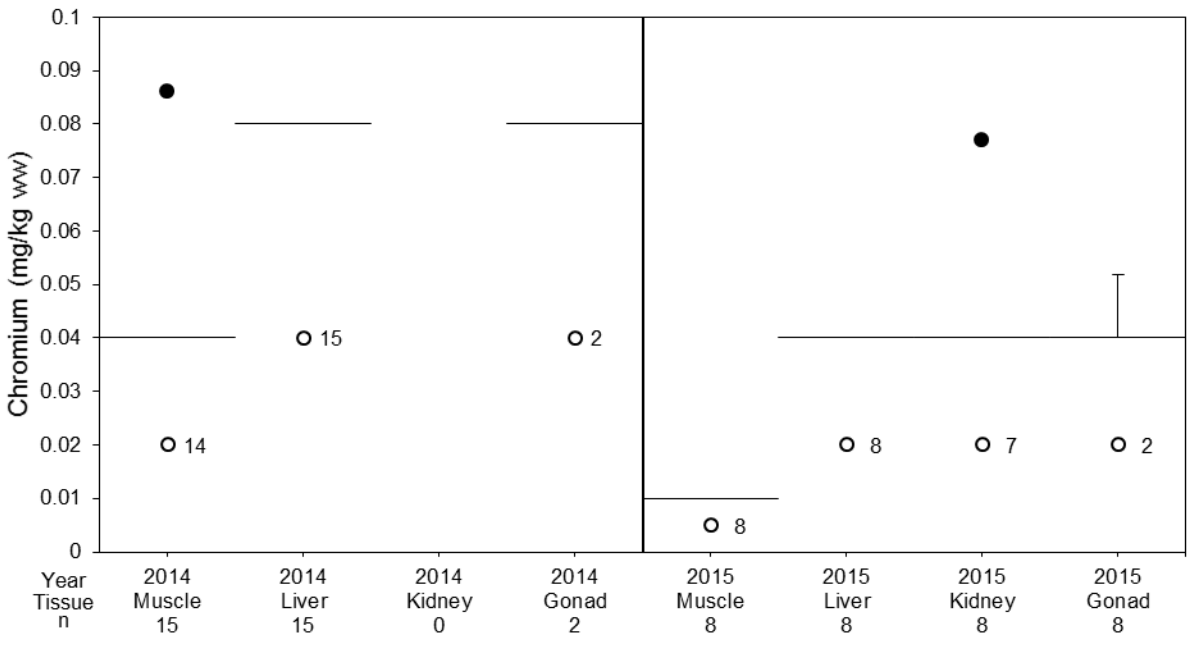
Figure 269: Chromium Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

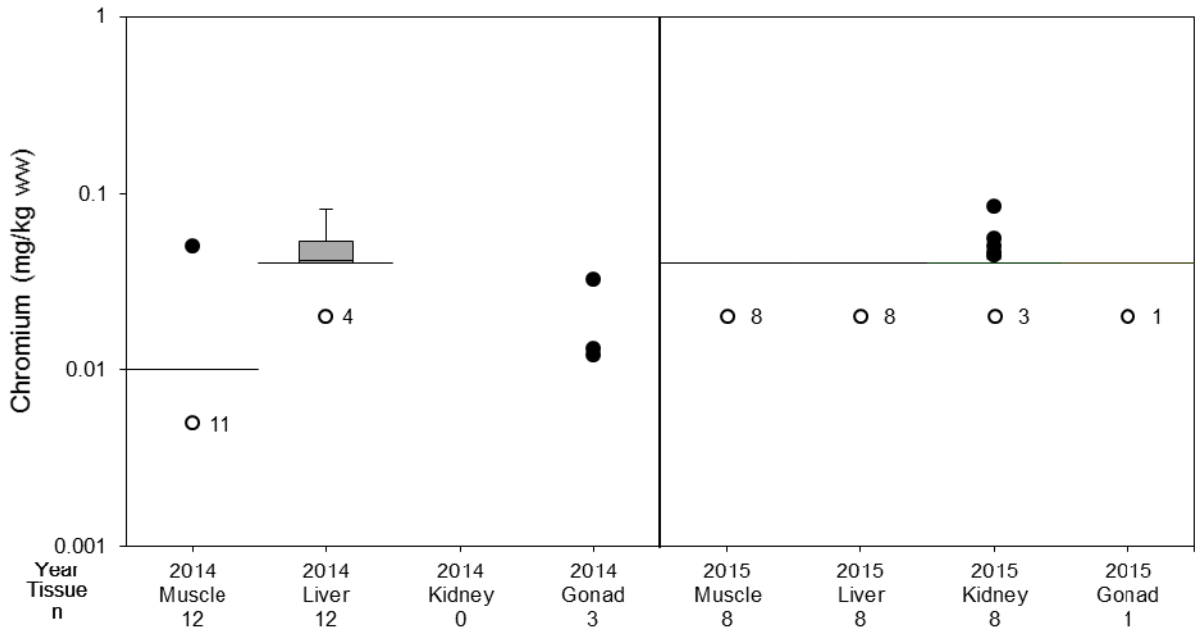
Figure 270: Chromium Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 271: Chromium Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

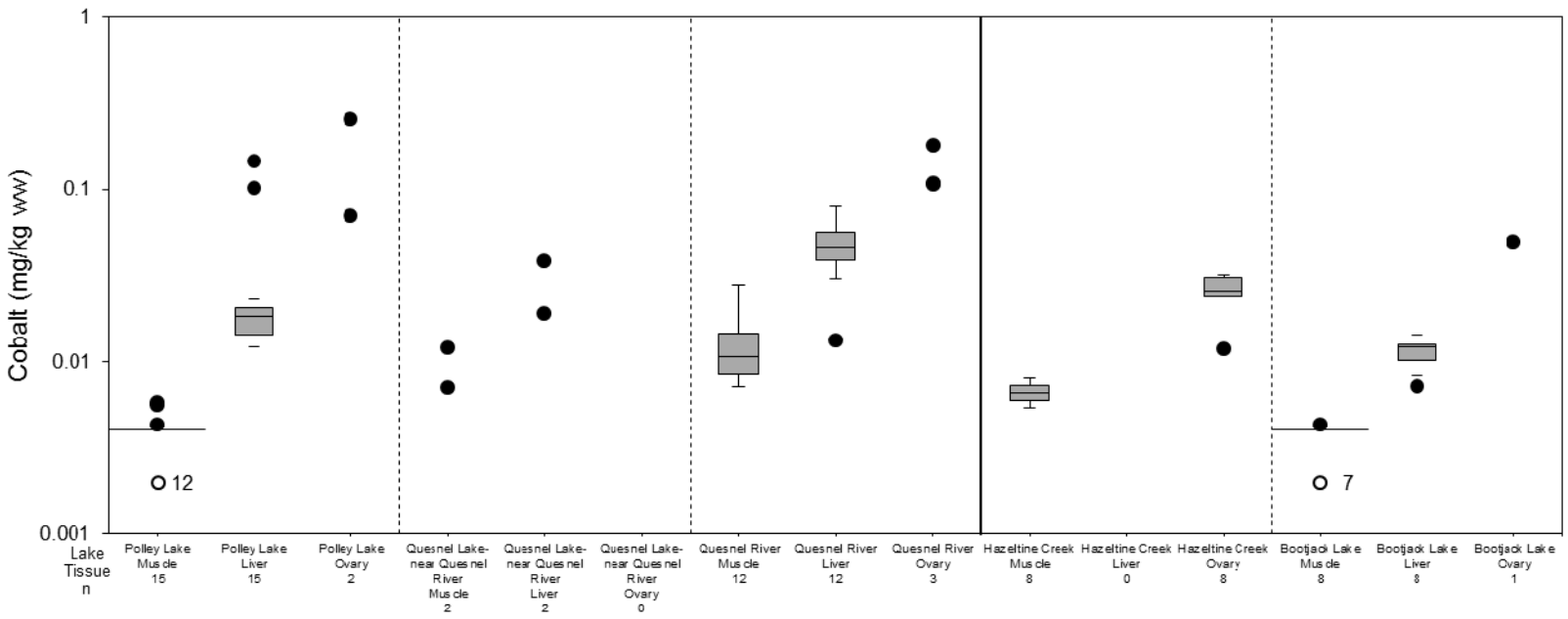


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale..

7.7 Cobalt

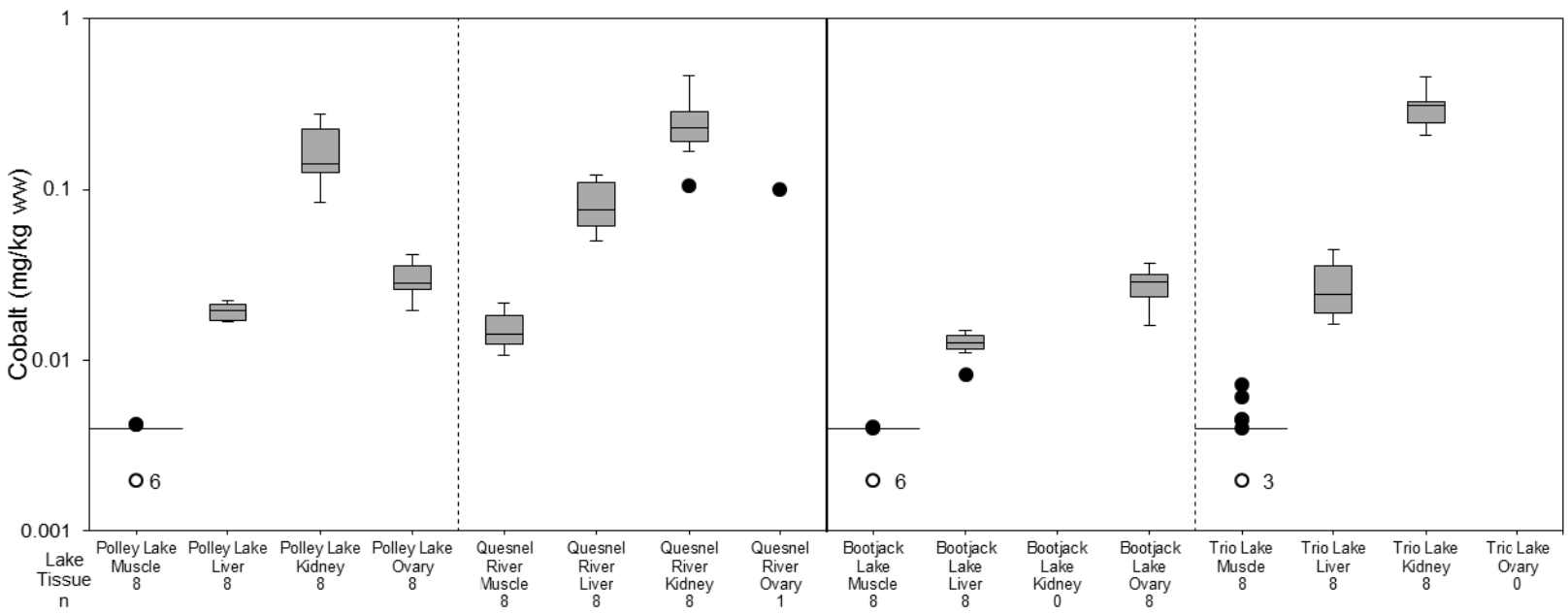
Figure 272: Cobalt Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

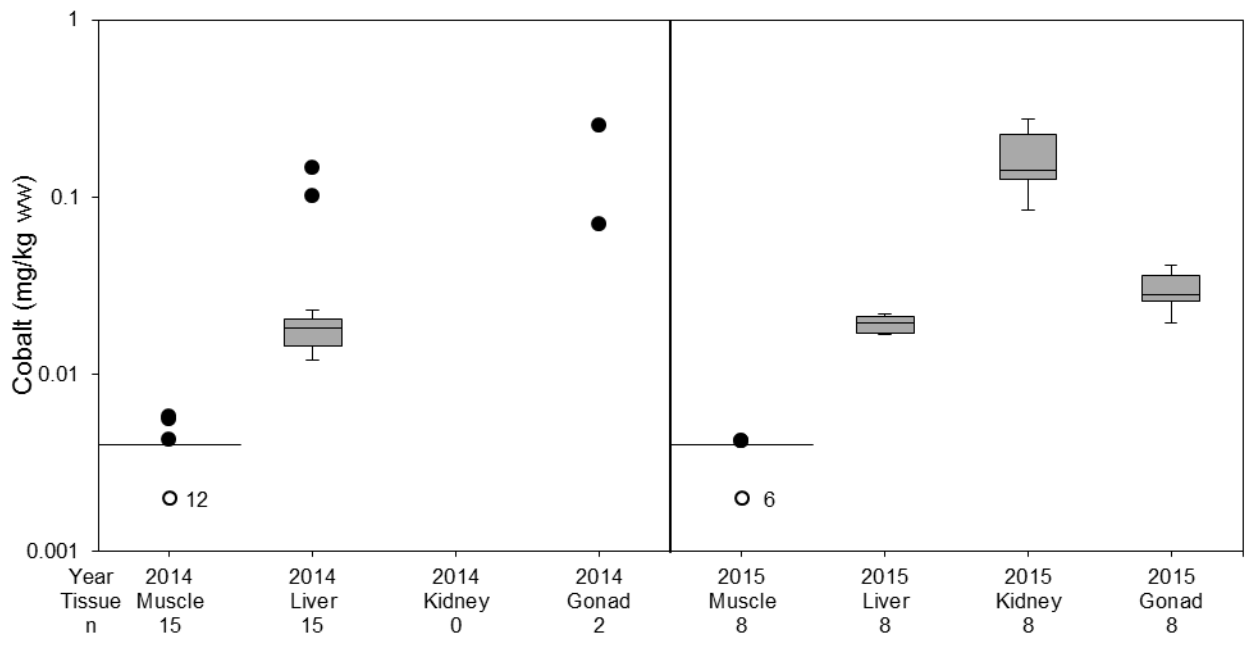
Figure 273: Cobalt Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

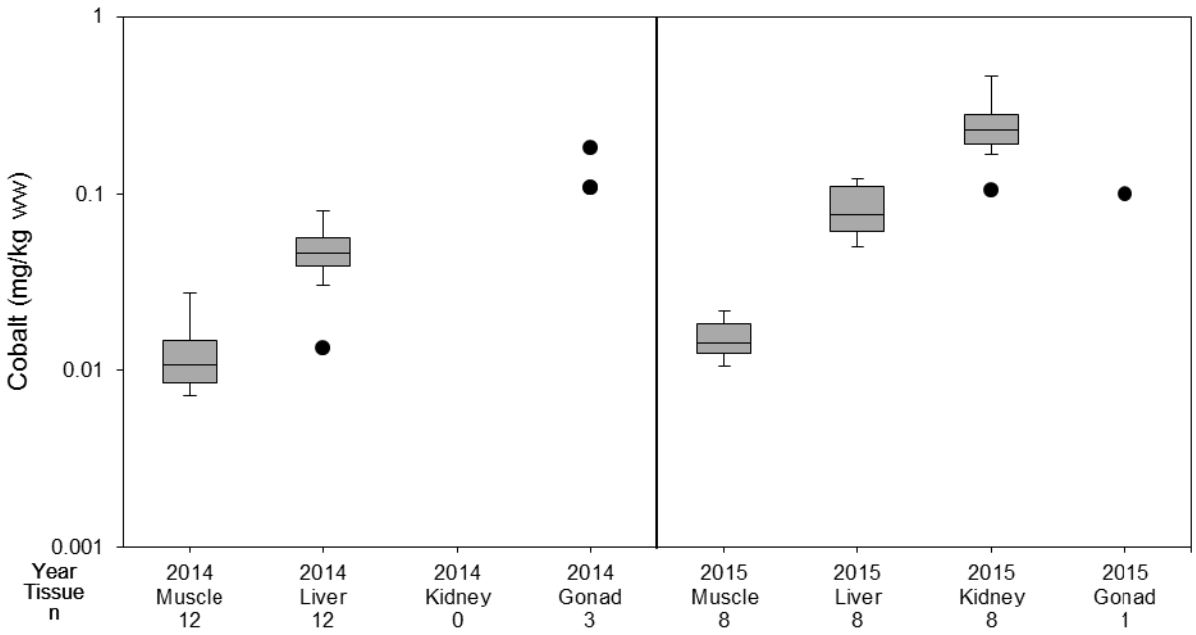
Figure 274: Cobalt Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 275: Cobalt Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

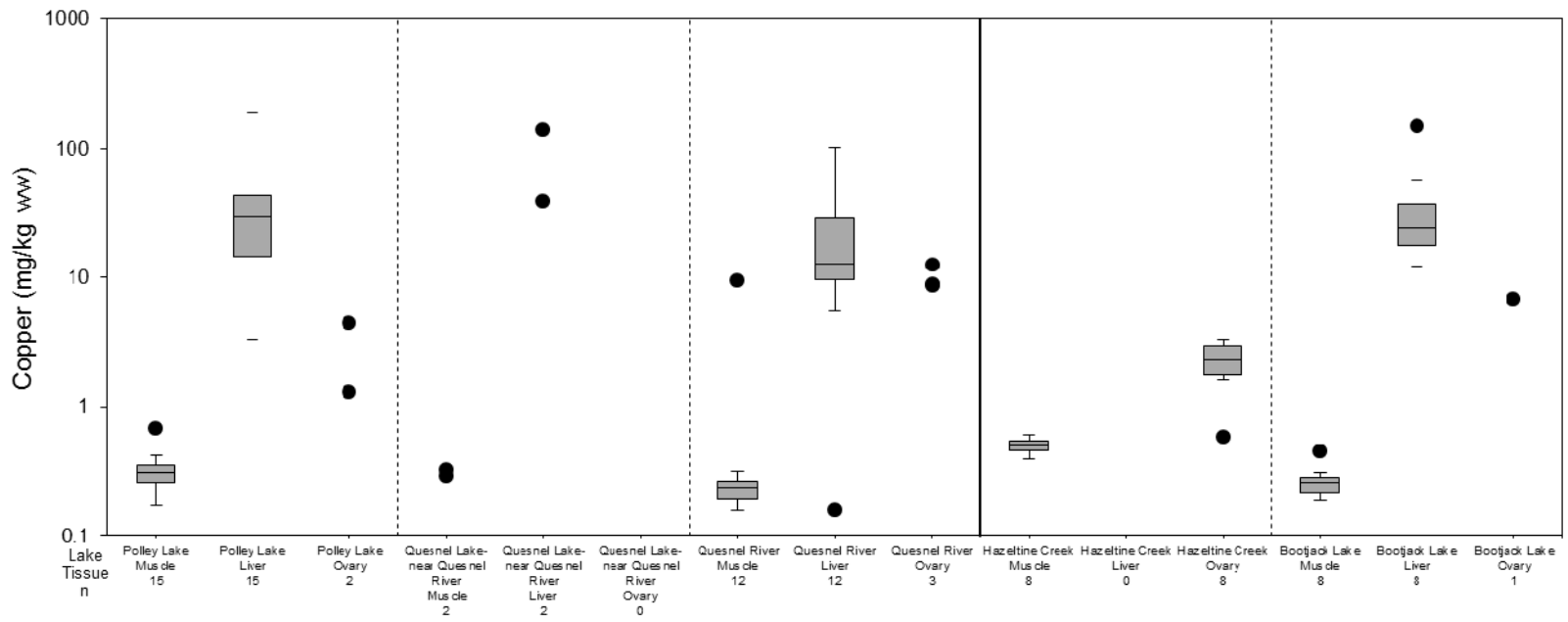


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

7.8 Copper

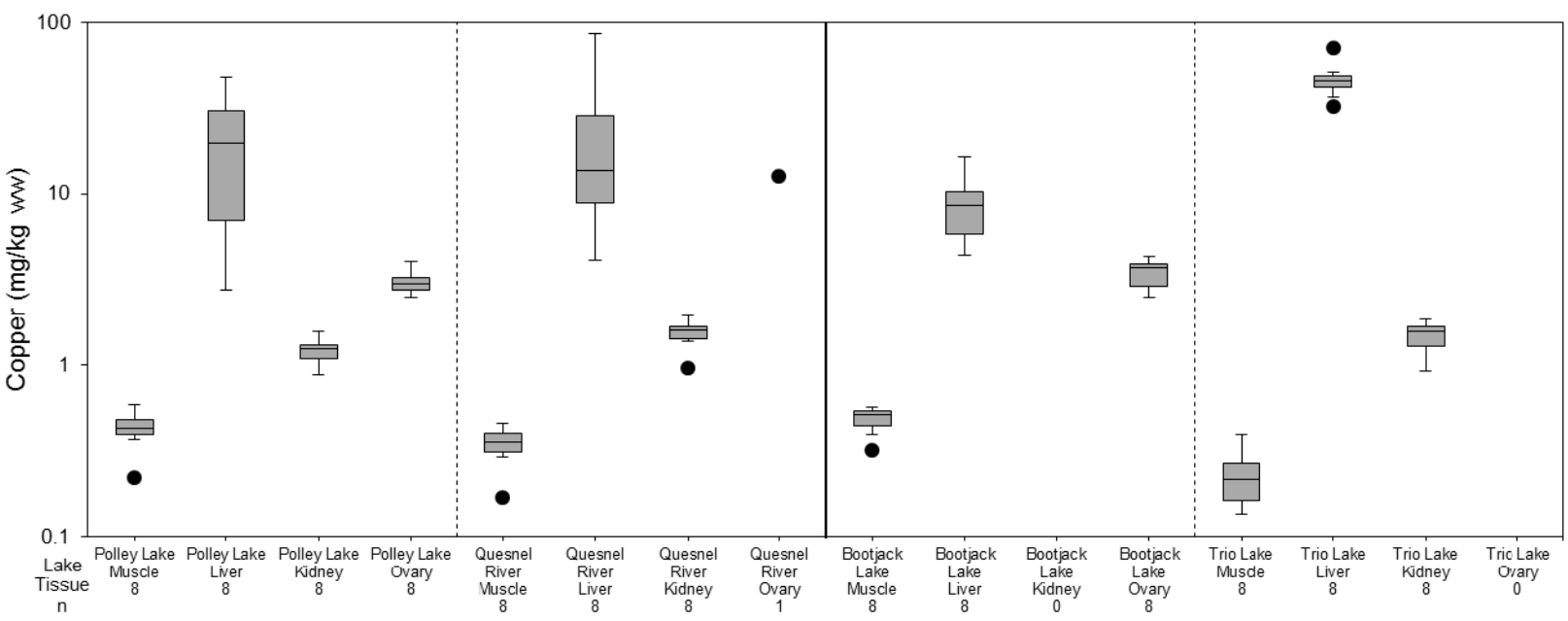
Figure 276: Copper Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

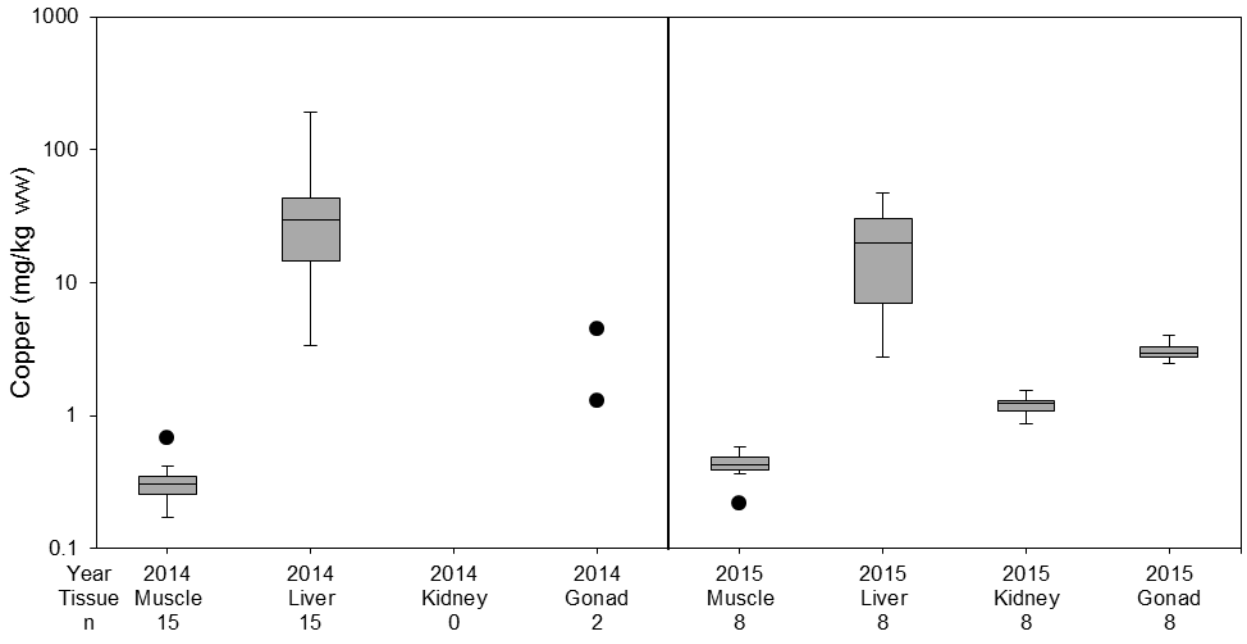
Figure 277: Copper Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

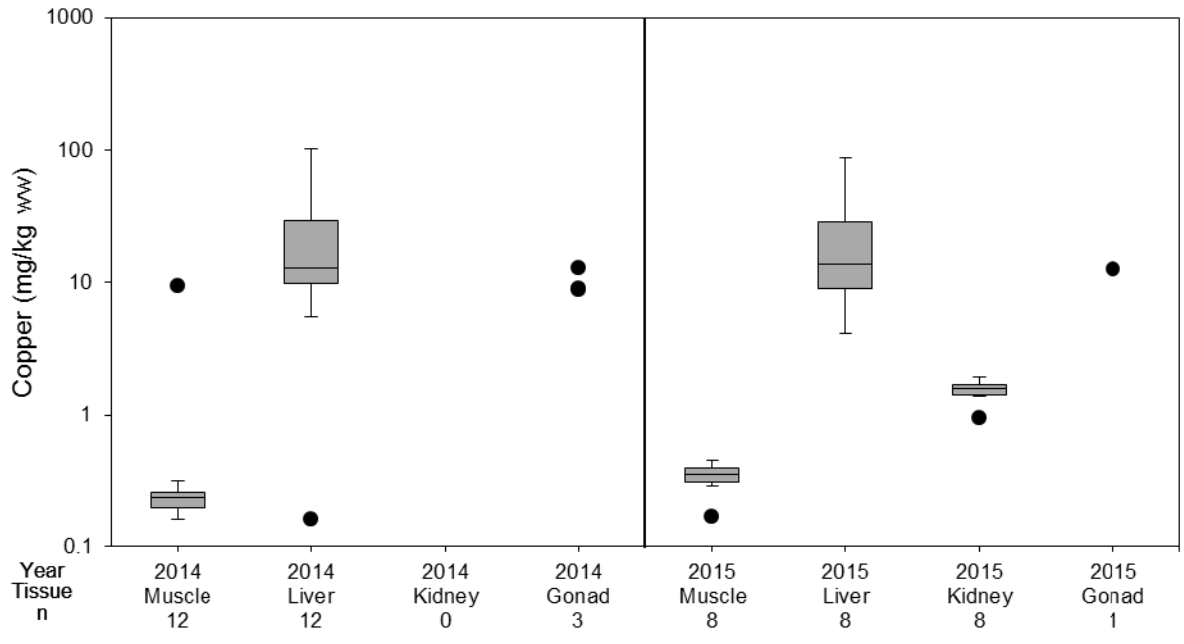
Figure 278: Copper Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 279: Copper Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

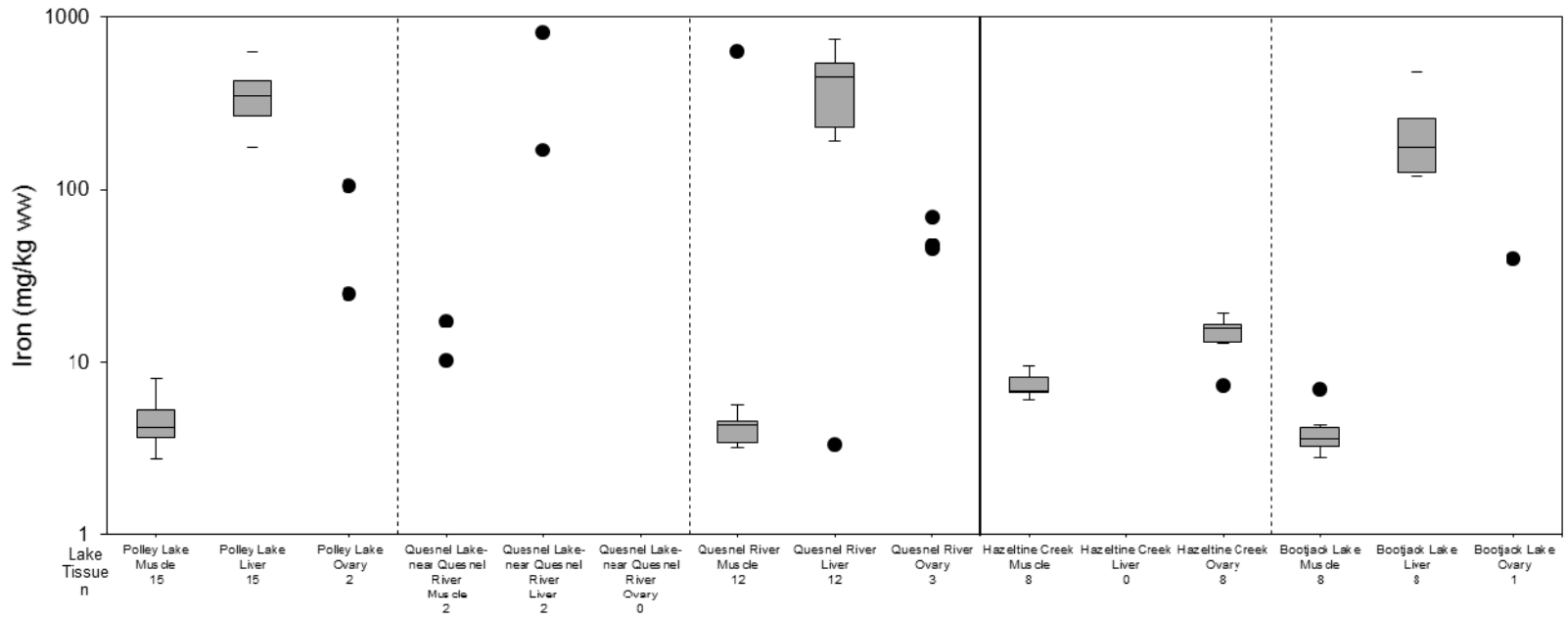


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

7.9 Iron

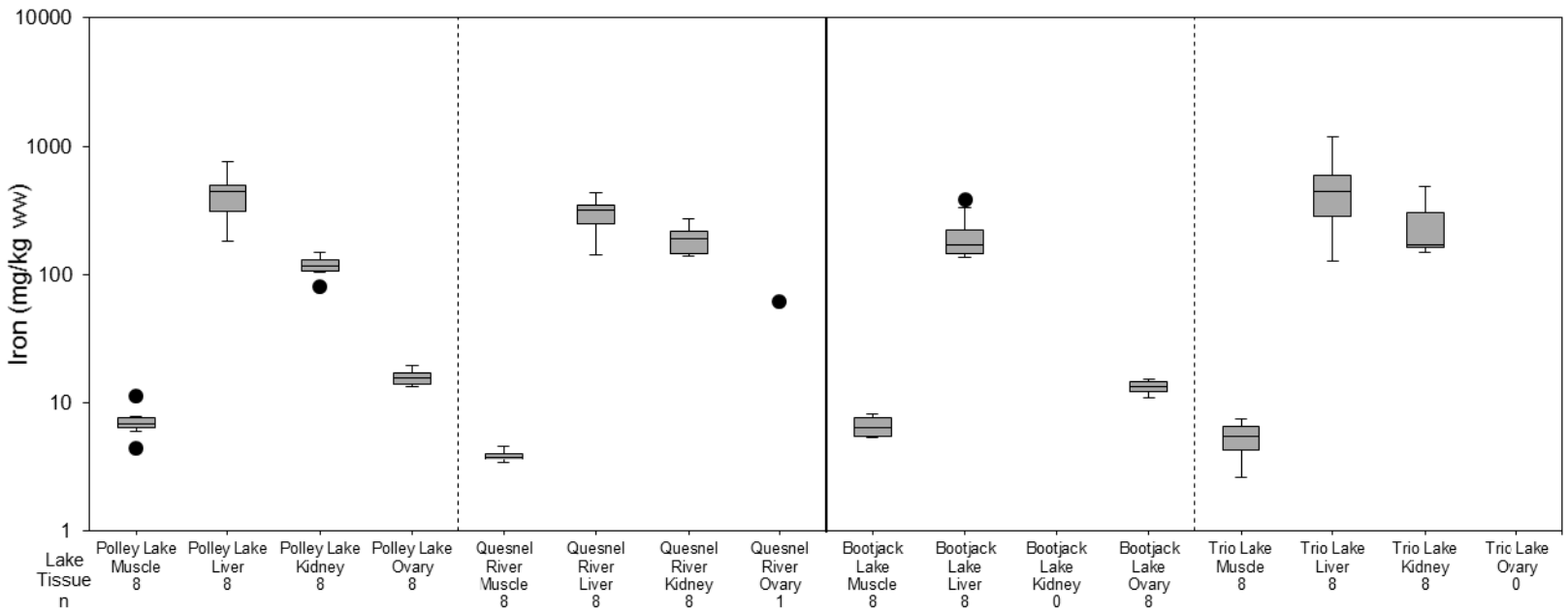
Figure 280: Iron Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

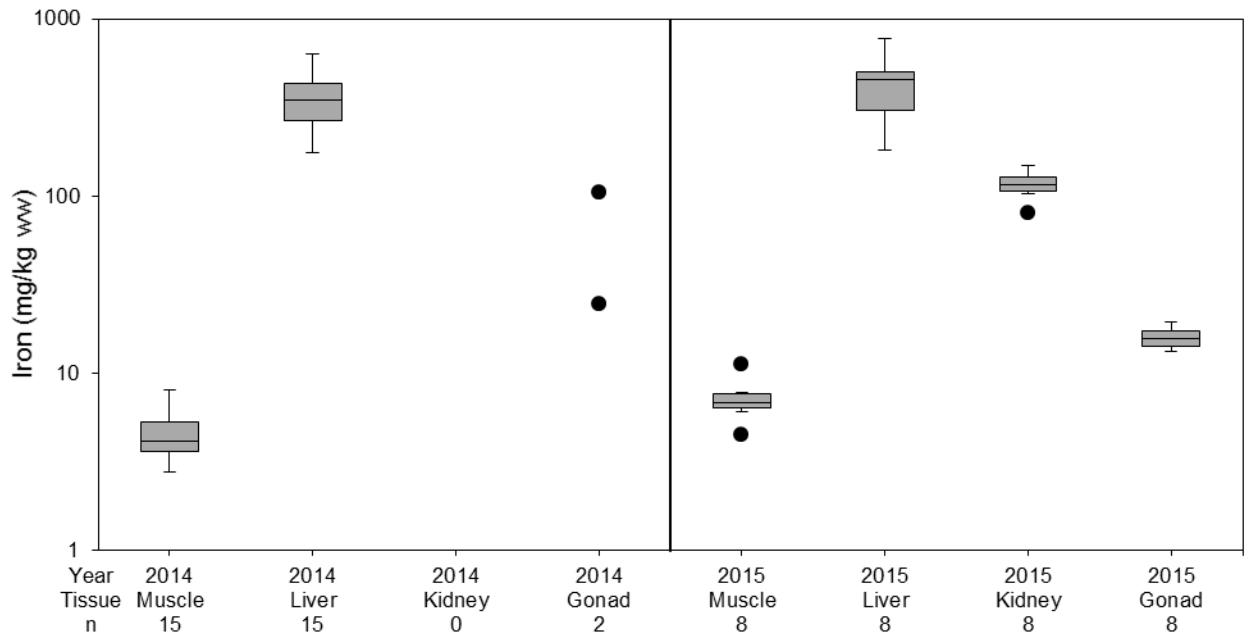
Figure 281: Iron Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

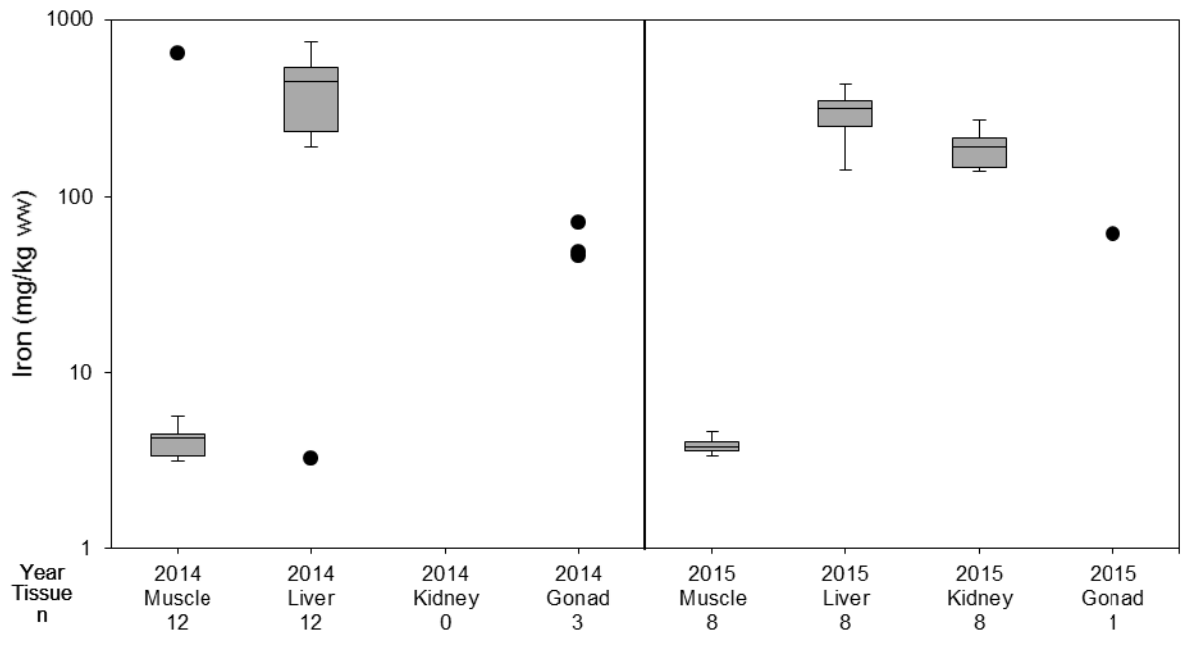
Figure 282: Iron Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 283: Iron Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

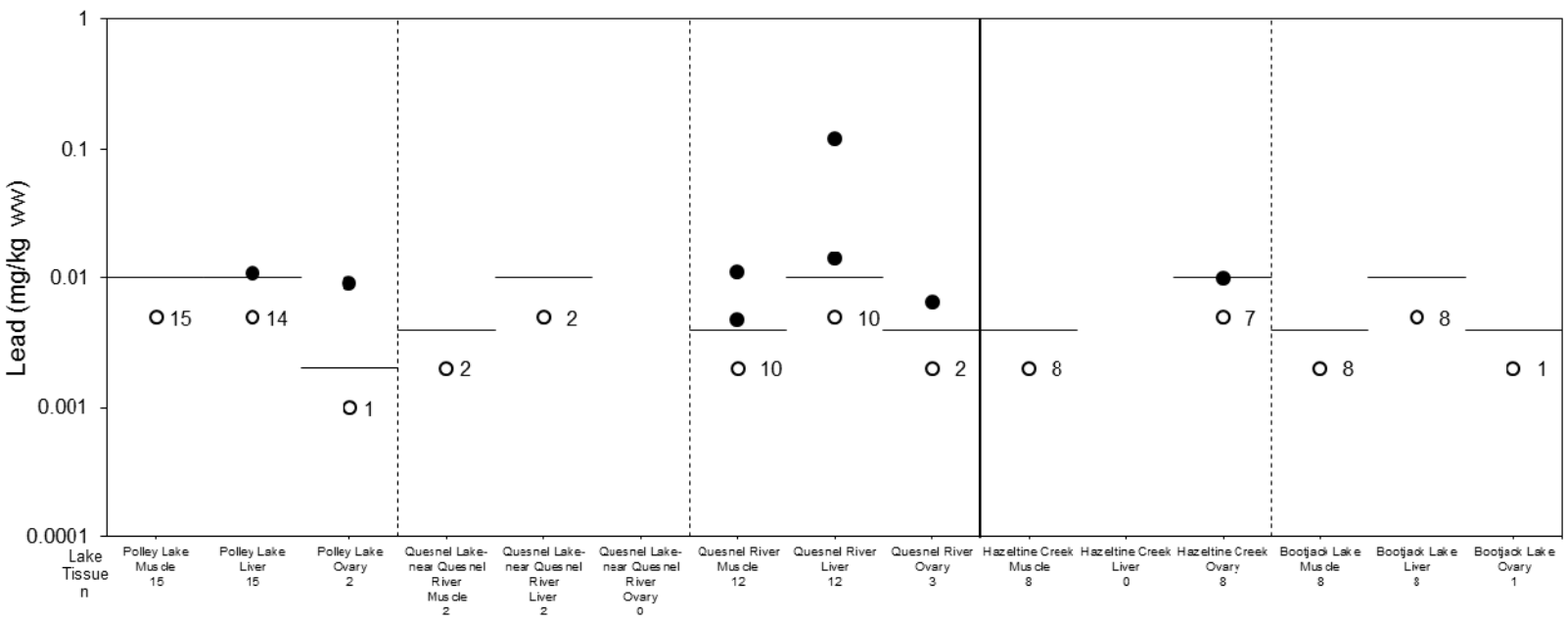


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

7.10 Lead

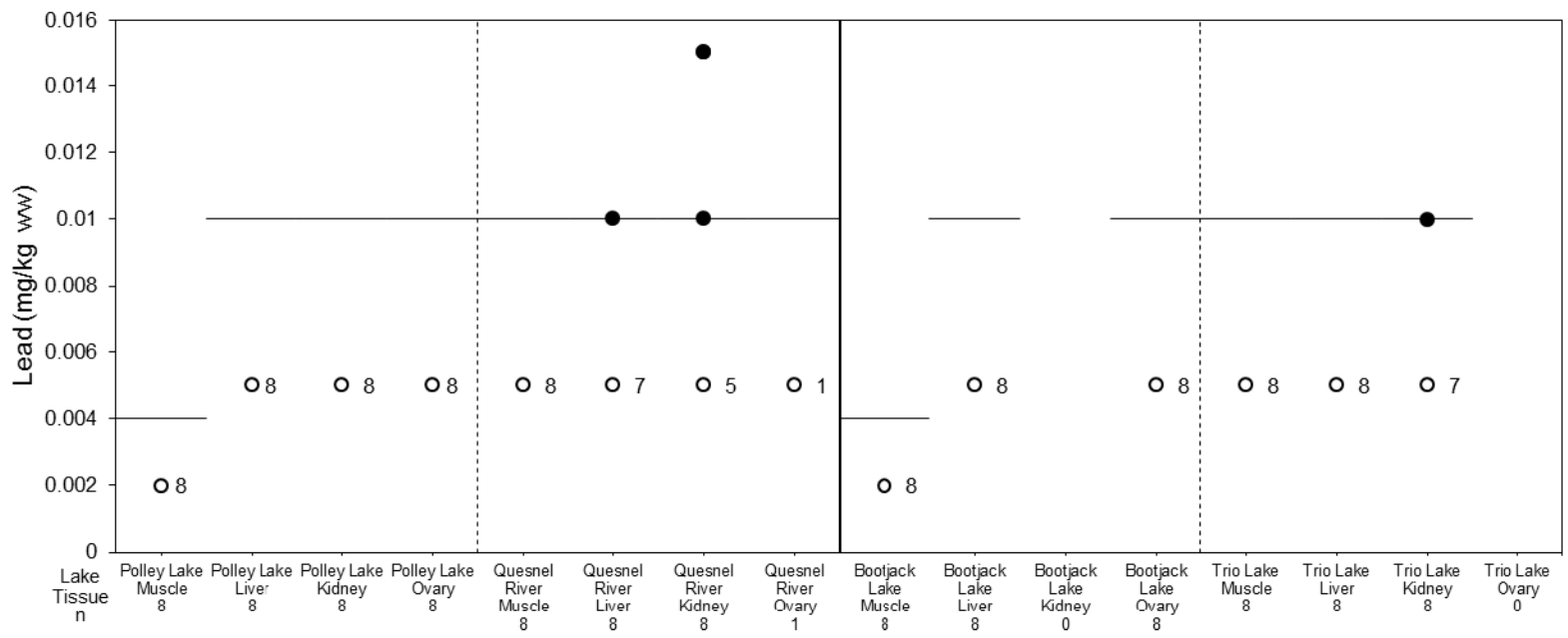
Figure 284: Lead Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

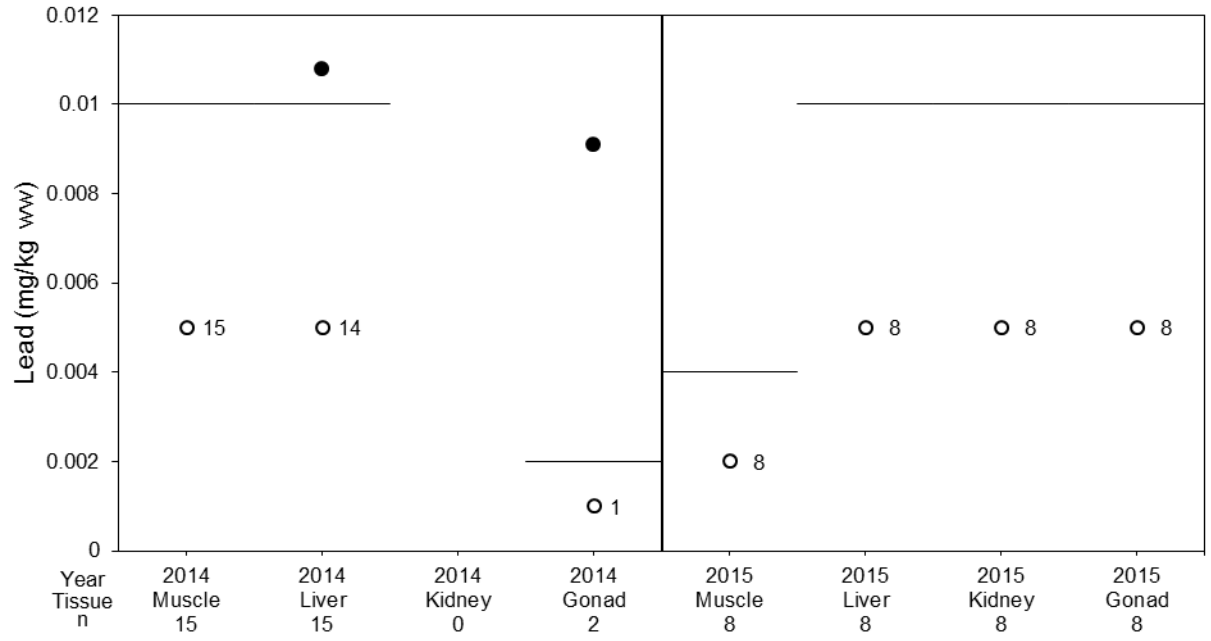
Figure 285: Lead Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

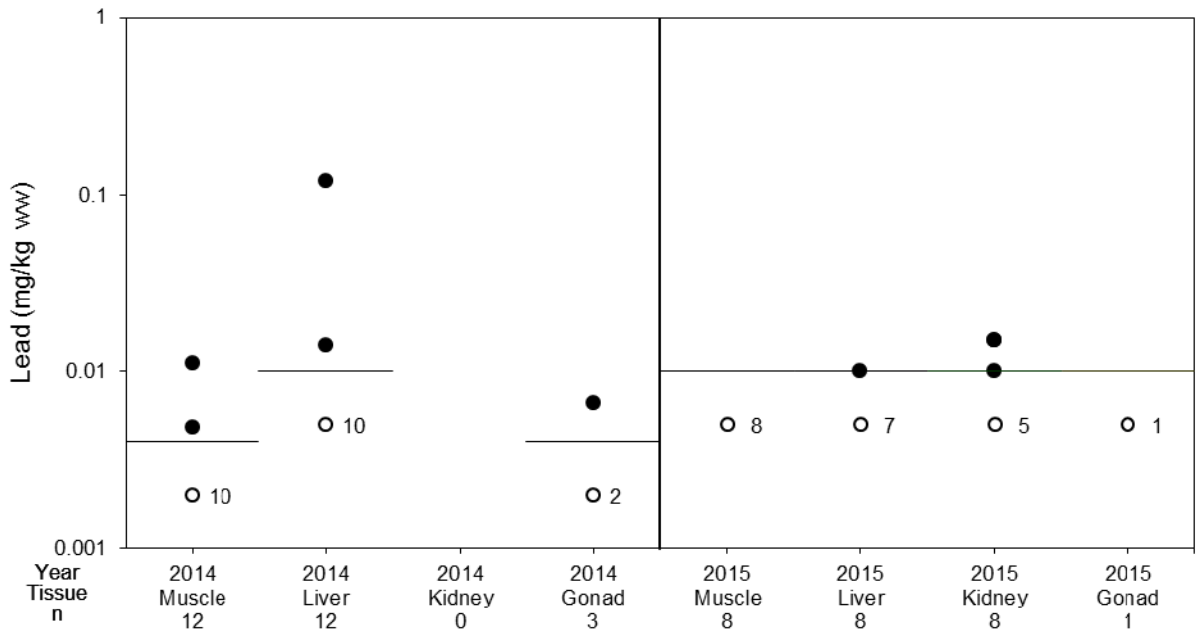
Figure 286: Lead Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 287: Lead Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

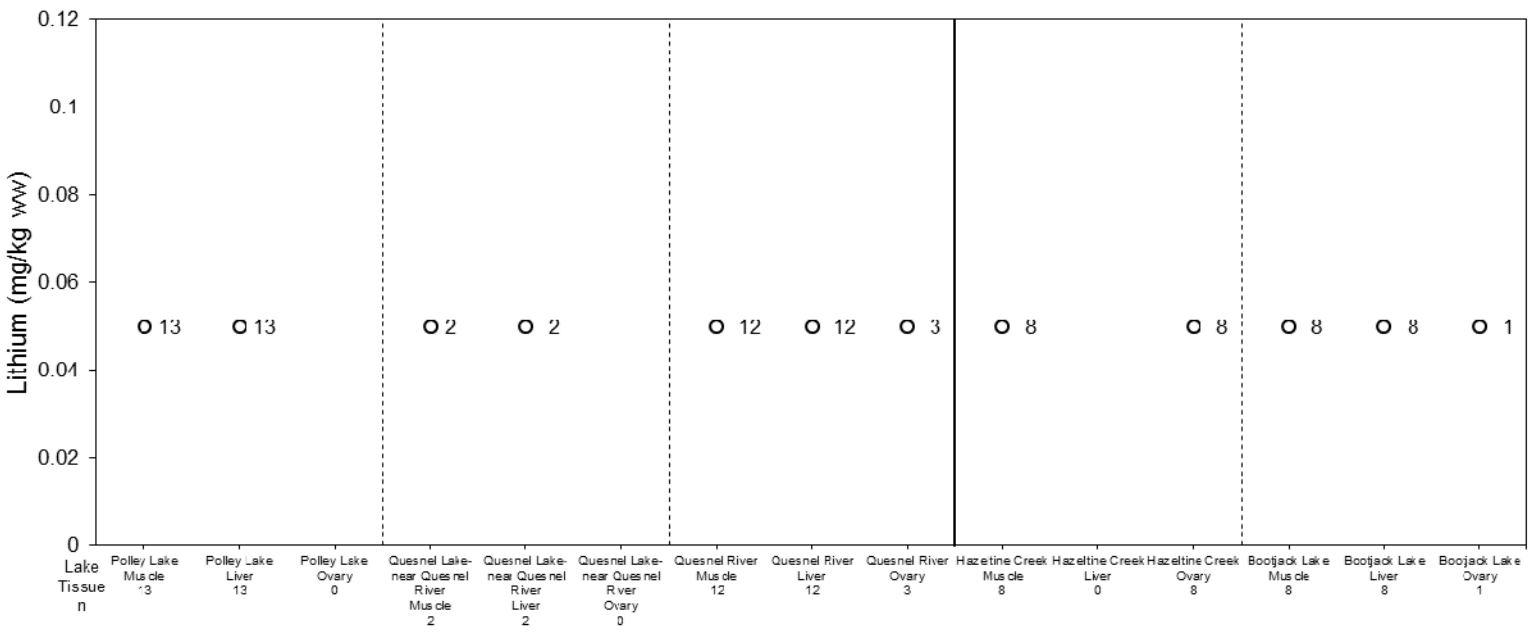


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

7.11 Lithium

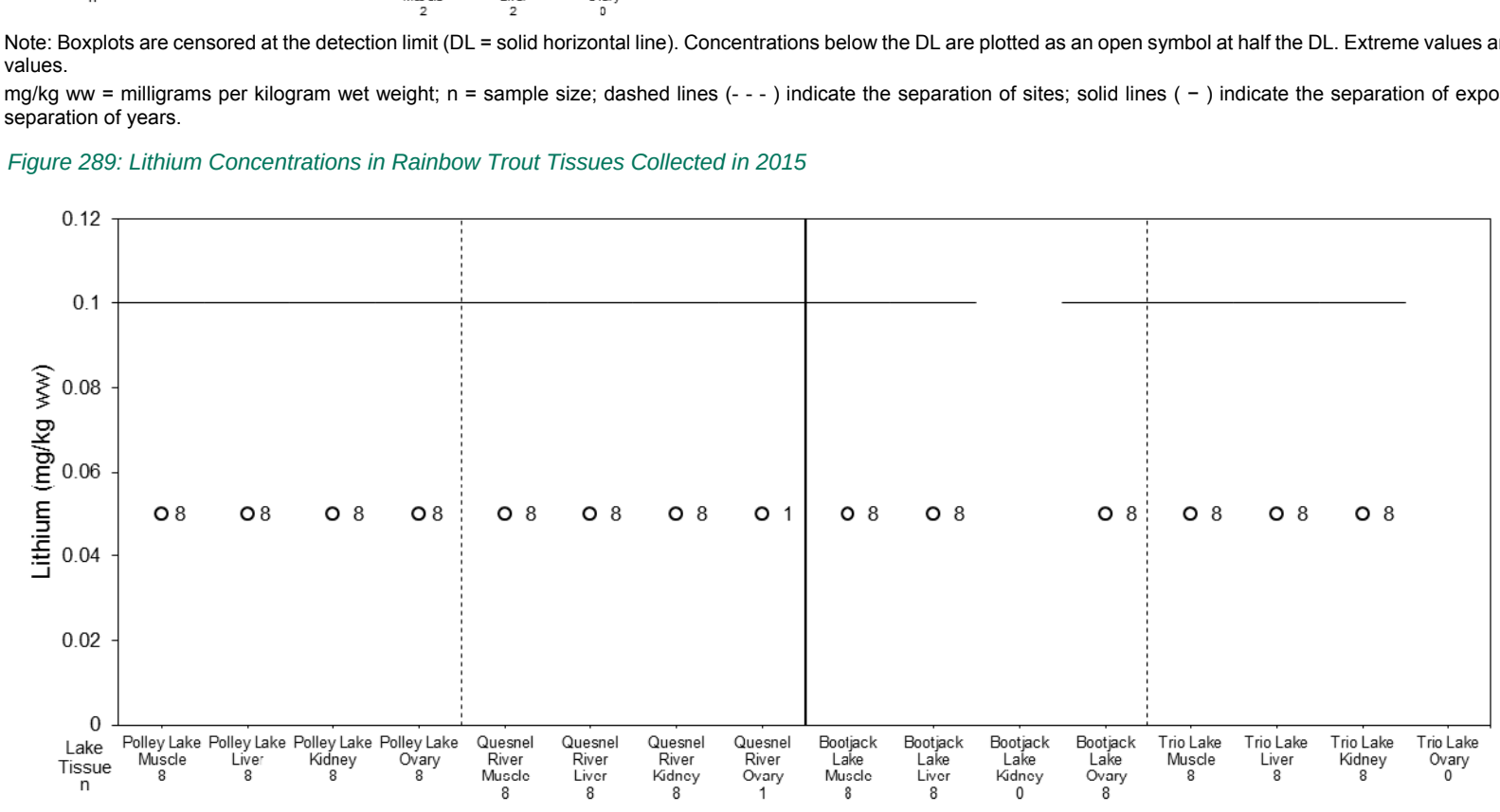
Figure 288: Lithium Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

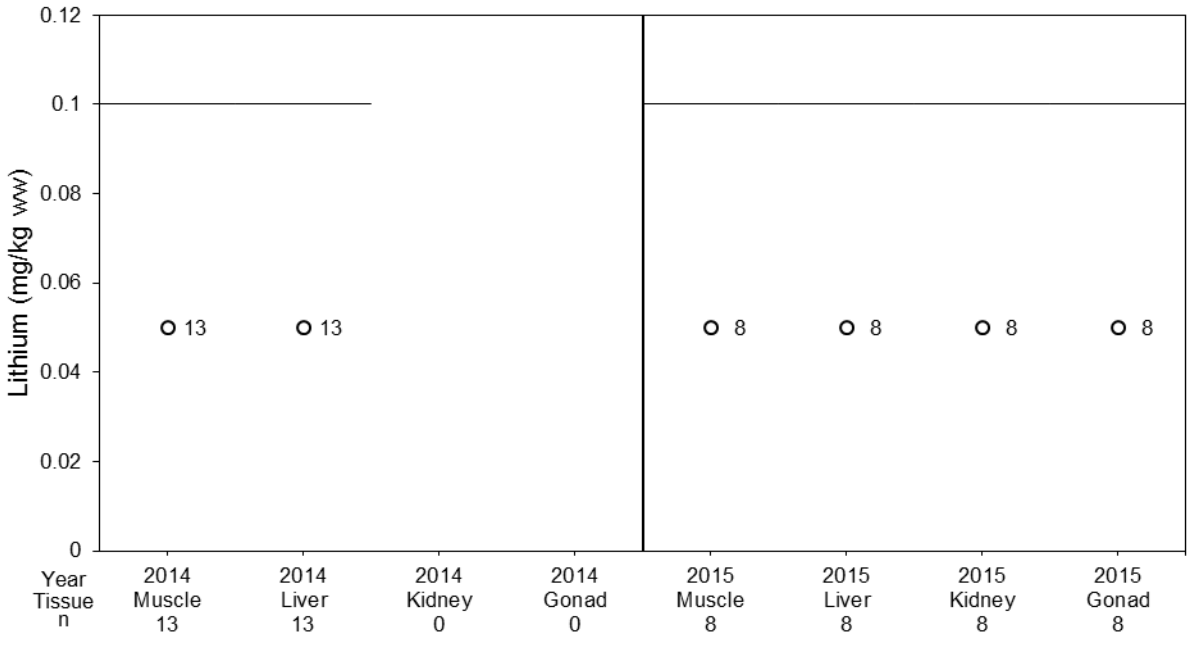
Figure 289: Lithium Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

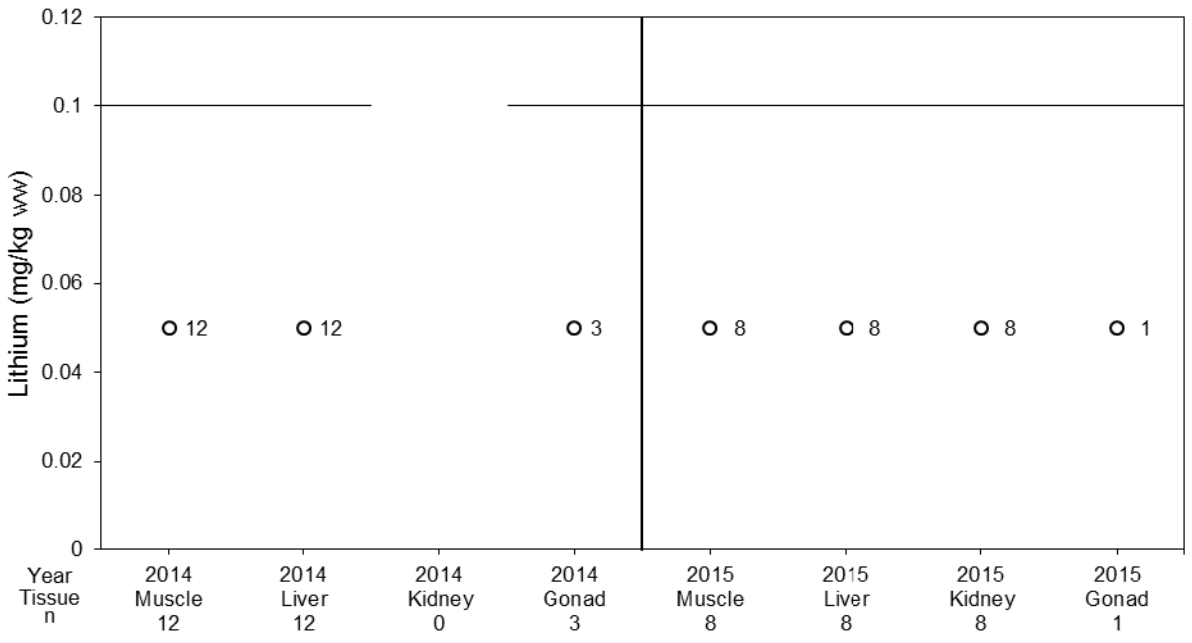
Figure 290: Lithium Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 291: Lithium Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

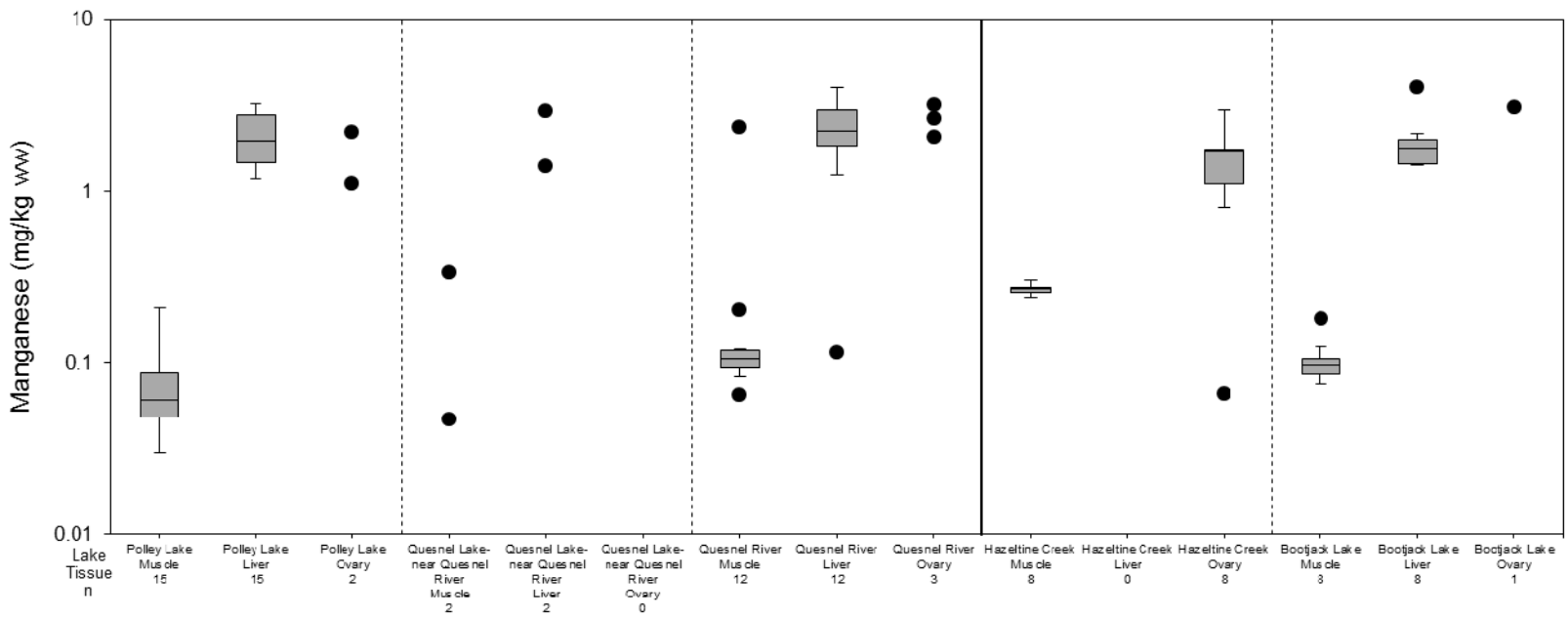


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

7.12 Manganese

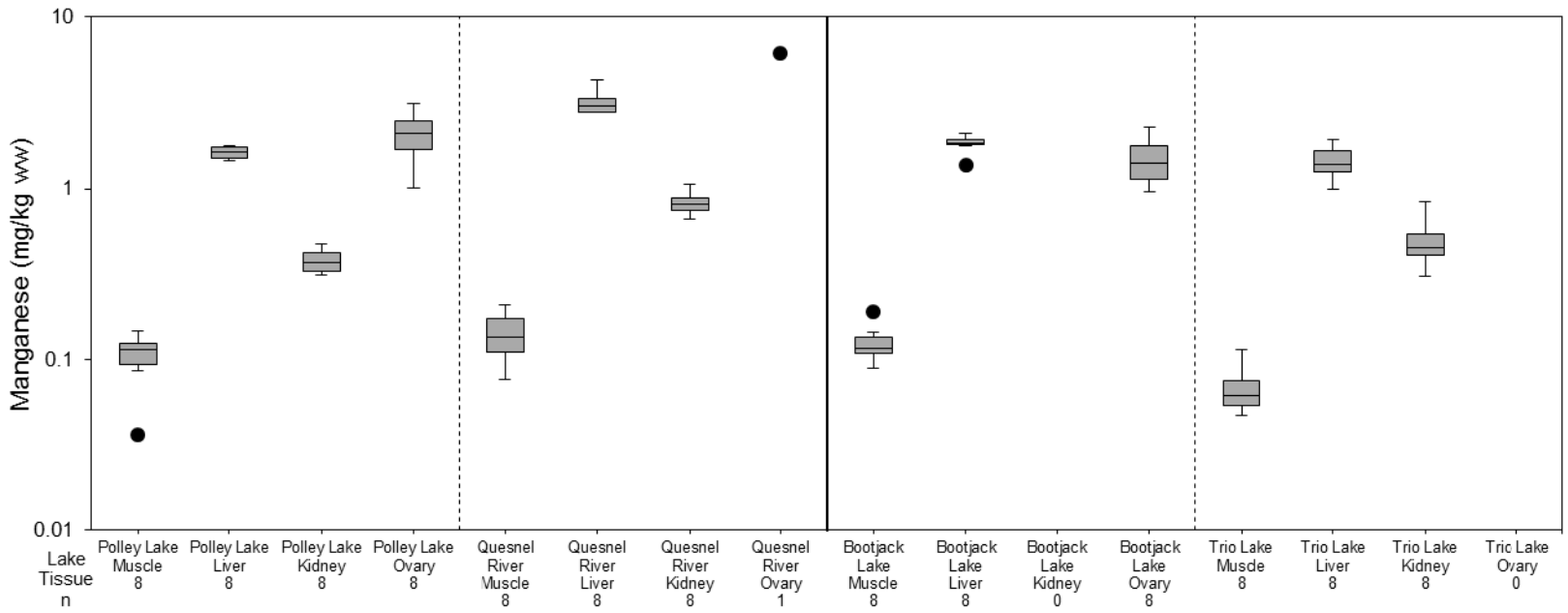
Figure 292: Manganese Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

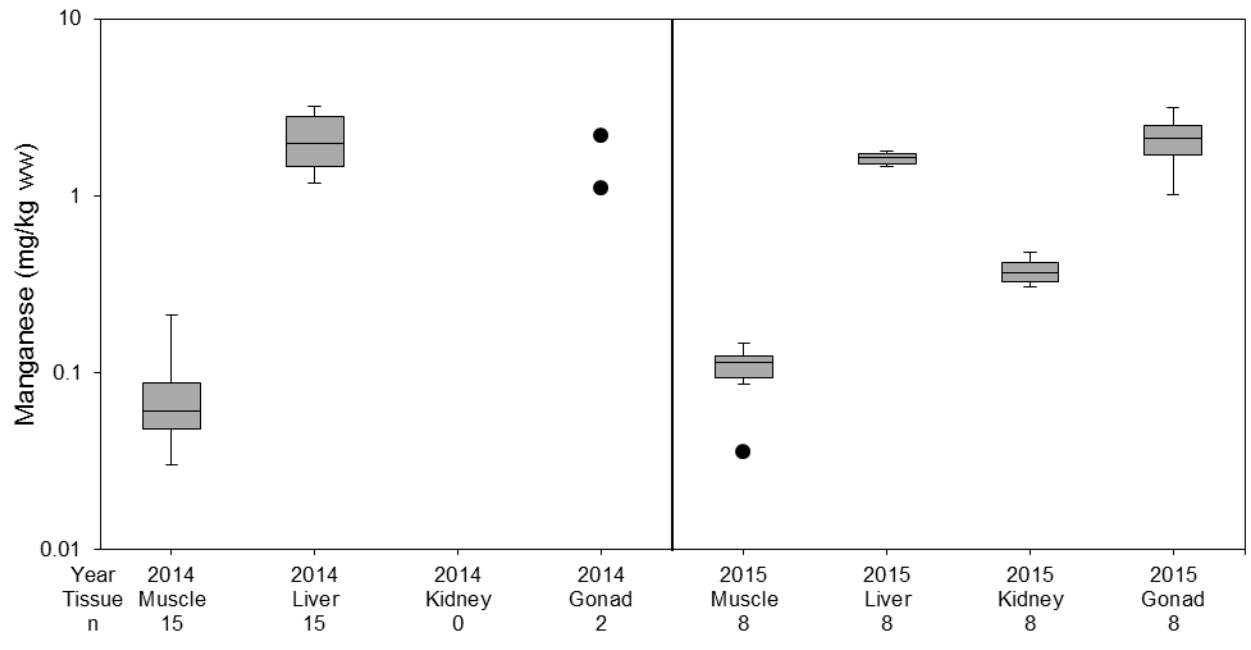
Figure 293: Manganese Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

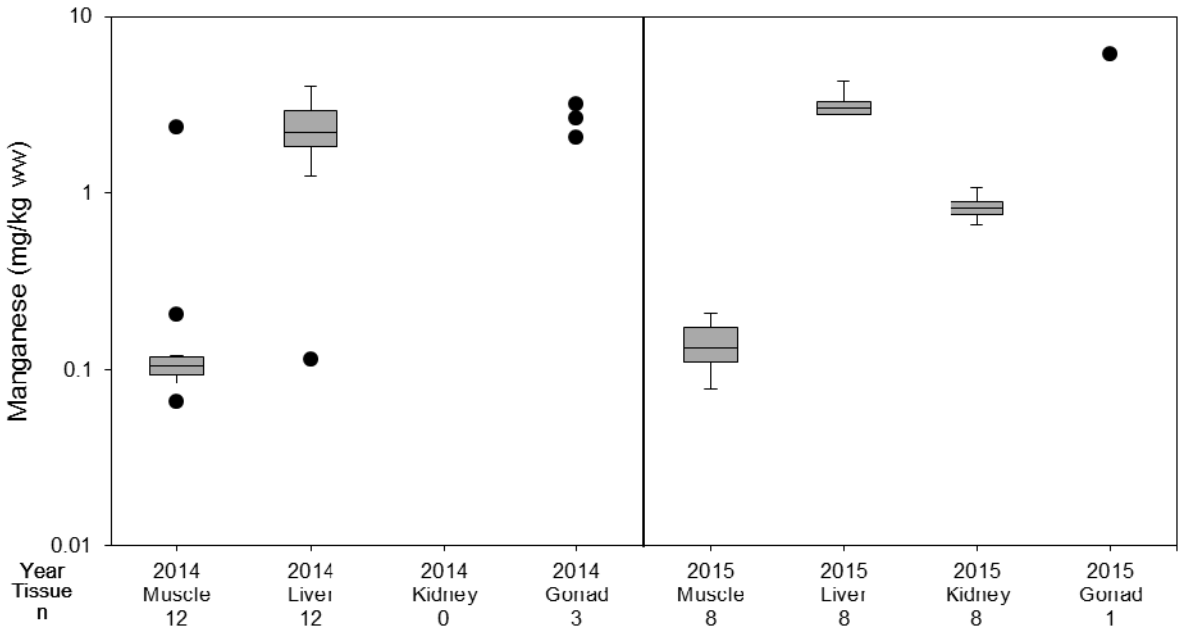
Figure 294: Manganese Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 295: Manganese Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

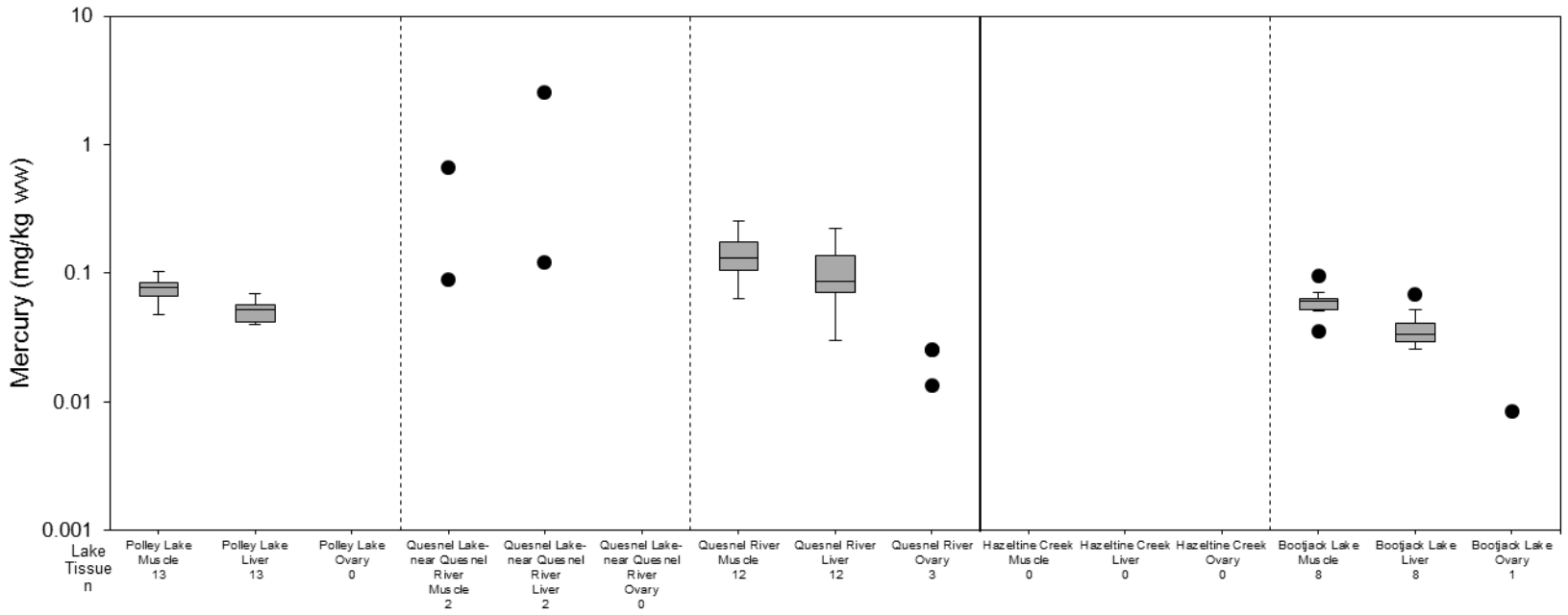


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

7.13 Mercury

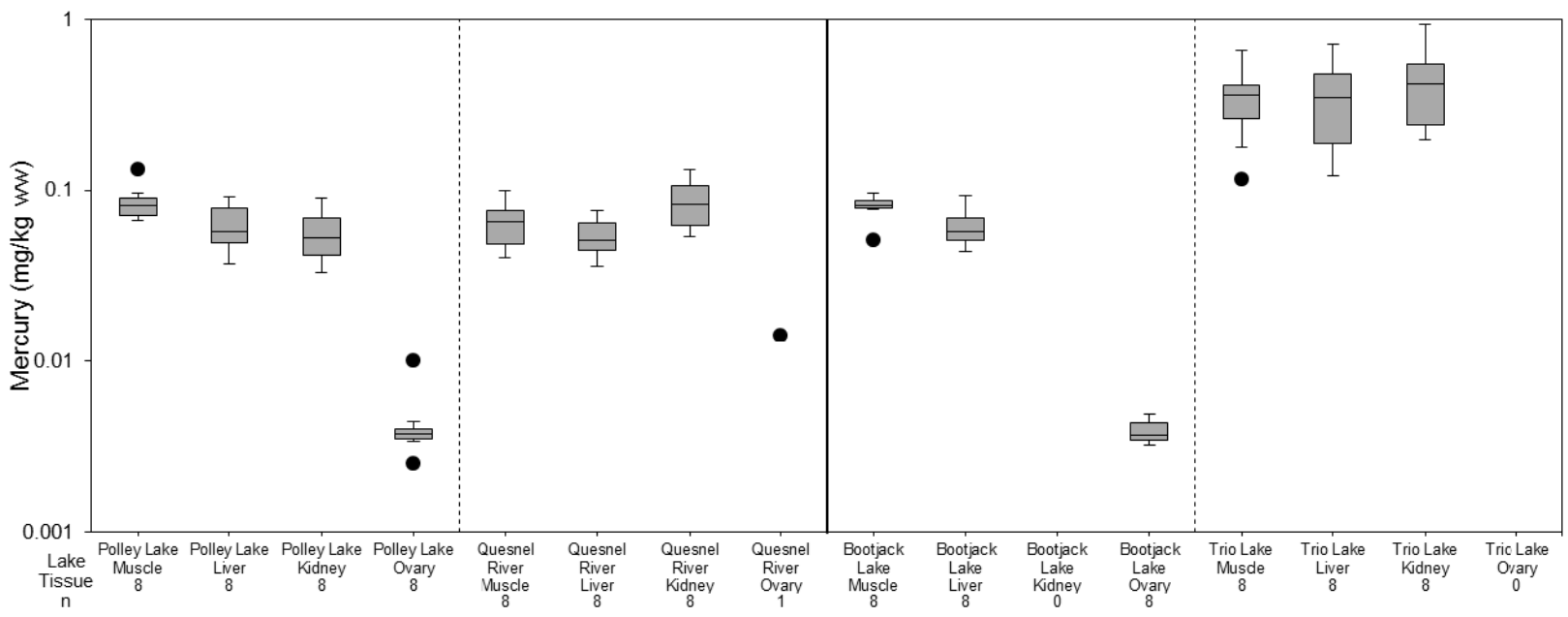
Figure 296: Mercury Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

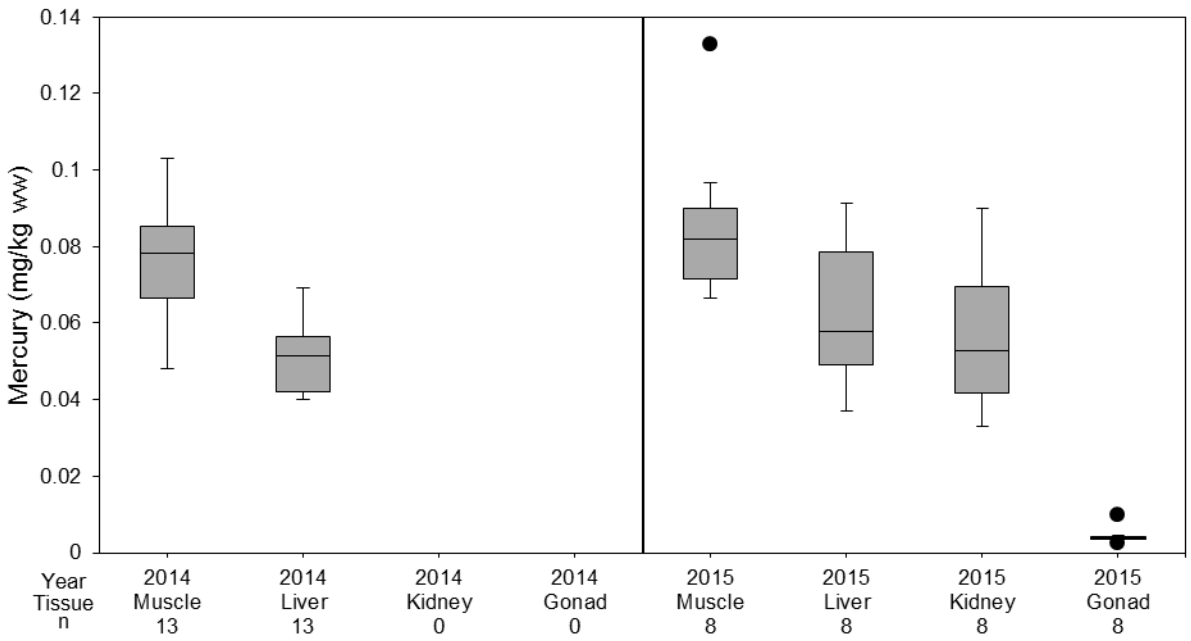
Figure 297: Mercury Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

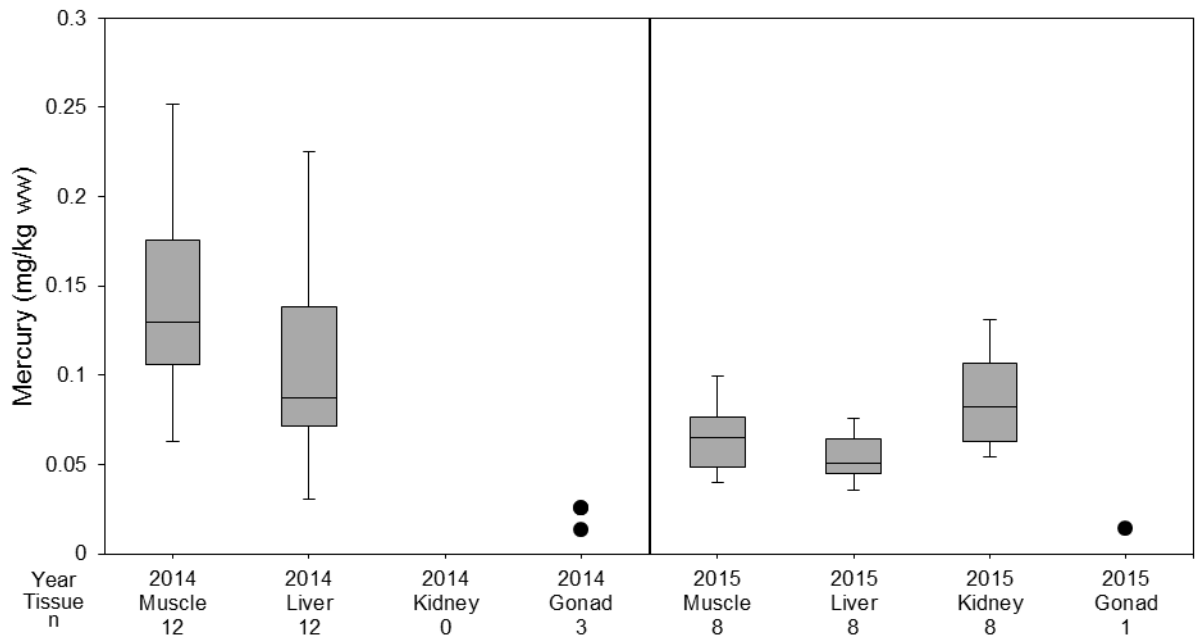
Figure 298: Mercury Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 299: Mercury Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

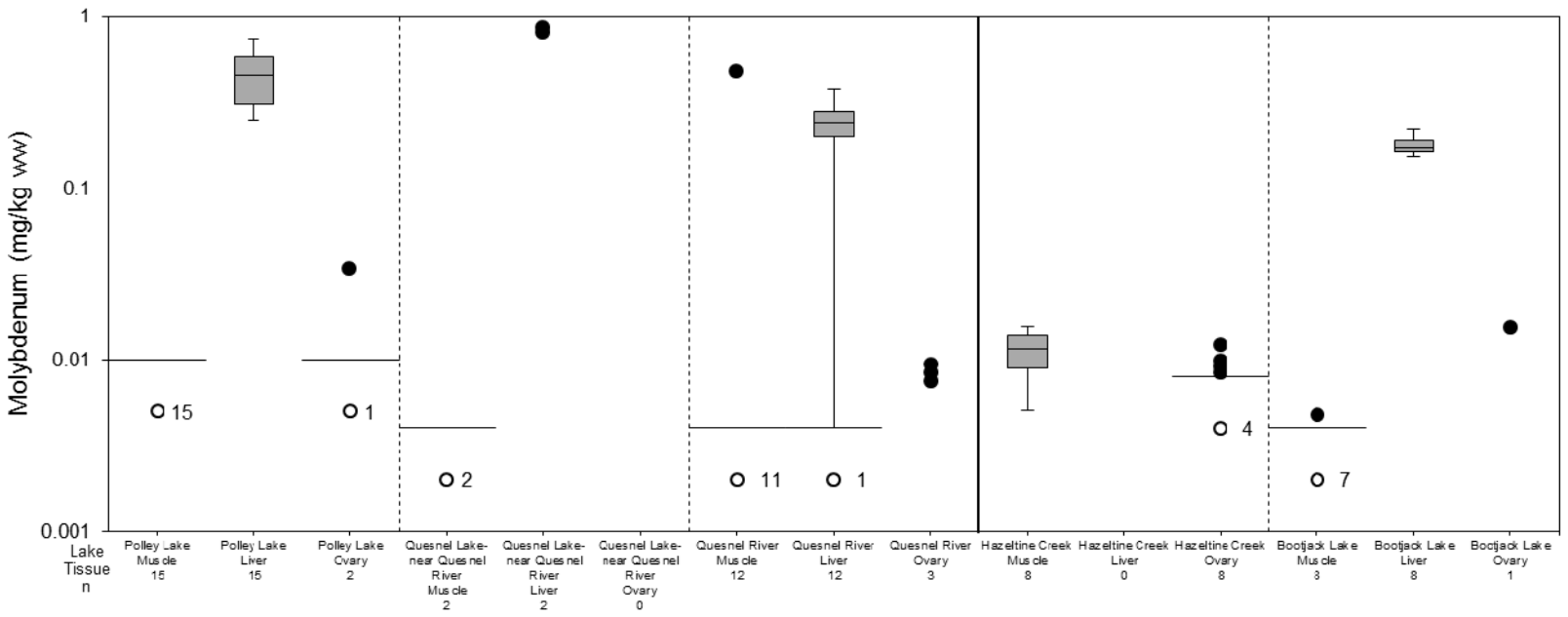


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

7.14 Molybdenum

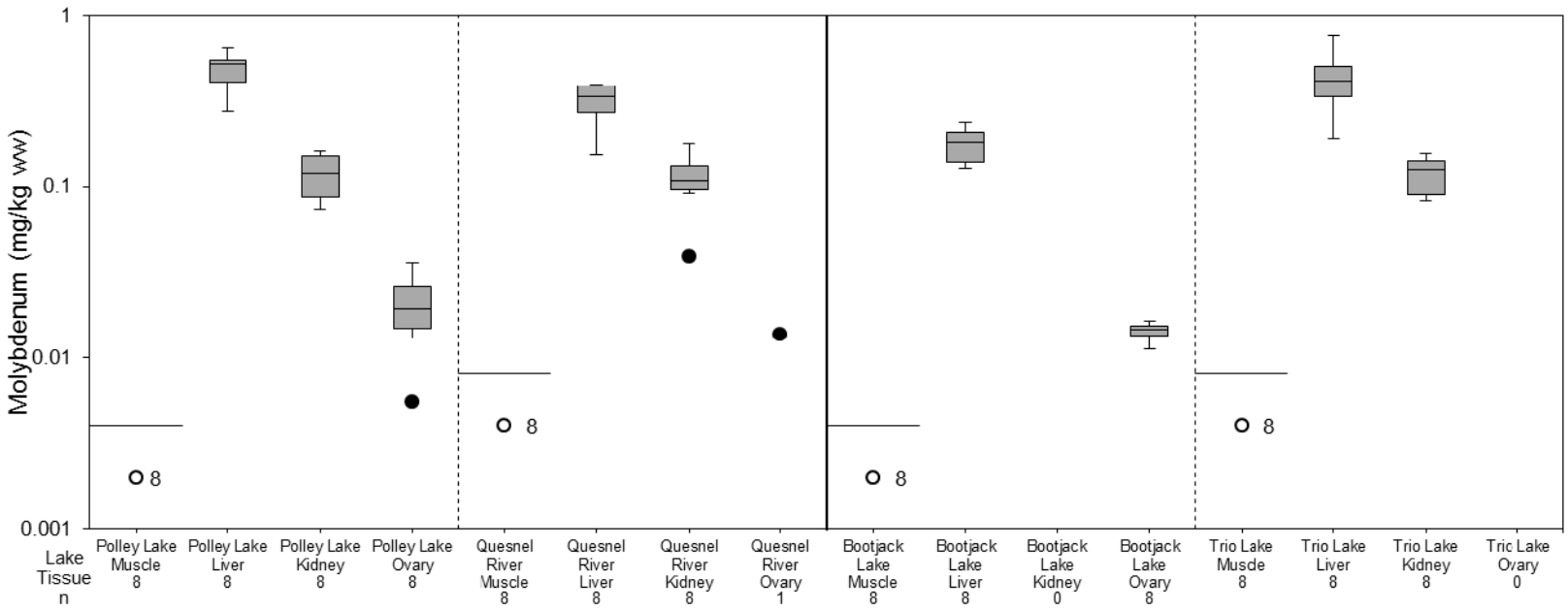
Figure 300: Molybdenum Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

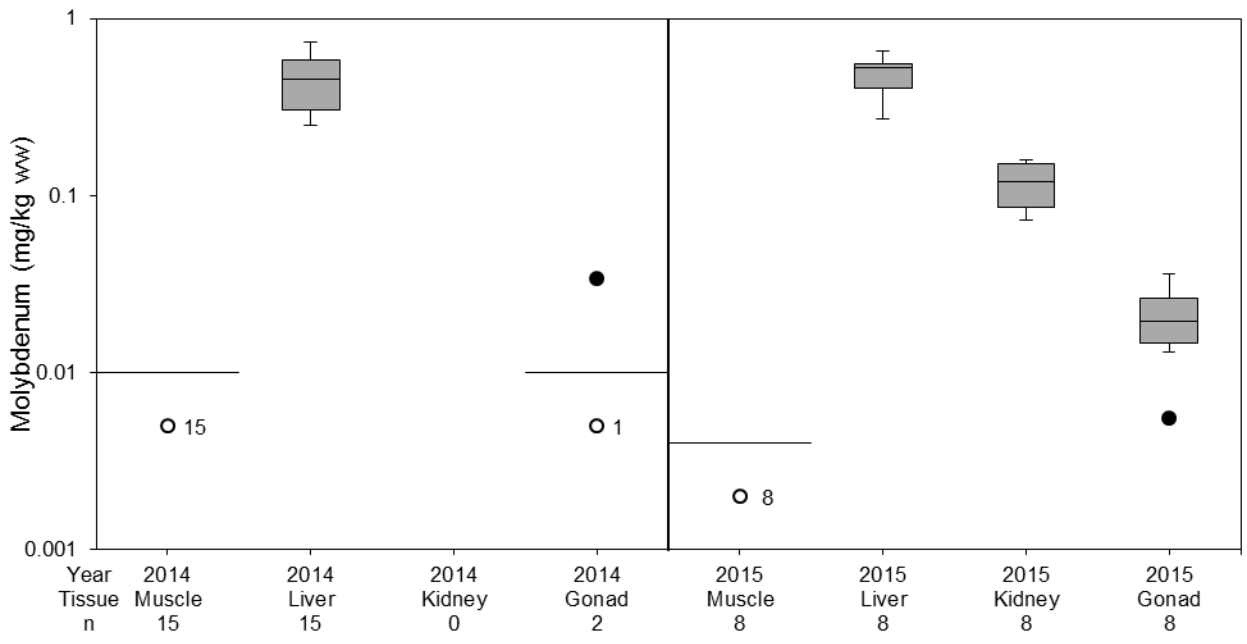
Figure 301: Molybdenum Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

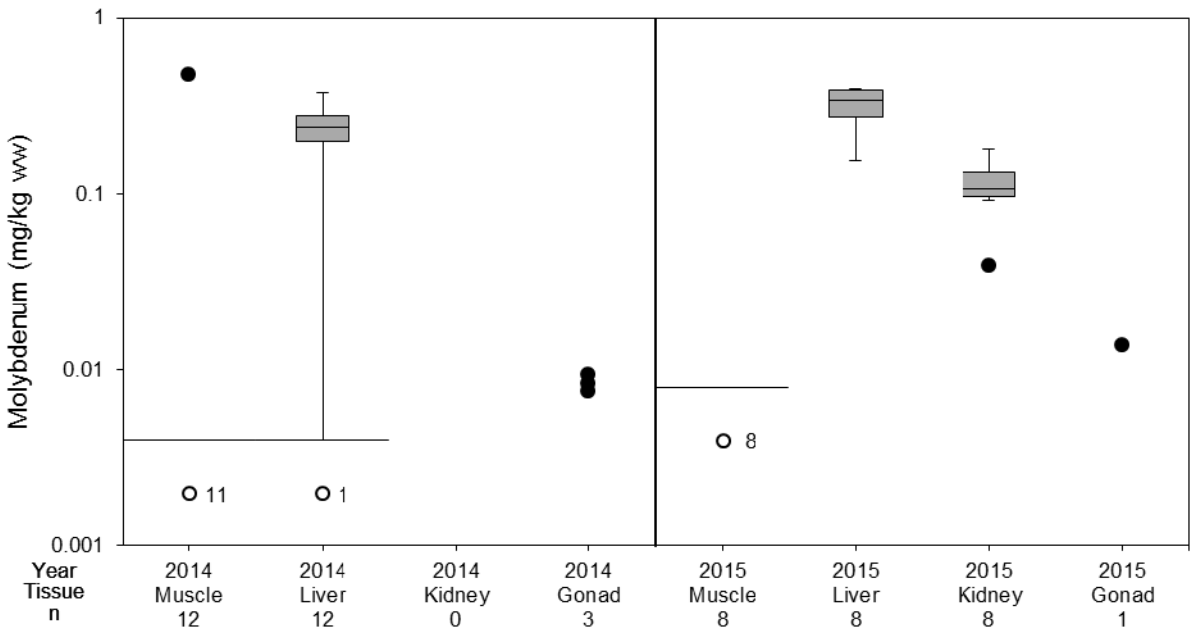
Figure 302: Molybdenum Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 303: Molybdenum Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

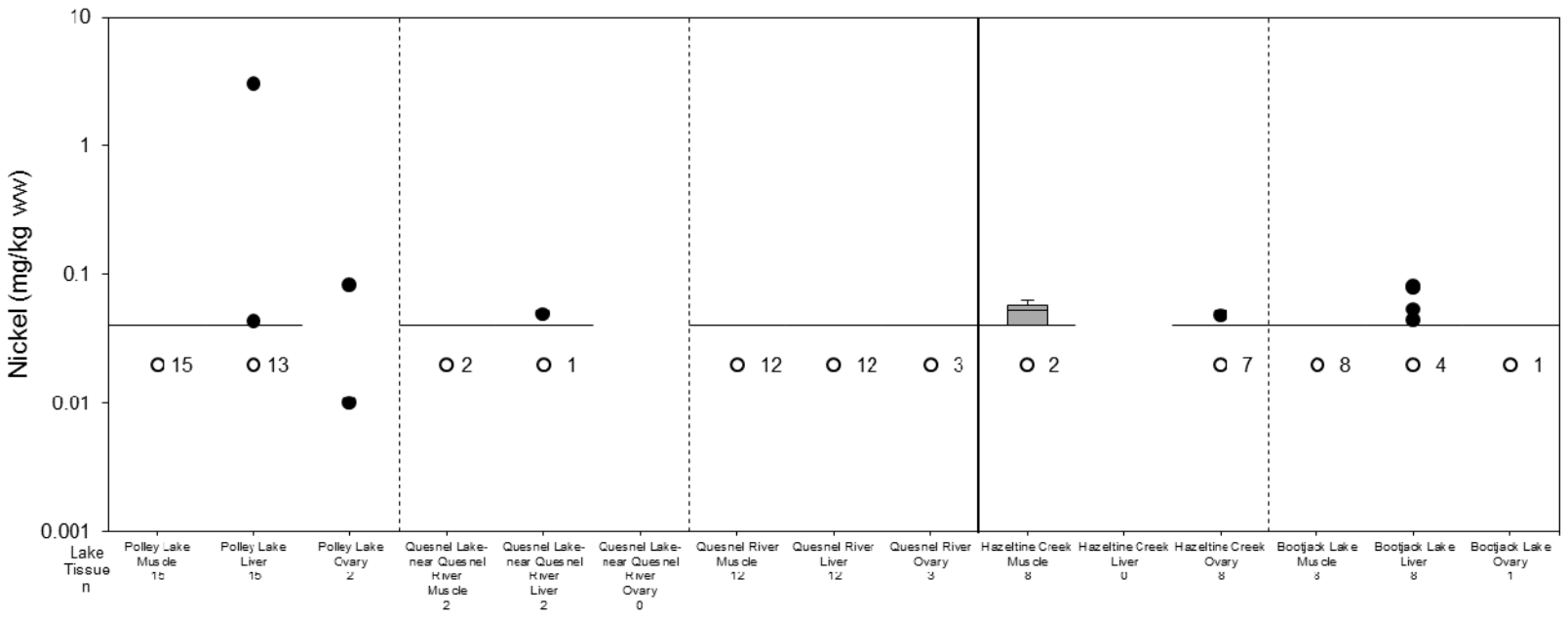


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

7.15 Nickel

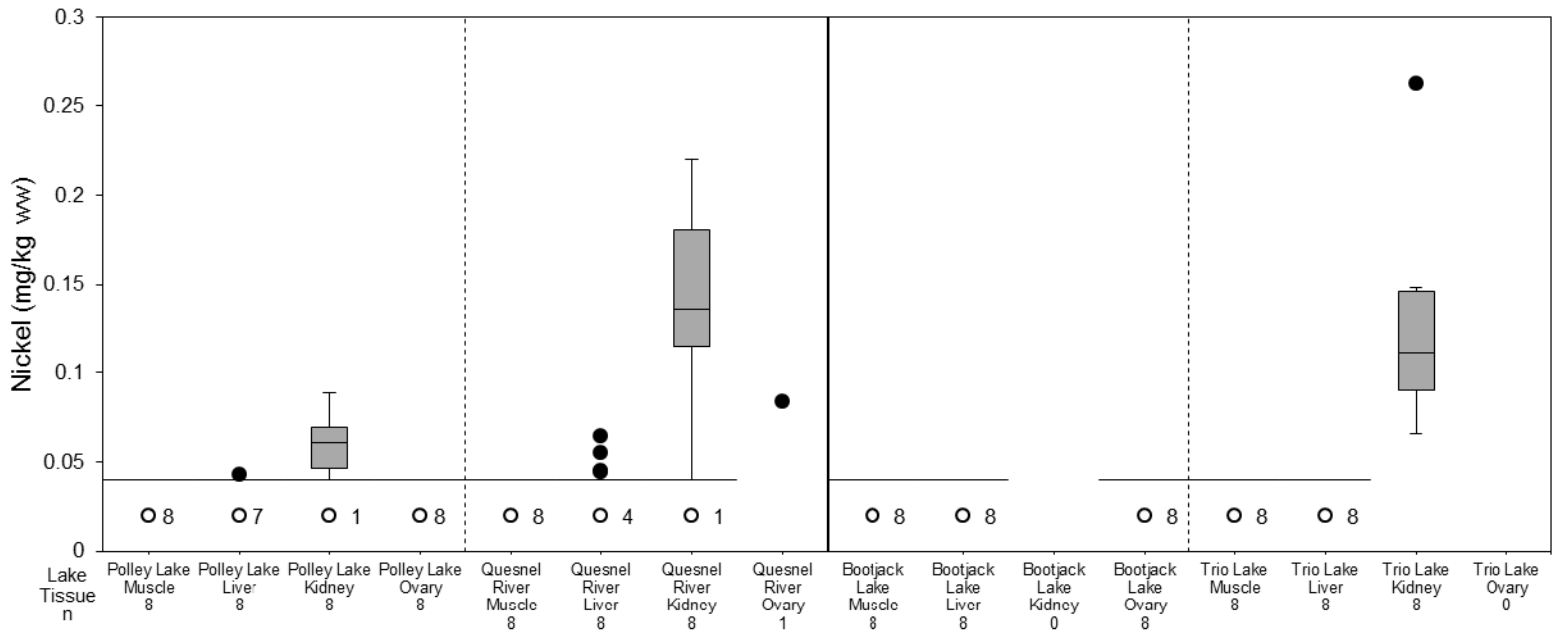
Figure 304: Nickel Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

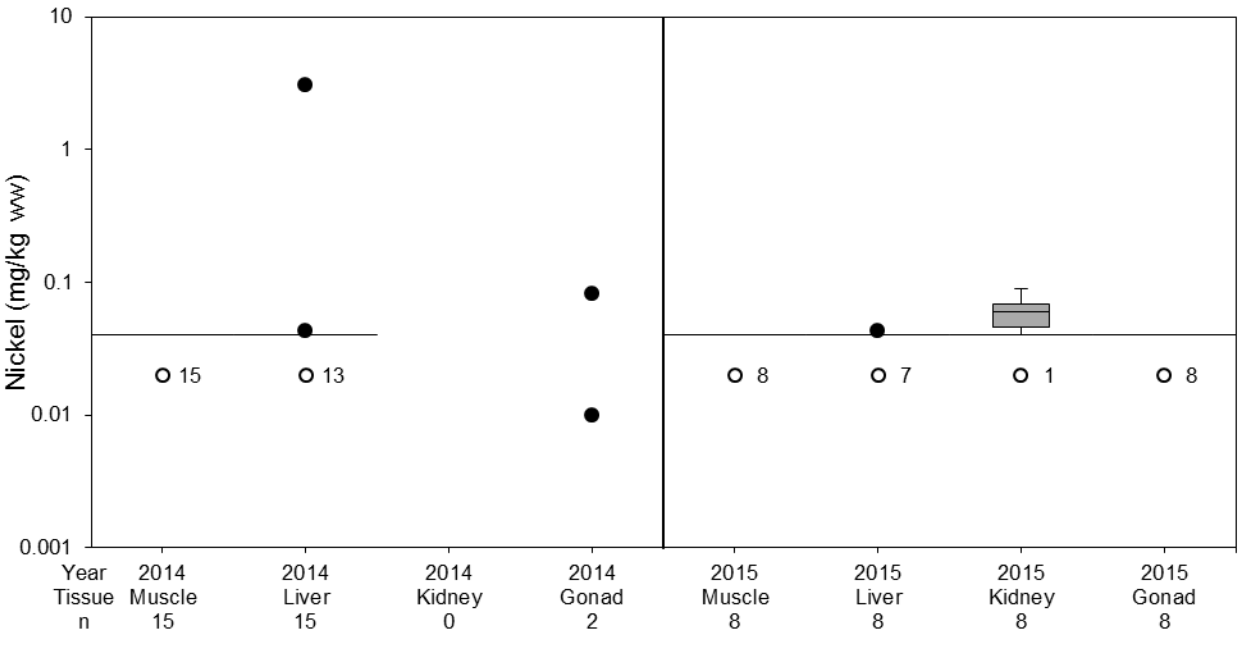
Figure 305: Nickel Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

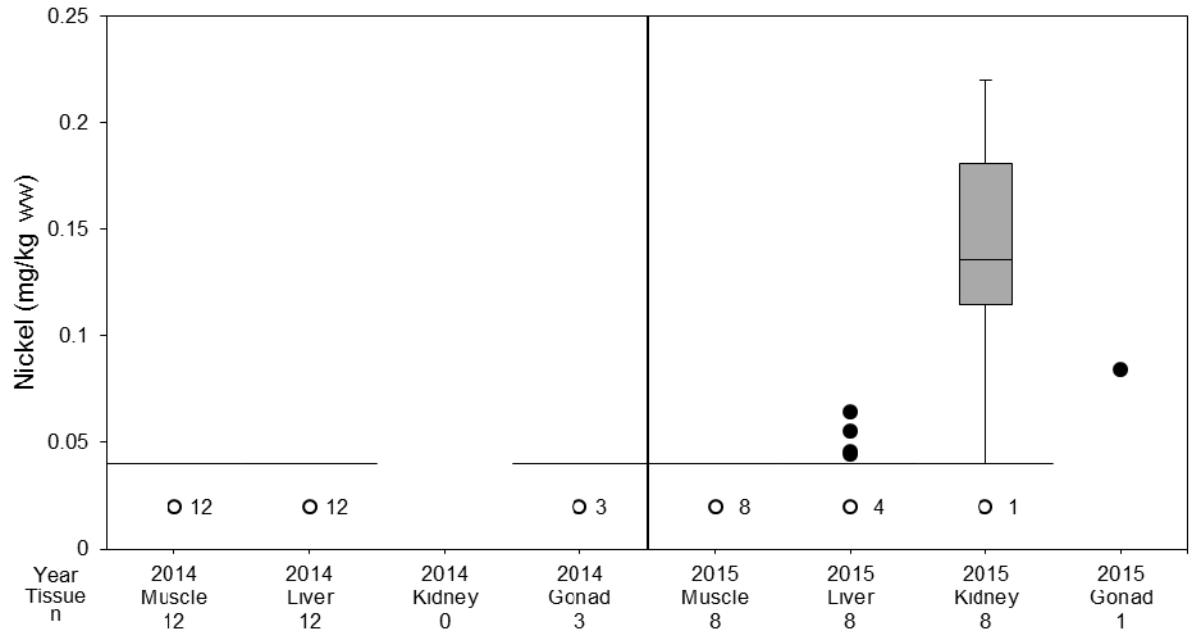
Figure 306: Nickel Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 307: Nickel Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

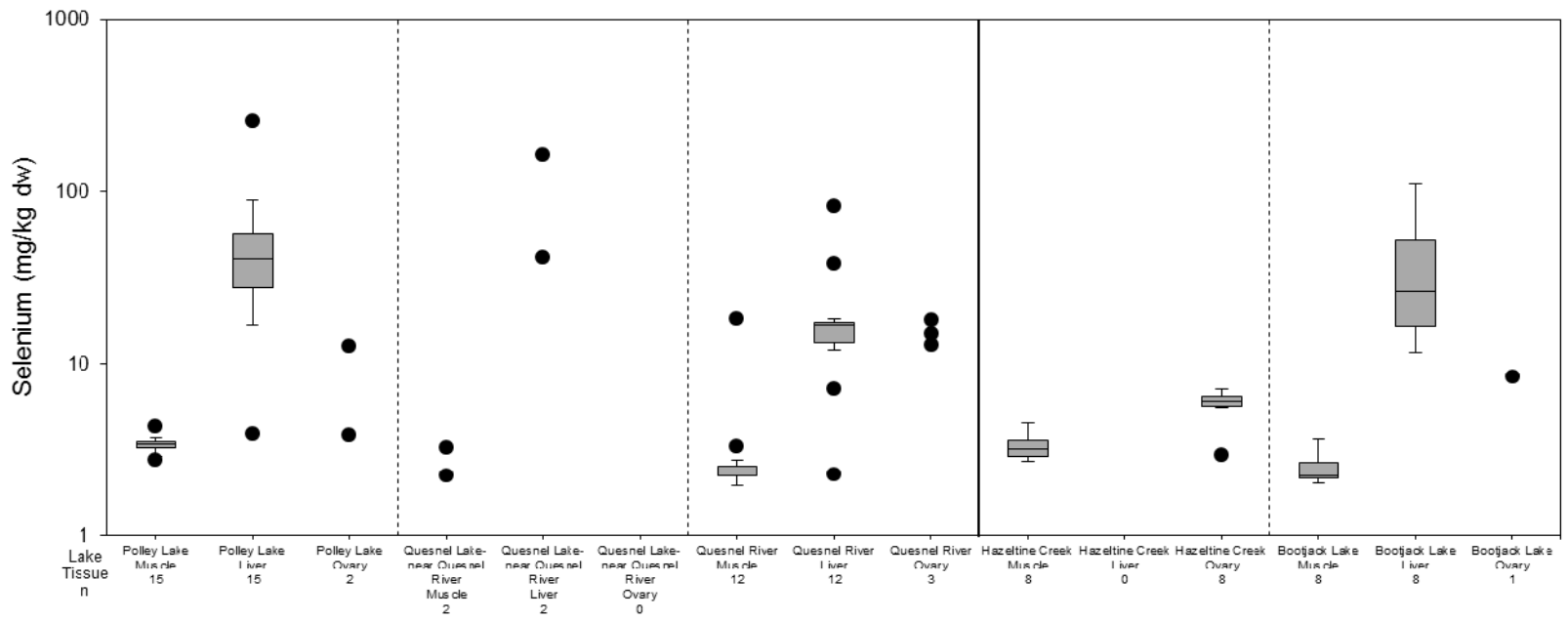


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

7.16 Selenium

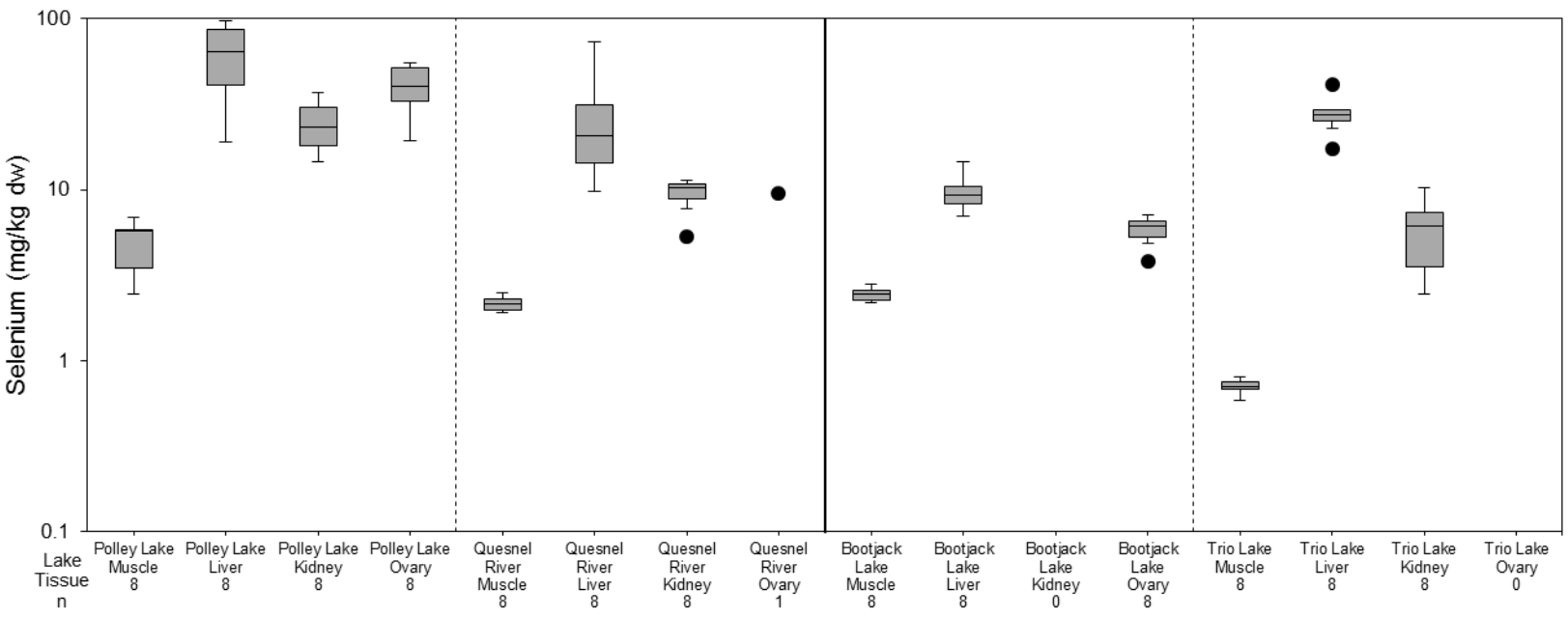
Figure 308: Selenium Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

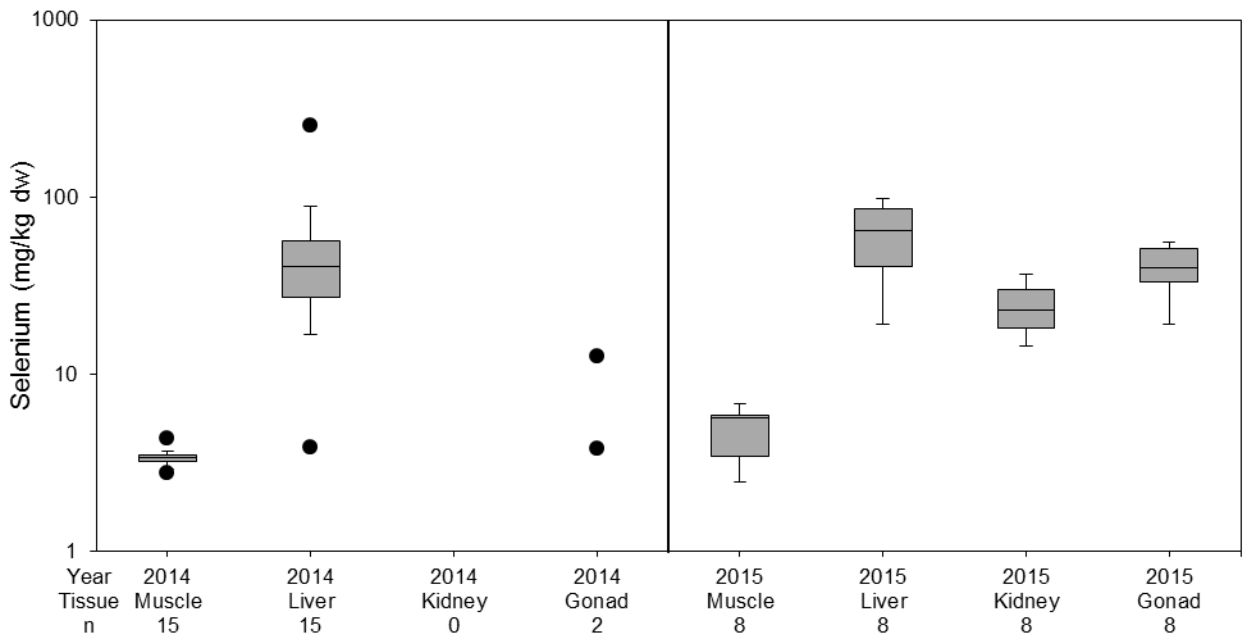
Figure 309: Selenium Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

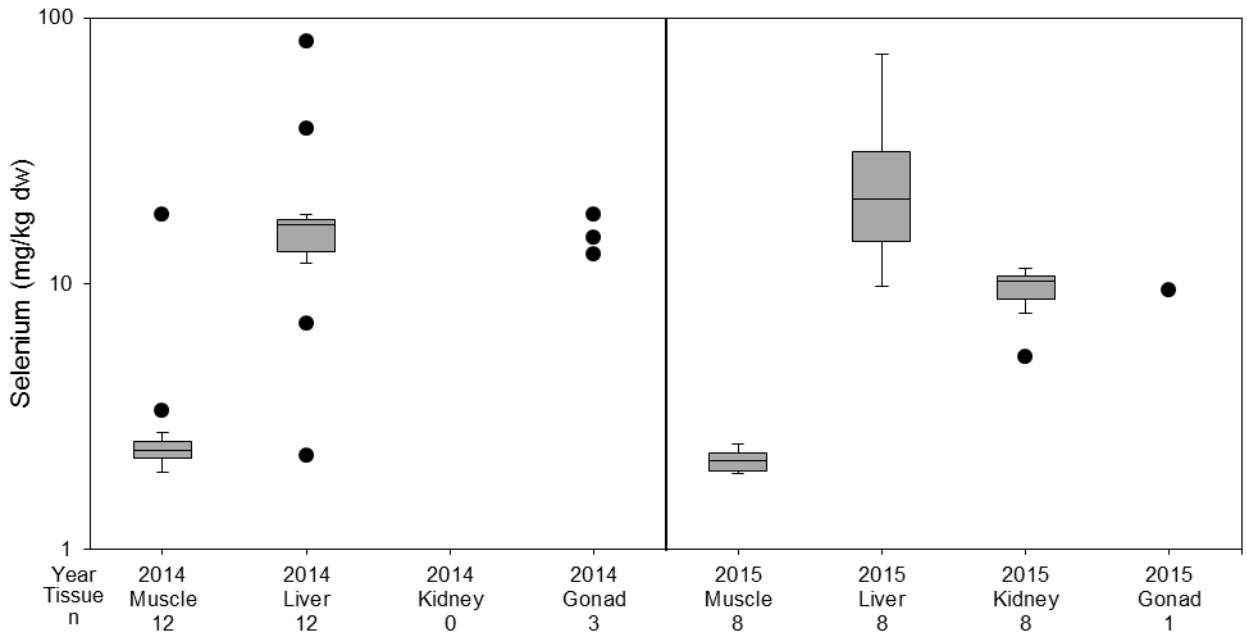
Figure 310: Selenium Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 311: Selenium Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

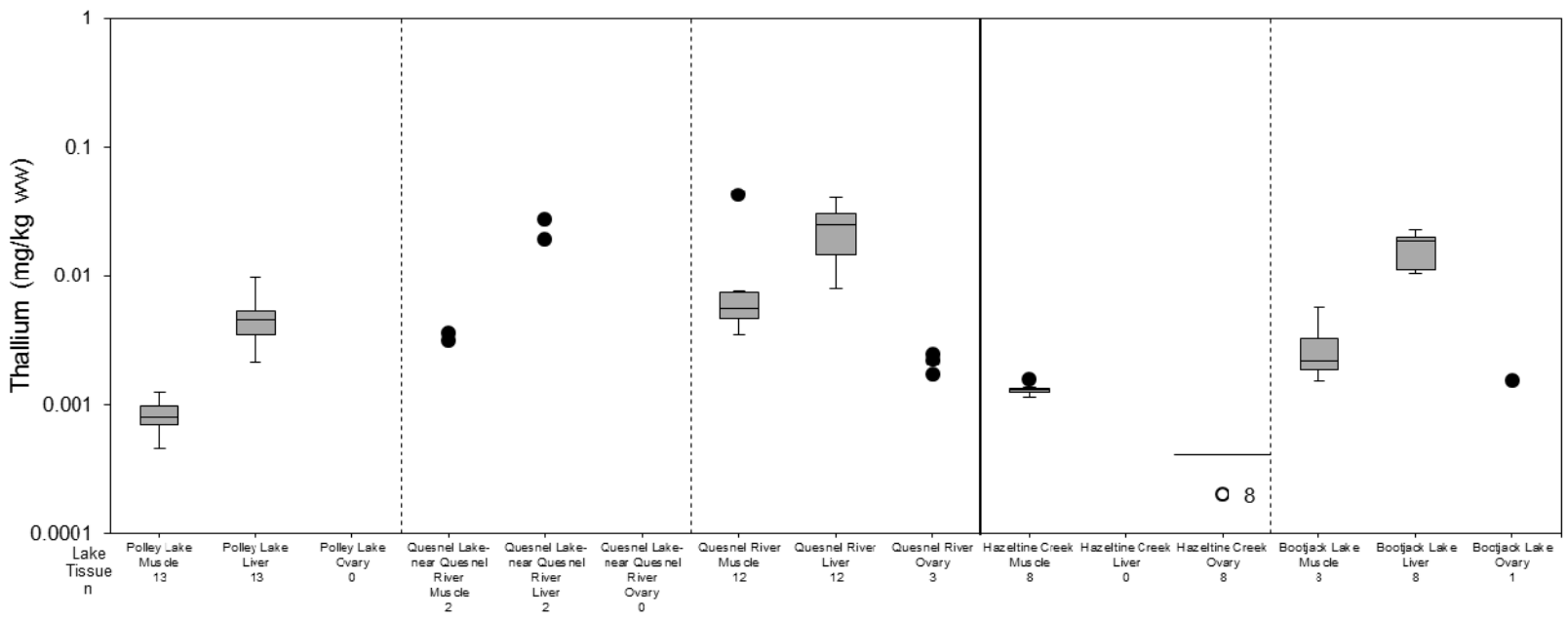


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

7.17 Thallium

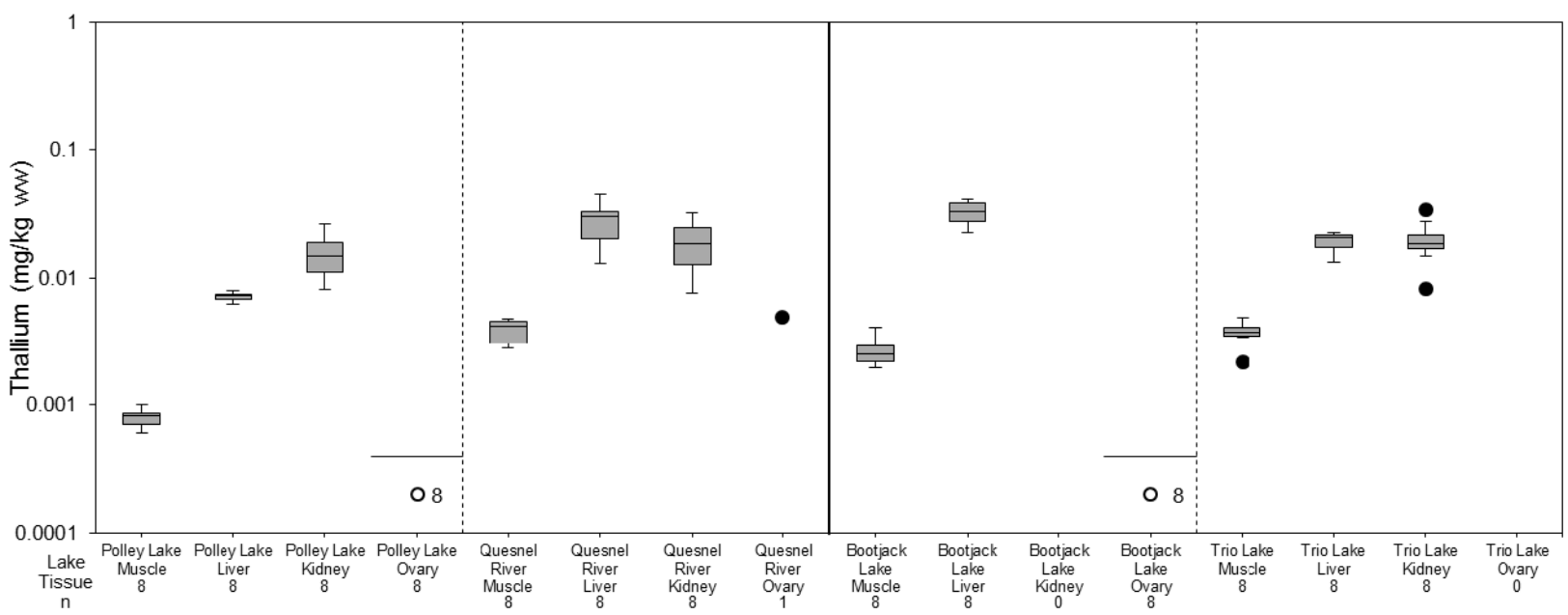
Figure 312: Thallium Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

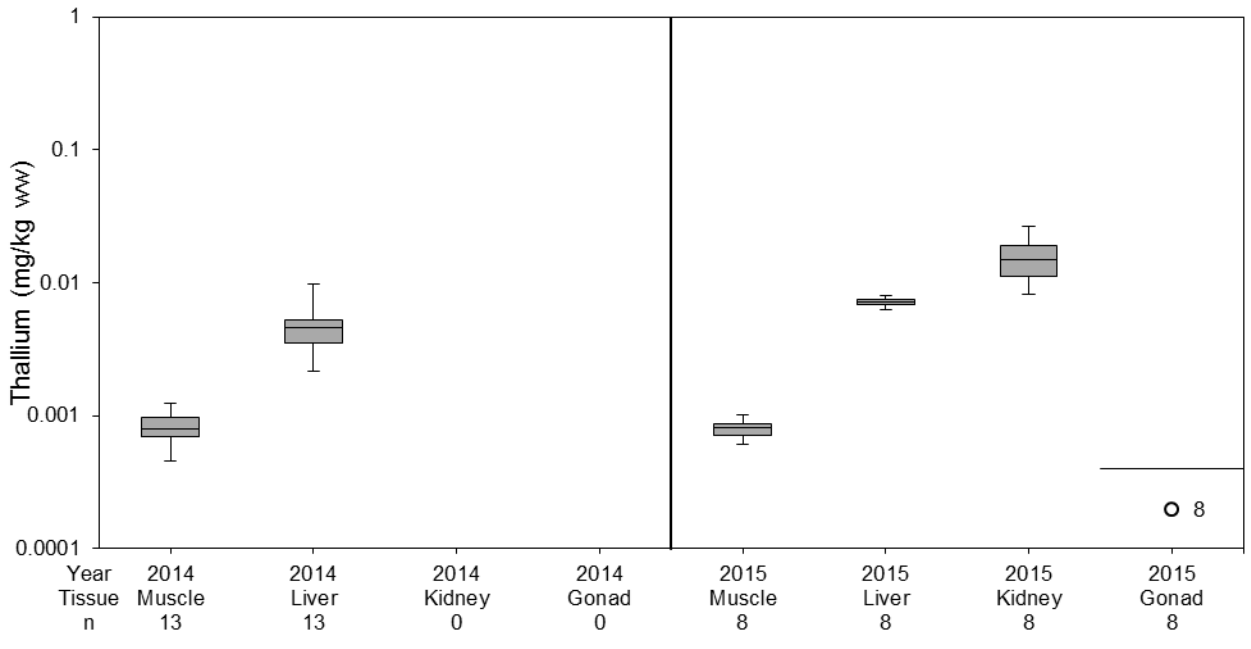
Figure 313: Thallium Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

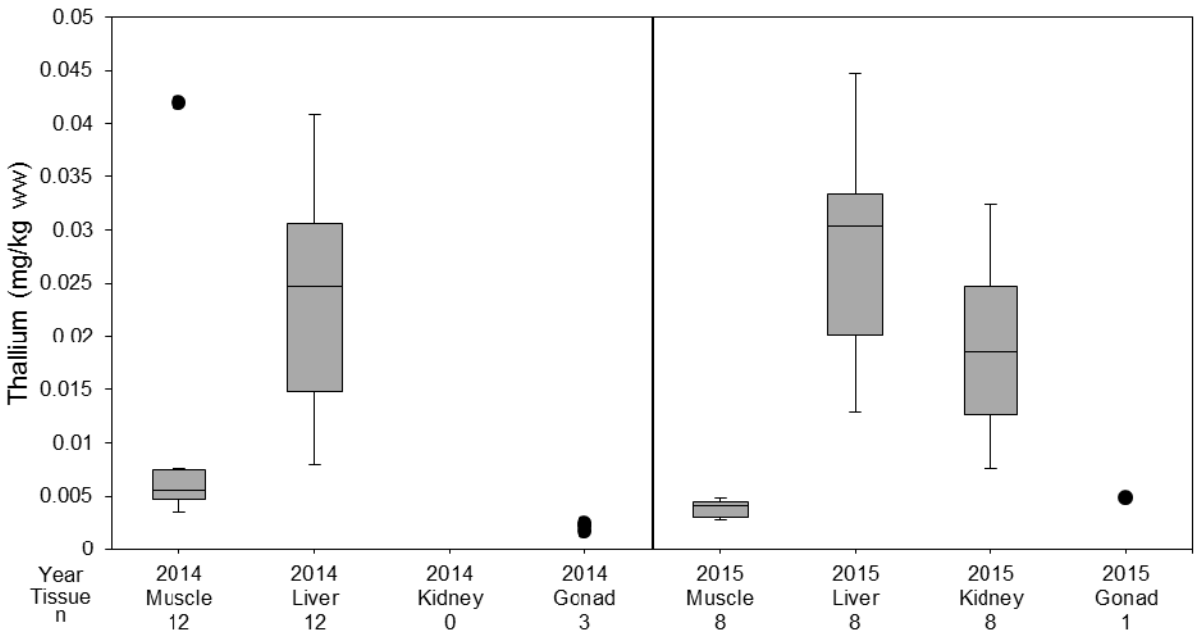
Figure 314: Thallium Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 315: Thallium Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

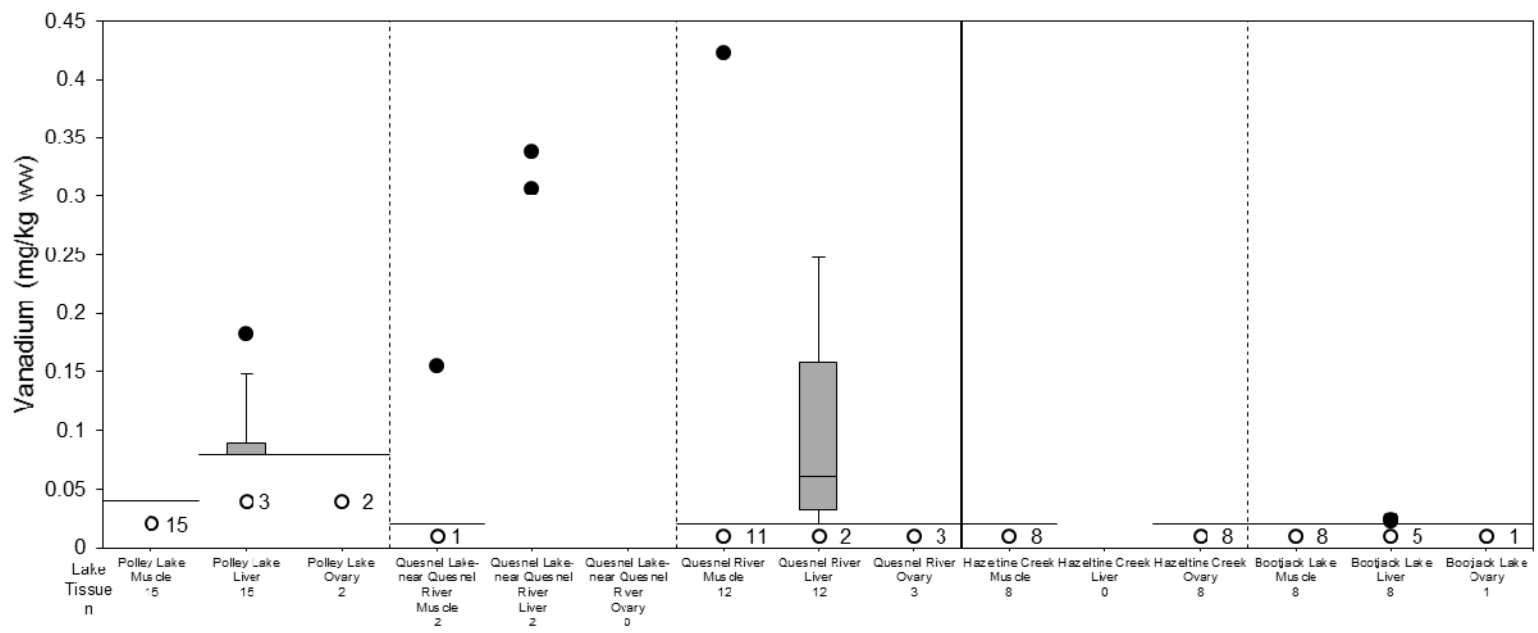


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

7.18 Vanadium

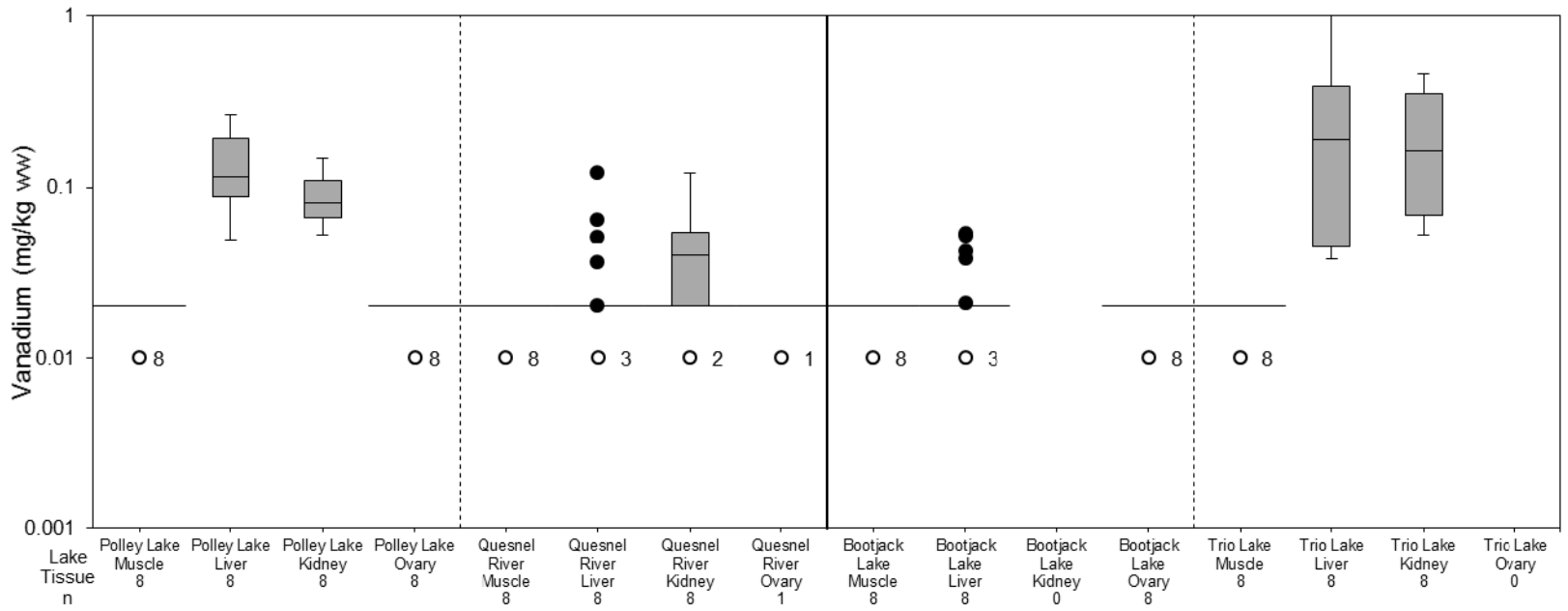
Figure 316: Vanadium Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

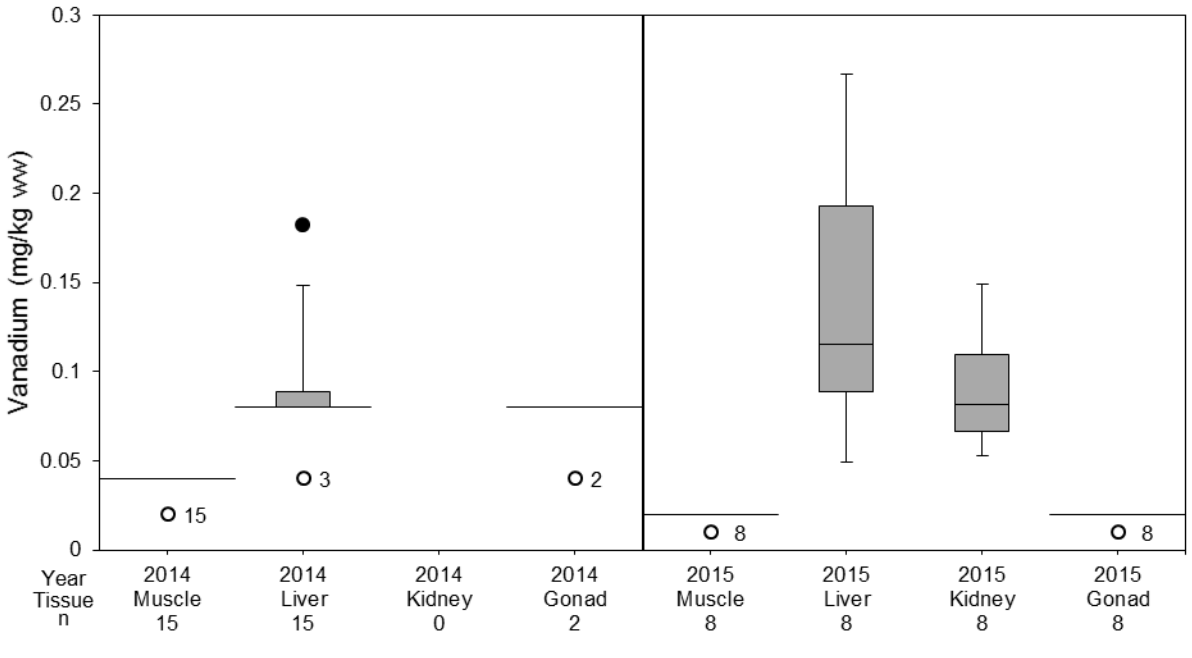
Figure 317: Vanadium Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

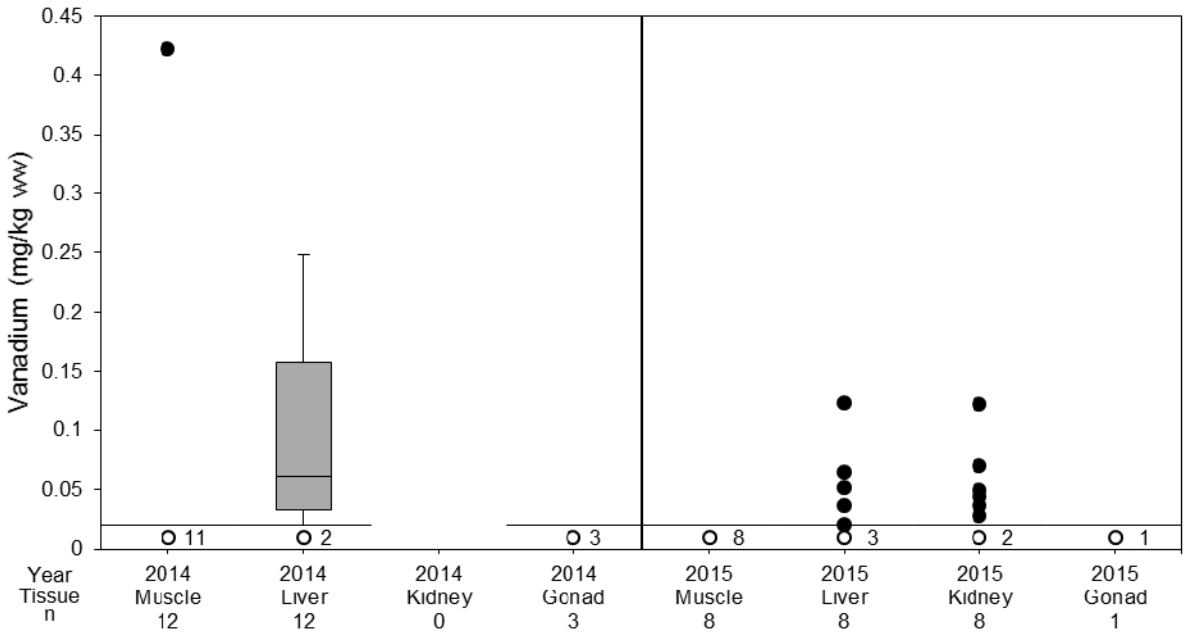
Figure 318: Vanadium Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 319: Vanadium Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015

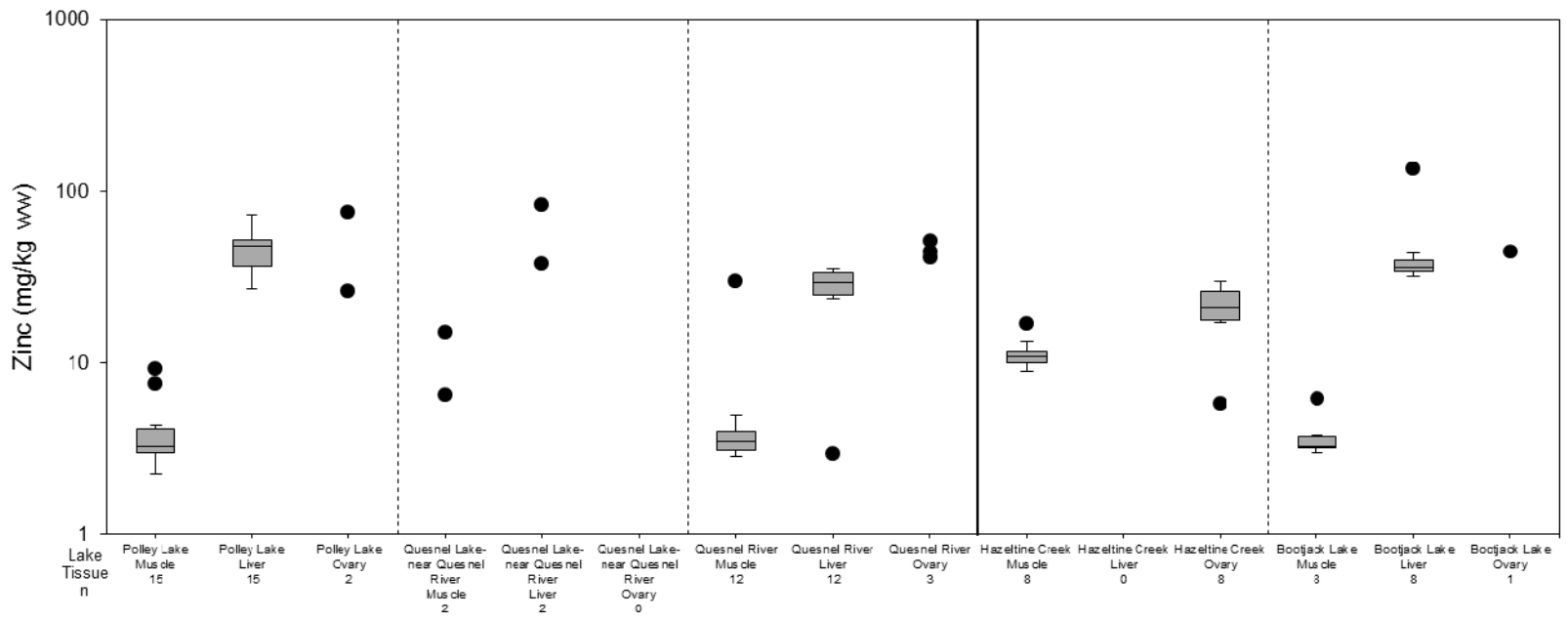


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

7.19 Zinc

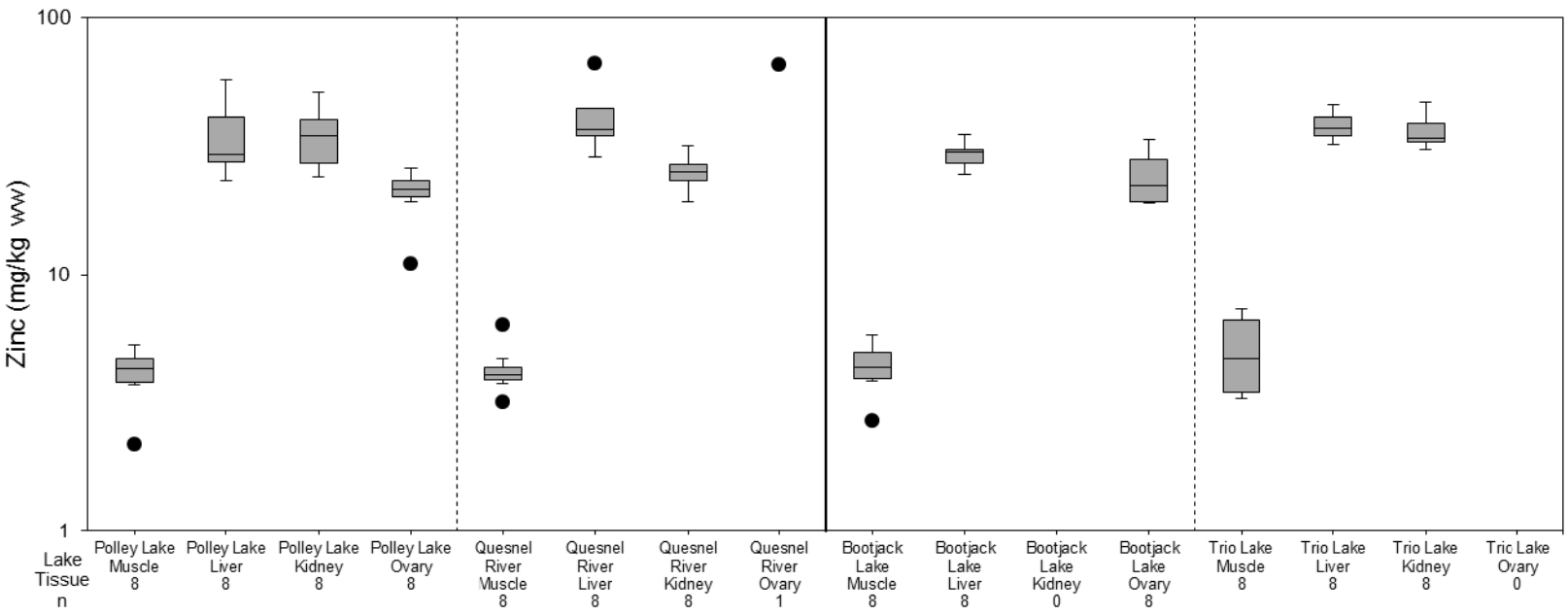
Figure 320: Zinc Concentrations in Rainbow Trout Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

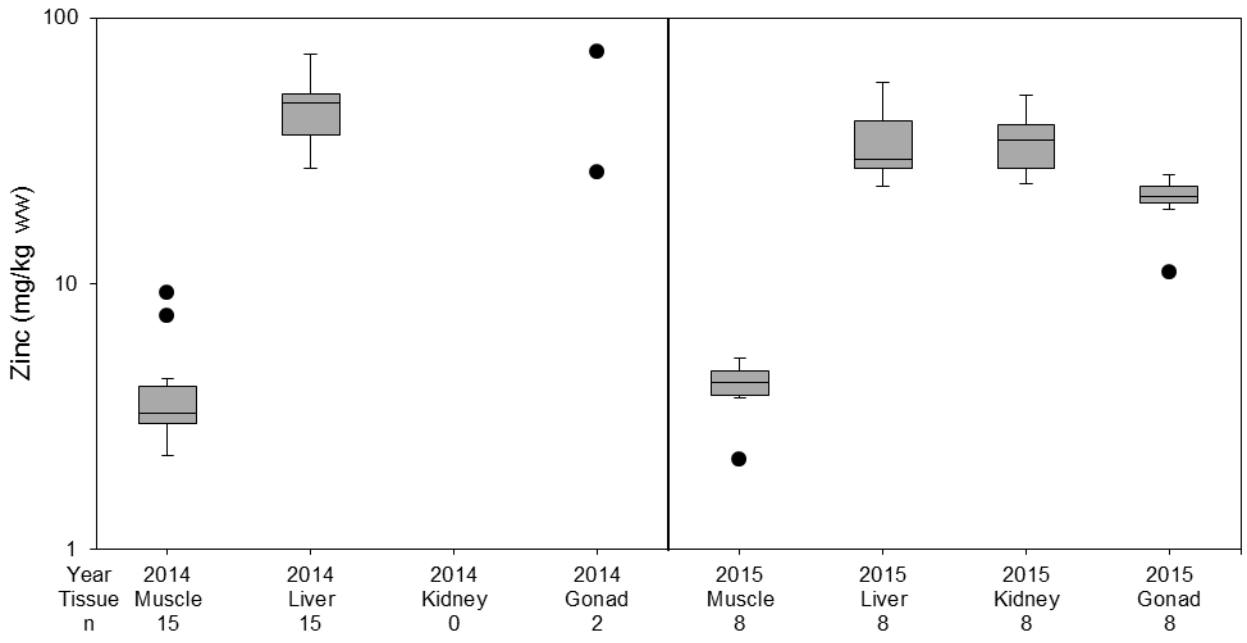
Figure 321: Zinc Concentrations in Rainbow Trout Tissues Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

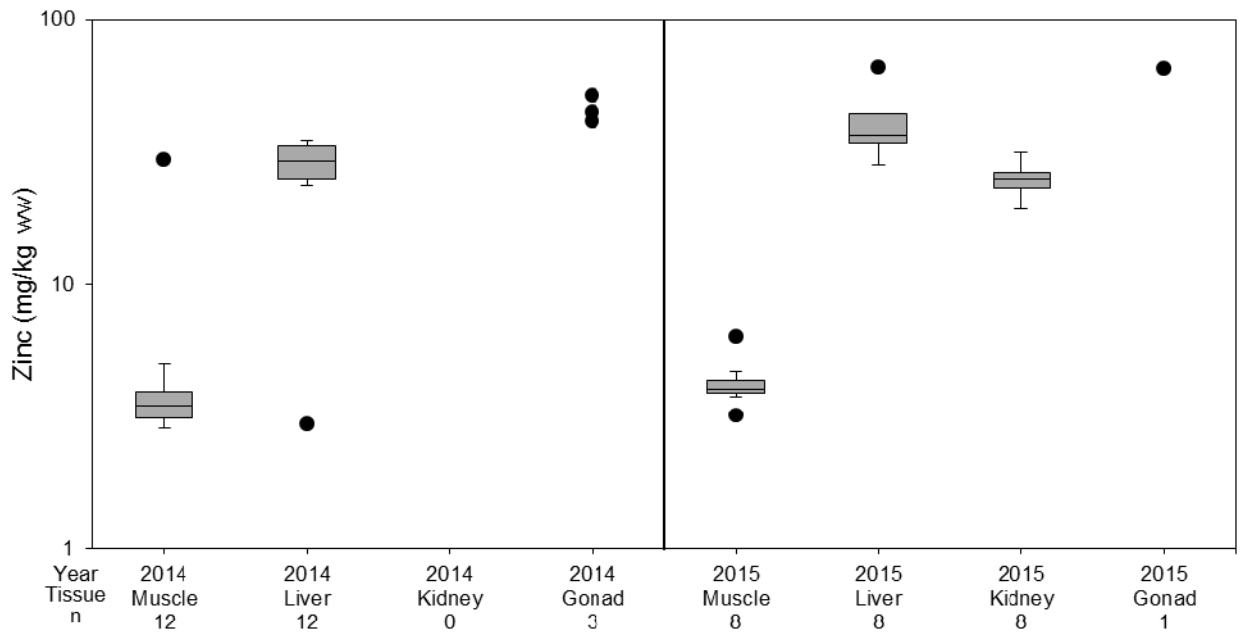
Figure 322: Zinc Concentrations in Rainbow Trout Tissues Collected from Polley Lake in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 323: Zinc Concentrations in Rainbow Trout Tissues Collected from Quesnel River in 2014 and 2015



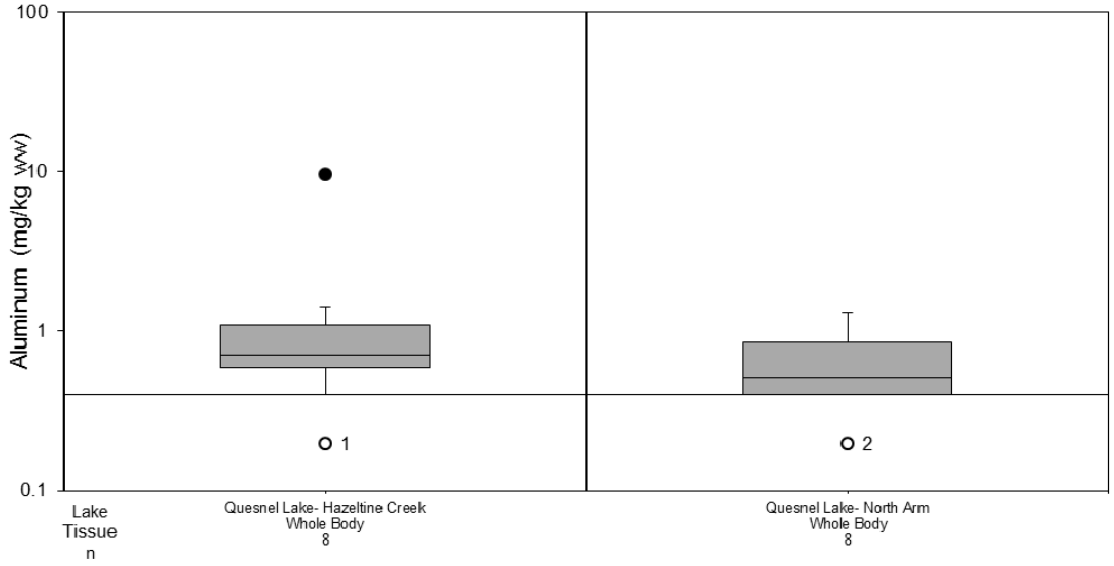
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

8.0 REDSIDE SHINER

8.1 Aluminum

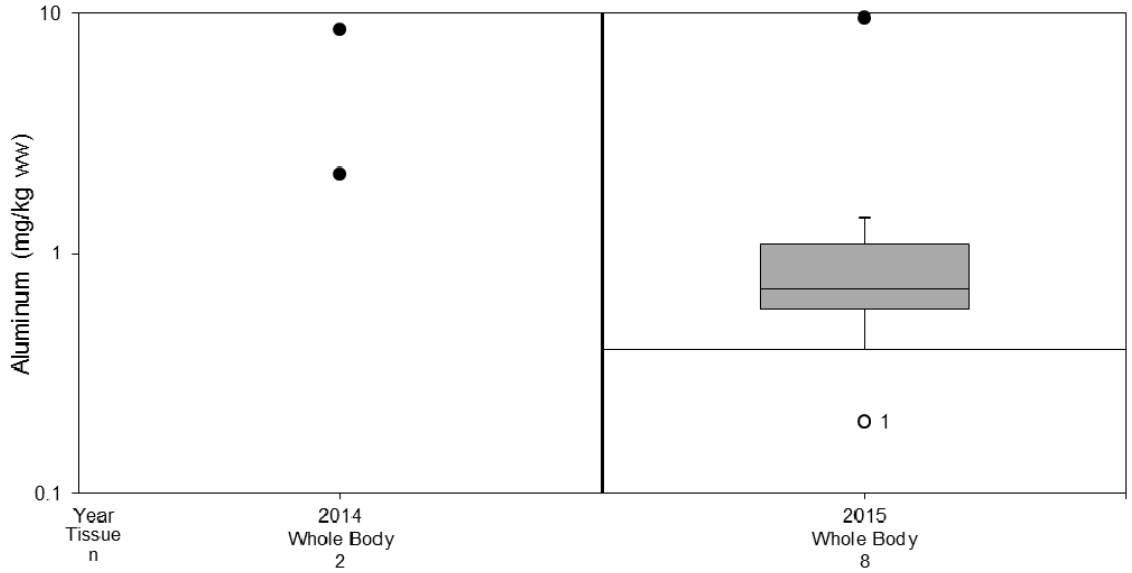
Figure 324: Aluminum Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 325: Aluminum Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

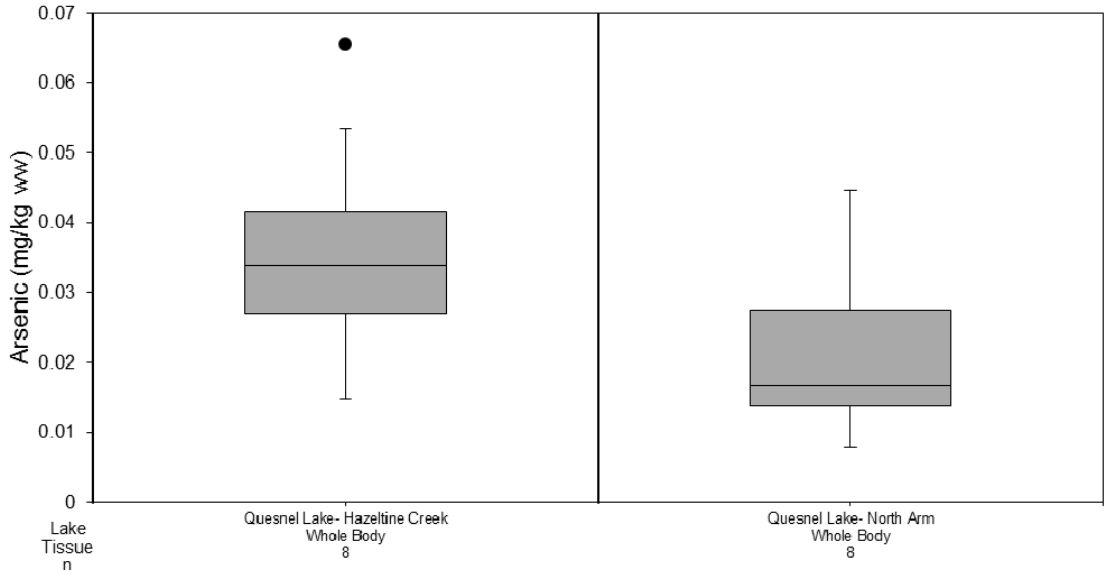


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

8.2 Arsenic

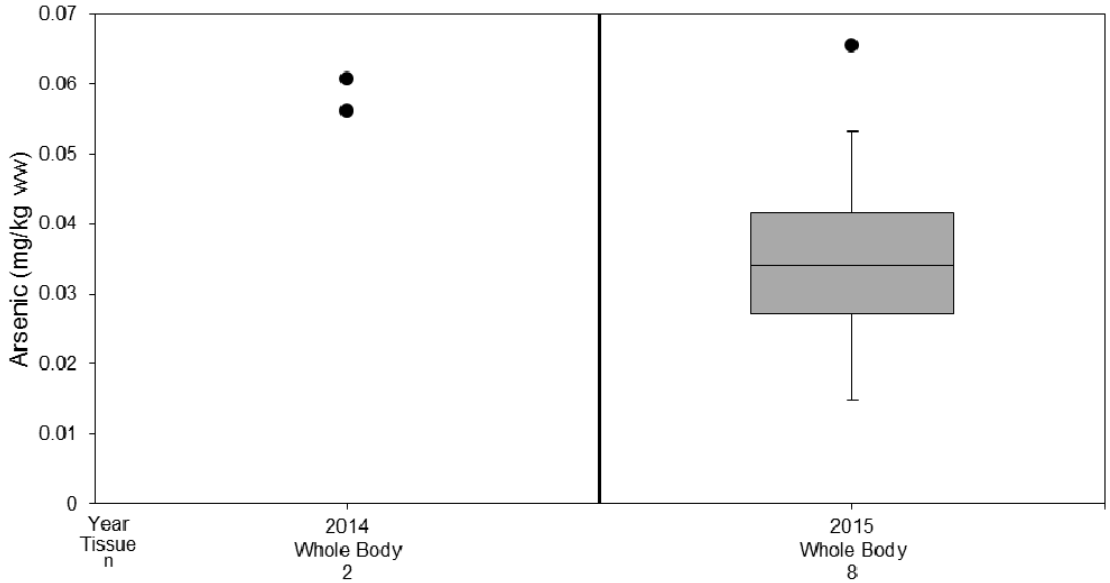
Figure 326: Arsenic Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 327: Arsenic Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

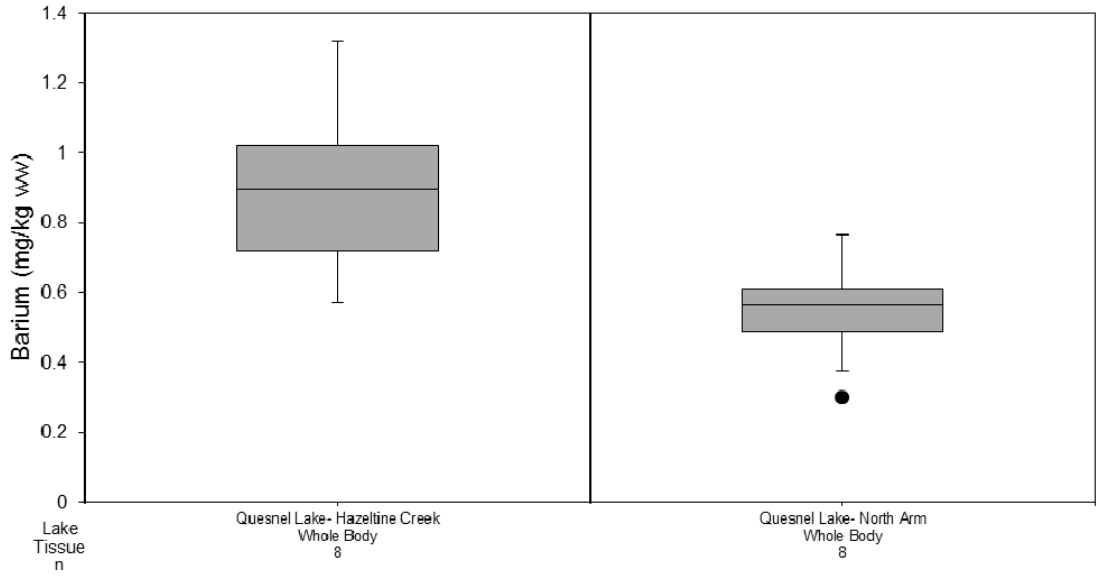


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.3 Barium

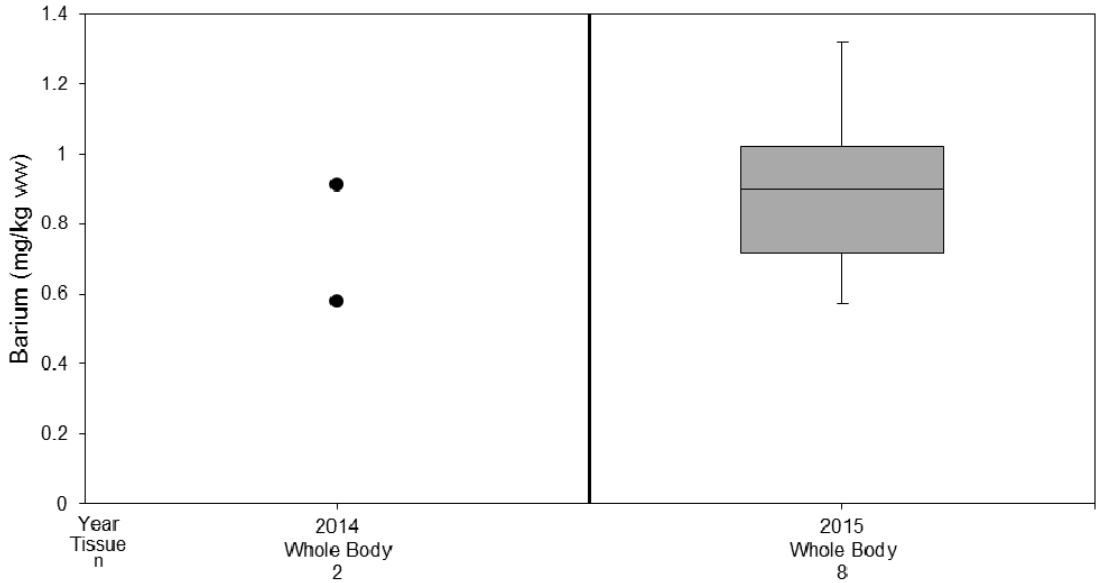
Figure 328: Barium Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 329: Barium Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

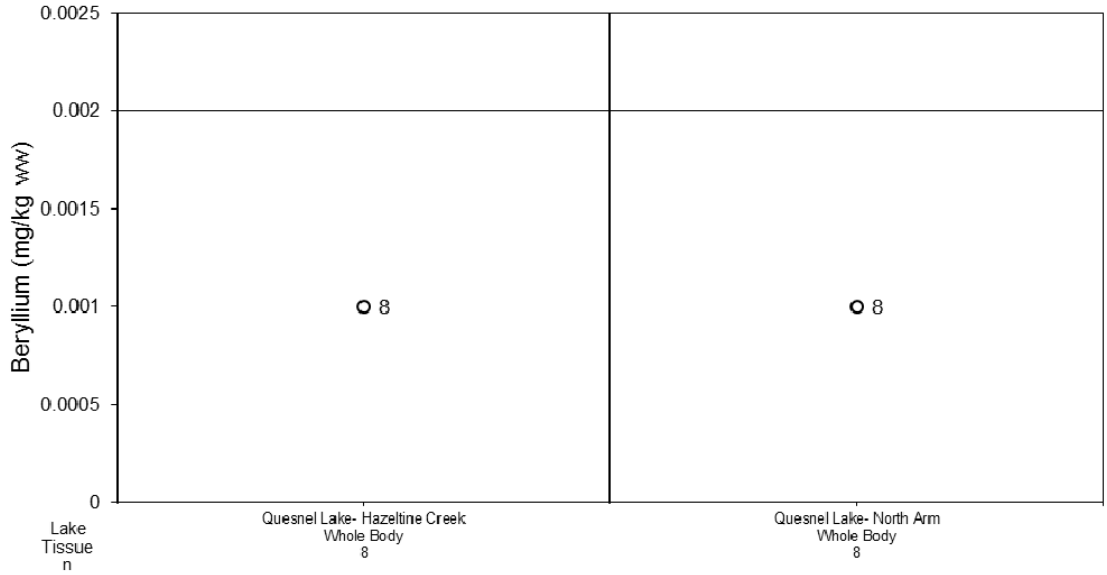


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.4 Beryllium

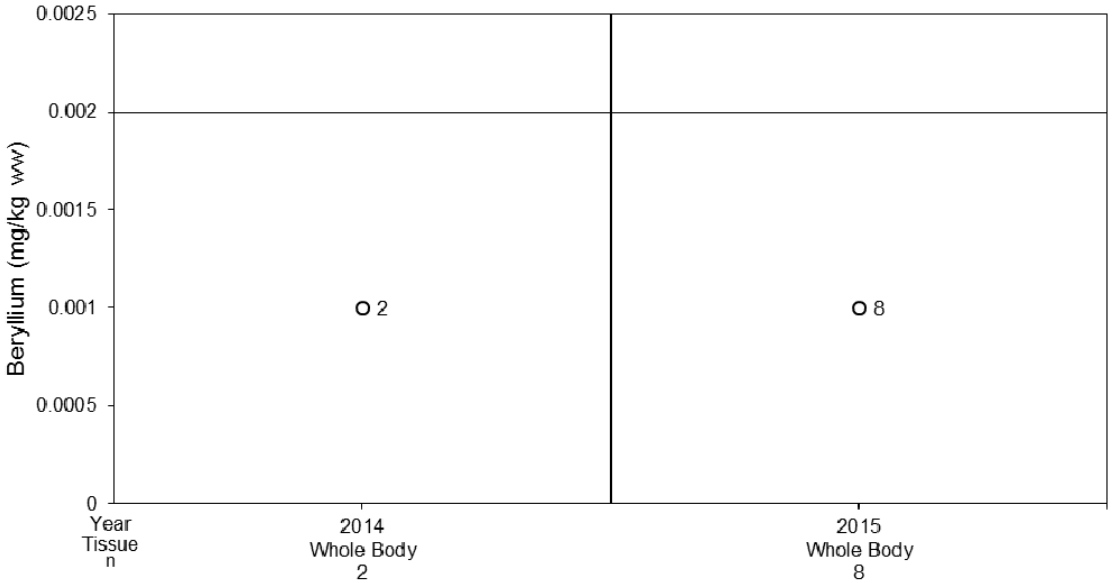
Figure 330: Beryllium Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 331: Beryllium Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

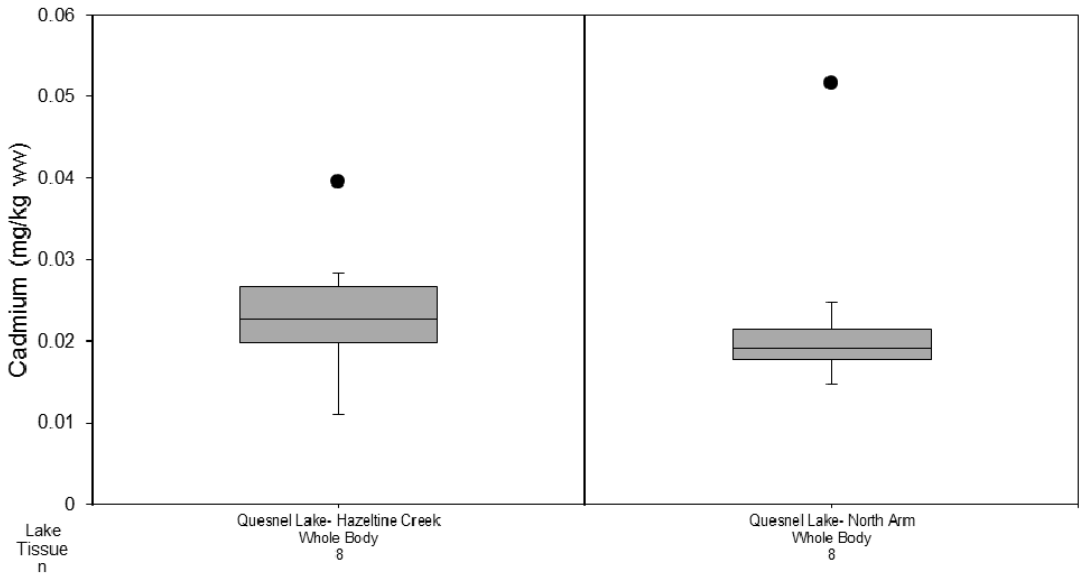


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.5 Cadmium

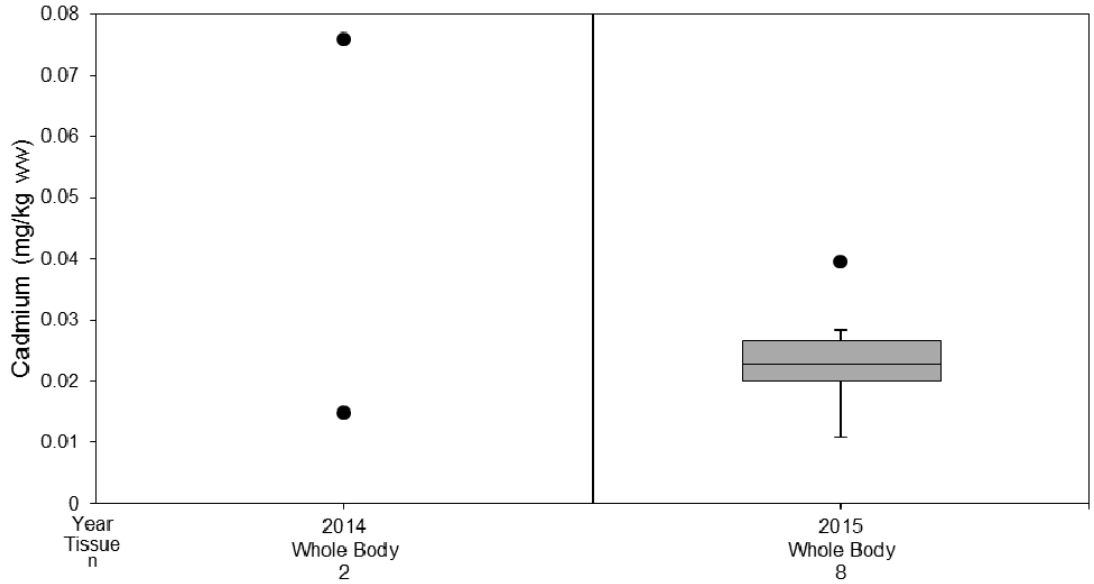
Figure 332: Cadmium Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 333: Cadmium Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

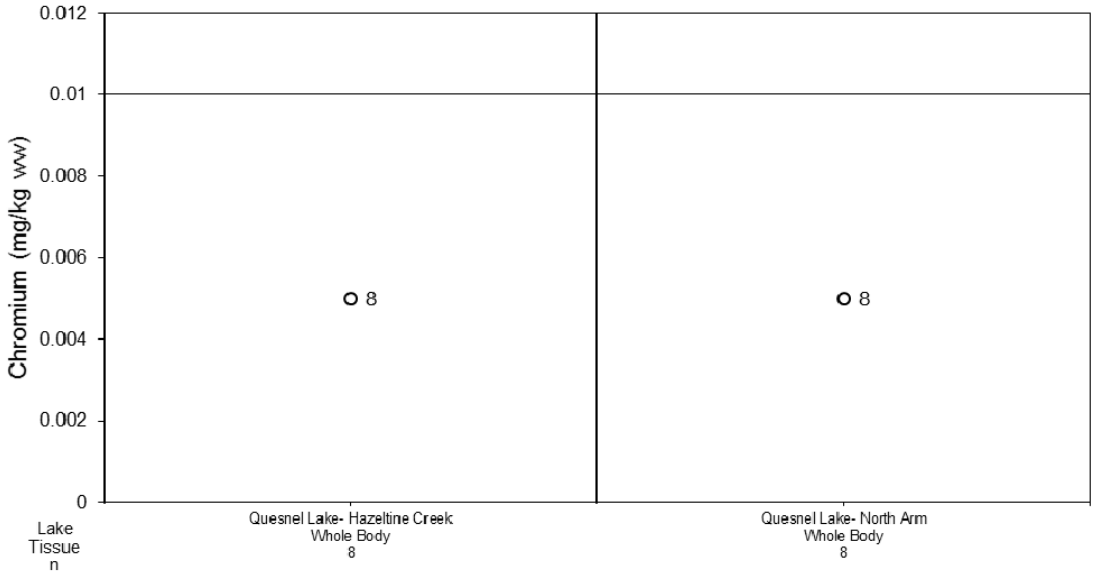


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.6 Chromium

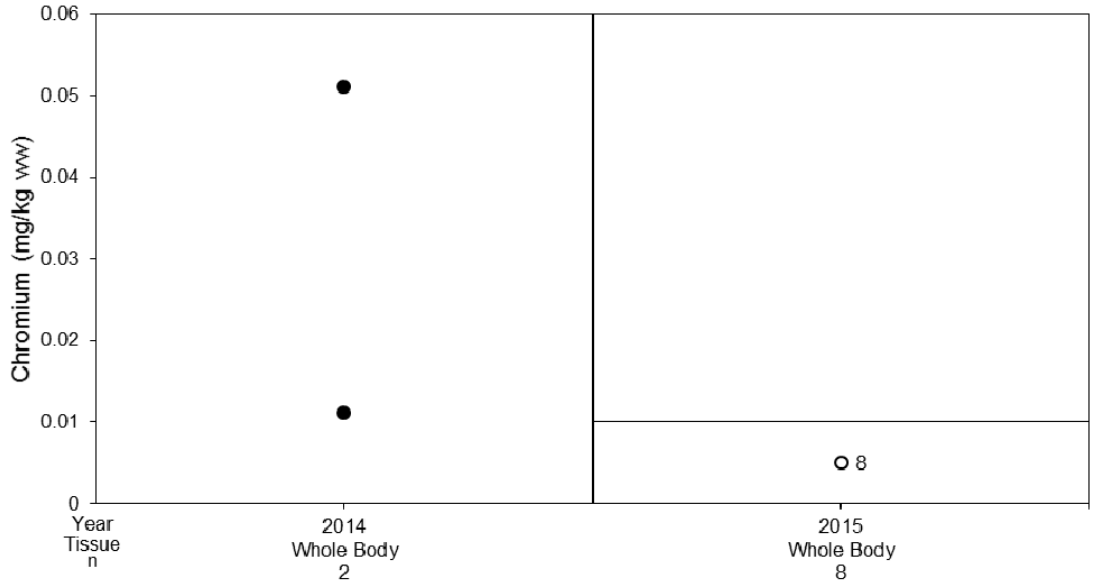
Figure 334: Chromium Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 335: Chromium Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

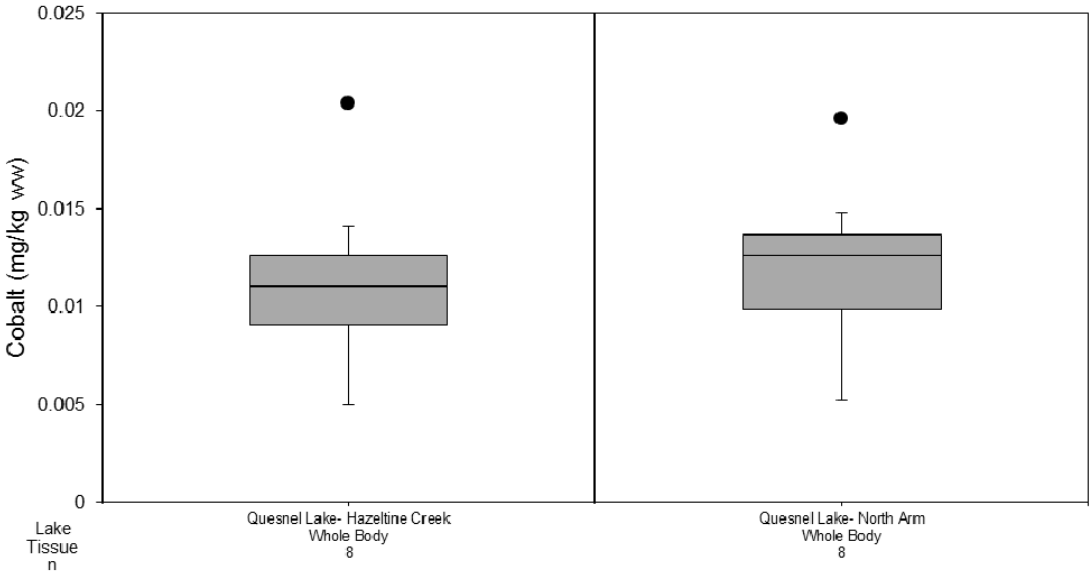


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.7 Cobalt

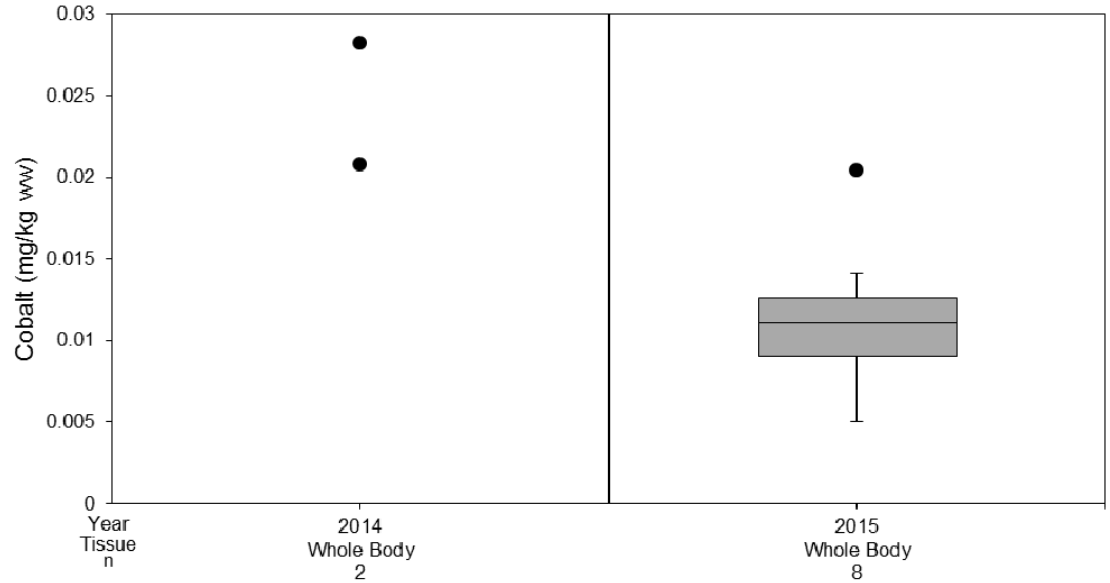
Figure 336: Cobalt Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 337: Cobalt Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

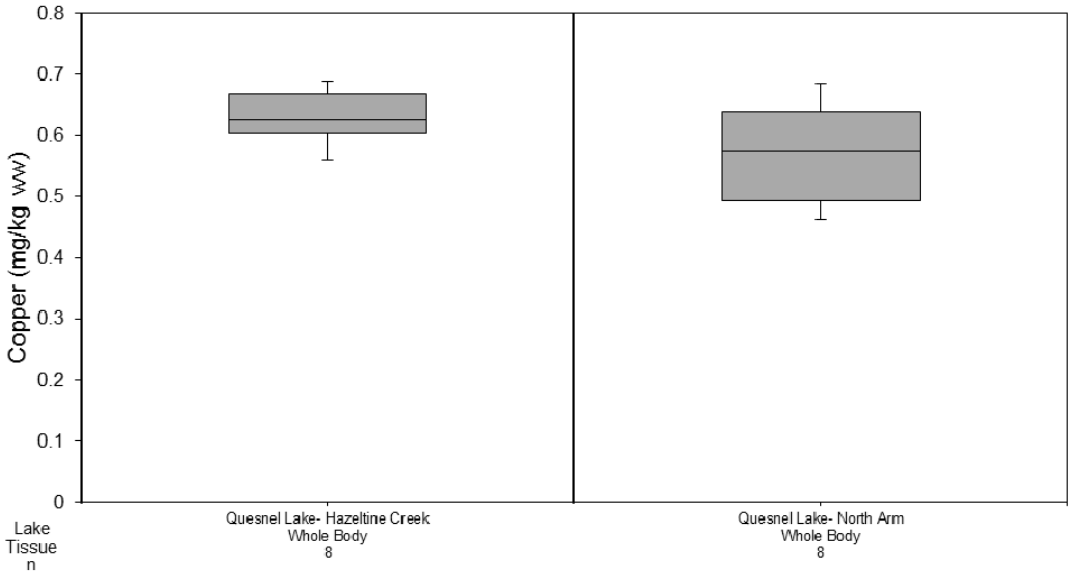


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.8 Copper

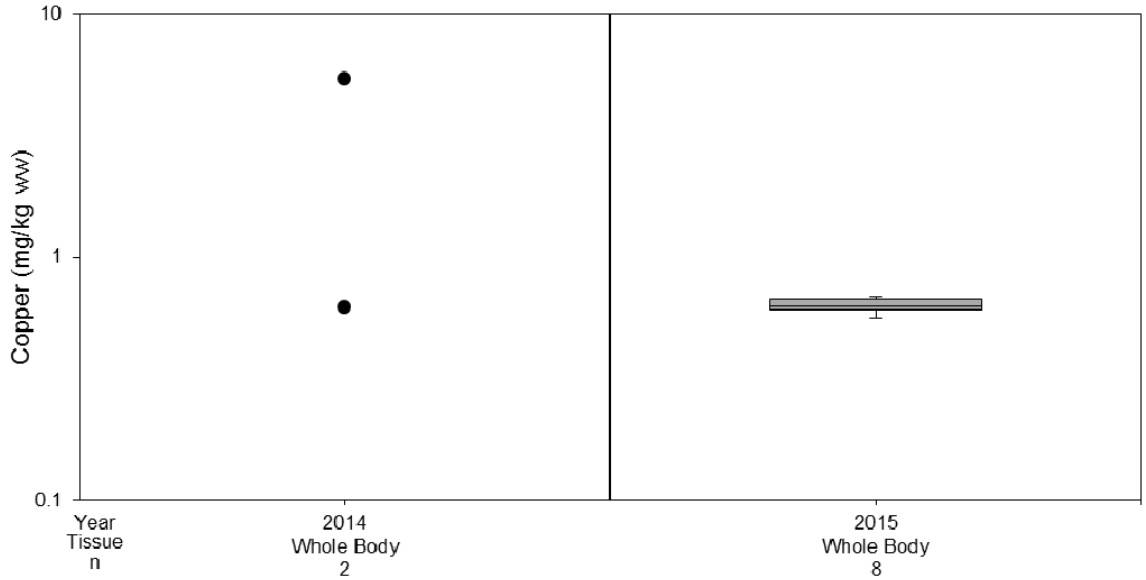
Figure 338: Copper Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 339: Copper Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

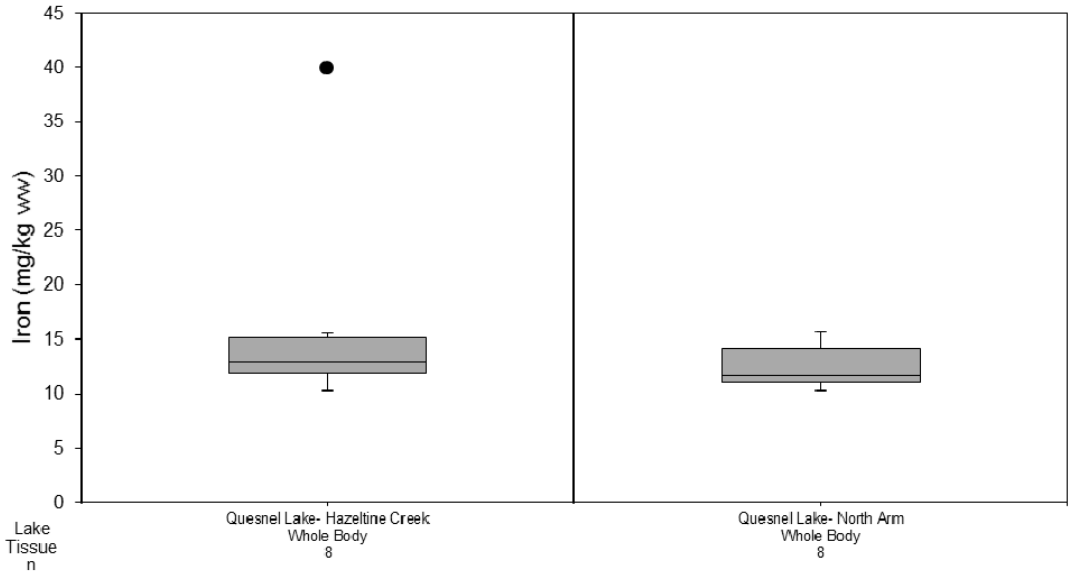


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.9 Iron

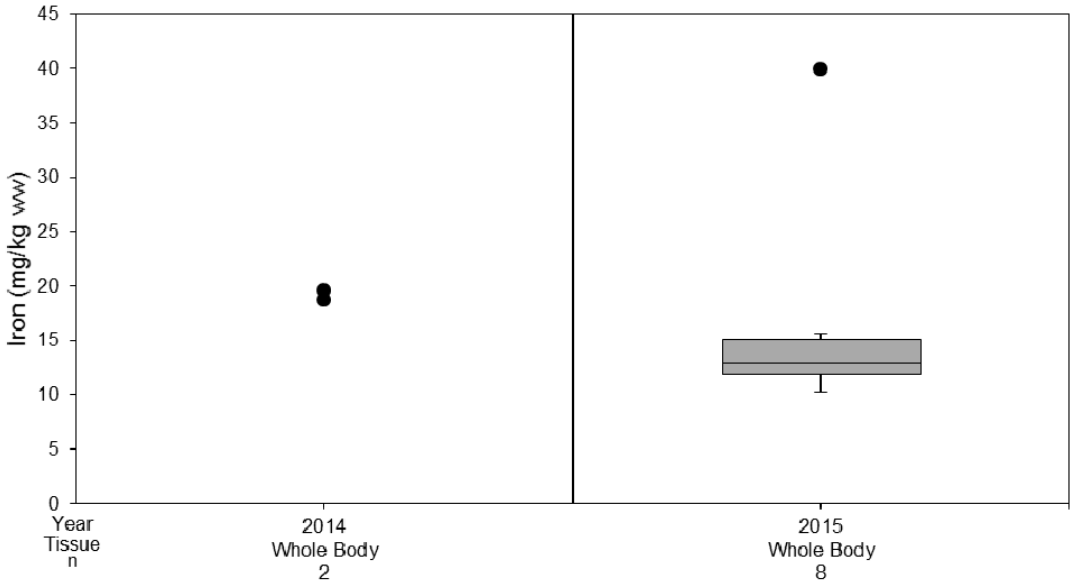
Figure 340: Iron Concentrations in Lake Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 341: Iron Concentrations in Lake Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

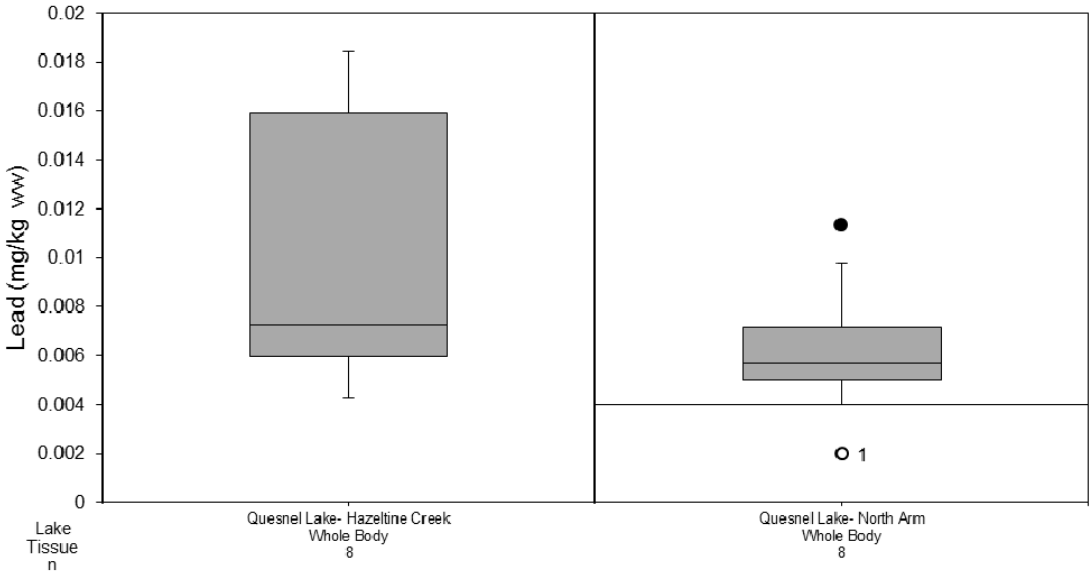


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.10 Lead

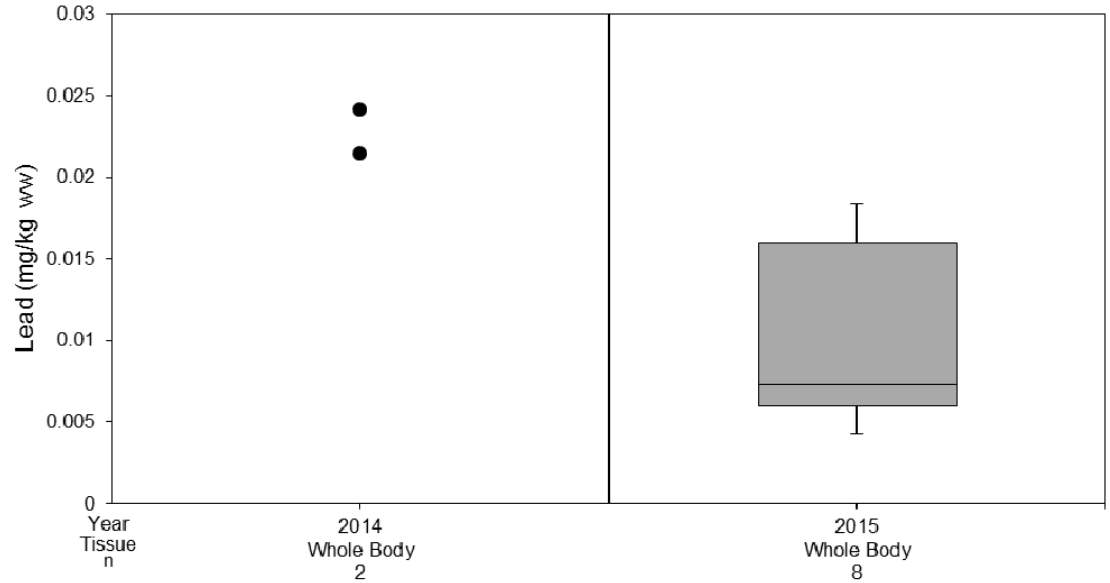
Figure 342: Lead Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 343: Lead Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

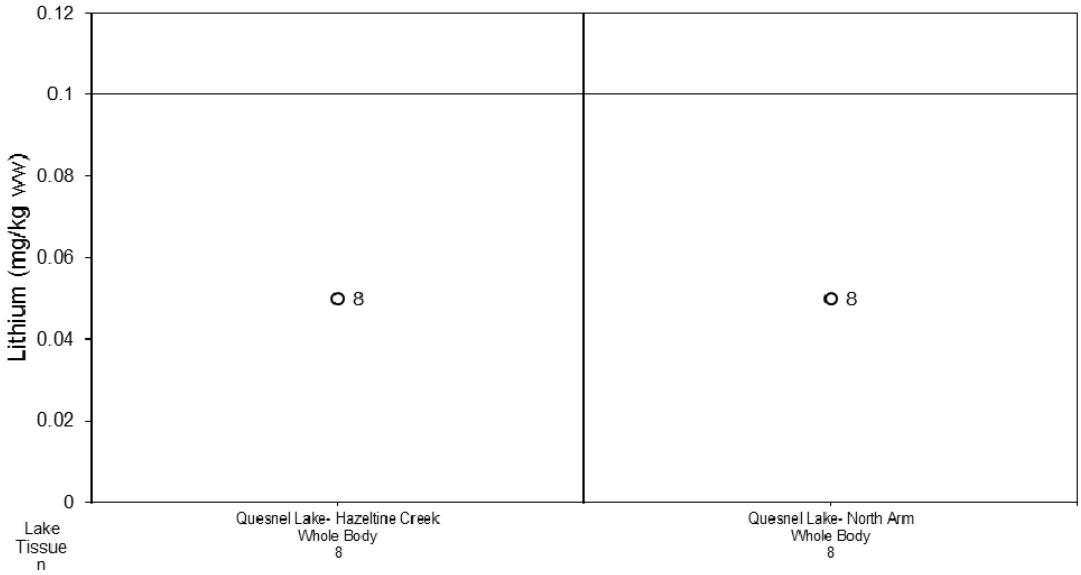


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.11 Lithium

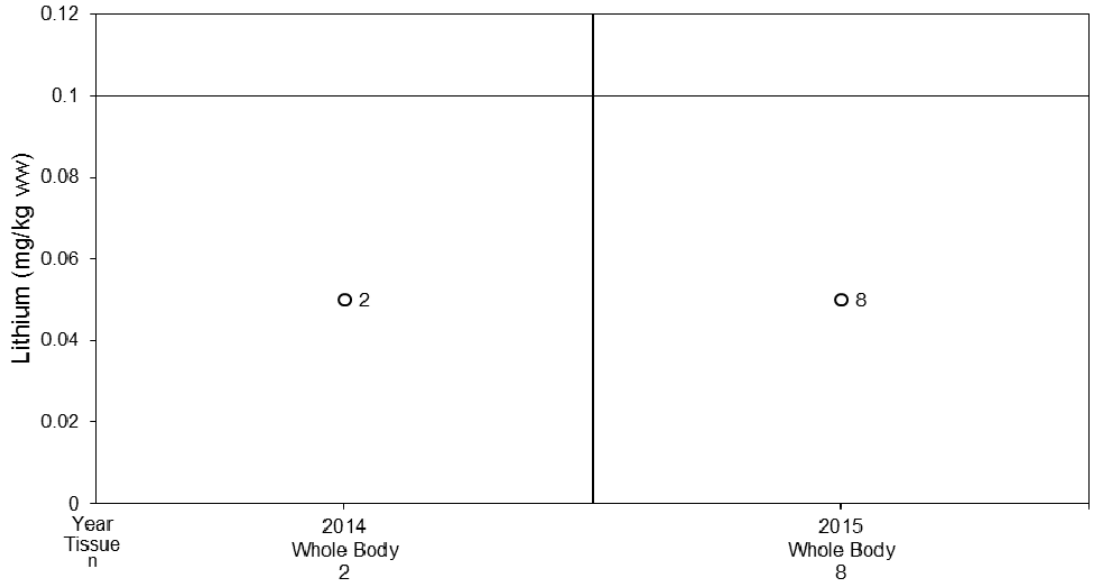
Figure 344: Lithium Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 345: Lithium Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

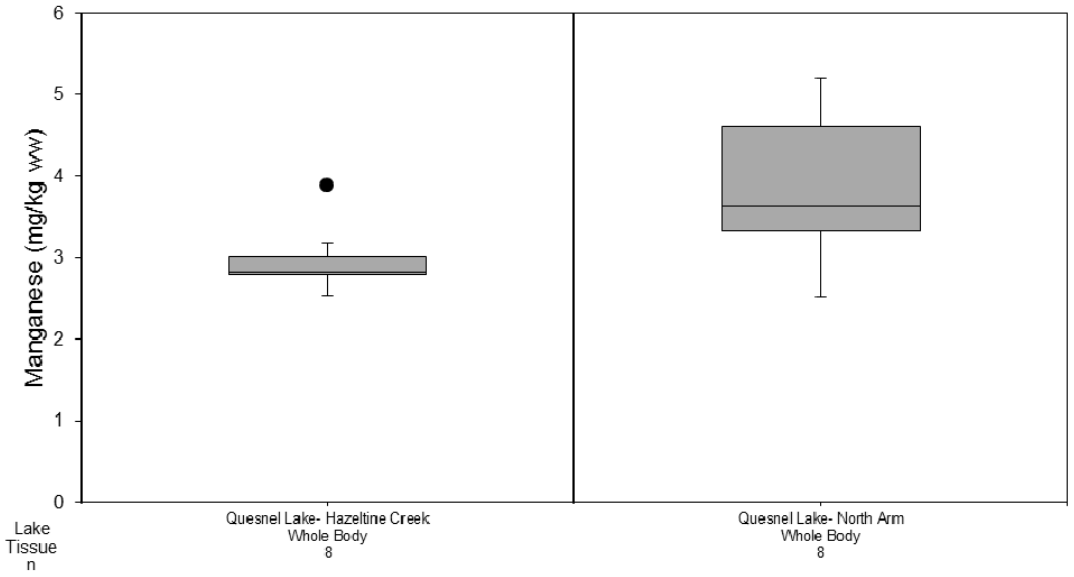


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.12 Manganese

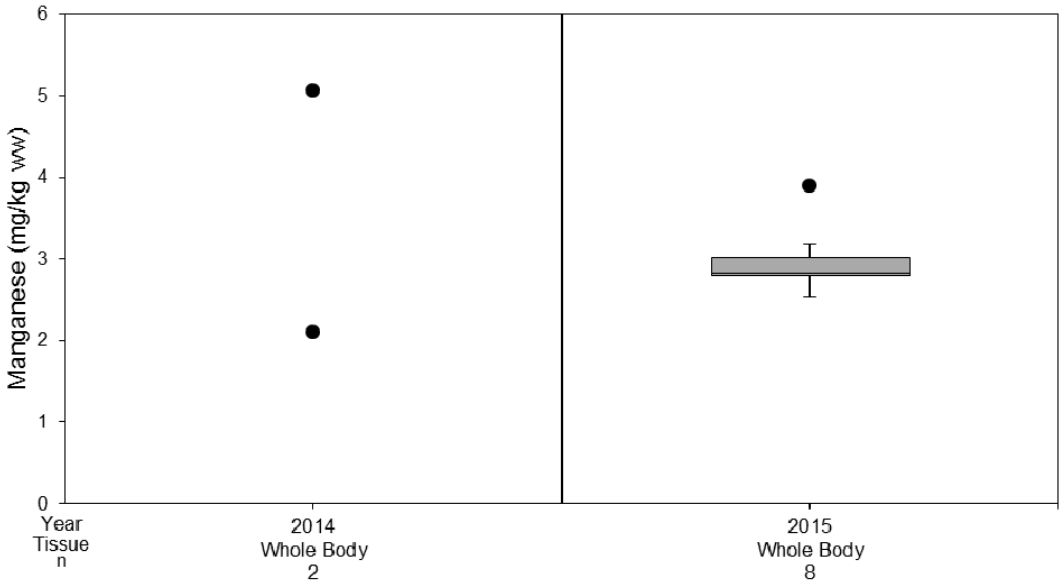
Figure 346: Manganese Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 347: Manganese Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

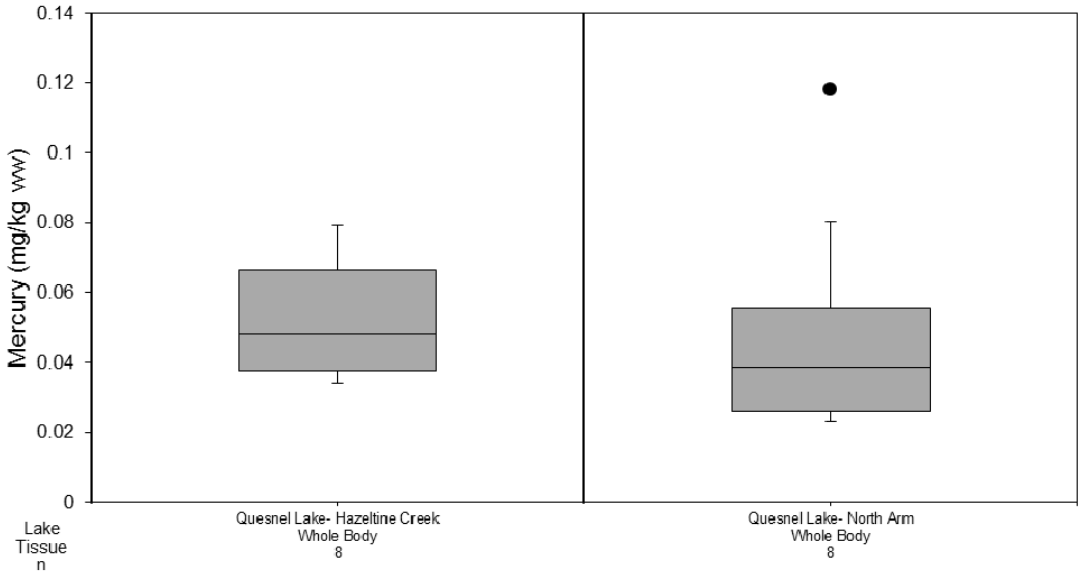


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.13 Mercury

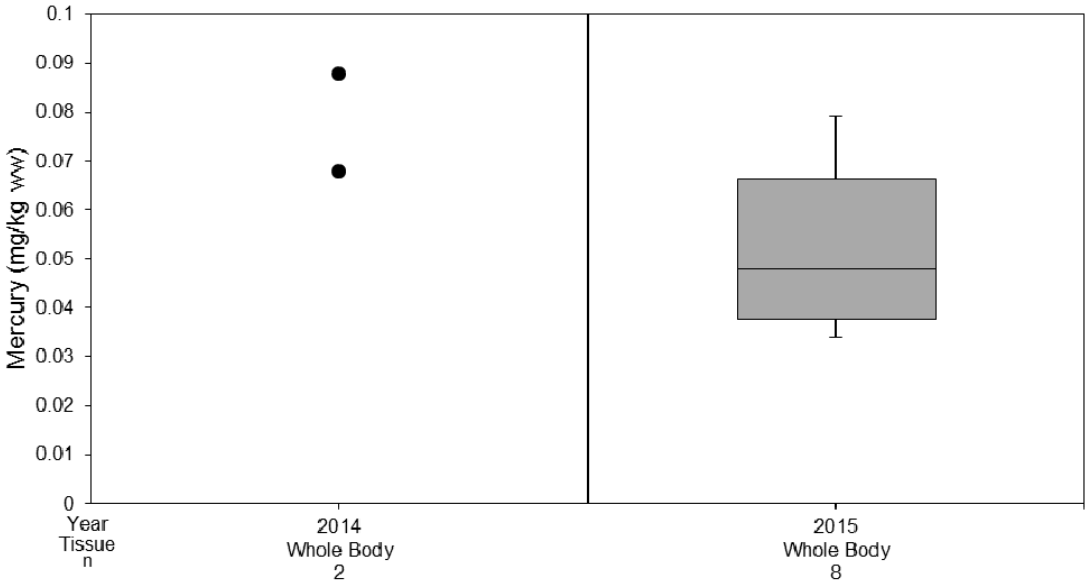
Figure 348: Mercury Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 349: Mercury Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

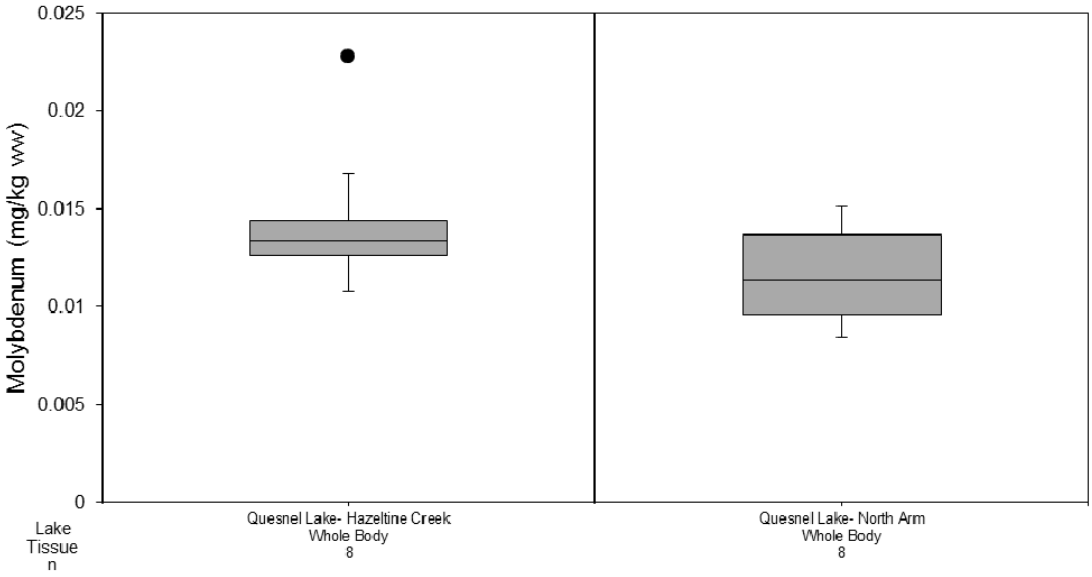


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.14 Molybdenum

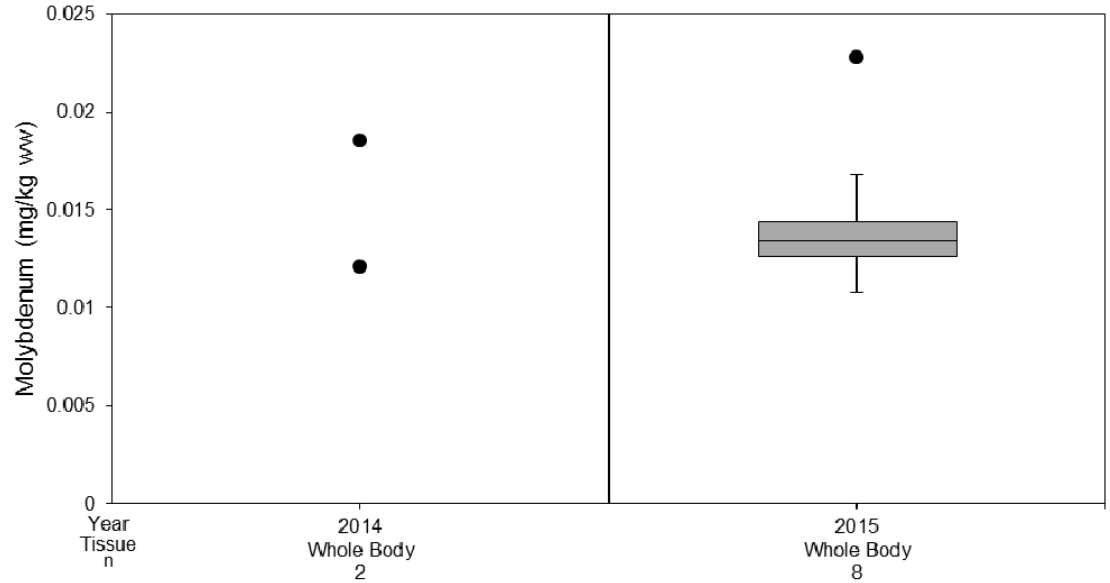
Figure 350: Molybdenum Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 351: Molybdenum Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

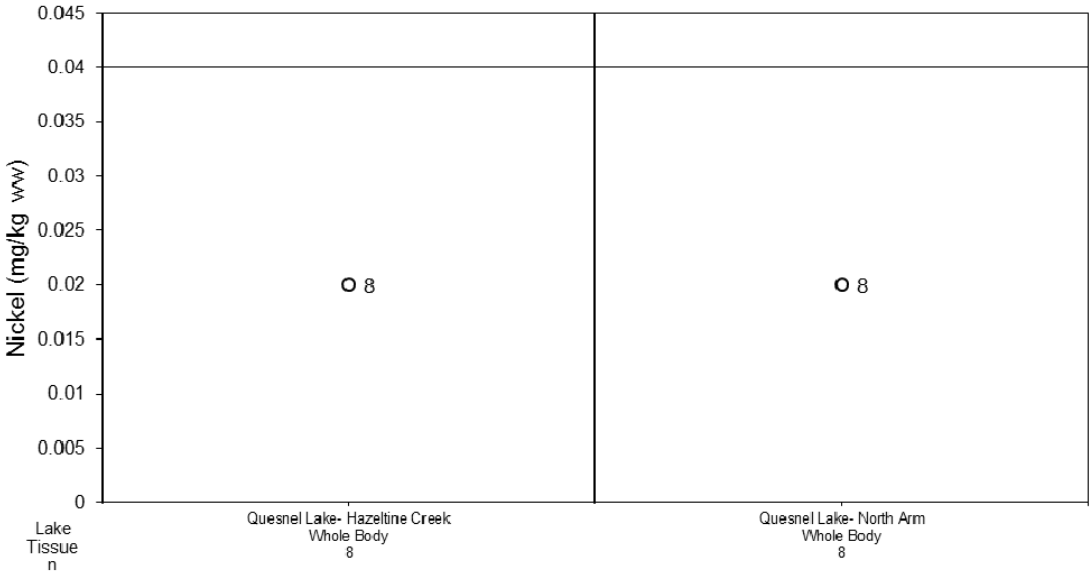


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.15 Nickel

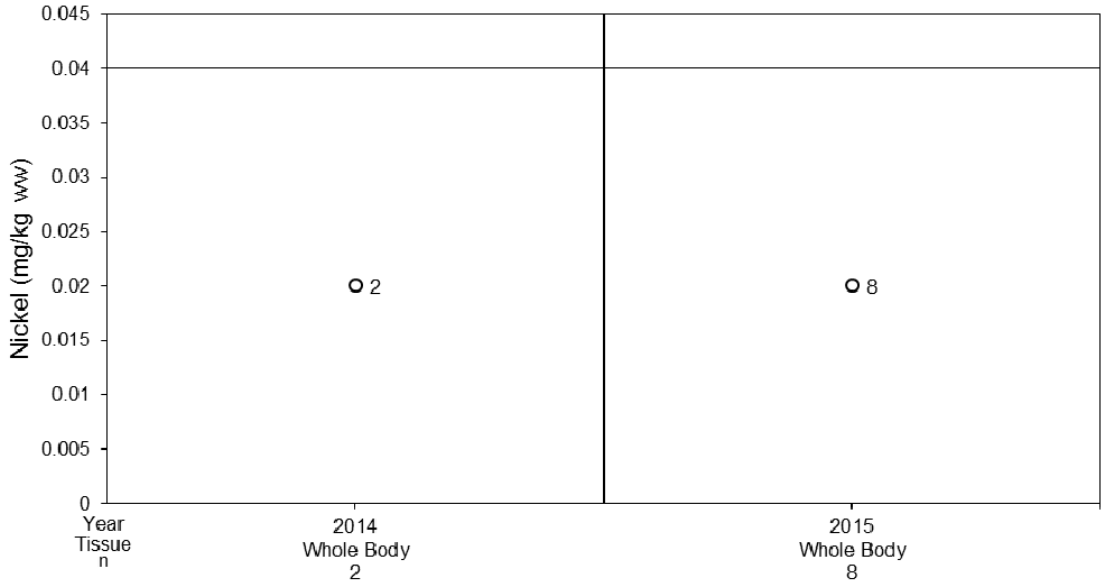
Figure 352: Nickel Concentrations in Lake Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 353: Nickel Concentrations in Lake Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

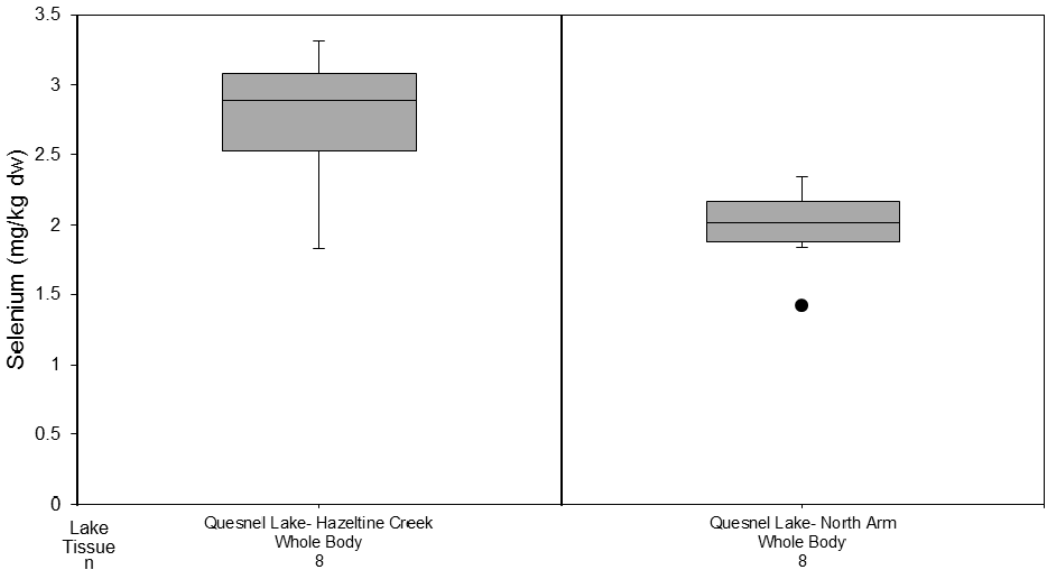


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.16 Selenium

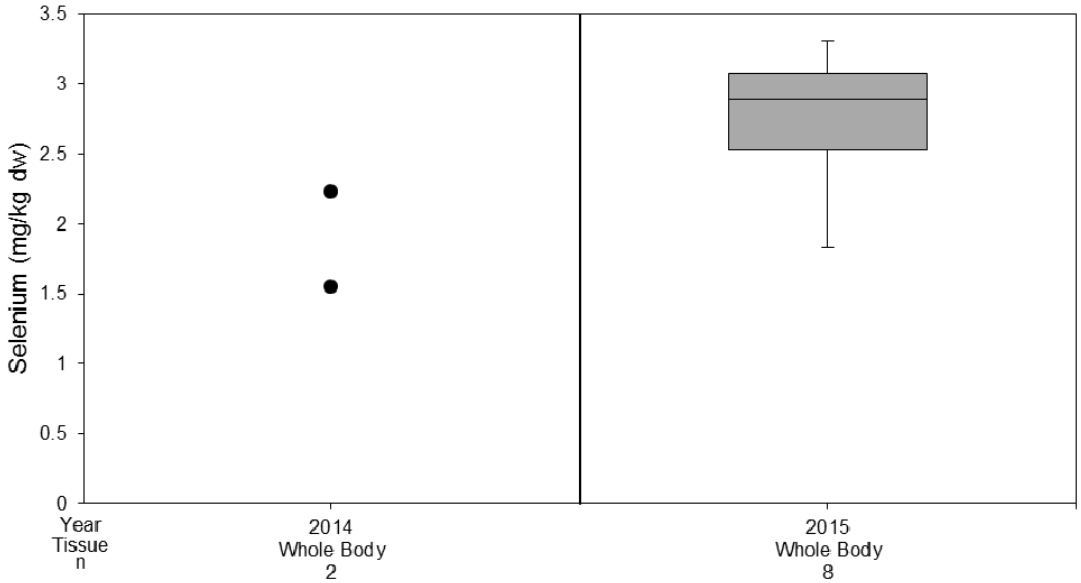
Figure 354: Selenium Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 355: Selenium Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

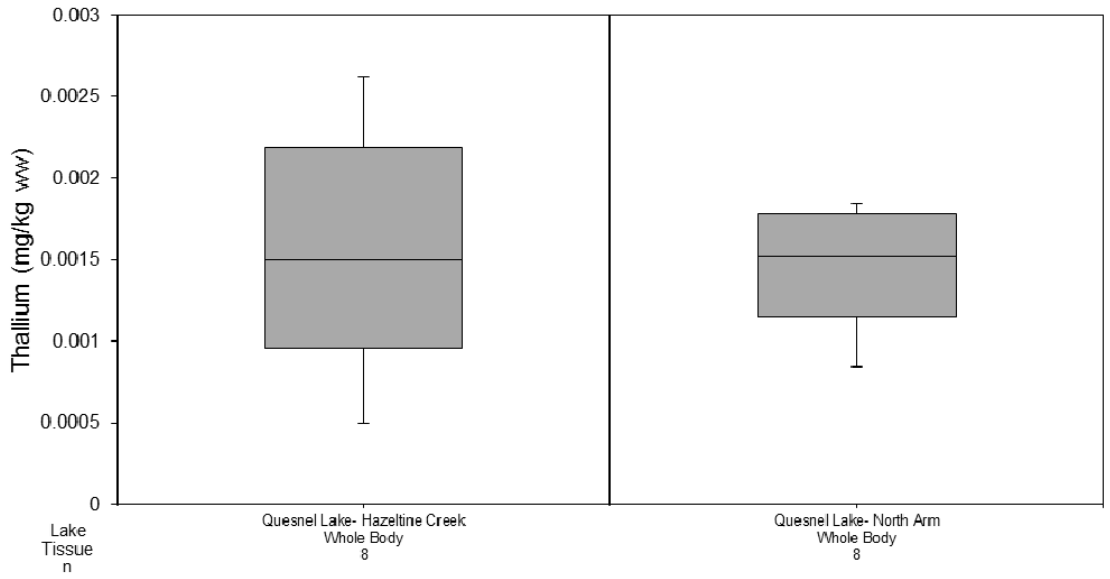


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.17 Thallium

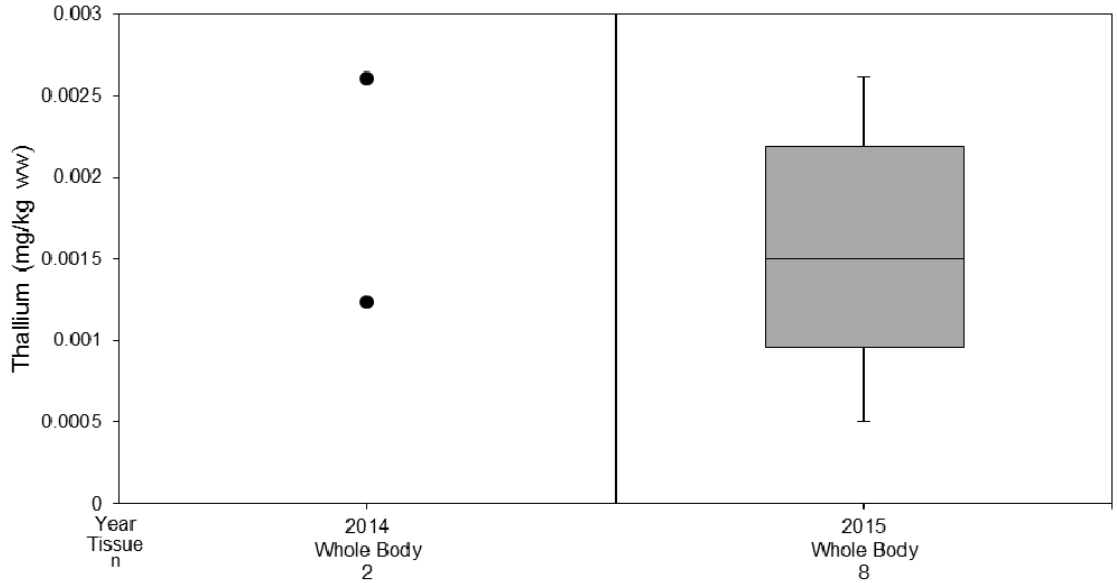
Figure 356: Thallium Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 357: Thallium Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

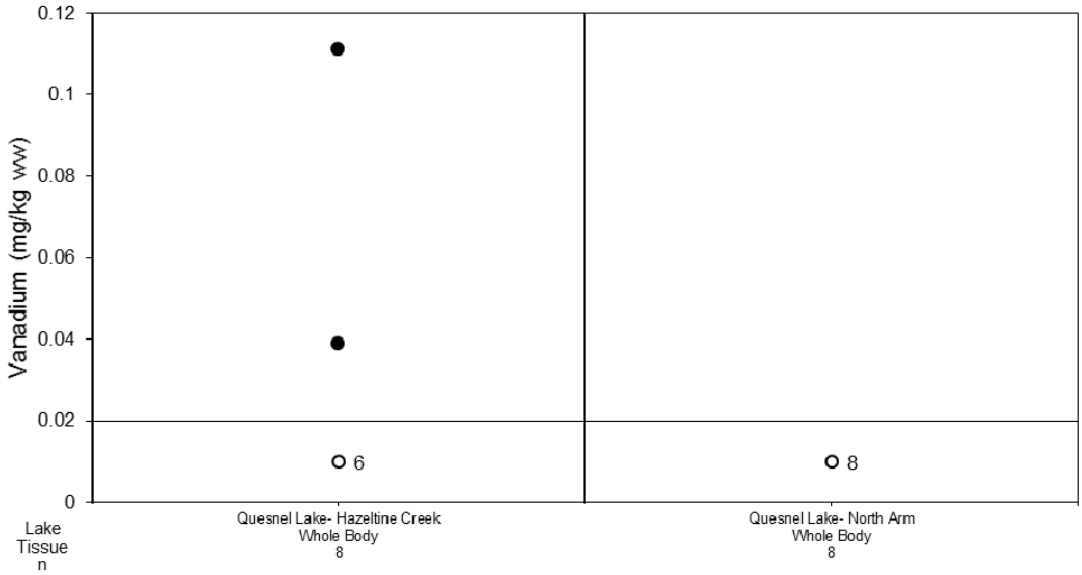


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.18 Vanadium

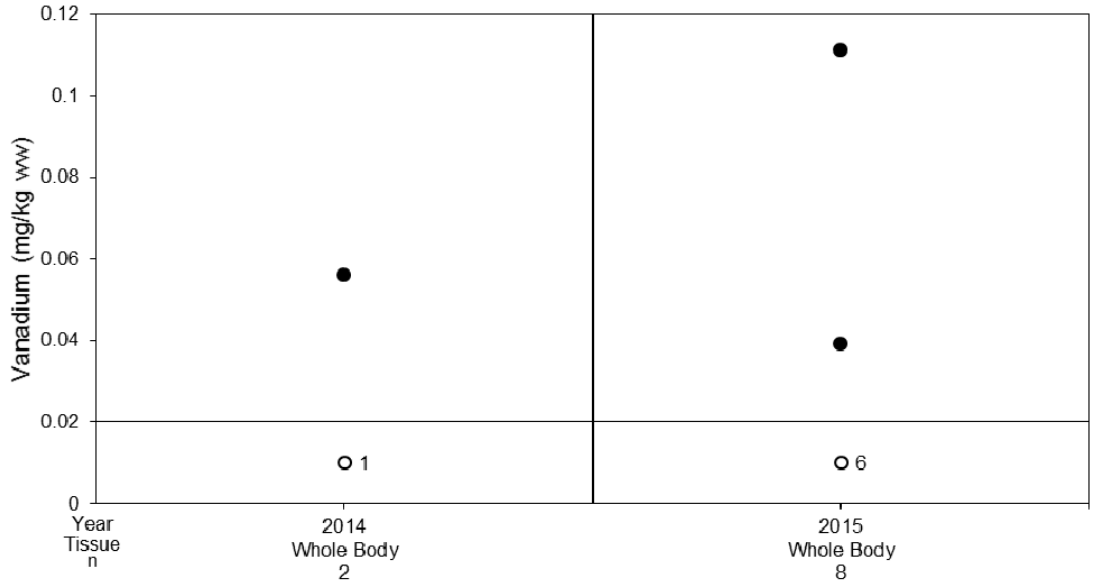
Figure 358: Vanadium Concentrations in Redside Shiner Tissue Collected in 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 359: Vanadium Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015

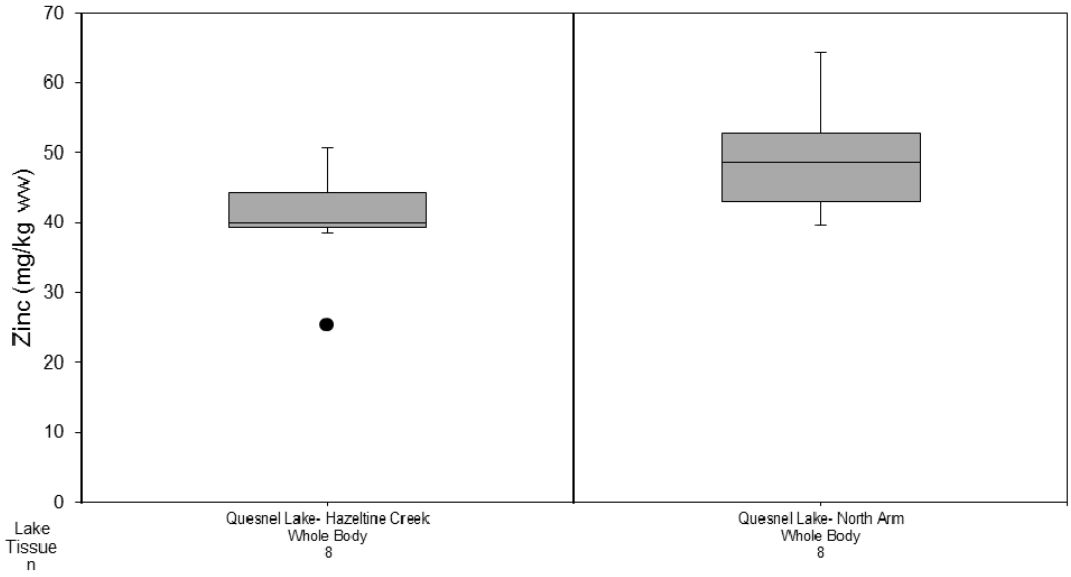


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

8.19 Zinc

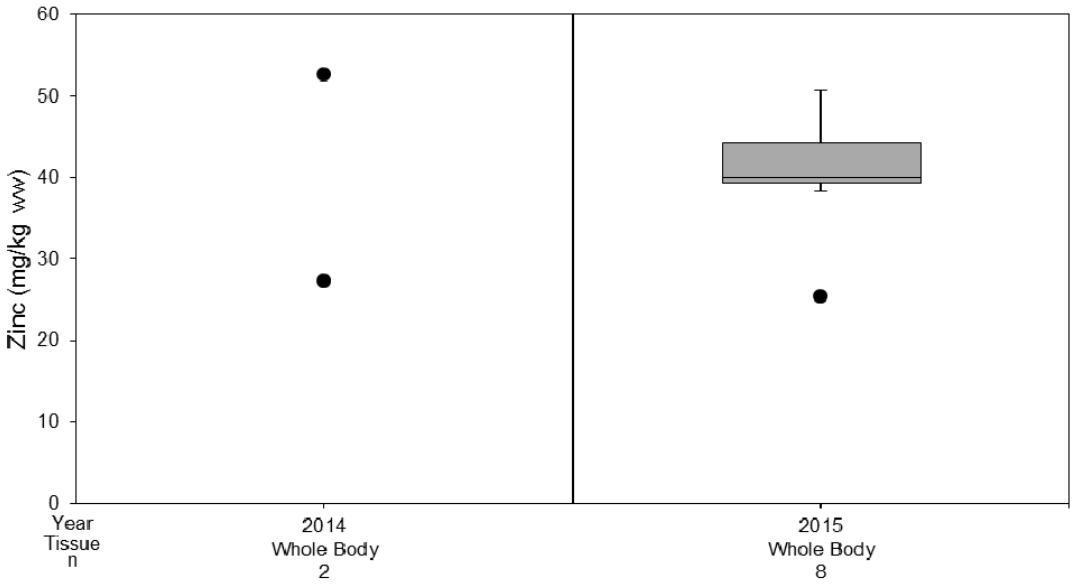
Figure 360: Zinc Concentrations in Redside Shiner Tissue Collected in 2015



\ Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 361: Zinc Concentrations in Redside Shiner Tissue Collected from the Quesnel Lake – Hazeltine Creek Confluence in 2014 and 2015



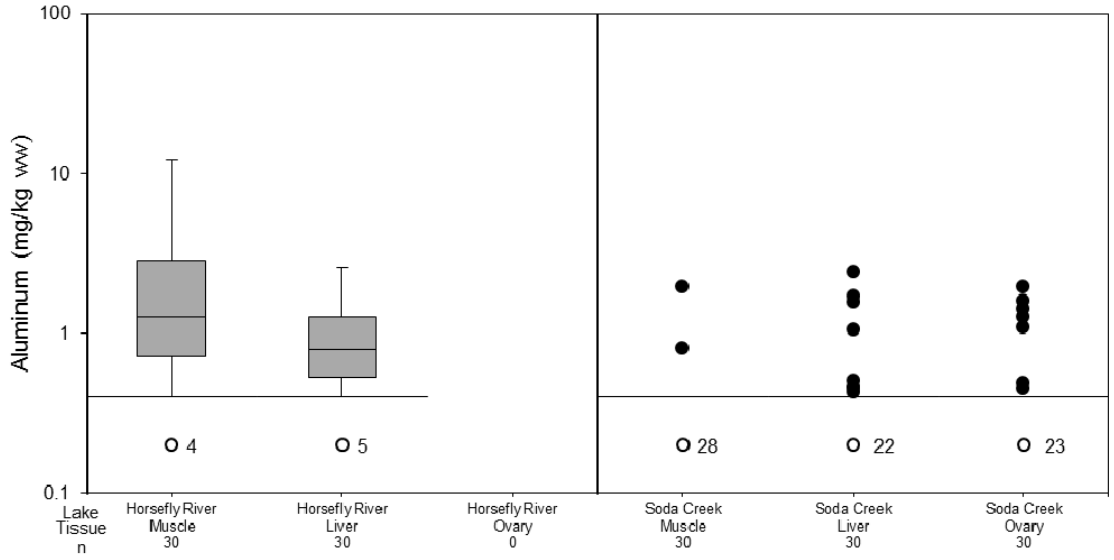
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

9.0 SOCKEYE SALMON ADULTS

9.1 Aluminum

Figure 362: Aluminum Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

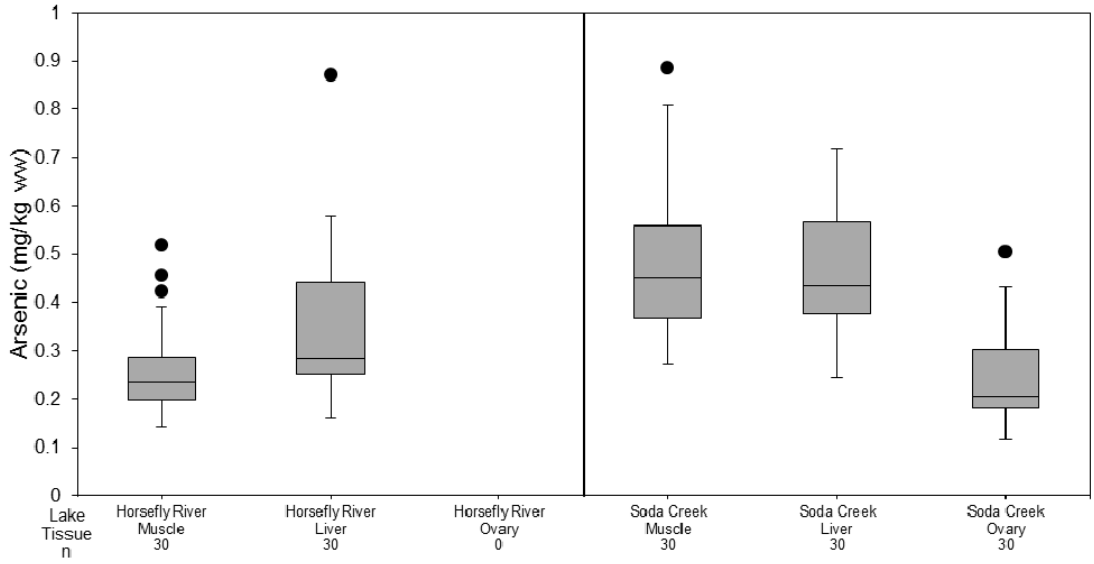


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.2 Arsenic

Figure 363: Arsenic Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

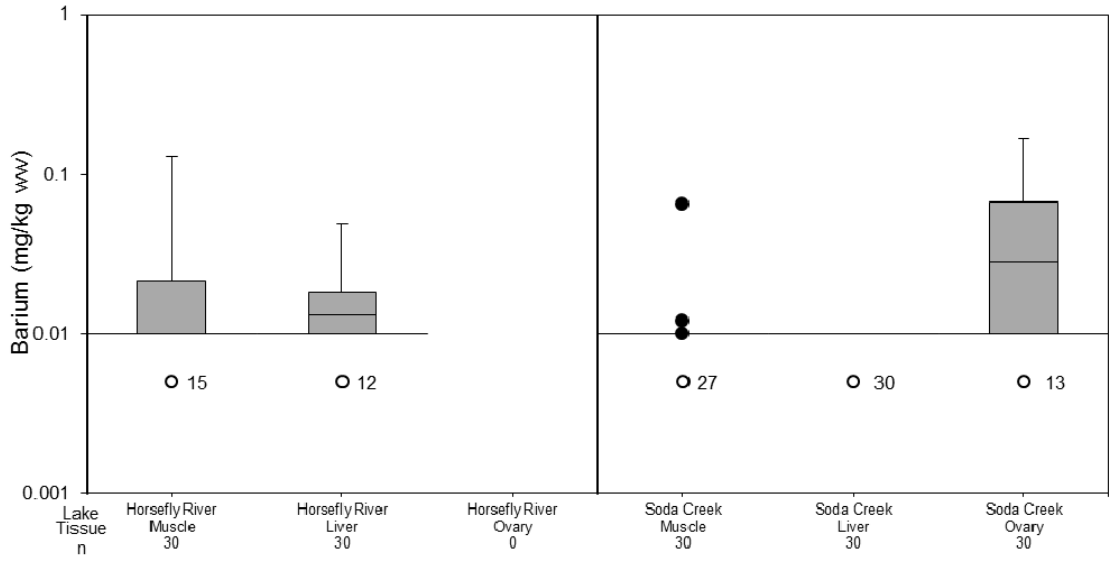


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

9.3 Barium

Figure 364: Barium Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

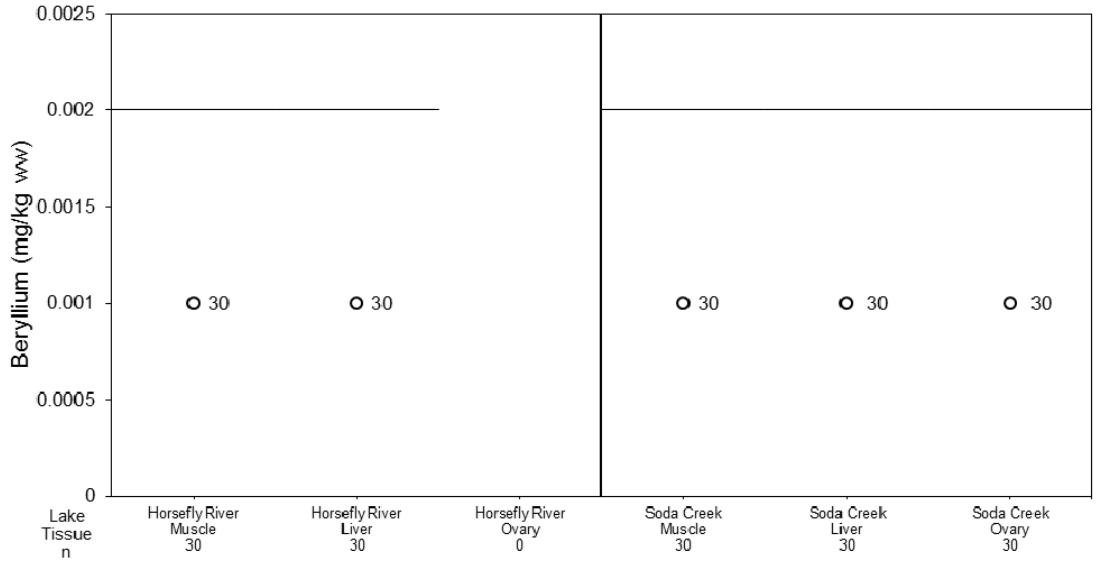


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.4 Beryllium

Figure 365: Beryllium Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

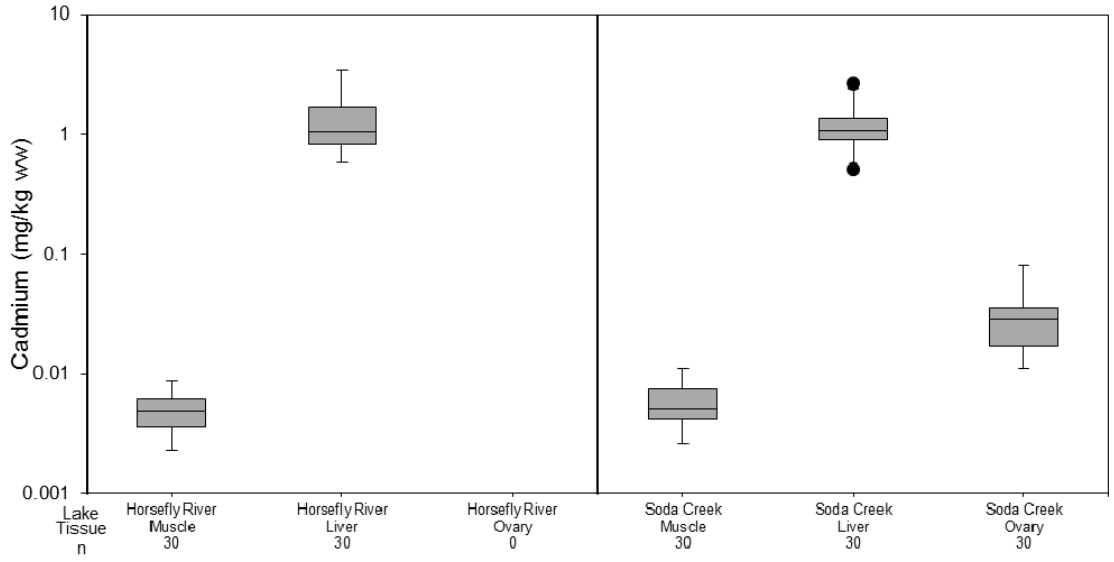


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

9.5 Cadmium

Figure 366: Cadmium Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

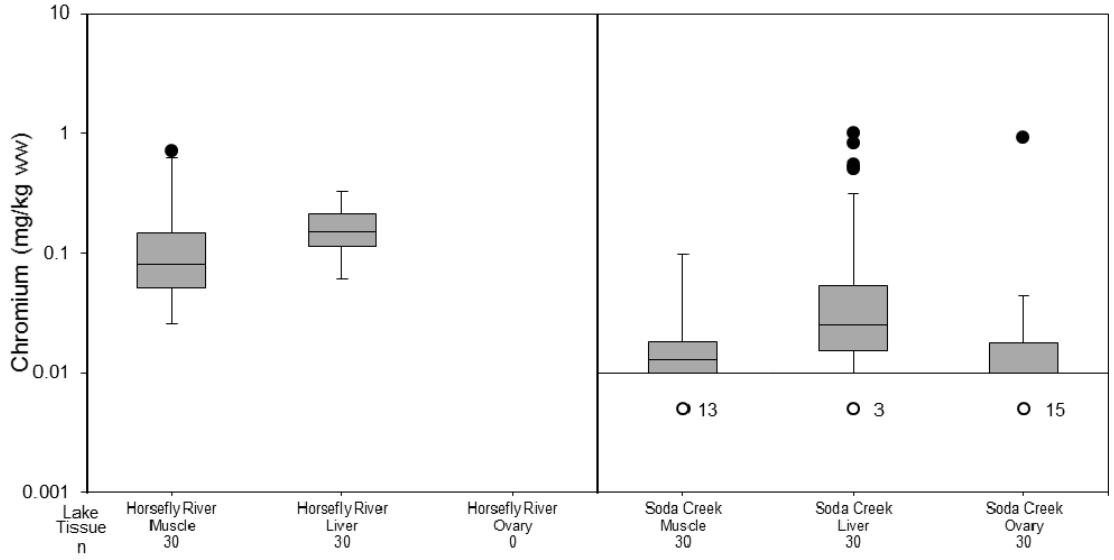


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.6 Chromium

Figure 367: Chromium Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

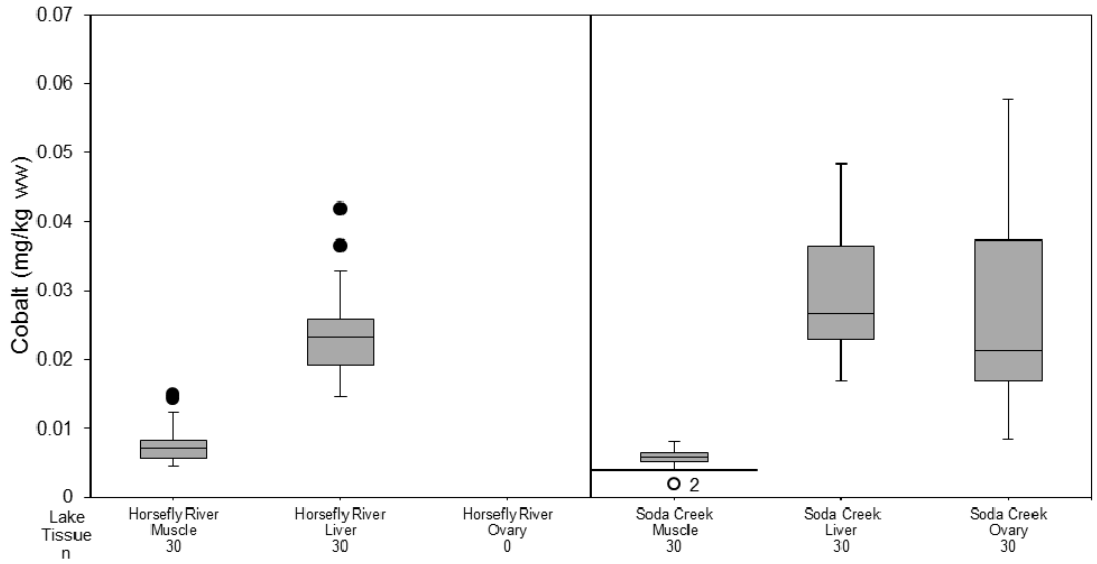


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.7 Cobalt

Figure 368: Cobalt Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

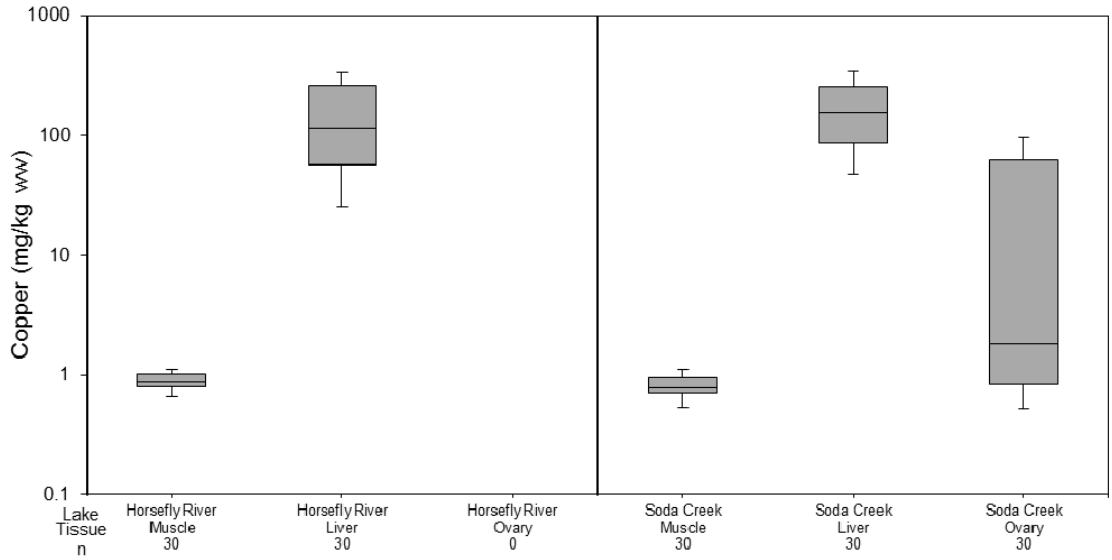


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

9.8 Copper

Figure 369: Copper Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

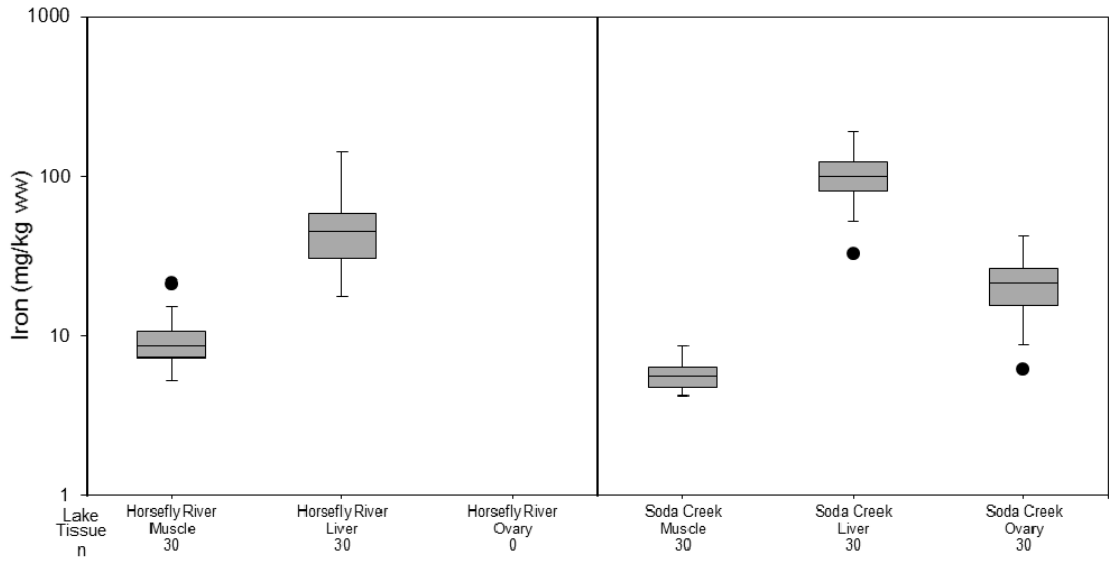


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.9 Iron

Figure 370: Iron Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

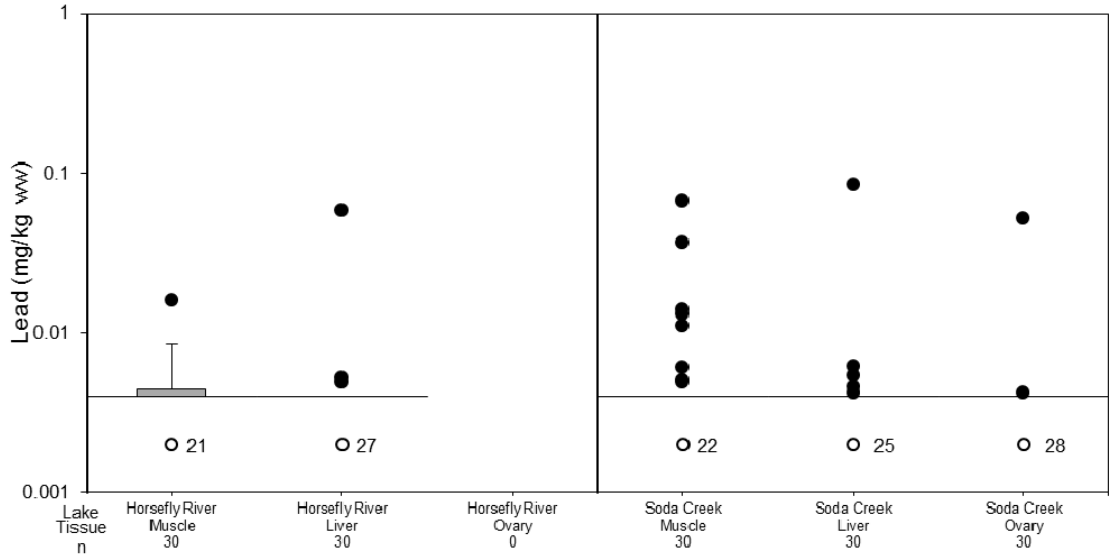


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.10 Lead

Figure 371: Lead Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

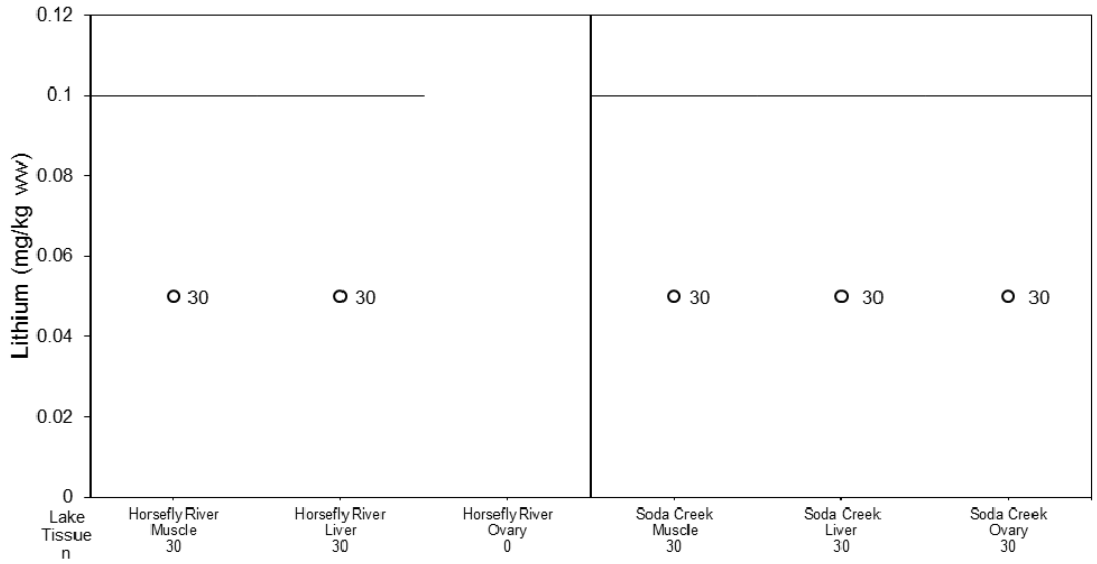


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.11 Lithium

Figure 372: Lithium Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

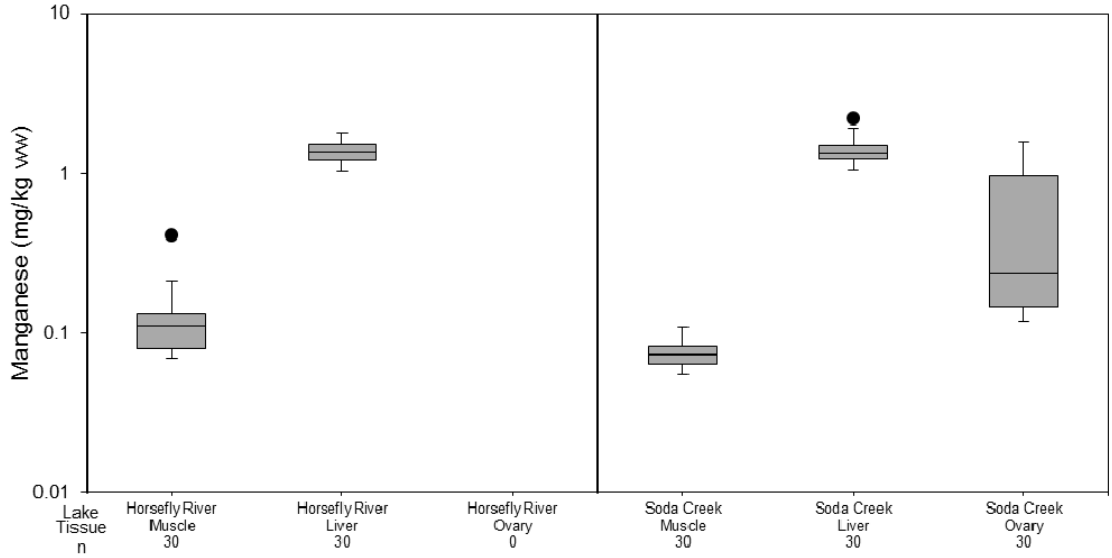


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

9.12 Manganese

Figure 373: Manganese Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

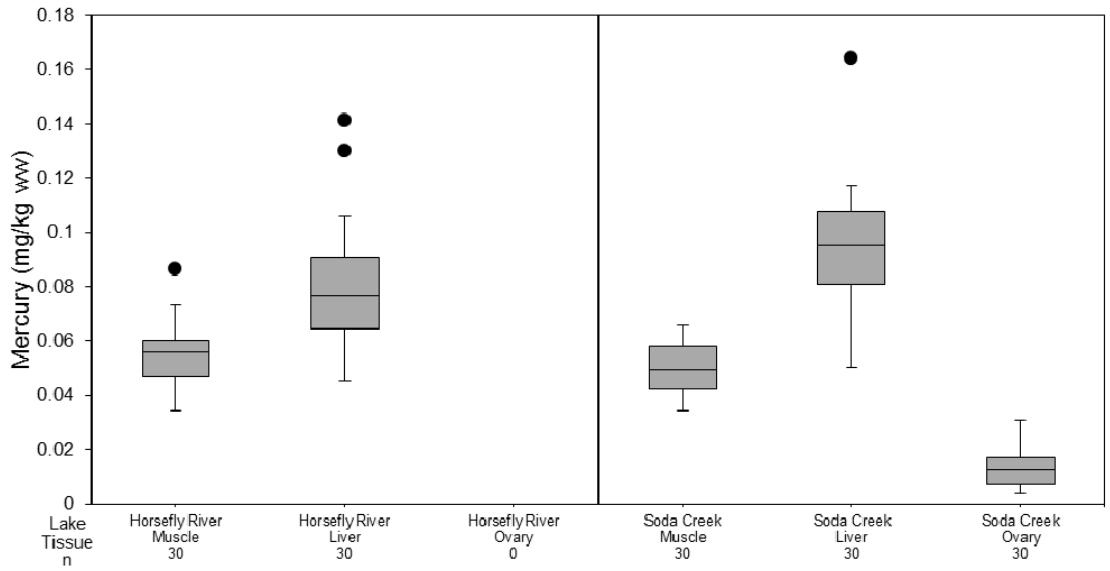


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.13 Mercury

Figure 374: Mercury Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

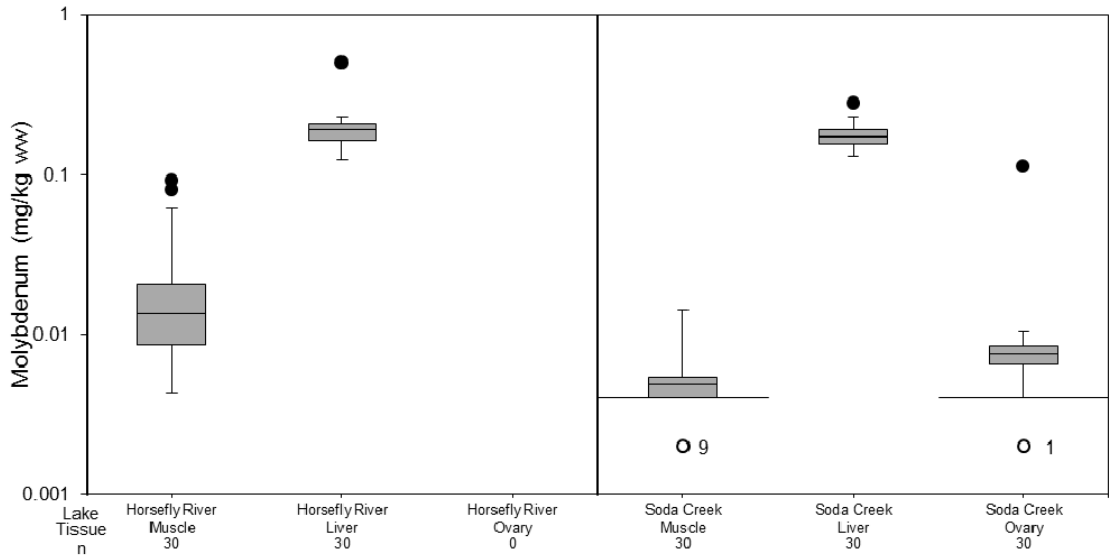


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

9.14 Molybdenum

Figure 375: Molybdenum Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

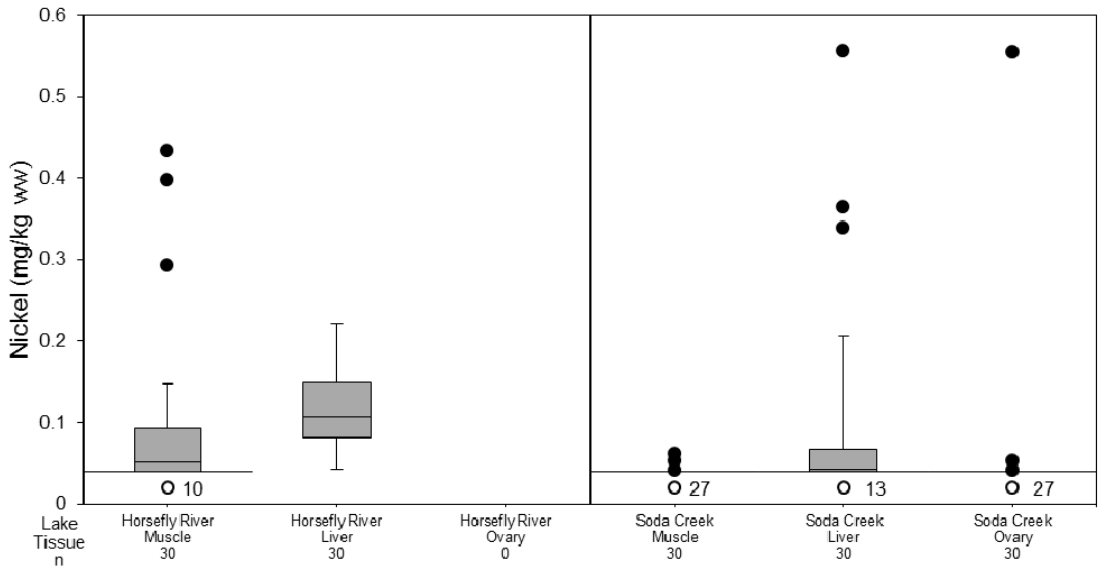


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.15 Nickel

Figure 376: Nickel Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

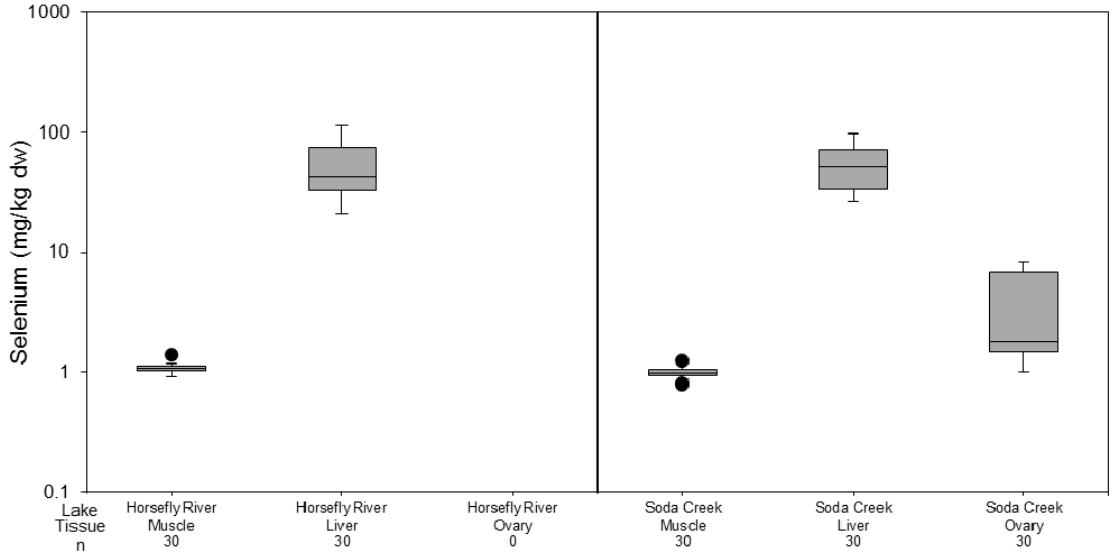


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

9.16 Selenium

Figure 377: Selenium Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

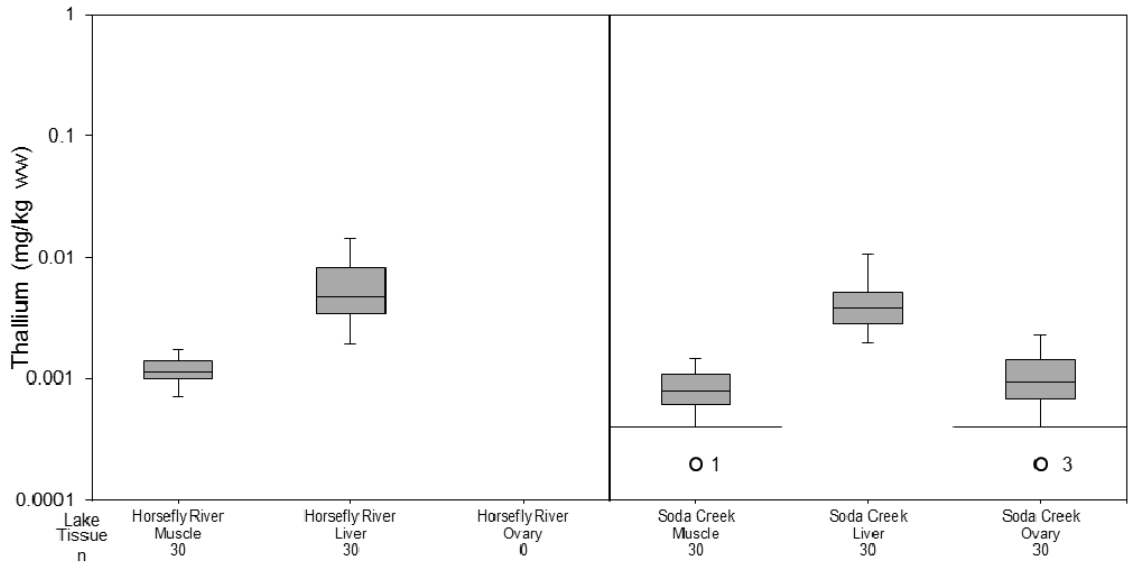


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.17 Thallium

Figure 378: Thallium Concentrations in Sockeye Salmon Adult Tissues Collected in 2014



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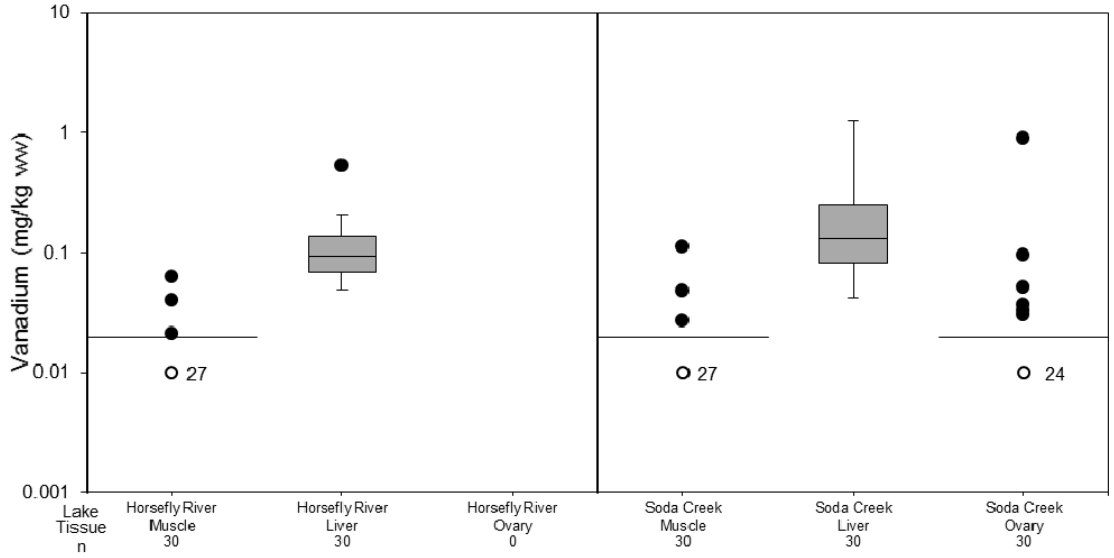
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.18 Vanadium

Figure 379: Vanadium Concentrations in Sockeye Salmon Adult Tissues Collected in 2014

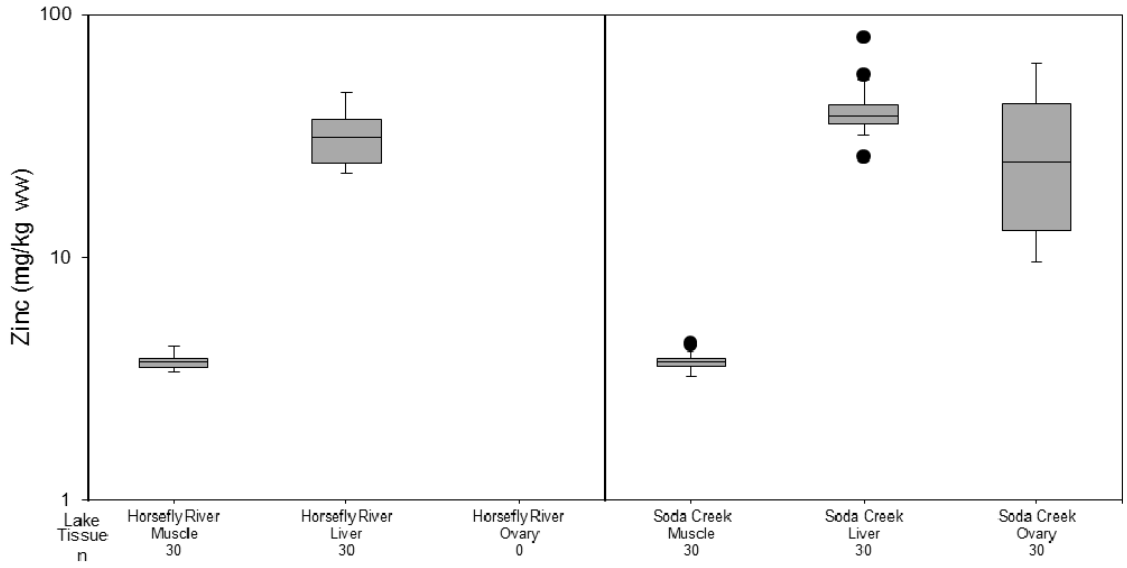


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

9.19 Zinc

Figure 380: Zinc Concentrations in Sockeye Salmon Adult Tissues Collected in 2014



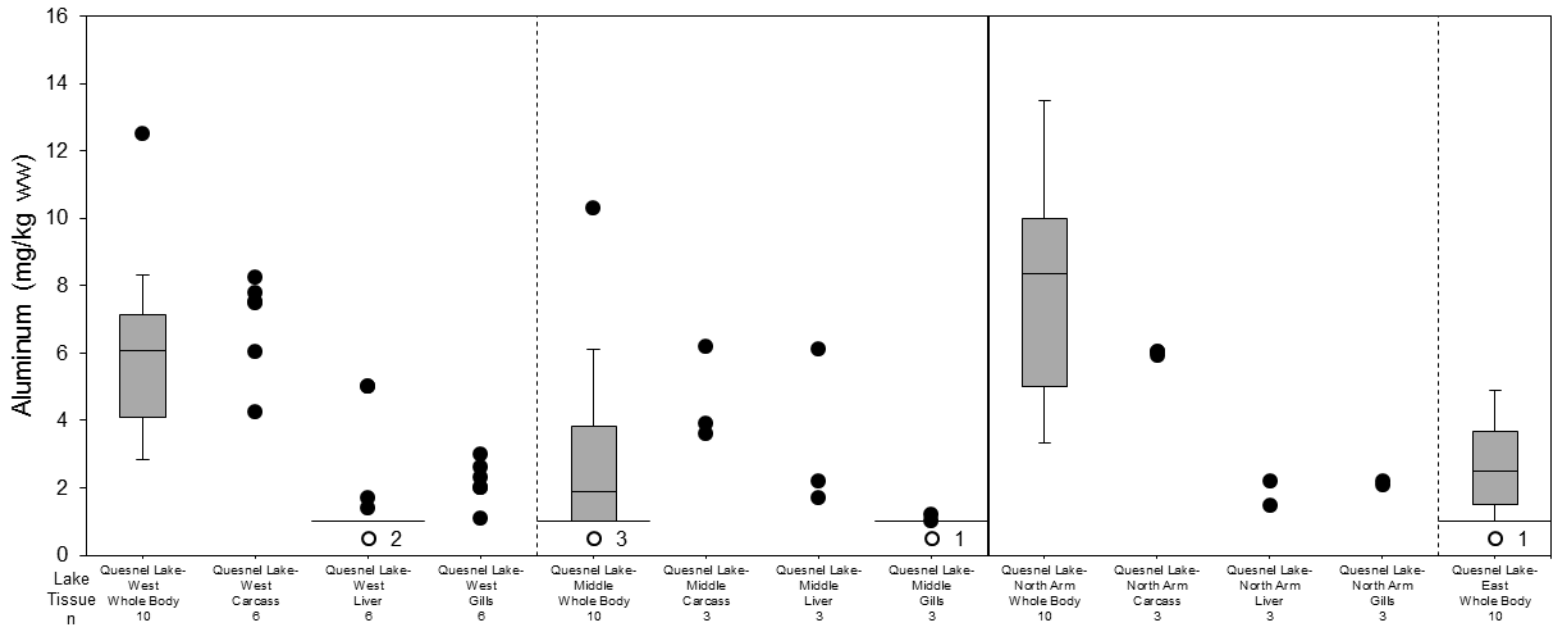
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values.

mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

10.0 SOCKEYE SALMON JUVENILES

10.1 Aluminum

Figure 381: Aluminum Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014

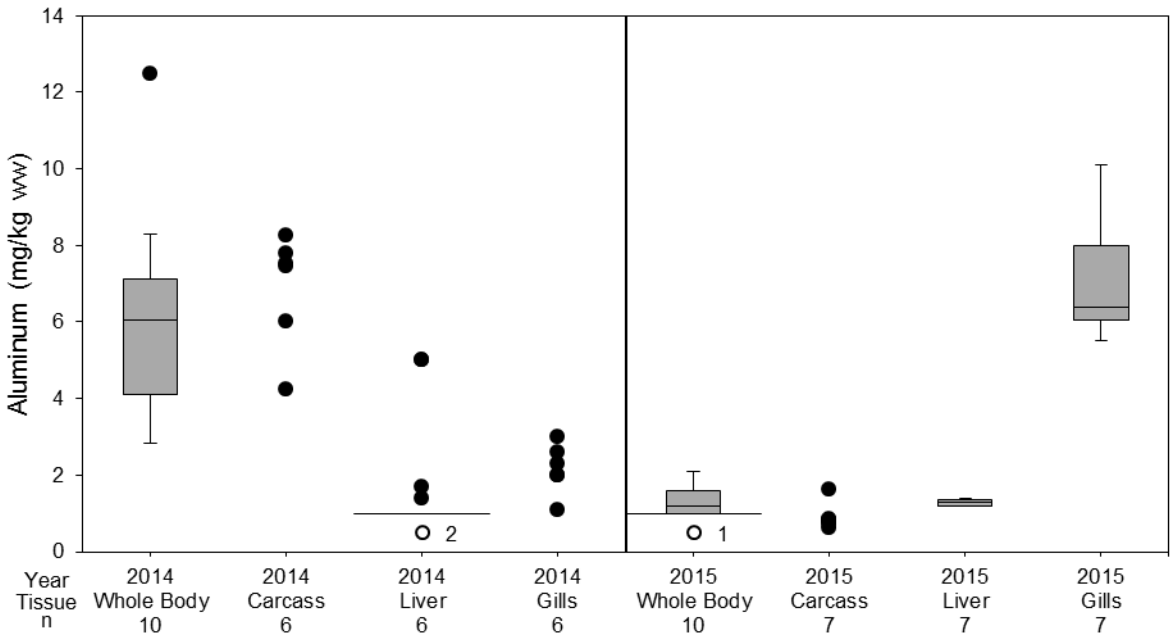


Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 382: Aluminum Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015

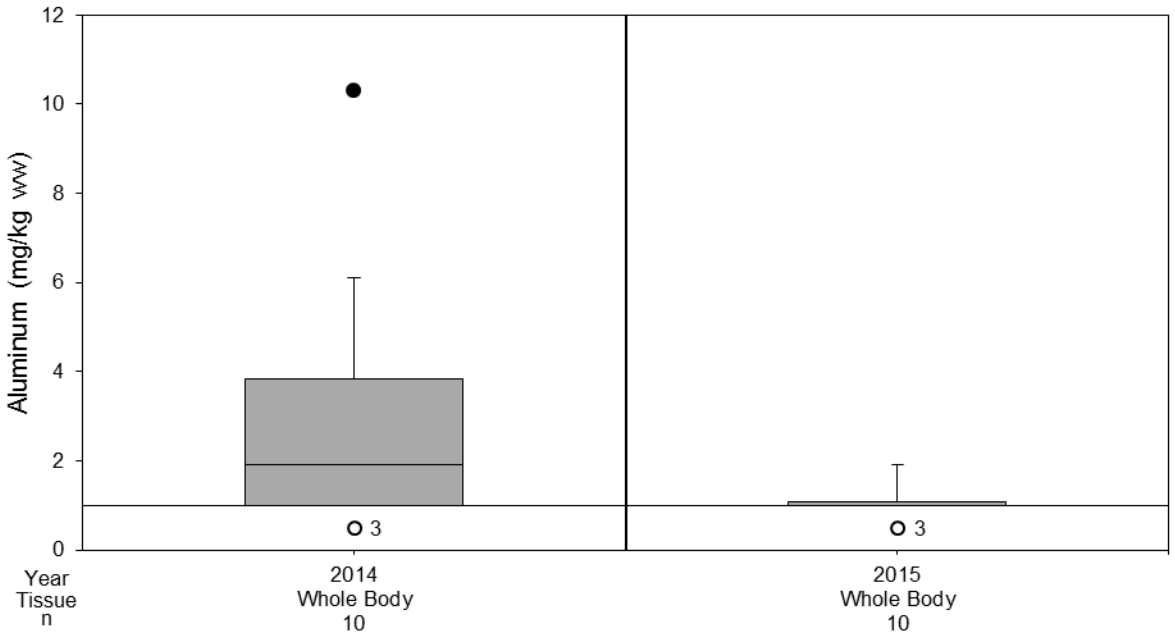
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 383: Aluminum Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

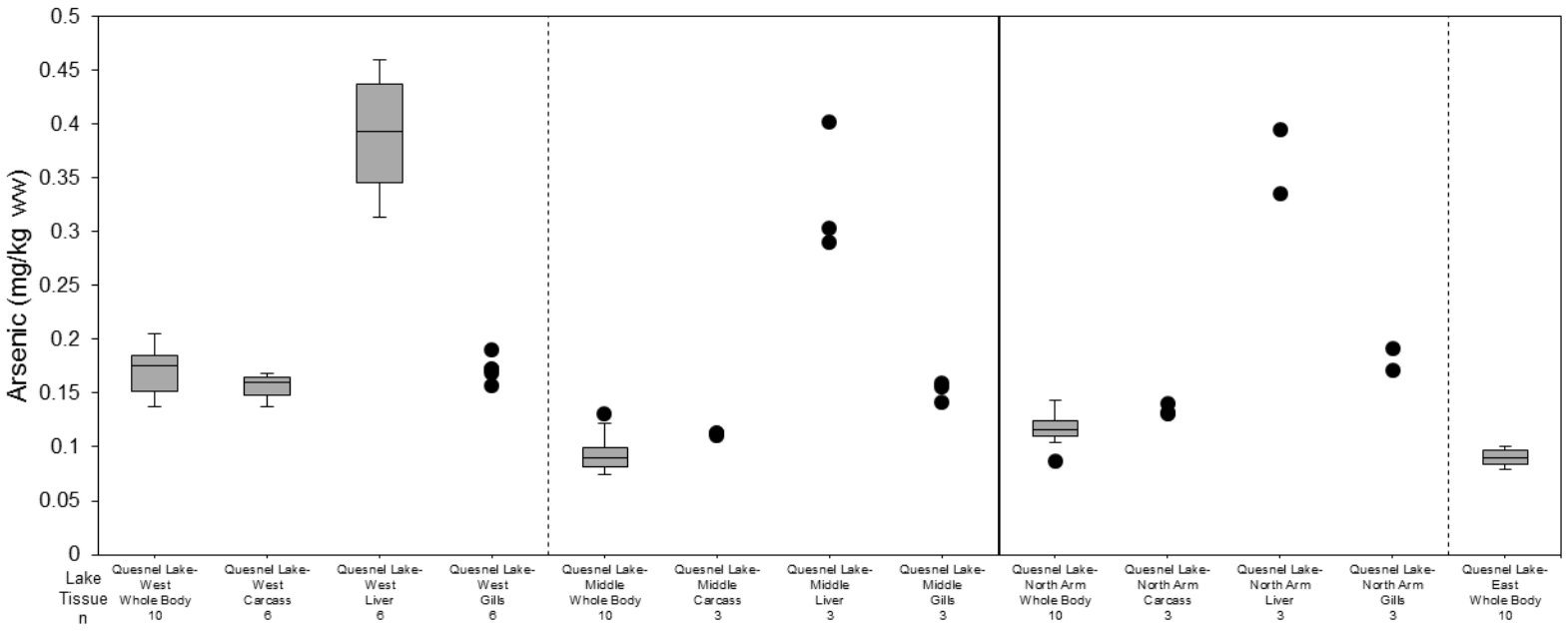
Figure 384: Aluminum Concentrations in Sockeye Salmon Juvenile Tissue Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

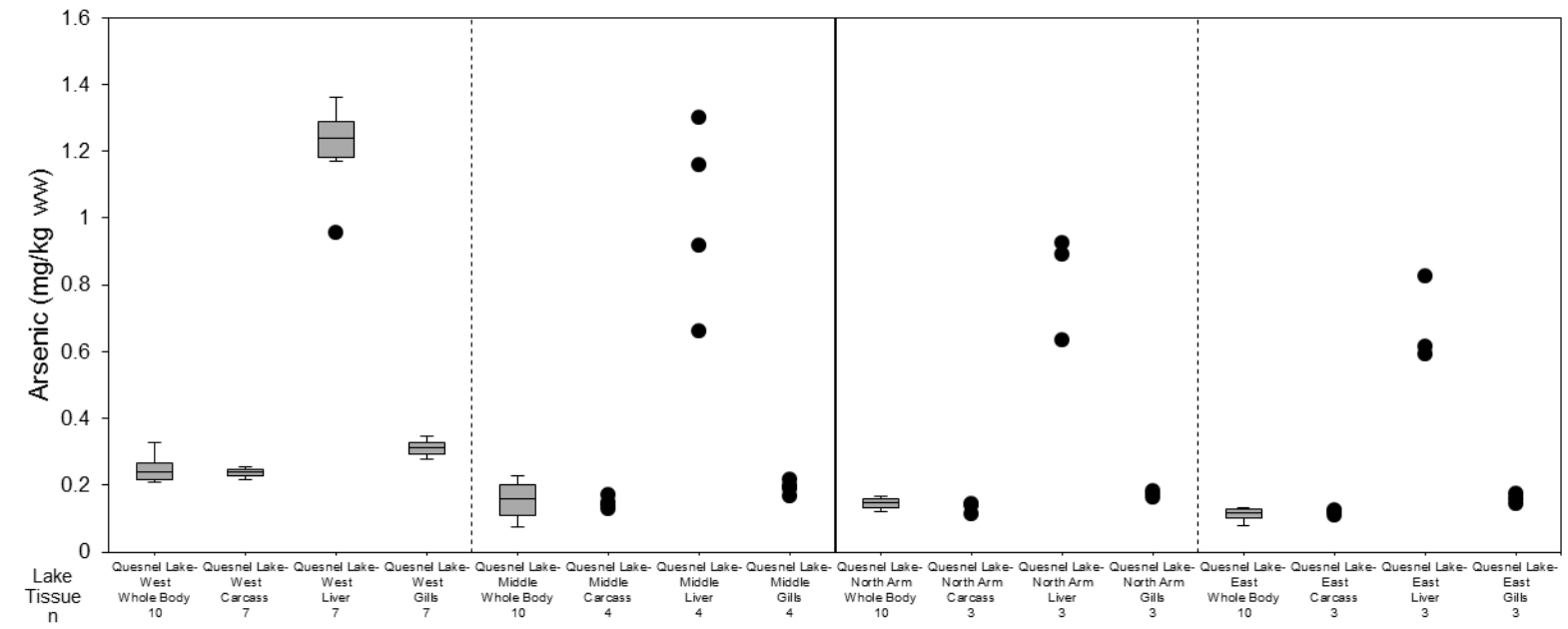
10.2 Arsenic

Figure 385: Arsenic Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



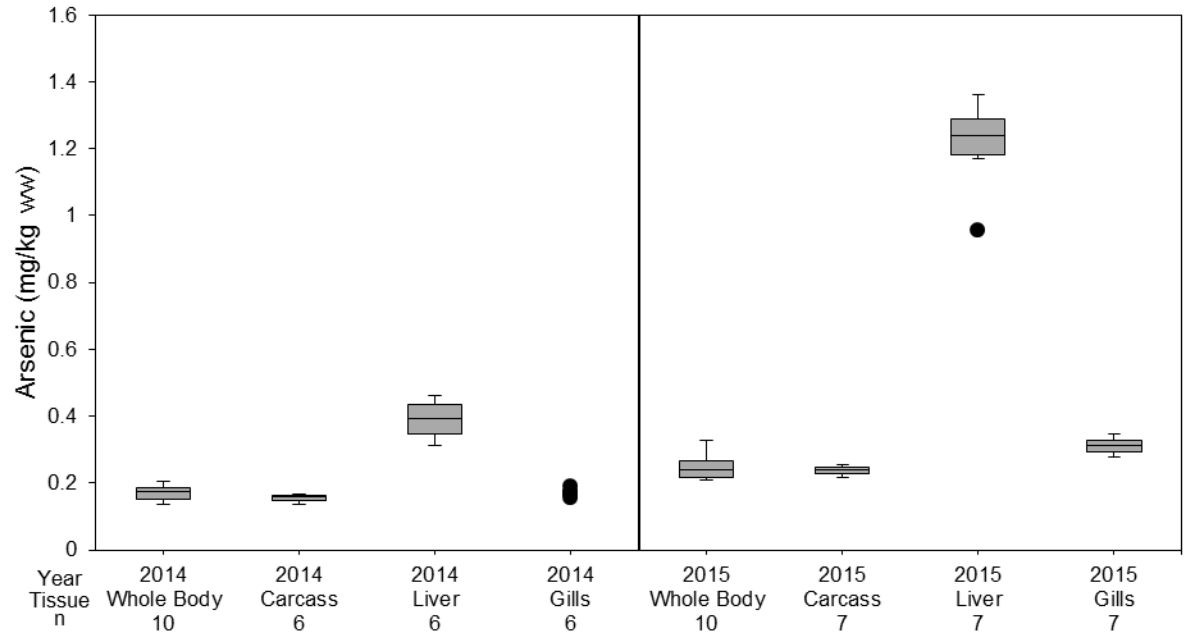
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years

Figure 386: Arsenic Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



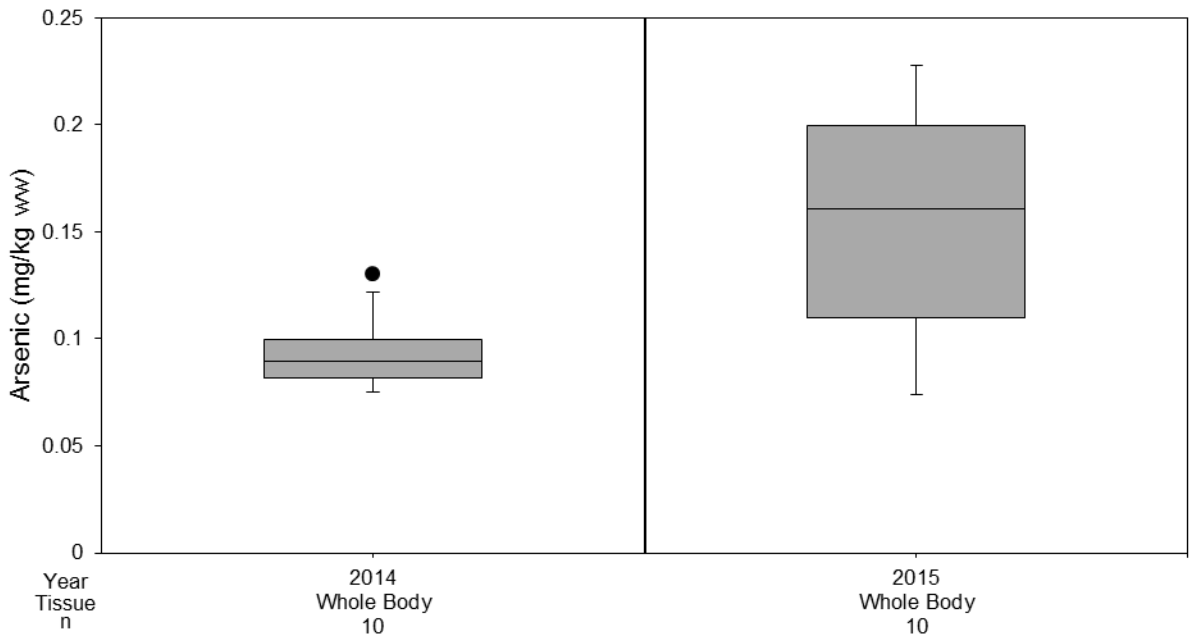
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 387: Arsenic Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

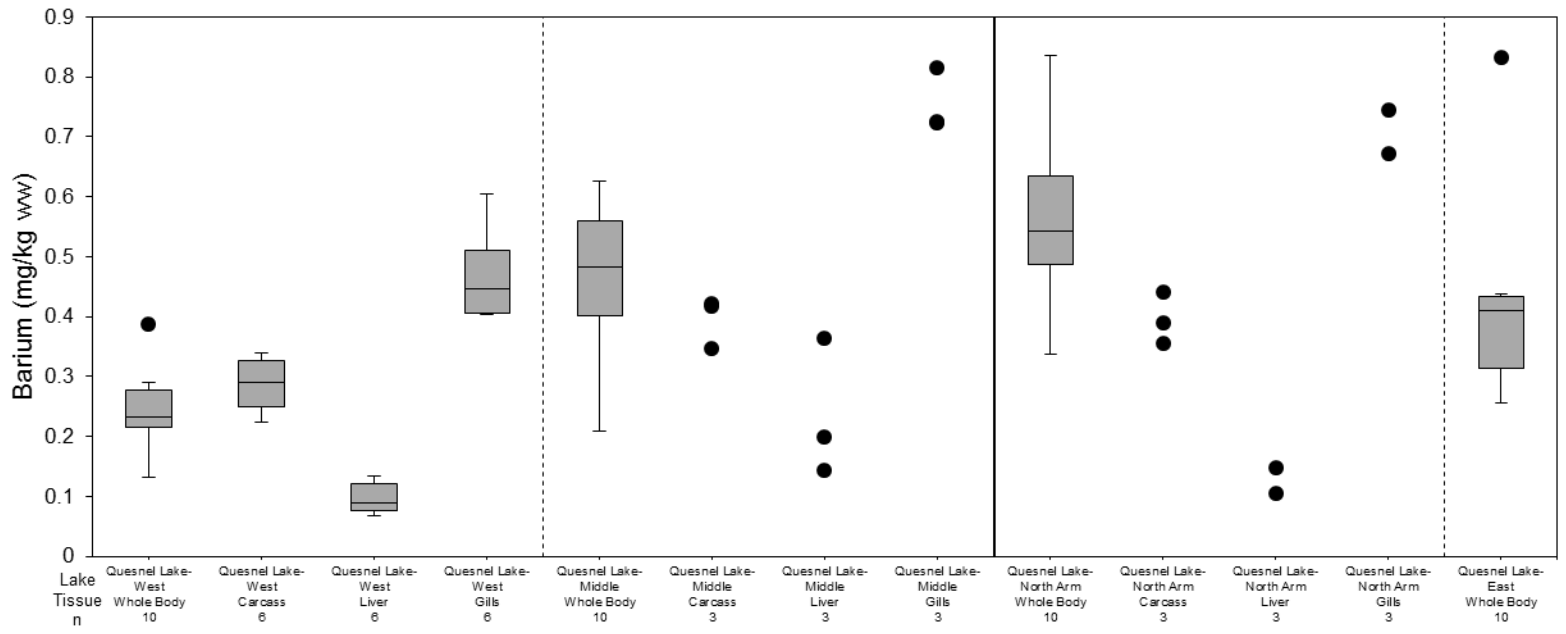
Figure 388: Arsenic Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

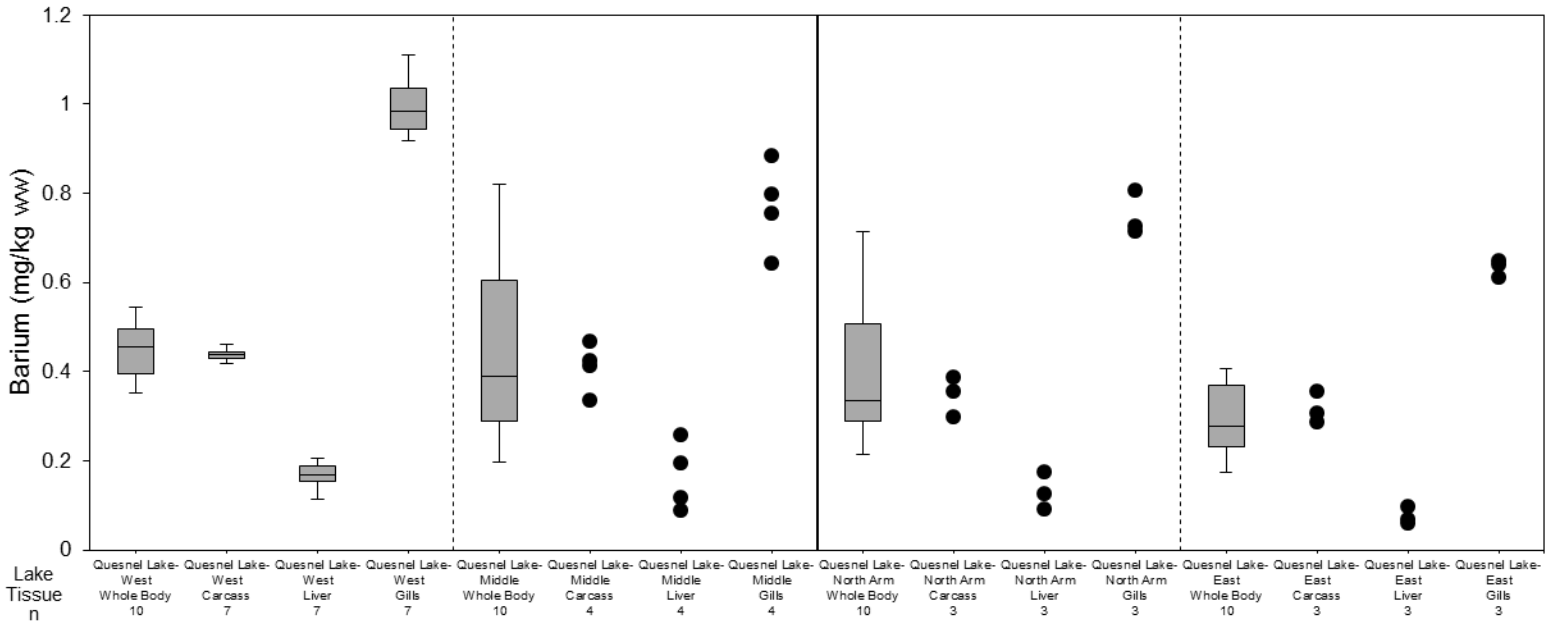
10.3 Barium

Figure 389: Barium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



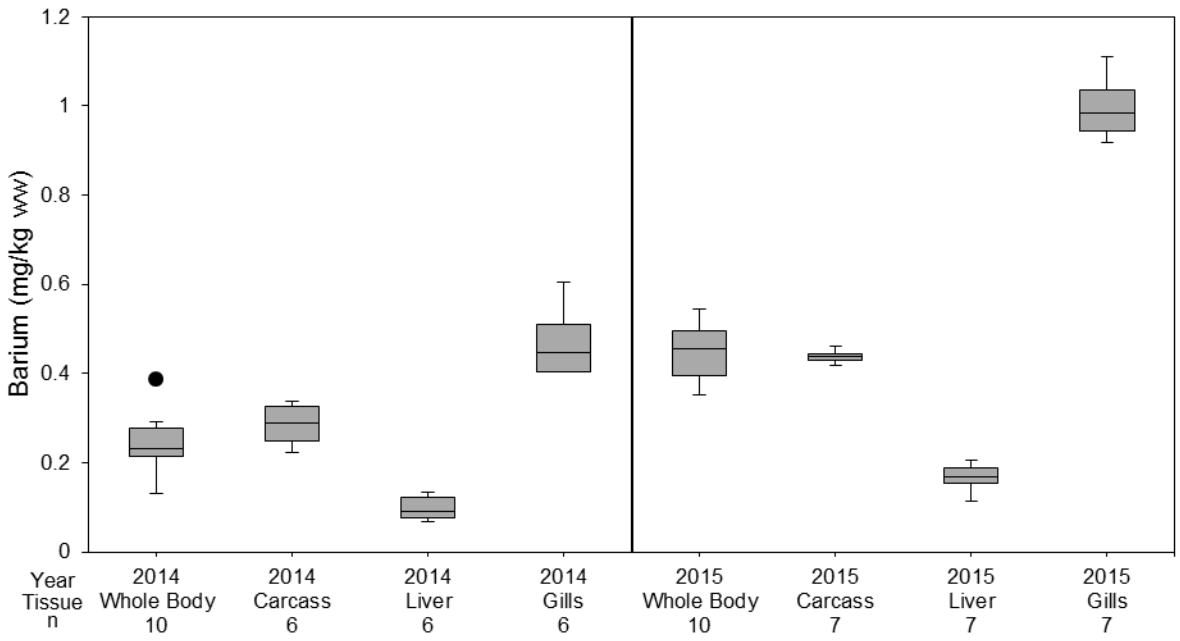
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 390: Barium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



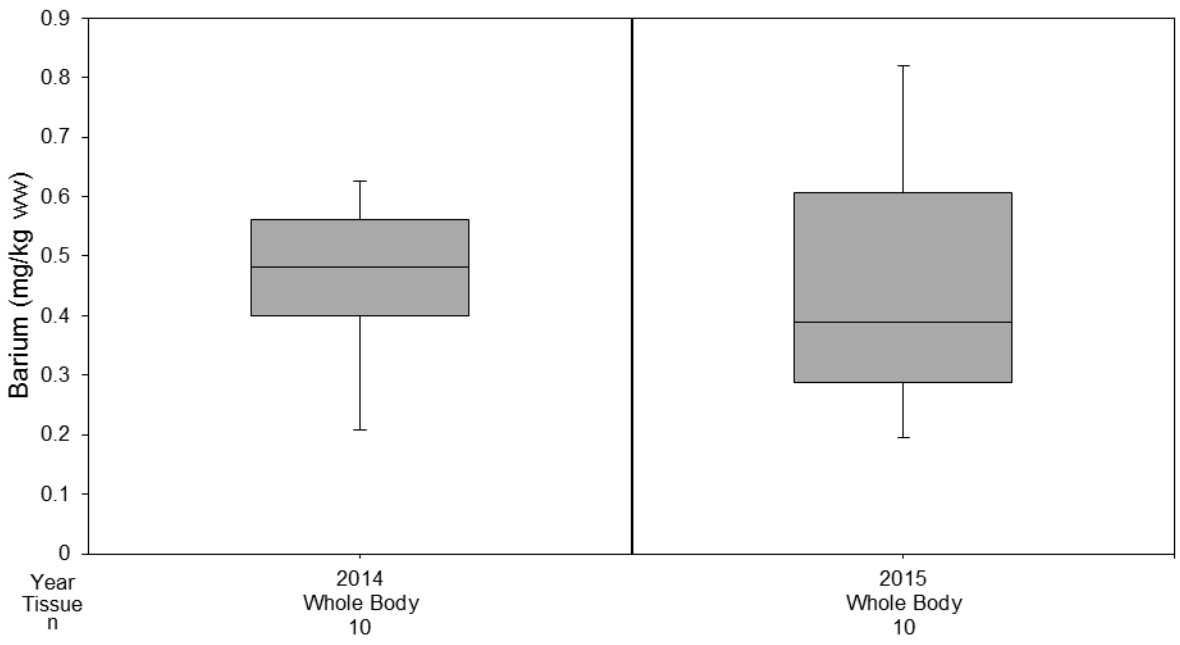
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years

Figure 391: Barium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

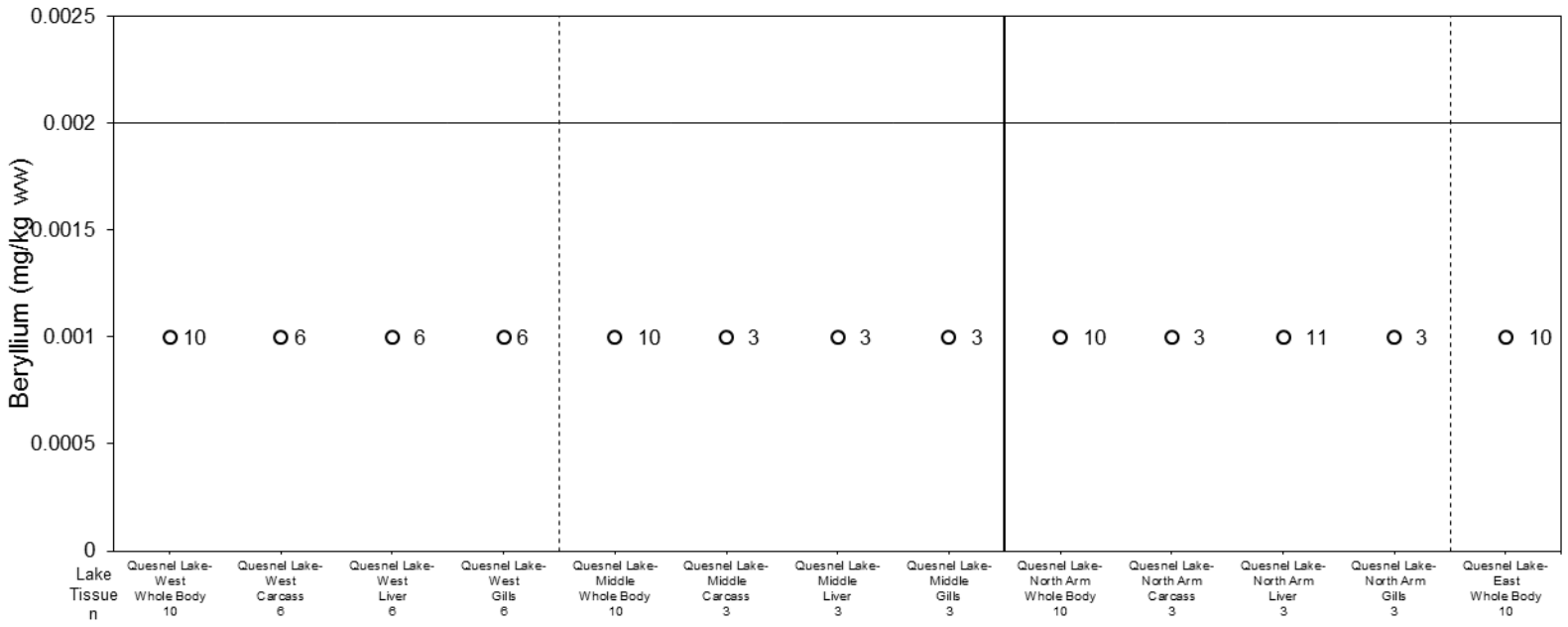
Figure 392: Barium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

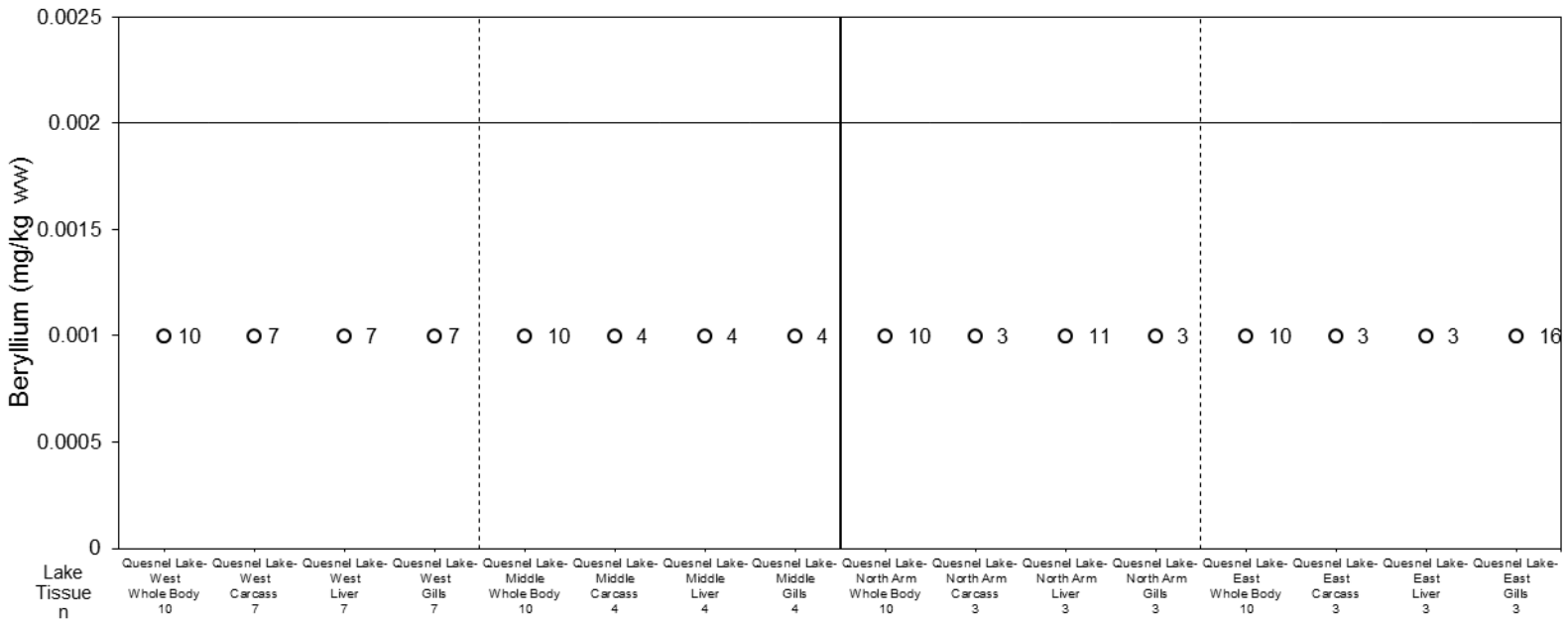
10.4 Beryllium

Figure 393: Beryllium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



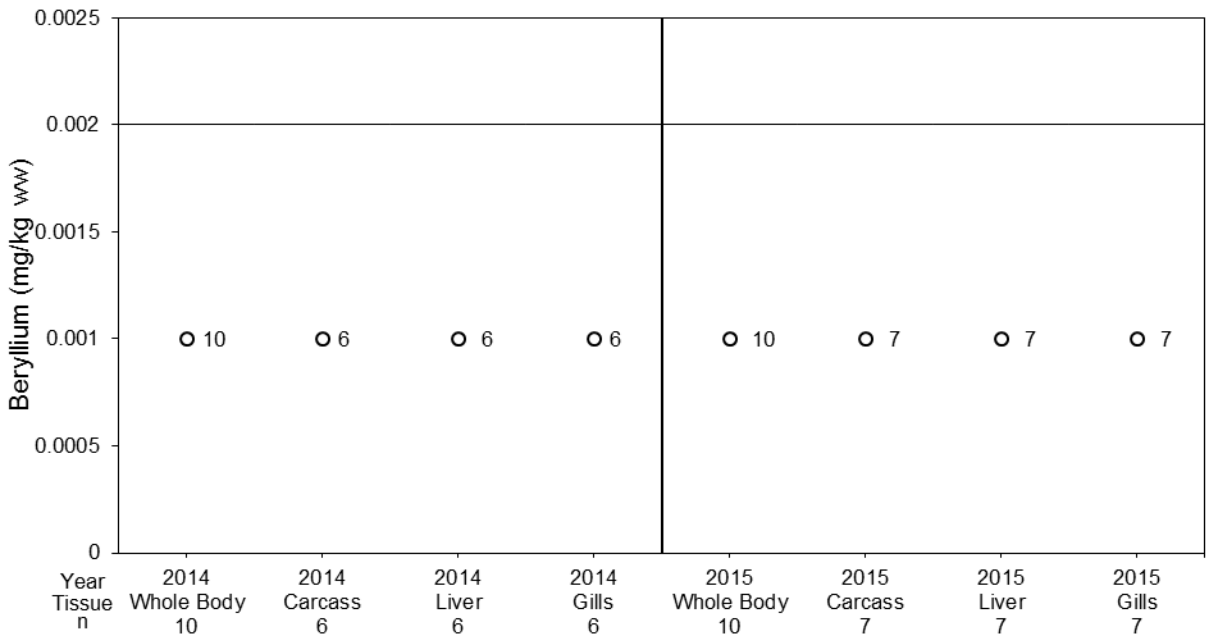
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 394: Beryllium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



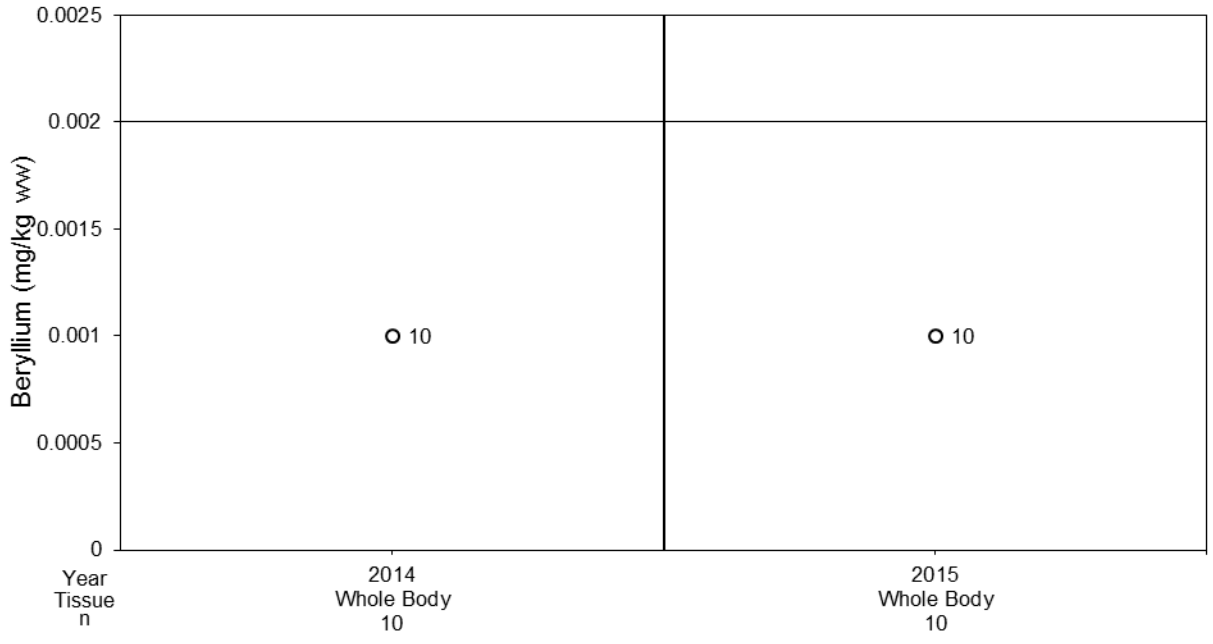
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 395: Beryllium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

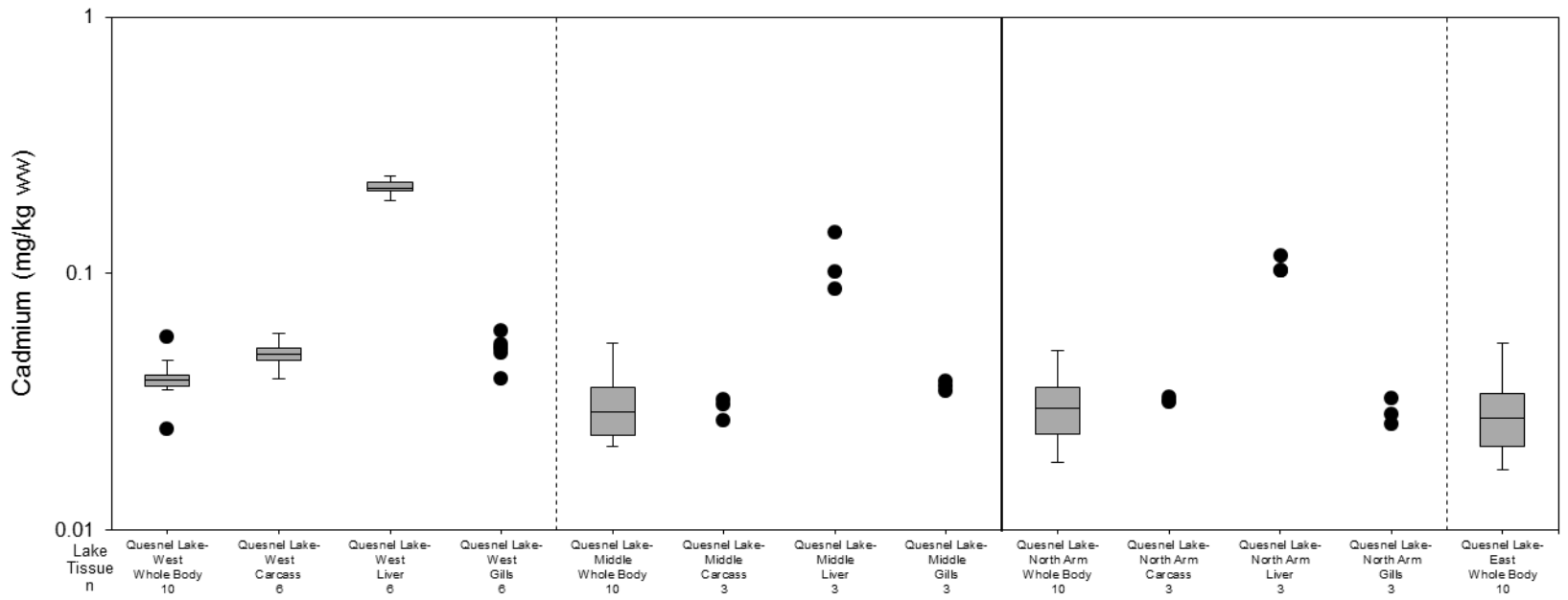
Figure 396: Beryllium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

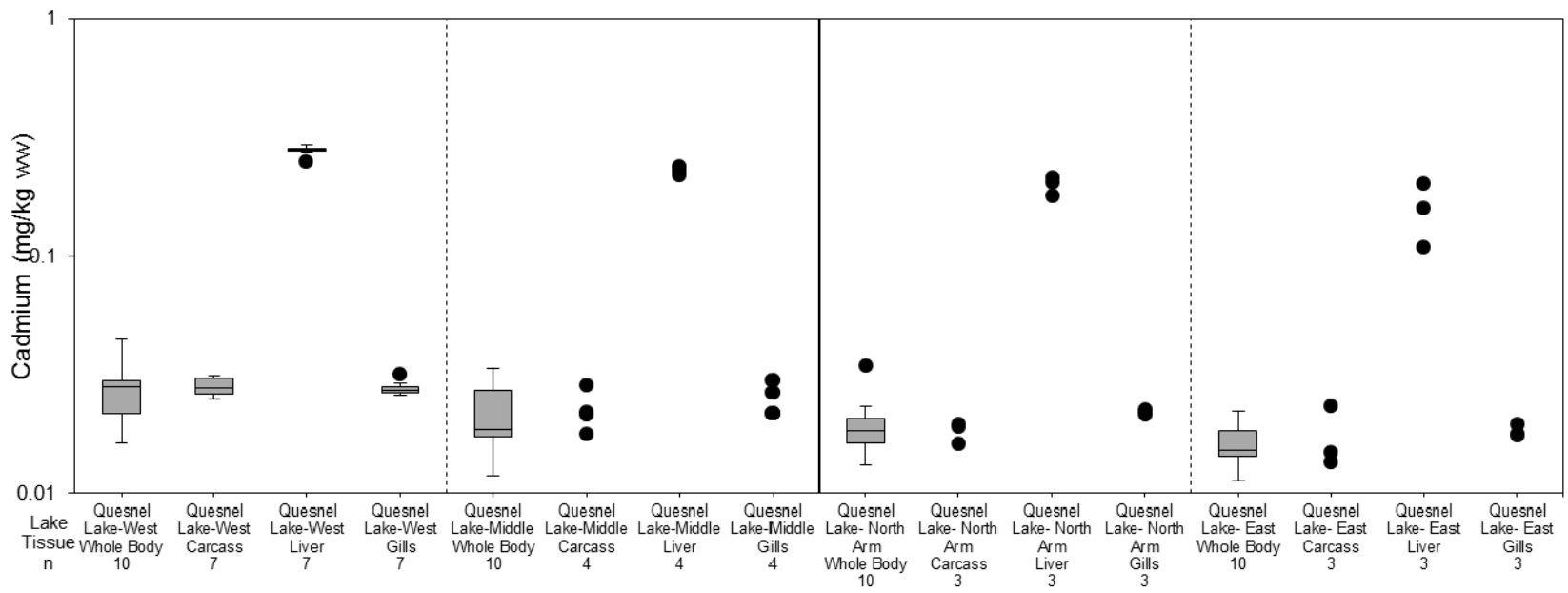
10.5 Cadmium

Figure 397: Cadmium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



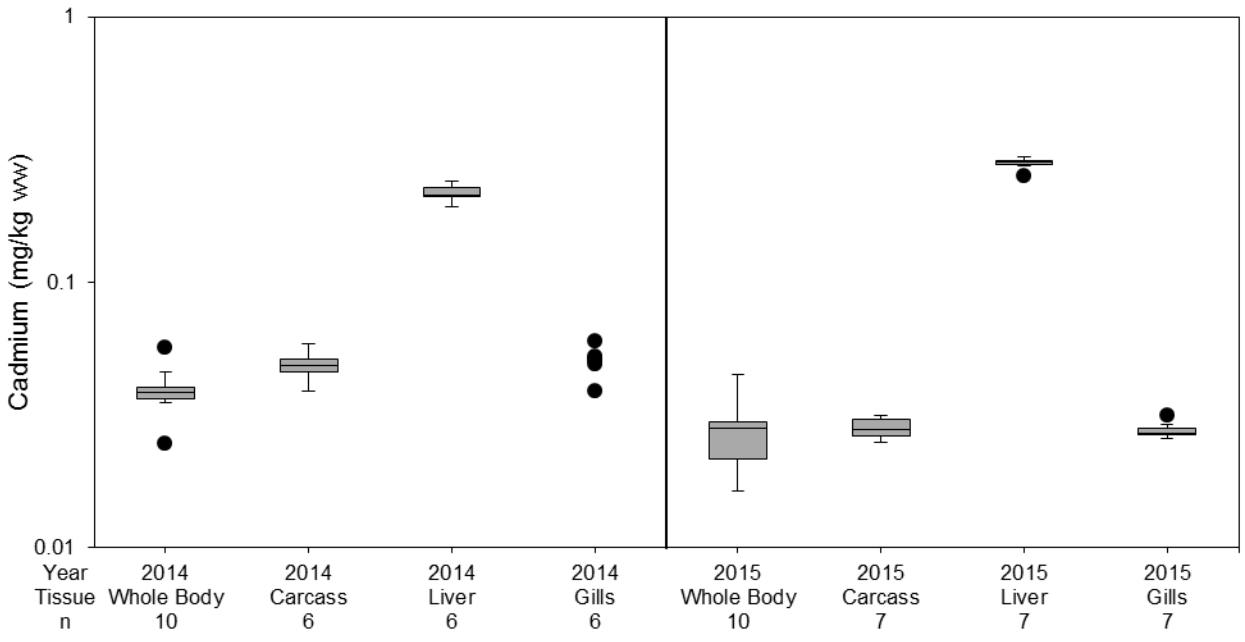
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 398: Cadmium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



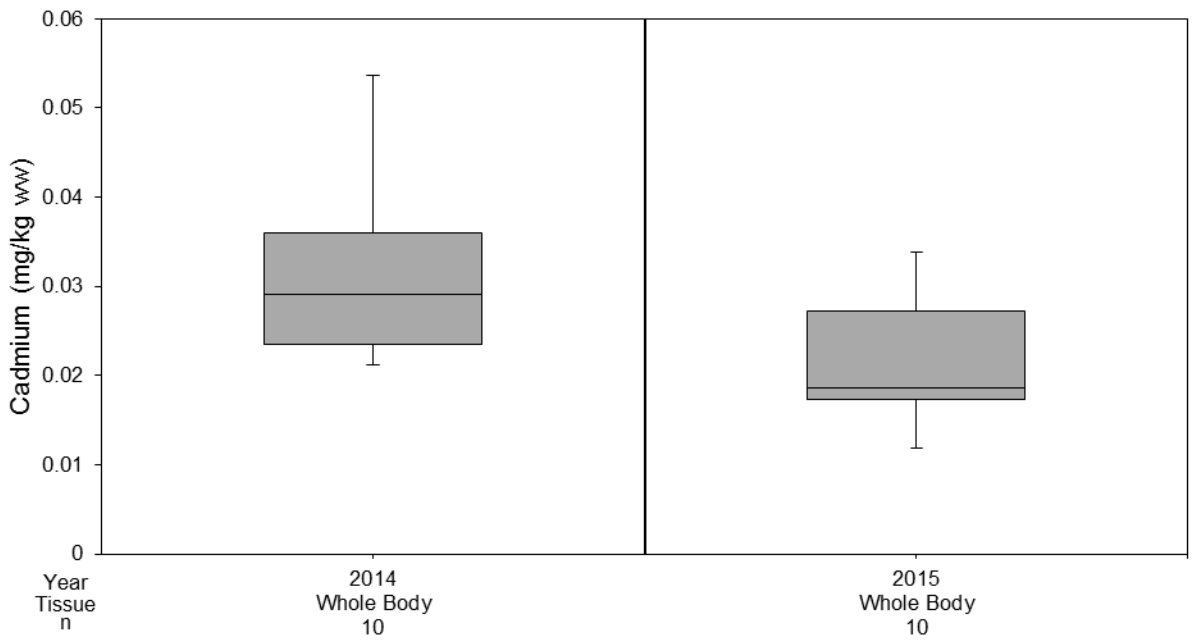
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 399: Cadmium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

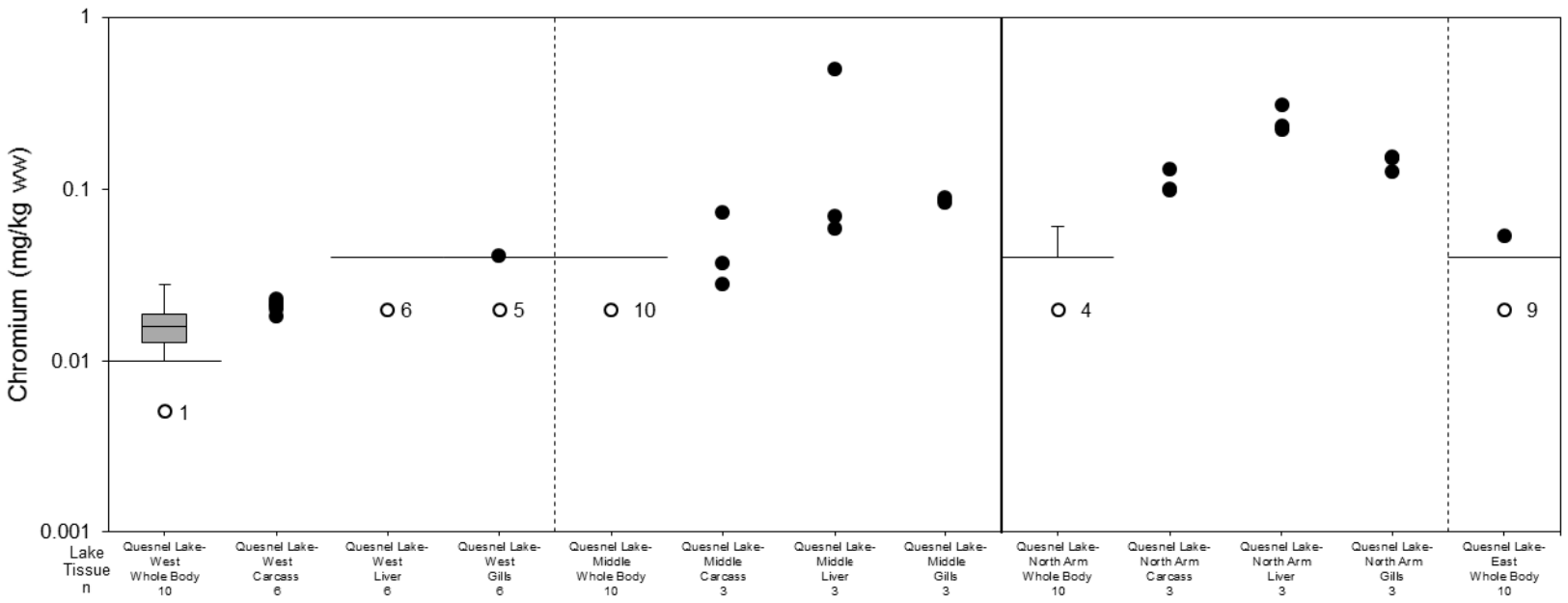
Figure 400: Cadmium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

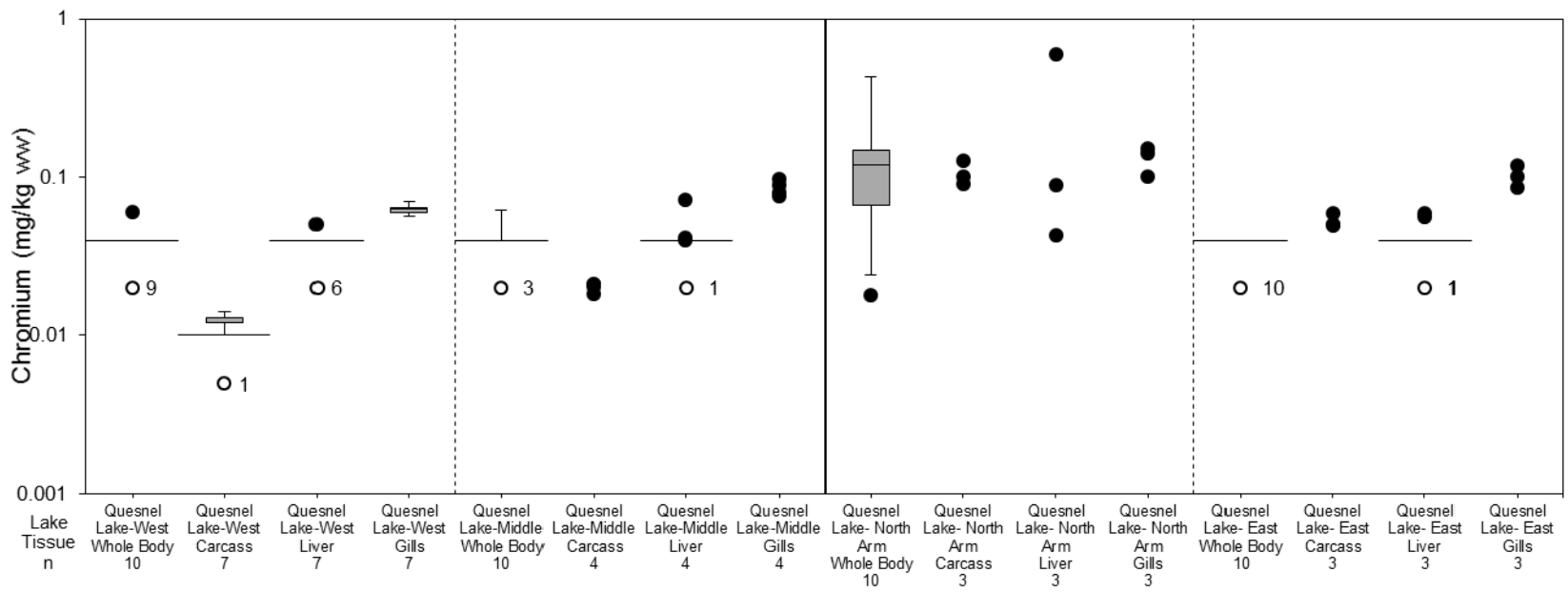
10.6 Chromium

Figure 401: Chromium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



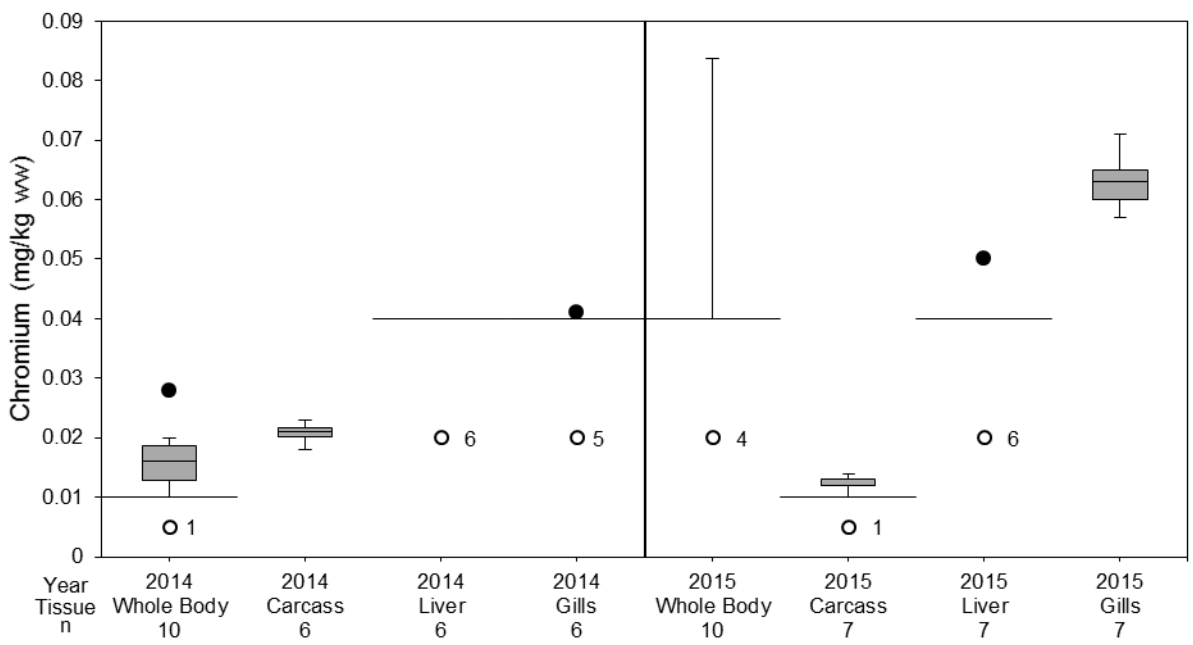
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 402: Chromium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



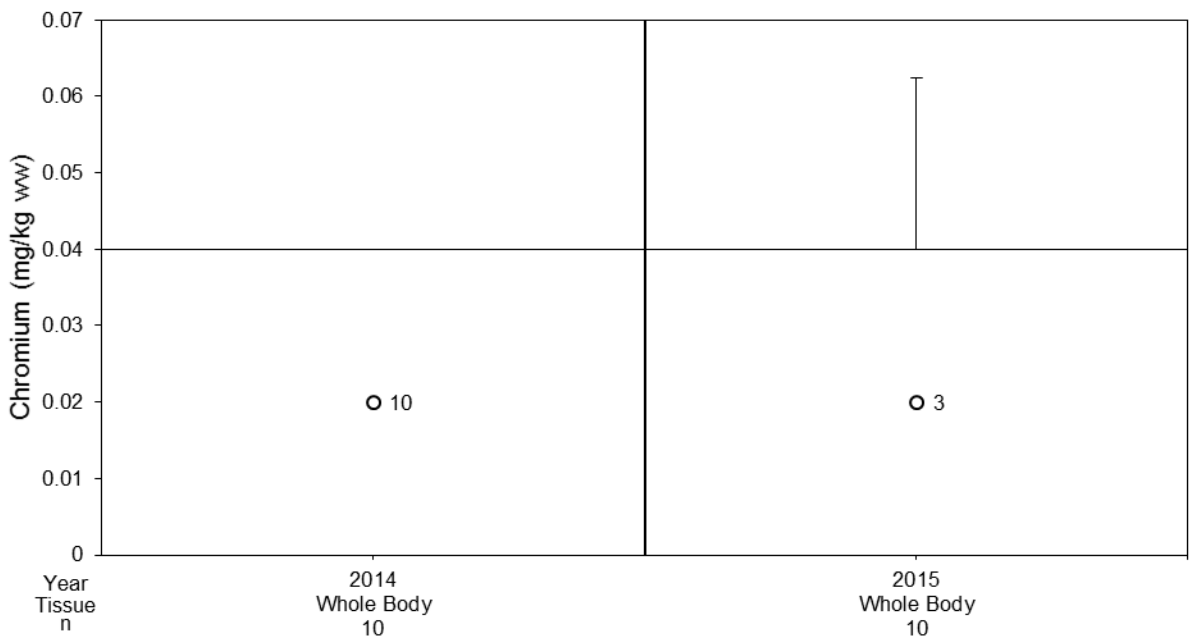
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 403: Chromium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

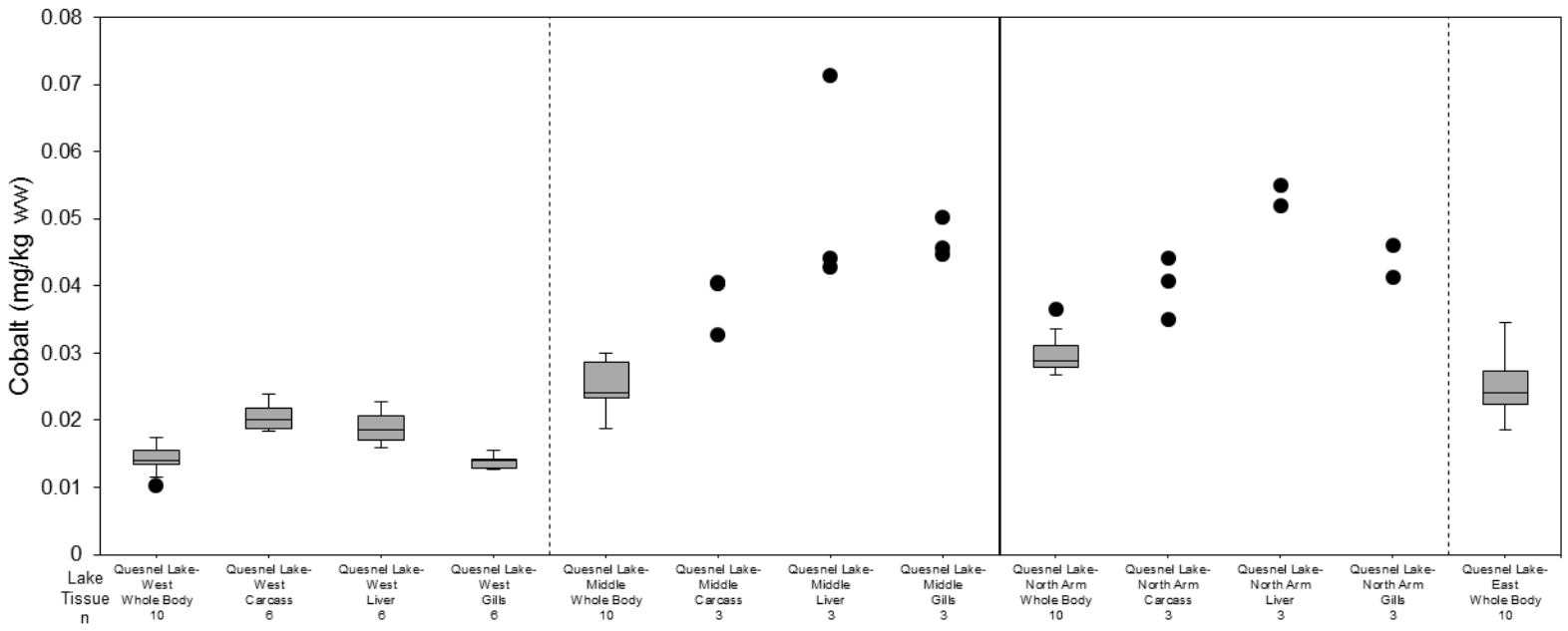
Figure 404: Chromium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

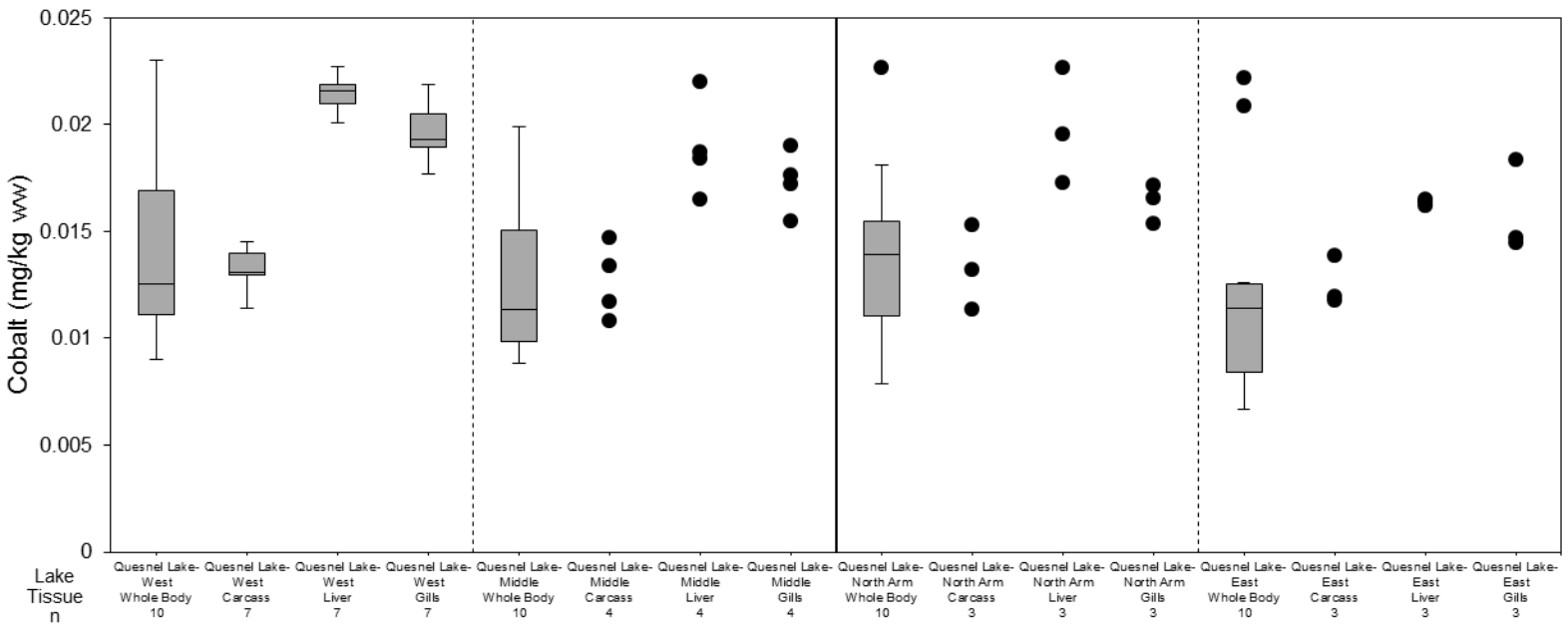
10.7 Cobalt

Figure 405: Cobalt Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



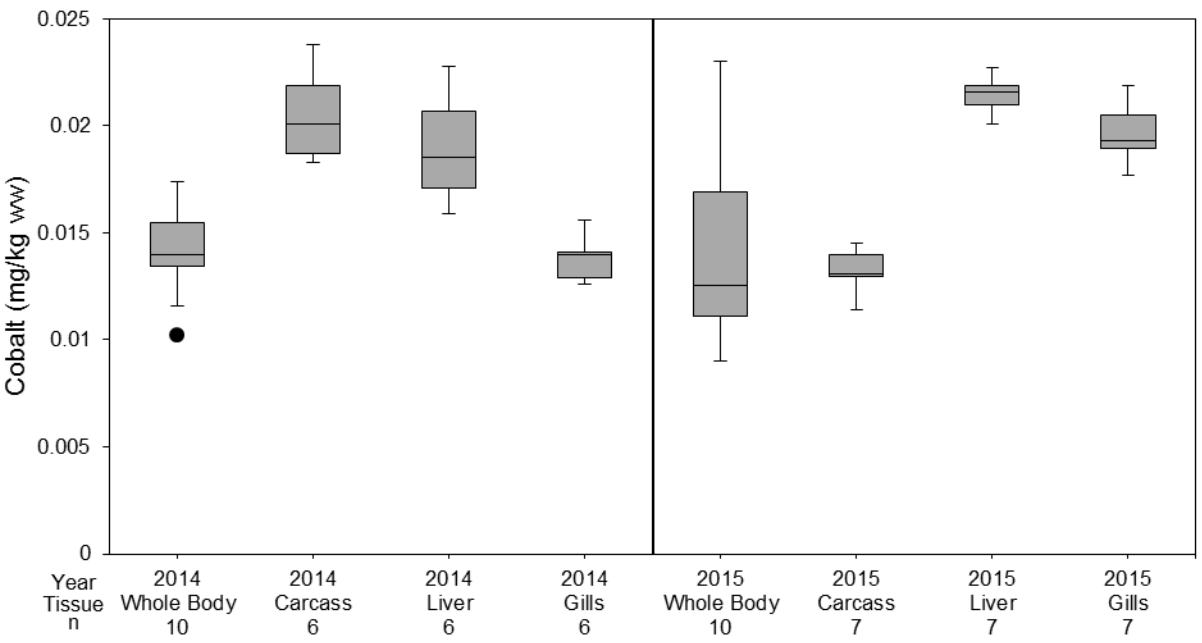
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 406: Cobalt Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



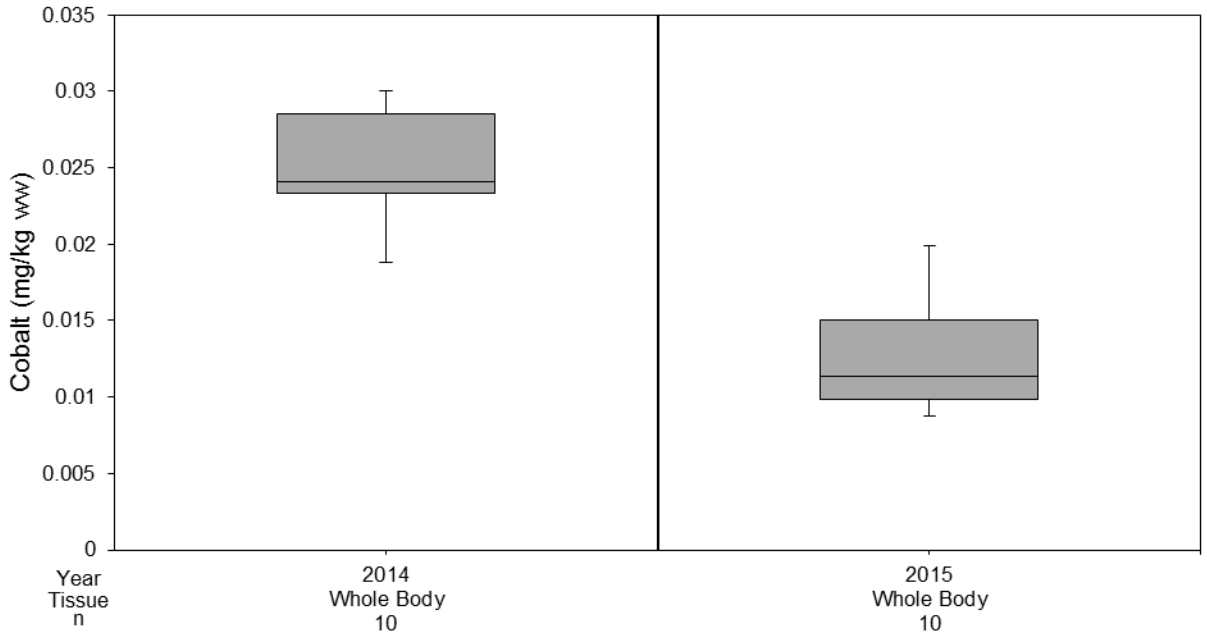
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 407: Cobalt Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

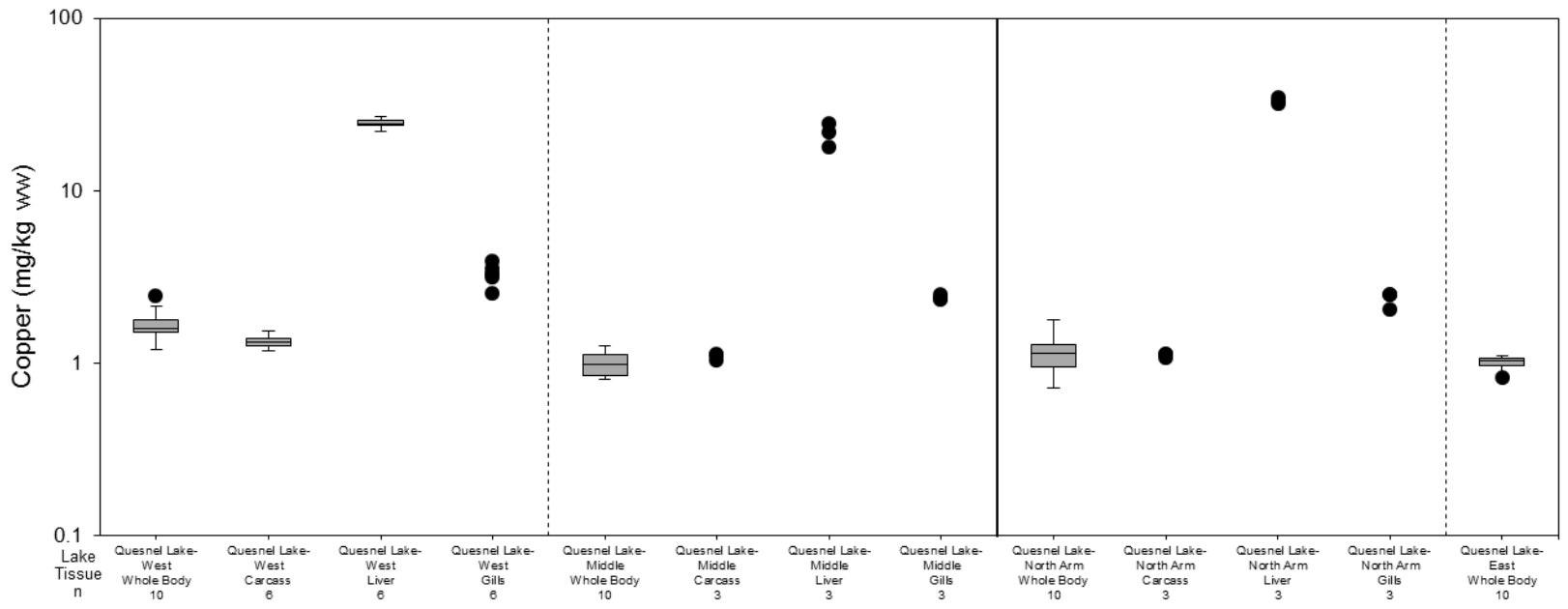
Figure 408: Cobalt Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

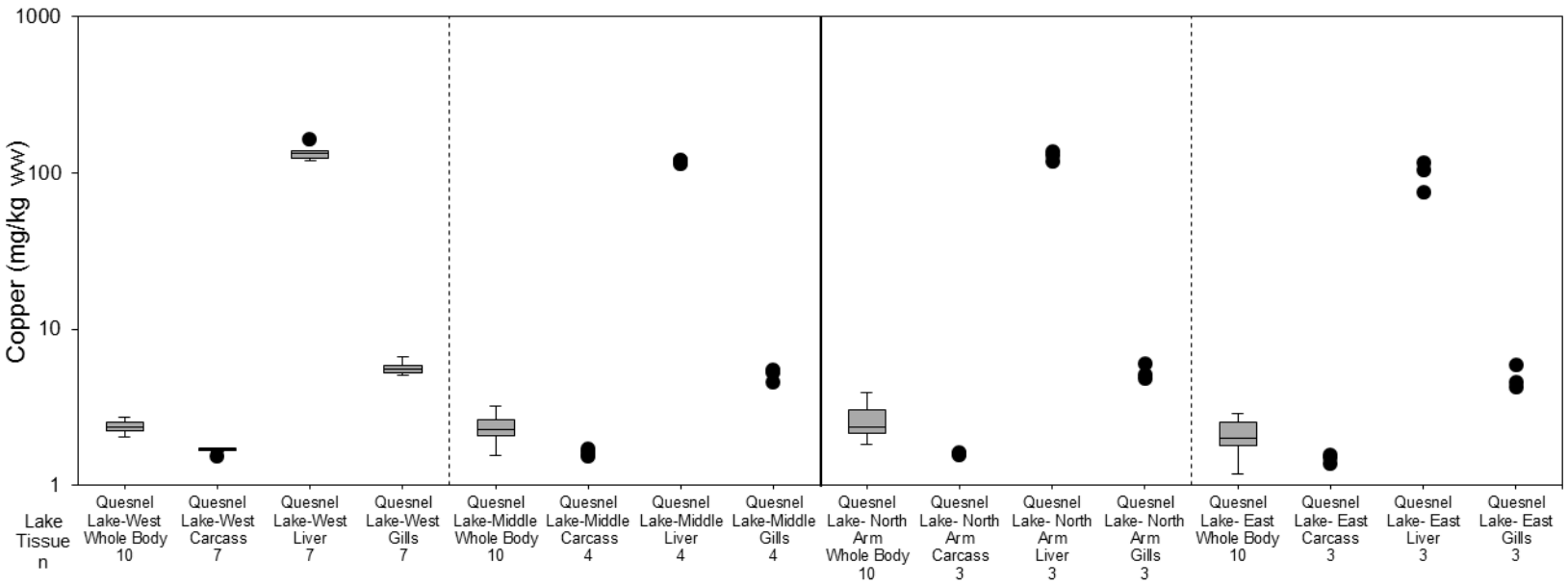
10.8 Copper

Figure 409: Copper Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



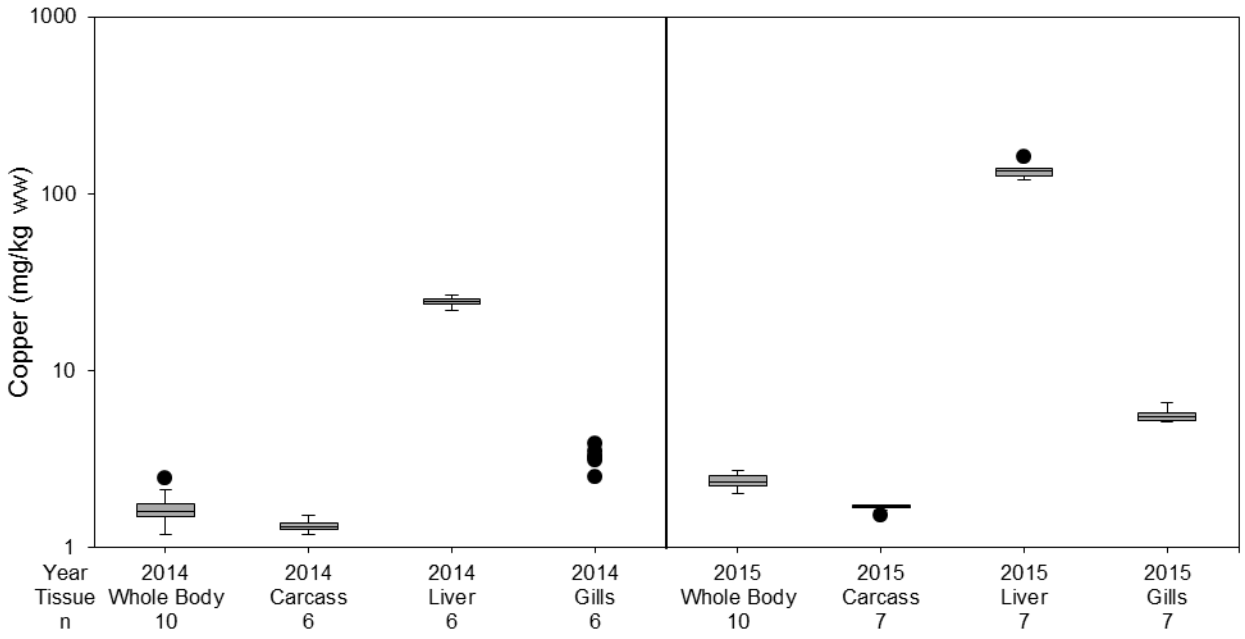
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 410: Copper Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



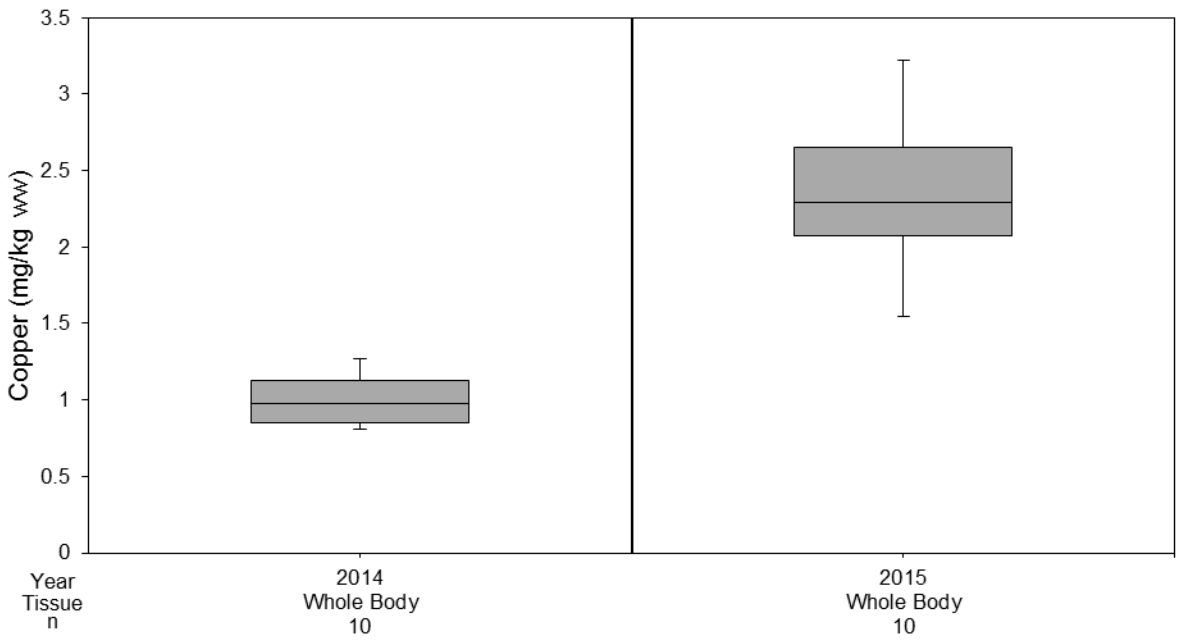
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 411: Copper Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

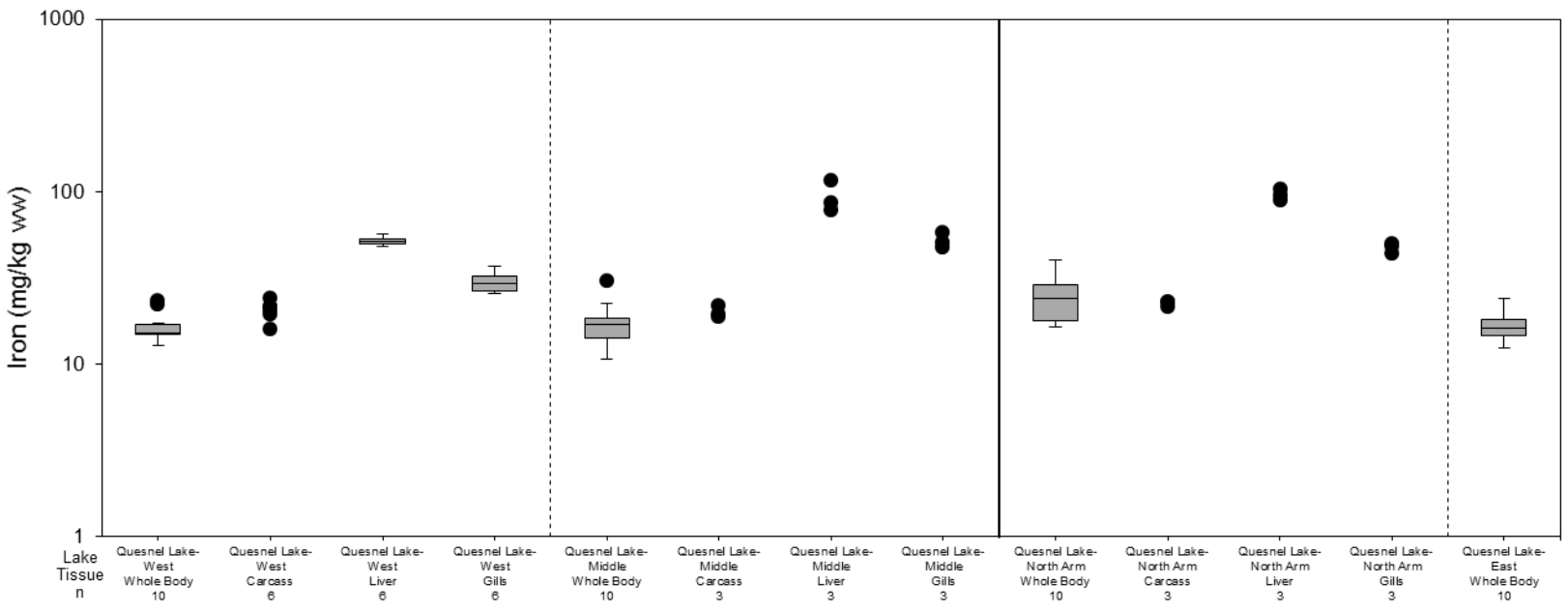
Figure 412: Copper Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

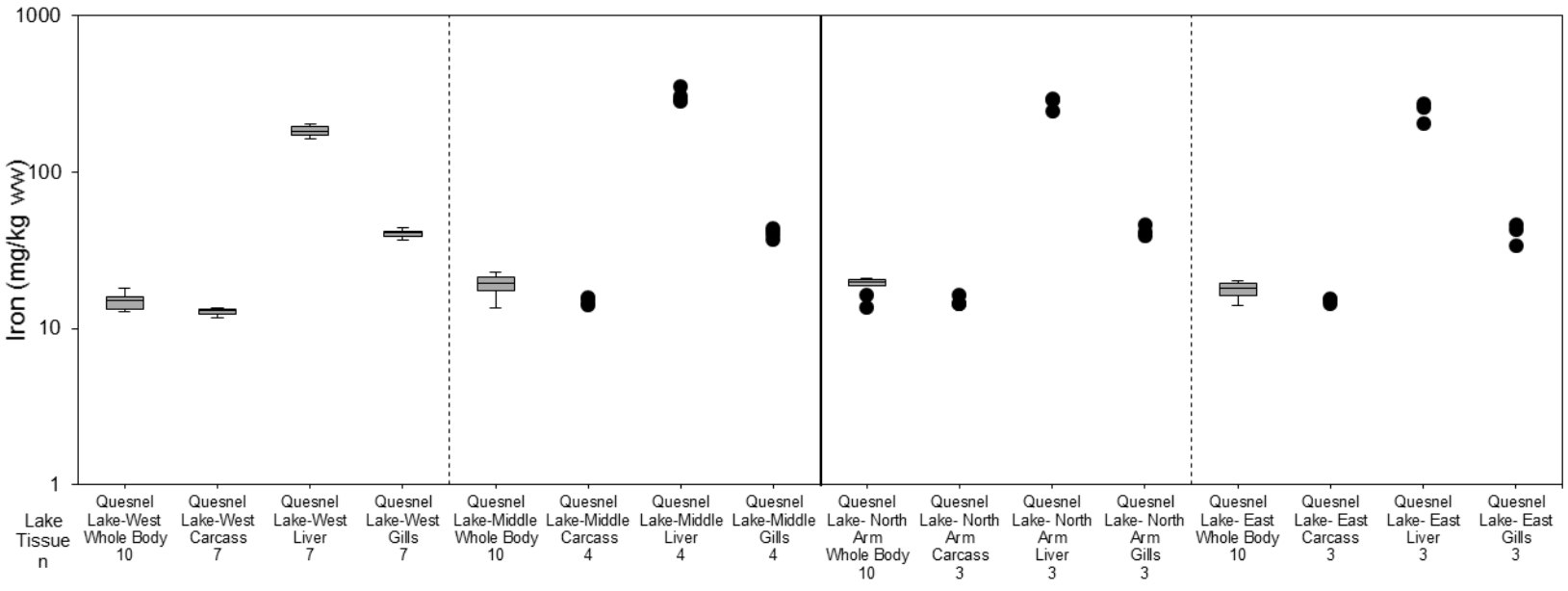
10.9 Iron

Figure 413: Iron Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



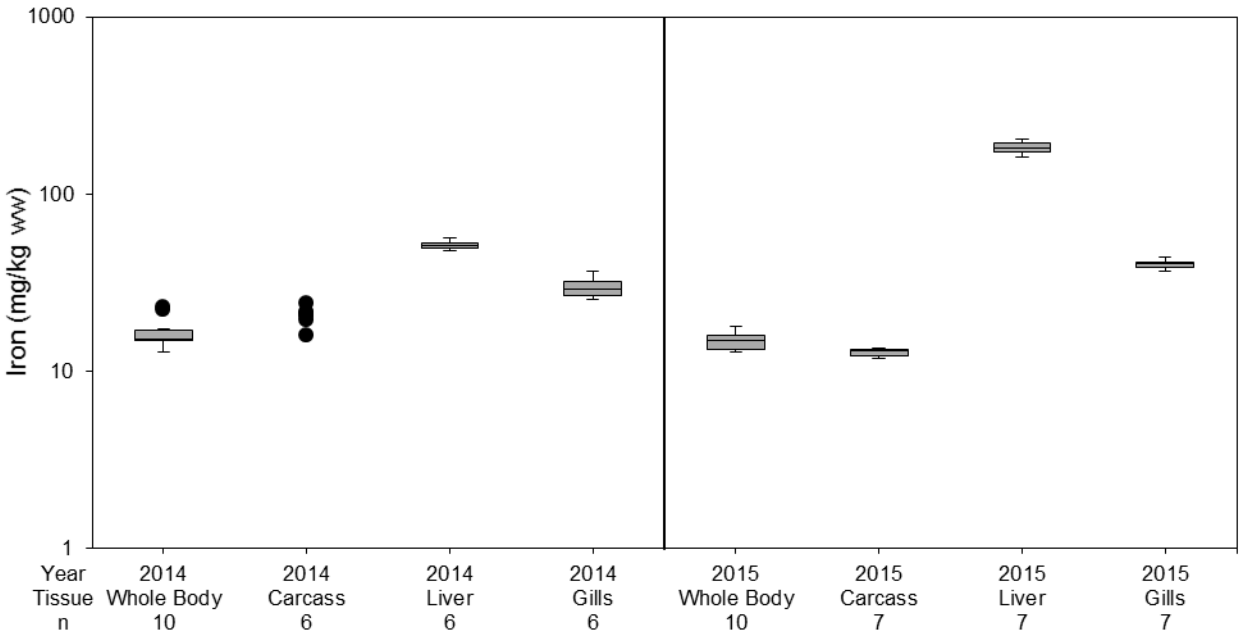
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 414: Iron Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



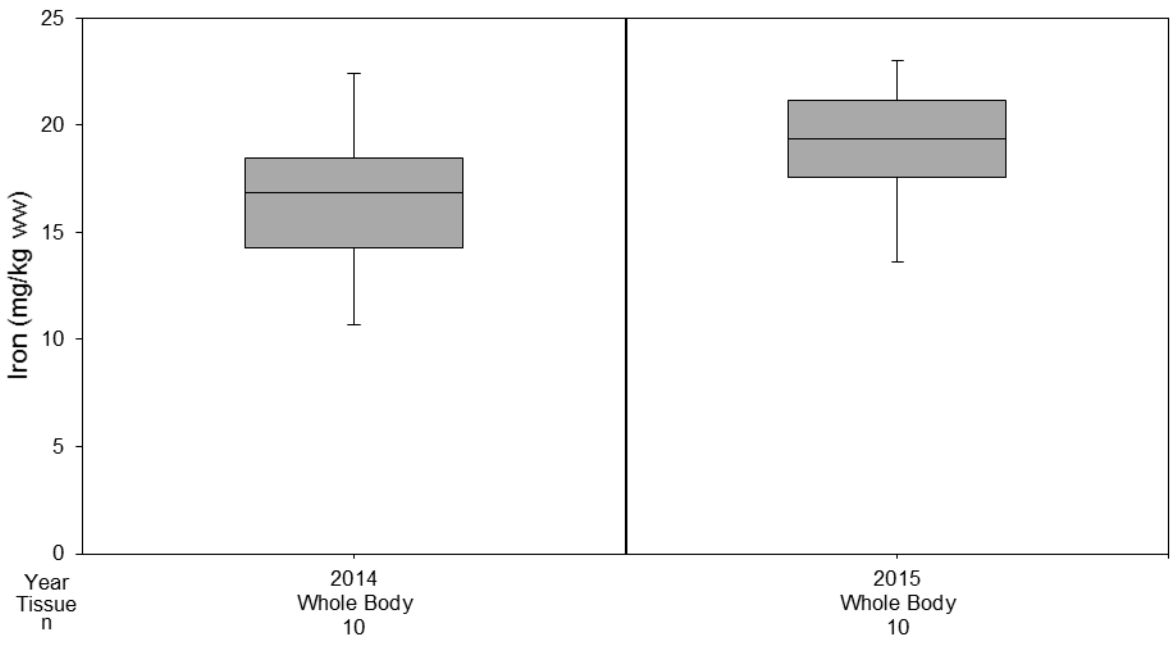
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 415: Iron Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

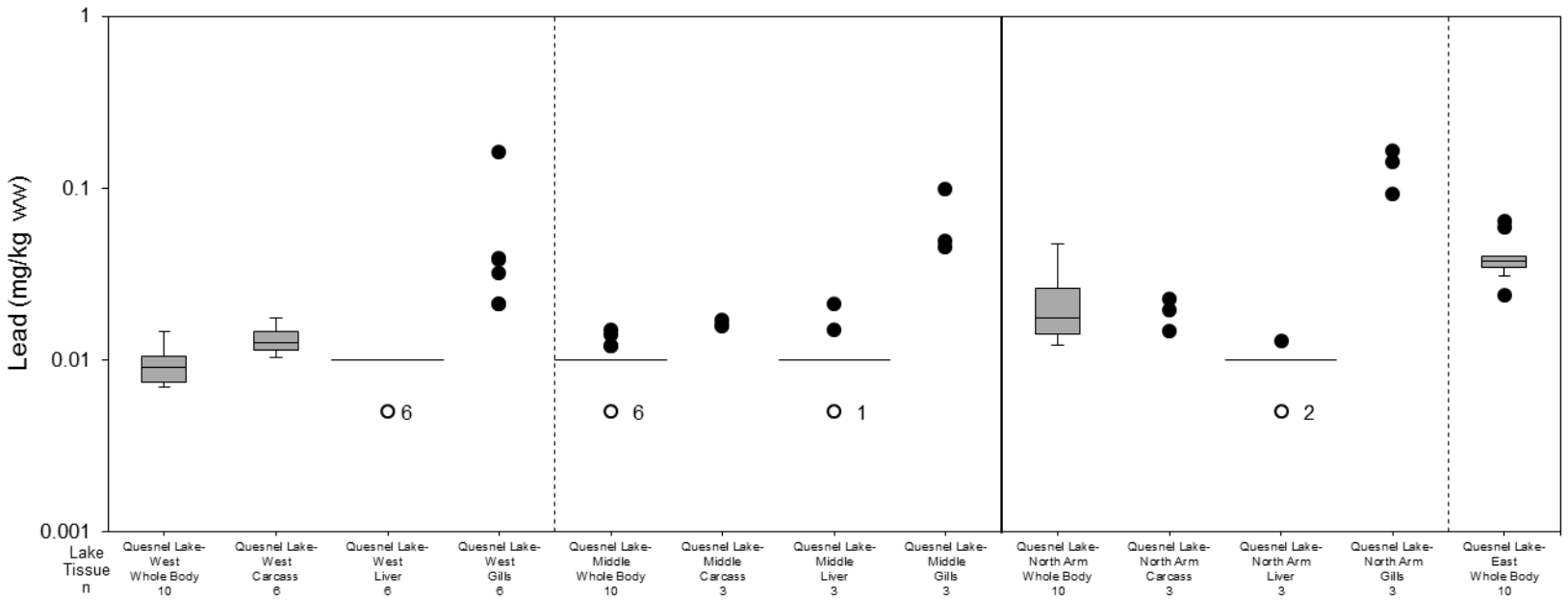
Figure 416: Iron Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

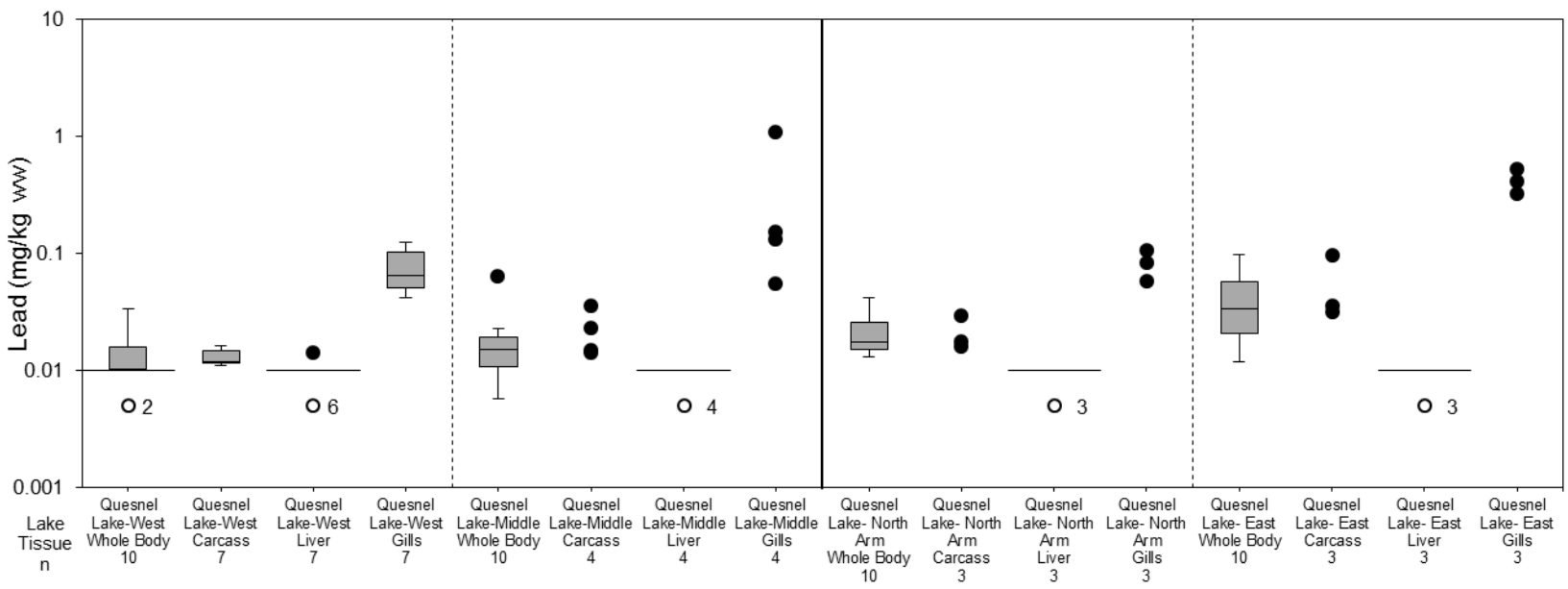
10.10 Lead

Figure 417: Lead Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



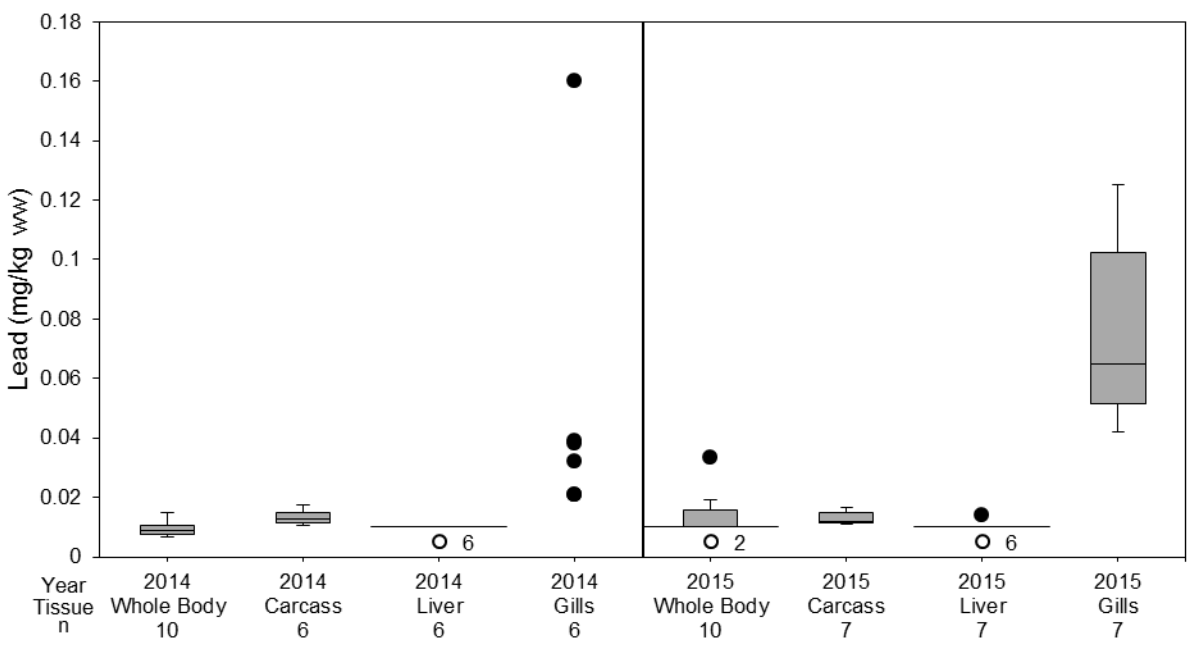
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 418: Lead Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



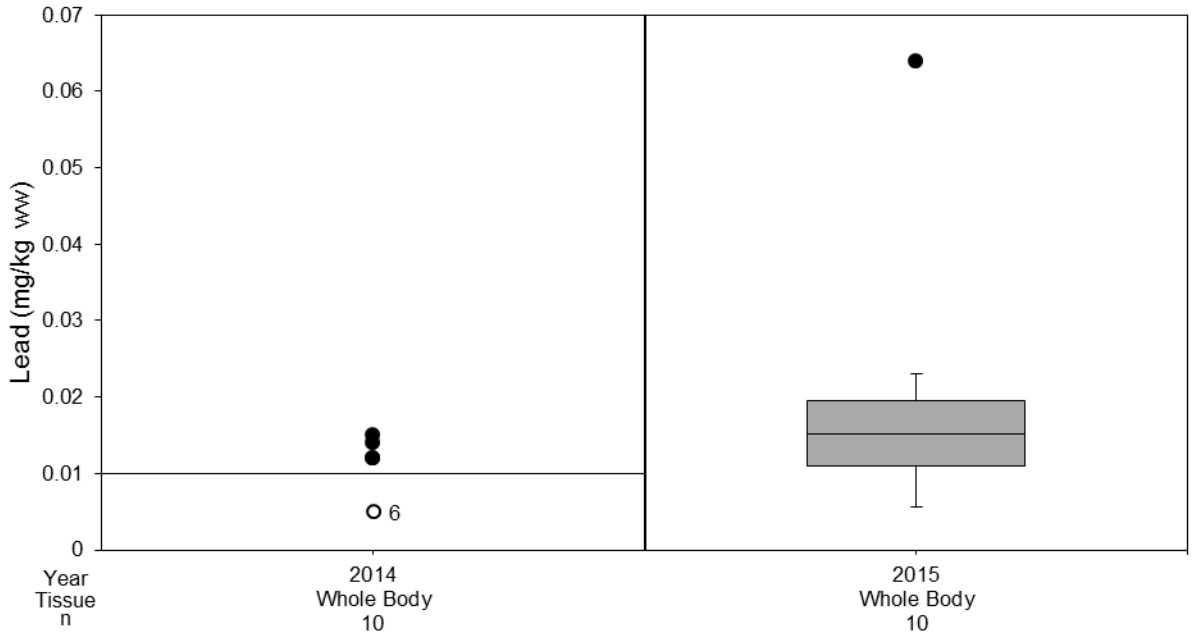
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 419: Lead Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

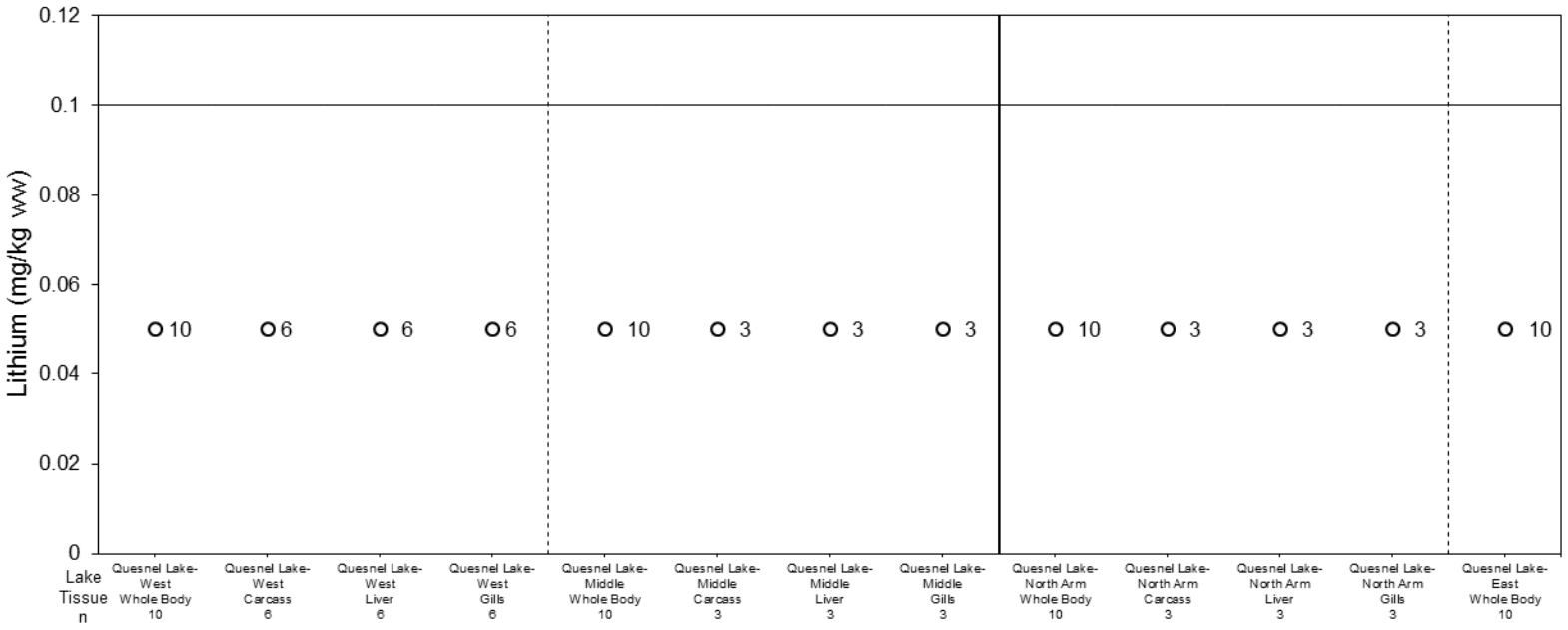
Figure 420: Lead Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

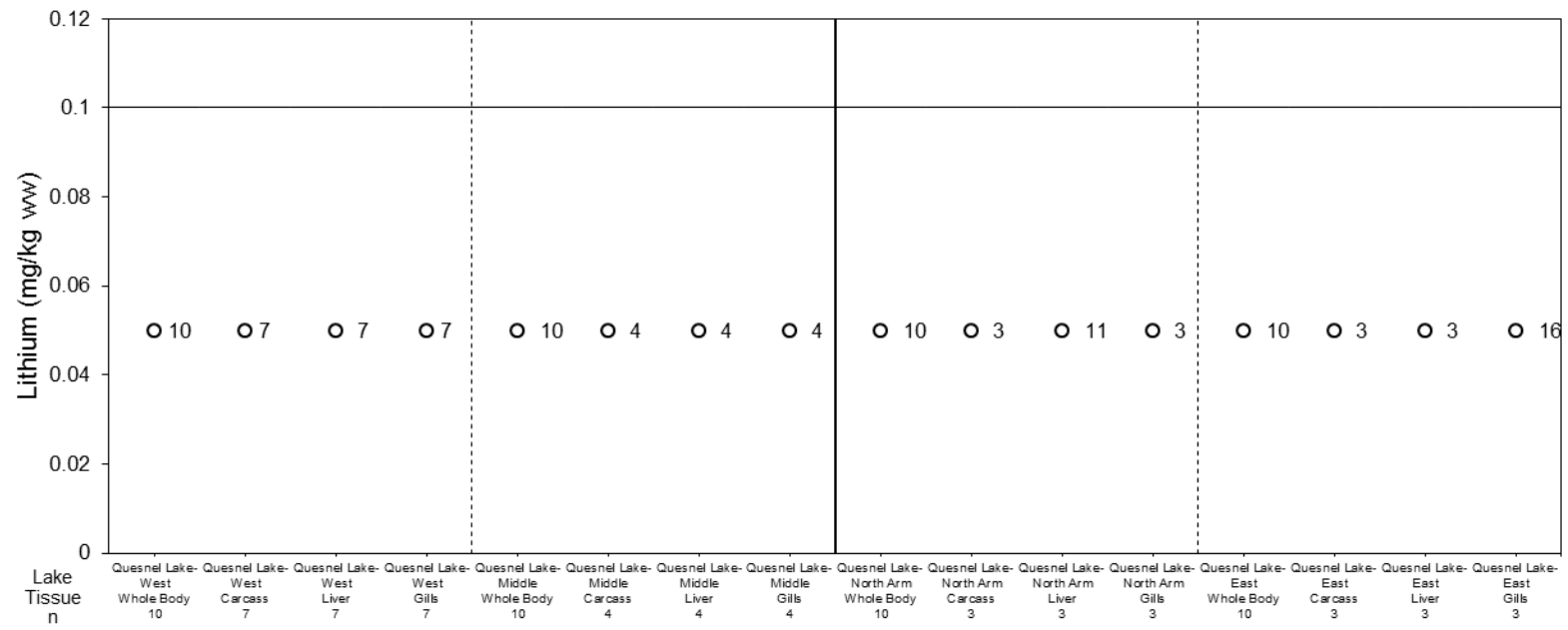
10.11 Lithium

Figure 421: Lithium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



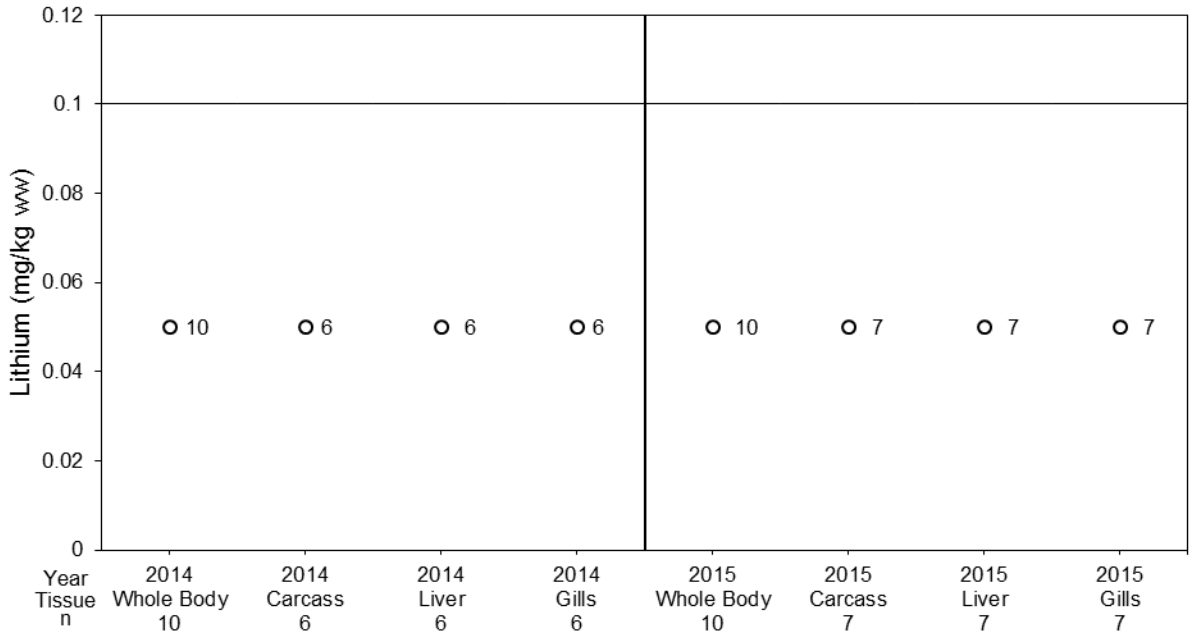
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 422: Lithium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



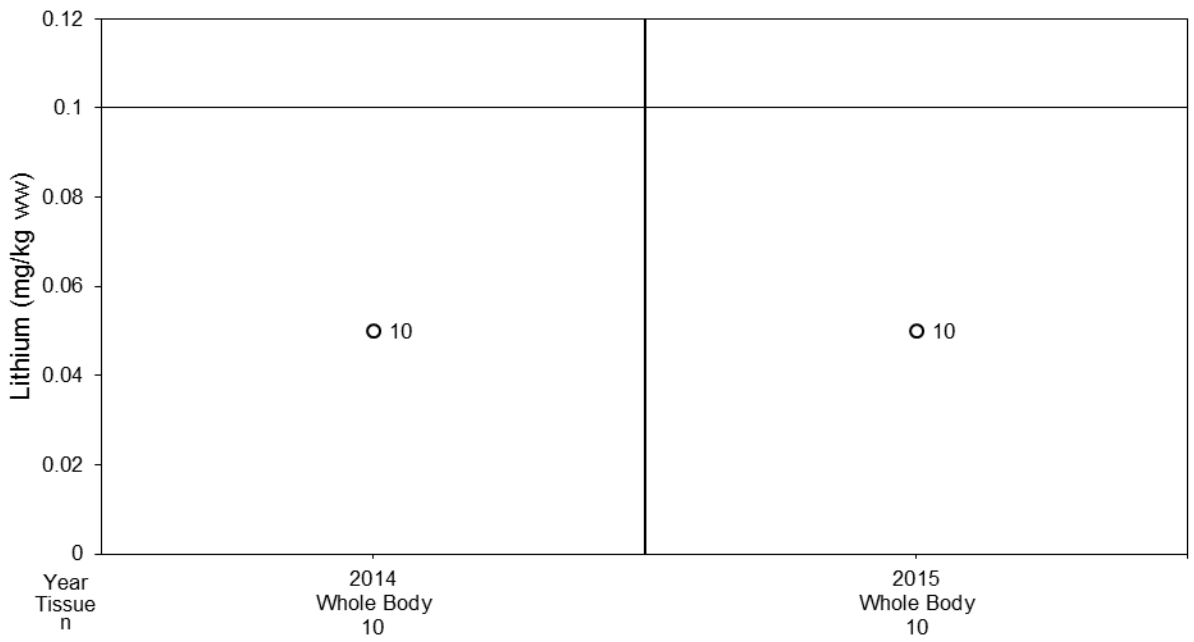
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 423: Lithium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

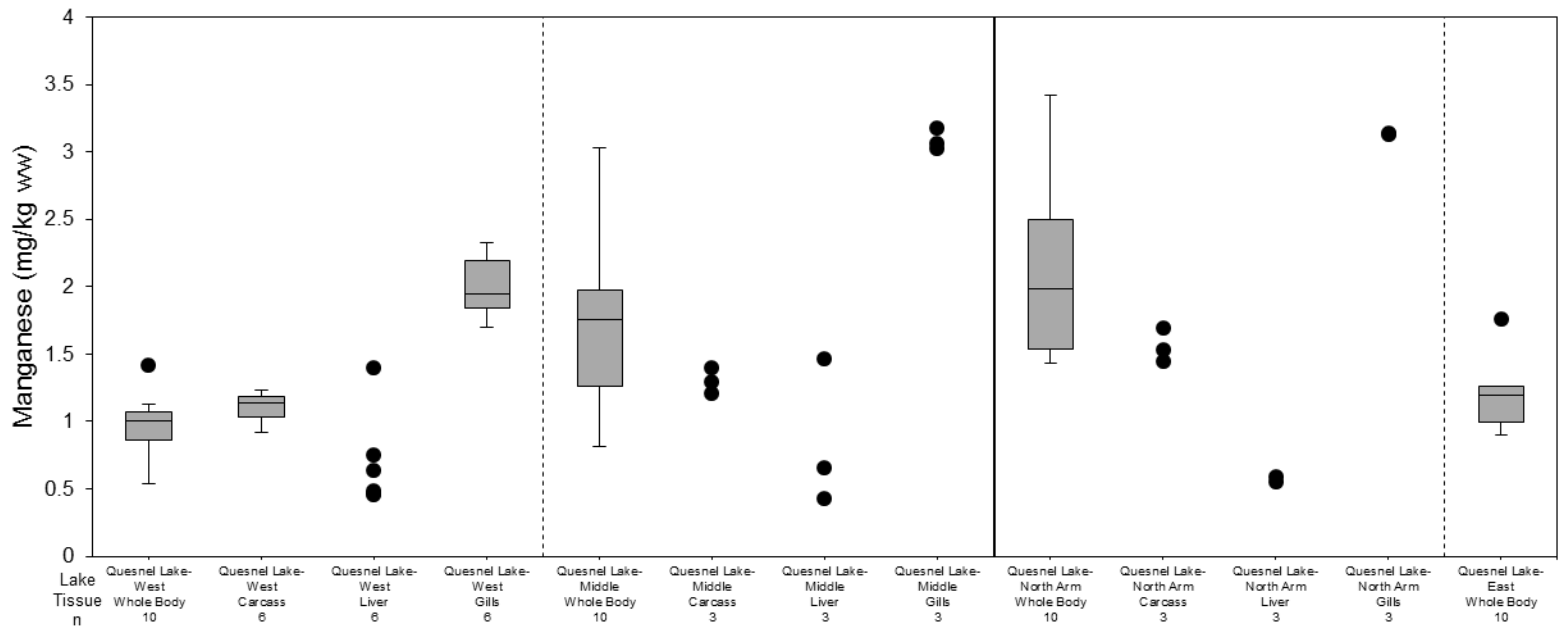
Figure 424: Lithium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

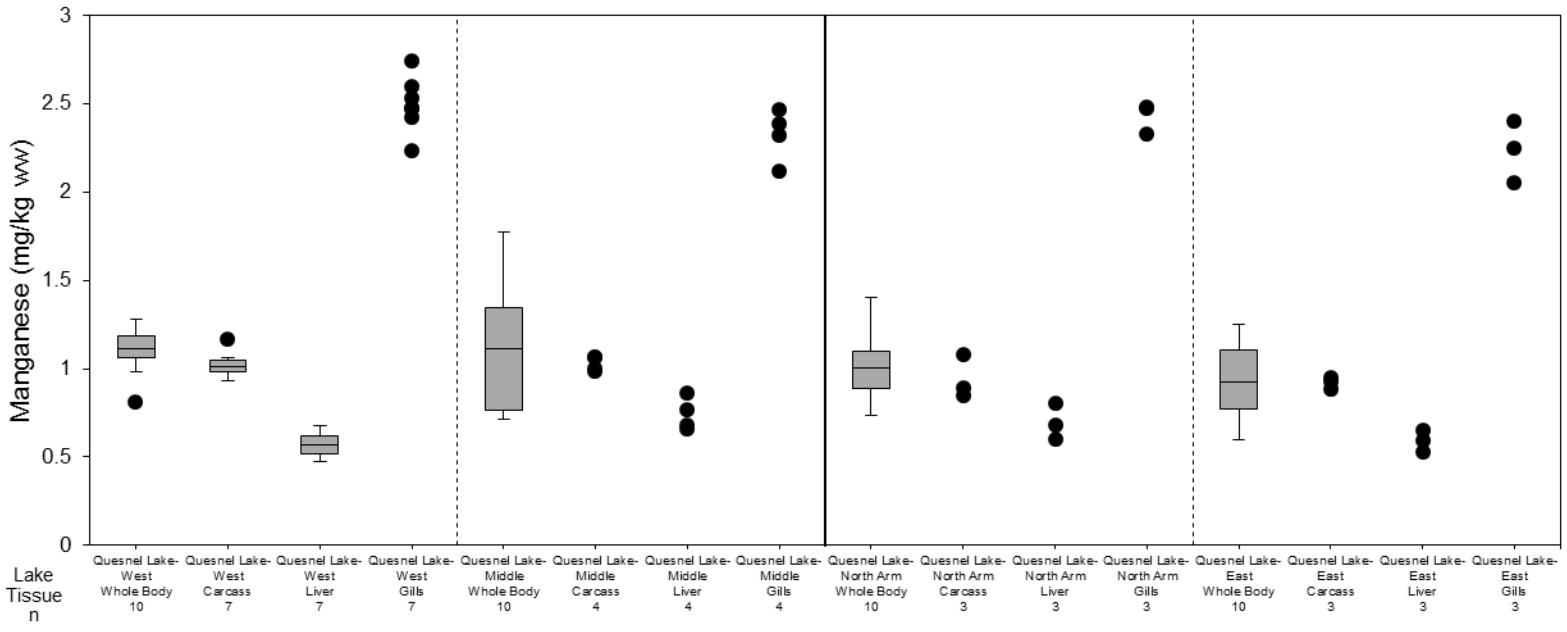
10.12 Manganese

Figure 425: Manganese Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



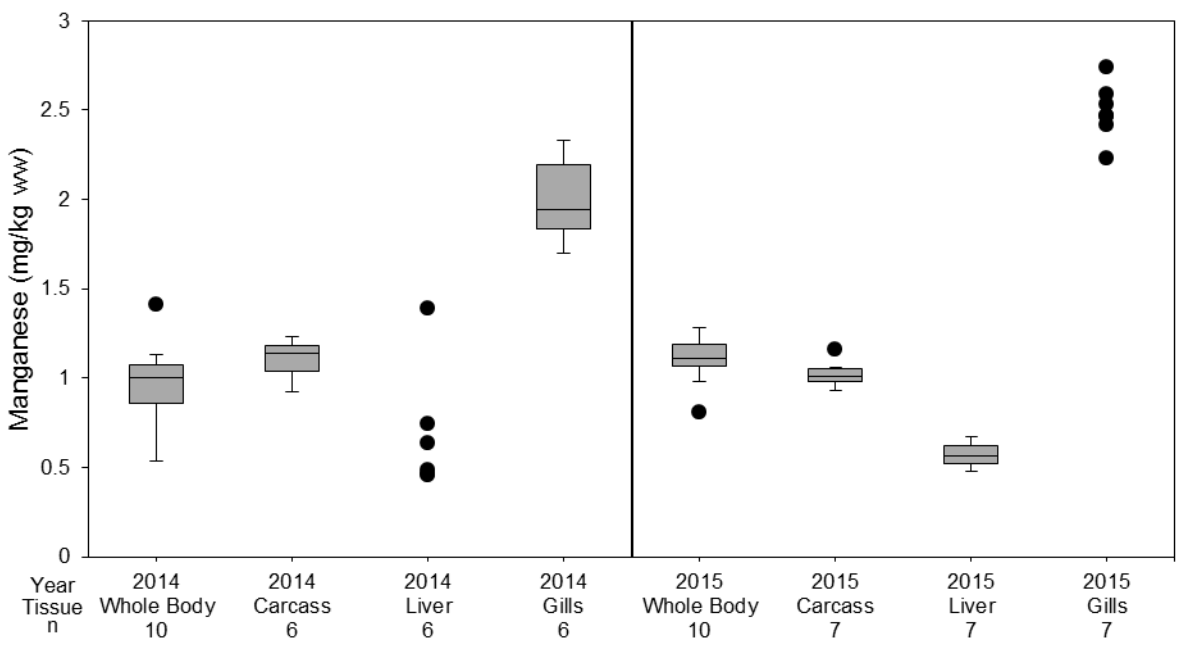
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 426: Manganese Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



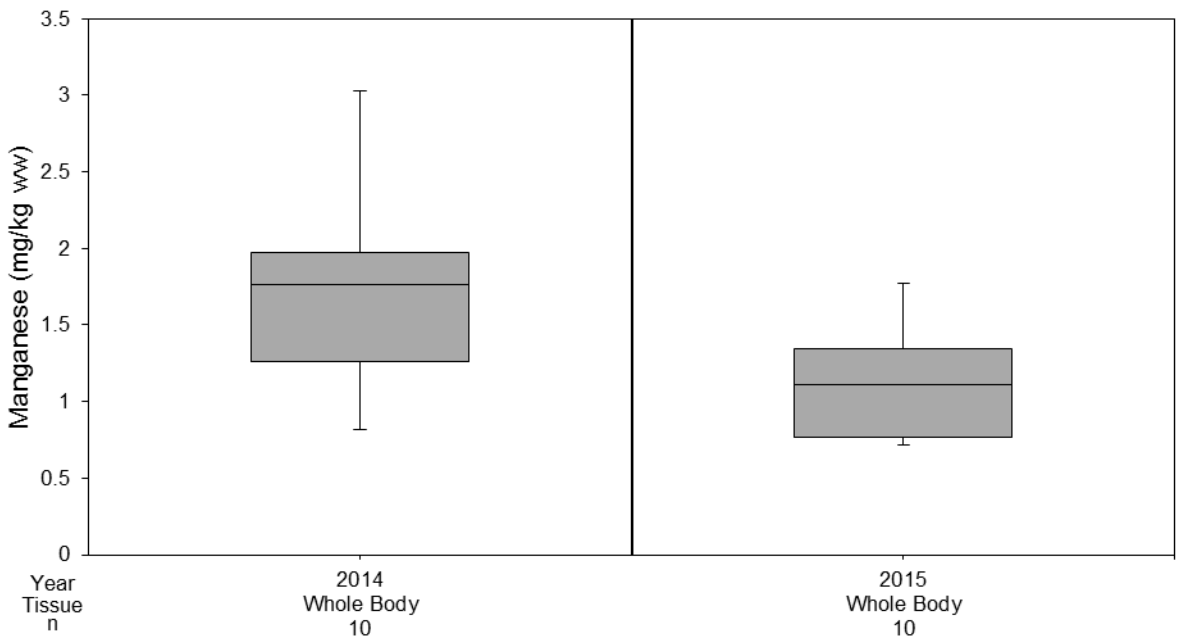
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 427: Manganese Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

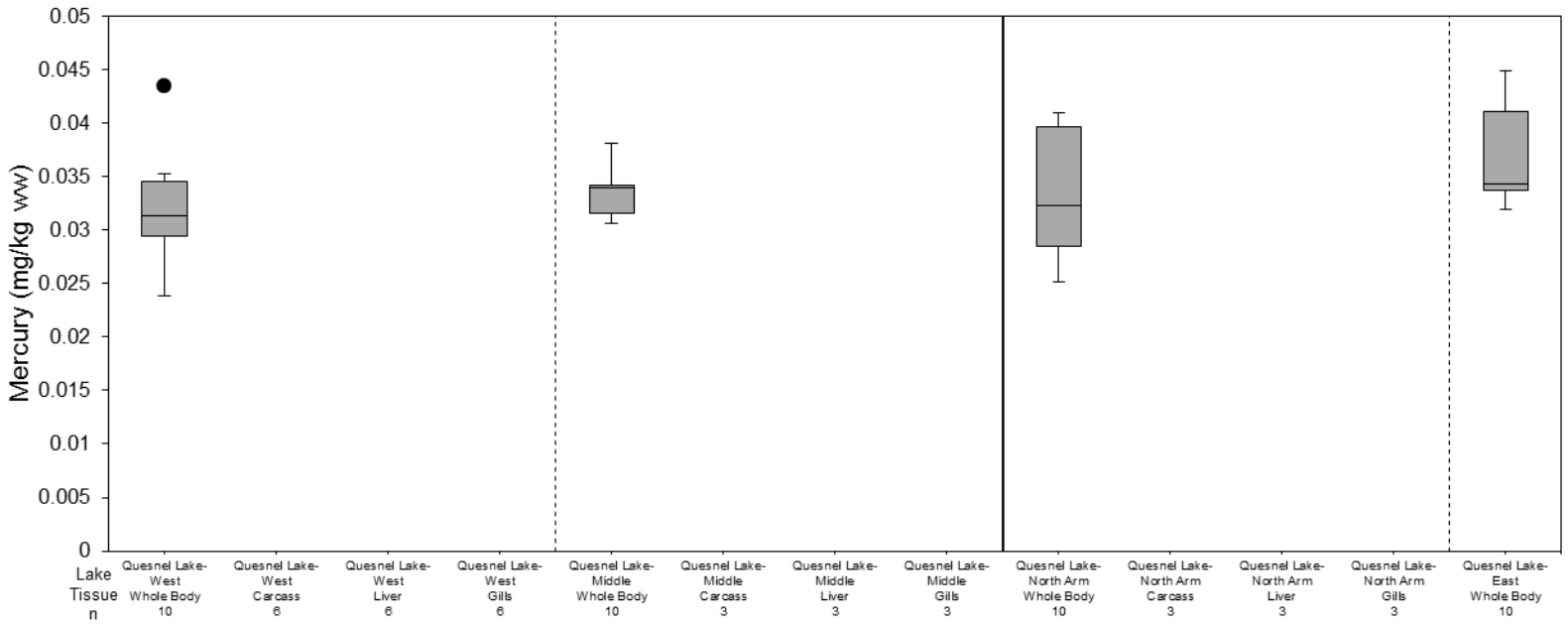
Figure 428: Manganese Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

10.13 Mercury

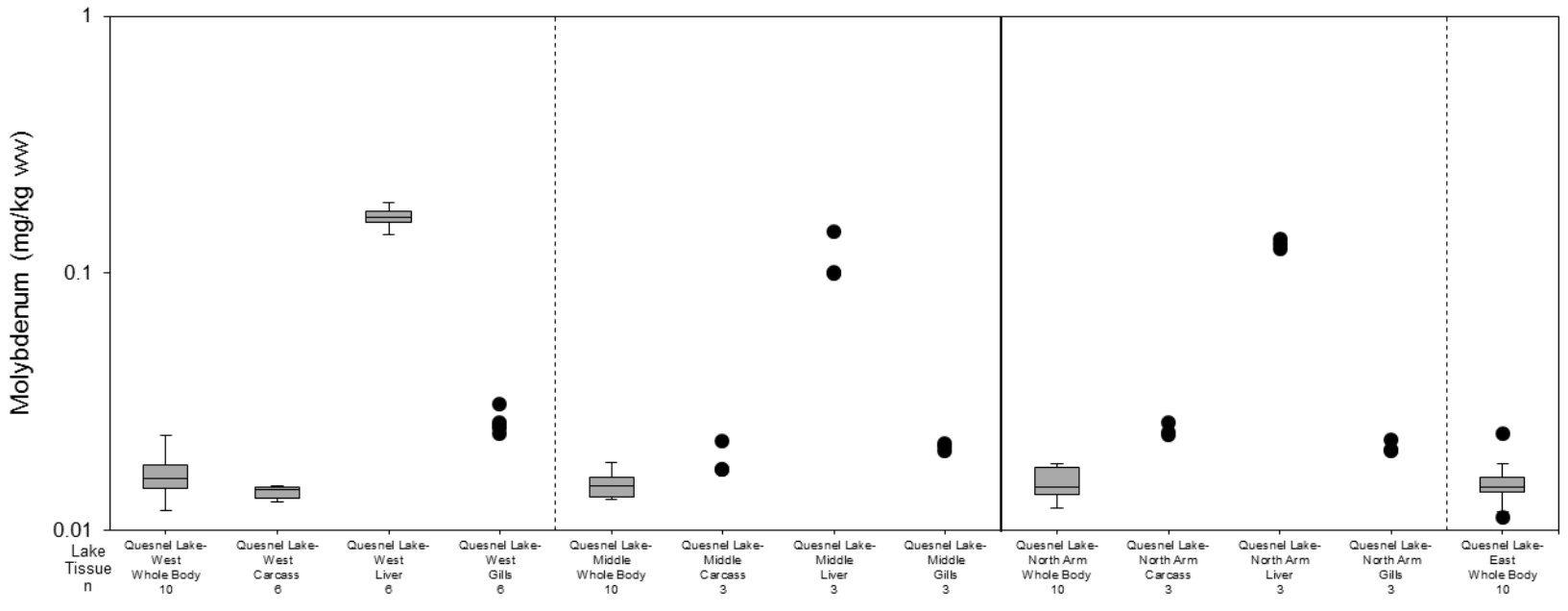
Figure 429: Mercury Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years. Mercury data was not analyzed in 2015.

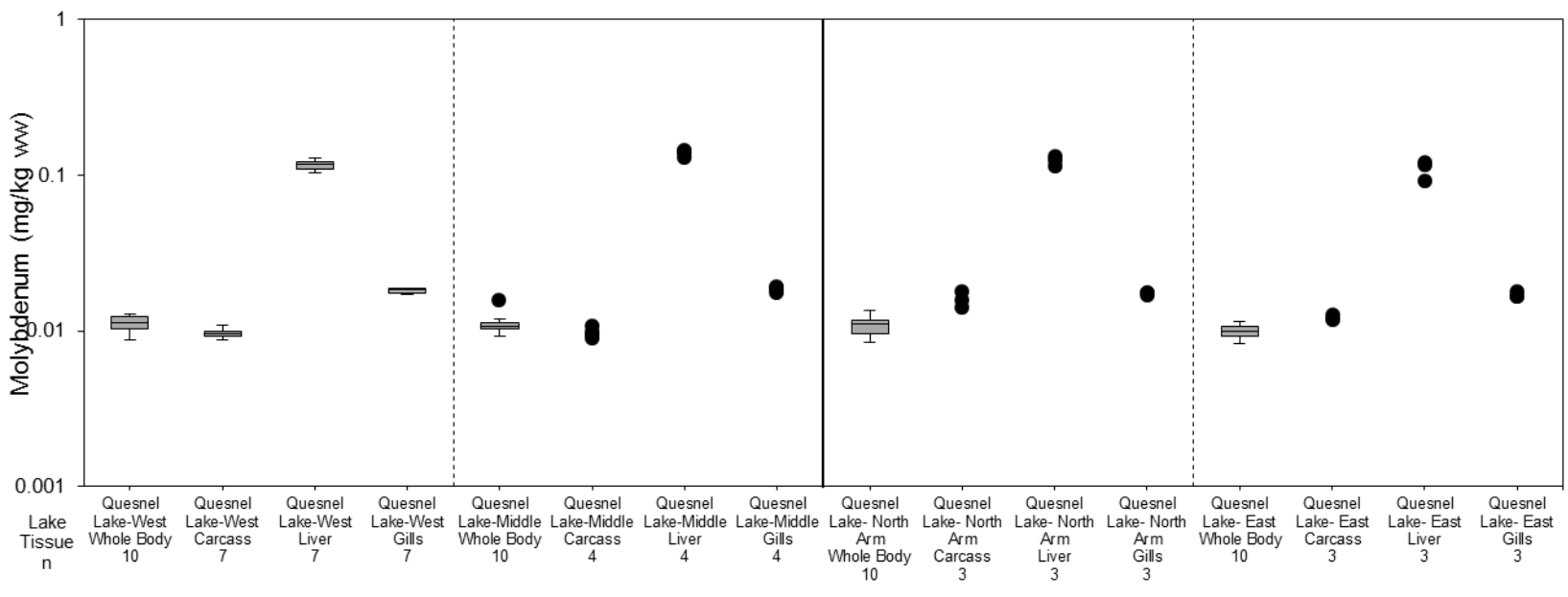
10.14 Molybdenum

Figure 430: Molybdenum Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



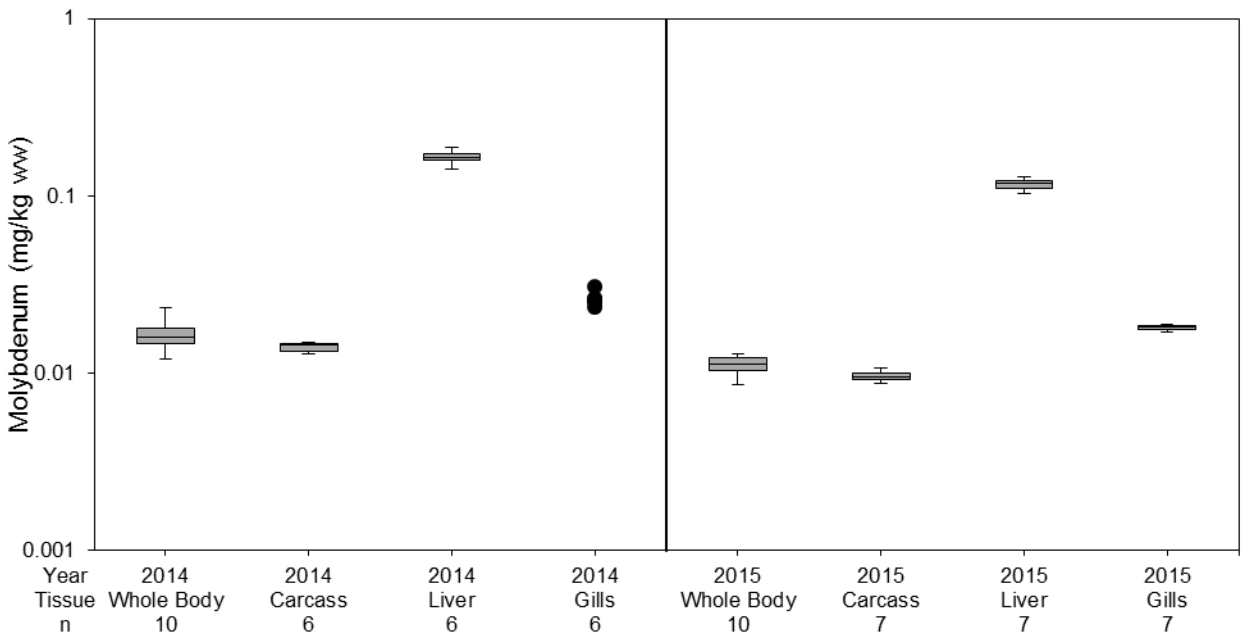
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 431: Molybdenum Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



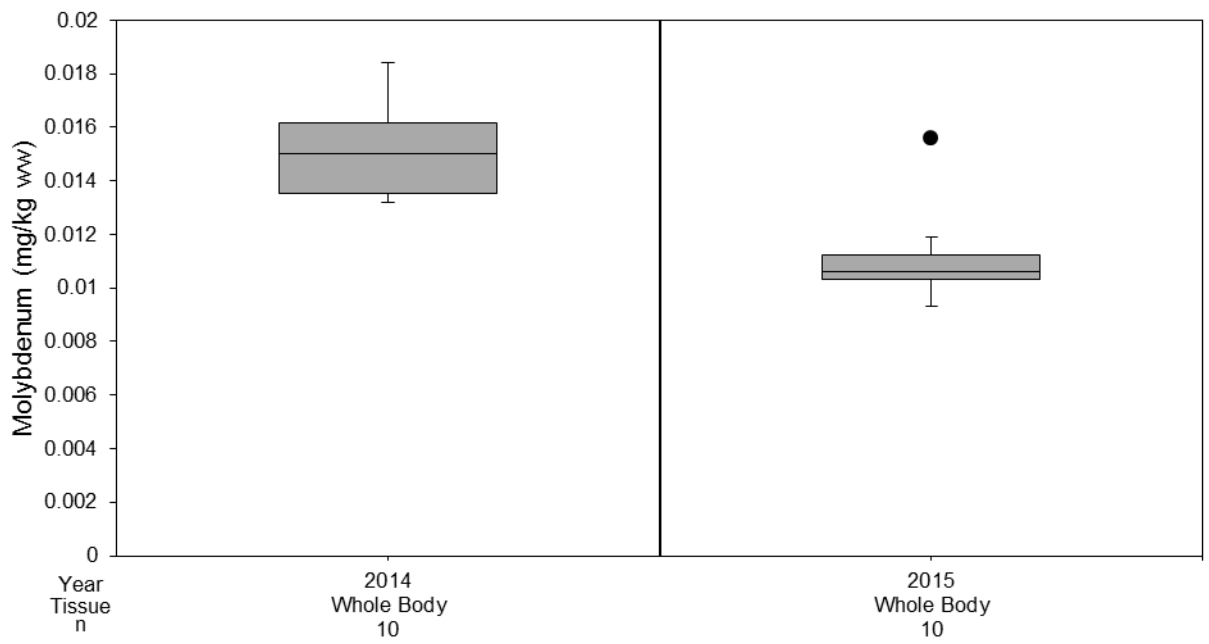
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 432: Molybdenum Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

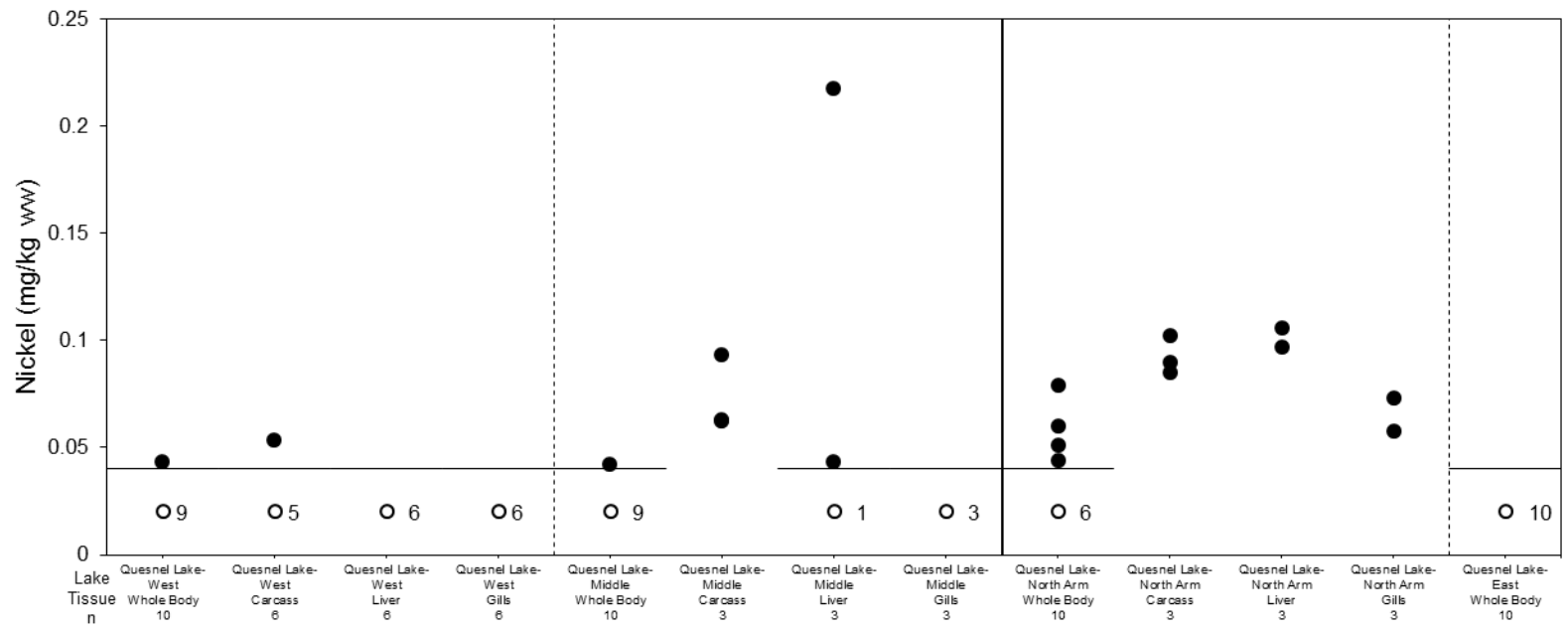
Figure 433: Molybdenum Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

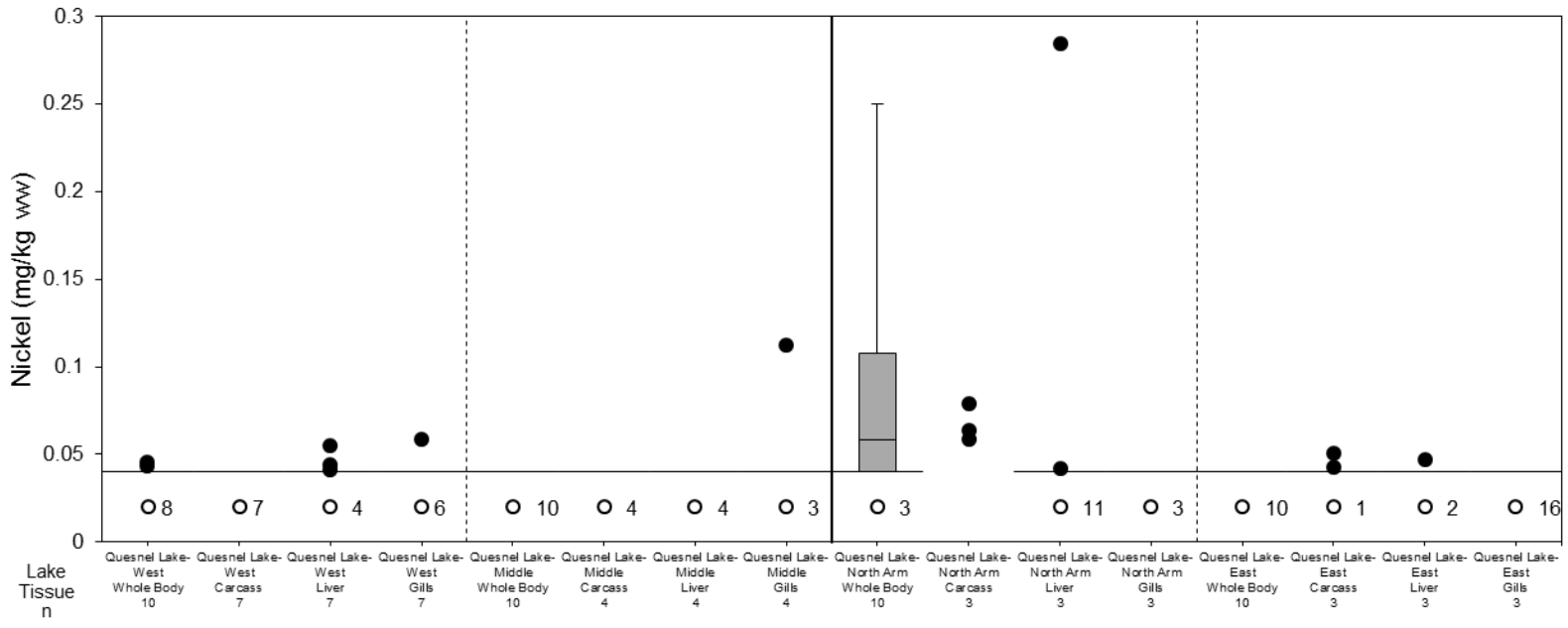
10.15 Nickel

Figure 434: Nickel Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



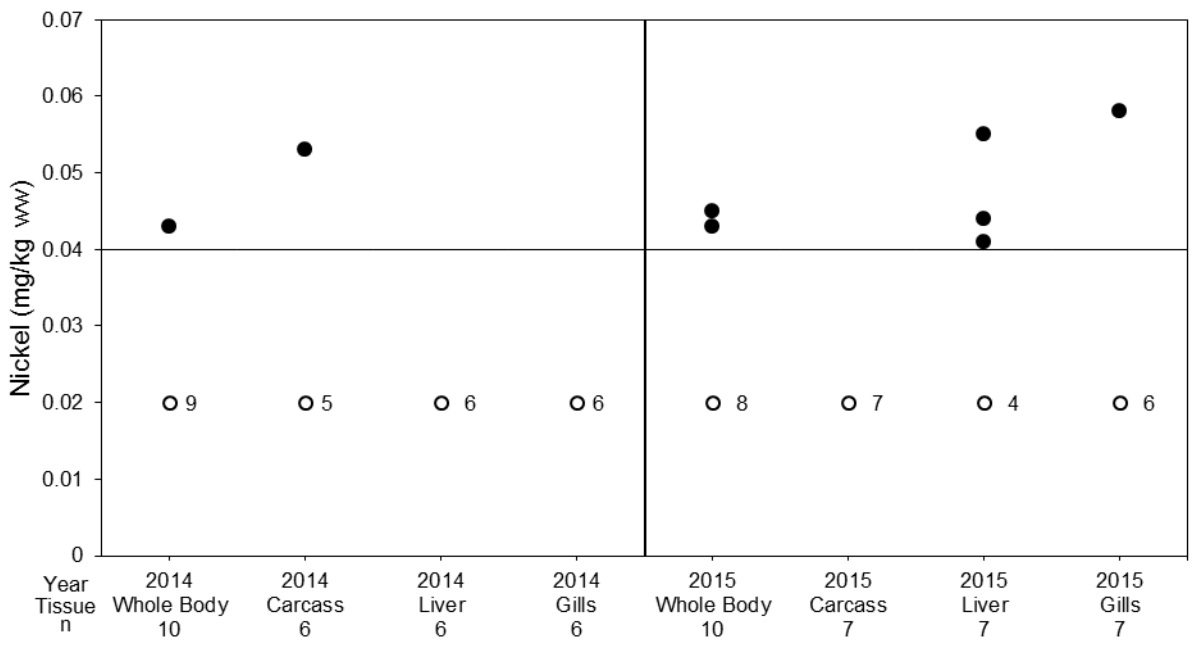
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 435: Nickel Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



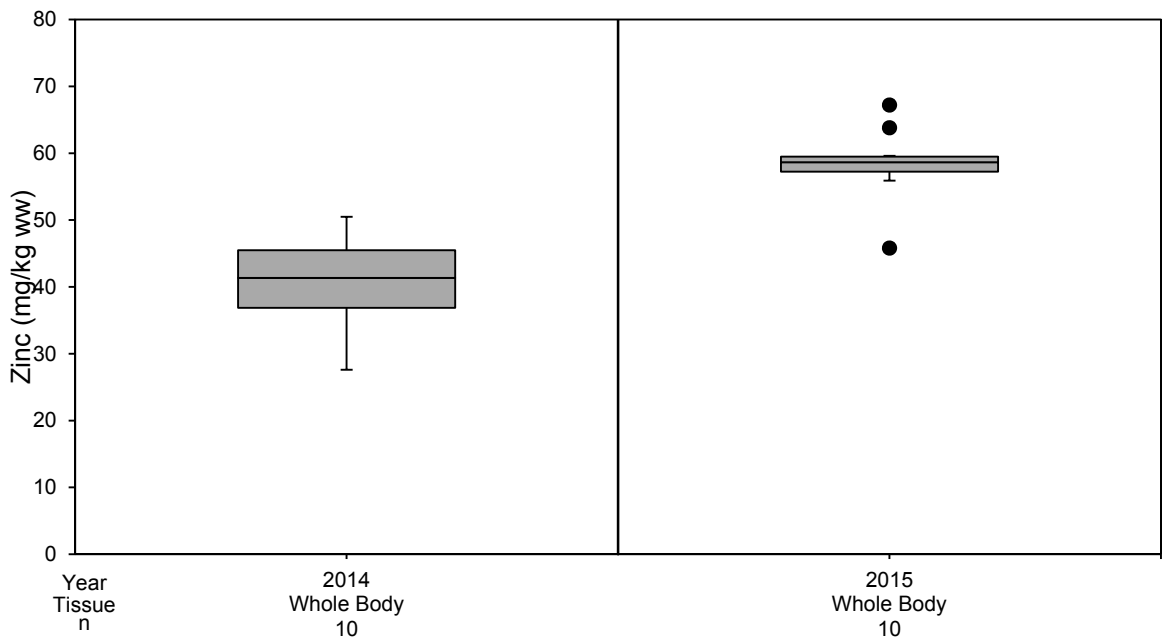
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 436: Nickel Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

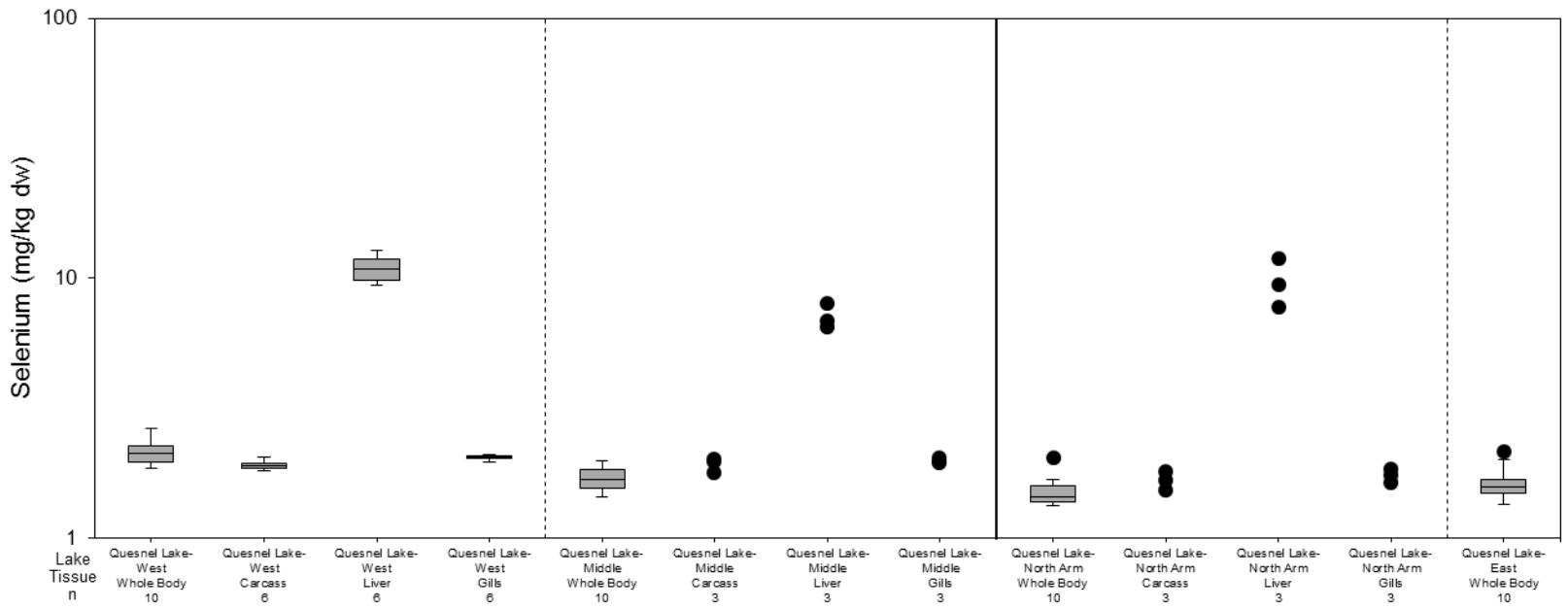
Figure 437: Nickel Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

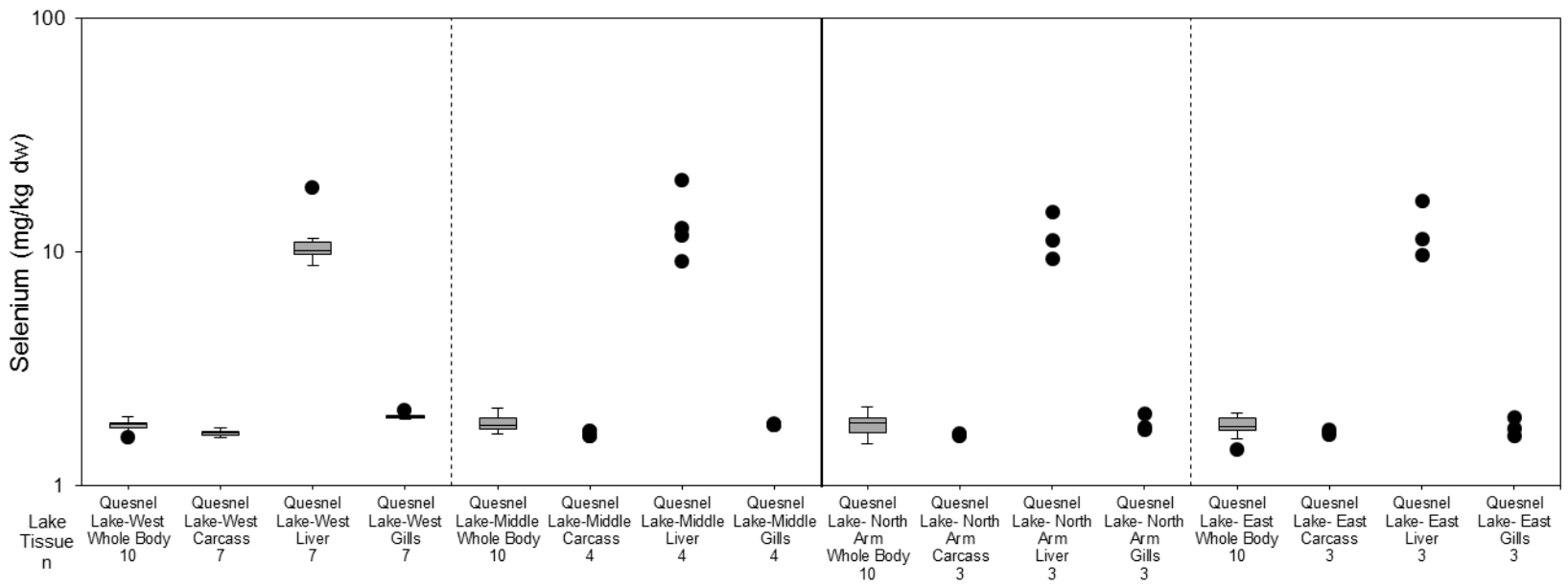
10.16 Selenium

Figure 438: Selenium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



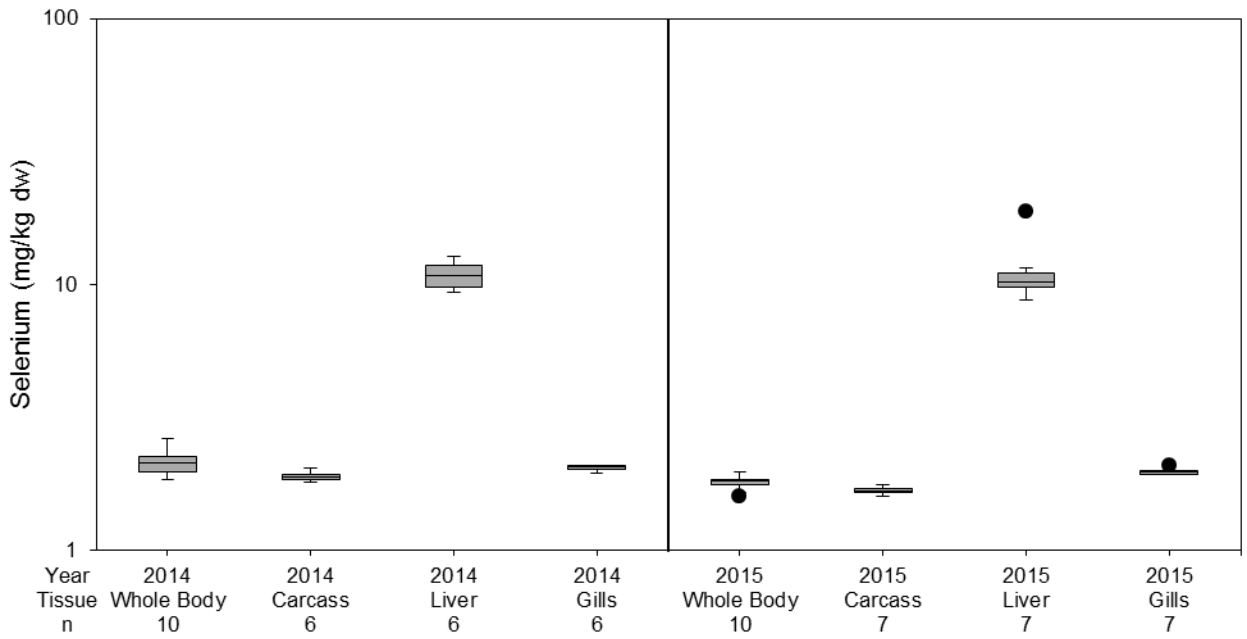
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 439: Selenium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



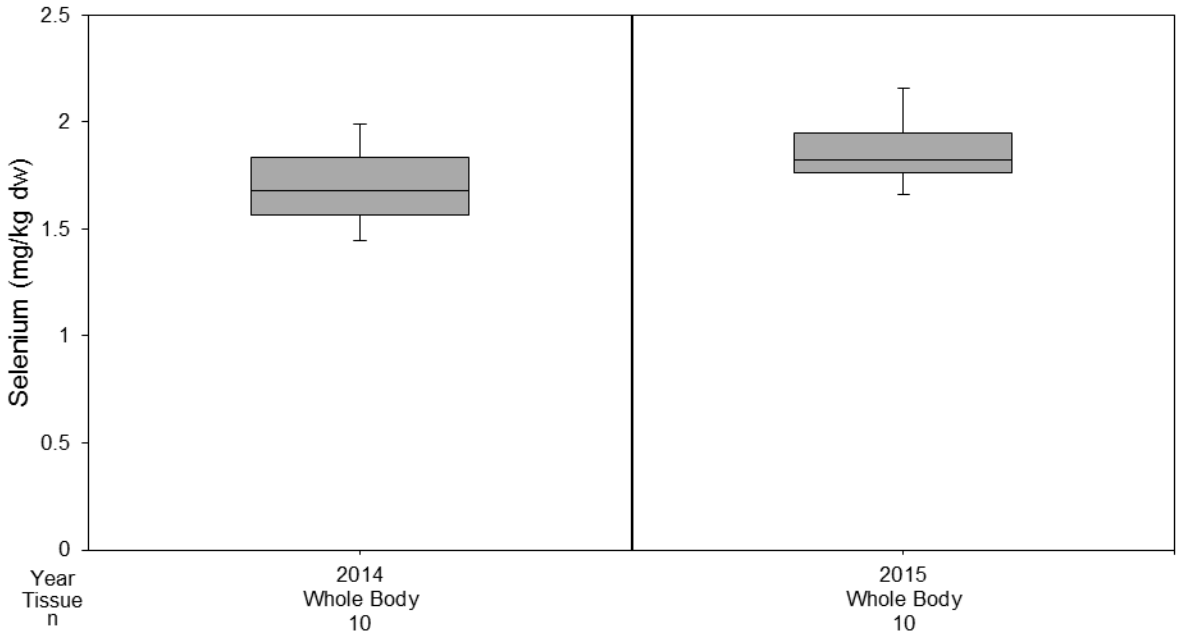
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

Figure 440: Selenium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years; y-axis is a logarithmic scale.

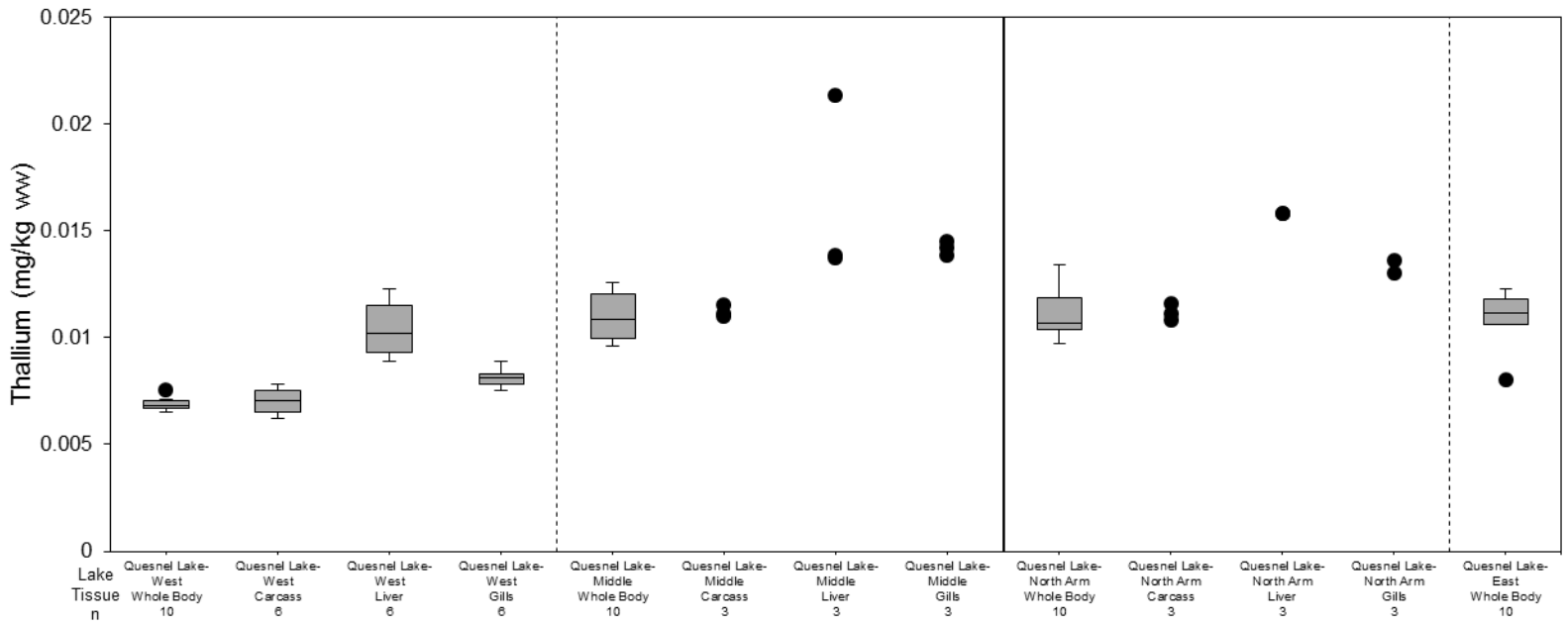
Figure 441: Selenium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg dw = milligrams per kilogram dry weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

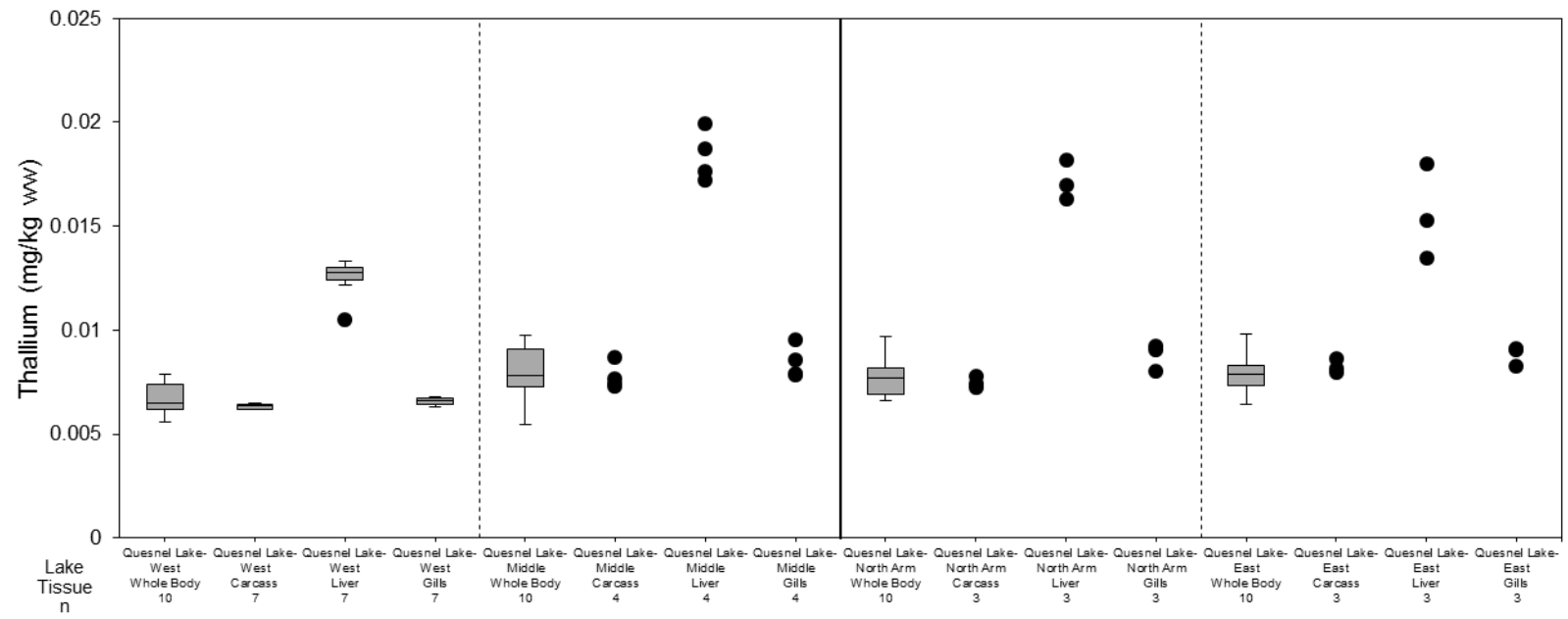
10.17 Thallium

Figure 442: Thallium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



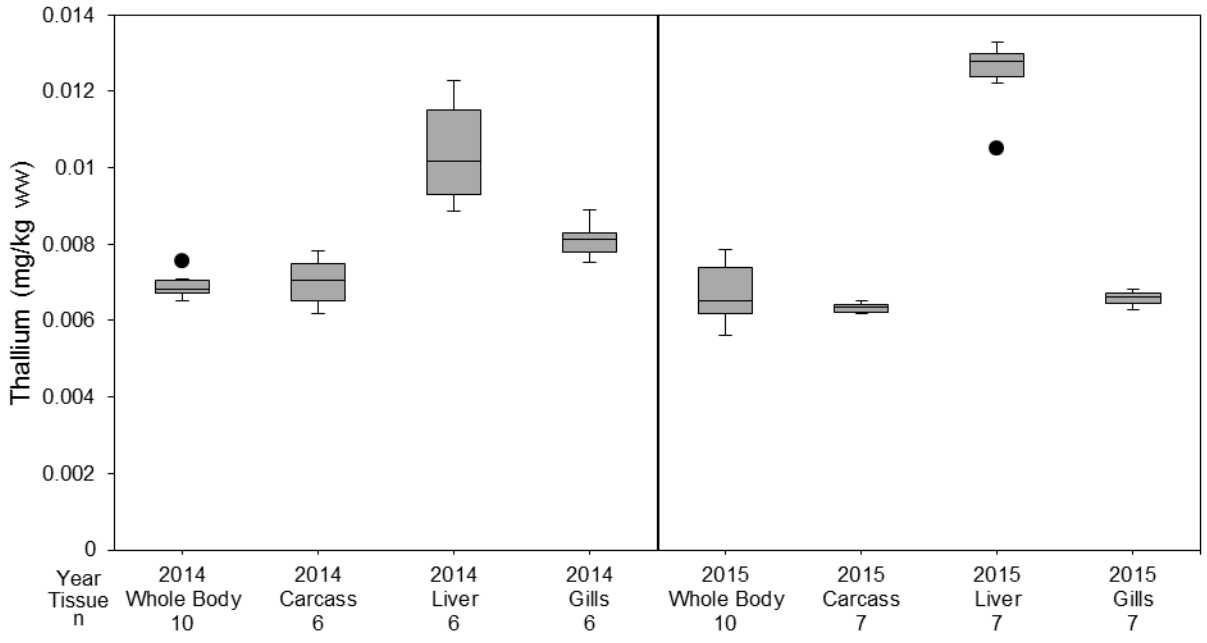
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 443: Thallium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



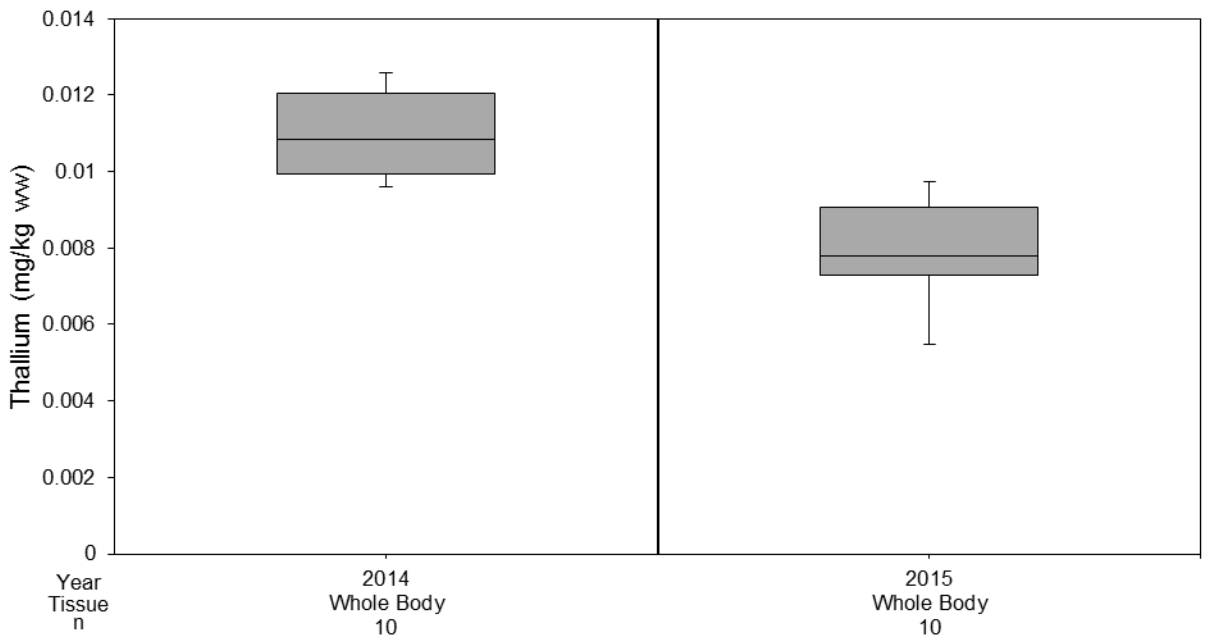
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 444: Thallium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

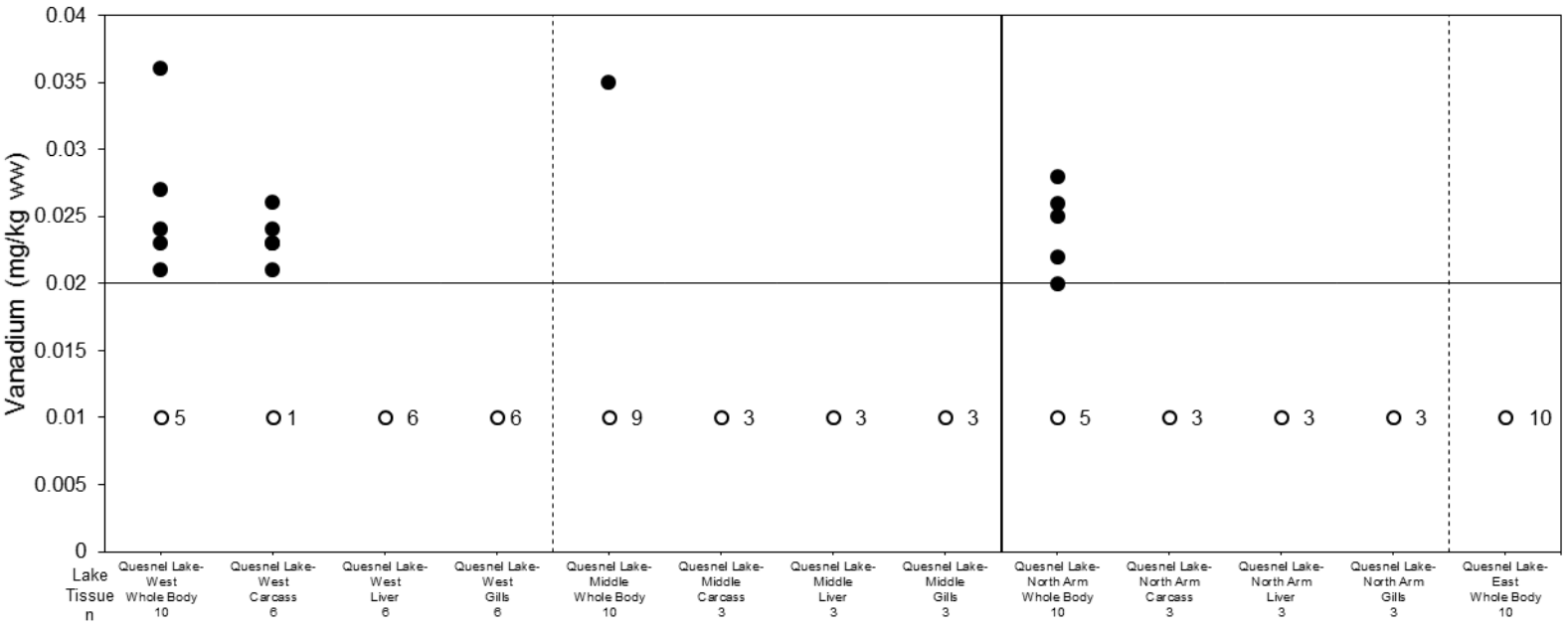
Figure 445: Thallium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

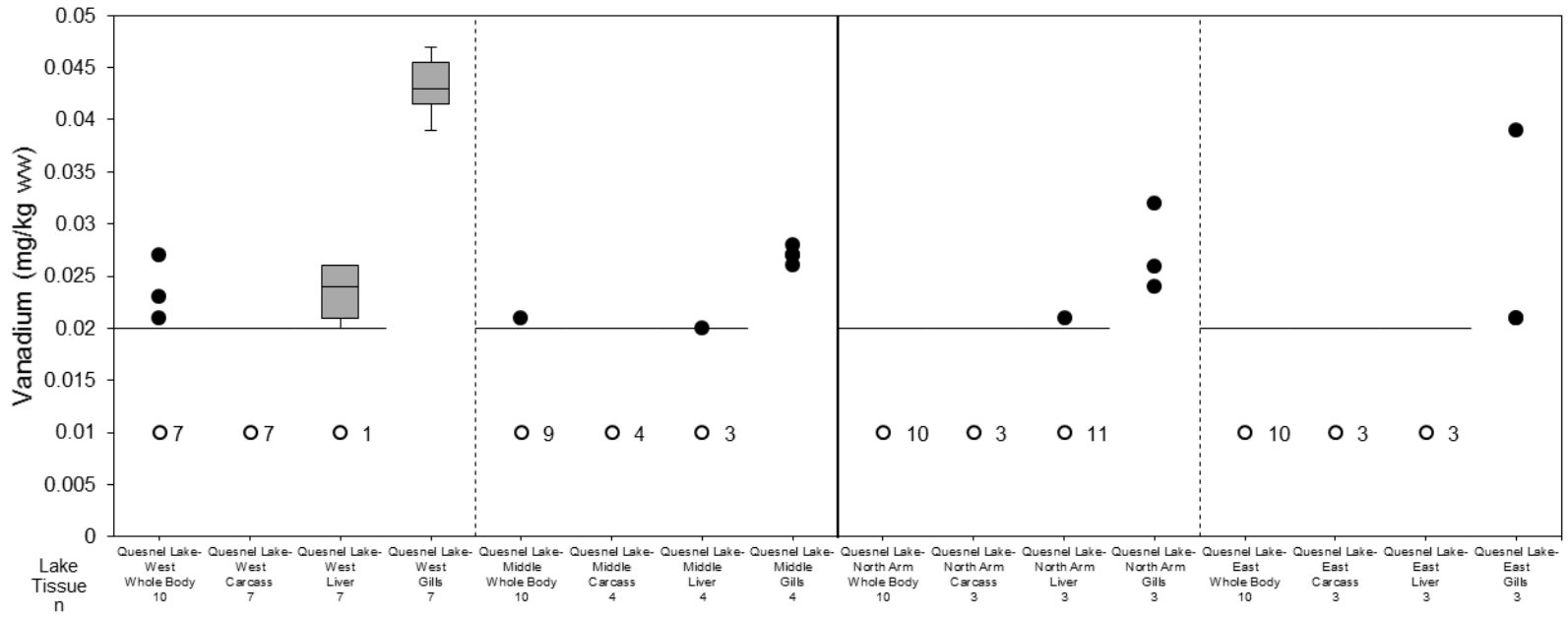
10.18 Vanadium

Figure 446: Vanadium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



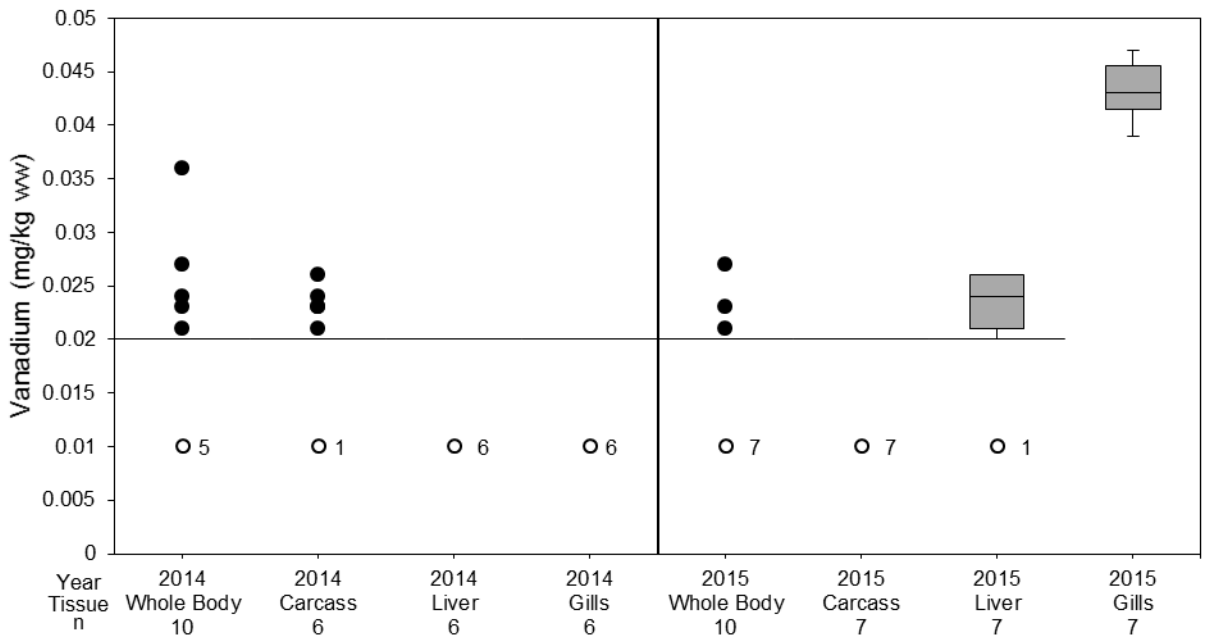
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 447: Vanadium Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



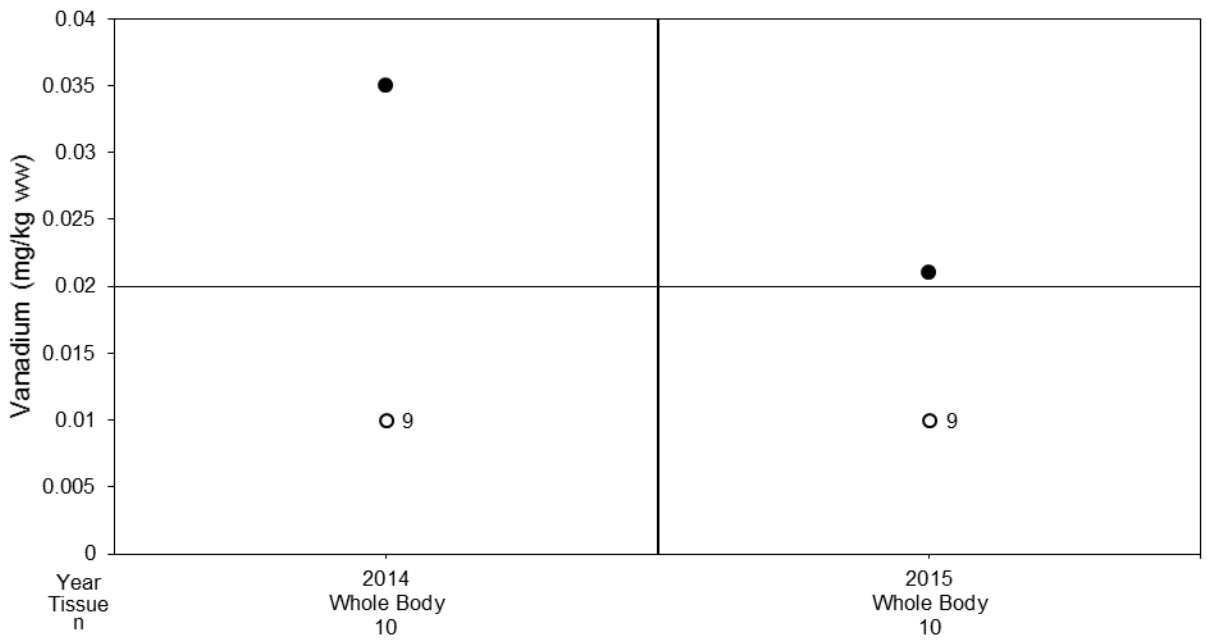
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 448: Vanadium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

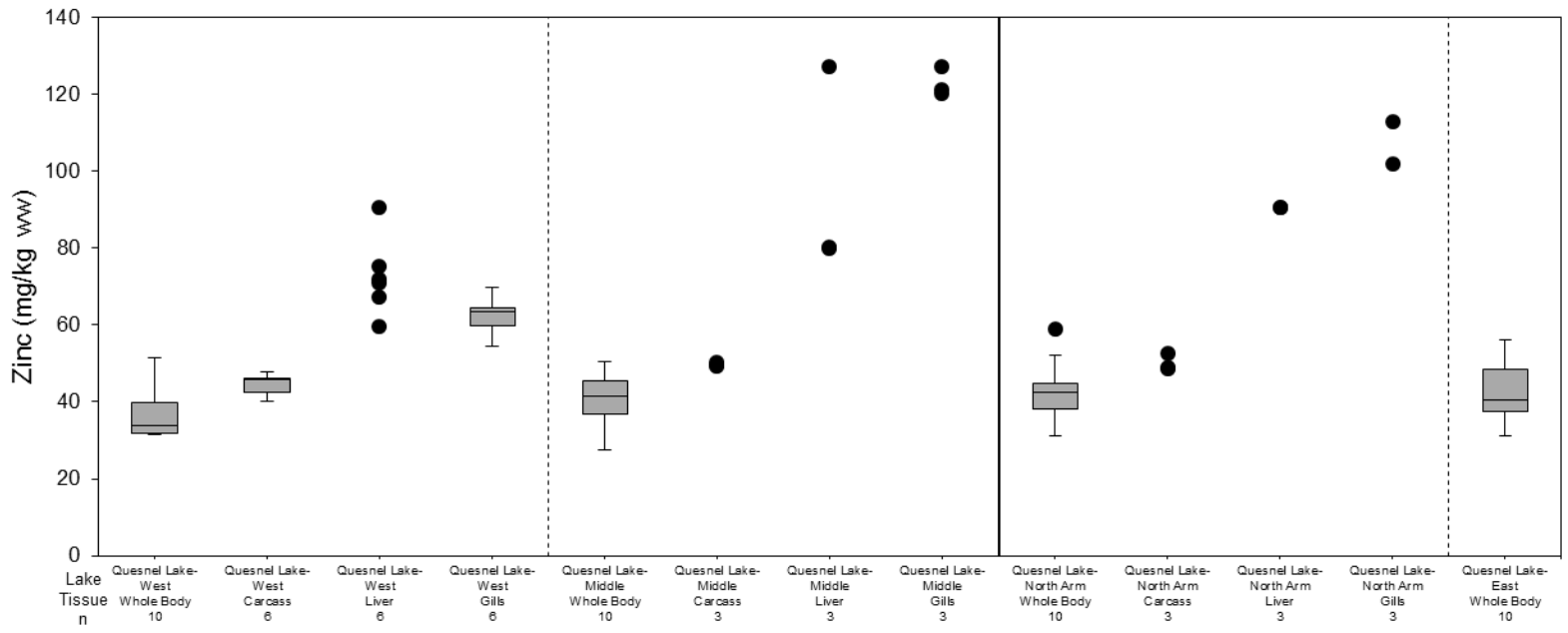
Figure 449: Vanadium Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

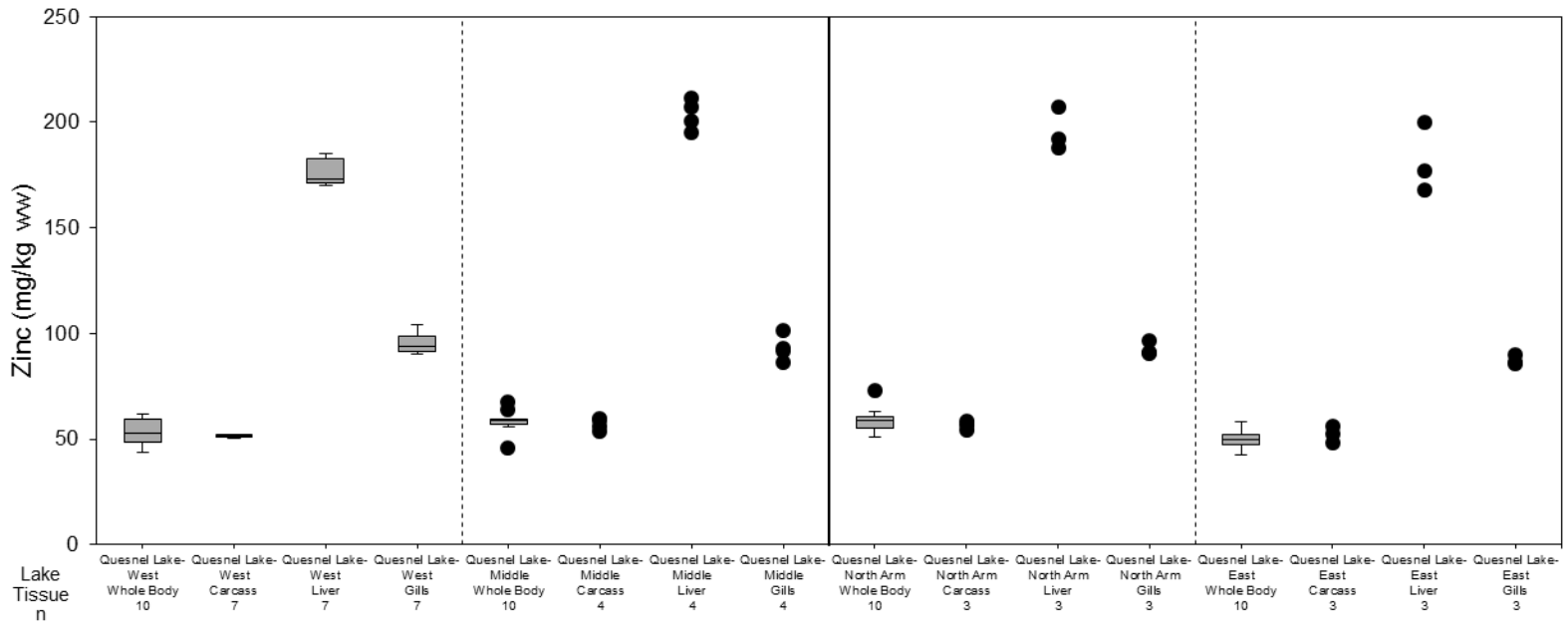
10.19 Zinc

Figure 450: Zinc Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2014



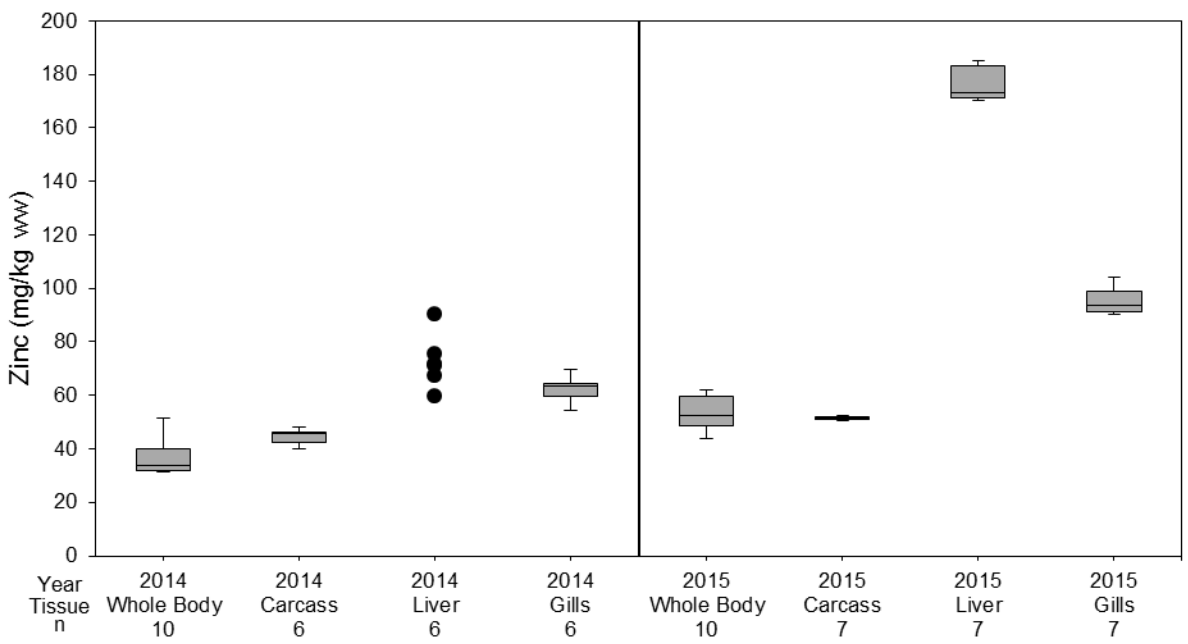
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 451: Zinc Concentrations in Sockeye Salmon Juvenile Tissues Collected in 2015



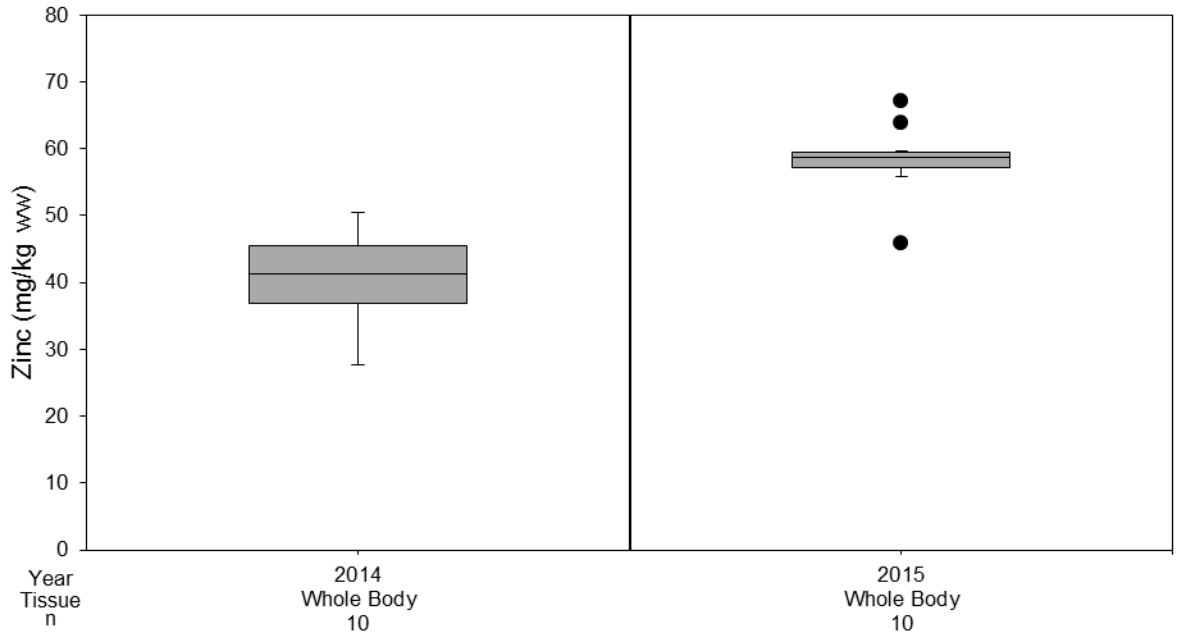
Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 452: Zinc Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – West in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

Figure 453: Zinc Concentrations in Sockeye Salmon Juvenile Tissues Collected from the Quesnel Lake – Middle in 2014 and 2015



Note: Boxplots are censored at the detection limit (DL = solid horizontal line). Concentrations below the DL are plotted as an open symbol at half the DL. Extreme values are plotted as individual values. mg/kg ww = milligrams per kilogram wet weight; n = sample size; dashed lines (- - -) indicate the separation of sites; solid lines (−) indicate the separation of exposure and reference or separation of years.

ATTACHMENT 4

FISH TISSUE CHEMISTRY REGRESSION PLOTS

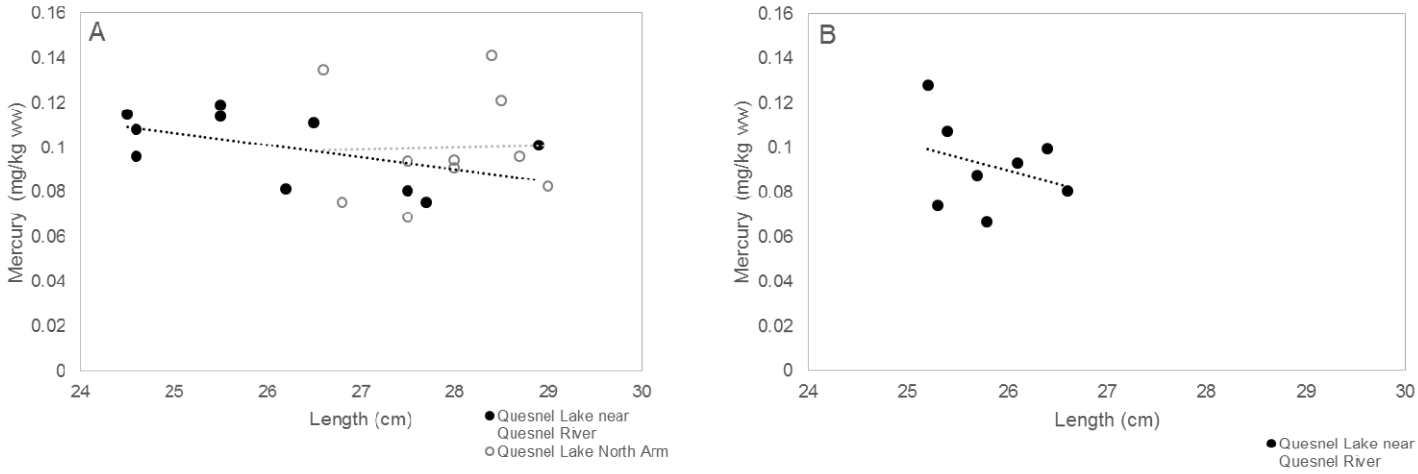
1.0 BURBOT

The type of samples collected from Burbot were not consistent among locations and years, therefore, no comparisons were made for Burbot tissue chemistry and regressions are not presented.

2.0 KOKANEE

2.1 Mercury

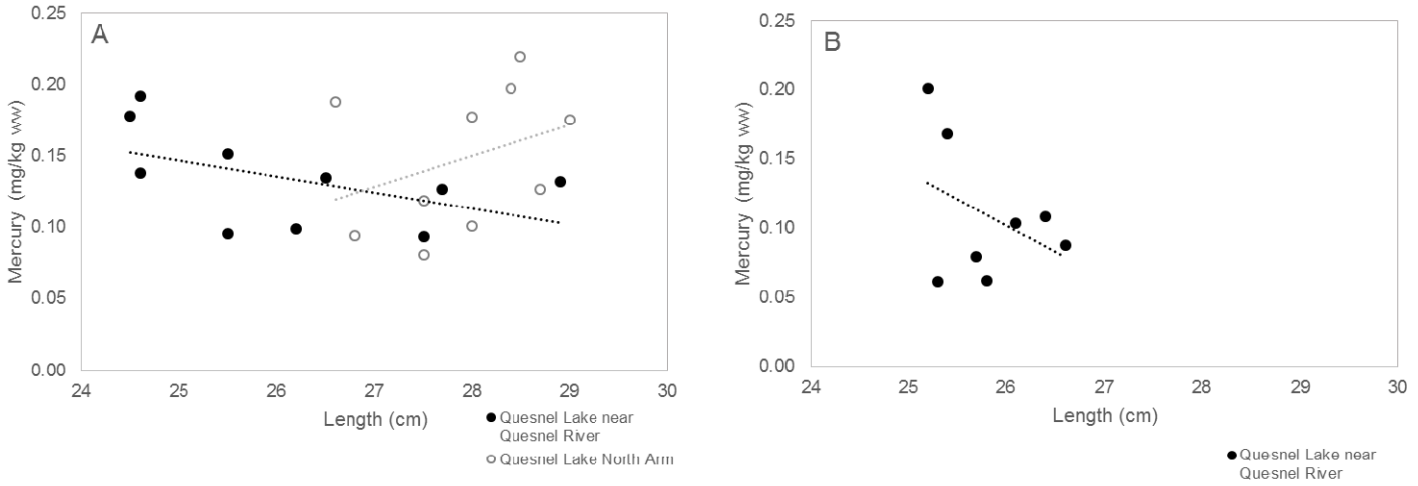
Figure 1: Mercury Concentration in Kokanee Muscle Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length



Regression equations: **(A)** Quesnel Lake near Quesnel River (exposure) y = -0.0054x + 0.2425, R^2 = 0.2621; P = 0.130; **Quesnel Lake North Arm (reference) y = 0.0010x + 0.0728, R^2 = 0.0010; P = 0.931**; **(B)** Quesnel Lake near Quesnel River (exposure) y = -0.0119x + 0.4001, R^2 = 0.099; P = 0.448.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

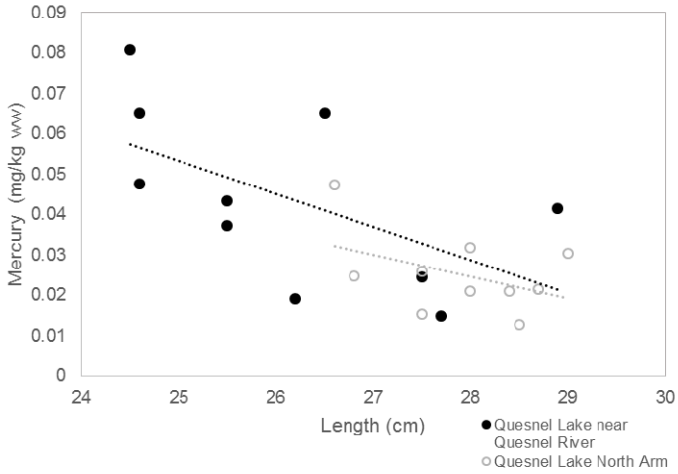
Figure 2: Mercury Concentration in Kokanee Liver Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length



Regression equations: **(A)** Quesnel Lake near Quesnel River (exposure) y = -0.0112x + 0.4263, R^2 = 0.2534; P = 0.138; Quesnel Lake North Arm (reference) y = 0.0218x - 0.4597, R^2 = 0.1256; P = 0.315; **(B)** Quesnel Lake near Quesnel River (exposure) y = -0.0382x + 1.0954, R^2 = 0.1535; P = 0.337.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 3: Mercury Concentration in Kokanee Ovary Tissue Collected in 2014 Relative to Fish Length



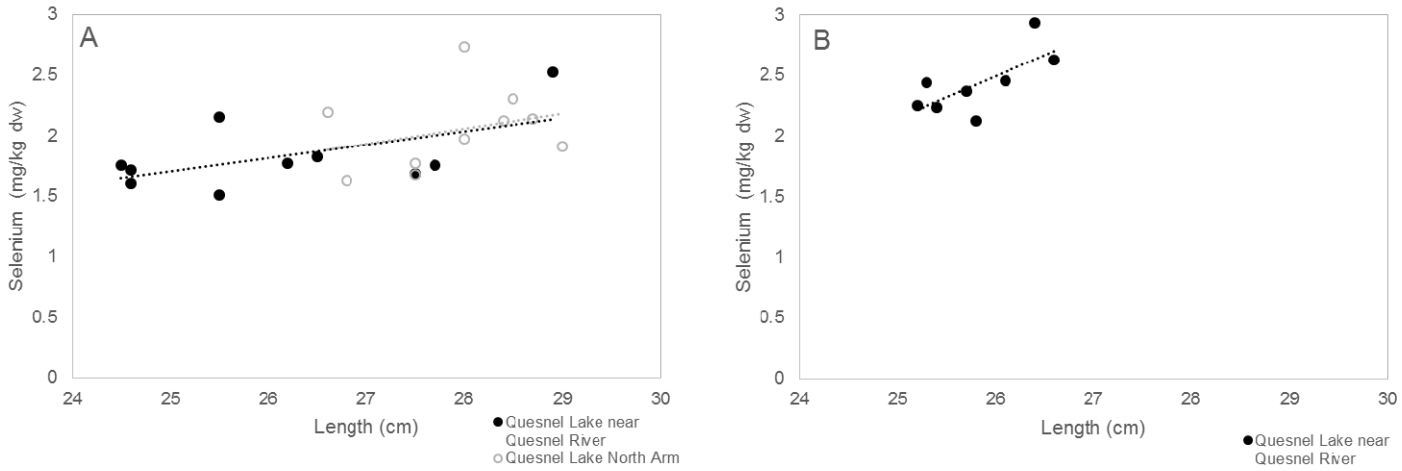
Sample size < 5 for Kokanee ovary collected in 2015.

Regression equations: **Quesnel Lake near Quesnel River (exposure) y = -0.0082x + 0.2585, R^2 = 0.3291; P = 0.083**; Quesnel Lake North Arm (reference) y = -0.0055x + 0.1773, R^2 = 0.1962; P = 0.200.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

2.2 Selenium

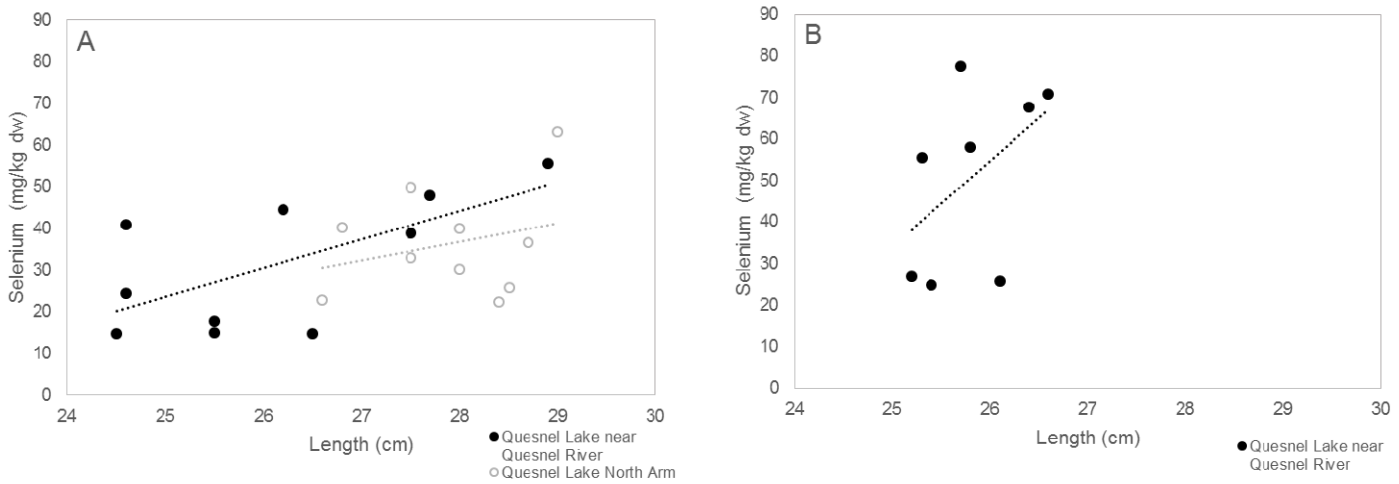
Figure 4: Selenium Concentrations in Kokanee Muscle Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length



Regression equations: **(A) Quesnel Lake near Quesnel River (exposure) y = 0.1096x - 1.0365, R^2 = 0.3123; P = 0.093**; Quesnel Lake North Arm (reference) y = 0.1245x – 1.4291, R^2 = 0.0892; P = 0.402; **(B) Quesnel Lake near Quesnel River (exposure) y = 0.3509x – 6.6276, R^2 = 0.0501; P = 0.049**.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

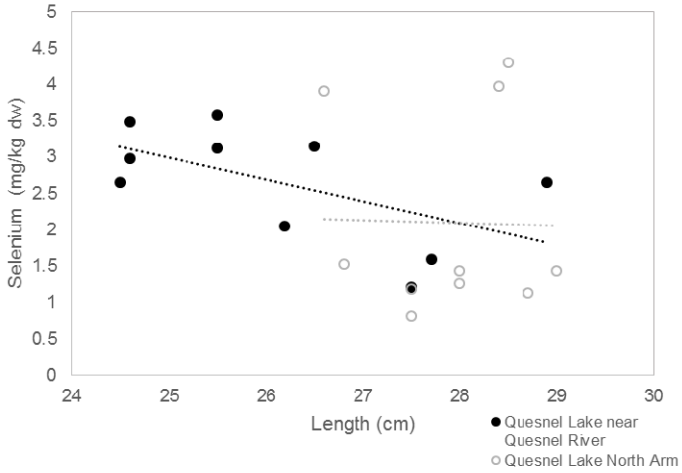
Figure 5: Selenium Concentrations in Kokanee Liver Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length



Regression equations: **(A) Quesnel Lake near Quesnel River (exposure) y = 6.9058x – 149.0965, R^2 = 0.4326; P = 0.039**; Quesnel Lake North Arm (reference) y = 4.4129x – 86.7912, R^2 = 0.0758; P = 0.441; **(B)** Quesnel Lake near Quesnel River (exposure) y = 20.5727x – 480.1874, R^2 = 0.2348; P = 0.224.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 6: Selenium Concentrations in Kokanee Ovary Tissue Collected in 2014 Relative to Fish Length



Sample size < 5 for Kokanee ovary collected in 2015.

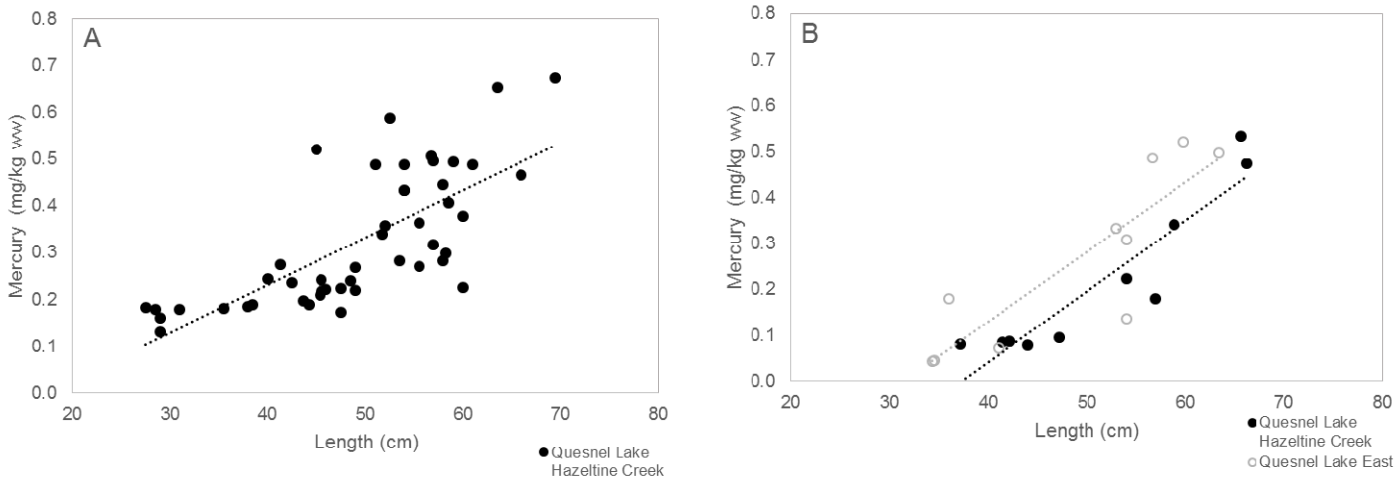
Regression equations: **Quesnel Lake near Quesnel River (exposure) y = -0.3031x – 10.5742, R^2 = 0.3294; P = 0.082**; Quesnel Lake North Arm (reference) y = -0.0408x – 3.2400, R^2 = 0.0006; P = 0.948.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

3.0 LAKE TROUT

3.1 Mercury

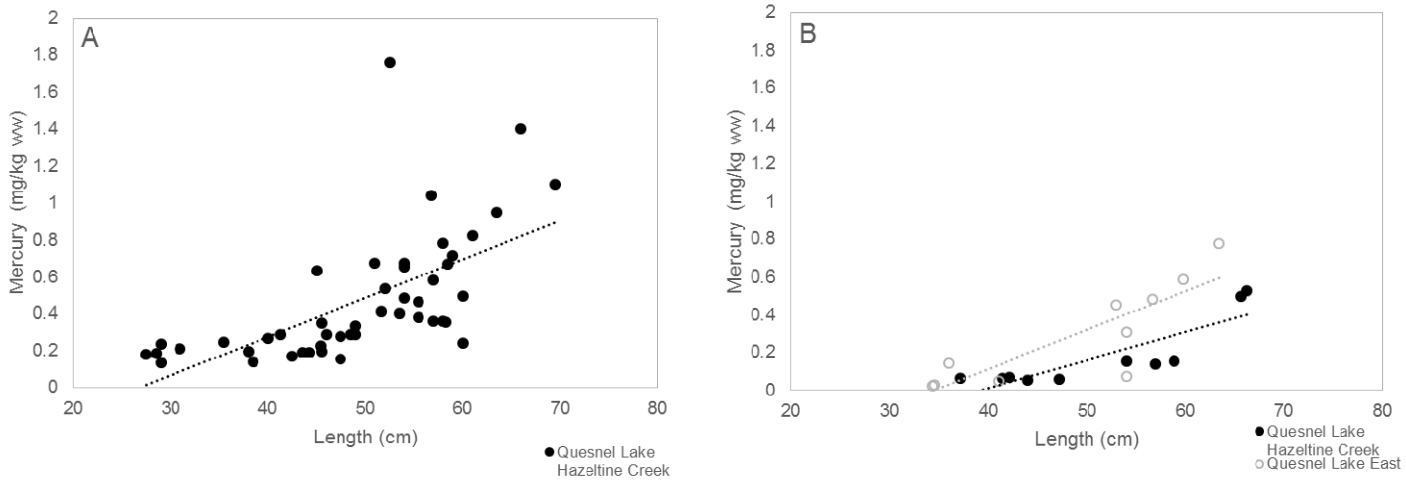
Figure 7: Mercury Concentrations in Lake Trout Muscle Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length



Regression equations: **(A) Quesnel Lake Hazeltine Creek (exposure) y = 0.0101x – 0.1750, R^2 = 0.5363; P = <0.001**; **(B) Quesnel Lake Hazeltine Creek (exposure) y = 0.0154x – 0.5748, R^2 = 0.8602; P = <0.001**; **Quesnel Lake East (reference) y = 0.0152x – 0.4773, R^2 = 0.7599; P = 0.001**.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

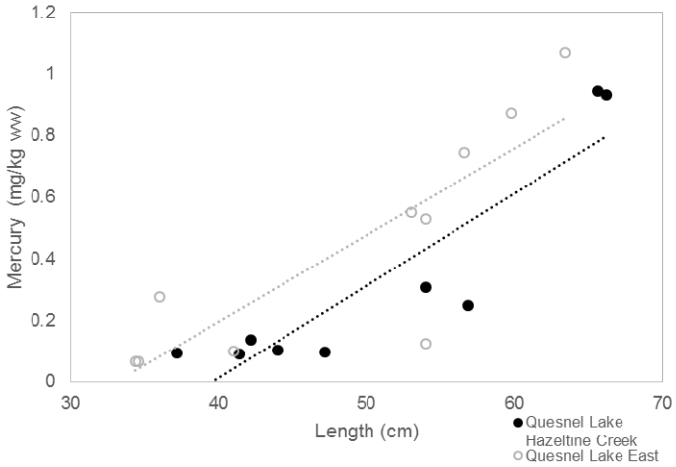
Figure 8: Mercury Concentrations in Lake Trout Liver Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length



Regression equations: **(A) Quesnel Lake Hazeltine Creek (exposure) y = 0.0210x – 0.5642, R^2 = 0.3943; P = <0.001**; **(B) Quesnel Lake Hazeltine Creek (exposure) y = 0.0148x – 0.5788, R^2 = 0.7267; P = 0.002**; **Quesnel Lake East (reference) y = 0.0207x – 0.7123, R^2 = 0.7231; P = 0.002**.
mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 9: Mercury Concentrations in Lake Trout Kidney Tissue Collected in 2015 Relative to Fish Length

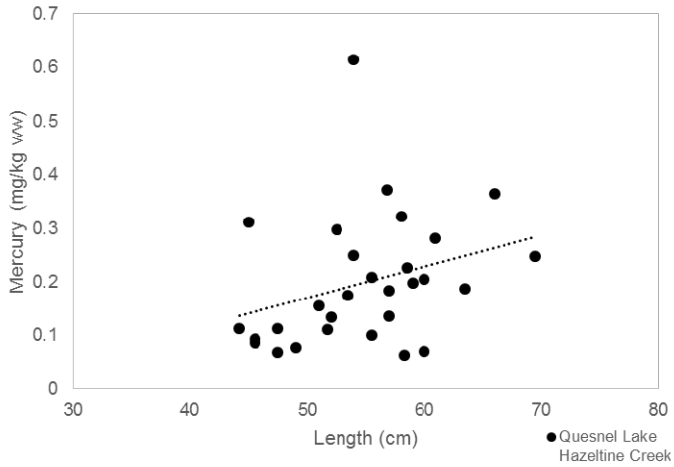
Lake Trout kidney was not collected in 2014.



Regression equations: **Quesnel Lake Hazeltine Creek (exposure) y = 0.0300x – 1.1904, R^2 = 0.8167; P = <0.001**; **Quesnel Lake East (reference) y = 0.0283x – 0.9358, R^2 = 0.7202; P = 0.002**.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 10: Mercury Concentrations in Lake Trout Ovary Tissue Collected in 2014 Relative to Fish Length

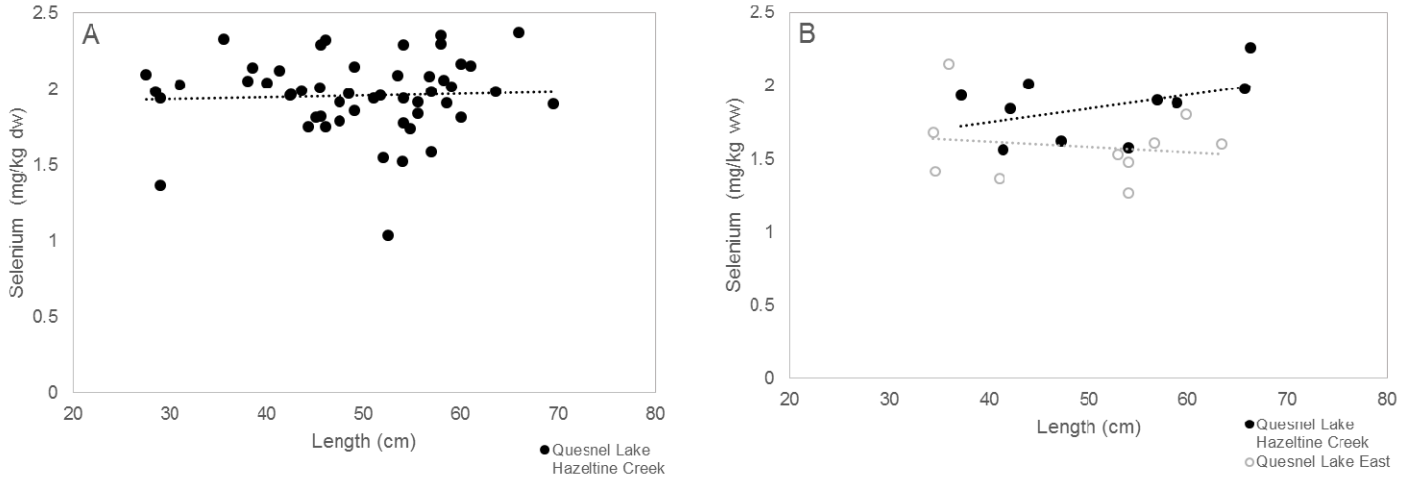


Sample size < 5 for Lake Trout ovary collected in 2015.

Regression equation: Quesnel Lake Hazeltine Creek (exposure) y = 0.0058x – 0.1195, R^2 = 0.0933; P = 0.107.
mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

3.2 Selenium

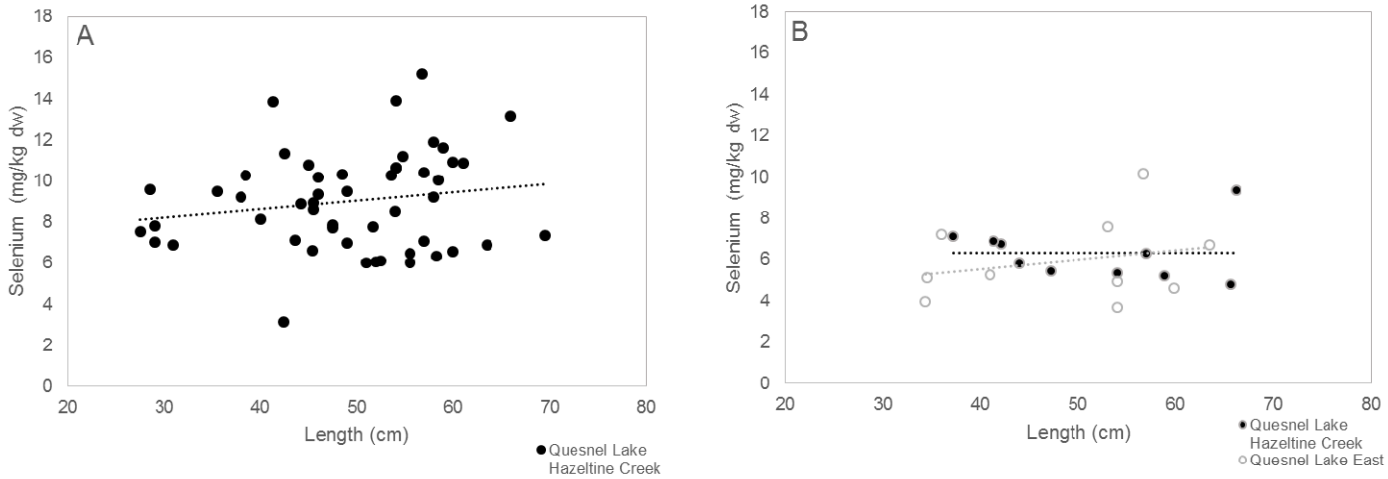
Figure 11: Selenium Concentrations in Lake Trout Muscle Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length



Regression equations: **(A)** Quesnel Lake Hazeltine Creek (exposure) y = 0.0011x + 1.9040, R^2 = 0.0018; P = 0.766; **(B)** Quesnel Lake Hazeltine Creek (exposure) y = 0.0095x + 1.3692, R^2 = 0.2038; P = 0.190; Quesnel Lake East (reference) y = -0.0036x + 1.7682, R^2 = 0.0254; P = 0.660.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 12: Selenium Concentrations in Lake Trout Liver Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length

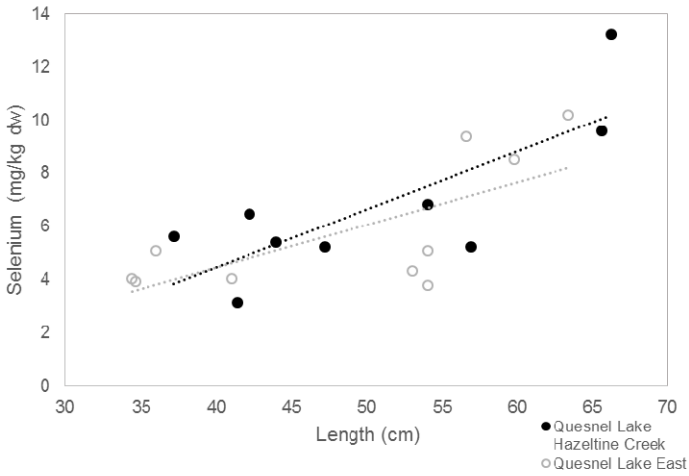


Regression equations: **(A)** Quesnel Lake Hazeltine Creek (exposure) y = 0.0407x + 6.9842, R^2 = 0.0290; P = 0.233; **(B)** Quesnel Lake Hazeltine Creek (exposure) y = -0.0008x + 6.3557, R^2 = <0.0001; P = 0.986; Quesnel Lake East (reference) y = 0.0445x + 3.7542, R^2 = 0.0614; P = 0.490.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 13: Selenium Concentrations in Lake Trout Kidney Tissue Collected in 2015 Relative to Fish Length

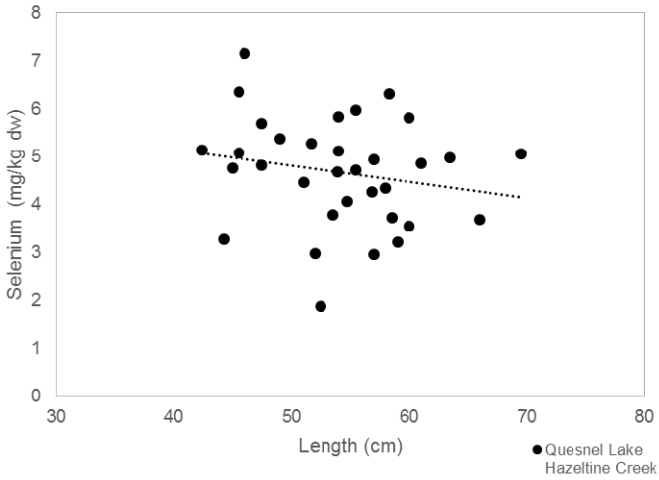
Lake Trout kidney was not collected in 2014.



Regression equations: **Quesnel Lake Hazeltine Creek (exposure) y = 0.2193x – 4.3360, R^2 = 0.6158**; **P = 0.012; Quesnel Lake East (reference) y = 0.1606x – 1.9804, R^2 = 0.5007, P = 0.022**.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 14: Selenium Concentrations in Lake Trout Ovary Tissue Collected in 2014 Relative to Fish Length



Sample size < 5 for Lake Trout ovary collected in 2015.

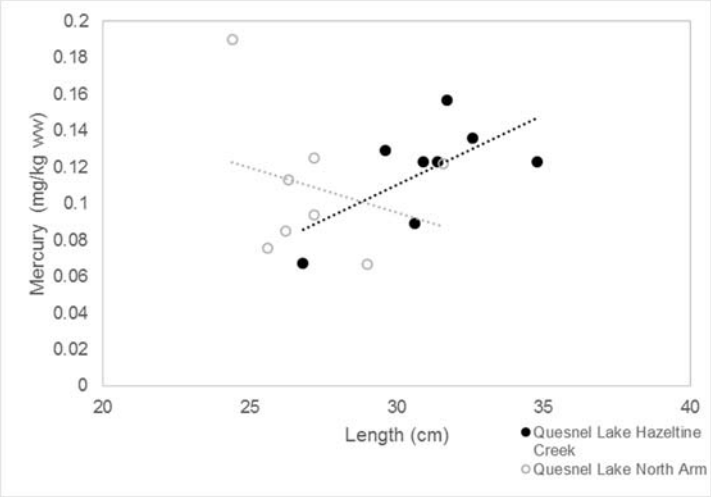
Regression equation: Quesnel Lake Hazeltine Creek (exposure) y = -0.0332x + 6.4665, R^2 = 0.0362; P = 0.289.
mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

4.0 LARGESCALE SUCKER

4.1 Mercury

Figure 15: Mercury Concentrations in Largescale Sucker Muscle Tissue Collected in 2015 Relative to Fish Length

Largescale Sucker muscle was not collected in 2014.



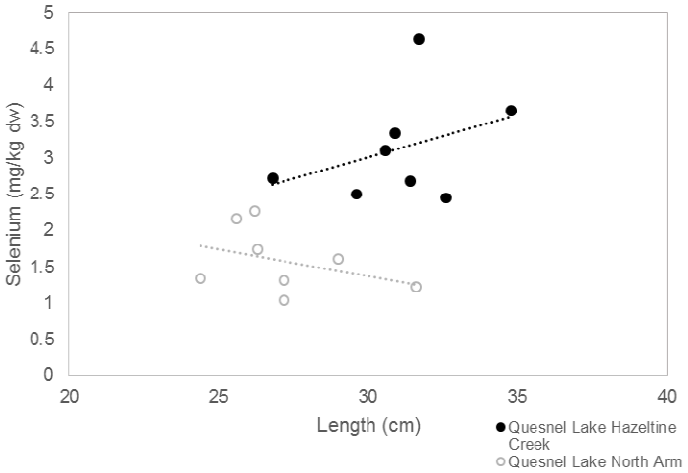
Regression equation: **Quesnel Lake Hazeltine Creek (exposure) y = 0.0076x – 0.1186, R^2 = 0.4003; P = 0.092**; Quesnel Lake North Arm (reference) y = -0.0049x + 0.2431, R^2 = 0.0792, P = 0.499.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

4.2 Selenium

Figure 16: Selenium Concentrations in Largescale Sucker Muscle Tissue Collected in 2015 Relative to Fish Length

Largescale Sucker muscle was not collected in 2014.



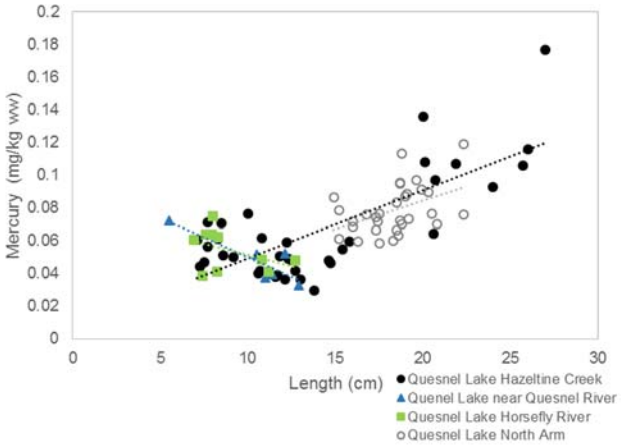
Regression equation: Quesnel Lake Hazeltine Creek (exposure) y = 0.1172x – 0.5040, R^2 = 0.1353; P = 0.370; Quesnel Lake North Arm (reference) y = -0.0752x + 3.6305, R^2 = 0.1407, P = 0.360.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

5.0 NORTHERN PIKEMINNOW

5.1 Mercury

Figure 17: Mercury Concentrations in Northern Pikeminnow Whole Body Tissue Collected in 2014 Relative to Fish Length



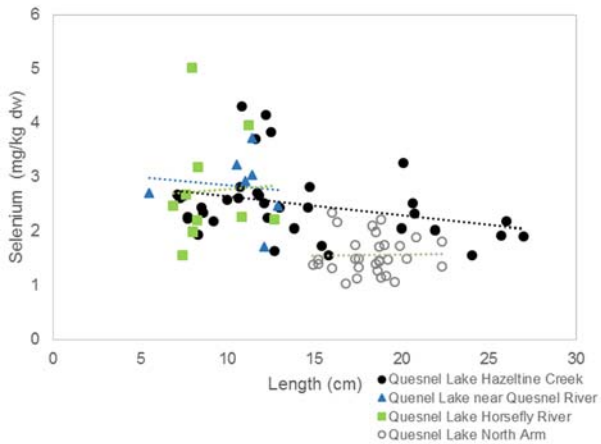
Northern Pikeminnow whole body was not collected in 2015.

Regression equations: **Quesnel Lake Hazeltine Creek (exposure) y = 0.0041x + 0.0082, R^2 = 0.5595; P = <0.001**; **Quesnel Lake near Quesnel River (exposure) y = -0.0048x + 0.0978, R^2 = 0.7500, P = 0.012**; Quesnel Lake Horsefly River (exposure) y = -0.0027x + 0.0782, R^2 = 0.1769, P = 0.226; **Quesnel Lake North Arm (reference) y = 0.0035x + 0.0154, R^2 = 0.1913, P = 0.014**.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

5.2 Selenium

Figure 18: Selenium Concentrations in Northern Pikeminnow Whole Body Tissue Collected in 2014 Relative to Fish Length



Northern Pikeminnow whole body was not collected in 2015.

Regression equations: **Quesnel Lake Hazeltine Creek (exposure) y = -0.0350x + 2.9851, R^2 = 0.0947; P = 0.068**; Quesnel Lake near Quesnel River (exposure) y = -0.0290x + 3.1352, R^2 = 0.0123, P = 0.813; Quesnel Lake Horsefly River (exposure) y = 0.0251x + 2.5260, R^2 = 0.0022, P = 0.898; Quesnel Lake North Arm (reference) y = 0.0050x + 1.4732, R^2 = 0.0007, P = 0.888.

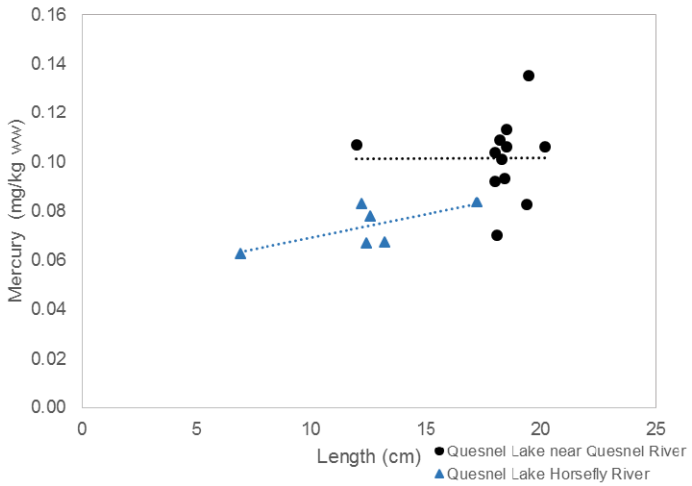
mg/kg dw = milligrams per kilogram dry weight; cm = centimetre.

Note: One statistical outlier from Quesnel Lake North Arm was removed (i.e. standardized residual > 3); regression equations that are significant (P < 0.1) are bolded.

6.0 PEAMOUTH CHUB

6.1 Mercury

Figure 19: Mercury Concentrations in Peamouth Chub Whole Body Tissue Collected in 2014 Relative to Fish Length



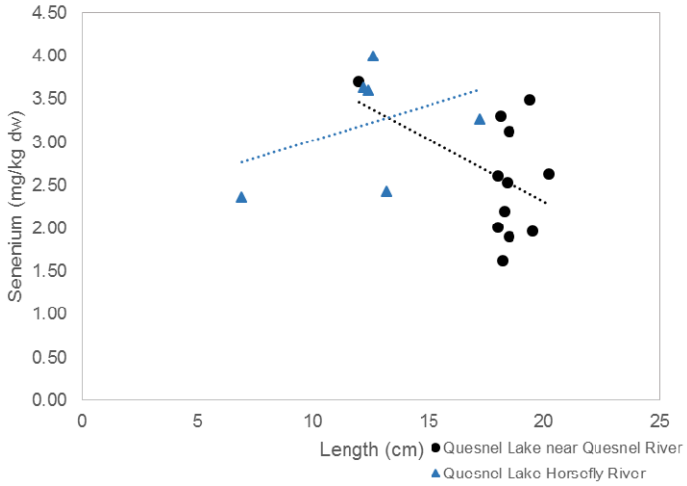
Insufficient data for 2015 Peamouth Chub (i.e., no lengths).

Regression equations: Quesnel Lake near Quesnel River (exposure) y = 7E-05x + 0.1003, R^2 = <0.0001, P = 0.978; Quesnel Lake Horsefly River (exposure) y = 0.0019x + 0.0504, R^2 = 0.4739, P = 0.131.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

6.2 Selenium

Figure 20: Selenium Concentrations in Peamouth Chub Collected from Quesnel Lake near Quesnel River in 2014 and 2015



Insufficient data for 2015 Peamouth Chub (i.e., no lengths).

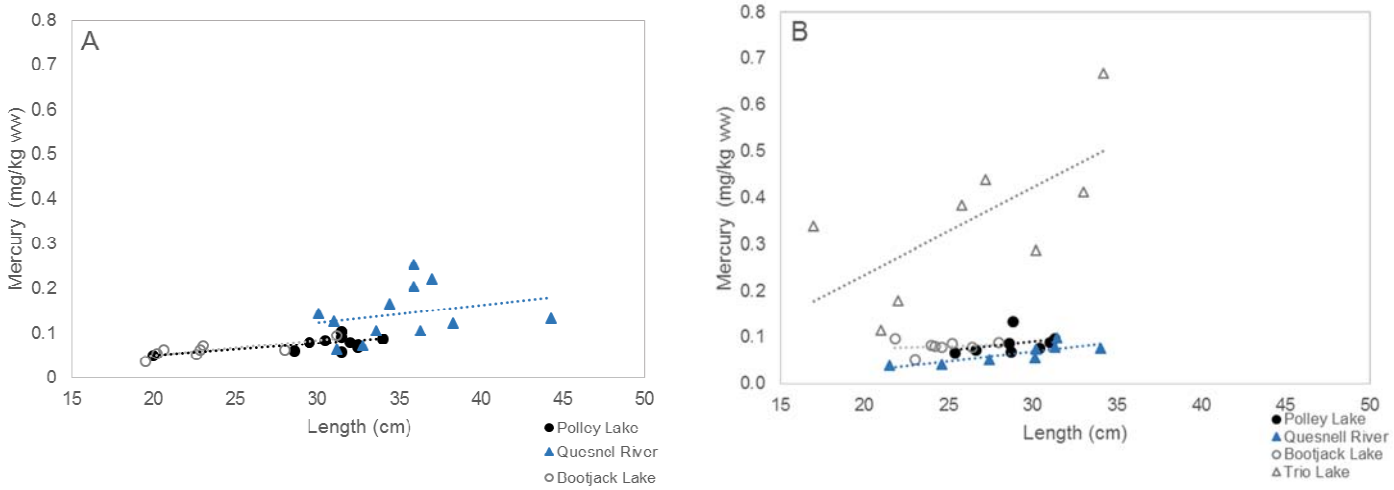
Regression equations: Quesnel Lake near Quesnel River (exposure) y = 0.0812x + 2.2082, R^2 = 0.1550, P = 0.440; Quesnel Lake Horsefly River (exposure) y = -0.1439x + 5.1930, R^2 = 0.1842, P = 0.164.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

7.0 RAINBOW TROUT

7.1 Mercury

Figure 21: Mercury Concentrations in Rainbow Trout Muscle Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length

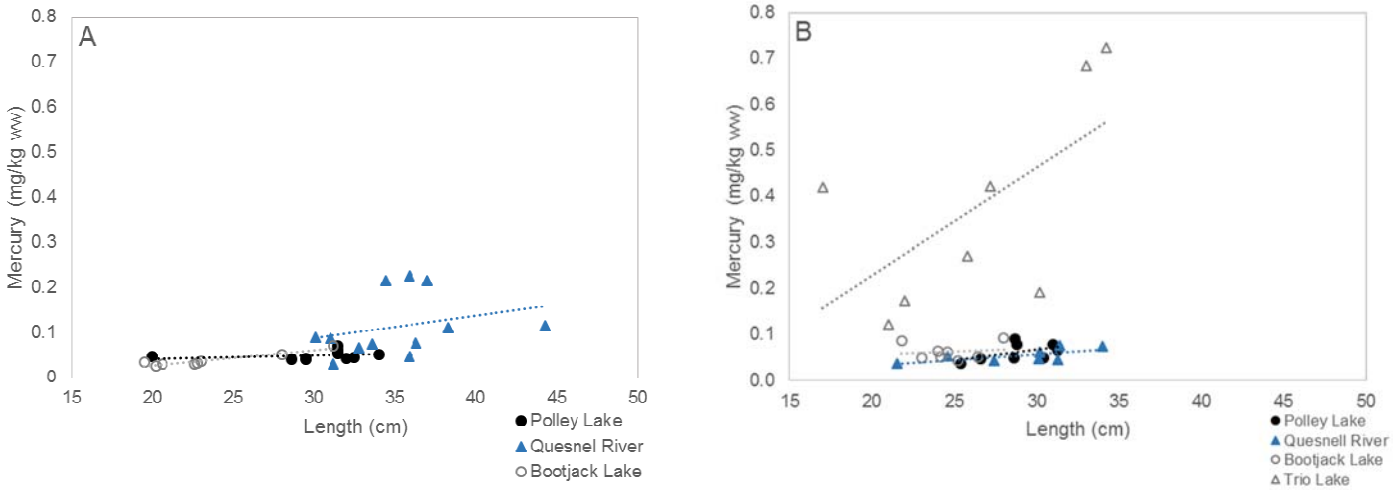


Regression equations: **(A) Polley Lake (exposure) y = 0.0027x - 0.0054, R^2 = 0.3131, P = 0.047**; Quesnel River (exposure) y = 0.0040x + 0.0034, R^2 = 0.0708, P = 0.403; **Bootjack Lake (reference) y = 0.0035x – 0.0202, R^2 = 0.6563, P = 0.015**; **(B)** Polley Lake (exposure) y = 0.0038x – 0.0235, R^2 = 0.1326, P = 0.375; **Quesnel River (exposure) y = 0.0042x – 0.0552, R^2 = 0.6627, P = 0.014**; Bootjack Lake (reference) y = 0.0013x + 0.0492, R^2 = 0.0346, P = 0.659; Trio Lake (reference) y = 0.0234x – 0.2385, R^2 = 0.3790, P = 0.104.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Note: One statistical outlier from (A) Quesnel River was removed (i.e. standardized residual > 3).

Figure 22: Mercury Concentrations in Rainbow Trout Liver Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length



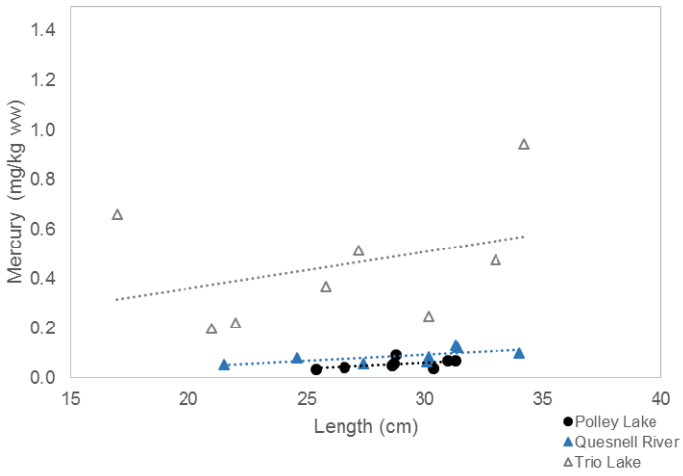
Regression equations: **(A)** Polley Lake (exposure) y = 0.0008x + 0.0265, R^2 = 0.0879, P = 0.325; Quesnel River (exposure) y = 0.0050x – 0.0631, R^2 = 0.0811, P = 0.370; **Bootjack Lake (reference) y = 0.0034x – 0.0419, R^2 = 0.8936, P = <0.001**; **(B)** Polley Lake (exposure) y = 0.0048x – 0.0750, R^2 = 0.2655, P = 0.191; **Quesnel River (exposure) y = 0.0025x – 0.0166, R^2 = 0.4741, P = 0.059**; Bootjack Lake (reference) y = 0.0012x + 0.0320, R^2 = 0.0182, P = 0.750; Trio Lake (reference) y = 0.0027x + 0.0178, R^2 = 0.0264, P = 0.701.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre.

Note: One statistical outlier from (A) Polley Lake was removed (i.e. standardized residual > 3); regression equations that are significant (P < 0.1) are bolded.

Figure 23: Mercury Concentrations in Rainbow Trout Kidney Tissue Collected in 2015 Relative to Fish Length

Rainbow Trout kidney was not collected in 2014.

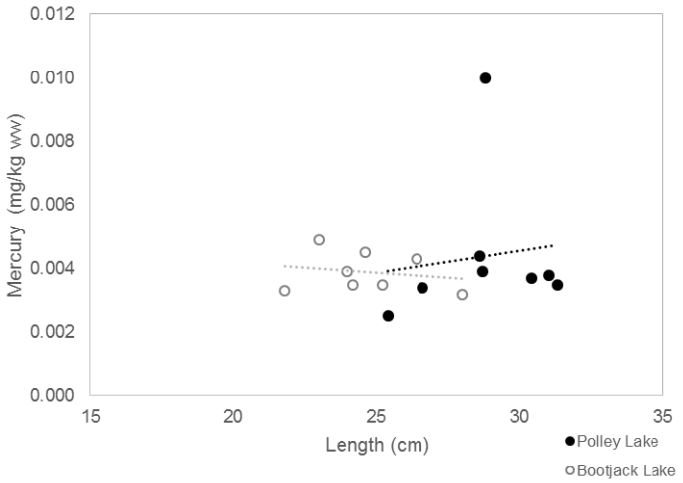


Regression equations: Polley Lake (exposure) y = 0.0049x – 0.0837, R^2 = 0.2738, P = 0.183; **Quesnel River (exposure) y = 0.0048x – 0.0521, R^2 = 0.4540, P = 0.067**; Trio Lake (reference) y = 0.0146x + 0.0696, R^2 = 0.1200, P = 0.401.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 24: Mercury Concentrations in Rainbow Trout Ovary Tissue Collected in 2015 Relative to Fish Length

Sample size < 5 for Rainbow Trout ovary collected in 2014.

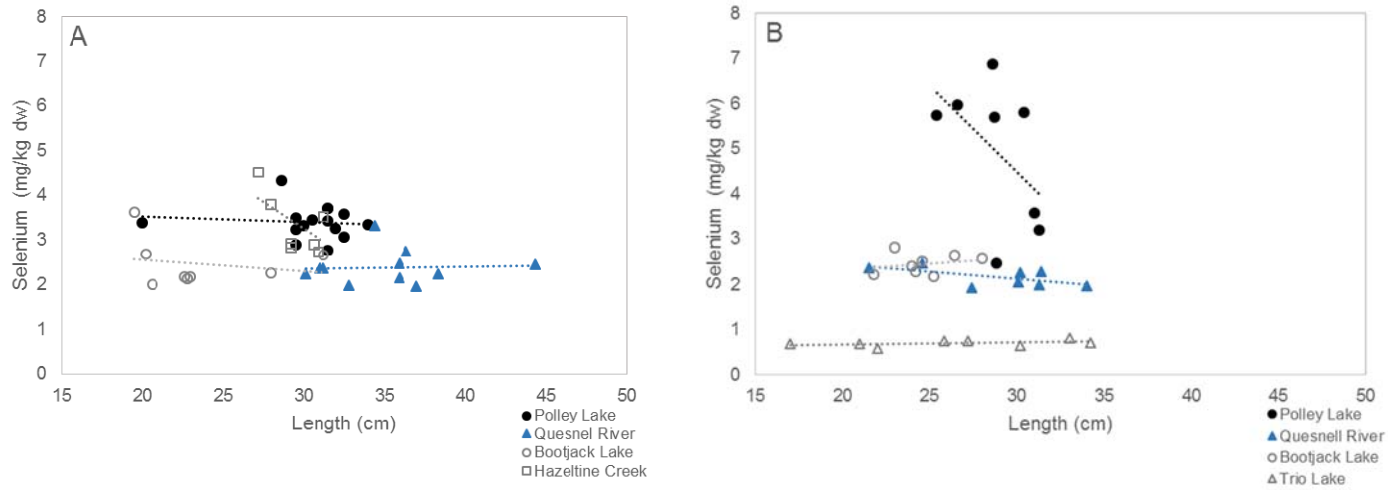


Regression equations: Polley Lake (exposure) y = 0.0001x + 0.0005, R^2 = 0.0142, P = 0.779; Bootjack Lake (reference) y = -6E-05x + 0.0055, R^2 = 0.0391, P = 0.639.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

7.2 Selenium

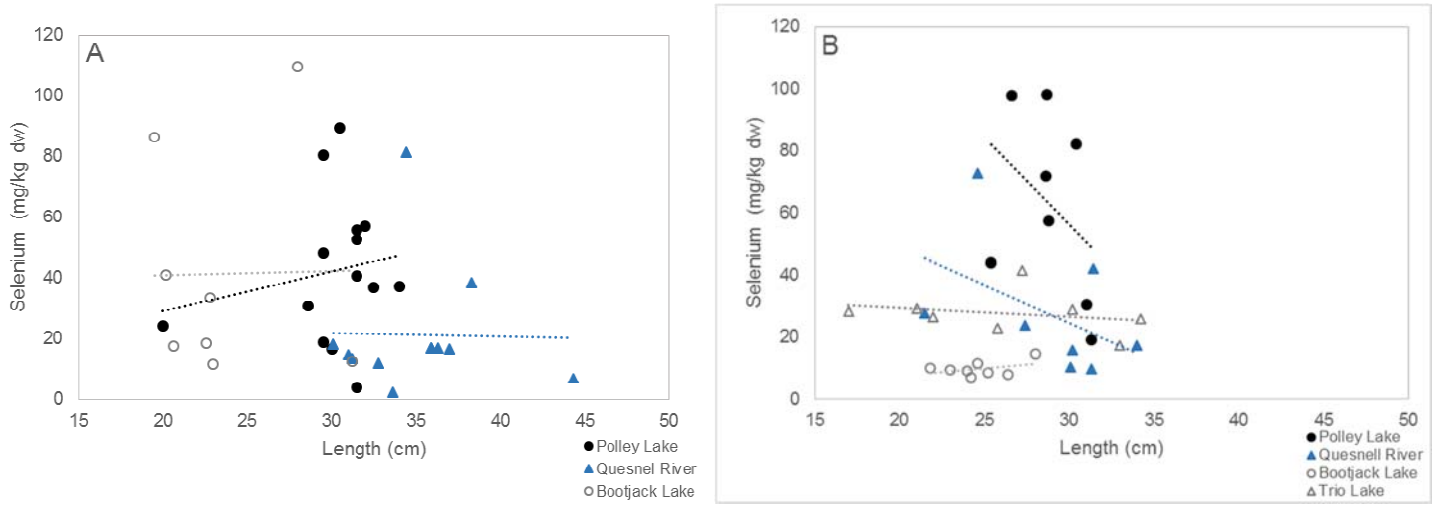
Figure 25: Selenium Concentrations in Rainbow Trout Muscle Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length



Regression equations: **(A)** Polley Lake (exposure) y = -0.0119x + 3.7628, R^2 = 0.0107, P = 0.714; Quesnel River (exposure) y = 0.0045x + 2.2334, R^2 = 0.0022, P = 0.890; Bootjack Lake (reference) y = -0.0241x + 3.0359, R^2 = 0.0344, P = 0.660; **(B)** Polley Lake (exposure) y = -0.3815x + 15.9216, R^2 = 0.2455, P = 0.212; Quesnel River (exposure) y = -0.0310x + 3.0620, R^2 = 0.3657, P = 0.112; Bootjack Lake (reference) y = 0.0282x + 1.7665, R^2 = 0.0616, P = 0.553; Trio Lake (reference) y = 0.0050x + 0.5735, R^2 = 0.2063, P = 0.258.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 26: Selenium Concentrations in Rainbow Trout Liver Tissue Collected in (A) 2014 and (B) 2015 Relative to Fish Length

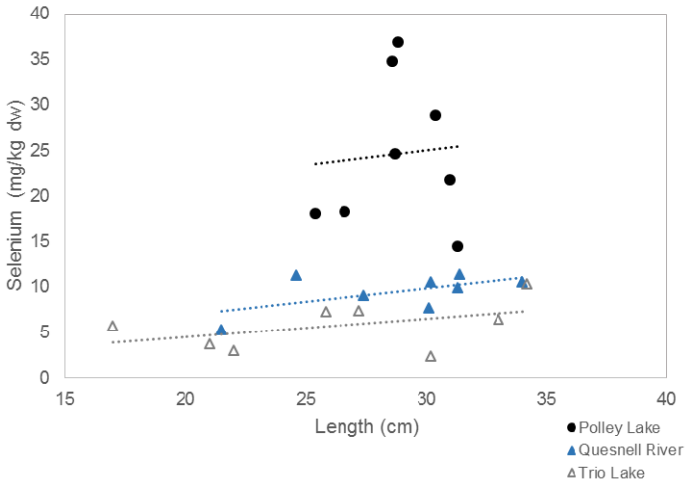


Regression equations: **(A)** Polley Lake (exposure) y = 1.3235x – 2.4468, R^2 = 0.0326, P = 0.537; Quesnel River (exposure) y = -0.1013x + 24.8301, R^2 = 0.0004, P = 0.953; Bootjack Lake (reference) y = 0.1300x + 38.3498, R^2 = 0.0002, P = 0.973; **(B)** Polley Lake (exposure) y = -5.5811x + 223.6408, R^2 = 0.1498, P = 0.343; Quesnel River (exposure) y = -2.4281x + 97.4570, R^2 = 0.2201, P = 0.241; Bootjack Lake (reference) y = 0.5084x – 2.7753, R^2 = 0.1673, P = 0.314; Trio Lake (reference) y = -0.2888x + 35.2176, R^2 = 0.0649, P = 0.543.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 27: Selenium Concentrations in Rainbow Trout Kidney Tissue Collected in 2015 Relative to Fish Length

Rainbow Trout kidney was not collected in 2014.

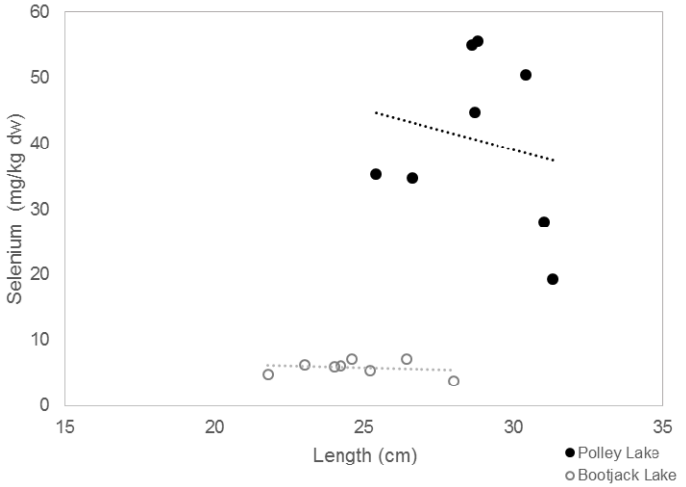


Regression equations: Polley Lake (exposure) y = 0.3150x + 15.4823, R^2 = 0.0066, P = 0.848; Quesnel River (exposure) y = 0.2917x + 1.0800, R^2 = 0.3316, P = 0.135; Trio Lake (reference) y = 0.2000x + 0.5509, R^2 = 0.2090, P = 0.255.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 28: Selenium Concentrations in Rainbow Trout Ovary Tissue Collected in 2015 Relative to Fish Length

Sample size < 5 for Rainbow Trout ovary collected in 2014.



Regression equations: Polley Lake (exposure) y = -1.2396x + 76.1761, R^2 = 0.0378, P = 0.645; Bootjack Lake (reference) y = -0.1191x + 8.8001, R^2 = 0.0402, P = 0.634.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

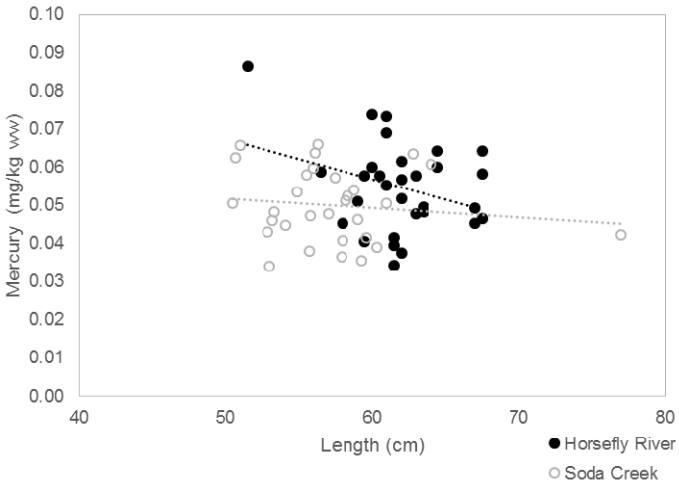
8.0 REDSIDE SHINER

Redside Shiner samples collected in 2014 had sample sizes < 5. Samples collected in 2015 did have a robust sample size, however length data was not available. Therefore, regressions could not be completed.

9.0 SOCKEYE SALMON ADULTS

9.1 Mercury

Figure 29: Mercury Concentrations in Sockeye Salmon Muscle Tissue Collected in 2014 Relative to Fish Length

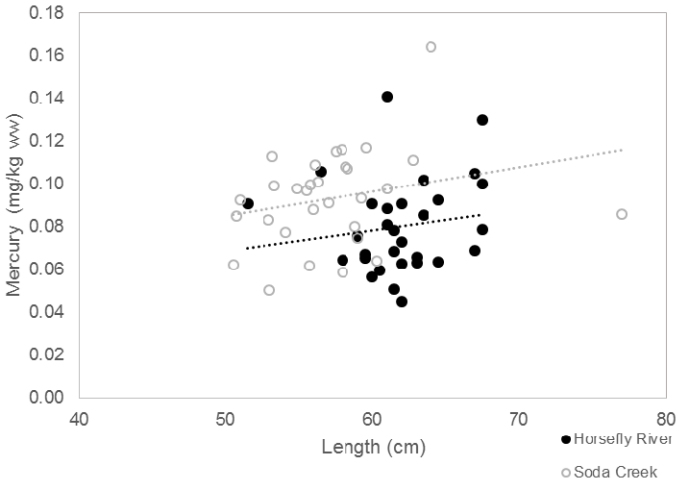


Sockeye Salmon were not collected in 2015.

Regression equations: **Horsefly River (exposure) y = -0.0011x + 0.1200, R^2 = 0.0983 P = 0.092**; Soda Creek (reference) y = -0.0002x + 0.0643, R^2 = 0.0173, P = 0.489.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 30: Mercury Concentrations in Sockeye Salmon Liver Tissue Collected in 2014 Relative to Fish Length



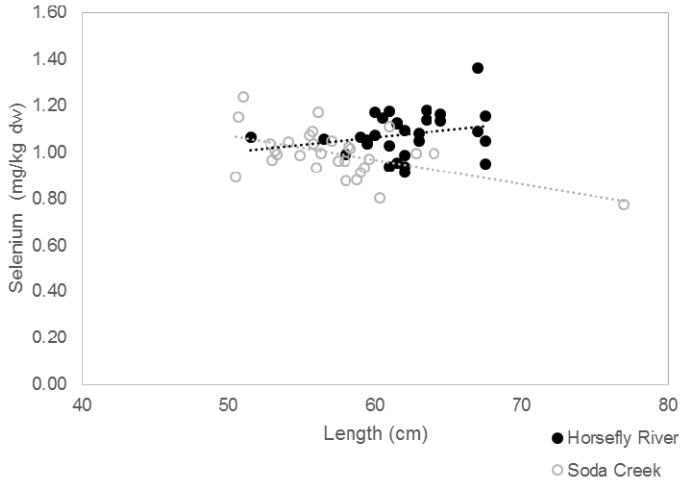
Sockeye Salmon were not collected in 2015.

Regression equations: Horsefly River (exposure) y = 0.0010x + 0.0194, R^2 = 0.0242 P = 0.412; Soda Creek (reference) y = 0.0011x + 0.0284, R^2= 0.0628, P = 0.182.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

9.2 Selenium

Figure 31: Selenium Concentrations in Sockeye Salmon Muscle Tissue Collected in 2014 Relative to Fish Length

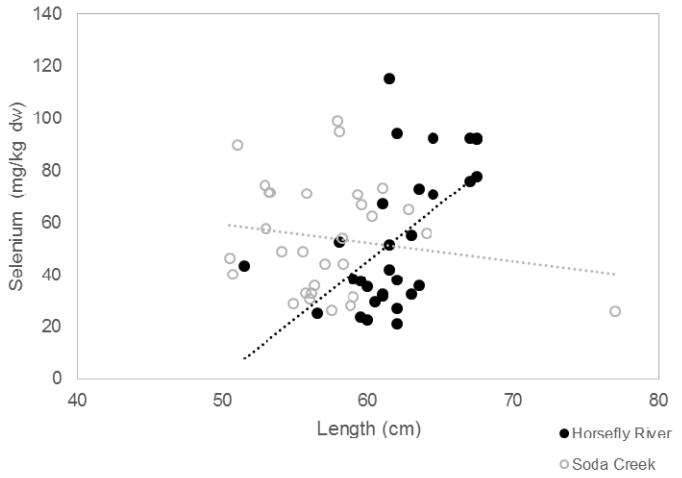


Sockeye Salmon were not collected in 2015.

Regression equations: Horsefly River (exposure) y = 0.0064x + 0.6787, R^2 = 0.0561 P = 0.208; **Soda Creek (reference) y = -0.0105x + 1.5991, R^2 = 0.2747, P = 0.003**.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

Figure 32: Selenium Concentrations in Sockeye Salmon Liver Tissue Collected in 2014 Relative to Fish Length



Sockeye Salmon were not collected in 2015.

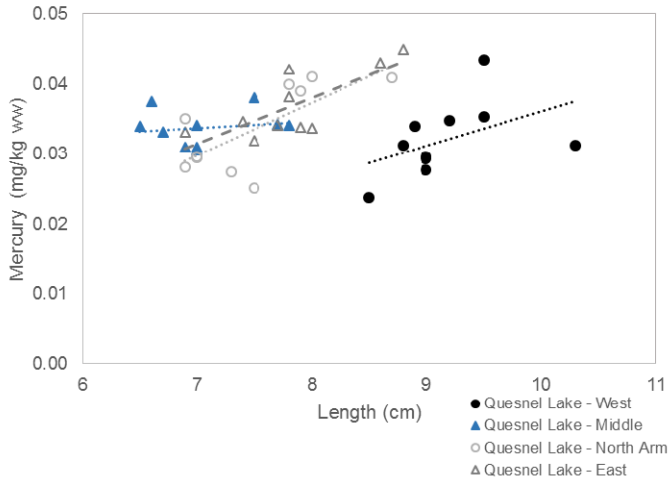
Regression equations: **Horsefly River (exposure) y = 4.4067x + 219.0123, R^2 = 0.3215 P = 0.001**; Soda Creek (reference) y = -0.6943x + 93.8863, R^2 = 0.0273, P = 0.383.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

10.0 SOCKEYE SALMON JUVENILE

10.1 Mercury

Figure 33: Mercury Concentrations in Sockeye Salmon Whole Body Tissue Collected in 2014 Relative to Fish Length



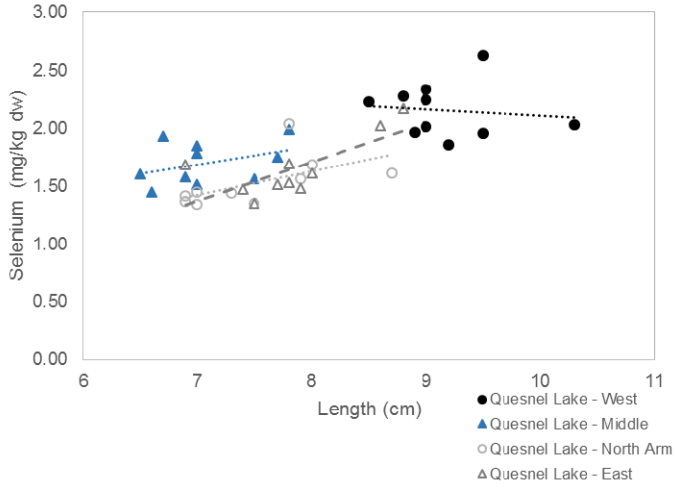
Sockeye Salmon were not collected in 2015.

Regression equations: Quesnel Lake - West (exposure) y = 0.0049x – 0.0130, R^2 = 0.2129, P = 0.180; Quesnel Lake – Middle (exposure) y = 0.0009x + 0.0273, R^2 = 0.0256, P = 0.659; **Quesnel Lake – North Arm (reference) y = 0.0076x – 0.0233, R^2 = 0.5216, P = 0.018**; **Quesnel Lake – East (reference) y = 0.0065x – 0.0143, R^2 = 0.5818, P = 0.010**.

mg/kg ww = milligrams per kilogram wet weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

10.2 Selenium

Figure 34: Selenium Concentrations in Sockeye Salmon Whole Body Tissue Collected in 2014 Relative to Fish Length



Sockeye Salmon were not collected in 2015.

Regression equations: Quesnel Lake - West (exposure) y = -0.0532x + 2.6404, R^2 = 0.0131, P = 0.753; Quesnel Lake – Middle (exposure) y = 0.1589x + 0.5772, R^2 = 0.1494, P = 0.270; **Quesnel Lake – North Arm (reference) y = 0.2054x – 0.0145, R^2 = 0.3285, P = 0.083**; **Quesnel Lake – East (reference) y = 0.3377x – 0.9939, R^2 = 0.5316, P = 0.017**.

mg/kg dw = milligrams per kilogram dry weight; cm = centimetre; regression equations that are significant (P < 0.1) are bolded.

ATTACHMENT 5

LABORATORY DATA FILES

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 11-JUN-14
Report Date: 11-SEP-14 12:55 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1468984

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 1, 2
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1468984-1 Tissue 21-MAY-14 W7-RBT-1 OVARY	L1468984-2 Tissue 21-MAY-14 W7-RBT-2 OVARY	L1468984-3 Tissue 21-MAY-14 W7-RBT-3 OVARY	L1468984-4 Tissue 21-MAY-14 W7-RBT-4 OVARY	L1468984-5 Tissue 21-MAY-14 W7-RBT-5 OVARY
TISSUE						
Physical Tests	% Moisture (%)	61.7	91.4	67.1	68.0	68.5
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	0.49	<1.0	<1.0	<1.0	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.022	<0.030	<0.030	<0.030	<0.020
	Arsenic (As)-Total (mg/kg wwt)	0.0085	<0.0060	<0.0060	0.0070	0.0057
	Barium (Ba)-Total (mg/kg)	0.126	0.099	0.099	0.106	0.130
	Barium (Ba)-Total (mg/kg wwt)	0.048	<0.010	0.033	0.034	0.041
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	<0.010	<0.010	<0.010	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.0018	<0.0020	<0.0020	<0.0020	<0.0010
	Calcium (Ca)-Total (mg/kg)	1310	1960	1170	1350	1180
	Calcium (Ca)-Total (mg/kg wwt)	503	170	387	431	372
	Cesium (Cs)-Total (mg/kg)	<0.0050	<0.0050	0.0058	<0.0050	0.0062
	Cesium (Cs)-Total (mg/kg wwt)	0.0018	<0.0010	0.0019	0.0015	0.0019
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.066	0.137	0.072	0.075	0.101
	Cobalt (Co)-Total (mg/kg wwt)	0.0254	0.0119	0.0239	0.0241	0.0318
	Copper (Cu)-Total (mg/kg)	8.61	6.78	7.03	5.04	5.80
	Copper (Cu)-Total (mg/kg wwt)	3.29	0.586	2.32	1.62	1.83
	Iron (Fe)-Total (mg/kg)	43.4	84.8	39.5	40.2	61.3
	Iron (Fe)-Total (mg/kg wwt)	16.6	7.3	13.0	12.9	19.3
	Lead (Pb)-Total (mg/kg)	0.026	<0.050	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	0.0099	<0.010	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1560	309	1290	1290	1550
	Magnesium (Mg)-Total (mg/kg wwt)	598	26.7	426	414	489
	Manganese (Mn)-Total (mg/kg)	4.46	0.776	5.18	2.51	3.79
	Manganese (Mn)-Total (mg/kg wwt)	1.71	0.067	1.71	0.806	1.20

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1468984-6 Tissue 21-MAY-14 W7-RBT-6 OVARY	L1468984-7 Tissue 21-MAY-14 W7-RBT-7 OVARY	L1468984-8 Tissue 21-MAY-14 W7-RBT-8 OVARY	L1468984-9 Tissue 21-MAY-14 W7-RBT-1X OVARY	L1468984-10 Tissue 21-MAY-14 W7-RBT-2A OVARY
TISSUE						
Physical Tests	% Moisture (%)	62.5	59.7	68.2	61.8	70.1
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<5.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<1.0	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.030	<0.020	<0.030	0.020	<0.020
	Arsenic (As)-Total (mg/kg wwt)	0.0077	0.0063	0.0076	0.0078	0.0043
	Barium (Ba)-Total (mg/kg)	0.088	0.106	0.142	0.113	0.124
	Barium (Ba)-Total (mg/kg wwt)	0.033	0.043	0.045	0.043	0.037
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.010	<0.0050	<0.010	<0.0050	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0020	<0.0010	<0.0030 DLB	0.0015	<0.0010
	Calcium (Ca)-Total (mg/kg)	1430	1200	1330	1260	1180
	Calcium (Ca)-Total (mg/kg wwt)	535	485	423	482	352
	Cesium (Cs)-Total (mg/kg)	0.0056	<0.0050	<0.0050	<0.0050	0.0060
	Cesium (Cs)-Total (mg/kg wwt)	0.0021	0.0018	0.0014	0.0017	0.0018
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.20	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	<0.040	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.081	0.064	0.096	0.063	0.132
	Cobalt (Co)-Total (mg/kg wwt)	0.0305	0.0258	0.0305	0.0239	0.0393
	Copper (Cu)-Total (mg/kg)	8.96	7.18	7.00	8.43	6.60
	Copper (Cu)-Total (mg/kg wwt)	3.36	2.90	2.23	3.22	1.97
	Iron (Fe)-Total (mg/kg)	44.4	41.7	46.6	41.6	47.7
	Iron (Fe)-Total (mg/kg wwt)	16.6	16.8	14.8	15.9	14.3
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	0.028	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	0.0108	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1510	1440	1480	1510	1630
	Magnesium (Mg)-Total (mg/kg wwt)	567	579	469	579	488
	Manganese (Mn)-Total (mg/kg)	7.91	4.37	5.29	4.28	2.84
	Manganese (Mn)-Total (mg/kg wwt)	2.97	1.76	1.68	1.63	0.850

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1468984-11 Tissue 21-MAY-14 W7-RBT-1 TISSUE	L1468984-12 Tissue 21-MAY-14 W7-RBT-2 TISSUE	L1468984-13 Tissue 21-MAY-14 W7-RBT-3TISSUE	L1468984-14 Tissue 21-MAY-14 W7-RBT-4 TISSUE	L1468984-15 Tissue 21-MAY-14 W7-RBT-5 TISSUE
TISSUE						
Physical Tests	% Moisture (%)	78.6	83.7	78.4	78.2	81.4
Metals	Aluminum (Al)-Total (mg/kg)	3.2	3.7	2.8	2.0	3.4
	Aluminum (Al)-Total (mg/kg wwt)	0.68	0.60	0.61	0.44	0.63
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.054	0.037	0.051	0.068	0.065
	Arsenic (As)-Total (mg/kg wwt)	0.0115	0.0060	0.0111	0.0148	0.0120
	Barium (Ba)-Total (mg/kg)	0.150	0.268	0.160	0.140	0.164
	Barium (Ba)-Total (mg/kg wwt)	0.032	0.044	0.035	0.030	0.030
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/kg)	3760	6240	3230	3110	3830
	Calcium (Ca)-Total (mg/kg wwt)	805	1020	700	677	713
	Cesium (Cs)-Total (mg/kg)	0.0187	0.0260	0.0193	0.0188	0.0219
	Cesium (Cs)-Total (mg/kg wwt)	0.0040	0.0042	0.0042	0.0041	0.0041
	Chromium (Cr)-Total (mg/kg)	0.522	0.719	0.566	0.693	0.711
	Chromium (Cr)-Total (mg/kg wwt)	0.112	0.117	0.123	0.151	0.132
	Cobalt (Co)-Total (mg/kg)	0.037	0.040	0.031	0.032	0.029
	Cobalt (Co)-Total (mg/kg wwt)	0.0079	0.0065	0.0067	0.0071	0.0054
	Copper (Cu)-Total (mg/kg)	2.72	2.40	2.28	2.36	2.54
	Copper (Cu)-Total (mg/kg wwt)	0.583	0.391	0.494	0.514	0.472
	Iron (Fe)-Total (mg/kg)	31.6	53.8	30.0	31.3	36.8
	Iron (Fe)-Total (mg/kg wwt)	6.76	8.77	6.49	6.81	6.85
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1230	1310	1230	1230	1450
	Magnesium (Mg)-Total (mg/kg wwt)	262	213	267	268	270
	Manganese (Mn)-Total (mg/kg)	1.28	1.85	1.27	1.11	1.28
	Manganese (Mn)-Total (mg/kg wwt)	0.274	0.301	0.275	0.241	0.239

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1468984-16	L1468984-17	L1468984-18	L1468984-19	
Description	Tissue	Tissue	Tissue	Tissue	
Sampled Date	21-MAY-14	21-MAY-14	21-MAY-14	21-MAY-14	
Sampled Time					
Client ID	W7-RBT-6 TISSUE	W7-RBT-7 TISSUE	W7-RBT-8 TISSUE	W7-RBT-1X TISSUE	
Grouping / **Analyte**					
TISSUE					
Physical Tests % Moisture (%)	79.3	76.5	79.6	79.0	
Metals Aluminum (Al)-Total (mg/kg)	4.3	<2.0	2.4	<2.0	
Aluminum (Al)-Total (mg/kg wwt)	0.90	<0.40	0.50	<0.40	
Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
Arsenic (As)-Total (mg/kg)	0.053	0.059	0.078	0.054	
Arsenic (As)-Total (mg/kg wwt)	0.0110	0.0139	0.0160	0.0114	
Barium (Ba)-Total (mg/kg)	0.167	0.124	0.167	0.167	
Barium (Ba)-Total (mg/kg wwt)	0.035	0.029	0.034	0.035	
Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	
Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	
Cadmium (Cd)-Total (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	
Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	<0.0010	<0.0010	<0.0010	
Calcium (Ca)-Total (mg/kg)	3870	2850	3050	3750	
Calcium (Ca)-Total (mg/kg wwt)	803	669	624	788	
Cesium (Cs)-Total (mg/kg)	0.0201	0.0133	0.0202	0.0202	
Cesium (Cs)-Total (mg/kg wwt)	0.0042	0.0031	0.0041	0.0042	
Chromium (Cr)-Total (mg/kg)	0.716	0.268	0.857	0.343	
Chromium (Cr)-Total (mg/kg wwt)	0.148	0.063	0.175	0.072	
Cobalt (Co)-Total (mg/kg)	0.029	0.026	0.039	0.022	
Cobalt (Co)-Total (mg/kg wwt)	0.0059	0.0060	0.0080	0.0046	
Copper (Cu)-Total (mg/kg)	2.58	2.59	2.00	2.57	
Copper (Cu)-Total (mg/kg wwt)	0.535	0.608	0.408	0.540	
Iron (Fe)-Total (mg/kg)	38.9	25.7	46.2	26.2	
Iron (Fe)-Total (mg/kg wwt)	8.06	6.05	9.45	5.51	
Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	
Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	
Magnesium (Mg)-Total (mg/kg)	1290	1180	1220	1300	
Magnesium (Mg)-Total (mg/kg wwt)	268	277	250	273	
Manganese (Mn)-Total (mg/kg)	1.26	1.11	1.37	1.20	
Manganese (Mn)-Total (mg/kg wwt)	0.260	0.262	0.280	0.251	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1468984-1	L1468984-2	L1468984-3	L1468984-4	L1468984-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	21-MAY-14	21-MAY-14	21-MAY-14	21-MAY-14	21-MAY-14
	Sampled Time					
	Client ID	W7-RBT-1 OVARY	W7-RBT-2 OVARY	W7-RBT-3 OVARY	W7-RBT-4 OVARY	W7-RBT-5 OVARY
Grouping	**Analyte**					
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.024	<0.040	<0.040	<0.040	0.032
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0092	<0.0080	0.0084	<0.0080	0.0100
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	12200	3180	10500	10200	12200
	Phosphorus (P)-Total (mg/kg wwt)	4670	274	3450	3270	3850
	Potassium (K)-Total (mg/kg)	8470	1700	7760	7530	8240
	Potassium (K)-Total (mg/kg wwt)	3240	147	2560	2410	2600
	Rubidium (Rb)-Total (mg/kg)	2.76	0.508	2.83	2.59	3.40
	Rubidium (Rb)-Total (mg/kg wwt)	1.06	0.044	0.932	0.830	1.07
	Selenium (Se)-Total (mg/kg)	6.70	2.97	6.00	5.48	5.97
	Selenium (Se)-Total (mg/kg wwt)	2.56	0.256	1.98	1.76	1.88
	Sodium (Na)-Total (mg/kg)	2170	35400	4460	4630	3450
	Sodium (Na)-Total (mg/kg wwt)	830	3050	1470	1480	1090
	Strontium (Sr)-Total (mg/kg)	3.17	3.10	3.48	3.62	3.53
	Strontium (Sr)-Total (mg/kg wwt)	1.21	0.268	1.15	1.16	1.11
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	78.1	67.2	54.8	66.7	65.7
	Zinc (Zn)-Total (mg/kg wwt)	29.9	5.80	18.0	21.4	20.7
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1468984-6 Tissue 21-MAY-14 W7-RBT-6 OVARY	L1468984-7 Tissue 21-MAY-14 W7-RBT-7 OVARY	L1468984-8 Tissue 21-MAY-14 W7-RBT-8 OVARY	L1468984-9 Tissue 21-MAY-14 W7-RBT-1X OVARY	L1468984-10 Tissue 21-MAY-14 W7-RBT-2A OVARY
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	<0.040	0.031	<0.040	0.022	0.031
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0080	0.0124	<0.0080	0.0085	0.0092
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.048	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	10800	11000	11400	11900	11400
	Phosphorus (P)-Total (mg/kg wwt)	4060	4450	3610	4560	3410
	Potassium (K)-Total (mg/kg)	7330	6970	7880	8290	7650
	Potassium (K)-Total (mg/kg wwt)	2750	2810	2510	3170	2290
	Rubidium (Rb)-Total (mg/kg)	2.79	1.77	2.27	2.66	3.12
	Rubidium (Rb)-Total (mg/kg wwt)	1.05	0.713	0.723	1.02	0.933
	Selenium (Se)-Total (mg/kg)	6.36	7.01	5.61	6.28	7.45
	Selenium (Se)-Total (mg/kg wwt)	2.38	2.83	1.78	2.40	2.23
	Sodium (Na)-Total (mg/kg)	2530	1520	2210	2100	3450
	Sodium (Na)-Total (mg/kg wwt)	949	614	702	801	1030
	Strontium (Sr)-Total (mg/kg)	3.18	3.03	4.55	3.01	3.50
	Strontium (Sr)-Total (mg/kg wwt)	1.19	1.22	1.45	1.15	1.05
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	71.6	63.7	54.0	76.4	62.3
	Zinc (Zn)-Total (mg/kg wwt)	26.8	25.7	17.2	29.2	18.6
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1468984-11 Tissue 21-MAY-14 W7-RBT-1 TISSUE	L1468984-12 Tissue 21-MAY-14 W7-RBT-2 TISSUE	L1468984-13 Tissue 21-MAY-14 W7-RBT-3TISSUE	L1468984-14 Tissue 21-MAY-14 W7-RBT-4 TISSUE	L1468984-15 Tissue 21-MAY-14 W7-RBT-5 TISSUE
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.050	0.058	0.062	0.072	0.084
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0107	0.0095	0.0135	0.0157	0.0156
	Nickel (Ni)-Total (mg/kg)	0.22	0.26	0.27	0.29	0.31
	Nickel (Ni)-Total (mg/kg wwt)	0.047	0.043	0.058	0.063	0.058
	Phosphorus (P)-Total (mg/kg)	12600	16100	13300	13200	14400
	Phosphorus (P)-Total (mg/kg wwt)	2700	2620	2890	2870	2680
	Potassium (K)-Total (mg/kg)	19100	22700	19600	19500	22700
	Potassium (K)-Total (mg/kg wwt)	4080	3700	4250	4240	4230
	Rubidium (Rb)-Total (mg/kg)	5.30	7.78	6.27	6.48	7.73
	Rubidium (Rb)-Total (mg/kg wwt)	1.13	1.27	1.36	1.41	1.44
	Selenium (Se)-Total (mg/kg)	2.73	3.51	4.50	2.84	3.51
	Selenium (Se)-Total (mg/kg wwt)	0.583	0.572	0.975	0.618	0.653
	Sodium (Na)-Total (mg/kg)	2480	2690	1990	2350	2520
	Sodium (Na)-Total (mg/kg wwt)	531	438	430	512	469
	Strontium (Sr)-Total (mg/kg)	5.46	9.58	5.14	4.81	6.18
	Strontium (Sr)-Total (mg/kg wwt)	1.17	1.56	1.11	1.05	1.15
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0053	0.0081	0.0060	0.0071	0.0064
	Thallium (Tl)-Total (mg/kg wwt)	0.00114	0.00132	0.00130	0.00155	0.00120
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	51.3	105	46.1	40.8	59.2
	Zinc (Zn)-Total (mg/kg wwt)	11.0	17.2	9.98	8.88	11.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L1468984-16 Description: Tissue Sampled Date: 21-MAY-14 Sampled Time: Client ID: W7-RBT-6 TISSUE	L1468984-17 Tissue 21-MAY-14 W7-RBT-7 TISSUE	L1468984-18 Tissue 21-MAY-14 W7-RBT-8 TISSUE	L1468984-19 Tissue 21-MAY-14 W7-RBT-1X TISSUE	
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.061	0.031	0.025	0.027	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0127	0.0073	0.0051	0.0057	
	Nickel (Ni)-Total (mg/kg)	0.27	<0.20	<0.20	<0.20	
	Nickel (Ni)-Total (mg/kg wwt)	0.057	<0.040	<0.040	<0.040	
	Phosphorus (P)-Total (mg/kg)	13900	12900	12900	13600	
	Phosphorus (P)-Total (mg/kg wwt)	2880	3030	2630	2850	
	Potassium (K)-Total (mg/kg)	20600	19100	19200	20800	
	Potassium (K)-Total (mg/kg wwt)	4260	4500	3920	4360	
	Rubidium (Rb)-Total (mg/kg)	6.74	4.02	5.32	5.58	
	Rubidium (Rb)-Total (mg/kg wwt)	1.40	0.944	1.09	1.17	
	Selenium (Se)-Total (mg/kg)	3.79	2.93	2.91	2.89	
	Selenium (Se)-Total (mg/kg wwt)	0.785	0.689	0.594	0.607	
	Sodium (Na)-Total (mg/kg)	2180	2010	2040	2370	
	Sodium (Na)-Total (mg/kg wwt)	452	472	418	497	
	Strontium (Sr)-Total (mg/kg)	5.62	4.13	5.09	5.54	
	Strontium (Sr)-Total (mg/kg wwt)	1.16	0.971	1.04	1.16	
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg)	0.0065	0.0054	0.0062	0.0057	
	Thallium (Tl)-Total (mg/kg wwt)	0.00135	0.00128	0.00126	0.00119	
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	
	Zinc (Zn)-Total (mg/kg)	48.7	45.0	65.1	56.2	
	Zinc (Zn)-Total (mg/kg wwt)	10.1	10.6	13.3	11.8	
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Cadmium (Cd)-Total	DLB	L1468984-2, -3, -4, -6, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection Limit was raised due to detection of analyte at comparable level in Method Blank.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-DRY-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1 2

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytic Request Form

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COC # _____

Page 1 of 2

Report to:	☐ Standard ☑ PDF ☑ Excel ☐ Digita ☐ Fax	**Report Format / Distribution**	◉ Regular (Default) ○ Priority (2-3 Business Days) - 50% Surcharge ○ Emergency (1 Business Day) - 100% Surcharge ○ ~~For Emergency < 1 Day, ASAP or Weekend - Contact ALS~~
Company: MOUNT POLLEY MINING CORP.			
Contact: Colleen Hughes		Email 1: on file	
Address: PO BOX 12, Likely, BC, V0L 1N0		Email 2: pstecko@minnow-environmental.com	
◉ Yes ○ No			
Phone: 250-790-2215 Fax:			
Invoice To: Same as Report ?		**Client / Project Information:**	
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone: Fax:		Quote #:	
Lab Work Order # (lab use only): L1468984		ALS Contact: Can Dang	Sampler: Colleen Hughes

Service Requested: (rush - subject to availability)

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Moisture	T-Se (HR ICP-MS)(Wet & Dr	Number of Containers
	W7-RBT-1 Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-2 Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-3 Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-4 Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-5 Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-6 Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-7 Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-8 Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-1X Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-2a Ovary	21-May-14		Tissue	X	X	1
	W7-RBT-1 Tissue	21-May-14		Tissue	x	x	1
	W7-RBT-2 Tissue	21-May-14		Tissue	x	x	1

Short Holding Time

Rush Processing

L1468984-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by: Norm Zinhelt	Date & Time: 1600hrs June 5/14	Received by: JK	Date: Jun 11	Time: 9:12	Temperature: 2.6	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF

ALS Laboratory Group
ANALYTICAL | ENVIRONMENTAL & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 8[illegible] 38 9878
www.alsglobal.com

COC # _____

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: Colleen Hughes	

Sample #	Sample Identification (This description will [illegible])	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Moisture	T-Se (HRICP-MS)(Wet & Dry)									Number of Containers
	W7-RBT-3 Tissue	21-May-14		Tissue	X	X									1
	W7-RBT-4 Tissue	21-May-14		Tissue	X	X									1
	W7-RBT-5 Tissue	21-May-14		Tissue	X	X									1
	W7-RBT-6 Tissue	21-May-14		Tissue	X	X									1
	W7-RBT-7 Tissue	21-May-14		Tissue	X	X									1
	W7-RBT- 8 Tissue	21-May-14		Tissue	X	X									
	W7-RBT-1X Tissue	21-May-14		Tissue	X	X									

Short Holding Time
Rush Processing

L1468984-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Norm Zinhelt	1600hrs June 5/14	JK	June 11	9:12	2.6			

MOUNT POLLEY MINING CORP.
ATTN: Jack Love
PO Box 12
Likely BC V0L 1N0

Date Received: 21-AUG-14
Report Date: 16-OCT-14 11:06 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1506160

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 1, 2
Legal Site Desc:

Comments: Please see the attached document for the total weights of Liver and Gonad samples.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506160-1	L1506160-2	L1506160-3	L1506160-4	L1506160-5
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-1 TAG#02567 MUSCLE	SK-2 TAG#02566 MUSCLE	SK-3 TAG#02565 MUSCLE	SK-4 TAG#02564 MUSCLE	SK-5 TAG#02563 MUSCLE
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	71.3	71.8	69.7	73.5	75.3
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.687	0.457	0.807	0.299	0.318
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0075	0.0044	0.0084	0.0040	0.0040
	Calcium (Ca)-Total (mg/kg wwt)	70.9	67.3	68.0	77.8	60.4
	Cesium (Cs)-Total (mg/kg wwt)	0.0178	0.0204	0.0198	0.0193	0.0258
	Chromium (Cr)-Total (mg/kg wwt)	0.016	<0.010	0.017	0.016	<0.010
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0062	0.0074	0.0046	0.0058
	Copper (Cu)-Total (mg/kg wwt)	0.537	0.946	1.11	0.699	1.00
	Iron (Fe)-Total (mg/kg wwt)	4.26	6.91	7.85	5.09	7.32
	Lead (Pb)-Total (mg/kg wwt)	0.0369	0.0672	0.0140	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	282	270	299	264	261
	Manganese (Mn)-Total (mg/kg wwt)	0.065	0.090	0.086	0.073	0.092
	Mercury (Hg)-Total (mg/kg wwt)	0.0463	0.0477	0.0341	0.0506	0.0472
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0050	0.0061	0.0051	0.0051
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2670	2570	2950	2520	2560
	Potassium (K)-Total (mg/kg wwt)	3880	3700	4150	3790	3710
	Rubidium (Rb)-Total (mg/kg wwt)	0.973	0.928	1.08	0.905	0.992
	Selenium (Se)-Total (mg/kg wwt)	0.262	0.296	0.293	0.294	0.256
	Sodium (Na)-Total (mg/kg wwt)	380	432	398	524	462
	Strontium (Sr)-Total (mg/kg wwt)	0.186	0.185	0.180	0.219	0.167
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00043	0.00131	0.00099	0.00065	0.00124
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.036	0.034	0.020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.21	3.94	4.31	3.74	3.97
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506160-6	L1506160-7	L1506160-8	L1506160-9	L1506160-10
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-6 TAG#02562 MUSCLE	SK-7 TAG#02561 MUSCLE	SK-8 TAG#02560 MUSCLE	SK-9 TAG#02559 MUSCLE	SK-10 TAG#02558 MUSCLE
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	71.9	71.3	74.2	69.0	71.8
Metals	Aluminum (Al)-Total (mg/kg wwt)	0.81	1.96	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.527	0.884	0.413	0.558	0.456
	Barium (Ba)-Total (mg/kg wwt)	0.012	0.065	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0050	0.0048	0.0044	0.0043	0.0041
	Calcium (Ca)-Total (mg/kg wwt)	82.8	91.3	90.1	74.5	84.0
	Cesium (Cs)-Total (mg/kg wwt)	0.0224	0.0173	0.0213	0.0195	0.0171
	Chromium (Cr)-Total (mg/kg wwt)	0.021	0.080	0.018	<0.010	0.012
	Cobalt (Co)-Total (mg/kg wwt)	0.0055	0.0081	0.0050	0.0051	0.0070
	Copper (Cu)-Total (mg/kg wwt)	0.857	1.03	0.767	0.644	0.975
	Iron (Fe)-Total (mg/kg wwt)	5.74	8.70	5.65	5.33	6.10
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0111	0.0130	0.0051	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	278	235	264	243	237
	Manganese (Mn)-Total (mg/kg wwt)	0.081	0.109	0.078	0.066	0.081
	Mercury (Hg)-Total (mg/kg wwt)	0.0407	0.0597	0.0625	0.0525	0.0659
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0052	0.0066	0.0044	<0.0040	0.0049
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.041	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2660	2360	2650	2420	2430
	Potassium (K)-Total (mg/kg wwt)	3660	3330	3780	3620	3390
	Rubidium (Rb)-Total (mg/kg wwt)	0.917	0.809	0.915	0.884	0.827
	Selenium (Se)-Total (mg/kg wwt)	0.246	0.268	0.297	0.315	0.281
	Sodium (Na)-Total (mg/kg wwt)	419	395	415	306	375
	Strontium (Sr)-Total (mg/kg wwt)	0.218	0.328	0.320	0.222	0.261
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00102	0.00086	0.00055	0.00113	0.00068
	Tin (Sn)-Total (mg/kg wwt)	0.029	0.026	0.038	<0.020	0.026
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.57	4.34	3.75	3.27	3.78
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1506160-11 Fish 20-AUG-14 11:00 SK-11 TAG#02557 MUSCLE	L1506160-12 Fish 20-AUG-14 11:00 SK-12 TAG#02556 MUSCLE	L1506160-13 Fish 20-AUG-14 11:00 SK-1 TAG#02567 LIVER	L1506160-14 Fish 20-AUG-14 11:00 SK-2 TAG#02566 LIVER	L1506160-15 Fish 20-AUG-14 11:00 SK-3 TAG#02565 LIVER
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	71.7	73.7	77.7	77.3	75.7
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	1.58
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.337	0.353	0.422	0.446	0.716
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0028	0.0056	1.33	0.966	1.02
	Calcium (Ca)-Total (mg/kg wwt)	82.8	61.5	76.0	78.0	82.4
	Cesium (Cs)-Total (mg/kg wwt)	0.0194	0.0231	0.0072	0.0088	0.0073
	Chromium (Cr)-Total (mg/kg wwt)	0.097	0.018	0.054	0.034	0.542
	Cobalt (Co)-Total (mg/kg wwt)	0.0072	0.0065	0.0177	0.0295	0.0233
	Copper (Cu)-Total (mg/kg wwt)	0.972	0.932	145	99.2	176
	Iron (Fe)-Total (mg/kg wwt)	6.20	7.23	125	71.9	118
	Lead (Pb)-Total (mg/kg wwt)	0.0061	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	261	271	167	206	162
	Manganese (Mn)-Total (mg/kg wwt)	0.086	0.076	1.15	1.61	1.25
	Mercury (Hg)-Total (mg/kg wwt)	0.0504	0.0513	0.0746	0.0913	0.0501
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0142	0.0055	0.130	0.195	0.210
	Nickel (Ni)-Total (mg/kg wwt)	0.061	<0.040	0.041	<0.040	0.364
	Phosphorus (P)-Total (mg/kg wwt)	2520	2610	3180	3730	3070
	Potassium (K)-Total (mg/kg wwt)	3560	3780	3550	3800	3350
	Rubidium (Rb)-Total (mg/kg wwt)	0.886	0.946	1.03	1.19	1.03
	Selenium (Se)-Total (mg/kg wwt)	0.253	0.269	7.05	10.0	14.0
	Sodium (Na)-Total (mg/kg wwt)	374	423	1070	1080	919
	Strontium (Sr)-Total (mg/kg wwt)	0.283	0.146	0.198	0.258	0.205
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00124	0.00082	0.00209	0.0108	0.00332
	Tin (Sn)-Total (mg/kg wwt)	0.028	0.028	<0.020	<0.020	0.026
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00050	0.00153	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	0.111	<0.020	0.147	0.169	0.883
	Zinc (Zn)-Total (mg/kg wwt)	3.72	3.87	32.5	34.9	42.6
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506160-16	L1506160-17	L1506160-18	L1506160-19	L1506160-20
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-4 TAG#02564 LIVER	SK-5 TAG#02563 LIVER	SK-6 TAG#02562 LIVER	SK-7 TAG#02561 LIVER	SK-8 TAG#02560 LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	78.2	79.6	78.1	77.3	79.3
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	1.70	2.44	0.51
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.250	0.302	0.372	0.531	0.550
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	1.04	0.765	1.24	0.970	0.964
	Calcium (Ca)-Total (mg/kg wwt)	79.9	81.7	71.6	86.8	101
	Cesium (Cs)-Total (mg/kg wwt)	0.0088	0.0103	0.0094	0.0078	0.0064
	Chromium (Cr)-Total (mg/kg wwt)	0.039	0.014	0.511	0.831	0.257
	Cobalt (Co)-Total (mg/kg wwt)	0.0299	0.0227	0.0345	0.0376	0.0209
	Copper (Cu)-Total (mg/kg wwt)	226	235	270	96.9	144
	Iron (Fe)-Total (mg/kg wwt)	108	99.3	81.1	52.5	80.4
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	156	145	152	207	175
	Manganese (Mn)-Total (mg/kg wwt)	1.05	1.21	1.24	1.90	1.31
	Mercury (Hg)-Total (mg/kg wwt)	0.0978	0.0997	0.0587	0.0879	0.0850
	Molybdenum (Mo)-Total (mg/kg wwt)	0.156	0.173	0.227	0.281	0.176
	Nickel (Ni)-Total (mg/kg wwt)	0.058	<0.040	0.338	0.556	0.182
	Phosphorus (P)-Total (mg/kg wwt)	2980	2910	3020	3900	3240
	Potassium (K)-Total (mg/kg wwt)	2980	3430	3340	3950	3680
	Rubidium (Rb)-Total (mg/kg wwt)	0.776	0.942	0.890	1.13	0.938
	Selenium (Se)-Total (mg/kg wwt)	16.0	14.5	20.8	6.94	8.29
	Sodium (Na)-Total (mg/kg wwt)	1310	1310	1230	1030	1010
	Strontium (Sr)-Total (mg/kg wwt)	0.224	0.263	0.191	0.324	0.346
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00287	0.00465	0.00520	0.00492	0.00231
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00053	0.00105	0.00058	0.00167	0.00274
	Vanadium (V)-Total (mg/kg wwt)	0.113	0.130	0.940	1.25	0.333
	Zinc (Zn)-Total (mg/kg wwt)	56.4	35.6	37.4	37.1	39.5
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1506160-21 Fish 20-AUG-14 11:00 SK-9 TAG#02559 LIVER	L1506160-22 Fish 20-AUG-14 11:00 SK-10 TAG#02558 LIVER	L1506160-23 Fish 20-AUG-14 11:00 SK-11 TAG#02557 LIVER	L1506160-24 Fish 20-AUG-14 11:00 SK-12 TAG#02556 LIVER	L1506160-25 Fish 20-AUG-14 11:00 SK-1 TAG#02567 GONADS
TISSUE						
Physical Tests	% Moisture (%)	78.3	79.0	76.9	77.4	77.4
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.650	0.377	0.357	0.545	0.175
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	1.30	0.773	0.612	1.70	0.0597
	Calcium (Ca)-Total (mg/kg wwt)	89.0	81.2	84.0	74.0	54.1
	Cesium (Cs)-Total (mg/kg wwt)	0.0106	0.0075	0.0100	0.0072	0.0108
	Chromium (Cr)-Total (mg/kg wwt)	1.01	0.016	0.042	<0.010	0.022
	Cobalt (Co)-Total (mg/kg wwt)	0.0371	0.0276	0.0245	0.0241	0.0169
	Copper (Cu)-Total (mg/kg wwt)	62.0	84.5	78.1	120	1.35
	Iron (Fe)-Total (mg/kg wwt)	163	59.4	91.1	56.3	21.8
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	199	187	219	214	166
	Manganese (Mn)-Total (mg/kg wwt)	2.20	1.33	1.59	1.51	0.150
	Mercury (Hg)-Total (mg/kg wwt)	0.107	0.101	0.0625	0.108	0.0213
	Molybdenum (Mo)-Total (mg/kg wwt)	0.213	0.147	0.173	0.231	0.0069
	Nickel (Ni)-Total (mg/kg wwt)	0.078	<0.040	0.044	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	3650	3430	3980	3930	8380
	Potassium (K)-Total (mg/kg wwt)	3640	3420	3880	4270	3350
	Rubidium (Rb)-Total (mg/kg wwt)	0.929	0.979	1.15	1.22	1.11
	Selenium (Se)-Total (mg/kg wwt)	9.59	7.49	10.7	12.2	0.279
	Sodium (Na)-Total (mg/kg wwt)	1150	1140	939	883	1020
	Strontium (Sr)-Total (mg/kg wwt)	0.317	0.302	0.311	0.210	0.169
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00755	0.00355	0.00958	0.00545	0.00094
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.026	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00130	0.00107	0.00067	0.00189	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	0.344	0.080	0.046	0.042	0.037
	Zinc (Zn)-Total (mg/kg wwt)	39.8	38.1	40.2	54.1	18.3
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506160-26	L1506160-27	L1506160-28	L1506160-29	L1506160-30
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-2 TAG#02566 GONADS	SK-3 TAG#02565 GONADS	SK-4 TAG#02564 GONADS	SK-5 TAG#02563 GONADS	SK-6 TAG#02562 GONADS
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	55.2	80.1	76.1	77.4	80.1
Metals	Aluminum (Al)-Total (mg/kg wwt)	0.49	1.61	1.27	1.42	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.212	0.257	0.149	0.131	0.120
	Barium (Ba)-Total (mg/kg wwt)	0.168	0.063	0.025	<0.010	0.012
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0029	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0169	0.0352	0.0340	0.0119	0.0148
	Calcium (Ca)-Total (mg/kg wwt)	525	54.8	78.2	55.0	50.1
	Cesium (Cs)-Total (mg/kg wwt)	0.0090	0.0151	0.0132	0.0145	0.0149
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.019	<0.010	0.017	0.030
	Cobalt (Co)-Total (mg/kg wwt)	0.0221	0.0157	0.0168	0.0084	0.0127
	Copper (Cu)-Total (mg/kg wwt)	57.9	1.27	2.13	0.525	0.762
	Iron (Fe)-Total (mg/kg wwt)	21.5	19.5	21.6	15.4	11.5
	Lead (Pb)-Total (mg/kg wwt)	0.0525	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	638	168	216	179	185
	Manganese (Mn)-Total (mg/kg wwt)	1.12	0.267	0.175	0.180	0.159
	Mercury (Hg)-Total (mg/kg wwt)	0.0069	0.0180	0.0187	0.0163	0.0124
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0085	0.0085	0.0052	0.0058	0.0050
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	4030	7030	10200	9340	7420
	Potassium (K)-Total (mg/kg wwt)	2040	4070	3590	3750	3770
	Rubidium (Rb)-Total (mg/kg wwt)	0.528	1.35	1.01	1.13	1.14
	Selenium (Se)-Total (mg/kg wwt)	3.10	0.339	0.355	0.298	0.262
	Sodium (Na)-Total (mg/kg wwt)	585	1030	1190	1100	1010
	Strontium (Sr)-Total (mg/kg wwt)	3.91	0.177	0.260	0.202	0.164
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00118	0.00225	0.00091	0.00156	0.00148
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.034	<0.020	<0.020	0.040
	Uranium (U)-Total (mg/kg wwt)	0.00147	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	34.6	19.6	23.9	15.0	10.7
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506160-31	L1506160-32	L1506160-33	L1506160-34	L1506160-35
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-7 TAG#02561 GONADS	SK-8 TAG#02560 GONADS	SK-9 TAG#02559 GONADS	SK-10 TAG#02558 GONADS	SK-11 TAG#02557 GONADS
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	56.6	58.9	55.2	54.6	55.3
Metals	Aluminum (Al)-Total (mg/kg wwt)	1.09	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.433	0.310	0.334	0.318	0.209
	Barium (Ba)-Total (mg/kg wwt)	0.117	0.031	0.075	0.071	0.063
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0204	0.0351	0.0337	0.0317	0.0159
	Calcium (Ca)-Total (mg/kg wwt)	450	434	384	262	356
	Cesium (Cs)-Total (mg/kg wwt)	0.0083	0.0077	0.0105	0.0083	0.0100
	Chromium (Cr)-Total (mg/kg wwt)	0.011	<0.010	<0.010	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg wwt)	0.0368	0.0474	0.0453	0.0438	0.0305
	Copper (Cu)-Total (mg/kg wwt)	53.4	96.8	75.2	83.6	60.7
	Iron (Fe)-Total (mg/kg wwt)	24.3	42.0	34.8	36.2	25.0
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	561	463	511	463	514
	Manganese (Mn)-Total (mg/kg wwt)	0.941	0.988	1.12	1.30	0.824
	Mercury (Hg)-Total (mg/kg wwt)	0.0084	0.0084	0.0083	0.0088	0.0055
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0095	0.0072	0.0098	0.0089	0.0077
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	4100	3240	3640	3660	3840
	Potassium (K)-Total (mg/kg wwt)	2110	1930	2070	2140	2140
	Rubidium (Rb)-Total (mg/kg wwt)	0.493	0.501	0.546	0.500	0.534
	Selenium (Se)-Total (mg/kg wwt)	2.72	3.42	1.60	3.22	2.79
	Sodium (Na)-Total (mg/kg wwt)	682	849	669	730	644
	Strontium (Sr)-Total (mg/kg wwt)	3.42	3.43	2.54	2.49	3.08
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00070	<0.00040	0.00100	0.00058	0.00090
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00136	0.00171	0.00122	0.00098	0.00068
	Vanadium (V)-Total (mg/kg wwt)	0.033	<0.020	0.096	0.030	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	35.5	63.4	56.7	54.6	38.9
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506160-36				
	Description	Fish				
	Sampled Date	20-AUG-14				
	Sampled Time	11:00				
	Client ID	SK-12 TAG#02556 GONADS				
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	55.7				
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40				
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020				
	Arsenic (As)-Total (mg/kg wwt)	0.193				
	Barium (Ba)-Total (mg/kg wwt)	0.104				
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020				
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020				
	Boron (B)-Total (mg/kg wwt)	<0.20				
	Cadmium (Cd)-Total (mg/kg wwt)	0.0180				
	Calcium (Ca)-Total (mg/kg wwt)	515				
	Cesium (Cs)-Total (mg/kg wwt)	0.0092				
	Chromium (Cr)-Total (mg/kg wwt)	0.012				
	Cobalt (Co)-Total (mg/kg wwt)	0.0336				
	Copper (Cu)-Total (mg/kg wwt)	51.9				
	Iron (Fe)-Total (mg/kg wwt)	21.3				
	Lead (Pb)-Total (mg/kg wwt)	<0.0040				
	Lithium (Li)-Total (mg/kg wwt)	<0.10				
	Magnesium (Mg)-Total (mg/kg wwt)	637				
	Manganese (Mn)-Total (mg/kg wwt)	0.760				
	Mercury (Hg)-Total (mg/kg wwt)	0.0052				
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0066				
	Nickel (Ni)-Total (mg/kg wwt)	<0.040				
	Phosphorus (P)-Total (mg/kg wwt)	4080				
	Potassium (K)-Total (mg/kg wwt)	2020				
	Rubidium (Rb)-Total (mg/kg wwt)	0.549				
	Selenium (Se)-Total (mg/kg wwt)	2.61				
	Sodium (Na)-Total (mg/kg wwt)	571				
	Strontium (Sr)-Total (mg/kg wwt)	4.14				
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040				
	Thallium (Tl)-Total (mg/kg wwt)	0.00068				
	Tin (Sn)-Total (mg/kg wwt)	<0.020				
	Uranium (U)-Total (mg/kg wwt)	0.00164				
	Vanadium (V)-Total (mg/kg wwt)	<0.020				
	Zinc (Zn)-Total (mg/kg wwt)	31.7				
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (Al)-Total	DUP-H	L1506160-14, -15, -16, -17, -18, -19, -20, -21, -23, -24, -26, -27, -28, -29, -31, -32, -33, -34, -35

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1 2

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1506160 Report Date: 16-OCT-14

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Jack Love

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-WET-CVAFS-VA	**Tissue**							
Batch R2969674								
WG1957338-4 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			105.6		%		70-130	02-OCT-14
WG1957338-5 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			97.9		%		70-130	02-OCT-14
WG1959296-4 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			101.6		%		70-130	02-OCT-14
WG1959296-5 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			99.7		%		70-130	02-OCT-14
WG1957338-3 DUP		**L1506160-6**						
Mercury (Hg)-Total		0.0407	0.0400		mg/kg wwt	1.6	40	02-OCT-14
WG1959296-3 DUP		**L1506160-31**						
Mercury (Hg)-Total		0.0084	0.0079		mg/kg wwt	5.7	40	02-OCT-14
WG1957338-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	02-OCT-14
WG1957338-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	02-OCT-14
WG1959296-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	02-OCT-14
WG1959296-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	02-OCT-14
MET-WET-CCMS-VA	**Tissue**							
Batch R2977175								
WG1959296-4 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			116.4		%		70-130	07-OCT-14
Cadmium (Cd)-Total			104.0		%		70-130	07-OCT-14
Chromium (Cr)-Total			103.0		%		70-130	07-OCT-14
Cobalt (Co)-Total			106.0		%		70-130	07-OCT-14
Copper (Cu)-Total			95.9		%		70-130	07-OCT-14
Iron (Fe)-Total			98.0		%		70-130	07-OCT-14
Lead (Pb)-Total			91.8		%		70-130	07-OCT-14
Manganese (Mn)-Total			100.8		%		70-130	07-OCT-14
Molybdenum (Mo)-Total			102.5		%		70-130	07-OCT-14
Nickel (Ni)-Total			101.8		%		70-130	07-OCT-14
Selenium (Se)-Total			99.9		%		70-130	07-OCT-14
Strontium (Sr)-Total			102.2		%		70-130	07-OCT-14
Vanadium (V)-Total			105.1		%		70-130	07-OCT-14
Zinc (Zn)-Total			102.1		%		70-130	07-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2977175								
WG1959296-5 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0088		mg/kg wwt		0.001-0.021	07-OCT-14
Arsenic (As)-Total			102.1		%		70-130	07-OCT-14
Barium (Ba)-Total			84.3		%		70-130	07-OCT-14
Boron (B)-Total			4.90		mg/kg wwt		3.5-5.5	07-OCT-14
Cadmium (Cd)-Total			103.3		%		70-130	07-OCT-14
Calcium (Ca)-Total			98.4		%		70-130	07-OCT-14
Cobalt (Co)-Total			102.6		%		70-130	07-OCT-14
Copper (Cu)-Total			98.4		%		70-130	07-OCT-14
Iron (Fe)-Total			95.6		%		70-130	07-OCT-14
Lead (Pb)-Total			95.9		%		70-130	07-OCT-14
Magnesium (Mg)-Total			99.5		%		70-130	07-OCT-14
Manganese (Mn)-Total			100.4		%		70-130	07-OCT-14
Nickel (Ni)-Total			97.6		%		70-130	07-OCT-14
Potassium (K)-Total			102.2		%		70-130	07-OCT-14
Rubidium (Rb)-Total			99.0		%		70-130	07-OCT-14
Selenium (Se)-Total			101.6		%		70-130	07-OCT-14
Sodium (Na)-Total			99.2		%		70-130	07-OCT-14
Strontium (Sr)-Total			96.7		%		70-130	07-OCT-14
Uranium (U)-Total			100.8		%		70-130	07-OCT-14
Vanadium (V)-Total			93.3		%		70-130	07-OCT-14
Zinc (Zn)-Total			102.1		%		70-130	07-OCT-14
WG1959296-3 DUP		**L1506160-31**						
Aluminum (Al)-Total		1.09	<0.40	DUP-H	mg/kg wwt	N/A	40	07-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Arsenic (As)-Total		0.433	0.410		mg/kg wwt	5.4	40	07-OCT-14
Barium (Ba)-Total		0.117	0.107		mg/kg wwt	8.8	40	07-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Cadmium (Cd)-Total		0.0204	0.0198		mg/kg wwt	3.4	40	07-OCT-14
Calcium (Ca)-Total		450	426		mg/kg wwt	5.3	60	07-OCT-14
Cesium (Cs)-Total		0.0083	0.0077		mg/kg wwt	8.0	40	07-OCT-14
Chromium (Cr)-Total		0.011	0.015		mg/kg wwt	30	40	07-OCT-14
Cobalt (Co)-Total		0.0368	0.0344		mg/kg wwt	6.8	40	07-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2977175								
WG1959296-3 DUP		**L1506160-31**						
Copper (Cu)-Total		53.4	50.5		mg/kg wwt	5.5	40	07-OCT-14
Iron (Fe)-Total		24.3	20.6		mg/kg wwt	16	40	07-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Magnesium (Mg)-Total		561	537		mg/kg wwt	4.5	40	07-OCT-14
Manganese (Mn)-Total		0.941	0.856		mg/kg wwt	9.4	40	07-OCT-14
Molybdenum (Mo)-Total		0.0095	0.0087		mg/kg wwt	8.1	40	07-OCT-14
Nickel (Ni)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Phosphorus (P)-Total		4100	3850		mg/kg wwt	6.3	40	07-OCT-14
Potassium (K)-Total		2110	2000		mg/kg wwt	5.7	40	07-OCT-14
Rubidium (Rb)-Total		0.493	0.460		mg/kg wwt	6.9	40	07-OCT-14
Selenium (Se)-Total		2.72	2.56		mg/kg wwt	6.0	40	07-OCT-14
Sodium (Na)-Total		682	645		mg/kg wwt	5.6	40	07-OCT-14
Strontium (Sr)-Total		3.42	3.20		mg/kg wwt	6.4	60	07-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Thallium (Tl)-Total		0.00070	0.00063		mg/kg wwt	12	40	07-OCT-14
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Uranium (U)-Total		0.00136	0.00119		mg/kg wwt	13	40	07-OCT-14
Vanadium (V)-Total		0.033	0.026		mg/kg wwt	25	40	07-OCT-14
Zinc (Zn)-Total		35.5	33.3		mg/kg wwt	6.3	40	07-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
WG1959296-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	07-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	07-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2977175								
WG1959296-1 MB								
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	07-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	07-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	07-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	07-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	07-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	07-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	07-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	07-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	07-OCT-14
WG1959296-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	07-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	07-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2977175								
WG1959296-2 MB								
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	07-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	07-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	07-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	07-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	07-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	07-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	07-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	07-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	07-OCT-14
Batch R2981408								
WG1957338-4 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			109.1		%		70-130	10-OCT-14
Cadmium (Cd)-Total			96.2		%		70-130	10-OCT-14
Chromium (Cr)-Total			90.2		%		70-130	10-OCT-14
Cobalt (Co)-Total			100.9		%		70-130	10-OCT-14
Copper (Cu)-Total			89.5		%		70-130	10-OCT-14
Iron (Fe)-Total			93.1		%		70-130	10-OCT-14
Lead (Pb)-Total			85.6		%		70-130	10-OCT-14
Manganese (Mn)-Total			94.6		%		70-130	10-OCT-14
Molybdenum (Mo)-Total			94.2		%		70-130	10-OCT-14
Nickel (Ni)-Total			94.6		%		70-130	10-OCT-14
Selenium (Se)-Total			93.7		%		70-130	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2981408								
WG1957338-4 CRM		**VA-NRC-TORT3**						
Strontium (Sr)-Total			93.0		%		70-130	10-OCT-14
Vanadium (V)-Total			100.4		%		70-130	10-OCT-14
Zinc (Zn)-Total			90.0		%		70-130	10-OCT-14
WG1957338-5 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0082		mg/kg wwt		0.001-0.021	10-OCT-14
Arsenic (As)-Total			111.5		%		70-130	10-OCT-14
Barium (Ba)-Total			89.8		%		70-130	10-OCT-14
Boron (B)-Total			5.03		mg/kg wwt		3.5-5.5	10-OCT-14
Cadmium (Cd)-Total			111.8		%		70-130	10-OCT-14
Calcium (Ca)-Total			104.9		%		70-130	10-OCT-14
Cobalt (Co)-Total			105.2		%		70-130	10-OCT-14
Copper (Cu)-Total			105.4		%		70-130	10-OCT-14
Iron (Fe)-Total			104.9		%		70-130	10-OCT-14
Lead (Pb)-Total			100.5		%		70-130	10-OCT-14
Magnesium (Mg)-Total			106.6		%		70-130	10-OCT-14
Manganese (Mn)-Total			105.9		%		70-130	10-OCT-14
Nickel (Ni)-Total			103.9		%		70-130	10-OCT-14
Potassium (K)-Total			106.2		%		70-130	10-OCT-14
Rubidium (Rb)-Total			107.0		%		70-130	10-OCT-14
Selenium (Se)-Total			109.8		%		70-130	10-OCT-14
Sodium (Na)-Total			100.8		%		70-130	10-OCT-14
Strontium (Sr)-Total			101.7		%		70-130	10-OCT-14
Uranium (U)-Total			106.4		%		70-130	10-OCT-14
Vanadium (V)-Total			102.2		%		70-130	10-OCT-14
Zinc (Zn)-Total			102.2		%		70-130	10-OCT-14
WG1971710-4 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			109.1		%		70-130	10-OCT-14
Cadmium (Cd)-Total			96.2		%		70-130	10-OCT-14
Chromium (Cr)-Total			90.2		%		70-130	10-OCT-14
Cobalt (Co)-Total			100.9		%		70-130	10-OCT-14
Copper (Cu)-Total			89.5		%		70-130	10-OCT-14
Iron (Fe)-Total			93.1		%		70-130	10-OCT-14
Lead (Pb)-Total			85.6		%		70-130	10-OCT-14
Manganese (Mn)-Total			94.6		%		70-130	10-OCT-14
Molybdenum (Mo)-Total			94.2		%		70-130	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2981408								
WG1971710-4 CRM		**VA-NRC-TORT3**						
Nickel (Ni)-Total			94.6		%		70-130	10-OCT-14
Selenium (Se)-Total			93.7		%		70-130	10-OCT-14
Strontium (Sr)-Total			93.0		%		70-130	10-OCT-14
Vanadium (V)-Total			100.5		%		70-130	10-OCT-14
Zinc (Zn)-Total			90.0		%		70-130	10-OCT-14
WG1971710-5 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0082		mg/kg wwt		0.001-0.021	10-OCT-14
Arsenic (As)-Total			111.4		%		70-130	10-OCT-14
Barium (Ba)-Total			89.8		%		70-130	10-OCT-14
Boron (B)-Total			5.03		mg/kg wwt		3.5-5.5	10-OCT-14
Cadmium (Cd)-Total			111.8		%		70-130	10-OCT-14
Calcium (Ca)-Total			104.9		%		70-130	10-OCT-14
Cobalt (Co)-Total			105.2		%		70-130	10-OCT-14
Copper (Cu)-Total			105.4		%		70-130	10-OCT-14
Iron (Fe)-Total			104.9		%		70-130	10-OCT-14
Lead (Pb)-Total			100.5		%		70-130	10-OCT-14
Magnesium (Mg)-Total			106.6		%		70-130	10-OCT-14
Manganese (Mn)-Total			105.9		%		70-130	10-OCT-14
Nickel (Ni)-Total			103.9		%		70-130	10-OCT-14
Potassium (K)-Total			106.2		%		70-130	10-OCT-14
Rubidium (Rb)-Total			107.1		%		70-130	10-OCT-14
Selenium (Se)-Total			109.8		%		70-130	10-OCT-14
Sodium (Na)-Total			100.7		%		70-130	10-OCT-14
Strontium (Sr)-Total			101.7		%		70-130	10-OCT-14
Uranium (U)-Total			106.4		%		70-130	10-OCT-14
Vanadium (V)-Total			102.2		%		70-130	10-OCT-14
Zinc (Zn)-Total			102.2		%		70-130	10-OCT-14
WG1957338-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2981408								
WG1957338-1 MB								
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	10-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
WG1957338-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2981408								
WG1957338-2 MB								
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	10-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
WG1971710-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2981408								
WG1971710-1 MB								
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	10-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
WG1971710-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2981408								
WG1971710-2 MB								
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	10-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
Batch R2991248								
WG1957338-3 DUP		**L1506160-6**						
Aluminum (Al)-Total		0.81	1.04		mg/kg wwt	25	40	10-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Arsenic (As)-Total		0.527	0.422		mg/kg wwt	22	40	10-OCT-14
Barium (Ba)-Total		0.012	0.018		mg/kg wwt	38	40	10-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991248								
WG1957338-3 DUP		**L1506160-6**						
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Cadmium (Cd)-Total		0.0050	0.0040		mg/kg wwt	23	40	10-OCT-14
Calcium (Ca)-Total		82.8	66.0		mg/kg wwt	23	60	10-OCT-14
Cesium (Cs)-Total		0.0224	0.0183		mg/kg wwt	20	40	10-OCT-14
Chromium (Cr)-Total		0.021	0.024		mg/kg wwt	11	40	10-OCT-14
Cobalt (Co)-Total		0.0055	0.0055		mg/kg wwt	1.0	40	10-OCT-14
Copper (Cu)-Total		0.857	0.713		mg/kg wwt	18	40	10-OCT-14
Iron (Fe)-Total		5.74	5.75		mg/kg wwt	0.2	40	10-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Magnesium (Mg)-Total		278	224		mg/kg wwt	21	40	10-OCT-14
Manganese (Mn)-Total		0.081	0.080		mg/kg wwt	1.2	40	10-OCT-14
Molybdenum (Mo)-Total		0.0052	0.0048		mg/kg wwt	7.4	40	10-OCT-14
Nickel (Ni)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Phosphorus (P)-Total		2660	2180		mg/kg wwt	20	40	10-OCT-14
Potassium (K)-Total		3660	3030		mg/kg wwt	19	40	10-OCT-14
Rubidium (Rb)-Total		0.917	0.750		mg/kg wwt	20	40	10-OCT-14
Selenium (Se)-Total		0.246	0.204		mg/kg wwt	19	40	10-OCT-14
Sodium (Na)-Total		419	349		mg/kg wwt	18	40	10-OCT-14
Strontium (Sr)-Total		0.218	0.175		mg/kg wwt	22	60	10-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Thallium (Tl)-Total		0.00102	0.00086		mg/kg wwt	17	40	10-OCT-14
Tin (Sn)-Total		0.029	0.028		mg/kg wwt	2.7	40	10-OCT-14
Uranium (U)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Vanadium (V)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Zinc (Zn)-Total		3.57	2.98		mg/kg wwt	18	40	10-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
MOISTURE-TISS-VA	**Tissue**							
Batch R2953158								
WG1954883-1 DUP		**L1506160-9**						
% Moisture		69.0	69.2		%	0.3	20	18-SEP-14
WG1954883-2 DUP		**L1506160-31**						
% Moisture		56.6	56.1		%	0.8	20	18-SEP-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-TISS-VA	**Tissue**							
Batch R2955709								
WG1956326-1 DUP		**L1506160-33**						
% Moisture		55.2	53.6		%	3.0	20	21-SEP-14

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS LABORATORY GROUP ANALYTICAL REPORT

ALS Lab WO#: L1506160

Client ID	Liver - Total Weight (g)	Gonad - Total Weight (g)
SK-1 TAG#02567	55.090	29.529
SK-2 TAG#02566	34.463	143.245
SK-3 TAG#02565	32.355	16.882
SK-4 TAG#02564	29.695	42.178
SK-5 TAG#02563	33.460	30.318
SK-6 TAG#02562	32.708	62.834
SK-7 TAG#02561	30.182	96.156
SK-8 TAG#02560	24.711	25.756
SK-9 TAG#02559	31.754	83.699
SK-10 TAG#02558	31.834	84.929
SK-11 TAG#02557	22.787	85.940
SK-12 TAG#02556	39.348	141.554

L1506160-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # SCFR Sockeye sampling

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack.Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: willie.sellars@williamslakeband.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver(METALS)	Gonads(METALS)	Muscle(METALS)	% moisture content	Sex(Confirmation)	Number of Containers
	SK-1 tag#02567	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-2 tag#02566	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-3 tag#02565	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-4 tag#02564	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-5 tag#02563	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-6 tag#02562	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-7 tag#02561	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-8 tag#02560	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-9 tag#02559	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-10 tag#02558	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-11 tag#02557	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-12 tag#02556	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C.Koenig						°C				

Sample Receipt Confirmation

36 Samples received at ALS in VANCOUVER

Job Reference #: N/A
Project PO #: N/A
Legal Site Description: N/A
Quote #: Q47599
Lab Work Order #: L1506160
Estimated Completion Date: 10/6/2014

Date Sampled: 8/20/2014
Date Received: 8/21/2014
Sampled By:
Chain of Custody: 1,2
Account Manager: Can Dang
Estimated Sample Disposal Date: 11/5/2014

Sample Integrity Observations:

Observation	Details
Sample integrity compromised	Sample integrity compromised: Samples not individually isolated within cooler and possible cross-contamination between fish specimens.
No CofC with Shipment	No CofC with Shipment.

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Jack Love
Address: PO Box 12
Likely,BC V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
kmcmahen@mountpolley.com
mia.sakelariou@snclavalin.com
Report Name: CROSSTAB_ALSQC
Digital Type: EHS_MOUNTP
Digital Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
mia.sakelariou@snclavalin.com
kmcmahen@mountpolley.com
Distribution: **Hard Copy:** N **Email:** Y **Fax:** N

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP. ~LIKELY
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100
Distribution: **Hard Copy:** Y **Email:** Y

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1506160-1	SK-1 TAG#02567 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-2	SK-2 TAG#02566 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-3	SK-3 TAG#02565 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-4	SK-4 TAG#02564 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-5	SK-5 TAG#02563 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1506160-6	SK-6 TAG#02562 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-7	SK-7 TAG#02561 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-8	SK-8 TAG#02560 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-9	SK-9 TAG#02559 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-10	SK-10 TAG#02558 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-11	SK-11 TAG#02557 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-12	SK-12 TAG#02556 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-13	SK-1 TAG#02567 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-14	SK-2 TAG#02566 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-15	SK-3 TAG#02565 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-16	SK-4 TAG#02564 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-17	SK-5 TAG#02563 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-18	SK-6 TAG#02562 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-19	SK-7 TAG#02561 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-20	SK-8 TAG#02560 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-21	SK-9 TAG#02559 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-22	SK-10 TAG#02558 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-23	SK-11 TAG#02557 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-24	SK-12 TAG#02556 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-25	SK-1 TAG#02567 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-26	SK-2 TAG#02566 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-27	SK-3 TAG#02565 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-28	SK-4 TAG#02564 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-29	SK-5 TAG#02563 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-30	SK-6 TAG#02562 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-31	SK-7 TAG#02561 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-32	SK-8 TAG#02560 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-33	SK-9 TAG#02559 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-34	SK-10 TAG#02558 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish
L1506160-35	SK-11 TAG#02557 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1506160-36	SK-12 TAG#02556 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/6/2014 5:00 PM		Fish

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
SK-1 TAG#02567 MUSCLE	X	X	X	X	X
SK-2 TAG#02566 MUSCLE	X	X	X	X	X
SK-3 TAG#02565 MUSCLE	X	X	X	X	X
SK-4 TAG#02564 MUSCLE	X	X	X	X	X
SK-5 TAG#02563 MUSCLE	X	X	X	X	X
SK-6 TAG#02562 MUSCLE	X	X	X	X	X
SK-7 TAG#02561 MUSCLE	X	X	X	X	X
SK-8 TAG#02560 MUSCLE	X	X	X	X	X
SK-9 TAG#02559 MUSCLE	X	X	X	X	X
SK-10 TAG#02558 MUSCLE	X	X	X	X	X
SK-11 TAG#02557 MUSCLE	X	X	X	X	X
SK-12 TAG#02556 MUSCLE	X	X	X	X	X
SK-1 TAG#02567 LIVER	X	X	X	X	X
SK-2 TAG#02566 LIVER	X	X	X	X	X
SK-3 TAG#02565 LIVER	X	X	X	X	X
SK-4 TAG#02564 LIVER	X	X	X	X	X
SK-5 TAG#02563 LIVER	X	X	X	X	X
SK-6 TAG#02562 LIVER	X	X	X	X	X
SK-7 TAG#02561 LIVER	X	X	X	X	X

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
SK-8 TAG#02560 LIVER	X	X	X	X	X
SK-9 TAG#02559 LIVER	X	X	X	X	X
SK-10 TAG#02558 LIVER	X	X	X	X	X
SK-11 TAG#02557 LIVER	X	X	X	X	X
SK-12 TAG#02556 LIVER	X	X	X	X	X
SK-1 TAG#02567 GONADS	X	X	X	X	X
SK-2 TAG#02566 GONADS	X	X	X	X	X
SK-3 TAG#02565 GONADS	X	X	X	X	X
SK-4 TAG#02564 GONADS	X	X	X	X	X
SK-5 TAG#02563 GONADS	X	X	X	X	X
SK-6 TAG#02562 GONADS	X	X	X	X	X
SK-7 TAG#02561 GONADS	X	X	X	X	X
SK-8 TAG#02560 GONADS	X	X	X	X	X
SK-9 TAG#02559 GONADS	X	X	X	X	X
SK-10 TAG#02558 GONADS	X	X	X	X	X
SK-11 TAG#02557 GONADS	X	X	X	X	X
SK-12 TAG#02556 GONADS	X	X	X	X	X

Sample Receipt Confirmation

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # L1506160 when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

L1506160-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # SCFR Sockeye sampling

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack.Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: willie.sellars@williamslakeband.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver(METALS)	Gonads(METALS)	Muscle(METALS)	% moisture content	Sex(Confirmation)	Number of Containers
	SK-1 tag#02567	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-2 tag#02566	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-3 tag#02565	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-4 tag#02564	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-5 tag#02563	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-6 tag#02562	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-7 tag#02561	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-8 tag#02560	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-9 tag#02559	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-10 tag#02558	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-11 tag#02557	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-12 tag#02556	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C.Koenig						°C				

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 21-AUG-14
Report Date: 27-OCT-14 17:13 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1506196

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 1
Legal Site Desc:

Comments: Addendum.

27-OCT-2014 Revision 2: This report was originally processed under Red Chris Development Company Ltd. It was transfered to Mount Polley Mining Corp's possession as per Jack Love's requests.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506196-1	L1506196-2	L1506196-3	L1506196-4	L1506196-5
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-13 TAG#02555 MUSCLE	SK-14 TAG#02554 MUSCLE	SK-15 TAG#02553 MUSCLE	SK-16 TAG#02552 MUSCLE	SK-17 TAG#71726 MUSCLE
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	73.4	75.3	72.9	72.6	73.4
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.453	0.318	0.428	0.418	0.377
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0040	0.0053	0.0052	0.0044	0.0053
	Calcium (Ca)-Total (mg/kg wwt)	64.7	59.2	60.4	64.5	101
	Cesium (Cs)-Total (mg/kg wwt)	0.0176	0.0200	0.0172	0.0172	0.0235
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.019	0.023	0.022	<0.010
	Cobalt (Co)-Total (mg/kg wwt)	0.0070	0.0055	0.0059	0.0075	0.0052
	Copper (Cu)-Total (mg/kg wwt)	0.736	0.777	0.694	0.731	0.698
	Iron (Fe)-Total (mg/kg wwt)	7.52	6.18	4.19	4.51	5.85
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	262	246	265	265	292
	Manganese (Mn)-Total (mg/kg wwt)	0.073	0.085	0.066	0.057	0.060
	Mercury (Hg)-Total (mg/kg wwt)	0.0535	0.0379	0.0414	0.0459	0.0447
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0044	0.0061	0.0049	<0.0040
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2580	2430	2460	2540	2820
	Potassium (K)-Total (mg/kg wwt)	3660	3690	3680	3680	3980
	Rubidium (Rb)-Total (mg/kg wwt)	0.937	0.915	0.894	0.885	1.02
	Selenium (Se)-Total (mg/kg wwt)	0.263	0.269	0.263	0.276	0.278
	Sodium (Na)-Total (mg/kg wwt)	364	472	431	361	338
	Strontium (Sr)-Total (mg/kg wwt)	0.184	0.140	0.168	0.180	0.310
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00097	0.00042	0.00041	0.00073	0.00148
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.027	<0.020	<0.020	0.034
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.027	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.72	3.52	3.79	3.55	3.67
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506196-6	L1506196-7	L1506196-8	L1506196-9	L1506196-10
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-18 TAG#71727 MUSCLE	SK-19 TAG#71728 MUSCLE	SK-20 TAG#71729 MUSCLE	SK-21 TAG#71730 MUSCLE	SK-22 TAG#71731 MUSCLE
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	71.4	71.8	71.4	72.8	72.8
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.559	0.567	0.741	0.502	0.351
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0090	0.0065	0.0074	0.0053	0.0037
	Calcium (Ca)-Total (mg/kg wwt)	55.0	101	63.9	81.8	115
	Cesium (Cs)-Total (mg/kg wwt)	0.0160	0.0168	0.0143	0.0191	0.0223
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.016	<0.010	<0.010	0.011
	Cobalt (Co)-Total (mg/kg wwt)	0.0062	0.0058	0.0049	0.0057	0.0061
	Copper (Cu)-Total (mg/kg wwt)	0.793	0.891	0.613	0.987	0.576
	Iron (Fe)-Total (mg/kg wwt)	5.12	6.52	4.19	5.67	4.63
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	257	253	254	283	283
	Manganese (Mn)-Total (mg/kg wwt)	0.070	0.082	0.060	0.075	0.063
	Mercury (Hg)-Total (mg/kg wwt)	0.0634	0.0573	0.0423	0.0637	0.0365
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0049	0.0041	<0.0040	<0.0040
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.052	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2540	2570	2360	2660	2780
	Potassium (K)-Total (mg/kg wwt)	3840	3770	3490	3880	3990
	Rubidium (Rb)-Total (mg/kg wwt)	0.859	0.882	0.857	0.957	0.957
	Selenium (Se)-Total (mg/kg wwt)	0.285	0.271	0.221	0.319	0.262
	Sodium (Na)-Total (mg/kg wwt)	404	396	304	355	366
	Strontium (Sr)-Total (mg/kg wwt)	0.151	0.330	0.176	0.262	0.387
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00078	0.00056	0.00056	0.00093
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.022
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.74	3.78	3.27	4.45	3.33
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506196-11	L1506196-12	L1506196-13	L1506196-14	L1506196-15
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-23 TAG#71732 MUSCLE	SK-24 TAG#71733 MUSCLE	SK-13 TAG#02555 LIVER	SK-14 TAG#02554 LIVER	SK-15 TAG#02553 LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	71.2	74.0	78.0	78.2	77.8
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.450	0.271	0.566	0.244	0.253
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0051	0.0076	0.852	0.721	1.25
	Calcium (Ca)-Total (mg/kg wwt)	76.6	64.3	72.5	98.6	67.3
	Cesium (Cs)-Total (mg/kg wwt)	0.0201	0.0207	0.0066	0.0060	0.0071
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.014	0.027	<0.010	0.023
	Cobalt (Co)-Total (mg/kg wwt)	0.0049	0.0064	0.0367	0.0169	0.0338
	Copper (Cu)-Total (mg/kg wwt)	0.845	0.700	47.5	85.4	252
	Iron (Fe)-Total (mg/kg wwt)	4.44	4.62	99.4	32.5	98.6
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	0.0851
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	276	288	181	221	150
	Manganese (Mn)-Total (mg/kg wwt)	0.059	0.058	1.47	1.53	1.16
	Mercury (Hg)-Total (mg/kg wwt)	0.0482	0.0657	0.0978	0.0617	0.117
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	<0.0040	0.181	0.155	0.176
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	0.059
	Phosphorus (P)-Total (mg/kg wwt)	2690	2830	3410	3980	2950
	Potassium (K)-Total (mg/kg wwt)	3800	3970	3720	4560	3160
	Rubidium (Rb)-Total (mg/kg wwt)	0.934	0.929	1.10	1.15	0.845
	Selenium (Se)-Total (mg/kg wwt)	0.286	0.322	6.38	7.21	14.8
	Sodium (Na)-Total (mg/kg wwt)	433	377	1070	725	1290
	Strontium (Sr)-Total (mg/kg wwt)	0.215	0.210	0.234	0.268	0.253
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00111	0.00111	0.00476	0.00263	0.00196
	Tin (Sn)-Total (mg/kg wwt)	0.025	0.039	0.020	<0.020	0.028
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00114	0.00148	0.00085
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.181	0.104	0.235
	Zinc (Zn)-Total (mg/kg wwt)	3.63	3.92	34.1	33.2	42.1
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506196-16	L1506196-17	L1506196-18	L1506196-19	L1506196-20
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-16 TAG#02552 LIVER	SK-17 TAG#71726 LIVER	SK-18 TAG#71727 LIVER	SK-19 TAG#71728 LIVER	SK-20 TAG#71729 LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	75.8	78.3	76.5	76.4	76.0
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.383	0.382	0.592	0.566	0.566
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0027	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	1.17	1.60	2.41	1.57	2.63
	Calcium (Ca)-Total (mg/kg wwt)	70.5	75.4	65.4	78.6	83.0
	Cesium (Cs)-Total (mg/kg wwt)	0.0086	0.0075	0.0060	0.0069	0.0073
	Chromium (Cr)-Total (mg/kg wwt)	0.055	0.015	<0.010	0.036	0.014
	Cobalt (Co)-Total (mg/kg wwt)	0.0483	0.0188	0.0272	0.0258	0.0382
	Copper (Cu)-Total (mg/kg wwt)	343	103	318	47.2	84.4
	Iron (Fe)-Total (mg/kg wwt)	129	102	144	81.9	78.8
	Lead (Pb)-Total (mg/kg wwt)	0.0062	<0.0040	0.0046	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	153	181	158	209	199
	Manganese (Mn)-Total (mg/kg wwt)	1.28	1.45	1.46	1.45	1.78
	Mercury (Hg)-Total (mg/kg wwt)	0.113	0.0773	0.111	0.115	0.0858
	Molybdenum (Mo)-Total (mg/kg wwt)	0.171	0.180	0.166	0.200	0.187
	Nickel (Ni)-Total (mg/kg wwt)	0.061	<0.040	<0.040	0.041	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2970	3410	3220	3660	3660
	Potassium (K)-Total (mg/kg wwt)	3090	3860	3390	3580	3620
	Rubidium (Rb)-Total (mg/kg wwt)	0.805	1.10	0.838	0.930	1.05
	Selenium (Se)-Total (mg/kg wwt)	17.3	10.6	15.3	6.19	6.28
	Sodium (Na)-Total (mg/kg wwt)	1160	1030	1140	1050	996
	Strontium (Sr)-Total (mg/kg wwt)	0.258	0.193	0.169	0.325	0.256
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00284	0.00741	0.00218	0.00493	0.00314
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00079	0.00124	0.00098	0.00175	0.00128
	Vanadium (V)-Total (mg/kg wwt)	0.119	0.053	0.256	0.089	0.096
	Zinc (Zn)-Total (mg/kg wwt)	80.4	38.2	42.6	33.3	41.9
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506196-21	L1506196-22	L1506196-23	L1506196-24	L1506196-25
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-21 TAG#71730 LIVER	SK-22 TAG#71731 LIVER	SK-23 TAG#71732 LIVER	SK-24 TAG#71733 LIVER	SK-13 TAG#02555 GONADS
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	77.2	77.1	77.5	77.8	55.4
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.653	0.384	0.465	0.411	0.253
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	0.068
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.894	1.07	1.10	0.954	0.0212
	Calcium (Ca)-Total (mg/kg wwt)	109	61.1	71.1	83.8	460
	Cesium (Cs)-Total (mg/kg wwt)	0.0082	0.0085	0.0095	0.0088	0.0076
	Chromium (Cr)-Total (mg/kg wwt)	0.018	0.019	0.054	0.024	<0.010
	Cobalt (Co)-Total (mg/kg wwt)	0.0356	0.0394	0.0394	0.0367	0.0375
	Copper (Cu)-Total (mg/kg wwt)	87.9	292	253	254	61.8
	Iron (Fe)-Total (mg/kg wwt)	113	193	122	98.6	26.4
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	201	144	159	150	583
	Manganese (Mn)-Total (mg/kg wwt)	1.51	1.15	1.32	1.33	0.835
	Mercury (Hg)-Total (mg/kg wwt)	0.109	0.116	0.0991	0.0923	0.0060
	Molybdenum (Mo)-Total (mg/kg wwt)	0.195	0.150	0.183	0.155	0.0083
	Nickel (Ni)-Total (mg/kg wwt)	0.070	0.049	0.069	0.045	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	3380	2860	3140	2950	4360
	Potassium (K)-Total (mg/kg wwt)	3210	3070	3230	3220	2180
	Rubidium (Rb)-Total (mg/kg wwt)	0.936	0.812	0.887	0.851	0.558
	Selenium (Se)-Total (mg/kg wwt)	7.54	22.6	16.1	19.9	3.41
	Sodium (Na)-Total (mg/kg wwt)	1040	1250	1280	1230	636
	Strontium (Sr)-Total (mg/kg wwt)	0.469	0.242	0.244	0.352	3.47
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00381	0.00391	0.00599	0.00437	0.00077
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.021	0.042	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00092	0.00062	0.00097	0.00094	0.00116
	Vanadium (V)-Total (mg/kg wwt)	0.201	0.079	0.131	0.273	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	51.1	48.2	37.8	35.3	44.3
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506196-26	L1506196-27	L1506196-28	L1506196-29	L1506196-30
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-14 TAG#02554 GONADS	SK-15 TAG#02553 GONADS	SK-16 TAG#02552 GONADS	SK-17 TAG#71726 GONADS	SK-18 TAG#71727 GONADS
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	56.8	77.6	78.2	55.5	80.3
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.182	0.115	0.191	0.251	0.234
	Barium (Ba)-Total (mg/kg wwt)	0.033	<0.010	<0.010	0.079	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0199	0.0276	0.0314	0.0400	0.0261
	Calcium (Ca)-Total (mg/kg wwt)	505	44.3	56.1	379	44.3
	Cesium (Cs)-Total (mg/kg wwt)	0.0080	0.0106	0.0129	0.0089	0.0089
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.019	<0.010	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg wwt)	0.0212	0.0160	0.0256	0.0577	0.0171
	Copper (Cu)-Total (mg/kg wwt)	35.5	0.808	1.50	87.4	0.821
	Iron (Fe)-Total (mg/kg wwt)	13.4	8.83	13.0	36.4	6.14
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	0.0042	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	569	191	189	525	178
	Manganese (Mn)-Total (mg/kg wwt)	0.978	0.140	0.154	1.43	0.134
	Mercury (Hg)-Total (mg/kg wwt)	0.0040	0.0142	0.0175	0.0073	0.0187
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0070	0.0054	0.0065	0.0085	0.0053
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	4550	9550	7440	3480	7630
	Potassium (K)-Total (mg/kg wwt)	2430	3840	3890	1850	4020
	Rubidium (Rb)-Total (mg/kg wwt)	0.563	1.18	1.10	0.491	1.14
	Selenium (Se)-Total (mg/kg wwt)	2.51	0.314	0.382	3.43	0.298
	Sodium (Na)-Total (mg/kg wwt)	583	1130	959	720	1130
	Strontium (Sr)-Total (mg/kg wwt)	3.64	0.157	0.220	2.90	0.147
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00079	0.00144	0.00083	0.00084
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.031	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00122	<0.00040	<0.00040	0.00143	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	25.8	10.2	27.4	58.8	12.3
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506196-31	L1506196-32	L1506196-33	L1506196-34	L1506196-35
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-19 TAG#71728 GONADS	SK-20 TAG#71729 GONADS	SK-21 TAG#71730 GONADS	SK-22 TAG#71731 GONADS	SK-23 TAG#71732 GONADS
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	55.6	55.5	55.4	79.6	79.4
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.293	0.503	0.368	0.180	0.187
	Barium (Ba)-Total (mg/kg wwt)	0.079	0.035	0.042	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0330	0.0780	0.0371	0.0137	0.0174
	Calcium (Ca)-Total (mg/kg wwt)	509	487	369	51.0	51.2
	Cesium (Cs)-Total (mg/kg wwt)	0.0081	0.0080	0.0082	0.0137	0.0145
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	0.018	0.011
	Cobalt (Co)-Total (mg/kg wwt)	0.0212	0.0448	0.0490	0.0172	0.0158
	Copper (Cu)-Total (mg/kg wwt)	40.9	76.4	78.0	0.597	0.782
	Iron (Fe)-Total (mg/kg wwt)	23.3	29.2	36.2	15.6	16.2
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	657	555	613	176	177
	Manganese (Mn)-Total (mg/kg wwt)	0.636	1.58	1.12	0.142	0.129
	Mercury (Hg)-Total (mg/kg wwt)	0.0071	0.0065	0.0103	0.0151	0.0170
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0081	0.0084	0.0083	0.0072	<0.0040
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.052	0.041	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	4330	4180	3680	7550	8680
	Potassium (K)-Total (mg/kg wwt)	2190	2100	1910	4160	4210
	Rubidium (Rb)-Total (mg/kg wwt)	0.513	0.577	0.514	1.19	1.23
	Selenium (Se)-Total (mg/kg wwt)	2.87	3.10	3.64	0.332	0.371
	Sodium (Na)-Total (mg/kg wwt)	583	707	672	965	1110
	Strontium (Sr)-Total (mg/kg wwt)	4.08	3.17	3.11	0.201	0.186
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00065	<0.00040	0.00049	0.00200	0.00230
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00191	0.00102	0.00080	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	29.2	45.3	58.4	15.3	12.6
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506196-36				
	Description	Fish				
	Sampled Date	20-AUG-14				
	Sampled Time	11:00				
	Client ID	SK-24 TAG#71733 GONADS				
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	78.9				
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40				
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020				
	Arsenic (As)-Total (mg/kg wwt)	0.192				
	Barium (Ba)-Total (mg/kg wwt)	<0.010				
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020				
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020				
	Boron (B)-Total (mg/kg wwt)	<0.20				
	Cadmium (Cd)-Total (mg/kg wwt)	0.0130				
	Calcium (Ca)-Total (mg/kg wwt)	59.0				
	Cesium (Cs)-Total (mg/kg wwt)	0.0139				
	Chromium (Cr)-Total (mg/kg wwt)	<0.010				
	Cobalt (Co)-Total (mg/kg wwt)	0.0185				
	Copper (Cu)-Total (mg/kg wwt)	0.754				
	Iron (Fe)-Total (mg/kg wwt)	9.92				
	Lead (Pb)-Total (mg/kg wwt)	<0.0040				
	Lithium (Li)-Total (mg/kg wwt)	<0.10				
	Magnesium (Mg)-Total (mg/kg wwt)	182				
	Manganese (Mn)-Total (mg/kg wwt)	0.144				
	Mercury (Hg)-Total (mg/kg wwt)	0.0160				
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0058				
	Nickel (Ni)-Total (mg/kg wwt)	<0.040				
	Phosphorus (P)-Total (mg/kg wwt)	8280				
	Potassium (K)-Total (mg/kg wwt)	4240				
	Rubidium (Rb)-Total (mg/kg wwt)	1.32				
	Selenium (Se)-Total (mg/kg wwt)	0.355				
	Sodium (Na)-Total (mg/kg wwt)	1010				
	Strontium (Sr)-Total (mg/kg wwt)	0.259				
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040				
	Thallium (Tl)-Total (mg/kg wwt)	0.00192				
	Tin (Sn)-Total (mg/kg wwt)	<0.020				
	Uranium (U)-Total (mg/kg wwt)	<0.00040				
	Vanadium (V)-Total (mg/kg wwt)	<0.020				
	Zinc (Zn)-Total (mg/kg wwt)	12.2				
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1506196 Report Date: 27-OCT-14

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-WET-CVAFS-VA	**Tissue**							
Batch R2959657								
WG1957194-4 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			101.8		%		70-130	25-SEP-14
WG1957194-5 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			92.2		%		70-130	25-SEP-14
WG1957194-3 DUP		**L1506196-7**						
Mercury (Hg)-Total		0.0573	0.0487		mg/kg wwt	16	40	25-SEP-14
WG1957194-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	25-SEP-14
WG1957194-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	25-SEP-14
Batch R2969674								
WG1959368-4 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			116.6		%		70-130	02-OCT-14
WG1959368-5 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			119.4		%		70-130	02-OCT-14
WG1959368-3 DUP		**L1506196-6**						
Mercury (Hg)-Total		0.0634	0.0633		mg/kg wwt	0.2	40	02-OCT-14
WG1959368-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	02-OCT-14
WG1959368-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	02-OCT-14
MET-WET-CCMS-VA	**Tissue**							
Batch R2975828								
WG1959368-4 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			108.0		%		70-130	07-OCT-14
Cadmium (Cd)-Total			104.1		%		70-130	07-OCT-14
Chromium (Cr)-Total			102.1		%		70-130	07-OCT-14
Cobalt (Co)-Total			108.2		%		70-130	07-OCT-14
Copper (Cu)-Total			96.9		%		70-130	07-OCT-14
Iron (Fe)-Total			98.6		%		70-130	07-OCT-14
Lead (Pb)-Total			92.7		%		70-130	07-OCT-14
Manganese (Mn)-Total			100.7		%		70-130	07-OCT-14
Molybdenum (Mo)-Total			104.5		%		70-130	07-OCT-14
Nickel (Ni)-Total			102.3		%		70-130	07-OCT-14
Selenium (Se)-Total			102.3		%		70-130	07-OCT-14
Strontium (Sr)-Total			100.4		%		70-130	07-OCT-14
Vanadium (V)-Total			104.5		%		70-130	07-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2975828								
WG1959368-4 CRM		**VA-NRC-TORT3**						
Zinc (Zn)-Total			101.5		%		70-130	07-OCT-14
WG1959368-5 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0090		mg/kg wwt		0.001-0.021	07-OCT-14
Arsenic (As)-Total			94.6		%		70-130	07-OCT-14
Barium (Ba)-Total			85.1		%		70-130	07-OCT-14
Boron (B)-Total			4.65		mg/kg wwt		3.5-5.5	07-OCT-14
Cadmium (Cd)-Total			105.0		%		70-130	07-OCT-14
Calcium (Ca)-Total			97.9		%		70-130	07-OCT-14
Cobalt (Co)-Total			101.6		%		70-130	07-OCT-14
Copper (Cu)-Total			98.7		%		70-130	07-OCT-14
Iron (Fe)-Total			95.2		%		70-130	07-OCT-14
Lead (Pb)-Total			95.7		%		70-130	07-OCT-14
Magnesium (Mg)-Total			101.9		%		70-130	07-OCT-14
Manganese (Mn)-Total			100.3		%		70-130	07-OCT-14
Nickel (Ni)-Total			98.0		%		70-130	07-OCT-14
Potassium (K)-Total			103.4		%		70-130	07-OCT-14
Rubidium (Rb)-Total			101.5		%		70-130	07-OCT-14
Selenium (Se)-Total			103.8		%		70-130	07-OCT-14
Sodium (Na)-Total			96.0		%		70-130	07-OCT-14
Strontium (Sr)-Total			95.7		%		70-130	07-OCT-14
Uranium (U)-Total			99.6		%		70-130	07-OCT-14
Vanadium (V)-Total			93.2		%		70-130	07-OCT-14
Zinc (Zn)-Total			99.8		%		70-130	07-OCT-14
WG1959368-3 DUP		**L1506196-6**						
Aluminum (Al)-Total		<0.40	<0.40	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Arsenic (As)-Total		0.559	0.493		mg/kg wwt	13	40	07-OCT-14
Barium (Ba)-Total		<0.010	<0.010	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Cadmium (Cd)-Total		0.0090	0.0080		mg/kg wwt	12	40	07-OCT-14
Calcium (Ca)-Total		55.0	68.9		mg/kg wwt	22	60	07-OCT-14
Cesium (Cs)-Total		0.0160	0.0158		mg/kg wwt	1.4	40	07-OCT-14
Chromium (Cr)-Total		<0.010	<0.010	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2975828								
WG1959368-3 DUP		**L1506196-6**						
Cobalt (Co)-Total		0.0062	0.0054		mg/kg wwt	14	40	07-OCT-14
Copper (Cu)-Total		0.793	0.627		mg/kg wwt	23	40	07-OCT-14
Iron (Fe)-Total		5.12	4.32		mg/kg wwt	17	40	07-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Magnesium (Mg)-Total		257	257		mg/kg wwt	0.0	40	07-OCT-14
Manganese (Mn)-Total		0.070	0.063		mg/kg wwt	11	40	07-OCT-14
Molybdenum (Mo)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Nickel (Ni)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Phosphorus (P)-Total		2540	2490		mg/kg wwt	2.0	40	07-OCT-14
Potassium (K)-Total		3840	3790		mg/kg wwt	1.5	40	07-OCT-14
Rubidium (Rb)-Total		0.859	0.833		mg/kg wwt	3.1	40	07-OCT-14
Selenium (Se)-Total		0.285	0.278		mg/kg wwt	2.3	40	07-OCT-14
Sodium (Na)-Total		404	386		mg/kg wwt	4.6	40	07-OCT-14
Strontium (Sr)-Total		0.151	0.214		mg/kg wwt	35	60	07-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Thallium (Tl)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Uranium (U)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Vanadium (V)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
Zinc (Zn)-Total		3.74	3.44		mg/kg wwt	8.3	40	07-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	07-OCT-14
WG1959368-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	07-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	07-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2975828								
WG1959368-1 MB								
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	07-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	07-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	07-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	07-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	07-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	07-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	07-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	07-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	07-OCT-14
WG1959368-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	07-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	07-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	07-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2975828								
WG1959368-2 MB								
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	07-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	07-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	07-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	07-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	07-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	07-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	07-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	07-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	07-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	07-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	07-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	07-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	07-OCT-14
Batch R2977828								
WG1969607-4 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			110.6		%		70-130	08-OCT-14
Cadmium (Cd)-Total			99.5		%		70-130	08-OCT-14
Chromium (Cr)-Total			112.9		%		70-130	08-OCT-14
Cobalt (Co)-Total			102.7		%		70-130	08-OCT-14
Copper (Cu)-Total			90.0		%		70-130	08-OCT-14
Iron (Fe)-Total			95.9		%		70-130	08-OCT-14
Lead (Pb)-Total			87.8		%		70-130	08-OCT-14
Manganese (Mn)-Total			96.1		%		70-130	08-OCT-14
Molybdenum (Mo)-Total			98.8		%		70-130	08-OCT-14
Nickel (Ni)-Total			99.1		%		70-130	08-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2977828								
WG1969607-4 CRM		**VA-NRC-TORT3**						
Selenium (Se)-Total			96.0		%		70-130	08-OCT-14
Strontium (Sr)-Total			94.6		%		70-130	08-OCT-14
Vanadium (V)-Total			100.5		%		70-130	08-OCT-14
Zinc (Zn)-Total			90.2		%		70-130	08-OCT-14
WG1969607-5 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0064		mg/kg wwt		0.001-0.021	08-OCT-14
Arsenic (As)-Total			94.5		%		70-130	08-OCT-14
Barium (Ba)-Total			79.9		%		70-130	08-OCT-14
Boron (B)-Total			4.45		mg/kg wwt		3.5-5.5	08-OCT-14
Cadmium (Cd)-Total			99.3		%		70-130	08-OCT-14
Calcium (Ca)-Total			94.1		%		70-130	08-OCT-14
Cobalt (Co)-Total			95.1		%		70-130	08-OCT-14
Copper (Cu)-Total			93.6		%		70-130	08-OCT-14
Iron (Fe)-Total			91.7		%		70-130	08-OCT-14
Lead (Pb)-Total			91.3		%		70-130	08-OCT-14
Magnesium (Mg)-Total			94.3		%		70-130	08-OCT-14
Manganese (Mn)-Total			93.6		%		70-130	08-OCT-14
Nickel (Ni)-Total			92.0		%		70-130	08-OCT-14
Potassium (K)-Total			93.0		%		70-130	08-OCT-14
Rubidium (Rb)-Total			93.8		%		70-130	08-OCT-14
Selenium (Se)-Total			94.4		%		70-130	08-OCT-14
Sodium (Na)-Total			90.6		%		70-130	08-OCT-14
Strontium (Sr)-Total			91.4		%		70-130	08-OCT-14
Uranium (U)-Total			95.7		%		70-130	08-OCT-14
Vanadium (V)-Total			90.0		%		70-130	08-OCT-14
Zinc (Zn)-Total			88.3		%		70-130	08-OCT-14
WG1969607-3 DUP		**L1506196-7**						
Aluminum (Al)-Total		<0.40	<0.40	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Arsenic (As)-Total		0.567	0.585		mg/kg wwt	3.1	40	08-OCT-14
Barium (Ba)-Total		<0.010	<0.010	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Cadmium (Cd)-Total		0.0065	0.0068		mg/kg wwt	5.3	40	08-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2977828								
WG1969607-3 DUP		**L1506196-7**						
Calcium (Ca)-Total		101	94.5		mg/kg wwt	6.4	60	08-OCT-14
Cesium (Cs)-Total		0.0168	0.0171		mg/kg wwt	1.7	40	08-OCT-14
Chromium (Cr)-Total		0.016	<0.010	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Cobalt (Co)-Total		0.0058	0.0061		mg/kg wwt	5.5	40	08-OCT-14
Copper (Cu)-Total		0.891	1.03		mg/kg wwt	15	40	08-OCT-14
Iron (Fe)-Total		6.52	7.18		mg/kg wwt	9.6	40	08-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Magnesium (Mg)-Total		253	258		mg/kg wwt	1.8	40	08-OCT-14
Manganese (Mn)-Total		0.082	0.089		mg/kg wwt	8.2	40	08-OCT-14
Molybdenum (Mo)-Total		0.0049	0.0046		mg/kg wwt	6.5	40	08-OCT-14
Nickel (Ni)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Phosphorus (P)-Total		2570	2630		mg/kg wwt	2.4	40	08-OCT-14
Potassium (K)-Total		3770	3940		mg/kg wwt	4.3	40	08-OCT-14
Rubidium (Rb)-Total		0.882	0.894		mg/kg wwt	1.3	40	08-OCT-14
Selenium (Se)-Total		0.271	0.278		mg/kg wwt	2.4	40	08-OCT-14
Sodium (Na)-Total		396	415		mg/kg wwt	4.7	40	08-OCT-14
Strontium (Sr)-Total		0.330	0.307		mg/kg wwt	7.2	60	08-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Thallium (Tl)-Total		0.00078	0.00084		mg/kg wwt	7.7	40	08-OCT-14
Tin (Sn)-Total		<0.020	0.020	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Uranium (U)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Vanadium (V)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
Zinc (Zn)-Total		3.78	3.92		mg/kg wwt	3.6	40	08-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	08-OCT-14
WG1969607-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	08-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	08-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	08-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	08-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	08-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2977828								
WG1969607-1 MB								
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	08-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	08-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	08-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	08-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	08-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	08-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	08-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	08-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	08-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	08-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	08-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	08-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	08-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	08-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	08-OCT-14
WG1969607-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	08-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	08-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	08-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	08-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	08-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2977828								
WG1969607-2 MB								
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	08-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	08-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	08-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	08-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	08-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	08-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	08-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	08-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	08-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	08-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	08-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	08-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	08-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	08-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	08-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	08-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	08-OCT-14
MOISTURE-TISS-VA	**Tissue**							
Batch R2953158								
WG1954883-3 DUP		**L1506196-7**						
% Moisture		71.8	72.0		%	0.3	20	18-SEP-14
WG1954883-4 DUP		**L1506196-26**						
% Moisture		56.8	57.6		%	1.5	20	18-SEP-14
Batch R2955709								
WG1956326-2 DUP		**L1506196-27**						
% Moisture		77.6	77.5		%	0.2	20	21-SEP-14

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS LABORATORY GROUP ANALYTICAL REPORT

ALS Lab WO#: L1506196

Client ID	Liver - Total Weight (g)	Gonad - Total Weight (g)
SK-13 TAG#02555	48.637	126.64
SK-14 TAG#02554	63.196	212.84
SK-15 TAG#02553	48.262	70.053
SK-16 TAG#02552	15.179	31.847
SK-17 TAG#71726	30.653	56.002
SK-18 TAG#71727	50.622	62.059
SK-19 TAG#71728	50.479	174.01
SK-20 TAG#71729	43.601	98.249
SK-21 TAG#71730	27.891	80.284
SK-22 TAG#71731	23.273	27.714
SK-23 TAG#71732	18.145	34.514
SK-24 TAG#71733	16.498	22.523

L1506196-COFC

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # SCFR Sockeye sampling

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: willie.sellars@williamslakeband.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver(METALS)	Gonads(METALS)	Muscle(METALS)	% moisture content	Sex(Confirmation)								Number of Containers
	SK-13 tag#02555	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-14 tag#02554	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-15 tag#02553	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-16 tag#02552	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-17 tag#71726	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-18 tag#71727	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-19 tag#71728	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-20 tag#71729	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-21 tag#71730	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-22 tag#71731	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-23 tag#71732	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-24 tag#71733	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C.Koenig			DJ	Aug21	9:30	2°C °C				

Sample Receipt Confirmation

36 Samples received at ALS in VANCOUVER

Job Reference #: N/A
Project PO #: N/A
Legal Site Description: N/A
Quote #: Q47599
Lab Work Order #: L1506196
Estimated Completion Date: 10/3/2014

Date Sampled: 8/20/2014
Date Received: 8/21/2014
Sampled By: CK,ML,KK,GS
Chain of Custody: 1
Account Manager: Can Dang
Estimated Sample Disposal Date: 11/2/2014

Sample Integrity Observations:

Observation	Details
Sample integrity compromised	Sample integrity compromised: Samples not individually isolated within cooler and possible cross-contamination between fish specimens.
No CofC with Shipment	No CofC with Shipment.

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12
Likely,BC V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
kmcmahen@mountpolley.com
mia.sakelariou@snclavalin.com
Report Name: CROSSTAB_ALSQC
Digital Type: EHS_MOUNTP
Digital Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
mia.sakelariou@snclavalin.com
kmcmahen@mountpolley.com
Distribution: **Hard Copy:** N **Email:** Y **Fax:** N

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP. ~LIKELY
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100
Distribution: **Hard Copy:** Y **Email:** Y

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1506196-1	SK-13 TAG#02555 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-2	SK-14 TAG#02554 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-3	SK-15 TAG#02553 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-4	SK-16 TAG#02552 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-5	SK-17 TAG#71726 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1506196-6	SK-18 TAG#71727 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-7	SK-19 TAG#71728 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-8	SK-20 TAG#71729 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-9	SK-21 TAG#71730 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-10	SK-22 TAG#71731 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-11	SK-23 TAG#71732 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-12	SK-24 TAG#71733 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-13	SK-13 TAG#02555 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-14	SK-14 TAG#02554 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-15	SK-15 TAG#02553 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-16	SK-16 TAG#02552 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-17	SK-17 TAG#71726 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-18	SK-18 TAG#71727 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-19	SK-19 TAG#71728 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-20	SK-20 TAG#71729 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-21	SK-21 TAG#71730 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-22	SK-22 TAG#71731 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-23	SK-23 TAG#71732 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-24	SK-24 TAG#71733 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-25	SK-13 TAG#02555 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-26	SK-14 TAG#02554 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-27	SK-15 TAG#02553 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-28	SK-16 TAG#02552 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-29	SK-17 TAG#71726 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-30	SK-18 TAG#71727 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-31	SK-19 TAG#71728 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-32	SK-20 TAG#71729 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-33	SK-21 TAG#71730 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-34	SK-22 TAG#71731 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506196-35	SK-23 TAG#71732 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1506196-36	SK-24 TAG#71733 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Special Request	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
SK-13 TAG#02555 MUSCLE	X	X	X	X	X	X
SK-14 TAG#02554 MUSCLE	X	X	X	X	X	X
SK-15 TAG#02553 MUSCLE	X	X	X	X	X	X
SK-16 TAG#02552 MUSCLE	X	X	X	X	X	X
SK-17 TAG#71726 MUSCLE	X	X	X	X	X	X
SK-18 TAG#71727 MUSCLE	X	X	X	X	X	X
SK-19 TAG#71728 MUSCLE	X	X	X	X	X	X
SK-20 TAG#71729 MUSCLE	X	X	X	X	X	X
SK-21 TAG#71730 MUSCLE	X	X	X	X	X	X
SK-22 TAG#71731 MUSCLE	X	X	X	X	X	X
SK-23 TAG#71732 MUSCLE	X	X	X	X	X	X
SK-24 TAG#71733 MUSCLE	X	X	X	X	X	X
SK-13 TAG#02555 LIVER	X		X	X	X	X
SK-14 TAG#02554 LIVER	X		X	X	X	X
SK-15 TAG#02553 LIVER	X		X	X	X	X
SK-16 TAG#02552 LIVER	X		X	X	X	X
SK-17 TAG#71726 LIVER	X		X	X	X	X
SK-18 TAG#71727 LIVER	X		X	X	X	X
SK-19 TAG#71728 LIVER	X		X	X	X	X

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Special Request	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
SK-20 TAG#71729 LIVER	X		X	X	X	X
SK-21 TAG#71730 LIVER	X		X	X	X	X
SK-22 TAG#71731 LIVER	X		X	X	X	X
SK-23 TAG#71732 LIVER	X		X	X	X	X
SK-24 TAG#71733 LIVER	X		X	X	X	X
SK-13 TAG#02555 GONADS	X		X	X	X	X
SK-14 TAG#02554 GONADS	X		X	X	X	X
SK-15 TAG#02553 GONADS	X		X	X	X	X
SK-16 TAG#02552 GONADS	X		X	X	X	X
SK-17 TAG#71726 GONADS	X		X	X	X	X
SK-18 TAG#71727 GONADS	X		X	X	X	X
SK-19 TAG#71728 GONADS	X		X	X	X	X
SK-20 TAG#71729 GONADS	X		X	X	X	X
SK-21 TAG#71730 GONADS	X		X	X	X	X
SK-22 TAG#71731 GONADS	X		X	X	X	X
SK-23 TAG#71732 GONADS	X		X	X	X	X
SK-24 TAG#71733 GONADS	X		X	X	X	X

Sample Receipt Confirmation

Analysis Completion Date (if different than sample due date):

Analysis Requested	Matrix	Due date	Lab Samples ID
Special Request	Misc.	10/17/2014	L1506196-1, 2, 3, 4, 5,

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # L1506196 when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

L1506196-COFC

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # SCFR Sockeye sampling

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: willie.sellars@williamslakeband.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver(METALS)	Gonads(METALS)	Muscle(METALS)	% moisture content	Sex(Confirmation)								Number of Containers
	SK-13 tag#02555	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-14 tag#02554	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-15 tag#02553	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-16 tag#02552	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-17 tag#71726	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-18 tag#71727	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-19 tag#71728	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-20 tag#71729	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-21 tag#71730	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-22 tag#71731	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-23 tag#71732	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								
	SK-24 tag#71733	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X								

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C.Koenig			DJ	Aug21	9:30	2°C °C				

MOUNT POLLEY MINING CORP.
ATTN: Jack Love
PO Box 12
Likely BC V0L 1N0

Date Received: 21-AUG-14
Report Date: 17-OCT-14 14:38 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1506204

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 1
Legal Site Desc:

Comments: Please see the attached document for details regarding the Total weight of Liver and Gonad samples.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506204-1	L1506204-2	L1506204-3	L1506204-4	L1506204-5
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-25 TAG#71734 MUSCLE	SK-26 TAG#71735 MUSCLE	SK-27 TAG#71736 MUSCLE	SK-28 TAG#71737 MUSCLE	SK-29 TAG#71738 MUSCLE
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	73.6	71.2	73.8	70.7	73.6
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.365	0.535	0.384	0.399	0.572
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0084	0.0078	0.0032	0.0026	0.0112
	Calcium (Ca)-Total (mg/kg wwt)	66.8	72.4	77.2	55.8	70.5
	Cesium (Cs)-Total (mg/kg wwt)	0.0245	0.0176	0.0210	0.0187	0.0214
	Chromium (Cr)-Total (mg/kg wwt)	0.026	<0.010	<0.010	<0.010	0.016
	Cobalt (Co)-Total (mg/kg wwt)	0.0054	0.0058	0.0048	0.0062	<0.0040
	Copper (Cu)-Total (mg/kg wwt)	0.766	0.750	0.762	0.862	0.613
	Iron (Fe)-Total (mg/kg wwt)	5.55	7.85	5.49	5.35	4.58
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0049	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	277	267	272	264	269
	Manganese (Mn)-Total (mg/kg wwt)	0.068	0.072	0.062	0.074	0.055
	Mercury (Hg)-Total (mg/kg wwt)	0.0429	0.0607	0.0580	0.0355	0.0539
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0076	0.0044	0.0051	0.0055	0.0059
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2790	2640	2770	2680	2630
	Potassium (K)-Total (mg/kg wwt)	3930	3720	3690	3770	3650
	Rubidium (Rb)-Total (mg/kg wwt)	0.970	0.889	0.951	0.842	0.917
	Selenium (Se)-Total (mg/kg wwt)	0.274	0.287	0.281	0.274	0.233
	Sodium (Na)-Total (mg/kg wwt)	375	424	441	507	358
	Strontium (Sr)-Total (mg/kg wwt)	0.193	0.176	0.212	0.124	0.210
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00128	0.00061	0.00077	0.00094	0.00061
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.028	<0.020	0.029
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	0.048	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.87	3.78	3.49	3.72	3.22
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506204-6	L1506204-7	L1506204-8	L1506204-9	L1506204-10
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-30 TAG#71739 MUSCLE	SK-25 TAG#71734 LIVER	SK-26 TAG#71735 LIVER	SK-27 TAG#71736 LIVER	SK-28 TAG#71737 LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	68.7	79.3	76.4	78.4	78.0
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	1.05	0.43
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.719	0.382	0.380	0.649	0.257
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0091	1.35	1.26	0.517	0.503
	Calcium (Ca)-Total (mg/kg wwt)	49.9	73.1	84.3	88.0	67.9
	Cesium (Cs)-Total (mg/kg wwt)	0.0174	0.0093	0.0065	0.0095	0.0072
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.012	0.013	0.310	0.017
	Cobalt (Co)-Total (mg/kg wwt)	0.0064	0.0214	0.0254	0.0219	0.0242
	Copper (Cu)-Total (mg/kg wwt)	1.04	240	245	161	211
	Iron (Fe)-Total (mg/kg wwt)	5.46	136	135	112	107
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0042	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	271	150	155	170	155
	Manganese (Mn)-Total (mg/kg wwt)	0.090	1.13	1.22	1.19	1.19
	Mercury (Hg)-Total (mg/kg wwt)	0.0391	0.0830	0.164	0.0968	0.0935
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0051	0.156	0.143	0.170	0.153
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.206	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2690	2990	3170	3300	3030
	Potassium (K)-Total (mg/kg wwt)	3770	3300	3440	3570	3280
	Rubidium (Rb)-Total (mg/kg wwt)	0.905	0.890	0.857	0.953	0.782
	Selenium (Se)-Total (mg/kg wwt)	0.251	15.4	13.2	10.6	15.6
	Sodium (Na)-Total (mg/kg wwt)	376	1290	1190	1240	1350
	Strontium (Sr)-Total (mg/kg wwt)	0.121	0.227	0.217	0.224	0.182
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00062	0.00448	0.00259	0.00336	0.00356
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.037
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00059	0.00078	0.00061	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.066	0.077	0.440	0.137
	Zinc (Zn)-Total (mg/kg wwt)	3.72	32.1	42.6	37.9	26.0
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506204-11	L1506204-12	L1506204-13	L1506204-14	L1506204-15
	Description	Fish	Fish	Fish	Fish	Fish
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14	20-AUG-14
	Sampled Time	11:00	11:00	11:00	11:00	11:00
	Client ID	SK-29 TAG#71738 LIVER	SK-30 TAG#71739 LIVER	SK-25 TAG#71734 GONADS	SK-26 TAG#71735 GONADS	SK-27 TAG#71736 GONADS
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	78.6	76.5	77.7	76.8	78.8
Metals	Aluminum (Al)-Total (mg/kg wwt)	0.46	0.46	<0.40	<0.40	1.94
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.678	0.519	0.186	0.194	0.306
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	1.94	1.50	0.0308	0.0466	0.0127
	Calcium (Ca)-Total (mg/kg wwt)	113	79.4	69.6	60.5	63.3
	Cesium (Cs)-Total (mg/kg wwt)	0.0078	0.0071	0.0139	0.0110	0.0135
	Chromium (Cr)-Total (mg/kg wwt)	0.022	0.032	0.014	0.016	0.921
	Cobalt (Co)-Total (mg/kg wwt)	0.0178	0.0234	0.0144	0.0213	0.0228
	Copper (Cu)-Total (mg/kg wwt)	70.9	295	1.23	1.10	0.856
	Iron (Fe)-Total (mg/kg wwt)	123	71.4	25.7	25.4	26.3
	Lead (Pb)-Total (mg/kg wwt)	0.0054	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	216	163	173	173	183
	Manganese (Mn)-Total (mg/kg wwt)	1.47	1.26	0.147	0.127	0.200
	Mercury (Hg)-Total (mg/kg wwt)	0.0802	0.0640	0.0133	0.0307	0.0242
	Molybdenum (Mo)-Total (mg/kg wwt)	0.164	0.156	0.0071	0.0073	0.112
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.047	<0.040	<0.040	0.554
	Phosphorus (P)-Total (mg/kg wwt)	4010	3230	8830	9330	8610
	Potassium (K)-Total (mg/kg wwt)	4000	3560	3550	3810	4000
	Rubidium (Rb)-Total (mg/kg wwt)	1.04	0.990	1.18	1.11	1.19
	Selenium (Se)-Total (mg/kg wwt)	6.02	14.7	0.323	0.267	0.309
	Sodium (Na)-Total (mg/kg wwt)	980	1170	1200	1130	1140
	Strontium (Sr)-Total (mg/kg wwt)	0.336	0.231	0.243	0.190	0.211
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00540	0.00283	0.00143	0.00110	0.00105
	Tin (Sn)-Total (mg/kg wwt)	0.050	0.031	0.079	0.034	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00209	0.00089	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	0.068	0.095	<0.020	<0.020	0.907
	Zinc (Zn)-Total (mg/kg wwt)	42.0	38.8	11.2	17.2	12.3
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1506204-16	L1506204-17	L1506204-18		
	Description	Fish	Fish	Fish		
	Sampled Date	20-AUG-14	20-AUG-14	20-AUG-14		
	Sampled Time	11:00	11:00	11:00		
	Client ID	SK-28 TAG#71737 GONADS	SK-29 TAG#71738 GONADS	SK-30 TAG#71739 GONADS		
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	74.1	54.8	80.2		
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	0.45		
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Arsenic (As)-Total (mg/kg wwt)	0.168	0.408	0.202		
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.045	<0.010		
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20		
	Cadmium (Cd)-Total (mg/kg wwt)	0.0112	0.0795	0.0473		
	Calcium (Ca)-Total (mg/kg wwt)	69.3	333	46.4		
	Cesium (Cs)-Total (mg/kg wwt)	0.0119	0.0101	0.0131		
	Chromium (Cr)-Total (mg/kg wwt)	0.027	0.015	0.044		
	Cobalt (Co)-Total (mg/kg wwt)	0.0173	0.0376	0.0138		
	Copper (Cu)-Total (mg/kg wwt)	0.687	67.6	1.24		
	Iron (Fe)-Total (mg/kg wwt)	13.2	29.6	17.5		
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg wwt)	203	533	179		
	Manganese (Mn)-Total (mg/kg wwt)	0.118	0.932	0.132		
	Mercury (Hg)-Total (mg/kg wwt)	0.0139	0.0062	0.0164		
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0087	0.0095	0.0106		
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		
	Phosphorus (P)-Total (mg/kg wwt)	11800	3930	7450		
	Potassium (K)-Total (mg/kg wwt)	3510	1960	4390		
	Rubidium (Rb)-Total (mg/kg wwt)	1.04	0.507	1.34		
	Selenium (Se)-Total (mg/kg wwt)	0.262	3.12	0.316		
	Sodium (Na)-Total (mg/kg wwt)	1280	582	1050		
	Strontium (Sr)-Total (mg/kg wwt)	0.199	3.24	0.155		
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
	Thallium (Tl)-Total (mg/kg wwt)	0.00178	0.00058	0.00121		
	Tin (Sn)-Total (mg/kg wwt)	0.069	<0.020	<0.020		
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00280	<0.00040		
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.052		
	Zinc (Zn)-Total (mg/kg wwt)	9.62	43.9	13.9		
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1506204 Report Date: 17-OCT-14

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Jack Love

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-WET-CVAFS-VA	**Tissue**							
Batch R2961882								
WG1956434-4 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			97.2		%		70-130	27-SEP-14
WG1956434-5 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			97.6		%		70-130	27-SEP-14
WG1956434-3 DUP		**L1506204-5**						
Mercury (Hg)-Total		0.0539	0.0542		mg/kg wwt	0.6	40	27-SEP-14
WG1956434-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	27-SEP-14
WG1956434-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	27-SEP-14
MET-WET-CCMS-VA	**Tissue**							
Batch R2998022								
WG1975728-4 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0157		mg/kg wwt		0.001-0.021	16-OCT-14
Arsenic (As)-Total			104.9		%		70-130	16-OCT-14
Barium (Ba)-Total			89.7		%		70-130	16-OCT-14
Boron (B)-Total			5.03		mg/kg wwt		3.5-5.5	16-OCT-14
Cadmium (Cd)-Total			108.4		%		70-130	16-OCT-14
Calcium (Ca)-Total			105.2		%		70-130	16-OCT-14
Cobalt (Co)-Total			103.0		%		70-130	16-OCT-14
Copper (Cu)-Total			101.3		%		70-130	16-OCT-14
Iron (Fe)-Total			101.8		%		70-130	16-OCT-14
Lead (Pb)-Total			102.4		%		70-130	16-OCT-14
Magnesium (Mg)-Total			103.0		%		70-130	16-OCT-14
Manganese (Mn)-Total			104.0		%		70-130	16-OCT-14
Nickel (Ni)-Total			100.8		%		70-130	16-OCT-14
Potassium (K)-Total			103.0		%		70-130	16-OCT-14
Rubidium (Rb)-Total			101.8		%		70-130	16-OCT-14
Selenium (Se)-Total			106.1		%		70-130	16-OCT-14
Sodium (Na)-Total			100.7		%		70-130	16-OCT-14
Strontium (Sr)-Total			99.8		%		70-130	16-OCT-14
Uranium (U)-Total			106.3		%		70-130	16-OCT-14
Vanadium (V)-Total			95.3		%		70-130	16-OCT-14
Zinc (Zn)-Total			95.0		%		70-130	16-OCT-14
WG1975728-5 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0146		mg/kg wwt		0.001-0.021	16-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2998022								
WG1975728-5 CRM		**VA-NIST-1566B**						
Arsenic (As)-Total			104.0		%		70-130	16-OCT-14
Barium (Ba)-Total			86.2		%		70-130	16-OCT-14
Boron (B)-Total			4.85		mg/kg wwt		3.5-5.5	16-OCT-14
Cadmium (Cd)-Total			105.0		%		70-130	16-OCT-14
Calcium (Ca)-Total			101.8		%		70-130	16-OCT-14
Cobalt (Co)-Total			103.2		%		70-130	16-OCT-14
Copper (Cu)-Total			100.0		%		70-130	16-OCT-14
Iron (Fe)-Total			98.8		%		70-130	16-OCT-14
Lead (Pb)-Total			98.2		%		70-130	16-OCT-14
Magnesium (Mg)-Total			101.9		%		70-130	16-OCT-14
Manganese (Mn)-Total			100.6		%		70-130	16-OCT-14
Nickel (Ni)-Total			99.3		%		70-130	16-OCT-14
Potassium (K)-Total			101.5		%		70-130	16-OCT-14
Rubidium (Rb)-Total			98.2		%		70-130	16-OCT-14
Selenium (Se)-Total			98.3		%		70-130	16-OCT-14
Sodium (Na)-Total			100.0		%		70-130	16-OCT-14
Strontium (Sr)-Total			96.0		%		70-130	16-OCT-14
Uranium (U)-Total			101.7		%		70-130	16-OCT-14
Vanadium (V)-Total			97.0		%		70-130	16-OCT-14
Zinc (Zn)-Total			93.5		%		70-130	16-OCT-14
WG1975728-3 DUP		**L1506204-5**						
Aluminum (Al)-Total		<0.40	<0.40	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Arsenic (As)-Total		0.572	0.581		mg/kg wwt	1.7	40	16-OCT-14
Barium (Ba)-Total		<0.010	<0.010	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Cadmium (Cd)-Total		0.0112	0.0114		mg/kg wwt	2.0	40	16-OCT-14
Calcium (Ca)-Total		70.5	68.7		mg/kg wwt	2.5	60	16-OCT-14
Cesium (Cs)-Total		0.0214	0.0220		mg/kg wwt	3.0	40	16-OCT-14
Chromium (Cr)-Total		0.016	0.016		mg/kg wwt	0.2	40	16-OCT-14
Cobalt (Co)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Copper (Cu)-Total		0.613	0.629		mg/kg wwt	2.6	40	16-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2998022								
WG1975728-3 DUP		**L1506204-5**						
Iron (Fe)-Total		4.58	4.47		mg/kg wwt	2.4	40	16-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Magnesium (Mg)-Total		269	268		mg/kg wwt	0.6	40	16-OCT-14
Manganese (Mn)-Total		0.055	0.059		mg/kg wwt	5.6	40	16-OCT-14
Molybdenum (Mo)-Total		0.0059	0.0059		mg/kg wwt	0.0	40	16-OCT-14
Nickel (Ni)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Phosphorus (P)-Total		2630	2620		mg/kg wwt	0.3	40	16-OCT-14
Potassium (K)-Total		3650	3720		mg/kg wwt	2.0	40	16-OCT-14
Rubidium (Rb)-Total		0.917	0.924		mg/kg wwt	0.8	40	16-OCT-14
Selenium (Se)-Total		0.233	0.237		mg/kg wwt	1.8	40	16-OCT-14
Sodium (Na)-Total		358	361		mg/kg wwt	0.8	40	16-OCT-14
Strontium (Sr)-Total		0.210	0.207		mg/kg wwt	1.5	60	16-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Thallium (Tl)-Total		0.00061	0.00061		mg/kg wwt	0.8	40	16-OCT-14
Tin (Sn)-Total		0.029	0.021		mg/kg wwt	34	40	16-OCT-14
Uranium (U)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Vanadium (V)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
Zinc (Zn)-Total		3.22	3.30		mg/kg wwt	2.5	40	16-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	16-OCT-14
WG1975728-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	16-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	16-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	16-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	16-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	16-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	16-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	16-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	16-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	16-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2998022								
WG1975728-1 MB								
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	16-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	16-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	16-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	16-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	16-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	16-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	16-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	16-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	16-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	16-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	16-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	16-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	16-OCT-14
WG1975728-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	16-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	16-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	16-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	16-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	16-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	16-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	16-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	16-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	16-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2998022								
WG1975728-2 MB								
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	16-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	16-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	16-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	16-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	16-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	16-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	16-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	16-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	16-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	16-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	16-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	16-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	16-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	16-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	16-OCT-14
MOISTURE-TISS-VA	**Tissue**							
Batch R2953158								
WG1954883-5 DUP		**L1506204-6**						
% Moisture		68.7	68.9		%	0.3	20	18-SEP-14
Batch R2955709								
WG1956326-3 DUP		**L1506204-11**						
% Moisture		78.6	78.8		%	0.3	20	21-SEP-14

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS LABORATORY GROUP ANALYTICAL REPORT

ALS Lab WO#: L1506204

Client ID	Liver - Total Weight (g)	Gonad - Total Weight (g)
SK-25 TAG#71734	32.420	71.628
SK-26 TAG#71735	49.232	27.773
SK-27 TAG#71736	42.458	27.512
SK-28 TAG#71737	38.620	29.347
SK-29 TAG#71738	26.572	58.560
SK-30 TAG#71739	44.365	50.630

L1506204-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # SCFR Sockeye sampling

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: willie.sellars@williamslakeband.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver(METALS)	Gonads(METALS)	Muscle(METALS)	% moisture content	Sex(Confirmation)	Number of Containers
	SK-25 tag#71734	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-26 tag#71735	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-27 tag#71736	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-28 tag#71737	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-29 tag#71738	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-30 tag#71739	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C.Koenig			DJ	Aug 21	9:30	2°C °C				

Sample Receipt Confirmation

18 Samples received at ALS in VANCOUVER

Job Reference #: N/A
Project PO #: N/A
Legal Site Description: N/A
Quote #: Q47599
Lab Work Order #: L1506204
Estimated Completion Date: 10/3/2014

Date Sampled: 8/20/2014
Date Received: 8/21/2014
Sampled By: CK,ML,KK,GS
Chain of Custody: 1
Account Manager: Can Dang
Estimated Sample Disposal Date: 11/2/2014

Sample Integrity Observations:

Observation	Details
Sample integrity compromised	Sample integrity compromised: Samples not individually isolated within cooler and possible cross-contamination between fish specimens.
No CofC with Shipment	No CofC with Shipment

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Jack Love
Address: PO Box 12
Likely,BC V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
kmcmahen@mountpolley.com
mia.sakelariou@snclavalin.com
Report Name: CROSSTAB_ALSQC
Digital Type: EHS_MOUNTP
Digital Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
mia.sakelariou@snclavalin.com
kmcmahen@mountpolley.com
Distribution: **Hard Copy:** N **Email:** Y **Fax:** N

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP. ~LIKELY
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100
Distribution: **Hard Copy:** Y **Email:** Y

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1506204-1	SK-25 TAG#71734 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-2	SK-26 TAG#71735 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-3	SK-27 TAG#71736 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-4	SK-28 TAG#71737 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-5	SK-29 TAG#71738 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-6	SK-30 TAG#71739 MUSCLE	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-7	SK-25 TAG#71734 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-8	SK-26 TAG#71735 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-9	SK-27 TAG#71736 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-10	SK-28 TAG#71737 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-11	SK-29 TAG#71738 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-12	SK-30 TAG#71739 LIVER	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-13	SK-25 TAG#71734 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-14	SK-26 TAG#71735 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-15	SK-27 TAG#71736 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-16	SK-28 TAG#71737 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-17	SK-29 TAG#71738 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish
L1506204-18	SK-30 TAG#71739 GONADS	8/20/2014 11:00 AM	8/21/2014 9:30 AM	10/3/2014 5:00 PM		Fish

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
SK-25 TAG#71734 MUSCLE	X	X	X	X	X
SK-26 TAG#71735 MUSCLE	X	X	X	X	X
SK-27 TAG#71736 MUSCLE	X	X	X	X	X
SK-28 TAG#71737 MUSCLE	X	X	X	X	X
SK-29 TAG#71738 MUSCLE	X	X	X	X	X
SK-30 TAG#71739 MUSCLE	X	X	X	X	X
SK-25 TAG#71734 LIVER	X	X	X	X	X
SK-26 TAG#71735 LIVER	X	X	X	X	X
SK-27 TAG#71736 LIVER	X	X	X	X	X
SK-28 TAG#71737 LIVER	X	X	X	X	X
SK-29 TAG#71738 LIVER	X	X	X	X	X
SK-30 TAG#71739 LIVER	X	X	X	X	X
SK-25 TAG#71734 GONADS	X	X	X	X	X
SK-26 TAG#71735 GONADS	X	X	X	X	X
SK-27 TAG#71736 GONADS	X	X	X	X	X
SK-28 TAG#71737 GONADS	X	X	X	X	X
SK-29 TAG#71738 GONADS	X	X	X	X	X
SK-30 TAG#71739 GONADS	X	X	X	X	X

Sample Receipt Confirmation

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # L1506204 when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

L1506204-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # SCFR Sockeye sampling

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: willie.sellars@williamslakeband.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver(METALS)	Gonads(METALS)	Muscle(METALS)	% moisture content	Sex(Confirmation)	Number of Containers
	SK-25 tag#71734	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-26 tag#71735	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-27 tag#71736	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-28 tag#71737	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-29 tag#71738	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	
	SK-30 tag#71739	Aug 20/2014	11:00-12:30	Other	X	X	X	X	X	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C.Koenig			DJ	Aug 21	9:30	2°C °C				

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-14
Report Date: 14-SEP-15 16:57 (MT)
Version: FINAL REV. 3

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1514793

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: Horsefly River
Legal Site Desc:

Comments: Please see the attached document for details regarding the Total weight of Liver and Muscle samples.
9-SEP-2015 Revision 2: The sample collection date and time was modified for the samples ALS identify as L1514793 - (28 to 30 and 58 to 60) as requested.
14-SEP-2015 Revision 3: The sample collection time for all samples were modified.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-1 FISH 02-SEP-14 11:30 SK-1 LIVER	L1514793-2 FISH 02-SEP-14 11:30 SK-2 LIVER	L1514793-3 FISH 02-SEP-14 11:30 SK-3 LIVER	L1514793-4 FISH 02-SEP-14 11:30 SK-4 LIVER	L1514793-5 FISH 02-SEP-14 11:30 SK-5 LIVER
TISSUE						
Physical Tests	% Moisture (%)	76.0	76.6	76.2	79.0	77.6
Metals	Aluminum (Al)-Total (mg/kg wwt)	0.83	0.51	0.42	0.55	1.37
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0021
	Arsenic (As)-Total (mg/kg wwt)	0.252	0.293	0.363	0.331	0.577
	Barium (Ba)-Total (mg/kg wwt)	0.012	<0.010	<0.010	<0.010	0.012
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	1.13	0.580	0.646	1.73	1.78
	Calcium (Ca)-Total (mg/kg wwt)	71.6	55.4	68.1	36.0	38.7
	Cesium (Cs)-Total (mg/kg wwt)	0.0072	0.0048	0.0060	0.0050	0.0062
	Chromium (Cr)-Total (mg/kg wwt)	0.241	0.061	0.130	0.118	0.162
	Cobalt (Co)-Total (mg/kg wwt)	0.0286	0.0146	0.0202	0.0195	0.0254
	Copper (Cu)-Total (mg/kg wwt)	121	52.6	97.7	204	302
	Iron (Fe)-Total (mg/kg wwt)	37.0	25.7	85.8	24.4	51.7
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	0.0052
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	228	227	254	160	165
	Manganese (Mn)-Total (mg/kg wwt)	1.35	1.17	1.78	1.12	1.26
	Mercury (Hg)-Total (mg/kg wwt)	0.0657	0.0754	0.0644	0.0924	0.0781
	Molybdenum (Mo)-Total (mg/kg wwt)	0.205	0.124	0.171	0.179	0.200
	Nickel (Ni)-Total (mg/kg wwt)	0.157	0.042	0.088	0.081	0.121
	Phosphorus (P)-Total (mg/kg wwt)	4110	3850	4420	2940	3180
	Potassium (K)-Total (mg/kg wwt)	4090	4100	4420	3450	3820
	Rubidium (Rb)-Total (mg/kg wwt)	1.12	1.26	1.24	0.938	1.08
	Selenium (Se)-Total (mg/kg wwt)	13.2	8.96	12.5	14.9	9.38
	Sodium (Na)-Total (mg/kg wwt)	633	571	777	880	784
	Strontium (Sr)-Total (mg/kg wwt)	0.131	0.115	0.167	0.086	0.083
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00471	0.00827	0.00732	0.00227	0.00463
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.028	0.031	0.023
	Uranium (U)-Total (mg/kg wwt)	0.00172	0.00099	0.00094	0.00118	0.00172
	Vanadium (V)-Total (mg/kg wwt)	0.138	0.091	0.052	0.103	0.529
	Zinc (Zn)-Total (mg/kg wwt)	47.7	24.2	31.5	31.3	42.1
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-6 FISH 02-SEP-14 11:30 SK-6 LIVER	L1514793-7 FISH 02-SEP-14 11:30 SK-7 LIVER	L1514793-8 FISH 02-SEP-14 11:30 SK-8 LIVER	L1514793-9 FISH 02-SEP-14 11:30 SK-9 LIVER	L1514793-10 FISH 02-SEP-14 11:30 SK-10 LIVER
Sample ID / **Description** / **Sampled Date** / **Sampled Time** / **Client ID**						
TISSUE						
Physical Tests	% Moisture (%)	79.1	79.2	75.9	76.0	76.0
Metals	Aluminum (Al)-Total (mg/kg wwt)	1.19	<0.40	0.74	0.75	0.53
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.485	0.460	0.196	0.184	0.182
	Barium (Ba)-Total (mg/kg wwt)	0.015	<0.010	<0.010	0.015	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	2.23	1.59	0.584	0.628	1.46
	Calcium (Ca)-Total (mg/kg wwt)	37.1	32.9	70.5	72.5	65.7
	Cesium (Cs)-Total (mg/kg wwt)	0.0058	0.0049	0.0065	0.0067	0.0066
	Chromium (Cr)-Total (mg/kg wwt)	0.113	0.328	0.178	0.152	0.244
	Cobalt (Co)-Total (mg/kg wwt)	0.0232	0.0259	0.0178	0.0257	0.0288
	Copper (Cu)-Total (mg/kg wwt)	313	178	33.3	74.2	52.1
	Iron (Fe)-Total (mg/kg wwt)	17.8	34.3	19.5	26.7	23.0
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	170	159	246	252	230
	Manganese (Mn)-Total (mg/kg wwt)	1.39	1.12	1.53	1.67	1.68
	Mercury (Hg)-Total (mg/kg wwt)	0.0999	0.141	0.0628	0.0630	0.0885
	Molybdenum (Mo)-Total (mg/kg wwt)	0.201	0.196	0.164	0.153	0.230
	Nickel (Ni)-Total (mg/kg wwt)	0.084	0.220	0.105	0.109	0.160
	Phosphorus (P)-Total (mg/kg wwt)	3220	2900	4330	4500	4280
	Potassium (K)-Total (mg/kg wwt)	3620	3360	4770	4800	4470
	Rubidium (Rb)-Total (mg/kg wwt)	1.02	0.862	1.67	1.46	1.26
	Selenium (Se)-Total (mg/kg wwt)	19.3	14.0	6.57	7.83	7.84
	Sodium (Na)-Total (mg/kg wwt)	1080	1030	767	645	648
	Strontium (Sr)-Total (mg/kg wwt)	0.098	0.080	0.135	0.154	0.186
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00256	0.00192	0.0112	0.00994	0.0103
	Tin (Sn)-Total (mg/kg wwt)	0.026	0.022	<0.020	<0.020	0.030
	Uranium (U)-Total (mg/kg wwt)	0.00117	0.00077	0.00123	0.00076	0.00308
	Vanadium (V)-Total (mg/kg wwt)	0.128	0.087	0.083	0.050	0.056
	Zinc (Zn)-Total (mg/kg wwt)	41.2	31.3	22.3	31.4	24.5
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-11 FISH 02-SEP-14 11:30 SK-11 LIVER	L1514793-12 FISH 02-SEP-14 11:30 SK-12 LIVER	L1514793-13 FISH 02-SEP-14 11:30 SK-13 LIVER	L1514793-14 FISH 02-SEP-14 11:30 SK-14 LIVER	L1514793-15 FISH 02-SEP-14 11:30 SK-15 LIVER
TISSUE						
Physical Tests	% Moisture (%)	75.7	76.6	75.9	77.0	79.6
Metals	Aluminum (Al)-Total (mg/kg wwt)	1.82	0.87	1.49	1.40	0.85
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0103
	Arsenic (As)-Total (mg/kg wwt)	0.252	0.273	0.261	0.258	0.274
	Barium (Ba)-Total (mg/kg wwt)	0.020	0.011	0.015	0.016	0.049
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	1.11	0.610	0.960	0.710	0.991
	Calcium (Ca)-Total (mg/kg wwt)	59.2	65.1	65.7	63.6	37.4
	Cesium (Cs)-Total (mg/kg wwt)	0.0071	0.0064	0.0086	0.0062	0.0066
	Chromium (Cr)-Total (mg/kg wwt)	0.094	0.145	0.125	0.100	0.212
	Cobalt (Co)-Total (mg/kg wwt)	0.0220	0.0165	0.0289	0.0166	0.0244
	Copper (Cu)-Total (mg/kg wwt)	37.0	48.5	81.2	74.1	265
	Iron (Fe)-Total (mg/kg wwt)	30.6	48.7	48.3	30.6	60.1
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	0.0587
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	228	235	230	233	150
	Manganese (Mn)-Total (mg/kg wwt)	1.46	1.43	1.53	1.18	1.29
	Mercury (Hg)-Total (mg/kg wwt)	0.0728	0.106	0.0854	0.0808	0.0635
	Molybdenum (Mo)-Total (mg/kg wwt)	0.163	0.172	0.147	0.135	0.504
	Nickel (Ni)-Total (mg/kg wwt)	0.063	0.093	0.088	0.071	0.145
	Phosphorus (P)-Total (mg/kg wwt)	4190	3980	4200	4170	2940
	Potassium (K)-Total (mg/kg wwt)	4660	4410	4500	4670	3570
	Rubidium (Rb)-Total (mg/kg wwt)	1.38	1.25	1.53	1.44	0.993
	Selenium (Se)-Total (mg/kg wwt)	5.18	5.93	8.65	7.31	18.8
	Sodium (Na)-Total (mg/kg wwt)	684	520	681	661	965
	Strontium (Sr)-Total (mg/kg wwt)	0.125	0.133	0.123	0.129	0.089
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00749	0.00640	0.0113	0.00669	0.00345
	Tin (Sn)-Total (mg/kg wwt)	0.031	<0.020	0.022	0.027	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00107	0.00117	0.00099	0.00095	0.00082
	Vanadium (V)-Total (mg/kg wwt)	0.066	0.095	0.075	0.057	0.151
	Zinc (Zn)-Total (mg/kg wwt)	22.5	23.7	24.6	24.3	39.5
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-16 FISH 02-SEP-14 11:30 SK-16 LIVER	L1514793-17 FISH 02-SEP-14 11:30 SK-17 LIVER	L1514793-18 FISH 02-SEP-14 11:30 SK-18 LIVER	L1514793-19 FISH 02-SEP-14 11:30 SK-19 LIVER	L1514793-20 FISH 02-SEP-14 11:30 SK-20 LIVER
Sample ID / **Description** / **Sampled Date** / **Sampled Time** / **Client ID**						
TISSUE						
Physical Tests	% Moisture (%)	78.8	79.0	76.7	80.0	77.6
Metals	Aluminum (Al)-Total (mg/kg wwt)	2.18	1.96	2.58	1.27	0.73
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.173	0.464	0.162	0.316	0.410
	Barium (Ba)-Total (mg/kg wwt)	0.022	0.025	0.027	0.015	0.014
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.935	1.12	0.635	3.44	1.24
	Calcium (Ca)-Total (mg/kg wwt)	37.3	37.6	65.3	46.9	63.1
	Cesium (Cs)-Total (mg/kg wwt)	0.0053	0.0060	0.0059	0.0028	0.0059
	Chromium (Cr)-Total (mg/kg wwt)	0.062	0.288	0.214	0.190	0.175
	Cobalt (Co)-Total (mg/kg wwt)	0.0201	0.0327	0.0189	0.0419	0.0192
	Copper (Cu)-Total (mg/kg wwt)	296	306	46.6	42.6	78.0
	Iron (Fe)-Total (mg/kg wwt)	30.5	29.1	53.1	50.3	35.7
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0049	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	170	175	234	175	230
	Manganese (Mn)-Total (mg/kg wwt)	1.36	1.21	1.38	1.04	1.28
	Mercury (Hg)-Total (mg/kg wwt)	0.130	0.0690	0.0451	0.0652	0.0595
	Molybdenum (Mo)-Total (mg/kg wwt)	0.203	0.216	0.188	0.207	0.169
	Nickel (Ni)-Total (mg/kg wwt)	0.056	0.191	0.139	0.121	0.116
	Phosphorus (P)-Total (mg/kg wwt)	3110	3230	4160	3250	3970
	Potassium (K)-Total (mg/kg wwt)	3590	3710	4600	3530	4300
	Rubidium (Rb)-Total (mg/kg wwt)	0.955	1.01	1.41	0.865	1.46
	Selenium (Se)-Total (mg/kg wwt)	19.5	19.4	8.90	4.74	6.64
	Sodium (Na)-Total (mg/kg wwt)	969	1040	694	995	684
	Strontium (Sr)-Total (mg/kg wwt)	0.110	0.096	0.148	0.107	0.131
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00338	0.00351	0.00696	0.00351	0.00819
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.029	0.025	0.039	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00106	0.00130	0.00095	0.00256	0.00128
	Vanadium (V)-Total (mg/kg wwt)	0.191	0.207	0.049	0.095	0.059
	Zinc (Zn)-Total (mg/kg wwt)	33.3	33.6	24.8	32.0	25.0
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-21 FISH 02-SEP-14 11:30 SK-21 LIVER	L1514793-22 FISH 02-SEP-14 11:30 SK-22 LIVER	L1514793-23 FISH 02-SEP-14 11:30 SK-23 LIVER	L1514793-24 FISH 02-SEP-14 11:30 SK-24 LIVER	L1514793-25 FISH 02-SEP-14 11:30 SK-25 LIVER
TISSUE						
Physical Tests	% Moisture (%)	75.8	76.6	76.5	78.5	78.1
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	1.24	<0.40	0.85	0.62
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.177	0.272	0.287	0.279	0.180
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.022	<0.010	0.019	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	1.02	1.69	0.897	1.84	1.08
	Calcium (Ca)-Total (mg/kg wwt)	74.0	73.1	68.4	43.6	45.8
	Cesium (Cs)-Total (mg/kg wwt)	0.0070	0.0068	0.0087	0.0049	0.0059
	Chromium (Cr)-Total (mg/kg wwt)	0.079	0.107	0.207	0.140	0.249
	Cobalt (Co)-Total (mg/kg wwt)	0.0239	0.0259	0.0231	0.0182	0.0364
	Copper (Cu)-Total (mg/kg wwt)	130	25.3	66.6	261	335
	Iron (Fe)-Total (mg/kg wwt)	70.8	46.5	60.1	40.5	65.0
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	248	239	250	179	168
	Manganese (Mn)-Total (mg/kg wwt)	1.55	1.72	1.36	1.38	1.28
	Mercury (Hg)-Total (mg/kg wwt)	0.0671	0.0907	0.0566	0.0787	0.0907
	Molybdenum (Mo)-Total (mg/kg wwt)	0.176	0.208	0.165	0.197	0.221
	Nickel (Ni)-Total (mg/kg wwt)	0.065	0.072	0.150	0.102	0.176
	Phosphorus (P)-Total (mg/kg wwt)	4460	4380	4520	3180	3030
	Potassium (K)-Total (mg/kg wwt)	4790	4240	4520	3690	3310
	Rubidium (Rb)-Total (mg/kg wwt)	1.40	1.29	1.71	1.04	0.914
	Selenium (Se)-Total (mg/kg wwt)	9.11	5.29	8.34	16.7	20.6
	Sodium (Na)-Total (mg/kg wwt)	745	895	734	969	1300
	Strontium (Sr)-Total (mg/kg wwt)	0.146	0.222	0.172	0.106	0.111
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00831	0.0143	0.0135	0.00286	0.00418
	Tin (Sn)-Total (mg/kg wwt)	0.021	0.022	<0.020	0.021	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00145	0.00314	0.00163	0.00113	0.00112
	Vanadium (V)-Total (mg/kg wwt)	0.087	0.057	0.083	0.090	0.142
	Zinc (Zn)-Total (mg/kg wwt)	39.0	24.4	29.9	31.5	39.4
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-26 FISH 02-SEP-14 11:30 SK-26 LIVER	L1514793-27 FISH 02-SEP-14 11:30 SK-27 LIVER	L1514793-28 FISH 04-SEP-14 11:45 SK-28 LIVER	L1514793-29 FISH 04-SEP-14 11:45 SK-29 LIVER	L1514793-30 FISH 04-SEP-14 11:45 SK-30 LIVER
TISSUE						
Physical Tests	% Moisture (%)	77.7	79.2	77.7	77.8	79.4
Metals	Aluminum (Al)-Total (mg/kg wwt)	0.69	1.03	0.62	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	0.0031	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.870	0.391	0.477	0.561	0.453
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.016	<0.010	<0.010	0.021
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.874	2.53	1.70	0.891	0.822
	Calcium (Ca)-Total (mg/kg wwt)	42.9	42.5	58.8	37.1	40.7
	Cesium (Cs)-Total (mg/kg wwt)	0.0055	0.0050	0.0037	0.0063	0.0074
	Chromium (Cr)-Total (mg/kg wwt)	0.138	0.274	0.144	0.081	0.215
	Cobalt (Co)-Total (mg/kg wwt)	0.0223	0.0249	0.0232	0.0186	0.0327
	Copper (Cu)-Total (mg/kg wwt)	311	235	110	208	241
	Iron (Fe)-Total (mg/kg wwt)	99.4	54.7	141	44.0	60.7
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	177	160	256	176	145
	Manganese (Mn)-Total (mg/kg wwt)	1.08	1.11	1.78	1.20	1.27
	Mercury (Hg)-Total (mg/kg wwt)	0.105	0.102	0.0906	0.0684	0.0509
	Molybdenum (Mo)-Total (mg/kg wwt)	0.185	0.212	0.209	0.161	0.209
	Nickel (Ni)-Total (mg/kg wwt)	0.102	0.190	0.130	0.069	0.168
	Phosphorus (P)-Total (mg/kg wwt)	3310	2940	4140	3170	2850
	Potassium (K)-Total (mg/kg wwt)	3970	3160	3720	3900	3460
	Rubidium (Rb)-Total (mg/kg wwt)	1.08	0.908	0.966	1.01	0.884
	Selenium (Se)-Total (mg/kg wwt)	16.9	15.2	9.72	11.4	23.7
	Sodium (Na)-Total (mg/kg wwt)	920	1230	683	865	976
	Strontium (Sr)-Total (mg/kg wwt)	0.086	0.118	0.102	0.067	0.086
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00314	0.00440	0.00393	0.00214	0.00340
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.022	0.025	<0.020	0.037
	Uranium (U)-Total (mg/kg wwt)	0.00055	0.00121	0.00181	0.00088	0.00090
	Vanadium (V)-Total (mg/kg wwt)	0.142	0.168	0.121	0.131	0.117
	Zinc (Zn)-Total (mg/kg wwt)	36.2	32.3	36.1	37.3	37.4
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-31 FISH 02-SEP-14 11:30 SK-1 MUSCLE	L1514793-32 FISH 02-SEP-14 11:30 SK-2 MUSCLE	L1514793-33 FISH 02-SEP-14 11:30 SK-3 MUSCLE	L1514793-34 FISH 02-SEP-14 11:30 SK-4 MUSCLE	L1514793-35 FISH 02-SEP-14 11:30 SK-5 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	74.6	75.0	74.4	74.8	76.8
Metals	Aluminum (Al)-Total (mg/kg wwt)	3.06	0.72	1.15	0.89	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.221	0.230	0.230	0.372	0.333
	Barium (Ba)-Total (mg/kg wwt)	0.034	<0.010	0.013	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0058	0.0035	0.0023	0.0075	0.0048
	Calcium (Ca)-Total (mg/kg wwt)	38.1	32.4	33.8	32.4	31.7
	Cesium (Cs)-Total (mg/kg wwt)	0.0299	0.0251	0.0243	0.0231	0.0196
	Chromium (Cr)-Total (mg/kg wwt)	0.104	0.065	0.058	0.055	0.051
	Cobalt (Co)-Total (mg/kg wwt)	0.0070	0.0061	0.0062	0.0046	0.0056
	Copper (Cu)-Total (mg/kg wwt)	1.12	0.884	1.02	0.746	1.01
	Iron (Fe)-Total (mg/kg wwt)	10.8	6.93	8.60	5.34	6.60
	Lead (Pb)-Total (mg/kg wwt)	0.0160	0.0046	<0.0040	0.0085	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	271	260	284	279	275
	Manganese (Mn)-Total (mg/kg wwt)	0.145	0.075	0.113	0.076	0.072
	Mercury (Hg)-Total (mg/kg wwt)	0.0478	0.0509	0.0453	0.0599	0.0395
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0153	0.0107	0.0103	0.0087	0.0078
	Nickel (Ni)-Total (mg/kg wwt)	0.063	0.057	<0.040	<0.040	0.041
	Phosphorus (P)-Total (mg/kg wwt)	2760	2550	2730	2610	2580
	Potassium (K)-Total (mg/kg wwt)	4200	3850	4290	3920	4040
	Rubidium (Rb)-Total (mg/kg wwt)	1.10	0.943	1.00	0.936	1.05
	Selenium (Se)-Total (mg/kg wwt)	0.275	0.266	0.254	0.286	0.260
	Sodium (Na)-Total (mg/kg wwt)	475	325	336	287	358
	Strontium (Sr)-Total (mg/kg wwt)	0.058	0.055	0.052	0.045	0.036
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00103	0.00151	0.00123	0.00076	0.00108
	Tin (Sn)-Total (mg/kg wwt)	0.067	0.060	<0.020	<0.020	0.027
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.021
	Zinc (Zn)-Total (mg/kg wwt)	4.31	3.63	3.81	3.50	4.12
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-36 FISH 02-SEP-14 11:30 SK-6 MUSCLE	L1514793-37 FISH 02-SEP-14 11:30 SK-7 MUSCLE	L1514793-38 FISH 02-SEP-14 11:30 SK-8 MUSCLE	L1514793-39 FISH 02-SEP-14 11:30 SK-9 MUSCLE	L1514793-40 FISH 02-SEP-14 11:30 SK-10 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	76.0	75.9	75.4	75.4	75.8
Metals	Aluminum (Al)-Total (mg/kg wwt)	<0.40	0.98	2.97	0.41	<0.40
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.422	0.392	0.192	0.162	0.169
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	0.028	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0062	0.0044	0.0029	0.0032	0.0068
	Calcium (Ca)-Total (mg/kg wwt)	30.2	30.2	32.6	31.9	32.1
	Cesium (Cs)-Total (mg/kg wwt)	0.0232	0.0195	0.0230	0.0228	0.0276
	Chromium (Cr)-Total (mg/kg wwt)	0.701	0.148	0.082	0.026	0.074
	Cobalt (Co)-Total (mg/kg wwt)	0.0148	0.0080	0.0059	0.0080	0.0065
	Copper (Cu)-Total (mg/kg wwt)	0.956	1.02	0.758	1.05	1.02
	Iron (Fe)-Total (mg/kg wwt)	8.50	8.23	7.99	8.56	6.06
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0048	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	266	258	245	249	271
	Manganese (Mn)-Total (mg/kg wwt)	0.126	0.092	0.111	0.082	0.087
	Mercury (Hg)-Total (mg/kg wwt)	0.0643	0.0553	0.0615	0.0576	0.0732
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0918	0.0219	0.0117	0.0069	0.0138
	Nickel (Ni)-Total (mg/kg wwt)	0.433	0.095	0.050	<0.040	0.049
	Phosphorus (P)-Total (mg/kg wwt)	2570	2500	2360	2410	2670
	Potassium (K)-Total (mg/kg wwt)	4170	4000	3630	3760	4510
	Rubidium (Rb)-Total (mg/kg wwt)	0.993	0.922	0.935	0.944	1.06
	Selenium (Se)-Total (mg/kg wwt)	0.252	0.283	0.231	0.258	0.227
	Sodium (Na)-Total (mg/kg wwt)	351	360	322	361	384
	Strontium (Sr)-Total (mg/kg wwt)	0.040	0.043	0.069	0.063	0.064
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00097	0.00072	0.00139	0.00151	0.00161
	Tin (Sn)-Total (mg/kg wwt)	0.030	0.046	0.034	0.037	0.061
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.80	4.08	3.37	3.78	4.05
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-41 FISH 02-SEP-14 11:30 SK-11 MUSCLE	L1514793-42 FISH 02-SEP-14 11:30 SK-12 MUSCLE	L1514793-43 FISH 02-SEP-14 11:30 SK-13 MUSCLE	L1514793-44 FISH 02-SEP-14 11:30 SK-14 MUSCLE	L1514793-45 FISH 02-SEP-14 11:30 SK-15 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	75.5	74.8	76.5	74.7	77.3
Metals	Aluminum (Al)-Total (mg/kg wwt)	0.74	1.94	1.46	0.83	1.71
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.202	0.197	0.269	0.175	0.179
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.017	0.020	<0.010	0.015
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0053	0.0039	0.0049	0.0038	0.0026
	Calcium (Ca)-Total (mg/kg wwt)	35.2	34.8	34.1	38.9	30.9
	Cesium (Cs)-Total (mg/kg wwt)	0.0247	0.0304	0.0273	0.0271	0.0226
	Chromium (Cr)-Total (mg/kg wwt)	0.626	0.036	0.073	0.083	0.112
	Cobalt (Co)-Total (mg/kg wwt)	0.0143	0.0045	0.0079	0.0055	0.0074
	Copper (Cu)-Total (mg/kg wwt)	0.866	0.847	0.828	0.663	0.961
	Iron (Fe)-Total (mg/kg wwt)	8.14	14.0	10.9	7.10	9.51
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	0.0042	0.0058
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	267	273	252	287	240
	Manganese (Mn)-Total (mg/kg wwt)	0.132	0.132	0.113	0.079	0.098
	Mercury (Hg)-Total (mg/kg wwt)	0.0568	0.0586	0.0496	0.0689	0.0641
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0800	0.0085	0.0136	0.0113	0.0175
	Nickel (Ni)-Total (mg/kg wwt)	0.398	<0.040	0.052	0.051	0.073
	Phosphorus (P)-Total (mg/kg wwt)	2530	2690	2420	2670	2410
	Potassium (K)-Total (mg/kg wwt)	4210	4140	3920	4280	4040
	Rubidium (Rb)-Total (mg/kg wwt)	0.994	1.01	1.02	1.06	1.01
	Selenium (Se)-Total (mg/kg wwt)	0.224	0.266	0.277	0.260	0.264
	Sodium (Na)-Total (mg/kg wwt)	346	329	368	304	393
	Strontium (Sr)-Total (mg/kg wwt)	0.059	0.069	0.056	0.072	0.053
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00141	0.00130	0.00149	0.00105	0.00091
	Tin (Sn)-Total (mg/kg wwt)	0.049	0.055	0.056	0.023	0.085
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.68	3.82	3.80	3.42	3.62
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-46 FISH 02-SEP-14 11:30 SK-16 MUSCLE	L1514793-47 FISH 02-SEP-14 11:30 SK-17 MUSCLE	L1514793-48 FISH 02-SEP-14 11:30 SK-18 MUSCLE	L1514793-49 FISH 02-SEP-14 11:30 SK-19 MUSCLE	L1514793-50 FISH 02-SEP-14 11:30 SK-20 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	76.0	75.7	76.1	78.7	76.5
Metals	Aluminum (Al)-Total (mg/kg wwt)	2.25	0.47	4.22	4.53	2.51
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.221	0.240	0.154	0.226	0.291
	Barium (Ba)-Total (mg/kg wwt)	0.018	<0.010	0.039	0.045	0.021
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0039	0.0059	0.0029	0.0077	0.0072
	Calcium (Ca)-Total (mg/kg wwt)	40.9	32.0	38.4	36.9	40.8
	Cesium (Cs)-Total (mg/kg wwt)	0.0215	0.0235	0.0245	0.0227	0.0239
	Chromium (Cr)-Total (mg/kg wwt)	0.225	0.051	0.214	0.118	0.052
	Cobalt (Co)-Total (mg/kg wwt)	0.0084	0.0067	0.0082	0.0076	0.0071
	Copper (Cu)-Total (mg/kg wwt)	0.998	1.02	0.781	0.662	0.923
	Iron (Fe)-Total (mg/kg wwt)	9.92	10.7	12.9	10.1	8.83
	Lead (Pb)-Total (mg/kg wwt)	0.0045	<0.0040	0.0046	0.0067	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	271	272	264	228	260
	Manganese (Mn)-Total (mg/kg wwt)	0.133	0.091	0.170	0.154	0.112
	Mercury (Hg)-Total (mg/kg wwt)	0.0582	0.0493	0.0375	0.0576	0.0577
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0284	0.0087	0.0289	0.0141	0.0081
	Nickel (Ni)-Total (mg/kg wwt)	0.133	<0.040	0.135	0.068	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2770	2570	2520	2340	2570
	Potassium (K)-Total (mg/kg wwt)	4230	4080	4140	4110	4270
	Rubidium (Rb)-Total (mg/kg wwt)	1.00	0.974	0.980	1.04	0.993
	Selenium (Se)-Total (mg/kg wwt)	0.277	0.331	0.236	0.221	0.270
	Sodium (Na)-Total (mg/kg wwt)	377	357	342	453	307
	Strontium (Sr)-Total (mg/kg wwt)	0.092	0.043	0.077	0.074	0.097
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00103	0.00119	0.00103	0.00106	0.00154
	Tin (Sn)-Total (mg/kg wwt)	0.049	0.046	0.058	0.059	0.055
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.84	4.00	3.51	3.44	3.60
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-51 FISH 02-SEP-14 11:30 SK-21 MUSCLE	L1514793-52 FISH 02-SEP-14 11:30 SK-22 MUSCLE	L1514793-53 FISH 02-SEP-14 11:30 SK-23 MUSCLE	L1514793-54 FISH 02-SEP-14 11:30 SK-24 MUSCLE	L1514793-55 FISH 02-SEP-14 11:30 SK-25 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	75.3	76.3	76.0	75.4	75.7
Metals	Aluminum (Al)-Total (mg/kg wwt)	12.3	3.82	8.68	<0.40	1.38
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.239	0.197	0.262	0.314	0.142
	Barium (Ba)-Total (mg/kg wwt)	0.128	0.028	0.056	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0038	0.0070	0.0056	0.0063	0.0029
	Calcium (Ca)-Total (mg/kg wwt)	55.6	39.4	38.2	37.4	36.6
	Cesium (Cs)-Total (mg/kg wwt)	0.0236	0.0258	0.0244	0.0210	0.0237
	Chromium (Cr)-Total (mg/kg wwt)	0.226	0.102	0.156	0.079	0.046
	Cobalt (Co)-Total (mg/kg wwt)	0.0124	0.0091	0.0096	0.0056	0.0057
	Copper (Cu)-Total (mg/kg wwt)	0.804	0.985	0.803	0.867	0.714
	Iron (Fe)-Total (mg/kg wwt)	21.3	11.2	15.3	5.22	5.50
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	276	266	267	268	269
	Manganese (Mn)-Total (mg/kg wwt)	0.407	0.146	0.213	0.076	0.074
	Mercury (Hg)-Total (mg/kg wwt)	0.0405	0.0736	0.0600	0.0465	0.0517
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0284	0.0146	0.0203	0.0133	0.0089
	Nickel (Ni)-Total (mg/kg wwt)	0.148	0.067	0.104	0.046	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2500	2550	2600	2520	2500
	Potassium (K)-Total (mg/kg wwt)	4030	4190	4370	3770	3800
	Rubidium (Rb)-Total (mg/kg wwt)	0.971	1.12	1.08	0.946	0.925
	Selenium (Se)-Total (mg/kg wwt)	0.260	0.254	0.281	0.234	0.266
	Sodium (Na)-Total (mg/kg wwt)	336	363	331	307	324
	Strontium (Sr)-Total (mg/kg wwt)	0.173	0.111	0.109	0.072	0.063
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00125	0.00174	0.00146	0.00143	0.00098
	Tin (Sn)-Total (mg/kg wwt)	0.081	0.037	0.037	<0.020	0.040
	Uranium (U)-Total (mg/kg wwt)	0.00054	<0.00040	0.00049	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	0.063	<0.020	0.040	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.62	3.83	3.74	3.60	3.50
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514793-56 FISH 02-SEP-14 11:30 SK-26 MUSCLE	L1514793-57 FISH 02-SEP-14 11:30 SK-27 MUSCLE	L1514793-58 FISH 04-SEP-14 11:45 SK-28 MUSCLE	L1514793-59 FISH 04-SEP-14 11:45 SK-29 MUSCLE	L1514793-60 FISH 04-SEP-14 11:45 SK-30 MUSCLE
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
TISSUE						
Physical Tests	% Moisture (%)	76.8	76.0	80.1	76.5	77.7
Metals	Aluminum (Al)-Total (mg/kg wwt)	0.96	1.81	0.45	3.65	1.06
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.518	0.455	0.253	0.260	0.270
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.022	<0.010	0.012	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0057	0.0088	0.0076	0.0047	0.0027
	Calcium (Ca)-Total (mg/kg wwt)	33.9	33.9	30.1	35.7	30.2
	Cesium (Cs)-Total (mg/kg wwt)	0.0177	0.0213	0.0235	0.0230	0.0233
	Chromium (Cr)-Total (mg/kg wwt)	0.463	0.139	0.044	0.038	0.026
	Cobalt (Co)-Total (mg/kg wwt)	0.0124	0.0090	0.0047	0.0047	0.0053
	Copper (Cu)-Total (mg/kg wwt)	1.02	1.09	0.801	0.833	0.711
	Iron (Fe)-Total (mg/kg wwt)	10.5	8.21	8.26	8.75	6.86
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	260	270	249	244	248
	Manganese (Mn)-Total (mg/kg wwt)	0.122	0.121	0.069	0.102	0.074
	Mercury (Hg)-Total (mg/kg wwt)	0.0453	0.0482	0.0864	0.0414	0.0344
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0614	0.0207	0.0079	0.0084	0.0043
	Nickel (Ni)-Total (mg/kg wwt)	0.293	0.086	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	2470	2560	2330	2440	2470
	Potassium (K)-Total (mg/kg wwt)	3980	4020	3840	3750	4200
	Rubidium (Rb)-Total (mg/kg wwt)	0.964	1.05	1.04	0.882	0.944
	Selenium (Se)-Total (mg/kg wwt)	0.253	0.273	0.212	0.224	0.251
	Sodium (Na)-Total (mg/kg wwt)	373	365	302	373	361
	Strontium (Sr)-Total (mg/kg wwt)	0.051	0.074	0.038	0.048	0.039
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00082	0.00132	0.00081	0.00106	0.00072
	Tin (Sn)-Total (mg/kg wwt)	0.032	0.020	0.087	0.032	0.030
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	3.87	4.04	3.56	3.41	3.37
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Phosphorus (P)-Total	MB-LOR	L1514793-1, -10, -12, -13, -14, -15, -16, -19, -2, -20, -24, -27, -30, -34, -38, -39, -4, -5, -54, -55, -59, -6, -7, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

Horsefly River

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1514793 Report Date: 14-SEP-15

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0

Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-WET-CVAFS-VA	**Tissue**							
Batch R2975431								
WG1966393-5 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			100.1		%		70-130	07-OCT-14
WG1966393-6 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			93.5		%		70-130	07-OCT-14
WG1966393-3 DUP		**L1514793-32**						
Mercury (Hg)-Total		0.0509	0.0497		mg/kg wwt	2.4	40	07-OCT-14
WG1966393-4 DUP		**L1514793-11**						
Mercury (Hg)-Total		0.0728	0.0731		mg/kg wwt	0.3	40	07-OCT-14
WG1966393-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
WG1966393-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	07-OCT-14
Batch R2978163								
WG1965382-5 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			107.2		%		70-130	08-OCT-14
WG1965382-6 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			97.7		%		70-130	08-OCT-14
WG1967865-4 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			104.8		%		70-130	08-OCT-14
WG1967865-5 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			95.1		%		70-130	08-OCT-14
WG1965382-3 DUP		**L1514793-24**						
Mercury (Hg)-Total		0.0787	0.0746		mg/kg wwt	5.4	40	08-OCT-14
WG1965382-4 DUP		**L1514793-14**						
Mercury (Hg)-Total		0.0808	0.0840		mg/kg wwt	3.9	40	08-OCT-14
WG1967865-3 DUP		**L1514793-52**						
Mercury (Hg)-Total		0.0736	0.0854		mg/kg wwt	15	40	08-OCT-14
WG1965382-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14
WG1965382-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14
WG1967865-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14
WG1967865-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14
MET-WET-CCMS-VA	**Tissue**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2989148								
WG1967865-5 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0076		mg/kg wwt		0.001-0.021	10-OCT-14
Arsenic (As)-Total			107.1		%		70-130	10-OCT-14
Barium (Ba)-Total			87.5		%		70-130	10-OCT-14
Boron (B)-Total			4.94		mg/kg wwt		3.5-5.5	10-OCT-14
Cadmium (Cd)-Total			109.9		%		70-130	10-OCT-14
Calcium (Ca)-Total			102.9		%		70-130	10-OCT-14
Cobalt (Co)-Total			102.4		%		70-130	10-OCT-14
Copper (Cu)-Total			104.0		%		70-130	10-OCT-14
Iron (Fe)-Total			98.5		%		70-130	10-OCT-14
Lead (Pb)-Total			99.9		%		70-130	10-OCT-14
Magnesium (Mg)-Total			102.2		%		70-130	10-OCT-14
Manganese (Mn)-Total			105.7		%		70-130	10-OCT-14
Nickel (Ni)-Total			102.9		%		70-130	10-OCT-14
Potassium (K)-Total			105.9		%		70-130	10-OCT-14
Rubidium (Rb)-Total			101.5		%		70-130	10-OCT-14
Selenium (Se)-Total			104.2		%		70-130	10-OCT-14
Sodium (Na)-Total			100.2		%		70-130	10-OCT-14
Strontium (Sr)-Total			101.8		%		70-130	10-OCT-14
Uranium (U)-Total			102.3		%		70-130	10-OCT-14
Vanadium (V)-Total			98.6		%		70-130	10-OCT-14
Zinc (Zn)-Total			103.7		%		70-130	10-OCT-14
WG1967865-3 DUP		**L1514793-52**						
Aluminum (Al)-Total		3.82	3.77		mg/kg wwt	1.3	40	10-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Arsenic (As)-Total		0.197	0.201		mg/kg wwt	2.0	40	10-OCT-14
Barium (Ba)-Total		0.028	0.032		mg/kg wwt	12	40	10-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Cadmium (Cd)-Total		0.0070	0.0074		mg/kg wwt	5.5	40	10-OCT-14
Calcium (Ca)-Total		39.4	38.1		mg/kg wwt	3.2	60	10-OCT-14
Cesium (Cs)-Total		0.0258	0.0255		mg/kg wwt	1.4	40	10-OCT-14
Chromium (Cr)-Total		0.102	0.084		mg/kg wwt	19	40	10-OCT-14
Cobalt (Co)-Total		0.0091	0.0079		mg/kg wwt	14	40	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2989148								
WG1967865-3 DUP		**L1514793-52**						
Copper (Cu)-Total		0.985	1.00		mg/kg wwt	1.8	40	10-OCT-14
Iron (Fe)-Total		11.2	9.78		mg/kg wwt	14	40	10-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Magnesium (Mg)-Total		266	264		mg/kg wwt	0.5	40	10-OCT-14
Manganese (Mn)-Total		0.146	0.116		mg/kg wwt	23	40	10-OCT-14
Molybdenum (Mo)-Total		0.0146	0.0137		mg/kg wwt	5.8	40	10-OCT-14
Nickel (Ni)-Total		0.067	0.058		mg/kg wwt	15	40	10-OCT-14
Phosphorus (P)-Total		2550	2570		mg/kg wwt	0.7	40	10-OCT-14
Potassium (K)-Total		4190	4120		mg/kg wwt	1.6	40	10-OCT-14
Rubidium (Rb)-Total		1.12	1.08		mg/kg wwt	3.1	40	10-OCT-14
Selenium (Se)-Total		0.254	0.251		mg/kg wwt	1.1	40	10-OCT-14
Sodium (Na)-Total		363	362		mg/kg wwt	0.3	40	10-OCT-14
Strontium (Sr)-Total		0.111	0.136		mg/kg wwt	20	60	10-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Thallium (Tl)-Total		0.00174	0.00230		mg/kg wwt	28	40	10-OCT-14
Tin (Sn)-Total		0.037	0.041		mg/kg wwt	10	40	10-OCT-14
Uranium (U)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Vanadium (V)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Zinc (Zn)-Total		3.83	3.87		mg/kg wwt	1.2	40	10-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
WG1967865-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2989148								
WG1967865-1 MB								
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	10-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
Batch R2991091								
WG1965382-5 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			113.0		%		70-130	14-OCT-14
Cadmium (Cd)-Total			101.2		%		70-130	14-OCT-14
Chromium (Cr)-Total			96.6		%		70-130	14-OCT-14
Cobalt (Co)-Total			105.4		%		70-130	14-OCT-14
Copper (Cu)-Total			90.7		%		70-130	14-OCT-14
Iron (Fe)-Total			96.1		%		70-130	14-OCT-14
Lead (Pb)-Total			91.0		%		70-130	14-OCT-14
Manganese (Mn)-Total			97.1		%		70-130	14-OCT-14
Molybdenum (Mo)-Total			101.9		%		70-130	14-OCT-14
Nickel (Ni)-Total			98.0		%		70-130	14-OCT-14
Selenium (Se)-Total			101.0		%		70-130	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1965382-5 CRM		**VA-NRC-TORT3**						
Strontium (Sr)-Total			98.3		%		70-130	14-OCT-14
Vanadium (V)-Total			100.9		%		70-130	14-OCT-14
Zinc (Zn)-Total			94.1		%		70-130	14-OCT-14
WG1965382-6 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0087		mg/kg wwt		0.001-0.021	14-OCT-14
Arsenic (As)-Total			104.2		%		70-130	14-OCT-14
Barium (Ba)-Total			87.8		%		70-130	14-OCT-14
Boron (B)-Total			4.99		mg/kg wwt		3.5-5.5	14-OCT-14
Cadmium (Cd)-Total			106.0		%		70-130	14-OCT-14
Calcium (Ca)-Total			103.6		%		70-130	14-OCT-14
Cobalt (Co)-Total			101.3		%		70-130	14-OCT-14
Copper (Cu)-Total			99.3		%		70-130	14-OCT-14
Iron (Fe)-Total			99.1		%		70-130	14-OCT-14
Lead (Pb)-Total			97.1		%		70-130	14-OCT-14
Magnesium (Mg)-Total			102.0		%		70-130	14-OCT-14
Manganese (Mn)-Total			102.1		%		70-130	14-OCT-14
Nickel (Ni)-Total			97.3		%		70-130	14-OCT-14
Potassium (K)-Total			98.9		%		70-130	14-OCT-14
Rubidium (Rb)-Total			100.3		%		70-130	14-OCT-14
Selenium (Se)-Total			105.7		%		70-130	14-OCT-14
Sodium (Na)-Total			94.4		%		70-130	14-OCT-14
Strontium (Sr)-Total			98.8		%		70-130	14-OCT-14
Uranium (U)-Total			101.8		%		70-130	14-OCT-14
Vanadium (V)-Total			94.7		%		70-130	14-OCT-14
Zinc (Zn)-Total			98.6		%		70-130	14-OCT-14
WG1966393-5 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			116.9		%		70-130	14-OCT-14
Cadmium (Cd)-Total			105.1		%		70-130	14-OCT-14
Chromium (Cr)-Total			103.9		%		70-130	14-OCT-14
Cobalt (Co)-Total			110.6		%		70-130	14-OCT-14
Copper (Cu)-Total			96.3		%		70-130	14-OCT-14
Iron (Fe)-Total			102.1		%		70-130	14-OCT-14
Lead (Pb)-Total			94.1		%		70-130	14-OCT-14
Manganese (Mn)-Total			103.1		%		70-130	14-OCT-14
Molybdenum (Mo)-Total			105.6		%		70-130	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1966393-5 CRM		**VA-NRC-TORT3**						
Nickel (Ni)-Total			102.5		%		70-130	14-OCT-14
Selenium (Se)-Total			103.7		%		70-130	14-OCT-14
Strontium (Sr)-Total			100.7		%		70-130	14-OCT-14
Vanadium (V)-Total			106.3		%		70-130	14-OCT-14
Zinc (Zn)-Total			97.6		%		70-130	14-OCT-14
WG1966393-6 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0067		mg/kg wwt		0.001-0.021	14-OCT-14
Arsenic (As)-Total			110.3		%		70-130	14-OCT-14
Barium (Ba)-Total			95.0		%		70-130	14-OCT-14
Boron (B)-Total			5.29		mg/kg wwt		3.5-5.5	14-OCT-14
Cadmium (Cd)-Total			112.6		%		70-130	14-OCT-14
Calcium (Ca)-Total			105.8		%		70-130	14-OCT-14
Cobalt (Co)-Total			108.5		%		70-130	14-OCT-14
Copper (Cu)-Total			106.8		%		70-130	14-OCT-14
Iron (Fe)-Total			106.7		%		70-130	14-OCT-14
Lead (Pb)-Total			105.9		%		70-130	14-OCT-14
Magnesium (Mg)-Total			109.6		%		70-130	14-OCT-14
Manganese (Mn)-Total			109.4		%		70-130	14-OCT-14
Nickel (Ni)-Total			105.5		%		70-130	14-OCT-14
Potassium (K)-Total			104.5		%		70-130	14-OCT-14
Rubidium (Rb)-Total			105.0		%		70-130	14-OCT-14
Selenium (Se)-Total			112.9		%		70-130	14-OCT-14
Sodium (Na)-Total			103.7		%		70-130	14-OCT-14
Strontium (Sr)-Total			103.8		%		70-130	14-OCT-14
Uranium (U)-Total			110.4		%		70-130	14-OCT-14
Vanadium (V)-Total			104.3		%		70-130	14-OCT-14
Zinc (Zn)-Total			105.3		%		70-130	14-OCT-14
WG1965382-3 DUP		**L1514793-24**						
Aluminum (Al)-Total		0.85	0.51	J	mg/kg wwt	0.34	0.8	14-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Arsenic (As)-Total		0.279	0.269		mg/kg wwt	3.5	40	14-OCT-14
Barium (Ba)-Total		0.019	<0.010	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1965382-3 DUP		**L1514793-24**						
Cadmium (Cd)-Total		1.84	1.76		mg/kg wwt	4.0	40	14-OCT-14
Calcium (Ca)-Total		43.6	41.4		mg/kg wwt	5.1	60	14-OCT-14
Cesium (Cs)-Total		0.0049	0.0045		mg/kg wwt	8.4	40	14-OCT-14
Chromium (Cr)-Total		0.140	0.113		mg/kg wwt	21	40	14-OCT-14
Cobalt (Co)-Total		0.0182	0.0175		mg/kg wwt	4.2	40	14-OCT-14
Copper (Cu)-Total		261	251		mg/kg wwt	4.0	40	14-OCT-14
Iron (Fe)-Total		40.5	38.3		mg/kg wwt	5.6	40	14-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Magnesium (Mg)-Total		179	173		mg/kg wwt	3.6	40	14-OCT-14
Manganese (Mn)-Total		1.38	1.32		mg/kg wwt	4.9	40	14-OCT-14
Molybdenum (Mo)-Total		0.197	0.188		mg/kg wwt	4.8	40	14-OCT-14
Nickel (Ni)-Total		0.102	0.082		mg/kg wwt	22	40	14-OCT-14
Phosphorus (P)-Total		3180	3080		mg/kg wwt	3.1	40	14-OCT-14
Potassium (K)-Total		3690	3520		mg/kg wwt	4.8	40	14-OCT-14
Rubidium (Rb)-Total		1.04	0.999		mg/kg wwt	4.1	40	14-OCT-14
Selenium (Se)-Total		16.7	16.2		mg/kg wwt	3.2	40	14-OCT-14
Sodium (Na)-Total		969	949		mg/kg wwt	2.0	40	14-OCT-14
Strontium (Sr)-Total		0.106	0.099		mg/kg wwt	7.0	60	14-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Thallium (Tl)-Total		0.00286	0.00268		mg/kg wwt	6.6	40	14-OCT-14
Tin (Sn)-Total		0.021	0.022		mg/kg wwt	6.3	40	14-OCT-14
Uranium (U)-Total		0.00113	0.00100		mg/kg wwt	12	40	14-OCT-14
Vanadium (V)-Total		0.090	0.087		mg/kg wwt	3.4	40	14-OCT-14
Zinc (Zn)-Total		31.5	30.4		mg/kg wwt	3.6	40	14-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
WG1965382-4 DUP		**L1514793-14**						
Aluminum (Al)-Total		1.40	1.76		mg/kg wwt	22	40	14-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Arsenic (As)-Total		0.258	0.249		mg/kg wwt	3.4	40	14-OCT-14
Barium (Ba)-Total		0.016	0.022		mg/kg wwt	33	40	14-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1965382-4 DUP		**L1514793-14**						
Cadmium (Cd)-Total		0.710	0.691		mg/kg wwt	2.7	40	14-OCT-14
Calcium (Ca)-Total		63.6	62.6		mg/kg wwt	1.5	60	14-OCT-14
Cesium (Cs)-Total		0.0062	0.0060		mg/kg wwt	3.2	40	14-OCT-14
Chromium (Cr)-Total		0.100	0.096		mg/kg wwt	3.6	40	14-OCT-14
Cobalt (Co)-Total		0.0166	0.0175		mg/kg wwt	5.4	40	14-OCT-14
Copper (Cu)-Total		74.1	71.4		mg/kg wwt	3.7	40	14-OCT-14
Iron (Fe)-Total		30.6	29.7		mg/kg wwt	3.0	40	14-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Magnesium (Mg)-Total		233	225		mg/kg wwt	3.4	40	14-OCT-14
Manganese (Mn)-Total		1.18	1.13		mg/kg wwt	4.6	40	14-OCT-14
Molybdenum (Mo)-Total		0.135	0.133		mg/kg wwt	1.1	40	14-OCT-14
Nickel (Ni)-Total		0.071	0.068		mg/kg wwt	3.6	40	14-OCT-14
Phosphorus (P)-Total		4170	4020		mg/kg wwt	3.5	40	14-OCT-14
Potassium (K)-Total		4670	4520		mg/kg wwt	3.3	40	14-OCT-14
Rubidium (Rb)-Total		1.44	1.38		mg/kg wwt	4.5	40	14-OCT-14
Selenium (Se)-Total		7.31	7.17		mg/kg wwt	2.0	40	14-OCT-14
Sodium (Na)-Total		661	633		mg/kg wwt	4.3	40	14-OCT-14
Strontium (Sr)-Total		0.129	0.128		mg/kg wwt	0.8	60	14-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Thallium (Tl)-Total		0.00669	0.00631		mg/kg wwt	5.9	40	14-OCT-14
Tin (Sn)-Total		0.027	0.026		mg/kg wwt	2.3	40	14-OCT-14
Uranium (U)-Total		0.00095	0.00087		mg/kg wwt	8.8	40	14-OCT-14
Vanadium (V)-Total		0.057	0.056		mg/kg wwt	0.9	40	14-OCT-14
Zinc (Zn)-Total		24.3	23.3		mg/kg wwt	4.3	40	14-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
WG1966393-3 DUP		**L1514793-32**						
Aluminum (Al)-Total		0.72	0.85		mg/kg wwt	16	40	14-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Arsenic (As)-Total		0.230	0.219		mg/kg wwt	4.8	40	14-OCT-14
Barium (Ba)-Total		<0.010	<0.010	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1966393-3 DUP		**L1514793-32**						
Cadmium (Cd)-Total		0.0035	0.0032		mg/kg wwt	11	40	14-OCT-14
Calcium (Ca)-Total		32.4	30.6		mg/kg wwt	5.5	60	14-OCT-14
Cesium (Cs)-Total		0.0251	0.0236		mg/kg wwt	6.1	40	14-OCT-14
Chromium (Cr)-Total		0.065	0.059		mg/kg wwt	10	40	14-OCT-14
Cobalt (Co)-Total		0.0061	0.0053		mg/kg wwt	13	40	14-OCT-14
Copper (Cu)-Total		0.884	0.804		mg/kg wwt	9.4	40	14-OCT-14
Iron (Fe)-Total		6.93	6.55		mg/kg wwt	5.5	40	14-OCT-14
Lead (Pb)-Total		0.0046	0.0046		mg/kg wwt	0.2	40	14-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Magnesium (Mg)-Total		260	243		mg/kg wwt	6.5	40	14-OCT-14
Manganese (Mn)-Total		0.075	0.070		mg/kg wwt	7.5	40	14-OCT-14
Molybdenum (Mo)-Total		0.0107	0.0108		mg/kg wwt	0.4	40	14-OCT-14
Nickel (Ni)-Total		0.057	<0.040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Phosphorus (P)-Total		2550	2390		mg/kg wwt	6.5	40	14-OCT-14
Potassium (K)-Total		3850	3600		mg/kg wwt	6.9	40	14-OCT-14
Rubidium (Rb)-Total		0.943	0.877		mg/kg wwt	7.3	40	14-OCT-14
Selenium (Se)-Total		0.266	0.247		mg/kg wwt	7.4	40	14-OCT-14
Sodium (Na)-Total		325	314		mg/kg wwt	3.4	40	14-OCT-14
Strontium (Sr)-Total		0.055	0.054		mg/kg wwt	2.0	60	14-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Thallium (Tl)-Total		0.00151	0.00132		mg/kg wwt	13	40	14-OCT-14
Tin (Sn)-Total		0.060	0.058		mg/kg wwt	3.1	40	14-OCT-14
Uranium (U)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Vanadium (V)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Zinc (Zn)-Total		3.63	3.43		mg/kg wwt	5.4	40	14-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
WG1966393-4 DUP		**L1514793-11**						
Aluminum (Al)-Total		1.82	2.24		mg/kg wwt	20	40	14-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Arsenic (As)-Total		0.252	0.245		mg/kg wwt	2.9	40	14-OCT-14
Barium (Ba)-Total		0.020	0.020		mg/kg wwt	2.8	40	14-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1966393-4 DUP		**L1514793-11**						
Cadmium (Cd)-Total		1.11	1.10		mg/kg wwt	0.7	40	14-OCT-14
Calcium (Ca)-Total		59.2	58.6		mg/kg wwt	1.1	60	14-OCT-14
Cesium (Cs)-Total		0.0071	0.0068		mg/kg wwt	3.9	40	14-OCT-14
Chromium (Cr)-Total		0.094	0.112		mg/kg wwt	18	40	14-OCT-14
Cobalt (Co)-Total		0.0220	0.0231		mg/kg wwt	4.8	40	14-OCT-14
Copper (Cu)-Total		37.0	36.5		mg/kg wwt	1.2	40	14-OCT-14
Iron (Fe)-Total		30.6	31.5		mg/kg wwt	2.8	40	14-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Magnesium (Mg)-Total		228	228		mg/kg wwt	0.1	40	14-OCT-14
Manganese (Mn)-Total		1.46	1.46		mg/kg wwt	0.2	40	14-OCT-14
Molybdenum (Mo)-Total		0.163	0.163		mg/kg wwt	0.4	40	14-OCT-14
Nickel (Ni)-Total		0.063	0.077		mg/kg wwt	20	40	14-OCT-14
Phosphorus (P)-Total		4190	4160		mg/kg wwt	0.7	40	14-OCT-14
Potassium (K)-Total		4660	4660		mg/kg wwt	0.0	40	14-OCT-14
Rubidium (Rb)-Total		1.38	1.40		mg/kg wwt	1.8	40	14-OCT-14
Selenium (Se)-Total		5.18	5.10		mg/kg wwt	1.7	40	14-OCT-14
Sodium (Na)-Total		684	686		mg/kg wwt	0.2	40	14-OCT-14
Strontium (Sr)-Total		0.125	0.125		mg/kg wwt	0.3	60	14-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
Thallium (Tl)-Total		0.00749	0.00768		mg/kg wwt	2.6	40	14-OCT-14
Tin (Sn)-Total		0.031	0.027		mg/kg wwt	12	40	14-OCT-14
Uranium (U)-Total		0.00107	0.00102		mg/kg wwt	4.5	40	14-OCT-14
Vanadium (V)-Total		0.066	0.067		mg/kg wwt	1.4	40	14-OCT-14
Zinc (Zn)-Total		22.5	22.4		mg/kg wwt	0.4	40	14-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	14-OCT-14
WG1965382-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	14-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1965382-1 MB								
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	14-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	14-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	14-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	14-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	14-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	14-OCT-14
Phosphorus (P)-Total			2.0	MB-LOR	mg/kg wwt		2	14-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	14-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	14-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	14-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	14-OCT-14
WG1965382-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	14-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1965382-2 MB								
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	14-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	14-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	14-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	14-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	14-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	14-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	14-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	14-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	14-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	14-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	14-OCT-14
WG1966393-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	14-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1966393-1 MB								
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	14-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	14-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	14-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	14-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	14-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	14-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	14-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	14-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	14-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	14-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	14-OCT-14
WG1966393-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	14-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	14-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	14-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2991091								
WG1966393-2 MB								
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	14-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	14-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	14-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	14-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	14-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	14-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	14-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	14-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	14-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	14-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	14-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	14-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	14-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	14-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	14-OCT-14
Batch R3002648								
WG1967865-4 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			123.9		%		70-130	17-OCT-14
Cadmium (Cd)-Total			107.6		%		70-130	17-OCT-14
Chromium (Cr)-Total			106.9		%		70-130	17-OCT-14
Cobalt (Co)-Total			112.1		%		70-130	17-OCT-14
Copper (Cu)-Total			98.9		%		70-130	17-OCT-14
Iron (Fe)-Total			102.5		%		70-130	17-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R3002648								
WG1967865-4 CRM		**VA-NRC-TORT3**						
Lead (Pb)-Total			102.5		%		70-130	17-OCT-14
Manganese (Mn)-Total			106.7		%		70-130	17-OCT-14
Molybdenum (Mo)-Total			106.1		%		70-130	17-OCT-14
Nickel (Ni)-Total			106.1		%		70-130	17-OCT-14
Selenium (Se)-Total			104.7		%		70-130	17-OCT-14
Strontium (Sr)-Total			101.7		%		70-130	17-OCT-14
Vanadium (V)-Total			111.4		%		70-130	17-OCT-14
Zinc (Zn)-Total			99.9		%		70-130	17-OCT-14
WG1967865-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	17-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	17-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	17-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	17-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	17-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	17-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	17-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	17-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	17-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	17-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	17-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	17-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	17-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	17-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	17-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	17-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R3002648								
WG1967865-2 MB								
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	17-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	17-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	17-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	17-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	17-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	17-OCT-14
MOISTURE-TISS-VA	**Tissue**							
Batch R2971228								
WG1965404-1 DUP		**L1514793-10**						
% Moisture		76.0	76.2		%	0.2	20	02-OCT-14
WG1965404-2 DUP		**L1514793-48**						
% Moisture		76.1	76.6		%	0.7	20	02-OCT-14
WG1965404-5 DUP		**L1514793-56**						
% Moisture		76.8	76.6		%	0.2	20	02-OCT-14
Batch R2972012								
WG1966422-2 DUP		**L1514793-42**						
% Moisture		74.8	74.8		%	0.1	20	03-OCT-14

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS LABORATORY GROUP ANALYTICAL REPORT

ALS Lab WO#: L1514793

Client ID	Liver - Total Weight (g)	Muscle- Total Weight (g)
SK-1	40.220	20.620
SK-2	69.284	23.515
SK-3	43.171	25.109
SK-4	51.629	26.250
SK-5	34.512	26.923
SK-6	45.234	36.194
SK-7	41.385	33.723
SK-8	67.154	32.003
SK-9	60.456	29.809
SK-10	47.631	29.220
SK-11	56.665	35.477
SK-12	47.768	30.052
SK-13	60.169	29.054
SK-14	65.323	36.545
SK-15	40.403	39.253
SK-16	48.202	44.150
SK-17	49.594	38.988
SK-18	59.403	37.684
SK-19	25.857	27.493
SK-20	60.998	33.123
SK-21	48.737	31.984
SK-22	41.875	34.505
SK-23	52.333	26.009
SK-24	56.757	40.482
SK-25	39.974	34.818
SK-26	48.081	41.670
SK-27	40.723	40.134
SK-28	27.889	14.629
SK-29	49.182	40.624
SK-30	37.929	35.520

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # HORSEFLY RIVER [redacted] Sockeye sampling

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab (lab use only)	L1514793-COFC	ALS Contact: Can Dang	Sampler: CK, [redacted]	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver (metals)	Muscle (metals)	% moisture	Number of Containers
	SK-1	Sep 2/14		FISH	X	X	X	
	SK-2				X	X	X	
	SK-3				X	X	X	
	SK-4				X	X	X	
	SK-5				X	X	X	
	SK-6				X	X	X	
	SK-7				X	X	X	
	SK-8				X	X	X	
	SK-9				X	X	X	
	SK-10				X	X	X	
	SK-11				X	X	X	
	SK-12	Sep 2/14		FISH	X	X	X	

Short Holding Time
Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

~~* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake BC, V0K2C0~~

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C.Koenig C. Koenig	Sep 7/14		JH	Sep 9	8130	1 °C				

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # Horsefly River [redacted] Sockeye sampling

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab W (lab	L1514793-COFC	ALS Contact: Can Dang	Sampler: CK[redacted]	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver (metals)	Muscle (metals)	% moisture	Number of Containers
	SK-13	Sep2/14		FISH	X	X	X	
	SK-14				X	X	X	
	SK-15				X	X	X	
	SK-16				X	X	X	
	SK-17				X	X	X	
	SK-18				X	X	X	
	SK-19				X	X	X	
	SK-20				X	X	X	
	SK-21				X	X	X	
	SK-22				X	X	X	
	SK-23				X	X	X	
	SK-24	Sep2/14		FISH	X	X	X	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy): Sep 7/14	Time (hh-mm):	Received by: JL	Date: Sept 9	Time: 8130	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # HORSEFLY RIVER [redacted] Sockeye sampling

Page 3 of 3

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab \ (lal	L1514793-COFC	ALS Contact: Can Dang	Sampler: CK[redacted]	

Sample #	(This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver (metals)	Muscle (metals)	Dioxins/furans	Number of Containers
	SK-25	Sep 2/14		FISH	X	X	X	
	SK-26	Sep 2/14			X	X	X	
	SK-27	Sep 2/14			X	X	X	
	SK-28	Sep 4/14			X	X	X	
	SK-29	Sep 4/14			X	X	X	
	SK-30	Sep 4/14		FISH	X	X	X	
	4							

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

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Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy): Sep 7/14	Time (hh-mm):	Received by: JR	Date: Sept 9	Time: 8:30	Temperature: °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

Sample Receipt Confirmation

60 Samples received at ALS in VANCOUVER

Job Reference #: N/A
Project PO #: N/A
Legal Site Description: N/A
Quote #: Q46666
Lab Work Order #: L1514793
Estimated Completion Date: 10/10/2014

Date Sampled: 9/2/2014
Date Received: 9/9/2014
Sampled By: CK
Chain of Custody: Horsefly River
Account Manager: Can Dang
Estimated Sample Disposal Date: See Sample Disposal Information section below.

Sample Integrity Observations: No observations were identified for this work order submission.

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12
Likely,BC V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
dmcmillan@minnow.ca
JLove@imperialmetals.com
ckoenig@redchrismine.ca
Natalie.neufeld@snclavalin.com
trevor.mcconkey@snclavalin.com
kmcmahen@mountpolley.com
mia.sakelariou@snclavalin.com
EDD Email: chughes@mountpolley.com
dmcmillan@minnow.ca
JLove@imperialmetals.com
ckoenig@redchrismine.ca
Natalie.neufeld@snclavalin.com
trevor.mcconkey@snclavalin.com
mia.sakelariou@snclavalin.com
kmcmahen@mountpolley.com

Distribution: **Hard Copy:** N **Email:** Y **Fax:** N
EDD: Y

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP. ~LIKELY
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100
Distribution: **Hard Copy:** Y **Email:** Y

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1514793-1	SK-1 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-2	SK-2 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-3	SK-3 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-4	SK-4 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-5	SK-5 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1514793-6	SK-6 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-7	SK-7 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-8	SK-8 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-9	SK-9 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-10	SK-10 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-11	SK-11 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-12	SK-12 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-13	SK-13 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-14	SK-14 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-15	SK-15 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-16	SK-16 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-17	SK-17 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-18	SK-18 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-19	SK-19 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-20	SK-20 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-21	SK-21 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-22	SK-22 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-23	SK-23 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-24	SK-24 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-25	SK-25 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-26	SK-26 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-27	SK-27 LIVER	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-28	SK-28 LIVER	9/4/2014 11:45 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-29	SK-29 LIVER	9/4/2014 11:45 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-30	SK-30 LIVER	9/4/2014 11:45 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-31	SK-1 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-32	SK-2 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-33	SK-3 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-34	SK-4 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1514793-35	SK-5 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-36	SK-6 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-37	SK-7 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-38	SK-8 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-39	SK-9 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-40	SK-10 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-41	SK-11 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-42	SK-12 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-43	SK-13 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-44	SK-14 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-45	SK-15 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-46	SK-16 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-47	SK-17 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-48	SK-18 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-49	SK-19 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-50	SK-20 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-51	SK-21 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-52	SK-22 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-53	SK-23 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-54	SK-24 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-55	SK-25 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-56	SK-26 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-57	SK-27 MUSCLE	9/2/2014 11:30 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-58	SK-28 MUSCLE	9/4/2014 11:45 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-59	SK-29 MUSCLE	9/4/2014 11:45 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH
L1514793-60	SK-30 MUSCLE	9/4/2014 11:45 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
SK-1 LIVER	X	X	X	X	X
SK-2 LIVER	X	X	X	X	X
SK-3 LIVER	X	X	X	X	X
SK-4 LIVER	X	X	X	X	X
SK-5 LIVER	X	X	X	X	X
SK-6 LIVER	X	X	X	X	X
SK-7 LIVER	X	X	X	X	X
SK-8 LIVER	X	X	X	X	X
SK-9 LIVER	X	X	X	X	X
SK-10 LIVER	X	X	X	X	X
SK-11 LIVER	X	X	X	X	X
SK-12 LIVER	X	X	X	X	X
SK-13 LIVER	X	X	X	X	X
SK-14 LIVER	X	X	X	X	X
SK-15 LIVER	X	X	X	X	X
SK-16 LIVER	X	X	X	X	X
SK-17 LIVER	X	X	X	X	X
SK-18 LIVER	X	X	X	X	X
SK-19 LIVER	X	X	X	X	X

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
SK-20 LIVER	X	X	X	X	X
SK-21 LIVER	X	X	X	X	X
SK-22 LIVER	X	X	X	X	X
SK-23 LIVER	X	X	X	X	X
SK-24 LIVER	X	X	X	X	X
SK-25 LIVER	X	X	X	X	X
SK-26 LIVER	X	X	X	X	X
SK-27 LIVER	X	X	X	X	X
SK-28 LIVER	X	X	X	X	X
SK-29 LIVER	X	X	X	X	X
SK-30 LIVER	X	X	X	X	X
SK-1 MUSCLE	X	X	X	X	X
SK-2 MUSCLE	X	X	X	X	X
SK-3 MUSCLE	X	X	X	X	X
SK-4 MUSCLE	X	X	X	X	X
SK-5 MUSCLE	X	X	X	X	X
SK-6 MUSCLE	X	X	X	X	X
SK-7 MUSCLE	X	X	X	X	X
SK-8 MUSCLE	X	X	X	X	X
SK-9 MUSCLE	X	X	X	X	X

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
SK-10 MUSCLE	X	X	X	X	X
SK-11 MUSCLE	X	X	X	X	X
SK-12 MUSCLE	X	X	X	X	X
SK-13 MUSCLE	X	X	X	X	X
SK-14 MUSCLE	X	X	X	X	X
SK-15 MUSCLE	X	X	X	X	X
SK-16 MUSCLE	X	X	X	X	X
SK-17 MUSCLE	X	X	X	X	X
SK-18 MUSCLE	X	X	X	X	X
SK-19 MUSCLE	X	X	X	X	X
SK-20 MUSCLE	X	X	X	X	X
SK-21 MUSCLE	X	X	X	X	X
SK-22 MUSCLE	X	X	X	X	X
SK-23 MUSCLE	X	X	X	X	X
SK-24 MUSCLE	X	X	X	X	X
SK-25 MUSCLE	X	X	X	X	X
SK-26 MUSCLE	X	X	X	X	X
SK-27 MUSCLE	X	X	X	X	X
SK-28 MUSCLE	X	X	X	X	X
SK-29 MUSCLE	X	X	X	X	X

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
SK-30 MUSCLE	X	X	X	X	X

Sample Receipt Confirmation

Sample Disposal Information:

Where possible, ALS will store samples for 30 days from the date a final report is issued, or 30 days from the date samples are placed on hold without analytical requests, after which samples may be discarded. Air samples collected on re-usable media are an exception, and are stored for 7 days from the date a final report is issued. Longer storage times are available upon request.

For information about ALS accreditations and certifications please contact your Account Manager or visit our webpage at www.alsglobal.com (see Canada downloads).

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # L1514793 when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # HORSEFLY RIVER [redacted] Sockeye sampling

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab (lab use only)	L1514793-COFC	ALS Contact: Can Dang	Sampler: CK, [redacted]	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver (metals)	Muscle (metals)	% moisture	Number of Containers
	SK-1	Sep 2/14		FISH	X	X	X	
	SK-2				X	X	X	
	SK-3				X	X	X	
	SK-4				X	X	X	
	SK-5				X	X	X	
	SK-6				X	X	X	
	SK-7				X	X	X	
	SK-8				X	X	X	
	SK-9				X	X	X	
	SK-10				X	X	X	
	SK-11				X	X	X	
	SK-12	Sep 2/14		FISH	X	X	X	

Short Holding Time
Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

~~* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake BC, V0K2C0~~

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C.Koenig C. Koenig	Sep 7/14		JH	Sep 9	8130	1 °C				

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # Horsefly River [redacted] Sockeye sampling

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab W (lab	L1514793-COFC	ALS Contact: Can Dang	Sampler: CK[redacted]	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver (metals)	Muscle (metals)	% moisture	Number of Containers
	SK-13	Sep2/14		FISH	X	X	X	
	SK-14				X	X	X	
	SK-15				X	X	X	
	SK-16				X	X	X	
	SK-17				X	X	X	
	SK-18				X	X	X	
	SK-19				X	X	X	
	SK-20				X	X	X	
	SK-21				X	X	X	
	SK-22				X	X	X	
	SK-23				X	X	X	
	SK-24	Sep2/14		FISH	X	X	X	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy): Sep 7/14	Time (hh-mm):	Received by: JL	Date: Sept 9	Time: 8130	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # HORSEFLY RIVER [redacted] Sockeye sampling

Page 3 of 3

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
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Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab \ (lal	L1514793-COFC	ALS Contact: Can Dang	Sampler: CK[redacted]	

Sample #	(This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver (metals)	Muscle (metals)	Dioxins/furans	Number of Containers
	SK-25	Sep 2/14		FISH	X	X	X	
	SK-26	Sep 2/14			X	X	X	
	SK-27	Sep 2/14			X	X	X	
	SK-28	Sep 4/14			X	X	X	
	SK-29	Sep 4/14			X	X	X	
	SK-30	Sep 4/14		FISH	X	X	X	
	4							

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

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Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy): Sep 7/14	Time (hh-mm):	Received by: JR	Date: Sept 9	Time: 8:30	Temperature: °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-14
Report Date: 04-SEP-15 18:01 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1514806

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: QL UNIMPACTED
Legal Site Desc:

Comments:

4-SEP-2015 Revision 2: The collection date for the sample ALS identify as L1514806-12 was modified.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1514806-1	L1514806-2	L1514806-3	L1514806-4	L1514806-5
Description	FISH - Unimpacte	FISH - Unimpacte	FISH - Unimpacte	FISH - Unimpacte	FISH - Unimpacte
Sampled Date	05-SEP-14	03-SEP-14	03-SEP-14	03-SEP-14	03-SEP-14
Sampled Time					
Client ID	NSC-1 HFGT-2	LNC-20 HFGT-1	NSC-9-10 HFGT-1	NSC-11-12-13 HFGT-1	PCC-2+5 HFGT-1
Grouping / **Analyte**					
TISSUE					
Physical Tests % Moisture (%)	75.7	77.5	71.7	76.0	73.8
Metals Aluminum (Al)-Total (mg/kg wwt)	1.35	12.3	<0.40	1.36	0.53
Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)-Total (mg/kg wwt)	0.0183	0.0502	0.0120	0.0230	0.0645
Barium (Ba)-Total (mg/kg wwt)	0.448	1.78	0.334	0.570	0.591
Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium (Cd)-Total (mg/kg wwt)	0.0117	0.0087	0.0111	0.0239	0.0311
Calcium (Ca)-Total (mg/kg wwt)	9800	11400	8810	12700	11700
Cesium (Cs)-Total (mg/kg wwt)	0.0064	0.0109	0.0082	0.0103	0.0164
Chromium (Cr)-Total (mg/kg wwt)	0.017	0.052	0.011	<0.010	0.020
Cobalt (Co)-Total (mg/kg wwt)	0.0095	0.0236	0.0146	0.0118	0.0140
Copper (Cu)-Total (mg/kg wwt)	0.941	0.609	0.644	0.828	0.614
Iron (Fe)-Total (mg/kg wwt)	12.3	30.5	12.3	12.7	11.3
Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0082	0.0044	0.0057	0.0060
Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total (mg/kg wwt)	420	432	386	455	422
Manganese (Mn)-Total (mg/kg wwt)	3.21	12.0	1.46	2.95	2.25
Mercury (Hg)-Total (mg/kg wwt)	0.0488	0.0484	0.0412	0.0606	0.0629
Molybdenum (Mo)-Total (mg/kg wwt)	0.0114	0.0218	0.0103	0.0121	0.0148
Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
Phosphorus (P)-Total (mg/kg wwt)	7590	8070	6440	8960	8520
Potassium (K)-Total (mg/kg wwt)	3620	3390	3420	3480	3430
Rubidium (Rb)-Total (mg/kg wwt)	4.49	7.82	5.00	8.49	4.90
Selenium (Se)-Total (mg/kg wwt)	0.548	0.532	0.621	0.591	0.619
Sodium (Na)-Total (mg/kg wwt)	762	915	723	788	724
Strontium (Sr)-Total (mg/kg wwt)	11.0	18.4	11.0	16.5	21.8
Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total (mg/kg wwt)	0.00168	0.00345	0.00222	0.00232	0.00385
Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00227	<0.00040	<0.00040	0.00061
Vanadium (V)-Total (mg/kg wwt)	<0.020	0.044	<0.020	<0.020	<0.020
Zinc (Zn)-Total (mg/kg wwt)	35.9	26.2	32.8	44.2	34.3
Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1514806-6	L1514806-7	L1514806-8	L1514806-9	L1514806-10
Description	FISH - Unimpacte	FISH - Unimpacte	FISH - Unimpacte	FISH - Unimpacte	FISH - Unimpacte
Sampled Date	03-SEP-14	03-SEP-14	03-SEP-14	05-SEP-14	03-SEP-14
Sampled Time					
Client ID	NSC-18 HFGT-1	LND-19 HFGT-1	NSC-7-8 HFGT-1	NSC2+NSC3-HFGT-2	NSC-17 HFGT-1
Grouping / **Analyte**					
TISSUE					
Physical Tests % Moisture (%)	75.1	77.2	76.3	70.6	75.9
Metals Aluminum (Al)-Total (mg/kg wwt)	0.73	19.1	0.44	5.63 RRU	<0.40
Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	0.0040	<0.0020
Arsenic (As)-Total (mg/kg wwt)	0.0156	0.116	0.0246	0.0492	0.0180
Barium (Ba)-Total (mg/kg wwt)	0.461	0.925	0.635	0.405	0.387
Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium (Cd)-Total (mg/kg wwt)	0.0108	0.0183	0.0243	0.0083	0.0153
Calcium (Ca)-Total (mg/kg wwt)	11800	12900	15700	9620	8290
Cesium (Cs)-Total (mg/kg wwt)	0.0050	0.0109	0.0102	0.0123	0.0113
Chromium (Cr)-Total (mg/kg wwt)	0.022	0.093	<0.010	0.269	0.086
Cobalt (Co)-Total (mg/kg wwt)	0.0179	0.0304	0.0134	0.0213	0.0107
Copper (Cu)-Total (mg/kg wwt)	0.598	0.945	0.778	0.714	0.655
Iron (Fe)-Total (mg/kg wwt)	17.0	40.5	14.3	18.9	13.0
Lead (Pb)-Total (mg/kg wwt)	0.0052	0.0243	<0.0040	0.0188	<0.0040
Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total (mg/kg wwt)	431	422	544	409	361
Manganese (Mn)-Total (mg/kg wwt)	2.79	8.12	4.34	3.93	2.39
Mercury (Hg)-Total (mg/kg wwt)	0.0414	0.0477	0.0621	0.0387	0.0479
Molybdenum (Mo)-Total (mg/kg wwt)	0.0122	0.0407	0.0144	0.0173	0.0108
Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.063	<0.040	0.303	0.042
Phosphorus (P)-Total (mg/kg wwt)	8370	8950	10800	6930	6270
Potassium (K)-Total (mg/kg wwt)	3570	3410	4070	3790	2980
Rubidium (Rb)-Total (mg/kg wwt)	4.38	7.27	9.37	10.1	7.94
Selenium (Se)-Total (mg/kg wwt)	0.984	0.464	0.752	0.461	0.532
Sodium (Na)-Total (mg/kg wwt)	828	1060	937	900	769
Strontium (Sr)-Total (mg/kg wwt)	14.3	19.4	18.9	10.3	9.90
Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total (mg/kg wwt)	0.00066	0.00192	0.00177	0.00141	0.00111
Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.066	<0.020
Uranium (U)-Total (mg/kg wwt)	0.00057	0.00292	0.00064	0.00054	0.00070
Vanadium (V)-Total (mg/kg wwt)	<0.020	0.078	<0.020	0.023	<0.020
Zinc (Zn)-Total (mg/kg wwt)	32.8	32.4	46.4	27.7	24.2
Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1514806-11	L1514806-12	L1514806-13	L1514806-14	
Description	FISH - Unimpacte	FISH - Impacted	FISH - Unimpacte	FISH - Unimpacte	
Sampled Date	03-SEP-14	05-SEP-14	03-SEP-14	03-SEP-14	
Sampled Time					
Client ID	NSC-14-15-16 HFGT-1	NSC-1 HAZ-3	NSC1+6 HFGT	NSC-3-4 HFGT-1	
Grouping / **Analyte**					
TISSUE					
Physical Tests % Moisture (%)	77.6	76.6	78.9	76.1	
Metals Aluminum (Al)-Total (mg/kg wwt)	<0.40	1.27	9.82	0.56	
Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	0.0022 RRU	
Arsenic (As)-Total (mg/kg wwt)	0.0270	0.0188	0.0320	0.0093	
Barium (Ba)-Total (mg/kg wwt)	0.540	0.362	0.600	0.422	
Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	0.0021	
Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	
Cadmium (Cd)-Total (mg/kg wwt)	0.0113	0.0086	0.0211	0.0140	
Calcium (Ca)-Total (mg/kg wwt)	11900	10100	11500	14100	
Cesium (Cs)-Total (mg/kg wwt)	0.0121	0.0096	0.0070	0.0315	
Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.018	0.191	<0.010	
Cobalt (Co)-Total (mg/kg wwt)	0.0106	0.0194	0.0151	0.0158	
Copper (Cu)-Total (mg/kg wwt)	0.780	0.883	0.721	0.774	
Iron (Fe)-Total (mg/kg wwt)	12.1	16.0	24.9	14.2	
Lead (Pb)-Total (mg/kg wwt)	0.0042	<0.0040	0.0092	0.0137	
Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	
Magnesium (Mg)-Total (mg/kg wwt)	412	470	394	414	
Manganese (Mn)-Total (mg/kg wwt)	2.52	2.65	3.36	3.52	
Mercury (Hg)-Total (mg/kg wwt)	0.0641	0.0366	0.0641	0.0748	
Molybdenum (Mo)-Total (mg/kg wwt)	0.0098	0.0128	0.0113	0.0127	
Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	
Phosphorus (P)-Total (mg/kg wwt)	8410	7860	8210	9600	
Potassium (K)-Total (mg/kg wwt)	3380	3820	3520	3490	
Rubidium (Rb)-Total (mg/kg wwt)	6.08	7.35	5.35	7.20	
Selenium (Se)-Total (mg/kg wwt)	0.599	0.570	1.06	0.474	
Sodium (Na)-Total (mg/kg wwt)	744	969	933	791	
Strontium (Sr)-Total (mg/kg wwt)	14.4	10.7	12.1	17.8	
Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
Thallium (Tl)-Total (mg/kg wwt)	0.00175	0.00118	0.00136	0.00217	
Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.024	
Uranium (U)-Total (mg/kg wwt)	0.00046	<0.00040	0.00110	0.00108	
Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.054	<0.020	
Zinc (Zn)-Total (mg/kg wwt)	37.3	33.2	37.1	37.1	
Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Chromium (Cr)-Total	DUP-H	L1514806-10
Duplicate	Chromium (Cr)-Total	DUP-H	L1514806-10

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
RRU	Reported Result is Uncertain due to proximity to the estimated Method Detection Limit.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

QL UNIMPACTED

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1514806 Report Date: 04-SEP-15

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-WET-CVAFS-VA	**Tissue**							
Batch R3005130								
WG1977185-5 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			99.1		%		70-130	20-OCT-14
WG1977185-6 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			101.1		%		70-130	20-OCT-14
WG1977185-4 DUP		**L1514806-10**						
Mercury (Hg)-Total		0.0479	0.0501		mg/kg wwt	4.5	40	20-OCT-14
WG1977185-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	20-OCT-14
WG1977185-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	20-OCT-14
Batch R3014188								
WG1979839-3 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			95.6		%		70-130	22-OCT-14
WG1979839-4 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			86.9		%		70-130	22-OCT-14
WG1979839-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	22-OCT-14
WG1979839-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	22-OCT-14
MET-WET-CCMS-VA	**Tissue**							
Batch R3002648								
WG1977185-5 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			109.6		%		70-130	17-OCT-14
Cadmium (Cd)-Total			93.7		%		70-130	17-OCT-14
Chromium (Cr)-Total			87.5		%		70-130	17-OCT-14
Cobalt (Co)-Total			98.2		%		70-130	17-OCT-14
Copper (Cu)-Total			86.9		%		70-130	17-OCT-14
Iron (Fe)-Total			92.1		%		70-130	17-OCT-14
Lead (Pb)-Total			88.5		%		70-130	17-OCT-14
Manganese (Mn)-Total			92.0		%		70-130	17-OCT-14
Molybdenum (Mo)-Total			98.5		%		70-130	17-OCT-14
Nickel (Ni)-Total			90.4		%		70-130	17-OCT-14
Selenium (Se)-Total			94.8		%		70-130	17-OCT-14
Strontium (Sr)-Total			95.9		%		70-130	17-OCT-14
Vanadium (V)-Total			98.6		%		70-130	17-OCT-14
Zinc (Zn)-Total			88.0		%		70-130	17-OCT-14
WG1977185-6 CRM		**VA-NRC-TORT3**						

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R3002648								
WG1977185-6 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			111.4		%		70-130	17-OCT-14
Cadmium (Cd)-Total			95.8		%		70-130	17-OCT-14
Chromium (Cr)-Total			92.3		%		70-130	17-OCT-14
Cobalt (Co)-Total			99.6		%		70-130	17-OCT-14
Copper (Cu)-Total			88.1		%		70-130	17-OCT-14
Iron (Fe)-Total			93.2		%		70-130	17-OCT-14
Lead (Pb)-Total			85.5		%		70-130	17-OCT-14
Manganese (Mn)-Total			93.2		%		70-130	17-OCT-14
Molybdenum (Mo)-Total			98.2		%		70-130	17-OCT-14
Nickel (Ni)-Total			92.2		%		70-130	17-OCT-14
Selenium (Se)-Total			97.9		%		70-130	17-OCT-14
Strontium (Sr)-Total			95.6		%		70-130	17-OCT-14
Vanadium (V)-Total			99.6		%		70-130	17-OCT-14
Zinc (Zn)-Total			89.0		%		70-130	17-OCT-14
WG1977185-4 DUP		**L1514806-10**						
Aluminum (Al)-Total		<0.40	<0.40	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Arsenic (As)-Total		0.0180	0.0145		mg/kg wwt	21	40	17-OCT-14
Barium (Ba)-Total		0.387	0.437		mg/kg wwt	12	40	17-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Cadmium (Cd)-Total		0.0153	0.0160		mg/kg wwt	4.5	40	17-OCT-14
Calcium (Ca)-Total		8290	9380		mg/kg wwt	12	60	17-OCT-14
Cesium (Cs)-Total		0.0113	0.0119		mg/kg wwt	4.7	40	17-OCT-14
Chromium (Cr)-Total		0.086	0.183	DUP-H	mg/kg wwt	72	40	17-OCT-14
Cobalt (Co)-Total		0.0107	0.0124		mg/kg wwt	15	40	17-OCT-14
Copper (Cu)-Total		0.655	0.667		mg/kg wwt	1.9	40	17-OCT-14
Iron (Fe)-Total		13.0	15.1		mg/kg wwt	15	40	17-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Magnesium (Mg)-Total		361	392		mg/kg wwt	8.2	40	17-OCT-14
Manganese (Mn)-Total		2.39	2.61		mg/kg wwt	9.0	40	17-OCT-14
Molybdenum (Mo)-Total		0.0108	0.0106		mg/kg wwt	2.3	40	17-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R3002648								
WG1977185-4 DUP		**L1514806-10**						
Nickel (Ni)-Total		0.042	<0.040	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Phosphorus (P)-Total		6270	6920		mg/kg wwt	10	40	17-OCT-14
Potassium (K)-Total		2980	3210		mg/kg wwt	7.3	40	17-OCT-14
Rubidium (Rb)-Total		7.94	8.46		mg/kg wwt	6.3	40	17-OCT-14
Selenium (Se)-Total		0.532	0.562		mg/kg wwt	5.5	40	17-OCT-14
Sodium (Na)-Total		769	832		mg/kg wwt	7.8	40	17-OCT-14
Strontium (Sr)-Total		9.90	11.2		mg/kg wwt	12	60	17-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Thallium (Tl)-Total		0.00111	0.00123		mg/kg wwt	10	40	17-OCT-14
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Uranium (U)-Total		0.00070	0.00073		mg/kg wwt	3.6	40	17-OCT-14
Vanadium (V)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
Zinc (Zn)-Total		24.2	26.6		mg/kg wwt	9.7	40	17-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	17-OCT-14
WG1977185-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	17-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	17-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	17-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	17-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	17-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	17-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	17-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	17-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	17-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	17-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	17-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	17-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R3002648								
WG1977185-1 MB								
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	17-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	17-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	17-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	17-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	17-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	17-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	17-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	17-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	17-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	17-OCT-14
WG1977185-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	17-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	17-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	17-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	17-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	17-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	17-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	17-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	17-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	17-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	17-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	17-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	17-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R3002648								
WG1977185-2 MB								
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	17-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	17-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	17-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	17-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	17-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	17-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	17-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	17-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	17-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	17-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	17-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	17-OCT-14
Batch R3020406								
WG1979839-3 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			111.5		%		70-130	23-OCT-14
Cadmium (Cd)-Total			99.4		%		70-130	23-OCT-14
Chromium (Cr)-Total			95.5		%		70-130	23-OCT-14
Cobalt (Co)-Total			102.5		%		70-130	23-OCT-14
Copper (Cu)-Total			90.9		%		70-130	23-OCT-14
Iron (Fe)-Total			94.6		%		70-130	23-OCT-14
Lead (Pb)-Total			92.4		%		70-130	23-OCT-14
Manganese (Mn)-Total			96.7		%		70-130	23-OCT-14
Molybdenum (Mo)-Total			101.4		%		70-130	23-OCT-14
Nickel (Ni)-Total			95.0		%		70-130	23-OCT-14
Selenium (Se)-Total			97.2		%		70-130	23-OCT-14
Strontium (Sr)-Total			99.7		%		70-130	23-OCT-14
Vanadium (V)-Total			99.9		%		70-130	23-OCT-14
Zinc (Zn)-Total			92.2		%		70-130	23-OCT-14
WG1979839-4 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0102		mg/kg wwt		0.001-0.021	23-OCT-14
Arsenic (As)-Total			103.5		%		70-130	23-OCT-14
Barium (Ba)-Total			85.0		%		70-130	23-OCT-14
Boron (B)-Total			4.72		mg/kg wwt		3.5-5.5	23-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R3020406								
WG1979839-4 CRM		**VA-NIST-1566B**						
Cadmium (Cd)-Total			102.6		%		70-130	23-OCT-14
Calcium (Ca)-Total			100.1		%		70-130	23-OCT-14
Cobalt (Co)-Total			100.3		%		70-130	23-OCT-14
Copper (Cu)-Total			98.6		%		70-130	23-OCT-14
Iron (Fe)-Total			94.8		%		70-130	23-OCT-14
Lead (Pb)-Total			96.8		%		70-130	23-OCT-14
Magnesium (Mg)-Total			100.6		%		70-130	23-OCT-14
Manganese (Mn)-Total			101.3		%		70-130	23-OCT-14
Nickel (Ni)-Total			94.5		%		70-130	23-OCT-14
Potassium (K)-Total			100.7		%		70-130	23-OCT-14
Rubidium (Rb)-Total			97.2		%		70-130	23-OCT-14
Selenium (Se)-Total			102.5		%		70-130	23-OCT-14
Sodium (Na)-Total			96.8		%		70-130	23-OCT-14
Strontium (Sr)-Total			98.3		%		70-130	23-OCT-14
Uranium (U)-Total			101.6		%		70-130	23-OCT-14
Vanadium (V)-Total			92.4		%		70-130	23-OCT-14
Zinc (Zn)-Total			95.2		%		70-130	23-OCT-14
WG1979839-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	23-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	23-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	23-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	23-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	23-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	23-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	23-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	23-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	23-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	23-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	23-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R3020406								
WG1979839-1 MB								
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	23-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	23-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	23-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	23-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	23-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	23-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	23-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	23-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	23-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	23-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	23-OCT-14
WG1979839-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	23-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	23-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	23-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	23-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	23-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	23-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	23-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	23-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	23-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	23-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	23-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R3020406								
WG1979839-2 MB								
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	23-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	23-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	23-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	23-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	23-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	23-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	23-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	23-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	23-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	23-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	23-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	23-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	23-OCT-14
MOISTURE-TISS-VA	**Tissue**							
Batch R2969433								
WG1964640-1 DUP		**L1514806-12**						
% Moisture		76.6	77.0		%	0.5	20	01-OCT-14

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

QL UNIMPACTED

COC # ~~SGER Baseline Sampling~~

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab Wo (lab u	L1514806-COFC	ALS Contact: Can Dang	Sampler: CK[redacted]	

Sample #	Sample Identification (This description may be used on report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	wholebody (metals)	%moisture	Number of Containers
	NSC-1			FISH	X	X	
	NSC-2				X	X	
	NSC-3				X	X	
	NSC-4				X	X	
	NSC-5				X	X	
	NSC-6				X	X	
	NSC-7				X	X	
	NSC-8				X	X	
	NSC-9				X	X	
	NSC-10				X	X	
	NSC-11			FISH	X	X	

Short Holding Time

Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* ~~Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda Creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0~~

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy)	Time (hh-mm)	Received by: JH	Date: Sep29	Time: 8130	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

QL UNIMPACTED

COC # [redacted]

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
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Page 2 of 2

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab Wor (lab us	L1514806-COFC	ALS Contact: Can Dang	Sampler: CK, ~~ML,KK,GS,~~	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	whole body (metals)	Bioaccumulation	Number of Containers
	PSC-1			FISH	X	X	
	[redacted]			[redacted]			
	LND-2			FISH	X	X	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

~~* Please include following addressee: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2C0~~

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy)	Time (hh-mm)	Received by: JN	Date: 8/4/9	Time: 8130	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

Sample Receipt Confirmation

14 Samples received at ALS in VANCOUVER

Job Reference #: N/A
Project PO #: N/A
Legal Site Description: N/A
Quote #: Q47599
Lab Work Order #: L1514806
Estimated Completion Date: 10/10/2014

Date Sampled: 9/3/2014
Date Received: 9/9/2014
Sampled By: CK
Chain of Custody: QL UNIMPACTED
Account Manager: Can Dang
Estimated Sample Disposal Date: See Sample Disposal Information section below.

Sample Integrity Observations: No observations were identified for this work order submission.

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12
Likely,BC V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
kmcmahen@mountpolley.com
mia.sakelariou@snclavalin.com
jlove@redchrismine.ca
ckoenig@redchrismine.ca
EDD Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
kmcmahen@mountpolley.com
mia.sakelariou@snclavalin.com
jlove@redchrismine.ca
ckoenig@redchrismine.ca

Distribution: **Hard Copy:** N **Email:** Y **Fax:** N
EDD: Y

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP. ~LIKELY
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100
Distribution: **Hard Copy:** Y **Email:** Y

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1514806-1	NSC-1 HFGT-2	9/5/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-2	LNC-20 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-3	NSC-9-10 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-4	NSC-11-12-13 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-5	PCC-2+5 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-6	NSC-18 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-7	LND-19 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-8	NSC-7-8 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-9	NSC2+NSC3- HFGT-2	9/5/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-10	NSC-17 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-11	NSC-14-15-16 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-12	NSC-1 HAZ-3	9/5/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Impacted
L1514806-13	NSC1+6 HFGT	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted
L1514806-14	NSC-3-4 HFGT-1	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		FISH - Unimpacted

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
NSC-1 HFGT-2	X	X	X	X	X
LNC-20 HFGT-1	X	X	X	X	X
NSC-9-10 HFGT-1	X	X	X	X	X
NSC-11-12-13 HFGT-1	X	X	X	X	X
PCC-2+5 HFGT-1	X	X	X	X	X
NSC-18 HFGT-1	X	X	X	X	X
LND-19 HFGT-1	X	X	X	X	X
NSC-7-8 HFGT-1	X	X	X	X	X
NSC2+NSC3- HFGT-2	X	X	X	X	X
NSC-17 HFGT-1	X	X	X	X	X
NSC-14-15-16 HFGT-1	X	X	X	X	X
NSC-1 HAZ-3	X	X	X	X	X
NSC1+6 HFGT	X	X	X	X	X
NSC-3-4 HFGT-1	X	X	X	X	X

Sample Receipt Confirmation

Sample Disposal Information:

Where possible, ALS will store samples for 30 days from the date a final report is issued, or 30 days from the date samples are placed on hold without analytical requests, after which samples may be discarded. Air samples collected on re-usable media are an exception, and are stored for 7 days from the date a final report is issued. Longer storage times are available upon request.

For information about ALS accreditations and certifications please contact your Account Manager or visit our webpage at www.alsglobal.com (see Canada downloads).

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # L1514806 when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

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COC # ~~SGER Baseline Sampling~~

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab Wo (lab u	L1514806-COFC	ALS Contact: Can Dang	Sampler: CK[redacted]	

Sample #	Sample Identification (This description may be used on report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	wholebody (metals)	%moisture	Number of Containers
	NSC-1			FISH	X	X	
	NSC-2				X	X	
	NSC-3				X	X	
	NSC-4				X	X	
	NSC-5				X	X	
	NSC-6				X	X	
	NSC-7				X	X	
	NSC-8				X	X	
	NSC-9				X	X	
	NSC-10				X	X	
	NSC-11			FISH	X	X	

Short Holding Time

Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* ~~Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda Creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0~~

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy)	Time (hh-mm)	Received by: JH	Date: Sep29	Time: 8130	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

QL UNIMPACTED

COC # [redacted]

ALS Environmental

Chain of Custody / Analytical Request Form
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Page 2 of 2

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab Wor (lab us	L1514806-COFC	ALS Contact: Can Dang	Sampler: CK, ~~ML,KK,GS,~~	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	whole body (metals)	Bioaccumulation	Number of Containers
	PSC-1			FISH	X	X	
	[redacted]			[redacted]			
	LND-2			FISH	X	X	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

~~* Please include following addressee: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2C0~~

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy)	Time (hh-mm)	Received by: JN	Date: 8/4/9	Time: 8130	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-14
Report Date: 04-SEP-15 18:07 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1514817

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: QL IMPACTED
Legal Site Desc:

Comments:

4-SEP-2015 Revision 2: The Client ID for the samples ALS identify as L1514817-6 and L1514817-12 was modified.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1514817-1	L1514817-2	L1514817-3	L1514817-4	L1514817-5
Description	Fish - Impacted	Fish - Impacted	Fish - Impacted	Fish - Impacted	Fish - Impacted
Sampled Date	22-AUG-14	01-SEP-14	05-SEP-14	05-SEP-14	05-SEP-14
Sampled Time					
Client ID	NSC-1 QGTSK-1	NSC-2,3 HAZ-2	LNC HAZ-3	NSC 4,5,6 HAZ-3	NSC-2 NSC-3 HAZ-3
Grouping / **Analyte**					
TISSUE					
Physical Tests % Moisture (%)	70.7	72.7	77.4	75.2	73.5
Metals Aluminum (Al)-Total (mg/kg wwt)	4.01	<0.40	215	2.53	0.60
Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0035 RRU	<0.0020	<0.0020
Arsenic (As)-Total (mg/kg wwt)	0.161	0.0293	0.109	0.0287	0.0144
Barium (Ba)-Total (mg/kg wwt)	0.388	0.443	2.02	0.469	0.361
Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0050	<0.0020	<0.0020
Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium (Cd)-Total (mg/kg wwt)	0.0186	0.0113	0.0586	0.0184	0.0138
Calcium (Ca)-Total (mg/kg wwt)	7840	11500	9560	6490	9080
Cesium (Cs)-Total (mg/kg wwt)	0.0067	0.0132	0.0341	0.0149	0.0115
Chromium (Cr)-Total (mg/kg wwt)	0.017	<0.010	0.567	0.038	<0.010
Cobalt (Co)-Total (mg/kg wwt)	0.0425	0.0139	0.170	0.0181	0.0094
Copper (Cu)-Total (mg/kg wwt)	0.843	0.656	2.73	1.07	0.789
Iron (Fe)-Total (mg/kg wwt)	15.9	10.4	419	12.1	10.2
Lead (Pb)-Total (mg/kg wwt)	0.0044	<0.0040	0.0711	<0.0040	<0.0040
Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	0.18	<0.10	<0.10
Magnesium (Mg)-Total (mg/kg wwt)	438	434	488	395	412
Manganese (Mn)-Total (mg/kg wwt)	1.44	2.41	15.0	1.99	1.60
Mercury (Hg)-Total (mg/kg wwt)	0.0468	0.0714	0.0521	0.0445	0.0567
Molybdenum (Mo)-Total (mg/kg wwt)	0.0118	0.0096	0.0330	0.0134	0.0152
Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.326	<0.040	<0.040
Phosphorus (P)-Total (mg/kg wwt)	6130	7800	6580	6240	6570
Potassium (K)-Total (mg/kg wwt)	3620	3490	3450	3680	3440
Rubidium (Rb)-Total (mg/kg wwt)	3.03	6.36	4.74	5.86	5.48
Selenium (Se)-Total (mg/kg wwt)	0.848	0.607	0.473	0.647	0.597
Sodium (Na)-Total (mg/kg wwt)	875	857	971	961	725
Strontium (Sr)-Total (mg/kg wwt)	11.8	12.8	19.4	8.80	11.9
Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total (mg/kg wwt)	0.00223	0.00166	0.00338	0.00101	0.00077
Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)-Total (mg/kg wwt)	0.00111	0.00045	0.0163	0.00068	0.00043
Vanadium (V)-Total (mg/kg wwt)	0.028	<0.020	1.32	<0.020	<0.020
Zinc (Zn)-Total (mg/kg wwt)	29.6	37.9	23.7	34.1	34.8
Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	0.136	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1514817-6	L1514817-7	L1514817-8	L1514817-9	L1514817-10
Description	Fish - Impacted	Fish - Impacted	Fish - Impacted	Fish - Impacted	Fish - Impacted
Sampled Date	01-SEP-14	27-AUG-14	27-AUG-14	27-AUG-14	27-AUG-14
Sampled Time					
Client ID	NSC-1 HAZ-2	NSC-1 QGTCP-1	NSC-2 QGTCP-1	NSC-3 QGTCP-1	NSC-4 QGTCP-1
Grouping / **Analyte**					
TISSUE					
Physical Tests % Moisture (%)	73.9	73.6	76.4	77.5	74.2
Metals Aluminum (Al)-Total (mg/kg wwt)	<0.40	1.58	0.44	17.9	5.39
Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)-Total (mg/kg wwt)	0.0209	0.256	0.0628	0.183	0.0828
Barium (Ba)-Total (mg/kg wwt)	0.518	0.287	0.181	0.366	0.283
Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium (Cd)-Total (mg/kg wwt)	0.0196	0.0208	0.0067	0.0248	0.0225
Calcium (Ca)-Total (mg/kg wwt)	14700	11400	7640	6000	6210
Cesium (Cs)-Total (mg/kg wwt)	0.0169	0.0075	0.0165	0.0077	0.0165
Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	0.067	0.018
Cobalt (Co)-Total (mg/kg wwt)	0.0115	0.0739	0.0233	0.0838	0.0310
Copper (Cu)-Total (mg/kg wwt)	0.959	0.835	0.575	0.978	0.783
Iron (Fe)-Total (mg/kg wwt)	10.5	16.0	10.2	34.9	18.7
Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0068	<0.0040	0.0101	0.0045
Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total (mg/kg wwt)	477	405	354	350	349
Manganese (Mn)-Total (mg/kg wwt)	2.55	1.87	1.09	2.02	1.56
Mercury (Hg)-Total (mg/kg wwt)	0.0389	0.0518	0.0524	0.0330	0.0399
Molybdenum (Mo)-Total (mg/kg wwt)	0.0167	0.0093	0.0103	0.0083	0.0115
Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.045	0.041
Phosphorus (P)-Total (mg/kg wwt)	9570	7540	5940	4930	5100
Potassium (K)-Total (mg/kg wwt)	3560	3230	3370	3130	3290
Rubidium (Rb)-Total (mg/kg wwt)	3.00	2.67	4.65	3.29	3.98
Selenium (Se)-Total (mg/kg wwt)	0.705	0.851	0.405	0.554	0.782
Sodium (Na)-Total (mg/kg wwt)	804	866	883	844	925
Strontium (Sr)-Total (mg/kg wwt)	21.9	16.1	10.7	7.44	9.63
Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total (mg/kg wwt)	0.00061	0.00246	0.00278	0.00260	0.00212
Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)-Total (mg/kg wwt)	0.00141	0.00070	0.00050	0.00126	0.00075
Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.103	0.033
Zinc (Zn)-Total (mg/kg wwt)	34.0	33.5	23.7	27.5	26.4
Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1514817-11 Fish - Impacted 27-AUG-14 NSC-5 QGTCP-1	L1514817-12 Fish - Impacted 03-SEP-14 NSC-1,2,3 HGT-3	L1514817-13 Fish - Impacted 29-AUG-14 NSC-1 CPGT-1	L1514817-14 Fish - Impacted 29-AUG-14 NSC-2 CPGT-1	L1514817-15 Fish - Impacted 21-AUG-14 POLDF-1 MUSCLE TISSUE
TISSUE						
Physical Tests	% Moisture (%)	76.4	76.5	68.7	71.9	79.7
Metals	Aluminum (Al)-Total (mg/kg wwt)	5.12	<0.40	54.7	1.55	<1.0
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0066	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.119	0.0214	0.208	0.151	0.0623
	Barium (Ba)-Total (mg/kg wwt)	0.423	0.508	1.37	0.231	0.116
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0194	0.0130	0.0335	0.0283	<0.0020
	Calcium (Ca)-Total (mg/kg wwt)	10300	9590	16000	7890	410
	Cesium (Cs)-Total (mg/kg wwt)	0.0089	0.0122	0.0199	0.0101	0.0016
	Chromium (Cr)-Total (mg/kg wwt)	0.023	<0.010	0.253	0.121	<0.040
	Cobalt (Co)-Total (mg/kg wwt)	0.0441	0.0144	0.103	0.0474	<0.0040
	Copper (Cu)-Total (mg/kg wwt)	0.792	0.815	1.33	0.774	0.238
	Iron (Fe)-Total (mg/kg wwt)	19.5	12.6	156	15.7	2.4
	Lead (Pb)-Total (mg/kg wwt)	0.0094	<0.0040	0.028	0.0052	<0.010
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	447	391	495	388	275
	Manganese (Mn)-Total (mg/kg wwt)	1.99	1.85	10.7	1.68	0.328
	Mercury (Hg)-Total (mg/kg wwt)	0.0394	0.0468	0.0720	0.0376	0.0331
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0114	0.0102	0.0227	0.0086	<0.0080
	Nickel (Ni)-Total (mg/kg wwt)	0.044	<0.040	0.178	0.308	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	7640	7440	8620	6300	1160
	Potassium (K)-Total (mg/kg wwt)	3610	3590	3480	3510	1210
	Rubidium (Rb)-Total (mg/kg wwt)	3.78	5.66	4.82	3.41	0.624
	Selenium (Se)-Total (mg/kg wwt)	0.878	0.623	0.847	0.821	1.01
	Sodium (Na)-Total (mg/kg wwt)	909	962	1010	886	178
	Strontium (Sr)-Total (mg/kg wwt)	13.3	12.4	29.7	10.9	1.30
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00430	0.00126	0.00312	0.00353	<0.00040
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00126	0.00057	0.0190	0.00042	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	0.032	<0.020	0.389	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	32.0	35.4	55.8	26.8	8.25
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1514817-16	L1514817-17	L1514817-18		
Description	Fish - Impacted	Fish - Impacted	Fish - Impacted		
Sampled Date	27-AUG-14	27-AUG-14	29-AUG-14		
Sampled Time					
Client ID	RB-1-LIVER ANGPQ-1	RB-1-TISSUE ANGPQ-1	BB-2 CPGT-1		
Grouping / **Analyte**					
TISSUE					
Physical Tests % Moisture (%)	66.9	77.5	79.7		
Metals Aluminum (Al)-Total (mg/kg wwt)	4.1	0.88	6.75		
Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
Arsenic (As)-Total (mg/kg wwt)	0.0466	0.0549	0.334		
Barium (Ba)-Total (mg/kg wwt)	<0.010	0.084	1.18		
Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20		
Cadmium (Cd)-Total (mg/kg wwt)	0.496	0.0026	0.0336		
Calcium (Ca)-Total (mg/kg wwt)	61.0	1530	14900		
Cesium (Cs)-Total (mg/kg wwt)	0.0067	0.0162	0.0174		
Chromium (Cr)-Total (mg/kg wwt)	0.077	0.038	0.048		
Cobalt (Co)-Total (mg/kg wwt)	0.0382	0.0119	0.0392		
Copper (Cu)-Total (mg/kg wwt)	38.9	0.323	1.51		
Iron (Fe)-Total (mg/kg wwt)	169	10.2	20.8		
Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	0.0062		
Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10		
Magnesium (Mg)-Total (mg/kg wwt)	201	242	435		
Manganese (Mn)-Total (mg/kg wwt)	2.91	0.332	3.54		
Mercury (Hg)-Total (mg/kg wwt)	0.121	0.0888	0.0476		
Molybdenum (Mo)-Total (mg/kg wwt)	0.799	<0.0040	0.0353		
Nickel (Ni)-Total (mg/kg wwt)	0.049	<0.040	0.052		
Phosphorus (P)-Total (mg/kg wwt)	4310	2840	9040		
Potassium (K)-Total (mg/kg wwt)	3060	3630	3030		
Rubidium (Rb)-Total (mg/kg wwt)	4.76	3.44	3.74		
Selenium (Se)-Total (mg/kg wwt)	13.8	0.499	0.719		
Sodium (Na)-Total (mg/kg wwt)	871	697	1250		
Strontium (Sr)-Total (mg/kg wwt)	0.085	2.04	38.0		
Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
Thallium (Tl)-Total (mg/kg wwt)	0.0275	0.00360	0.00275		
Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020		
Uranium (U)-Total (mg/kg wwt)	0.00717	0.00061	0.00274		
Vanadium (V)-Total (mg/kg wwt)	0.307	0.155	0.103		
Zinc (Zn)-Total (mg/kg wwt)	37.6	15.1	25.0		
Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Chromium (Cr)-Total	DUP-H	L1514817-1, -10, -11, -12, -14, -17, -18, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
RRU	Reported Result is Uncertain due to proximity to the estimated Method Detection Limit.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

QL IMPACTED

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1514817 Report Date: 04-SEP-15

Client: MOUNT POLLEY MINING CORP.
PO Box 12
Likely BC V0L 1N0
Contact: Colleen Hughes

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-WET-CVAFS-VA	**Tissue**							
Batch R2978163								
WG1966992-4 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			97.1		%		70-130	08-OCT-14
WG1966992-5 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			95.9		%		70-130	08-OCT-14
WG1966992-3 DUP		**L1514817-17**						
Mercury (Hg)-Total		0.0888	0.104		mg/kg wwt	16	40	08-OCT-14
WG1966992-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14
WG1966992-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	08-OCT-14
HG-WET-MICR-CVAF-VA	**Tissue**							
Batch R2979415								
WG1965952-5 CRM		**VA-NRC-TORT3**						
Mercury (Hg)-Total			87.4		%		70-130	09-OCT-14
WG1965952-6 CRM		**VA-NIST-1566B**						
Mercury (Hg)-Total			103.0		%		70-130	09-OCT-14
WG1965952-4 DUP		**L1514817-15**						
Mercury (Hg)-Total		0.0331	0.0424		mg/kg wwt	25	30	09-OCT-14
WG1965952-1 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	09-OCT-14
WG1965952-2 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	09-OCT-14
WG1965952-3 MB								
Mercury (Hg)-Total			<0.0010		mg/kg wwt		0.001	09-OCT-14
MET-WET-CCMS-VA	**Tissue**							
Batch R2989148								
WG1966992-4 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			109.1		%		70-130	10-OCT-14
Cadmium (Cd)-Total			97.8		%		70-130	10-OCT-14
Chromium (Cr)-Total			94.5		%		70-130	10-OCT-14
Cobalt (Co)-Total			102.2		%		70-130	10-OCT-14
Copper (Cu)-Total			92.1		%		70-130	10-OCT-14
Iron (Fe)-Total			94.9		%		70-130	10-OCT-14
Lead (Pb)-Total			86.8		%		70-130	10-OCT-14
Manganese (Mn)-Total			96.6		%		70-130	10-OCT-14
Molybdenum (Mo)-Total			99.1		%		70-130	10-OCT-14
Nickel (Ni)-Total			95.0		%		70-130	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2989148								
WG1966992-4 CRM		**VA-NRC-TORT3**						
Selenium (Se)-Total			97.5		%		70-130	10-OCT-14
Strontium (Sr)-Total			96.9		%		70-130	10-OCT-14
Vanadium (V)-Total			99.5		%		70-130	10-OCT-14
Zinc (Zn)-Total			88.5		%		70-130	10-OCT-14
WG1966992-5 CRM		**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0083		mg/kg wwt		0.001-0.021	10-OCT-14
Arsenic (As)-Total			105.8		%		70-130	10-OCT-14
Barium (Ba)-Total			87.6		%		70-130	10-OCT-14
Boron (B)-Total			4.93		mg/kg wwt		3.5-5.5	10-OCT-14
Cadmium (Cd)-Total			107.0		%		70-130	10-OCT-14
Calcium (Ca)-Total			101.2		%		70-130	10-OCT-14
Cobalt (Co)-Total			102.6		%		70-130	10-OCT-14
Copper (Cu)-Total			102.5		%		70-130	10-OCT-14
Iron (Fe)-Total			99.3		%		70-130	10-OCT-14
Lead (Pb)-Total			97.3		%		70-130	10-OCT-14
Magnesium (Mg)-Total			101.8		%		70-130	10-OCT-14
Manganese (Mn)-Total			105.5		%		70-130	10-OCT-14
Nickel (Ni)-Total			102.4		%		70-130	10-OCT-14
Potassium (K)-Total			104.5		%		70-130	10-OCT-14
Rubidium (Rb)-Total			102.2		%		70-130	10-OCT-14
Selenium (Se)-Total			106.4		%		70-130	10-OCT-14
Sodium (Na)-Total			98.7		%		70-130	10-OCT-14
Strontium (Sr)-Total			98.9		%		70-130	10-OCT-14
Uranium (U)-Total			100.6		%		70-130	10-OCT-14
Vanadium (V)-Total			102.2		%		70-130	10-OCT-14
Zinc (Zn)-Total			99.1		%		70-130	10-OCT-14
WG1966992-3 DUP		**L1514817-17**						
Aluminum (Al)-Total		0.88	0.77		mg/kg wwt	14	40	10-OCT-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Arsenic (As)-Total		0.0549	0.0613		mg/kg wwt	11	40	10-OCT-14
Barium (Ba)-Total		0.084	0.072		mg/kg wwt	15	40	10-OCT-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Cadmium (Cd)-Total		0.0026	0.0025		mg/kg wwt	5.2	40	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2989148								
WG1966992-3 DUP		**L1514817-17**						
Calcium (Ca)-Total		1530	1410		mg/kg wwt	8.2	60	10-OCT-14
Cesium (Cs)-Total		0.0162	0.0173		mg/kg wwt	6.4	40	10-OCT-14
Chromium (Cr)-Total		0.038	0.091	DUP-H	mg/kg wwt	83	40	10-OCT-14
Cobalt (Co)-Total		0.0119	0.0109		mg/kg wwt	8.5	40	10-OCT-14
Copper (Cu)-Total		0.323	0.338		mg/kg wwt	4.4	40	10-OCT-14
Iron (Fe)-Total		10.2	10.9		mg/kg wwt	6.6	40	10-OCT-14
Lead (Pb)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Magnesium (Mg)-Total		242	246		mg/kg wwt	1.6	40	10-OCT-14
Manganese (Mn)-Total		0.332	0.292		mg/kg wwt	13	40	10-OCT-14
Molybdenum (Mo)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Nickel (Ni)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Phosphorus (P)-Total		2840	2800		mg/kg wwt	1.6	40	10-OCT-14
Potassium (K)-Total		3630	3800		mg/kg wwt	4.5	40	10-OCT-14
Rubidium (Rb)-Total		3.44	3.70		mg/kg wwt	7.2	40	10-OCT-14
Selenium (Se)-Total		0.499	0.477		mg/kg wwt	4.5	40	10-OCT-14
Sodium (Na)-Total		697	731		mg/kg wwt	4.7	40	10-OCT-14
Strontium (Sr)-Total		2.04	1.81		mg/kg wwt	12	60	10-OCT-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Thallium (Tl)-Total		0.00360	0.00332		mg/kg wwt	7.8	40	10-OCT-14
Tin (Sn)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
Uranium (U)-Total		0.00061	0.00052		mg/kg wwt	16	40	10-OCT-14
Vanadium (V)-Total		0.155	0.140		mg/kg wwt	9.7	40	10-OCT-14
Zinc (Zn)-Total		15.1	13.8		mg/kg wwt	8.7	40	10-OCT-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	10-OCT-14
WG1966992-1 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2989148								
WG1966992-1 MB								
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	10-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
WG1966992-2 MB								
Aluminum (Al)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Arsenic (As)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-OCT-14
Cadmium (Cd)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-CCMS-VA	**Tissue**							
Batch R2989148								
WG1966992-2 MB								
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-OCT-14
Chromium (Cr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Copper (Cu)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Iron (Fe)-Total			<0.60		mg/kg wwt		0.6	10-OCT-14
Lead (Pb)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Molybdenum (Mo)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Selenium (Se)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-OCT-14
Strontium (Sr)-Total			<0.010		mg/kg wwt		0.01	10-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-OCT-14
Zinc (Zn)-Total			<0.10		mg/kg wwt		0.1	10-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-OCT-14
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch R3055491								
WG1965952-5 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			122.8		%		70-130	30-OCT-14
Cadmium (Cd)-Total			115.0		%		70-130	30-OCT-14
Chromium (Cr)-Total			79.6		%		70-130	30-OCT-14
Cobalt (Co)-Total			84.8		%		70-130	30-OCT-14
Copper (Cu)-Total			96.3		%		70-130	30-OCT-14
Iron (Fe)-Total			99.6		%		70-130	30-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch	**R3055491**							
WG1965952-5	**CRM**	**VA-NRC-TORT3**						
Lead (Pb)-Total			74.9		%		70-130	30-OCT-14
Manganese (Mn)-Total			128.5		%		70-130	30-OCT-14
Molybdenum (Mo)-Total			123.7		%		70-130	30-OCT-14
Nickel (Ni)-Total			80.9		%		70-130	30-OCT-14
Selenium (Se)-Total			88.1		%		70-130	30-OCT-14
Strontium (Sr)-Total			119.9		%		70-130	30-OCT-14
Vanadium (V)-Total			121.9		%		70-130	30-OCT-14
Zinc (Zn)-Total			95.6		%		70-130	30-OCT-14
WG1965952-6	**CRM**	**VA-NIST-1566B**						
Antimony (Sb)-Total			0.0077		mg/kg wwt		0.001-0.021	30-OCT-14
Arsenic (As)-Total			97.7		%		70-130	30-OCT-14
Barium (Ba)-Total			89.8		%		70-130	30-OCT-14
Boron (B)-Total			121.2		%		70-130	30-OCT-14
Cadmium (Cd)-Total			126.9		%		70-130	30-OCT-14
Calcium (Ca)-Total			110.4		%		70-130	30-OCT-14
Cobalt (Co)-Total			84.5		%		70-130	30-OCT-14
Copper (Cu)-Total			109.2		%		70-130	30-OCT-14
Iron (Fe)-Total			104.0		%		70-130	30-OCT-14
Lead (Pb)-Total			94.5		%		70-130	30-OCT-14
Magnesium (Mg)-Total			100.3		%		70-130	30-OCT-14
Manganese (Mn)-Total			126.2		%		70-130	30-OCT-14
Nickel (Ni)-Total			85.7		%		70-130	30-OCT-14
Potassium (K)-Total			92.2		%		70-130	30-OCT-14
Rubidium (Rb)-Total			98.4		%		70-130	30-OCT-14
Selenium (Se)-Total			99.0		%		70-130	30-OCT-14
Sodium (Na)-Total			86.7		%		70-130	30-OCT-14
Strontium (Sr)-Total			119.9		%		70-130	30-OCT-14
Uranium (U)-Total			120.6		%		70-130	30-OCT-14
Vanadium (V)-Total			73.4		%		70-130	30-OCT-14
Zinc (Zn)-Total			97.6		%		70-130	30-OCT-14
WG1965952-1	**MB**							
Aluminum (Al)-Total			<1.0		mg/kg wwt		1	30-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Arsenic (As)-Total			<0.0060		mg/kg wwt		0.006	30-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch	**R3055491**							
WG1965952-1	**MB**							
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	30-OCT-14
Cadmium (Cd)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	30-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	30-OCT-14
Chromium (Cr)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	30-OCT-14
Copper (Cu)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Iron (Fe)-Total			<1.0		mg/kg wwt		1	30-OCT-14
Lead (Pb)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	30-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	30-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14
Molybdenum (Mo)-Total			<0.0080		mg/kg wwt		0.008	30-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	30-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	30-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14
Selenium (Se)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	30-OCT-14
Strontium (Sr)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	30-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	30-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	30-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Zinc (Zn)-Total			<0.20		mg/kg wwt		0.2	30-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
WG1965952-2	**MB**							
Aluminum (Al)-Total			<1.0		mg/kg wwt		1	30-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Arsenic (As)-Total			<0.0060		mg/kg wwt		0.006	30-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch	**R3055491**							
WG1965952-2	**MB**							
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	30-OCT-14
Cadmium (Cd)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	30-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	30-OCT-14
Chromium (Cr)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	30-OCT-14
Copper (Cu)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Iron (Fe)-Total			<1.0		mg/kg wwt		1	30-OCT-14
Lead (Pb)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	30-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	30-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14
Molybdenum (Mo)-Total			<0.0080		mg/kg wwt		0.008	30-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	30-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	30-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14
Selenium (Se)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	30-OCT-14
Strontium (Sr)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	30-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	30-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	30-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Zinc (Zn)-Total			<0.20		mg/kg wwt		0.2	30-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
WG1965952-3	**MB**							
Aluminum (Al)-Total			<1.0		mg/kg wwt		1	30-OCT-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Arsenic (As)-Total			<0.0060		mg/kg wwt		0.006	30-OCT-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch	**R3055491**							
WG1965952-3	**MB**							
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	30-OCT-14
Cadmium (Cd)-Total			<0.0020		mg/kg wwt		0.002	30-OCT-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	30-OCT-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	30-OCT-14
Chromium (Cr)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	30-OCT-14
Copper (Cu)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Iron (Fe)-Total			<1.0		mg/kg wwt		1	30-OCT-14
Lead (Pb)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	30-OCT-14
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	30-OCT-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14
Molybdenum (Mo)-Total			<0.0080		mg/kg wwt		0.008	30-OCT-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	30-OCT-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	30-OCT-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	30-OCT-14
Selenium (Se)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	30-OCT-14
Strontium (Sr)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	30-OCT-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	30-OCT-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	30-OCT-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	30-OCT-14
Zinc (Zn)-Total			<0.20		mg/kg wwt		0.2	30-OCT-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	30-OCT-14
Batch	**R3073890**							
WG1994284-5	**CRM**	**VA-NRC-TORT3**						
Cadmium (Cd)-Total			122.7		%		70-130	10-NOV-14
Chromium (Cr)-Total			75.3		%		70-130	10-NOV-14
Cobalt (Co)-Total			101.8		%		70-130	10-NOV-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch	**R3073890**							
WG1994284-5	**CRM**	**VA-NRC-TORT3**						
Copper (Cu)-Total			113.9		%		70-130	10-NOV-14
Iron (Fe)-Total			112.8		%		70-130	10-NOV-14
Lead (Pb)-Total			82.8		%		70-130	10-NOV-14
Nickel (Ni)-Total			109.3		%		70-130	10-NOV-14
Selenium (Se)-Total			113.4		%		70-130	10-NOV-14
Strontium (Sr)-Total			116.9		%		70-130	10-NOV-14
Zinc (Zn)-Total			108.8		%		70-130	10-NOV-14
WG1994284-6	**CRM**	**VA-NRC-TORT3**						
Cadmium (Cd)-Total			124.7		%		70-130	10-NOV-14
Chromium (Cr)-Total			86.0		%		70-130	10-NOV-14
Cobalt (Co)-Total			101.4		%		70-130	10-NOV-14
Copper (Cu)-Total			113.2		%		70-130	10-NOV-14
Iron (Fe)-Total			112.0		%		70-130	10-NOV-14
Lead (Pb)-Total			83.9		%		70-130	10-NOV-14
Nickel (Ni)-Total			111.7		%		70-130	10-NOV-14
Selenium (Se)-Total			111.5		%		70-130	10-NOV-14
Strontium (Sr)-Total			118.7		%		70-130	10-NOV-14
Zinc (Zn)-Total			107.6		%		70-130	10-NOV-14
WG1994284-4	**DUP**	**L1514817-15**						
Aluminum (Al)-Total		<1.0	<1.0	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Antimony (Sb)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Arsenic (As)-Total		0.0623	0.0588		mg/kg wwt	5.7	40	10-NOV-14
Barium (Ba)-Total		0.116	0.103		mg/kg wwt	12	40	10-NOV-14
Beryllium (Be)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Bismuth (Bi)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Boron (B)-Total		<0.20	<0.20	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Cadmium (Cd)-Total		<0.0020	<0.0020	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Calcium (Ca)-Total		410	345		mg/kg wwt	17	60	10-NOV-14
Cesium (Cs)-Total		0.0016	0.0015		mg/kg wwt	8.4	40	10-NOV-14
Chromium (Cr)-Total		<0.040	0.050	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Cobalt (Co)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Copper (Cu)-Total		0.238	0.298		mg/kg wwt	23	40	10-NOV-14
Iron (Fe)-Total		2.4	3.4		mg/kg wwt	36	40	10-NOV-14
Lead (Pb)-Total		<0.010	0.010	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Lithium (Li)-Total		<0.10	<0.10	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch	**R3073890**							
WG1994284-4	**DUP**	**L1514817-15**						
Magnesium (Mg)-Total		275	270		mg/kg wwt	1.7	40	10-NOV-14
Manganese (Mn)-Total		0.328	0.248		mg/kg wwt	28	40	10-NOV-14
Molybdenum (Mo)-Total		<0.0080	<0.0080	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Nickel (Ni)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Phosphorus (P)-Total		1160	1080		mg/kg wwt	7.0	40	10-NOV-14
Potassium (K)-Total		1210	1160		mg/kg wwt	4.3	40	10-NOV-14
Rubidium (Rb)-Total		0.624	0.594		mg/kg wwt	5.0	40	10-NOV-14
Selenium (Se)-Total		1.01	0.992		mg/kg wwt	2.3	40	10-NOV-14
Sodium (Na)-Total		178	168		mg/kg wwt	5.4	40	10-NOV-14
Strontium (Sr)-Total		1.30	1.01		mg/kg wwt	26	60	10-NOV-14
Tellurium (Te)-Total		<0.0040	<0.0040	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Thallium (Tl)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Tin (Sn)-Total		<0.020	0.039	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Uranium (U)-Total		<0.00040	<0.00040	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Vanadium (V)-Total		<0.020	<0.020	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
Zinc (Zn)-Total		8.25	10.0		mg/kg wwt	19	40	10-NOV-14
Zirconium (Zr)-Total		<0.040	<0.040	RPD-NA	mg/kg wwt	N/A	40	10-NOV-14
WG1994284-1	**MB**							
Aluminum (Al)-Total			<1.0		mg/kg wwt		1	10-NOV-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Arsenic (As)-Total			<0.0060		mg/kg wwt		0.006	10-NOV-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-NOV-14
Cadmium (Cd)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-NOV-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-NOV-14
Chromium (Cr)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-NOV-14
Copper (Cu)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Iron (Fe)-Total			<1.0		mg/kg wwt		1	10-NOV-14
Lead (Pb)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-NOV-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch	**R3073890**							
WG1994284-1	**MB**							
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-NOV-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Molybdenum (Mo)-Total			<0.0080		mg/kg wwt		0.008	10-NOV-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-NOV-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-NOV-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Selenium (Se)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-NOV-14
Strontium (Sr)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-NOV-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-NOV-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-NOV-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Zinc (Zn)-Total			<0.20		mg/kg wwt		0.2	10-NOV-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
WG1994284-2	**MB**							
Aluminum (Al)-Total			<1.0		mg/kg wwt		1	10-NOV-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Arsenic (As)-Total			<0.0060		mg/kg wwt		0.006	10-NOV-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-NOV-14
Cadmium (Cd)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-NOV-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-NOV-14
Chromium (Cr)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-NOV-14
Copper (Cu)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Iron (Fe)-Total			<1.0		mg/kg wwt		1	10-NOV-14
Lead (Pb)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-NOV-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch	**R3073890**							
WG1994284-2	**MB**							
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-NOV-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Molybdenum (Mo)-Total			<0.0080		mg/kg wwt		0.008	10-NOV-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-NOV-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-NOV-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Selenium (Se)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-NOV-14
Strontium (Sr)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-NOV-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-NOV-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-NOV-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Zinc (Zn)-Total			<0.20		mg/kg wwt		0.2	10-NOV-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
WG1994284-3	**MB**							
Aluminum (Al)-Total			<1.0		mg/kg wwt		1	10-NOV-14
Antimony (Sb)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Arsenic (As)-Total			<0.0060		mg/kg wwt		0.006	10-NOV-14
Barium (Ba)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Beryllium (Be)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Bismuth (Bi)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Boron (B)-Total			<0.20		mg/kg wwt		0.2	10-NOV-14
Cadmium (Cd)-Total			<0.0020		mg/kg wwt		0.002	10-NOV-14
Calcium (Ca)-Total			<4.0		mg/kg wwt		4	10-NOV-14
Cesium (Cs)-Total			<0.0010		mg/kg wwt		0.001	10-NOV-14
Chromium (Cr)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Cobalt (Co)-Total			<0.0040		mg/kg wwt		0.004	10-NOV-14
Copper (Cu)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Iron (Fe)-Total			<1.0		mg/kg wwt		1	10-NOV-14
Lead (Pb)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Lithium (Li)-Total			<0.10		mg/kg wwt		0.1	10-NOV-14

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-WET-MICR-HRMS-VA	**Tissue**							
Batch R3073890								
WG1994284-3 MB								
Magnesium (Mg)-Total			<0.40		mg/kg wwt		0.4	10-NOV-14
Manganese (Mn)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Molybdenum (Mo)-Total			<0.0080		mg/kg wwt		0.008	10-NOV-14
Nickel (Ni)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Phosphorus (P)-Total			<2.0		mg/kg wwt		2	10-NOV-14
Potassium (K)-Total			<4.0		mg/kg wwt		4	10-NOV-14
Rubidium (Rb)-Total			<0.010		mg/kg wwt		0.01	10-NOV-14
Selenium (Se)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Sodium (Na)-Total			<4.0		mg/kg wwt		4	10-NOV-14
Strontium (Sr)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Tellurium (Te)-Total			<0.0040		mg/kg wwt		0.004	10-NOV-14
Thallium (Tl)-Total			<0.00040		mg/kg wwt		0.0004	10-NOV-14
Tin (Sn)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Uranium (U)-Total			<0.00040		mg/kg wwt		0.0004	10-NOV-14
Vanadium (V)-Total			<0.020		mg/kg wwt		0.02	10-NOV-14
Zinc (Zn)-Total			<0.20		mg/kg wwt		0.2	10-NOV-14
Zirconium (Zr)-Total			<0.040		mg/kg wwt		0.04	10-NOV-14
Batch R3074471								
WG1994284-5 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			121.9		%		70-130	12-NOV-14
Manganese (Mn)-Total			121.2		%		70-130	12-NOV-14
Molybdenum (Mo)-Total			119.9		%		70-130	12-NOV-14
Vanadium (V)-Total			122.8		%		70-130	12-NOV-14
WG1994284-6 CRM		**VA-NRC-TORT3**						
Arsenic (As)-Total			122.8		%		70-130	12-NOV-14
Manganese (Mn)-Total			126.1		%		70-130	12-NOV-14
Molybdenum (Mo)-Total			124.1		%		70-130	12-NOV-14
Vanadium (V)-Total			126.2		%		70-130	12-NOV-14
MOISTURE-TISS-VA	**Tissue**							
Batch R2969434								
WG1964641-1 DUP		**L1514817-17**						
% Moisture		77.5	77.7		%	0.3	20	01-OCT-14

Quality Control Report

Workorder: L1514817 Report Date: 04-SEP-15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-TISS-VA	**Tissue**							
Batch R2973170								
WG1965949-1 DUP		**L1514817-15**						
% Moisture		79.7	80.5		%	0.9	20	03-OCT-14

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

QL COC # IMPACTED ~~SOFR Sockeye sampling~~

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab Wor (lab u	L1514817-COFC	ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	(whole body (metals) % moisture	Number of Containers
	NSC-1			FISH		
	NSC-2					
	NSC-3					
	NSC4					
	NSC-5					
	NSC-6					
	NSC-7					
	NSC-8					
	NSC-9					
	NSC-10					
	NSC-11					
	NSC-12			FISH		

Short Holding Time
Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* ~~Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2C0~~

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date: Sept 9	Time: 8130	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

QL COC # IMPACTED ~~SCFR Sockeye sampling~~

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Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab W	L1514817-COFC	ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,	
(lab				

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	whole body (metals)	% moisture	Liver (metals)	tissue (metals)	Number of Containers
	NSC-13			FISH	X	X			
	BB-1			?			X	X	
	POLDF-1			?	[redacted]	X		X	
	LND-1			FISH	X	X			
	BB-1				X	X			

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2G0

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy)	Time (hh-mm)	Received by: JN	Date: Sept 9	Time: 8730	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

Sample Receipt Confirmation

18 Samples received at ALS in VANCOUVER

Job Reference #: N/A
Project PO #: N/A
Legal Site Description: N/A
Quote #: Q47599
Lab Work Order #: L1514817
Estimated Completion Date: 10/10/2014

Date Sampled: 8/21/2014
Date Received: 9/9/2014
Sampled By: CK,ML,KK,GS
Chain of Custody: QL IMPACTED
Account Manager: Can Dang
Estimated Sample Disposal Date: See Sample Disposal Information section below.

Sample Integrity Observations: No observations were identified for this work order submission.

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12
Likely,BC V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
kmcmahen@mountpolley.com
mia.sakelariou@snclavalin.com
EDD Email: chughes@mountpolley.com
Natalie.neufeld@snclavalin.com
mia.sakelariou@snclavalin.com
kmcmahen@mountpolley.com

Distribution: **Hard Copy:** N **Email:** Y **Fax:** N
EDD: Y

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP. ~LIKELY
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100
Distribution: **Hard Copy:** Y **Email:** Y

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1514817-1	NSC-1 QGTSK-1	8/22/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-2	NSC-2,3 HAZ-2	9/1/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-3	LNC HAZ-3	9/5/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-4	NSC 4,5,6 HAZ-3	9/5/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-5	NSC-2 NSC-3 HAZ-3	9/5/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-6	NSC-1 HAZ-2	9/1/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-7	NSC-1 QGTCP-1	8/27/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-8	NSC-2 QGTCP-1	8/27/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-9	NSC-3 QGTCP-1	8/27/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-10	NSC-4 QGTCP-1	8/27/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-11	NSC-5 QGTCP-1	8/27/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-12	NSC-1,2,3 HGT-3	9/3/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-13	NSC-1 CPGT-1	8/29/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-14	NSC-2 CPGT-1	8/29/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-15	POLDF-1 MUSCLE TISSUE	8/21/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-16	RB-1-LIVER ANGPQ-1	8/27/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-17	RB-1-TISSUE ANGPQ-1	8/27/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted
L1514817-18	BB-2 CPGT-1	8/29/2014 12:00 AM	9/9/2014 8:30 AM	10/10/2014 5:00 PM		Fish - Impacted

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (WET)	Mercury in Tissue by CVAFS Micro (WET)	Metals in Tissue by CRC ICPMS (WET)	Metals in Tissue by HR-ICPMS Micro (WET)	% Moisture in Tissues	Tissue/Vegetation MIcro Preparation	Tissue/Vegetation Sample Preparation
NSC-1 QGTSK-1	X	X		X		X		X
NSC-2,3 HAZ-2	X	X		X		X		X
LNC HAZ-3	X	X		X		X		X
NSC 4,5,6 HAZ-3	X	X		X		X		X
NSC-2 NSC-3 HAZ-3	X	X		X		X		X
NSC-1 HAZ-2	X	X		X		X		X
NSC-1 QGTCP-1	X	X		X		X		X
NSC-2 QGTCP-1	X	X		X		X		X
NSC-3 QGTCP-1	X	X		X		X		X
NSC-4 QGTCP-1	X	X		X		X		X
NSC-5 QGTCP-1	X	X		X		X		X
NSC-1,2,3 HGT-3	X	X		X		X		X
NSC-1 CPGT-1	X		X		X	X	X	X
NSC-2 CPGT-1	X	X		X		X		X
POLDF-1 MUSCLE TISSUE	X		X		X	X	X	X
RB-1-LIVER ANGPQ-1	X		X		X	X	X	X
RB-1-TISSUE ANGPQ-1	X	X		X		X		X
BB-2 CPGT-1	X	X		X		X		X

Sample Receipt Confirmation

Sample Disposal Information:

Where possible, ALS will store samples for 30 days from the date a final report is issued, or 30 days from the date samples are placed on hold without analytical requests, after which samples may be discarded. Air samples collected on re-usable media are an exception, and are stored for 7 days from the date a final report is issued. Longer storage times are available upon request.

For information about ALS accreditations and certifications please contact your Account Manager or visit our webpage at www.alsglobal.com (see Canada downloads).

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # L1514817 when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

QL COC # IMPACTED ~~SOFR Sockeye sampling~~

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Red Chris Development Company	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Jack Love/Heather Hawkins	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	200-580 Hornby St.	Email 1: jlove@redchrismine.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab Wor (lab u	L1514817-COFC	ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	(whole body (metals) % moisture	Number of Containers
	NSC-1			FISH		
	NSC-2					
	NSC-3					
	NSC4					
	NSC-5					
	NSC-6					
	NSC-7					
	NSC-8					
	NSC-9					
	NSC-10					
	NSC-11					
	NSC-12			FISH		

Short Holding Time
Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

* ~~Please include following addresses: kym.keogh@gov.bc.ca and have a COPY mailed to: Confidential lab results, Soda creek SK sampling, 2672 Indian Drive, Williams Lake,BC, V0K2C0~~

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C.Koenig	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date: Sept 9	Time: 8130	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

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	Vancouver, BC V6C 3B6	Email 2:		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-800-9200 329 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab W	L1514817-COFC	ALS Contact: Can Dang	Sampler: CK,ML,KK,GS,	
(lab				

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	whole body (metals)	% moisture	Liver (metals)	tissue (metals)	Number of Containers
	NSC-13			FISH	X	X			
	BB-1			?			X	X	
	POLDF-1			?	[redacted]	X		X	
	LND-1			FISH	X	X			
	BB-1				X	X			

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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Released by: C.Koenig	Date (dd-mmm-yy)	Time (hh-mm)	Received by: JN	Date: Sept 9	Time: 8730	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 01-OCT-14
Report Date: 18-NOV-14 17:48 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1526238

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: P0027
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526238-1 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-1	L1526238-2 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-1(LIVER)	L1526238-3 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-1X	L1526238-4 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-1X(GONAD)	L1526238-5 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-2
TISSUE						
Physical Tests	% Moisture (%)	77.2	73.6	78.4	64.8	77.2
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<2.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.048	0.038	0.023	0.023	<0.020
	Arsenic (As)-Total (mg/kg wwt)	0.0109	0.0100	0.0050	0.0079	<0.0040
	Barium (Ba)-Total (mg/kg)	<0.050	0.245	<0.050	0.253	0.087
	Barium (Ba)-Total (mg/kg wwt)	0.011	0.064	<0.010	0.089	0.020
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	0.020	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	0.0046	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.114	<0.0050	<0.0050	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0300	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/kg)	489	297	337	1200	1240
	Calcium (Ca)-Total (mg/kg wwt)	111	78.2	72.7	424	282
	Cesium (Cs)-Total (mg/kg)	0.0787	0.0229	0.0562	0.0130	0.0378
	Cesium (Cs)-Total (mg/kg wwt)	0.0179	0.0060	0.0122	0.0046	0.0086
	Chromium (Cr)-Total (mg/kg)	0.069	<0.20	<0.050	<0.050	0.066
	Chromium (Cr)-Total (mg/kg wwt)	0.016	<0.040	<0.010	<0.010	0.015
	Cobalt (Co)-Total (mg/kg)	<0.020	0.046	<0.020	0.130	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	0.0043	0.0122	<0.0040	0.0459	<0.0040
	Copper (Cu)-Total (mg/kg)	1.99	77.9	1.11	18.1	0.84
	Copper (Cu)-Total (mg/kg wwt)	0.454	20.5	0.240	6.36	0.192
	Iron (Fe)-Total (mg/kg)	30.9	1480	19.3	103	17.9
	Iron (Fe)-Total (mg/kg wwt)	7.03	389	4.17	36.2	4.08
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1830	934	1300	1420	1390
	Magnesium (Mg)-Total (mg/kg wwt)	416	246	281	499	317
	Manganese (Mn)-Total (mg/kg)	0.437	15.3	0.275	7.97	0.544
	Manganese (Mn)-Total (mg/kg wwt)	0.100	4.04	0.059	2.81	0.124

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526238-6 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-2(LIVER)	L1526238-7 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-3	L1526238-8 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-3(LIVER)	L1526238-9 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-4	L1526238-10 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-4(LIVER)
Sample ID		L1526238-6	L1526238-7	L1526238-8	L1526238-9	L1526238-10
Description		TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
Sampled Date		25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14
Sampled Time		08:00	08:00	08:00	08:00	08:00
Client ID		BOOTJACK LK RB-2(LIVER)	BOOTJACK LK RB-3	BOOTJACK LK RB-3(LIVER)	BOOTJACK LK RB-4	BOOTJACK LK RB-4(LIVER)
TISSUE						
Physical Tests	% Moisture (%)	74.6	77.0	76.9	77.2	75.5
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<5.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<1.0	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.034	0.036	0.082	0.066	0.058
	Arsenic (As)-Total (mg/kg wwt)	0.0086	0.0083	0.0190	0.0150	0.0142
	Barium (Ba)-Total (mg/kg)	0.597	0.078	0.106	0.063	0.064
	Barium (Ba)-Total (mg/kg wwt)	0.151	0.018	0.025	0.014	0.016
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.277	<0.0050	0.230	<0.0050	0.094
	Cadmium (Cd)-Total (mg/kg wwt)	0.0702	<0.0010	0.0533	<0.0010	0.0231
	Calcium (Ca)-Total (mg/kg)	219	653	368	695	354
	Calcium (Ca)-Total (mg/kg wwt)	55.6	150	85.2	158	86.8
	Cesium (Cs)-Total (mg/kg)	0.0088	0.0663	0.0309	0.0598	0.0332
	Cesium (Cs)-Total (mg/kg wwt)	0.0022	0.0152	0.0072	0.0136	0.0081
	Chromium (Cr)-Total (mg/kg)	0.73	<0.050	0.42	<0.050	0.24
	Chromium (Cr)-Total (mg/kg wwt)	0.186	<0.010	0.096	0.011	0.059
	Cobalt (Co)-Total (mg/kg)	0.049	<0.020	0.046	<0.020	0.029
	Cobalt (Co)-Total (mg/kg wwt)	0.0125	<0.0040	0.0107	<0.0040	0.0072
	Copper (Cu)-Total (mg/kg)	586	1.21	57.6	0.98	126
	Copper (Cu)-Total (mg/kg wwt)	149	0.277	13.3	0.223	30.8
	Iron (Fe)-Total (mg/kg)	1890	16.3	720	13.5	490
	Iron (Fe)-Total (mg/kg wwt)	480	3.74	167	3.07	120
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	642	1260	762	1260	879
	Magnesium (Mg)-Total (mg/kg wwt)	163	290	176	288	216
	Manganese (Mn)-Total (mg/kg)	5.54	0.378	7.99	0.417	7.84
	Manganese (Mn)-Total (mg/kg wwt)	1.40	0.087	1.85	0.095	1.92

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526238-11 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-5	L1526238-12 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-5(LIVER)	L1526238-13 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-6	L1526238-14 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-6(LIVER)	L1526238-15 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-7
TISSUE						
Physical Tests	% Moisture (%)	77.3	75.0	74.5	76.8	76.9
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<2.0	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<0.40	<1.0	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.033	0.057	0.050	0.064	0.054
	Arsenic (As)-Total (mg/kg wwt)	0.0075	0.0143	0.0129	0.0150	0.0124
	Barium (Ba)-Total (mg/kg)	0.266	0.117	<0.050	<0.050	0.064
	Barium (Ba)-Total (mg/kg wwt)	0.060	0.029	0.010	0.011	0.015
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.097	<0.0050	0.090	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0242	<0.0010	0.0209	<0.0010
	Calcium (Ca)-Total (mg/kg)	2880	301	504	239	755
	Calcium (Ca)-Total (mg/kg wwt)	655	75.3	129	55.4	174
	Cesium (Cs)-Total (mg/kg)	0.0431	0.0275	0.0480	0.0251	0.0420
	Cesium (Cs)-Total (mg/kg wwt)	0.0098	0.0069	0.0123	0.0058	0.0097
	Chromium (Cr)-Total (mg/kg)	<0.050	0.35	0.054	0.52	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.088	0.014	0.120	0.011
	Cobalt (Co)-Total (mg/kg)	<0.020	0.050	<0.020	0.036	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0125	<0.0040	0.0083	<0.0040
	Copper (Cu)-Total (mg/kg)	1.15	78.2	1.21	52.3	1.09
	Copper (Cu)-Total (mg/kg wwt)	0.262	19.6	0.308	12.2	0.252
	Iron (Fe)-Total (mg/kg)	12.2	861	16.7	810	14.2
	Iron (Fe)-Total (mg/kg wwt)	2.78	215	4.27	188	3.27
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.020	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.0040	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1160	754	1220	813	1270
	Magnesium (Mg)-Total (mg/kg wwt)	263	188	312	189	293
	Manganese (Mn)-Total (mg/kg)	0.806	6.84	0.322	6.08	0.326
	Manganese (Mn)-Total (mg/kg wwt)	0.183	1.71	0.082	1.41	0.075

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1526238-16	L1526238-17	L1526238-18	L1526238-19	
	Description	TISSUE	TISSUE	TISSUE	TISSUE	
	Sampled Date	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	
	Sampled Time	08:00	08:00	08:00	08:00	
	Client ID	BOOTJACK LK RB-7(LIVER)	BOOTJACK LK RB-8	BOOTJACK LK RB-8(LIVER)	BOOTJACK LK RB-1(GONAD)	
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	74.2	78.0	71.9	65.0	
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<5.0	<2.0	
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<1.0	<0.40	
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Arsenic (As)-Total (mg/kg)	0.069	0.040	0.075	0.023	
	Arsenic (As)-Total (mg/kg wwt)	0.0177	0.0087	0.0210	0.0082	
	Barium (Ba)-Total (mg/kg)	<0.050	0.077	<0.050	0.282	
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.017	<0.010	0.099	
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	
	Cadmium (Cd)-Total (mg/kg)	0.133	<0.0050	0.168	<0.0050	
	Cadmium (Cd)-Total (mg/kg wwt)	0.0342	<0.0010	0.0472	<0.0010	
	Calcium (Ca)-Total (mg/kg)	206	999	226	1290	
	Calcium (Ca)-Total (mg/kg wwt)	53.1	220	63.5	453	
	Cesium (Cs)-Total (mg/kg)	0.0189	0.0819	0.0307	0.0141	
	Cesium (Cs)-Total (mg/kg wwt)	0.0049	0.0180	0.0086	0.0049	
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.20	<0.050	
	Chromium (Cr)-Total (mg/kg wwt)	0.044	<0.010	<0.040	0.010	
	Cobalt (Co)-Total (mg/kg)	0.048	<0.020	0.051	0.144	
	Cobalt (Co)-Total (mg/kg wwt)	0.0123	<0.0040	0.0143	0.0503	
	Copper (Cu)-Total (mg/kg)	110	0.91	203	19.5	
	Copper (Cu)-Total (mg/kg wwt)	28.3	0.201	56.9	6.85	
	Iron (Fe)-Total (mg/kg)	486	15.6	447	114	
	Iron (Fe)-Total (mg/kg wwt)	125	3.42	126	39.8	
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.020	
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.0040	
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	
	Magnesium (Mg)-Total (mg/kg)	720	1340	688	1550	
	Magnesium (Mg)-Total (mg/kg wwt)	186	294	193	543	
	Manganese (Mn)-Total (mg/kg)	5.58	0.452	7.70	8.77	
	Manganese (Mn)-Total (mg/kg wwt)	1.44	0.100	2.16	3.07	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526238-1 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-1	L1526238-2 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-1(LIVER)	L1526238-3 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-1X	L1526238-4 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-1X(GONAD)	L1526238-5 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-2
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.418	0.263	0.321	0.0237	0.271
	Mercury (Hg)-Total (mg/kg wwt)	0.0952	0.0693	0.0694	0.0083	0.0617
	Molybdenum (Mo)-Total (mg/kg)	0.021	0.821	<0.020	0.037	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0048	0.216	<0.0040	0.0131	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	16800	17200	11700	10400	12100
	Phosphorus (P)-Total (mg/kg wwt)	3830	4530	2530	3670	2760
	Potassium (K)-Total (mg/kg)	28300	16000	20000	5240	20000
	Potassium (K)-Total (mg/kg wwt)	6450	4220	4320	1850	4550
	Rubidium (Rb)-Total (mg/kg)	14.8	12.1	10.5	3.53	7.90
	Rubidium (Rb)-Total (mg/kg wwt)	3.37	3.20	2.28	1.24	1.80
	Selenium (Se)-Total (mg/kg)	2.67	12.7	1.91	7.71	2.27
	Selenium (Se)-Total (mg/kg wwt)	0.607	3.34	0.414	2.72	0.517
	Sodium (Na)-Total (mg/kg)	1470	3600	1080	2050	1140
	Sodium (Na)-Total (mg/kg wwt)	335	948	234	721	260
	Strontium (Sr)-Total (mg/kg)	0.505	0.45	0.357	3.13	1.79
	Strontium (Sr)-Total (mg/kg wwt)	0.115	0.117	0.077	1.10	0.408
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0251	0.0722	0.0181	0.0039	0.0247
	Thallium (Tl)-Total (mg/kg wwt)	0.00572	0.0190	0.00391	0.00138	0.00562
	Tin (Sn)-Total (mg/kg)	0.10	0.15	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.024	0.040	<0.020	0.025	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0025	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00065	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	27.5	135	16.8	113	13.2
	Zinc (Zn)-Total (mg/kg wwt)	6.27	35.6	3.63	39.9	3.02
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526238-6 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-2(LIVER)	L1526238-7 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-3	L1526238-8 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-3(LIVER)	L1526238-9 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-4	L1526238-10 TISSUE 25-SEP-14 08:00 BOOTJACK LK RB-4(LIVER)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.203	0.311	0.159	0.264	0.133
	Mercury (Hg)-Total (mg/kg wwt)	0.0515	0.0716	0.0368	0.0601	0.0327
	Molybdenum (Mo)-Total (mg/kg)	0.679	<0.020	0.684	<0.020	0.692
	Molybdenum (Mo)-Total (mg/kg wwt)	0.172	<0.0040	0.158	<0.0040	0.170
	Nickel (Ni)-Total (mg/kg)	0.32	<0.20	<0.20	<0.20	0.32
	Nickel (Ni)-Total (mg/kg wwt)	0.082	<0.040	0.044	<0.040	0.080
	Phosphorus (P)-Total (mg/kg)	12300	11600	13900	11600	14900
	Phosphorus (P)-Total (mg/kg wwt)	3120	2670	3220	2640	3670
	Potassium (K)-Total (mg/kg)	12500	18800	12900	19100	16200
	Potassium (K)-Total (mg/kg wwt)	3180	4310	2990	4360	3970
	Rubidium (Rb)-Total (mg/kg)	7.21	10.1	13.0	10.5	14.6
	Rubidium (Rb)-Total (mg/kg wwt)	1.83	2.32	3.00	2.39	3.59
	Selenium (Se)-Total (mg/kg)	110	2.19	11.6	2.14	33.7
	Selenium (Se)-Total (mg/kg wwt)	27.8	0.503	2.69	0.488	8.26
	Sodium (Na)-Total (mg/kg)	3210	967	4750	797	3260
	Sodium (Na)-Total (mg/kg wwt)	814	222	1100	181	801
	Strontium (Sr)-Total (mg/kg)	0.31	0.972	0.87	1.09	0.77
	Strontium (Sr)-Total (mg/kg wwt)	0.078	0.223	0.201	0.247	0.188
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0828	0.0091	0.0456	0.0108	0.0929
	Thallium (Tl)-Total (mg/kg wwt)	0.0210	0.00210	0.0105	0.00245	0.0228
	Tin (Sn)-Total (mg/kg)	0.21	<0.10	0.17	<0.10	0.40
	Tin (Sn)-Total (mg/kg wwt)	0.054	<0.020	0.040	<0.020	0.099
	Uranium (U)-Total (mg/kg)	0.0021	<0.0020	0.0040	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00054	<0.00040	0.00093	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.14	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	0.023	<0.020	0.032	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	142	16.3	583	13.2	176
	Zinc (Zn)-Total (mg/kg wwt)	36.1	3.75	135	3.01	43.3
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1526238-11	L1526238-12	L1526238-13	L1526238-14	L1526238-15
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	BOOTJACK LK RB-5	BOOTJACK LK RB-5(LIVER)	BOOTJACK LK RB-6	BOOTJACK LK RB-6(LIVER)	BOOTJACK LK RB-7
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.267	0.117	0.198	0.125	0.228
	Mercury (Hg)-Total (mg/kg wwt)	0.0606	0.0293	0.0505	0.0289	0.0527
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.724	<0.020	0.708	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.181	<0.0040	0.164	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	0.23	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.054	<0.040
	Phosphorus (P)-Total (mg/kg)	11400	13800	10700	13600	11300
	Phosphorus (P)-Total (mg/kg wwt)	2580	3460	2730	3150	2610
	Potassium (K)-Total (mg/kg)	17000	13800	16900	13200	18400
	Potassium (K)-Total (mg/kg wwt)	3870	3450	4320	3060	4250
	Rubidium (Rb)-Total (mg/kg)	9.26	12.5	8.79	10.7	8.74
	Rubidium (Rb)-Total (mg/kg wwt)	2.10	3.12	2.24	2.48	2.02
	Selenium (Se)-Total (mg/kg)	2.00	17.7	2.17	18.5	2.69
	Selenium (Se)-Total (mg/kg wwt)	0.455	4.43	0.554	4.29	0.621
	Sodium (Na)-Total (mg/kg)	1030	3660	847	4390	913
	Sodium (Na)-Total (mg/kg wwt)	234	915	216	1020	211
	Strontium (Sr)-Total (mg/kg)	5.20	0.50	0.673	0.53	1.02
	Strontium (Sr)-Total (mg/kg wwt)	1.18	0.125	0.172	0.124	0.234
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0067	0.0454	0.0090	0.0858	0.0072
	Thallium (Tl)-Total (mg/kg wwt)	0.00153	0.0114	0.00230	0.0199	0.00165
	Tin (Sn)-Total (mg/kg)	<0.10	0.19	<0.10	0.31	0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.047	<0.020	0.073	0.024
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.025	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	16.3	127	12.7	164	14.1
	Zinc (Zn)-Total (mg/kg wwt)	3.70	31.7	3.25	38.1	3.25
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1526238-16	L1526238-17	L1526238-18	L1526238-19	
	Description	TISSUE	TISSUE	TISSUE	TISSUE	
	Sampled Date	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	
	Sampled Time	08:00	08:00	08:00	08:00	
	Client ID	BOOTJACK LK RB-7(LIVER)	BOOTJACK LK RB-8	BOOTJACK LK RB-8(LIVER)	BOOTJACK LK RB-1(GONAD)	
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0990	0.161	0.120	0.0242	
	Mercury (Hg)-Total (mg/kg wwt)	0.0255	0.0354	0.0337	0.0085	
	Molybdenum (Mo)-Total (mg/kg)	0.588	<0.020	0.791	0.044	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.152	<0.0040	0.222	0.0155	
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	
	Phosphorus (P)-Total (mg/kg)	12800	12000	13200	11300	
	Phosphorus (P)-Total (mg/kg wwt)	3300	2630	3720	3960	
	Potassium (K)-Total (mg/kg)	12600	19100	12100	5800	
	Potassium (K)-Total (mg/kg wwt)	3250	4210	3390	2030	
	Rubidium (Rb)-Total (mg/kg)	9.37	14.7	12.8	3.91	
	Rubidium (Rb)-Total (mg/kg wwt)	2.42	3.23	3.60	1.37	
	Selenium (Se)-Total (mg/kg)	41.0	3.63	86.4	8.35	
	Selenium (Se)-Total (mg/kg wwt)	10.6	0.799	24.3	2.93	
	Sodium (Na)-Total (mg/kg)	2910	897	2320	2470	
	Sodium (Na)-Total (mg/kg wwt)	749	198	651	864	
	Strontium (Sr)-Total (mg/kg)	0.36	1.49	0.40	3.41	
	Strontium (Sr)-Total (mg/kg wwt)	0.093	0.329	0.113	1.19	
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg)	0.0434	0.0088	0.0655	0.0043	
	Thallium (Tl)-Total (mg/kg wwt)	0.0112	0.00193	0.0184	0.00152	
	Tin (Sn)-Total (mg/kg)	0.11	0.11	0.14	<0.10	
	Tin (Sn)-Total (mg/kg wwt)	0.030	0.024	0.040	0.031	
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	
	Zinc (Zn)-Total (mg/kg)	132	15.0	121	127	
	Zinc (Zn)-Total (mg/kg wwt)	34.1	3.29	34.1	44.6	
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Bismuth (Bi)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Calcium (Ca)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Magnesium (Mg)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Manganese (Mn)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Phosphorus (P)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Potassium (K)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Selenium (Se)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Strontium (Sr)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Zinc (Zn)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Bismuth (Bi)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Calcium (Ca)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Magnesium (Mg)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Manganese (Mn)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Phosphorus (P)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Potassium (K)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Selenium (Se)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Strontium (Sr)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Zinc (Zn)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Thallium (Tl)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Duplicate	Thallium (Tl)-Total	DUP-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Certified Reference Material	Antimony (Sb)-Total	RM-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9
Certified Reference Material	Antimony (Sb)-Total	RM-H	L1526238-1, -11, -13, -15, -17, -19, -3, -4, -5, -7, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
RM-H	Reference Material recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Reference Information

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (DRY) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-VA Tissue Metals in Tissue by CRC ICPMS (WET) EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (WET) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA Tissue % Moisture in Tissues ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

P0027

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # P0027

Report to:		**Report Format / Distribution**		**Service Requested:** (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:		Quote #:		
Lab (lab use only)		**ALS Contact:** Can Dang	**Sampler:** Colleen Hughes	

L1526238-COFC

Sample #	Sample Identification (This description will appear o	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Number of Containers
	Bootjack Lk RB-1	25-Sep-14	8:00-16:15	Tissue	X	X	X	2
	Bootjack Lk RB-1X	25-Sep-14	8:00-16:15	Tissue	X	X	X	2
	Bootjack Lk RB-2	25-Sep-14	8:00-16:15	Tissue	X	X	X	2
	Bootjack Lk RB-3	25-Sep-14	8:00-16:15	Tissue	X	X	X	2
	Bootjack Lk RB-4	25-Sep-14	8:00-16:15	Tissue	X	X	X	2
	Bootjack Lk RB-5	25-Sep-14	8:00-16:15	Tissue	X	X	X	2
	Bootjack Lk RB-6	25-Sep-14	8:00-16:15	Tissue	X	X	X	2
	Bootjack Lk RB-7	25-Sep-14	8:00-16:15	Tissue	X	X	X	2
	Bootjack Lk RB-8	25-Sep-14	8:00-16:15	Tissue	X	X	X	2

Short Holding Time

Rush Processing

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Sept. 29, 2014	JW	Oct 1	8:30	-1.5			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

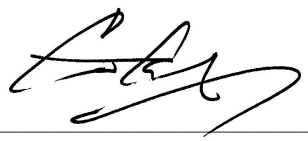
Date Received: 01-OCT-14
Report Date: 03-DEC-14 15:31 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1526270

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: P0026
Legal Site Desc:



Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526270-1 OTHER 11-SEP-14 08:00 QUESNEL R RB-1 (LIVER)	L1526270-2 OTHER 11-SEP-14 08:00 QUESNEL R RB-1 (TISSUE)	L1526270-3 OTHER 11-SEP-14 08:00 QUESNEL R RB-1 (GONAD)	L1526270-4 OTHER 11-SEP-14 08:00 QUESNEL R RB-2 (LIVER)	L1526270-5 OTHER 11-SEP-14 08:00 QUESNEL R RB-2 (TISSUE)
TISSUE						
Physical Tests	% Moisture (%)	75.4	76.4	72.0	72.3	77.0
Metals	Aluminum (Al)-Total (mg/kg)	16.9	<2.0	2.6	16.1	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	4.1	<0.40	0.71	4.4	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.092	0.114	0.052	0.290	2.94
	Arsenic (As)-Total (mg/kg wwt)	0.0227	0.0269	0.0146	0.0802	0.674
	Barium (Ba)-Total (mg/kg)	0.099	<0.050	0.685	0.097	<0.050
	Barium (Ba)-Total (mg/kg wwt)	0.024	0.012	0.192	0.027	0.011
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.729	<0.0050	0.0132	1.58	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.179	<0.0010	0.0037	0.437	<0.0010
	Calcium (Ca)-Total (mg/kg)	177	903	921	465	605
	Calcium (Ca)-Total (mg/kg wwt)	43.6	213	258	129	139
	Cesium (Cs)-Total (mg/kg)	0.0236	0.0912	0.0307	0.0277	0.0607
	Cesium (Cs)-Total (mg/kg wwt)	0.0058	0.0215	0.0086	0.0077	0.0139
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.050	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	0.045	<0.010	0.013	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.146	0.050	0.385	0.186	0.062
	Cobalt (Co)-Total (mg/kg wwt)	0.0360	0.0118	0.108	0.0514	0.0143
	Copper (Cu)-Total (mg/kg)	46.8	1.08	32.2	46.3	1.12
	Copper (Cu)-Total (mg/kg wwt)	11.5	0.255	9.00	12.8	0.257
	Iron (Fe)-Total (mg/kg)	1890	19.1	250	1550	14.4
	Iron (Fe)-Total (mg/kg wwt)	464	4.51	70.1	428	3.30
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.020	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.0040	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	710	1290	1190	830	1280
	Magnesium (Mg)-Total (mg/kg wwt)	175	304	334	230	293
	Manganese (Mn)-Total (mg/kg)	9.99	0.458	11.4	12.8	0.383
	Manganese (Mn)-Total (mg/kg wwt)	2.46	0.108	3.19	3.55	0.088

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526270-6 OTHER 11-SEP-14 08:00 QUESNEL R RB-2 (GONAD)	L1526270-8 OTHER 11-SEP-14 08:00 QUESNEL R RB-2X (TISSUE)	L1526270-9 OTHER 11-SEP-14 08:00 QUESNEL R RB-3 (LIVER)	L1526270-10 OTHER 11-SEP-14 08:00 QUESNEL R RB-3 (TISSUE)	L1526270-11 OTHER 11-SEP-14 08:00 QUESNEL R RB-4 (LIVER)
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	65.4	75.4	77.0	75.4	72.8
Metals	Aluminum (Al)-Total (mg/kg)	2.8	<2.0	10.4	<2.0	13.8
	Aluminum (Al)-Total (mg/kg wwt)	0.95	<0.40	2.38	<0.40	3.8
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.088	2.67	0.125	0.260	0.180
	Arsenic (As)-Total (mg/kg wwt)	0.0304	0.657	0.0286	0.0641	0.0491
	Barium (Ba)-Total (mg/kg)	0.621	0.156	<0.050	0.055	0.071
	Barium (Ba)-Total (mg/kg wwt)	0.215	0.038	<0.010	0.013	0.019
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.0090	<0.0050	1.17	<0.0050	0.986
	Cadmium (Cd)-Total (mg/kg wwt)	0.0031	<0.0010	0.269	<0.0010	0.268
	Calcium (Ca)-Total (mg/kg)	1340	1930	202	848	191
	Calcium (Ca)-Total (mg/kg wwt)	465	476	46.4	209	51.8
	Cesium (Cs)-Total (mg/kg)	0.0158	0.0539	0.0216	0.0530	0.0207
	Cesium (Cs)-Total (mg/kg wwt)	0.0055	0.0133	0.0050	0.0130	0.0056
	Chromium (Cr)-Total (mg/kg)	0.092	<0.050	0.161	<0.050	0.30
	Chromium (Cr)-Total (mg/kg wwt)	0.032	<0.010	0.037	<0.010	0.081
	Cobalt (Co)-Total (mg/kg)	0.529	0.058	0.174	0.030	0.171
	Cobalt (Co)-Total (mg/kg wwt)	0.183	0.0144	0.0399	0.0073	0.0464
	Copper (Cu)-Total (mg/kg)	36.7	0.92	152	1.29	47.5
	Copper (Cu)-Total (mg/kg wwt)	12.7	0.226	34.9	0.319	12.9
	Iron (Fe)-Total (mg/kg)	138	11.7	1030	18.1	2460
	Iron (Fe)-Total (mg/kg wwt)	47.7	2.88	238	4.46	670
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1280	1210	642	1170	653
	Magnesium (Mg)-Total (mg/kg wwt)	445	297	147	288	178
	Manganese (Mn)-Total (mg/kg)	6.02	0.563	5.36	0.414	8.14
	Manganese (Mn)-Total (mg/kg wwt)	2.08	0.138	1.23	0.102	2.21

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526270-12 OTHER 11-SEP-14 08:00 QUESNEL R RB-4 (TISSUE)	L1526270-13 OTHER 11-SEP-14 08:00 QUESNEL R RB-5 (LIVER)	L1526270-14 OTHER 11-SEP-14 08:00 QUESNEL R RB-5 (TISSUE)	L1526270-15 OTHER 11-SEP-14 08:00 QUESNEL R RB-6 (LIVER)	L1526270-16 OTHER 11-SEP-14 08:00 QUESNEL R RB-6 (TISSUE)
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	80.4	73.1	78.4	76.1	78.4
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	24.3	<2.0	5.1	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	6.6	<0.40	1.2	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.433	0.331	3.01	0.158	0.865
	Arsenic (As)-Total (mg/kg wwt)	0.0850	0.0890	0.650	0.0376	0.187
	Barium (Ba)-Total (mg/kg)	0.097	0.053	0.101	0.063	0.107
	Barium (Ba)-Total (mg/kg wwt)	0.019	0.014	0.022	0.015	0.023
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	3.04	<0.0050	1.29	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.818	<0.0010	0.308	<0.0010
	Calcium (Ca)-Total (mg/kg)	1180	161	1430	174	1670
	Calcium (Ca)-Total (mg/kg wwt)	231	43.3	310	41.4	361
	Cesium (Cs)-Total (mg/kg)	0.0896	0.0233	0.0835	0.0233	0.0971
	Cesium (Cs)-Total (mg/kg wwt)	0.0176	0.0063	0.0181	0.0056	0.0210
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.050	0.24	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.053	<0.010	0.058	<0.010
	Cobalt (Co)-Total (mg/kg)	0.038	0.300	0.071	0.309	0.072
	Cobalt (Co)-Total (mg/kg wwt)	0.0075	0.0807	0.0154	0.0737	0.0156
	Copper (Cu)-Total (mg/kg)	0.81	379	0.81	70.4	0.92
	Copper (Cu)-Total (mg/kg wwt)	0.160	102	0.175	16.8	0.199
	Iron (Fe)-Total (mg/kg)	21.2	2800	16.2	2180	14.6
	Iron (Fe)-Total (mg/kg wwt)	4.16	753	3.51	521	3.17
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.020	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.0040	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1430	768	1360	683	1360
	Magnesium (Mg)-Total (mg/kg wwt)	281	207	294	163	293
	Manganese (Mn)-Total (mg/kg)	0.422	14.6	0.454	9.48	0.547
	Manganese (Mn)-Total (mg/kg wwt)	0.083	3.94	0.098	2.26	0.118

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526270-17 OTHER 12-SEP-14 08:00 QUESNEL R RB-7 (LIVER)	L1526270-18 OTHER 12-SEP-14 08:00 QUESNEL R RB-7 (TISSUE)	L1526270-19 OTHER 12-SEP-14 08:00 QUESNEL R RB-8 (LIVER)	L1526270-20 OTHER 12-SEP-14 08:00 QUESNEL R RB-8 (TISSUE)	L1526270-21 OTHER 12-SEP-14 08:00 QUESNEL R RB-9 (LIVER)
TISSUE						
Physical Tests	% Moisture (%)	74.1	77.3	74.1	80.6	74.5
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	14.7	<2.0	15.4
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	3.8	<0.40	3.93
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.098	0.229	0.138	0.225	0.129
	Arsenic (As)-Total (mg/kg wwt)	0.0254	0.0520	0.0358	0.0438	0.0330
	Barium (Ba)-Total (mg/kg)	0.394	0.085	0.101	0.056	0.070
	Barium (Ba)-Total (mg/kg wwt)	0.102	0.019	0.026	0.011	0.018
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	0.22	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.466	<0.0050	0.999	<0.0050	0.752
	Cadmium (Cd)-Total (mg/kg wwt)	0.121	<0.0010	0.259	<0.0010	0.192
	Calcium (Ca)-Total (mg/kg)	242	979	196	965	372
	Calcium (Ca)-Total (mg/kg wwt)	62.8	222	50.9	188	95.1
	Cesium (Cs)-Total (mg/kg)	0.0288	0.0814	0.0273	0.0810	0.0361
	Cesium (Cs)-Total (mg/kg wwt)	0.0075	0.0185	0.0071	0.0157	0.0092
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.20	<0.050	0.103
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	0.051	<0.010	0.026
	Cobalt (Co)-Total (mg/kg)	0.177	0.050	0.279	0.037	0.188
	Cobalt (Co)-Total (mg/kg wwt)	0.0459	0.0113	0.0724	0.0072	0.0480
	Copper (Cu)-Total (mg/kg)	38.1	1.04	35.2	0.95	130
	Copper (Cu)-Total (mg/kg wwt)	9.87	0.235	9.14	0.185	33.1
	Iron (Fe)-Total (mg/kg)	1160	15.1	2200	29.1	751
	Iron (Fe)-Total (mg/kg wwt)	300	3.42	571	5.65	192
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	0.055	<0.020	0.472
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	0.014	<0.0040	0.120
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	648	1300	678	1280	774
	Magnesium (Mg)-Total (mg/kg wwt)	168	295	176	250	197
	Manganese (Mn)-Total (mg/kg)	7.47	0.530	8.11	0.333	10.8
	Manganese (Mn)-Total (mg/kg wwt)	1.94	0.120	2.10	0.065	2.75

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526270-22 OTHER 12-SEP-14 08:00 QUESNEL R RB-9 (TISSUE)	L1526270-23 OTHER 12-SEP-14 08:00 QUESNEL R RB-9 (GONAD)	L1526270-24 OTHER 12-SEP-14 08:00 QUESNEL R RB-10 (LIVER)	L1526270-25 OTHER 12-SEP-14 08:00 QUESNEL R RB-10 (TISSUE)	L1526270-26 OTHER 12-SEP-14 08:00 QUESNEL R RB-11 (LIVER)
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	77.8	70.4	73.0	79.7	76.3
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	2.4	9.1	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	0.70	2.5	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.248	0.056	0.071	0.067	0.118
	Arsenic (As)-Total (mg/kg wwt)	0.0551	0.0165	0.0191	0.0137	0.0280
	Barium (Ba)-Total (mg/kg)	0.083	0.619	0.210	0.072	<0.050
	Barium (Ba)-Total (mg/kg wwt)	0.018	0.183	0.057	0.015	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.0085	0.834	<0.0050	1.77
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0025	0.225	<0.0010	0.420
	Calcium (Ca)-Total (mg/kg)	1530	1180	189	1080	266
	Calcium (Ca)-Total (mg/kg wwt)	338	350	51.0	219	63.2
	Cesium (Cs)-Total (mg/kg)	0.0768	0.0268	0.0386	0.104	0.0131
	Cesium (Cs)-Total (mg/kg wwt)	0.0170	0.0079	0.0104	0.0211	0.0031
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	0.27	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.012	0.073	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.045	0.368	0.112	0.046	0.181
	Cobalt (Co)-Total (mg/kg wwt)	0.0100	0.109	0.0304	0.0094	0.0428
	Copper (Cu)-Total (mg/kg)	0.90	29.5	104	1.19	23.3
	Copper (Cu)-Total (mg/kg wwt)	0.200	8.73	28.0	0.242	5.52
	Iron (Fe)-Total (mg/kg)	15.1	153	1810	22.6	898
	Iron (Fe)-Total (mg/kg wwt)	3.34	45.3	489	4.60	213
	Lead (Pb)-Total (mg/kg)	<0.020	0.022	<0.050	0.024	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0066	<0.010	0.0048	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1230	1290	726	1390	696
	Magnesium (Mg)-Total (mg/kg wwt)	272	381	196	282	165
	Manganese (Mn)-Total (mg/kg)	0.490	9.01	14.9	0.468	6.59
	Manganese (Mn)-Total (mg/kg wwt)	0.109	2.66	4.01	0.095	1.56

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L1526270-27 Description: OTHER Sampled Date: 12-SEP-14 Sampled Time: 08:00 Client ID: QUESNEL R RB-11 (TISSUE)	Sample ID: L1526270-28 Description: OTHER Sampled Date: 12-SEP-14 Sampled Time: 08:00 Client ID: QUESNEL R RB-12 (LIVER)	Sample ID: L1526270-29 Description: OTHER Sampled Date: 12-SEP-14 Sampled Time: 08:00 Client ID: QUESNEL R RB-12 (TISSUE)		
TISSUE						
Physical Tests	% Moisture (%)	75.6	76.6	71.2		
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	16.2		
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	0.45	4.7		
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Arsenic (As)-Total (mg/kg)	0.250	0.165	0.243		
	Arsenic (As)-Total (mg/kg wwt)	0.0610	0.0386	0.0700		
	Barium (Ba)-Total (mg/kg)	0.132	0.074	0.114		
	Barium (Ba)-Total (mg/kg wwt)	0.032	0.017	0.033		
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0		
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	0.22		
	Cadmium (Cd)-Total (mg/kg)	<0.0050	<0.0050	1.30		
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	<0.0010	0.375		
	Calcium (Ca)-Total (mg/kg)	1410	781	304		
	Calcium (Ca)-Total (mg/kg wwt)	342	182	87.4		
	Cesium (Cs)-Total (mg/kg)	0.0402	0.0831	0.0158		
	Cesium (Cs)-Total (mg/kg wwt)	0.0098	0.0194	0.0046		
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.20		
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	0.050		
	Cobalt (Co)-Total (mg/kg)	0.036	0.057	0.096		
	Cobalt (Co)-Total (mg/kg wwt)	0.0088	0.0132	0.0277		
	Copper (Cu)-Total (mg/kg)	1.17	0.69	32.5		
	Copper (Cu)-Total (mg/kg wwt)	0.286	0.161	9.35		
	Iron (Fe)-Total (mg/kg)	18.1	14.0	2220		
	Iron (Fe)-Total (mg/kg wwt)	4.41	3.27	639		
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.050		
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	0.011		
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50		
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg)	1230	1320	642		
	Magnesium (Mg)-Total (mg/kg wwt)	300	309	185		
	Manganese (Mn)-Total (mg/kg)	0.840	0.489	8.24		
	Manganese (Mn)-Total (mg/kg wwt)	0.205	0.114	2.37		

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526270-1 OTHER 11-SEP-14 08:00 QUESNEL R RB-1 (LIVER)	L1526270-2 OTHER 11-SEP-14 08:00 QUESNEL R RB-1 (TISSUE)	L1526270-3 OTHER 11-SEP-14 08:00 QUESNEL R RB-1 (GONAD)	L1526270-4 OTHER 11-SEP-14 08:00 QUESNEL R RB-2 (LIVER)	L1526270-5 OTHER 11-SEP-14 08:00 QUESNEL R RB-2 (TISSUE)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.462	0.565	0.0908	0.273	0.460
	Mercury (Hg)-Total (mg/kg wwt)	0.113	0.133	0.0254	0.0755	0.106
	Molybdenum (Mo)-Total (mg/kg)	0.963	<0.020	0.030	0.754	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.237	<0.0040	0.0084	0.209	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	12500	11700	9260	14600	11300
	Phosphorus (P)-Total (mg/kg wwt)	3080	2750	2590	4050	2600
	Potassium (K)-Total (mg/kg)	13500	19600	6380	12900	17900
	Potassium (K)-Total (mg/kg wwt)	3310	4610	1790	3560	4120
	Rubidium (Rb)-Total (mg/kg)	18.6	16.9	7.85	23.3	17.5
	Rubidium (Rb)-Total (mg/kg wwt)	4.58	3.98	2.20	6.45	4.03
	Selenium (Se)-Total (mg/kg)	7.12	2.45	15.0	17.0	2.77
	Selenium (Se)-Total (mg/kg wwt)	1.75	0.577	4.20	4.70	0.635
	Sodium (Na)-Total (mg/kg)	3050	1120	3910	2980	892
	Sodium (Na)-Total (mg/kg wwt)	750	265	1090	824	205
	Strontium (Sr)-Total (mg/kg)	0.21	0.971	1.94	0.66	0.727
	Strontium (Sr)-Total (mg/kg wwt)	0.052	0.229	0.543	0.182	0.167
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0786	0.0208	0.0080	0.0997	0.0265
	Thallium (Tl)-Total (mg/kg wwt)	0.0193	0.00490	0.00225	0.0276	0.00609
	Tin (Sn)-Total (mg/kg)	0.70	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.172	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0178	<0.0020	0.0034	0.0240	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00438	<0.00040	0.00095	0.00665	<0.00040
	Vanadium (V)-Total (mg/kg)	0.46	<0.10	<0.10	0.16	<0.10
	Vanadium (V)-Total (mg/kg wwt)	0.112	<0.020	<0.020	0.044	<0.020
	Zinc (Zn)-Total (mg/kg)	143	15.6	161	103	13.7
	Zinc (Zn)-Total (mg/kg wwt)	35.1	3.69	45.0	28.4	3.14
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	0.29	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	0.081	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526270-6 OTHER 11-SEP-14 08:00 QUESNEL R RB-2 (GONAD)	L1526270-8 OTHER 11-SEP-14 08:00 QUESNEL R RB-2X (TISSUE)	L1526270-9 OTHER 11-SEP-14 08:00 QUESNEL R RB-3 (LIVER)	L1526270-10 OTHER 11-SEP-14 08:00 QUESNEL R RB-3 (TISSUE)	L1526270-11 OTHER 11-SEP-14 08:00 QUESNEL R RB-4 (LIVER)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0390	0.433	0.475	0.501	0.827
	Mercury (Hg)-Total (mg/kg wwt)	0.0135	0.107	0.109	0.123	0.225
	Molybdenum (Mo)-Total (mg/kg)	0.027	<0.020	1.09	<0.020	1.25
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0094	<0.0040	0.251	<0.0040	0.341
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	9900	11000	12700	10700	13000
	Phosphorus (P)-Total (mg/kg wwt)	3430	2710	2930	2640	3540
	Potassium (K)-Total (mg/kg)	4540	16500	13600	17100	10600
	Potassium (K)-Total (mg/kg wwt)	1570	4060	3120	4220	2870
	Rubidium (Rb)-Total (mg/kg)	5.42	16.0	10.8	11.8	10.5
	Rubidium (Rb)-Total (mg/kg wwt)	1.88	3.94	2.47	2.90	2.87
	Selenium (Se)-Total (mg/kg)	18.1	2.51	38.5	2.24	17.0
	Selenium (Se)-Total (mg/kg wwt)	6.27	0.618	8.84	0.551	4.63
	Sodium (Na)-Total (mg/kg)	2190	883	4580	936	4340
	Sodium (Na)-Total (mg/kg wwt)	756	217	1050	231	1180
	Strontium (Sr)-Total (mg/kg)	3.51	2.66	0.299	0.891	0.33
	Strontium (Sr)-Total (mg/kg wwt)	1.21	0.653	0.069	0.219	0.089
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0072	0.0241	0.0509	0.0149	0.112
	Thallium (Tl)-Total (mg/kg wwt)	0.00251	0.00592	0.0117	0.00367	0.0304
	Tin (Sn)-Total (mg/kg)	<0.10	0.11	0.40	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.023	0.028	0.092	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0042	<0.0020	0.0046	<0.0020	0.0170
	Uranium (U)-Total (mg/kg wwt)	0.00145	<0.00040	0.00105	<0.00040	0.00463
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	1.08	<0.10	0.56
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.248	<0.020	0.153
	Zinc (Zn)-Total (mg/kg)	150	13.4	103	15.7	128
	Zinc (Zn)-Total (mg/kg wwt)	51.9	3.30	23.7	3.86	34.9
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526270-12 OTHER 11-SEP-14 08:00 QUESNEL R RB-4 (TISSUE)	L1526270-13 OTHER 11-SEP-14 08:00 QUESNEL R RB-5 (LIVER)	L1526270-14 OTHER 11-SEP-14 08:00 QUESNEL R RB-5 (TISSUE)	L1526270-15 OTHER 11-SEP-14 08:00 QUESNEL R RB-6 (LIVER)	L1526270-16 OTHER 11-SEP-14 08:00 QUESNEL R RB-6 (TISSUE)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	1.28	0.793	0.769	0.370	0.664
	Mercury (Hg)-Total (mg/kg wwt)	0.252	0.214	0.166	0.0882	0.144
	Molybdenum (Mo)-Total (mg/kg)	<0.020	1.40	<0.020	1.00	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.378	<0.0040	0.239	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	13600	14700	12300	13400	12800
	Phosphorus (P)-Total (mg/kg wwt)	2670	3950	2660	3190	2760
	Potassium (K)-Total (mg/kg)	23500	12100	20700	12400	20700
	Potassium (K)-Total (mg/kg wwt)	4600	3240	4480	2960	4480
	Rubidium (Rb)-Total (mg/kg)	18.4	16.2	17.5	14.5	18.1
	Rubidium (Rb)-Total (mg/kg wwt)	3.61	4.36	3.78	3.47	3.92
	Selenium (Se)-Total (mg/kg)	2.47	81.2	3.32	18.3	2.23
	Selenium (Se)-Total (mg/kg wwt)	0.484	21.9	0.719	4.37	0.482
	Sodium (Na)-Total (mg/kg)	1590	3740	1150	4880	1270
	Sodium (Na)-Total (mg/kg wwt)	313	1010	248	1160	274
	Strontium (Sr)-Total (mg/kg)	1.47	0.27	1.90	0.26	1.97
	Strontium (Sr)-Total (mg/kg wwt)	0.288	0.074	0.412	0.062	0.427
	Tellurium (Te)-Total (mg/kg)	<0.020	0.057	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	0.0153	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0251	0.124	0.0343	0.0919	0.0346
	Thallium (Tl)-Total (mg/kg wwt)	0.00493	0.0334	0.00741	0.0219	0.00749
	Tin (Sn)-Total (mg/kg)	0.12	<0.10	<0.10	0.16	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.023	<0.020	<0.020	0.039	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0404	<0.0020	0.0063	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.0109	<0.00040	0.00149	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.29	<0.10	0.15	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.077	<0.020	0.036	<0.020
	Zinc (Zn)-Total (mg/kg)	14.6	124	15.6	121	16.8
	Zinc (Zn)-Total (mg/kg wwt)	2.86	33.5	3.36	28.8	3.63
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1526270-17	L1526270-18	L1526270-19	L1526270-20	L1526270-21
	Description	OTHER	OTHER	OTHER	OTHER	OTHER
	Sampled Date	12-SEP-14	12-SEP-14	12-SEP-14	12-SEP-14	12-SEP-14
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	QUESNEL R RB-7 (LIVER)	QUESNEL R RB-7 (TISSUE)	QUESNEL R RB-8 (LIVER)	QUESNEL R RB-8 (TISSUE)	QUESNEL R RB-9 (LIVER)
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.116	0.278	0.183	1.05	0.848
	Mercury (Hg)-Total (mg/kg wwt)	0.0302	0.0631	0.0475	0.204	0.216
	Molybdenum (Mo)-Total (mg/kg)	0.612	<0.020	0.698	<0.020	1.10
	Molybdenum (Mo)-Total (mg/kg wwt)	0.159	<0.0040	0.181	<0.0040	0.280
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11900	11400	14500	11800	15900
	Phosphorus (P)-Total (mg/kg wwt)	3100	2590	3760	2280	4050
	Potassium (K)-Total (mg/kg)	11800	18700	10500	21000	15100
	Potassium (K)-Total (mg/kg wwt)	3050	4250	2730	4090	3850
	Rubidium (Rb)-Total (mg/kg)	19.2	21.1	15.8	17.2	22.7
	Rubidium (Rb)-Total (mg/kg wwt)	4.98	4.79	4.09	3.34	5.79
	Selenium (Se)-Total (mg/kg)	13.7	2.36	16.9	2.14	16.6
	Selenium (Se)-Total (mg/kg wwt)	3.54	0.536	4.38	0.417	4.23
	Sodium (Na)-Total (mg/kg)	3580	970	4550	1870	3130
	Sodium (Na)-Total (mg/kg wwt)	927	220	1180	364	799
	Strontium (Sr)-Total (mg/kg)	0.33	1.22	0.38	1.03	0.495
	Strontium (Sr)-Total (mg/kg wwt)	0.085	0.276	0.097	0.199	0.126
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.119	0.0333	0.117	0.0261	0.0620
	Thallium (Tl)-Total (mg/kg wwt)	0.0309	0.00756	0.0303	0.00508	0.0158
	Tin (Sn)-Total (mg/kg)	0.11	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.030	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0037	<0.0020	0.0058	<0.0020	0.0226
	Uranium (U)-Total (mg/kg wwt)	0.00096	<0.00040	0.00150	<0.00040	0.00578
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.13	<0.10	0.70
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.033	<0.020	0.179
	Zinc (Zn)-Total (mg/kg)	94.3	14.1	115	15.7	131
	Zinc (Zn)-Total (mg/kg wwt)	24.5	3.19	29.8	3.05	33.4
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1526270-22 OTHER 12-SEP-14 08:00 QUESNEL R RB-9 (TISSUE)	L1526270-23 OTHER 12-SEP-14 08:00 QUESNEL R RB-9 (GONAD)	L1526270-24 OTHER 12-SEP-14 08:00 QUESNEL R RB-10 (LIVER)	L1526270-25 OTHER 12-SEP-14 08:00 QUESNEL R RB-10 (TISSUE)	L1526270-26 OTHER 12-SEP-14 08:00 QUESNEL R RB-11 (LIVER)
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.996	0.0852	0.320	0.624	0.274
	Mercury (Hg)-Total (mg/kg wwt)	0.221	0.0252	0.0865	0.127	0.0649
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.025	1.01	<0.020	0.862
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0075	0.274	<0.0040	0.204
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11100	10500	14300	12700	13100
	Phosphorus (P)-Total (mg/kg wwt)	2460	3100	3860	2580	3110
	Potassium (K)-Total (mg/kg)	17400	5580	11700	21400	12300
	Potassium (K)-Total (mg/kg wwt)	3860	1650	3170	4350	2920
	Rubidium (Rb)-Total (mg/kg)	16.3	6.99	21.5	25.0	8.18
	Rubidium (Rb)-Total (mg/kg wwt)	3.60	2.07	5.80	5.08	1.94
	Selenium (Se)-Total (mg/kg)	1.96	12.9	14.7	2.37	11.9
	Selenium (Se)-Total (mg/kg wwt)	0.434	3.82	3.98	0.483	2.83
	Sodium (Na)-Total (mg/kg)	1080	3970	2560	1160	6860
	Sodium (Na)-Total (mg/kg wwt)	240	1170	692	235	1630
	Strontium (Sr)-Total (mg/kg)	1.78	2.78	0.22	1.23	0.52
	Strontium (Sr)-Total (mg/kg wwt)	0.395	0.821	0.060	0.251	0.123
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0157	0.0058	0.152	0.0315	0.0466
	Thallium (Tl)-Total (mg/kg wwt)	0.00349	0.00172	0.0409	0.00641	0.0111
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	0.12	0.13	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.033	0.026	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0040	0.0109	<0.0020	0.0078
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00118	0.00295	<0.00040	0.00185
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.12	<0.10	0.72
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.032	<0.020	0.171
	Zinc (Zn)-Total (mg/kg)	12.9	140	127	24.7	106
	Zinc (Zn)-Total (mg/kg wwt)	2.87	41.4	34.3	5.01	25.2
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1526270-27	L1526270-28	L1526270-29		
	Description	OTHER	OTHER	OTHER		
	Sampled Date	12-SEP-14	12-SEP-14	12-SEP-14		
	Sampled Time	08:00	08:00	08:00		
	Client ID	QUESNEL R RB-11 (TISSUE)	QUESNEL R RB-12 (LIVER)	QUESNEL R RB-12 (TISSUE)		
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.295	0.315	0.366		
	Mercury (Hg)-Total (mg/kg wwt)	0.0718	0.0736	0.105		
	Molybdenum (Mo)-Total (mg/kg)	<0.020	<0.020	1.66		
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	<0.0040	0.478		
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		
	Phosphorus (P)-Total (mg/kg)	11600	11300	12200		
	Phosphorus (P)-Total (mg/kg wwt)	2840	2640	3520		
	Potassium (K)-Total (mg/kg)	18900	18500	10500		
	Potassium (K)-Total (mg/kg wwt)	4610	4310	3010		
	Rubidium (Rb)-Total (mg/kg)	9.94	21.5	12.5		
	Rubidium (Rb)-Total (mg/kg wwt)	2.42	5.02	3.59		
	Selenium (Se)-Total (mg/kg)	1.99	2.26	18.2		
	Selenium (Se)-Total (mg/kg wwt)	0.485	0.529	5.24		
	Sodium (Na)-Total (mg/kg)	1260	1060	3380		
	Sodium (Na)-Total (mg/kg wwt)	307	247	972		
	Strontium (Sr)-Total (mg/kg)	2.08	0.933	0.39		
	Strontium (Sr)-Total (mg/kg wwt)	0.508	0.218	0.112		
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020		
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
	Thallium (Tl)-Total (mg/kg)	0.0168	0.0342	0.146		
	Thallium (Tl)-Total (mg/kg wwt)	0.00410	0.00800	0.0419		
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10		
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020		
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0132		
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00380		
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	1.46		
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.422		
	Zinc (Zn)-Total (mg/kg)	17.1	12.7	103		
	Zinc (Zn)-Total (mg/kg wwt)	4.16	2.96	29.6		
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Reference Information

Chain of Custody Numbers:

P0026

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # P0026

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond, Norm Zirnhelt,	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: norm@environmentalquality.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: dolighan@telus.net	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	
[redacted] Lab Wo (lab_u		ALS Contact: Can Dang	Sampler: NZ

L1526270-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Liver(METALS)	Tissue(METALS)	Gonad(METALS)	% Moisture content	Number of Containers
[redacted]	Quesnel R RB-1 (Gonad Sampled)	11-Sep-14	08:00-16:15	Other	X	X	X	X	3
[redacted]	Quesnel R RB-2 (Gonad Sampled)	11-Sep-14	08:00-16:15	Other	X	X	X	X	3
[redacted]	Quesnel R RB 2X	11-Sep-14	08:00-16:15	Other	X	X		X	2
[redacted]	Quesnel R RB-3	11-Sep-14	08:00-16:15	Other	X	X		X	2
[redacted]	Quesnel R RB-4	11-Sep-14	08:00-16:15	Other	X	X		X	2
[redacted]	Quesnel R RB-5	11-Sep-14	08:00-16:15	Other	X	X		X	2
[redacted]	Quesnel R RB-6	11-Sep-14	08:00-16:15	Other	X	X		X	2
[redacted]	Quesnel R RB-7	12-Sep-14	08:00-16:15	Other	X	X		X	2
[redacted]	Quesnel R RB-8	12-Sep-14	08:00-16:15	Other	X	X		X	2
[redacted]	Quesnel R RB-9 (GONAD sampled)	12-Sep-14	08:00-16:15	Other	X	X	X	X	3
[redacted]	Quesnel R RB-10	12-Sep-14	08:00-16:15	Other	X	X		X	2
[redacted]	Quesnel R RB-11	12-Sep-14	08:00-16:15	Other	X	X		X	2
[redacted]	Quesnel R RB-12	12-Sep-14	08:00-16:15	Other	X	X		X	2

Short Holding Time

Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

[redacted] SHIPMENT RELEASE (client use)			[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Laura McO N. Zirnhelt	30-Sept-14 ~~29-Sep-14~~	2:30	JH	~~Sept~~ Sept 1	8:30	-1.5°C				

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 02-OCT-14
Report Date: 14-SEP-15 16:40 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1527061

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Comments: Please note we received an extra sample "RB-1 QUESNEL LAKE (IMPACTED) TISSUE R" not listed on the COC. We analyzed the extra sample as per other samples in the work order.

Please note we did not receive samples "BB-1 (HFSL-2) Right side liver tissue" and "RSC-11 (Polley Lake, Sinking net, P4)." Hence, requested analyses could not be completed.

14-SEP-2015 Revision 2: The sample collection date for the sample ASL identify as L1527061-12 was modified.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527061-1 OTHER 23-SEP-14 12:10 BB-1(HFSL-2) LEFT SIDE TISSUE	L1527061-2 OTHER 23-SEP-14 12:10 BB-1(HFSL-2) LEFT SIDE TISSUE(LIVER)	L1527061-3 OTHER 23-SEP-14 12:10 BB-1(HFSL-2) RIGHT SIDE TISSUE	L1527061-5 OTHER 23-SEP-14 11:45 RB-1 QUESNEL LAKE (IMPACTED) TISSUE	L1527061-6 OTHER 23-SEP-14 11:45 RB-1 QUESNEL LAKE (IMPACTED) TISSUE(LIVER)
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	81.2	43.5	80.5	89.8	82.8
Metals	Aluminum (Al)-Total (mg/kg)	3.7	3.1	2.7	<4.0 DLHM	12.3
	Aluminum (Al)-Total (mg/kg wwt)	0.69	1.77	0.53	<0.40	2.12
	Antimony (Sb)-Total (mg/kg)	<0.010	0.011	<0.010	<0.020 DLHM	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0062	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.677	3.39	0.996	0.146	0.243
	Arsenic (As)-Total (mg/kg wwt)	0.128	1.91	0.194	0.0149	0.0418
	Barium (Ba)-Total (mg/kg)	0.054	<0.050	<0.050	<0.10 DLHM	0.070
	Barium (Ba)-Total (mg/kg wwt)	0.010	<0.010	<0.010	<0.010	0.012
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.020 DLHM	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	0.011	<0.010	<0.020 DLHM	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0063	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<2.0 DLHM	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.376	<0.0050	<0.010 DLHM	1.72
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.212	<0.0010	<0.0010	0.296
	Calcium (Ca)-Total (mg/kg)	447	53	364	508	1150
	Calcium (Ca)-Total (mg/kg wwt)	84.2	29.8	70.8	51.7	198
	Cesium (Cs)-Total (mg/kg)	0.606	0.0205	0.458	0.238	0.115
	Cesium (Cs)-Total (mg/kg wwt)	0.114	0.0116	0.0890	0.0242	0.0198
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	0.72	0.782
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	0.073	0.135
	Cobalt (Co)-Total (mg/kg)	<0.020	0.273	<0.020	0.069	0.111
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.154	<0.0040	0.0070	0.0191
	Copper (Cu)-Total (mg/kg)	1.10	17.8	1.50	2.83	813
	Copper (Cu)-Total (mg/kg wwt)	0.208	10.0	0.291	0.288	140
	Iron (Fe)-Total (mg/kg)	14.8	192	20.8	169	4760
	Iron (Fe)-Total (mg/kg wwt)	2.78	109	4.05	17.2	819
	Lead (Pb)-Total (mg/kg)	0.040	<0.020	<0.020	<0.040 DLHM	0.031
	Lead (Pb)-Total (mg/kg wwt)	0.0076	<0.0040	<0.0040	<0.0040	0.0054
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<1.0 DLHM	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1350	175	1230	1270	751
	Magnesium (Mg)-Total (mg/kg wwt)	254	99.0	240	129	129
	Manganese (Mn)-Total (mg/kg)	0.669	1.30	0.619	0.46	8.08
	Manganese (Mn)-Total (mg/kg wwt)	0.126	0.733	0.120	0.047	1.39

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1527061-7	L1527061-8	L1527061-9	L1527061-10	L1527061-11
Description	OTHER	OTHER	OTHER	OTHER	OTHER
Sampled Date	23-SEP-14	23-SEP-14	23-SEP-14	23-SEP-14	23-SEP-14
Sampled Time	12:30	12:30	12:30	12:30	12:30
Client ID	PCC-1(HFGT-2)	PCC-2(HFGT-2)	PCC-3(HFGT-2)	PCC-4(HFGT-2)	PCC-5(HFGT-2)
Grouping **Analyte**					
TISSUE					
Physical Tests % Moisture (%)	75.0	76.8	77.6	77.1	74.2
Metals Aluminum (Al)-Total (mg/kg)	4.0	2.9	7.8	3.5	2.3
Aluminum (Al)-Total (mg/kg wwt)	1.00	0.68	1.74	0.81	0.59
Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)-Total (mg/kg)	0.275	0.177	0.150	0.177	0.165
Arsenic (As)-Total (mg/kg wwt)	0.0687	0.0410	0.0336	0.0405	0.0428
Barium (Ba)-Total (mg/kg)	2.89	3.85	3.64	2.72	2.33
Barium (Ba)-Total (mg/kg wwt)	0.723	0.893	0.815	0.623	0.601
Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total (mg/kg wwt)	0.0021	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium (Cd)-Total (mg/kg)	0.102	0.0957	0.151	0.114	0.0967
Cadmium (Cd)-Total (mg/kg wwt)	0.0256	0.0222	0.0339	0.0262	0.0250
Calcium (Ca)-Total (mg/kg)	35300	43300	43500	47900	33200
Calcium (Ca)-Total (mg/kg wwt)	8840	10000	9750	11000	8580
Cesium (Cs)-Total (mg/kg)	0.0704	0.0420	0.0691	0.0893	0.0955
Cesium (Cs)-Total (mg/kg wwt)	0.0176	0.0097	0.0155	0.0204	0.0247
Chromium (Cr)-Total (mg/kg)	0.078	0.054	0.051	0.061	0.067
Chromium (Cr)-Total (mg/kg wwt)	0.020	0.013	0.011	0.014	0.017
Cobalt (Co)-Total (mg/kg)	0.084	0.109	0.099	0.144	0.112
Cobalt (Co)-Total (mg/kg wwt)	0.0211	0.0253	0.0222	0.0330	0.0288
Copper (Cu)-Total (mg/kg)	2.02	2.68	3.03	2.55	2.35
Copper (Cu)-Total (mg/kg wwt)	0.504	0.621	0.679	0.584	0.609
Iron (Fe)-Total (mg/kg)	60.2	60.6	63.1	59.1	50.7
Iron (Fe)-Total (mg/kg wwt)	15.1	14.1	14.1	13.5	13.1
Lead (Pb)-Total (mg/kg)	<0.020	0.023	0.022	<0.020	<0.020
Lead (Pb)-Total (mg/kg wwt)	0.0044	0.0054	0.0049	<0.0040	<0.0040
Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total (mg/kg)	1510	1810	1820	1810	1460
Magnesium (Mg)-Total (mg/kg wwt)	379	419	409	415	377
Manganese (Mn)-Total (mg/kg)	11.0	14.2	14.8	12.1	7.31
Manganese (Mn)-Total (mg/kg wwt)	2.74	3.29	3.31	2.78	1.89

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527061-12 OTHER 29-AUG-14 12:00 MW-1(CPGT-1) FOUND DEAD	L1527061-14 OTHER 23-SEP-14 12:00 RSC-2(Q.LAKE FOUND DEAD NEAR HAZ.CR.MOUTH)	L1527061-15 OTHER 14-AUG-14 12:00 RSC-3(POLLEY LAKE, FOUND DEAD NEAR QUL-45)	L1527061-16 OTHER 23-SEP-14 11:45 RB-1 QUESNEL LAKE (IMPACTED) TISSUE R	
TISSUE						
Physical Tests	% Moisture (%)	75.4	75.2	79.9	86.9	
Metals	Aluminum (Al)-Total (mg/kg)	7.5	34.6	46.6	DLHM <4.0	
	Aluminum (Al)-Total (mg/kg wwt)	1.85	8.58	9.39	<0.40	
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	0.024	DLHM <0.020	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0049	<0.0020	
	Arsenic (As)-Total (mg/kg)	0.274	0.245	0.207	0.126	
	Arsenic (As)-Total (mg/kg wwt)	0.0674	0.0608	0.0417	0.0165	
	Barium (Ba)-Total (mg/kg)	0.626	2.33	4.18	DLHM <0.10	
	Barium (Ba)-Total (mg/kg wwt)	0.154	0.577	0.841	<0.010	
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	DLHM <0.020	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	DLHM <0.020	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	DLHM <2.0	
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	
	Cadmium (Cd)-Total (mg/kg)	0.0695	0.0596	0.0990	DLHM <0.010	
	Cadmium (Cd)-Total (mg/kg wwt)	0.0171	0.0148	0.0199	0.0011	
	Calcium (Ca)-Total (mg/kg)	16300	22500	49000	898	
	Calcium (Ca)-Total (mg/kg wwt)	4000	5580	9850	118	
	Cesium (Cs)-Total (mg/kg)	0.111	0.0697	0.0299	0.185	
	Cesium (Cs)-Total (mg/kg wwt)	0.0273	0.0173	0.0060	0.0243	
	Chromium (Cr)-Total (mg/kg)	0.057	<0.050	0.130	0.34	
	Chromium (Cr)-Total (mg/kg wwt)	0.014	0.011	0.026	0.044	
	Cobalt (Co)-Total (mg/kg)	0.254	0.084	0.069	0.063	
	Cobalt (Co)-Total (mg/kg wwt)	0.0623	0.0208	0.0140	0.0082	
	Copper (Cu)-Total (mg/kg)	4.88	21.7	3.82	2.83	
	Copper (Cu)-Total (mg/kg wwt)	1.20	5.39	0.769	0.371	
	Iron (Fe)-Total (mg/kg)	57.3	78.9	95.1	174	
	Iron (Fe)-Total (mg/kg wwt)	14.1	19.6	19.1	22.9	
	Lead (Pb)-Total (mg/kg)	<0.020	0.086	0.063	DLHM <0.040	
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0214	0.0126	<0.0040	
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	DLHM <1.0	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	
	Magnesium (Mg)-Total (mg/kg)	1200	1610	1870	982	
	Magnesium (Mg)-Total (mg/kg wwt)	294	399	377	129	
	Manganese (Mn)-Total (mg/kg)	4.09	8.46	13.1	0.46	
	Manganese (Mn)-Total (mg/kg wwt)	1.01	2.10	2.63	0.061	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1527061-1	L1527061-2	L1527061-3	L1527061-5	L1527061-6
	Description	OTHER	OTHER	OTHER	OTHER	OTHER
	Sampled Date	23-SEP-14	23-SEP-14	23-SEP-14	23-SEP-14	23-SEP-14
	Sampled Time	12:10	12:10	12:10	11:45	11:45
	Client ID	BB-1(HFSL-2) LEFT SIDE TISSUE	BB-1(HFSL-2) LEFT SIDE TISSUE(LIVER)	BB-1(HFSL-2) RIGHT SIDE TISSUE	RB-1 QUESNEL LAKE (IMPACTED) TISSUE	RB-1 QUESNEL LAKE (IMPACTED) TISSUE(LIVER)
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	2.78	0.390	2.62	6.43	14.6
	Mercury (Hg)-Total (mg/kg wwt)	0.523	0.220	0.510	0.654	2.51
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.278	<0.020	<0.040 DLHM	4.96
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.157	<0.0040	<0.0040	0.854
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.40 DLHM	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11300	3500	11200	12500	14600
	Phosphorus (P)-Total (mg/kg wwt)	2130	1980	2170	1270	2520
	Potassium (K)-Total (mg/kg)	21400	3350	20600	18800	11000
	Potassium (K)-Total (mg/kg wwt)	4030	1890	4000	1910	1890
	Rubidium (Rb)-Total (mg/kg)	35.7	4.75	32.3	20.7	12.6
	Rubidium (Rb)-Total (mg/kg wwt)	6.71	2.68	6.28	2.11	2.16
	Selenium (Se)-Total (mg/kg)	2.78	2.29	2.84	3.28	163
	Selenium (Se)-Total (mg/kg wwt)	0.523	1.29	0.552	0.334	28.0
	Sodium (Na)-Total (mg/kg)	2080	1100	2350	17800	11100
	Sodium (Na)-Total (mg/kg wwt)	392	620	458	1810	1920
	Strontium (Sr)-Total (mg/kg)	0.623	0.172	0.529	0.41	0.956
	Strontium (Sr)-Total (mg/kg wwt)	0.117	0.097	0.103	0.042	0.165
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.040 DLHM	0.362
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	0.0622
	Thallium (Tl)-Total (mg/kg)	0.0096	0.0053	0.0109	0.0310	0.110
	Thallium (Tl)-Total (mg/kg wwt)	0.00180	0.00300	0.00212	0.00315	0.0190
	Tin (Sn)-Total (mg/kg)	0.12	<0.10	0.14	0.24	0.13
	Tin (Sn)-Total (mg/kg wwt)	0.022	0.025	0.027	0.024	0.022
	Uranium (U)-Total (mg/kg)	<0.0020	0.0047	<0.0020	<0.0040 DLHM	0.0232
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00265	<0.00040	<0.00040	0.00399
	Vanadium (V)-Total (mg/kg)	<0.10	0.19	<0.10	<0.20 DLHM	1.96
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.107	<0.020	<0.020	0.338
	Zinc (Zn)-Total (mg/kg)	22.6	39.8	30.0	63.6	481
	Zinc (Zn)-Total (mg/kg wwt)	4.26	22.5	5.85	6.47	82.8
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.40 DLHM	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527061-7 OTHER 23-SEP-14 12:30 PCC-1(HFGT-2)	L1527061-8 OTHER 23-SEP-14 12:30 PCC-2(HFGT-2)	L1527061-9 OTHER 23-SEP-14 12:30 PCC-3(HFGT-2)	L1527061-10 OTHER 23-SEP-14 12:30 PCC-4(HFGT-2)	L1527061-11 OTHER 23-SEP-14 12:30 PCC-5(HFGT-2)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.335	0.357	0.348	0.294	0.261
	Mercury (Hg)-Total (mg/kg wwt)	0.0837	0.0828	0.0780	0.0672	0.0673
	Molybdenum (Mo)-Total (mg/kg)	0.056	0.073	0.064	0.098	0.056
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0139	0.0170	0.0144	0.0224	0.0145
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	25000	30300	30300	29700	23800
	Phosphorus (P)-Total (mg/kg wwt)	6250	7030	6790	6810	6160
	Potassium (K)-Total (mg/kg)	14200	16000	16200	16200	13800
	Potassium (K)-Total (mg/kg wwt)	3560	3710	3620	3710	3570
	Rubidium (Rb)-Total (mg/kg)	18.1	18.4	21.1	21.4	16.8
	Rubidium (Rb)-Total (mg/kg wwt)	4.54	4.25	4.73	4.89	4.35
	Selenium (Se)-Total (mg/kg)	3.27	3.64	3.99	3.61	2.42
	Selenium (Se)-Total (mg/kg wwt)	0.817	0.843	0.896	0.826	0.626
	Sodium (Na)-Total (mg/kg)	3270	3740	3860	3820	3160
	Sodium (Na)-Total (mg/kg wwt)	816	866	866	875	816
	Strontium (Sr)-Total (mg/kg)	57.2	72.3	78.2	90.1	69.5
	Strontium (Sr)-Total (mg/kg wwt)	14.3	16.8	17.5	20.6	18.0
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0051	0.0106	0.0173	0.0157	0.0143
	Thallium (Tl)-Total (mg/kg wwt)	0.00128	0.00246	0.00389	0.00361	0.00370
	Tin (Sn)-Total (mg/kg)	<0.10	0.15	0.16	0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.035	0.036	0.024	0.025
	Uranium (U)-Total (mg/kg)	0.0083	0.0132	0.0117	0.0102	0.0079
	Uranium (U)-Total (mg/kg wwt)	0.00206	0.00307	0.00262	0.00234	0.00204
	Vanadium (V)-Total (mg/kg)	0.34	0.43	0.29	0.26	0.30
	Vanadium (V)-Total (mg/kg wwt)	0.086	0.101	0.066	0.059	0.077
	Zinc (Zn)-Total (mg/kg)	98.8	113	138	120	104
	Zinc (Zn)-Total (mg/kg wwt)	24.7	26.3	31.0	27.5	26.9
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527061-12 OTHER 29-AUG-14 12:00 MW-1(CPGT-1) FOUND DEAD	L1527061-14 OTHER 23-SEP-14 12:00 RSC-2(Q.LAKE FOUND DEAD NEAR HAZ.CR.MOUTH)	L1527061-15 OTHER 14-AUG-14 12:00 RSC-3(POLLEY LAKE, FOUND DEAD NEAR QUL-45)	L1527061-16 OTHER 23-SEP-14 11:45 RB-1 QUESNEL LAKE (IMPACTED) TISSUE R	
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.240	0.274	0.392	5.37	
	Mercury (Hg)-Total (mg/kg wwt)	0.0590	0.0679	0.0789	0.704	
	Molybdenum (Mo)-Total (mg/kg)	0.020	0.049	0.048	<0.040 DLHM	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0049	0.0121	0.0097	0.0042	
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.22	<0.40 DLHM	
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.044	<0.040	
	Phosphorus (P)-Total (mg/kg)	16600	19200	28600	10800	
	Phosphorus (P)-Total (mg/kg wwt)	4070	4770	5760	1420	
	Potassium (K)-Total (mg/kg)	14800	13800	5480	15200	
	Potassium (K)-Total (mg/kg wwt)	3630	3410	1100	2000	
	Rubidium (Rb)-Total (mg/kg)	16.1	21.2	8.05	16.5	
	Rubidium (Rb)-Total (mg/kg wwt)	3.94	5.26	1.62	2.16	
	Selenium (Se)-Total (mg/kg)	2.85	2.23	1.96	3.06	
	Selenium (Se)-Total (mg/kg wwt)	0.700	0.552	0.395	0.402	
	Sodium (Na)-Total (mg/kg)	3380	4620	2600	13400	
	Sodium (Na)-Total (mg/kg wwt)	829	1150	523	1770	
	Strontium (Sr)-Total (mg/kg)	24.5	47.0	85.5	0.83	
	Strontium (Sr)-Total (mg/kg wwt)	6.03	11.7	17.2	0.109	
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.040 DLHM	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg)	0.0154	0.0105	0.0068	0.0271	
	Thallium (Tl)-Total (mg/kg wwt)	0.00379	0.00260	0.00136	0.00355	
	Tin (Sn)-Total (mg/kg)	<0.10	0.20	0.23	0.28	
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.050	0.047	0.037	
	Uranium (U)-Total (mg/kg)	0.0112	0.0029	0.0139	<0.0040 DLHM	
	Uranium (U)-Total (mg/kg wwt)	0.00276	0.00072	0.00280	<0.00040	
	Vanadium (V)-Total (mg/kg)	0.35	0.22	0.21	<0.20 DLHM	
	Vanadium (V)-Total (mg/kg wwt)	0.085	0.056	0.043	<0.020	
	Zinc (Zn)-Total (mg/kg)	87.6	110	99.2	59.4	
	Zinc (Zn)-Total (mg/kg wwt)	21.5	27.3	20.0	7.79	
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.40 DLHM	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHM	Detection Limit Adjusted: Sample has High Moisture Content

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

MET-DRY-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Enviro

L1527061-COFC

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # Ques Lk HFSL-2/HFGT-2 +DEAD FISH

Page 1 of 1

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy o	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab (lab use only)		ALS Contact: Can Dang	Sampler: C. Koenig	

Short Holding Time

Rush Processing

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
	BB-1(site name HFSL-2) Left side tissue	23-09-14	12:10	Other		X		X	
	BB-1(site name HFSL-2) Right side tissue	23-09-14	12:10	Other		X		X	
	RB[redacted]-1(floating dead kelt rainbow trout) Quesnel Lake(impacted)	23-09-14	11:45	Other		X		X	
	PCC-1 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	PCC-2 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	PCC-3 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	PCC-4 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	PCC-5 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	MW-1 (CPGT-1) found dead.	29-08-14	12:00	Other	X		X		
	RSC-1 (POLLEY LAKE Sinking Net P4)	25-09-14	16:00	Other	X		X		
	RSC-2 (Q. Lake found dead near HA2 u/s mouth)	23-08-14	12:00	Other	X		X		
	RSC-3 (Polley Lake found dead near [redacted]-45)	14-08-14	12:00	Other	X		X		

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

*Please add site names abbreviations (Horsefly Set Line-2((HFSL-2)) ,as un-impacted), and (Horsefly Gee Trap-2((HFGT-2)) as un-impacted)

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C. Koenig C Koenig	Sep 30/14	17:00	JH	OCT 2	1150	1 °C				

Sample Receipt Confirmation

14 Samples received at ALS in VANCOUVER

Job Reference #: N/A
Project PO #: N/A
Legal Site Description: N/A
Quote #: N/A
Lab Work Order #: L1527061
Estimated Completion Date: 11/17/2014

Date Sampled: 8/14/2014
Date Received: 10/2/2014
Sampled By: C KOENIG
Chain of Custody: N/A
Account Manager: Can Dang
Estimated Sample Disposal Date: See Sample Disposal Information section below.

Sample Integrity Observations:

Observation	Details
Samples listed on COC but not received	SAMPLE #4 AND 13 WERE NOT RECEIVED.
Extra samples/bottles received but not listed on COC	RECEIVED A SAMPLE LABELED "RB-1 QUESNEL LAKE (IMPACTED) TISSUE R" ADDED AS SAMPLE #16

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12
Likely,BC V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
natalie.neufeld@snclavalin.com
ckoenig@redchrismine.ca
mia.sakelariou@snclavalin.com
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EDD Email: chughes@mountpolley.com
natalie.neufeld@snclavalin.com
ckoenig@redchrismine.ca
mia.sakelariou@snclavalin.com
kmcmahen@mountpolley.com

Distribution: **Hard Copy:** N **Email:** Y **Fax:** N
EDD: Y

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP. ~LIKELY
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100
Distribution: **Hard Copy:** Y **Email:** Y

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1527061-1	BB-1(HFSL-2) LEFT SIDE TISSUE	9/23/2014 12:10 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-2	BB-1(HFSL-2) LEFT SIDE TISSUE(LIVER)	9/23/2014 12:10 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-3	BB-1(HFSL-2) RIGHT SIDE TISSUE	9/23/2014 12:10 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-5	RB-1 QUESNEL LAKE (IMPACTED) TISSUE	9/23/2014 11:45 AM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-6	RB-1 QUESNEL LAKE (IMPACTED) TISSUE(LIVER)	9/23/2014 11:45 AM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-7	PCC-1(HFGT-2)	9/23/2014 12:30 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-8	PCC-2(HFGT-2)	9/23/2014 12:30 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-9	PCC-3(HFGT-2)	9/23/2014 12:30 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-10	PCC-4(HFGT-2)	9/23/2014 12:30 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-11	PCC-5(HFGT-2)	9/23/2014 12:30 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-12	MW-1(CPGT-1) FOUND DEAD	8/29/2014 12:00 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-14	RSC-2(Q.LAKE FOUND DEAD NEAR HAZ.CR.MOUTH)	9/23/2014 12:00 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-15	RSC-3(POLLEY LAKE, FOUND DEAD NEAR QUL-45)	8/14/2014 12:00 PM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER
L1527061-16	RB-1 QUESNEL LAKE (IMPACTED) TISSUE R	9/23/2014 11:45 AM	10/2/2014 10:50 AM	11/17/2014 5:00 PM		OTHER

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS (DRY)	Mercury in Tissue by CVAFS (WET)	Metals in Tissue by CRC ICPMS (DRY)	Metals in Tissue by CRC ICPMS (WET)	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
BB-1(HFSL-2) LEFT SIDE TISSUE	X	X	X	X	X	X	X
BB-1(HFSL-2) LEFT SIDE TISSUE(LIVER)	X	X	X	X	X	X	X
BB-1(HFSL-2) RIGHT SIDE TISSUE	X	X	X	X	X	X	X
RB-1 QUESNEL LAKE (IMPACTED) TISSUE	X	X	X	X	X	X	X
RB-1 QUESNEL LAKE (IMPACTED) TISSUE (LIVER)	X	X	X	X	X	X	X
PCC-1(HFGT-2)	X	X	X	X	X	X	X
PCC-2(HFGT-2)	X	X	X	X	X	X	X
PCC-3(HFGT-2)	X	X	X	X	X	X	X
PCC-4(HFGT-2)	X	X	X	X	X	X	X
PCC-5(HFGT-2)	X	X	X	X	X	X	X
MW-1(CPGT-1) FOUND DEAD	X	X	X	X	X	X	X
RSC-2(Q.LAKE FOUND DEAD NEAR HAZ.CR.MOUTH)	X	X	X	X	X	X	X
RSC-3(POLLEY LAKE, FOUND DEAD NEAR QUL-45)	X	X	X	X	X	X	X
RB-1 QUESNEL LAKE (IMPACTED) TISSUE R	X	X	X	X	X	X	X

Sample Receipt Confirmation

Sample Disposal Information:

Where possible, ALS will store samples for 30 days from the date a final report is issued, or 30 days from the date samples are placed on hold without analytical requests, after which samples may be discarded. Air samples collected on re-usable media are an exception, and are stored for 7 days from the date a final report is issued. Longer storage times are available upon request.

For information about ALS accreditations and certifications please contact your Account Manager or visit our webpage at www.alsglobal.com (see Canada downloads).

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # L1527061 when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

ALS Enviro

L1527061-COFC

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # Ques Lk HFSL-2/HFGT-2 +DEAD FISH

Page 1 of 1

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy o	☐ Yes ☐ No	Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:		Quote #:		
Lab (lab use only)		ALS Contact: Can Dang	Sampler: C. Koenig	

Short Holding Time

Rush Processing

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
	BB-1(site name HFSL-2) Left side tissue	23-09-14	12:10	Other		X		X	
	BB-1(site name HFSL-2) Right side tissue	23-09-14	12:10	Other		X		X	
	RB[redacted]-1(floating dead kelt rainbow trout) Quesnel Lake(impacted)	23-09-14	11:45	Other		X		X	
	PCC-1 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	PCC-2 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	PCC-3 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	PCC-4 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	PCC-5 (site name HFGT-2)	23-09-14	12:30	Other	X		X		
	MW-1 (CPGT-1) found dead.	29-08-14	12:00	Other	X		X		
	RSC-1 (POLLEY LAKE Sinking Net P4)	25-09-14	16:00	Other	X		X		
	RSC-2 (Q. Lake found dead near HA2 u/s mouth)	23-08-14	12:00	Other	X		X		
	RSC-3 (Polley Lake found dead near [redacted]-45)	14-08-14	12:00	Other	X		X		

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

*Please add site names abbreviations (Horsefly Set Line-2((HFSL-2)) ,as un-impacted), and (Horsefly Gee Trap-2((HFGT-2)) as un-impacted)

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C. Koenig C Koenig	Sep 30/14	17:00	JH	OCT 2	1150	1 °C				

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 02-OCT-14
Report Date: 17-NOV-14 12:57 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1527078

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: Q LK CPGN-1 PCC-1-12
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527078-1 Other 23-SEP-14 12:30 PCC-1 (CPGN-1)	L1527078-2 Other 23-SEP-14 12:30 PCC-2 (CPGN-1)	L1527078-3 Other 23-SEP-14 12:30 PCC-3 (CPGN-1)	L1527078-4 Other 23-SEP-14 12:30 PCC-4 (CPGN-1)	L1527078-5 Other 23-SEP-14 12:30 PCC-5 (CPGN-1)
TISSUE						
Physical Tests	% Moisture (%)	77.1	73.7	75.6	74.4	77.9
Metals	Aluminum (Al)-Total (mg/kg)	141	92.7	17.1	68.2	81.1
	Aluminum (Al)-Total (mg/kg wwt)	32.2	24.4	4.16	17.5	17.9
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.296	0.276	0.269	0.232	0.276
	Arsenic (As)-Total (mg/kg wwt)	0.0679	0.0726	0.0657	0.0595	0.0609
	Barium (Ba)-Total (mg/kg)	3.45	1.95	1.47	2.23	3.08
	Barium (Ba)-Total (mg/kg wwt)	0.790	0.514	0.358	0.571	0.681
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.153	0.139	0.145	0.137	0.135
	Cadmium (Cd)-Total (mg/kg wwt)	0.0350	0.0365	0.0354	0.0351	0.0299
	Calcium (Ca)-Total (mg/kg)	37700	17000	19900	28100	45200
	Calcium (Ca)-Total (mg/kg wwt)	8640	4480	4850	7190	9980
	Cesium (Cs)-Total (mg/kg)	0.0933	0.0824	0.0759	0.0966	0.0741
	Cesium (Cs)-Total (mg/kg wwt)	0.0214	0.0217	0.0185	0.0248	0.0164
	Chromium (Cr)-Total (mg/kg)	1.57	0.848	0.466	0.892	1.19
	Chromium (Cr)-Total (mg/kg wwt)	0.360	0.223	0.114	0.229	0.263
	Cobalt (Co)-Total (mg/kg)	0.235	0.176	0.089	0.149	0.154
	Cobalt (Co)-Total (mg/kg wwt)	0.0539	0.0463	0.0217	0.0383	0.0340
	Copper (Cu)-Total (mg/kg)	3.54	2.55	2.68	2.99	3.02
	Copper (Cu)-Total (mg/kg wwt)	0.810	0.671	0.655	0.766	0.668
	Iron (Fe)-Total (mg/kg)	327	219	79.0	141	176
	Iron (Fe)-Total (mg/kg wwt)	75.0	57.6	19.3	36.1	38.9
	Lead (Pb)-Total (mg/kg)	0.049	0.037	<0.020	0.127	0.036
	Lead (Pb)-Total (mg/kg wwt)	0.0112	0.0098	<0.0040	0.0325	0.0079
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1700	1130	1320	1310	1700
	Magnesium (Mg)-Total (mg/kg wwt)	390	297	323	336	376
	Manganese (Mn)-Total (mg/kg)	12.9	8.29	4.39	8.69	10.1
	Manganese (Mn)-Total (mg/kg wwt)	2.96	2.18	1.07	2.23	2.23

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527078-6 Other 23-SEP-14 12:30 PCC-6 (CPGN-1)	L1527078-7 Other 23-SEP-14 12:30 PCC-7 (CPGN-1)	L1527078-8 Other 23-SEP-14 12:30 PCC-8 (CPGN-1)	L1527078-9 Other 23-SEP-14 12:30 PCC-9 (CPGN-1)	L1527078-10 Other 23-SEP-14 12:30 PCC-10 (CPGN-1)
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	75.6	76.3	75.6	75.6	76.3
Metals	Aluminum (Al)-Total (mg/kg)	20.4	46.0	17.8	204	160
	Aluminum (Al)-Total (mg/kg wwt)	4.99	10.9	4.34	49.8	38.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.195	0.270	0.348	0.293	0.285
	Arsenic (As)-Total (mg/kg wwt)	0.0476	0.0640	0.0850	0.0716	0.0675
	Barium (Ba)-Total (mg/kg)	1.48	2.27	1.56	4.07	2.76
	Barium (Ba)-Total (mg/kg wwt)	0.362	0.538	0.381	0.993	0.654
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.0775	0.105	0.108	0.124	0.104
	Cadmium (Cd)-Total (mg/kg wwt)	0.0189	0.0249	0.0263	0.0303	0.0246
	Calcium (Ca)-Total (mg/kg)	21500	33800	19100	44400	22600
	Calcium (Ca)-Total (mg/kg wwt)	5250	8000	4670	10800	5350
	Cesium (Cs)-Total (mg/kg)	0.0846	0.101	0.0767	0.0647	0.0917
	Cesium (Cs)-Total (mg/kg wwt)	0.0207	0.0238	0.0187	0.0158	0.0217
	Chromium (Cr)-Total (mg/kg)	0.443	0.544	0.674	1.93	1.66
	Chromium (Cr)-Total (mg/kg wwt)	0.108	0.129	0.165	0.472	0.392
	Cobalt (Co)-Total (mg/kg)	0.071	0.120	0.134	0.282	0.230
	Cobalt (Co)-Total (mg/kg wwt)	0.0174	0.0285	0.0328	0.0688	0.0545
	Copper (Cu)-Total (mg/kg)	2.06	2.47	2.40	3.24	2.73
	Copper (Cu)-Total (mg/kg wwt)	0.504	0.585	0.587	0.792	0.646
	Iron (Fe)-Total (mg/kg)	68.9	95.6	75.1	374	264
	Iron (Fe)-Total (mg/kg wwt)	16.9	22.7	18.4	91.2	62.5
	Lead (Pb)-Total (mg/kg)	<0.020	0.026	<0.020	0.064	0.068
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0062	<0.0040	0.0157	0.0162
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1270	1540	1250	1740	1310
	Magnesium (Mg)-Total (mg/kg wwt)	311	366	307	426	310
	Manganese (Mn)-Total (mg/kg)	5.63	9.10	6.06	18.8	10.8
	Manganese (Mn)-Total (mg/kg wwt)	1.38	2.16	1.48	4.59	2.57

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1527078-11	L1527078-12			
	Description	Other	Other			
	Sampled Date	23-SEP-14	23-SEP-14			
	Sampled Time	12:30	12:30			
	Client ID	PCC-11 (CPGN-1)	PCC-12 (CPGN-1)			
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	76.4	75.5			
Metals	Aluminum (Al)-Total (mg/kg)	64.1	10.3			
	Aluminum (Al)-Total (mg/kg wwt)	15.1	2.54			
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010			
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020			
	Arsenic (As)-Total (mg/kg)	0.217	0.295			
	Arsenic (As)-Total (mg/kg wwt)	0.0512	0.0723			
	Barium (Ba)-Total (mg/kg)	2.02	1.28			
	Barium (Ba)-Total (mg/kg wwt)	0.478	0.314			
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010			
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020			
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010			
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020			
	Boron (B)-Total (mg/kg)	<1.0	<1.0			
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20			
	Cadmium (Cd)-Total (mg/kg)	0.113	0.143			
	Cadmium (Cd)-Total (mg/kg wwt)	0.0266	0.0352			
	Calcium (Ca)-Total (mg/kg)	35900	23100			
	Calcium (Ca)-Total (mg/kg wwt)	8490	5660			
	Cesium (Cs)-Total (mg/kg)	0.0844	0.0782			
	Cesium (Cs)-Total (mg/kg wwt)	0.0199	0.0192			
	Chromium (Cr)-Total (mg/kg)	0.647	0.217			
	Chromium (Cr)-Total (mg/kg wwt)	0.153	0.053			
	Cobalt (Co)-Total (mg/kg)	0.121	0.080			
	Cobalt (Co)-Total (mg/kg wwt)	0.0285	0.0196			
	Copper (Cu)-Total (mg/kg)	3.25	1.82			
	Copper (Cu)-Total (mg/kg wwt)	0.767	0.446			
	Iron (Fe)-Total (mg/kg)	143	65.9			
	Iron (Fe)-Total (mg/kg wwt)	33.7	16.1			
	Lead (Pb)-Total (mg/kg)	0.035	<0.020			
	Lead (Pb)-Total (mg/kg wwt)	0.0084	0.0042			
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50			
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10			
	Magnesium (Mg)-Total (mg/kg)	1440	1080			
	Magnesium (Mg)-Total (mg/kg wwt)	340	264			
	Manganese (Mn)-Total (mg/kg)	8.00	4.18			
	Manganese (Mn)-Total (mg/kg wwt)	1.89	1.02			

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527078-1 Other 23-SEP-14 12:30 PCC-1 (CPGN-1)	L1527078-2 Other 23-SEP-14 12:30 PCC-2 (CPGN-1)	L1527078-3 Other 23-SEP-14 12:30 PCC-3 (CPGN-1)	L1527078-4 Other 23-SEP-14 12:30 PCC-4 (CPGN-1)	L1527078-5 Other 23-SEP-14 12:30 PCC-5 (CPGN-1)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.468	0.431	0.433	0.528	0.373
	Mercury (Hg)-Total (mg/kg wwt)	0.107	0.113	0.106	0.135	0.0824
	Molybdenum (Mo)-Total (mg/kg)	0.214	0.124	0.091	0.126	0.158
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0490	0.0327	0.0223	0.0322	0.0348
	Nickel (Ni)-Total (mg/kg)	1.02	0.56	0.29	0.55	0.68
	Nickel (Ni)-Total (mg/kg wwt)	0.234	0.148	0.071	0.140	0.151
	Phosphorus (P)-Total (mg/kg)	26800	15100	19400	19800	29800
	Phosphorus (P)-Total (mg/kg wwt)	6130	3980	4730	5070	6590
	Potassium (K)-Total (mg/kg)	14900	11500	13400	12500	13600
	Potassium (K)-Total (mg/kg wwt)	3410	3020	3270	3200	2990
	Rubidium (Rb)-Total (mg/kg)	16.4	14.6	17.2	14.6	15.9
	Rubidium (Rb)-Total (mg/kg wwt)	3.75	3.85	4.19	3.73	3.52
	Selenium (Se)-Total (mg/kg)	3.70	1.90	3.12	1.97	3.50
	Selenium (Se)-Total (mg/kg wwt)	0.847	0.499	0.762	0.504	0.772
	Sodium (Na)-Total (mg/kg)	3460	2470	2700	2780	3130
	Sodium (Na)-Total (mg/kg wwt)	793	648	658	714	692
	Strontium (Sr)-Total (mg/kg)	71.4	35.6	35.8	60.6	89.0
	Strontium (Sr)-Total (mg/kg wwt)	16.4	9.36	8.75	15.5	19.7
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0084	0.0075	0.0075	0.0078	0.0079
	Thallium (Tl)-Total (mg/kg wwt)	0.00193	0.00197	0.00182	0.00199	0.00175
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0274	0.0124	0.0057	0.0185	0.0191
	Uranium (U)-Total (mg/kg wwt)	0.00628	0.00326	0.00138	0.00474	0.00422
	Vanadium (V)-Total (mg/kg)	0.80	0.46	<0.10	0.26	0.40
	Vanadium (V)-Total (mg/kg wwt)	0.184	0.120	<0.020	0.068	0.088
	Zinc (Zn)-Total (mg/kg)	107	88.7	105	98.4	88.5
	Zinc (Zn)-Total (mg/kg wwt)	24.6	23.3	25.6	25.2	19.6
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527078-6 Other 23-SEP-14 12:30 PCC-6 (CPGN-1)	L1527078-7 Other 23-SEP-14 12:30 PCC-7 (CPGN-1)	L1527078-8 Other 23-SEP-14 12:30 PCC-8 (CPGN-1)	L1527078-9 Other 23-SEP-14 12:30 PCC-9 (CPGN-1)	L1527078-10 Other 23-SEP-14 12:30 PCC-10 (CPGN-1)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.445	0.437	0.434	0.287	0.394
	Mercury (Hg)-Total (mg/kg wwt)	0.109	0.104	0.106	0.0702	0.0933
	Molybdenum (Mo)-Total (mg/kg)	0.090	0.098	0.118	0.210	0.208
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0221	0.0233	0.0290	0.0513	0.0494
	Nickel (Ni)-Total (mg/kg)	0.26	0.31	0.44	1.09	1.11
	Nickel (Ni)-Total (mg/kg wwt)	0.064	0.073	0.107	0.266	0.263
	Phosphorus (P)-Total (mg/kg)	18700	25200	16900	31900	18900
	Phosphorus (P)-Total (mg/kg wwt)	4560	5960	4140	7780	4480
	Potassium (K)-Total (mg/kg)	12400	13500	13000	13000	13200
	Potassium (K)-Total (mg/kg wwt)	3040	3210	3180	3170	3130
	Rubidium (Rb)-Total (mg/kg)	15.1	16.2	17.3	12.7	14.6
	Rubidium (Rb)-Total (mg/kg wwt)	3.69	3.84	4.23	3.10	3.47
	Selenium (Se)-Total (mg/kg)	1.62	2.01	2.62	3.30	2.53
	Selenium (Se)-Total (mg/kg wwt)	0.395	0.476	0.641	0.806	0.599
	Sodium (Na)-Total (mg/kg)	2330	2690	2410	2500	2760
	Sodium (Na)-Total (mg/kg wwt)	570	637	590	611	653
	Strontium (Sr)-Total (mg/kg)	48.4	73.0	37.0	78.2	44.3
	Strontium (Sr)-Total (mg/kg wwt)	11.8	17.3	9.03	19.1	10.5
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0073	0.0091	0.0093	0.0115	0.0084
	Thallium (Tl)-Total (mg/kg wwt)	0.00179	0.00216	0.00228	0.00281	0.00199
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.022
	Uranium (U)-Total (mg/kg)	0.0068	0.0155	0.0055	0.0273	0.0155
	Uranium (U)-Total (mg/kg wwt)	0.00166	0.00368	0.00134	0.00668	0.00368
	Vanadium (V)-Total (mg/kg)	<0.10	0.26	<0.10	1.03	0.62
	Vanadium (V)-Total (mg/kg wwt)	0.021	0.060	0.020	0.252	0.146
	Zinc (Zn)-Total (mg/kg)	81.9	105	81.5	92.1	86.6
	Zinc (Zn)-Total (mg/kg wwt)	20.0	24.9	19.9	22.5	20.5
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1527078-11	L1527078-12			
	Description	Other	Other			
	Sampled Date	23-SEP-14	23-SEP-14			
	Sampled Time	12:30	12:30			
	Client ID	PCC-11 (CPGN-1)	PCC-12 (CPGN-1)			
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.427	0.376			
	Mercury (Hg)-Total (mg/kg wwt)	0.101	0.0922			
	Molybdenum (Mo)-Total (mg/kg)	0.109	0.061			
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0257	0.0148			
	Nickel (Ni)-Total (mg/kg)	0.42	<0.20			
	Nickel (Ni)-Total (mg/kg wwt)	0.100	<0.040			
	Phosphorus (P)-Total (mg/kg)	24900	17500			
	Phosphorus (P)-Total (mg/kg wwt)	5880	4280			
	Potassium (K)-Total (mg/kg)	12100	10200			
	Potassium (K)-Total (mg/kg wwt)	2870	2500			
	Rubidium (Rb)-Total (mg/kg)	15.1	14.8			
	Rubidium (Rb)-Total (mg/kg wwt)	3.56	3.62			
	Selenium (Se)-Total (mg/kg)	2.20	2.61			
	Selenium (Se)-Total (mg/kg wwt)	0.519	0.640			
	Sodium (Na)-Total (mg/kg)	2660	2020			
	Sodium (Na)-Total (mg/kg wwt)	627	495			
	Strontium (Sr)-Total (mg/kg)	76.8	42.9			
	Strontium (Sr)-Total (mg/kg wwt)	18.1	10.5			
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020			
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040			
	Thallium (Tl)-Total (mg/kg)	0.0062	0.0075			
	Thallium (Tl)-Total (mg/kg wwt)	0.00147	0.00185			
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10			
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020			
	Uranium (U)-Total (mg/kg)	0.0142	0.0064			
	Uranium (U)-Total (mg/kg wwt)	0.00336	0.00157			
	Vanadium (V)-Total (mg/kg)	0.38	<0.10			
	Vanadium (V)-Total (mg/kg wwt)	0.089	0.023			
	Zinc (Zn)-Total (mg/kg)	93.5	76.4			
	Zinc (Zn)-Total (mg/kg wwt)	22.1	18.7			
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20			
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

MET-DRY-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Q LK CPGN-1 PCC-1-12

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # Q Lk CPGN-1 PCC-1-12

Page 1 of 1

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	

L1527078-COFC

Lab Wor (lab us

ALS Contact: Can Dang Sampler: C. Koenig

Sample #	Sample Identification (This desc... will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Number of Containers
	PCC-1	23-09-14	12:30	Other	X		X	
	PCC-2	23-09-14	12:30	Other	X		X	
	PCC-3	23-09-14	12:30	Other	X		X	
	PCC-4	23-09-14	12:30	Other	X		X	
	PCC-5	23-09-14	12:30	Other	X		X	
	PCC-6	23-09-14	12:30	Other	X		X	
	PCC-7	23-09-14	12:30	Other	X		X	
	PCC-8	23-09-14	12:30	Other	X		X	
	PCC-9	23-09-14	12:30	Other	X		X	
	PCC-10	23-09-14	12:30	Other	X		X	
	PCC-11	23-09-14	12:30	Other	X		X	
	PCC-12	23-09-14	12:30	Other	X		X	

Short Holding Time
Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

*Please add site name CPGN-1(Cedar Point Gill Net-1,as potentially impacted)

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C. Koenig	Sep 30/14	17:00	JH	Oct 2	10:50	°C				

Sample Receipt Confirmation

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
afrye@mountpolley.com
CORY.BETTLES@SNCLAVALIN.COM
CKOENIG@RECHRISMINE.CA
NATALIE.NEUFELD@SNCLAVALIN.COM
Report Name: CROSSTAB_ALS
Digital Type: EHS_MOUNTP
Digital Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
CORY.BETTLES@SNCLAVALIN.COM
CKOENIG@RECHRISMINE.CA
NATALIE.NEUFELD@SNCLAVALIN.COM
Distribution: Hard Copy: N Email: Y Fax: N

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP.
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100

Client Information:

Job Reference #:
Project PO #:
Legal Site Description: N/A
Quote #: N/A
Date Sampled: 23-SEP-14
Date Received: 02-OCT-14
Sampled By: C KOENIG
Chain Of Custody: Q LK CPGN-1 PCC-1-12

Workorder Summary:

Lab Work Order #: **L1527078**
Estimated completion date: 17-NOV-14
12 Samples received at ALS in **VANCOUVER**
Account Manager: Can Dang
Estimated sample disposal date: 17-DEC-14

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type	Client Job#
L1527078-1	PCC-1	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-2	PCC-2	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-3	PCC-3	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-4	PCC-4	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-5	PCC-5	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-6	PCC-6	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-7	PCC-7	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-8	PCC-8	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-9	PCC-9	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-10	PCC-10	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-11	PCC-11	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527078-12	PCC-12	23-SEP-14 12:30	02-OCT-14 10:50	17-NOV-14		OTHER	

Analysis Requested :	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS [DRY]	Mercury in Tissue by CVAFS [WET]	Metals in Tissue by CRC ICPMS [DRY]	Metals in Tissue by CRC ICPMS [WET]	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
PCC-1	✓	✓	✓	✓	✓	✓	✓
PCC-2	✓	✓	✓	✓	✓	✓	✓
PCC-3	✓	✓	✓	✓	✓	✓	✓
PCC-4	✓	✓	✓	✓	✓	✓	✓
PCC-5	✓	✓	✓	✓	✓	✓	✓
PCC-6	✓	✓	✓	✓	✓	✓	✓
PCC-7	✓	✓	✓	✓	✓	✓	✓
PCC-8	✓	✓	✓	✓	✓	✓	✓
PCC-9	✓	✓	✓	✓	✓	✓	✓
PCC-10	✓	✓	✓	✓	✓	✓	✓
PCC-11	✓	✓	✓	✓	✓	✓	✓
PCC-12	✓	✓	✓	✓	✓	✓	✓

Sample Integrity Observations: No observations were identified for this work order submission.

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # when calling your Account Manager.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # Q Lk CPGN-1 PCC-1-12

Page 1 of 1

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	

L1527078-COFC

Lab Wor (lab us

ALS Contact: Can Dang Sampler: C. Koenig

Sample #	Sample Identification (This desc... will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Number of Containers
	PCC-1	23-09-14	12:30	Other	X		X	
	PCC-2	23-09-14	12:30	Other	X		X	
	PCC-3	23-09-14	12:30	Other	X		X	
	PCC-4	23-09-14	12:30	Other	X		X	
	PCC-5	23-09-14	12:30	Other	X		X	
	PCC-6	23-09-14	12:30	Other	X		X	
	PCC-7	23-09-14	12:30	Other	X		X	
	PCC-8	23-09-14	12:30	Other	X		X	
	PCC-9	23-09-14	12:30	Other	X		X	
	PCC-10	23-09-14	12:30	Other	X		X	
	PCC-11	23-09-14	12:30	Other	X		X	
	PCC-12	23-09-14	12:30	Other	X		X	

Short Holding Time
Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

*Please add site name CPGN-1(Cedar Point Gill Net-1,as potentially impacted)

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C. Koenig	Sep 30/14	17:00	JH	Oct 2	10:50	°C				

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 02-OCT-14
Report Date: 24-NOV-14 16:42 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1527082

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: RB-1-8 POL LK GN FL, RB-9-16 POL LK GN SK
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527082-1 Other 25-SEP-14 17:00 RB-1(TISSUE)	L1527082-2 Other 25-SEP-14 17:00 RB-1(LIVER)	L1527082-3 Other 25-SEP-14 17:00 RB-2(TISSUE)	L1527082-4 Other 25-SEP-14 17:00 RB-2(LIVER)	L1527082-5 Other 25-SEP-14 17:00 RB-3(TISSUE)
TISSUE						
Physical Tests	% Moisture (%)	77.9	74.5	80.4	74.0	77.2
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<5.0	3.9
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<1.0	0.89
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.037	0.094	0.031	0.074	0.106
	Arsenic (As)-Total (mg/kg wwt)	0.0081	0.0240	0.0061	0.0193	0.0243
	Barium (Ba)-Total (mg/kg)	<0.050	0.073	0.051	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.019	0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.062	0.036	0.107	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0157	0.0071	0.0278	<0.0010
	Calcium (Ca)-Total (mg/kg)	253	464	1160	432	204
	Calcium (Ca)-Total (mg/kg wwt)	55.9	118	228	112	46.5
	Cesium (Cs)-Total (mg/kg)	0.0320	0.0240	0.0288	0.0193	0.0593
	Cesium (Cs)-Total (mg/kg wwt)	0.0071	0.0061	0.0056	0.0050	0.0135
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	<0.040	0.010
	Cobalt (Co)-Total (mg/kg)	<0.020	0.091	<0.020	0.053	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	0.0043	0.0232	<0.0040	0.0137	<0.0040
	Copper (Cu)-Total (mg/kg)	1.89	79.2	1.77	113	1.85
	Copper (Cu)-Total (mg/kg wwt)	0.417	20.2	0.346	29.4	0.423
	Iron (Fe)-Total (mg/kg)	23.6	1670	41.2	1670	12.1
	Iron (Fe)-Total (mg/kg wwt)	5.20	425	8.1	435	2.76
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1280	655	1090	651	1760
	Magnesium (Mg)-Total (mg/kg wwt)	282	167	213	169	402
	Manganese (Mn)-Total (mg/kg)	0.277	5.24	0.324	4.99	0.359
	Manganese (Mn)-Total (mg/kg wwt)	0.061	1.33	0.063	1.30	0.082

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527082-6 Other 25-SEP-14 17:00 RB-3(LIVER)	L1527082-7 Other 25-SEP-14 17:00 RB-4(TISSUE)	L1527082-8 Other 25-SEP-14 17:00 RB-4(LIVER)	L1527082-9 Other 25-SEP-14 17:00 RB-5(TISSUE)	L1527082-10 Other 25-SEP-14 17:00 RB-5(LIVER)
TISSUE						
Physical Tests	% Moisture (%)	71.1	79.0	71.9	77.3	73.8
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<5.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	1.1	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.161	0.021	0.090	0.050	0.129
	Arsenic (As)-Total (mg/kg wwt)	0.0466	0.0044	0.0254	0.0114	0.0337
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	0.089	<0.050	0.260
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	0.025	<0.010	0.068
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.051	<0.0050	0.135	<0.0050	0.034
	Cadmium (Cd)-Total (mg/kg wwt)	0.0148	<0.0010	0.0378	<0.0010	0.0088
	Calcium (Ca)-Total (mg/kg)	481	378	1410	264	348
	Calcium (Ca)-Total (mg/kg wwt)	139	79.3	397	59.7	91.2
	Cesium (Cs)-Total (mg/kg)	0.0306	0.0293	0.0172	0.0292	0.0273
	Cesium (Cs)-Total (mg/kg wwt)	0.0088	0.0062	0.0048	0.0066	0.0071
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	<0.040	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.064	<0.020	0.067	<0.020	0.078
	Cobalt (Co)-Total (mg/kg wwt)	0.0184	<0.0040	0.0188	<0.0040	0.0204
	Copper (Cu)-Total (mg/kg)	42.4	1.26	677	1.35	12.9
	Copper (Cu)-Total (mg/kg wwt)	12.3	0.265	190	0.307	3.37
	Iron (Fe)-Total (mg/kg)	612	18.6	2240	18.3	897
	Iron (Fe)-Total (mg/kg wwt)	177	3.91	631	4.14	235
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	675	1380	637	1350	641
	Magnesium (Mg)-Total (mg/kg wwt)	195	289	179	307	168
	Manganese (Mn)-Total (mg/kg)	5.15	0.201	7.67	0.208	10.1
	Manganese (Mn)-Total (mg/kg wwt)	1.49	0.042	2.16	0.047	2.65

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527082-11 Other 25-SEP-14 17:00 RB-6(WHOLE BODY FISH)	L1527082-12 Other 25-SEP-14 17:00 RB-7(TISSUE)	L1527082-13 Other 25-SEP-14 17:00 RB-7(LIVER)	L1527082-14 Other 25-SEP-14 17:00 RB-8(TISSUE)	L1527082-15 Other 25-SEP-14 17:00 RB-8(LIVER)
TISSUE						
Physical Tests	% Moisture (%)	74.8	77.9	71.7	77.3	72.8
Metals	Aluminum (Al)-Total (mg/kg)	6.1	<2.0	<5.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	1.54	<0.40	<1.0	0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.214	0.091	0.096	0.079	0.144
	Arsenic (As)-Total (mg/kg wwt)	0.0539	0.0200	0.0271	0.0179	0.0392
	Barium (Ba)-Total (mg/kg)	0.480	<0.050	<0.050	0.052	<0.050
	Barium (Ba)-Total (mg/kg wwt)	0.121	<0.010	<0.010	0.012	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.0389	<0.0050	0.138	<0.0050	0.077
	Cadmium (Cd)-Total (mg/kg wwt)	0.0098	<0.0010	0.0391	<0.0010	0.0210
	Calcium (Ca)-Total (mg/kg)	10800	433	234	1460	299
	Calcium (Ca)-Total (mg/kg wwt)	2730	95.6	66.2	331	81.4
	Cesium (Cs)-Total (mg/kg)	0.0547	0.0444	0.0224	0.0323	0.0270
	Cesium (Cs)-Total (mg/kg wwt)	0.0137	0.0098	0.0063	0.0073	0.0073
	Chromium (Cr)-Total (mg/kg)	0.113	<0.050	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	0.028	<0.010	<0.040	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.061	<0.020	0.050	<0.020	0.044
	Cobalt (Co)-Total (mg/kg wwt)	0.0154	<0.0040	0.0142	<0.0040	0.0121
	Copper (Cu)-Total (mg/kg)	2.39	1.57	162	1.05	37.1
	Copper (Cu)-Total (mg/kg wwt)	0.600	0.347	45.9	0.240	10.1
	Iron (Fe)-Total (mg/kg)	60.8	19.7	1650	14.4	1140
	Iron (Fe)-Total (mg/kg wwt)	15.3	4.34	468	3.28	311
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1140	1390	590	1310	796
	Magnesium (Mg)-Total (mg/kg wwt)	286	308	167	298	216
	Manganese (Mn)-Total (mg/kg)	6.01	0.224	6.46	0.508	11.4
	Manganese (Mn)-Total (mg/kg wwt)	1.51	0.050	1.83	0.116	3.10

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527082-16 Other 25-SEP-14 17:00 RB-9(TISSUE)	L1527082-17 Other 25-SEP-14 17:00 RB-9(LIVER)	L1527082-18 Other 25-SEP-14 17:00 RB-10(TISSUE)	L1527082-19 Other 25-SEP-14 17:00 RB-10(LIVER)	L1527082-20 Other 25-SEP-14 17:00 RB-11(WHOLE BODY FISH)
TISSUE						
Physical Tests	% Moisture (%)	75.4	72.9	78.4	72.3	73.7
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<2.0	<5.0	5.8
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<0.40	<1.0	1.53
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.053	0.119	0.048	0.112	0.181
	Arsenic (As)-Total (mg/kg wwt)	0.0131	0.0324	0.0103	0.0310	0.0477
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	0.501
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	0.132
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.039	<0.0050	0.096	0.0219
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0107	<0.0010	0.0265	0.0058
	Calcium (Ca)-Total (mg/kg)	513	300	613	392	21500
	Calcium (Ca)-Total (mg/kg wwt)	126	81.4	132	109	5650
	Cesium (Cs)-Total (mg/kg)	0.0279	0.0181	0.0404	0.0274	0.0540
	Cesium (Cs)-Total (mg/kg wwt)	0.0069	0.0049	0.0087	0.0076	0.0142
	Chromium (Cr)-Total (mg/kg)	0.080	<0.20	<0.050	<0.20	0.150
	Chromium (Cr)-Total (mg/kg wwt)	0.020	<0.040	<0.010	<0.040	0.039
	Cobalt (Co)-Total (mg/kg)	<0.020	0.069	<0.020	0.063	0.057
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0187	<0.0040	0.0175	0.0149
	Copper (Cu)-Total (mg/kg)	1.44	114	1.42	62.3	2.32
	Copper (Cu)-Total (mg/kg wwt)	0.354	31.1	0.307	17.2	0.609
	Iron (Fe)-Total (mg/kg)	17.3	742	17.2	1080	55.4
	Iron (Fe)-Total (mg/kg wwt)	4.25	201	3.70	300	14.6
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.020	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.0040	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1390	628	1370	756	1300
	Magnesium (Mg)-Total (mg/kg wwt)	343	170	295	209	341
	Manganese (Mn)-Total (mg/kg)	0.235	6.16	0.317	11.6	6.12
	Manganese (Mn)-Total (mg/kg wwt)	0.058	1.67	0.068	3.21	1.61

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527082-21 Other 25-SEP-14 17:00 RB-12(TISSUE)	L1527082-22 Other 25-SEP-14 17:00 RB-12(LIVER)	L1527082-23 Other 25-SEP-14 17:00 RB-13(TISSUE)	L1527082-24 Other 25-SEP-14 17:00 RB-13(LIVER)	L1527082-25 Other 25-SEP-14 17:00 RB-14(TISSUE)
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	76.4	73.0	76.9	73.9	79.9
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.044	0.077	<0.030	0.098	0.051
	Arsenic (As)-Total (mg/kg wwt)	0.0105	0.0209	0.0066	0.0256	0.0103
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.077	<0.010	0.120	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0208	<0.0020	0.0312	<0.0020
	Calcium (Ca)-Total (mg/kg)	275	244	1090	405	314
	Calcium (Ca)-Total (mg/kg wwt)	65.1	65.8	252	106	63.2
	Cesium (Cs)-Total (mg/kg)	0.0307	0.0235	0.0274	0.0181	0.0407
	Cesium (Cs)-Total (mg/kg wwt)	0.0073	0.0064	0.0063	0.0047	0.0082
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	0.047	<0.020	0.079	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0128	<0.0040	0.0207	<0.0040
	Copper (Cu)-Total (mg/kg)	1.23	151	0.75	108	0.94
	Copper (Cu)-Total (mg/kg wwt)	0.291	40.8	0.173	28.1	0.190
	Iron (Fe)-Total (mg/kg)	17.2	1450	13.2	1500	26.8
	Iron (Fe)-Total (mg/kg wwt)	4.07	393	3.1	392	5.4
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1250	735	1100	568	1070
	Magnesium (Mg)-Total (mg/kg wwt)	297	198	255	148	215
	Manganese (Mn)-Total (mg/kg)	0.126	11.2	0.261	7.53	0.188
	Manganese (Mn)-Total (mg/kg wwt)	0.030	3.03	0.060	1.96	0.038

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1527082-26	L1527082-27	L1527082-28	L1527082-29	L1527082-30
	Description	Other	Other	Other	Other	Other
	Sampled Date	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14
	Sampled Time	17:00	17:00	17:00	17:00	17:00
	Client ID	RB-14(LIVER)	RB-15(TISSUE)	RB-15(LIVER)	RB-16(WHOLE BODY FISH)	RSC-1(WHOLE BODY FISH),((PANEL 4 SK NET))
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	75.4	77.9	73.4	74.1	75.9
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	2.0	<5.0	6.4	11.3
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	0.45	<1.0	1.65	2.72
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.108	0.034	0.085	0.129	0.077
	Arsenic (As)-Total (mg/kg wwt)	0.0265	0.0075	0.0227	0.0334	0.0186
	Barium (Ba)-Total (mg/kg)	0.073	0.064	<0.050	0.397	1.94
	Barium (Ba)-Total (mg/kg wwt)	0.018	0.014	<0.010	0.103	0.468
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.191	<0.0050	0.022	0.0253	0.0315
	Cadmium (Cd)-Total (mg/kg wwt)	0.0471	<0.0010	0.0058	0.0066	0.0076
	Calcium (Ca)-Total (mg/kg)	868	1160	305	10400	46300
	Calcium (Ca)-Total (mg/kg wwt)	213	256	81.3	2700	11100
	Cesium (Cs)-Total (mg/kg)	0.0302	0.0278	0.0236	0.0489	0.0261
	Cesium (Cs)-Total (mg/kg wwt)	0.0074	0.0061	0.0063	0.0127	0.0063
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.20	0.109	0.211
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	<0.040	0.028	0.051
	Cobalt (Co)-Total (mg/kg)	0.063	<0.020	0.055	0.039	0.144
	Cobalt (Co)-Total (mg/kg wwt)	0.0155	<0.0040	0.0147	0.0101	0.0346
	Copper (Cu)-Total (mg/kg)	312	1.14	118	2.35	2.21
	Copper (Cu)-Total (mg/kg wwt)	76.7	0.252	31.3	0.608	0.532
	Iron (Fe)-Total (mg/kg)	2410	16.3	672	41.6	68.2
	Iron (Fe)-Total (mg/kg wwt)	592	3.61	179	10.8	16.4
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	0.036	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	0.0094	0.0043
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	809	1190	685	979	1500
	Magnesium (Mg)-Total (mg/kg wwt)	199	262	182	254	361
	Manganese (Mn)-Total (mg/kg)	12.0	0.427	4.40	5.61	9.48
	Manganese (Mn)-Total (mg/kg wwt)	2.94	0.094	1.17	1.45	2.28

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	Sample ID	L1527082-1	L1527082-2	L1527082-3	L1527082-4	L1527082-5
	Description	Other	Other	Other	Other	Other
	Sampled Date	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14
	Sampled Time	17:00	17:00	17:00	17:00	17:00
	Client ID	RB-1(TISSUE)	RB-1(LIVER)	RB-2(TISSUE)	RB-2(LIVER)	RB-3(TISSUE)
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.301	0.174	0.524	0.236	0.211
	Mercury (Hg)-Total (mg/kg wwt)	0.0665	0.0442	0.103	0.0613	0.0481
	Molybdenum (Mo)-Total (mg/kg)	<0.020	2.01	<0.040	2.41	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.512	<0.0080	0.629	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11000	10800	9740	12000	14200
	Phosphorus (P)-Total (mg/kg wwt)	2430	2750	1910	3120	3250
	Potassium (K)-Total (mg/kg)	18900	10200	20000	10300	25900
	Potassium (K)-Total (mg/kg wwt)	4170	2590	3920	2690	5910
	Rubidium (Rb)-Total (mg/kg)	7.22	5.68	6.78	4.74	10.9
	Rubidium (Rb)-Total (mg/kg wwt)	1.59	1.45	1.33	1.23	2.48
	Selenium (Se)-Total (mg/kg)	3.09	37.0	3.72	40.6	3.38
	Selenium (Se)-Total (mg/kg wwt)	0.681	9.41	0.729	10.6	0.773
	Sodium (Na)-Total (mg/kg)	930	3970	4100	4360	1100
	Sodium (Na)-Total (mg/kg wwt)	205	1010	802	1140	251
	Strontium (Sr)-Total (mg/kg)	0.283	0.94	1.47	1.07	0.231
	Strontium (Sr)-Total (mg/kg wwt)	0.062	0.240	0.289	0.279	0.053
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0046	0.0172	0.0041	0.0224	0.0031
	Thallium (Tl)-Total (mg/kg wwt)	0.00101	0.00438	0.00080	0.00583	0.00071
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00050	<0.00040	0.00049	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.26	<0.10	0.53	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.067	<0.020	0.138	<0.020
	Zinc (Zn)-Total (mg/kg)	14.3	171	21.3	281	17.8
	Zinc (Zn)-Total (mg/kg wwt)	3.15	43.5	4.17	73.1	4.07
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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	Sample ID	L1527082-6	L1527082-7	L1527082-8	L1527082-9	L1527082-10
	Description	Other	Other	Other	Other	Other
	Sampled Date	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14
	Sampled Time	17:00	17:00	17:00	17:00	17:00
	Client ID	RB-3(LIVER)	RB-4(TISSUE)	RB-4(LIVER)	RB-5(TISSUE)	RB-5(LIVER)
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.159	0.353	0.201	0.396	0.207
	Mercury (Hg)-Total (mg/kg wwt)	0.0460	0.0741	0.0565	0.0897	0.0542
	Molybdenum (Mo)-Total (mg/kg)	0.858	<0.020	2.58	<0.020	1.32
	Molybdenum (Mo)-Total (mg/kg wwt)	0.248	<0.0040	0.724	<0.0040	0.345
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11700	11300	12000	11700	11300
	Phosphorus (P)-Total (mg/kg wwt)	3390	2370	3370	2650	2970
	Potassium (K)-Total (mg/kg)	9080	19000	11400	19200	12400
	Potassium (K)-Total (mg/kg wwt)	2630	3990	3190	4340	3260
	Rubidium (Rb)-Total (mg/kg)	5.64	5.65	4.66	6.83	5.50
	Rubidium (Rb)-Total (mg/kg wwt)	1.63	1.19	1.31	1.55	1.44
	Selenium (Se)-Total (mg/kg)	24.1	3.58	254	3.71	3.89
	Selenium (Se)-Total (mg/kg wwt)	6.98	0.752	71.3	0.840	1.02
	Sodium (Na)-Total (mg/kg)	3720	1890	4000	1460	4710
	Sodium (Na)-Total (mg/kg wwt)	1080	396	1120	331	1230
	Strontium (Sr)-Total (mg/kg)	1.20	0.444	3.11	0.217	0.87
	Strontium (Sr)-Total (mg/kg wwt)	0.346	0.093	0.875	0.049	0.228
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0182	0.0030	0.0163	0.0020	0.0082
	Thallium (Tl)-Total (mg/kg wwt)	0.00528	0.00063	0.00458	0.00046	0.00214
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0032	<0.0020	0.0044
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00090	<0.00040	0.00116
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.65	<0.10	0.26
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.182	<0.020	0.069
	Zinc (Zn)-Total (mg/kg)	175	14.3	182	14.4	166
	Zinc (Zn)-Total (mg/kg wwt)	50.7	3.00	51.2	3.27	43.5
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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	Sample ID	L1527082-11	L1527082-12	L1527082-13	L1527082-14	L1527082-15
	Description	Other	Other	Other	Other	Other
	Sampled Date	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14
	Sampled Time	17:00	17:00	17:00	17:00	17:00
	Client ID	RB-6(WHOLE BODY FISH)	RB-7(TISSUE)	RB-7(LIVER)	RB-8(TISSUE)	RB-8(LIVER)
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.146	0.356	0.147	0.340	0.148
	Mercury (Hg)-Total (mg/kg wwt)	0.0366	0.0786	0.0415	0.0772	0.0403
	Molybdenum (Mo)-Total (mg/kg)	0.065	<0.020	1.79	<0.020	1.04
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0163	<0.0040	0.505	<0.0040	0.282
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	14100	11800	12100	11100	13600
	Phosphorus (P)-Total (mg/kg wwt)	3550	2610	3430	2520	3690
	Potassium (K)-Total (mg/kg)	14500	19900	11200	17900	11900
	Potassium (K)-Total (mg/kg wwt)	3650	4400	3170	4080	3240
	Rubidium (Rb)-Total (mg/kg)	7.29	8.59	6.34	6.16	6.30
	Rubidium (Rb)-Total (mg/kg wwt)	1.83	1.90	1.79	1.40	1.71
	Selenium (Se)-Total (mg/kg)	3.65	2.91	80.5	3.24	19.0
	Selenium (Se)-Total (mg/kg wwt)	0.919	0.642	22.8	0.736	5.18
	Sodium (Na)-Total (mg/kg)	2900	1250	3090	1810	3790
	Sodium (Na)-Total (mg/kg wwt)	729	277	874	413	1030
	Strontium (Sr)-Total (mg/kg)	18.1	0.512	0.42	1.92	0.77
	Strontium (Sr)-Total (mg/kg wwt)	4.56	0.113	0.119	0.436	0.209
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0044	0.0056	0.0240	0.0035	0.0144
	Thallium (Tl)-Total (mg/kg wwt)	0.00111	0.00124	0.00680	0.00079	0.00391
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.18	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.051	<0.020	0.025
	Zinc (Zn)-Total (mg/kg)	143	14.3	95.7	19.4	186
	Zinc (Zn)-Total (mg/kg wwt)	36.0	3.15	27.1	4.41	50.5
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1527082-16 Other 25-SEP-14 17:00 RB-9(TISSUE)	L1527082-17 Other 25-SEP-14 17:00 RB-9(LIVER)	L1527082-18 Other 25-SEP-14 17:00 RB-10(TISSUE)	L1527082-19 Other 25-SEP-14 17:00 RB-10(LIVER)	L1527082-20 Other 25-SEP-14 17:00 RB-11(WHOLE BODY FISH)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.420	0.255	0.271	0.144	0.132
	Mercury (Hg)-Total (mg/kg wwt)	0.103	0.0692	0.0584	0.0400	0.0348
	Molybdenum (Mo)-Total (mg/kg)	<0.020	1.13	<0.020	1.49	0.063
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.308	<0.0040	0.413	0.0166
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11500	11800	11000	13700	19900
	Phosphorus (P)-Total (mg/kg wwt)	2840	3210	2380	3790	5240
	Potassium (K)-Total (mg/kg)	19100	11700	18200	11700	14600
	Potassium (K)-Total (mg/kg wwt)	4700	3180	3920	3250	3840
	Rubidium (Rb)-Total (mg/kg)	6.07	5.06	7.12	6.08	7.00
	Rubidium (Rb)-Total (mg/kg wwt)	1.49	1.37	1.53	1.68	1.84
	Selenium (Se)-Total (mg/kg)	2.77	55.6	4.34	30.7	4.35
	Selenium (Se)-Total (mg/kg wwt)	0.681	15.1	0.935	8.50	1.14
	Sodium (Na)-Total (mg/kg)	1350	3960	2000	3080	2760
	Sodium (Na)-Total (mg/kg wwt)	332	1070	432	852	724
	Strontium (Sr)-Total (mg/kg)	0.551	0.60	0.664	0.80	29.4
	Strontium (Sr)-Total (mg/kg wwt)	0.136	0.164	0.143	0.221	7.73
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0035	0.0129	0.0033	0.0085	0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00086	0.00349	0.00070	0.00236	0.00106
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.021
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	0.00051	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.12	<0.10	0.14	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.033	<0.020	0.038	<0.020
	Zinc (Zn)-Total (mg/kg)	14.4	146	13.8	119	153
	Zinc (Zn)-Total (mg/kg wwt)	3.53	39.6	2.98	32.8	40.2
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1527082-21 Other 25-SEP-14 17:00 RB-12(TISSUE)	L1527082-22 Other 25-SEP-14 17:00 RB-12(LIVER)	L1527082-23 Other 25-SEP-14 17:00 RB-13(TISSUE)	L1527082-24 Other 25-SEP-14 17:00 RB-13(LIVER)	L1527082-25 Other 25-SEP-14 17:00 RB-14(TISSUE)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.330	0.156	0.244	0.203	0.406
	Mercury (Hg)-Total (mg/kg wwt)	0.0781	0.0421	0.0564	0.0529	0.0817
	Molybdenum (Mo)-Total (mg/kg)	<0.020	2.02	<0.040	2.46	<0.040
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.546	<0.0080	0.642	<0.0080
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	10200	14100	9550	11500	8710
	Phosphorus (P)-Total (mg/kg wwt)	2410	3800	2210	2990	1750
	Potassium (K)-Total (mg/kg)	17000	12800	18100	10300	18900
	Potassium (K)-Total (mg/kg wwt)	4030	3460	4190	2690	3800
	Rubidium (Rb)-Total (mg/kg)	7.56	9.67	6.11	4.51	7.12
	Rubidium (Rb)-Total (mg/kg wwt)	1.79	2.61	1.41	1.18	1.43
	Selenium (Se)-Total (mg/kg)	3.25	57.1	3.43	52.6	3.45
	Selenium (Se)-Total (mg/kg wwt)	0.769	15.4	0.793	13.7	0.694
	Sodium (Na)-Total (mg/kg)	1770	4200	1200	4100	2170
	Sodium (Na)-Total (mg/kg wwt)	418	1130	277	1070	436
	Strontium (Sr)-Total (mg/kg)	0.210	0.37	1.44	0.90	0.34
	Strontium (Sr)-Total (mg/kg wwt)	0.050	0.100	0.333	0.235	0.069
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0041	0.0185	0.0036	0.0185	0.0054
	Thallium (Tl)-Total (mg/kg wwt)	0.00097	0.00501	0.00084	0.00483	0.00108
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	0.0035	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	0.00091	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.22	<0.10	0.42	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.060	<0.020	0.109	<0.020
	Zinc (Zn)-Total (mg/kg)	12.0	114	11.5	184	11.3
	Zinc (Zn)-Total (mg/kg wwt)	2.84	30.8	2.66	48.1	2.27
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1527082-26 Other 25-SEP-14 17:00 RB-14(LIVER)	L1527082-27 Other 25-SEP-14 17:00 RB-15(TISSUE)	L1527082-28 Other 25-SEP-14 17:00 RB-15(LIVER)	L1527082-29 Other 25-SEP-14 17:00 RB-16(WHOLE BODY FISH)	L1527082-30 Other 25-SEP-14 17:00 RSC-1(WHOLE BODY FISH),((PANEL 4 SK NET))
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.240	0.386	0.194	0.140	0.290
	Mercury (Hg)-Total (mg/kg wwt)	0.0589	0.0854	0.0516	0.0364	0.0698
	Molybdenum (Mo)-Total (mg/kg)	3.01	<0.020	1.72	0.055	0.100
	Molybdenum (Mo)-Total (mg/kg wwt)	0.740	<0.0040	0.458	0.0143	0.0240
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	0.043	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	13500	10500	12200	12900	29300
	Phosphorus (P)-Total (mg/kg wwt)	3330	2320	3240	3350	7060
	Potassium (K)-Total (mg/kg)	11700	16400	12100	12500	10500
	Potassium (K)-Total (mg/kg wwt)	2880	3630	3220	3230	2520
	Rubidium (Rb)-Total (mg/kg)	5.81	6.64	6.01	6.40	6.78
	Rubidium (Rb)-Total (mg/kg wwt)	1.43	1.47	1.60	1.66	1.63
	Selenium (Se)-Total (mg/kg)	89.4	3.35	37.3	3.42	3.58
	Selenium (Se)-Total (mg/kg wwt)	22.0	0.740	9.94	0.886	0.863
	Sodium (Na)-Total (mg/kg)	3920	1390	4030	1820	2460
	Sodium (Na)-Total (mg/kg wwt)	964	306	1070	471	592
	Strontium (Sr)-Total (mg/kg)	2.14	1.58	0.54	15.6	91.4
	Strontium (Sr)-Total (mg/kg wwt)	0.526	0.348	0.143	4.05	22.0
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0399	0.0030	0.0115	0.0041	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00980	0.00066	0.00306	0.00106	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.022
	Uranium (U)-Total (mg/kg)	0.0038	<0.0020	<0.0020	<0.0020	0.0030
	Uranium (U)-Total (mg/kg wwt)	0.00094	<0.00040	<0.00040	<0.00040	0.00073
	Vanadium (V)-Total (mg/kg)	0.60	<0.10	0.12	<0.10	0.12
	Vanadium (V)-Total (mg/kg wwt)	0.148	<0.020	0.033	<0.020	0.029
	Zinc (Zn)-Total (mg/kg)	114	17.0	206	131	119
	Zinc (Zn)-Total (mg/kg wwt)	28.1	3.75	54.8	34.0	28.7
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Reference Information

Chain of Custody Numbers:

RB-1-8 POL LK GN FL RB-9-16 POL LK GN SK

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # RB-1-8 POL Lk GN FL

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	
[redacted] (lab use only)		ALS Contact: Can Dang	Sampler: C. Koenig

L1527082-COFC

Sample #	Sample Identification (This description will appear)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
[redacted]	RB-1	25-09-14	17:00	Other		X		X	
[redacted]	RB-2	25-09-14	17:00	Other		X		X	
[redacted]	RB-3	25-09-14	17:00	Other		X		X	
[redacted]	RB-4	25-09-14	17:00	Other		X		X	
[redacted]	RB-5	25-09-14	17:00	Other		X		X	
[redacted]	RB-6(Whole body fish)	25-09-14	17:00	Other	X	[redacted]	X	[redacted]	
[redacted]	RB-7	25-09-14	17:00	Other		X		X	
[redacted]	RB-8	25-09-14	17:00	Other		X		X	
[redacted]									
[redacted]									
[redacted]									
[redacted]									

Short Holding Time

Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C. Koenig	Date (dd-mmm-yy): Sep 30/14	Time (hh-mm): 17:00	Received by:	Date:	Time:	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # RB-9-16 POL Lk GN SK

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	
Lab Wor (lab use)	L1527082-COFC	ALS Contact: Can Dang	Sampler: C. Koenig

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
	RB-9	25-09-14	17:00	Other		X		X	
	RB-10	25-09-14	17:00	Other		X		X	
	RB-11(whole body fish)	25-09-14	17:00	Other	X		X		
	RB-12	25-09-14	17:00	Other		X		X	
	RB-13	25-09-14	17:00	Other		X		X	
	RB-14	25-09-14	17:00	Other		X		X	
	RB-15	25-09-14	17:00	Other		X		X	
	RB-16(whole body fish)	25-09-14	17:00	Other	X		X		
	RSC-1(Whole body fish), ((Panel 4 SK net))	25-09-14	17:00	Other	X		X		

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

*One RSC included

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C. Koenig	Date (dd-mmm-yy): Sep30/14	Time (hh-mm): 17:00	Received by: JH	Date: 0CT 2	Time: 10:50	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

Sample Receipt Confirmation

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
afrye@mountpolley.com
CORY.BETTLES@SNCLAVALIN.COM
CKOENIG@RECHRISMINE.CA
NATALIE.NEUFELD@SNCLAVALIN.COM
Report Name: CROSSTAB_ALS
Digital Type: EHS_MOUNTP
Digital Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
CORY.BETTLES@SNCLAVALIN.COM
CKOENIG@RECHRISMINE.CA
NATALIE.NEUFELD@SNCLAVALIN.COM
Distribution: Hard Copy: N Email: Y Fax: N

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP.
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100

Client Information:

Job Reference #:
Project PO #:
Legal Site Description: N/A
Quote #: N/A

Date Sampled: 25-SEP-14
Date Received: 02-OCT-14
Sampled By: C KOENIG
Chain Of Custody: RB-1-8 POL LK GN FL, RB-9-16 POL LK GN SK

Workorder Summary:

Lab Work Order #: **L1527082**
Estimated completion date: 17-NOV-14
30 Samples received at ALS in **VANCOUVER**

Account Manager: Can Dang
Estimated sample disposal date: 17-DEC-14

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type	Client Job#
L1527082-1	RB-1(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-2	RB-1(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-3	RB-2(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-4	RB-2(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-5	RB-3(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-6	RB-3(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-7	RB-4(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-8	RB-4(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-9	RB-5(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-10	RB-5(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-11	RB-6(WHOLE BODY FISH)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-12	RB-7(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-13	RB-7(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-14	RB-8(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-15	RB-8(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-16	RB-9(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-17	RB-9(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-18	RB-10(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-19	RB-10(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-20	RB-11(WHOLE BODY FISH)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-21	RB-12(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type	Client Job#
L1527082-22	RB-12(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-23	RB-13(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-24	RB-13(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-25	RB-14(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-26	RB-14(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-27	RB-15(TISSUE)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-28	RB-15(LIVER)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-29	RB-16(WHOLE BODY FISH)	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527082-30	RSC-1(WHOLE BODY FISH),((PANEL 4 SK NET))	25-SEP-14 17:00	02-OCT-14 10:50	17-NOV-14		OTHER	

Analysis Requested :	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS [DRY]	Mercury in Tissue by CVAFS [WET]	Metals in Tissue by CRC ICPMS [DRY]	Metals in Tissue by CRC ICPMS [WET]	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
RB-1(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-1(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-2(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-2(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-3(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-3(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-4(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-4(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-5(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-5(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-6(WHOLE BODY FISH)	✓	✓	✓	✓	✓	✓	✓
RB-7(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-7(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-8(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-8(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-9(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-9(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-10(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-10(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-11(WHOLE BODY FISH)	✓	✓	✓	✓	✓	✓	✓
RB-12(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-12(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-13(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-13(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-14(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-14(LIVER)	✓	✓	✓	✓	✓	✓	✓
RB-15(TISSUE)	✓	✓	✓	✓	✓	✓	✓
RB-15(LIVER)	✓	✓	✓	✓	✓	✓	✓

Analysis Requested :	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS [DRY]	Mercury in Tissue by CVAFS [WET]	Metals in Tissue by CRC ICPMS [DRY]	Metals in Tissue by CRC ICPMS [WET]	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
RB-16(WHOLE BODY FISH)	✓	✓	✓	✓	✓	✓	✓
RSC-1(WHOLE BODY FISH),((PANEL 4 SK NET))	✓	✓	✓	✓	✓	✓	✓

Sample Integrity Observations: No observations were identified for this work order submission.

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # when calling your Account Manager.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # RB-1-8 POL Lk GN FL

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	
[redacted] (lab use only)		ALS Contact: Can Dang	Sampler: C. Koenig

L1527082-COFC

Sample #	Sample Identification (This description will appear)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
[redacted]	RB-1	25-09-14	17:00	Other		X		X	
[redacted]	RB-2	25-09-14	17:00	Other		X		X	
[redacted]	RB-3	25-09-14	17:00	Other		X		X	
[redacted]	RB-4	25-09-14	17:00	Other		X		X	
[redacted]	RB-5	25-09-14	17:00	Other		X		X	
[redacted]	RB-6(Whole body fish)	25-09-14	17:00	Other	X	[redacted]	X	[redacted]	
[redacted]	RB-7	25-09-14	17:00	Other		X		X	
[redacted]	RB-8	25-09-14	17:00	Other		X		X	
[redacted]									
[redacted]									
[redacted]									
[redacted]									

Short Holding Time

Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C. Koenig	Date (dd-mmm-yy): Sep 30/14	Time (hh-mm): 17:00	Received by:	Date:	Time:	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # RB-9-16 POL Lk GN SK

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	
Lab Wor (lab use)	L1527082-COFC	ALS Contact: Can Dang	Sampler: C. Koenig

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
	RB-9	25-09-14	17:00	Other		X		X	
	RB-10	25-09-14	17:00	Other		X		X	
	RB-11(whole body fish)	25-09-14	17:00	Other	X		X		
	RB-12	25-09-14	17:00	Other		X		X	
	RB-13	25-09-14	17:00	Other		X		X	
	RB-14	25-09-14	17:00	Other		X		X	
	RB-15	25-09-14	17:00	Other		X		X	
	RB-16(whole body fish)	25-09-14	17:00	Other	X		X		
	RSC-1(Whole body fish), ((Panel 4 SK net))	25-09-14	17:00	Other	X		X		

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

*One RSC included

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: C. Koenig	Date (dd-mmm-yy): Sep30/14	Time (hh-mm): 17:00	Received by: JH	Date: 0CT 2	Time: 10:50	Temperature: 1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 02-OCT-14
Report Date: 21-NOV-14 17:18 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1527095

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: LNS-1-8 POL LK GN, LNS-9-16 POL LK GN
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1527095-1	L1527095-2	L1527095-3	L1527095-4	L1527095-5
	Description	Other	Other	Other	Other	Other
	Sampled Date	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14
	Sampled Time	14:00	14:00	14:00	14:00	14:00
	Client ID	LNS-1	LNS-2	LNS-3	LNS-4	LNS-5
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	79.4	79.4	77.9	79.1	78.4
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	<1.0	<1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.287	0.311	0.252	0.131	0.352
	Arsenic (As)-Total (mg/kg wwt)	0.0591	0.0641	0.0557	0.0274	0.0760
	Barium (Ba)-Total (mg/kg)	0.073	0.773	0.213	<0.050	0.133
	Barium (Ba)-Total (mg/kg wwt)	0.015	0.159	0.047	<0.010	0.029
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Calcium (Ca)-Total (mg/kg)	407	4030	1320	400	1900
	Calcium (Ca)-Total (mg/kg wwt)	83.6	830	293	83.3	412
	Cesium (Cs)-Total (mg/kg)	0.0478	0.0562	0.0640	0.0533	0.0571
	Cesium (Cs)-Total (mg/kg wwt)	0.0098	0.0116	0.0142	0.0111	0.0123
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Copper (Cu)-Total (mg/kg)	0.71	1.14	0.92	1.21	0.75
	Copper (Cu)-Total (mg/kg wwt)	0.145	0.236	0.203	0.252	0.162
	Iron (Fe)-Total (mg/kg)	15.8	12.5	8.3	14.9	7.7
	Iron (Fe)-Total (mg/kg wwt)	3.3	2.6	1.8	3.1	1.7
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1170	1450	1540	1210	1450
	Magnesium (Mg)-Total (mg/kg wwt)	241	299	341	252	314
	Manganese (Mn)-Total (mg/kg)	0.479	3.61	1.76	0.415	1.70
	Manganese (Mn)-Total (mg/kg wwt)	0.099	0.744	0.389	0.086	0.367

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527095-6 Other 25-SEP-14 14:00 LNS-6	L1527095-7 Other 25-SEP-14 14:00 LNS-7	L1527095-8 Other 25-SEP-14 14:00 LNS-8	L1527095-9 Other 25-SEP-14 14:00 LNS-9	L1527095-10 Other 25-SEP-14 14:00 LNS-10
Sample ID / **Description** / **Sampled Date** / **Sampled Time** / **Client ID**						
TISSUE						
Physical Tests	% Moisture (%)	80.0	77.9	78.5	80.4	78.4
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	<1.0	<1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.336	0.118	0.327	0.132	0.330
	Arsenic (As)-Total (mg/kg wwt)	0.0673	0.0260	0.0703	0.0259	0.0713
	Barium (Ba)-Total (mg/kg)	0.216	0.094	0.067	0.168	0.076
	Barium (Ba)-Total (mg/kg wwt)	0.043	0.021	0.015	0.033	0.016
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Calcium (Ca)-Total (mg/kg)	1880	696	897	1540	1320
	Calcium (Ca)-Total (mg/kg wwt)	376	154	193	302	286
	Cesium (Cs)-Total (mg/kg)	0.0663	0.0447	0.0611	0.102	0.0493
	Cesium (Cs)-Total (mg/kg wwt)	0.0133	0.0099	0.0132	0.0200	0.0106
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Copper (Cu)-Total (mg/kg)	0.75	1.71	1.74	0.57	0.78
	Copper (Cu)-Total (mg/kg wwt)	0.151	0.378	0.374	0.113	0.168
	Iron (Fe)-Total (mg/kg)	5.0	20.6	21.2	6.4	6.3
	Iron (Fe)-Total (mg/kg wwt)	1.0	4.5	4.6	1.3	1.4
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1470	1190	1250	1380	1380
	Magnesium (Mg)-Total (mg/kg wwt)	293	263	269	271	298
	Manganese (Mn)-Total (mg/kg)	2.20	0.768	0.870	2.83	1.14
	Manganese (Mn)-Total (mg/kg wwt)	0.440	0.170	0.187	0.556	0.247

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527095-11 Other 25-SEP-14 14:00 LNS-11	L1527095-12 Other 25-SEP-14 14:00 LNS-12	L1527095-13 Other 25-SEP-14 14:00 LNS-13	L1527095-14 Other 25-SEP-14 14:00 LNS-14	L1527095-15 Other 25-SEP-14 14:00 LNS-15
	Sample ID					
	Description					
	Sampled Date					
	Sampled Time					
	Client ID					
TISSUE						
Physical Tests	% Moisture (%)	79.3	79.6	77.2	77.6	78.8
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	<1.0	<1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.477	0.154	0.245	0.367	0.264
	Arsenic (As)-Total (mg/kg wwt)	0.0989	0.0316	0.0559	0.0824	0.0559
	Barium (Ba)-Total (mg/kg)	0.308	0.135	0.239	0.168	0.127
	Barium (Ba)-Total (mg/kg wwt)	0.064	0.028	0.055	0.038	0.027
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Calcium (Ca)-Total (mg/kg)	2940	1040	2050	2480	599
	Calcium (Ca)-Total (mg/kg wwt)	610	212	469	556	127
	Cesium (Cs)-Total (mg/kg)	0.0601	0.0683	0.0419	0.0615	0.0516
	Cesium (Cs)-Total (mg/kg wwt)	0.0125	0.0139	0.0096	0.0138	0.0109
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Copper (Cu)-Total (mg/kg)	0.85	0.73	1.57	1.62	0.83
	Copper (Cu)-Total (mg/kg wwt)	0.176	0.149	0.358	0.364	0.177
	Iron (Fe)-Total (mg/kg)	10.8	9.6	15.8	17.2	10.0
	Iron (Fe)-Total (mg/kg wwt)	2.2	2.0	3.6	3.8	2.1
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1410	1320	1210	1370	1280
	Magnesium (Mg)-Total (mg/kg wwt)	293	270	277	307	271
	Manganese (Mn)-Total (mg/kg)	3.65	2.90	2.65	1.81	0.560
	Manganese (Mn)-Total (mg/kg wwt)	0.757	0.593	0.606	0.406	0.119

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1527095-16				
	Description	Other				
	Sampled Date	25-SEP-14				
	Sampled Time	14:00				
	Client ID	LNS-16				
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	79.1				
Metals	Aluminum (Al)-Total (mg/kg)	<5.0				
	Aluminum (Al)-Total (mg/kg wwt)	<1.0				
	Antimony (Sb)-Total (mg/kg)	<0.010				
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020				
	Arsenic (As)-Total (mg/kg)	0.123				
	Arsenic (As)-Total (mg/kg wwt)	0.0257				
	Barium (Ba)-Total (mg/kg)	0.485				
	Barium (Ba)-Total (mg/kg wwt)	0.101				
	Beryllium (Be)-Total (mg/kg)	<0.010				
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020				
	Bismuth (Bi)-Total (mg/kg)	<0.010				
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020				
	Boron (B)-Total (mg/kg)	<1.0				
	Boron (B)-Total (mg/kg wwt)	<0.20				
	Cadmium (Cd)-Total (mg/kg)	<0.010				
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0020				
	Calcium (Ca)-Total (mg/kg)	2400				
	Calcium (Ca)-Total (mg/kg wwt)	501				
	Cesium (Cs)-Total (mg/kg)	0.0563				
	Cesium (Cs)-Total (mg/kg wwt)	0.0118				
	Chromium (Cr)-Total (mg/kg)	<0.20				
	Chromium (Cr)-Total (mg/kg wwt)	<0.040				
	Cobalt (Co)-Total (mg/kg)	<0.020				
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040				
	Copper (Cu)-Total (mg/kg)	2.30				
	Copper (Cu)-Total (mg/kg wwt)	0.481				
	Iron (Fe)-Total (mg/kg)	13.4				
	Iron (Fe)-Total (mg/kg wwt)	2.8				
	Lead (Pb)-Total (mg/kg)	<0.050				
	Lead (Pb)-Total (mg/kg wwt)	<0.010				
	Lithium (Li)-Total (mg/kg)	<0.50				
	Lithium (Li)-Total (mg/kg wwt)	<0.10				
	Magnesium (Mg)-Total (mg/kg)	1370				
	Magnesium (Mg)-Total (mg/kg wwt)	287				
	Manganese (Mn)-Total (mg/kg)	3.67				
	Manganese (Mn)-Total (mg/kg wwt)	0.766				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1527095-1	L1527095-2	L1527095-3	L1527095-4	L1527095-5
	Description	Other	Other	Other	Other	Other
	Sampled Date	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14	25-SEP-14
	Sampled Time	14:00	14:00	14:00	14:00	14:00
	Client ID	LNS-1	LNS-2	LNS-3	LNS-4	LNS-5
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.375	0.302	0.188	0.370	0.391
	Mercury (Hg)-Total (mg/kg wwt)	0.0771	0.0622	0.0415	0.0772	0.0845
	Molybdenum (Mo)-Total (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	8880	12500	9500	9700	10500
	Phosphorus (P)-Total (mg/kg wwt)	1830	2580	2100	2020	2280
	Potassium (K)-Total (mg/kg)	20900	24600	20000	21500	21900
	Potassium (K)-Total (mg/kg wwt)	4290	5070	4430	4480	4740
	Rubidium (Rb)-Total (mg/kg)	7.58	10.9	13.8	8.37	8.17
	Rubidium (Rb)-Total (mg/kg wwt)	1.56	2.24	3.05	1.75	1.77
	Selenium (Se)-Total (mg/kg)	5.23	5.36	5.14	7.81	4.64
	Selenium (Se)-Total (mg/kg wwt)	1.08	1.11	1.14	1.63	1.00
	Sodium (Na)-Total (mg/kg)	1230	1750	2170	1480	1910
	Sodium (Na)-Total (mg/kg wwt)	252	361	479	309	414
	Strontium (Sr)-Total (mg/kg)	0.27	10.2	2.26	0.21	3.52
	Strontium (Sr)-Total (mg/kg wwt)	0.055	2.10	0.501	0.044	0.762
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	10.5	63.7	17.4	14.6	18.1
	Zinc (Zn)-Total (mg/kg wwt)	2.16	13.1	3.85	3.05	3.92
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527095-6 Other 25-SEP-14 14:00 LNS-6	L1527095-7 Other 25-SEP-14 14:00 LNS-7	L1527095-8 Other 25-SEP-14 14:00 LNS-8	L1527095-9 Other 25-SEP-14 14:00 LNS-9	L1527095-10 Other 25-SEP-14 14:00 LNS-10
Sample ID / **Description** / **Sampled Date** / **Sampled Time** / **Client ID**						
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.318	0.339	0.493	0.286	0.409
	Mercury (Hg)-Total (mg/kg wwt)	0.0636	0.0748	0.106	0.0562	0.0884
	Molybdenum (Mo)-Total (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	9820	9260	9960	9790	10100
	Phosphorus (P)-Total (mg/kg wwt)	1960	2050	2140	1920	2190
	Potassium (K)-Total (mg/kg)	20900	19600	21800	21700	22000
	Potassium (K)-Total (mg/kg wwt)	4170	4340	4700	4260	4750
	Rubidium (Rb)-Total (mg/kg)	9.03	7.29	9.44	12.3	10.3
	Rubidium (Rb)-Total (mg/kg wwt)	1.81	1.61	2.03	2.41	2.22
	Selenium (Se)-Total (mg/kg)	4.89	6.37	4.40	7.34	4.33
	Selenium (Se)-Total (mg/kg wwt)	0.977	1.41	0.946	1.44	0.937
	Sodium (Na)-Total (mg/kg)	1850	1190	1640	1640	1710
	Sodium (Na)-Total (mg/kg wwt)	369	263	353	321	370
	Strontium (Sr)-Total (mg/kg)	3.51	0.67	0.80	3.15	1.97
	Strontium (Sr)-Total (mg/kg wwt)	0.703	0.148	0.173	0.618	0.426
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	0.12	<0.10	0.11	0.14	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.024	<0.020	0.023	0.028	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	15.4	17.6	13.9	13.0	17.4
	Zinc (Zn)-Total (mg/kg wwt)	3.07	3.89	2.99	2.54	3.75
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1527095-11 Other 25-SEP-14 14:00 LNS-11	L1527095-12 Other 25-SEP-14 14:00 LNS-12	L1527095-13 Other 25-SEP-14 14:00 LNS-13	L1527095-14 Other 25-SEP-14 14:00 LNS-14	L1527095-15 Other 25-SEP-14 14:00 LNS-15
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.325	0.269	0.452	0.408	0.337
	Mercury (Hg)-Total (mg/kg wwt)	0.0674	0.0550	0.103	0.0914	0.0713
	Molybdenum (Mo)-Total (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	10800	9220	9990	10300	8830
	Phosphorus (P)-Total (mg/kg wwt)	2230	1880	2280	2300	1870
	Potassium (K)-Total (mg/kg)	20900	19500	19700	21000	19300
	Potassium (K)-Total (mg/kg wwt)	4330	3980	4490	4710	4090
	Rubidium (Rb)-Total (mg/kg)	8.93	13.7	7.25	9.01	9.19
	Rubidium (Rb)-Total (mg/kg wwt)	1.85	2.79	1.66	2.02	1.95
	Selenium (Se)-Total (mg/kg)	4.63	8.49	4.93	4.36	5.70
	Selenium (Se)-Total (mg/kg wwt)	0.959	1.73	1.13	0.979	1.21
	Sodium (Na)-Total (mg/kg)	2170	2150	1980	1950	2170
	Sodium (Na)-Total (mg/kg wwt)	449	439	451	438	459
	Strontium (Sr)-Total (mg/kg)	7.20	1.62	4.21	5.04	0.71
	Strontium (Sr)-Total (mg/kg wwt)	1.49	0.331	0.961	1.13	0.151
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	0.19	0.15	0.20
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.042	0.033	0.043
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	19.8	12.3	30.9	18.2	17.2
	Zinc (Zn)-Total (mg/kg wwt)	4.11	2.52	7.06	4.08	3.64
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1527095-16				
	Description	Other				
	Sampled Date	25-SEP-14				
	Sampled Time	14:00				
	Client ID	LNS-16				
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.259				
	Mercury (Hg)-Total (mg/kg wwt)	0.0541				
	Molybdenum (Mo)-Total (mg/kg)	<0.040				
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0080				
	Nickel (Ni)-Total (mg/kg)	<0.20				
	Nickel (Ni)-Total (mg/kg wwt)	<0.040				
	Phosphorus (P)-Total (mg/kg)	10400				
	Phosphorus (P)-Total (mg/kg wwt)	2160				
	Potassium (K)-Total (mg/kg)	20300				
	Potassium (K)-Total (mg/kg wwt)	4230				
	Rubidium (Rb)-Total (mg/kg)	13.7				
	Rubidium (Rb)-Total (mg/kg wwt)	2.86				
	Selenium (Se)-Total (mg/kg)	4.87				
	Selenium (Se)-Total (mg/kg wwt)	1.02				
	Sodium (Na)-Total (mg/kg)	1750				
	Sodium (Na)-Total (mg/kg wwt)	366				
	Strontium (Sr)-Total (mg/kg)	5.55				
	Strontium (Sr)-Total (mg/kg wwt)	1.16				
	Tellurium (Te)-Total (mg/kg)	<0.020				
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040				
	Thallium (Tl)-Total (mg/kg)	<0.0020				
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040				
	Tin (Sn)-Total (mg/kg)	0.13				
	Tin (Sn)-Total (mg/kg wwt)	0.028				
	Uranium (U)-Total (mg/kg)	<0.0020				
	Uranium (U)-Total (mg/kg wwt)	<0.00040				
	Vanadium (V)-Total (mg/kg)	<0.10				
	Vanadium (V)-Total (mg/kg wwt)	<0.020				
	Zinc (Zn)-Total (mg/kg)	37.9				
	Zinc (Zn)-Total (mg/kg wwt)	7.91				
	Zirconium (Zr)-Total (mg/kg)	<0.20				
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Copper (Cu)-Total	DUP-H	L1527095-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)-Total	DUP-H	L1527095-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

LNS-1-8 POL LK GN LNS-9-16 POL LK GN

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # LNS-9-16 POL Lk GN F+S

Report To		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	**Analysis Request**
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	
[redacted] Lab Work (lab use)	L1527095-COFC	**ALS Contact:** Can Dang	**Sampler:** C. Koenig

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
[redacted]	LNS-9	25-09-14	14:00	Other		X			
[redacted]	LNS-10	25-09-14	14:00	Other		X			
[redacted]	LNS-11	25-09-14	14:00	Other		X			
[redacted]	LNS-12	25-09-14	14:00	Other		X			
[redacted]	LNS-13	25-09-14	14:00	Other		X			
[redacted]	LNS-14	25-09-14	14:00	Other		X			
[redacted]	LNS-15	25-09-14	14:00	Other		X			
[redacted]	LNS-16	25-09-14	14:00	Other		X			
[redacted]									
[redacted]									
[redacted]									
[redacted]									

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

LNS=Long nose sucker, no livers taken as they were connected to the anal tracts throughout body cavity attempted Liver separation resulted in a mess and contamination of Liver samples*

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C. Koenig	Sep 30/14	17:00	JH	Oct 2	0750	1 °C				

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # LNS-1-8 POL Lk GN F+S

Page 1 of 2

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	
Lab Wor (lab use)	L1527095-COFC	ALS Contact: Can Dang	Sampler: C. Koenig

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
	LNS-1	25-09-14	14:00	Other		X			
	LNS-2	25-09-14	14:00	Other		X			
	LNS-3	25-09-14	14:00	Other		X			
	LNS-4	25-09-14	14:00	Other		X			
	LNS-5	25-09-14	14:00	Other		X			
	LNS-6	25-09-14	14:00	Other		X			
	LNS-7	25-09-14	14:00	Other		X			
	LNS-8	25-09-14	14:00	Other		X			

Short Holding Time
Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

LNS-Long nose sucker, no livers taken as they were connected to the anal tracts throughout body cavity attempted Liver separation resulted in a mess and contamination of Liver samples*

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C. Koenig	Sep 30/14	17:00	FH	OCT 2	10:50	1 °C				

Sample Receipt Confirmation

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
afrye@mountpolley.com
NATALIE.NEUFELD@SNCLAVALIN.COM
CKOENIG@RECHRISMINE.CA
CORY.BETTLES@SNCLAVALIN.COM
Report Name: CROSSTAB_ALS
Digital Type: EHS_MOUNTP
Digital Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
NATALIE.NEUFELD@SNCLAVALIN.COM
CKOENIG@RECHRISMINE.CA
CORY.BETTLES@SNCLAVALIN.COM
Distribution: Hard Copy: N Email: Y Fax: N

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP.
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100

Client Information:

Job Reference #:
Project PO #:
Legal Site Description: N/A
Quote #: N/A
Date Sampled: 25-SEP-14
Date Received: 02-OCT-14
Sampled By: C KOENIG
Chain Of Custody: LNS-1-8 POL LK GN, LNS-9-16 POL LK GN

Workorder Summary:

Lab Work Order #: **L1527095**
Estimated completion date: 17-NOV-14
16 Samples received at ALS in **VANCOUVER**
Account Manager: Can Dang
Estimated sample disposal date: 17-DEC-14

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type	Client Job#
L1527095-1	LNS-1	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-2	LNS-2	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-3	LNS-3	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-4	LNS-4	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-5	LNS-5	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-6	LNS-6	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-7	LNS-7	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-8	LNS-8	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-9	LNS-9	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-10	LNS-10	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-11	LNS-11	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-12	LNS-12	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-13	LNS-13	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-14	LNS-14	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-15	LNS-15	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	
L1527095-16	LNS-16	25-SEP-14 14:00	02-OCT-14 10:50	17-NOV-14		OTHER	

Analysis Requested :	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS [DRY]	Mercury in Tissue by CVAFS [WET]	Metals in Tissue by CRC ICPMS [DRY]	Metals in Tissue by CRC ICPMS [WET]	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
LNS-1	✓	✓	✓	✓	✓	✓	✓
LNS-2	✓	✓	✓	✓	✓	✓	✓
LNS-3	✓	✓	✓	✓	✓	✓	✓
LNS-4	✓	✓	✓	✓	✓	✓	✓
LNS-5	✓	✓	✓	✓	✓	✓	✓
LNS-6	✓	✓	✓	✓	✓	✓	✓
LNS-7	✓	✓	✓	✓	✓	✓	✓
LNS-8	✓	✓	✓	✓	✓	✓	✓
LNS-9	✓	✓	✓	✓	✓	✓	✓
LNS-10	✓	✓	✓	✓	✓	✓	✓
LNS-11	✓	✓	✓	✓	✓	✓	✓
LNS-12	✓	✓	✓	✓	✓	✓	✓
LNS-13	✓	✓	✓	✓	✓	✓	✓
LNS-14	✓	✓	✓	✓	✓	✓	✓
LNS-15	✓	✓	✓	✓	✓	✓	✓
LNS-16	✓	✓	✓	✓	✓	✓	✓

Sample Integrity Observations: No observations were identified for this work order submission.

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # when calling your Account Manager.

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # LNS-9-16 POL Lk GN F+S

Report To		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	**Analysis Request**
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	
[redacted] Lab Work (lab use)	L1527095-COFC	**ALS Contact:** Can Dang	**Sampler:** C. Koenig

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
[redacted]	LNS-9	25-09-14	14:00	Other		X			
[redacted]	LNS-10	25-09-14	14:00	Other		X			
[redacted]	LNS-11	25-09-14	14:00	Other		X			
[redacted]	LNS-12	25-09-14	14:00	Other		X			
[redacted]	LNS-13	25-09-14	14:00	Other		X			
[redacted]	LNS-14	25-09-14	14:00	Other		X			
[redacted]	LNS-15	25-09-14	14:00	Other		X			
[redacted]	LNS-16	25-09-14	14:00	Other		X			
[redacted]									
[redacted]									
[redacted]									
[redacted]									

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

LNS=Long nose sucker, no livers taken as they were connected to the anal tracts throughout body cavity attempted Liver separation resulted in a mess and contamination of Liver samples*

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C. Koenig	Sep 30/14	17:00	JH	Oct 2	0750	1 °C				

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # LNS-1-8 POL Lk GN F+S

Page 1 of 2

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Mount Polley Mining Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	C.Bettles, Natalie Neufeld, Laura McOrmond,Lee Nikl	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	PO Box 12, Likely, BC V0L 1N0	Email 1: Natalie.Neufeld@snclavalin.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6C 3B6	Email 2: Cory.Bettles@snclavalin.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	2507902215x2560 Fax:	Email 3: ckoenig@redchrismine.ca	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:		Quote #:	
Lab Wor (lab use)	L1527095-COFC	ALS Contact: Can Dang	Sampler: C. Koenig

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Whole body metals	Tissue(METALS)	% Moisture content	Liver(METALS)	Number of Containers
	LNS-1	25-09-14	14:00	Other		X			
	LNS-2	25-09-14	14:00	Other		X			
	LNS-3	25-09-14	14:00	Other		X			
	LNS-4	25-09-14	14:00	Other		X			
	LNS-5	25-09-14	14:00	Other		X			
	LNS-6	25-09-14	14:00	Other		X			
	LNS-7	25-09-14	14:00	Other		X			
	LNS-8	25-09-14	14:00	Other		X			

Short Holding Time
Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

LNS-Long nose sucker, no livers taken as they were connected to the anal tracts throughout body cavity attempted Liver separation resulted in a mess and contamination of Liver samples*

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
C. Koenig	Sep 30/14	17:00	FH	OCT 2	10:50	1 °C				

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 24-OCT-14
Report Date: 05-JAN-15 12:08 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1538008

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Comments: Please see the attached document for total weight and fork length measurements.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1538008-1 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 1	L1538008-2 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 2	L1538008-3 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 3	L1538008-4 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 4	L1538008-5 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 5
TISSUE						
Physical Tests	% Moisture (%)	73.5	72.1	74.2	78.9	71.1
Metals	Aluminum (Al)-Total (mg/kg wwt)	4.61	9.9	4.3	3.34	6.26
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0029 RRU
	Arsenic (As)-Total (mg/kg wwt)	0.124	0.111	0.0865	0.125	0.132
	Barium (Ba)-Total (mg/kg wwt)	0.621	0.786	0.337	0.404	0.583
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0184	0.0489	0.0309	0.0189	0.0228
	Calcium (Ca)-Total (mg/kg wwt)	5250	7790	5550	5520	6610
	Cesium (Cs)-Total (mg/kg wwt)	0.0358	0.0461	0.0416	0.0397	0.0385
	Chromium (Cr)-Total (mg/kg wwt)	0.024	0.044	<0.040	0.013	0.025
	Cobalt (Co)-Total (mg/kg wwt)	0.0294	0.0336	0.0270	0.0289	0.0283
	Copper (Cu)-Total (mg/kg wwt)	1.20	0.715	0.918	1.31	1.41
	Iron (Fe)-Total (mg/kg wwt)	17.3	33.2	16.4	17.0	20.0
	Lead (Pb)-Total (mg/kg wwt)	0.0123	0.044	0.019	0.0134	0.0150
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	325	278	287	333	341
	Manganese (Mn)-Total (mg/kg wwt)	1.52	2.52	1.43	1.46	1.59
	Mercury (Hg)-Total (mg/kg wwt)	0.0390	0.0295	0.0274	0.0399	0.0409
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0122	0.0165	0.0153	0.0137	0.0180
	Nickel (Ni)-Total (mg/kg wwt)	0.044	0.079	0.060	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	5140	5200	4340	5170	5840
	Potassium (K)-Total (mg/kg wwt)	3080	2690	2740	3270	3200
	Rubidium (Rb)-Total (mg/kg wwt)	4.96	5.11	5.13	5.36	5.21
	Selenium (Se)-Total (mg/kg wwt)	0.415	0.404	0.372	0.430	0.465
	Sodium (Na)-Total (mg/kg wwt)	632	599	616	681	681
	Strontium (Sr)-Total (mg/kg wwt)	9.41	18.2	11.7	9.44	11.7
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.0104	0.0111	0.0101	0.0108	0.0123
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00070	0.00147	0.00078	0.00067	0.00074
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.026	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	44.0	40.3	31.1	44.9	52.0
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1538008-6 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 6	L1538008-7 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 7	L1538008-8 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 8	L1538008-9 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 9	L1538008-10 TISSUE 23-OCT-14 19:37 QUESNEL NORTH 10
TISSUE						
Physical Tests	% Moisture (%)	74.6	71.9	74.5	71.8	72.5
Metals	Aluminum (Al)-Total (mg/kg wwt)	10.9	10.0	9.7	13.5	7.0
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.104	0.115	0.117	0.143	0.110
	Barium (Ba)-Total (mg/kg wwt)	0.484	0.504	0.495	0.835	0.639
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0324	0.0263	0.0290	0.0502	0.0372
	Calcium (Ca)-Total (mg/kg wwt)	6610	5010	4670	8580	7330
	Cesium (Cs)-Total (mg/kg wwt)	0.0450	0.0363	0.0440	0.0465	0.0451
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	0.033	<0.040	0.052	<0.040
	Cobalt (Co)-Total (mg/kg wwt)	0.0268	0.0365	0.0277	0.0317	0.0287
	Copper (Cu)-Total (mg/kg wwt)	0.917	1.79	1.08	1.19	1.04
	Iron (Fe)-Total (mg/kg wwt)	29.1	24.2	28.5	40.0	24.2
	Lead (Pb)-Total (mg/kg wwt)	0.021	0.0163	0.028	0.047	0.014
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	322	290	269	363	334
	Manganese (Mn)-Total (mg/kg wwt)	2.76	1.68	2.44	3.42	2.28
	Mercury (Hg)-Total (mg/kg wwt)	0.0296	0.0410	0.0251	0.0281	0.0350
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0136	0.0143	0.0141	0.0182	0.0181
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.051	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	4830	4850	3970	5650	5250
	Potassium (K)-Total (mg/kg wwt)	2810	3030	2790	3060	2880
	Rubidium (Rb)-Total (mg/kg wwt)	5.20	4.98	5.17	5.63	5.53
	Selenium (Se)-Total (mg/kg wwt)	0.341	0.473	0.344	0.399	0.376
	Sodium (Na)-Total (mg/kg wwt)	610	673	598	638	646
	Strontium (Sr)-Total (mg/kg wwt)	14.1	9.39	11.3	19.5	15.8
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.0104	0.0105	0.00970	0.0134	0.0121
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00157	0.00099	0.00137	0.00218	0.00110
	Vanadium (V)-Total (mg/kg wwt)	0.025	0.022	0.020	0.028	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	37.5	42.5	36.6	58.8	42.6
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1538008-11 TISSUE 23-OCT-14 00:14 QUESNEL MIDDLE 1	L1538008-12 TISSUE 23-OCT-14 00:14 QUESNEL MIDDLE 2	L1538008-13 TISSUE 23-OCT-14 00:14 QUESNEL MIDDLE 3	L1538008-14 TISSUE 23-OCT-14 00:14 QUESNEL MIDDLE 4	L1538008-15 TISSUE 23-OCT-14 00:14 QUESNEL MIDDLE 5
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	73.5	74.9	71.5	70.9	69.6
Metals	Aluminum (Al)-Total (mg/kg wwt)	<1.0	10.3	2.5	<1.0	6.1
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.101	0.0952	0.0826	0.0749	0.0847
	Barium (Ba)-Total (mg/kg wwt)	0.626	0.554	0.397	0.435	0.605
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0224	0.0536	0.0376	0.0212	0.0437
	Calcium (Ca)-Total (mg/kg wwt)	8530	5790	6260	9730	5120
	Cesium (Cs)-Total (mg/kg wwt)	0.0346	0.0339	0.0367	0.0311	0.0351
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg wwt)	0.0232	0.0278	0.0288	0.0188	0.0231
	Copper (Cu)-Total (mg/kg wwt)	1.13	0.916	0.899	0.809	1.27
	Iron (Fe)-Total (mg/kg wwt)	22.4	30.1	14.2	16.1	18.1
	Lead (Pb)-Total (mg/kg wwt)	0.015	0.014	0.012	<0.010	0.012
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	336	270	356	342	318
	Manganese (Mn)-Total (mg/kg wwt)	1.81	2.77	1.37	3.03	2.02
	Mercury (Hg)-Total (mg/kg wwt)	0.0331	0.0341	0.0306	0.0342	0.0381
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0166	0.0162	0.0184	0.0132	0.0150
	Nickel (Ni)-Total (mg/kg wwt)	0.042	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	5650	4600	4980	6310	4370
	Potassium (K)-Total (mg/kg wwt)	3070	2970	3010	2780	2920
	Rubidium (Rb)-Total (mg/kg wwt)	4.57	4.28	4.58	4.03	4.39
	Selenium (Se)-Total (mg/kg wwt)	0.511	0.447	0.527	0.509	0.475
	Sodium (Na)-Total (mg/kg wwt)	642	646	645	611	596
	Strontium (Sr)-Total (mg/kg wwt)	17.1	13.0	13.3	18.6	10.5
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.0126	0.0103	0.0122	0.0122	0.0114
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00059	0.00125	0.00051	0.00042	0.00066
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.035	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	48.6	46.4	38.0	50.5	34.5
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1538008-16	L1538008-17	L1538008-18	L1538008-19	L1538008-20
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	23-OCT-14	23-OCT-14	23-OCT-14	23-OCT-14	23-OCT-14
	Sampled Time	00:14	00:14	00:14	00:14	00:14
	Client ID	QUESNEL MIDDLE 6	QUESNEL MIDDLE 7	QUESNEL MIDDLE 8	QUESNEL MIDDLE 9	QUESNEL MIDDLE 10
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	74.8	72.7	69.9	71.8	71.8
Metals	Aluminum (Al)-Total (mg/kg wwt)	4.16	1.2	<1.0	1.3	2.9
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.122	0.0765	0.130	0.0811	0.0945
	Barium (Ba)-Total (mg/kg wwt)	0.411	0.208	0.389	0.563	0.530
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0268	0.0309	0.0216	0.0280	0.0301
	Calcium (Ca)-Total (mg/kg wwt)	4820	4210	3660	7700	6200
	Cesium (Cs)-Total (mg/kg wwt)	0.0310	0.0315	0.0342	0.0337	0.0324
	Chromium (Cr)-Total (mg/kg wwt)	0.012	<0.040	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg wwt)	0.0300	0.0298	0.0244	0.0237	0.0238
	Copper (Cu)-Total (mg/kg wwt)	1.04	0.834	0.808	1.12	1.17
	Iron (Fe)-Total (mg/kg wwt)	14.4	12.9	10.7	18.6	17.6
	Lead (Pb)-Total (mg/kg wwt)	0.0069	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	321	387	256	315	255
	Manganese (Mn)-Total (mg/kg wwt)	1.22	0.937	0.814	1.71	1.83
	Mercury (Hg)-Total (mg/kg wwt)	0.0341	0.0339	0.0375	0.0309	0.0310
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0137	0.0150	0.0160	0.0135	0.0133
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	4930	3780	3510	5630	4580
	Potassium (K)-Total (mg/kg wwt)	3160	3070	2860	3000	2850
	Rubidium (Rb)-Total (mg/kg wwt)	4.21	4.42	4.34	4.41	4.14
	Selenium (Se)-Total (mg/kg wwt)	0.502	0.438	0.435	0.445	0.427
	Sodium (Na)-Total (mg/kg wwt)	674	673	618	638	605
	Strontium (Sr)-Total (mg/kg wwt)	8.32	9.00	7.40	16.0	13.0
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.0101	0.00959	0.00988	0.0116	0.00972
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00046	<0.00040	<0.00040	0.00050	0.00044
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	42.7	36.5	27.6	41.2	41.5
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1538008-21 TISSUE 23-OCT-14 19:15 QUESNEL WEST 1	L1538008-22 TISSUE 23-OCT-14 19:15 QUESNEL WEST 2	L1538008-23 TISSUE 23-OCT-14 19:15 QUESNEL WEST 3	L1538008-24 TISSUE 23-OCT-14 19:15 QUESNEL WEST 4	L1538008-25 TISSUE 23-OCT-14 19:15 QUESNEL WEST 5
TISSUE						
Physical Tests	% Moisture (%)	68.9	73.4	71.4	73.9	71.9
Metals	Aluminum (Al)-Total (mg/kg wwt)	5.60	6.60	3.43	8.31	3.92
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.117
	Arsenic (As)-Total (mg/kg wwt)	0.199	0.160	0.149	0.137	0.205
	Barium (Ba)-Total (mg/kg wwt)	0.240	0.224	0.216	0.266	0.211
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0370	0.0399	0.0460	0.0361	0.0351
	Calcium (Ca)-Total (mg/kg wwt)	5000	3920	4640	4340	4800
	Cesium (Cs)-Total (mg/kg wwt)	0.0205	0.0228	0.0216	0.0247	0.0203
	Chromium (Cr)-Total (mg/kg wwt)	0.017	<0.010	0.011	0.018	0.015
	Cobalt (Co)-Total (mg/kg wwt)	0.0136	0.0142	0.0116	0.0159	0.0141
	Copper (Cu)-Total (mg/kg wwt)	1.82	1.50	1.65	1.20	1.60
	Iron (Fe)-Total (mg/kg wwt)	16.0	14.9	12.8	17.4	14.9
	Lead (Pb)-Total (mg/kg wwt)	0.0080	0.0070	0.0103	0.0106	0.0107
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	314	322	333	346	359
	Manganese (Mn)-Total (mg/kg wwt)	1.08	0.853	0.747	1.13	1.05
	Mercury (Hg)-Total (mg/kg wwt)	0.0339	0.0296	0.0348	0.0353	0.0277
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0135	0.0171	0.0162	0.0120	0.0182
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	5090	4460	4830	4940	5100
	Potassium (K)-Total (mg/kg wwt)	3270	3440	3230	3750	3300
	Rubidium (Rb)-Total (mg/kg wwt)	5.31	5.69	5.37	6.16	5.39
	Selenium (Se)-Total (mg/kg wwt)	0.610	0.620	0.532	0.687	0.566
	Sodium (Na)-Total (mg/kg wwt)	689	672	603	686	681
	Strontium (Sr)-Total (mg/kg wwt)	8.23	6.75	6.96	6.86	7.86
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00658	0.00683	0.00755	0.00706	0.00668
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.101
	Uranium (U)-Total (mg/kg wwt)	0.00057	0.00052	0.00055	0.00072	0.00045
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.021	<0.020	0.027	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	40.2	32.4	35.1	32.2	39.3
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1538008-26 TISSUE 23-OCT-14 19:15 QUESNEL WEST 6	L1538008-27 TISSUE 23-OCT-14 19:15 QUESNEL WEST 7	L1538008-28 TISSUE 23-OCT-14 19:15 QUESNEL WEST 8	L1538008-29 TISSUE 23-OCT-14 19:15 QUESNEL WEST 9	L1538008-30 TISSUE 23-OCT-14 19:15 QUESNEL WEST 10
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	72.0	68.9	69.7	72.3	73.5
Metals	Aluminum (Al)-Total (mg/kg wwt)	7.31	4.63	12.5	2.83	6.51
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0025 RRU	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.188	0.175	0.139	0.177	0.177
	Barium (Ba)-Total (mg/kg wwt)	0.386	0.132	0.282	0.215	0.291
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0404	0.0248	0.0394	0.0568	0.0376
	Calcium (Ca)-Total (mg/kg wwt)	6110	2130	3360	4740	4800
	Cesium (Cs)-Total (mg/kg wwt)	0.0210	0.0212	0.0212	0.0209	0.0214
	Chromium (Cr)-Total (mg/kg wwt)	0.012	0.019	0.020	0.028	0.015
	Cobalt (Co)-Total (mg/kg wwt)	0.0174	0.0102	0.0171	0.0139	0.0134
	Copper (Cu)-Total (mg/kg wwt)	2.46	1.45	1.52	1.60	2.13
	Iron (Fe)-Total (mg/kg wwt)	23.2	15.0	22.2	15.2	13.9
	Lead (Pb)-Total (mg/kg wwt)	0.0147	0.0069	0.0100	0.0078	0.0073
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	318	248	278	347	335
	Manganese (Mn)-Total (mg/kg wwt)	1.41	0.535	0.956	0.875	1.06
	Mercury (Hg)-Total (mg/kg wwt)	0.0293	0.0313	0.0435	0.0313	0.0238
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0157	0.0235	0.0156	0.0193	0.0143
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.043	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	5770	3320	4110	5080	5120
	Potassium (K)-Total (mg/kg wwt)	3430	3150	3280	3430	3520
	Rubidium (Rb)-Total (mg/kg wwt)	5.64	5.36	5.40	5.60	5.72
	Selenium (Se)-Total (mg/kg wwt)	0.627	0.632	0.592	0.630	0.591
	Sodium (Na)-Total (mg/kg wwt)	696	619	623	708	679
	Strontium (Sr)-Total (mg/kg wwt)	9.87	3.26	5.00	7.66	7.91
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00710	0.00680	0.00683	0.00700	0.00652
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00066	<0.00040	0.00066	0.00056	0.00079
	Vanadium (V)-Total (mg/kg wwt)	0.024	<0.020	0.036	<0.020	0.023
	Zinc (Zn)-Total (mg/kg wwt)	51.6	31.7	31.6	43.3	31.5
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1538008-31	L1538008-32	L1538008-33	L1538008-34	L1538008-35
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	23-OCT-14	23-OCT-14	23-OCT-14	23-OCT-14	23-OCT-14
	Sampled Time	19:12	19:12	19:12	19:12	19:12
	Client ID	QUESNEL EAST 1	QUESNEL EAST 2	QUESNEL EAST 3	QUESNEL EAST 4	QUESNEL EAST 5
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	70.6	69.9	69.4	72.4	74.3
Metals	Aluminum (Al)-Total (mg/kg wwt)	4.9	<1.0	1.4	3.94	4.07
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0026 RRU
	Arsenic (As)-Total (mg/kg wwt)	0.0980	0.117	0.101	0.0928	0.0893
	Barium (Ba)-Total (mg/kg wwt)	1.04	0.313	0.255	0.414	0.420
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0535	0.0182	0.0270	0.0278	0.0172
	Calcium (Ca)-Total (mg/kg wwt)	9630	3510	4870	6030	5490
	Cesium (Cs)-Total (mg/kg wwt)	0.0352	0.0257	0.0323	0.0324	0.0344
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	0.054	<0.040	0.012	0.013
	Cobalt (Co)-Total (mg/kg wwt)	0.0272	0.0222	0.0273	0.0345	0.0343
	Copper (Cu)-Total (mg/kg wwt)	0.830	1.07	1.11	1.08	1.08
	Iron (Fe)-Total (mg/kg wwt)	24.1	14.4	15.6	17.4	18.3
	Lead (Pb)-Total (mg/kg wwt)	0.059	0.034	0.031	0.0356	0.0403
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	353	190	305	361	332
	Manganese (Mn)-Total (mg/kg wwt)	3.00	0.895	0.982	1.17	0.959
	Mercury (Hg)-Total (mg/kg wwt)	0.0338	0.0319	0.0337	0.0430	0.0449
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0164	0.0182	0.0238	0.0140	0.0147
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	6670	3100	4100	5670	5450
	Potassium (K)-Total (mg/kg wwt)	3190	2590	2830	3390	3590
	Rubidium (Rb)-Total (mg/kg wwt)	4.58	3.64	4.17	4.49	4.66
	Selenium (Se)-Total (mg/kg wwt)	0.436	0.407	0.494	0.557	0.557
	Sodium (Na)-Total (mg/kg wwt)	578	633	630	721	684
	Strontium (Sr)-Total (mg/kg wwt)	20.6	7.11	8.77	9.93	9.36
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.0123	0.00804	0.0110	0.0115	0.0119
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00097	<0.00040	0.00098	0.00041	0.00095
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	56.0	41.1	39.8	52.3	48.6
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1538008-36 TISSUE 23-OCT-14 19:12 QUESNEL EAST 6	L1538008-37 TISSUE 23-OCT-14 19:12 QUESNEL EAST 7	L1538008-38 TISSUE 23-OCT-14 19:12 QUESNEL EAST 8	L1538008-39 TISSUE 23-OCT-14 19:12 QUESNEL EAST 9	L1538008-40 TISSUE 23-OCT-14 19:12 QUESNEL EAST 10
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	72.5	70.6	72.8	73.2	70.5
Metals	Aluminum (Al)-Total (mg/kg wwt)	2.8	1.8	2.9	2.2	1.1
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.0850	0.0797	0.0915	0.0841	0.0820
	Barium (Ba)-Total (mg/kg wwt)	0.317	0.294	0.833	0.438	0.407
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0343	0.0328	0.0389	0.0201	0.0250
	Calcium (Ca)-Total (mg/kg wwt)	4640	5910	8510	3630	6250
	Cesium (Cs)-Total (mg/kg wwt)	0.0370	0.0357	0.0322	0.0359	0.0399
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg wwt)	0.0199	0.0226	0.0249	0.0186	0.0233
	Copper (Cu)-Total (mg/kg wwt)	0.997	0.844	1.02	0.967	1.05
	Iron (Fe)-Total (mg/kg wwt)	15.5	16.8	22.8	12.5	13.2
	Lead (Pb)-Total (mg/kg wwt)	0.038	0.037	0.064	0.024	0.039
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	295	297	320	275	323
	Manganese (Mn)-Total (mg/kg wwt)	1.26	1.04	1.76	1.21	1.25
	Mercury (Hg)-Total (mg/kg wwt)	0.0382	0.0421	0.0332	0.0346	0.0341
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0113	0.0147	0.0149	0.0156	0.0119
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)	4020	4600	5790	3540	5070
	Potassium (K)-Total (mg/kg wwt)	3320	3060	2960	2930	3020
	Rubidium (Rb)-Total (mg/kg wwt)	4.69	4.41	4.23	4.36	4.51
	Selenium (Se)-Total (mg/kg wwt)	0.421	0.498	0.459	0.395	0.446
	Sodium (Na)-Total (mg/kg wwt)	605	622	678	588	640
	Strontium (Sr)-Total (mg/kg wwt)	8.92	11.0	17.6	7.44	11.9
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.0107	0.0113	0.0121	0.00868	0.0106
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.043
	Uranium (U)-Total (mg/kg wwt)	0.00063	0.00047	0.00089	0.00044	0.00046
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	37.7	37.5	48.4	31.1	33.3
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (Al)-Total	DUP-H	L1538008-10, -11, -12, -13, -14, -15, -17, -18, -19, -2, -3, -31, -33, -37, -38, -39, -40, -6, -8, -9
Duplicate	Iron (Fe)-Total	DUP-H	L1538008-10, -11, -12, -13, -14, -15, -17, -18, -19, -2, -3, -31, -33, -37, -38, -39, -40, -6, -8, -9
Duplicate	Manganese (Mn)-Total	DUP-H	L1538008-10, -11, -12, -13, -14, -15, -17, -18, -19, -2, -3, -31, -33, -37, -38, -39, -40, -6, -8, -9
Duplicate	Zinc (Zn)-Total	DUP-H	L1538008-10, -11, -12, -13, -14, -15, -17, -18, -19, -2, -3, -31, -33, -37, -38, -39, -40, -6, -8, -9
Duplicate	Aluminum (Al)-Total	DUP-H	L1538008-14, -20, -32, -36
Duplicate	Barium (Ba)-Total	DUP-H	L1538008-14, -20, -32, -36
Duplicate	Magnesium (Mg)-Total	DUP-H	L1538008-14, -20, -32, -36
Duplicate	Manganese (Mn)-Total	DUP-H	L1538008-14, -20, -32, -36
Duplicate	Uranium (U)-Total	DUP-H	L1538008-14, -20, -32, -36
Duplicate	Antimony (Sb)-Total	RRU	L1538008-27

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
RRU	Reported Result is Uncertain due to proximity to the estimated Method Detection Limit.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-WET-CVAFS-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-WET-CCMS-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1991). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

This analysis is not compliant with the requirements of the B.C. Lab Manual for digestion of tissue samples from British Columbia for metals analysis after January 1, 2015.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Reference Information

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS LABORATORY GROUP ANALYTICAL REPORT

ALS Lab Work Order #: L1538008

Client ID	Total Weight (g)	Fork Length (cm)
QUESNEL NORTH 1	3.399	7.90
QUESNEL NORTH 2	2.168	7.00
QUESNEL NORTH 3	1.612	7.30
QUESNEL NORTH 4	3.132	7.80
QUESNEL NORTH 5	3.829	8.70
QUESNEL NORTH 6	1.967	7.00
QUESNEL NORTH 7	3.213	8.00
QUESNEL NORTH 8	2.225	7.50
QUESNEL NORTH 9	1.672	6.90
QUESNEL NORTH 10	2.079	6.90
QUESNEL MIDDLE 1	1.827	6.70
QUESNEL MIDDLE 2	1.801	7.00
QUESNEL MIDDLE 3	1.615	7.00
QUESNEL MIDDLE 4	2.738	7.70
QUESNEL MIDDLE 5	2.502	7.50
QUESNEL MIDDLE 6	2.988	7.80
QUESNEL MIDDLE 7	1.316	6.50
QUESNEL MIDDLE 8	2.427	6.60
QUESNEL MIDDLE 9	1.808	6.90
QUESNEL MIDDLE 10	2.593	7.00
QUESNEL WEST 1	5.131	8.90
QUESNEL WEST 2	4.161	9.00
QUESNEL WEST 3	5.263	9.20
QUESNEL WEST 4	3.978	9.50
QUESNEL WEST 5	5.51	9.00
QUESNEL WEST 6	5.484	9.00
QUESNEL WEST 7	9.054	10.30
QUESNEL WEST 8	6.675	9.50
QUESNEL WEST 9	4.139	8.80
QUESNEL WEST 10	4.269	8.50
QUESNEL EAST 1	2.432	7.90
QUESNEL EAST 2	2.755	7.50
QUESNEL EAST 3	2.485	8.00
QUESNEL EAST 4	3.537	8.60
QUESNEL EAST 5	4.356	8.80
QUESNEL EAST 6	3.021	7.80
QUESNEL EAST 7	2.435	7.80
QUESNEL EAST 8	1.953	6.90
QUESNEL EAST 9	2.268	7.40
QUESNEL EAST 10	2.788	7.70

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report to:				Report Format / Distribution				Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.			☑ Standard ☐ Other				◉ Regular (Default)
Contact:	Colleen Hughes			☑ PDF ☑ Excel ☐ Digital ☐ Fax				○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0			Email 1: chughes@mountpolley.com				○ Emergency (1 Business Day) - 100% Surcharge
				Email 2: Daniel.Selbie@dfo-mpo.gc.ca				○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215	Fax:	250-790-2268					
Invoice To:	Same as Report ? ◉ Yes ○ No			Client / Project Information:				Analysis Request
Company:				Job #:				Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:				PO / AFE:				
Address:				Legal Site Description:				
Phone:		Fax:		Quote #:				
Lab Work Order # (lab use only)				ALS Contact: Can Dang		Sampler: Garrett Lidin		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	P	P	P	P	P	P	P	P	P	P	P	P	Number of Containers
	North Arm, Tow 1, 10 Nerka samples (Number 1)	23-Oct-14	19:37 PST	Tissue													1
	Middle Arm (Lower West Arm), Tow 5, 10 Nerka samples (Number 2)	25-Oct-14	00:14 PST	Tissue													1
	West Arm, Tow 6,10 Nerka Samples (Number 3)	26-Oct-14	19:15 PST	Tissue													1
	East Arm, Tow 9, 10 Nerka Samples (Number 4)	27-Oct-14	19:12 PST	Tissue													1

Special Instructions / Regulations / Hazardous Details

Please also record fork length, weight, and % moisture. Perform the full suite of metals analyses

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the last page of the white report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (ALS use only)						FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations Yes / No ? If Yes attach SIF		
	Oct 24/14 1100hrs		Oct 24/14	11:00 a.	-3 C.					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY; PINK - FILE COPY; YELLOW - CLIENT COPY

Sample Receipt Confirmation

40 Samples received at ALS in VANCOUVER

Job Reference #: N/A
Project PO #: N/A
Legal Site Description: N/A
Quote #: N/A
Lab Work Order #: L1538008
Estimated Completion Date: 12/19/2014

Date Sampled: 10/23/2014
Date Received: 10/24/2014
Sampled By: Garrett Lidin
Chain of Custody: N/A
Account Manager: Can Dang
Estimated Sample Disposal Date: 1/18/2015

Sample Integrity Observations:

Observation	Details
CofC incomplete or unclear	Sampling date > receiving date

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12
Likely,BC V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
Report Name: CROSSTAB_ALS
Digital Type: EHS_MOUNTP
Digital Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
Distribution: **Hard Copy:** N **Email:** Y **Fax:** N

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP. ~LIKELY
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100
Distribution: **Hard Copy:** Y **Email:** Y

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1538008-1	QUESNEL NORTH 1	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-2	QUESNEL NORTH 2	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-3	QUESNEL NORTH 3	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-4	QUESNEL NORTH 4	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-5	QUESNEL NORTH 5	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-6	QUESNEL NORTH 6	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-7	QUESNEL NORTH 7	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-8	QUESNEL NORTH 8	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1538008-9	QUESNEL NORTH 9	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-10	QUESNEL NORTH 10	10/23/2014 7:37 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-11	QUESNEL MIDDLE 1	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-12	QUESNEL MIDDLE 2	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-13	QUESNEL MIDDLE 3	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-14	QUESNEL MIDDLE 4	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-15	QUESNEL MIDDLE 5	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-16	QUESNEL MIDDLE 6	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-17	QUESNEL MIDDLE 7	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-18	QUESNEL MIDDLE 8	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-19	QUESNEL MIDDLE 9	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-20	QUESNEL MIDDLE 10	10/23/2014 12:14 AM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-21	QUESNEL WEST 1	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-22	QUESNEL WEST 2	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-23	QUESNEL WEST 3	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-24	QUESNEL WEST 4	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-25	QUESNEL WEST 5	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-26	QUESNEL WEST 6	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-27	QUESNEL WEST 7	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-28	QUESNEL WEST 8	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-29	QUESNEL WEST 9	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-30	QUESNEL WEST 10	10/23/2014 7:15 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-31	QUESNEL EAST 1	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-32	QUESNEL EAST 2	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-33	QUESNEL EAST 3	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-34	QUESNEL EAST 4	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-35	QUESNEL EAST 5	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-36	QUESNEL EAST 6	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-37	QUESNEL EAST 7	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-38	QUESNEL EAST 8	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE

Sample Receipt Confirmation

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1538008-39	QUESNEL EAST 9	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE
L1538008-40	QUESNEL EAST 10	10/23/2014 7:12 PM	10/24/2014 11:00 AM	12/19/2014 5:00 PM		TISSUE

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Special Request	Mercury in Tissue by CVAFS (WET)	Mercury in Tissue by CVAFS Micro (WET)	Metals in Tissue by CRC ICPMS (WET)	Metals in Tissue by HR-ICPMS Micro (WET)	% Moisture in Tissues	Tissue/Vegetation MIcro Preparation	Tissue/Vegetation Sample Preparation
QUESNEL NORTH 1	X	X	X		X		X		X
QUESNEL NORTH 2	X	X		X		X	X	X	X
QUESNEL NORTH 3	X	X		X		X	X	X	X
QUESNEL NORTH 4	X	X	X		X		X		X
QUESNEL NORTH 5	X	X	X		X		X		X
QUESNEL NORTH 6	X	X		X		X	X	X	X
QUESNEL NORTH 7	X	X	X		X		X		X
QUESNEL NORTH 8	X	X		X		X	X	X	X
QUESNEL NORTH 9	X	X		X		X	X	X	X
QUESNEL NORTH 10	X	X		X		X	X	X	X
QUESNEL MIDDLE 1	X	X		X		X	X	X	X
QUESNEL MIDDLE 2	X	X		X		X	X	X	X
QUESNEL MIDDLE 3	X	X		X		X	X	X	X
QUESNEL MIDDLE 4	X	X		X		X	X	X	X
QUESNEL MIDDLE 5	X	X		X		X	X	X	X
QUESNEL MIDDLE 6	X	X	X		X		X		X
QUESNEL MIDDLE 7	X	X		X		X	X	X	X
QUESNEL MIDDLE 8	X	X		X		X	X	X	X
QUESNEL MIDDLE 9	X	X		X		X	X	X	X

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Special Request	Mercury in Tissue by CVAFS (WET)	Mercury in Tissue by CVAFS Micro (WET)	Metals in Tissue by CRC ICPMS (WET)	Metals in Tissue by HR-ICPMS Micro (WET)	% Moisture in Tissues	Tissue/Vegetation MIcro Preparation	Tissue/Vegetation Sample Preparation
QUESNEL MIDDLE 10	X	X		X		X	X	X	X
QUESNEL WEST 1	X	X	X		X		X		X
QUESNEL WEST 2	X	X	X		X		X		X
QUESNEL WEST 3	X	X	X		X		X		X
QUESNEL WEST 4	X	X	X		X		X		X
QUESNEL WEST 5	X	X	X		X		X		X
QUESNEL WEST 6	X	X	X		X		X		X
QUESNEL WEST 7	X	X	X		X		X		X
QUESNEL WEST 8	X	X	X		X		X		X
QUESNEL WEST 9	X	X	X		X		X		X
QUESNEL WEST 10	X	X	X		X		X		X
QUESNEL EAST 1	X	X		X		X	X	X	X
QUESNEL EAST 2	X	X		X		X	X	X	X
QUESNEL EAST 3	X	X		X		X	X	X	X
QUESNEL EAST 4	X	X	X		X		X		X
QUESNEL EAST 5	X	X	X		X		X		X
QUESNEL EAST 6	X	X		X		X	X	X	X
QUESNEL EAST 7	X	X		X		X	X	X	X
QUESNEL EAST 8	X	X		X		X	X	X	X
QUESNEL EAST 9	X	X		X		X	X	X	X

Sample Receipt Confirmation

Analysis Requested:	Sample Handling and Disposal Fee	Special Request	Mercury in Tissue by CVAFS (WET)	Mercury in Tissue by CVAFS Micro (WET)	Metals in Tissue by CRC ICPMS (WET)	Metals in Tissue by HR-ICPMS Micro (WET)	% Moisture in Tissues	Tissue/Vegetation MIcro Preparation	Tissue/Vegetation Sample Preparation
QUESNEL EAST 10	X	X		X		X	X	X	X

Sample Receipt Confirmation

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # L1538008 when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report to:				Report Format / Distribution				Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.			☑ Standard ☐ Other				◉ Regular (Default)
Contact:	Colleen Hughes			☑ PDF ☑ Excel ☐ Digital ☐ Fax				○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0			Email 1: chughes@mountpolley.com				○ Emergency (1 Business Day) - 100% Surcharge
				Email 2: Daniel.Selbie@dfo-mpo.gc.ca				○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215	Fax:	250-790-2268					
Invoice To:	Same as Report ? ◉ Yes ○ No			Client / Project Information:				Analysis Request
Company:				Job #:				Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:				PO / AFE:				
Address:				Legal Site Description:				
Phone:		Fax:		Quote #:				
Lab Work Order # (lab use only)				ALS Contact: Can Dang		Sampler: Garrett Lidin		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	P	P	P	P	P	P	P	P	P	P	P	P	Number of Containers
	North Arm, Tow 1, 10 Nerka samples (Number 1)	23-Oct-14	19:37 PST	Tissue													1
	Middle Arm (Lower West Arm), Tow 5, 10 Nerka samples (Number 2)	25-Oct-14	00:14 PST	Tissue													1
	West Arm, Tow 6,10 Nerka Samples (Number 3)	26-Oct-14	19:15 PST	Tissue													1
	East Arm, Tow 9, 10 Nerka Samples (Number 4)	27-Oct-14	19:12 PST	Tissue													1

Special Instructions / Regulations / Hazardous Details

Please also record fork length, weight, and % moisture. Perform the full suite of metals analyses

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the last page of the white report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (ALS use only)						FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations Yes / No ? If Yes attach SIF		
	Oct 24/14 1100hrs		Oct 24/14	11:00 a.	-3 C.					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY; PINK - FILE COPY; YELLOW - CLIENT COPY

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 03-JUN-15
Report Date: 06-JUL-15 15:26 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1621080

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: FT-1
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1621080-1 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1 - MUSCLE	L1621080-2 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1 - LIVER	L1621080-3 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1 - KIDNEY	L1621080-4 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1 - GONAD	L1621080-5 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1X - MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	81.0	77.2	83.0	62.2	80.2
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	0.0033	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	0.037	0.343	<0.020	0.028
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0084	0.0584	0.0042	0.0056
	Barium (Ba)-Total (mg/kg)	0.058	0.052	0.221	0.150	0.149
	Barium (Ba)-Total (mg/kg wwt)	0.011	0.012	0.038	0.057	0.030
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.131	0.914	<0.0050	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0299	0.156	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/kg)	1060	316	1440	1120	1010
	Calcium (Ca)-Total (mg/kg wwt)	202	72.0	245	425	200
	Cesium (Cs)-Total (mg/kg)	0.0605	0.0386	0.0608	0.0148	0.0684
	Cesium (Cs)-Total (mg/kg wwt)	0.0115	0.0088	0.0104	0.0056	0.0136
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	0.21	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	0.013	<0.010
	Cobalt (Co)-Total (mg/kg)	<0.020	0.095	0.840	0.070	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0217	0.143	0.0266	<0.0040
	Copper (Cu)-Total (mg/kg)	2.28	30.8	7.10	6.55	2.34
	Copper (Cu)-Total (mg/kg wwt)	0.433	7.01	1.21	2.48	0.464
	Iron (Fe)-Total (mg/kg)	34.4	2110	709	40.0	30.8
	Iron (Fe)-Total (mg/kg wwt)	6.53	481	121	15.1	6.10
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1210	691	1060	1500	1210
	Magnesium (Mg)-Total (mg/kg wwt)	231	157	181	566	239
	Manganese (Mn)-Total (mg/kg)	0.684	7.79	1.95	2.67	0.656
	Manganese (Mn)-Total (mg/kg wwt)	0.130	1.77	0.333	1.01	0.130

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1621080-6 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1X - GONAD	L1621080-7 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-2 - MUSCLE	L1621080-8 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-2 - LIVER	L1621080-9 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-2 - KIDNEY	L1621080-10 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-2 - GONAD
TISSUE						
Physical Tests	% Moisture (%)	61.3	80.8	78.3	80.5	61.0
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<5.0	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<1.0	<1.0	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	0.045	0.045	0.358	0.024
	Arsenic (As)-Total (mg/kg wwt)	0.0065	0.0086	0.0098	0.0697	0.0095
	Barium (Ba)-Total (mg/kg)	0.145	<0.050	<0.050	0.160	0.092
	Barium (Ba)-Total (mg/kg wwt)	0.056	<0.010	<0.010	0.031	0.036
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.0087	0.058	1.31	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0017	0.0127	0.256	0.0011
	Calcium (Ca)-Total (mg/kg)	1160	1240	366	884	1290
	Calcium (Ca)-Total (mg/kg wwt)	449	237	79.5	172	505
	Cesium (Cs)-Total (mg/kg)	0.0148	0.0551	0.0406	0.0441	0.0159
	Cesium (Cs)-Total (mg/kg wwt)	0.0057	0.0106	0.0088	0.0086	0.0062
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.20	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	0.015	<0.010	<0.040	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.072	<0.020	0.087	0.434	0.068
	Cobalt (Co)-Total (mg/kg wwt)	0.0277	<0.0040	0.0189	0.0846	0.0267
	Copper (Cu)-Total (mg/kg)	6.81	2.45	12.7	6.41	8.14
	Copper (Cu)-Total (mg/kg wwt)	2.64	0.469	2.76	1.25	3.18
	Iron (Fe)-Total (mg/kg)	40.1	35.3	832	562	35.0
	Iron (Fe)-Total (mg/kg wwt)	15.5	6.78	181	110	13.6
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1540	1290	697	940	1470
	Magnesium (Mg)-Total (mg/kg wwt)	596	247	151	183	573
	Manganese (Mn)-Total (mg/kg)	2.77	0.642	6.71	2.44	3.34
	Manganese (Mn)-Total (mg/kg wwt)	1.07	0.123	1.46	0.476	1.30

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Grouping	Analyte	L1621080-11 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-3 - MUSCLE	L1621080-12 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-3 - LIVER	L1621080-13 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-3 - KIDNEY	L1621080-14 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-3 - GONAD	L1621080-15 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-4 - MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	82.4	80.9	85.4	64.1	78.9
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	6.1	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.060	0.054	0.336	0.036	0.037
	Arsenic (As)-Total (mg/kg wwt)	0.0105	0.0103	0.0490	0.0129	0.0078
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	0.228	0.164	0.088
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	0.033	0.059	0.018
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.259	1.08	<0.0050	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0496	0.157	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/kg)	998	362	925	1240	1070
	Calcium (Ca)-Total (mg/kg wwt)	175	69.2	135	444	226
	Cesium (Cs)-Total (mg/kg)	0.0802	0.0516	0.0814	0.0201	0.0747
	Cesium (Cs)-Total (mg/kg wwt)	0.0141	0.0099	0.0119	0.0072	0.0158
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	0.22	0.070	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	0.025	<0.010
	Cobalt (Co)-Total (mg/kg)	<0.020	0.116	1.62	0.116	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0221	0.236	0.0416	0.0042
	Copper (Cu)-Total (mg/kg)	2.44	126	5.95	11.2	2.76
	Copper (Cu)-Total (mg/kg wwt)	0.428	24.2	0.868	4.02	0.583
	Iron (Fe)-Total (mg/kg)	39.6	2970	1020	50.2	37.3
	Iron (Fe)-Total (mg/kg wwt)	6.97	569	148	18.0	7.87
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1410	693	1130	1310	1240
	Magnesium (Mg)-Total (mg/kg wwt)	248	133	165	469	262
	Manganese (Mn)-Total (mg/kg)	0.490	7.97	2.13	6.81	0.692
	Manganese (Mn)-Total (mg/kg wwt)	0.086	1.53	0.310	2.44	0.146

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Grouping	Analyte	L1621080-16 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-4 - LIVER	L1621080-17 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-4 - KIDNEY	L1621080-18 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-4 - GONAD	L1621080-19 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-5 - MUSCLE	L1621080-20 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-5 - LIVER
TISSUE						
Physical Tests	% Moisture (%)	77.8	81.8	61.2	80.1	76.6
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<5.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	<1.0	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.056	0.121	<0.030	0.044	0.055
	Arsenic (As)-Total (mg/kg wwt)	0.0123	0.0220	0.0085	0.0087	0.0128
	Barium (Ba)-Total (mg/kg)	<0.050	0.198	0.106	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.036	0.041	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.079	0.645	<0.010	<0.0050	0.109
	Cadmium (Cd)-Total (mg/kg wwt)	0.0175	0.117	<0.0020	<0.0010	0.0257
	Calcium (Ca)-Total (mg/kg)	354	663	1100	789	271
	Calcium (Ca)-Total (mg/kg wwt)	78.6	121	427	157	63.6
	Cesium (Cs)-Total (mg/kg)	0.0473	0.0753	0.0187	0.0746	0.0544
	Cesium (Cs)-Total (mg/kg wwt)	0.0105	0.0137	0.0072	0.0148	0.0127
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.094	0.778	0.062	<0.020	0.085
	Cobalt (Co)-Total (mg/kg wwt)	0.0209	0.141	0.0240	<0.0040	0.0200
	Copper (Cu)-Total (mg/kg)	31.0	6.12	7.17	2.67	201
	Copper (Cu)-Total (mg/kg wwt)	6.89	1.11	2.78	0.529	47.2
	Iron (Fe)-Total (mg/kg)	1190	442	37.1	38.6	1360
	Iron (Fe)-Total (mg/kg wwt)	265	80.3	14.4	7.66	320
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	745	955	1410	1300	594
	Magnesium (Mg)-Total (mg/kg wwt)	166	174	548	258	139
	Manganese (Mn)-Total (mg/kg)	7.81	1.98	6.14	0.571	7.27
	Manganese (Mn)-Total (mg/kg wwt)	1.73	0.359	2.38	0.113	1.71

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Grouping	Analyte	L1621080-21 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-5 - KIDNEY	L1621080-22 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-5 - GONAD	L1621080-23 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-6 - MUSCLE	L1621080-24 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-6 - LIVER	L1621080-25 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-6 - KIDNEY
TISSUE						
Physical Tests	% Moisture (%)	79.6	62.5	80.8	75.2	80.5
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<2.0	<5.0	7.5
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<0.40	<1.0	1.5
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.013
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0026
	Arsenic (As)-Total (mg/kg)	0.120	0.021	0.022	0.079	0.400
	Arsenic (As)-Total (mg/kg wwt)	0.0244	0.0079	0.0043	0.0195	0.0781
	Barium (Ba)-Total (mg/kg)	0.177	0.170	<0.050	<0.050	0.209
	Barium (Ba)-Total (mg/kg wwt)	0.036	0.064	<0.010	<0.010	0.041
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.487	<0.0050	<0.0050	0.179	1.04
	Cadmium (Cd)-Total (mg/kg wwt)	0.0992	0.0011	<0.0010	0.0445	0.203
	Calcium (Ca)-Total (mg/kg)	3820	1010	312	257	1140
	Calcium (Ca)-Total (mg/kg wwt)	779	378	59.9	63.8	222
	Cesium (Cs)-Total (mg/kg)	0.0623	0.0266	0.0466	0.0530	0.0932
	Cesium (Cs)-Total (mg/kg wwt)	0.0127	0.0100	0.0090	0.0131	0.0182
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.050	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	0.017	<0.010	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	0.644	0.052	<0.020	0.068	1.13
	Cobalt (Co)-Total (mg/kg wwt)	0.131	0.0194	<0.0040	0.0168	0.221
	Copper (Cu)-Total (mg/kg)	6.44	7.92	1.15	62.1	7.96
	Copper (Cu)-Total (mg/kg wwt)	1.31	2.97	0.220	15.4	1.56
	Iron (Fe)-Total (mg/kg)	623	45.8	23.4	1950	556
	Iron (Fe)-Total (mg/kg wwt)	127	17.1	4.49	485	109
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.020	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.0040	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	920	1560	640	645	1270
	Magnesium (Mg)-Total (mg/kg wwt)	187	583	123	160	249
	Manganese (Mn)-Total (mg/kg)	2.30	4.92	0.190	6.42	2.07
	Manganese (Mn)-Total (mg/kg wwt)	0.469	1.84	0.036	1.59	0.405

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Grouping	Analyte	L1621080-26 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-6 - GONAD	L1621080-27 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-7 - MUSCLE	L1621080-28 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-7 - LIVER	L1621080-29 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-7 - KIDNEY	L1621080-30 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-7 - GONAD
TISSUE						
Physical Tests	% Moisture (%)	70.9	85.0	75.2	85.0	64.5
Metals	Aluminum (Al)-Total (mg/kg)	2.0	<2.0	<5.0	6.5	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	0.59	<0.40	<1.0	<1.0	0.43
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	0.011	0.022
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0078
	Arsenic (As)-Total (mg/kg)	0.031	0.033	0.050	0.329	0.021
	Arsenic (As)-Total (mg/kg wwt)	0.0089	0.0050	0.0124	0.0492	0.0076
	Barium (Ba)-Total (mg/kg)	0.197	<0.050	<0.050	0.175	0.250
	Barium (Ba)-Total (mg/kg wwt)	0.057	<0.010	<0.010	0.026	0.089
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	<0.0050	0.164	0.759	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	<0.0010	0.0408	0.114	<0.0010
	Calcium (Ca)-Total (mg/kg)	1870	1210	219	808	1480
	Calcium (Ca)-Total (mg/kg wwt)	543	182	54.5	121	528
	Cesium (Cs)-Total (mg/kg)	0.0056	0.0958	0.0260	0.0956	0.0239
	Cesium (Cs)-Total (mg/kg wwt)	0.0016	0.0144	0.0065	0.0143	0.0085
	Chromium (Cr)-Total (mg/kg)	0.088	<0.050	<0.20	<0.20	0.104
	Chromium (Cr)-Total (mg/kg wwt)	0.026	<0.010	<0.040	<0.040	0.037
	Cobalt (Co)-Total (mg/kg)	0.124	0.023	0.069	0.743	0.084
	Cobalt (Co)-Total (mg/kg wwt)	0.0360	<0.0040	0.0170	0.111	0.0298
	Copper (Cu)-Total (mg/kg)	8.95	2.45	188	6.91	9.99
	Copper (Cu)-Total (mg/kg wwt)	2.61	0.367	46.7	1.03	3.55
	Iron (Fe)-Total (mg/kg)	46.0	40.7	1710	686	46.0
	Iron (Fe)-Total (mg/kg wwt)	13.4	6.10	425	103	16.4
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1030	1370	702	1140	1590
	Magnesium (Mg)-Total (mg/kg wwt)	299	206	174	170	567
	Manganese (Mn)-Total (mg/kg)	6.25	0.637	7.20	2.06	8.80
	Manganese (Mn)-Total (mg/kg wwt)	1.82	0.096	1.79	0.308	3.13

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Grouping	Analyte	L1621080-31 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-8 - MUSCLE	L1621080-32 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-8 - LIVER	L1621080-33 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-8 - KIDNEY	L1621080-34 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-8 - GONAD	
TISSUE						
Physical Tests	% Moisture (%)	81.4	75.8	79.9	66.6	
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	6.8	<2.0	
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	1.4	<0.40	
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	0.010	<0.010	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0021	<0.0020	
	Arsenic (As)-Total (mg/kg)	0.021	0.087	0.298	<0.020	
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0209	0.0600	0.0052	
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	0.218	0.171	
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	0.044	0.057	
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.278	0.843	<0.0050	
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0671	0.170	<0.0010	
	Calcium (Ca)-Total (mg/kg)	945	399	851	1330	
	Calcium (Ca)-Total (mg/kg wwt)	176	96.4	171	444	
	Cesium (Cs)-Total (mg/kg)	0.0608	0.0687	0.0752	0.0203	
	Cesium (Cs)-Total (mg/kg wwt)	0.0113	0.0166	0.0151	0.0068	
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	0.38	<0.050	
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	0.077	0.014	
	Cobalt (Co)-Total (mg/kg)	0.023	0.071	1.37	0.109	
	Cobalt (Co)-Total (mg/kg wwt)	0.0042	0.0172	0.276	0.0364	
	Copper (Cu)-Total (mg/kg)	2.14	103	6.41	8.95	
	Copper (Cu)-Total (mg/kg wwt)	0.398	24.8	1.29	2.99	
	Iron (Fe)-Total (mg/kg)	60.4	3190	667	58.6	
	Iron (Fe)-Total (mg/kg wwt)	11.2	771	134	19.6	
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	
	Magnesium (Mg)-Total (mg/kg)	1260	830	1080	1400	
	Magnesium (Mg)-Total (mg/kg wwt)	234	201	218	469	
	Manganese (Mn)-Total (mg/kg)	0.625	6.08	1.84	7.99	
	Manganese (Mn)-Total (mg/kg wwt)	0.116	1.47	0.371	2.67	

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Grouping	Analyte	L1621080-1 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1 - MUSCLE	L1621080-2 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1 - LIVER	L1621080-3 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1 - KIDNEY	L1621080-4 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1 - GONAD	L1621080-5 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1X - MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.462	0.345	0.414	0.0100	0.447
	Mercury (Hg)-Total (mg/kg wwt)	0.0878	0.0785	0.0705	0.0038	0.0887
	Molybdenum (Mo)-Total (mg/kg)	<0.020	2.35	0.890	0.041	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.536	0.152	0.0154	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.37	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.063	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	13000	12300	13800	11600	12900
	Phosphorus (P)-Total (mg/kg wwt)	2470	2810	2350	4380	2550
	Potassium (K)-Total (mg/kg)	21700	10500	17300	6850	21500
	Potassium (K)-Total (mg/kg wwt)	4120	2400	2950	2590	4250
	Rubidium (Rb)-Total (mg/kg)	8.51	5.40	7.86	3.19	8.54
	Rubidium (Rb)-Total (mg/kg wwt)	1.62	1.23	1.34	1.20	1.69
	Selenium (Se)-Total (mg/kg)	3.56	30.6	21.7	28.0	3.77
	Selenium (Se)-Total (mg/kg wwt)	0.678	6.97	3.69	10.6	0.747
	Sodium (Na)-Total (mg/kg)	2000	6380	6370	1710	1970
	Sodium (Na)-Total (mg/kg wwt)	381	1450	1080	646	390
	Strontium (Sr)-Total (mg/kg)	1.53	0.45	2.90	3.39	1.41
	Strontium (Sr)-Total (mg/kg wwt)	0.290	0.103	0.494	1.28	0.279
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0044	0.0342	0.0951	<0.0020	0.0038
	Thallium (Tl)-Total (mg/kg wwt)	0.00084	0.00780	0.0162	<0.00040	0.00075
	Tin (Sn)-Total (mg/kg)	<0.10	0.10	0.46	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.024	0.078	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0031	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00054	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.32	0.39	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.072	0.066	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	20.0	116	147	57.6	18.5
	Zinc (Zn)-Total (mg/kg wwt)	3.81	26.3	25.1	21.8	3.67
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1621080-6 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-1X - GONAD	L1621080-7 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-2 - MUSCLE	L1621080-8 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-2 - LIVER	L1621080-9 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-2 - KIDNEY	L1621080-10 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-2 - GONAD
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0091	0.504	0.302	0.355	0.0089
	Mercury (Hg)-Total (mg/kg wwt)	0.0035	0.0967	0.0655	0.0691	0.0035
	Molybdenum (Mo)-Total (mg/kg)	0.041	<0.020	1.26	0.778	0.033
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0160	<0.0040	0.273	0.152	0.0131
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	0.24	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.047	<0.040
	Phosphorus (P)-Total (mg/kg)	12100	13700	12800	12800	11500
	Phosphorus (P)-Total (mg/kg wwt)	4680	2620	2770	2490	4490
	Potassium (K)-Total (mg/kg)	7020	22300	10400	15300	6660
	Potassium (K)-Total (mg/kg wwt)	2720	4270	2270	2990	2600
	Rubidium (Rb)-Total (mg/kg)	3.21	8.95	5.80	7.08	3.47
	Rubidium (Rb)-Total (mg/kg wwt)	1.24	1.72	1.26	1.38	1.36
	Selenium (Se)-Total (mg/kg)	28.0	3.19	19.1	14.6	19.3
	Selenium (Se)-Total (mg/kg wwt)	10.8	0.612	4.15	2.84	7.54
	Sodium (Na)-Total (mg/kg)	1800	2100	6290	4420	1500
	Sodium (Na)-Total (mg/kg wwt)	697	404	1360	862	586
	Strontium (Sr)-Total (mg/kg)	3.37	1.30	0.36	1.58	2.70
	Strontium (Sr)-Total (mg/kg wwt)	1.30	0.250	0.078	0.309	1.05
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0032	0.0369	0.0417	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00061	0.00801	0.00813	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	0.0029	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	0.00056	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.23	0.34	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.049	0.067	<0.020
	Zinc (Zn)-Total (mg/kg)	59.3	21.0	127	262	64.0
	Zinc (Zn)-Total (mg/kg wwt)	23.0	4.03	27.6	51.2	25.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1621080-11 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-3 - MUSCLE	L1621080-12 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-3 - LIVER	L1621080-13 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-3 - KIDNEY	L1621080-14 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-3 - GONAD	L1621080-15 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-4 - MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.438	0.261	0.266	0.0102	0.315
	Mercury (Hg)-Total (mg/kg wwt)	0.0769	0.0500	0.0388	0.0037	0.0664
	Molybdenum (Mo)-Total (mg/kg)	<0.020	2.75	0.642	0.069	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.525	0.0937	0.0246	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.30	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.044	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	14100	12300	15400	10900	12400
	Phosphorus (P)-Total (mg/kg wwt)	2480	2360	2240	3910	2620
	Potassium (K)-Total (mg/kg)	23000	11200	20600	6090	19700
	Potassium (K)-Total (mg/kg wwt)	4050	2140	3000	2180	4150
	Rubidium (Rb)-Total (mg/kg)	9.04	6.34	8.60	2.88	8.38
	Rubidium (Rb)-Total (mg/kg wwt)	1.59	1.21	1.25	1.03	1.77
	Selenium (Se)-Total (mg/kg)	5.78	82.1	28.9	50.5	5.74
	Selenium (Se)-Total (mg/kg wwt)	1.02	15.7	4.21	18.1	1.21
	Sodium (Na)-Total (mg/kg)	1630	7120	5800	2560	1390
	Sodium (Na)-Total (mg/kg wwt)	286	1360	846	920	294
	Strontium (Sr)-Total (mg/kg)	1.24	0.49	2.29	3.28	1.18
	Strontium (Sr)-Total (mg/kg wwt)	0.218	0.093	0.335	1.18	0.248
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0058	0.0387	0.0830	<0.0020	0.0035
	Thallium (Tl)-Total (mg/kg wwt)	0.00102	0.00740	0.0121	<0.00040	0.00073
	Tin (Sn)-Total (mg/kg)	<0.10	0.16	0.48	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.031	0.070	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0035	0.0049	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00068	0.00072	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.71	0.66	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.136	0.096	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	30.0	158	164	63.2	23.1
	Zinc (Zn)-Total (mg/kg wwt)	5.27	30.2	23.9	22.7	4.88
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1621080-16 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-4 - LIVER	L1621080-17 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-4 - KIDNEY	L1621080-18 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-4 - GONAD	L1621080-19 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-5 - MUSCLE	L1621080-20 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-5 - LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.167	0.182	0.0064	0.364	0.199
	Mercury (Hg)-Total (mg/kg wwt)	0.0372	0.0330	0.0025	0.0723	0.0467
	Molybdenum (Mo)-Total (mg/kg)	1.48	0.403	0.055	<0.020	1.84
	Molybdenum (Mo)-Total (mg/kg wwt)	0.329	0.0732	0.0212	<0.0040	0.432
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	13700	13700	9850	13500	12500
	Phosphorus (P)-Total (mg/kg wwt)	3050	2480	3820	2680	2930
	Potassium (K)-Total (mg/kg)	9970	15400	6120	22800	9890
	Potassium (K)-Total (mg/kg wwt)	2220	2800	2370	4520	2320
	Rubidium (Rb)-Total (mg/kg)	6.85	7.85	3.10	9.10	5.84
	Rubidium (Rb)-Total (mg/kg wwt)	1.52	1.43	1.20	1.81	1.37
	Selenium (Se)-Total (mg/kg)	44.1	18.1	35.3	6.00	97.7
	Selenium (Se)-Total (mg/kg wwt)	9.79	3.28	13.7	1.19	22.9
	Sodium (Na)-Total (mg/kg)	5460	3890	1220	1440	4730
	Sodium (Na)-Total (mg/kg wwt)	1210	706	473	285	1110
	Strontium (Sr)-Total (mg/kg)	0.32	0.91	3.20	1.06	0.35
	Strontium (Sr)-Total (mg/kg wwt)	0.072	0.165	1.24	0.211	0.081
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0311	0.107	<0.0020	0.0042	0.0266
	Thallium (Tl)-Total (mg/kg wwt)	0.00690	0.0195	<0.00040	0.00083	0.00624
	Tin (Sn)-Total (mg/kg)	0.11	0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.023	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0020	<0.0020	<0.0020	0.0021
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	0.00048
	Vanadium (V)-Total (mg/kg)	0.42	0.37	<0.10	<0.10	0.41
	Vanadium (V)-Total (mg/kg wwt)	0.094	0.067	<0.020	<0.020	0.095
	Zinc (Zn)-Total (mg/kg)	105	153	49.2	18.8	121
	Zinc (Zn)-Total (mg/kg wwt)	23.3	27.8	19.1	3.73	28.3
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1621080-21 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-5 - KIDNEY	L1621080-22 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-5 - GONAD	L1621080-23 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-6 - MUSCLE	L1621080-24 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-6 - LIVER	L1621080-25 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-6 - KIDNEY
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.209	0.0090	0.694	0.318	0.461
	Mercury (Hg)-Total (mg/kg wwt)	0.0426	0.0034	0.133	0.0790	0.0901
	Molybdenum (Mo)-Total (mg/kg)	0.435	0.084	<0.020	2.12	0.818
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0887	0.0316	<0.0040	0.526	0.160
	Nickel (Ni)-Total (mg/kg)	0.29	<0.20	<0.20	<0.20	0.45
	Nickel (Ni)-Total (mg/kg wwt)	0.059	<0.040	<0.040	<0.040	0.088
	Phosphorus (P)-Total (mg/kg)	13200	11300	6440	13100	13200
	Phosphorus (P)-Total (mg/kg wwt)	2700	4250	1240	3260	2580
	Potassium (K)-Total (mg/kg)	16600	6710	10800	9600	17000
	Potassium (K)-Total (mg/kg wwt)	3380	2520	2070	2380	3330
	Rubidium (Rb)-Total (mg/kg)	7.04	3.39	5.29	5.97	9.56
	Rubidium (Rb)-Total (mg/kg wwt)	1.43	1.27	1.02	1.48	1.87
	Selenium (Se)-Total (mg/kg)	18.2	34.8	2.47	57.4	36.8
	Selenium (Se)-Total (mg/kg wwt)	3.72	13.0	0.475	14.2	7.19
	Sodium (Na)-Total (mg/kg)	4190	1850	828	4300	4410
	Sodium (Na)-Total (mg/kg wwt)	854	693	159	1070	861
	Strontium (Sr)-Total (mg/kg)	6.91	3.84	0.373	0.29	3.02
	Strontium (Sr)-Total (mg/kg wwt)	1.41	1.44	0.072	0.072	0.591
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0666	<0.0020	0.0048	0.0291	0.136
	Thallium (Tl)-Total (mg/kg wwt)	0.0136	<0.00040	0.00093	0.00722	0.0265
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	0.22
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.021	0.043
	Uranium (U)-Total (mg/kg)	0.0026	<0.0020	<0.0020	0.0052	0.0080
	Uranium (U)-Total (mg/kg wwt)	0.00053	<0.00040	<0.00040	0.00129	0.00156
	Vanadium (V)-Total (mg/kg)	0.26	<0.10	<0.10	0.68	0.65
	Vanadium (V)-Total (mg/kg wwt)	0.053	<0.020	<0.020	0.169	0.128
	Zinc (Zn)-Total (mg/kg)	173	69.0	11.4	151	218
	Zinc (Zn)-Total (mg/kg wwt)	35.3	25.8	2.19	37.4	42.6
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1621080-26 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-6 - GONAD	L1621080-27 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-7 - MUSCLE	L1621080-28 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-7 - LIVER	L1621080-29 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-7 - KIDNEY	L1621080-30 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-7 - GONAD
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0345	0.459	0.367	0.373	0.0111
	Mercury (Hg)-Total (mg/kg wwt)	0.0100	0.0688	0.0913	0.0559	0.0039
	Molybdenum (Mo)-Total (mg/kg)	<0.020	<0.020	2.40	0.535	0.101
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0055	<0.0040	0.595	0.0801	0.0360
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	0.41	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.062	<0.040
	Phosphorus (P)-Total (mg/kg)	9670	14600	12800	15400	11700
	Phosphorus (P)-Total (mg/kg wwt)	2820	2190	3170	2310	4150
	Potassium (K)-Total (mg/kg)	1110	22300	8470	19400	6500
	Potassium (K)-Total (mg/kg wwt)	324	3350	2100	2910	2310
	Rubidium (Rb)-Total (mg/kg)	0.593	11.3	5.72	10.8	3.45
	Rubidium (Rb)-Total (mg/kg wwt)	0.173	1.69	1.42	1.62	1.23
	Selenium (Se)-Total (mg/kg)	55.6	5.71	98.0	24.6	44.8
	Selenium (Se)-Total (mg/kg wwt)	16.2	0.856	24.3	3.69	15.9
	Sodium (Na)-Total (mg/kg)	7920	916	2320	3380	1320
	Sodium (Na)-Total (mg/kg wwt)	2310	137	578	507	470
	Strontium (Sr)-Total (mg/kg)	4.50	1.39	0.24	1.60	3.46
	Strontium (Sr)-Total (mg/kg wwt)	1.31	0.208	0.059	0.240	1.23
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0054	0.0274	0.0550	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00081	0.00682	0.00824	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	0.15	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.022	0.024
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0154	0.0155	0.0050
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00383	0.00233	0.00179
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	1.06	0.69	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.264	0.103	<0.020
	Zinc (Zn)-Total (mg/kg)	37.7	30.2	210	225	59.1
	Zinc (Zn)-Total (mg/kg wwt)	11.0	4.52	52.1	33.7	21.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1621080-31 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-8 - MUSCLE	L1621080-32 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-8 - LIVER	L1621080-33 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-8 - KIDNEY	L1621080-34 Tissue 14-MAY-15 16:15 FRYPAN CR. RB-8 - GONAD	
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.469	0.207	0.248	0.0132	
	Mercury (Hg)-Total (mg/kg wwt)	0.0872	0.0501	0.0499	0.0044	
	Molybdenum (Mo)-Total (mg/kg)	<0.020	2.71	0.727	0.054	
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.655	0.146	0.0180	
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.44	<0.20	
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.043	0.089	<0.040	
	Phosphorus (P)-Total (mg/kg)	14300	13400	13800	11400	
	Phosphorus (P)-Total (mg/kg wwt)	2660	3230	2780	3820	
	Potassium (K)-Total (mg/kg)	22900	12300	17500	5980	
	Potassium (K)-Total (mg/kg wwt)	4260	2980	3510	2000	
	Rubidium (Rb)-Total (mg/kg)	10.2	8.70	8.75	3.14	
	Rubidium (Rb)-Total (mg/kg wwt)	1.89	2.10	1.76	1.05	
	Selenium (Se)-Total (mg/kg)	6.90	72.2	34.7	55.0	
	Selenium (Se)-Total (mg/kg wwt)	1.28	17.4	6.99	18.4	
	Sodium (Na)-Total (mg/kg)	1980	3410	5240	2440	
	Sodium (Na)-Total (mg/kg wwt)	368	824	1060	815	
	Strontium (Sr)-Total (mg/kg)	1.16	0.45	1.98	3.30	
	Strontium (Sr)-Total (mg/kg wwt)	0.216	0.108	0.399	1.10	
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg)	0.0036	0.0301	0.0936	<0.0020	
	Thallium (Tl)-Total (mg/kg wwt)	0.00066	0.00728	0.0188	<0.00040	
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	0.37	<0.10	
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.075	<0.020	
	Uranium (U)-Total (mg/kg)	<0.0020	0.0057	0.0070	<0.0020	
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00137	0.00140	<0.00040	
	Vanadium (V)-Total (mg/kg)	<0.10	1.11	0.74	<0.10	
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.267	0.149	<0.020	
	Zinc (Zn)-Total (mg/kg)	24.8	236	193	61.0	
	Zinc (Zn)-Total (mg/kg wwt)	4.61	57.1	38.9	20.4	
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Reference Information

Chain of Custody Numbers:

FT-1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # FT-1

Page 1 of 1

Report to:		Report Format / Distribution				Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard	☑ Other			◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF	☑ Excel	☐ Digital	☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file			○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:				○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:					Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:				Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:				
Contact:		PO / AFE:				
Address:		Legal Site Description:				
Phone:	Fax:	Quote #:				
[redacted] Lab Work Order # (lab use only)	L1621080	ALS Contact:	Can Dang	Sampler:	Norm Zirnhelt 25	

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Kidney Metals	Gonad Metals					Number of Containers
[redacted]	Frypan Cr. RB-1	14-May-15	8:00-16:15	Tissue	X	X	X	X	X					4
[redacted]	Frypan Cr. RB-1X	14-May-15	8:00-16:15	Tissue	X	X			X					2
[redacted]	Frypan Cr. RB-2	14-May-15	8:00-16:15	Tissue	X	X	X	X	X					4
[redacted]	Frypan Cr. RB-3	14-May-15	8:00-16:15	Tissue	X	X	X	X	X					4
[redacted]	Frypan Cr. RB-4	14-May-15	8:00-16:15	Tissue	X	X	X	X	X					4
[redacted]	Frypan Cr. RB-5	14-May-15	8:00-16:15	Tissue	X	X	X	X	X					4
[redacted]	Frypan Cr. RB-6	14-May-15	8:00-16:15	Tissue	X	X	X	X	X					4
[redacted]	Frypan Cr. RB-7	14-May-15	8:00-16:15	Tissue	X	X	X	X	X					4
[redacted]	Frypan Cr. RB-8	14-May-15	8:00-16:15	Tissue	X	X	X	X	X					4
[redacted]														
[redacted]														
[redacted]														

L1621080-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	June 2, 2015 1600hr	lady	06/03	9AM	2.2°C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 03-JUN-15
Report Date: 10-FEB-16 15:11 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1621082

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: FT-2
Legal Site Desc:

Comments:

10-FEB-2016 Revision 2: This revision replaces and supersedes previous revision of this report. The metals data for the sample ALS identify as L1621082-10 have been modified.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1621082-1	L1621082-2	L1621082-3	L1621082-4	L1621082-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	BOOTJACK LK TRIB 10 RB-1 - MUSCLE	BOOTJACK LK TRIB 10 RB-1 - LIVER	BOOTJACK LK TRIB 10 RB-1 - GONAD	BOOTJACK LK TRIB 10 RB-2 - MUSCLE	BOOTJACK LK TRIB 10 RB-2 - LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	81.5	78.1	64.0	80.8	76.1
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<2.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<0.40	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	<0.030	0.031	0.025	<0.030
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0060	0.0111	0.0049	0.0068
	Barium (Ba)-Total (mg/kg)	0.074	0.082	0.544	0.122	0.060
	Barium (Ba)-Total (mg/kg wwt)	0.014	0.018	0.196	0.024	0.014
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.074	<0.0050	<0.0050	0.108
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0163	<0.0010	<0.0010	0.0259
	Calcium (Ca)-Total (mg/kg)	685	645	1410	855	228
	Calcium (Ca)-Total (mg/kg wwt)	127	142	507	164	54.5
	Cesium (Cs)-Total (mg/kg)	0.0684	0.0322	0.0137	0.0660	0.0294
	Cesium (Cs)-Total (mg/kg wwt)	0.0126	0.0071	0.0049	0.0127	0.0070
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.050	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.010	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	0.054	0.078	<0.020	0.046
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0118	0.0280	<0.0040	0.0111
	Copper (Cu)-Total (mg/kg)	1.73	28.6	10.0	2.03	36.3
	Copper (Cu)-Total (mg/kg wwt)	0.320	6.27	3.62	0.391	8.69
	Iron (Fe)-Total (mg/kg)	29.1	739	34.4	28.7	781
	Iron (Fe)-Total (mg/kg wwt)	5.39	162	12.4	5.51	187
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.020	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.0040	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1250	887	1750	1260	804
	Magnesium (Mg)-Total (mg/kg wwt)	231	194	628	242	192
	Manganese (Mn)-Total (mg/kg)	0.484	6.29	4.68	0.599	7.68
	Manganese (Mn)-Total (mg/kg wwt)	0.089	1.38	1.68	0.115	1.84

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1621082-6	L1621082-7	L1621082-8	L1621082-9	L1621082-10
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	BOOTJACK LK TRIB 10 RB-2 - GONAD	BOOTJACK LK TRIB 10 RB-3 - MUSCLE	BOOTJACK LK TRIB 10 RB-3 - LIVER	BOOTJACK LK TRIB 10 RB-3 - GONAD	BOOTJACK LK TRIB 10 RB-3X - MUSCLE
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	61.7	84.4	78.8	63.1	84.1
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<5.0	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<1.0	<1.0	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	0.034	0.053	<0.030	0.030
	Arsenic (As)-Total (mg/kg wwt)	0.0069	0.0053	0.0112	0.0078	0.0048
	Barium (Ba)-Total (mg/kg)	0.563	0.090	<0.050	0.408	0.187
	Barium (Ba)-Total (mg/kg wwt)	0.215	0.014	0.011	0.151	0.030
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	0.012	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0025	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	<0.0050	0.139	<0.010	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	<0.0010	0.0294	<0.0020	<0.0010
	Calcium (Ca)-Total (mg/kg)	1460	830	216	1290	2100
	Calcium (Ca)-Total (mg/kg wwt)	558	130	45.9	478	334
	Cesium (Cs)-Total (mg/kg)	0.0146	0.0841	0.0359	0.0136	0.0884
	Cesium (Cs)-Total (mg/kg wwt)	0.0056	0.0131	0.0076	0.0050	0.0140
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.20	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.040	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.076	<0.020	0.060	0.043	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	0.0289	<0.0040	0.0127	0.0158	<0.0040
	Copper (Cu)-Total (mg/kg)	11.2	3.64	39.2	7.88	2.91
	Copper (Cu)-Total (mg/kg wwt)	4.29	0.569	8.31	2.91	0.461
	Iron (Fe)-Total (mg/kg)	40.3	53.0	1820	39.5	55.8
	Iron (Fe)-Total (mg/kg wwt)	15.4	8.29	385	14.6	8.85
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1460	1460	772	1360	1500
	Magnesium (Mg)-Total (mg/kg wwt)	559	229	164	504	238
	Manganese (Mn)-Total (mg/kg)	3.11	0.699	9.30	3.42	1.00
	Manganese (Mn)-Total (mg/kg wwt)	1.19	0.109	1.97	1.26	0.159

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1621082-11 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB-3X - GONAD	L1621082-12 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB- 4 - MUSCLE	L1621082-13 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB- 4 - LIVER	L1621082-14 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB- 4 - GONAD	L1621082-15 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB- 5 - MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	62.0	81.3	78.9	62.1	79.3
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<5.0	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<1.0	<1.0	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.030	<0.020	<0.030	<0.030	0.041
	Arsenic (As)-Total (mg/kg wwt)	0.0088	<0.0040	<0.0060	0.0082	0.0085
	Barium (Ba)-Total (mg/kg)	0.421	0.111	<0.050	0.465	0.060
	Barium (Ba)-Total (mg/kg wwt)	0.160	0.021	<0.010	0.176	0.012
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	0.012	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0023	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.010	<0.0050	0.095	<0.010	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0020	<0.0010	0.0200	<0.0020	<0.0010
	Calcium (Ca)-Total (mg/kg)	1350	876	262	1440	882
	Calcium (Ca)-Total (mg/kg wwt)	512	164	55.3	547	183
	Cesium (Cs)-Total (mg/kg)	0.0135	0.0762	0.0296	0.0112	0.0685
	Cesium (Cs)-Total (mg/kg wwt)	0.0051	0.0143	0.0063	0.0043	0.0142
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.20	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	<0.040	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.044	<0.020	0.039	0.055	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	0.0167	<0.0040	0.0082	0.0207	<0.0040
	Copper (Cu)-Total (mg/kg)	7.87	2.43	21.0	10.0	2.59
	Copper (Cu)-Total (mg/kg wwt)	3.00	0.455	4.42	3.80	0.538
	Iron (Fe)-Total (mg/kg)	40.7	41.2	644	35.9	26.3
	Iron (Fe)-Total (mg/kg wwt)	15.5	7.73	136	13.6	5.46
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1380	1300	925	1300	1380
	Magnesium (Mg)-Total (mg/kg wwt)	525	244	195	492	286
	Manganese (Mn)-Total (mg/kg)	3.62	0.566	9.92	2.55	0.629
	Manganese (Mn)-Total (mg/kg wwt)	1.38	0.106	2.09	0.966	0.130

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1621082-16	L1621082-17	L1621082-18	L1621082-19	L1621082-20
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	BOOTJACK LK TRIB 10 RB- 5 - LIVER	BOOTJACK LK TRIB 10 RB- 5 - GONAD	BOOTJACK LK TRIB 10 RB- 6 - MUSCLE	BOOTJACK LK TRIB 10 RB- 6 - LIVER	BOOTJACK LK TRIB 10 RB- 6 - GONAD
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	76.2	61.3	81.1	76.3	63.5
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<2.0	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<0.40	<1.0	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.041	0.033	<0.020	0.030	0.026
	Arsenic (As)-Total (mg/kg wwt)	0.0098	0.0130	<0.0040	0.0072	0.0096
	Barium (Ba)-Total (mg/kg)	0.100	0.476	0.069	<0.050	0.486
	Barium (Ba)-Total (mg/kg wwt)	0.024	0.184	0.013	<0.010	0.177
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.045	<0.0050	<0.0050	0.079	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.0107	<0.0010	<0.0010	0.0187	<0.0010
	Calcium (Ca)-Total (mg/kg)	524	1490	908	197	1400
	Calcium (Ca)-Total (mg/kg wwt)	125	575	172	46.7	510
	Cesium (Cs)-Total (mg/kg)	0.0333	0.0132	0.0765	0.0305	0.0131
	Cesium (Cs)-Total (mg/kg wwt)	0.0079	0.0051	0.0145	0.0072	0.0048
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	0.322	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	0.061	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.063	0.087	0.022	0.053	0.087
	Cobalt (Co)-Total (mg/kg wwt)	0.0150	0.0336	0.0041	0.0125	0.0318
	Copper (Cu)-Total (mg/kg)	44.2	10.8	2.58	18.7	6.82
	Copper (Cu)-Total (mg/kg wwt)	10.5	4.17	0.488	4.43	2.49
	Iron (Fe)-Total (mg/kg)	623	34.2	35.8	739	33.6
	Iron (Fe)-Total (mg/kg wwt)	149	13.2	6.77	175	12.3
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.020	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.0040	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	801	1450	1360	851	1560
	Magnesium (Mg)-Total (mg/kg wwt)	191	561	257	202	569
	Manganese (Mn)-Total (mg/kg)	7.48	4.07	0.766	7.68	2.77
	Manganese (Mn)-Total (mg/kg wwt)	1.78	1.57	0.145	1.82	1.01

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1621082-21	L1621082-22	L1621082-23	L1621082-24	L1621082-25
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	BOOTJACK LK TRIB 10 RB- 7 - MUSCLE	BOOTJACK LK TRIB 10 RB- 7 - LIVER	BOOTJACK LK TRIB 10 RB- 7 - GONAD	BOOTJACK LK TRIB 10 RB- 8 - MUSCLE	BOOTJACK LK TRIB 10 RB- 8 - LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	83.1	76.6	63.9	81.5	77.3
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	0.048	<0.030	<0.020	0.041
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0113	0.0091	<0.0040	0.0094
	Barium (Ba)-Total (mg/kg)	0.098	0.052	0.676	0.206	0.097
	Barium (Ba)-Total (mg/kg wwt)	0.017	0.012	0.244	0.038	0.022
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.146	<0.010	<0.0050	0.165
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0342	<0.0020	<0.0010	0.0375
	Calcium (Ca)-Total (mg/kg)	949	202	1210	1930	241
	Calcium (Ca)-Total (mg/kg wwt)	161	47.4	438	357	54.7
	Cesium (Cs)-Total (mg/kg)	0.0712	0.0358	0.0116	0.0523	0.0211
	Cesium (Cs)-Total (mg/kg wwt)	0.0121	0.0084	0.0042	0.0097	0.0048
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.024	0.059	0.067	<0.020	0.063
	Cobalt (Co)-Total (mg/kg wwt)	0.0040	0.0139	0.0241	<0.0040	0.0143
	Copper (Cu)-Total (mg/kg)	3.16	70.5	8.09	2.94	44.4
	Copper (Cu)-Total (mg/kg wwt)	0.536	16.5	2.92	0.544	10.1
	Iron (Fe)-Total (mg/kg)	37.2	589	30.5	42.8	1440
	Iron (Fe)-Total (mg/kg wwt)	6.30	138	11.0	7.92	328
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1420	822	1340	1550	734
	Magnesium (Mg)-Total (mg/kg wwt)	241	192	484	286	167
	Manganese (Mn)-Total (mg/kg)	0.698	8.18	5.67	1.03	7.98
	Manganese (Mn)-Total (mg/kg wwt)	0.118	1.91	2.05	0.190	1.81

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1621082-26				
	Description	Tissue				
	Sampled Date	22-MAY-15				
	Sampled Time	16:15				
	Client ID	BOOTJACK LK TRIB 10 RB- 8 - GONAD				
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	61.5				
Metals	Aluminum (Al)-Total (mg/kg)	<2.0				
	Aluminum (Al)-Total (mg/kg wwt)	<0.40				
	Antimony (Sb)-Total (mg/kg)	<0.010				
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020				
	Arsenic (As)-Total (mg/kg)	0.027				
	Arsenic (As)-Total (mg/kg wwt)	0.0106				
	Barium (Ba)-Total (mg/kg)	0.654				
	Barium (Ba)-Total (mg/kg wwt)	0.251				
	Beryllium (Be)-Total (mg/kg)	<0.010				
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020				
	Bismuth (Bi)-Total (mg/kg)	<0.010				
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020				
	Boron (B)-Total (mg/kg)	<1.0				
	Boron (B)-Total (mg/kg wwt)	<0.20				
	Cadmium (Cd)-Total (mg/kg)	<0.0050				
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010				
	Calcium (Ca)-Total (mg/kg)	1380				
	Calcium (Ca)-Total (mg/kg wwt)	531				
	Cesium (Cs)-Total (mg/kg)	0.0104				
	Cesium (Cs)-Total (mg/kg wwt)	0.0040				
	Chromium (Cr)-Total (mg/kg)	<0.050				
	Chromium (Cr)-Total (mg/kg wwt)	<0.010				
	Cobalt (Co)-Total (mg/kg)	0.097				
	Cobalt (Co)-Total (mg/kg wwt)	0.0371				
	Copper (Cu)-Total (mg/kg)	9.85				
	Copper (Cu)-Total (mg/kg wwt)	3.79				
	Iron (Fe)-Total (mg/kg)	38.8				
	Iron (Fe)-Total (mg/kg wwt)	14.9				
	Lead (Pb)-Total (mg/kg)	<0.020				
	Lead (Pb)-Total (mg/kg wwt)	<0.0040				
	Lithium (Li)-Total (mg/kg)	<0.50				
	Lithium (Li)-Total (mg/kg wwt)	<0.10				
	Magnesium (Mg)-Total (mg/kg)	1420				
	Magnesium (Mg)-Total (mg/kg wwt)	547				
	Manganese (Mn)-Total (mg/kg)	5.94				
	Manganese (Mn)-Total (mg/kg wwt)	2.28				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1621082-1 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB-1 - MUSCLE	L1621082-2 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB-1 - LIVER	L1621082-3 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB-1 - GONAD	L1621082-4 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB-2 - MUSCLE	L1621082-5 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB-2 - LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.427	0.236	0.0120	0.406	0.258
	Mercury (Hg)-Total (mg/kg wwt)	0.0790	0.0518	0.0043	0.0779	0.0618
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.582	0.046	<0.020	0.903
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.128	0.0164	<0.0040	0.216
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	12400	14400	11900	12500	13900
	Phosphorus (P)-Total (mg/kg wwt)	2300	3150	4290	2400	3330
	Potassium (K)-Total (mg/kg)	21000	11700	6890	21100	10200
	Potassium (K)-Total (mg/kg wwt)	3890	2560	2480	4050	2430
	Rubidium (Rb)-Total (mg/kg)	11.0	13.0	3.83	11.4	9.20
	Rubidium (Rb)-Total (mg/kg wwt)	2.03	2.85	1.38	2.19	2.20
	Selenium (Se)-Total (mg/kg)	2.66	7.84	7.18	2.53	11.5
	Selenium (Se)-Total (mg/kg wwt)	0.491	1.72	2.58	0.485	2.74
	Sodium (Na)-Total (mg/kg)	870	2590	1610	939	3140
	Sodium (Na)-Total (mg/kg wwt)	161	568	581	180	752
	Strontium (Sr)-Total (mg/kg)	0.920	0.72	3.51	1.33	0.36
	Strontium (Sr)-Total (mg/kg wwt)	0.170	0.158	1.26	0.255	0.087
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0126	0.151	<0.0020	0.0117	0.174
	Thallium (Tl)-Total (mg/kg wwt)	0.00233	0.0331	<0.00040	0.00224	0.0416
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.027	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	0.0035
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	0.00085
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	0.18
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.042
	Zinc (Zn)-Total (mg/kg)	14.7	137	77.9	20.5	125
	Zinc (Zn)-Total (mg/kg wwt)	2.72	30.0	28.1	3.93	29.9
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1621082-6	L1621082-7	L1621082-8	L1621082-9	L1621082-10
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	BOOTJACK LK TRIB 10 RB-2 - GONAD	BOOTJACK LK TRIB 10 RB-3 - MUSCLE	BOOTJACK LK TRIB 10 RB-3 - LIVER	BOOTJACK LK TRIB 10 RB-3 - GONAD	BOOTJACK LK TRIB 10 RB-3X - MUSCLE
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0117	0.569	0.436	0.0086	0.554
	Mercury (Hg)-Total (mg/kg wwt)	0.0045	0.0890	0.0924	0.0032	0.0879
	Molybdenum (Mo)-Total (mg/kg)	0.040	<0.020	0.901	0.041	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0152	<0.0040	0.191	0.0151	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11500	15300	14200	10300	16500
	Phosphorus (P)-Total (mg/kg wwt)	4380	2390	3000	3800	2620
	Potassium (K)-Total (mg/kg)	6660	25300	10800	6360	25600
	Potassium (K)-Total (mg/kg wwt)	2550	3950	2290	2350	4060
	Rubidium (Rb)-Total (mg/kg)	3.94	16.0	9.21	4.20	15.7
	Rubidium (Rb)-Total (mg/kg wwt)	1.51	2.50	1.95	1.55	2.49
	Selenium (Se)-Total (mg/kg)	7.20	2.57	14.6	3.78	2.37
	Selenium (Se)-Total (mg/kg wwt)	2.75	0.402	3.10	1.40	0.376
	Sodium (Na)-Total (mg/kg)	1430	1750	3700	1630	1830
	Sodium (Na)-Total (mg/kg wwt)	547	273	785	602	290
	Strontium (Sr)-Total (mg/kg)	4.02	1.21	0.46	4.12	3.39
	Strontium (Sr)-Total (mg/kg wwt)	1.54	0.189	0.097	1.52	0.538
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0130	0.106	<0.0020	0.0123
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00203	0.0224	<0.00040	0.00195
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	0.52
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.083
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0100	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00212	0.00041	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.25	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	0.054	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	86.9	30.3	151	75.5	25.2
	Zinc (Zn)-Total (mg/kg wwt)	33.3	4.74	31.9	27.9	4.00
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1621082-11	L1621082-12	L1621082-13	L1621082-14	L1621082-15
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	BOOTJACK LK TRIB 10 RB-3X - GONAD	BOOTJACK LK TRIB 10 RB- 4 - MUSCLE	BOOTJACK LK TRIB 10 RB- 4 - LIVER	BOOTJACK LK TRIB 10 RB- 4 - GONAD	BOOTJACK LK TRIB 10 RB- 5 - MUSCLE
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0088	0.459	0.207	0.0093	0.394
	Mercury (Hg)-Total (mg/kg wwt)	0.0033	0.0860	0.0437	0.0035	0.0816
	Molybdenum (Mo)-Total (mg/kg)	0.044	<0.020	0.667	<0.040	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0166	<0.0040	0.141	0.0142	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	10500	12900	15500	10300	12900
	Phosphorus (P)-Total (mg/kg wwt)	3980	2410	3260	3900	2670
	Potassium (K)-Total (mg/kg)	6280	22200	12700	6090	20800
	Potassium (K)-Total (mg/kg wwt)	2390	4170	2680	2310	4310
	Rubidium (Rb)-Total (mg/kg)	4.07	11.4	10.6	3.46	11.5
	Rubidium (Rb)-Total (mg/kg wwt)	1.55	2.15	2.24	1.31	2.38
	Selenium (Se)-Total (mg/kg)	3.72	2.19	8.43	5.40	2.42
	Selenium (Se)-Total (mg/kg wwt)	1.41	0.410	1.78	2.05	0.501
	Sodium (Na)-Total (mg/kg)	1700	1620	3410	1590	808
	Sodium (Na)-Total (mg/kg wwt)	645	304	718	603	167
	Strontium (Sr)-Total (mg/kg)	4.24	1.30	0.43	4.98	1.31
	Strontium (Sr)-Total (mg/kg wwt)	1.61	0.245	0.091	1.89	0.272
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0217	0.133	<0.0020	0.0134
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00407	0.0280	<0.00040	0.00278
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0057	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00043	0.00106	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	73.9	20.5	116	53.1	26.6
	Zinc (Zn)-Total (mg/kg wwt)	28.1	3.85	24.6	20.1	5.51
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1621082-16 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB- 5 - LIVER	L1621082-17 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB- 5 - GONAD	L1621082-18 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB- 6 - MUSCLE	L1621082-19 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB- 6 - LIVER	L1621082-20 Tissue 22-MAY-15 16:15 BOOTJACK LK TRIB 10 RB- 6 - GONAD
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.269	0.0102	0.424	0.221	0.0097
	Mercury (Hg)-Total (mg/kg wwt)	0.0641	0.0039	0.0801	0.0523	0.0035
	Molybdenum (Mo)-Total (mg/kg)	0.717	0.041	<0.020	0.564	0.031
	Molybdenum (Mo)-Total (mg/kg wwt)	0.171	0.0160	<0.0040	0.134	0.0112
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	13100	11400	13400	13900	12100
	Phosphorus (P)-Total (mg/kg wwt)	3130	4420	2540	3310	4400
	Potassium (K)-Total (mg/kg)	9980	7230	22300	11400	7110
	Potassium (K)-Total (mg/kg wwt)	2380	2790	4220	2700	2590
	Rubidium (Rb)-Total (mg/kg)	8.91	4.18	12.1	13.5	4.56
	Rubidium (Rb)-Total (mg/kg wwt)	2.12	1.62	2.29	3.19	1.66
	Selenium (Se)-Total (mg/kg)	9.10	6.06	2.28	7.01	6.16
	Selenium (Se)-Total (mg/kg wwt)	2.17	2.34	0.431	1.66	2.25
	Sodium (Na)-Total (mg/kg)	2690	1350	1220	2540	1290
	Sodium (Na)-Total (mg/kg wwt)	642	524	231	603	471
	Strontium (Sr)-Total (mg/kg)	1.11	4.29	1.37	0.31	4.31
	Strontium (Sr)-Total (mg/kg wwt)	0.265	1.66	0.259	0.073	1.57
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.138	<0.0020	0.0140	0.157	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.0328	<0.00040	0.00264	0.0371	<0.00040
	Tin (Sn)-Total (mg/kg)	0.14	<0.10	<0.10	0.14	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.033	<0.020	<0.020	0.034	0.023
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	0.021	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	125	49.1	30.6	113	53.3
	Zinc (Zn)-Total (mg/kg wwt)	29.9	19.0	5.78	26.7	19.4
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1621082-21	L1621082-22	L1621082-23	L1621082-24	L1621082-25
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15	22-MAY-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	BOOTJACK LK TRIB 10 RB- 7 - MUSCLE	BOOTJACK LK TRIB 10 RB- 7 - LIVER	BOOTJACK LK TRIB 10 RB- 7 - GONAD	BOOTJACK LK TRIB 10 RB- 8 - MUSCLE	BOOTJACK LK TRIB 10 RB- 8 - LIVER
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.565	0.365	0.0091	0.278	0.214
	Mercury (Hg)-Total (mg/kg wwt)	0.0958	0.0855	0.0033	0.0515	0.0485
	Molybdenum (Mo)-Total (mg/kg)	<0.020	1.01	<0.040	<0.020	0.901
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.235	0.0120	<0.0040	0.205
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	14100	13600	9830	14500	13100
	Phosphorus (P)-Total (mg/kg wwt)	2390	3190	3550	2690	2970
	Potassium (K)-Total (mg/kg)	22800	10300	6520	22200	11100
	Potassium (K)-Total (mg/kg wwt)	3860	2410	2350	4120	2510
	Rubidium (Rb)-Total (mg/kg)	10.9	7.68	3.25	11.0	7.55
	Rubidium (Rb)-Total (mg/kg wwt)	1.85	1.80	1.17	2.03	1.71
	Selenium (Se)-Total (mg/kg)	2.23	10.1	4.87	2.81	9.40
	Selenium (Se)-Total (mg/kg wwt)	0.378	2.38	1.76	0.521	2.13
	Sodium (Na)-Total (mg/kg)	1210	2810	1250	1060	2720
	Sodium (Na)-Total (mg/kg wwt)	205	658	450	197	619
	Strontium (Sr)-Total (mg/kg)	1.38	0.41	4.11	2.97	0.35
	Strontium (Sr)-Total (mg/kg wwt)	0.234	0.095	1.48	0.549	0.081
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0206	0.178	<0.0020	0.0107	0.119
	Thallium (Tl)-Total (mg/kg wwt)	0.00350	0.0416	<0.00040	0.00198	0.0269
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	0.13
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.030
	Uranium (U)-Total (mg/kg)	<0.0020	0.0029	<0.0020	<0.0020	0.0038
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00067	<0.00040	<0.00040	0.00086
	Vanadium (V)-Total (mg/kg)	<0.10	0.16	<0.10	<0.10	0.23
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.038	<0.020	<0.020	0.052
	Zinc (Zn)-Total (mg/kg)	26.1	149	52.3	23.0	120
	Zinc (Zn)-Total (mg/kg wwt)	4.42	35.0	18.9	4.26	27.3
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1621082-26				
	Description	Tissue				
	Sampled Date	22-MAY-15				
	Sampled Time	16:15				
	Client ID	BOOTJACK LK TRIB 10 RB- 8 - GONAD				
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0126				
	Mercury (Hg)-Total (mg/kg wwt)	0.0049				
	Molybdenum (Mo)-Total (mg/kg)	0.036				
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0140				
	Nickel (Ni)-Total (mg/kg)	<0.20				
	Nickel (Ni)-Total (mg/kg wwt)	<0.040				
	Phosphorus (P)-Total (mg/kg)	11700				
	Phosphorus (P)-Total (mg/kg wwt)	4500				
	Potassium (K)-Total (mg/kg)	7200				
	Potassium (K)-Total (mg/kg wwt)	2770				
	Rubidium (Rb)-Total (mg/kg)	3.66				
	Rubidium (Rb)-Total (mg/kg wwt)	1.41				
	Selenium (Se)-Total (mg/kg)	6.30				
	Selenium (Se)-Total (mg/kg wwt)	2.42				
	Sodium (Na)-Total (mg/kg)	1400				
	Sodium (Na)-Total (mg/kg wwt)	539				
	Strontium (Sr)-Total (mg/kg)	4.09				
	Strontium (Sr)-Total (mg/kg wwt)	1.57				
	Tellurium (Te)-Total (mg/kg)	<0.020				
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040				
	Thallium (Tl)-Total (mg/kg)	<0.0020				
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040				
	Tin (Sn)-Total (mg/kg)	<0.10				
	Tin (Sn)-Total (mg/kg wwt)	<0.020				
	Uranium (U)-Total (mg/kg)	<0.0020				
	Uranium (U)-Total (mg/kg wwt)	<0.00040				
	Vanadium (V)-Total (mg/kg)	<0.10				
	Vanadium (V)-Total (mg/kg wwt)	<0.020				
	Zinc (Zn)-Total (mg/kg)	63.7				
	Zinc (Zn)-Total (mg/kg wwt)	24.5				
	Zirconium (Zr)-Total (mg/kg)	<0.20				
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Barium (Ba)-Total	DUP-H	L1621082-11, -13, -14, -16, -19, -2, -22, -23, -25, -5, -8, -9
Duplicate	Calcium (Ca)-Total	DUP-H	L1621082-11, -13, -14, -16, -19, -2, -22, -23, -25, -5, -8, -9
Duplicate	Strontium (Sr)-Total	DUP-H	L1621082-11, -13, -14, -16, -19, -2, -22, -23, -25, -5, -8, -9
Duplicate	Barium (Ba)-Total	DUP-H	L1621082-11, -13, -14, -16, -19, -2, -22, -23, -25, -5, -8, -9
Duplicate	Calcium (Ca)-Total	DUP-H	L1621082-11, -13, -14, -16, -19, -2, -22, -23, -25, -5, -8, -9
Duplicate	Strontium (Sr)-Total	DUP-H	L1621082-11, -13, -14, -16, -19, -2, -22, -23, -25, -5, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA Tissue Mercury in Tissue by CVAFS Micro (DRY) EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA Tissue Mercury in Tissue by CVAFS (WET) EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA Tissue Mercury in Tissue by CVAFS Micro (WET) EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA Tissue Metals in Tissue by CRC ICPMS (DRY) EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (DRY) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA Tissue Metals in Tissue by CRC ICPMS (WET) EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only

Reference Information

partially recovered.

MET-WET-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (WET) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA Tissue % Moisture in Tissues ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

FT-2

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # FT-2

Page 1 of 1

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)	L1621082	ALS Contact: Can Dang	Sampler: Norm Zirnhelt 25	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Gonad Metals	Number of Containers
	Bootjack Lk Trib 10 RB-1	22-May-15	8:00-16:15	Tissue	X	X	X	X	3
	Bootjack Lk Trib 10 RB-2	22-May-15	8:00-16:15	Tissue	X	X	X	X	3
	Bootjack Lk Trib 10 RB-3	22-May-15	8:00-16:15	Tissue	X	X	X	X	3
	Bootjack Lk Trib 10 RB-3X	22-May-15	8:00-16:15	Tissue	X	X		X	2
	Bootjack Lk Trib 10 RB-4	22-May-15	8:00-16:15	Tissue	X	X	X	X	3
	Bootjack Lk Trib 10 RB-5	22-May-15	8:00-16:15	Tissue	X	X	X	X	3
	Bootjack Lk Trib 10 RB-6	22-May-15	8:00-16:15	Tissue	X	X	X	X	3
	Bootjack Lk Trib 10 RB-7	22-May-15	8:00-16:15	Tissue	X	X	X	X	3
	Bootjack Lk Trib 10 RB-8	22-May-15	8:00-16:15	Tissue	X	X	X	X	3

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	June 2, 2015 1600hr	lady	06/03	9AM	2.2°C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Katie McMahen
PO Box 12
Likely BC V0L 1N0

Date Received: 03-SEP-15
Report Date: 19-OCT-15 17:03 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1667546

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 2, 3, 4, B0023
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-1 Tissue 30-AUG-15 RYE GRASS-1	L1667546-2 Tissue 30-AUG-15 RYE GRASS-2	L1667546-3 Tissue 30-AUG-15 RYE GRASS-3	L1667546-4 Tissue 30-AUG-15 RYE GRASS-4	L1667546-5 Tissue 30-AUG-15 RYE GRASS-4X
TISSUE						
Physical Tests	% Moisture (%)	67.4	52.9	65.6	61.7	53.2
Metals	Aluminum (Al)-Total (mg/kg)	207	19.2	17.4	155	30.9
	Aluminum (Al)-Total (mg/kg wwt)	67.6	9.07	6.00	59.2	14.5
	Antimony (Sb)-Total (mg/kg)	0.013	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0044	<0.0020	<0.0020	0.0023	<0.0020
	Arsenic (As)-Total (mg/kg)	0.422	0.039	0.026	0.138	0.033
	Arsenic (As)-Total (mg/kg wwt)	0.138	0.0184	0.0089	0.0530	0.0154
	Barium (Ba)-Total (mg/kg)	32.7	29.8	49.1	41.9	21.7
	Barium (Ba)-Total (mg/kg wwt)	10.7	14.1	16.9	16.0	10.1
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0024	<0.0020	<0.0020	0.0028	<0.0020
	Bismuth (Bi)-Total (mg/kg)	0.052	0.026	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	0.0171	0.0124	<0.0020	<0.0020	0.0023
	Boron (B)-Total (mg/kg)	3.6	2.5	2.2	1.6	1.8
	Boron (B)-Total (mg/kg wwt)	1.19	1.17	0.77	0.59	0.83
	Cadmium (Cd)-Total (mg/kg)	0.137	0.105	0.211	0.102	0.0528
	Cadmium (Cd)-Total (mg/kg wwt)	0.0445	0.0495	0.0725	0.0392	0.0247
	Calcium (Ca)-Total (mg/kg)	3230	1240	3340	1850	1150
	Calcium (Ca)-Total (mg/kg wwt)	1050	586	1150	707	540
	Cesium (Cs)-Total (mg/kg)	0.0299	<0.0050	0.0091	0.186	0.165
	Cesium (Cs)-Total (mg/kg wwt)	0.0097	0.0023	0.0031	0.0714	0.0773
	Chromium (Cr)-Total (mg/kg)	0.294	0.067	0.052	0.141	0.055
	Chromium (Cr)-Total (mg/kg wwt)	0.096	0.032	0.018	0.054	0.026
	Cobalt (Co)-Total (mg/kg)	0.194	0.023	<0.020	0.182	0.047
	Cobalt (Co)-Total (mg/kg wwt)	0.0634	0.0110	0.0061	0.0697	0.0218
	Copper (Cu)-Total (mg/kg)	14.3	5.43	5.76	12.6	5.56
	Copper (Cu)-Total (mg/kg wwt)	4.67	2.56	1.98	4.81	2.60
	Iron (Fe)-Total (mg/kg)	496	101	66.9	355	97.4
	Iron (Fe)-Total (mg/kg wwt)	162	47.5	23.0	136	45.6
	Lead (Pb)-Total (mg/kg)	0.423	0.030	0.030	0.073	0.022
	Lead (Pb)-Total (mg/kg wwt)	0.138	0.0141	0.0103	0.0279	0.0102
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	984	808	813	811	500
	Magnesium (Mg)-Total (mg/kg wwt)	321	381	280	310	234
	Manganese (Mn)-Total (mg/kg)	32.5	16.8	19.0	39.8	28.9
	Manganese (Mn)-Total (mg/kg wwt)	10.6	7.91	6.55	15.2	13.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1667546-6	L1667546-7	L1667546-8	L1667546-9	L1667546-10
Description	Tissue	Tissue	Tissue	Tissue	Tissue
Sampled Date	30-AUG-15	30-AUG-15	30-AUG-15	30-AUG-15	30-AUG-15
Sampled Time					
Client ID	RYE GRASS-5	RYE GRASS-6	RYE GRASS-7	RYE GRASS-7X	RYE GRASS-8
Grouping / **Analyte**					
TISSUE					
Physical Tests % Moisture (%)	66.6	76.2	71.1	72.3	62.5
Metals Aluminum (Al)-Total (mg/kg)	449	36.5	31.4	20.5	54.3
Aluminum (Al)-Total (mg/kg wwt)	150	8.68	9.07	5.67	20.3
Antimony (Sb)-Total (mg/kg)	0.014	<0.010	<0.010	<0.010	<0.010
Antimony (Sb)-Total (mg/kg wwt)	0.0048	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)-Total (mg/kg)	0.338	0.053	0.040	0.031	0.077
Arsenic (As)-Total (mg/kg wwt)	0.113	0.0126	0.0116	0.0085	0.0288
Barium (Ba)-Total (mg/kg)	24.8	73.6	21.2	13.2	44.3
Barium (Ba)-Total (mg/kg wwt)	8.29	17.5	6.14	3.65	16.6
Beryllium (Be)-Total (mg/kg)	0.017	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)-Total (mg/kg wwt)	0.0057	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0022	<0.0020	<0.0020	<0.0020
Boron (B)-Total (mg/kg)	2.6	2.6	2.0	1.2	2.3
Boron (B)-Total (mg/kg wwt)	0.86	0.63	0.58	0.34	0.88
Cadmium (Cd)-Total (mg/kg)	0.0716	0.128	0.170	0.113	0.354
Cadmium (Cd)-Total (mg/kg wwt)	0.0239	0.0304	0.0491	0.0313	0.133
Calcium (Ca)-Total (mg/kg)	1580	5450	2260	1230	2300
Calcium (Ca)-Total (mg/kg wwt)	527	1300	654	341	861
Cesium (Cs)-Total (mg/kg)	0.0574	<0.0050	0.0106	0.0053	0.0070
Cesium (Cs)-Total (mg/kg wwt)	0.0192	<0.0010	0.0031	0.0015	0.0026
Chromium (Cr)-Total (mg/kg)	0.292	0.104	0.094	0.071	0.076
Chromium (Cr)-Total (mg/kg wwt)	0.097	0.025	0.027	0.020	0.029
Cobalt (Co)-Total (mg/kg)	0.399	0.068	0.040	0.023	0.050
Cobalt (Co)-Total (mg/kg wwt)	0.133	0.0161	0.0115	0.0064	0.0189
Copper (Cu)-Total (mg/kg)	27.6	7.09	6.16	3.35	5.04
Copper (Cu)-Total (mg/kg wwt)	9.22	1.69	1.78	0.928	1.89
Iron (Fe)-Total (mg/kg)	1030	86.7	109	65.0	101
Iron (Fe)-Total (mg/kg wwt)	345	20.6	31.4	18.0	37.8
Lead (Pb)-Total (mg/kg)	0.121	0.037	0.026	0.021	0.036
Lead (Pb)-Total (mg/kg wwt)	0.0405	0.0088	0.0075	0.0059	0.0136
Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium (Li)-Total (mg/kg wwt)	0.13	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total (mg/kg)	899	1130	665	409	669
Magnesium (Mg)-Total (mg/kg wwt)	300	270	192	113	251
Manganese (Mn)-Total (mg/kg)	57.5	61.1	46.6	26.0	64.6
Manganese (Mn)-Total (mg/kg wwt)	19.2	14.5	13.5	7.20	24.2

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-11 Tissue 30-AUG-15 RYE GRASS-9	L1667546-12 Tissue 30-AUG-15 RYE GRASS-10	L1667546-13 Tissue 19-AUG-15 WILLOW SEEDLING-1	L1667546-14 Tissue 19-AUG-15 WILLOW WATTLE-1	L1667546-15 Tissue 19-AUG-15 WILLOW STAKE-1
TISSUE						
Physical Tests	% Moisture (%)	65.0	61.2	55.0	63.0	57.8
Metals	Aluminum (Al)-Total (mg/kg)	8.5	199	193	139	260
	Aluminum (Al)-Total (mg/kg wwt)	2.99	77.3	87.0	51.3	110
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	0.054	0.016
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0026	0.0043	0.0200	0.0066
	Arsenic (As)-Total (mg/kg)	0.066	0.101	0.256	0.204	0.360
	Arsenic (As)-Total (mg/kg wwt)	0.0230	0.0394	0.115	0.0755	0.152
	Barium (Ba)-Total (mg/kg)	19.9	29.7	8.53	5.56	33.2
	Barium (Ba)-Total (mg/kg wwt)	6.98	11.5	3.84	2.06	14.0
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0020	0.0021	<0.0020	0.0035
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	0.011	0.011
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0035	0.0039	0.0046
	Boron (B)-Total (mg/kg)	2.2	4.6	19.9	24.6	12.7
	Boron (B)-Total (mg/kg wwt)	0.77	1.79	8.94	9.11	5.36
	Cadmium (Cd)-Total (mg/kg)	0.0857	0.168	0.216	0.248	1.69
	Cadmium (Cd)-Total (mg/kg wwt)	0.0300	0.0654	0.0973	0.0920	0.715
	Calcium (Ca)-Total (mg/kg)	2520	2710	7810	12500	22200
	Calcium (Ca)-Total (mg/kg wwt)	882	1050	3510	4640	9350
	Cesium (Cs)-Total (mg/kg)	0.0148	0.0758	0.0587	0.144	0.132
	Cesium (Cs)-Total (mg/kg wwt)	0.0052	0.0294	0.0264	0.0532	0.0556
	Chromium (Cr)-Total (mg/kg)	<0.050	0.388	0.381	0.289	0.554
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.151	0.171	0.107	0.234
	Cobalt (Co)-Total (mg/kg)	<0.020	0.138	0.305	0.393	0.790
	Cobalt (Co)-Total (mg/kg wwt)	0.0060	0.0537	0.137	0.145	0.333
	Copper (Cu)-Total (mg/kg)	4.92	7.52	3.71	5.21	7.28
	Copper (Cu)-Total (mg/kg wwt)	1.72	2.92	1.67	1.93	3.07
	Iron (Fe)-Total (mg/kg)	36.8	408	354	313	587
	Iron (Fe)-Total (mg/kg wwt)	12.9	159	159	116	248
	Lead (Pb)-Total (mg/kg)	0.053	0.069	0.162	0.091	0.203
	Lead (Pb)-Total (mg/kg wwt)	0.0185	0.0268	0.0730	0.0337	0.0857
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	0.15
	Magnesium (Mg)-Total (mg/kg)	811	1070	1860	3920	5240
	Magnesium (Mg)-Total (mg/kg wwt)	284	414	835	1450	2210
	Manganese (Mn)-Total (mg/kg)	23.7	25.2	68.4	196	328
	Manganese (Mn)-Total (mg/kg wwt)	8.31	9.80	30.8	72.6	138

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-16 Tissue 19-AUG-15 WILLOW SEEDLING-2	L1667546-17 Tissue 19-AUG-15 WILLOW WATTLE-2	L1667546-18 Tissue 19-AUG-15 WILLOW STAKE-2	L1667546-19 Tissue 19-AUG-15 WILLOW SEEDLING-3	L1667546-20 Tissue 19-AUG-15 WILLOW WATTLE-3
TISSUE						
Physical Tests	% Moisture (%)	57.0	58.0	56.8	60.0	63.5
Metals	Aluminum (Al)-Total (mg/kg)	321	293	175	245	99.2
	Aluminum (Al)-Total (mg/kg wwt)	138	123	75.9	98.2	36.2
	Antimony (Sb)-Total (mg/kg)	0.026	0.016	<0.010	0.017	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0114	0.0066	0.0041	0.0068	0.0023
	Arsenic (As)-Total (mg/kg)	0.600	0.315	0.277	0.456	0.163
	Arsenic (As)-Total (mg/kg wwt)	0.258	0.132	0.120	0.182	0.0593
	Barium (Ba)-Total (mg/kg)	16.0	5.90	4.70	8.89	12.8
	Barium (Ba)-Total (mg/kg wwt)	6.87	2.48	2.03	3.56	4.68
	Beryllium (Be)-Total (mg/kg)	0.012	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0051	0.0036	0.0026	0.0036	<0.0020
	Bismuth (Bi)-Total (mg/kg)	0.511	0.020	0.018	0.026	0.014
	Bismuth (Bi)-Total (mg/kg wwt)	0.220	0.0083	0.0077	0.0105	0.0050
	Boron (B)-Total (mg/kg)	60.9	24.4	20.0	19.5	46.9
	Boron (B)-Total (mg/kg wwt)	26.2	10.2	8.67	7.79	17.1
	Cadmium (Cd)-Total (mg/kg)	0.823	0.366	0.360	1.30	1.01
	Cadmium (Cd)-Total (mg/kg wwt)	0.354	0.153	0.156	0.522	0.369
	Calcium (Ca)-Total (mg/kg)	17700	9210	9260	11100	20700
	Calcium (Ca)-Total (mg/kg wwt)	7630	3860	4010	4430	7530
	Cesium (Cs)-Total (mg/kg)	0.0536	0.0603	0.0388	0.0780	0.0364
	Cesium (Cs)-Total (mg/kg wwt)	0.0231	0.0253	0.0168	0.0312	0.0133
	Chromium (Cr)-Total (mg/kg)	0.457	0.645	0.270	0.553	0.164
	Chromium (Cr)-Total (mg/kg wwt)	0.197	0.271	0.117	0.221	0.060
	Cobalt (Co)-Total (mg/kg)	0.612	0.695	0.513	0.651	0.793
	Cobalt (Co)-Total (mg/kg wwt)	0.263	0.292	0.222	0.261	0.289
	Copper (Cu)-Total (mg/kg)	16.5	8.69	5.42	6.94	7.49
	Copper (Cu)-Total (mg/kg wwt)	7.09	3.65	2.34	2.78	2.73
	Iron (Fe)-Total (mg/kg)	695	617	371	529	240
	Iron (Fe)-Total (mg/kg wwt)	299	259	160	212	87.4
	Lead (Pb)-Total (mg/kg)	0.162	0.161	0.123	0.188	0.071
	Lead (Pb)-Total (mg/kg wwt)	0.0696	0.0676	0.0533	0.0754	0.0258
	Lithium (Li)-Total (mg/kg)	0.56	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	0.24	0.17	0.12	0.13	0.10
	Magnesium (Mg)-Total (mg/kg)	4260	2420	2540	2870	5120
	Magnesium (Mg)-Total (mg/kg wwt)	1830	1020	1100	1150	1870
	Manganese (Mn)-Total (mg/kg)	127	89.9	202	113	167
	Manganese (Mn)-Total (mg/kg wwt)	54.5	37.7	87.4	45.4	60.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-21 Tissue 19-AUG-15 WILLOW STAKE-3	L1667546-22 Tissue 25-AUG-15 WILLOW SEEDLING-4	L1667546-23 Tissue 25-AUG-15 WILLOW WATTLE-4	L1667546-24 Tissue 25-AUG-15 WILLOW STAKE-4	L1667546-25 Tissue 25-AUG-15 WILLOW STAKE-4X
TISSUE						
Physical Tests	% Moisture (%)	57.3	59.8	62.9	60.8	60.9
Metals	Aluminum (Al)-Total (mg/kg)	112	580	160	344	367
	Aluminum (Al)-Total (mg/kg wwt)	47.7	233	59.2	135	144
	Antimony (Sb)-Total (mg/kg)	0.011	0.027	0.014	0.015	0.016
	Antimony (Sb)-Total (mg/kg wwt)	0.0048	0.0107	0.0052	0.0058	0.0064
	Arsenic (As)-Total (mg/kg)	0.333	0.540	0.830	0.598	0.635
	Arsenic (As)-Total (mg/kg wwt)	0.142	0.217	0.308	0.234	0.248
	Barium (Ba)-Total (mg/kg)	24.1	14.3	6.39	9.84	11.0
	Barium (Ba)-Total (mg/kg wwt)	10.3	5.76	2.37	3.85	4.31
	Beryllium (Be)-Total (mg/kg)	<0.010	0.016	<0.010	0.012	0.012
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0063	0.0020	0.0045	0.0048
	Bismuth (Bi)-Total (mg/kg)	0.024	0.271	0.075	0.012	0.015
	Bismuth (Bi)-Total (mg/kg wwt)	0.0103	0.109	0.0278	0.0045	0.0058
	Boron (B)-Total (mg/kg)	57.8	19.9	76.9	48.3	49.7
	Boron (B)-Total (mg/kg wwt)	24.7	8.00	28.5	18.9	19.4
	Cadmium (Cd)-Total (mg/kg)	0.968	0.621	0.400	2.51	2.94
	Cadmium (Cd)-Total (mg/kg wwt)	0.413	0.250	0.148	0.982	1.15
	Calcium (Ca)-Total (mg/kg)	17900	15400	15800	13200	14000
	Calcium (Ca)-Total (mg/kg wwt)	7630	6200	5850	5170	5500
	Cesium (Cs)-Total (mg/kg)	0.0304	0.0871	0.0614	0.0512	0.0508
	Cesium (Cs)-Total (mg/kg wwt)	0.0130	0.0351	0.0228	0.0200	0.0199
	Chromium (Cr)-Total (mg/kg)	0.236	1.21	0.351	0.501	0.508
	Chromium (Cr)-Total (mg/kg wwt)	0.101	0.487	0.130	0.196	0.199
	Cobalt (Co)-Total (mg/kg)	0.451	1.11	1.63	0.508	0.526
	Cobalt (Co)-Total (mg/kg wwt)	0.193	0.446	0.603	0.199	0.206
	Copper (Cu)-Total (mg/kg)	8.16	10.4	9.36	19.0	19.4
	Copper (Cu)-Total (mg/kg wwt)	3.48	4.20	3.47	7.42	7.57
	Iron (Fe)-Total (mg/kg)	245	1070	321	798	821
	Iron (Fe)-Total (mg/kg wwt)	105	431	119	312	321
	Lead (Pb)-Total (mg/kg)	0.082	0.285	0.109	0.171	0.167
	Lead (Pb)-Total (mg/kg wwt)	0.0351	0.114	0.0403	0.0670	0.0652
	Lithium (Li)-Total (mg/kg)	<0.50	0.57	1.18	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.23	0.44	0.14	0.14
	Magnesium (Mg)-Total (mg/kg)	4190	3180	4360	2090	2070
	Magnesium (Mg)-Total (mg/kg wwt)	1790	1280	1620	818	809
	Manganese (Mn)-Total (mg/kg)	279	199	111	127	137
	Manganese (Mn)-Total (mg/kg wwt)	119	80.2	41.0	49.6	53.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-26 Tissue 25-AUG-15 WILLOW WATTLE-4X	L1667546-27 Tissue 25-AUG-15 WILLOW STAKE-5	L1667546-28 Tissue 25-AUG-15 WILLOW SEEDLING-5	L1667546-29 Tissue 25-AUG-15 WILLOW WATTLE-5	L1667546-30 Tissue 25-AUG-15 WILLOW STAKE-6
TISSUE						
Physical Tests	% Moisture (%)	62.3	58.7	56.3	60.1	59.5
Metals	Aluminum (Al)-Total (mg/kg)	179	250	300	109	199
	Aluminum (Al)-Total (mg/kg wwt)	67.4	103	131	43.4	80.6
	Antimony (Sb)-Total (mg/kg)	0.014	0.022	0.026	0.010	0.025
	Antimony (Sb)-Total (mg/kg wwt)	0.0052	0.0091	0.0111	0.0040	0.0100
	Arsenic (As)-Total (mg/kg)	0.595	0.526	0.459	0.163	1.09
	Arsenic (As)-Total (mg/kg wwt)	0.225	0.218	0.201	0.0651	0.439
	Barium (Ba)-Total (mg/kg)	6.43	7.67	6.99	3.34	8.02
	Barium (Ba)-Total (mg/kg wwt)	2.43	3.17	3.05	1.33	3.25
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0021	0.0034	0.0041	<0.0020	0.0025
	Bismuth (Bi)-Total (mg/kg)	0.021	0.497	1.07	0.533	0.976
	Bismuth (Bi)-Total (mg/kg wwt)	0.0081	0.205	0.468	0.213	0.395
	Boron (B)-Total (mg/kg)	74.6	53.8	36.0	30.1	52.3
	Boron (B)-Total (mg/kg wwt)	28.2	22.2	15.7	12.0	21.2
	Cadmium (Cd)-Total (mg/kg)	0.345	0.577	1.70	0.436	0.569
	Cadmium (Cd)-Total (mg/kg wwt)	0.130	0.239	0.744	0.174	0.230
	Calcium (Ca)-Total (mg/kg)	16000	15200	11000	11100	13900
	Calcium (Ca)-Total (mg/kg wwt)	6040	6280	4790	4440	5610
	Cesium (Cs)-Total (mg/kg)	0.0685	0.0627	0.0914	0.0371	0.0237
	Cesium (Cs)-Total (mg/kg wwt)	0.0259	0.0259	0.0399	0.0148	0.0096
	Chromium (Cr)-Total (mg/kg)	0.361	0.517	0.689	0.198	0.383
	Chromium (Cr)-Total (mg/kg wwt)	0.136	0.214	0.301	0.079	0.155
	Cobalt (Co)-Total (mg/kg)	1.25	0.862	0.803	0.386	0.508
	Cobalt (Co)-Total (mg/kg wwt)	0.472	0.356	0.351	0.154	0.206
	Copper (Cu)-Total (mg/kg)	9.71	8.28	10.9	8.14	8.30
	Copper (Cu)-Total (mg/kg wwt)	3.67	3.43	4.78	3.25	3.36
	Iron (Fe)-Total (mg/kg)	357	505	617	279	448
	Iron (Fe)-Total (mg/kg wwt)	135	209	270	111	181
	Lead (Pb)-Total (mg/kg)	0.121	0.159	0.174	0.062	0.118
	Lead (Pb)-Total (mg/kg wwt)	0.0457	0.0657	0.0762	0.0245	0.0476
	Lithium (Li)-Total (mg/kg)	0.94	<0.50	<0.50	<0.50	0.62
	Lithium (Li)-Total (mg/kg wwt)	0.36	0.17	0.21	<0.10	0.25
	Magnesium (Mg)-Total (mg/kg)	4440	3580	3230	3110	4070
	Magnesium (Mg)-Total (mg/kg wwt)	1680	1480	1410	1240	1650
	Manganese (Mn)-Total (mg/kg)	113	188	117	104	295
	Manganese (Mn)-Total (mg/kg wwt)	42.5	77.8	51.2	41.6	119

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-31 Tissue 25-AUG-15 WILLOW WATTLE-6	L1667546-32 Tissue 25-AUG-15 WILLOW SEEDLING-6	L1667546-33 Tissue 25-AUG-15 WILLOW-1	L1667546-34 Tissue 25-AUG-15 WILLOW-2	L1667546-35 Tissue 25-AUG-15 WILLOW-3
TISSUE						
Physical Tests	% Moisture (%)	55.5	58.1	57.5	60.3	64.8
Metals	Aluminum (Al)-Total (mg/kg)	177	314	23.7	90.2	103
	Aluminum (Al)-Total (mg/kg wwt)	79.0	132	10.1	35.8	36.1
	Antimony (Sb)-Total (mg/kg)	<0.010	0.021	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0038	0.0089	<0.0020	0.0025	0.0027
	Arsenic (As)-Total (mg/kg)	0.153	0.402	0.021	0.087	0.082
	Arsenic (As)-Total (mg/kg wwt)	0.0682	0.168	0.0091	0.0345	0.0288
	Barium (Ba)-Total (mg/kg)	3.87	11.6	10.0	5.47	18.0
	Barium (Ba)-Total (mg/kg wwt)	1.72	4.86	4.27	2.17	6.32
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0021	0.0035	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	0.573	0.011	0.028	0.024
	Bismuth (Bi)-Total (mg/kg wwt)	0.0030	0.240	0.0046	0.0112	0.0086
	Boron (B)-Total (mg/kg)	28.7	25.9	24.1	33.0	68.1
	Boron (B)-Total (mg/kg wwt)	12.8	10.9	10.2	13.1	24.0
	Cadmium (Cd)-Total (mg/kg)	0.153	1.64	1.75	2.29	9.34
	Cadmium (Cd)-Total (mg/kg wwt)	0.0681	0.687	0.744	0.911	3.29
	Calcium (Ca)-Total (mg/kg)	11600	12600	22000	20200	24000
	Calcium (Ca)-Total (mg/kg wwt)	5150	5290	9370	8010	8440
	Cesium (Cs)-Total (mg/kg)	0.0633	0.0747	0.0082	0.0269	0.0182
	Cesium (Cs)-Total (mg/kg wwt)	0.0282	0.0313	0.0035	0.0107	0.0064
	Chromium (Cr)-Total (mg/kg)	0.407	0.771	0.057	0.167	0.215
	Chromium (Cr)-Total (mg/kg wwt)	0.181	0.323	0.024	0.066	0.075
	Cobalt (Co)-Total (mg/kg)	1.04	0.559	0.504	1.00	1.09
	Cobalt (Co)-Total (mg/kg wwt)	0.463	0.234	0.214	0.397	0.383
	Copper (Cu)-Total (mg/kg)	6.29	8.04	4.21	7.53	7.31
	Copper (Cu)-Total (mg/kg wwt)	2.80	3.37	1.79	2.99	2.57
	Iron (Fe)-Total (mg/kg)	350	572	72.4	202	269
	Iron (Fe)-Total (mg/kg wwt)	156	240	30.8	80.4	94.6
	Lead (Pb)-Total (mg/kg)	0.090	0.151	0.035	0.072	0.066
	Lead (Pb)-Total (mg/kg wwt)	0.0402	0.0635	0.0148	0.0285	0.0233
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.13	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	2470	3150	1170	1930	1690
	Magnesium (Mg)-Total (mg/kg wwt)	1100	1320	499	765	595
	Manganese (Mn)-Total (mg/kg)	162	91.7	48.6	75.0	68.4
	Manganese (Mn)-Total (mg/kg wwt)	72.3	38.5	20.7	29.8	24.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-36 Tissue 25-AUG-15 WILLOW-3X	L1667546-37 Tissue 25-AUG-15 WILLOW-4	L1667546-38 Tissue 25-AUG-15 WILLOW-5	L1667546-39 Tissue 25-AUG-15 WILLOW-6	L1667546-40 Tissue 25-AUG-15 WILLOW-6X
TISSUE						
Physical Tests	% Moisture (%)	62.3	61.4	61.2	57.7	57.9
Metals	Aluminum (Al)-Total (mg/kg)	87.8	40.8	89.8	40.5	48.6
	Aluminum (Al)-Total (mg/kg wwt)	33.0	15.7	34.8	17.1	20.4
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0032	<0.0020	0.0051	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.086	0.049	0.066	0.038	0.041
	Arsenic (As)-Total (mg/kg wwt)	0.0322	0.0190	0.0255	0.0159	0.0173
	Barium (Ba)-Total (mg/kg)	17.8	93.3	51.2	38.2	38.6
	Barium (Ba)-Total (mg/kg wwt)	6.71	36.0	19.9	16.2	16.2
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	0.033	0.019	0.148	0.086	0.059
	Bismuth (Bi)-Total (mg/kg wwt)	0.0123	0.0073	0.0574	0.0364	0.0248
	Boron (B)-Total (mg/kg)	79.6	47.6	25.9	54.4	54.3
	Boron (B)-Total (mg/kg wwt)	30.0	18.3	10.0	23.0	22.8
	Cadmium (Cd)-Total (mg/kg)	9.74	4.83	3.16	1.72	1.94
	Cadmium (Cd)-Total (mg/kg wwt)	3.67	1.86	1.23	0.727	0.816
	Calcium (Ca)-Total (mg/kg)	24800	24500	20900	20900	21100
	Calcium (Ca)-Total (mg/kg wwt)	9320	9430	8090	8860	8860
	Cesium (Cs)-Total (mg/kg)	0.0168	0.0557	0.0139	0.0188	0.0208
	Cesium (Cs)-Total (mg/kg wwt)	0.0063	0.0215	0.0054	0.0080	0.0088
	Chromium (Cr)-Total (mg/kg)	0.192	0.173	0.188	0.108	0.120
	Chromium (Cr)-Total (mg/kg wwt)	0.072	0.067	0.073	0.046	0.051
	Cobalt (Co)-Total (mg/kg)	1.20	0.386	0.471	0.464	0.470
	Cobalt (Co)-Total (mg/kg wwt)	0.451	0.149	0.183	0.196	0.198
	Copper (Cu)-Total (mg/kg)	7.38	4.83	4.97	3.94	3.79
	Copper (Cu)-Total (mg/kg wwt)	2.78	1.86	1.93	1.67	1.59
	Iron (Fe)-Total (mg/kg)	256	107	182	89.4	104
	Iron (Fe)-Total (mg/kg wwt)	96.5	41.2	70.4	37.8	43.6
	Lead (Pb)-Total (mg/kg)	0.068	0.038	0.052	0.027	0.028
	Lead (Pb)-Total (mg/kg wwt)	0.0256	0.0146	0.0200	0.0112	0.0120
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1710	3450	2810	2620	2540
	Magnesium (Mg)-Total (mg/kg wwt)	645	1330	1090	1110	1070
	Manganese (Mn)-Total (mg/kg)	64.3	26.5	104	42.1	40.1
	Manganese (Mn)-Total (mg/kg wwt)	24.2	10.2	40.3	17.8	16.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-41 Tissue 25-AUG-15 WILLOW-7	L1667546-42 Tissue 25-AUG-15 WILLOW-8	L1667546-43 Tissue 25-AUG-15 WILLOW-9	L1667546-44 Tissue 25-AUG-15 WILLOW-10	L1667546-45 Tissue 19-AUG-15 BERRIES-1
TISSUE						
Physical Tests	% Moisture (%)	55.0	57.9	58.1	58.3	73.4
Metals	Aluminum (Al)-Total (mg/kg)	26.1	37.0	117	20.8	15.7
	Aluminum (Al)-Total (mg/kg wwt)	11.8	15.6	49.0	8.70	4.2
	Antimony (Sb)-Total (mg/kg)	<0.010	0.012	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0051	0.0024	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.064	0.027	0.056	0.057	<0.030
	Arsenic (As)-Total (mg/kg wwt)	0.0287	0.0114	0.0234	0.0240	<0.0060
	Barium (Ba)-Total (mg/kg)	10.9	9.08	2.75	2.26	5.45
	Barium (Ba)-Total (mg/kg wwt)	4.93	3.82	1.15	0.942	1.45
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	1.37	0.012	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	0.0024	0.578	0.0049	0.0024	<0.0020
	Boron (B)-Total (mg/kg)	40.7	31.2	22.8	58.6	14.8
	Boron (B)-Total (mg/kg wwt)	18.3	13.1	9.55	24.4	3.92
	Cadmium (Cd)-Total (mg/kg)	1.93	4.92	2.82	0.383	0.020
	Cadmium (Cd)-Total (mg/kg wwt)	0.871	2.07	1.18	0.160	0.0054
	Calcium (Ca)-Total (mg/kg)	20900	32500	19200	17200	1860
	Calcium (Ca)-Total (mg/kg wwt)	9400	13700	8020	7160	493
	Cesium (Cs)-Total (mg/kg)	0.0576	0.0064	0.0158	0.0063	<0.0050
	Cesium (Cs)-Total (mg/kg wwt)	0.0259	0.0027	0.0066	0.0026	<0.0010
	Chromium (Cr)-Total (mg/kg)	0.066	0.110	0.245	0.051	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	0.030	0.046	0.103	0.021	<0.040
	Cobalt (Co)-Total (mg/kg)	2.71	1.35	0.502	0.638	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	1.22	0.568	0.210	0.266	<0.0040
	Copper (Cu)-Total (mg/kg)	4.81	3.74	4.70	5.63	5.89
	Copper (Cu)-Total (mg/kg wwt)	2.17	1.57	1.97	2.35	1.57
	Iron (Fe)-Total (mg/kg)	93.8	80.0	205	62.1	34.6
	Iron (Fe)-Total (mg/kg wwt)	42.2	33.7	85.8	25.9	9.2
	Lead (Pb)-Total (mg/kg)	0.029	0.025	0.065	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	0.0131	0.0104	0.0273	0.0076	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	3330	2250	1630	2210	973
	Magnesium (Mg)-Total (mg/kg wwt)	1500	944	684	921	258
	Manganese (Mn)-Total (mg/kg)	163	77.8	79.4	38.3	2.90
	Manganese (Mn)-Total (mg/kg wwt)	73.5	32.7	33.3	16.0	0.771

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1667546-46	L1667546-47	L1667546-48		
	Description	Tissue	Tissue	Tissue		
	Sampled Date	19-AUG-15	19-AUG-15	19-AUG-15		
	Sampled Time					
	Client ID	BERRIES-2	BERRIES-3	BERRIES-4		
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	59.8	53.9	71.4		
Metals	Aluminum (Al)-Total (mg/kg)	52.7	20.5	60.4		
	Aluminum (Al)-Total (mg/kg wwt)	21.2	9.45	17.3		
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Arsenic (As)-Total (mg/kg)	0.040	<0.020	<0.030		
	Arsenic (As)-Total (mg/kg wwt)	0.0159	0.0058	0.0084		
	Barium (Ba)-Total (mg/kg)	1.59	15.0	48.3		
	Barium (Ba)-Total (mg/kg wwt)	0.642	6.91	13.8		
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Boron (B)-Total (mg/kg)	6.1	12.3	16.9		
	Boron (B)-Total (mg/kg wwt)	2.45	5.65	4.84		
	Cadmium (Cd)-Total (mg/kg)	0.445	0.0153	0.459		
	Cadmium (Cd)-Total (mg/kg wwt)	0.179	0.0070	0.132		
	Calcium (Ca)-Total (mg/kg)	1220	5630	2890		
	Calcium (Ca)-Total (mg/kg wwt)	492	2600	828		
	Cesium (Cs)-Total (mg/kg)	0.0091	0.0092	0.0402		
	Cesium (Cs)-Total (mg/kg wwt)	0.0037	0.0043	0.0115		
	Chromium (Cr)-Total (mg/kg)	0.595	<0.050	<0.20		
	Chromium (Cr)-Total (mg/kg wwt)	0.239	0.013	<0.040		
	Cobalt (Co)-Total (mg/kg)	0.047	0.031	0.097		
	Cobalt (Co)-Total (mg/kg wwt)	0.0187	0.0145	0.0278		
	Copper (Cu)-Total (mg/kg)	8.32	2.90	15.3		
	Copper (Cu)-Total (mg/kg wwt)	3.35	1.34	4.38		
	Iron (Fe)-Total (mg/kg)	133	53.0	128		
	Iron (Fe)-Total (mg/kg wwt)	53.5	24.5	36.6		
	Lead (Pb)-Total (mg/kg)	0.022	<0.020	<0.050		
	Lead (Pb)-Total (mg/kg wwt)	0.0087	<0.0040	<0.010		
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50		
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg)	762	1420	1360		
	Magnesium (Mg)-Total (mg/kg wwt)	306	655	390		
	Manganese (Mn)-Total (mg/kg)	11.2	95.8	894		
	Manganese (Mn)-Total (mg/kg wwt)	4.49	44.2	256		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1667546-1	L1667546-2	L1667546-3	L1667546-4	L1667546-5
Description	Tissue	Tissue	Tissue	Tissue	Tissue
Sampled Date	30-AUG-15	30-AUG-15	30-AUG-15	30-AUG-15	30-AUG-15
Sampled Time					
Client ID	RYE GRASS-1	RYE GRASS-2	RYE GRASS-3	RYE GRASS-4	RYE GRASS-4X
Grouping **Analyte**					
TISSUE					
Metals Molybdenum (Mo)-Total (mg/kg)	5.83	2.42	2.76	0.823	0.599
Molybdenum (Mo)-Total (mg/kg wwt)	1.90	1.14	0.949	0.315	0.280
Nickel (Ni)-Total (mg/kg)	1.55	0.80	<0.20	0.27	<0.20
Nickel (Ni)-Total (mg/kg wwt)	0.506	0.378	0.050	0.102	0.064
Phosphorus (P)-Total (mg/kg)	1620	4290	2090	1660	1770
Phosphorus (P)-Total (mg/kg wwt)	527	2020	719	636	827
Potassium (K)-Total (mg/kg)	10600	17100	12700	13200	6410
Potassium (K)-Total (mg/kg wwt)	3450	8080	4380	5030	3000
Rubidium (Rb)-Total (mg/kg)	3.53	4.92	11.1	43.4	24.8
Rubidium (Rb)-Total (mg/kg wwt)	1.15	2.32	3.82	16.6	11.6
Selenium (Se)-Total (mg/kg)	0.244	<0.050	<0.050	0.076	0.061
Selenium (Se)-Total (mg/kg wwt)	0.080	<0.010	0.012	0.029	0.028
Sodium (Na)-Total (mg/kg)	264	48	33	64	28
Sodium (Na)-Total (mg/kg wwt)	86.1	22.4	11.3	24.5	13.1
Strontium (Sr)-Total (mg/kg)	31.5	8.80	24.6	15.0	7.47
Strontium (Sr)-Total (mg/kg wwt)	10.3	4.15	8.48	5.74	3.49
Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	0.0054	<0.0020
Thallium (Tl)-Total (mg/kg wwt)	0.00052	<0.00040	<0.00040	0.00206	<0.00040
Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	0.11	<0.10
Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.041	<0.020
Uranium (U)-Total (mg/kg)	0.0154	<0.0020	<0.0020	0.0114	<0.0020
Uranium (U)-Total (mg/kg wwt)	0.00501	0.00056	<0.00040	0.00435	0.00085
Vanadium (V)-Total (mg/kg)	1.57	0.16	0.11	1.23	0.27
Vanadium (V)-Total (mg/kg wwt)	0.513	0.075	0.039	0.470	0.124
Zinc (Zn)-Total (mg/kg)	24.3	53.5	21.8	37.1	31.0
Zinc (Zn)-Total (mg/kg wwt)	7.93	25.2	7.51	14.2	14.5
Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Zirconium (Zr)-Total (mg/kg wwt)	0.050	<0.040	<0.040	0.042	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-6 Tissue 30-AUG-15 RYE GRASS-5	L1667546-7 Tissue 30-AUG-15 RYE GRASS-6	L1667546-8 Tissue 30-AUG-15 RYE GRASS-7	L1667546-9 Tissue 30-AUG-15 RYE GRASS-7X	L1667546-10 Tissue 30-AUG-15 RYE GRASS-8
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	1.82	1.20	3.19	2.19	1.52
	Molybdenum (Mo)-Total (mg/kg wwt)	0.607	0.285	0.921	0.608	0.570
	Nickel (Ni)-Total (mg/kg)	0.40	0.36	0.21	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	0.133	0.085	0.060	<0.040	0.042
	Phosphorus (P)-Total (mg/kg)	2530	2920	1050	724	1060
	Phosphorus (P)-Total (mg/kg wwt)	845	694	303	201	398
	Potassium (K)-Total (mg/kg)	12500	13500	11400	7580	8050
	Potassium (K)-Total (mg/kg wwt)	4180	3220	3300	2100	3020
	Rubidium (Rb)-Total (mg/kg)	5.86	6.06	7.63	4.40	2.04
	Rubidium (Rb)-Total (mg/kg wwt)	1.96	1.44	2.21	1.22	0.763
	Selenium (Se)-Total (mg/kg)	0.070	0.090	0.089	<0.050	1.48
	Selenium (Se)-Total (mg/kg wwt)	0.023	0.021	0.026	0.012	0.554
	Sodium (Na)-Total (mg/kg)	88	406	60	44	63
	Sodium (Na)-Total (mg/kg wwt)	29.4	96.6	17.2	12.1	23.6
	Strontium (Sr)-Total (mg/kg)	14.0	38.0	14.7	9.01	21.0
	Strontium (Sr)-Total (mg/kg wwt)	4.69	9.03	4.25	2.50	7.86
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0079	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00052	0.00189	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	0.66	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.020	<0.020	0.190	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0303	<0.0020	0.0027	<0.0020	0.0054
	Uranium (U)-Total (mg/kg wwt)	0.0101	0.00046	0.00079	<0.00040	0.00202
	Vanadium (V)-Total (mg/kg)	3.97	0.15	0.37	0.18	0.27
	Vanadium (V)-Total (mg/kg wwt)	1.32	0.035	0.107	0.050	0.100
	Zinc (Zn)-Total (mg/kg)	24.8	23.0	20.5	17.0	5.53
	Zinc (Zn)-Total (mg/kg wwt)	8.28	5.48	5.93	4.72	2.07
	Zirconium (Zr)-Total (mg/kg)	0.32	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.108	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-11 Tissue 30-AUG-15 RYE GRASS-9	L1667546-12 Tissue 30-AUG-15 RYE GRASS-10	L1667546-13 Tissue 19-AUG-15 WILLOW SEEDLING-1	L1667546-14 Tissue 19-AUG-15 WILLOW WATTLE-1	L1667546-15 Tissue 19-AUG-15 WILLOW STAKE-1
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	2.10	8.56	0.324	0.477	0.478
	Molybdenum (Mo)-Total (mg/kg wwt)	0.738	3.32	0.146	0.177	0.202
	Nickel (Ni)-Total (mg/kg)	<0.20	0.37	0.75	0.94	2.08
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.142	0.336	0.348	0.880
	Phosphorus (P)-Total (mg/kg)	1830	1640	603	895	1600
	Phosphorus (P)-Total (mg/kg wwt)	641	637	271	331	674
	Potassium (K)-Total (mg/kg)	9740	10100	3340	4810	4920
	Potassium (K)-Total (mg/kg wwt)	3410	3930	1500	1780	2080
	Rubidium (Rb)-Total (mg/kg)	5.94	15.6	2.95	5.04	5.92
	Rubidium (Rb)-Total (mg/kg wwt)	2.08	6.05	1.33	1.87	2.50
	Selenium (Se)-Total (mg/kg)	0.189	0.113	0.154	0.548	<0.050
	Selenium (Se)-Total (mg/kg wwt)	0.066	0.044	0.069	0.203	0.018
	Sodium (Na)-Total (mg/kg)	670	64	<20	<20	32
	Sodium (Na)-Total (mg/kg wwt)	235	24.9	8.7	7.8	13.7
	Strontium (Sr)-Total (mg/kg)	21.4	26.8	39.4	108	136
	Strontium (Sr)-Total (mg/kg wwt)	7.52	10.4	17.7	40.0	57.4
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0053	0.0048	0.0027	0.0053
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00207	0.00214	0.00099	0.00223
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0115	0.0090	0.0073	0.0132
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00446	0.00405	0.00270	0.00556
	Vanadium (V)-Total (mg/kg)	<0.10	1.26	0.86	0.76	1.39
	Vanadium (V)-Total (mg/kg wwt)	0.023	0.488	0.386	0.281	0.588
	Zinc (Zn)-Total (mg/kg)	18.7	17.2	8.44	7.47	55.5
	Zinc (Zn)-Total (mg/kg wwt)	6.54	6.66	3.80	2.76	23.5
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	0.044	0.040	0.073

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-16 Tissue 19-AUG-15 WILLOW SEEDLING-2	L1667546-17 Tissue 19-AUG-15 WILLOW WATTLE-2	L1667546-18 Tissue 19-AUG-15 WILLOW STAKE-2	L1667546-19 Tissue 19-AUG-15 WILLOW SEEDLING-3	L1667546-20 Tissue 19-AUG-15 WILLOW WATTLE-3
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	1.67	0.676	2.85	0.624	0.966
	Molybdenum (Mo)-Total (mg/kg wwt)	0.719	0.284	1.23	0.250	0.352
	Nickel (Ni)-Total (mg/kg)	1.38	1.58	0.50	2.00	2.32
	Nickel (Ni)-Total (mg/kg wwt)	0.594	0.662	0.218	0.802	0.844
	Phosphorus (P)-Total (mg/kg)	1110	968	996	1140	988
	Phosphorus (P)-Total (mg/kg wwt)	478	406	431	457	360
	Potassium (K)-Total (mg/kg)	5520	9430	7190	6080	8540
	Potassium (K)-Total (mg/kg wwt)	2370	3960	3110	2440	3110
	Rubidium (Rb)-Total (mg/kg)	2.32	7.49	6.50	4.36	6.77
	Rubidium (Rb)-Total (mg/kg wwt)	0.999	3.14	2.81	1.75	2.47
	Selenium (Se)-Total (mg/kg)	0.755	0.787	0.227	2.22	0.394
	Selenium (Se)-Total (mg/kg wwt)	0.325	0.330	0.098	0.888	0.144
	Sodium (Na)-Total (mg/kg)	120	38	79	55	47
	Sodium (Na)-Total (mg/kg wwt)	51.8	15.8	34.3	22.2	17.0
	Strontium (Sr)-Total (mg/kg)	111	54.9	98.2	47.0	149
	Strontium (Sr)-Total (mg/kg wwt)	47.6	23.1	42.5	18.8	54.4
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0058	0.0029	<0.0020	0.0116	0.0029
	Thallium (Tl)-Total (mg/kg wwt)	0.00248	0.00122	0.00062	0.00465	0.00105
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.025	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0583	0.0276	0.0197	0.0491	0.0084
	Uranium (U)-Total (mg/kg wwt)	0.0251	0.0116	0.00850	0.0197	0.00308
	Vanadium (V)-Total (mg/kg)	2.33	1.56	1.09	1.35	0.66
	Vanadium (V)-Total (mg/kg wwt)	1.00	0.653	0.473	0.541	0.242
	Zinc (Zn)-Total (mg/kg)	40.9	14.8	9.15	46.9	26.4
	Zinc (Zn)-Total (mg/kg wwt)	17.6	6.23	3.96	18.8	9.63
	Zirconium (Zr)-Total (mg/kg)	0.23	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.098	0.051	0.054	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-21 Tissue 19-AUG-15 WILLOW STAKE-3	L1667546-22 Tissue 25-AUG-15 WILLOW SEEDLING-4	L1667546-23 Tissue 25-AUG-15 WILLOW WATTLE-4	L1667546-24 Tissue 25-AUG-15 WILLOW STAKE-4	L1667546-25 Tissue 25-AUG-15 WILLOW STAKE-4X
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.647	0.726	2.65	2.37	2.45
	Molybdenum (Mo)-Total (mg/kg wwt)	0.276	0.292	0.984	0.929	0.959
	Nickel (Ni)-Total (mg/kg)	1.66	2.54	3.03	2.00	2.94
	Nickel (Ni)-Total (mg/kg wwt)	0.709	1.02	1.12	0.783	1.15
	Phosphorus (P)-Total (mg/kg)	1110	1460	1210	2010	1920
	Phosphorus (P)-Total (mg/kg wwt)	473	587	449	787	750
	Potassium (K)-Total (mg/kg)	5840	7890	9680	13100	13000
	Potassium (K)-Total (mg/kg wwt)	2490	3170	3590	5120	5070
	Rubidium (Rb)-Total (mg/kg)	2.96	3.25	6.36	5.25	5.18
	Rubidium (Rb)-Total (mg/kg wwt)	1.26	1.31	2.36	2.06	2.03
	Selenium (Se)-Total (mg/kg)	0.696	0.089	1.65	1.57	1.70
	Selenium (Se)-Total (mg/kg wwt)	0.297	0.036	0.613	0.613	0.666
	Sodium (Na)-Total (mg/kg)	28	70	79	57	75
	Sodium (Na)-Total (mg/kg wwt)	11.9	28.2	29.2	22.4	29.2
	Strontium (Sr)-Total (mg/kg)	120	54.7	179	80.3	90.0
	Strontium (Sr)-Total (mg/kg wwt)	51.1	22.0	66.4	31.5	35.2
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0050	0.0076	0.0048	0.0048	0.0058
	Thallium (Tl)-Total (mg/kg wwt)	0.00121	0.00306	0.00179	0.00188	0.00227
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0266	0.0265	0.0168	0.0252	0.0257
	Uranium (U)-Total (mg/kg wwt)	0.0114	0.0107	0.00624	0.00988	0.0101
	Vanadium (V)-Total (mg/kg)	0.57	2.58	0.75	2.66	2.77
	Vanadium (V)-Total (mg/kg wwt)	0.243	1.04	0.279	1.04	1.08
	Zinc (Zn)-Total (mg/kg)	36.6	27.5	16.3	55.8	62.9
	Zinc (Zn)-Total (mg/kg wwt)	15.6	11.0	6.05	21.8	24.6
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.048	0.052	0.070	0.048

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-26 Tissue 25-AUG-15 WILLOW WATTLE-4X	L1667546-27 Tissue 25-AUG-15 WILLOW STAKE-5	L1667546-28 Tissue 25-AUG-15 WILLOW SEEDLING-5	L1667546-29 Tissue 25-AUG-15 WILLOW WATTLE-5	L1667546-30 Tissue 25-AUG-15 WILLOW STAKE-6
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	2.03	0.884	0.555	0.458	1.46
	Molybdenum (Mo)-Total (mg/kg wwt)	0.767	0.365	0.242	0.183	0.590
	Nickel (Ni)-Total (mg/kg)	2.56	2.13	2.58	1.30	1.22
	Nickel (Ni)-Total (mg/kg wwt)	0.965	0.880	1.13	0.520	0.494
	Phosphorus (P)-Total (mg/kg)	1290	1250	1770	862	1170
	Phosphorus (P)-Total (mg/kg wwt)	488	516	771	344	475
	Potassium (K)-Total (mg/kg)	11300	11200	8220	12400	6850
	Potassium (K)-Total (mg/kg wwt)	4250	4630	3590	4940	2770
	Rubidium (Rb)-Total (mg/kg)	7.43	6.37	6.14	5.29	2.05
	Rubidium (Rb)-Total (mg/kg wwt)	2.80	2.63	2.68	2.11	0.829
	Selenium (Se)-Total (mg/kg)	1.61	0.438	0.975	0.215	0.646
	Selenium (Se)-Total (mg/kg wwt)	0.608	0.181	0.426	0.086	0.262
	Sodium (Na)-Total (mg/kg)	50	107	62	78	65
	Sodium (Na)-Total (mg/kg wwt)	18.9	44.2	27.0	31.0	26.5
	Strontium (Sr)-Total (mg/kg)	168	118	47.3	84.4	166
	Strontium (Sr)-Total (mg/kg wwt)	63.3	49.0	20.6	33.7	67.1
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0036	0.0070	0.0085	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00136	0.00288	0.00371	0.00055	0.00066
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.035	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0170	0.0552	0.0598	0.0133	0.0596
	Uranium (U)-Total (mg/kg wwt)	0.00643	0.0228	0.0261	0.00531	0.0241
	Vanadium (V)-Total (mg/kg)	0.87	1.35	1.57	0.86	1.36
	Vanadium (V)-Total (mg/kg wwt)	0.328	0.556	0.684	0.342	0.552
	Zinc (Zn)-Total (mg/kg)	13.0	22.0	53.2	15.4	13.9
	Zinc (Zn)-Total (mg/kg wwt)	4.90	9.11	23.3	6.14	5.61
	Zirconium (Zr)-Total (mg/kg)	<0.20	0.21	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.087	<0.040	0.056	0.067

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-31 Tissue 25-AUG-15 WILLOW WATTLE-6	L1667546-32 Tissue 25-AUG-15 WILLOW SEEDLING-6	L1667546-33 Tissue 25-AUG-15 WILLOW-1	L1667546-34 Tissue 25-AUG-15 WILLOW-2	L1667546-35 Tissue 25-AUG-15 WILLOW-3
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.252	0.843	0.080	0.391	0.147
	Molybdenum (Mo)-Total (mg/kg wwt)	0.112	0.353	0.0341	0.155	0.0519
	Nickel (Ni)-Total (mg/kg)	1.12	2.01	1.58	3.25	4.37
	Nickel (Ni)-Total (mg/kg wwt)	0.498	0.842	0.673	1.29	1.54
	Phosphorus (P)-Total (mg/kg)	1040	1930	1550	1790	1790
	Phosphorus (P)-Total (mg/kg wwt)	465	809	659	709	631
	Potassium (K)-Total (mg/kg)	11700	9390	7160	11900	11100
	Potassium (K)-Total (mg/kg wwt)	5190	3930	3040	4740	3900
	Rubidium (Rb)-Total (mg/kg)	8.04	4.95	6.97	13.8	7.82
	Rubidium (Rb)-Total (mg/kg wwt)	3.58	2.07	2.96	5.46	2.75
	Selenium (Se)-Total (mg/kg)	0.456	0.707	0.097	0.279	0.793
	Selenium (Se)-Total (mg/kg wwt)	0.203	0.296	0.041	0.111	0.279
	Sodium (Na)-Total (mg/kg)	27	54	61	29	58
	Sodium (Na)-Total (mg/kg wwt)	12.0	22.5	25.9	11.4	20.5
	Strontium (Sr)-Total (mg/kg)	98.9	77.3	109	94.1	117
	Strontium (Sr)-Total (mg/kg wwt)	44.0	32.4	46.4	37.3	41.1
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0146	<0.0020	0.0086	0.0030
	Thallium (Tl)-Total (mg/kg wwt)	0.00076	0.00611	<0.00040	0.00341	0.00106
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.021	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0120	0.0180	<0.0020	0.0049	0.0064
	Uranium (U)-Total (mg/kg wwt)	0.00534	0.00755	0.00053	0.00195	0.00224
	Vanadium (V)-Total (mg/kg)	0.90	1.47	<0.10	0.46	0.51
	Vanadium (V)-Total (mg/kg wwt)	0.400	0.616	0.041	0.182	0.181
	Zinc (Zn)-Total (mg/kg)	7.52	42.8	36.8	75.3	111
	Zinc (Zn)-Total (mg/kg wwt)	3.35	17.9	15.6	29.9	39.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.065	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-36 Tissue 25-AUG-15 WILLOW-3X	L1667546-37 Tissue 25-AUG-15 WILLOW-4	L1667546-38 Tissue 25-AUG-15 WILLOW-5	L1667546-39 Tissue 25-AUG-15 WILLOW-6	L1667546-40 Tissue 25-AUG-15 WILLOW-6X
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.164	0.239	0.347	0.120	0.116
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0616	0.0921	0.134	0.0509	0.0488
	Nickel (Ni)-Total (mg/kg)	4.47	3.47	1.41	1.29	1.39
	Nickel (Ni)-Total (mg/kg wwt)	1.68	1.34	0.547	0.544	0.584
	Phosphorus (P)-Total (mg/kg)	1890	1730	3040	2110	1970
	Phosphorus (P)-Total (mg/kg wwt)	711	668	1180	894	829
	Potassium (K)-Total (mg/kg)	10400	8770	9780	7060	7500
	Potassium (K)-Total (mg/kg wwt)	3920	3380	3790	2990	3150
	Rubidium (Rb)-Total (mg/kg)	6.71	5.68	2.82	3.44	3.85
	Rubidium (Rb)-Total (mg/kg wwt)	2.53	2.19	1.09	1.45	1.62
	Selenium (Se)-Total (mg/kg)	0.932	0.466	<0.050	<0.050	<0.050
	Selenium (Se)-Total (mg/kg wwt)	0.351	0.180	0.015	0.012	0.015
	Sodium (Na)-Total (mg/kg)	44	35	38	51	29
	Sodium (Na)-Total (mg/kg wwt)	16.4	13.4	14.6	21.5	12.1
	Strontium (Sr)-Total (mg/kg)	125	110	152	124	122
	Strontium (Sr)-Total (mg/kg wwt)	47.0	42.2	58.9	52.4	51.5
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0030	0.0035	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00113	0.00135	<0.00040	0.00056	0.00051
	Tin (Sn)-Total (mg/kg)	<0.10	0.13	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.049	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0056	0.0023	0.0037	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00210	0.00090	0.00145	0.00074	0.00083
	Vanadium (V)-Total (mg/kg)	0.43	0.24	0.41	0.18	0.22
	Vanadium (V)-Total (mg/kg wwt)	0.162	0.094	0.160	0.076	0.092
	Zinc (Zn)-Total (mg/kg)	112	62.4	128	25.2	25.7
	Zinc (Zn)-Total (mg/kg wwt)	42.3	24.1	49.8	10.7	10.8
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.044	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1667546-41 Tissue 25-AUG-15 WILLOW-7	L1667546-42 Tissue 25-AUG-15 WILLOW-8	L1667546-43 Tissue 25-AUG-15 WILLOW-9	L1667546-44 Tissue 25-AUG-15 WILLOW-10	L1667546-45 Tissue 19-AUG-15 BERRIES-1
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.217	0.103	0.322	0.387	0.080
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0978	0.0433	0.135	0.161	0.0213
	Nickel (Ni)-Total (mg/kg)	1.27	5.75	3.32	1.97	2.21
	Nickel (Ni)-Total (mg/kg wwt)	0.571	2.42	1.39	0.821	0.587
	Phosphorus (P)-Total (mg/kg)	1340	2040	2020	1650	1600
	Phosphorus (P)-Total (mg/kg wwt)	605	857	847	689	426
	Potassium (K)-Total (mg/kg)	4010	10900	10400	12400	7320
	Potassium (K)-Total (mg/kg wwt)	1810	4570	4350	5170	1940
	Rubidium (Rb)-Total (mg/kg)	6.40	3.42	5.54	9.26	18.5
	Rubidium (Rb)-Total (mg/kg wwt)	2.88	1.44	2.32	3.86	4.90
	Selenium (Se)-Total (mg/kg)	<0.050	0.190	0.200	0.054	<0.10
	Selenium (Se)-Total (mg/kg wwt)	0.016	0.080	0.084	0.023	<0.020
	Sodium (Na)-Total (mg/kg)	30	52	<20	32	<20
	Sodium (Na)-Total (mg/kg wwt)	13.3	21.7	7.1	13.3	4.8
	Strontium (Sr)-Total (mg/kg)	91.6	152	62.8	54.7	10.0
	Strontium (Sr)-Total (mg/kg wwt)	41.2	64.1	26.3	22.8	2.66
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00043	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	1.97
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.523
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0046	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00052	0.00058	0.00192	0.00062	<0.00040
	Vanadium (V)-Total (mg/kg)	0.12	0.15	0.41	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	0.054	0.065	0.170	0.038	<0.020
	Zinc (Zn)-Total (mg/kg)	25.1	68.5	84.5	11.1	19.7
	Zinc (Zn)-Total (mg/kg wwt)	11.3	28.8	35.4	4.62	5.22
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1667546-46	L1667546-47	L1667546-48		
Description	Tissue	Tissue	Tissue		
Sampled Date	19-AUG-15	19-AUG-15	19-AUG-15		
Sampled Time					
Client ID	BERRIES-2	BERRIES-3	BERRIES-4		
Grouping / **Analyte**					
TISSUE					
Metals Molybdenum (Mo)-Total (mg/kg)	0.539	0.084	0.446		
Molybdenum (Mo)-Total (mg/kg wwt)	0.217	0.0387	0.128		
Nickel (Ni)-Total (mg/kg)	1.30	0.29	1.29		
Nickel (Ni)-Total (mg/kg wwt)	0.523	0.133	0.369		
Phosphorus (P)-Total (mg/kg)	2610	1570	2110		
Phosphorus (P)-Total (mg/kg wwt)	1050	726	605		
Potassium (K)-Total (mg/kg)	8790	12300	10500		
Potassium (K)-Total (mg/kg wwt)	3540	5670	3010		
Rubidium (Rb)-Total (mg/kg)	11.3	5.68	20.1		
Rubidium (Rb)-Total (mg/kg wwt)	4.56	2.62	5.75		
Selenium (Se)-Total (mg/kg)	<0.050	<0.050	<0.10		
Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.010	<0.020		
Sodium (Na)-Total (mg/kg)	29	<20	123		
Sodium (Na)-Total (mg/kg wwt)	11.6	7.6	35.2		
Strontium (Sr)-Total (mg/kg)	7.46	38.0	10.4		
Strontium (Sr)-Total (mg/kg wwt)	3.00	17.5	2.98		
Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020		
Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020		
Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040		
Tin (Sn)-Total (mg/kg)	0.44	<0.10	1.62		
Tin (Sn)-Total (mg/kg wwt)	0.176	0.026	0.464		
Uranium (U)-Total (mg/kg)	0.0021	<0.0020	<0.0020		
Uranium (U)-Total (mg/kg wwt)	0.00085	0.00042	0.00048		
Vanadium (V)-Total (mg/kg)	0.44	0.17	0.31		
Vanadium (V)-Total (mg/kg wwt)	0.176	0.077	0.089		
Zinc (Zn)-Total (mg/kg)	11.4	5.42	28.4		
Zinc (Zn)-Total (mg/kg wwt)	4.57	2.50	8.14		
Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	0.21		
Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	0.061		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (Al)-Total	DUP-H	L1667546-45, -48
Duplicate	Iron (Fe)-Total	DUP-H	L1667546-45, -48
Duplicate	Phosphorus (P)-Total	DUP-H	L1667546-45, -48
Duplicate	Potassium (K)-Total	DUP-H	L1667546-45, -48
Duplicate	Aluminum (Al)-Total	DUP-H	L1667546-45, -48
Duplicate	Iron (Fe)-Total	DUP-H	L1667546-45, -48
Duplicate	Phosphorus (P)-Total	DUP-H	L1667546-45, -48
Duplicate	Potassium (K)-Total	DUP-H	L1667546-45, -48

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

2 3 4 B0023

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # B0023

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Katie McMahen	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L1667546	ALS Contact: Can Dang	Sampler: GH, SF

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	Rye grass - 1	30-Aug-15		Tissue	X	1
	Rye grass - 2	30-Aug-15		Tissue	X	1
	Rye grass - 3	30-Aug-15		Tissue	X	1
	Rye grass - 4	30-Aug-15		Tissue	X	1
	Rye grass - 4x	30-Aug-15		Tissue	X	1
	Rye grass - 5	30-Aug-15		Tissue	X	1
	Rye grass - 6	30-Aug-15		Tissue	X	1
	Rye grass - 7	30-Aug-15		Tissue	X	1
	Rye grass - 7x	30-Aug-15		Tissue	X	1
	Rye grass 8	30-Aug-15		Tissue	X	1
	Rye grass - 9	30-Aug-15		Tissue	X	1
	Rye grass - 10	30-Aug-15		Tissue	X	1

L1667546-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
	02/09/15 15:30	mike	9/3	9:25	8.6			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # B0023

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Katie McMahen	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Analysis Request
Company:		Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: GH, SF	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	Willow Seedling - 1	19-Aug-15		Tissue	X	1
	Willow Wattle - 1	19-Aug-15		Tissue	X	1
	Willow Stake - 1	19-Aug-15		Tissue	X	1
	Willow Seeding - 2	19-Aug-15		Tissue	X	1
	Willow Wattle - 2	19-Aug-15		Tissue	X	1
	Willow Stake - 2	19-Aug-15		Tissue	X	1
	Willow Seedling - 3	19-Aug-15		Tissue	X	1
	Willow Wattle - 3	19-Aug-15		Tissue	X	1
	Willow Stake - 3	19-Aug-15		Tissue	X	1
	Willow Seedling - 4	25-Aug-15		Tissue	X	1
	Willow Wattle - 4	25-Aug-15		Tissue	X	1
	Willow Stake - 4	25-Aug-15		Tissue	X	1

L1667546-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
	02/09/15 15:30	MIKE	9/3	9:25	8.6			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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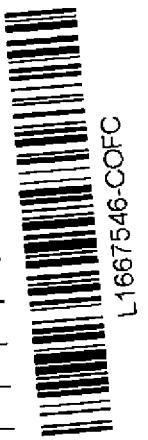
COC # B0023

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Katie McMahen	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: GH, SF

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	Willow Stake - 4x	25-Aug-15		Tissue	X	1
	Willow Wattle - 4x	25-Aug-15		Tissue	X	1
	Willow Stake - 5	25-Aug-15		Tissue	X	1
	Willow Seedling - 5	25-Aug-15		Tissue	X	1
	Willow Wattle - 5	25-Aug-15		Tissue	X	1
	Willow Stake - 6	25-Aug-15		Tissue	X	1
	Willow Wattle - 6	25-Aug-15		Tissue	X	1
	Willow Seedling - 6	25-Aug-15		Tissue	X	1
	Willow - 1	25-Aug-15		Tissue	X	1
	Willow - 2	25-Aug-15		Tissue	X	1
	Willow - 3	25-Aug-15		Tissue	X	1
	Willow - 3x	25-Aug-15		Tissue	X	1



Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
	02/09/15 15:30	MIKE	9/3	9:25	8.6			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # B0023

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Katie McMahen	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: GH, SF	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	Willow - 4	25-Aug-15		Tissue	X	1
	Willow - 5	25-Aug-15		Tissue	X	1
	Willow - 6	25-Aug-15		Tissue	X	1
	Willow - 6x	25-Aug-15		Tissue	X	1
	Willow - 7	25-Aug-15		Tissue	X	1
	Willow - 8	25-Aug-15		Tissue	X	1
	Willow - 9	25-Aug-15		Tissue	X	1
	Willow - 10	25-Aug-15		Tissue	X	1
	Berries - 1	19-Aug-15		Tissue	X	1
	Berries - 2	19-Aug-15		Tissue	X	1
	Berries - 3	19-Aug-15		Tissue	X	1
	Berries - 4	19-Aug-15		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
	01/09/15 15:30	MIKE	9/3	9:25	8.6			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-OCT-15
Report Date: 26-FEB-16 16:56 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1686208

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 25-FEB-16 15:09

26-FEB-2016 Revision 2: As results from re-analysis of specific samples this revision includes the following modifications:
- The Aluminum data for the sample, L1686208-24, was modified;
- The Nickel data for the sample, L1686208-32, was modified;
- The data obtained from re-analysis of the sample, "QUL NEAR HAZELTINE CR LT #3 KIDNEY"(L1686208-12), is included under the additional sample "QUL NEAR HAZELTINE CR LT #3 KIDNEY (RECHECK)"(L1686208-36).

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-1	L1686208-2	L1686208-4	L1686208-5	L1686208-6
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #1	QUL NEAR HAZELTINE CR LT #1 LIVER	QUL NEAR HAZELTINE CR LT #1 GONAD	QUL NEAR HAZELTINE CR LT #1X	QUL NEAR HAZELTINE CR LT #1X GONAD
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	77.2	77.2	64.3	74.9	64.0
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.215	0.312	0.125	0.291	0.104
	Arsenic (As)-Total (mg/kg wwt)	0.0491	0.0712	0.0448	0.0729	0.0375
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.144	0.0060	0.0076	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.0010	0.0328	0.0022	0.0019	<0.0010
	Calcium (Ca)-Total (mg/kg)	255	432	1050	244	1040
	Calcium (Ca)-Total (mg/kg wwt)	58.1	98.6	376	61.1	376
	Cesium (Cs)-Total (mg/kg)	0.344	0.273	0.0883	0.322	0.0880
	Cesium (Cs)-Total (mg/kg wwt)	0.0784	0.0622	0.0315	0.0808	0.0317
	Chromium (Cr)-Total (mg/kg)	<0.050	0.058	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.013	<0.010	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	<0.020	0.064	0.037	<0.020	0.032
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0145	0.0132	<0.0040	0.0116
	Copper (Cu)-Total (mg/kg)	1.63	23.1	16.1	1.99	16.7
	Copper (Cu)-Total (mg/kg wwt)	0.371	5.27	5.74	0.499	6.01
	Iron (Fe)-Total (mg/kg)	14.3	296	52.9	18.3	53.5
	Iron (Fe)-Total (mg/kg wwt)	3.27	67.5	18.9	4.60	19.2
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1130	918	1370	1040	1350
	Magnesium (Mg)-Total (mg/kg wwt)	258	209	488	260	487
	Manganese (Mn)-Total (mg/kg)	0.271	2.95	0.631	0.308	0.615
	Manganese (Mn)-Total (mg/kg wwt)	0.062	0.674	0.226	0.077	0.221

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-7	L1686208-8	L1686208-9	L1686208-10	L1686208-11
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #2	QUL NEAR HAZELTINE CR LT #2 LIVER	QUL NEAR HAZELTINE CR LT #2 KIDNEY	QUL NEAR HAZELTINE CR LT #3	QUL NEAR HAZELTINE CR LT #3 LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	76.0	69.9	80.0	77.2	69.1
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.215	0.357	0.290	0.316	0.560
	Arsenic (As)-Total (mg/kg wwt)	0.0517	0.107	0.0580	0.0721	0.173
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	0.137	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	0.028	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.109	0.850	<0.0050	0.144
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0328	0.170	<0.0010	0.0445
	Calcium (Ca)-Total (mg/kg)	242	178	445	303	229
	Calcium (Ca)-Total (mg/kg wwt)	58.0	53.4	89.2	69.0	70.9
	Cesium (Cs)-Total (mg/kg)	0.184	0.0970	0.181	0.195	0.103
	Cesium (Cs)-Total (mg/kg wwt)	0.0441	0.0292	0.0363	0.0445	0.0320
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	0.047	0.146	<0.020	0.057
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0143	0.0292	<0.0040	0.0177
	Copper (Cu)-Total (mg/kg)	1.77	78.7	5.29	1.92	53.8
	Copper (Cu)-Total (mg/kg wwt)	0.425	23.7	1.06	0.438	16.7
	Iron (Fe)-Total (mg/kg)	9.0	197	284	12.8	106
	Iron (Fe)-Total (mg/kg wwt)	2.16	59.4	57.0	2.92	32.9
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1160	392	625	1050	542
	Magnesium (Mg)-Total (mg/kg wwt)	279	118	125	240	168
	Manganese (Mn)-Total (mg/kg)	0.278	3.05	1.49	0.296	5.69
	Manganese (Mn)-Total (mg/kg wwt)	0.067	0.919	0.299	0.067	1.76

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-12	L1686208-13	L1686208-14	L1686208-15	L1686208-16
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #3 KIDNEY	QUL NEAR HAZELTINE CR LT #4	QUL NEAR HAZELTINE CR LT #4 LIVER	QUL NEAR HAZELTINE CR LT #4 KIDNEY	QUL NEAR HAZELTINE CR LT #5
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	79.8	76.0	72.3	81.3	73.4
Metals	Aluminum (Al)-Total (mg/kg)	5.2	<2.0	<5.0	8.1	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	1.0	<0.40	<1.0	1.5	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.369	0.193	0.601	0.373	0.329
	Arsenic (As)-Total (mg/kg wwt)	0.0747	0.0463	0.167	0.0698	0.0873
	Barium (Ba)-Total (mg/kg)	0.133	<0.050	<0.050	0.267	<0.050
	Barium (Ba)-Total (mg/kg wwt)	0.027	<0.010	<0.010	0.050	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.613	<0.0050	0.202	1.34	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.124	<0.0010	0.0562	0.251	<0.0010
	Calcium (Ca)-Total (mg/kg)	462	271	223	426	186
	Calcium (Ca)-Total (mg/kg wwt)	93.6	65.1	61.9	79.8	49.5
	Cesium (Cs)-Total (mg/kg)	0.163	0.194	0.0940	0.254	0.184
	Cesium (Cs)-Total (mg/kg wwt)	0.0329	0.0467	0.0261	0.0477	0.0489
	Chromium (Cr)-Total (mg/kg)	0.24	<0.050	<0.20	0.44	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	0.049	<0.010	<0.040	0.082	<0.010
	Cobalt (Co)-Total (mg/kg)	0.169	<0.020	0.090	0.332	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	0.0343	<0.0040	0.0251	0.0622	<0.0040
	Copper (Cu)-Total (mg/kg)	37.4	1.24	50.5	4.56	2.06
	Copper (Cu)-Total (mg/kg wwt)	7.57	0.298	14.0	0.854	0.546
	Iron (Fe)-Total (mg/kg)	361	8.9	177	304	16.1
	Iron (Fe)-Total (mg/kg wwt)	73.1	2.14	49.0	56.9	4.28
	Lead (Pb)-Total (mg/kg)	1.23	<0.020	<0.050	0.070	<0.020
	Lead (Pb)-Total (mg/kg wwt)	0.248	<0.0040	<0.010	0.013	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	700	1020	593	698	896
	Magnesium (Mg)-Total (mg/kg wwt)	142	245	165	131	238
	Manganese (Mn)-Total (mg/kg)	1.57	0.262	4.65	1.95	0.250
	Manganese (Mn)-Total (mg/kg wwt)	0.319	0.063	1.29	0.365	0.067

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-17	L1686208-18	L1686208-19	L1686208-20	L1686208-21
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #5 LIVER	QUL NEAR HAZELTINE CR LT #5 KIDNEY	QUL NEAR HAZELTINE CR LT #6	QUL NEAR HAZELTINE CR LT #6 LIVER	QUL NEAR HAZELTINE CR LT #6 KIDNEY
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	63.8	79.6	76.2	72.5	78.5
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	5.3	<2.0	<2.0	5.5
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	1.1	<0.40	<0.40	1.2
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.324	0.326	0.309	0.419	0.355
	Arsenic (As)-Total (mg/kg wwt)	0.117	0.0664	0.0734	0.115	0.0761
	Barium (Ba)-Total (mg/kg)	<0.050	0.171	<0.050	<0.050	0.302
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.035	<0.010	<0.010	0.065
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.105	1.65	<0.0050	0.180	0.887
	Cadmium (Cd)-Total (mg/kg wwt)	0.0381	0.337	<0.0010	0.0496	0.190
	Calcium (Ca)-Total (mg/kg)	117	492	176	269	540
	Calcium (Ca)-Total (mg/kg wwt)	42.5	100	41.8	74.0	116
	Cesium (Cs)-Total (mg/kg)	0.0709	0.243	0.258	0.0762	0.152
	Cesium (Cs)-Total (mg/kg wwt)	0.0257	0.0496	0.0612	0.0209	0.0326
	Chromium (Cr)-Total (mg/kg)	<0.050	0.23	<0.050	0.056	0.27
	Chromium (Cr)-Total (mg/kg wwt)	0.014	0.046	<0.010	0.016	0.059
	Cobalt (Co)-Total (mg/kg)	0.044	0.477	<0.020	0.082	0.139
	Cobalt (Co)-Total (mg/kg wwt)	0.0160	0.0974	<0.0040	0.0224	0.0299
	Copper (Cu)-Total (mg/kg)	107	3.95	2.05	92.8	2.45
	Copper (Cu)-Total (mg/kg wwt)	38.7	0.805	0.488	25.5	0.525
	Iron (Fe)-Total (mg/kg)	222	345	12.1	284	574
	Iron (Fe)-Total (mg/kg wwt)	80.2	70.3	2.87	78.2	123
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.020	<0.020	0.053
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.0040	<0.0040	0.011
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	293	616	1110	412	489
	Magnesium (Mg)-Total (mg/kg wwt)	106	126	264	113	105
	Manganese (Mn)-Total (mg/kg)	2.14	1.11	0.250	3.56	0.916
	Manganese (Mn)-Total (mg/kg wwt)	0.774	0.226	0.059	0.979	0.197

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-22	L1686208-23	L1686208-24	L1686208-25	L1686208-26
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #7	QUL NEAR HAZELTINE CR LT #7 LIVER	QUL NEAR HAZELTINE CR LT #7 KIDNEY	QUL NEAR HAZELTINE CR LT #7 GONAD	QUL NEAR HAZELTINE CR LT #8
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	78.0	78.0	81.4	81.1	79.1
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	2.5	21.3	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	0.55	4.0	<1.0	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.161	0.449	0.396	0.143	0.210
	Arsenic (As)-Total (mg/kg wwt)	0.0354	0.0988	0.0736	0.0272	0.0439
	Barium (Ba)-Total (mg/kg)	<0.050	0.112	0.202	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.025	0.038	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.350	3.71	0.028	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0770	0.690	0.0052	<0.0010
	Calcium (Ca)-Total (mg/kg)	293	330	804	940	208
	Calcium (Ca)-Total (mg/kg wwt)	64.3	72.5	149	178	43.4
	Cesium (Cs)-Total (mg/kg)	0.248	0.0750	0.187	0.341	0.303
	Cesium (Cs)-Total (mg/kg wwt)	0.0545	0.0165	0.0348	0.0646	0.0631
	Chromium (Cr)-Total (mg/kg)	<0.050	0.237	0.57	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.052	0.105	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	<0.020	0.186	0.353	0.228	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0410	0.0655	0.0432	<0.0040
	Copper (Cu)-Total (mg/kg)	0.96	123	5.63	26.9	1.69
	Copper (Cu)-Total (mg/kg wwt)	0.210	27.0	1.05	5.09	0.352
	Iron (Fe)-Total (mg/kg)	7.7	1430	573	444	14.7
	Iron (Fe)-Total (mg/kg wwt)	1.70	315	106	84.1	3.06
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1270	635	768	513	1100
	Magnesium (Mg)-Total (mg/kg wwt)	279	140	143	97.1	230
	Manganese (Mn)-Total (mg/kg)	0.258	3.79	2.17	6.12	0.254
	Manganese (Mn)-Total (mg/kg wwt)	0.057	0.832	0.403	1.16	0.053

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-27	L1686208-28	L1686208-29	L1686208-30	L1686208-31
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #8 LIVER	QUL NEAR HAZELTINE CR LT #8 KIDNEY	QUL NEAR HAZELTINE CR LT #8 GONAD	QUL NEAR HAZELTINE CR LT #9	QUL NEAR HAZELTINE CR LT #9 LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	79.3	79.8	66.5	75.2	60.8
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	9.3	<2.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	1.9	<0.40	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.261	0.365	0.099	0.230	0.250
	Arsenic (As)-Total (mg/kg wwt)	0.0540	0.0739	0.0332	0.0572	0.0979
	Barium (Ba)-Total (mg/kg)	<0.050	0.141	<0.050	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.029	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.240	3.58	<0.0050	<0.0050	0.143
	Cadmium (Cd)-Total (mg/kg wwt)	0.0496	0.725	<0.0010	<0.0010	0.0560
	Calcium (Ca)-Total (mg/kg)	363	734	1240	196	89
	Calcium (Ca)-Total (mg/kg wwt)	75.0	149	414	48.8	34.7
	Cesium (Cs)-Total (mg/kg)	0.253	0.250	0.0707	0.192	0.0830
	Cesium (Cs)-Total (mg/kg wwt)	0.0523	0.0506	0.0237	0.0476	0.0325
	Chromium (Cr)-Total (mg/kg)	0.170	0.77	<0.050	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	0.035	0.155	<0.010	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.074	0.175	0.037	<0.020	0.037
	Cobalt (Co)-Total (mg/kg wwt)	0.0152	0.0354	0.0125	<0.0040	0.0146
	Copper (Cu)-Total (mg/kg)	12.3	3.90	15.8	1.94	132
	Copper (Cu)-Total (mg/kg wwt)	2.55	0.790	5.29	0.481	51.7
	Iron (Fe)-Total (mg/kg)	499	459	55.3	11.5	87.3
	Iron (Fe)-Total (mg/kg wwt)	103	92.9	18.5	2.85	34.2
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.020	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.0040	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1060	638	1540	956	331
	Magnesium (Mg)-Total (mg/kg wwt)	219	129	517	237	130
	Manganese (Mn)-Total (mg/kg)	5.10	0.950	0.543	0.228	2.82
	Manganese (Mn)-Total (mg/kg wwt)	1.05	0.192	0.182	0.057	1.11

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-32	L1686208-33	L1686208-34	L1686208-35	L1686208-36
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #9 KIDNEY	QUL NEAR HAZELTINE CR LT #10	QUL NEAR HAZELTINE CR LT #10 LIVER	QUL NEAR HAZELTINE CR LT #10 KIDNEY	QUL NEAR HAZELTINE CR LT #3 KIDNEY (RECHECK)
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	78.1	71.5	69.1	73.5	79.8
Metals	Aluminum (Al)-Total (mg/kg)	11.7	<2.0	<5.0	<5.0	7.6
	Aluminum (Al)-Total (mg/kg wwt)	2.6	<0.40	<1.0	<1.0	1.5
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.356	0.140	0.539	0.363	0.366
	Arsenic (As)-Total (mg/kg wwt)	0.0779	0.0399	0.167	0.0962	0.0742
	Barium (Ba)-Total (mg/kg)	0.189	<0.050	<0.050	0.129	0.225
	Barium (Ba)-Total (mg/kg wwt)	0.041	<0.010	<0.010	0.034	0.046
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.820	<0.0050	0.219	0.536	0.464
	Cadmium (Cd)-Total (mg/kg wwt)	0.179	<0.0010	0.0679	0.142	0.0939
	Calcium (Ca)-Total (mg/kg)	445	273	278	368	709
	Calcium (Ca)-Total (mg/kg wwt)	97.4	77.8	85.9	97.5	144
	Cesium (Cs)-Total (mg/kg)	0.205	0.147	0.0753	0.121	0.153
	Cesium (Cs)-Total (mg/kg wwt)	0.0449	0.0418	0.0233	0.0320	0.0310
	Chromium (Cr)-Total (mg/kg)	0.28	<0.050	<0.20	<0.20	0.24
	Chromium (Cr)-Total (mg/kg wwt)	0.061	<0.010	<0.040	<0.040	0.049
	Cobalt (Co)-Total (mg/kg)	0.312	<0.020	0.070	0.081	0.171
	Cobalt (Co)-Total (mg/kg wwt)	0.0682	<0.0040	0.0216	0.0213	0.0345
	Copper (Cu)-Total (mg/kg)	4.37	1.18	80.7	2.26	3.71
	Copper (Cu)-Total (mg/kg wwt)	0.957	0.337	25.0	0.598	0.750
	Iron (Fe)-Total (mg/kg)	366	7.0	119	344	427
	Iron (Fe)-Total (mg/kg wwt)	80.2	2.00	36.9	91.1	86.4
	Lead (Pb)-Total (mg/kg)	0.066	<0.020	<0.050	0.082	0.083
	Lead (Pb)-Total (mg/kg wwt)	0.014	<0.0040	<0.010	0.022	0.017
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	599	871	477	416	665
	Magnesium (Mg)-Total (mg/kg wwt)	131	248	147	110	135
	Manganese (Mn)-Total (mg/kg)	1.29	0.252	4.88	1.00	1.67
	Manganese (Mn)-Total (mg/kg wwt)	0.282	0.072	1.51	0.265	0.339

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-1	L1686208-2	L1686208-4	L1686208-5	L1686208-6
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #1	QUL NEAR HAZELTINE CR LT #1 LIVER	QUL NEAR HAZELTINE CR LT #1 GONAD	QUL NEAR HAZELTINE CR LT #1X	QUL NEAR HAZELTINE CR LT #1X GONAD
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	1.50	0.691	0.0898	1.28	0.0991
	Mercury (Hg)-Total (mg/kg wwt)	0.341	0.158	0.0321	0.321	0.0357
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.278	<0.020	<0.020	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0633	0.0057	<0.0040	0.0053
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11200	19600	11500	10500	11300
	Phosphorus (P)-Total (mg/kg wwt)	2560	4460	4100	2620	4070
	Potassium (K)-Total (mg/kg)	18600	17200	6090	17000	6020
	Potassium (K)-Total (mg/kg wwt)	4230	3920	2170	4260	2170
	Rubidium (Rb)-Total (mg/kg)	49.6	84.3	15.4	45.9	15.0
	Rubidium (Rb)-Total (mg/kg wwt)	11.3	19.2	5.48	11.5	5.39
	Selenium (Se)-Total (mg/kg)	1.88	5.23	4.21	1.77	4.24
	Selenium (Se)-Total (mg/kg wwt)	0.429	1.19	1.50	0.444	1.53
	Sodium (Na)-Total (mg/kg)	1630	5230	3110	1650	2850
	Sodium (Na)-Total (mg/kg wwt)	371	1190	1110	414	1030
	Strontium (Sr)-Total (mg/kg)	0.215	0.517	2.56	0.266	2.48
	Strontium (Sr)-Total (mg/kg wwt)	0.049	0.118	0.913	0.067	0.893
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0269	0.602	0.0189	0.0286	0.0181
	Thallium (Tl)-Total (mg/kg wwt)	0.00614	0.137	0.00677	0.00717	0.00650
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	12.6	97.3	58.8	13.4	57.1
	Zinc (Zn)-Total (mg/kg wwt)	2.86	22.2	21.0	3.37	20.5
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-7	L1686208-8	L1686208-9	L1686208-10	L1686208-11
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #2	QUL NEAR HAZELTINE CR LT #2 LIVER	QUL NEAR HAZELTINE CR LT #2 KIDNEY	QUL NEAR HAZELTINE CR LT #3	QUL NEAR HAZELTINE CR LT #3 LIVER
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.329	0.183	0.516	0.357	0.219
	Mercury (Hg)-Total (mg/kg wwt)	0.0791	0.0551	0.103	0.0815	0.0677
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.417	0.273	<0.020	0.490
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.125	0.0546	<0.0040	0.152
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11600	7400	12300	10600	9770
	Phosphorus (P)-Total (mg/kg wwt)	2780	2230	2460	2410	3020
	Potassium (K)-Total (mg/kg)	18800	6600	10600	17900	7130
	Potassium (K)-Total (mg/kg wwt)	4500	1990	2120	4080	2210
	Rubidium (Rb)-Total (mg/kg)	40.8	18.6	27.8	39.6	20.4
	Rubidium (Rb)-Total (mg/kg wwt)	9.79	5.59	5.57	9.02	6.32
	Selenium (Se)-Total (mg/kg)	2.02	5.83	5.38	1.93	7.10
	Selenium (Se)-Total (mg/kg wwt)	0.484	1.75	1.08	0.441	2.20
	Sodium (Na)-Total (mg/kg)	1120	3590	8660	727	2330
	Sodium (Na)-Total (mg/kg wwt)	270	1080	1730	166	720
	Strontium (Sr)-Total (mg/kg)	0.168	0.27	0.70	0.253	0.28
	Strontium (Sr)-Total (mg/kg wwt)	0.040	0.082	0.141	0.058	0.085
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0339	0.431	0.140	0.0681	0.303
	Thallium (Tl)-Total (mg/kg wwt)	0.00814	0.130	0.0281	0.0155	0.0938
	Tin (Sn)-Total (mg/kg)	<0.10	0.18	0.55	<0.10	0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.054	0.110	<0.020	0.032
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	13.5	89.3	94.1	15.4	86.7
	Zinc (Zn)-Total (mg/kg wwt)	3.23	26.9	18.9	3.51	26.8
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-12	L1686208-13	L1686208-14	L1686208-15	L1686208-16
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #3 KIDNEY	QUL NEAR HAZELTINE CR LT #4	QUL NEAR HAZELTINE CR LT #4 LIVER	QUL NEAR HAZELTINE CR LT #4 KIDNEY	QUL NEAR HAZELTINE CR LT #5
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.463	0.363	0.255	0.724	0.842
	Mercury (Hg)-Total (mg/kg wwt)	0.0937	0.0872	0.0707	0.136	0.224
	Molybdenum (Mo)-Total (mg/kg)	0.163	<0.020	0.537	0.245	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0329	<0.0040	0.149	0.0460	<0.0040
	Nickel (Ni)-Total (mg/kg)	0.39	<0.20	<0.20	0.36	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	0.079	<0.040	<0.040	0.067	<0.040
	Phosphorus (P)-Total (mg/kg)	12800	10600	10600	12600	9040
	Phosphorus (P)-Total (mg/kg wwt)	2580	2540	2940	2360	2400
	Potassium (K)-Total (mg/kg)	10200	17700	8390	11000	14000
	Potassium (K)-Total (mg/kg wwt)	2070	4250	2330	2060	3730
	Rubidium (Rb)-Total (mg/kg)	28.4	40.1	23.2	39.6	31.0
	Rubidium (Rb)-Total (mg/kg wwt)	5.75	9.63	6.43	7.41	8.24
	Selenium (Se)-Total (mg/kg)	5.56	1.84	6.73	6.48	1.58
	Selenium (Se)-Total (mg/kg wwt)	1.13	0.442	1.87	1.21	0.420
	Sodium (Na)-Total (mg/kg)	4960	964	3050	5850	1500
	Sodium (Na)-Total (mg/kg wwt)	1000	232	846	1100	399
	Strontium (Sr)-Total (mg/kg)	0.62	0.217	0.30	0.65	0.119
	Strontium (Sr)-Total (mg/kg wwt)	0.126	0.052	0.082	0.122	0.032
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.188	0.0441	0.371	0.192	0.0334
	Thallium (Tl)-Total (mg/kg wwt)	0.0381	0.0106	0.103	0.0360	0.00887
	Tin (Sn)-Total (mg/kg)	1.12	<0.10	0.11	2.34	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.227	<0.020	0.031	0.438	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	120	12.3	105	113	12.7
	Zinc (Zn)-Total (mg/kg wwt)	24.2	2.95	29.0	21.1	3.36
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-17	L1686208-18	L1686208-19	L1686208-20	L1686208-21
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #5 LIVER	QUL NEAR HAZELTINE CR LT #5 KIDNEY	QUL NEAR HAZELTINE CR LT #6	QUL NEAR HAZELTINE CR LT #6 LIVER	QUL NEAR HAZELTINE CR LT #6 KIDNEY
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.426	1.50	0.758	0.509	1.16
	Mercury (Hg)-Total (mg/kg wwt)	0.154	0.306	0.180	0.140	0.249
	Molybdenum (Mo)-Total (mg/kg)	0.228	0.267	<0.020	0.415	0.164
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0825	0.0545	<0.0040	0.114	0.0352
	Nickel (Ni)-Total (mg/kg)	<0.20	0.22	<0.20	<0.20	0.24
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.044	<0.040	<0.040	0.051
	Phosphorus (P)-Total (mg/kg)	6570	11200	10800	8720	8370
	Phosphorus (P)-Total (mg/kg wwt)	2380	2290	2580	2400	1800
	Potassium (K)-Total (mg/kg)	5840	9740	16700	7760	7580
	Potassium (K)-Total (mg/kg wwt)	2110	1990	3980	2130	1630
	Rubidium (Rb)-Total (mg/kg)	16.4	27.0	41.4	23.5	22.8
	Rubidium (Rb)-Total (mg/kg wwt)	5.93	5.51	9.85	6.46	4.89
	Selenium (Se)-Total (mg/kg)	5.37	6.83	1.90	6.28	5.22
	Selenium (Se)-Total (mg/kg wwt)	1.94	1.39	0.453	1.73	1.12
	Sodium (Na)-Total (mg/kg)	3190	8330	1090	5450	7640
	Sodium (Na)-Total (mg/kg wwt)	1150	1700	260	1500	1640
	Strontium (Sr)-Total (mg/kg)	0.182	1.09	0.119	0.494	1.16
	Strontium (Sr)-Total (mg/kg wwt)	0.066	0.223	0.028	0.136	0.249
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.226	0.158	0.0477	0.176	0.0987
	Thallium (Tl)-Total (mg/kg wwt)	0.0817	0.0322	0.0113	0.0483	0.0212
	Tin (Sn)-Total (mg/kg)	<0.10	0.48	<0.10	0.11	0.80
	Tin (Sn)-Total (mg/kg wwt)	0.020	0.098	<0.020	0.029	0.171
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	79.0	77.4	14.2	120	73.8
	Zinc (Zn)-Total (mg/kg wwt)	28.6	15.8	3.36	33.0	15.8
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-22	L1686208-23	L1686208-24	L1686208-25	L1686208-26
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #7	QUL NEAR HAZELTINE CR LT #7 LIVER	QUL NEAR HAZELTINE CR LT #7 KIDNEY	QUL NEAR HAZELTINE CR LT #7 GONAD	QUL NEAR HAZELTINE CR LT #8
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	2.16	2.40	5.02	0.915	2.55
	Mercury (Hg)-Total (mg/kg wwt)	0.474	0.527	0.932	0.173	0.533
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.474	0.341	0.096	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.104	0.0633	0.0181	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.44	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.082	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	12400	13000	12100	8240	11100
	Phosphorus (P)-Total (mg/kg wwt)	2730	2860	2240	1560	2310
	Potassium (K)-Total (mg/kg)	21700	10800	11900	11400	18800
	Potassium (K)-Total (mg/kg wwt)	4770	2380	2210	2150	3910
	Rubidium (Rb)-Total (mg/kg)	36.4	20.4	22.8	24.1	38.9
	Rubidium (Rb)-Total (mg/kg wwt)	8.00	4.49	4.23	4.56	8.11
	Selenium (Se)-Total (mg/kg)	2.27	9.38	13.2	6.49	1.99
	Selenium (Se)-Total (mg/kg wwt)	0.498	2.06	2.46	1.23	0.414
	Sodium (Na)-Total (mg/kg)	1720	7620	9570	9150	1650
	Sodium (Na)-Total (mg/kg wwt)	377	1680	1780	1730	345
	Strontium (Sr)-Total (mg/kg)	0.205	0.756	2.44	0.88	0.154
	Strontium (Sr)-Total (mg/kg wwt)	0.045	0.166	0.454	0.166	0.032
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0288	0.109	0.130	0.0700	0.0216
	Thallium (Tl)-Total (mg/kg wwt)	0.00632	0.0240	0.0241	0.0132	0.00451
	Tin (Sn)-Total (mg/kg)	<0.10	0.14	0.83	0.16	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.030	0.154	0.030	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0029	0.0035	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00064	0.00064	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.14	0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.030	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	13.7	139	90.7	149	12.1
	Zinc (Zn)-Total (mg/kg wwt)	3.02	30.6	16.9	28.2	2.53
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1686208-27	L1686208-28	L1686208-29	L1686208-30	L1686208-31
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR LT #8 LIVER	QUL NEAR HAZELTINE CR LT #8 KIDNEY	QUL NEAR HAZELTINE CR LT #8 GONAD	QUL NEAR HAZELTINE CR LT #9	QUL NEAR HAZELTINE CR LT #9 LIVER
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	2.41	4.67	0.214	0.382	0.151
	Mercury (Hg)-Total (mg/kg wwt)	0.498	0.945	0.0716	0.0949	0.0593
	Molybdenum (Mo)-Total (mg/kg)	0.296	0.258	<0.020	<0.020	0.245
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0612	0.0522	0.0050	<0.0040	0.0960
	Nickel (Ni)-Total (mg/kg)	<0.20	0.42	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.086	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	20900	11000	11500	9710	6760
	Phosphorus (P)-Total (mg/kg wwt)	4320	2220	3840	2410	2650
	Potassium (K)-Total (mg/kg)	19600	10600	6560	16000	5000
	Potassium (K)-Total (mg/kg wwt)	4050	2150	2200	3990	1960
	Rubidium (Rb)-Total (mg/kg)	72.7	26.0	12.8	39.6	17.0
	Rubidium (Rb)-Total (mg/kg wwt)	15.0	5.26	4.29	9.83	6.64
	Selenium (Se)-Total (mg/kg)	4.85	9.57	4.46	1.62	5.50
	Selenium (Se)-Total (mg/kg wwt)	1.00	1.94	1.49	0.402	2.15
	Sodium (Na)-Total (mg/kg)	5010	8140	2910	1330	1740
	Sodium (Na)-Total (mg/kg wwt)	1030	1650	974	330	680
	Strontium (Sr)-Total (mg/kg)	0.406	2.44	2.89	0.152	0.12
	Strontium (Sr)-Total (mg/kg wwt)	0.084	0.495	0.967	0.038	0.049
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.654	0.119	0.0209	0.0369	0.197
	Thallium (Tl)-Total (mg/kg wwt)	0.135	0.0241	0.00699	0.00916	0.0773
	Tin (Sn)-Total (mg/kg)	<0.10	0.68	<0.10	<0.10	0.15
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.138	<0.020	<0.020	0.060
	Uranium (U)-Total (mg/kg)	<0.0020	0.0036	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00074	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	94.4	72.3	64.0	13.0	72.4
	Zinc (Zn)-Total (mg/kg wwt)	19.5	14.6	21.4	3.23	28.3
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1686208-32 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR LT #9 KIDNEY	L1686208-33 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR LT #10	L1686208-34 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR LT #10 LIVER	L1686208-35 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR LT #10 KIDNEY	L1686208-36 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR LT #3 KIDNEY (RECHECK)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.438	0.297	0.216	0.337	
	Mercury (Hg)-Total (mg/kg wwt)	0.0959	0.0846	0.0667	0.0892	
	Molybdenum (Mo)-Total (mg/kg)	0.229	<0.020	0.528	0.094	0.165
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0501	<0.0040	0.163	0.0249	0.0335
	Nickel (Ni)-Total (mg/kg)	0.23	<0.20	<0.20	0.30	0.54
	Nickel (Ni)-Total (mg/kg wwt)	0.051	<0.040	<0.040	0.079	0.108
	Phosphorus (P)-Total (mg/kg)	11300	8280	8780	7170	11500
	Phosphorus (P)-Total (mg/kg wwt)	2470	2360	2720	1900	2330
	Potassium (K)-Total (mg/kg)	10700	14000	6140	7430	10500
	Potassium (K)-Total (mg/kg wwt)	2340	3970	1900	1970	2130
	Rubidium (Rb)-Total (mg/kg)	31.4	30.6	17.6	19.2	25.7
	Rubidium (Rb)-Total (mg/kg wwt)	6.88	8.71	5.44	5.09	5.20
	Selenium (Se)-Total (mg/kg)	5.21	1.57	6.88	3.16	6.53
	Selenium (Se)-Total (mg/kg wwt)	1.14	0.446	2.13	0.836	1.32
	Sodium (Na)-Total (mg/kg)	6700	986	3210	3050	4670
	Sodium (Na)-Total (mg/kg wwt)	1470	281	992	807	945
	Strontium (Sr)-Total (mg/kg)	0.74	0.244	0.36	0.64	0.76
	Strontium (Sr)-Total (mg/kg wwt)	0.162	0.070	0.112	0.170	0.155
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.160	0.0479	0.238	0.0871	0.169
	Thallium (Tl)-Total (mg/kg wwt)	0.0350	0.0136	0.0736	0.0231	0.0341
	Tin (Sn)-Total (mg/kg)	0.95	<0.10	0.26	0.95	1.95
	Tin (Sn)-Total (mg/kg wwt)	0.207	0.025	0.079	0.252	0.395
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	77.7	10.6	98.3	51.4	147
	Zinc (Zn)-Total (mg/kg wwt)	17.0	3.03	30.4	13.6	29.8
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Barium (Ba)-Total	DUP-H	L1686208-24, -32, -36
Duplicate	Barium (Ba)-Total	DUP-H	L1686208-24, -32, -36

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA Tissue Mercury in Tissue by CVAFS Micro (DRY) EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA Tissue Mercury in Tissue by CVAFS (WET) EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA Tissue Mercury in Tissue by CVAFS Micro (WET) EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA Tissue Metals in Tissue by CRC ICPMS (DRY) EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (DRY) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA Tissue Metals in Tissue by CRC ICPMS (WET) EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (WET) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

Reference Information

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Gr
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Short Holding Time

Rush Processing

dy / Analytical Request Form
oll Free: 1 800 668 9878
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COC # _____

Page 1 of 1

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		ıal Site Description:		
Phone:		ıte #:		
[redacted] Lab Work Orde [redacted] (lab use only)		ıtact: Can Dang	Sampler: Zirnhelt,Dolighan	

L1686208-COFC

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HR ICP-MS)(Wet&D	Moisture	Liver Metals	Kidney Metals	Gonad Metals							Number of Containers
[redacted]	QUL near Hazeltine Cr LT #1	04-Oct-15	8:00-16:15	Tissue	X	X	X	X	X							4
[redacted]	QUL near Hazeltine Cr LT #1X	04-Oct-15	8:00-16:15	Tissue	X	X			X							2
[redacted]	QUL near Hazeltine Cr LT #2	04-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
[redacted]	QUL near Hazeltine Cr LT #3	04-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
[redacted]	QUL near Hazeltine Cr LT #4	04-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
[redacted]	QUL near Hazeltine Cr LT #5	04-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
[redacted]	QUL near Hazeltine Cr LT #6	04-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
[redacted]	QUL near Hazeltine Cr LT #7	04-Oct-15	8:00-16:15	Tissue	X	X	X	X	X							4
[redacted]	QUL near Hazeltine Cr LT #8	04-Oct-15	8:00-16:15	Tissue	X	X	X	X	X							4
[redacted]	QUL near Hazeltine Cr LT #9	04-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
[redacted]	QUL near Hazeltine Cr LT #10	04-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
[redacted]																

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	08/10/2015 16:30	Jean	9Oct	9:25	-1.6°C			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 14-OCT-15
Report Date: 10-NOV-15 16:33 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1687334

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687334-1 Tissue 10-SEP-15 16:15 QUL NEAR GRAIN CR. CSU #1	L1687334-2 Tissue 10-SEP-15 16:15 QUL NEAR GRAIN CR. CSU #2	L1687334-3 Tissue 10-SEP-15 16:15 QUL NEAR GRAIN CR. CSU #3	L1687334-4 Tissue 10-SEP-15 16:15 QUL NEAR GRAIN CR. CSU #3X	L1687334-5 Tissue 10-SEP-15 16:15 QUL NEAR GRAIN CR. CSU #4
	Sample ID	L1687334-1	L1687334-2	L1687334-3	L1687334-4	L1687334-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR GRAIN CR. CSU #1	QUL NEAR GRAIN CR. CSU #2	QUL NEAR GRAIN CR. CSU #3	QUL NEAR GRAIN CR. CSU #3X	QUL NEAR GRAIN CR. CSU #4
TISSUE						
Physical Tests	% Moisture (%)	82.6	80.6	80.5	80.0	80.8
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.110	0.170	0.355	0.405	0.150
	Arsenic (As)-Total (mg/kg wwt)	0.0191	0.0330	0.0694	0.0813	0.0288
	Barium (Ba)-Total (mg/kg)	0.208	0.131	0.186	0.083	0.109
	Barium (Ba)-Total (mg/kg wwt)	0.036	0.026	0.036	0.017	0.021
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	0.012	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0023	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.0051	<0.0050	<0.0050	<0.0050	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/kg)	1340	1190	2220	853	1340
	Calcium (Ca)-Total (mg/kg wwt)	233	231	434	171	257
	Cesium (Cs)-Total (mg/kg)	0.217	0.172	0.192	0.168	0.147
	Cesium (Cs)-Total (mg/kg wwt)	0.0378	0.0333	0.0374	0.0336	0.0283
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.022	0.024	0.021	<0.020	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0047	0.0042	<0.0040	<0.0040
	Copper (Cu)-Total (mg/kg)	1.33	1.41	1.38	1.03	1.52
	Copper (Cu)-Total (mg/kg wwt)	0.231	0.273	0.269	0.207	0.292
	Iron (Fe)-Total (mg/kg)	14.2	11.4	12.8	10.2	12.1
	Iron (Fe)-Total (mg/kg wwt)	2.47	2.21	2.50	2.04	2.32
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1500	1470	1500	1470	1480
	Magnesium (Mg)-Total (mg/kg wwt)	260	286	292	294	285
	Manganese (Mn)-Total (mg/kg)	1.22	0.758	1.37	0.908	1.10
	Manganese (Mn)-Total (mg/kg wwt)	0.213	0.147	0.268	0.182	0.211

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1687334-6	L1687334-7	L1687334-8	L1687334-9	
	Description	Tissue	Tissue	Tissue	Tissue	
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	
	Sampled Time	16:15	16:15	16:15	16:15	
	Client ID	QUL NEAR GRAIN CR. CSU #5	QUL NEAR GRAIN CR. CSU #6	QUL NEAR GRAIN CR. CSU #7	QUL NEAR GRAIN CR. CSU #8	
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	81.3	81.8	81.4	81.0	
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<2.0	<2.0	
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Arsenic (As)-Total (mg/kg)	0.114	0.337	0.205	0.177	
	Arsenic (As)-Total (mg/kg wwt)	0.0214	0.0615	0.0381	0.0336	
	Barium (Ba)-Total (mg/kg)	0.200	0.141	0.121	0.283	
	Barium (Ba)-Total (mg/kg wwt)	0.037	0.026	0.023	0.054	
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Bismuth (Bi)-Total (mg/kg)	0.016	0.014	<0.010	<0.010	
	Bismuth (Bi)-Total (mg/kg wwt)	0.0030	0.0025	<0.0020	<0.0020	
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	
	Cadmium (Cd)-Total (mg/kg)	<0.0050	<0.0050	0.0058	<0.0050	
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	<0.0010	0.0011	<0.0010	
	Calcium (Ca)-Total (mg/kg)	1360	967	1520	1290	
	Calcium (Ca)-Total (mg/kg wwt)	254	176	283	245	
	Cesium (Cs)-Total (mg/kg)	0.265	0.173	0.181	0.143	
	Cesium (Cs)-Total (mg/kg wwt)	0.0496	0.0316	0.0337	0.0271	
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	
	Cobalt (Co)-Total (mg/kg)	<0.020	0.021	0.025	0.021	
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0047	<0.0040	
	Copper (Cu)-Total (mg/kg)	1.57	1.16	1.68	0.99	
	Copper (Cu)-Total (mg/kg wwt)	0.294	0.212	0.313	0.189	
	Iron (Fe)-Total (mg/kg)	10.3	11.8	12.3	10.0	
	Iron (Fe)-Total (mg/kg wwt)	1.94	2.15	2.29	1.91	
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	
	Magnesium (Mg)-Total (mg/kg)	1550	1460	1370	1350	
	Magnesium (Mg)-Total (mg/kg wwt)	291	266	256	256	
	Manganese (Mn)-Total (mg/kg)	1.50	1.36	0.908	1.55	
	Manganese (Mn)-Total (mg/kg wwt)	0.280	0.248	0.169	0.295	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1687334-1	L1687334-2	L1687334-3	L1687334-4	L1687334-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR GRAIN CR. CSU #1	QUL NEAR GRAIN CR. CSU #2	QUL NEAR GRAIN CR. CSU #3	QUL NEAR GRAIN CR. CSU #3X	QUL NEAR GRAIN CR. CSU #4
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.701	0.484	0.342	0.313	0.393
	Mercury (Hg)-Total (mg/kg wwt)	0.122	0.0940	0.0668	0.0627	0.0755
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.026	0.024	<0.020	0.024
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0050	0.0046	<0.0040	0.0046
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	10900	10700	11700	10300	10900
	Phosphorus (P)-Total (mg/kg wwt)	1890	2080	2290	2070	2090
	Potassium (K)-Total (mg/kg)	18500	18800	19800	18600	19400
	Potassium (K)-Total (mg/kg wwt)	3210	3660	3870	3720	3720
	Rubidium (Rb)-Total (mg/kg)	25.3	27.2	26.7	25.6	18.9
	Rubidium (Rb)-Total (mg/kg wwt)	4.40	5.29	5.21	5.12	3.62
	Selenium (Se)-Total (mg/kg)	1.22	1.31	1.61	1.51	2.16
	Selenium (Se)-Total (mg/kg wwt)	0.212	0.255	0.315	0.302	0.415
	Sodium (Na)-Total (mg/kg)	2470	2290	2240	1980	2440
	Sodium (Na)-Total (mg/kg wwt)	430	444	436	398	469
	Strontium (Sr)-Total (mg/kg)	2.28	1.68	3.69	0.975	1.85
	Strontium (Sr)-Total (mg/kg wwt)	0.396	0.327	0.721	0.195	0.355
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0048	0.0047	0.0089	0.0067	0.0065
	Thallium (Tl)-Total (mg/kg wwt)	0.00084	0.00092	0.00174	0.00133	0.00125
	Tin (Sn)-Total (mg/kg)	0.14	<0.10	0.11	<0.10	0.11
	Tin (Sn)-Total (mg/kg wwt)	0.025	<0.020	0.022	<0.020	0.021
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	38.5	41.5	27.3	20.9	29.0
	Zinc (Zn)-Total (mg/kg wwt)	6.69	8.06	5.33	4.19	5.58
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1687334-6	L1687334-7	L1687334-8	L1687334-9	
	Description	Tissue	Tissue	Tissue	Tissue	
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	
	Sampled Time	16:15	16:15	16:15	16:15	
	Client ID	QUL NEAR GRAIN CR. CSU #5	QUL NEAR GRAIN CR. CSU #6	QUL NEAR GRAIN CR. CSU #7	QUL NEAR GRAIN CR. CSU #8	
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.601	0.688	1.02	0.448	
	Mercury (Hg)-Total (mg/kg wwt)	0.113	0.125	0.190	0.0852	
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.022	<0.020	<0.020	
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0040	<0.0040	<0.0040	
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	
	Phosphorus (P)-Total (mg/kg)	11000	10500	10400	10400	
	Phosphorus (P)-Total (mg/kg wwt)	2060	1910	1940	1980	
	Potassium (K)-Total (mg/kg)	20200	18700	17300	17900	
	Potassium (K)-Total (mg/kg wwt)	3780	3400	3230	3410	
	Rubidium (Rb)-Total (mg/kg)	24.2	28.0	27.6	24.0	
	Rubidium (Rb)-Total (mg/kg wwt)	4.52	5.11	5.13	4.57	
	Selenium (Se)-Total (mg/kg)	1.74	1.03	1.34	2.27	
	Selenium (Se)-Total (mg/kg wwt)	0.326	0.188	0.249	0.431	
	Sodium (Na)-Total (mg/kg)	2560	2890	3050	2530	
	Sodium (Na)-Total (mg/kg wwt)	479	528	567	482	
	Strontium (Sr)-Total (mg/kg)	2.09	1.28	2.19	1.41	
	Strontium (Sr)-Total (mg/kg wwt)	0.392	0.234	0.408	0.269	
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg)	0.0063	0.0027	0.0050	0.0066	
	Thallium (Tl)-Total (mg/kg wwt)	0.00118	0.00049	0.00093	0.00125	
	Tin (Sn)-Total (mg/kg)	0.16	0.15	0.16	0.12	
	Tin (Sn)-Total (mg/kg wwt)	0.030	0.028	0.029	0.023	
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	
	Zinc (Zn)-Total (mg/kg)	38.7	32.6	41.6	35.7	
	Zinc (Zn)-Total (mg/kg wwt)	7.26	5.94	7.75	6.79	
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Copper (Cu)-Total	MB-LOR	L1687334-1, -2, -3, -4, -5, -6, -7, -8, -9
Method Blank	Manganese (Mn)-Total	MB-LOR	L1687334-1, -2, -3, -4, -5, -6, -7, -8, -9
Method Blank	Copper (Cu)-Total	MB-LOR	L1687334-1, -2, -3, -4, -5, -6, -7, -8, -9
Method Blank	Manganese (Mn)-Total	MB-LOR	L1687334-1, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L1687334	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Kidney Metals	Gonad metals								Number of Containers
	QUL near Grain Cr. CSU # 1	10-Sep-15	8:00-16:15	Tissue	X	X											1
	QUL near Grain Cr. CSU # 2	10-Sep-15	8:00-16:15	Tissue	X	X											1
	QUL near Grain Cr. CSU # 3	10-Sep-15	8:00-16:15	Tissue	X	X											1
	QUL near Grain Cr. CSU # 3X	10-Sep-15	8:00-16:15	Tissue	X	X											1
	QUL near Grain Cr. CSU # 4	10-Sep-15	8:00-16:15	Tissue	X	X											1
	QUL near Grain Cr. CSU # 5	10-Sep-15	8:00-16:15	Tissue	X	X											1
	QUL near Grain Cr. CSU # 6	10-Sep-15	8:00-16:15	Tissue	X	X											1
	QUL near Grain Cr. CSU # 7	10-Sep-15	8:00-16:15	Tissue	X	X											1
	QUL near Grain Cr. CSU # 8	10-Sep-15	8:00-16:15	Tissue	X	X											1

L1687334-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Oct. 13, 2015	lady	OCT 14 2015	9:30am	2.8			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 14-OCT-15
Report Date: 09-DEC-15 11:50 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1687336

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-1 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #1 MUSCLE	L1687336-2 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #1 LIVER	L1687336-3 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #1 KIDNEY	L1687336-4 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #2 MUSCLE	L1687336-5 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #2 LIVER
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	76.6	71.3	72.5	79.8	69.9
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	9.9	21.7	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	2.8	6.0	<0.40	1.3
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0023	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.043	0.097	1.25	0.236	0.193
	Arsenic (As)-Total (mg/kg wwt)	0.0101	0.0279	0.344	0.0475	0.0582
	Barium (Ba)-Total (mg/kg)	0.113	0.100	1.19	0.177	0.262
	Barium (Ba)-Total (mg/kg wwt)	0.027	0.029	0.327	0.036	0.079
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.790	1.51	0.0067	1.12
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.227	0.414	0.0014	0.336
	Calcium (Ca)-Total (mg/kg)	1230	573	1060	1160	464
	Calcium (Ca)-Total (mg/kg wwt)	287	164	292	233	140
	Cesium (Cs)-Total (mg/kg)	0.0805	0.0352	0.0798	0.0968	0.0461
	Cesium (Cs)-Total (mg/kg wwt)	0.0188	0.0101	0.0219	0.0195	0.0139
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	0.011	<0.040	0.050	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.056	0.377	1.01	0.096	0.392
	Cobalt (Co)-Total (mg/kg wwt)	0.0132	0.108	0.278	0.0193	0.118
	Copper (Cu)-Total (mg/kg)	1.24	39.4	5.67	1.78	290
	Copper (Cu)-Total (mg/kg wwt)	0.290	11.3	1.56	0.359	87.3
	Iron (Fe)-Total (mg/kg)	18.6	1500	777	17.7	1050
	Iron (Fe)-Total (mg/kg wwt)	4.36	431	214	3.56	316
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	0.055	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	0.015	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1110	641	917	1330	729
	Magnesium (Mg)-Total (mg/kg wwt)	260	184	252	267	219
	Manganese (Mn)-Total (mg/kg)	0.550	9.75	2.90	0.691	14.3
	Manganese (Mn)-Total (mg/kg wwt)	0.129	2.80	0.798	0.139	4.30

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-6 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #2 KIDNEY	L1687336-7 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #3 MUSCLE	L1687336-8 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #3 LIVER	L1687336-9 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #3 KIDNEY	L1687336-10 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	74.2	77.7	64.7	74.4	77.3
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<5.0	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<1.0	<1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.829	0.136	0.372	0.358	0.152
	Arsenic (As)-Total (mg/kg wwt)	0.214	0.0304	0.132	0.0915	0.0345
	Barium (Ba)-Total (mg/kg)	2.19	0.092	0.175	0.244	<0.050
	Barium (Ba)-Total (mg/kg wwt)	0.565	0.021	0.062	0.062	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	1.40	0.0057	0.230	0.372	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	0.360	0.0013	0.0812	0.0952	<0.0020
	Calcium (Ca)-Total (mg/kg)	1070	1230	495	1040	636
	Calcium (Ca)-Total (mg/kg wwt)	277	274	175	267	144
	Cesium (Cs)-Total (mg/kg)	0.0826	0.0706	0.0456	0.0544	0.157
	Cesium (Cs)-Total (mg/kg wwt)	0.0213	0.0158	0.0161	0.0139	0.0355
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.20	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	0.046	<0.010	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	1.79	0.079	0.247	0.407	0.067
	Cobalt (Co)-Total (mg/kg wwt)	0.462	0.0177	0.0871	0.104	0.0151
	Copper (Cu)-Total (mg/kg)	6.95	1.83	70.6	3.70	0.74
	Copper (Cu)-Total (mg/kg wwt)	1.79	0.408	24.9	0.947	0.167
	Iron (Fe)-Total (mg/kg)	1050	16.4	429	538	15.0
	Iron (Fe)-Total (mg/kg wwt)	270	3.66	151	138	3.4
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	909	1110	741	713	1120
	Magnesium (Mg)-Total (mg/kg wwt)	234	248	262	182	253
	Manganese (Mn)-Total (mg/kg)	4.17	0.899	9.43	2.58	0.339
	Manganese (Mn)-Total (mg/kg wwt)	1.07	0.201	3.33	0.662	0.077

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-11 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4 LIVER	L1687336-12 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4 KIDNEY	L1687336-13 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4 GONAD	L1687336-14 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4X MUSCLE	L1687336-15 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #5 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	67.8	75.8	65.1	77.2	77.5
Metals	Aluminum (Al)-Total (mg/kg)	8.4	8.1	<5.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	2.7	2.0	<1.0	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.261	0.607	0.083	0.134	0.196
	Arsenic (As)-Total (mg/kg wwt)	0.0840	0.147	0.0289	0.0306	0.0440
	Barium (Ba)-Total (mg/kg)	0.067	0.674	0.440	<0.050	0.055
	Barium (Ba)-Total (mg/kg wwt)	0.022	0.163	0.153	<0.010	0.012
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.592	0.976	0.025	<0.0050	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.191	0.236	0.0088	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/kg)	316	1280	916	408	715
	Calcium (Ca)-Total (mg/kg wwt)	102	309	319	93.0	161
	Cesium (Cs)-Total (mg/kg)	0.0875	0.120	0.0478	0.114	0.0771
	Cesium (Cs)-Total (mg/kg wwt)	0.0282	0.0291	0.0167	0.0259	0.0173
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	0.044	<0.040	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.192	1.20	0.287	0.085	0.048
	Cobalt (Co)-Total (mg/kg wwt)	0.0617	0.292	0.100	0.0193	0.0108
	Copper (Cu)-Total (mg/kg)	12.8	5.91	36.0	1.93	1.77
	Copper (Cu)-Total (mg/kg wwt)	4.13	1.43	12.6	0.440	0.397
	Iron (Fe)-Total (mg/kg)	1060	909	174	23.8	16.5
	Iron (Fe)-Total (mg/kg wwt)	342	220	60.8	5.42	3.70
	Lead (Pb)-Total (mg/kg)	<0.050	0.060	<0.050	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	0.010	0.015	<0.010	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	796	990	1120	1150	1230
	Magnesium (Mg)-Total (mg/kg wwt)	256	240	389	261	276
	Manganese (Mn)-Total (mg/kg)	9.34	3.47	17.5	0.383	0.494
	Manganese (Mn)-Total (mg/kg wwt)	3.01	0.840	6.12	0.087	0.111

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-16 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #5 LIVER	L1687336-17 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #5 KIDNEY	L1687336-18 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #6 MUSCLE	L1687336-19 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #6 LIVER	L1687336-20 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #6 KIDNEY
TISSUE						
Physical Tests	% Moisture (%)	71.9	74.8	78.7	69.9	74.1
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<2.0	16.4	7.5
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	<0.40	4.9	1.9
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.027
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0071
	Arsenic (As)-Total (mg/kg)	0.391	0.789	0.341	0.238	1.36
	Arsenic (As)-Total (mg/kg wwt)	0.110	0.199	0.0727	0.0717	0.352
	Barium (Ba)-Total (mg/kg)	0.117	0.417	0.152	0.058	0.659
	Barium (Ba)-Total (mg/kg wwt)	0.033	0.105	0.032	0.017	0.171
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	1.2	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	0.37	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.391	0.988	<0.0050	0.913	1.54
	Cadmium (Cd)-Total (mg/kg wwt)	0.110	0.249	<0.0010	0.275	0.398
	Calcium (Ca)-Total (mg/kg)	367	801	1770	343	1250
	Calcium (Ca)-Total (mg/kg wwt)	103	202	376	103	325
	Cesium (Cs)-Total (mg/kg)	0.0385	0.0714	0.162	0.0732	0.154
	Cesium (Cs)-Total (mg/kg wwt)	0.0108	0.0180	0.0344	0.0220	0.0400
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.050	<0.20	0.33
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.010	<0.040	0.085
	Cobalt (Co)-Total (mg/kg)	0.178	0.660	0.050	0.216	0.939
	Cobalt (Co)-Total (mg/kg wwt)	0.0501	0.166	0.0106	0.0650	0.243
	Copper (Cu)-Total (mg/kg)	57.7	7.71	1.64	128	6.34
	Copper (Cu)-Total (mg/kg wwt)	16.2	1.95	0.349	38.5	1.64
	Iron (Fe)-Total (mg/kg)	505	580	18.3	1040	775
	Iron (Fe)-Total (mg/kg wwt)	142	146	3.90	314	201
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.020	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.0040	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	641	851	1480	665	1010
	Magnesium (Mg)-Total (mg/kg wwt)	180	215	315	200	262
	Manganese (Mn)-Total (mg/kg)	11.0	4.02	0.766	9.24	3.28
	Manganese (Mn)-Total (mg/kg wwt)	3.10	1.01	0.163	2.78	0.851

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-21 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #7 MUSCLE	L1687336-22 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #7 LIVER	L1687336-23 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #7 KIDNEY	L1687336-24 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #8 MUSCLE	L1687336-25 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #8 LIVER
TISSUE						
Physical Tests	% Moisture (%)	77.9	69.9	77.2	76.0	67.4
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	8.5	<5.0	<2.0	5.5
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	2.5	1.0	<0.40	1.8
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.106	0.233	0.670	0.102	0.286
	Arsenic (As)-Total (mg/kg wwt)	0.0234	0.0701	0.153	0.0246	0.0934
	Barium (Ba)-Total (mg/kg)	0.231	0.090	1.00	0.069	<0.050
	Barium (Ba)-Total (mg/kg wwt)	0.051	0.027	0.229	0.017	0.016
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.631	0.804	<0.0050	0.286
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.190	0.184	<0.0010	0.0933
	Calcium (Ca)-Total (mg/kg)	2430	283	913	576	296
	Calcium (Ca)-Total (mg/kg wwt)	538	85.1	208	138	96.6
	Cesium (Cs)-Total (mg/kg)	0.124	0.0505	0.111	0.113	0.0434
	Cesium (Cs)-Total (mg/kg wwt)	0.0274	0.0152	0.0254	0.0272	0.0142
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.098	0.402	0.937	0.054	0.188
	Cobalt (Co)-Total (mg/kg wwt)	0.0216	0.121	0.214	0.0129	0.0614
	Copper (Cu)-Total (mg/kg)	1.43	30.6	6.03	1.89	23.8
	Copper (Cu)-Total (mg/kg wwt)	0.317	9.21	1.38	0.454	7.77
	Iron (Fe)-Total (mg/kg)	18.1	937	791	19.3	1120
	Iron (Fe)-Total (mg/kg wwt)	4.00	282	181	4.63	364
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1330	667	850	1200	667
	Magnesium (Mg)-Total (mg/kg wwt)	294	201	194	287	217
	Manganese (Mn)-Total (mg/kg)	0.935	11.2	3.33	0.452	8.56
	Manganese (Mn)-Total (mg/kg wwt)	0.207	3.36	0.760	0.108	2.79

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1687336-26				
	Description	Tissue				
	Sampled Date	29-SEP-15				
	Sampled Time	16:15				
	Client ID	QUR NEAR D/S LIKELY RB #8 KIDNEY				
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	75.1				
Metals	Aluminum (Al)-Total (mg/kg)	<5.0				
	Aluminum (Al)-Total (mg/kg wwt)	<1.0				
	Antimony (Sb)-Total (mg/kg)	<0.010				
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020				
	Arsenic (As)-Total (mg/kg)	0.710				
	Arsenic (As)-Total (mg/kg wwt)	0.177				
	Barium (Ba)-Total (mg/kg)	0.907				
	Barium (Ba)-Total (mg/kg wwt)	0.226				
	Beryllium (Be)-Total (mg/kg)	<0.010				
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020				
	Bismuth (Bi)-Total (mg/kg)	<0.010				
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020				
	Boron (B)-Total (mg/kg)	<1.0				
	Boron (B)-Total (mg/kg wwt)	<0.20				
	Cadmium (Cd)-Total (mg/kg)	0.757				
	Cadmium (Cd)-Total (mg/kg wwt)	0.188				
	Calcium (Ca)-Total (mg/kg)	1080				
	Calcium (Ca)-Total (mg/kg wwt)	268				
	Cesium (Cs)-Total (mg/kg)	0.0966				
	Cesium (Cs)-Total (mg/kg wwt)	0.0241				
	Chromium (Cr)-Total (mg/kg)	0.22				
	Chromium (Cr)-Total (mg/kg wwt)	0.056				
	Cobalt (Co)-Total (mg/kg)	0.794				
	Cobalt (Co)-Total (mg/kg wwt)	0.198				
	Copper (Cu)-Total (mg/kg)	6.51				
	Copper (Cu)-Total (mg/kg wwt)	1.62				
	Iron (Fe)-Total (mg/kg)	579				
	Iron (Fe)-Total (mg/kg wwt)	144				
	Lead (Pb)-Total (mg/kg)	<0.050				
	Lead (Pb)-Total (mg/kg wwt)	0.010				
	Lithium (Li)-Total (mg/kg)	<0.50				
	Lithium (Li)-Total (mg/kg wwt)	<0.10				
	Magnesium (Mg)-Total (mg/kg)	818				
	Magnesium (Mg)-Total (mg/kg wwt)	204				
	Manganese (Mn)-Total (mg/kg)	2.87				
	Manganese (Mn)-Total (mg/kg wwt)	0.714				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-1 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #1 MUSCLE	L1687336-2 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #1 LIVER	L1687336-3 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #1 KIDNEY	L1687336-4 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #2 MUSCLE	L1687336-5 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #2 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.324	0.258	0.366	0.203	0.180
	Mercury (Hg)-Total (mg/kg wwt)	0.0759	0.0740	0.101	0.0410	0.0542
	Molybdenum (Mo)-Total (mg/kg)	<0.020	1.39	0.647	<0.020	1.07
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.399	0.178	<0.0040	0.323
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.65	<0.20	0.21
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.178	<0.040	0.064
	Phosphorus (P)-Total (mg/kg)	9540	12600	11300	11100	13200
	Phosphorus (P)-Total (mg/kg wwt)	2230	3610	3110	2230	3970
	Potassium (K)-Total (mg/kg)	15900	8440	13000	19400	7850
	Potassium (K)-Total (mg/kg wwt)	3720	2420	3570	3920	2360
	Rubidium (Rb)-Total (mg/kg)	14.9	7.63	10.9	21.6	9.36
	Rubidium (Rb)-Total (mg/kg wwt)	3.49	2.19	2.99	4.35	2.81
	Selenium (Se)-Total (mg/kg)	1.97	17.6	10.5	2.49	72.7
	Selenium (Se)-Total (mg/kg wwt)	0.462	5.03	2.90	0.502	21.9
	Sodium (Na)-Total (mg/kg)	1920	3810	3290	2530	3330
	Sodium (Na)-Total (mg/kg wwt)	448	1090	904	509	1000
	Strontium (Sr)-Total (mg/kg)	1.49	0.98	3.90	1.97	1.66
	Strontium (Sr)-Total (mg/kg wwt)	0.349	0.282	1.07	0.396	0.501
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0048	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0121	0.0536	0.0873	0.0222	0.149
	Thallium (Tl)-Total (mg/kg wwt)	0.00282	0.0154	0.0240	0.00448	0.0447
	Tin (Sn)-Total (mg/kg)	<0.10	0.14	0.27	<0.10	0.25
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.040	0.075	<0.020	0.076
	Uranium (U)-Total (mg/kg)	<0.0020	0.0068	0.0118	<0.0020	0.0039
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00194	0.00326	<0.00040	0.00118
	Vanadium (V)-Total (mg/kg)	<0.10	0.43	0.44	<0.10	0.12
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.122	0.121	<0.020	0.036
	Zinc (Zn)-Total (mg/kg)	13.6	154	85.1	23.4	146
	Zinc (Zn)-Total (mg/kg wwt)	3.18	44.2	23.4	4.71	44.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-6 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #2 KIDNEY	L1687336-7 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #3 MUSCLE	L1687336-8 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #3 LIVER	L1687336-9 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #3 KIDNEY	L1687336-10 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4 MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.306	0.180	0.101	0.211	0.349
	Mercury (Hg)-Total (mg/kg wwt)	0.0790	0.0402	0.0358	0.0539	0.0790
	Molybdenum (Mo)-Total (mg/kg)	0.504	<0.020	0.436	0.153	<0.040
	Molybdenum (Mo)-Total (mg/kg wwt)	0.130	<0.0040	0.154	0.0391	<0.0080
	Nickel (Ni)-Total (mg/kg)	0.50	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	0.128	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	9620	10000	13400	8530	8950
	Phosphorus (P)-Total (mg/kg wwt)	2480	2240	4740	2180	2030
	Potassium (K)-Total (mg/kg)	12400	15800	7250	10000	15200
	Potassium (K)-Total (mg/kg wwt)	3200	3530	2560	2560	3440
	Rubidium (Rb)-Total (mg/kg)	11.4	14.4	7.57	7.64	15.4
	Rubidium (Rb)-Total (mg/kg wwt)	2.95	3.21	2.67	1.96	3.49
	Selenium (Se)-Total (mg/kg)	11.3	2.36	27.7	5.32	1.99
	Selenium (Se)-Total (mg/kg wwt)	2.92	0.528	9.77	1.36	0.451
	Sodium (Na)-Total (mg/kg)	2600	2440	2900	2070	1910
	Sodium (Na)-Total (mg/kg wwt)	670	546	1030	530	434
	Strontium (Sr)-Total (mg/kg)	3.60	1.94	0.87	1.68	0.73
	Strontium (Sr)-Total (mg/kg wwt)	0.928	0.434	0.308	0.429	0.166
	Tellurium (Te)-Total (mg/kg)	0.024	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	0.0061	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.104	0.0137	0.0830	0.0298	0.0195
	Thallium (Tl)-Total (mg/kg wwt)	0.0267	0.00305	0.0293	0.00764	0.00442
	Tin (Sn)-Total (mg/kg)	0.43	0.13	0.13	0.38	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.112	0.028	0.046	0.097	<0.020
	Uranium (U)-Total (mg/kg)	0.0068	<0.0020	<0.0020	0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00174	<0.00040	<0.00040	0.00052	<0.00040
	Vanadium (V)-Total (mg/kg)	0.17	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	0.044	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	101	28.4	187	95.3	16.6
	Zinc (Zn)-Total (mg/kg wwt)	26.1	6.33	66.1	24.4	3.76
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-11 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4 LIVER	L1687336-12 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4 KIDNEY	L1687336-13 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4 GONAD	L1687336-14 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #4X MUSCLE	L1687336-15 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #5 MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.140	0.543	0.0405	0.313	0.225
	Mercury (Hg)-Total (mg/kg wwt)	0.0452	0.131	0.0141	0.0714	0.0507
	Molybdenum (Mo)-Total (mg/kg)	1.22	0.460	<0.040	<0.020	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.392	0.111	0.0137	<0.0040	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	0.78	0.24	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.189	0.084	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	13600	11200	8950	9380	10700
	Phosphorus (P)-Total (mg/kg wwt)	4370	2710	3120	2130	2410
	Potassium (K)-Total (mg/kg)	8610	12700	5220	15200	17000
	Potassium (K)-Total (mg/kg wwt)	2770	3080	1820	3470	3820
	Rubidium (Rb)-Total (mg/kg)	12.9	14.3	6.24	18.6	13.4
	Rubidium (Rb)-Total (mg/kg wwt)	4.15	3.46	2.18	4.24	3.01
	Selenium (Se)-Total (mg/kg)	9.81	9.90	9.51	2.04	1.93
	Selenium (Se)-Total (mg/kg wwt)	3.16	2.40	3.32	0.464	0.433
	Sodium (Na)-Total (mg/kg)	2850	4010	1860	2080	1980
	Sodium (Na)-Total (mg/kg wwt)	918	972	648	473	445
	Strontium (Sr)-Total (mg/kg)	0.62	2.73	2.61	0.549	0.970
	Strontium (Sr)-Total (mg/kg wwt)	0.200	0.662	0.909	0.125	0.218
	Tellurium (Te)-Total (mg/kg)	<0.020	0.026	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	0.0064	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.101	0.0848	0.0141	0.0182	0.0136
	Thallium (Tl)-Total (mg/kg wwt)	0.0325	0.0205	0.00491	0.00414	0.00305
	Tin (Sn)-Total (mg/kg)	0.15	0.63	0.16	<0.10	0.13
	Tin (Sn)-Total (mg/kg wwt)	0.049	0.154	0.057	0.020	0.029
	Uranium (U)-Total (mg/kg)	0.0072	0.0131	0.0025	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00233	0.00318	0.00088	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.12	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.028	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	112	117	187	17.6	18.2
	Zinc (Zn)-Total (mg/kg wwt)	36.2	28.4	65.1	4.01	4.10
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-16 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #5 LIVER	L1687336-17 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #5 KIDNEY	L1687336-18 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #6 MUSCLE	L1687336-19 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #6 LIVER	L1687336-20 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #6 KIDNEY
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.152	0.227	0.467	0.251	0.475
	Mercury (Hg)-Total (mg/kg wwt)	0.0427	0.0572	0.0995	0.0757	0.123
	Molybdenum (Mo)-Total (mg/kg)	0.655	0.365	<0.020	1.28	0.531
	Molybdenum (Mo)-Total (mg/kg wwt)	0.184	0.0921	<0.0040	0.387	0.138
	Nickel (Ni)-Total (mg/kg)	<0.20	0.29	<0.20	<0.20	0.85
	Nickel (Ni)-Total (mg/kg wwt)	0.055	0.074	<0.040	0.044	0.220
	Phosphorus (P)-Total (mg/kg)	10600	11700	13000	14100	12200
	Phosphorus (P)-Total (mg/kg wwt)	2990	2960	2770	4230	3170
	Potassium (K)-Total (mg/kg)	8570	13000	22300	8320	14000
	Potassium (K)-Total (mg/kg wwt)	2410	3290	4760	2500	3620
	Rubidium (Rb)-Total (mg/kg)	6.34	8.64	25.3	10.3	14.2
	Rubidium (Rb)-Total (mg/kg wwt)	1.78	2.18	5.38	3.11	3.68
	Selenium (Se)-Total (mg/kg)	23.9	9.11	2.28	42.1	11.4
	Selenium (Se)-Total (mg/kg wwt)	6.73	2.30	0.486	12.7	2.95
	Sodium (Na)-Total (mg/kg)	3450	4210	2830	3400	4020
	Sodium (Na)-Total (mg/kg wwt)	969	1060	602	1020	1040
	Strontium (Sr)-Total (mg/kg)	0.76	2.18	2.17	0.54	3.24
	Strontium (Sr)-Total (mg/kg wwt)	0.215	0.549	0.462	0.162	0.838
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	0.028
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	0.0072
	Thallium (Tl)-Total (mg/kg)	0.0458	0.0505	0.0225	0.119	0.125
	Thallium (Tl)-Total (mg/kg wwt)	0.0129	0.0127	0.00480	0.0357	0.0324
	Tin (Sn)-Total (mg/kg)	0.36	0.29	<0.10	<0.10	0.42
	Tin (Sn)-Total (mg/kg wwt)	0.100	0.072	0.021	<0.020	0.108
	Uranium (U)-Total (mg/kg)	0.0056	0.0080	<0.0020	0.0082	0.0142
	Uranium (U)-Total (mg/kg wwt)	0.00158	0.00203	<0.00040	0.00247	0.00368
	Vanadium (V)-Total (mg/kg)	<0.10	0.19	<0.10	0.21	0.27
	Vanadium (V)-Total (mg/kg wwt)	0.020	0.049	<0.020	0.064	0.070
	Zinc (Zn)-Total (mg/kg)	124	90.0	19.7	94.6	100
	Zinc (Zn)-Total (mg/kg wwt)	34.8	22.7	4.21	28.5	25.9
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687336-21 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #7 MUSCLE	L1687336-22 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #7 LIVER	L1687336-23 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #7 KIDNEY	L1687336-24 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #8 MUSCLE	L1687336-25 Tissue 29-SEP-15 16:15 QUR NEAR D/S LIKELY RB #8 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.332	0.204	0.376	0.236	0.146
	Mercury (Hg)-Total (mg/kg wwt)	0.0735	0.0613	0.0858	0.0568	0.0475
	Molybdenum (Mo)-Total (mg/kg)	<0.020	1.17	0.454	<0.020	0.914
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.352	0.104	<0.0040	0.298
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.59	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.045	0.136	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11400	11800	11300	10600	12400
	Phosphorus (P)-Total (mg/kg wwt)	2510	3560	2570	2540	4040
	Potassium (K)-Total (mg/kg)	17600	8590	12900	17800	7880
	Potassium (K)-Total (mg/kg wwt)	3890	2590	2950	4270	2570
	Rubidium (Rb)-Total (mg/kg)	19.3	8.59	12.7	20.0	9.13
	Rubidium (Rb)-Total (mg/kg wwt)	4.28	2.58	2.89	4.79	2.98
	Selenium (Se)-Total (mg/kg)	2.27	15.7	10.5	2.05	10.3
	Selenium (Se)-Total (mg/kg wwt)	0.502	4.73	2.40	0.493	3.37
	Sodium (Na)-Total (mg/kg)	2230	3080	3330	1830	2820
	Sodium (Na)-Total (mg/kg wwt)	492	927	759	439	919
	Strontium (Sr)-Total (mg/kg)	4.07	0.69	2.69	0.856	0.65
	Strontium (Sr)-Total (mg/kg wwt)	0.901	0.206	0.613	0.206	0.211
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0042	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0212	0.105	0.0720	0.0162	0.0668
	Thallium (Tl)-Total (mg/kg wwt)	0.00470	0.0315	0.0164	0.00388	0.0218
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	0.34	<0.10	0.18
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.028	0.077	<0.020	0.060
	Uranium (U)-Total (mg/kg)	<0.0020	0.0059	0.0079	<0.0020	0.0050
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00177	0.00180	<0.00040	0.00164
	Vanadium (V)-Total (mg/kg)	<0.10	0.17	0.16	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.051	0.036	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	17.8	124	84.5	16.6	102
	Zinc (Zn)-Total (mg/kg wwt)	3.95	37.2	19.3	3.98	33.4
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1687336-26
	Description	Tissue
	Sampled Date	29-SEP-15
	Sampled Time	16:15
	Client ID	QUR NEAR D/S LIKELY RB #8 KIDNEY
Grouping	**Analyte**	
TISSUE		
Metals	Mercury (Hg)-Total (mg/kg)	0.260
	Mercury (Hg)-Total (mg/kg wwt)	0.0646
	Molybdenum (Mo)-Total (mg/kg)	0.394
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0982
	Nickel (Ni)-Total (mg/kg)	0.54
	Nickel (Ni)-Total (mg/kg wwt)	0.135
	Phosphorus (P)-Total (mg/kg)	10900
	Phosphorus (P)-Total (mg/kg wwt)	2720
	Potassium (K)-Total (mg/kg)	12800
	Potassium (K)-Total (mg/kg wwt)	3180
	Rubidium (Rb)-Total (mg/kg)	13.2
	Rubidium (Rb)-Total (mg/kg wwt)	3.29
	Selenium (Se)-Total (mg/kg)	7.77
	Selenium (Se)-Total (mg/kg wwt)	1.93
	Sodium (Na)-Total (mg/kg)	4450
	Sodium (Na)-Total (mg/kg wwt)	1110
	Strontium (Sr)-Total (mg/kg)	3.23
	Strontium (Sr)-Total (mg/kg wwt)	0.804
	Tellurium (Te)-Total (mg/kg)	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0499
	Thallium (Tl)-Total (mg/kg wwt)	0.0124
	Tin (Sn)-Total (mg/kg)	0.95
	Tin (Sn)-Total (mg/kg wwt)	0.237
	Uranium (U)-Total (mg/kg)	0.0096
	Uranium (U)-Total (mg/kg wwt)	0.00239
	Vanadium (V)-Total (mg/kg)	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020
	Zinc (Zn)-Total (mg/kg)	127
	Zinc (Zn)-Total (mg/kg wwt)	31.6
	Zirconium (Zr)-Total (mg/kg)	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Barium (Ba)-Total	DUP-H	L1687336-10, -12, -13, -16, -17, -19, -2, -20, -22, -23, -25, -26, -3, -5, -6, -9
Duplicate	Calcium (Ca)-Total	DUP-H	L1687336-10, -12, -13, -16, -17, -19, -2, -20, -22, -23, -25, -26, -3, -5, -6, -9
Duplicate	Manganese (Mn)-Total	DUP-H	L1687336-10, -12, -13, -16, -17, -19, -2, -20, -22, -23, -25, -26, -3, -5, -6, -9
Duplicate	Strontium (Sr)-Total	DUP-H	L1687336-10, -12, -13, -16, -17, -19, -2, -20, -22, -23, -25, -26, -3, -5, -6, -9
Duplicate	Barium (Ba)-Total	DUP-H	L1687336-10, -12, -13, -16, -17, -19, -2, -20, -22, -23, -25, -26, -3, -5, -6, -9
Duplicate	Calcium (Ca)-Total	DUP-H	L1687336-10, -12, -13, -16, -17, -19, -2, -20, -22, -23, -25, -26, -3, -5, -6, -9
Duplicate	Manganese (Mn)-Total	DUP-H	L1687336-10, -12, -13, -16, -17, -19, -2, -20, -22, -23, -25, -26, -3, -5, -6, -9
Duplicate	Strontium (Sr)-Total	DUP-H	L1687336-10, -12, -13, -16, -17, -19, -2, -20, -22, -23, -25, -26, -3, -5, -6, -9
Method Blank	Copper (Cu)-Total	MB-LOR	L1687336-1, -14, -15, -18, -21, -24, -4, -7
Method Blank	Strontium (Sr)-Total	MB-LOR	L1687336-1, -14, -15, -18, -21, -24, -4, -7
Method Blank	Copper (Cu)-Total	MB-LOR	L1687336-1, -14, -15, -18, -21, -24, -4, -7
Method Blank	Strontium (Sr)-Total	MB-LOR	L1687336-1, -14, -15, -18, -21, -24, -4, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Reference Information

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA Tissue Metals in Tissue by CRC ICPMS (WET) EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (WET) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA Tissue % Moisture in Tissues ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report to:		**Report Format / Distribution**		**Service Requested:** (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)	L1687336	**ALS Contact:** Can Dang	**Sampler:** Dolighan,Zirnhelt	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Kidney Metals	Gonad Metals							Number of Containers
	QUR near d/s Likely RB # 1	29-Sep-15	8:00-16:15	Tissue	X	X	X	X								3
	QUR near d/s Likely RB # 2	29-Sep-15	8:00-16:15	Tissue	X	X	X	X								3
	QUR near d/s Likely RB # 3	29-Sep-15	8:00-16:15	Tissue	X	X	X	X								3
	QUR near d/s Likely RB # 4	29-Sep-15	8:00-16:15	Tissue	X	X	X	X	X							4
	QUR near d/s Likely RB # 4X	29-Sep-15	8:00-16:15	Tissue	X	X										1
	QUR near d/s Likely RB # 5	29-Sep-15	8:00-16:15	Tissue	X	X	X	X								3
	QUR near d/s Likely RB # 6	29-Sep-15	8:00-16:15	Tissue	X	X	X	X								3
	QUR near d/s Likely RB # 7	29-Sep-15	8:00-16:15	Tissue	X	X	X	X								3
	QUR near d/s Likely RB # 8	29-Sep-15	8:00-16:15	Tissue	X	X	X	X								3

L1687336-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Oct. 13, 2015	lady	OCT 14 2015	9:30am	-2.8			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 14-OCT-15
Report Date: 10-NOV-15 16:39 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1687337

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc: 42281

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687337-1 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#1	L1687337-2 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#2	L1687337-3 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#3	L1687337-4 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#4	L1687337-5 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#5
TISSUE						
Physical Tests	% Moisture (%)	83.3	83.2	82.3	83.7	82.8
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.118	0.060	0.067	0.075	0.136
	Arsenic (As)-Total (mg/kg wwt)	0.0197	0.0100	0.0119	0.0123	0.0234
	Barium (Ba)-Total (mg/kg)	0.276	0.469	0.468	0.478	0.189
	Barium (Ba)-Total (mg/kg wwt)	0.046	0.079	0.083	0.078	0.033
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	0.011	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.0052	<0.0050	<0.0050	0.0071	0.0129
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	<0.0010	<0.0010	0.0012	0.0022
	Calcium (Ca)-Total (mg/kg)	2790	4720	3950	3420	1890
	Calcium (Ca)-Total (mg/kg wwt)	466	793	700	558	326
	Cesium (Cs)-Total (mg/kg)	0.102	0.0995	0.0552	0.0634	0.122
	Cesium (Cs)-Total (mg/kg wwt)	0.0170	0.0167	0.0098	0.0104	0.0210
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.027	<0.020	<0.020	<0.020	0.051
	Cobalt (Co)-Total (mg/kg wwt)	0.0045	<0.0040	<0.0040	<0.0040	0.0088
	Copper (Cu)-Total (mg/kg)	1.32	1.47	1.67	2.25	1.82
	Copper (Cu)-Total (mg/kg wwt)	0.220	0.247	0.296	0.368	0.313
	Iron (Fe)-Total (mg/kg)	13.9	16.6	17.5	20.8	16.3
	Iron (Fe)-Total (mg/kg wwt)	2.33	2.78	3.11	3.40	2.80
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1390	1350	1260	1280	1330
	Magnesium (Mg)-Total (mg/kg wwt)	232	227	223	209	230
	Manganese (Mn)-Total (mg/kg)	3.63	5.36	3.01	3.47	1.84
	Manganese (Mn)-Total (mg/kg wwt)	0.607	0.901	0.533	0.567	0.318

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1687337-6	L1687337-7	L1687337-8	L1687337-9	
	Description	Tissue	Tissue	Tissue	Tissue	
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	
	Sampled Time	16:15	16:15	16:15	16:15	
	Client ID	QUL NEAR HAZELTINE CR. CSU#6	QUL NEAR HAZELTINE CR. CSU#7	QUL NEAR HAZELTINE CR. CSU#7X	QUL NEAR HAZELTINE CR. CSU#8	
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	84.8	81.8	80.9	82.4	
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<2.0	<2.0	
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Arsenic (As)-Total (mg/kg)	0.099	0.208	0.190	0.123	
	Arsenic (As)-Total (mg/kg wwt)	0.0150	0.0379	0.0362	0.0217	
	Barium (Ba)-Total (mg/kg)	0.339	0.224	0.288	0.404	
	Barium (Ba)-Total (mg/kg wwt)	0.051	0.041	0.055	0.071	
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	
	Cadmium (Cd)-Total (mg/kg)	0.125	<0.0050	<0.0050	<0.0050	
	Cadmium (Cd)-Total (mg/kg wwt)	0.0190	<0.0010	<0.0010	<0.0010	
	Calcium (Ca)-Total (mg/kg)	2080	2280	2790	2460	
	Calcium (Ca)-Total (mg/kg wwt)	316	414	532	432	
	Cesium (Cs)-Total (mg/kg)	0.165	0.0509	0.0560	0.0950	
	Cesium (Cs)-Total (mg/kg wwt)	0.0250	0.0093	0.0107	0.0167	
	Chromium (Cr)-Total (mg/kg)	0.052	<0.050	<0.050	<0.050	
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	
	Cobalt (Co)-Total (mg/kg)	0.023	<0.020	0.022	0.025	
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0042	0.0043	
	Copper (Cu)-Total (mg/kg)	1.87	1.00	1.33	1.56	
	Copper (Cu)-Total (mg/kg wwt)	0.284	0.181	0.254	0.275	
	Iron (Fe)-Total (mg/kg)	18.2	10.9	12.9	13.8	
	Iron (Fe)-Total (mg/kg wwt)	2.77	1.99	2.46	2.43	
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	
	Magnesium (Mg)-Total (mg/kg)	1340	1320	1310	1320	
	Magnesium (Mg)-Total (mg/kg wwt)	204	239	250	232	
	Manganese (Mn)-Total (mg/kg)	2.13	1.46	2.00	3.36	
	Manganese (Mn)-Total (mg/kg wwt)	0.324	0.266	0.382	0.591	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1687337-1 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#1	L1687337-2 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#2	L1687337-3 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#3	L1687337-4 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#4	L1687337-5 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. CSU#5
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.776	0.733	0.691	0.960	0.390
	Mercury (Hg)-Total (mg/kg wwt)	0.129	0.123	0.123	0.157	0.0673
	Molybdenum (Mo)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11900	12700	11300	11300	10700
	Phosphorus (P)-Total (mg/kg wwt)	1980	2130	2010	1850	1840
	Potassium (K)-Total (mg/kg)	22100	21600	18400	19500	18200
	Potassium (K)-Total (mg/kg wwt)	3690	3630	3270	3180	3140
	Rubidium (Rb)-Total (mg/kg)	20.5	23.4	13.2	16.6	17.5
	Rubidium (Rb)-Total (mg/kg wwt)	3.42	3.93	2.35	2.71	3.02
	Selenium (Se)-Total (mg/kg)	2.50	2.68	3.65	4.62	2.72
	Selenium (Se)-Total (mg/kg wwt)	0.417	0.451	0.647	0.755	0.468
	Sodium (Na)-Total (mg/kg)	2040	1760	1720	2810	1870
	Sodium (Na)-Total (mg/kg wwt)	341	296	304	459	323
	Strontium (Sr)-Total (mg/kg)	3.63	6.97	5.52	5.05	3.49
	Strontium (Sr)-Total (mg/kg wwt)	0.605	1.17	0.979	0.825	0.601
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0113	0.0083	0.0027	0.0122	0.0077
	Thallium (Tl)-Total (mg/kg wwt)	0.00189	0.00140	0.00048	0.00200	0.00133
	Tin (Sn)-Total (mg/kg)	0.15	0.15	0.10	0.15	0.18
	Tin (Sn)-Total (mg/kg wwt)	0.024	0.025	<0.020	0.024	0.031
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	31.3	25.1	36.7	39.4	32.1
	Zinc (Zn)-Total (mg/kg wwt)	5.23	4.23	6.50	6.42	5.53
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1687337-6	L1687337-7	L1687337-8	L1687337-9	
	Description	Tissue	Tissue	Tissue	Tissue	
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	
	Sampled Time	16:15	16:15	16:15	16:15	
	Client ID	QUL NEAR HAZELTINE CR. CSU#6	QUL NEAR HAZELTINE CR. CSU#7	QUL NEAR HAZELTINE CR. CSU#7X	QUL NEAR HAZELTINE CR. CSU#8	
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.811	0.490	0.521	0.772	
	Mercury (Hg)-Total (mg/kg wwt)	0.123	0.0891	0.0994	0.136	
	Molybdenum (Mo)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	
	Phosphorus (P)-Total (mg/kg)	12100	10100	10500	11100	
	Phosphorus (P)-Total (mg/kg wwt)	1850	1840	2010	1950	
	Potassium (K)-Total (mg/kg)	22200	17800	18600	19800	
	Potassium (K)-Total (mg/kg wwt)	3370	3240	3550	3480	
	Rubidium (Rb)-Total (mg/kg)	23.8	14.1	15.4	18.2	
	Rubidium (Rb)-Total (mg/kg wwt)	3.62	2.57	2.94	3.20	
	Selenium (Se)-Total (mg/kg)	3.34	3.10	3.21	2.46	
	Selenium (Se)-Total (mg/kg wwt)	0.507	0.564	0.613	0.432	
	Sodium (Na)-Total (mg/kg)	1900	1680	1700	2740	
	Sodium (Na)-Total (mg/kg wwt)	289	305	324	482	
	Strontium (Sr)-Total (mg/kg)	3.66	3.05	3.96	3.87	
	Strontium (Sr)-Total (mg/kg wwt)	0.556	0.555	0.755	0.681	
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg)	0.0030	0.0042	0.0046	0.0057	
	Thallium (Tl)-Total (mg/kg wwt)	0.00046	0.00076	0.00087	0.00100	
	Tin (Sn)-Total (mg/kg)	0.16	<0.10	0.14	0.11	
	Tin (Sn)-Total (mg/kg wwt)	0.024	<0.020	0.026	<0.020	
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	
	Zinc (Zn)-Total (mg/kg)	39.1	32.2	36.3	38.0	
	Zinc (Zn)-Total (mg/kg wwt)	5.95	5.86	6.93	6.69	
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Copper (Cu)-Total	MB-LOR	L1687337-1, -2, -3, -4, -5, -6, -7, -8, -9
Method Blank	Manganese (Mn)-Total	MB-LOR	L1687337-1, -2, -3, -4, -5, -6, -7, -8, -9
Method Blank	Copper (Cu)-Total	MB-LOR	L1687337-1, -2, -3, -4, -5, -6, -7, -8, -9
Method Blank	Manganese (Mn)-Total	MB-LOR	L1687337-1, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Page 1 of 1

Report to:		**Report Format / Distribution**	**Service Requested:** (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description: 42281	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L1687337	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Kidney Metals	Gonad metals	Number of Containers
	QUL near Hazeltine Cr. CSU # 1	04-Oct-15	8:00-16:15	Tissue	X	X				1
	QUL near Hazeltine Cr. CSU # 2	04-Oct-15	8:00-16:15	Tissue	X	X				1
	QUL near Hazeltine Cr. CSU # 3	04-Oct-15	8:00-16:15	Tissue	X	X				1
	QUL near Hazeltine Cr. CSU # 4	04-Oct-15	8:00-16:15	Tissue	X	X				1
	QUL near Hazeltine Cr. CSU # 5	04-Oct-15	8:00-16:15	Tissue	X	X				1
	QUL near Hazeltine Cr. CSU # 6	04-Oct-15	8:00-16:15	Tissue	X	X				1
	QUL near Hazeltine Cr. CSU # 7	04-Oct-15	8:00-16:15	Tissue	X	X				1
	QUL near Hazeltine Cr. CSU # 7X	04-Oct-15	8:00-16:15	Tissue	X	X				1
	QUL near Hazeltine Cr. CSU # 8	04-Oct-15	8:00-16:15	Tissue	X	X				1

L1687337-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Oct. 13, 2015	Jady	OCT 14 2015	9:30AM	-2.8			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 15-OCT-15
Report Date: 14-DEC-15 10:47 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1688080

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc: 42281

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688080-1 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#1 MUSCLE	L1688080-2 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#1 LIVER	L1688080-3 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#1 KIDNEY	L1688080-4 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#2 MUSCLE	L1688080-5 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#2 LIVER
TISSUE						
Physical Tests	% Moisture (%)	80.1	78.1	77.6	78.9	67.3
Metals	Aluminum (Al)-Total (mg/kg)	2.2	<5.0	20.6	<2.0	2.6
	Aluminum (Al)-Total (mg/kg wwt)	0.44	<1.0	4.6	<0.40	0.86
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.108	0.313	0.198	0.094	0.192
	Arsenic (As)-Total (mg/kg wwt)	0.0215	0.0686	0.0444	0.0199	0.0627
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	0.094	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	0.021	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0033
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.154	1.02	<0.0050	0.108
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0337	0.229	<0.0010	0.0353
	Calcium (Ca)-Total (mg/kg)	744	549	612	376	220
	Calcium (Ca)-Total (mg/kg wwt)	148	120	137	79.2	71.9
	Cesium (Cs)-Total (mg/kg)	0.215	0.151	0.277	0.348	0.0999
	Cesium (Cs)-Total (mg/kg wwt)	0.0427	0.0330	0.0621	0.0734	0.0327
	Chromium (Cr)-Total (mg/kg)	<0.050	0.34	<0.20	<0.050	0.127
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.075	<0.040	<0.010	0.041
	Cobalt (Co)-Total (mg/kg)	0.066	0.472	0.711	<0.020	0.103
	Cobalt (Co)-Total (mg/kg wwt)	0.0131	0.103	0.159	<0.0040	0.0338
	Copper (Cu)-Total (mg/kg)	1.58	27.2	4.16	2.00	37.9
	Copper (Cu)-Total (mg/kg wwt)	0.314	5.94	0.930	0.422	12.4
	Iron (Fe)-Total (mg/kg)	13.3	304	443	26.3	1060
	Iron (Fe)-Total (mg/kg wwt)	2.65	66.5	99.2	5.55	346
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1200	686	852	1070	428
	Magnesium (Mg)-Total (mg/kg wwt)	238	150	191	226	140
	Manganese (Mn)-Total (mg/kg)	0.384	4.67	0.971	0.343	2.65
	Manganese (Mn)-Total (mg/kg wwt)	0.076	1.02	0.217	0.072	0.865

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688080-6 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#2 KIDNEY	L1688080-7 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#3 MUSCLE	L1688080-8 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#3 LIVER	L1688080-9 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#3 KIDNEY	L1688080-10 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	80.0	74.1	64.8	80.0	77.4
Metals	Aluminum (Al)-Total (mg/kg)	17.6	2.3	<5.0	<5.0	2.2
	Aluminum (Al)-Total (mg/kg wwt)	3.5	0.60	<1.0	<1.0	0.49
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.173	0.159	0.242	0.129	0.242
	Arsenic (As)-Total (mg/kg wwt)	0.0347	0.0411	0.0851	0.0257	0.0547
	Barium (Ba)-Total (mg/kg)	0.110	<0.050	<0.050	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	0.022	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	1.54	<0.0050	0.064	0.383	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.308	<0.0010	0.0224	0.0767	<0.0010
	Calcium (Ca)-Total (mg/kg)	784	394	231	488	282
	Calcium (Ca)-Total (mg/kg wwt)	157	102	81.2	97.7	63.8
	Cesium (Cs)-Total (mg/kg)	0.462	0.207	0.145	0.422	0.328
	Cesium (Cs)-Total (mg/kg wwt)	0.0924	0.0535	0.0511	0.0845	0.0740
	Chromium (Cr)-Total (mg/kg)	0.28	<0.050	<0.20	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	0.056	<0.010	<0.040	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.378	<0.020	0.092	0.324	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	0.0755	<0.0040	0.0325	0.0649	<0.0040
	Copper (Cu)-Total (mg/kg)	6.16	1.58	27.0	5.98	2.67
	Copper (Cu)-Total (mg/kg wwt)	1.23	0.409	9.52	1.20	0.602
	Iron (Fe)-Total (mg/kg)	793	11.4	167	761	28.3
	Iron (Fe)-Total (mg/kg wwt)	159	2.96	58.8	152	6.39
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	834	917	424	882	1040
	Magnesium (Mg)-Total (mg/kg wwt)	167	237	149	176	236
	Manganese (Mn)-Total (mg/kg)	1.09	0.261	2.58	0.821	0.391
	Manganese (Mn)-Total (mg/kg wwt)	0.219	0.068	0.907	0.164	0.088

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688080-11 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4 LIVER	L1688080-12 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4 KIDNEY	L1688080-13 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4 GONAD	L1688080-17 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4X GONAD	L1688080-18 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#5 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	75.5	78.5	64.1	63.8	74.5
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	12.5	<5.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	2.7	<1.0	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.267	0.183	0.073	0.081	0.123
	Arsenic (As)-Total (mg/kg wwt)	0.0653	0.0393	0.0262	0.0292	0.0313
	Barium (Ba)-Total (mg/kg)	<0.050	0.109	<0.050	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.023	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.125	1.16	<0.010	<0.0050	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.0307	0.250	<0.0020	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/kg)	461	661	944	886	513
	Calcium (Ca)-Total (mg/kg wwt)	113	142	339	321	131
	Cesium (Cs)-Total (mg/kg)	0.241	0.382	0.109	0.0780	0.273
	Cesium (Cs)-Total (mg/kg wwt)	0.0590	0.0823	0.0390	0.0283	0.0695
	Chromium (Cr)-Total (mg/kg)	0.056	0.27	<0.20	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	0.014	0.058	<0.040	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.124	0.213	0.039	0.045	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	0.0304	0.0459	0.0139	0.0163	<0.0040
	Copper (Cu)-Total (mg/kg)	12.5	3.39	12.8	12.3	1.29
	Copper (Cu)-Total (mg/kg wwt)	3.05	0.730	4.62	4.47	0.330
	Iron (Fe)-Total (mg/kg)	432	767	56.0	43.8	10.5
	Iron (Fe)-Total (mg/kg wwt)	106	165	20.1	15.9	2.68
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1060	600	1360	1210	1050
	Magnesium (Mg)-Total (mg/kg wwt)	260	129	491	437	268
	Manganese (Mn)-Total (mg/kg)	5.68	1.57	2.64	1.73	0.251
	Manganese (Mn)-Total (mg/kg wwt)	1.39	0.337	0.950	0.628	0.064

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688080-19 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#5 LIVER	L1688080-20 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#5 KIDNEY	L1688080-21 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#5X MUSCLE	L1688080-22 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#6 MUSCLE	L1688080-23 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#6 LIVER
TISSUE						
Physical Tests	% Moisture (%)	68.6	79.7	76.9	73.9	62.3
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	12.8	<2.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	2.6	<0.40	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.283	0.212	0.093	0.160	0.326
	Arsenic (As)-Total (mg/kg wwt)	0.0887	0.0431	0.0215	0.0416	0.123
	Barium (Ba)-Total (mg/kg)	<0.050	0.086	<0.050	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.018	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.130	0.787	<0.0050	<0.0050	0.048
	Cadmium (Cd)-Total (mg/kg wwt)	0.0407	0.160	<0.0010	<0.0010	0.0182
	Calcium (Ca)-Total (mg/kg)	269	535	386	408	278
	Calcium (Ca)-Total (mg/kg wwt)	84.5	109	89.0	106	105
	Cesium (Cs)-Total (mg/kg)	0.165	0.635	0.319	0.184	0.116
	Cesium (Cs)-Total (mg/kg wwt)	0.0518	0.129	0.0737	0.0480	0.0439
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.050	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.010	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.092	0.419	<0.020	0.021	0.069
	Cobalt (Co)-Total (mg/kg wwt)	0.0289	0.0851	<0.0040	0.0054	0.0260
	Copper (Cu)-Total (mg/kg)	59.3	3.73	1.68	1.93	21.4
	Copper (Cu)-Total (mg/kg wwt)	18.6	0.756	0.387	0.504	8.09
	Iron (Fe)-Total (mg/kg)	256	381	13.5	11.1	147
	Iron (Fe)-Total (mg/kg wwt)	80.5	77.3	3.11	2.89	55.6
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.020	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.0040	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	431	771	1100	890	442
	Magnesium (Mg)-Total (mg/kg wwt)	135	156	254	232	167
	Manganese (Mn)-Total (mg/kg)	4.74	0.631	0.247	0.305	3.04
	Manganese (Mn)-Total (mg/kg wwt)	1.49	0.128	0.057	0.079	1.15

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	Sample ID	L1688080-24	L1688080-25	L1688080-26	L1688080-27	L1688080-28
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL EAST ARM LT#6 KIDNEY	QUL EAST ARM LT#7 MUSCLE	QUL EAST ARM LT#7 LIVER	QUL EAST ARM LT#7 KIDNEY	QUL EAST ARM LT#8 MUSCLE
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	76.3	79.1	55.9	77.0	78.0
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	4.3	<5.0	6.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	0.89	<1.0	1.4	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.190	0.128	0.243	0.250	0.154
	Arsenic (As)-Total (mg/kg wwt)	0.0449	0.0267	0.107	0.0576	0.0339
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	<0.050	0.074	<0.050
	Barium (Ba)-Total (mg/kg wwt)	0.011	<0.010	<0.010	0.017	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.205	<0.0050	0.040	0.228	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.0486	<0.0010	0.0176	0.0524	<0.0010
	Calcium (Ca)-Total (mg/kg)	490	474	271	676	228
	Calcium (Ca)-Total (mg/kg wwt)	116	98.9	119	156	50.0
	Cesium (Cs)-Total (mg/kg)	0.309	0.210	0.0854	0.295	0.323
	Cesium (Cs)-Total (mg/kg wwt)	0.0732	0.0439	0.0376	0.0680	0.0709
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.20	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	<0.040	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.181	0.021	0.069	0.241	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	0.0428	0.0044	0.0302	0.0555	<0.0040
	Copper (Cu)-Total (mg/kg)	10.7	1.56	36.0	7.08	1.48
	Copper (Cu)-Total (mg/kg wwt)	2.53	0.325	15.9	1.63	0.326
	Iron (Fe)-Total (mg/kg)	487	15.5	110	327	14.5
	Iron (Fe)-Total (mg/kg wwt)	115	3.24	48.5	75.3	3.19
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	750	1080	347	892	1070
	Magnesium (Mg)-Total (mg/kg wwt)	178	226	153	206	235
	Manganese (Mn)-Total (mg/kg)	1.06	0.362	1.94	0.839	0.235
	Manganese (Mn)-Total (mg/kg wwt)	0.250	0.076	0.854	0.193	0.052

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	Sample ID	L1688080-29	L1688080-30	L1688080-31	L1688080-32	L1688080-33
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL EAST ARM LT#8 LIVER	QUL EAST ARM LT#8 KIDNEY	QUL EAST ARM LT#8 GONAD	QUL EAST ARM LT#9 MUSCLE	QUL EAST ARM LT#9 LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	86.8	81.5	70.2	77.8	70.5
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<2.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	0.57	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.310	0.154	0.061	0.099	0.175
	Arsenic (As)-Total (mg/kg wwt)	0.0410	0.0284	0.0181	0.0220	0.0516
	Barium (Ba)-Total (mg/kg)	<0.050	0.053	<0.050	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.378	0.770	<0.0050	<0.0050	0.212
	Cadmium (Cd)-Total (mg/kg wwt)	0.0500	0.142	<0.0010	<0.0010	0.0624
	Calcium (Ca)-Total (mg/kg)	964	539	1020	337	233
	Calcium (Ca)-Total (mg/kg wwt)	128	99.4	303	74.8	68.8
	Cesium (Cs)-Total (mg/kg)	0.399	0.502	0.108	0.530	0.267
	Cesium (Cs)-Total (mg/kg wwt)	0.0528	0.0926	0.0323	0.118	0.0786
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.050	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.010	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.164	0.132	0.034	<0.020	0.162
	Cobalt (Co)-Total (mg/kg wwt)	0.0217	0.0243	0.0102	<0.0040	0.0479
	Copper (Cu)-Total (mg/kg)	50.5	3.98	12.1	2.10	32.8
	Copper (Cu)-Total (mg/kg wwt)	6.68	0.735	3.60	0.467	9.68
	Iron (Fe)-Total (mg/kg)	679	710	51.3	22.8	1190
	Iron (Fe)-Total (mg/kg wwt)	89.9	131	15.3	5.06	351
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.020	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.0040	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1220	574	1250	977	389
	Magnesium (Mg)-Total (mg/kg wwt)	161	106	373	217	115
	Manganese (Mn)-Total (mg/kg)	7.26	0.694	0.576	0.296	2.59
	Manganese (Mn)-Total (mg/kg wwt)	0.961	0.128	0.172	0.066	0.765

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	Sample ID	L1688080-34	L1688080-35	L1688080-36	L1688080-37	
	Description	Tissue	Tissue	Tissue	Tissue	
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	
	Sampled Time	16:15	16:15	16:15	16:15	
	Client ID	QUL EAST ARM LT#9 KIDNEY	QUL EAST ARM LT#10 MUSCLE	QUL EAST ARM LT#10 LIVER	QUL EAST ARM LT#10 KIDNEY	
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	80.4	78.3	79.9	82.0	
Metals	Aluminum (Al)-Total (mg/kg)	11.1	<2.0	<5.0	19.9	
	Aluminum (Al)-Total (mg/kg wwt)	2.2	<0.40	<1.0	3.6	
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Arsenic (As)-Total (mg/kg)	0.149	0.243	0.908	0.234	
	Arsenic (As)-Total (mg/kg wwt)	0.0292	0.0529	0.182	0.0421	
	Barium (Ba)-Total (mg/kg)	0.160	<0.050	<0.050	0.145	
	Barium (Ba)-Total (mg/kg wwt)	0.031	<0.010	<0.010	0.026	
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	
	Cadmium (Cd)-Total (mg/kg)	1.26	<0.0050	0.415	2.65	
	Cadmium (Cd)-Total (mg/kg wwt)	0.248	<0.0010	0.0834	0.477	
	Calcium (Ca)-Total (mg/kg)	652	428	383	584	
	Calcium (Ca)-Total (mg/kg wwt)	128	93.1	76.9	105	
	Cesium (Cs)-Total (mg/kg)	0.447	0.303	0.209	0.578	
	Cesium (Cs)-Total (mg/kg wwt)	0.0877	0.0658	0.0420	0.104	
	Chromium (Cr)-Total (mg/kg)	0.29	<0.050	<0.20	0.32	
	Chromium (Cr)-Total (mg/kg wwt)	0.057	<0.010	<0.040	0.057	
	Cobalt (Co)-Total (mg/kg)	0.290	<0.020	0.172	0.468	
	Cobalt (Co)-Total (mg/kg wwt)	0.0569	<0.0040	0.0346	0.0843	
	Copper (Cu)-Total (mg/kg)	3.29	3.03	86.1	3.76	
	Copper (Cu)-Total (mg/kg wwt)	0.646	0.659	17.3	0.677	
	Iron (Fe)-Total (mg/kg)	851	40.1	1810	1160	
	Iron (Fe)-Total (mg/kg wwt)	167	8.71	363	209	
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.050	
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.010	
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	
	Magnesium (Mg)-Total (mg/kg)	673	969	659	687	
	Magnesium (Mg)-Total (mg/kg wwt)	132	211	132	124	
	Manganese (Mn)-Total (mg/kg)	0.947	0.369	5.52	0.954	
	Manganese (Mn)-Total (mg/kg wwt)	0.186	0.080	1.11	0.172	

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688080-1 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#1 MUSCLE	L1688080-2 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#1 LIVER	L1688080-3 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#1 KIDNEY	L1688080-4 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#2 MUSCLE	L1688080-5 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#2 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.899	0.673	1.23	2.37	2.37
	Mercury (Hg)-Total (mg/kg wwt)	0.179	0.147	0.275	0.499	0.776
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.568	0.181	<0.020	0.231
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.124	0.0405	<0.0040	0.0756
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.23	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.052	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	10000	12100	11800	9600	8220
	Phosphorus (P)-Total (mg/kg wwt)	1990	2650	2650	2020	2690
	Potassium (K)-Total (mg/kg)	16900	8850	14200	16800	6110
	Potassium (K)-Total (mg/kg wwt)	3370	1940	3170	3550	2000
	Rubidium (Rb)-Total (mg/kg)	29.5	15.1	21.1	26.7	11.0
	Rubidium (Rb)-Total (mg/kg wwt)	5.88	3.30	4.72	5.63	3.59
	Selenium (Se)-Total (mg/kg)	2.15	7.21	5.10	1.61	6.69
	Selenium (Se)-Total (mg/kg wwt)	0.428	1.58	1.14	0.339	2.19
	Sodium (Na)-Total (mg/kg)	2560	4840	3640	2010	3230
	Sodium (Na)-Total (mg/kg wwt)	509	1060	815	425	1060
	Strontium (Sr)-Total (mg/kg)	0.793	0.81	0.83	0.302	0.319
	Strontium (Sr)-Total (mg/kg wwt)	0.158	0.178	0.185	0.064	0.104
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0355	0.336	0.153	0.0307	0.0662
	Thallium (Tl)-Total (mg/kg wwt)	0.00707	0.0735	0.0343	0.00647	0.0216
	Tin (Sn)-Total (mg/kg)	0.11	0.31	0.40	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.022	0.069	0.089	<0.020	0.028
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	0.0027
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00042	<0.00040	0.00089
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	17.5	87.0	69.2	15.9	79.4
	Zinc (Zn)-Total (mg/kg wwt)	3.47	19.0	15.5	3.35	26.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1688080-6 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#2 KIDNEY	L1688080-7 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#3 MUSCLE	L1688080-8 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#3 LIVER	L1688080-9 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#3 KIDNEY	L1688080-10 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4 MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	5.35	0.277	0.138	0.496	1.36
	Mercury (Hg)-Total (mg/kg wwt)	1.07	0.0718	0.0485	0.0992	0.308
	Molybdenum (Mo)-Total (mg/kg)	0.226	<0.020	0.419	0.170	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0452	<0.0040	0.147	0.0339	<0.0040
	Nickel (Ni)-Total (mg/kg)	0.33	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	0.066	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11200	7620	7380	12400	9020
	Phosphorus (P)-Total (mg/kg wwt)	2240	1970	2600	2480	2030
	Potassium (K)-Total (mg/kg)	12700	12700	5200	16500	15400
	Potassium (K)-Total (mg/kg wwt)	2550	3280	1830	3300	3490
	Rubidium (Rb)-Total (mg/kg)	20.5	32.8	15.1	37.5	36.7
	Rubidium (Rb)-Total (mg/kg wwt)	4.10	8.48	5.33	7.50	8.29
	Selenium (Se)-Total (mg/kg)	10.2	1.36	5.28	4.02	1.27
	Selenium (Se)-Total (mg/kg wwt)	2.04	0.353	1.86	0.805	0.286
	Sodium (Na)-Total (mg/kg)	4860	1520	2180	4070	988
	Sodium (Na)-Total (mg/kg wwt)	973	393	769	815	223
	Strontium (Sr)-Total (mg/kg)	1.85	0.351	0.36	0.78	0.214
	Strontium (Sr)-Total (mg/kg wwt)	0.369	0.091	0.126	0.155	0.048
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.160	0.0231	0.241	0.0838	0.0374
	Thallium (Tl)-Total (mg/kg wwt)	0.0319	0.00598	0.0849	0.0168	0.00843
	Tin (Sn)-Total (mg/kg)	0.37	<0.10	0.10	0.54	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.073	<0.020	0.037	0.108	<0.020
	Uranium (U)-Total (mg/kg)	0.0024	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00048	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	82.1	11.2	58.9	63.0	14.2
	Zinc (Zn)-Total (mg/kg wwt)	16.4	2.90	20.7	12.6	3.20
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1688080-11 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4 LIVER	L1688080-12 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4 KIDNEY	L1688080-13 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4 GONAD	L1688080-17 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#4X GONAD	L1688080-18 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#5 MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	1.26	2.46	0.0858	0.0798	0.538
	Mercury (Hg)-Total (mg/kg wwt)	0.309	0.530	0.0308	0.0289	0.137
	Molybdenum (Mo)-Total (mg/kg)	0.331	0.205	<0.040	<0.020	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0810	0.0441	<0.0080	0.0047	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	0.26	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.056	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	17400	10600	9600	8940	8380
	Phosphorus (P)-Total (mg/kg wwt)	4250	2290	3450	3240	2140
	Potassium (K)-Total (mg/kg)	12300	10300	4890	4940	14400
	Potassium (K)-Total (mg/kg wwt)	3010	2210	1760	1790	3680
	Rubidium (Rb)-Total (mg/kg)	42.6	26.8	9.34	12.3	37.4
	Rubidium (Rb)-Total (mg/kg wwt)	10.4	5.78	3.36	4.46	9.53
	Selenium (Se)-Total (mg/kg)	3.68	5.04	2.92	3.11	1.48
	Selenium (Se)-Total (mg/kg wwt)	0.901	1.09	1.05	1.13	0.377
	Sodium (Na)-Total (mg/kg)	3940	4400	2050	2160	1610
	Sodium (Na)-Total (mg/kg wwt)	965	947	736	782	410
	Strontium (Sr)-Total (mg/kg)	0.582	0.86	3.02	2.08	0.455
	Strontium (Sr)-Total (mg/kg wwt)	0.142	0.186	1.09	0.752	0.116
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.540	0.144	0.0203	0.0172	0.0250
	Thallium (Tl)-Total (mg/kg wwt)	0.132	0.0310	0.00731	0.00622	0.00637
	Tin (Sn)-Total (mg/kg)	<0.10	0.40	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.022	0.085	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	111	79.5	47.4	50.8	11.8
	Zinc (Zn)-Total (mg/kg wwt)	27.2	17.1	17.0	18.4	3.02
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1688080-19 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#5 LIVER	L1688080-20 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#5 KIDNEY	L1688080-21 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#5X MUSCLE	L1688080-22 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#6 MUSCLE	L1688080-23 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#6 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.243	0.611	0.663	0.174	0.0836
	Mercury (Hg)-Total (mg/kg wwt)	0.0763	0.124	0.153	0.0455	0.0316
	Molybdenum (Mo)-Total (mg/kg)	0.344	0.184	<0.020	<0.020	0.318
	Molybdenum (Mo)-Total (mg/kg wwt)	0.108	0.0374	<0.0040	<0.0040	0.120
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	8550	11000	8920	8020	6890
	Phosphorus (P)-Total (mg/kg wwt)	2680	2240	2060	2090	2600
	Potassium (K)-Total (mg/kg)	6140	14500	15900	13100	5210
	Potassium (K)-Total (mg/kg wwt)	1930	2950	3660	3420	1970
	Rubidium (Rb)-Total (mg/kg)	14.9	33.6	41.0	32.9	11.9
	Rubidium (Rb)-Total (mg/kg wwt)	4.67	6.82	9.46	8.58	4.49
	Selenium (Se)-Total (mg/kg)	4.93	3.78	1.54	1.42	5.11
	Selenium (Se)-Total (mg/kg wwt)	1.55	0.768	0.357	0.369	1.93
	Sodium (Na)-Total (mg/kg)	3090	3680	1920	1870	2030
	Sodium (Na)-Total (mg/kg wwt)	971	746	444	487	767
	Strontium (Sr)-Total (mg/kg)	0.33	0.91	0.352	0.424	0.48
	Strontium (Sr)-Total (mg/kg wwt)	0.104	0.184	0.081	0.111	0.182
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.278	0.0836	0.0306	0.0235	0.249
	Thallium (Tl)-Total (mg/kg wwt)	0.0872	0.0170	0.00706	0.00612	0.0941
	Tin (Sn)-Total (mg/kg)	0.11	0.40	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.034	0.080	<0.020	<0.020	0.028
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	74.8	59.4	14.0	14.4	61.4
	Zinc (Zn)-Total (mg/kg wwt)	23.5	12.0	3.23	3.74	23.2
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1688080-24 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#6 KIDNEY	L1688080-25 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#7 MUSCLE	L1688080-26 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#7 LIVER	L1688080-27 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#7 KIDNEY	L1688080-28 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#8 MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.280	0.208	0.0614	0.281	1.52
	Mercury (Hg)-Total (mg/kg wwt)	0.0663	0.0434	0.0271	0.0647	0.333
	Molybdenum (Mo)-Total (mg/kg)	0.150	<0.020	0.249	0.184	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0355	<0.0040	0.110	0.0423	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	0.32	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.073	<0.040
	Phosphorus (P)-Total (mg/kg)	11700	9350	4870	11900	8860
	Phosphorus (P)-Total (mg/kg wwt)	2770	1950	2140	2740	1940
	Potassium (K)-Total (mg/kg)	13300	16700	3990	13900	15300
	Potassium (K)-Total (mg/kg wwt)	3140	3490	1760	3210	3350
	Rubidium (Rb)-Total (mg/kg)	29.2	42.0	10.0	35.0	38.6
	Rubidium (Rb)-Total (mg/kg wwt)	6.92	8.77	4.42	8.07	8.47
	Selenium (Se)-Total (mg/kg)	3.94	1.69	3.92	4.02	1.54
	Selenium (Se)-Total (mg/kg wwt)	0.932	0.352	1.73	0.927	0.337
	Sodium (Na)-Total (mg/kg)	3350	1220	1160	2150	1840
	Sodium (Na)-Total (mg/kg wwt)	792	255	509	496	404
	Strontium (Sr)-Total (mg/kg)	0.79	0.515	0.35	0.71	0.137
	Strontium (Sr)-Total (mg/kg wwt)	0.187	0.107	0.153	0.164	0.030
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0980	0.0255	0.186	0.113	0.0251
	Thallium (Tl)-Total (mg/kg wwt)	0.0232	0.00532	0.0819	0.0261	0.00551
	Tin (Sn)-Total (mg/kg)	0.46	0.12	<0.10	0.72	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.109	0.025	0.031	0.165	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	69.1	14.8	52.4	84.6	10.6
	Zinc (Zn)-Total (mg/kg wwt)	16.4	3.09	23.1	19.5	2.32
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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Grouping	Analyte	L1688080-29 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#8 LIVER	L1688080-30 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#8 KIDNEY	L1688080-31 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#8 GONAD	L1688080-32 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#9 MUSCLE	L1688080-33 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#9 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	3.43	2.99	0.145	2.35	1.99
	Mercury (Hg)-Total (mg/kg wwt)	0.453	0.552	0.0433	0.521	0.588
	Molybdenum (Mo)-Total (mg/kg)	0.295	0.131	<0.020	<0.020	0.280
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0390	0.0241	0.0040	<0.0040	0.0826
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	18700	9940	10000	8420	7060
	Phosphorus (P)-Total (mg/kg wwt)	2470	1830	2990	1870	2080
	Potassium (K)-Total (mg/kg)	15100	11700	7410	14400	6510
	Potassium (K)-Total (mg/kg wwt)	2000	2160	2210	3190	1920
	Rubidium (Rb)-Total (mg/kg)	34.6	26.8	16.2	28.4	11.9
	Rubidium (Rb)-Total (mg/kg wwt)	4.58	4.95	4.83	6.31	3.50
	Selenium (Se)-Total (mg/kg)	7.56	4.34	3.59	1.81	4.64
	Selenium (Se)-Total (mg/kg wwt)	1.00	0.801	1.07	0.401	1.37
	Sodium (Na)-Total (mg/kg)	8440	5330	3120	2240	3550
	Sodium (Na)-Total (mg/kg wwt)	1120	984	931	498	1050
	Strontium (Sr)-Total (mg/kg)	1.59	0.87	2.52	0.315	0.29
	Strontium (Sr)-Total (mg/kg wwt)	0.210	0.160	0.751	0.070	0.085
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.504	0.0629	0.0371	0.0265	0.129
	Thallium (Tl)-Total (mg/kg wwt)	0.0667	0.0116	0.0111	0.00587	0.0380
	Tin (Sn)-Total (mg/kg)	0.28	0.27	<0.10	<0.10	0.11
	Tin (Sn)-Total (mg/kg wwt)	0.037	0.050	<0.020	<0.020	0.032
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	147	60.0	49.6	14.9	67.3
	Zinc (Zn)-Total (mg/kg wwt)	19.5	11.1	14.8	3.32	19.9
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688080-34 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#9 KIDNEY	L1688080-35 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#10 MUSCLE	L1688080-36 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#10 LIVER	L1688080-37 Tissue 10-SEP-15 16:15 QUL EAST ARM LT#10 KIDNEY	
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	4.44	2.24	2.42	4.14	
	Mercury (Hg)-Total (mg/kg wwt)	0.871	0.487	0.486	0.744	
	Molybdenum (Mo)-Total (mg/kg)	0.204	<0.020	0.636	0.217	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0399	<0.0040	0.128	0.0391	
	Nickel (Ni)-Total (mg/kg)	0.27	<0.20	<0.20	0.40	
	Nickel (Ni)-Total (mg/kg wwt)	0.053	<0.040	<0.040	0.073	
	Phosphorus (P)-Total (mg/kg)	11000	8710	12500	11100	
	Phosphorus (P)-Total (mg/kg wwt)	2150	1890	2520	1990	
	Potassium (K)-Total (mg/kg)	13100	14900	9230	15800	
	Potassium (K)-Total (mg/kg wwt)	2570	3240	1850	2830	
	Rubidium (Rb)-Total (mg/kg)	22.2	32.1	19.1	26.3	
	Rubidium (Rb)-Total (mg/kg wwt)	4.35	6.97	3.83	4.74	
	Selenium (Se)-Total (mg/kg)	8.51	1.61	10.1	9.42	
	Selenium (Se)-Total (mg/kg wwt)	1.67	0.349	2.04	1.69	
	Sodium (Na)-Total (mg/kg)	5970	2280	6030	5990	
	Sodium (Na)-Total (mg/kg wwt)	1170	496	1210	1080	
	Strontium (Sr)-Total (mg/kg)	1.76	0.407	0.50	1.39	
	Strontium (Sr)-Total (mg/kg wwt)	0.345	0.089	0.101	0.251	
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg)	0.0921	0.0333	0.323	0.0892	
	Thallium (Tl)-Total (mg/kg wwt)	0.0181	0.00723	0.0648	0.0160	
	Tin (Sn)-Total (mg/kg)	0.36	<0.10	0.18	0.22	
	Tin (Sn)-Total (mg/kg wwt)	0.071	<0.020	0.037	0.039	
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	0.0027	
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	0.00049	
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	
	Zinc (Zn)-Total (mg/kg)	64.6	16.5	117	68.1	
	Zinc (Zn)-Total (mg/kg wwt)	12.7	3.60	23.5	12.3	
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report to:		Report Format / Distribution				Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard	☑ Other			◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF	☑ Excel	☐ Digital	☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file			○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:				○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:					Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:				Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:				
Contact:		PO / AFE:				
Address:		Legal Site Description:			42281	
Phone:	Fax:	Quote #:				
Lab Work Order # (lab use only)	L1688080	ALS Contact:	Can Dang	Sampler:	Dolghan,Zirnhelt	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Kidney Metals	Gonad metals						Number of Containers
	QUL East Arm LT # 1	10-Sep-15	8:00-16:15	Tissue	X	X	X	X							3
	QUL East Arm LT # 2	10-Sep-15	8:00-16:15	Tissue	X	X	X	X							3
	QUL East Arm LT # 3	10-Sep-15	8:00-16:15	Tissue	X	X	X	X							3
	QUL East Arm LT # 4	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	X						4
	QUL East Arm LT # 4X	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	X						4
	QUL East Arm LT # 5	10-Sep-15	8:00-16:15	Tissue	X	X	X	X							3
	QUL East Arm LT # 5X	10-Sep-15	8:00-16:15	Tissue	X	X									1
	QUL East Arm LT # 6	10-Sep-15	8:00-16:15	Tissue	X	X	X	X							3
	QUL East Arm LT # 7	10-Sep-15	8:00-16:15	Tissue	X	X	X	X							3
	QUL East Arm LT # 8	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	X						4
	QUL East Arm LT # 9	10-Sep-15	8:00-16:15	Tissue	X	X	X	X							3
	QUL East Arm LT # 10														

L1688080-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Oct. 14, 2015	lady	OCT 15 2015	9:30AM	-2.0 C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 15-OCT-15
Report Date: 08-DEC-15 16:52 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1688082

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc: 42281

Comments: The sample identify as "QUL NEAR HAZELTINE CR. NSC#3 KIDNEY" was not received. Five extra tissue samples were received. Metals analyses was performed on the five extra samples as requested.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688082-1	L1688082-2	L1688082-3	L1688082-4	L1688082-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15	04-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR HAZELTINE CR. NSC#1 MUSCLE	QUL NEAR HAZELTINE CR. NSC#1 LIVER	QUL NEAR HAZELTINE CR. NSC#1 KIDNEY	QUL NEAR HAZELTINE CR. NSC#2 MUSCLE	QUL NEAR HAZELTINE CR. NSC#2 LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	79.2	66.0	71.5	79.4	70.8
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.063	0.147	0.133	0.067	0.334
	Arsenic (As)-Total (mg/kg wwt)	0.0131	0.0499	0.0378	0.0137	0.0975
	Barium (Ba)-Total (mg/kg)	0.116	0.099	0.144	0.165	0.054
	Barium (Ba)-Total (mg/kg wwt)	0.024	0.034	0.041	0.034	0.016
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.065	0.955	0.0052	0.058
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0220	0.272	0.0011	0.0169
	Calcium (Ca)-Total (mg/kg)	1980	458	579	1500	363
	Calcium (Ca)-Total (mg/kg wwt)	413	156	165	308	106
	Cesium (Cs)-Total (mg/kg)	0.193	0.0765	0.167	0.157	0.125
	Cesium (Cs)-Total (mg/kg wwt)	0.0402	0.0260	0.0477	0.0324	0.0364
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	<0.020	0.419	<0.020	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	<0.0040	0.119	<0.0040	0.0050
	Copper (Cu)-Total (mg/kg)	3.33	7.06	2.80	2.02	8.69
	Copper (Cu)-Total (mg/kg wwt)	0.695	2.40	0.798	0.415	2.54
	Iron (Fe)-Total (mg/kg)	21.6	233	269	12.7	115
	Iron (Fe)-Total (mg/kg wwt)	4.51	79.1	76.6	2.61	33.5
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1360	452	616	1190	641
	Magnesium (Mg)-Total (mg/kg wwt)	283	154	176	244	187
	Manganese (Mn)-Total (mg/kg)	0.665	1.43	1.34	0.534	1.85
	Manganese (Mn)-Total (mg/kg wwt)	0.139	0.486	0.380	0.110	0.541

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688082-6 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#2 KIDNEY	L1688082-7 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#3 MUSCLE	L1688082-9 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4 MUSCLE	L1688082-10 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4 LIVER	L1688082-11 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4 KIDNEY
TISSUE						
Physical Tests	% Moisture (%)	53.6	79.0	79.7	71.2	71.7
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<2.0	11.2	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<0.40	3.2	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.539	0.095	0.032	0.112	0.117
	Arsenic (As)-Total (mg/kg wwt)	0.250	0.0199	0.0064	0.0322	0.0331
	Barium (Ba)-Total (mg/kg)	0.562	0.144	0.156	0.267	0.248
	Barium (Ba)-Total (mg/kg wwt)	0.261	0.030	0.032	0.077	0.070
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.266	<0.0050	<0.0050	0.046	0.958
	Cadmium (Cd)-Total (mg/kg wwt)	0.124	<0.0010	<0.0010	0.0132	0.271
	Calcium (Ca)-Total (mg/kg)	477	2320	2290	383	520
	Calcium (Ca)-Total (mg/kg wwt)	221	488	465	110	147
	Cesium (Cs)-Total (mg/kg)	0.0803	0.188	0.220	0.154	0.192
	Cesium (Cs)-Total (mg/kg wwt)	0.0372	0.0395	0.0446	0.0444	0.0544
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.050	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	<0.010	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	0.086	<0.020	<0.020	<0.020	0.470
	Cobalt (Co)-Total (mg/kg wwt)	0.0398	<0.0040	<0.0040	0.0056	0.133
	Copper (Cu)-Total (mg/kg)	1.96	2.55	1.82	6.18	4.46
	Copper (Cu)-Total (mg/kg wwt)	0.910	0.535	0.370	1.78	1.26
	Iron (Fe)-Total (mg/kg)	102	14.5	13.0	152	327
	Iron (Fe)-Total (mg/kg wwt)	47.2	3.05	2.64	43.9	92.6
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.020	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.0040	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	420	1160	1160	487	682
	Magnesium (Mg)-Total (mg/kg wwt)	195	243	236	140	193
	Manganese (Mn)-Total (mg/kg)	0.507	0.558	0.669	1.91	1.79
	Manganese (Mn)-Total (mg/kg wwt)	0.235	0.117	0.136	0.549	0.507

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688082-12 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4 GONAD	L1688082-13 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4X MUSCLE	L1688082-14 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#5 MUSCLE	L1688082-15 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#5 LIVER	L1688082-16 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#5 KIDNEY
TISSUE						
Physical Tests	% Moisture (%)	71.8	78.4	79.9	75.7	80.5
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<2.0	14.9	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<0.40	3.6	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.067	0.038	0.077	0.256	0.209
	Arsenic (As)-Total (mg/kg wwt)	0.0189	0.0082	0.0156	0.0620	0.0408
	Barium (Ba)-Total (mg/kg)	<0.050	0.097	0.142	0.183	0.167
	Barium (Ba)-Total (mg/kg wwt)	0.011	0.021	0.029	0.044	0.033
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.023	<0.0050	<0.0050	0.142	1.36
	Cadmium (Cd)-Total (mg/kg wwt)	0.0066	<0.0010	<0.0010	0.0344	0.266
	Calcium (Ca)-Total (mg/kg)	730	1180	2500	611	1020
	Calcium (Ca)-Total (mg/kg wwt)	206	255	503	148	198
	Cesium (Cs)-Total (mg/kg)	0.255	0.198	0.214	0.129	0.279
	Cesium (Cs)-Total (mg/kg wwt)	0.0720	0.0428	0.0430	0.0313	0.0544
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.050	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	<0.010	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	0.035	<0.020	<0.020	0.033	0.311
	Cobalt (Co)-Total (mg/kg wwt)	0.0099	<0.0040	<0.0040	0.0080	0.0606
	Copper (Cu)-Total (mg/kg)	3.33	1.56	2.00	7.80	3.06
	Copper (Cu)-Total (mg/kg wwt)	0.938	0.336	0.401	1.89	0.596
	Iron (Fe)-Total (mg/kg)	93.2	12.2	15.8	157	212
	Iron (Fe)-Total (mg/kg wwt)	26.2	2.63	3.17	38.0	41.3
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.020	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.0040	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	695	1090	1250	730	965
	Magnesium (Mg)-Total (mg/kg wwt)	196	235	252	177	188
	Manganese (Mn)-Total (mg/kg)	5.71	0.447	0.826	5.15	1.43
	Manganese (Mn)-Total (mg/kg wwt)	1.61	0.096	0.166	1.25	0.279

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688082-17 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#7 MUSCLE	L1688082-18 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#7 KIDNEY	L1688082-19 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#5 GONAD (2)	L1688082-20 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#6 MUSCLE (2)	L1688082-21 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#6 KIDNEY (2)
TISSUE						
Physical Tests	% Moisture (%)	78.3	68.8	72.8	76.7	83.3
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.034	0.085	0.133	0.053	0.125
	Arsenic (As)-Total (mg/kg wwt)	0.0075	0.0264	0.0360	0.0124	0.0209
	Barium (Ba)-Total (mg/kg)	0.193	0.114	0.055	0.126	0.146
	Barium (Ba)-Total (mg/kg wwt)	0.042	0.036	0.015	0.029	0.024
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.308	0.087	<0.0050	1.06
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0962	0.0236	<0.0010	0.177
	Calcium (Ca)-Total (mg/kg)	3170	544	808	1740	914
	Calcium (Ca)-Total (mg/kg wwt)	688	170	219	405	153
	Cesium (Cs)-Total (mg/kg)	0.197	0.168	0.140	0.186	0.383
	Cesium (Cs)-Total (mg/kg wwt)	0.0428	0.0526	0.0379	0.0433	0.0641
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.040	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	0.173	0.052	<0.020	0.414
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0542	0.0141	<0.0040	0.0694
	Copper (Cu)-Total (mg/kg)	1.81	1.90	2.83	1.77	4.61
	Copper (Cu)-Total (mg/kg wwt)	0.394	0.594	0.768	0.412	0.772
	Iron (Fe)-Total (mg/kg)	13.6	101	145	14.4	293
	Iron (Fe)-Total (mg/kg wwt)	2.96	31.4	39.3	3.34	49.0
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1260	472	721	1040	1100
	Magnesium (Mg)-Total (mg/kg wwt)	274	147	196	242	184
	Manganese (Mn)-Total (mg/kg)	1.08	0.854	2.50	0.527	1.84
	Manganese (Mn)-Total (mg/kg wwt)	0.235	0.267	0.680	0.123	0.308

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688082-22	L1688082-23			
	Description	Tissue	Tissue			
	Sampled Date	04-OCT-15	04-OCT-15			
	Sampled Time	16:15	16:15			
	Client ID	QUL NEAR HAZELTINE CR. NSC#6 GONAD (2)	QUL NEAR HAZELTINE CR. NSC#7 GONAD (2)			
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	75.2	75.6			
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0			
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0			
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010			
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020			
	Arsenic (As)-Total (mg/kg)	0.149	0.057			
	Arsenic (As)-Total (mg/kg wwt)	0.0371	0.0140			
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050			
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010			
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010			
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020			
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010			
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020			
	Boron (B)-Total (mg/kg)	<1.0	<1.0			
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20			
	Cadmium (Cd)-Total (mg/kg)	0.042	0.042			
	Cadmium (Cd)-Total (mg/kg wwt)	0.0103	0.0103			
	Calcium (Ca)-Total (mg/kg)	784	857			
	Calcium (Ca)-Total (mg/kg wwt)	195	209			
	Cesium (Cs)-Total (mg/kg)	0.263	0.245			
	Cesium (Cs)-Total (mg/kg wwt)	0.0653	0.0598			
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20			
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040			
	Cobalt (Co)-Total (mg/kg)	0.034	0.043			
	Cobalt (Co)-Total (mg/kg wwt)	0.0084	0.0106			
	Copper (Cu)-Total (mg/kg)	3.81	3.48			
	Copper (Cu)-Total (mg/kg wwt)	0.944	0.850			
	Iron (Fe)-Total (mg/kg)	117	129			
	Iron (Fe)-Total (mg/kg wwt)	29.0	31.4			
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050			
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010			
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50			
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10			
	Magnesium (Mg)-Total (mg/kg)	893	747			
	Magnesium (Mg)-Total (mg/kg wwt)	222	182			
	Manganese (Mn)-Total (mg/kg)	3.93	5.69			
	Manganese (Mn)-Total (mg/kg wwt)	0.975	1.39			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688082-1 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#1 MUSCLE	L1688082-2 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#1 LIVER	L1688082-3 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#1 KIDNEY	L1688082-4 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#2 MUSCLE	L1688082-5 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#2 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	1.31	0.160	0.142	0.589	0.126
	Mercury (Hg)-Total (mg/kg wwt)	0.272	0.0545	0.0403	0.121	0.0369
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.143	0.275	<0.020	0.186
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0484	0.0785	<0.0040	0.0542
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11700	3280	8980	8960	6740
	Phosphorus (P)-Total (mg/kg wwt)	2430	1110	2560	1840	1970
	Potassium (K)-Total (mg/kg)	18700	4920	10900	14800	7160
	Potassium (K)-Total (mg/kg wwt)	3900	1670	3100	3040	2090
	Rubidium (Rb)-Total (mg/kg)	41.4	12.8	26.6	32.3	17.8
	Rubidium (Rb)-Total (mg/kg wwt)	8.63	4.36	7.58	6.64	5.18
	Selenium (Se)-Total (mg/kg)	2.62	3.96	3.37	1.76	2.49
	Selenium (Se)-Total (mg/kg wwt)	0.546	1.35	0.959	0.362	0.726
	Sodium (Na)-Total (mg/kg)	1970	1850	2560	1160	1280
	Sodium (Na)-Total (mg/kg wwt)	410	627	728	239	372
	Strontium (Sr)-Total (mg/kg)	2.27	0.58	0.42	1.56	0.39
	Strontium (Sr)-Total (mg/kg wwt)	0.473	0.196	0.120	0.320	0.113
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0089	0.0041	0.0071	0.0107	0.0296
	Thallium (Tl)-Total (mg/kg wwt)	0.00185	0.00138	0.00203	0.00219	0.00865
	Tin (Sn)-Total (mg/kg)	0.20	0.19	1.40	0.15	0.15
	Tin (Sn)-Total (mg/kg wwt)	0.042	0.064	0.400	0.032	0.045
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0057	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00161	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	30.0	58.9	73.7	26.6	55.7
	Zinc (Zn)-Total (mg/kg wwt)	6.24	20.0	21.0	5.48	16.3
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688082-6 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#2 KIDNEY	L1688082-7 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#3 MUSCLE	L1688082-9 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4 MUSCLE	L1688082-10 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4 LIVER	L1688082-11 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4 KIDNEY
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0570	0.341	1.74	0.280	0.204
	Mercury (Hg)-Total (mg/kg wwt)	0.0264	0.0717	0.353	0.0808	0.0576
	Molybdenum (Mo)-Total (mg/kg)	0.096	<0.020	<0.020	0.121	0.283
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0445	<0.0040	<0.0040	0.0347	0.0800
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	4940	9130	9080	5290	9870
	Phosphorus (P)-Total (mg/kg wwt)	2290	1920	1840	1520	2790
	Potassium (K)-Total (mg/kg)	6140	13100	14900	6400	9850
	Potassium (K)-Total (mg/kg wwt)	2850	2760	3030	1840	2790
	Rubidium (Rb)-Total (mg/kg)	14.3	30.5	33.9	17.1	24.2
	Rubidium (Rb)-Total (mg/kg wwt)	6.62	6.41	6.88	4.92	6.85
	Selenium (Se)-Total (mg/kg)	1.17	1.65	1.90	3.09	3.57
	Selenium (Se)-Total (mg/kg wwt)	0.542	0.347	0.387	0.891	1.01
	Sodium (Na)-Total (mg/kg)	770	1350	1160	2060	2100
	Sodium (Na)-Total (mg/kg wwt)	357	283	236	593	593
	Strontium (Sr)-Total (mg/kg)	0.38	3.09	3.45	0.58	0.50
	Strontium (Sr)-Total (mg/kg wwt)	0.177	0.650	0.701	0.168	0.142
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0081	0.0106	0.0074	0.0104	0.0277
	Thallium (Tl)-Total (mg/kg wwt)	0.00377	0.00223	0.00151	0.00300	0.00783
	Tin (Sn)-Total (mg/kg)	0.38	0.11	<0.10	0.16	0.49
	Tin (Sn)-Total (mg/kg wwt)	0.175	0.023	<0.020	0.047	0.140
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	0.0028
	Uranium (U)-Total (mg/kg wwt)	0.00062	<0.00040	<0.00040	<0.00040	0.00080
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	79.5	41.9	18.4	58.7	97.1
	Zinc (Zn)-Total (mg/kg wwt)	36.9	8.79	3.74	16.9	27.5
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688082-12 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4 GONAD	L1688082-13 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#4X MUSCLE	L1688082-14 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#5 MUSCLE	L1688082-15 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#5 LIVER	L1688082-16 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#5 KIDNEY
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0930	1.58	1.19	0.166	0.171
	Mercury (Hg)-Total (mg/kg wwt)	0.0262	0.342	0.239	0.0403	0.0333
	Molybdenum (Mo)-Total (mg/kg)	0.152	<0.020	<0.020	0.207	0.312
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0428	<0.0040	<0.0040	0.0502	0.0608
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	8560	8100	10600	7320	10800
	Phosphorus (P)-Total (mg/kg wwt)	2410	1750	2120	1780	2110
	Potassium (K)-Total (mg/kg)	8080	13900	16900	7930	15300
	Potassium (K)-Total (mg/kg wwt)	2280	2990	3390	1920	2990
	Rubidium (Rb)-Total (mg/kg)	20.7	32.1	36.7	15.8	34.8
	Rubidium (Rb)-Total (mg/kg wwt)	5.82	6.92	7.39	3.82	6.79
	Selenium (Se)-Total (mg/kg)	5.24	1.74	2.46	3.55	4.27
	Selenium (Se)-Total (mg/kg wwt)	1.48	0.375	0.494	0.861	0.833
	Sodium (Na)-Total (mg/kg)	1580	1100	1600	2320	2600
	Sodium (Na)-Total (mg/kg wwt)	446	238	322	563	506
	Strontium (Sr)-Total (mg/kg)	0.39	1.59	3.05	0.79	0.76
	Strontium (Sr)-Total (mg/kg wwt)	0.110	0.344	0.612	0.192	0.147
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0071	0.0048	0.0093	0.0168	0.0144
	Thallium (Tl)-Total (mg/kg wwt)	0.00200	0.00104	0.00187	0.00407	0.00281
	Tin (Sn)-Total (mg/kg)	0.12	<0.10	0.18	0.39	1.30
	Tin (Sn)-Total (mg/kg wwt)	0.035	<0.020	0.037	0.094	0.253
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	0.0040
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	0.00077
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	103	18.5	24.4	59.1	94.5
	Zinc (Zn)-Total (mg/kg wwt)	29.1	3.99	4.90	14.3	18.4
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688082-17 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#7 MUSCLE	L1688082-18 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#7 KIDNEY	L1688082-19 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#5 GONAD (2)	L1688082-20 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#6 MUSCLE (2)	L1688082-21 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. NSC#6 KIDNEY (2)
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	1.56	0.114	0.0776	1.33	0.282
	Mercury (Hg)-Total (mg/kg wwt)	0.339	0.0355	0.0211	0.310	0.0472
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.145	0.172	<0.020	0.360
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0454	0.0468	<0.0040	0.0603
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	10300	6240	8330	8450	13100
	Phosphorus (P)-Total (mg/kg wwt)	2230	1950	2260	1970	2200
	Potassium (K)-Total (mg/kg)	15300	8260	8050	13200	18700
	Potassium (K)-Total (mg/kg wwt)	3310	2580	2180	3070	3130
	Rubidium (Rb)-Total (mg/kg)	30.5	17.3	18.8	28.6	37.6
	Rubidium (Rb)-Total (mg/kg wwt)	6.62	5.40	5.11	6.66	6.29
	Selenium (Se)-Total (mg/kg)	2.13	1.96	5.92	1.63	4.41
	Selenium (Se)-Total (mg/kg wwt)	0.461	0.613	1.61	0.378	0.738
	Sodium (Na)-Total (mg/kg)	1710	1800	1880	1180	4040
	Sodium (Na)-Total (mg/kg wwt)	372	562	511	275	677
	Strontium (Sr)-Total (mg/kg)	3.95	0.61	0.44	2.17	0.75
	Strontium (Sr)-Total (mg/kg wwt)	0.857	0.192	0.119	0.505	0.126
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0033	0.0043	0.0090	0.0062	0.0136
	Thallium (Tl)-Total (mg/kg wwt)	0.00071	0.00135	0.00244	0.00144	0.00228
	Tin (Sn)-Total (mg/kg)	<0.10	0.58	0.22	<0.10	0.89
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.181	0.058	0.021	0.150
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0022	<0.0020	0.0048
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00058	0.00059	<0.00040	0.00080
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	0.13
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.022
	Zinc (Zn)-Total (mg/kg)	26.9	48.3	146	18.9	89.3
	Zinc (Zn)-Total (mg/kg wwt)	5.83	15.1	39.6	4.41	15.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688082-22	L1688082-23			
	Description	Tissue	Tissue			
	Sampled Date	04-OCT-15	04-OCT-15			
	Sampled Time	16:15	16:15			
	Client ID	QUL NEAR HAZELTINE CR. NSC#6 GONAD (2)	QUL NEAR HAZELTINE CR. NSC#7 GONAD (2)			
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.124	0.151			
	Mercury (Hg)-Total (mg/kg wwt)	0.0307	0.0370			
	Molybdenum (Mo)-Total (mg/kg)	0.177	0.157			
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0440	0.0383			
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20			
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040			
	Phosphorus (P)-Total (mg/kg)	8460	8180			
	Phosphorus (P)-Total (mg/kg wwt)	2100	2000			
	Potassium (K)-Total (mg/kg)	9390	10100			
	Potassium (K)-Total (mg/kg wwt)	2330	2470			
	Rubidium (Rb)-Total (mg/kg)	21.3	19.8			
	Rubidium (Rb)-Total (mg/kg wwt)	5.29	4.84			
	Selenium (Se)-Total (mg/kg)	4.63	4.51			
	Selenium (Se)-Total (mg/kg wwt)	1.15	1.10			
	Sodium (Na)-Total (mg/kg)	2350	2840			
	Sodium (Na)-Total (mg/kg wwt)	582	693			
	Strontium (Sr)-Total (mg/kg)	0.41	0.65			
	Strontium (Sr)-Total (mg/kg wwt)	0.102	0.159			
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020			
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040			
	Thallium (Tl)-Total (mg/kg)	0.0117	0.0040			
	Thallium (Tl)-Total (mg/kg wwt)	0.00290	0.00098			
	Tin (Sn)-Total (mg/kg)	0.15	0.15			
	Tin (Sn)-Total (mg/kg wwt)	0.037	0.036			
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020			
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040			
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10			
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020			
	Zinc (Zn)-Total (mg/kg)	119	109			
	Zinc (Zn)-Total (mg/kg wwt)	29.6	26.6			
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20			
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Molybdenum (Mo)-Total	DUP-H	L1688082-1
Duplicate	Molybdenum (Mo)-Total	DUP-H	L1688082-1
Method Blank	Uranium (U)-Total	MB-LOR	L1688082-1
Method Blank	Uranium (U)-Total	MB-LOR	L1688082-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Reference Information

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA Tissue % Moisture in Tissues ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	**Analysis Request**
Company:		Job #:	Pleas
Contact:		PO / AFE:	
Address:		Legal Site Description: 42281	L1688082-COFC
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L1688082	**ALS Contact:** Can Dang	**Sampler:** Dolighan,Zirnhelt

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Kidney Metals	Gonad metals	Number of Containers
	QUL near Hazeltine Cr. NSC # 1	15-Oct-15	8:00-16:15	Tissue	X	X	X	X		3
	QUL near Hazeltine Cr. NSC # 2	15-Oct-15	8:00-16:15	Tissue	X	X	X	X		3
	QUL near Hazeltine Cr. NSC # 3	15-Oct-15	8:00-16:15	Tissue	X	X		X		2
	QUL near Hazeltine Cr. NSC # 4	15-Oct-15	8:00-16:15	Tissue	X	X	X	X	X	4
	QUL near Hazeltine Cr. NSC # 4X	15-Oct-15	8:00-16:15	Tissue	X	X				1
	QUL near Hazeltine Cr. NSC # 5	15-Oct-15	8:00-16:15	Tissue	X	X	X	X		3
	QUL near Hazeltine Cr. NSC # 7	15-Oct-15	8:00-16:15	Tissue	X	X		X		2
	Note to lab: Liver # 4 was very small,difficult to dissect (extr.material?)									

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Oct. 14, 2015	Lady	OCT 15 2015	9:30Am	-2.0°C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 16-OCT-15
Report Date: 09-DEC-15 12:21 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1688995

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc: 42281

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688995-1	L1688995-2	L1688995-3	L1688995-4	L1688995-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR LIKELY KO#1 MUSCLE	QUL NEAR LIKELY KO#1 LIVER	QUL NEAR LIKELY KO#1 KIDNEY	QUL NEAR LIKELY KO#1X MUSCLE	QUL NEAR LIKELY KO#2 MUSCLE
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	85.3	78.0	80.9	86.4	82.8
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.074	0.225	0.279	0.075	0.073
	Arsenic (As)-Total (mg/kg wwt)	0.0109	0.0495	0.0533	0.0102	0.0127
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	<0.050	0.059	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.575	2.03	<0.0050	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.127	0.388	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/kg)	825	282	624	1280	651
	Calcium (Ca)-Total (mg/kg wwt)	121	62.1	119	175	112
	Cesium (Cs)-Total (mg/kg)	0.209	0.0546	0.0889	0.209	0.189
	Cesium (Cs)-Total (mg/kg wwt)	0.0306	0.0120	0.0170	0.0284	0.0326
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	0.49	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	0.093	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.025	0.096	0.791	0.031	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0211	0.151	0.0042	<0.0040
	Copper (Cu)-Total (mg/kg)	3.36	621	22.1	3.92	3.24
	Copper (Cu)-Total (mg/kg wwt)	0.493	137	4.22	0.535	0.559
	Iron (Fe)-Total (mg/kg)	31.5	1250	595	39.5	28.0
	Iron (Fe)-Total (mg/kg wwt)	4.62	275	114	5.38	4.83
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1240	634	734	1330	1210
	Magnesium (Mg)-Total (mg/kg wwt)	183	140	140	182	209
	Manganese (Mn)-Total (mg/kg)	0.609	7.34	2.22	0.823	0.505
	Manganese (Mn)-Total (mg/kg wwt)	0.089	1.62	0.425	0.112	0.087

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688995-6 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#2 LIVER	L1688995-7 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#2 KIDNEY	L1688995-8 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#3 MUSCLE	L1688995-9 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#3 LIVER	L1688995-10 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#3 KIDNEY
TISSUE						
Physical Tests	% Moisture (%)	76.2	80.5	82.8	78.2	81.3
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<2.0	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	<0.40	<1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.222	0.216	0.080	0.245	0.292
	Arsenic (As)-Total (mg/kg wwt)	0.0530	0.0422	0.0138	0.0533	0.0545
	Barium (Ba)-Total (mg/kg)	<0.050	0.108	<0.050	<0.050	0.080
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.021	<0.010	<0.010	0.015
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.485	1.87	<0.0050	0.517	1.58
	Cadmium (Cd)-Total (mg/kg wwt)	0.116	0.365	<0.0010	0.112	0.295
	Calcium (Ca)-Total (mg/kg)	257	612	818	304	1090
	Calcium (Ca)-Total (mg/kg wwt)	61.3	119	141	66.2	203
	Cesium (Cs)-Total (mg/kg)	0.0526	0.0875	0.193	0.0477	0.0742
	Cesium (Cs)-Total (mg/kg wwt)	0.0125	0.0171	0.0333	0.0104	0.0139
	Chromium (Cr)-Total (mg/kg)	<0.20	0.29	<0.050	<0.20	0.33
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	0.057	<0.010	<0.040	0.061
	Cobalt (Co)-Total (mg/kg)	0.088	0.686	<0.020	0.093	0.706
	Cobalt (Co)-Total (mg/kg wwt)	0.0210	0.134	<0.0040	0.0203	0.132
	Copper (Cu)-Total (mg/kg)	572	34.6	3.24	618	22.8
	Copper (Cu)-Total (mg/kg wwt)	136	6.75	0.559	135	4.26
	Iron (Fe)-Total (mg/kg)	993	558	22.8	1440	579
	Iron (Fe)-Total (mg/kg wwt)	236	109	3.94	313	108
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.020	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.0040	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	697	743	1150	662	729
	Magnesium (Mg)-Total (mg/kg wwt)	166	145	198	144	136
	Manganese (Mn)-Total (mg/kg)	6.44	2.75	0.474	6.14	2.07
	Manganese (Mn)-Total (mg/kg wwt)	1.53	0.536	0.082	1.34	0.386

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688995-11	L1688995-12	L1688995-13	L1688995-14	L1688995-15
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR LIKELY KO#4 MUSCLE	QUL NEAR LIKELY KO#4 LIVER	QUL NEAR LIKELY KO#4 KIDNEY	QUL NEAR LIKELY KO#5 MUSCLE	QUL NEAR LIKELY KO#5 LIVER
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	86.7	76.8	79.7	80.6	77.5
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	<5.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	<1.0	<0.40	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.084	0.292	0.336	0.089	0.189
	Arsenic (As)-Total (mg/kg wwt)	0.0112	0.0677	0.0683	0.0173	0.0426
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	0.098	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	0.020	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.455	1.88	<0.0050	0.579
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.105	0.382	<0.0010	0.130
	Calcium (Ca)-Total (mg/kg)	851	253	587	742	291
	Calcium (Ca)-Total (mg/kg wwt)	113	58.7	119	144	65.5
	Cesium (Cs)-Total (mg/kg)	0.205	0.0318	0.0712	0.186	0.0531
	Cesium (Cs)-Total (mg/kg wwt)	0.0273	0.0074	0.0145	0.0360	0.0119
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	0.37	0.166	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	0.076	0.032	<0.040
	Cobalt (Co)-Total (mg/kg)	0.020	0.109	1.06	0.021	0.094
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0252	0.215	<0.0040	0.0211
	Copper (Cu)-Total (mg/kg)	3.15	460	25.5	3.17	371
	Copper (Cu)-Total (mg/kg wwt)	0.420	107	5.18	0.615	83.5
	Iron (Fe)-Total (mg/kg)	38.8	1060	613	24.0	1320
	Iron (Fe)-Total (mg/kg wwt)	5.17	246	125	4.66	297
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1400	698	716	1080	687
	Magnesium (Mg)-Total (mg/kg wwt)	187	162	146	209	155
	Manganese (Mn)-Total (mg/kg)	0.668	7.11	2.63	0.448	5.00
	Manganese (Mn)-Total (mg/kg wwt)	0.089	1.65	0.535	0.087	1.13

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688995-16 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#5 KIDNEY	L1688995-17 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6 MUSCLE	L1688995-18 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6 LIVER	L1688995-19 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6 KIDNEY	L1688995-20 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6 GONAD
TISSUE						
Physical Tests	% Moisture (%)	80.4	83.7	75.8	81.4	62.3
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<5.0	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<1.0	<1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.317	0.062	0.192	0.329	0.053
	Arsenic (As)-Total (mg/kg wwt)	0.0621	0.0101	0.0465	0.0610	0.0200
	Barium (Ba)-Total (mg/kg)	0.093	<0.050	<0.050	0.177	0.180
	Barium (Ba)-Total (mg/kg wwt)	0.018	<0.010	<0.010	0.033	0.068
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	1.89	<0.0050	0.788	2.08	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	0.370	<0.0010	0.191	0.386	<0.0020
	Calcium (Ca)-Total (mg/kg)	1080	336	419	851	1010
	Calcium (Ca)-Total (mg/kg wwt)	211	54.8	101	158	380
	Cesium (Cs)-Total (mg/kg)	0.0893	0.161	0.0279	0.0801	0.0242
	Cesium (Cs)-Total (mg/kg wwt)	0.0175	0.0263	0.0068	0.0149	0.0091
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.20	0.42	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	<0.040	0.079	<0.040
	Cobalt (Co)-Total (mg/kg)	0.888	<0.020	0.116	0.437	0.027
	Cobalt (Co)-Total (mg/kg wwt)	0.174	<0.0040	0.0282	0.0810	0.0103
	Copper (Cu)-Total (mg/kg)	22.8	2.70	158	13.6	36.3
	Copper (Cu)-Total (mg/kg wwt)	4.46	0.441	38.2	2.53	13.7
	Iron (Fe)-Total (mg/kg)	497	29.4	1700	610	34.2
	Iron (Fe)-Total (mg/kg wwt)	97.4	4.80	411	113	12.9
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	688	1300	713	773	1370
	Magnesium (Mg)-Total (mg/kg wwt)	135	212	173	143	517
	Manganese (Mn)-Total (mg/kg)	2.23	0.477	6.29	3.09	4.98
	Manganese (Mn)-Total (mg/kg wwt)	0.437	0.078	1.52	0.574	1.88

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688995-22 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6X GONAD	L1688995-23 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#7 MUSCLE	L1688995-24 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#7 LIVER	L1688995-25 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#7 KIDNEY	L1688995-26 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#8 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	61.3	85.1	75.3	80.3	86.0
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<2.0	<5.0	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<0.40	<1.0	<1.0	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.013
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.058	0.042	0.163	0.255	0.090
	Arsenic (As)-Total (mg/kg wwt)	0.0226	0.0063	0.0404	0.0502	0.0126
	Barium (Ba)-Total (mg/kg)	0.161	0.054	<0.050	0.119	0.053
	Barium (Ba)-Total (mg/kg wwt)	0.062	<0.010	<0.010	0.023	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.014
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.010	<0.0050	0.667	2.65	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0020	<0.0010	0.165	0.523	<0.0010
	Calcium (Ca)-Total (mg/kg)	921	1500	262	1010	1160
	Calcium (Ca)-Total (mg/kg wwt)	356	222	64.8	200	162
	Cesium (Cs)-Total (mg/kg)	0.0226	0.290	0.0528	0.134	0.342
	Cesium (Cs)-Total (mg/kg wwt)	0.0087	0.0431	0.0130	0.0265	0.0478
	Chromium (Cr)-Total (mg/kg)	<0.20	0.093	<0.20	0.40	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	0.014	<0.040	0.080	<0.010
	Cobalt (Co)-Total (mg/kg)	0.025	0.023	0.129	0.800	0.027
	Cobalt (Co)-Total (mg/kg wwt)	0.0098	<0.0040	0.0318	0.158	<0.0040
	Copper (Cu)-Total (mg/kg)	34.4	2.68	149	14.8	3.31
	Copper (Cu)-Total (mg/kg wwt)	13.3	0.398	36.7	2.92	0.463
	Iron (Fe)-Total (mg/kg)	32.7	33.7	1780	808	37.8
	Iron (Fe)-Total (mg/kg wwt)	12.6	5.02	440	159	5.28
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.0040	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1240	1390	714	761	1430
	Magnesium (Mg)-Total (mg/kg wwt)	480	207	177	150	200
	Manganese (Mn)-Total (mg/kg)	3.93	0.908	6.39	2.27	0.962
	Manganese (Mn)-Total (mg/kg wwt)	1.52	0.135	1.58	0.447	0.134

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688995-27	L1688995-28			
	Description	Tissue	Tissue			
	Sampled Date	13-OCT-15	13-OCT-15			
	Sampled Time	16:15	16:15			
	Client ID	QUL NEAR LIKELY KO#8 LIVER	QUL NEAR LIKELY KO#8 KIDNEY			
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	77.4	83.0			
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0			
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0			
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010			
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020			
	Arsenic (As)-Total (mg/kg)	0.145	0.441			
	Arsenic (As)-Total (mg/kg wwt)	0.0328	0.0750			
	Barium (Ba)-Total (mg/kg)	<0.050	0.236			
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.040			
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010			
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020			
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010			
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020			
	Boron (B)-Total (mg/kg)	<1.0	<1.0			
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20			
	Cadmium (Cd)-Total (mg/kg)	0.929	1.88			
	Cadmium (Cd)-Total (mg/kg wwt)	0.210	0.321			
	Calcium (Ca)-Total (mg/kg)	397	1060			
	Calcium (Ca)-Total (mg/kg wwt)	89.6	180			
	Cesium (Cs)-Total (mg/kg)	0.0522	0.117			
	Cesium (Cs)-Total (mg/kg wwt)	0.0118	0.0199			
	Chromium (Cr)-Total (mg/kg)	0.23	0.58			
	Chromium (Cr)-Total (mg/kg wwt)	0.053	0.099			
	Cobalt (Co)-Total (mg/kg)	0.198	0.471			
	Cobalt (Co)-Total (mg/kg wwt)	0.0447	0.0800			
	Copper (Cu)-Total (mg/kg)	205	13.8			
	Copper (Cu)-Total (mg/kg wwt)	46.2	2.35			
	Iron (Fe)-Total (mg/kg)	2280	573			
	Iron (Fe)-Total (mg/kg wwt)	516	97.4			
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050			
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010			
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50			
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10			
	Magnesium (Mg)-Total (mg/kg)	775	636			
	Magnesium (Mg)-Total (mg/kg wwt)	175	108			
	Manganese (Mn)-Total (mg/kg)	9.85	2.25			
	Manganese (Mn)-Total (mg/kg wwt)	2.22	0.383			

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688995-1 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#1 MUSCLE	L1688995-2 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#1 LIVER	L1688995-3 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#1 KIDNEY	L1688995-4 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#1X MUSCLE	L1688995-5 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#2 MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.551	0.399	0.671	0.530	0.387
	Mercury (Hg)-Total (mg/kg wwt)	0.0808	0.0878	0.128	0.0722	0.0667
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.727	0.336	0.021	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.160	0.0642	<0.0040	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.23	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.044	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	14000	12400	14400	14700	12200
	Phosphorus (P)-Total (mg/kg wwt)	2050	2730	2740	2010	2100
	Potassium (K)-Total (mg/kg)	25400	9260	11300	26300	20400
	Potassium (K)-Total (mg/kg wwt)	3730	2040	2170	3590	3510
	Rubidium (Rb)-Total (mg/kg)	23.7	9.54	10.4	24.8	29.2
	Rubidium (Rb)-Total (mg/kg wwt)	3.48	2.10	1.99	3.38	5.03
	Selenium (Se)-Total (mg/kg)	2.64	70.6	5.13	2.80	2.12
	Selenium (Se)-Total (mg/kg wwt)	0.387	15.6	0.980	0.381	0.366
	Sodium (Na)-Total (mg/kg)	6420	4780	7940	7290	3560
	Sodium (Na)-Total (mg/kg wwt)	942	1050	1520	993	614
	Strontium (Sr)-Total (mg/kg)	1.00	0.31	0.73	1.69	0.781
	Strontium (Sr)-Total (mg/kg wwt)	0.147	0.068	0.140	0.230	0.135
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0172	0.178	0.0532	0.0165	0.0178
	Thallium (Tl)-Total (mg/kg wwt)	0.00252	0.0393	0.0102	0.00225	0.00308
	Tin (Sn)-Total (mg/kg)	0.16	0.30	1.03	0.15	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.023	0.066	0.197	0.021	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0027	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00051	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	21.6	270	191	40.9	22.1
	Zinc (Zn)-Total (mg/kg wwt)	3.16	59.5	36.6	5.57	3.81
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688995-6	L1688995-7	L1688995-8	L1688995-9	L1688995-10
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL NEAR LIKELY KO#2 LIVER	QUL NEAR LIKELY KO#2 KIDNEY	QUL NEAR LIKELY KO#3 MUSCLE	QUL NEAR LIKELY KO#3 LIVER	QUL NEAR LIKELY KO#3 KIDNEY
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.260	0.396	0.508	0.364	0.583
	Mercury (Hg)-Total (mg/kg wwt)	0.0620	0.0772	0.0876	0.0793	0.109
	Molybdenum (Mo)-Total (mg/kg)	0.579	0.375	<0.020	0.786	0.396
	Molybdenum (Mo)-Total (mg/kg wwt)	0.138	0.0731	<0.0040	0.171	0.0740
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	13000	13400	12300	12100	14500
	Phosphorus (P)-Total (mg/kg wwt)	3090	2610	2110	2640	2710
	Potassium (K)-Total (mg/kg)	9760	10300	20700	9360	9950
	Potassium (K)-Total (mg/kg wwt)	2320	2000	3570	2040	1860
	Rubidium (Rb)-Total (mg/kg)	12.5	13.6	25.8	13.0	12.5
	Rubidium (Rb)-Total (mg/kg wwt)	2.98	2.66	4.45	2.83	2.34
	Selenium (Se)-Total (mg/kg)	58.1	5.07	2.36	77.4	3.96
	Selenium (Se)-Total (mg/kg wwt)	13.8	0.989	0.408	16.9	0.739
	Sodium (Na)-Total (mg/kg)	4500	7000	3820	6170	9790
	Sodium (Na)-Total (mg/kg wwt)	1070	1370	659	1340	1830
	Strontium (Sr)-Total (mg/kg)	0.24	0.74	1.10	0.36	1.12
	Strontium (Sr)-Total (mg/kg wwt)	0.057	0.145	0.189	0.078	0.208
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.209	0.0513	0.0185	0.190	0.0501
	Thallium (Tl)-Total (mg/kg wwt)	0.0499	0.0100	0.00319	0.0412	0.00934
	Tin (Sn)-Total (mg/kg)	0.22	0.89	<0.10	0.37	1.31
	Tin (Sn)-Total (mg/kg wwt)	0.052	0.174	<0.020	0.081	0.244
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	224	139	29.9	321	224
	Zinc (Zn)-Total (mg/kg wwt)	53.3	27.1	5.16	69.8	41.8
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688995-11 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#4 MUSCLE	L1688995-12 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#4 LIVER	L1688995-13 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#4 KIDNEY	L1688995-14 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#5 MUSCLE	L1688995-15 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#5 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.748	0.468	0.783	0.381	0.274
	Mercury (Hg)-Total (mg/kg wwt)	0.0996	0.108	0.159	0.0740	0.0615
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.845	0.396	<0.020	0.653
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.196	0.0805	<0.0040	0.147
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	15000	12500	13000	11500	12200
	Phosphorus (P)-Total (mg/kg wwt)	1990	2910	2630	2240	2740
	Potassium (K)-Total (mg/kg)	26100	8400	9270	19300	10000
	Potassium (K)-Total (mg/kg wwt)	3470	1950	1890	3750	2250
	Rubidium (Rb)-Total (mg/kg)	19.6	5.55	6.90	22.9	12.4
	Rubidium (Rb)-Total (mg/kg wwt)	2.61	1.29	1.40	4.43	2.78
	Selenium (Se)-Total (mg/kg)	2.93	67.5	4.67	2.44	55.4
	Selenium (Se)-Total (mg/kg wwt)	0.390	15.7	0.949	0.474	12.5
	Sodium (Na)-Total (mg/kg)	4350	3740	5120	3130	5280
	Sodium (Na)-Total (mg/kg wwt)	579	868	1040	607	1190
	Strontium (Sr)-Total (mg/kg)	1.02	0.24	0.81	1.00	0.30
	Strontium (Sr)-Total (mg/kg wwt)	0.135	0.056	0.165	0.195	0.068
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0204	0.200	0.0745	0.0226	0.180
	Thallium (Tl)-Total (mg/kg wwt)	0.00272	0.0465	0.0151	0.00439	0.0406
	Tin (Sn)-Total (mg/kg)	0.14	0.11	0.78	0.14	0.31
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.025	0.160	0.028	0.069
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	52.2	471	189	35.1	198
	Zinc (Zn)-Total (mg/kg wwt)	6.96	109	38.5	6.80	44.6
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688995-16 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#5 KIDNEY	L1688995-17 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6 MUSCLE	L1688995-18 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6 LIVER	L1688995-19 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6 KIDNEY	L1688995-20 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6 GONAD
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.428	0.569	0.425	0.529	0.0148
	Mercury (Hg)-Total (mg/kg wwt)	0.0839	0.0929	0.103	0.0982	0.0056
	Molybdenum (Mo)-Total (mg/kg)	0.477	<0.020	0.867	0.472	0.043
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0934	<0.0040	0.210	0.0875	0.0163
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	12200	12900	12800	14200	9650
	Phosphorus (P)-Total (mg/kg wwt)	2390	2110	3100	2630	3640
	Potassium (K)-Total (mg/kg)	9870	23700	8600	12600	6660
	Potassium (K)-Total (mg/kg wwt)	1930	3870	2080	2350	2510
	Rubidium (Rb)-Total (mg/kg)	11.2	27.2	9.88	14.0	6.33
	Rubidium (Rb)-Total (mg/kg wwt)	2.19	4.45	2.39	2.59	2.39
	Selenium (Se)-Total (mg/kg)	6.23	2.45	25.6	7.05	5.35
	Selenium (Se)-Total (mg/kg wwt)	1.22	0.400	6.20	1.31	2.02
	Sodium (Na)-Total (mg/kg)	8790	3820	5030	9070	1460
	Sodium (Na)-Total (mg/kg wwt)	1720	624	1220	1680	550
	Strontium (Sr)-Total (mg/kg)	1.34	0.376	0.46	1.27	3.92
	Strontium (Sr)-Total (mg/kg wwt)	0.263	0.061	0.112	0.235	1.48
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0649	0.0285	0.108	0.0781	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.0127	0.00465	0.0261	0.0145	0.00047
	Tin (Sn)-Total (mg/kg)	0.61	0.15	0.29	0.65	0.20
	Tin (Sn)-Total (mg/kg wwt)	0.119	0.025	0.069	0.120	0.074
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	0.0027	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	0.00049	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	371	21.6	235	176	47.1
	Zinc (Zn)-Total (mg/kg wwt)	72.8	3.52	56.9	32.7	17.7
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688995-22 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#6X GONAD	L1688995-23 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#7 MUSCLE	L1688995-24 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#7 LIVER	L1688995-25 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#7 KIDNEY	L1688995-26 Tissue 13-OCT-15 16:15 QUL NEAR LIKELY KO#8 MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0147	0.719	0.679	0.922	0.917
	Mercury (Hg)-Total (mg/kg wwt)	0.0057	0.107	0.168	0.182	0.128
	Molybdenum (Mo)-Total (mg/kg)	0.047	0.023	0.941	0.464	0.036
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0180	<0.0040	0.233	0.0916	0.0050
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	8660	15600	13400	12100	16700
	Phosphorus (P)-Total (mg/kg wwt)	3350	2320	3310	2390	2330
	Potassium (K)-Total (mg/kg)	7300	29000	8640	13200	30800
	Potassium (K)-Total (mg/kg wwt)	2820	4310	2140	2600	4300
	Rubidium (Rb)-Total (mg/kg)	6.11	37.3	10.7	15.7	36.2
	Rubidium (Rb)-Total (mg/kg wwt)	2.36	5.55	2.64	3.10	5.05
	Selenium (Se)-Total (mg/kg)	5.12	2.24	24.7	6.24	2.26
	Selenium (Se)-Total (mg/kg wwt)	1.98	0.333	6.11	1.23	0.315
	Sodium (Na)-Total (mg/kg)	1530	4710	5460	7110	4560
	Sodium (Na)-Total (mg/kg wwt)	590	700	1350	1400	638
	Strontium (Sr)-Total (mg/kg)	4.32	2.17	0.30	1.42	1.50
	Strontium (Sr)-Total (mg/kg wwt)	1.67	0.323	0.075	0.280	0.210
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0317	0.121	0.0695	0.0425
	Thallium (Tl)-Total (mg/kg wwt)	0.00045	0.00472	0.0299	0.0137	0.00594
	Tin (Sn)-Total (mg/kg)	0.14	0.21	0.23	0.56	0.16
	Tin (Sn)-Total (mg/kg wwt)	0.053	0.031	0.056	0.110	0.023
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	0.0027	0.0026
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	0.00053	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	46.0	33.2	304	191	38.4
	Zinc (Zn)-Total (mg/kg wwt)	17.8	4.93	75.2	37.6	5.37
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688995-27	L1688995-28			
	Description	Tissue	Tissue			
	Sampled Date	13-OCT-15	13-OCT-15			
	Sampled Time	16:15	16:15			
	Client ID	QUL NEAR LIKELY KO#8 LIVER	QUL NEAR LIKELY KO#8 KIDNEY			
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.890	0.824			
	Mercury (Hg)-Total (mg/kg wwt)	0.201	0.140			
	Molybdenum (Mo)-Total (mg/kg)	1.32	0.506			
	Molybdenum (Mo)-Total (mg/kg wwt)	0.299	0.0860			
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20			
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040			
	Phosphorus (P)-Total (mg/kg)	14000	11100			
	Phosphorus (P)-Total (mg/kg wwt)	3160	1880			
	Potassium (K)-Total (mg/kg)	8100	9990			
	Potassium (K)-Total (mg/kg wwt)	1830	1700			
	Rubidium (Rb)-Total (mg/kg)	9.58	11.2			
	Rubidium (Rb)-Total (mg/kg wwt)	2.16	1.91			
	Selenium (Se)-Total (mg/kg)	26.8	5.66			
	Selenium (Se)-Total (mg/kg wwt)	6.05	0.962			
	Sodium (Na)-Total (mg/kg)	7000	6740			
	Sodium (Na)-Total (mg/kg wwt)	1580	1150			
	Strontium (Sr)-Total (mg/kg)	0.44	1.53			
	Strontium (Sr)-Total (mg/kg wwt)	0.100	0.259			
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020			
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040			
	Thallium (Tl)-Total (mg/kg)	0.124	0.0802			
	Thallium (Tl)-Total (mg/kg wwt)	0.0281	0.0136			
	Tin (Sn)-Total (mg/kg)	0.38	0.50			
	Tin (Sn)-Total (mg/kg wwt)	0.086	0.084			
	Uranium (U)-Total (mg/kg)	0.0022	0.0033			
	Uranium (U)-Total (mg/kg wwt)	0.00049	0.00055			
	Vanadium (V)-Total (mg/kg)	0.12	<0.10			
	Vanadium (V)-Total (mg/kg wwt)	0.027	<0.020			
	Zinc (Zn)-Total (mg/kg)	306	329			
	Zinc (Zn)-Total (mg/kg wwt)	69.1	56.0			
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20			
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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Page 1 of 1

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description: 42281	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	L1688995	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Kidney Metals	Gonad metals							Number of Containers
	QUL near Likely KO # 1	13-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
	QUL near Likely KO # 1X	13-Oct-15	8:00-16:15	Tissue	X	X										1
	QUL near Likely KO # 2	13-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
	QUL near Likely KO # 3	13-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
	QUL near Likely KO # 4	13-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
	QUL near Likely KO # 5	13-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
	QUL near Likely KO # 6	13-Oct-15	8:00-16:15	Tissue	X	X	X	X	X							4
	QUL near Likely KO # 6X	13-Oct-15	8:00-16:15	Tissue		X			X							1
	QUL near Likely KO # 7	13-Oct-15	8:00-16:15	Tissue	X	X	X	X								3
	QUL near Likely KO # 8	13-Oct-15	8:00-16:15	Tissue	X	X	X	X								3

L1688995-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Oct. 15, 2015	Jean	OCT 16 2015	9:35	-1.8			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 16-OCT-15
Report Date: 09-DEC-15 12:41 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1688997

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc: 42281

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688997-1 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #1 MUSCLE	L1688997-2 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #1 LIVER	L1688997-3 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #2 MUSCLE	L1688997-4 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #2 LIVER	L1688997-5 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #3 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	85.6	48.3	84.0	53.9	81.2
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<5.0	4.1	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<1.0	0.66	1.2	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.333	0.520	0.145	0.464	0.145
	Arsenic (As)-Total (mg/kg wwt)	0.0478	0.269	0.0233	0.214	0.0273
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.405	<0.0050	0.264	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.209	<0.0010	0.122	<0.0010
	Calcium (Ca)-Total (mg/kg)	724	140	556	126	507
	Calcium (Ca)-Total (mg/kg wwt)	104	72.5	89.2	58.3	95.3
	Cesium (Cs)-Total (mg/kg)	0.539	0.0409	0.278	0.0426	0.360
	Cesium (Cs)-Total (mg/kg wwt)	0.0775	0.0211	0.0446	0.0197	0.0676
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.050	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.040	<0.010	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.051	0.495	0.036	0.435	0.026
	Cobalt (Co)-Total (mg/kg wwt)	0.0073	0.256	0.0058	0.200	0.0050
	Copper (Cu)-Total (mg/kg)	1.75	17.6	1.42	38.9	1.25
	Copper (Cu)-Total (mg/kg wwt)	0.251	9.07	0.228	17.9	0.236
	Iron (Fe)-Total (mg/kg)	16.1	151	37.9	217	12.2
	Iron (Fe)-Total (mg/kg wwt)	2.32	78.1	6.08	100	2.29
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.020	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	<0.0040	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1600	182	1220	211	1110
	Magnesium (Mg)-Total (mg/kg wwt)	230	93.8	196	97.4	208
	Manganese (Mn)-Total (mg/kg)	1.05	1.57	0.679	3.55	0.706
	Manganese (Mn)-Total (mg/kg wwt)	0.151	0.813	0.109	1.64	0.133

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688997-6 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #3 LIVER	L1688997-7 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #3X MUSCLE	L1688997-8 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #4 MUSCLE	L1688997-9 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #4 LIVER	L1688997-10 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #5 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	47.8	81.6	82.0	59.0	82.0
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<2.0	<5.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<1.0	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0027	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.254	0.142	0.263	1.44	0.397
	Arsenic (As)-Total (mg/kg wwt)	0.133	0.0261	0.0475	0.591	0.0714
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	0.081	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	0.015	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	0.0033	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.0605	<0.0050	<0.0050	0.284	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.0316	<0.0010	<0.0010	0.117	<0.0010
	Calcium (Ca)-Total (mg/kg)	41	440	1390	216	485
	Calcium (Ca)-Total (mg/kg wwt)	21.4	80.9	252	88.7	87.2
	Cesium (Cs)-Total (mg/kg)	0.0196	0.351	0.292	0.0474	0.324
	Cesium (Cs)-Total (mg/kg wwt)	0.0102	0.0644	0.0526	0.0195	0.0583
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.040	<0.010
	Cobalt (Co)-Total (mg/kg)	0.202	0.033	0.031	0.710	0.029
	Cobalt (Co)-Total (mg/kg wwt)	0.105	0.0061	0.0056	0.291	0.0051
	Copper (Cu)-Total (mg/kg)	14.0	1.75	1.14	20.9	3.09
	Copper (Cu)-Total (mg/kg wwt)	7.29	0.321	0.205	8.56	0.555
	Iron (Fe)-Total (mg/kg)	96.2	16.0	11.2	282	42.4
	Iron (Fe)-Total (mg/kg wwt)	50.2	2.93	2.03	116	7.63
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	84.3	1020	1170	245	962
	Magnesium (Mg)-Total (mg/kg wwt)	44.0	188	212	101	173
	Manganese (Mn)-Total (mg/kg)	0.622	0.709	1.39	2.30	0.452
	Manganese (Mn)-Total (mg/kg wwt)	0.324	0.130	0.251	0.945	0.081

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688997-11 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #5 LIVER	L1688997-12 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #6 MUSCLE	L1688997-13 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #6 LIVER	L1688997-14 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #7 MUSCLE	L1688997-15 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #7 LIVER
TISSUE						
Physical Tests	% Moisture (%)	55.7	81.3	49.0	79.1	56.9
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<2.0	<2.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	0.78	<0.40	0.81	<0.40	1.1
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	1.11	0.207	0.696	0.416	0.820
	Arsenic (As)-Total (mg/kg wwt)	0.493	0.0387	0.355	0.0867	0.353
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	<0.050	0.057	0.070
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	0.012	0.030
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.188	<0.0050	0.283	<0.0050	0.756
	Cadmium (Cd)-Total (mg/kg wwt)	0.0833	<0.0010	0.144	<0.0010	0.326
	Calcium (Ca)-Total (mg/kg)	101	471	72	745	243
	Calcium (Ca)-Total (mg/kg wwt)	44.9	88.1	36.8	155	105
	Cesium (Cs)-Total (mg/kg)	0.0554	0.432	0.0472	0.220	0.0671
	Cesium (Cs)-Total (mg/kg wwt)	0.0246	0.0807	0.0241	0.0460	0.0289
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	0.339	0.020	0.442	0.037	0.965
	Cobalt (Co)-Total (mg/kg wwt)	0.150	<0.0040	0.226	0.0077	0.416
	Copper (Cu)-Total (mg/kg)	28.8	1.24	23.9	1.44	25.6
	Copper (Cu)-Total (mg/kg wwt)	12.8	0.232	12.2	0.301	11.1
	Iron (Fe)-Total (mg/kg)	195	13.3	176	18.2	223
	Iron (Fe)-Total (mg/kg wwt)	86.5	2.49	89.9	3.80	95.9
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	186	1060	177	1070	275
	Magnesium (Mg)-Total (mg/kg wwt)	82.4	198	90.3	223	119
	Manganese (Mn)-Total (mg/kg)	1.20	0.644	1.28	0.648	4.57
	Manganese (Mn)-Total (mg/kg wwt)	0.532	0.120	0.654	0.135	1.97

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688997-1	L1688997-2	L1688997-3	L1688997-4	L1688997-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL EAST ARM BB #1 MUSCLE	QUL EAST ARM BB #1 LIVER	QUL EAST ARM BB #2 MUSCLE	QUL EAST ARM BB #2 LIVER	QUL EAST ARM BB #3 MUSCLE
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.466	0.0461	0.565	0.0446	2.29
	Mercury (Hg)-Total (mg/kg wwt)	0.0670	0.0238	0.0906	0.0206	0.430
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.188	<0.020	0.279	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0971	<0.0040	0.129	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.047	<0.040
	Phosphorus (P)-Total (mg/kg)	12600	2880	9240	3520	9560
	Phosphorus (P)-Total (mg/kg wwt)	1810	1490	1480	1620	1800
	Potassium (K)-Total (mg/kg)	23400	2150	16600	3010	15900
	Potassium (K)-Total (mg/kg wwt)	3360	1110	2660	1390	2990
	Rubidium (Rb)-Total (mg/kg)	34.6	3.03	20.7	3.76	24.0
	Rubidium (Rb)-Total (mg/kg wwt)	4.97	1.57	3.32	1.73	4.50
	Selenium (Se)-Total (mg/kg)	3.44	1.74	2.61	2.01	2.10
	Selenium (Se)-Total (mg/kg wwt)	0.495	0.900	0.418	0.927	0.394
	Sodium (Na)-Total (mg/kg)	4890	1410	3840	1670	4330
	Sodium (Na)-Total (mg/kg wwt)	702	726	616	771	813
	Strontium (Sr)-Total (mg/kg)	1.60	0.26	1.19	0.34	1.31
	Strontium (Sr)-Total (mg/kg wwt)	0.230	0.133	0.191	0.158	0.247
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0116	0.0061	0.0065	0.0062	0.0054
	Thallium (Tl)-Total (mg/kg wwt)	0.00167	0.00316	0.00104	0.00285	0.00102
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	0.11	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.022	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0023	<0.0020	0.0040	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00119	<0.00040	0.00186	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.043	<0.020
	Zinc (Zn)-Total (mg/kg)	35.3	35.2	28.9	54.1	33.3
	Zinc (Zn)-Total (mg/kg wwt)	5.08	18.2	4.63	24.9	6.25
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1688997-6	L1688997-7	L1688997-8	L1688997-9	L1688997-10
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15	13-OCT-15
	Sampled Time	16:15	16:15	16:15	16:15	16:15
	Client ID	QUL EAST ARM BB #3 LIVER	QUL EAST ARM BB #3X MUSCLE	QUL EAST ARM BB #4 MUSCLE	QUL EAST ARM BB #4 LIVER	QUL EAST ARM BB #5 MUSCLE
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0995	2.18	0.799	0.0823	2.84
	Mercury (Hg)-Total (mg/kg wwt)	0.0519	0.400	0.144	0.0338	0.511
	Molybdenum (Mo)-Total (mg/kg)	0.096	<0.020	<0.020	0.413	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0503	<0.0040	<0.0040	0.170	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.045	<0.040
	Phosphorus (P)-Total (mg/kg)	1620	8860	9720	3650	9380
	Phosphorus (P)-Total (mg/kg wwt)	846	1630	1750	1500	1690
	Potassium (K)-Total (mg/kg)	1470	14700	16000	2910	15100
	Potassium (K)-Total (mg/kg wwt)	769	2700	2890	1190	2720
	Rubidium (Rb)-Total (mg/kg)	2.46	22.0	23.0	4.22	26.1
	Rubidium (Rb)-Total (mg/kg wwt)	1.28	4.04	4.15	1.73	4.70
	Selenium (Se)-Total (mg/kg)	0.861	2.00	2.28	2.42	2.18
	Selenium (Se)-Total (mg/kg wwt)	0.449	0.367	0.411	0.993	0.392
	Sodium (Na)-Total (mg/kg)	836	3730	3650	2150	3970
	Sodium (Na)-Total (mg/kg wwt)	436	685	659	880	715
	Strontium (Sr)-Total (mg/kg)	0.191	1.08	3.48	0.61	1.25
	Strontium (Sr)-Total (mg/kg wwt)	0.100	0.199	0.628	0.249	0.226
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0031	0.0056	0.0098	0.0071	0.0157
	Thallium (Tl)-Total (mg/kg wwt)	0.00160	0.00103	0.00176	0.00293	0.00282
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.026	<0.020
	Uranium (U)-Total (mg/kg)	0.0022	<0.0020	<0.0020	0.0031	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00113	<0.00040	<0.00040	0.00129	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.043	<0.020
	Zinc (Zn)-Total (mg/kg)	25.7	35.7	25.8	49.9	44.3
	Zinc (Zn)-Total (mg/kg wwt)	13.4	6.56	4.65	20.5	7.97
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1688997-11 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #5 LIVER	L1688997-12 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #6 MUSCLE	L1688997-13 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #6 LIVER	L1688997-14 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #7 MUSCLE	L1688997-15 Tissue 13-OCT-15 16:15 QUL EAST ARM BB #7 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.350	2.18	0.159	0.669	0.0611
	Mercury (Hg)-Total (mg/kg wwt)	0.155	0.408	0.0808	0.140	0.0263
	Molybdenum (Mo)-Total (mg/kg)	0.230	<0.020	0.153	<0.020	0.275
	Molybdenum (Mo)-Total (mg/kg wwt)	0.102	<0.0040	0.0779	<0.0040	0.118
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.042	<0.040	0.045
	Phosphorus (P)-Total (mg/kg)	3470	9230	3020	8900	4140
	Phosphorus (P)-Total (mg/kg wwt)	1540	1720	1540	1860	1790
	Potassium (K)-Total (mg/kg)	2970	15700	2350	14600	4000
	Potassium (K)-Total (mg/kg wwt)	1320	2930	1200	3050	1720
	Rubidium (Rb)-Total (mg/kg)	6.22	26.1	4.86	23.7	6.81
	Rubidium (Rb)-Total (mg/kg wwt)	2.76	4.87	2.48	4.94	2.93
	Selenium (Se)-Total (mg/kg)	2.29	2.05	1.81	2.20	2.88
	Selenium (Se)-Total (mg/kg wwt)	1.02	0.382	0.923	0.458	1.24
	Sodium (Na)-Total (mg/kg)	1710	3800	1470	2900	1630
	Sodium (Na)-Total (mg/kg wwt)	759	710	748	606	701
	Strontium (Sr)-Total (mg/kg)	0.446	1.04	0.281	1.80	0.64
	Strontium (Sr)-Total (mg/kg wwt)	0.198	0.195	0.143	0.375	0.277
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0067	0.0085	0.0042	0.0121	0.0116
	Thallium (Tl)-Total (mg/kg wwt)	0.00298	0.00158	0.00216	0.00252	0.00499
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0049	<0.0020	0.0027	<0.0020	0.0054
	Uranium (U)-Total (mg/kg wwt)	0.00217	<0.00040	0.00140	<0.00040	0.00231
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	0.12
	Vanadium (V)-Total (mg/kg wwt)	0.033	<0.020	0.030	<0.020	0.052
	Zinc (Zn)-Total (mg/kg)	46.2	26.8	41.4	25.0	50.9
	Zinc (Zn)-Total (mg/kg wwt)	20.5	5.01	21.1	5.22	22.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory
ANALYTICAL CHEMISTRY & TESTING SE

Short Holding Time

Custody / Analytical Request Form
ada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Environmental Division

Rush Processing

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:	42281	
		Quote #:		
Phone:	Fax:			
Lab Work Order # (lab use only)	L1688997	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HR/ICP-MS)(Wet&D	Moisture	Liver Metals	Number of Containers
	QUL East Arm BB # 1	13-Sep-15	8:00-16:15	Tissue	X	X	X	2
	QUL East Arm BB # 2	13-Sep-15	8:00-16:15	Tissue	X	X	X	2
	QUL East Arm BB # 3	13-Sep-15	8:00-16:15	Tissue	X	X	X	2
	QUL East Arm BB # 3X	13-Sep-15	8:00-16:15	Tissue	X	X		1
	QUL East Arm BB # 4	13-Sep-15	8:00-16:15	Tissue	X	X	X	2
	QUL East Arm BB # 5	13-Sep-15	8:00-16:15	Tissue	X	X	X	2
	QUL East Arm BB # 6	13-Sep-15	8:00-16:15	Tissue	X	X	X	2
	QUL East Arm BB # 7	13-Sep-15	8:00-16:15	Tissue	X	X	X	2

L1688997-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Oct. 14, 2015	Jean	OCT 16 2015	9:35	-1.8°C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 10-OCT-15
Report Date: 24-NOV-15 17:03 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1691825

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691825-1 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#1 MUSCLE	L1691825-2 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#1 LIVER	L1691825-3 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#1 GONADS	L1691825-4 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#2 MUSCLE	L1691825-5 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#2 LIVER
TISSUE						
Physical Tests	% Moisture (%)	82.4	34.9	74.3	81.4	44.1
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	2.3	<2.0	<2.0	2.6
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	1.47	<0.40	<0.40	1.45
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.011
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0041	<0.0020	<0.0020	0.0059
	Arsenic (As)-Total (mg/kg)	0.551	0.644	0.675	0.376	1.02
	Arsenic (As)-Total (mg/kg wwt)	0.0967	0.419	0.174	0.0701	0.572
	Barium (Ba)-Total (mg/kg)	0.050	<0.050	0.354	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	0.091	<0.010	0.011
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.159	0.0058	<0.0050	0.231
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.104	0.0015	<0.0010	0.129
	Calcium (Ca)-Total (mg/kg)	559	<20	5260	389	35
	Calcium (Ca)-Total (mg/kg wwt)	98.2	11.2	1350	72.6	19.6
	Cesium (Cs)-Total (mg/kg)	0.479	0.0115	0.119	0.373	0.0230
	Cesium (Cs)-Total (mg/kg wwt)	0.0841	0.0075	0.0305	0.0695	0.0128
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.023	0.166	0.143	<0.020	0.458
	Cobalt (Co)-Total (mg/kg wwt)	0.0041	0.108	0.0369	<0.0040	0.256
	Copper (Cu)-Total (mg/kg)	1.60	7.27	13.1	1.41	24.8
	Copper (Cu)-Total (mg/kg wwt)	0.281	4.73	3.37	0.263	13.9
	Iron (Fe)-Total (mg/kg)	18.2	53.3	44.2	11.1	105
	Iron (Fe)-Total (mg/kg wwt)	3.19	34.7	11.4	2.06	58.8
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1400	55.1	500	1210	142
	Magnesium (Mg)-Total (mg/kg wwt)	246	35.9	129	225	79.3
	Manganese (Mn)-Total (mg/kg)	0.808	0.284	1.17	0.777	1.20
	Manganese (Mn)-Total (mg/kg wwt)	0.142	0.185	0.301	0.145	0.672

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691825-6 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#3 MUSCLE	L1691825-7 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#3 LIVER	L1691825-8 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#4 MUSCLE	L1691825-9 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#4 LIVER	L1691825-10 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#4X MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	81.5	29.2	83.3	42.9	80.2
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	2.1	<2.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	1.52	<0.40	0.50	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0027	<0.0020	0.0021	<0.0020
	Arsenic (As)-Total (mg/kg)	0.440	0.568	0.933	2.74	0.704
	Arsenic (As)-Total (mg/kg wwt)	0.0816	0.402	0.156	1.56	0.140
	Barium (Ba)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Barium (Ba)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	0.027	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.0050	0.0750	<0.0050	0.104	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0531	<0.0010	0.0592	<0.0010
	Calcium (Ca)-Total (mg/kg)	365	23	462	54	382
	Calcium (Ca)-Total (mg/kg wwt)	67.7	16.4	77.2	31.0	75.7
	Cesium (Cs)-Total (mg/kg)	0.270	0.0086	0.166	0.0192	0.145
	Cesium (Cs)-Total (mg/kg wwt)	0.0501	0.0061	0.0277	0.0109	0.0288
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.020	0.207	<0.020	0.212	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.147	<0.0040	0.121	<0.0040
	Copper (Cu)-Total (mg/kg)	2.44	16.3	1.92	7.26	1.51
	Copper (Cu)-Total (mg/kg wwt)	0.452	11.5	0.321	4.14	0.299
	Iron (Fe)-Total (mg/kg)	23.9	63.0	18.0	60.5	10.1
	Iron (Fe)-Total (mg/kg wwt)	4.43	44.6	3.01	34.5	2.00
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1180	64.6	1250	103	1130
	Magnesium (Mg)-Total (mg/kg wwt)	218	45.8	209	58.8	224
	Manganese (Mn)-Total (mg/kg)	0.626	0.662	0.705	1.05	0.629
	Manganese (Mn)-Total (mg/kg wwt)	0.116	0.469	0.118	0.602	0.125

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691825-1 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#1 MUSCLE	L1691825-2 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#1 LIVER	L1691825-3 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#1 GONADS	L1691825-4 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#2 MUSCLE	L1691825-5 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#2 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	2.72	0.0989	0.373	2.11	0.161
	Mercury (Hg)-Total (mg/kg wwt)	0.478	0.0643	0.0960	0.394	0.0897
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.071	0.071	<0.020	0.258
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0464	0.0183	<0.0040	0.144
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.41	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.105	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	12200	1110	10100	9600	3000
	Phosphorus (P)-Total (mg/kg wwt)	2150	723	2600	1790	1680
	Potassium (K)-Total (mg/kg)	18900	1260	8990	16800	3100
	Potassium (K)-Total (mg/kg wwt)	3320	823	2320	3130	1730
	Rubidium (Rb)-Total (mg/kg)	33.7	1.94	18.5	29.5	4.79
	Rubidium (Rb)-Total (mg/kg wwt)	5.91	1.26	4.76	5.50	2.68
	Selenium (Se)-Total (mg/kg)	2.40	0.842	7.34	2.27	1.77
	Selenium (Se)-Total (mg/kg wwt)	0.422	0.548	1.89	0.423	0.988
	Sodium (Na)-Total (mg/kg)	3270	544	5670	3450	1020
	Sodium (Na)-Total (mg/kg wwt)	574	354	1460	642	572
	Strontium (Sr)-Total (mg/kg)	1.11	0.065	13.3	0.593	0.125
	Strontium (Sr)-Total (mg/kg wwt)	0.195	0.042	3.43	0.110	0.070
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0089	<0.0020	0.0086	0.0103	0.0059
	Thallium (Tl)-Total (mg/kg wwt)	0.00157	0.00109	0.00220	0.00191	0.00330
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0054	0.0086	<0.0020	0.0033
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00351	0.00222	<0.00040	0.00184
	Vanadium (V)-Total (mg/kg)	<0.10	0.11	0.10	<0.10	0.11
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.072	0.026	<0.020	0.060
	Zinc (Zn)-Total (mg/kg)	30.5	19.0	91.0	29.4	40.1
	Zinc (Zn)-Total (mg/kg wwt)	5.35	12.4	23.4	5.47	22.4
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691825-6 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#3 MUSCLE	L1691825-7 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#3 LIVER	L1691825-8 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#4 MUSCLE	L1691825-9 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#4 LIVER	L1691825-10 Tissue 04-OCT-15 16:15 QUL NEAR HAZELTINE CR. BB#4X MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	2.35	0.0944	0.625	0.0438	0.546
	Mercury (Hg)-Total (mg/kg wwt)	0.436	0.0669	0.104	0.0250	0.108
	Molybdenum (Mo)-Total (mg/kg)	<0.020	0.058	<0.020	0.135	<0.020
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.0413	<0.0040	0.0772	<0.0040
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	10800	1270	10700	2120	9310
	Phosphorus (P)-Total (mg/kg wwt)	2000	898	1780	1210	1850
	Potassium (K)-Total (mg/kg)	18400	1560	18000	2210	15700
	Potassium (K)-Total (mg/kg wwt)	3420	1100	3010	1260	3110
	Rubidium (Rb)-Total (mg/kg)	27.6	2.18	27.9	3.53	24.2
	Rubidium (Rb)-Total (mg/kg wwt)	5.11	1.54	4.65	2.02	4.79
	Selenium (Se)-Total (mg/kg)	2.56	0.980	3.93	1.63	3.46
	Selenium (Se)-Total (mg/kg wwt)	0.474	0.694	0.655	0.931	0.686
	Sodium (Na)-Total (mg/kg)	2750	639	3570	1270	2890
	Sodium (Na)-Total (mg/kg wwt)	511	453	596	724	573
	Strontium (Sr)-Total (mg/kg)	0.736	0.082	0.882	0.200	0.705
	Strontium (Sr)-Total (mg/kg wwt)	0.136	0.058	0.147	0.114	0.140
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0173	0.0027	0.0163	0.0057	0.0144
	Thallium (Tl)-Total (mg/kg wwt)	0.00321	0.00191	0.00272	0.00328	0.00286
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00081	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.024	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	42.0	25.0	31.7	20.6	27.8
	Zinc (Zn)-Total (mg/kg wwt)	7.78	17.7	5.29	11.7	5.52
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (Al)-Total	DUP-H	L1691825-2, -5, -7, -9
Method Blank	Copper (Cu)-Total	MB-LOR	L1691825-2, -5, -7, -9
Method Blank	Copper (Cu)-Total	MB-LOR	L1691825-2, -5, -7, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:		Quote #:	
Lab Work (lab use		ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt

L1691825-COFC

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Gonads	Number of Containers
	QUL near Hazeltine Cr. BB # 1	04-Oct-15	8:00-16:15	Tissue	X	X	X	X	
	Qul near Hazeltine Cr. BB # 2	04-Oct-15	8:00-16:15	Tissue	X	X	X		
	QUL near Hazeltine Cr. BB # 3	04-Oct-15	8:00-16:15	Tissue	X	X	X		
	QUL near Hazeltine Cr. BB # 4	04-Oct-15	8:00-16:15	Tissue	X	X	X		
	QUL near Hazeltine Cr. BB # 4 X	04-Oct-15	8:00-16:15	Tissue	X	X			

Short Holding Time

Rush Processing

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Oct 9 2015 1630	YL	OCT 10	16:00	0			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 10-OCT-15
Report Date: 07-DEC-15 17:45 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1691836

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-1 Tissue 04-AUG-15 16:15 TRIO LAKE RB#1 MUSCLE	L1691836-2 Tissue 04-AUG-15 16:15 TRIO LAKE RB#1 LIVER	L1691836-3 Tissue 04-AUG-15 16:15 TRIO LAKE RB#1 KIDNEY	L1691836-4 Tissue 04-AUG-15 16:15 TRIO LAKE RB#1X MUSCLE	L1691836-5 Tissue 04-AUG-15 16:15 TRIO LAKE RB#2 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	76.0	70.5	69.1	76.6	81.8
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	<1.0	<1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.030	<0.030	0.079	<0.030	<0.030
	Arsenic (As)-Total (mg/kg wwt)	<0.0060	0.0085	0.0244	<0.0060	<0.0060
	Barium (Ba)-Total (mg/kg)	0.109	<0.050	0.265	0.148	0.105
	Barium (Ba)-Total (mg/kg wwt)	0.026	0.012	0.082	0.035	0.019
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.010	0.190	0.477	<0.010	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0020	0.0561	0.147	<0.0020	<0.0020
	Calcium (Ca)-Total (mg/kg)	864	232	896	2160	925
	Calcium (Ca)-Total (mg/kg wwt)	208	68.5	277	505	168
	Cesium (Cs)-Total (mg/kg)	0.0290	0.0054	0.0153	0.0289	0.0347
	Cesium (Cs)-Total (mg/kg wwt)	0.0070	0.0016	0.0047	0.0068	0.0063
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	0.44	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	0.041	0.135	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	0.055	0.762	<0.020	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0163	0.235	<0.0040	<0.0040
	Copper (Cu)-Total (mg/kg)	0.68	110	4.21	0.60	0.75
	Copper (Cu)-Total (mg/kg wwt)	0.164	32.3	1.30	0.141	0.136
	Iron (Fe)-Total (mg/kg)	10.9	1040	552	11.5	28.7
	Iron (Fe)-Total (mg/kg wwt)	2.6	308	170	2.7	5.2
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1270	672	609	1320	1300
	Magnesium (Mg)-Total (mg/kg wwt)	306	198	188	308	235
	Manganese (Mn)-Total (mg/kg)	0.239	6.24	0.981	0.491	0.380
	Manganese (Mn)-Total (mg/kg wwt)	0.057	1.84	0.303	0.115	0.069

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-6 Tissue 04-AUG-15 16:15 TRIO LAKE RB#2 LIVER	L1691836-7 Tissue 04-AUG-15 16:15 TRIO LAKE RB#2 KIDNEY	L1691836-8 Tissue 04-AUG-15 16:15 TRIO LAKE RB#3 MUSCLE	L1691836-9 Tissue 04-AUG-15 16:15 TRIO LAKE RB#3 LIVER	L1691836-10 Tissue 04-AUG-15 16:15 TRIO LAKE RB#3 KIDNEY
TISSUE						
Physical Tests	% Moisture (%)	75.8	87.4	77.4	73.5	78.4
Metals	Aluminum (Al)-Total (mg/kg)	27.3	27.1	<5.0	8.2	14.8
	Aluminum (Al)-Total (mg/kg wwt)	6.6	3.4	<1.0	2.2	3.2
	Antimony (Sb)-Total (mg/kg)	0.014	0.024	<0.010	<0.010	0.039
	Antimony (Sb)-Total (mg/kg wwt)	0.0034	0.0030	<0.0020	<0.0020	0.0084
	Arsenic (As)-Total (mg/kg)	0.073	0.179	<0.030	0.044	0.403
	Arsenic (As)-Total (mg/kg wwt)	0.0176	0.0225	<0.0060	0.0116	0.0871
	Barium (Ba)-Total (mg/kg)	0.111	0.850	0.079	0.052	1.50
	Barium (Ba)-Total (mg/kg wwt)	0.027	0.107	0.018	0.014	0.324
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	1.1
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	0.25
	Cadmium (Cd)-Total (mg/kg)	0.656	0.806	<0.010	0.156	1.29
	Cadmium (Cd)-Total (mg/kg wwt)	0.159	0.101	<0.0020	0.0414	0.278
	Calcium (Ca)-Total (mg/kg)	462	2460	508	240	1740
	Calcium (Ca)-Total (mg/kg wwt)	112	309	115	63.6	376
	Cesium (Cs)-Total (mg/kg)	0.0106	0.0309	0.0277	0.0085	0.0261
	Cesium (Cs)-Total (mg/kg wwt)	0.0026	0.0039	0.0063	0.0023	0.0056
	Chromium (Cr)-Total (mg/kg)	0.42	1.46	<0.20	0.29	1.09
	Chromium (Cr)-Total (mg/kg wwt)	0.102	0.184	<0.040	0.076	0.235
	Cobalt (Co)-Total (mg/kg)	0.114	1.97	0.027	0.072	1.45
	Cobalt (Co)-Total (mg/kg wwt)	0.0276	0.248	0.0061	0.0190	0.314
	Copper (Cu)-Total (mg/kg)	196	7.25	1.08	193	8.01
	Copper (Cu)-Total (mg/kg wwt)	47.6	0.912	0.243	51.0	1.73
	Iron (Fe)-Total (mg/kg)	4920	3300	33.4	1790	681
	Iron (Fe)-Total (mg/kg wwt)	1190	415	7.5	475	147
	Lead (Pb)-Total (mg/kg)	<0.050	0.082	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	715	1120	1140	649	1250
	Magnesium (Mg)-Total (mg/kg wwt)	173	141	258	172	270
	Manganese (Mn)-Total (mg/kg)	6.01	2.79	0.237	3.74	2.77
	Manganese (Mn)-Total (mg/kg wwt)	1.46	0.350	0.054	0.990	0.599

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-11 Tissue 04-AUG-15 16:15 TRIO LAKE RB#4 MUSCLE	L1691836-12 Tissue 04-AUG-15 16:15 TRIO LAKE RB#4 LIVER	L1691836-13 Tissue 04-AUG-15 16:15 TRIO LAKE RB#4 KIDNEY	L1691836-14 Tissue 04-AUG-15 16:15 TRIO LAKE RB#5 MUSCLE	L1691836-15 Tissue 04-AUG-15 16:15 TRIO LAKE RB#5 LIVER
TISSUE						
Physical Tests	% Moisture (%)	82.0	80.4	82.9	78.3	76.2
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	9.4	11.5	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	1.8	2.0	<1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	0.013	0.017	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0026	0.0029	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.030	0.057	0.399	<0.030	0.069
	Arsenic (As)-Total (mg/kg wwt)	<0.0060	0.0112	0.0680	<0.0060	0.0164
	Barium (Ba)-Total (mg/kg)	0.097	<0.050	0.826	0.064	<0.050
	Barium (Ba)-Total (mg/kg wwt)	0.017	<0.010	0.141	0.014	<0.010
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	<0.010	0.592	1.18	<0.010	0.274
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0020	0.116	0.201	<0.0020	0.0653
	Calcium (Ca)-Total (mg/kg)	735	320	2160	778	278
	Calcium (Ca)-Total (mg/kg wwt)	133	62.6	369	169	66.1
	Cesium (Cs)-Total (mg/kg)	0.0345	0.0087	0.0226	0.0325	0.0097
	Cesium (Cs)-Total (mg/kg wwt)	0.0062	0.0017	0.0039	0.0070	0.0023
	Chromium (Cr)-Total (mg/kg)	<0.20	0.50	1.91	<0.20	0.37
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	0.097	0.326	<0.040	0.089
	Cobalt (Co)-Total (mg/kg)	0.022	0.176	1.87	<0.020	0.086
	Cobalt (Co)-Total (mg/kg wwt)	0.0040	0.0346	0.319	<0.0040	0.0204
	Copper (Cu)-Total (mg/kg)	0.91	220	9.66	0.87	153
	Copper (Cu)-Total (mg/kg wwt)	0.164	43.1	1.65	0.189	36.3
	Iron (Fe)-Total (mg/kg)	32.8	2980	2860	21.1	1750
	Iron (Fe)-Total (mg/kg wwt)	5.9	583	487	4.6	417
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1310	742	1170	1190	602
	Magnesium (Mg)-Total (mg/kg wwt)	236	145	199	259	143
	Manganese (Mn)-Total (mg/kg)	0.260	8.16	2.77	0.306	4.34
	Manganese (Mn)-Total (mg/kg wwt)	0.047	1.60	0.472	0.066	1.03

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-16 Tissue 04-AUG-15 16:15 TRIO LAKE RB#5 KIDNEY	L1691836-17 Tissue 04-AUG-15 16:15 TRIO LAKE RB#6 MUSCLE	L1691836-18 Tissue 04-AUG-15 16:15 TRIO LAKE RB#6 LIVER	L1691836-19 Tissue 04-AUG-15 16:15 TRIO LAKE RB#6 KIDNEY	L1691836-20 Tissue 04-AUG-15 16:15 TRIO LAKE RB#7 MUSCLE
TISSUE						
Physical Tests	% Moisture (%)	78.9	76.7	72.3	82.5	75.1
Metals	Aluminum (Al)-Total (mg/kg)	13.3	<5.0	<5.0	5.8	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	2.8	<1.0	1.2	1.0	<1.0
	Antimony (Sb)-Total (mg/kg)	0.011	<0.010	<0.010	0.015	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0024	<0.0020	<0.0020	0.0026	<0.0020
	Arsenic (As)-Total (mg/kg)	0.245	0.034	0.043	0.438	0.069
	Arsenic (As)-Total (mg/kg wwt)	0.0518	0.0080	0.0120	0.0768	0.0171
	Barium (Ba)-Total (mg/kg)	0.522	<0.050	<0.050	0.618	0.112
	Barium (Ba)-Total (mg/kg wwt)	0.110	0.010	0.010	0.108	0.028
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	1.3	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	0.23	<0.20
	Cadmium (Cd)-Total (mg/kg)	1.12	<0.010	0.322	0.828	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	0.236	<0.0020	0.0891	0.145	<0.0020
	Calcium (Ca)-Total (mg/kg)	1420	608	212	2370	591
	Calcium (Ca)-Total (mg/kg wwt)	299	141	58.8	416	147
	Cesium (Cs)-Total (mg/kg)	0.0283	0.0238	0.0072	0.0300	0.0514
	Cesium (Cs)-Total (mg/kg wwt)	0.0060	0.0055	0.0020	0.0053	0.0128
	Chromium (Cr)-Total (mg/kg)	1.28	<0.20	0.26	1.93	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	0.271	<0.040	0.072	0.338	<0.040
	Cobalt (Co)-Total (mg/kg)	2.13	<0.020	0.066	1.19	0.029
	Cobalt (Co)-Total (mg/kg wwt)	0.450	0.0045	0.0181	0.208	0.0072
	Copper (Cu)-Total (mg/kg)	7.07	1.30	166	6.98	1.58
	Copper (Cu)-Total (mg/kg wwt)	1.49	0.303	46.0	1.22	0.394
	Iron (Fe)-Total (mg/kg)	1230	28.5	2350	955	26.8
	Iron (Fe)-Total (mg/kg wwt)	260	6.6	651	167	6.7
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	967	1160	622	1310	1050
	Magnesium (Mg)-Total (mg/kg wwt)	204	271	172	230	263
	Manganese (Mn)-Total (mg/kg)	2.03	0.223	4.79	2.39	0.381
	Manganese (Mn)-Total (mg/kg wwt)	0.428	0.052	1.33	0.419	0.095

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-21 Tissue 04-AUG-15 16:15 TRIO LAKE RB#7 LIVER	L1691836-22 Tissue 04-AUG-15 16:15 TRIO LAKE RB#7 KIDNEY	L1691836-23 Tissue 04-AUG-15 16:15 TRIO LAKE RB#8 MUSCLE	L1691836-24 Tissue 04-AUG-15 16:15 TRIO LAKE RB#8 LIVER	L1691836-25 Tissue 04-AUG-15 16:15 TRIO LAKE RB#8 KIDNEY
TISSUE						
Physical Tests	% Moisture (%)	73.9	74.7	76.5	76.1	76.6
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	1.1	<1.0	<1.0	1.1
	Antimony (Sb)-Total (mg/kg)	<0.010	0.012	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0029	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.152	0.206	0.035	0.053	0.078
	Arsenic (As)-Total (mg/kg wwt)	0.0398	0.0521	0.0082	0.0126	0.0182
	Barium (Ba)-Total (mg/kg)	<0.050	0.489	0.191	0.071	0.832
	Barium (Ba)-Total (mg/kg wwt)	<0.010	0.124	0.045	0.017	0.195
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.123	0.730	<0.010	0.099	0.383
	Cadmium (Cd)-Total (mg/kg wwt)	0.0321	0.185	<0.0020	0.0237	0.0897
	Calcium (Ca)-Total (mg/kg)	423	1680	1290	414	930
	Calcium (Ca)-Total (mg/kg wwt)	111	426	304	98.8	218
	Cesium (Cs)-Total (mg/kg)	0.0206	0.0329	0.0540	0.0196	0.0367
	Cesium (Cs)-Total (mg/kg wwt)	0.0054	0.0083	0.0127	0.0047	0.0086
	Chromium (Cr)-Total (mg/kg)	<0.20	0.59	<0.20	<0.20	2.24
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	0.149	<0.040	<0.040	0.525
	Cobalt (Co)-Total (mg/kg)	0.171	1.36	<0.020	0.166	1.31
	Cobalt (Co)-Total (mg/kg wwt)	0.0446	0.345	0.0045	0.0396	0.307
	Copper (Cu)-Total (mg/kg)	272	7.26	1.10	188	7.11
	Copper (Cu)-Total (mg/kg wwt)	71.0	1.84	0.257	44.8	1.66
	Iron (Fe)-Total (mg/kg)	484	585	14.9	894	721
	Iron (Fe)-Total (mg/kg wwt)	126	148	3.5	213	169
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	705	829	1100	583	724
	Magnesium (Mg)-Total (mg/kg wwt)	184	210	257	139	169
	Manganese (Mn)-Total (mg/kg)	7.42	3.30	0.491	5.56	2.24
	Manganese (Mn)-Total (mg/kg wwt)	1.94	0.836	0.115	1.33	0.524

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-1 Tissue 04-AUG-15 16:15 TRIO LAKE RB#1 MUSCLE	L1691836-2 Tissue 04-AUG-15 16:15 TRIO LAKE RB#1 LIVER	L1691836-3 Tissue 04-AUG-15 16:15 TRIO LAKE RB#1 KIDNEY	L1691836-4 Tissue 04-AUG-15 16:15 TRIO LAKE RB#1X MUSCLE	L1691836-5 Tissue 04-AUG-15 16:15 TRIO LAKE RB#2 MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	1.20	0.655	0.804	1.17	2.27
	Mercury (Hg)-Total (mg/kg wwt)	0.288	0.193	0.248	0.273	0.412
	Molybdenum (Mo)-Total (mg/kg)	<0.040	1.24	0.288	<0.040	<0.040
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0080	0.367	0.0888	<0.0080	<0.0080
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.21	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.066	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	10000	13900	8440	10600	12200
	Phosphorus (P)-Total (mg/kg wwt)	2410	4100	2610	2470	2210
	Potassium (K)-Total (mg/kg)	16900	9020	9010	16700	20700
	Potassium (K)-Total (mg/kg wwt)	4070	2660	2780	3910	3750
	Rubidium (Rb)-Total (mg/kg)	3.67	2.69	2.38	3.76	6.36
	Rubidium (Rb)-Total (mg/kg wwt)	0.882	0.793	0.736	0.881	1.16
	Selenium (Se)-Total (mg/kg)	0.65	29.1	2.44	0.71	0.81
	Selenium (Se)-Total (mg/kg wwt)	0.157	8.58	0.753	0.166	0.147
	Sodium (Na)-Total (mg/kg)	949	2740	2240	986	1780
	Sodium (Na)-Total (mg/kg wwt)	228	809	690	231	324
	Strontium (Sr)-Total (mg/kg)	1.54	0.33	1.95	6.93	1.59
	Strontium (Sr)-Total (mg/kg wwt)	0.371	0.096	0.601	1.62	0.288
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0166	0.0486	0.0569	0.0162	0.0121
	Thallium (Tl)-Total (mg/kg wwt)	0.00399	0.0143	0.0176	0.00379	0.00219
	Tin (Sn)-Total (mg/kg)	<0.10	0.12	0.13	<0.10	0.12
	Tin (Sn)-Total (mg/kg wwt)	0.022	0.034	0.039	<0.020	0.021
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00057	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.16	0.19	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.046	0.059	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	13.7	131	121	17.9	19.3
	Zinc (Zn)-Total (mg/kg wwt)	3.29	38.8	37.5	4.19	3.50
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-6 Tissue 04-AUG-15 16:15 TRIO LAKE RB#2 LIVER	L1691836-7 Tissue 04-AUG-15 16:15 TRIO LAKE RB#2 KIDNEY	L1691836-8 Tissue 04-AUG-15 16:15 TRIO LAKE RB#3 MUSCLE	L1691836-9 Tissue 04-AUG-15 16:15 TRIO LAKE RB#3 LIVER	L1691836-10 Tissue 04-AUG-15 16:15 TRIO LAKE RB#3 KIDNEY
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	2.82	3.78	1.95	1.59	2.38
	Mercury (Hg)-Total (mg/kg wwt)	0.684	0.475	0.439	0.422	0.515
	Molybdenum (Mo)-Total (mg/kg)	2.77	0.653	<0.040	1.46	0.684
	Molybdenum (Mo)-Total (mg/kg wwt)	0.671	0.0822	<0.0080	0.387	0.148
	Nickel (Ni)-Total (mg/kg)	<0.20	1.16	<0.20	<0.20	0.36
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.146	<0.040	<0.040	0.077
	Phosphorus (P)-Total (mg/kg)	13800	15900	10000	12400	11300
	Phosphorus (P)-Total (mg/kg wwt)	3350	2000	2270	3280	2450
	Potassium (K)-Total (mg/kg)	10400	18300	17300	8860	12700
	Potassium (K)-Total (mg/kg wwt)	2530	2300	3910	2350	2750
	Rubidium (Rb)-Total (mg/kg)	3.90	6.12	6.31	4.43	5.32
	Rubidium (Rb)-Total (mg/kg wwt)	0.946	0.770	1.42	1.17	1.15
	Selenium (Se)-Total (mg/kg)	17.3	6.51	0.76	41.6	7.45
	Selenium (Se)-Total (mg/kg wwt)	4.19	0.819	0.170	11.0	1.61
	Sodium (Na)-Total (mg/kg)	4370	7830	1280	2740	3300
	Sodium (Na)-Total (mg/kg wwt)	1060	985	288	725	713
	Strontium (Sr)-Total (mg/kg)	0.75	5.54	0.65	0.44	5.69
	Strontium (Sr)-Total (mg/kg wwt)	0.182	0.696	0.146	0.117	1.23
	Tellurium (Te)-Total (mg/kg)	<0.020	0.044	<0.020	<0.020	0.035
	Tellurium (Te)-Total (mg/kg wwt)	0.0045	0.0056	<0.0040	<0.0040	0.0075
	Thallium (Tl)-Total (mg/kg)	0.0893	0.0658	0.0174	0.0806	0.158
	Thallium (Tl)-Total (mg/kg wwt)	0.0217	0.00828	0.00392	0.0214	0.0341
	Tin (Sn)-Total (mg/kg)	0.28	2.10	<0.10	0.18	0.71
	Tin (Sn)-Total (mg/kg wwt)	0.068	0.265	<0.020	0.048	0.154
	Uranium (U)-Total (mg/kg)	0.0348	0.0382	<0.0020	0.0050	0.0102
	Uranium (U)-Total (mg/kg wwt)	0.00845	0.00480	<0.00040	0.00133	0.00219
	Vanadium (V)-Total (mg/kg)	4.12	2.73	<0.10	2.02	1.73
	Vanadium (V)-Total (mg/kg wwt)	0.998	0.343	<0.020	0.534	0.374
	Zinc (Zn)-Total (mg/kg)	189	251	32.3	148	194
	Zinc (Zn)-Total (mg/kg wwt)	45.7	31.6	7.29	39.3	42.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	0.37	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.047	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-11 Tissue 04-AUG-15 16:15 TRIO LAKE RB#4 MUSCLE	L1691836-12 Tissue 04-AUG-15 16:15 TRIO LAKE RB#4 LIVER	L1691836-13 Tissue 04-AUG-15 16:15 TRIO LAKE RB#4 KIDNEY	L1691836-14 Tissue 04-AUG-15 16:15 TRIO LAKE RB#5 MUSCLE	L1691836-15 Tissue 04-AUG-15 16:15 TRIO LAKE RB#5 LIVER
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	3.70	3.69	5.55	1.56	1.77
	Mercury (Hg)-Total (mg/kg wwt)	0.668	0.723	0.946	0.339	0.420
	Molybdenum (Mo)-Total (mg/kg)	<0.040	3.96	0.817	<0.040	1.89
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0080	0.776	0.139	<0.0080	0.450
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.75	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	0.127	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	11000	14900	12100	10500	13000
	Phosphorus (P)-Total (mg/kg wwt)	1980	2910	2060	2280	3090
	Potassium (K)-Total (mg/kg)	20400	10500	14000	19100	8910
	Potassium (K)-Total (mg/kg wwt)	3680	2050	2380	4140	2120
	Rubidium (Rb)-Total (mg/kg)	4.17	3.10	3.07	5.96	3.64
	Rubidium (Rb)-Total (mg/kg wwt)	0.753	0.608	0.524	1.29	0.866
	Selenium (Se)-Total (mg/kg)	0.72	25.9	10.3	0.70	28.5
	Selenium (Se)-Total (mg/kg wwt)	0.129	5.07	1.76	0.151	6.79
	Sodium (Na)-Total (mg/kg)	2290	5390	5470	1480	3980
	Sodium (Na)-Total (mg/kg wwt)	413	1060	932	321	948
	Strontium (Sr)-Total (mg/kg)	0.80	0.49	7.19	0.97	0.56
	Strontium (Sr)-Total (mg/kg wwt)	0.145	0.095	1.23	0.211	0.133
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	0.053	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0091	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0191	0.104	0.162	0.0160	0.0556
	Thallium (Tl)-Total (mg/kg wwt)	0.00344	0.0204	0.0276	0.00348	0.0132
	Tin (Sn)-Total (mg/kg)	<0.10	0.22	1.16	<0.10	0.24
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.043	0.198	<0.020	0.057
	Uranium (U)-Total (mg/kg)	<0.0020	0.0128	0.0228	<0.0020	0.0032
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00250	0.00389	<0.00040	0.00077
	Vanadium (V)-Total (mg/kg)	<0.10	1.73	2.69	<0.10	0.56
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.340	0.459	<0.020	0.132
	Zinc (Zn)-Total (mg/kg)	20.8	177	199	15.8	134
	Zinc (Zn)-Total (mg/kg wwt)	3.75	34.8	33.9	3.44	31.9
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-16 Tissue 04-AUG-15 16:15 TRIO LAKE RB#5 KIDNEY	L1691836-17 Tissue 04-AUG-15 16:15 TRIO LAKE RB#6 MUSCLE	L1691836-18 Tissue 04-AUG-15 16:15 TRIO LAKE RB#6 LIVER	L1691836-19 Tissue 04-AUG-15 16:15 TRIO LAKE RB#6 KIDNEY	L1691836-20 Tissue 04-AUG-15 16:15 TRIO LAKE RB#7 MUSCLE
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	3.12	1.65	0.980	2.10	0.465
	Mercury (Hg)-Total (mg/kg wwt)	0.660	0.383	0.271	0.367	0.116
	Molybdenum (Mo)-Total (mg/kg)	0.602	<0.040	1.63	0.714	<0.040
	Molybdenum (Mo)-Total (mg/kg wwt)	0.127	<0.0080	0.452	0.125	<0.0080
	Nickel (Ni)-Total (mg/kg)	0.45	<0.20	<0.20	0.84	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	0.095	<0.040	<0.040	0.148	<0.040
	Phosphorus (P)-Total (mg/kg)	12700	9680	12200	14300	9390
	Phosphorus (P)-Total (mg/kg wwt)	2680	2250	3390	2510	2340
	Potassium (K)-Total (mg/kg)	14700	15600	9280	16700	14600
	Potassium (K)-Total (mg/kg wwt)	3100	3630	2570	2930	3640
	Rubidium (Rb)-Total (mg/kg)	5.14	4.84	3.42	5.58	7.70
	Rubidium (Rb)-Total (mg/kg wwt)	1.09	1.12	0.947	0.978	1.92
	Selenium (Se)-Total (mg/kg)	5.74	0.75	23.0	7.31	0.69
	Selenium (Se)-Total (mg/kg wwt)	1.21	0.174	6.38	1.28	0.171
	Sodium (Na)-Total (mg/kg)	4040	1220	3110	5130	1020
	Sodium (Na)-Total (mg/kg wwt)	854	283	860	899	255
	Strontium (Sr)-Total (mg/kg)	3.33	0.74	0.37	4.92	1.13
	Strontium (Sr)-Total (mg/kg wwt)	0.702	0.172	0.102	0.862	0.281
	Tellurium (Te)-Total (mg/kg)	0.060	<0.020	<0.020	0.045	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	0.0127	<0.0040	<0.0040	0.0079	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0893	0.0186	0.0814	0.105	0.0142
	Thallium (Tl)-Total (mg/kg wwt)	0.0189	0.00432	0.0225	0.0185	0.00353
	Tin (Sn)-Total (mg/kg)	1.64	<0.10	0.21	4.79	0.19
	Tin (Sn)-Total (mg/kg wwt)	0.347	<0.020	0.058	0.839	0.046
	Uranium (U)-Total (mg/kg)	0.0078	<0.0020	0.0039	0.0081	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00166	<0.00040	0.00109	0.00141	<0.00040
	Vanadium (V)-Total (mg/kg)	0.92	<0.10	0.90	0.76	<0.10
	Vanadium (V)-Total (mg/kg wwt)	0.194	<0.020	0.249	0.134	<0.020
	Zinc (Zn)-Total (mg/kg)	222	24.2	162	188	26.5
	Zinc (Zn)-Total (mg/kg wwt)	46.8	5.62	44.8	33.0	6.59
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1691836-21 Tissue 04-AUG-15 16:15 TRIO LAKE RB#7 LIVER	L1691836-22 Tissue 04-AUG-15 16:15 TRIO LAKE RB#7 KIDNEY	L1691836-23 Tissue 04-AUG-15 16:15 TRIO LAKE RB#8 MUSCLE	L1691836-24 Tissue 04-AUG-15 16:15 TRIO LAKE RB#8 LIVER	L1691836-25 Tissue 04-AUG-15 16:15 TRIO LAKE RB#8 KIDNEY
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.462	0.780	0.757	0.730	0.957
	Mercury (Hg)-Total (mg/kg wwt)	0.121	0.198	0.178	0.174	0.224
	Molybdenum (Mo)-Total (mg/kg)	0.956	0.612	<0.040	0.800	0.385
	Molybdenum (Mo)-Total (mg/kg wwt)	0.250	0.155	<0.0080	0.191	0.0901
	Nickel (Ni)-Total (mg/kg)	<0.20	0.38	<0.20	<0.20	1.12
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.095	<0.040	<0.040	0.263
	Phosphorus (P)-Total (mg/kg)	12800	9610	9400	11600	10300
	Phosphorus (P)-Total (mg/kg wwt)	3330	2430	2210	2760	2420
	Potassium (K)-Total (mg/kg)	9080	9720	15600	8780	10500
	Potassium (K)-Total (mg/kg wwt)	2370	2460	3660	2100	2470
	Rubidium (Rb)-Total (mg/kg)	7.66	5.56	8.03	6.27	5.97
	Rubidium (Rb)-Total (mg/kg wwt)	2.00	1.41	1.89	1.50	1.40
	Selenium (Se)-Total (mg/kg)	29.1	3.75	0.59	26.5	2.99
	Selenium (Se)-Total (mg/kg wwt)	7.61	0.951	0.138	6.33	0.699
	Sodium (Na)-Total (mg/kg)	3800	2550	993	4370	2620
	Sodium (Na)-Total (mg/kg wwt)	994	645	233	1040	613
	Strontium (Sr)-Total (mg/kg)	0.77	3.10	3.67	1.37	3.19
	Strontium (Sr)-Total (mg/kg wwt)	0.200	0.785	0.862	0.328	0.746
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0695	0.0786	0.0210	0.0864	0.0633
	Thallium (Tl)-Total (mg/kg wwt)	0.0182	0.0199	0.00493	0.0206	0.0148
	Tin (Sn)-Total (mg/kg)	0.16	0.36	0.31	0.13	0.98
	Tin (Sn)-Total (mg/kg wwt)	0.043	0.091	0.072	0.030	0.229
	Uranium (U)-Total (mg/kg)	<0.0020	0.0064	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00050	0.00162	<0.00040	<0.00040	0.00046
	Vanadium (V)-Total (mg/kg)	0.14	0.28	<0.10	0.17	0.23
	Vanadium (V)-Total (mg/kg wwt)	0.038	0.072	<0.020	0.040	0.053
	Zinc (Zn)-Total (mg/kg)	134	120	28.6	143	143
	Zinc (Zn)-Total (mg/kg wwt)	35.0	30.5	6.71	34.1	33.5
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Mercury (Hg)-Total	DUP-H	L1691836-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -3, -4, -5, -6, -7, -8, -9
Duplicate	Iron (Fe)-Total	DUP-H	L1691836-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -3, -4, -5, -6, -7, -8, -9
Duplicate	Mercury (Hg)-Total	LCS-L	L1691836-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -25, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report to:		**Report Format / Distribution**	**Service Requested:** (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:		Quote #:	
Lab Work (lab use)	L1691836-COFC	**ALS Contact:** Can Dang	**Sampler:** Dolighan,Zirnhelt

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	Liver Metals	Kidney Metals	Number of Containers
	Trio Lake RB # 1	04-Aug-15	8:00-16:15	Tissue	X	X	X	X	3
	Trio Lake RB # 1X	04-Aug-15	8:00-16:15	Tissue	X	X			1
	Trio Lake RB # 2	04-Aug-15	8:00-16:15	Tissue	X	X	X	X	3
	Trio Lake RB # 3	04-Aug-15	8:00-16:15	Tissue	X	X	X	X	3
	Trio Lake RB # 4	04-Aug-15	8:00-16:15	Tissue	X	X	X	X	3
	Trio Lake RB # 5	04-Aug-15	8:00-16:15	Tissue	X	X	X	X	3
	Trio Lake RB # 6	04-Aug-15	8:00-16:15	Tissue	X	X	X	X	3
	Trio Lake RB # 7	04-Aug-15	8:00-16:15	Tissue	X	X	X	X	3
	Trio Lake RB # 8	04-Aug-15	8:00-16:15	Tissue	X	X	X	X	3

Short Holding Time

Rush Processing

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Oct 9 2015 1630		Oct 10	1600	9 ·			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 08-DEC-15
Report Date: 15-JAN-16 18:23 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1712033

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc: 42281

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712033-1	L1712033-2	L1712033-3	L1712033-4	L1712033-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	QUL NEAR GRAIN CR.PCC #1	QUL NEAR GRAIN CR.PCC #2	QUL NEAR GRAIN CR.PCC #3	QUL NEAR GRAIN CR.PCC #4	QUL NEAR GRAIN CR.PCC #5
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	74.5	72.9	66.8	72.2	71.2
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.164	0.136	0.110	0.132	0.195
	Arsenic (As)-Total (mg/kg wwt)	0.0419	0.0369	0.0366	0.0366	0.0561
	Barium (Ba)-Total (mg/kg)	4.21	3.33	2.50	2.45	1.63
	Barium (Ba)-Total (mg/kg wwt)	1.08	0.905	0.829	0.680	0.470
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	0.0024	0.0026	0.0028	0.0024	0.0027
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.0736	0.127	0.0472	0.0502	0.0543
	Cadmium (Cd)-Total (mg/kg wwt)	0.0188	0.0345	0.0157	0.0139	0.0156
	Calcium (Ca)-Total (mg/kg)	50500	37800	42800	27800	26800
	Calcium (Ca)-Total (mg/kg wwt)	12900	10300	14200	7720	7710
	Cesium (Cs)-Total (mg/kg)	0.112	0.0922	0.0885	0.136	0.108
	Cesium (Cs)-Total (mg/kg wwt)	0.0286	0.0250	0.0294	0.0379	0.0311
	Chromium (Cr)-Total (mg/kg)	0.104	0.302	<0.050	0.056	0.057
	Chromium (Cr)-Total (mg/kg wwt)	0.026	0.082	0.013	0.015	0.016
	Cobalt (Co)-Total (mg/kg)	0.159	0.156	0.073	0.153	0.099
	Cobalt (Co)-Total (mg/kg wwt)	0.0406	0.0422	0.0241	0.0425	0.0286
	Copper (Cu)-Total (mg/kg)	2.22	2.46	1.63	2.10	1.98
	Copper (Cu)-Total (mg/kg wwt)	0.567	0.669	0.541	0.583	0.569
	Iron (Fe)-Total (mg/kg)	61.4	82.0	54.3	52.6	55.4
	Iron (Fe)-Total (mg/kg wwt)	15.7	22.2	18.0	14.6	15.9
	Lead (Pb)-Total (mg/kg)	0.034	0.037	0.036	0.025	0.025
	Lead (Pb)-Total (mg/kg wwt)	0.0086	0.0099	0.0121	0.0070	0.0072
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1710	1500	1420	1340	1250
	Magnesium (Mg)-Total (mg/kg wwt)	437	407	472	373	360
	Manganese (Mn)-Total (mg/kg)	13.5	9.03	7.87	7.21	6.43
	Manganese (Mn)-Total (mg/kg wwt)	3.45	2.45	2.61	2.00	1.85

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712033-6	L1712033-7	L1712033-8		
	Description	Tissue	Tissue	Tissue		
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15		
	Sampled Time	08:00	08:00	08:00		
	Client ID	QUL NEAR GRAIN CR.PCC #6	QUL NEAR GRAIN CR.PCC #7	QUL NEAR GRAIN CR.PCC #8		
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	73.6	73.6	74.7		
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	6.7	76.7		
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	1.78	19.4		
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Arsenic (As)-Total (mg/kg)	0.121	0.179	0.136		
	Arsenic (As)-Total (mg/kg wwt)	0.0319	0.0473	0.0346		
	Barium (Ba)-Total (mg/kg)	3.09	3.00	2.84		
	Barium (Ba)-Total (mg/kg wwt)	0.815	0.793	0.718		
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0022	<0.0020		
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0		
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20		
	Cadmium (Cd)-Total (mg/kg)	0.0591	0.0832	0.0630		
	Cadmium (Cd)-Total (mg/kg wwt)	0.0156	0.0219	0.0160		
	Calcium (Ca)-Total (mg/kg)	44200	31800	30800		
	Calcium (Ca)-Total (mg/kg wwt)	11700	8380	7810		
	Cesium (Cs)-Total (mg/kg)	0.126	0.0911	0.120		
	Cesium (Cs)-Total (mg/kg wwt)	0.0331	0.0240	0.0305		
	Chromium (Cr)-Total (mg/kg)	0.092	0.198	0.346		
	Chromium (Cr)-Total (mg/kg wwt)	0.024	0.052	0.088		
	Cobalt (Co)-Total (mg/kg)	0.119	0.105	0.165		
	Cobalt (Co)-Total (mg/kg wwt)	0.0313	0.0276	0.0419		
	Copper (Cu)-Total (mg/kg)	2.08	2.21	2.74		
	Copper (Cu)-Total (mg/kg wwt)	0.548	0.582	0.695		
	Iron (Fe)-Total (mg/kg)	64.6	69.6	188		
	Iron (Fe)-Total (mg/kg wwt)	17.0	18.4	47.6		
	Lead (Pb)-Total (mg/kg)	0.025	0.023	0.052		
	Lead (Pb)-Total (mg/kg wwt)	0.0067	0.0059	0.0132		
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50		
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg)	1660	1340	1380		
	Magnesium (Mg)-Total (mg/kg wwt)	438	353	350		
	Manganese (Mn)-Total (mg/kg)	6.80	7.99	8.54		
	Manganese (Mn)-Total (mg/kg wwt)	1.79	2.11	2.16		

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712033-1	L1712033-2	L1712033-3	L1712033-4	L1712033-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	QUL NEAR GRAIN CR.PCC #1	QUL NEAR GRAIN CR.PCC #2	QUL NEAR GRAIN CR.PCC #3	QUL NEAR GRAIN CR.PCC #4	QUL NEAR GRAIN CR.PCC #5
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.339	0.290	0.289	0.365	0.298
	Mercury (Hg)-Total (mg/kg wwt)	0.0865	0.0786	0.0960	0.101	0.0857
	Molybdenum (Mo)-Total (mg/kg)	0.083	0.088	0.057	0.059	0.055
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0213	0.0240	0.0189	0.0164	0.0158
	Nickel (Ni)-Total (mg/kg)	<0.20	0.23	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.062	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	34700	27400	28500	22200	21500
	Phosphorus (P)-Total (mg/kg wwt)	8860	7420	9480	6150	6180
	Potassium (K)-Total (mg/kg)	13000	11800	10000	11800	11500
	Potassium (K)-Total (mg/kg wwt)	3330	3190	3320	3270	3310
	Rubidium (Rb)-Total (mg/kg)	15.2	14.3	10.4	14.0	13.7
	Rubidium (Rb)-Total (mg/kg wwt)	3.89	3.88	3.44	3.88	3.94
	Selenium (Se)-Total (mg/kg)	2.11	3.03	1.80	1.81	2.02
	Selenium (Se)-Total (mg/kg wwt)	0.539	0.822	0.599	0.503	0.582
	Sodium (Na)-Total (mg/kg)	3520	3050	2690	2890	2610
	Sodium (Na)-Total (mg/kg wwt)	898	826	893	804	750
	Strontium (Sr)-Total (mg/kg)	110	71.9	92.4	60.7	58.4
	Strontium (Sr)-Total (mg/kg wwt)	28.1	19.5	30.7	16.9	16.8
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0050	0.0038	0.0033	0.0049	0.0034
	Thallium (Tl)-Total (mg/kg wwt)	0.00127	0.00103	0.00108	0.00136	0.00099
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	0.11
	Tin (Sn)-Total (mg/kg wwt)	0.025	<0.020	<0.020	<0.020	0.030
	Uranium (U)-Total (mg/kg)	0.0308	0.0146	0.0253	0.0196	0.0161
	Uranium (U)-Total (mg/kg wwt)	0.00786	0.00396	0.00841	0.00544	0.00462
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.022	0.035	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	114	117	96.1	97.9	94.4
	Zinc (Zn)-Total (mg/kg wwt)	29.1	31.7	32.0	27.2	27.2
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
Aggregate Organics	Lipid Content (% wwt)	3.9	6.0	2.7	5.3	5.5

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712033-6	L1712033-7	L1712033-8		
	Description	Tissue	Tissue	Tissue		
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15		
	Sampled Time	08:00	08:00	08:00		
	Client ID	QUL NEAR GRAIN CR.PCC #6	QUL NEAR GRAIN CR.PCC #7	QUL NEAR GRAIN CR.PCC #8		
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.264	0.271	0.180		
	Mercury (Hg)-Total (mg/kg wwt)	0.0697	0.0714	0.0457		
	Molybdenum (Mo)-Total (mg/kg)	0.058	0.081	0.084		
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0152	0.0214	0.0214		
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.36		
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.048	0.091		
	Phosphorus (P)-Total (mg/kg)	31400	23100	22100		
	Phosphorus (P)-Total (mg/kg wwt)	8260	6080	5600		
	Potassium (K)-Total (mg/kg)	12200	12300	12200		
	Potassium (K)-Total (mg/kg wwt)	3220	3240	3100		
	Rubidium (Rb)-Total (mg/kg)	15.2	13.9	20.6		
	Rubidium (Rb)-Total (mg/kg wwt)	4.02	3.67	5.21		
	Selenium (Se)-Total (mg/kg)	1.97	2.47	2.27		
	Selenium (Se)-Total (mg/kg wwt)	0.519	0.651	0.574		
	Sodium (Na)-Total (mg/kg)	2940	2880	3020		
	Sodium (Na)-Total (mg/kg wwt)	774	761	766		
	Strontium (Sr)-Total (mg/kg)	96.4	56.2	70.8		
	Strontium (Sr)-Total (mg/kg wwt)	25.4	14.8	17.9		
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020		
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
	Thallium (Tl)-Total (mg/kg)	0.0065	0.0042	0.0052		
	Thallium (Tl)-Total (mg/kg wwt)	0.00171	0.00110	0.00130		
	Tin (Sn)-Total (mg/kg)	0.12	<0.10	<0.10		
	Tin (Sn)-Total (mg/kg wwt)	0.032	<0.020	<0.020		
	Uranium (U)-Total (mg/kg)	0.0260	0.0193	0.0187		
	Uranium (U)-Total (mg/kg wwt)	0.00684	0.00508	0.00473		
	Vanadium (V)-Total (mg/kg)	<0.10	0.11	0.27		
	Vanadium (V)-Total (mg/kg wwt)	0.022	0.028	0.068		
	Zinc (Zn)-Total (mg/kg)	109	96.9	87.7		
	Zinc (Zn)-Total (mg/kg wwt)	28.8	25.6	22.2		
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		
Aggregate Organics	Lipid Content (% wwt)	5.1	5.5	5.2		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

LIPIDS-GRAV-VA	Tissue	Lipids in Tissue by Gravimetric	EPA 3570, 8290

A portion of homogenized sample is extracted with dichloromethane. The extract is evaporated to dryness and the lipid content determined gravimetrically.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:	42281	
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	% Lipid	Mercury MDL < 0.1 mg/kg ww								Number of Containers
[redacted]	QUL near Grain Cr.PCC # 1	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 2	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 3	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 4	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 5	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 6	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 7	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr. PCC # 8	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]																
[redacted]																
[redacted]																
[redacted]																

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Dec.7, 2015 1630 hr	Lady	Dec 8	9:40am	-2.0 °C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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GENF 18.00 Front

Sample Receipt Confirmation

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
slitke@mountpolley.com
EDD Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
slitke@mountpolley.com
Distribution: Hard Copy: N Email: Y Fax: N EDD: Y

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP.
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100

Client Information:

Job Reference #:
Project PO #:
Legal Site Description: 42281
Quote #: N/A
Date Sampled: 10-SEP-15
Date Received: 08-DEC-15
Sampled By: Dolighan,Zirnhelf
Chain Of Custody: --

Workorder Summary:

Lab Work Order #: **L1712033**
Estimated completion date: 17-DEC-15
8 Samples received at ALS in **VANCOUVER**
Account Manager: Can Dang
Estimated sample disposal date: See Sample Disposal Information section below.

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type	Client Job#
L1712033-1	QUL NEAR GRAIN CR.PCC #1	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712033-2	QUL NEAR GRAIN CR.PCC #2	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712033-3	QUL NEAR GRAIN CR.PCC #3	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712033-4	QUL NEAR GRAIN CR.PCC #4	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712033-5	QUL NEAR GRAIN CR.PCC #5	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712033-6	QUL NEAR GRAIN CR.PCC #6	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712033-7	QUL NEAR GRAIN CR.PCC #7	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712033-8	QUL NEAR GRAIN CR.PCC #8	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	

Analysis Requested :	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS [DRY]	Mercury in Tissue by CVAFS [WET]	Lipids in Tissue by Gravimetric	Metals in Tissue by CRC ICPMS [DRY]	Metals in Tissue by CRC ICPMS [WET]	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
QUL NEAR GRAIN CR.PCC #1	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR.PCC #2	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR.PCC #3	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR.PCC #4	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR.PCC #5	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR.PCC #6	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR.PCC #7	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR.PCC #8	✓	✓	✓	✓	✓	✓	✓	✓

Sample Integrity Observations:

No observations were identified for this work order submission.

Sample Disposal Information:

Where possible, ALS will store samples for 30 days from the date a final report is issued, or 30 days from the date samples are placed on hold without analytical requests, after which samples may be discarded. Air samples collected on re-usable media are an exception, and are stored for 7 days from the date a final report is issued. Longer storage times are available upon request.

For information about ALS accreditations and certifications please contact your Account Manager or visit our webpage at www.alsglobal.com (see Canada downloads).

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

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ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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Page 1 of 1

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:	42281	
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	% Lipid	Mercury MDL < 0.1 mg/kg ww								Number of Containers
[redacted]	QUL near Grain Cr.PCC # 1	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 2	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 3	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 4	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 5	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 6	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr.PCC # 7	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Grain Cr. PCC # 8	10-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]																
[redacted]																
[redacted]																
[redacted]																

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Dec.7, 2015 1630 hr	Lady	Dec 8	9:40am	-2.0 °C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 08-DEC-15
Report Date: 21-JAN-16 16:41 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1712036

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc: 42281

Comments: Due to limited samples weight available, as instructed, lipid analysis was performed on a composited sample instead. The samples which could be used for compositing are listed in the "Client ID" description.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712036-1	L1712036-2	L1712036-3	L1712036-4	L1712036-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	QUL NEAR GRAIN CR. RSC#1	QUL NEAR GRAIN CR. RSC#2	QUL NEAR GRAIN CR. RSC#3	QUL NEAR GRAIN CR. RSC#4	QUL NEAR GRAIN CR. RSC#5
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	72.9	73.0	76.8	72.4	74.2
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	<2.0	5.7	3.4	3.2
	Aluminum (Al)-Total (mg/kg wwt)	<0.40	<0.40	1.32	0.94	0.83
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.133	0.091	0.063	0.162	0.068
	Arsenic (As)-Total (mg/kg wwt)	0.0361	0.0245	0.0145	0.0446	0.0175
	Barium (Ba)-Total (mg/kg)	2.12	1.40	2.45	1.90	2.79
	Barium (Ba)-Total (mg/kg wwt)	0.574	0.377	0.568	0.525	0.719
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.190	0.0750	0.0633	0.0668	0.0963
	Cadmium (Cd)-Total (mg/kg wwt)	0.0516	0.0203	0.0147	0.0184	0.0248
	Calcium (Ca)-Total (mg/kg)	35800	32100	48900	45200	54500
	Calcium (Ca)-Total (mg/kg wwt)	9720	8660	11300	12500	14100
	Cesium (Cs)-Total (mg/kg)	0.0841	0.119	0.149	0.0781	0.131
	Cesium (Cs)-Total (mg/kg wwt)	0.0228	0.0322	0.0346	0.0216	0.0338
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.048	0.037	0.057	0.071	0.047
	Cobalt (Co)-Total (mg/kg wwt)	0.0130	0.0100	0.0133	0.0196	0.0122
	Copper (Cu)-Total (mg/kg)	1.78	2.29	2.28	1.68	2.44
	Copper (Cu)-Total (mg/kg wwt)	0.483	0.618	0.528	0.463	0.629
	Iron (Fe)-Total (mg/kg)	40.4	40.5	50.3	42.9	60.9
	Iron (Fe)-Total (mg/kg wwt)	11.0	11.0	11.6	11.8	15.7
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	0.027	0.021	0.021
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0050	0.0063	0.0058	0.0055
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1450	1690	1860	1630	1710
	Magnesium (Mg)-Total (mg/kg wwt)	393	457	430	449	442
	Manganese (Mn)-Total (mg/kg)	13.5	9.33	15.5	12.2	17.7
	Manganese (Mn)-Total (mg/kg wwt)	3.67	2.52	3.59	3.38	4.55

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712036-6	L1712036-7	L1712036-8	L1712036-9	
	Description	Tissue	Tissue	Tissue	Tissue	
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	
	Sampled Time	08:00	08:00	08:00	08:00	
	Client ID	QUL NEAR GRAIN CR. RSC#6	QUL NEAR GRAIN CR. RSC#7	QUL NEAR GRAIN CR. RSC#8	QUL NEAR GRAIN CR. COMPOSITE (2, 5, 6, 8)	
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	73.7	76.5	77.1		
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	2.1	<2.0		
	Aluminum (Al)-Total (mg/kg wwt)	0.52	0.50	0.42		
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Arsenic (As)-Total (mg/kg)	0.030	0.068	0.051		
	Arsenic (As)-Total (mg/kg wwt)	0.0079	0.0159	0.0118		
	Barium (Ba)-Total (mg/kg)	1.14	2.38	3.33		
	Barium (Ba)-Total (mg/kg wwt)	0.299	0.559	0.764		
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0		
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20		
	Cadmium (Cd)-Total (mg/kg)	0.0700	0.0667	0.0870		
	Cadmium (Cd)-Total (mg/kg wwt)	0.0184	0.0157	0.0199		
	Calcium (Ca)-Total (mg/kg)	25300	46100	57600		
	Calcium (Ca)-Total (mg/kg wwt)	6630	10800	13200		
	Cesium (Cs)-Total (mg/kg)	0.119	0.149	0.123		
	Cesium (Cs)-Total (mg/kg wwt)	0.0312	0.0350	0.0283		
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050		
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010		
	Cobalt (Co)-Total (mg/kg)	0.035	0.063	0.023		
	Cobalt (Co)-Total (mg/kg wwt)	0.0093	0.0148	0.0052		
	Copper (Cu)-Total (mg/kg)	2.55	2.91	2.16		
	Copper (Cu)-Total (mg/kg wwt)	0.671	0.685	0.496		
	Iron (Fe)-Total (mg/kg)	39.4	58.8	65.8		
	Iron (Fe)-Total (mg/kg wwt)	10.3	13.8	15.1		
	Lead (Pb)-Total (mg/kg)	0.043	0.042	0.022		
	Lead (Pb)-Total (mg/kg wwt)	0.0113	0.0098	0.0049		
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50		
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg)	2180	2840	1880		
	Magnesium (Mg)-Total (mg/kg wwt)	573	668	430		
	Manganese (Mn)-Total (mg/kg)	12.0	20.3	22.6		
	Manganese (Mn)-Total (mg/kg wwt)	3.15	4.78	5.19		

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712036-1	L1712036-2	L1712036-3	L1712036-4	L1712036-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	QUL NEAR GRAIN CR. RSC#1	QUL NEAR GRAIN CR. RSC#2	QUL NEAR GRAIN CR. RSC#3	QUL NEAR GRAIN CR. RSC#4	QUL NEAR GRAIN CR. RSC#5
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.112	0.0891	0.347	0.0849	0.182
	Mercury (Hg)-Total (mg/kg wwt)	0.0303	0.0241	0.0804	0.0234	0.0470
	Molybdenum (Mo)-Total (mg/kg)	0.031	0.033	0.065	0.049	0.055
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0084	0.0089	0.0151	0.0135	0.0141
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	26000	24000	35700	31400	36800
	Phosphorus (P)-Total (mg/kg wwt)	7060	6490	8260	8670	9470
	Potassium (K)-Total (mg/kg)	10400	10400	12500	11300	10900
	Potassium (K)-Total (mg/kg wwt)	2820	2820	2890	3120	2800
	Rubidium (Rb)-Total (mg/kg)	16.4	15.9	21.7	17.2	15.9
	Rubidium (Rb)-Total (mg/kg wwt)	4.45	4.31	5.03	4.75	4.09
	Selenium (Se)-Total (mg/kg)	1.89	2.34	1.94	1.41	1.84
	Selenium (Se)-Total (mg/kg wwt)	0.513	0.632	0.450	0.390	0.475
	Sodium (Na)-Total (mg/kg)	2280	1970	2840	2150	2640
	Sodium (Na)-Total (mg/kg wwt)	619	532	658	594	681
	Strontium (Sr)-Total (mg/kg)	83.6	76.3	127	110	146
	Strontium (Sr)-Total (mg/kg wwt)	22.7	20.6	29.5	30.5	37.6
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0031	0.0066	0.0066	0.0044	0.0070
	Thallium (Tl)-Total (mg/kg wwt)	0.00084	0.00178	0.00154	0.00122	0.00179
	Tin (Sn)-Total (mg/kg)	0.19	0.12	0.25	0.35	0.15
	Tin (Sn)-Total (mg/kg wwt)	0.051	0.034	0.058	0.097	0.038
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0044	<0.0020	0.0038
	Uranium (U)-Total (mg/kg wwt)	0.00052	<0.00040	0.00101	0.00048	0.00099
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	158	147	277	189	205
	Zinc (Zn)-Total (mg/kg wwt)	42.8	39.6	64.3	52.0	52.9
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
Aggregate Organics	Lipid Content (% wwt)					

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712036-6	L1712036-7	L1712036-8	L1712036-9	
	Description	Tissue	Tissue	Tissue	Tissue	
	Sampled Date	10-SEP-15	10-SEP-15	10-SEP-15	10-SEP-15	
	Sampled Time	08:00	08:00	08:00	08:00	
	Client ID	QUL NEAR GRAIN CR. RSC#6	QUL NEAR GRAIN CR. RSC#7	QUL NEAR GRAIN CR. RSC#8	QUL NEAR GRAIN CR. COMPOSITE (2, 5, 6, 8)	
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.451	0.112	0.206		
	Mercury (Hg)-Total (mg/kg wwt)	0.118	0.0264	0.0473		
	Molybdenum (Mo)-Total (mg/kg)	0.044	0.042	0.049		
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0115	0.0098	0.0112		
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		
	Phosphorus (P)-Total (mg/kg)	20200	33900	38800		
	Phosphorus (P)-Total (mg/kg wwt)	5310	7960	8900		
	Potassium (K)-Total (mg/kg)	11500	12300	12000		
	Potassium (K)-Total (mg/kg wwt)	3010	2890	2750		
	Rubidium (Rb)-Total (mg/kg)	16.6	17.9	15.8		
	Rubidium (Rb)-Total (mg/kg wwt)	4.37	4.21	3.62		
	Selenium (Se)-Total (mg/kg)	2.15	2.20	2.09		
	Selenium (Se)-Total (mg/kg wwt)	0.564	0.517	0.480		
	Sodium (Na)-Total (mg/kg)	2210	2850	2670		
	Sodium (Na)-Total (mg/kg wwt)	581	669	613		
	Strontium (Sr)-Total (mg/kg)	57.6	116	142		
	Strontium (Sr)-Total (mg/kg wwt)	15.1	27.3	32.6		
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020		
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
	Thallium (Tl)-Total (mg/kg)	0.0057	0.0078	0.0041		
	Thallium (Tl)-Total (mg/kg wwt)	0.00150	0.00184	0.00094		
	Tin (Sn)-Total (mg/kg)	<0.10	0.15	0.14		
	Tin (Sn)-Total (mg/kg wwt)	0.023	0.036	0.031		
	Uranium (U)-Total (mg/kg)	<0.0020	0.0022	0.0028		
	Uranium (U)-Total (mg/kg wwt)	0.00052	0.00051	0.00064		
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10		
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020		
	Zinc (Zn)-Total (mg/kg)	172	183	230		
	Zinc (Zn)-Total (mg/kg wwt)	45.3	43.0	52.8		
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		
Aggregate Organics	Lipid Content (% wwt)				6.4	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

LIPIDS-GRAV-VA	Tissue	Lipids in Tissue by Gravimetric	EPA 3570, 8290

A portion of homogenized sample is extracted with dichloromethane. The extract is evaporated to dryness and the lipid content determined gravimetrically.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:	42281	
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	% Lipid	Mercury MDL < 0.1 mg/kg ww	Number of Containers
[redacted]	QUL near Grain Cr. RSC # 1	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 2	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 3	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 4	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 5	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 6	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 7	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 8	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]									
[redacted]									
[redacted]									
[redacted]									

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	07/12/2015 1630 hr	Lady	Dec 8	9:40HR	-2.0 °C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

Sample Receipt Confirmation

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
slitke@mountpolley.com
EDD Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
slitke@mountpolley.com
Distribution: Hard Copy: N Email: Y Fax: N EDD: Y

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP.
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100

Client Information:

Job Reference #:
Project PO #:
Legal Site Description: 42281
Quote #: N/A
Date Sampled: 10-SEP-15
Date Received: 08-DEC-15
Sampled By: Dolighan,Zirnhel
Chain Of Custody: --

Workorder Summary:

Lab Work Order #: **L1712036**
Estimated completion date: 17-DEC-15
8 Samples received at ALS in **VANCOUVER**
Account Manager: Can Dang
Estimated sample disposal date: See Sample Disposal Information section below.

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type	Client Job#
L1712036-1	QUL NEAR GRAIN CR. RSC#1	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712036-2	QUL NEAR GRAIN CR. RSC#2	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712036-3	QUL NEAR GRAIN CR. RSC#3	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712036-4	QUL NEAR GRAIN CR. RSC#4	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712036-5	QUL NEAR GRAIN CR. RSC#5	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712036-6	QUL NEAR GRAIN CR. RSC#6	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712036-7	QUL NEAR GRAIN CR. RSC#7	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712036-8	QUL NEAR GRAIN CR. RSC#8	10-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	

Analysis Requested :	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS [DRY]	Mercury in Tissue by CVAFS [WET]	Lipids in Tissue by Gravimetric	Metals in Tissue by CRC ICPMS [DRY]	Metals in Tissue by CRC ICPMS [WET]	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
QUL NEAR GRAIN CR. RSC#1	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR. RSC#2	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR. RSC#3	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR. RSC#4	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR. RSC#5	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR. RSC#6	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR. RSC#7	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR GRAIN CR. RSC#8	✓	✓	✓	✓	✓	✓	✓	✓

Sample Integrity Observations:

No observations were identified for this work order submission.

Sample Disposal Information:

Where possible, ALS will store samples for 30 days from the date a final report is issued, or 30 days from the date samples are placed on hold without analytical requests, after which samples may be discarded. Air samples collected on re-usable media are an exception, and are stored for 7 days from the date a final report is issued. Longer storage times are available upon request.

For information about ALS accreditations and certifications please contact your Account Manager or visit our webpage at www.alsglobal.com (see Canada downloads).

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:	42281	
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	% Lipid	Mercury MDL < 0.1 mg/kg ww	Number of Containers
[redacted]	QUL near Grain Cr. RSC # 1	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 2	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 3	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 4	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 5	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 6	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 7	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]	QUL near Grain Cr. RSC # 8	10-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
[redacted]									
[redacted]									
[redacted]									
[redacted]									

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	07/12/2015 1630 hr	Lady	Dec 8	9:40HR	-2.0 °C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 08-DEC-15
Report Date: 21-JAN-16 17:43 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1712039

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc: 42281

Comments: Due to limited samples weight available, as instructed, lipid analysis was performed on a composited sample instead. The samples which could be used for compositing are listed in the "Client ID" description.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712039-1	L1712039-2	L1712039-3	L1712039-4	L1712039-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	QUL NEAR HAZELTINE CR. RSC#1	QUL NEAR HAZELTINE CR. RSC#2	QUL NEAR HAZELTINE CR. RSC#3	QUL NEAR HAZELTINE CR. RSC#4	QUL NEAR HAZELTINE CR. RSC#5
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	71.7	72.8	77.9	75.2	79.6
Metals	Aluminum (Al)-Total (mg/kg)	5.0	35.0	2.7	2.2	3.5
	Aluminum (Al)-Total (mg/kg wwt)	1.41	9.54	0.60	0.55	0.71
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.052	0.126	0.170	0.135	0.150
	Arsenic (As)-Total (mg/kg wwt)	0.0148	0.0344	0.0377	0.0335	0.0306
	Barium (Ba)-Total (mg/kg)	2.02	3.38	3.94	3.01	6.44
	Barium (Ba)-Total (mg/kg wwt)	0.572	0.921	0.873	0.748	1.32
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.139	0.0743	0.114	0.0790	0.0533
	Cadmium (Cd)-Total (mg/kg wwt)	0.0395	0.0203	0.0253	0.0196	0.0109
	Calcium (Ca)-Total (mg/kg)	34700	32500	50100	40900	58400
	Calcium (Ca)-Total (mg/kg wwt)	9830	8860	11100	10200	11900
	Cesium (Cs)-Total (mg/kg)	0.0611	0.0826	0.0699	0.0539	0.0541
	Cesium (Cs)-Total (mg/kg wwt)	0.0173	0.0225	0.0155	0.0134	0.0110
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	<0.020	0.044	0.092	0.041	0.069
	Cobalt (Co)-Total (mg/kg wwt)	0.0050	0.0121	0.0204	0.0102	0.0141
	Copper (Cu)-Total (mg/kg)	2.16	2.48	2.73	2.25	3.37
	Copper (Cu)-Total (mg/kg wwt)	0.613	0.677	0.606	0.560	0.689
	Iron (Fe)-Total (mg/kg)	52.6	146	54.8	41.6	55.3
	Iron (Fe)-Total (mg/kg wwt)	14.9	39.9	12.1	10.3	11.3
	Lead (Pb)-Total (mg/kg)	0.064	0.068	0.029	0.029	0.036
	Lead (Pb)-Total (mg/kg wwt)	0.0181	0.0184	0.0064	0.0071	0.0074
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1490	1430	2050	1840	2270
	Magnesium (Mg)-Total (mg/kg wwt)	423	389	455	457	464
	Manganese (Mn)-Total (mg/kg)	9.87	14.3	12.6	11.9	13.7
	Manganese (Mn)-Total (mg/kg wwt)	2.80	3.89	2.79	2.96	2.80

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712039-6	L1712039-7	L1712039-8	L1712039-9	
	Description	Tissue	Tissue	Tissue	Tissue	
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	
	Sampled Time	08:00	08:00	08:00	08:00	
	Client ID	QUL NEAR HAZELTINE CR. RSC#6	QUL NEAR HAZELTINE CR. RSC#7	QUL NEAR HAZELTINE CR. RSC#8	QUL NEAR HAZELTINE CR. - COMPOSITE(#2, 3, 4 AND 6)	
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	77.5	77.8	73.3		
Metals	Aluminum (Al)-Total (mg/kg)	3.2	<2.0	3.7		
	Aluminum (Al)-Total (mg/kg wwt)	0.71	<0.40	1.00		
	Antimony (Sb)-Total (mg/kg)	0.010	<0.010	<0.010		
	Antimony (Sb)-Total (mg/kg wwt)	0.0023	<0.0020	<0.0020		
	Arsenic (As)-Total (mg/kg)	0.237	0.295	0.062		
	Arsenic (As)-Total (mg/kg wwt)	0.0533	0.0654	0.0167		
	Barium (Ba)-Total (mg/kg)	5.38	4.33	2.36		
	Barium (Ba)-Total (mg/kg wwt)	1.21	0.959	0.630		
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Bismuth (Bi)-Total (mg/kg)	0.014	<0.010	<0.010		
	Bismuth (Bi)-Total (mg/kg wwt)	0.0031	<0.0020	<0.0020		
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0		
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20		
	Cadmium (Cd)-Total (mg/kg)	0.116	0.128	0.0748		
	Cadmium (Cd)-Total (mg/kg wwt)	0.0261	0.0284	0.0200		
	Calcium (Ca)-Total (mg/kg)	53800	49300	40900		
	Calcium (Ca)-Total (mg/kg wwt)	12100	10900	10900		
	Cesium (Cs)-Total (mg/kg)	0.0800	0.0623	0.0246		
	Cesium (Cs)-Total (mg/kg wwt)	0.0180	0.0138	0.0066		
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050		
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	<0.010	<0.010		
	Cobalt (Co)-Total (mg/kg)	0.053	0.046	0.021		
	Cobalt (Co)-Total (mg/kg wwt)	0.0119	0.0102	0.0056		
	Copper (Cu)-Total (mg/kg)	2.96	2.88	2.24		
	Copper (Cu)-Total (mg/kg wwt)	0.665	0.639	0.600		
	Iron (Fe)-Total (mg/kg)	58.1	56.7	58.3		
	Iron (Fe)-Total (mg/kg wwt)	13.1	12.6	15.6		
	Lead (Pb)-Total (mg/kg)	0.068	0.021	<0.020		
	Lead (Pb)-Total (mg/kg wwt)	0.0152	0.0047	0.0043		
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50		
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg)	2140	2140	1520		
	Magnesium (Mg)-Total (mg/kg wwt)	480	474	405		
	Manganese (Mn)-Total (mg/kg)	12.6	11.5	11.9		
	Manganese (Mn)-Total (mg/kg wwt)	2.84	2.54	3.18		

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712039-1	L1712039-2	L1712039-3	L1712039-4	L1712039-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	QUL NEAR HAZELTINE CR. RSC#1	QUL NEAR HAZELTINE CR. RSC#2	QUL NEAR HAZELTINE CR. RSC#3	QUL NEAR HAZELTINE CR. RSC#4	QUL NEAR HAZELTINE CR. RSC#5
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.124	0.125	0.173	0.274	0.225
	Mercury (Hg)-Total (mg/kg wwt)	0.0350	0.0340	0.0384	0.0681	0.0460
	Molybdenum (Mo)-Total (mg/kg)	0.038	0.062	0.057	0.055	0.066
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0108	0.0168	0.0126	0.0136	0.0135
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	25900	24800	35200	30300	42600
	Phosphorus (P)-Total (mg/kg wwt)	7330	6770	7790	7520	8710
	Potassium (K)-Total (mg/kg)	11000	10500	14800	13000	15200
	Potassium (K)-Total (mg/kg wwt)	3100	2860	3270	3230	3110
	Rubidium (Rb)-Total (mg/kg)	12.3	11.5	23.5	17.0	16.6
	Rubidium (Rb)-Total (mg/kg wwt)	3.49	3.12	5.21	4.23	3.40
	Selenium (Se)-Total (mg/kg)	1.86	1.82	3.24	2.74	3.02
	Selenium (Se)-Total (mg/kg wwt)	0.526	0.497	0.717	0.681	0.617
	Sodium (Na)-Total (mg/kg)	1870	2090	3000	2490	3570
	Sodium (Na)-Total (mg/kg wwt)	530	571	665	619	728
	Strontium (Sr)-Total (mg/kg)	82.2	82.9	105	74.5	136
	Strontium (Sr)-Total (mg/kg wwt)	23.3	22.6	23.2	18.5	27.7
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0026	<0.0020	0.0087	0.0103	0.0053
	Thallium (Tl)-Total (mg/kg wwt)	0.00073	0.00050	0.00192	0.00257	0.00108
	Tin (Sn)-Total (mg/kg)	0.19	0.12	0.18	0.24	0.27
	Tin (Sn)-Total (mg/kg wwt)	0.054	0.033	0.040	0.059	0.054
	Uranium (U)-Total (mg/kg)	<0.0020	0.0040	0.0065	0.0047	0.0133
	Uranium (U)-Total (mg/kg wwt)	0.00057	0.00109	0.00144	0.00116	0.00272
	Vanadium (V)-Total (mg/kg)	<0.10	0.41	<0.10	<0.10	0.19
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.111	<0.020	<0.020	0.039
	Zinc (Zn)-Total (mg/kg)	162	145	198	102	188
	Zinc (Zn)-Total (mg/kg wwt)	45.9	39.6	43.8	25.4	38.4
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
Aggregate Organics	Lipid Content (% wwt)					

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712039-6	L1712039-7	L1712039-8	L1712039-9	
	Description	Tissue	Tissue	Tissue	Tissue	
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	
	Sampled Time	08:00	08:00	08:00	08:00	
	Client ID	QUL NEAR HAZELTINE CR. RSC#6	QUL NEAR HAZELTINE CR. RSC#7	QUL NEAR HAZELTINE CR. RSC#8	QUL NEAR HAZELTINE CR. - COMPOSITE(#2, 3, 4 AND 6)	
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.221	0.358	0.246		
	Mercury (Hg)-Total (mg/kg wwt)	0.0498	0.0793	0.0658		
	Molybdenum (Mo)-Total (mg/kg)	0.101	0.060	0.047		
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0228	0.0133	0.0126		
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		
	Phosphorus (P)-Total (mg/kg)	36900	38000	29700		
	Phosphorus (P)-Total (mg/kg wwt)	8290	8420	7930		
	Potassium (K)-Total (mg/kg)	13800	15000	12200		
	Potassium (K)-Total (mg/kg wwt)	3100	3320	3250		
	Rubidium (Rb)-Total (mg/kg)	22.0	20.0	14.0		
	Rubidium (Rb)-Total (mg/kg wwt)	4.95	4.44	3.75		
	Selenium (Se)-Total (mg/kg)	2.89	3.32	2.89		
	Selenium (Se)-Total (mg/kg wwt)	0.649	0.735	0.773		
	Sodium (Na)-Total (mg/kg)	3290	3400	2760		
	Sodium (Na)-Total (mg/kg wwt)	740	753	737		
	Strontium (Sr)-Total (mg/kg)	112	105	76.1		
	Strontium (Sr)-Total (mg/kg wwt)	25.1	23.3	20.3		
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020		
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
	Thallium (Tl)-Total (mg/kg)	0.0117	0.0093	0.0039		
	Thallium (Tl)-Total (mg/kg wwt)	0.00262	0.00206	0.00103		
	Tin (Sn)-Total (mg/kg)	0.22	0.18	0.13		
	Tin (Sn)-Total (mg/kg wwt)	0.050	0.039	0.035		
	Uranium (U)-Total (mg/kg)	0.0090	0.0053	<0.0020		
	Uranium (U)-Total (mg/kg wwt)	0.00203	0.00117	0.00053		
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10		
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020		
	Zinc (Zn)-Total (mg/kg)	179	179	190		
	Zinc (Zn)-Total (mg/kg wwt)	40.3	39.7	50.7		
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		
Aggregate Organics	Lipid Content (% wwt)				2.9	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

LIPIDS-GRAV-VA	Tissue	Lipids in Tissue by Gravimetric	EPA 3570, 8290

A portion of homogenized sample is extracted with dichloromethane. The extract is evaporated to dryness and the lipid content determined gravimetrically.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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COC # _____

Page 1 of 1

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:	42281	
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	% Lipid	Mercury MDL < 0.1 mg/kg ww								Number of Containers
[redacted]	QUL near Hazeltine Cr. RSC # 1	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Hazeltine Cr. RSC # 2	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Hazeltine Cr. RSC # 3	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Hazeltine Cr. RSC # 4	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Hazeltine Cr. RSC # 5	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Hazeltine Cr. RSC # 6	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Hazeltine Cr. RSC # 7	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Hazeltine Cr. RSC # 8	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]																
[redacted]																
[redacted]																
[redacted]																

L1712039-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	07/12/2015 1630 hr	lady	Dec 8	9:40Am	-2.0 C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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GENF 18.00 Front

Sample Receipt Confirmation

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
slitke@mountpolley.com
EDD Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
slitke@mountpolley.com
Distribution: Hard Copy: N Email: Y Fax: N EDD: Y

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP.
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100

Client Information:

Job Reference #:
Project PO #:
Legal Site Description: 42281
Quote #: N/A
Date Sampled: 20-SEP-15
Date Received: 08-DEC-15
Sampled By: Dolighan/Zirnhel
Chain Of Custody: --

Workorder Summary:

Lab Work Order #: **L1712039**
Estimated completion date: 17-DEC-15
8 Samples received at ALS in **VANCOUVER**
Account Manager: Can Dang
Estimated sample disposal date: See Sample Disposal Information section below.

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type	Client Job#
L1712039-1	QUL NEAR HAZELTINE CR. RSC#1	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712039-2	QUL NEAR HAZELTINE CR. RSC#2	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712039-3	QUL NEAR HAZELTINE CR. RSC#3	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712039-4	QUL NEAR HAZELTINE CR. RSC#4	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712039-5	QUL NEAR HAZELTINE CR. RSC#5	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712039-6	QUL NEAR HAZELTINE CR. RSC#6	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712039-7	QUL NEAR HAZELTINE CR. RSC#7	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712039-8	QUL NEAR HAZELTINE CR. RSC#8	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	

Analysis Requested :	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS [DRY]	Mercury in Tissue by CVAFS [WET]	Lipids in Tissue by Gravimetric	Metals in Tissue by CRC ICPMS [DRY]	Metals in Tissue by CRC ICPMS [WET]	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
QUL NEAR HAZELTINE CR. RSC#1	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR. RSC#2	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR. RSC#3	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR. RSC#4	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR. RSC#5	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR. RSC#6	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR. RSC#7	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR. RSC#8	✓	✓	✓	✓	✓	✓	✓	✓

Sample Integrity Observations:

No observations were identified for this work order submission.

Sample Disposal Information:

Where possible, ALS will store samples for 30 days from the date a final report is issued, or 30 days from the date samples are placed on hold without analytical requests, after which samples may be discarded. Air samples collected on re-usable media are an exception, and are stored for 7 days from the date a final report is issued. Longer storage times are available upon request.

For information about ALS accreditations and certifications please contact your Account Manager or visit our webpage at www.alsglobal.com (see Canada downloads).

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page 1 of 1

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Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
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Address:		Legal Site Description:	42281	
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	% Lipid	Mercury MDL < 0.1 mg/kg ww								Number of Containers
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[redacted]	QUL near Hazeltine Cr. RSC # 6	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Hazeltine Cr. RSC # 7	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]	QUL near Hazeltine Cr. RSC # 8	20-Sep-15	8:00-16:15	Tissue	X	X	X	X								1
[redacted]																
[redacted]																
[redacted]																
[redacted]																

L1712039-COFC

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By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	07/12/2015 1630 hr	lady	Dec 8	9:40Am	-2.0 C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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GENF 18.00 Front

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 08-DEC-15
Report Date: 18-JAN-16 12:34 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1712040

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc: 42281

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712040-1	L1712040-2	L1712040-3	L1712040-4	L1712040-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	QUL NEAR HAZELTINE CR.PCC#1	QUL NEAR HAZELTINE CR.PCC#2	QUL NEAR HAZELTINE CR.PCC#2	QUL NEAR HAZELTINE CR.PCC#4	QUL NEAR HAZELTINE CR.PCC#5
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	76.6	74.9	72.8	73.8	76.7
Metals	Aluminum (Al)-Total (mg/kg)	<2.0	48.3	5.2	<2.0	2.3
	Aluminum (Al)-Total (mg/kg wwt)	0.42	12.1	1.41	<0.40	0.53
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.186	0.339	0.173	0.178	0.147
	Arsenic (As)-Total (mg/kg wwt)	0.0435	0.0849	0.0470	0.0466	0.0343
	Barium (Ba)-Total (mg/kg)	2.87	4.12	3.61	4.15	3.67
	Barium (Ba)-Total (mg/kg wwt)	0.672	1.03	0.982	1.09	0.854
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg)	0.158	0.249	0.114	0.165	0.163
	Cadmium (Cd)-Total (mg/kg wwt)	0.0371	0.0625	0.0309	0.0433	0.0379
	Calcium (Ca)-Total (mg/kg)	48600	38500	36800	35000	46400
	Calcium (Ca)-Total (mg/kg wwt)	11400	9660	10000	9180	10800
	Cesium (Cs)-Total (mg/kg)	0.0831	0.0581	0.0619	0.0803	0.103
	Cesium (Cs)-Total (mg/kg wwt)	0.0194	0.0146	0.0169	0.0211	0.0240
	Chromium (Cr)-Total (mg/kg)	0.060	0.550	0.124	0.075	0.127
	Chromium (Cr)-Total (mg/kg wwt)	0.014	0.138	0.034	0.020	0.030
	Cobalt (Co)-Total (mg/kg)	0.073	0.148	0.051	0.107	0.087
	Cobalt (Co)-Total (mg/kg wwt)	0.0171	0.0372	0.0138	0.0280	0.0202
	Copper (Cu)-Total (mg/kg)	2.23	2.48	1.92	2.72	2.33
	Copper (Cu)-Total (mg/kg wwt)	0.521	0.622	0.522	0.715	0.542
	Iron (Fe)-Total (mg/kg)	56.5	194	67.0	66.8	70.7
	Iron (Fe)-Total (mg/kg wwt)	13.2	48.7	18.2	17.5	16.4
	Lead (Pb)-Total (mg/kg)	0.031	0.041	0.044	0.044	0.033
	Lead (Pb)-Total (mg/kg wwt)	0.0071	0.0102	0.0121	0.0115	0.0076
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1690	1540	1480	1400	1760
	Magnesium (Mg)-Total (mg/kg wwt)	395	387	402	368	409
	Manganese (Mn)-Total (mg/kg)	9.97	11.9	9.01	11.1	12.1
	Manganese (Mn)-Total (mg/kg wwt)	2.33	2.98	2.45	2.92	2.81

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712040-6	L1712040-7	L1712040-8		
	Description	Tissue	Tissue	Tissue		
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15		
	Sampled Time	08:00	08:00	08:00		
	Client ID	QUL NEAR HAZELTINE CR.PCC#6	QUL NEAR HAZELTINE CR.PCC#7	QUL NEAR HAZELTINE CR.PCC#8		
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	72.7	76.6	77.3		
Metals	Aluminum (Al)-Total (mg/kg)	2.1	7.5	3.6		
	Aluminum (Al)-Total (mg/kg wwt)	0.58	1.75	0.81		
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Arsenic (As)-Total (mg/kg)	0.685	0.481	0.285		
	Arsenic (As)-Total (mg/kg wwt)	0.187	0.113	0.0648		
	Barium (Ba)-Total (mg/kg)	2.24	3.17	5.20		
	Barium (Ba)-Total (mg/kg wwt)	0.613	0.743	1.18		
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Boron (B)-Total (mg/kg)	<1.0	<1.0	<1.0		
	Boron (B)-Total (mg/kg wwt)	<0.20	<0.20	<0.20		
	Cadmium (Cd)-Total (mg/kg)	0.284	0.224	0.144		
	Cadmium (Cd)-Total (mg/kg wwt)	0.0776	0.0524	0.0328		
	Calcium (Ca)-Total (mg/kg)	30200	41300	50000		
	Calcium (Ca)-Total (mg/kg wwt)	8240	9680	11300		
	Cesium (Cs)-Total (mg/kg)	0.0817	0.0906	0.0442		
	Cesium (Cs)-Total (mg/kg wwt)	0.0223	0.0212	0.0100		
	Chromium (Cr)-Total (mg/kg)	0.142	0.193	0.081		
	Chromium (Cr)-Total (mg/kg wwt)	0.039	0.045	0.018		
	Cobalt (Co)-Total (mg/kg)	0.064	0.111	0.093		
	Cobalt (Co)-Total (mg/kg wwt)	0.0176	0.0260	0.0211		
	Copper (Cu)-Total (mg/kg)	1.95	2.73	2.43		
	Copper (Cu)-Total (mg/kg wwt)	0.533	0.639	0.552		
	Iron (Fe)-Total (mg/kg)	56.2	85.0	77.3		
	Iron (Fe)-Total (mg/kg wwt)	15.3	19.9	17.5		
	Lead (Pb)-Total (mg/kg)	0.030	0.022	0.025		
	Lead (Pb)-Total (mg/kg wwt)	0.0082	0.0052	0.0058		
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50		
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg)	1310	1560	1950		
	Magnesium (Mg)-Total (mg/kg wwt)	359	365	444		
	Manganese (Mn)-Total (mg/kg)	5.72	9.45	16.1		
	Manganese (Mn)-Total (mg/kg wwt)	1.56	2.21	3.66		

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712040-1	L1712040-2	L1712040-3	L1712040-4	L1712040-5
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15	20-SEP-15
	Sampled Time	08:00	08:00	08:00	08:00	08:00
	Client ID	QUL NEAR HAZELTINE CR.PCC#1	QUL NEAR HAZELTINE CR.PCC#2	QUL NEAR HAZELTINE CR.PCC#2	QUL NEAR HAZELTINE CR.PCC#4	QUL NEAR HAZELTINE CR.PCC#5
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.614	0.479	0.296	0.462	0.493
	Mercury (Hg)-Total (mg/kg wwt)	0.144	0.120	0.0805	0.121	0.115
	Molybdenum (Mo)-Total (mg/kg)	0.095	0.139	0.072	0.068	0.084
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0222	0.0348	0.0195	0.0178	0.0195
	Nickel (Ni)-Total (mg/kg)	<0.20	0.43	<0.20	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.109	<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	33600	27600	26900	25500	32800
	Phosphorus (P)-Total (mg/kg wwt)	7860	6910	7320	6680	7630
	Potassium (K)-Total (mg/kg)	13700	13400	12700	12900	14400
	Potassium (K)-Total (mg/kg wwt)	3200	3350	3460	3380	3350
	Rubidium (Rb)-Total (mg/kg)	15.0	15.1	12.4	14.5	16.7
	Rubidium (Rb)-Total (mg/kg wwt)	3.51	3.80	3.36	3.81	3.89
	Selenium (Se)-Total (mg/kg)	2.56	4.12	3.24	2.82	3.75
	Selenium (Se)-Total (mg/kg wwt)	0.599	1.03	0.881	0.740	0.874
	Sodium (Na)-Total (mg/kg)	4190	3650	3110	3590	4030
	Sodium (Na)-Total (mg/kg wwt)	981	914	846	941	937
	Strontium (Sr)-Total (mg/kg)	105	70.9	66.7	69.8	101
	Strontium (Sr)-Total (mg/kg wwt)	24.5	17.8	18.1	18.3	23.5
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0088	0.0073	0.0025	0.0030	0.0086
	Thallium (Tl)-Total (mg/kg wwt)	0.00207	0.00183	0.00067	0.00080	0.00199
	Tin (Sn)-Total (mg/kg)	0.11	0.11	<0.10	0.13	0.17
	Tin (Sn)-Total (mg/kg wwt)	0.026	0.027	<0.020	0.034	0.040
	Uranium (U)-Total (mg/kg)	0.0611	0.0311	0.0375	0.0218	0.0212
	Uranium (U)-Total (mg/kg wwt)	0.0143	0.00780	0.0102	0.00571	0.00495
	Vanadium (V)-Total (mg/kg)	<0.10	0.30	0.14	0.11	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.075	0.038	0.030	<0.020
	Zinc (Zn)-Total (mg/kg)	99.8	97.2	93.1	101	119
	Zinc (Zn)-Total (mg/kg wwt)	23.3	24.4	25.3	26.4	27.8
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
Aggregate Organics	Lipid Content (% wwt)	1.9	5.4	3.0	1.8	2.6

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1712040-6	L1712040-7	L1712040-8		
	Description	Tissue	Tissue	Tissue		
	Sampled Date	20-SEP-15	20-SEP-15	20-SEP-15		
	Sampled Time	08:00	08:00	08:00		
	Client ID	QUL NEAR HAZELTINE CR.PCC#6	QUL NEAR HAZELTINE CR.PCC#7	QUL NEAR HAZELTINE CR.PCC#8		
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.528	0.574	0.356		
	Mercury (Hg)-Total (mg/kg wwt)	0.144	0.134	0.0808		
	Molybdenum (Mo)-Total (mg/kg)	0.080	0.080	0.080		
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0220	0.0187	0.0181		
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Nickel (Ni)-Total (mg/kg wwt)	0.050	0.044	<0.040		
	Phosphorus (P)-Total (mg/kg)	23100	29600	36200		
	Phosphorus (P)-Total (mg/kg wwt)	6300	6920	8220		
	Potassium (K)-Total (mg/kg)	12200	13400	14900		
	Potassium (K)-Total (mg/kg wwt)	3340	3130	3370		
	Rubidium (Rb)-Total (mg/kg)	16.7	17.7	13.8		
	Rubidium (Rb)-Total (mg/kg wwt)	4.57	4.14	3.14		
	Selenium (Se)-Total (mg/kg)	2.75	3.07	2.36		
	Selenium (Se)-Total (mg/kg wwt)	0.752	0.720	0.535		
	Sodium (Na)-Total (mg/kg)	3230	3900	4120		
	Sodium (Na)-Total (mg/kg wwt)	883	914	935		
	Strontium (Sr)-Total (mg/kg)	55.9	81.0	89.5		
	Strontium (Sr)-Total (mg/kg wwt)	15.3	19.0	20.3		
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020		
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
	Thallium (Tl)-Total (mg/kg)	0.0065	0.0078	0.0056		
	Thallium (Tl)-Total (mg/kg wwt)	0.00177	0.00182	0.00127		
	Tin (Sn)-Total (mg/kg)	<0.10	0.19	0.13		
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.044	0.029		
	Uranium (U)-Total (mg/kg)	0.0394	0.0213	0.0418		
	Uranium (U)-Total (mg/kg wwt)	0.0108	0.00500	0.00949		
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.13		
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.021	0.029		
	Zinc (Zn)-Total (mg/kg)	84.0	135	126		
	Zinc (Zn)-Total (mg/kg wwt)	22.9	31.6	28.5		
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		
Aggregate Organics	Lipid Content (% wwt)	5.7	1.9	2.1		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

LIPIDS-GRAV-VA	Tissue	Lipids in Tissue by Gravimetric	EPA 3570, 8290

A portion of homogenized sample is extracted with dichloromethane. The extract is evaporated to dryness and the lipid content determined gravimetrically.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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COC # _____

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description: 42281	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	% Lipid	Mercury MDL < 0.1 mg/kg ww	Number of Containers
	QUL near Hazeltine Cr.PCC # 1	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr.PCC # 2	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr.PCC # 3	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr.PCC # 4	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr.PCC # 5	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr.PCC # 6	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr.PCC # 7	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr. PCC # 8	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1

L1712040-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Dec. 7, 2015	lady	Dec. 8	9:40am	-2.0 °C			

Sample Receipt Confirmation

Report Distribution:

Company Name: MOUNT POLLEY MINING CORP.
Contact: Colleen Hughes
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: 250-790-2268
Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
slitke@mountpolley.com
EDD Email: chughes@mountpolley.com
kmcmahen@mountpolley.com
slitke@mountpolley.com
Distribution: Hard Copy: N Email: Y Fax: N EDD: Y

Invoice Distribution:

Acct Name: MOUNT POLLEY MINING CORP.
Contact: Accounts Payable
Address: PO Box 12,
Likely, BC, V0L 1N0
Phone: 250-790-2215
Fax: --
Invoice Email: prosette@mountpolley.com
chughes@mountpolley.com
Project #: N/A
Account #: MPM100

Client Information:

Job Reference #:
Project PO #:
Legal Site Description: 42281
Quote #: N/A
Date Sampled: 20-SEP-15
Date Received: 08-DEC-15
Sampled By: Dolighan,Zirnhel
Chain Of Custody: --

Workorder Summary:

Lab Work Order #: **L1712040**
Estimated completion date: 17-DEC-15
8 Samples received at ALS in **VANCOUVER**
Account Manager: Can Dang
Estimated sample disposal date: See Sample Disposal Information section below.

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type	Client Job#
L1712040-1	QUL NEAR HAZELTINE CR.PCC#1	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712040-2	QUL NEAR HAZELTINE CR.PCC#2	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712040-3	QUL NEAR HAZELTINE CR.PCC#2	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712040-4	QUL NEAR HAZELTINE CR.PCC#4	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712040-5	QUL NEAR HAZELTINE CR.PCC#5	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712040-6	QUL NEAR HAZELTINE CR.PCC#6	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712040-7	QUL NEAR HAZELTINE CR.PCC#7	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	
L1712040-8	QUL NEAR HAZELTINE CR.PCC#8	20-SEP-15 08:00	08-DEC-15 09:40	17-DEC-15		Tissue	

Analysis Requested :	Sample Handling and Disposal Fee	Mercury in Tissue by CVAFS [DRY]	Mercury in Tissue by CVAFS [WET]	Lipids in Tissue by Gravimetric	Metals in Tissue by CRC ICPMS [DRY]	Metals in Tissue by CRC ICPMS [WET]	% Moisture in Tissues	Tissue/Vegetation Sample Preparation
QUL NEAR HAZELTINE CR.PCC#1	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR.PCC#2	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR.PCC#2	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR.PCC#4	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR.PCC#5	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR.PCC#6	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR.PCC#7	✓	✓	✓	✓	✓	✓	✓	✓
QUL NEAR HAZELTINE CR.PCC#8	✓	✓	✓	✓	✓	✓	✓	✓

Sample Integrity Observations:

No observations were identified for this work order submission.

Sample Disposal Information:

Where possible, ALS will store samples for 30 days from the date a final report is issued, or 30 days from the date samples are placed on hold without analytical requests, after which samples may be discarded. Air samples collected on re-usable media are an exception, and are stored for 7 days from the date a final report is issued. Longer storage times are available upon request.

For information about ALS accreditations and certifications please contact your Account Manager or visit our webpage at www.alsglobal.com (see Canada downloads).

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # when calling your Account Manager.

ALS Group appreciates your business. Thank you for the opportunity to work with you.

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Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description: 42281	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: Dolighan,Zirnhelt

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	T-metals(HRICP-MS)(Wet&D	Moisture	% Lipid	Mercury MDL < 0.1 mg/kg ww	Number of Containers
	QUL near Hazeltine Cr.PCC # 1	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
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	QUL near Hazeltine Cr.PCC # 4	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr.PCC # 5	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr.PCC # 6	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr.PCC # 7	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1
	QUL near Hazeltine Cr. PCC # 8	20-Sep-15	8:00-16:15	Tissue	X	X	X	X	1

L1712040-COFC

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
N.Zirnhelt	Dec. 7, 2015	lady	Dec. 8	9:40am	-2.0 °C			

APPENDIX D-2

Sentinel Fish Tissue Quality in the Vicinity of Mount Polley Mine, 2015 – 2016

(Appendix D-2 will be issued with the ecological and aquatic health risk assessments Appendix Book)

APPENDIX E

Terrestrial Plant and Invertebrate Tissue Chemistry

APPENDIX E-1.1

Tissue Data Report for Plants Collected Along Hazeltine Channel

TECHNICAL MEMORANDUM

DATE 7 February 2017 **REFERENCE No.** 1662612-045-TM-Rev0-22343

TO 'Lyn Anglin, PhD, PGeo
Imperial Metals Corporation

CC Don Parsons (MPMC) and Reidar Zapf-Gilje

FROM Evin Zapf-Gilje and Trish Miller **EMAIL** Evin_Zapf-Gilje@golder.com; Trish_Miller@golder.com

2016 TISSUE DATA REPORT FOR PLANTS COLLECTED ALONG HAZELTINE CHANNEL – MOUNT POLLEY MINE

Golder Associates Ltd. (Golder) is pleased to provide Mount Polley Mining Corporation (MPMC) with the following technical memorandum that summarizes the tissue chemistry results of plant samples collected from the Hazeltine Channel floodplain and halo in 2015 and 2016. This memorandum updates and presents statistical analyses of the tissue data presented in "Appendix J – *Terrestrial Vegetation Data Report* (dated 25 May 2016)" included in the Post-Event Environmental Impact Assessment Report (PEEIAR) update report dated 3 June 2016 (Golder 2016a). This memorandum presents the data collected in 2015 and 2016 and provides some context for the tissue concentrations measured. This memorandum will be appended to the up-coming human health risk assessment (HHRA). The data within will be used in both the human health and ecological risk assessments for evaluation of potential risks associated with metal concentrations in plant tissue.

1.0 BACKGROUND

Samples of plants considered edible for human and/or ecological receptors (berries, spruce, willow, and rye/barley grass) were collected in summer 2015 and summer 2016 from the terrestrial area impacted by the Tailings Storage Facility (TSF) embankment breach (i.e., Hazeltine Channel floodplain and halo) to evaluate whether concentrations of copper, selenium, and vanadium in plant tissue have changed as a result of tailings deposition along the Hazeltine Channel. This data will also be used to evaluate potential risks to human and ecological receptors in the up-coming risk assessments. Copper and vanadium were identified previously (Golder 2016b) to be contaminants of potential concern (COPC) because concentrations of these metals in tailings exceeded the applicable BC Contaminated Sites Regulation (CSR) soil standards (BC MoE 2014). Selenium in tailings and plants was included in the present analysis on request from project reviewers, although tailings concentrations were below the CSR standard and less than some of the natural sediments along the Hazeltine Channel. The 'floodplain' area is where the forest and portions of native soils were removed by the flood of debris from the TSF embankment breach. The area along the Hazeltine Channel where tailings had deposited on top of the native organic soil is referred to as the 'halo' area (Figures A-1 through A-14 in Attachment A). This memorandum refers to 'tailings deposited' along the Hazeltine Channel. In reality, the deposited material is a heterogeneous mix of tailings, scoured native till and construction material.

The limited amount of plant tissue collected in 2015 were insufficient for statistical comparison. However, a preliminary assessment indicated that concentrations of copper, selenium, and vanadium in plants from the floodplain and halo were similar to local background and/or baseline concentrations. In 2016, additional samples were collected to provide sufficient data for statistical analysis and provide a more definitive evaluation of the potential impact of tailings on plant tissue chemistry.

Copper is an essential element for plant growth and reproduction (Hochmuth et al. 2015, Landis and Steenis 2000, Majid 1984). It is a constituent of proteins and enzymes, playing a role in forming chlorophyll, and required for chloroplast development and photosynthesis (Hochmuth et al. 2015, Fageria 2007). Essential copper concentrations vary for different plant species, and tissue concentrations can vary within different parts of the plant (e.g., shoots, leaves, roots), and is dependent on plant age (Hochmuth et al. 2015). Plants are well adapted to prevent copper toxicity through specific immobilization mechanisms in their roots, stems, and mycorrhizal fungal associations (Emamverdian et al. 2015). Vanadium also occurs in all living organisms at trace levels, but its role in plant or animal metabolism is poorly understood (Imtiaz et al. 2015). In general, selenium is not known to be an essential element for plant growth, however, elemental selenium is chemically similar to sulphur and as a result, plants incidentally take up and metabolize selenium via sulphur transporters and pathways (Pilon-Smits and Quinn 2010). In a few plant species, selenium can increase growth, increase antioxidant potential, and protect against predators such as herbivores and disease (Pilon-Smits and Quinn 2010, Boyd and Martens 1993).

2.0 METHODS

2.1 Sample Collection

Consistent with the methods used in the 2015 program, samples of edible plants were collected between 3 August and 5 September 2016 by Golder and MPMC field staff. Plant samples were hand-picked by field staff using nitrile gloves and collected in clean, laboratory-supplied 2 ounce or 3.38 ounce Whirl-Pak® bags. Each plant sample was collected along with a soil sample at the same time and location (i.e., at the base of the plant). Plant and soil samples were also collected from non-impacted areas to represent local background. The locations of tissue and co-located soil samples can be found in Figures A-1 through A-14 in Attachment A.

- Berry—Berry samples were collected from plants growing in the halo area. The type of berries collected were those that are likely to be consumed by humans and wildlife (e.g., thimbleberry [*Rubus parviflorus*], blueberry [*Vaccinium* sp.], Devil's club [*Oplopanax horridus*], and highbush cranberry [*Viburnum trilobum]*). The plants selected were those producing berries and growing through or rooted within tailings or tailings mixture. Berry samples were primarily found where the tailings layer was less than 30 cm in depth.

- Conifer—Spruce (*Picea* sp.) needle samples were collected from trees growing in the halo area. The new growth at the tips of branches was collected; it is in this new shoot growth where metals would accumulate (Burkhead et al., 2009) and new shoots are preferred by wildlife. The trees growing in the halo area were growing through tailings and rooted in native soil.

- Shrub—Willow (*Salix* sp.) leaf samples were collected from shrubs planted in the floodplain by MPMC and from native shrubs in the halo area. Only willow planted in the floodplain before spring 2016 were sampled because established plants would have developed roots into the substrate for nutrient acquisition (as opposed to the recent cuttings, which primarily would have developed from nutrients stored within the cutting). Plants sampled included willow planted in lower Hazeltine Channel in early 2015, above the canyon in late 2015, and in upper Hazeltine Channel late 2015 (near Gavin Lake Bridge, was collected using a hand shovel).

- Grass—Rye and barley grass *(Lolium* sp., *Secale* sp., and *Hordeum* sp.) samples were collected from the floodplain, and if present, from the halo area. Where rye and barley grass were not present, a variety of other grass species including *Festuca* (Fescue), *Poa* (meadow grass), *Cinna* (woodreed), *Deschampsia* (tufted hairgrass) and *Achnatherum* (needle grass) were collected. The above ground portion of grass was collected. Grasses were generally shallowly rooted in deposited tailings, a tailings till mixture or in reclaimed substrates.
- Soil samples were collected at each plant sample location. Surface soil, generally within the top 0.2 m from the base of the plant was collected using a hand shovel. Soil collected targeted the rooting layer. In the floodplain this was generally the surficial tailings or till layer. In the halo plants were rooted in the native soil under tailings. The forest floor (LFH layers) was removed before collecting samples in background areas. Soil was homogenized in a stainless steel bowl prior to transfer to clean, laboratory-supplied 125-mL, glass sample jars with Teflon™ lined lids.

Tissue samples were submitted for analysis of metals and moisture content, and were rinsed with DI water by the laboratory staff prior to analysis. Soil samples were submitted for analysis of metals, nutrients, total organic carbon (TOC), and pH. For quality assurance and quality control (QA/QC), field duplicate samples of plants and soil were collected from 10% of locations.

2.2 Statistical Analyses

The statistical analysis was designed to evaluate temporal and spatial differences in metals concentrations in plants. Specifically, the analyses were used to address the following questions:

- Are metal concentrations in plants collected from exposed areas statistically higher than concentrations measured in plants from background areas and the pre-mine baseline study?
- If statistically different concentrations were measured in exposed areas, do these concentrations exceed documented thresholds for plant toxicity?

A baseline study of plant tissue sampling at the Mount Polley property was conducted by Hallam Knight Piésold to document pre-mine concentrations of metals in plants on or near the mine. Sampling was conducted in 1989, 1995, and 1996 in areas including the Central and West Pits (now the Cariboo and Springer Pits), the Mill Site, and the TSF (Golder 2016a). Vanadium was not measured in the historic plant samples and berry samples were not collected in the baseline study. Soil samples were not collected with baseline plant samples. Further detail of the available baseline data are provided in Appendix J of the PEEIAR update (Golder 2016a).

Tissue data were first separated into different populations based on tissue type by plant functional group (i.e., berries from berry-producing shrubs, other shrubs, conifers, grasses), sample area (i.e., background, baseline, halo, or floodplain), and collection year (baseline data were not separated by year). Background and baseline data were not pooled as the samples were collected at least 19 years apart from different parts of the mine area. Floodplain and halo data were kept as separate populations as there are differences between these two areas, namely; i) growth medium – plants growing in the halo are generally rooted in native soils underlying tailings while floodplain plants have been planted directly into the deposited tailings till mixture, and ii) age of plants – plants growing in the halo are generally well established and have been growing for several years while all plants in the floodplain have been planted post TSF embankment breach as part of restoration efforts.

Copper, selenium, and vanadium concentrations in plants collected from the floodplain and halo areas in 2015 and 2016 were compared to samples from background areas and the available baseline data. Table 1 provides a summary of the samples available for each parameter.

Table 1: Number of Each Type of Plant Tissue Sample Collected Along Hazeltine Channel

Tissue	Year	Halo (Cu, Se, V)	Floodplain (Cu, Se, V)	Background (Cu, Se, V)	Baseline (Cu)	Baseline (Se)
Berry	2015	11	-	6	-	-
	2016	21		10		
Shrub	2015	1	20	10	85	79
	2016	6	19	11		
Conifer	2015	7	-	3	11	9
	2016	19		12		
Grass	2015	-	11	-	10	5
	2016	2	19	11		

Different tissue types were considered separate data populations for the purposes of statistical analysis. The following outlines the rationale for the further breakdown of data populations:

- A non-parametric Wilcoxon signed-rank test was first used to test for differences in tissue concentrations between 2015 and 2016 data populations. There were no statistical differences between 2015 and 2016 data, with the exception of selenium concentrations in floodplain grasses (Section 3.0). The difference observed for selenium is believed to be associated with uncertainty due to variable data sets. Over 50% of the grass samples had concentrations of selenium less than five times that method detection limit, where uncertainty in results is greater. Also, the variation in selenium concentrations in natural sediments along the Hazeltine Creek channel may also contribute to variability, particularly when concentrations range above and below 5x MDL. No difference was found for copper and vanadium concentrations for the same data population.
- As the data for the two sampling events appears to be similar, and there is no evidence of a difference in environmental or geochemical conditions between the 2015 and 2016 seasons, the two data sets were pooled for each area and tissue type.

Available data populations are summarized in Table 2. Halo berry, halo conifer, floodplain shrub, and floodplain grass data were compared to background and baseline data for each tissue type where available. As previously mentioned, the pre-mine baseline survey did not include berries, nor did it include analyses for vanadium.

Table 2: Data Populations Available for Statistical Analysis

Tissue	Halo	Floodplain	Background	Baseline
Berry	Yes	No	Yes	No
Shrub	No	Yes	Yes	Yes
Conifer	Yes	No	Yes	Yes
Grass	No	Yes	Yes	Yes

With guidance from Dr. Dennis Helsel[1] of Practical Statistics, the following statistical analysis was performed to evaluate whether metal concentrations in plant tissues were elevated in areas impacted by tailings deposition. The following statistical analyses were conducted using R version 3.3.2:

Non-parametric Wilcoxon signed-rank tests were used to compare tissue concentrations between two data populations (e.g., floodplain shrubs to background shrubs). A one-tailed test of difference was used since it is reasonable to assume that the concentrations in the floodplain or halo would be equal to or greater than background or baseline concentrations. A threshold for statistical significance of $\alpha = 0.05$ was applied to identify statistically significant differences among data populations.

Summary statistics (minimum, maximum, mean, median, number of samples, and number of detected samples) were reported for each tissue type separated by area. Mean values were calculated using the full detection limit for samples with non-detects.

Non-parametric tests were considered to be the most appropriate method for evaluating whether there is a statistically significant difference between plant tissue concentrations from impacted areas and background areas. This is because the objective of non-parametric tests is to determine whether one group tends to produce generally higher observations than the other (Helsel 2002). Additionally, non-parametric tests are better suited than parametric tests to deal with non-detects, outliers, and non-normally distributed data, which are common with chemical concentrations in the field (Helsel 2002). Non-parametric tests do not require the data to conform to an unrealistic, specific shape such as a normal distribution, and have greater power to identify differences for skewed distributions common to environmental data (Helsel 1987). Non-parametric comparisons are more robust than a test of difference between means of the different data populations (Helsel 1987).

Individual plant samples collected from the floodplain and halo areas in 2015 and 2016 were plotted for comparison to background and baseline samples. Boxplots were created for each tissue type to compare concentrations across areas (i.e., halo, floodplain, background, or baseline). Boxplots indicate minimum values, 25th, 50th, and 75th percentiles, maximum values, and outliers. Data greater than three times the interquartile range (IQR; interquartile range = difference between the 25th and 75th percentile) above the 75th percentile are typically flagged for further evaluation as potential outliers. However, as we had no reason to question the sample results, all the data were included in the statistical analyses. The upper whisker of a boxplot shows the maximum detected value within three times the interquartile range.

Metal concentrations in plant tissue were also compared to the co-located soil samples to determine tissue: soil ratios (i.e., bioaccumulation factors [BAFs]). Individual plant tissue concentrations were plotted against co-located soil concentrations to visualize the relationship. Bioaccumulation factors were plotted against soil concentration to examine if there was a concentration-dependence of metal accumulation in plants.

[1] Dr. Dennis Helsel (PhD, Environmental Science and Engineering, Virginia Tech) has 37 years of experience applying statistics to practical issues in environmental sciences. He is the owner and lead scientist of Practical Stats, an environmental statistics training and consulting firm. He is the lead or sole author of two textbooks, *Statistical Methods in Water Resources* (USGS, 2002), and *Statistics for Censored Environmental Data using Minitab and R*, 2nd ed. (Wiley 2012), as well chapters in two handbooks and over 50 journal articles. *Full list of publications (pdf)*

Dr. Helsel was a 2003 recipient of the Distinguished Achievement Award from the American Statistical Association's section on Statistics and the Environment, and of the Dept. of Interior's Distinguished Service Award in 2007. He has been invited to conduct training classes on environmental statistics to the Chinese Ministry of Water Resources, the Umweltbundesamt (German Environment Agency), the Helsinki University of Technology, Finland; and the American Statistical Association.

2.3 Quality Assurance/Quality Control

2.3.1 Field Quality Assurance/Quality Control

Plant samples were hand-picked by field staff wearing nitrile gloves and placed in labelled collection bags. Re-usable equipment (e.g., bowls and trowels) was decontaminated between samples. Care was taken to minimize the introduction of foreign material into the samples or loss of plant material of interest during sample collection. Field notes were maintained to document the field sampling program. Each sample was labelled with a unique identifier and the date sampled. Soil samples were refrigerated and plant samples were frozen after collection for storage before submission for chemical analysis. Chain-of-custody forms were updated as samples were collected, and were checked to verify the information recorded before samples were submitted for chemical analysis.

For QA/QC purposes, nine duplicate plant samples and seven duplicate soil samples were collected and analyzed. Plant tissue duplicates were comprised of three conifer duplicates, three shrub duplicates and three grass duplicates collected from both impacted and non-impacted local background areas. Due to low sample volume, no berry duplicates were collected in 2016. Sample duplicates are collected to provide an indication of sample variation and the reproducibility of the laboratory test methods. Duplicate samples were collected using the same methods as described above, but repeated twice at the desired location. Each duplicate sample was submitted to the laboratory for chemical analysis under a unique sample number to prevent reporting bias.

The results of the duplicate samples are often expressed as Relative Percent Difference (RPD). The RPD is an indicator of laboratory precision and sample heterogeneity. Lower RPD numbers indicate better precision in laboratory analysis and sample homogeneity. The formula for computing the RPD is given below:

$$RPD = \frac{abs(sample - duplicate)}{mean} \times 100$$

Where:

- RPD is the relative percent difference
- abs (sample-duplicate) is the absolute value of the original sample minus the duplicate sample
- mean is the average between the two samples

In accordance with British Columbia Field Sampling Manual (2013), a data quality objective (DQO) of an RPD value of 50% was used to identify notable differences between original and duplicate tissue samples, when values were greater than or equal to five times the method detection limit (MDL). The RPD value used for tissue is relatively high because a higher degree of natural variability is expected for this biological matrix. An RPD value of >35% was used for soil samples as some heterogeneity is still expected. For values less than five times the MDL, a difference factor (DF) was calculated. A DF is the absolute difference between the two sample values divided by the method detection limit. In general, samples should have a difference factor of less than 2.0.

2.3.2 Laboratory Quality Assurance/Quality Control

ALS Laboratory (ALS, Burnaby BC) is an accredited laboratory (locally, Canadian Association for Laboratory Accreditation Inc. and Standard Council of Canada) and methods are based on International Organization for Standards/International Electrotechnical Commission (ISO/IEC) 17025:2005. ALS analytical methods are based on well established, internationally-recognized procedures such as those published by the United States Environmental Protection Agency and the American Public Health Association, as well as local country standards. All approved methods included quality control and performance criteria that must be achieved prior to releasing the data.

Laboratory quality control for chemistry samples included analysis of method blanks, laboratory duplicates, spiked samples, and control samples using certified reference materials to assess precision and accuracy of chemical analyses. Laboratory data quality control reports were reviewed upon receipt to confirm that the laboratory data quality objectives (DQOs) had been met and that the appropriate quality control information had been reported.

3.0 RESULTS

Statistical comparisons between 2015 and 2016 data populations were conducted as a first step to evaluate whether data could be pooled. No statistically significant differences were found between 2015 and 2016 data populations with the exception of selenium concentrations in floodplain grasses (Attachment B; Table B-1). Differences in selenium concentration in floodplain grasses were likely due to the high natural variability of tissue concentrations and small sizes of the data populations, as changes were not observed in geochemical or environmental conditions. Therefore, tissue data from 2015 and 2016 were pooled for subsequent statistical comparisons between areas. Raw tissue and soil chemistry data are presented in Attachment C.

3.1 Copper

Statistical comparisons of copper concentrations in plant tissues are presented in Table 3. Summary statistics of copper concentrations in plant tissue collected from the different areas are presented in Attachment B. Box-plots for the various tissue types are presented below (Figure 2 and 3). In soil, copper concentrations ranged from 11 to 1030 mg/kg (Table C-2, Attachment C). Copper concentrations in plant tissue samples collected in 2015 and 2016 ranged from 0.8 to 79 milligrams per kilogram dry weight (mg/kg dw) with a median concentration of 5.6 mg/kg dw (Table B-2; Figure 1). There are no standards for concentrations of copper in plant tissue. Adequate copper concentrations in plants is variable for different species, within different parts of the plant (e.g., shoots, leaves, roots), and is dependent on plant age. The adequate range of copper concentration in plants is between 4 and 20 mg/kg dw (Hochmuth et al. 2015). These results are provided to give some perspective on measured concentrations of copper in plant tissues collected from the Site. Copper results are discussed below for the floodplain and halo.

Table 3: Results of Non-Parametric, Two-Sample Wilcoxon Test for Difference in Copper Concentrations in Plant Tissue

Area	Tissue	P-value (vs Background)	P-value (vs Pre-mine Baseline)
Floodplain	Grass	**0.0177**	**0.0315**
	Shrub	**<0.001**	**<0.001**
Halo	Conifer	**0.0328**	0.0975
	Berry	0.289	N/A

Note: The values shown are the p-value from one-tailed, two-sample Wilcoxon tests assuming that background or baseline < halo or floodplain tissue concentrations.

Bold = Statistical difference; significance level set at 0.05.

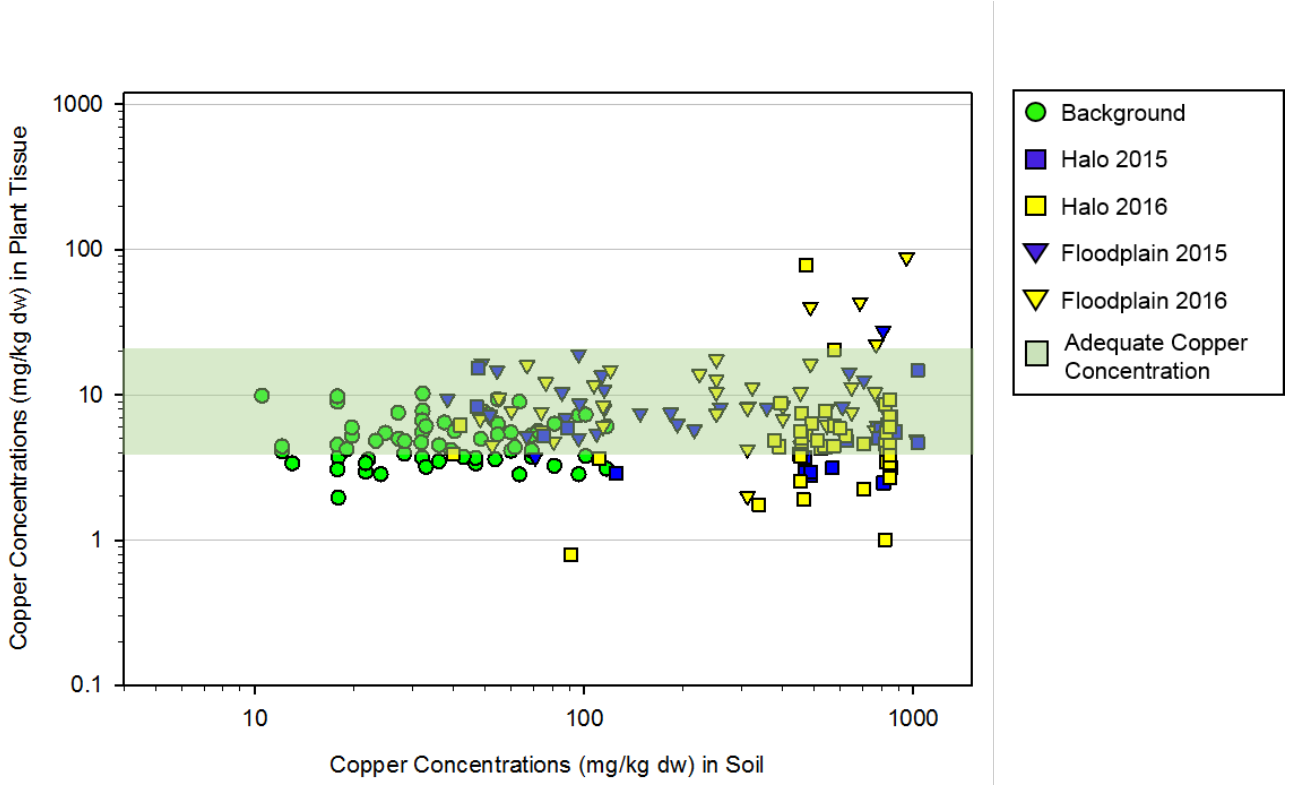

Figure 1: Copper Concentrations in Plant Tissue versus Soil

Note: The Green Shaded Band Represents Copper Concentrations in Plant Tissues Described as Adequate for Normal Growth and Development by Hochmuth et al. 2015.

Floodplain

Grass and shrub samples were collected from the floodplain; berries and spruce were not present in the floodplain.

- Grass: Copper concentrations in floodplain grass ranged from 2.0 to 89 mg/kg dw with a median value of 7.6 mg/kg dw (Table B-2; Figure 2a). Copper concentrations in grass from the floodplain were statistically higher than concentrations in background and baseline samples (Table 3).
- Shrubs: Copper concentrations in floodplain shrubs ranged from 3.7 to 22 mg/kg dw with a median value of 8.4 mg/kg dw (Table B-2, Figure 2b). Copper concentrations in shrubs from the floodplain were statistically higher than concentrations in background and baseline samples (Table 3, Figure 2b). However, the floodplain results (n=39) fall within the range of the baseline data (n=85).

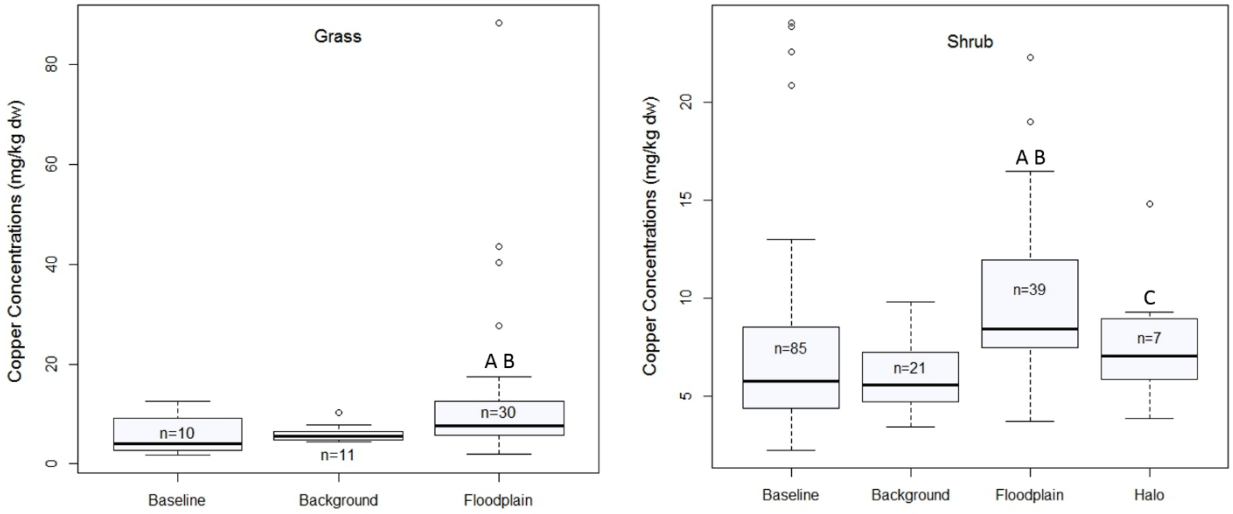

Figure 2: Copper Concentrations in a) Grass and b) Shrub Samples Collected in 2015 and 2016 (Floodplain, Halo, and Background) and Prior to Mine Development (Baseline)

A) Statistically Higher than Baseline.

B) Statistically Higher than Background.

C) Insufficient Data for Statistical Comparison to Background or Baseline.

Halo

Conifer, berry and shrub samples were collected from the halo area.

- Conifer: Copper concentrations in halo conifers ranged from 2.3 to 7.7 mg/kg dw with a median concentration of 4.0 mg/kg dw (Table B-2; Figure 3a). Copper concentrations in conifers from the halo were statistically higher than concentrations in background samples, but were not statistically higher than in baseline samples (Table 1). In spite of these differences, the measured concentrations in halo conifers are below copper toxicity levels previously observed in lodgepole pine, which occur at concentrations from 10.2 to 28.9 mg/kg according to Majid (1984).
- Berries: Copper concentrations in halo berries ranged from 0.80 to 79 mg/kg dw with a median concentration of 4.9 mg/kg dw (Table B-2, Figure 3b). Copper concentrations in berries from the halo were not statistically higher than in background samples (Table 1). No baseline data were available for berries. With the exception of the three potential outliers, halo berry samples fall within the range of background samples (Figure 3b).
- Shrubs: Copper concentrations in halo shrubs ranged from 3.8 to 15 mg/kg dw with a median concentration of 7.0 mg/kg dw (Table B-2, Figure 2b). With the exception of one potential outlier, the range of copper concentrations in halo shrubs was within the range measured in background shrubs. Copper concentrations in halo shrubs were within the range of baseline shrubs (Figure 2b). No statistical comparison of halo shrubs (n=7) to background or baseline was conducted as the sample size was considered too small to identify differences with sufficient power.

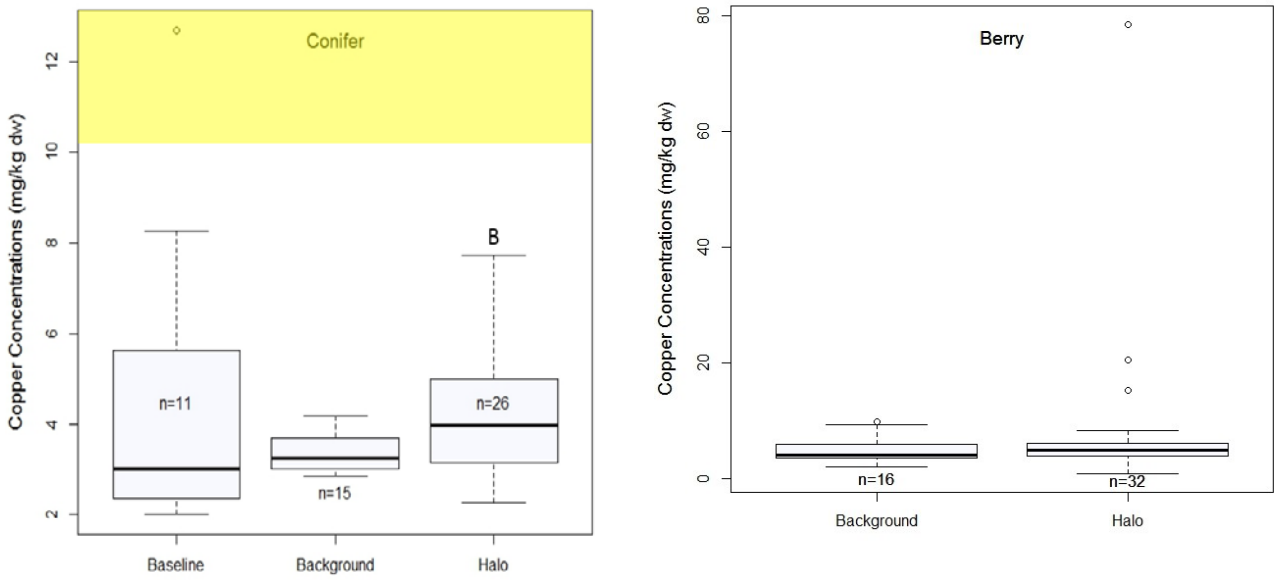

Figure 3: Copper Concentrations in a) Conifer and b) Berry Samples Collected in 2015 and 2016 (Halo and Background) and Prior to Mine Development (Baseline)

A) Statistically Higher than Baseline.

B) Statistically Higher than Background.

The Yellow Shaded Band Represents the Range of Copper Toxicity Found for Lodgepole Pine Based on Reduction in Shoot Growth by Majid 1984.

Copper bioaccumulation factors for all plant samples were below one and decreased with increasing soil concentration (Figure 4). These data indicate that there is a nonlinear relationship between copper concentrations in soil and plants, supported by the understanding that plants are able to regulate copper uptake (Emamverdian et al. 2015). The majority of tissue samples have copper concentrations between 2 and 20 mg/kg dw (Figure 1), which is within the general range for different plant species considered adequate for plant health (4 to 20 mg/kg dw; Hochmuth et al. 2015).

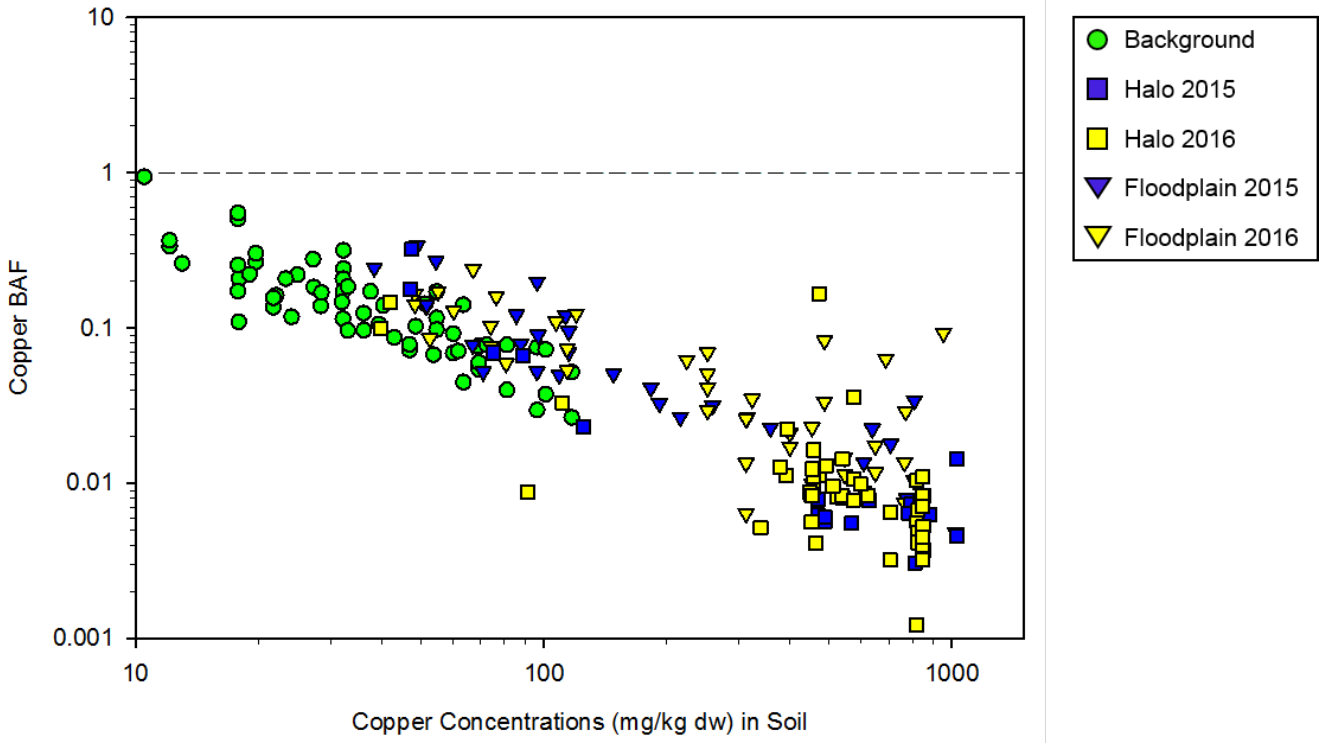

Figure 4: Copper Bioaccumulation Factors versus Soil Concentrations in Plants within the Halo, Floodplain, and Background Areas

3.2 Selenium

Statistical comparisons of selenium concentrations in plant tissues are presented in Table 4. Summary statistics of selenium concentrations in plant tissue collected from the different areas are presented in Attachment B. Box-plots for the various tissue types are presented below. Selenium concentrations in plant tissue samples collected in 2015 and 2016 ranged from <0.05 to 3.8 mg/kg dw with a median concentration of 0.1 mg/kg dw (Table B-3; Figure 5). A review of published literature did not identify limits for adequate or toxic concentration ranges for selenium in plants. In soil, selenium concentrations ranged from 0.2 to 3.7 mg/kg (Table C-2, Attachment C). Selenium results are discussed below for the halo and floodplain.

Table 4: Results of Non-Parametric, Two-Sample Wilcoxon Test for Difference in Selenium Concentrations in Plant Tissue

Area	Tissue	P-value (vs Background)	P-value (vs Baseline)
Floodplain	Grass	**<0.001**	-
	Shrub	**<0.001**	**<0.001**
Halo	Conifer	1[a]	0.99[a]
	Berry	0.328	-

Note: The values shown are the p-value from one-tailed two-sample Wilcoxon tests assuming that background or baseline < halo or floodplain tissue concentrations.

Bold = Statistical difference; significance level set at 0.05.

a) No detected values for Halo or Background.

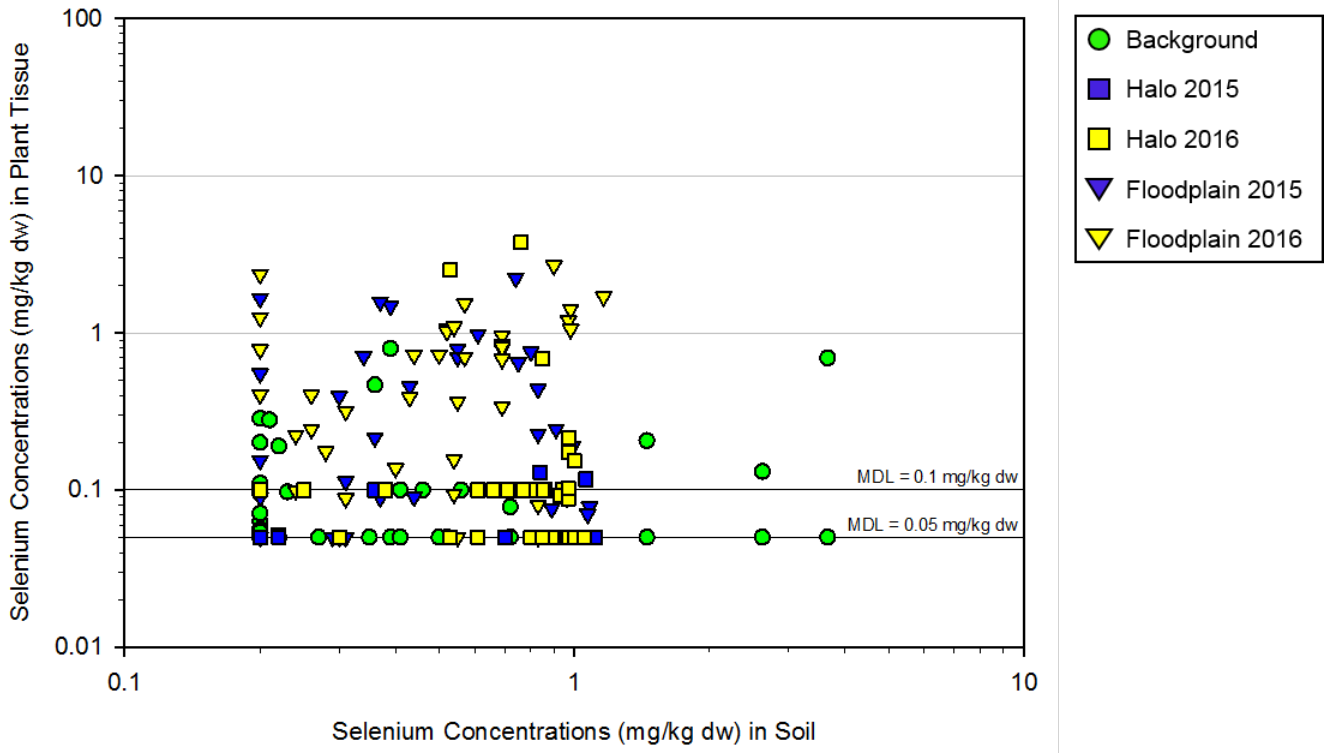

Figure 5: Selenium Concentrations in Plant Tissue versus Soil

Floodplain

Grass and shrub samples were collected from the floodplain. Selenium concentrations in floodplain grass samples ranged from <0.05 to 2.4 mg/kg dw with a median value of 0.29 mg/kg dw (Table B-3, Figure 6a). Selenium concentrations in grass samples from the floodplain were statistically higher than background samples (Table 4). Only one background sample had detectable concentrations of selenium as compared to 27 of 30 samples having detectable concentrations of selenium in floodplain grasses. Selenium concentrations in floodplain grasses appear to be similar to baseline grasses as the first quartile and median were very close between the two data populations (Figure 6). No statistical comparison of floodplain grass to baseline grass (n=5) was conducted as the baseline sample size was considered too small to identify differences with sufficient power.

Selenium concentrations in floodplain shrub samples ranged from <0.05 to 2.7 mg/kg dw with a median concentration of 0.55 mg/kg dw (Table B-3, Figure 6b). Selenium concentrations in shrubs from the floodplain were statistically higher than background and baseline samples.

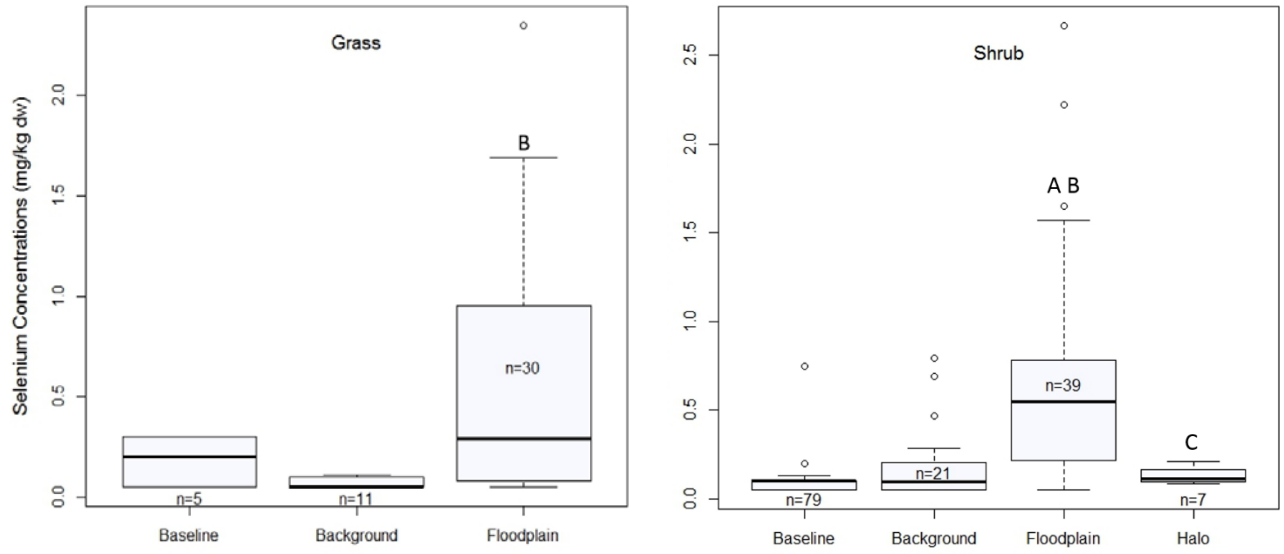

Figure 6: Selenium Concentrations in a) Grass and b) Shrub Samples Collected in 2015 and 2016 (Floodplain, Halo and Background) and Prior to Mine Development (Baseline)

A) Statistically Higher than Baseline.

B) Statistically Higher than Background.

C) Insufficient Data for Statistical Comparison to Background or Baseline.

Halo

Conifer, berry and shrub samples were collected from the halo area. Selenium concentrations in conifer samples were below MDL for all samples collected from the halo and background areas (Table 4); therefore no statistical comparison was possible. In 2 of 9 baseline conifer samples there were detectable amounts of selenium (Table 4). Boxplots showing selenium concentrations are not provided as there were no detectable levels of selenium in impacted areas.

Selenium concentrations in berry samples from the halo ranged from <0.05 to 3.75 mg/kg dw with a median concentration of <0.1 mg/kg dw (Table B-3). Concentrations of selenium in berry samples from the halo area were not statistically higher than in background samples. No baseline data were available for berries. Concentrations of selenium were detected in 3 of 32 berry samples and in none of the background berry samples. Boxplots showing selenium concentrations are not provided as there were no detectable concentrations of selenium in background areas.

Selenium concentrations in shrub samples from the halo ranged from 0.088 to 0.21 mg/kg dw with a median concentration of 0.12 mg/kg dw (Table B-3; Figure 6b). Selenium concentrations in halo shrub samples were within the range of concentrations measured in background and baseline samples (Table B-3; Figure 6b). No statistical comparison of halo shrubs (n=7) to background or baseline shrubs was conducted as the sample size was considered too small to identify differences with sufficient power.

Selenium bioaccumulation factors for all data populations (including background) were above one in a portion of the plant tissue samples (Figure 7). The data indicate that there is a nonlinear relationship between selenium concentrations in soil and plants; although there are samples with a BAF of >1 there does not appear to be a trend relating soil concentration with increased BAFs (Figure 7).

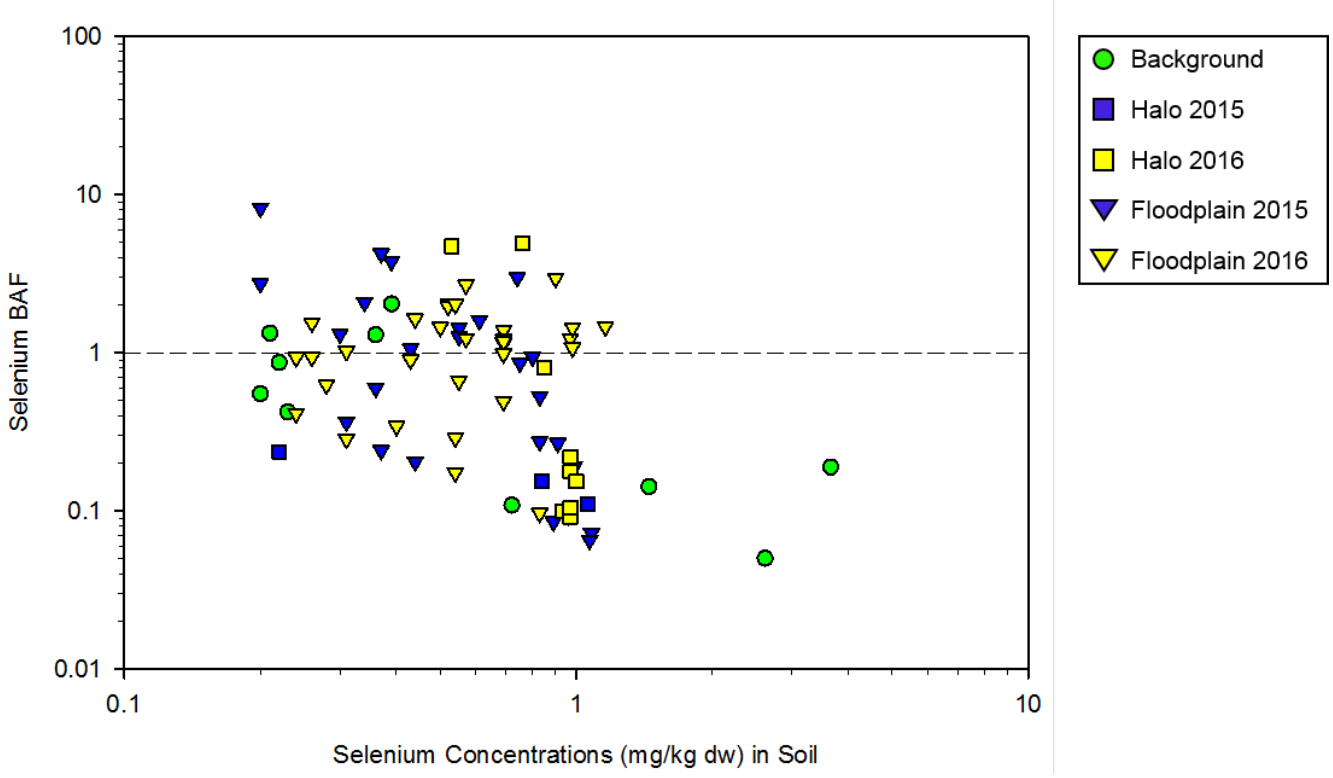

Figure 7: Bioaccumulation Factors versus Selenium Concentrations in Soil within the Halo, Floodplain, and Background Areas

3.3 Vanadium

Statistical comparison of vanadium concentrations are presented in Table 5. Summary statistics of vanadium concentrations in plant tissue collected from the different areas are presented in Attachment B. Box-plots for the various tissue types are presented below. Vanadium concentrations in plant tissue samples collected in 2015 and 2016 ranged from <0.1 to 12 mg/kg dw with a median concentration of 0.2 mg/kg dw (Table B-3, Figure 8). In soil, vanadium concentrations ranged from 9.3 to 257 mg/kg (Table C-2, Attachment C). Baseline samples were not analyzed for vanadium and thus no comparison to baseline could be completed. There is no standard for vanadium concentrations in plants and a review of the published literature returned no such data. Vanadium results are discussed below for the floodplain and halo.

Table 5: Results of Non-Parametric, Two-Sample Wilcoxon Test for Difference in Vanadium Concentrations in Plant Tissue

Area	Tissue	P-value (VS Background)
Floodplain	Grass	**0.014**
	Shrub	**<0.001**
Halo	Conifer	**0.003**
	Berry	**0.004**

Note: The values shown are the p-value from one-tailed two-sample Wilcoxon tests assuming that background or baseline < halo or floodplain tissue concentrations.

Bold = Statistical difference; significance level set at 0.05.

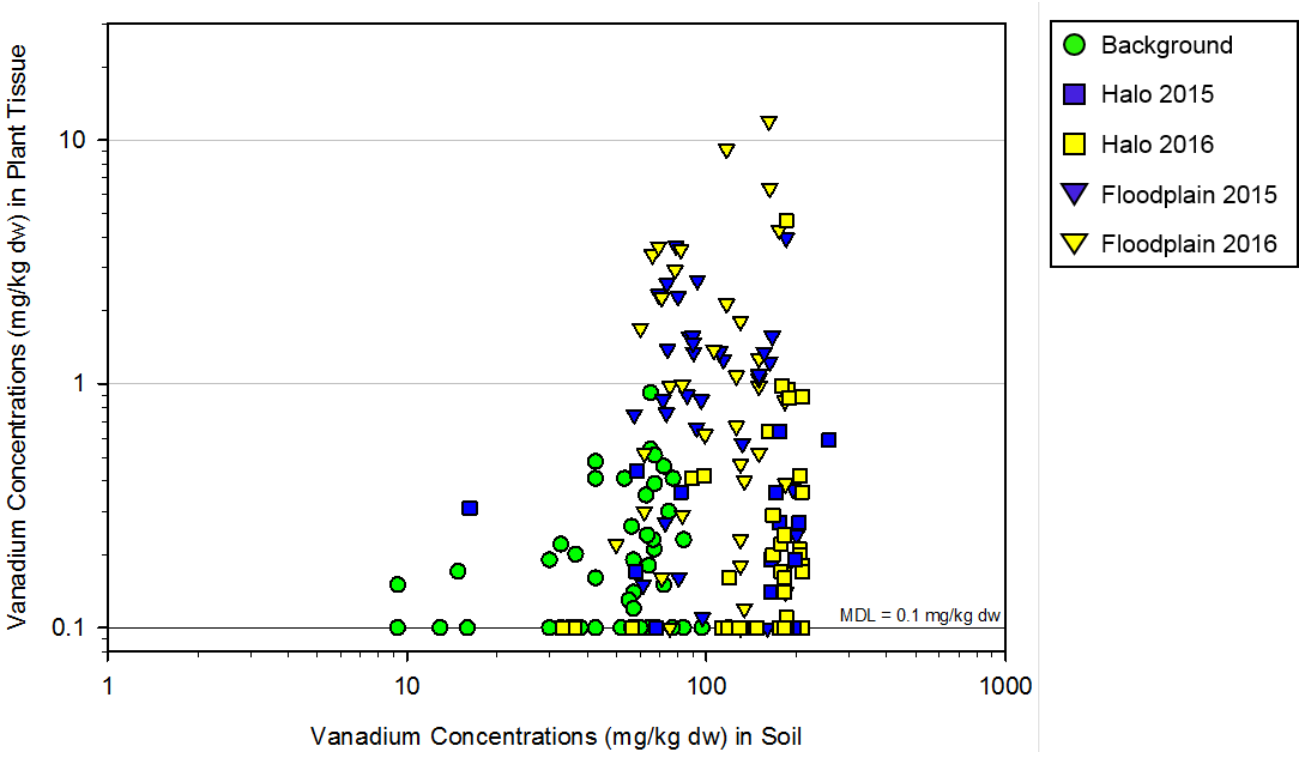

Figure 8: Vanadium Concentrations in Plant Tissue versus Soil

Floodplain

Grass and shrub samples were collected from the floodplain.

- Grass: Vanadium concentrations in grass from the floodplain ranged from <0.1 to 12 mg/kg dw with a median value of 0.34 mg/kg dw (Table B-4; Figure 9a). Vanadium concentrations in grass from the floodplain were statistically higher than background samples. The median vanadium concentration in floodplain grass was 2.6x higher than the median background concentration.
- Shrubs: Vanadium concentrations in shrubs from the floodplain ranged from 0.16 to 4.3 mg/kg dw with a median concentration of 1.36 mg/kg dw (Table B-4; Figure 9b). Vanadium concentrations in shrubs from the floodplain were statistically higher than background samples. The median vanadium concentration in floodplain shrubs was 6.2x higher than the median background concentration.

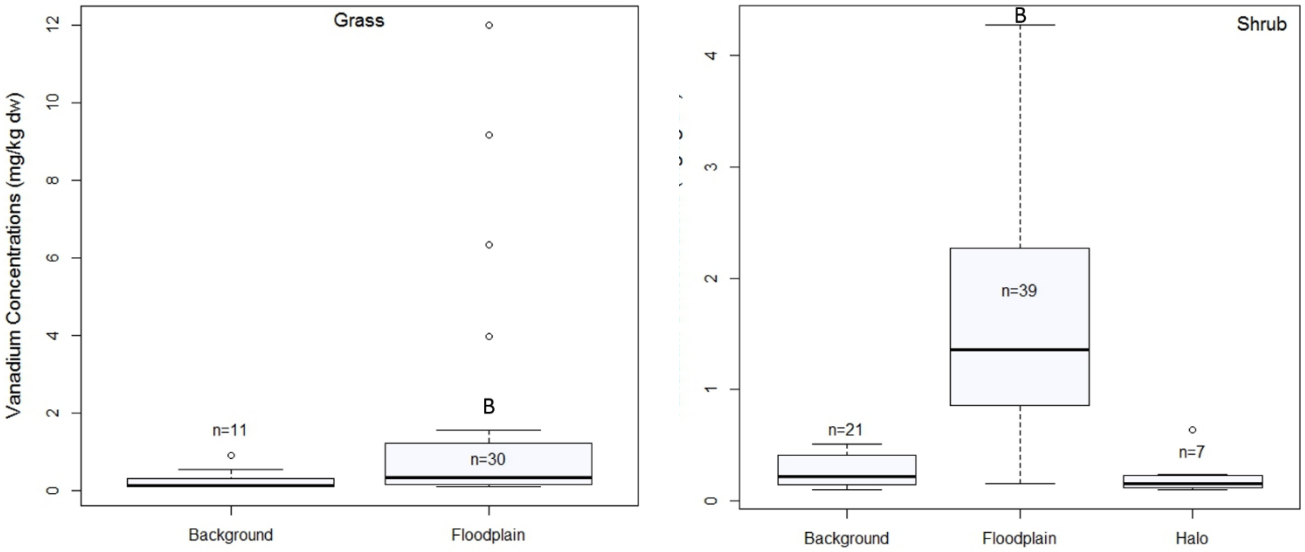

Figure 9: Vanadium Concentrations in a) Grass and b) Shrub Samples Collected in 2015 and 2016 (Floodplain, Halo and Background)

B) Statistically Higher than Background.

Halo

Conifer, berry and shrub samples were collected in the halo area.

- Conifers: Vanadium concentrations in conifers from the halo ranged from <0.1 to 0.98 mg/kg dw with a median concentration of 0.20 mg/kg dw (Table B-4; Figure 10a). Vanadium concentrations in conifers from the halo area were statistically higher than background samples (Table 5).
- Berries; Vanadium concentrations in berries from the halo ranged from <0.1 to 4.7 mg/kg dw with a median concentration of <0.1 mg/kg dw (Table B-4; Figure 10b). Detectable concentrations of vanadium were measured in 14 of 32 halo samples and in 1 of 16 background samples. Vanadium concentrations in berries from the halo were statistically higher than background samples; however median concentrations for both were <MDL (Table 5; Table B-4). No baseline data were available for berries.
- Shrubs: Vanadium concentrations in shrubs from the halo ranged from <0.1 to 0.64 mg/kg dw with a median concentration of 0.16 mg/kg dw (Table B-4, Figure 9b). Concentrations of vanadium in halo shrubs were, with the exception of one outlier, generally lower and within the range of background samples (Figure 9b). No statistical comparison of halo shrubs (n=7) to background shrubs was conducted as the sample size was considered too small to identify differences with sufficient power.

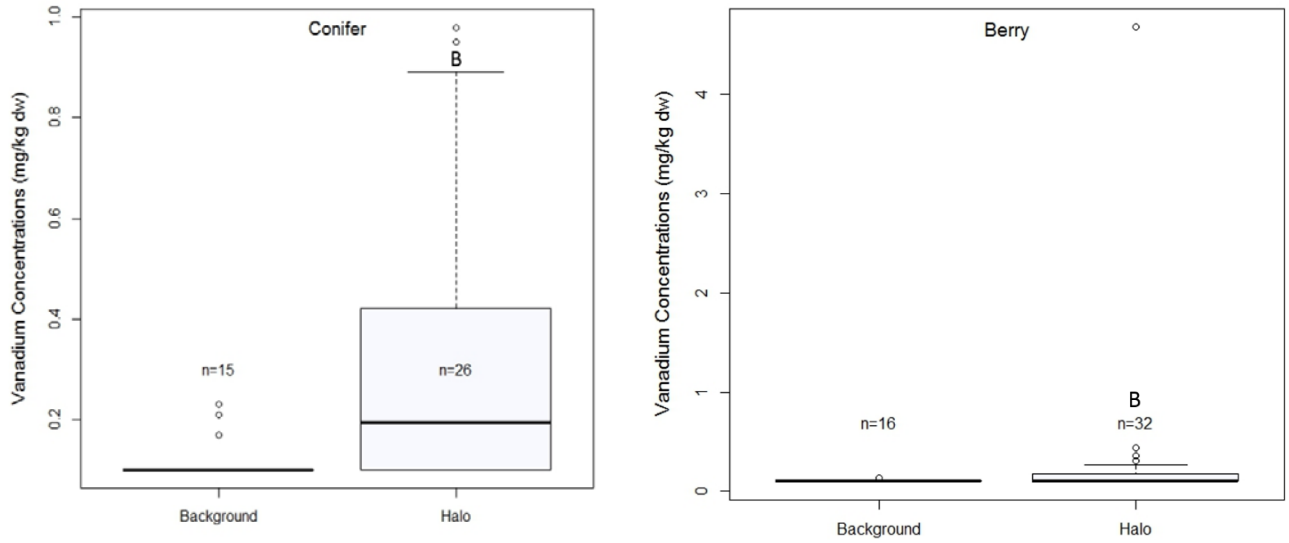

Figure 10: Copper Concentrations in a) Conifer and b) Berry Samples Collected in 2015 and 2016 (Halo and Background) and Prior to Mine Development (Baseline)

B) Statistically Higher than Background.

Vanadium bioaccumulation factors were well below one for all plant samples (Figure 1) and show a decreasing trend with higher soil concentrations. The data indicate that there is a non-linear relationship between vanadium concentrations in soil and plants.

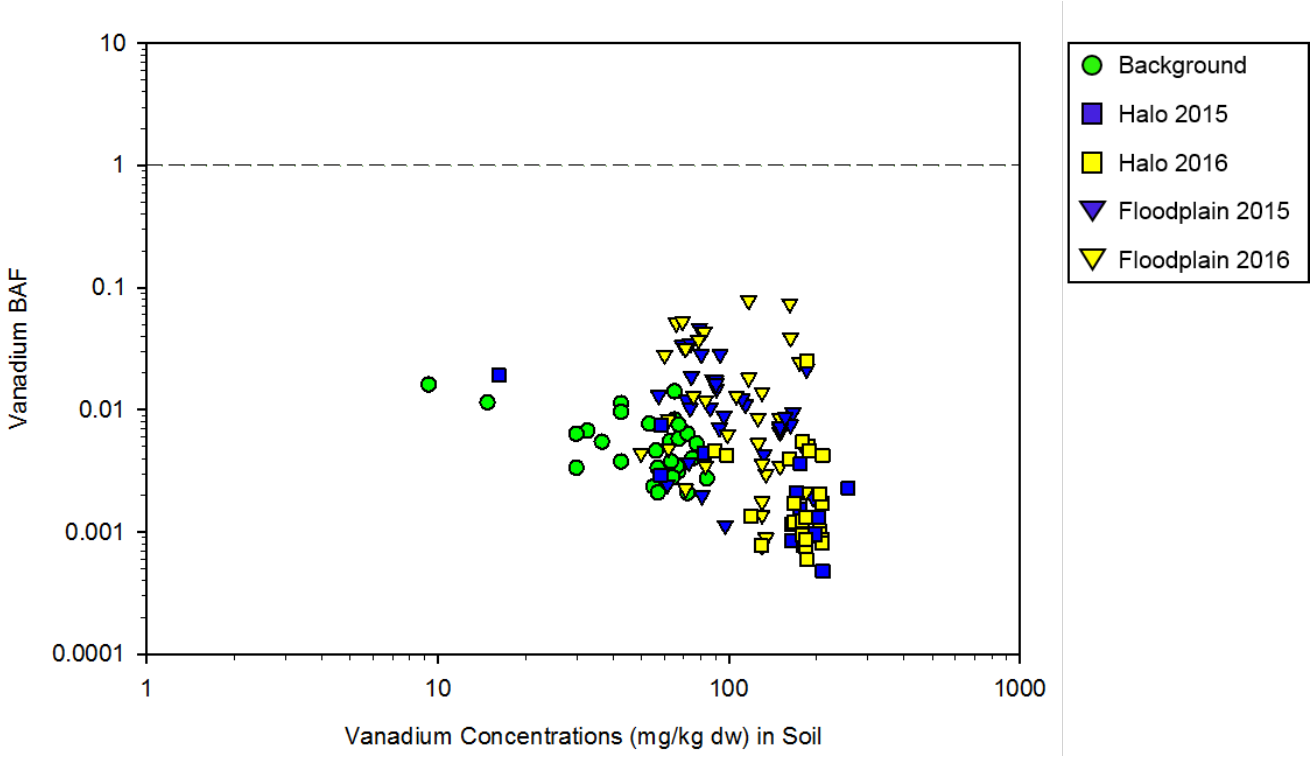

Figure 11: Bioaccumulation Factors versus Vanadium Concentrations in Soil within the Halo, Floodplain, and Background Areas

3.4 Quality Assurance/Quality Control

3.4.1 Field

Results of analyses for field duplicates are provided in Attachment D, Table D-1 (tissue) and Table D-2 (soil). In plant tissue, the RPD was greater than 50% in one or more sets of duplicate samples for the following:

- Shrub samples: aluminum, chromium, iron, and vanadium (one sample)
- Grass samples: aluminum, barium, and boron
- Conifer samples: cadmium

RPDs greater than 50% were observed in both impacted and background areas. In one shrub sample an RPD of 80% for vanadium was observed. The concentration of one of the samples used to calculate this vanadium RPD was only 3.4x the MDL, although the RPD was still calculated as the mean concentration of the sample and its duplicate were above 5x the MDL. Higher variability is expected in samples with concentrations near the MDL so this elevated RPD is unlikely to be representative of shrub samples as a whole. The RPDs calculated for copper, vanadium and selenium all met the data quality objective of <50% with the exception of the one sample noted above; therefore, the data were considered reliable for the purposes of this memorandum. Overall, conifer samples had the least variability in metal concentrations amongst the tissue types.

In soil, RPDs were greater than 35% for the following parameters: copper, chromium, molybdenum, total carbon, total organic carbon, and potassium. Elevated RPDs were observed in two of the seven duplicate samples, both of which were collected in floodplain area. The majority of the observed variability is likely attributed to the higher heterogeneity of floodplain soils. Although this variability could affect the precision of the individual results, selection of the duplicate samples was random, meaning that there would be no systematic bias in results due to the variability.

3.4.2 Laboratory

Laboratory data reports for samples collected during field sampling are provided in Attachment E. The following data quality issues were identified in the ALS laboratory report for tissue samples:

- Hold-times were met for all tissue samples.
- Detection limits were adjusted for several parameters because of matrix interferences, low sample volume, or a required dilution.
- Method Blank for magnesium exceeded ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
- The duplicates results were outside the ALS DQOs in at least one sample for total beryllium, total cobalt, total lead, total thallium, total titanium, total tin, and total uranium due to sample heterogeneity.
- Reference Material recovery was above ALS DQO for total zinc and total sodium in some samples in lab report L1826505. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

The following data quality issues were identified in the ALS laboratory reports for soil:

- Recommended hold times were exceeded prior to analysis of organic carbon, inorganic carbon, available nitrate, pH, and mercury in some samples.
- Detection limits for several nutrients were adjusted in some samples due to high concentrations of test analytes, sample matrix effects, limited sample amount, or high percent moisture.

The DQO were met for copper, selenium, and vanadium in all samples and were met for the majority of samples for other parameters; therefore, the data were considered reliable for the purposes of this memorandum.

4.0 UNCERTAINTY AND DATA GAPS

The uncertainty within the studied area was mostly due to other factors that can affect metal uptake within these plants, such as plant growth, species diversity, plant age, growth stage (e.g., planted vs established), season, microsite variability, rooting depth, and soil type. Soil conditions could vary with respect to concentrations of nutrients, organic carbon, soil structure, and the soil food web community, including the soil microbial community. The substrates in the floodplain are composed of tailings and till, had negligible soil development, and were largely absent of organic matter, unlike the halo or background areas. As such, the variation in metal concentrations in tissues may reflect the wider range of chemical, physical, and biological conditions in the substrates among areas rather than only the metal concentration in the substrates.

Within the floodplain area, the deposition of tailings and scoured native till varied along Hazeltine Channel as did the soil treatments in areas rehabilitated by MPMC. Rehabilitation work in the floodplain is ongoing, with a number of different treatments having been and currently being utilized along the Hazeltine Channel. Further studies of tissue concentrations in plants along the floodplain area should take into account the various soil treatments to reduce the uncertainty associated with tissue chemistry results in this area.

5.0 SUMMARY OF FINDINGS

In general, concentrations of copper in all types of tissues in all areas fell within the range of adequate levels and below values considered toxic to plants according to the published literature. Evaluation of selenium or vanadium toxicity was hampered by the lack of toxicity threshold values reported in the literature. However, none of the samples had symptoms of toxicity, and BAF values were lower than one for copper and vanadium, and either below 1 or close to background levels for selenium.

With the understanding that toxicity thresholds were not exceeded for copper, and unlikely to have been exceeded for selenium or vanadium based on lack of visible symptoms or excessive BAFs, there were some statistical differences in metal concentrations among floodplain, halo, background, and baseline levels.

The key differences among substrates are:

- Plant tissue concentrations were not statistically different between 2015 and 2016 for all areas and tissue types with the exception of selenium concentrations in floodplain grasses. This finding indicates that concentrations of metals in plants are not increasing over time.

- Tissue concentrations of copper were lower in the halo than in the floodplain. Tissue concentrations of copper, selenium and vanadium in berries and conifers were neither statistically higher in the halo than background nor baseline with one exception: copper in halo conifers was higher than background.
- Shrubs in the halo zone had lower copper, selenium, and vanadium tissue concentrations than in the floodplain and were within the range of background and baseline concentrations.
- Berry and conifer samples collected in the halo had statistically higher vanadium concentrations than background samples.
- Plant tissue samples collected in the floodplain areas (shrubs and grass) had statistically higher concentrations of copper, selenium and vanadium than background samples.

The key findings by plant functional group were:

- Grasses in the floodplain had statistically higher concentrations of copper, but not selenium, than baseline. Concentrations of copper, selenium, and vanadium in floodplain grasses were statistically higher than background. Vanadium was not analyzed in baseline samples.
- Shrubs collected in halo area had tissue concentrations of copper, selenium, and vanadium within the range of background and baseline samples. Copper, selenium, and vanadium concentrations in floodplain shrubs were statistically higher than background and baseline samples. Vanadium was not analyzed in baseline samples.
- Conifers in the halo area did not have statistically higher concentrations of selenium than background or baseline. Conifers from the halo area were statistically higher than background samples for copper and vanadium but were within the range of baseline for copper. Vanadium was not analyzed in baseline samples. The magnitude of these differences were smaller than that of shrubs or grasses.
- Berries in the halo area did not have statistically higher concentrations of copper or selenium than background samples. Concentrations of vanadium in halo berries were statistically higher than background, but the majority of vanadium concentrations in berries were less than detection limits for both halo and background samples.

These findings indicate that there are higher concentrations of metals in all plant functional groups collected from the floodplain than background and/or baseline samples, even though copper concentrations were generally within the range of normal and below levels considered toxic to plants. In the halo, certain plant functional groups were greater than background and/or baseline but, with the exception of vanadium, the values generally fell within the range of background or baseline levels. The generally greater concentrations observed in floodplain than halo plants may be attributed to their younger age, the lower organic matter of the substrate they were planted into, and the greater amount of residual tailings. The BAF data showed a decreasing rate of uptake with increasing soil concentrations confirming that these plants are able to regulate uptake of the metals. Given that the concentrations of copper in plants were generally within the range of normal and below thresholds for toxicity, the risks to plants is likely to be low. Further assessment of potential risks associated with this increased uptake will be addressed as part of the up-coming ecological risk assessment.

6.0 CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this memorandum.

We trust the above meets your present requirements. If you have any questions or requirements, please contact the undersigned.

GOLDER ASSOCIATES LTD.

Evin Zapf-Gilje, BSc
Environmental Scientist

Trish Miller, MSc, RPBio
Principal, Senior Environmental Scientist

EZ/TM/ef/rs/it/ah/it/cmm

Attachments: Study Limitations
Attachment A: Sample Location Figures 1 to 13
Attachment B: Summary Statistics Tables
Attachment C: Plant and Soil Analytical Results
Attachment D: Results of Plant and Soil QA/QC Analyses
Attachment E: Analytical Reports

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ATTACHMENT A
Sample Location Figures 1 to 13

LEGEND

- VEGETATION SAMPLE
- POST BREACH AFFECTED AREA EXTENT
- WATERBODY

0 500 1,000

1:22,500 METRES

REFERENCES

1. POST BREACH AFFECTED AREA OBTAINED FROM SNC LAVALIN LTD.
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TITLE
VEGETATION SAMPLE OVERVIEW

PROJECT NO.	PHASE/DOC	REV.	FIGURE
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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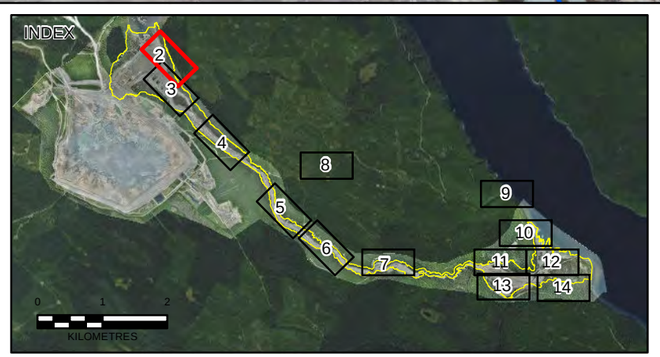
LEGEND

VEGETATION SAMPLE TYPE

- BERRY
- CONIFER
- GRASS
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- POST BREACH AFFECTED AREA EXTENT



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REFERENCES

1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
2. MAIN MAP IMAGERY OBTAINED FROM MPMC, JUNE 2016
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TITLE

VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-2**

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BERRY16-BKG-10

BERRY16-20

BERRY16-19

Rye grass - 9

Rye grass - 10

Rye Grass - 11

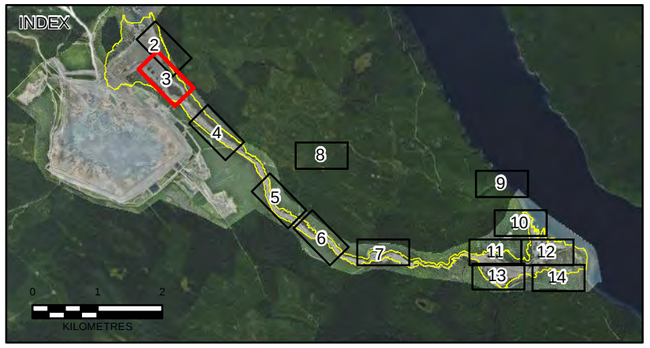
Berries - 3

Berries - 4

LEGEND

VEGETATION SAMPLE TYPE

- BERRY
- GRASS
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- POST BREACH AFFECTED AREA EXTENT



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REFERENCES

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TITLE

VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-3**

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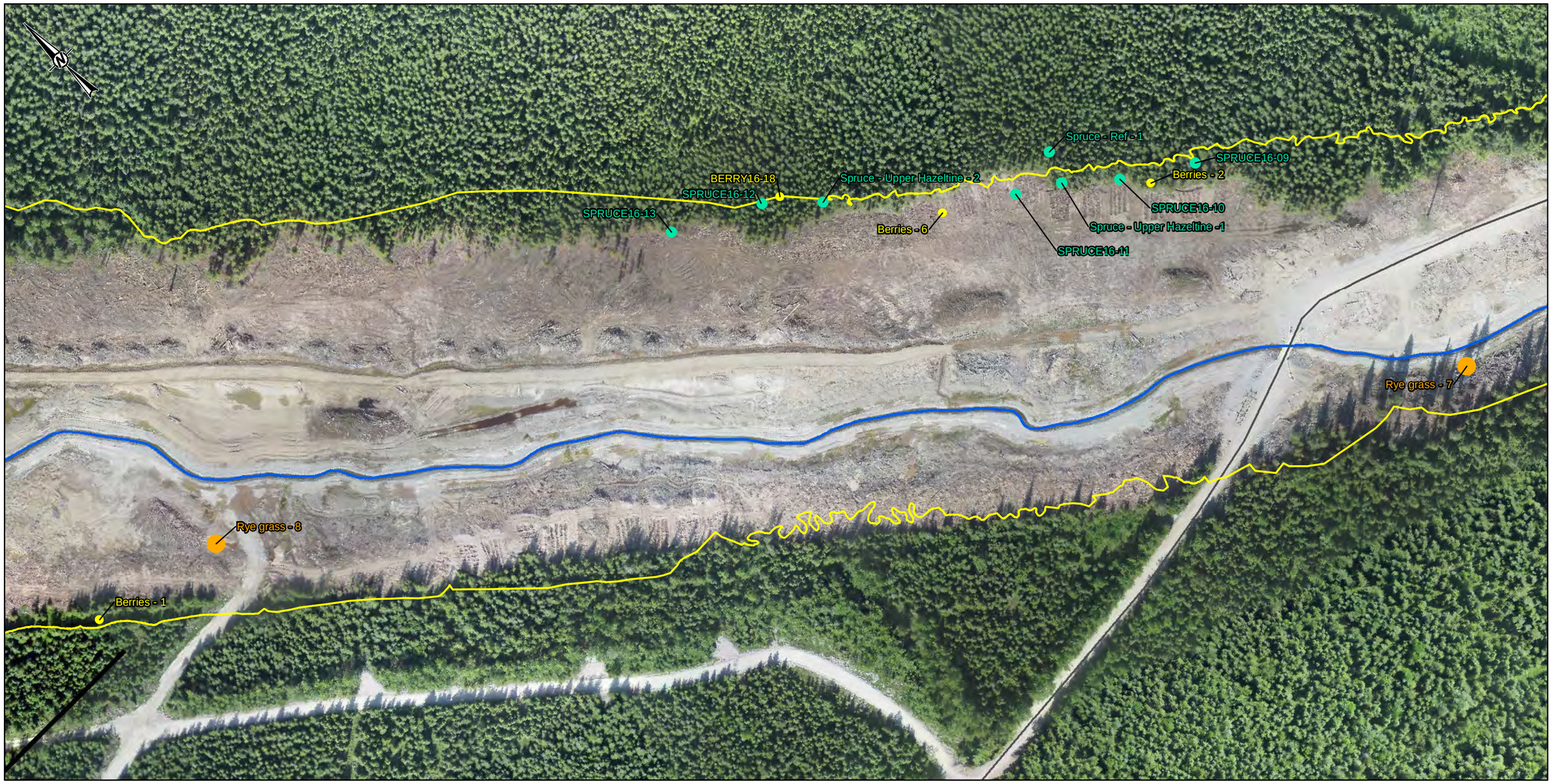
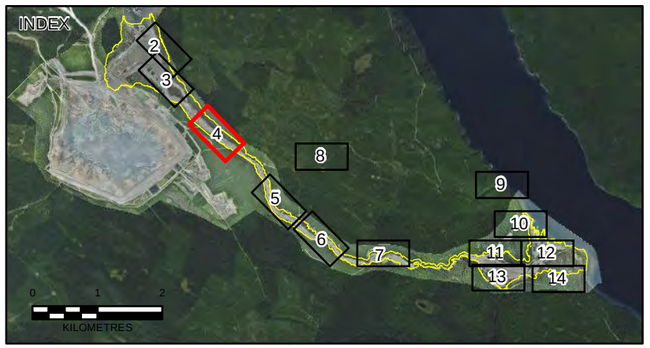


LEGEND

VEGETATION SAMPLE TYPE

- BERRY
- CONIFER
- GRASS
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- GAVIN LAKE ROAD
- POST BREACH AFFECTED AREA EXTENT



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REFERENCES

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TITLE
VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
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LEGEND

VEGETATION SAMPLE TYPE

- SHRUB
- GRASS
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- POST BREACH AFFECTED AREA EXTENT

0 40 80

1:2,000 METRES

REFERENCES

1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
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TITLE
VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
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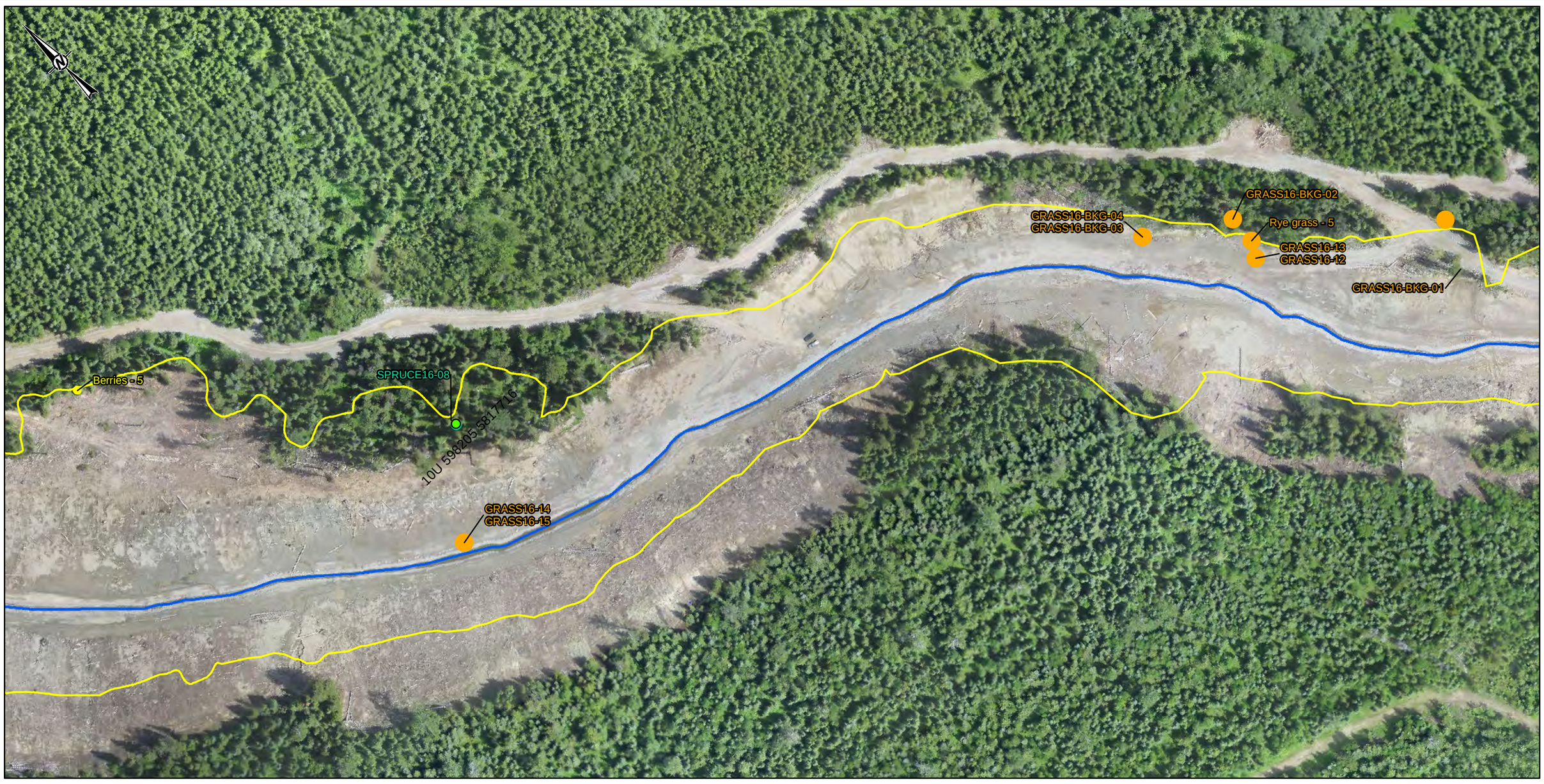
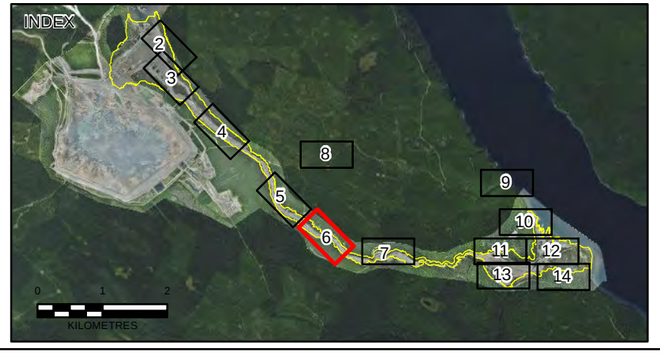


LEGEND

VEGETATION SAMPLE TYPE

- BERRY
- CONIFER
- GRASS
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- POST BREACH AFFECTED AREA EXTENT



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TITLE
VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-6**

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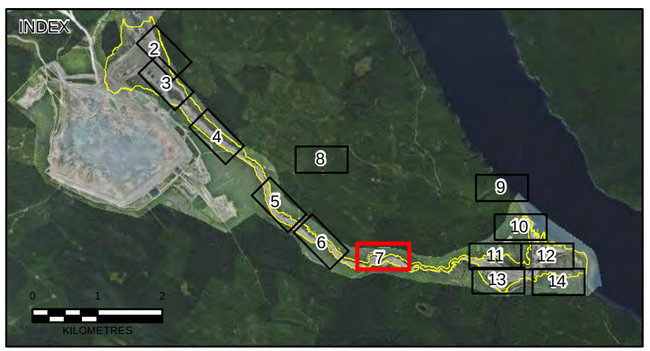
SPRUCE-BKG-04
WILLOW16-BKG-05
WILLOW16-BKG-04
WILLOW16-BKG-03
WILLOW16-BKG-06
SPRUCE16-BKG-05
WILLOW16-BKG-01
SPRUCE16-BKG-02
BERRY16-BKG-11
WILLOW16-BKG-02
SPRUCE16-BK
GRASS16-BKG-08
GRASS16-BKG-07
GRASS16-BKG-06
Rye grass - 3
GRASS16-19
WILLOW16-13
WILLOW16-16
WILLOW16-17
WILLOW16-12
GRASS16-18
Rye grass - 4
WILLOW16-18
GRASS16-20
WILLOW16-19
GRASS16-21
GRASS16-11

LEGEND

VEGETATION SAMPLE TYPE

- BERRY
- CONIFER
- SHRUB
- GRASS
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- POST BREACH AFFECTED AREA EXTENT



0 40 80
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REFERENCES

1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
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CLIENT
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PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION
2016 TERRESTRIAL PLANT DATA REPORT

TITLE
VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-7**

PATH: \\golder.gds\gal\burnaby\CAD-GIS\Client\1413\03.1662612\99_PROJECT\02_PRODUCTION\MXD\Report\PHASE_22300\1662612_FIG_2_14_DDP_VEGETATION_SAMPLES_2015_2016.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm
0

LEGEND

VEGETATION SAMPLE TYPE

- CONIFER
- SHRUB
- GRASS
- GAVIN LAKE ROAD

0 40 80

1:2,000 METRES

REFERENCES

1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
2. MAIN MAP IMAGERY OBTAINED FROM MPMC, JUNE 2016
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CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

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PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION
2016 TERRESTRIAL PLANT DATA REPORT

TITLE
VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-8**

PATH: \\golder.gds\gal\burnaby\CAD-GIS\Client\1411803\t66.2812\99_PROJECTS\02_PRODUCTION\MXD\Report\PHASE_2\2201662612_FIG_2_14_DDP_VEGETATION_SAMPLES_2015_2016.mxd

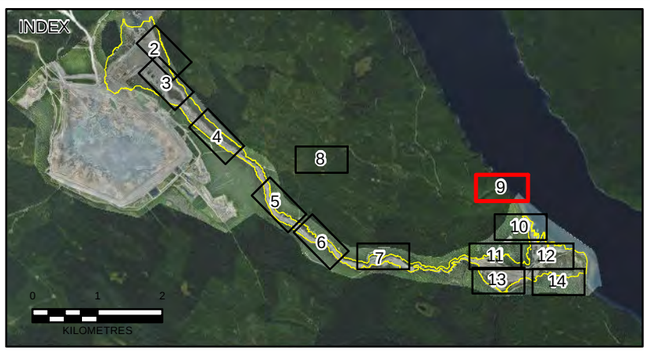
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

LEGEND

VEGETATION SAMPLE TYPE

- SHRUB
- WATERBODY



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1:2,000 METRES

REFERENCES

1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
2. MAIN MAP IMAGERY OBTAINED FROM MPMC, JUNE 2016
3. INSET MAP IMAGERY OBTAINED FROM MPMC, MAY 2015
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5. DATUM: NAD83 PROJECTION: UTM10

CLIENT

MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

CONSULTANT

Golder Associates

YYYY-MM-DD	2017-01-31
DESIGNED	EZG
PREPARED	CD/AD
REVIEWED	EZG
APPROVED	TM

PROJECT

MOUNT POLLEY DETAILED SITE INVESTIGATION
2016 TERRESTRIAL PLANT DATA REPORT

TITLE

VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-9**

PATH: \\golder.gds\gal\burnaby\CAD-GIS\Client\1413\03.1662612\99_PROJECTS\02_PRODUCTION\MXD\Report\PHASE_2\2300\1662612_FIG_2_1.4_DDP_VEGETATION_SAMPLES_2015_2016.mxd

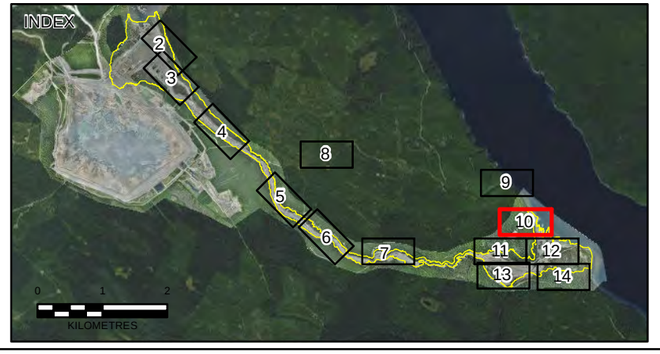
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25mm

LEGEND

VEGETATION SAMPLE TYPE

- SHRUB
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- DITCH ROAD
- POST BREACH AFFECTED AREA EXTENT
- WATERBODY



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REFERENCES

1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
2. MAIN MAP IMAGERY OBTAINED FROM MPMC, JUNE 2016
3. INSET MAP IMAGERY OBTAINED FROM MPMC, MAY 2015
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5. DATUM: NAD83 PROJECTION: UTM10

CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

CONSULTANT
Golder Associates

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION
2016 TERRESTRIAL PLANT DATA REPORT

TITLE
VEGETATION SAMPLE LOCATIONS

YYYY-MM-DD	2017-01-31
DESIGNED	EZG
PREPARED	CD/AD
REVIEWED	EZG
APPROVED	TM

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-10**

Willow - 5
Willow - 6
GRASS16-BKG-09
SPRUCE16-BKG-11
Willow - 7
Willow Wattle - 4
Willow - Lower Hazeltine - 3
Willow - Lower Hazeltine - 2
Willow Seedling - 4
Willow - Lower Hazeltine - 1
Willow Stake - 1
Willow Stake - 2
Willow Wattle - 1
Willow Seedling - 1
Willow Wattle - 2
Willow Seedling - 2
Willow Wattle - 3
Willow Stake - 3
Willow Seedling - 3
Willow Seedling - 5
Willow - Lower Hazeltine - 5
GRASS16-09
WILLOW16-10
Willow - Lower Hazeltine - 4
Willow Seedling - 6
Willow Wattle - 6
BERRY16-BKG-05
Berry - Lower Hazeltine - 1
GRASS16-05
GRASS16-04
WILLOW16-08

LEGEND

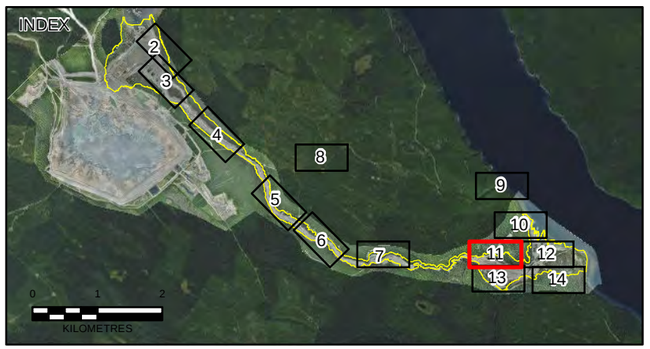
VEGETATION SAMPLE TYPE

- BERRY
- CONIFER
- SHRUB
- GRASS

NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)

DITCH ROAD

POST BREACH AFFECTED AREA EXTENT



0 40 80

1:2,000 METRES

REFERENCES

1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
2. MAIN MAP IMAGERY OBTAINED FROM MPMC, JUNE 2016
3. INSET MAP IMAGERY OBTAINED FROM MPMC, MAY 2015
4. INSET MAP BACKGROUND IMAGERY COPYRIGHT © 20161201 ESRI AND ITS LICENSORS. SOURCE: DIGITALGLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGE DATE: 20101104
5. DATUM: NAD83 PROJECTION: UTM10

CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

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Golder Associates

YYYY-MM-DD	2017-01-31
DESIGNED	EZG
PREPARED	CD/AD
REVIEWED	EZG
APPROVED	TM

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION
2016 TERRESTRIAL PLANT DATA REPORT

TITLE
VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-11**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25mm

PATH: \\golder.gds\gal\burnaby\CAD-GIS\Client\14138\03.1662612\09_PROJECTS\02_PRODUCTION\MXD\Report\PHASE_22300\1662612_FIG_2_11_DDP_VEGETATION_SAMPLES_2015_2016.mxd

LEGEND

VEGETATION SAMPLE TYPE

- BERRY
- CONIFER
- SHRUB
- GRASS
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- POST BREACH AFFECTED AREA EXTENT
- WATERBODY

0 40 80

1:2,000 METRES

REFERENCES

1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
2. MAIN MAP IMAGERY OBTAINED FROM MPMC, JUNE 2016
3. INSET MAP IMAGERY OBTAINED FROM MPMC, MAY 2015
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5. DATUM: NAD83 PROJECTION: UTM10

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MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

CONSULTANT

Golder Associates

YYYY-MM-DD	2017-01-31
DESIGNED	EZG
PREPARED	CD/AD
REVIEWED	EZG
APPROVED	TM

PROJECT

MOUNT POLLEY DETAILED SITE INVESTIGATION
2016 TERRESTRIAL PLANT DATA REPORT

TITLE

VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-12**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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LEGEND

VEGETATION SAMPLE TYPE

- SHRUB
- GRASS
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- DITCH ROAD
- POST BREACH AFFECTED AREA EXTENT

0 40 80

1:2,000 METRES

REFERENCES

1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
2. MAIN MAP IMAGERY OBTAINED FROM MPMC, JUNE 2016
3. INSET MAP IMAGERY OBTAINED FROM MPMC, MAY 2015
4. INSET MAP BACKGROUND IMAGERY COPYRIGHT © 20161201 ESRI AND ITS LICENSORS. SOURCE: DIGITALGLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGE DATE: 20101104
5. DATUM: NAD83 PROJECTION: UTM10

CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-01-31
DESIGNED	EZG
PREPARED	CD/AD
REVIEWED	EZG
APPROVED	TM

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION
2016 TERRESTRIAL PLANT DATA REPORT

TITLE
VEGETATION SAMPLE LOCATIONS

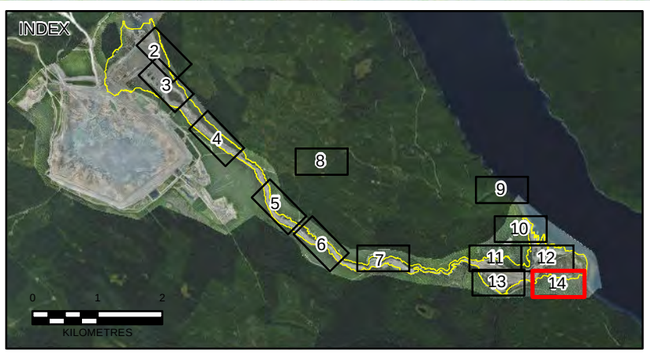
PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-13**

WILLOW16-20
SPRUCE16-14
BERRY16-11
BERRY16-14
BERRY16-17
WILLOW16-25
SPRUCE16-17
WILLOW16-24
WILLOW16-23
WILLOW16-22
WILLOW16-21
SPRUCE16-16
SPRUCE16-15
SPRUCE16-02
BERRY16-13
BERRY16-12
BERRY16-16
SPRUCE16-BKG-10
SPRUCE16-BKG-09
WILLOW16-BKG-10
WILLOW16-BKG-07
SPRUCE16-BKG-06
BERRY16-BKG-09
BERRY16-BKG-08
WILLOW16-BKG-09
SPRUCE16-BKG-08
BERRY16-BKG-07
WILLOW16-BKG-08
SPRUCE16-BKG-07
BERRY16-BKG-06
Willow - 1

LEGEND

VEGETATION SAMPLE TYPE

- BERRY
- CONIFER
- SHRUB
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- DITCH ROAD
- POST BREACH AFFECTED AREA EXTENT



0 40 80
1:2,000 METRES

REFERENCES
1. POST BREACH AFFECTED AREA AND HAZELTINE CREEK CHANNEL OBTAINED FROM SNC LAVALIN LTD.
2. MAIN MAP IMAGERY OBTAINED FROM MPMC, JUNE 2016
3. INSET MAP IMAGERY OBTAINED FROM MPMC, MAY 2015
4. INSET MAP BACKGROUND IMAGERY COPYRIGHT © 20161201 ESRI AND ITS LICENSORS. SOURCE: DIGITALGLOBE. USED UNDER LICENSE, ALL RIGHTS RESERVED. IMAGE DATE: 20101104
5. DATUM: NAD83 PROJECTION: UTM10

CLIENT
MOUNT POLLEY MINING CORPORATION
IMPERIAL METALS

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-01-31
DESIGNED	EZG
PREPARED	CD/AD
REVIEWED	EZG
APPROVED	TM

PROJECT
MOUNT POLLEY DETAILED SITE INVESTIGATION
2016 TERRESTRIAL PLANT DATA REPORT

TITLE
VEGETATION SAMPLE LOCATIONS

PROJECT NO.	PHASE/DOC	REV.	FIGURE
1662612	22300	0	**A-14**

PATH: \\golder.gds\gal\burnaby\CAD-GIS\Client\1413\03\1662612\99_PROJECTS\02_PRODUCTION\MXD\Report\PHASE_22300\1662612_FIG_2_14_DDP_VEGETATION_SAMPLES_2015_2016.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B
25mm
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ATTACHMENT B
Summary Statistics Tables

Table B-1: Results of Statistical Analysis - 2015 and 2016 Data Populations
Detailed Site Investigation
Mount Polley Mining Corporation

Plant and Area Comparisons	Wilcoxon Signed-Rank Test	Conclusion	*p*
Conifer			
Copper Halo 2015 v 2016	two-tailed	Copper Halo 2015 = 2016	0.17
Selenium Halo 2015 v 2016	two-tailed	Selenium Halo 2015 = 2016	NA*
Vanadium Halo 2015 v 2016	two-tailed	Vanadium Halo 2015 = 2016	0.75
Grass			
Copper Floodplain 2015 v 2016	two-tailed	Copper Floodplain 2015 = 2016	0.61
Selenium Floodplain 2015 v 2016	two-tailed	Selenium Floodplain 2015 =/= 2016	**0.008**
Vanadium Floodplain 2015 v 2016	two-tailed	Vanadium Floodplain 2015 = 2016	0.71
Shrub			
Copper Floodplain 2015 v 2016	two-tailed	Copper Floodplain 2015 = 2016	0.29
Selenium Floodplain 2015 v 2016	two-tailed	Selenium Floodplain 2015 = 2016	0.73
Vanadium Floodplain 2015 v 2016	two-tailed	Vanadium Floodplain 2015 = 2016	0.94
Berry			
Copper Halo 2015 v 2016	two-tailed	Copper Halo 2015 = 2016	0.42
Selenium Halo 2015 v 2016	two-tailed	Selenium Halo 2015 = 2016	0.71
Vanadium Halo 2015 v 2016	two-tailed	Vanadium Halo 2015 = 2016	0.096

Notes:

* There are no detected concentrations of selenium in conifers in either 2015 or 2016. The two populations are equal.

Table B-2: Summary Statistics of Copper Concentrations (mg/kg dw) in Tissue Samples Along Hazeltine Creek

Tissue		Halo	Floodplain	Background	Baseline
Berries	N	32	0	16	0
	N detect	32	0	16	0
	Min	0.80	-	2.0	-
	Max	79	-	9.9	-
	Mean	7.7	-	5.0	-
	Median	4.9	-	4.1	-
Shrubs	N	7	39	21	85
	N detect	7	39	21	85
	Min	3.8	3.7	3.4	2.2
	Max	15	22	9.8	24
	Mean	7.9	10	5.8	7.0
	Median	7.0	8.4	5.5	5.8
Conifers	N	26	0	15	11
	N detect	26	0	15	11
	Min	2.3	-	2.8	2.0
	Max	7.7	-	4.2	13
	Mean	4.2	-	3.4	4.5
	Median	4.0	-	3.2	3.0
Grasses	N	2	30	11	10
	N detect	2	30	11	10
	Min	5.6	2.0	4.4	1.7
	Max	8.8	89	10	13
	Mean	7.2	13	6.1	5.9
	Median	7.	7.6	5.6	4.0

Table B-3: Summary Statistics of Selenium Concentrations (mg/kg dw) in Tissue Samples Along Hazeltine Creek

Tissue		Halo	Floodplain	Background	Baseline
Berries	N	32	0	16	0
	N detect	3	0	0	0
	Min	<0.05	-	<0.05	-
	Max	3.8	-	<0.1	-
	Mean	0.20	-	<0.1	-
	Median	<0.1	-	<0.1	-
Shrubs	N	7	39	21	79
	N detect	7	37	16	19
	Min	0.088	<0.05	<0.05	<0.05
	Max	0.21	2.7	0.79	0.75
	Mean	0.13	0.66	0.19	<0.1
	Median	0.12	0.55	0.095	<0.1
Conifers	N	26	0	15	9
	N detect	0	0	0	2
	Min	<0.05	-	<0.05	<0.05
	Max	<0.05	-	<0.05	0.1
	Mean	<0.05	-	<0.05	<0.1
	Median	<0.05	-	<0.05	<0.1
Grasses	N	2	30	11	5
	N detect	0	27	1	3
	Min	0.68	<0.05	<0.05	<0.05
	Max	2.5	2.4	0.11	0.30
	Mean	1.6	0.56	0.070	0.18
	Median	1.6	0.29	<0.05	0.20

Table B-4: Summary Statistics of Vanadium Concentrations (mg/kg dw) in Tissue Samples Along Hazeltine Creek

Tissue		Halo	Floodplain	Background
Berries	N	32	0	16
	N detect	14	0	1
	Min	<0.1	-	<0.1
	Max	4.7	-	0.14
	Mean	0.29	-	<0.1
	Median	<0.1	-	<0.1
Shrubs	N	7	39	21
	N detect	7	39	18
	Min	<0.1	0.16	<0.1
	Max	0.64	4.3	0.51
	Mean	0.23	1.6	0.26
	Median	0.16	1.4	0.22
Conifers	N	26	0	15
	N detect	17	0	4
	Min	<0.1	-	<0.1
	Max	0.98	-	0.23
	Mean	0.34	-	0.12
	Median	0.20	-	<0.1
Grasses	N	2	30	11
	N detect	2	18	7
	Min	0.20	<0.1	<0.1
	Max	0.42	12	0.92
	Mean	0.31	1.5	0.27
	Median	0.31	0.34	0.13

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ATTACHMENT C
Plant and Soil Analytical Results

Table C-1 - Results of Plant Tissue Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	G0149-8 BERRY16-11	G0149-10 BERRY16-12	G0149-11 BERRY16-13	G0149-12 SPRUCE16-02	G0150-1 BERRY16-14	G0150-2 BERRY16-15	G0150-5 SPRUCE16-03	G0150-6 BERRY16-BKG-04	G0150-7 BERRY16-BKG-05	G0150-8 BERRY16-BKG-06	G0150-9 BERRY16-BKG-07	G0150-10 BERRY16-BKG-08	G0150-11 BERRY16-BKG-09	G0150-12 BERRY16-16	G0152-1 BERRY16-17	G0152-6 WILLOW16-06	G0152-7 WILLOW16-07	G0152-8 GRASS16-03	G0152-9 GRASS16-04	G0152-10 WILLOW16-08	G0152-11 GRASS16-05	G0152-12 GRASS16-06	G0156-1 GRASS16-07	G0156-2 GRASS16-08	G0156-3 WILLOW16-09	G0156-4 GRASS16-10	G0156-5 WILLOW16-10	G0156-6 GRASS16-09
Date Sampled		19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	20-Aug-2016	20-Aug-2016	20-Aug-2016	20-Aug-2016	20-Aug-2016	20-Aug-2016	20-Aug-2016	20-Aug-2016	20-Aug-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016
ALS Sample ID		L1826505-1	L1826505-3	L1826505-4	L1826505-5	L1826505-6	L1826505-7	L1826505-10	L1826505-11	L1826505-12	L1826505-13	L1826505-14	L1826505-15	L1826505-16	L1826505-17	L1826505-18	L1826505-19	L1826505-20	L1826505-21	L1826505-22	L1826505-23	L1826505-24	L1826505-25	L1826505-26	L1826505-27	L1826505-28	L1826505-29	L1826505-30	L1826505-31
Physical Tests																													
% Moisture	%	77.5	79.9	77.4	57.8	76.6	75.6	54.0	66.6	45.6	74.5	87.3	82.5	74.1	79.5	70.9	56.4	59.6	61.6	30.5	57.1	43.2	36.2	8.72	8.01	55.3	42.3	57.8	50.7
Metals																													
Aluminum (Al)-Total	mg/kg	<5.0	<5.0	<5.0	3.2	<5.0	<5.0	7.8	3.6	6.0	4.8	<5.0	<5.0	<5.0	7.7	<5.0	476	106	41.2	36.5	65.9	41.7	181	272	330	76.8	18.2	272	48.8
Aluminum (Al)-Total	mg/kg wwt	<1.0	<1.0	<1.0	1.33	<1.0	<1.0	3.60	1.19	3.28	1.23	<1.0	<1.0	<1.0	1.6	1.0	208	42.9	15.8	25.4	28.3	23.7	115	248	304	34.3	10.5	115	24.1
Antimony (Sb)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.019	0.014	<0.010	<0.010	0.011	<0.010	<0.010	0.010	0.042	<0.010	<0.010	0.015	<0.010
Antimony (Sb)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	0.0028	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0083	0.0055	0.0022	0.0025	0.0046	<0.0020	0.0050	0.0093	0.0382	0.0043	<0.0020	0.0062	<0.0020
Arsenic (As)-Total	mg/kg	<0.030	<0.030	<0.030	<0.020	<0.030	<0.030	0.026	<0.020	<0.020	<0.020	<0.030	<0.030	<0.030	<0.030	<0.030	0.456	0.217	0.045	0.082	0.322	0.060	0.218	0.388	0.242	0.269	0.063	0.306	0.048
Arsenic (As)-Total	mg/kg wwt	<0.0060	<0.0060	<0.0060	0.0045	<0.0060	<0.0060	0.0119	<0.0040	<0.0040	<0.0040	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.199	0.0876	0.0172	0.0568	0.138	0.0342	0.139	0.354	0.223	0.120	0.0361	0.129	0.0238
Barium (Ba)-Total	mg/kg	4.32	4.29	0.609	16.9	3.60	5.90	74.6	4.40	6.56	1.72	8.04	1.32	4.09	1.69	3.60	20.8	5.17	2.72	19.8	9.66	7.71	45.9	9.05	7.21	7.92	20.3	9.47	14.8
Barium (Ba)-Total	mg/kg wwt	0.970	0.860	0.138	7.14	0.843	1.44	34.3	1.47	3.57	0.440	1.02	0.232	1.06	0.347	1.05	9.09	2.09	1.04	13.8	4.15	4.38	29.3	8.27	6.63	3.54	11.7	3.99	7.28
Beryllium (Be)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0059	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0030	0.0066	0.0132	<0.0020	<0.0020	0.0031	<0.0020
Bismuth (Bi)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	0.0039	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	mg/kg	18.3	14.5	13.7	38.3	9.2	17.2	14.4	21.0	9.7	11.2	21.8	14.1	14.6	13.7	11.0	122	58.0	5.6	7.4	107	1.8	8.7	8.3	9.2	94.1	2.6	53.9	4.6
Boron (B)-Total	mg/kg wwt	4.11	2.91	3.10	16.1	2.15	4.20	6.64	7.02	5.29	2.87	2.78	2.47	3.77	2.81	3.21	53.0	23.4	2.14	5.17	45.9	1.02	5.56	7.54	8.46	42.1	1.51	22.7	2.28
Cadmium (Cd)-Total	mg/kg	0.106	0.036	<0.010	0.0263	0.024	0.048	0.103	0.0822	0.0067	<0.0050	0.033	<0.010	0.023	0.022	0.021	1.54	1.45	0.156	0.0247	1.58	0.0147	0.0844	0.0598	0.0163	1.64	0.0400	0.479	0.0517
Cadmium (Cd)-Total	mg/kg wwt	0.0239	0.0072	<0.0020	0.0111	0.0056	0.0116	0.0474	0.0274	0.0036	<0.0010	0.0042	<0.0020	0.0061	0.0046	0.0062	0.669	0.585	0.0600	0.0172	0.680	0.0083	0.0538	0.0546	0.0150	0.733	0.0231	0.202	0.0255
Calcium (Ca)-Total	mg/kg	2520	3110	2390	6050	1280	2640	11000	708	4640	5760	1980	1980	1870	2880	966	24100	11900	2260	2640	16300	1210	4170	2640	3600	17400	1840	11700	1820
Calcium (Ca)-Total	mg/kg wwt	566	624	539	2550	300	644	5070	236	2520	1470	252	346	484	591	281	10500	4810	870	1830	7000	686	2660	2410	3310	7780	1060	4950	900
Cesium (Cs)-Total	mg/kg	<0.0050	<0.0050	0.0092	0.0157	<0.0050	0.0064	0.0212	0.0108	0.0050	0.0064	<0.0050	0.0063	0.0082	0.0108	<0.0050	0.0766	0.0287	0.0168	0.0065	0.0115	0.0057	0.0266	0.0440	0.0636	0.0335	0.0212	0.0437	0.0205
Cesium (Cs)-Total	mg/kg wwt	<0.0010	<0.0010	0.0021	0.0066	<0.0010	0.0016	0.0097	0.0036	0.0011	0.0016	<0.0010	0.0011	0.0021	0.0022	<0.0010	0.0334	0.0116	0.0064	0.0045	0.0050	0.0038	0.0170	0.0402	0.0585	0.0150	0.0122	0.0184	0.0101
Chromium (Cr)-Total	mg/kg	<0.20	<0.20	<0.20	<0.050	<0.20	<0.20	<0.050	<0.050	<0.050	<0.050	<0.20	<0.20	<0.20	<0.20	<0.20	1.15	0.128	<0.050	0.074	0.103	0.120	0.286	0.464	0.482	0.106	<0.050	0.468	0.071
Chromium (Cr)-Total	mg/kg wwt	<0.040	<0.040	<0.040	<0.010	<0.040	<0.040	<0.010	<0.010	0.015	<0.010	<0.040	<0.040	<0.040	<0.040	<0.040	0.500	0.052	0.016	0.052	0.044	0.068	0.183	0.424	0.443	0.048	0.022	0.197	0.035
Cobalt (Co)-Total	mg/kg	<0.020	<0.020	0.024	<0.020	<0.020	<0.020	0.047	0.023	<0.020	<0.020	<0.020	0.036	<0.020	0.026	<0.020	1.06	0.616	0.052	0.058	0.637	0.060	0.174	0.273	0.319	0.566	0.023	0.812	0.071
Cobalt (Co)-Total	mg/kg wwt	<0.0040	<0.0040	0.0055	0.0072	<0.0040	<0.0040	0.0214	0.0076	0.0082	<0.0040	<0.0040	0.0064	<0.0040	0.0053	<0.0040	0.461	0.249	0.0200	0.0403	0.273	0.0339	0.111	0.250	0.293	0.253	0.0133	0.342	0.0349
Copper (Cu)-Total	mg/kg	5.10	5.20	3.80	2.54	1.01	4.58	2.26	9.88	4.07	5.00	3.38	3.73	1.96	4.85	1.76	7.74	10.4	5.71	4.22	8.14	2.00	10.4	12.8	17.5	7.41	4.47	10.4	5.55
Copper (Cu)-Total	mg/kg wwt	1.15	1.04	0.859	1.07	0.236	1.12	1.04	3.30	2.21	1.28	0.431	0.653	0.508	0.994	0.512	3.37	4.21	2.19	2.94	3.50	1.14	6.64	11.7	16.1	3.31	2.58	4.38	2.74
Iron (Fe)-Total	mg/kg	21.9	20.6	27.3	17.5	5.5	19.6	22.7	25.6	21.0	19.0	29.7	29.6	9.6	42.2	11.3	831	264	83.0	67.2	168	81.0	338	441	418	203	45.0	626	89.6
Iron (Fe)-Total	mg/kg wwt	4.9	4.1	6.2	7.38	1.3	4.8	10.5	8.54	11.4	4.87	3.8	5.2	2.5	8.7	3.3	362	107	31.9	46.7	71.9	46.0	215	402	385	90.9	26.0	264	43.7
Lead (Pb)-Total	mg/kg	<0.050	<0.050	<0.050	<0.020	<0.050	<0.050	<0.020	<0.020	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050	<0.050	0.224	0.061	0.026	0.022	0.037	0.022	0.134	0.135	0.158	0.045	<0.020	0.137	0.023
Lead (Pb)-Total	mg/kg wwt	<0.010	<0.010	<0.010	<0.0040	<0.010	<0.010	0.0059	<0.0040	<0.0040	<0.0040	<0.010	<0.010	<0.010	<0.010	<0.010	0.0976	0.0245	0.0099	0.0153	0.0160	0.0127	0.0856	0.124	0.145	0.0202	0.0087	0.0577	0.0115
Lithium (Li)-Total	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium (Li)-Total	mg/kg wwt	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.27	0.15	<0.10	<0.10	0.17	<0.10	<0.10	0.41	0.30	<0.10	<0.10	0.16	<0.10
Magnesium (Mg)-Total	mg/kg	948	968	1380	728	317	1080	635	1520	1970	2110	1200	1260	644	964	372	4460	2650	686	985	2890	801	1190	982	964	2870	646	2920	1290
Magnesium (Mg)-Total	mg/kg wwt	213	194	312	307	74.3	263	292	507	1070	539	153	221	167	198	108	1940	1070	263	685	1240	455	761	897	887	1280	373	1230	636
Manganese (Mn)-Total	mg/kg	3.45	3.43	18.7	47.4	1.18	2.87	114	18.0	24.6	16.9	3.74	23.1	1.69	21.0	1.09	300	203	75.8	110	185	428	62.5	165	135	300	74.1	64.1	69.8
Manganese (Mn)-Total	mg/kg wwt	0.776	0.688	4.22	20.0	0.277	0.700	52.3	6.00	13.4	4.33	0.477	4.04	0.436	4.31	0.316	131	82.1	29.1	76.2	79.6	243	39.9	150	124	134	42.7	27.0	34.4
Mercury (Hg)-Total	mg/kg	0.0088	0.0059	0.0066	0.0123	<0.0050	0.0055	0.0118	<0.0050	<0.0050	<0.0050	0.0094	0.0063	<0.0050	0.0067	<0.0050	0.0142	0.0097	0.0081	<0.0050	0.0114	<0.0050	0.0054	0.0089	0.0087	0.0098	0.0057	0.0107	0.0051
Mercury (Hg)-Total	mg/kg wwt	0.0020	0.0012	0.0015	0.0052	<0.0010	0.0013	0.0054	<0.0010	0.0018	<0.0010	0.0012	0.0011	0.0013	0.0014	0.0012	0.0062	0.0039	0.0031	0.0027	0.0049	0.0015	0.0034	0.0081	0.0080	0.0044	0.0033	0.0045	0.0025
Molybdenum (Mo)-Total	mg/kg	0.109	0.202	1.86	0.257	<0.040	0.122	1.45	1.36	0.408	1.83	0.233	1.08	0.078	0.246	0.048	0.655	1.23	6.31	1.04	1.17	0.435	8.17	3.44	7.52	0.758	1.26	0.287	6.29
Molybdenum (Mo)-Total	mg/kg wwt	0.0244	0.0405	0.421	0.108	<0.0080	0.0298	0.665	0.453	0.222	0.468	0.0297	0.188	0.0202	0.0504	0.0141	0.286	0.496	2.42	0.722	0.501	0.247	5.21	3.14	6.92	0.339	0.730	0.121	3.10
Nickel (Ni)-Total	mg/kg	<0.20	0.42	0.80	<0.20	<0.20	0.28	<0.20	2.61	0.52	<0.20	0.31	0.85	<0.20	0.59	0.27	7.04	1.96	0.56	0.85	2.40	0.49	0.64	1.14	1.66	1.95	0.28	2.36	1.37
Nickel (Ni)-Total	mg/kg wwt	<0.040	0.084	0.180	<0.040	0.069	0.076	0.871	0.284	<0.040	0.040	0.040	0.148	0.045	0.122	0.078	3.07	0.794	0.216	0.589	1.03	0.276	0.411	1.04	1.52	0.871	0.160	0.996	0.675
Phosphorus (P)-Total	mg/kg	1900	1680	1910	1670	719	2130	1270	3780	2560	2470	2650	1900	1230	1840	753	1330	1040	860	614	1160	248	1630	776	828	1370	1110	1770	2400
Phosphorus (P)-Total	mg/kg wwt	428	338	431	705	169	519	585	1260	1390	631	337	333	319	378	219	580	419	330	427	496	141	1040	709	761	615	638	745	1180
Potassium (K)-Total	mg/kg	8470	9230	6080	7220	6820	7490	5750	24900	6620	8210	11400	8480	6910	6270	6230	6610	9610	2560	3780	7210	3780	4650	2850	887	10200	6750	11200	3840
Potassium (K)-Total	mg/kg wwt	1900	1850	1370	3040	1600	1830	2640	8310	3600	2100	1450	1480	1790	1290	1810	2880	3880	984	2630	3090	2150	2960	2600	816	4540	3890	4730	1900
Rubidium (Rb)-Total	mg/kg	8.57	21.1	14.9	11.9	8.44	12.4	5.49	21.3	3.66	12.3	21.3	13.4	13.2	12.4	7.05	4.51	4.54	2.81	0.748	1.82	0.726	2.08	4.32	1.16	5.17	3.82	4.67	3.88
Rubidium (Rb)-Total	mg/kg wwt	1.92	4.23	3.37	5.02	1.98	3.02	2.52	7.11	1.99	3.15	2.72	2.35	3.42	2.55	2.05	1.97	1.83	1.08	0.520	0.783	0.413	1.33	3.94	1.07	2.31	2.21	1.97	1.91
Selenium (Se)-Total	mg/kg	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	1.25	1.41	1.05	0.156	1.09	0.094	0.954	0.842	0.812	0.678	<0.050	0.364	0.684
Selenium (Se)-Total	mg/kg wwt	<0.020	<0.020	<0.020	<0.010	<0.020	<0.020	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	0.543	0.570	0.402	0.109	0.469	0.053	0.608	0.768	0.747	0.303	0.018	0.154	0.338
Sodium (Na)-Total	mg/kg	39	42	36	<20	<20	<20	<20	38	<20	<20	32	27	<20	48	<20	<20	26	<20	<20	36	<20	106	53	225	<20	<20	26	<20
Sodium (Na)-Total	mg/kg wwt	8.8	8.5	8.1	<4.0	4.2	<4.0	<4.0	12.7	<4.0	<4.0	4.1	4.7	<4.0	9.8	5.8	8.4	10.6	<4.0	6.1	15.3	<4.0	67.4	48.6	207	5.1	<4.0	11.2	<4.0
Strontium (Sr)-Total	mg/kg	7.64	10.0	10.2	43.3	5.55	8.81	92.9	3.91	21.5	25.1	14.0	12.9	10.3	15.0	4.24	179	80.1	23.9	26.5	150	8.28	35.3	29.3	40.2	142	18.4	55.7	10.6
Strontium (Sr)-Total	mg/kg wwt	1.72	2.01	2.31	18.2	1.30	2.15	42.7	1.31	11.7	6.40	1.79	2.25	2.66	3.08	1.23	78.0	32.4	9.17	18.4	64.3	4.71	22.5	26.7	36.9	63.4	10.6	23.5	5.23
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	mg/kg	0.0030	<0.0020	<0.0020	0.0088	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0048	<0.0020	<0.0020	<0.0020	0.0021	0.0030	0.0028	0.0025	<0.0020	0.0136	<0.0020	<0.0020	<0.0020
Thallium (Tl)-Total	mg/kg wwt	0.00067	<0.00040	<0.00040	0.00372	<0.00040	<0.00040	0.00057	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00211	<0.00040	<0.00040	0.00044	0.00090	0.00173	0.00181	0.00228	0.00175	0.00607	<0.00040	0.00068	<0.00040
Tin (Sn)-Total	mg/kg	5.28	3.79	3.32	<0.10	3.76	2.51	<0.10	0.25	0.26	0.49	5.16	1.99	1.94	2.63	4.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total	mg/kg wwt	1.19	0.761	0.750	<0.020	0.881	0.612	<0.020	0.082	0.142	0.126	0.657	0.348	0.502	0.539	1.18	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)-Total	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0486	0.0182	0.0020	0.0044	0.0109	0.0118	0.0126	0.0132	0.0824	0.0324	<0.0020	0.0222	<0.0020
Uranium (U)-Total	mg/kg wwt	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00052	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.0212	0.00735	0.00077	0.00304	0.00466	0.00672	0.00803	0.0121	0.0758	0.0145	0.00042	0.00936	0.00089
Vanadium (V)-Total	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2.26	0.85	0.17	0.18	0.47	0.23	0.98	1.05	1.27	0.52	0.10	1.81	0.20
Vanadium (V)-Total	mg/kg wwt	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.985	0.344	0.066	0.124	0.202	0.131	0.623	0.960	1.17	0.231	0.058	0.764	0.101
Zinc (Zn)-Total	mg/kg	13.4	16.4	16.9	45.8	3.1	18.2	52.1	13.1	9.94	6.58	14.0	16.0	5.8	20.6	4.7	72.7	148	23.6	25.7	68.0	<3.0	22.3	24.6	15.2	80.1	28.8	28.8	18.1
Zinc (Zn)-Total	mg/kg wwt	3.01	3.28	3.81	19.3	0.74	4.43	23.9	4.37	5.41	1.68	1.79	2.80	1.51	4.22	1.38	31.7	59.7	9.06	17.9	29.2	<1.8	14.2	22.5	14.0	35.8	16.6	12.1	8.95
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zirconium (Zr)-Total	mg/kg wwt	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.081	0.042	<0.040	0.062	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

Notes:
mg/kg = milligram per kilogram dry weight; mg/kg wwt = milligram per kilogram wet weight

Table C-1 - Results of Plant Tissue Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	G0156-7 SPRUCE16-06	G0156-8 SPRUCE16-07	G0168-3 SPRUCE16-15	G0168-6 WILLOW16-BKG-07	G0168-7 SPRUCE16-BKG-06	G0168-9 WILLOW16-BKG-08	G0168-10 SPRUCE16-BKG-07	G0169-2 WILLOW16-BKG-09	G0169-3 WILLOW16-BKG-09D	G0169-4 SPRUCE16-BKG-08	G0169-5 SPRUCE16-BKG-08D	G0169-9 WILLOW16-21	G0169-10 WILLOW16-22	G0169-11 WILLOW16-23	G0169-12 WILLOW16-24	G0170-1 SPRUCE16-16	G0170-5 WILLOW16-BKG-10	G0170-6 SPRUCE16-BKG-09	G0170-9 SPRUCE16-BKG-10	G0170-12 WILLOW16-25	G0171-1 SPRUCE16-17	G0171-3 SPRUCE16-18	G0171-4 GRASS16-BKG-09	G0171-5 GRASS16-BKG-09D	G0171-6 SPRUCE16-BKG-11	G0147-1 BERRY16-04	G0147-7 BERRY16-05	G0147-8 BERRY16-06
Date Sampled		2-Sep-2016	2-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	17-Aug-2016	19-Aug-2016	19-Aug-2016
ALS Sample ID		L1826505-32	L1826505-33	L1826505-34	L1826505-37	L1826505-38	L1826505-40	L1826505-41	L1826505-45	L1826505-46	L1826505-47	L1826505-48	L1826505-49	L1826505-50	L1826505-51	L1826505-52	L1826505-53	L1826505-57	L1826505-58	L1826505-61	L1826505-64	L1826505-65	L1826505-67	L1826505-68	L1826505-69	L1826505-70	L1826566-1	L1826566-7	L1826566-8
Physical Tests																													
% Moisture	%	51.9	51.4	57.0	67.1	60.7	66.1	59.4	55.0	60.9	57.6	56.8	65.1	64.0	72.2	68.9	30.7	55.1	56.4	56.4	57.4	55.1	56.7	17.9	16.8	51.9	60.9	80.4	51.0
Metals																													
Aluminum (Al)-Total	mg/kg	49.1	34.2	9.2	30.5	9.7	32.8	16.7	22.7	27.9	12.7	13.1	44.8	23.9	16.5	25.0	17.0	16.3	8.9	23.2	17.5	7.3	9.6	17.0	19.3	12.1	744	21.3	41.1
Aluminum (Al)-Total	mg/kg wwt	23.6	16.6	3.97	10.0	3.79	11.1	6.78	10.2	10.9	5.37	5.64	15.6	8.61	4.57	7.77	11.8	7.32	3.87	10.1	7.45	3.26	4.14	13.9	16.0	5.83	291	4.2	20.2
Antimony (Sb)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.028	<0.010	<0.010
Antimony (Sb)-Total	mg/kg wwt	0.0025	0.0022	<0.0020	0.0027	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0027	0.0022	0.0041	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0109	<0.0020	<0.0020
Arsenic (As)-Total	mg/kg	0.046	0.031	<0.020	0.031	<0.020	0.025	<0.020	<0.020	<0.020	<0.020	<0.020	0.244	0.258	0.060	0.081	0.113	0.023	<0.020	<0.020	0.024	<0.020	<0.020	<0.020	<0.020	<0.020	0.856	0.062	0.030
Arsenic (As)-Total	mg/kg wwt	0.0222	0.0150	0.0051	0.0102	<0.0040	0.0085	0.0059	0.0088	0.0075	<0.0040	0.0059	0.0850	0.0927	0.0166	0.0252	0.0781	0.0101	<0.0040	0.0062	0.0103	<0.0040	0.0067	0.0098	0.0092	0.0048	0.335	0.0121	0.0148
Barium (Ba)-Total	mg/kg	71.0	95.8	26.3	3.88	13.7	3.75	38.6	6.63	6.42	49.2	53.3	7.43	8.79	3.49	2.29	40.9	16.0	52.7	109	11.0	43.0	83.5	4.09	5.24	112	10.5	2.57	5.12
Barium (Ba)-Total	mg/kg wwt	34.1	46.6	11.3	1.28	5.36	1.27	15.6	2.98	2.51	20.9	23.0	2.59	3.16	0.969	0.712	28.4	7.19	23.0	47.3	4.70	19.3	36.1	3.36	4.36	53.7	4.10	0.505	2.51
Beryllium (Be)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.056	<0.010	<0.010
Beryllium (Be)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0219	<0.0020	<0.0020
Bismuth (Bi)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	mg/kg	9.4	9.2	18.4	73.7	16.2	42.5	12.0	31.9	30.3	18.6	21.7	40.2	46.5	36.5	44.3	6.3	33.3	8.9	10.7	40.4	13.4	15.2	4.1	4.3	13.2	1.5	9.3	10.5
Boron (B)-Total	mg/kg wwt	4.54	4.47	7.91	24.3	6.37	14.4	4.86	14.4	11.8	7.89	9.37	14.0	16.8	10.1	13.8	4.36	14.9	3.89	4.68	17.2	6.02	6.59	3.40	3.60	6.33	0.59	1.83	5.17
Cadmium (Cd)-Total	mg/kg	0.0776	0.112	0.0535	2.12	0.0171	1.45	0.0125	2.96	2.68	0.0228	0.0213	1.42	2.26	1.06	2.04	0.0758	6.74	0.0243	0.0496	3.79	0.0445	0.0344	<0.0050	<0.0050	0.0754	1.19	0.163	0.010
Cadmium (Cd)-Total	mg/kg wwt	0.0373	0.0542	0.0230	0.698	0.0067	0.494	0.0051	1.33	1.05	0.0097	0.0092	0.495	0.814	0.295	0.636	0.0525	3.02	0.0106	0.0216	1.61	0.0200	0.0149	0.0024	0.0023	0.0363	0.464	0.0320	0.0051
Calcium (Ca)-Total	mg/kg	4490	10000	7350	21900	4100	19600	6970	21400	21400	7710	9260	16800	19900	11100	8700	7490	22000	5060	9980	16400	4780	10400	1770	1830	5330	3270	1680	2870
Calcium (Ca)-Total	mg/kg wwt	2160	4860	3160	7220	1610	6650	2830	9620	8360	3270	4000	5870	7160	3100	2710	5190	9880	2210	4350	6970	2150	4500	1460	1520	2560	1280	330	1410
Cesium (Cs)-Total	mg/kg	0.0172	0.0209	0.0169	0.0120	0.0077	0.0340	0.0310	0.0648	0.0673	0.0205	0.0264	0.0127	0.0516	0.0246	0.0152	0.0114	0.0457	0.00625	0.0117	0.0094	0.0131	0.0104	<0.0050	<0.0050	<0.0050	0.185	0.0330	0.0095
Cesium (Cs)-Total	mg/kg wwt	0.0083	0.0102	0.0073	0.0040	0.0030	0.0115	0.0126	0.0292	0.0263	0.0087	0.0114	0.0044	0.0186	0.0068	0.0047	0.0079	0.0205	0.0273	0.0051	0.0040	0.0059	0.0045	0.0019	0.0020	0.0024	0.0722	0.0065	0.0047
Chromium (Cr)-Total	mg/kg	0.068	<0.050	<0.050	0.081	<0.050	0.067	0.051	0.051	0.063	<0.050	0.051	0.084	<0.050	<0.050	0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	1.74	<0.20	<0.20
Chromium (Cr)-Total	mg/kg wwt	0.033	0.024	0.013	0.027	0.016	0.023	0.021	0.023	0.024	0.018	0.022	0.029	0.016	0.011	0.016	0.020	0.023	<0.010	0.011	0.020	<0.010	<0.010	0.035	0.041	0.015	0.682	<0.040	<0.040
Cobalt (Co)-Total	mg/kg	0.185	0.099	0.038	0.429	0.022	1.12	0.048	0.648	0.709	0.030	0.029	0.599	1.49	1.74	4.06	0.422	0.395	0.051	0.127	0.612	0.035	0.053	<0.020	<0.020	0.103	0.619	0.100	0.049
Cobalt (Co)-Total	mg/kg wwt	0.0887	0.0482	0.0162	0.141	0.0088	0.379	0.0193	0.292	0.277	0.0128	0.0127	0.209	0.538	0.484	1.26	0.293	0.177	0.0222	0.0555	0.261	0.0156	0.0228	0.0159	0.0165	0.0495	0.242	0.0196	0.0241
Copper (Cu)-Total	mg/kg	4.00	3.43	3.37	6.07	3.10	7.32	3.78	6.10	5.90	3.19	3.97	9.29	7.02	3.82	6.05	2.71	3.39	2.95	2.84	5.62	3.80	4.51	4.50	5.56	3.49	78.5	5.32	6.16
Copper (Cu)-Total	mg/kg wwt	1.92	1.66	1.45	2.00	1.22	2.49	1.53	2.75	2.31	1.35	1.72	3.24	2.53	1.06	1.88	1.88	1.52	1.29	1.24	2.39	1.71	1.95	3.69	4.63	1.68	30.7	1.04	3.02
Iron (Fe)-Total	mg/kg	115	73.5	27.0	78.2	26.7	95.7	46.4	75.4	84.6	30.6	33.1	100	85.8	66.8	82.5	49.9	68.1	25.0	33.3	57.1	23.7	33.0	59.1	59.9	36.2	1960	60.3	69.2
Iron (Fe)-Total	mg/kg wwt	55.4	35.7	11.6	25.7	10.5	32.5	18.8	34.0	33.1	13.0	14.3	34.9	30.9	18.6	25.7	34.6	30.5	10.9	14.5	24.3	10.7	14.3	48.5	49.9	17.4	768	11.8	33.9
Lead (Pb)-Total	mg/kg	0.031	0.029	<0.020	0.036	<0.020	0.025	<0.020	<0.020	0.029	<0.020	<0.020	0.036	<0.020	<0.020	<0.020	0.021	<0.020	<0.020	0.023	0.022	<0.020	<0.020	<0.020	<0.020	<0.020	0.503	<0.050	<0.050
Lead (Pb)-Total	mg/kg wwt	0.0149	0.0140	<0.0040	0.0119	0.0042	0.0085	0.0051	0.0081	0.0113	0.0041	0.0052	0.0126	0.0050	0.0045	0.0054	0.0145	0.0079	<0.0040	0.0099	0.0092	<0.0040	<0.0040	0.0079	0.0075	<0.0040	0.197	<0.010	<0.010
Lithium (Li)-Total	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.63	<0.50	<0.50
Lithium (Li)-Total	mg/kg wwt	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.25	<0.10	<0.10
Magnesium (Mg)-Total	mg/kg	683	973	1100	2240	728	2900	731	1230	1500	835	895	2230	2930	2300	1740	2390	1530	978	949	1330	607	973	1060	1310	850	2160	1320	1960
Magnesium (Mg)-Total	mg/kg wwt	328	473	474	736	286	984	297	553	585	354	386	777	1060	640	543	1660	688	426	414	566	273	421	874	1090	409	845	259	960
Manganese (Mn)-Total	mg/kg	204	404	63.5	64.5	29.9	43.2	85.0	32.2	28.7	148	151	287	161	132	415	445	39.3	166	541	41.6	64.3	71.5	30.2	35.1	169	48.7	66.4	28.0
Manganese (Mn)-Total	mg/kg wwt	98.3	196	27.3	21.2	11.7	14.7	34.5	14.5	11.2	63.0	65.3	100	57.9	36.8	129	309	17.6	72.4	236	17.7	28.9	31.0	24.8	29.2	81.3	19.0	13.0	13.8
Mercury (Hg)-Total	mg/kg	0.0158	0.0151	0.0121	0.0143	0.0135	0.0123	0.0139	0.0114	0.0124	0.0128	0.0140	0.0113	0.0096	0.0086	0.0097	0.0145	0.0121	0.0108	0.0177	0.0134	0.0140	0.0127	<0.0050	0.0050	0.0134	0.098	<0.0050	0.0054
Mercury (Hg)-Total	mg/kg wwt	0.0076	0.0073	0.0052	0.0047	0.0053	0.0042	0.0056	0.0051	0.0048	0.0054	0.0061	0.0039	0.0035	0.0024	0.0030	0.0100	0.0054	0.0047	0.0077	0.0057	0.0063	0.0055	0.0034	0.0042	0.0065	0.0381	<0.0010	0.0026
Molybdenum (Mo)-Total	mg/kg	0.145	0.433	0.438	0.701	0.474	0.467	0.086	0.079	0.089	0.030	0.040	2.07	1.19	1.01	1.48	0.103	0.304	0.342	0.042	0.520	0.674	1.16	4.12	3.75	0.200	0.446	1.14	0.742
Molybdenum (Mo)-Total	mg/kg wwt	0.0699	0.210	0.189	0.231	0.186	0.158	0.0349	0.0356	0.0348	0.0128	0.0172	0.721	0.427	0.281	0.460	0.0717	0.136	0.149	0.0182	0.222	0.303	0.502	3.38	3.12	0.0962	0.174	0.224	0.364
Nickel (Ni)-Total	mg/kg	0.35	0.32	<0.20	1.15	0.22	3.40	0.23	5.07	5.70	0.41	<0.20	1.29	1.56	1.22	1.93	0.51	2.44	0.34	0.20	2.51	0.23	0.30	0.23	0.29	1.42	1.78	1.12	0.61
Nickel (Ni)-Total	mg/kg wwt	0.168	0.157	0.053	0.378	0.088	1.15	0.094	2.28	2.23	0.173	0.082	0.451	0.560	0.339	0.602	0.350	1.09	0.148	0.089	1.07	0.104	0.128	0.187	0.240	0.685	0.696	0.221	0.300
Phosphorus (P)-Total	mg/kg	1480	1160	1720	1040	1340	1500	1560	1470	1620	1650	1820	2450	4190	2220	2360	2710	1920	1240	1680	2510	1670	2260	3550	4250	2010	10700	2490	2440
Phosphorus (P)-Total	mg/kg wwt	709	565	740	342	526	508	635	660	634	698	785	856	1510	617	735	1880	860	542	732	1070	752	979	2920	3540	965	4180	489	1200
Potassium (K)-Total	mg/kg	5330	4640	5580	9110	7080	13000	6970	10400	11400	5590	7200	12400	8870	11700	14200	5310	7940	6440	6010	17600	7270	9850	4230	4840	6280	11700	9730	8940
Potassium (K)-Total	mg/kg wwt	2560	2250	2400	3000	2780	4400	2830	4660	4440	2370	3110	4330	3190	3260	4410	3680	3560	2810	2620	7510	3270	4260	3470	4030	3020	4570	1910	4380
Rubidium (Rb)-Total	mg/kg	3.41	3.91	12.8	7.55	11.3	16.2	15.7	19.4	20.9	7.10	9.32	4.39	5.72	4.71	5.32	3.85	14.3	22.1	4.14	7.54	9.04	6.60	0.938	0.945	1.87	9.52	17.3	17.2
Rubidium (Rb)-Total	mg/kg wwt	1.64	1.90	5.53	2.49	4.45	5.51	6.37	8.73	8.18	3.01	4.03	1.53	2.06	1.31	1.65	2.67	6.41	9.65	1.80	3.21	4.07	2.86	0.770	0.787	0.902	3.72	3.39	8.45
Selenium (Se)-Total	mg/kg	<0.050	<0.050	<0.050	0.131	<0.050	0.691	<0.050	0.206	0.188	<0.050	<0.050	0.214	0.173	0.088	0.102	<0.050	0.095	<0.050	<0.050	0.153	<0.050	<0.050	<0.050	<0.050	<0.050	3.75	<0.10	<0.10
Selenium (Se)-Total	mg/kg wwt	<0.010	<0.010	<0.010	0.043	<0.010	0.235	<0.010	0.093	0.073	<0.010	<0.010	0.075	0.062	0.024	0.032	<0.010	0.043	<0.010	<0.010	0.065	<0.010	0.013	<0.010	<0.010	<0.010	1.47	<0.020	<0.020
Sodium (Na)-Total	mg/kg	25	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	46	<20	<20	<20	1140	<20	<20	<20	<20	<20	<20	<20	<20	<20	5050	21	<20
Sodium (Na)-Total	mg/kg wwt	12.0	<4.0	<4.0	<4.0	<4.0	4.1	<4.0	<4.0	<4.0	<4.0	<4.0	15.9	<4.0	<4.0	<4.0	793	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	1980	4.1	5.1
Strontium (Sr)-Total	mg/kg	39.6	77.0	68.1	78.5	45.4	87.4	117	119	113	88.3	101	111	154	72.1	52.6	69.4	137	42.0	67.7	93.9	35.7	89.3	7.08	7.41	41.6	15.6	9.52	15.7
Strontium (Sr)-Total	mg/kg wwt	19.0	37.4	29.3	25.8	17.8	29.7	47.3	53.7	44.0	37.5	43.7	38.6	55.4	20.0	16.4	48.1	61.4	18.3	29.5	40.0	16.1	38.7	5.82	6.17	20.0	6.09	1.87	7.67
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	mg/kg	0.0050	0.0042	<0.0020	<0.0020	<0.0020	<0.0020	0.0113	<0.0020	<0.0020	<0.0020	<0.0020	0.0037	0.0035	0.0032	<0.0020	<0.0020	0.0022	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0052	<0.0020	<0.0020
Thallium (Tl)-Total	mg/kg wwt	0.00242	0.00204	<0.00040	<0.00040	0.00052	0.00052	0.00458	0.00052	<0.00040	<0.00040	<0.00040	0.00129	0.00127	0.00090	0.00049	<0.00040	0.00099	<0.00040	0.00087	0.00063	<0.00040	0.00070	<0.00040	<0.00040	<0.00040	0.00203	<0.00040	<0.00040
Tin (Sn)-Total	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.29	1.47	0.19
Tin (Sn)-Total	mg/kg wwt	<0.020	<0.020	<0.020	0.025	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.112	0.289	0.092
Uranium (U)-Total	mg/kg	0.0027	0.0022	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0023	<0.0020	<0.0020	<0.0020	0.0145	0.0070	0.0077	0.0032	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0978	<0.0020	<0.0020
Uranium (U)-Total	mg/kg wwt	0.00132	0.00109	<0.00040	0.00058	<0.00040	0.00056	<0.00040	0.00104	0.00077	0.00050	0.00062	0.00505	0.00252	0.00213	0.00100	0.00050	0.00041	<0.00040	<0.00040	0.00041	<0.00040	0.00048	0.00046	0.00057	<0.00040	0.0382	<0.00040	0.00083
Vanadium (V)-Total	mg/kg	0.29	0.20	<0.10	0.20	<0.10	0.19	0.10	0.15	0.18	<0.10	<0.10	0.24	0.14	<0.10	0.16	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	4.68	0.11	0.21
Vanadium (V)-Total	mg/kg wwt	0.138	0.096	0.026	0.064	0.022	0.065	0.041	0.066	0.071	0.026	0.030	0.083	0.050	0.027	0.049	0.064	0.042	<0.020	0.031	0.045	0.024	0.023	0.056	0.061	0.031	1.83	0.022	0.102
Zinc (Zn)-Total	mg/kg	29.2	59.0	45.1	116	35.1	64.2	44.0	53.2	53.4	53.0	65.3	107	143	77.5	138	26.1	120	39.0	77.9	125	39.3	65.0	31.3	37.0	43.1	144	24.2	9.9
Zinc (Zn)-Total	mg/kg wwt	14.0	28.7	19.4	38.3	13.8	21.8	17.8	24.0	20.8	22.5	28.2	37.2	51.5	21.5	43.0	18.1	53.6	17.0	33.9	53.2	17.7	28.1	25.7	30.8	20.7	56.4	4.75	4.86
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1.27	<0.20	<0.20
Zirconium (Zr)-Total	mg/kg wwt	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.496	<0.040	<0.040

Notes:
mg/kg = milligram per kilogram dry weight;

Table C-1 - Results of Plant Tissue Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	G0147-9 BERRY16-07	G0147-10 BERRY16-08	G0147-11 BERRY16-09	G0147-12 BERRY16-10	G0149-1 SPRUCE16-01	G0149-3 BERRY-BKG-02	G0149-4 BERRY-BKG-01	G0149-5 BERRY-BKG-03	G0152-2 BERRY16-18	G0152-3 BERRY16-19	G0152-4 BERRY16-20	G0152-5 BERRY16-BKG-10	G0156-9 GRASS16-11	G0156-10 GRASS16-BKG-01	G0156-11 GRASS16-BKG-02	G0156-12 GRASS16-12	G0157-1 GRASS16-13	G0157-2 GRASS16-BKG-03	G0157-3 GRASS16-BKG-04	G0157-4 GRASS16-14	G0157-5 GRASS16-15	G01157-6 GRASS16-BKG-05	G0157-7 WILLOW16-13	G0157-8 WILLOW16-14	G0157-9 WILLOW16-14D	G0157-10 WILLOW16-15	G0157-11 WILLOW16-17	G0157-12 WILLOW16-16
Date Sampled		19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	20-Aug-2016	20-Aug-2016	20-Aug-2016	20-Aug-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	4-Sep-2016	4-Sep-2016
ALS Sample ID		L1826566-9	L1826566-10	L1826566-11	L1826566-12	L1826566-13	L1826566-15	L1826566-16	L1826566-17	L1826566-19	L1826566-20	L1826566-21	L1826566-22	L1826566-23	L1826566-24	L1826566-25	L1826566-26	L1826566-27	L1826566-28	L1826566-29	L1826566-30	L1826566-31	L1826566-32	L1826566-33	L1826566-34	L1826566-35	L1826566-36	L1826566-37	L1826566-38
Physical Tests																													
% Moisture	%	85.4	70.8	88.9	70.4	57.9	43.2	73.1	84.1	82.8	77.4	80.1	81.5	45.5	59.0	54.3	36.0	48.5	66.1	62.7	46.5	58.7	63.5	59.7	57.3	57.0	62.4	49.8	53.5
Metals																													
Aluminum (Al)-Total	mg/kg	42.1	36.5	16.3	27.6	52.4	11.9	23.2	12.6	14.4	11.5	22.8	9.9	88.8	50.9	19.0	26.5	101	73.8	193	74.0	112	44.8	291	42.1	107	610	257	629
Aluminum (Al)-Total	mg/kg wwt	6.1	10.7	1.81	8.2	22.1	6.7	6.2	2.0	2.5	2.6	4.5	1.8	48.4	20.9	8.67	17.0	51.9	25.1	71.9	39.6	46.5	16.4	117	18.0	45.9	229	129	292
Antimony (Sb)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.021	<0.010	0.019
Antimony (Sb)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0021	<0.0020	<0.0020	<0.0020	0.0037	<0.0020	0.0024	<0.0020	0.0026	<0.0020	0.0037	<0.0020	<0.0020	0.0081	0.0047	0.0087
Arsenic (As)-Total	mg/kg	0.037	<0.020	<0.020	<0.030	0.028	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.089	0.037	<0.020	<0.020	0.063	0.040	0.117	0.051	0.104	0.029	0.207	0.033	0.059	0.355	0.201	0.398
Arsenic (As)-Total	mg/kg wwt	<0.0060	0.0050	<0.0040	<0.0060	0.0117	0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.0484	0.0151	0.0046	0.0120	0.0324	0.0136	0.0437	0.0270	0.0431	0.0105	0.0835	0.0140	0.0253	0.133	0.101	0.185
Barium (Ba)-Total	mg/kg	9.36	4.42	13.7	11.7	63.4	6.74	5.66	4.13	7.17	1.64	9.51	8.17	66.0	21.5	71.6	14.3	34.3	15.8	27.3	15.7	34.0	48.4	6.89	4.36	3.74	8.94	21.9	17.9
Barium (Ba)-Total	mg/kg wwt	1.37	1.29	1.52	3.47	26.7	3.83	1.52	0.657	1.23	0.370	1.90	1.51	36.0	8.80	32.7	9.17	17.7	5.38	10.2	8.37	14.1	17.7	2.78	1.86	1.61	3.36	11.0	8.33
Beryllium (Be)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	<0.010	0.015
Beryllium (Be)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0024	<0.0020	<0.0020	<0.0020	0.0028	<0.0020	<0.0020	0.0066	0.0035	0.0071
Bismuth (Bi)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	mg/kg	46.5	14.3	18.0	24.9	14.5	20.7	10.3	22.4	12.6	12.7	13.3	13.4	5.8	<1.0	3.7	3.3	7.6	3.5	4.0	2.9	9.3	3.8	17.8	13.9	19.7	41.9	6.2	23.6
Boron (B)-Total	mg/kg wwt	6.79	4.18	1.99	7.37	6.09	11.8	2.78	3.57	2.18	2.87	2.66	2.47	3.16	0.35	1.68	2.14	3.90	1.20	1.51	1.54	3.83	1.38	7.17	5.92	8.45	15.7	3.10	11.0
Cadmium (Cd)-Total	mg/kg	0.194	0.0109	0.0277	0.176	0.0171	0.043	<0.010	0.019	0.062	<0.010	0.019	0.011	0.450	0.065	0.167	0.0618	0.0416	0.0333	0.106	0.0155	0.0098	0.0575	0.949	0.328	0.214	1.19	0.915	1.24
Cadmium (Cd)-Total	mg/kg wwt	0.0284	0.0032	0.0031	0.0521	0.0072	0.0241	0.0023	0.0030	0.0106	<0.0020	0.0038	0.0020	0.245	0.0266	0.0761	0.0395	0.0214	0.0113	0.0397	0.0083	0.0041	0.0210	0.383	0.140	0.0921	0.446	0.459	0.576
Calcium (Ca)-Total	mg/kg	4020	3960	3410	2890	3610	2040	3620	1740	2100	1840	1930	2140	3840	1970	2370	1370	3690	1320	3630	2030	3650	2020	11800	7780	6510	9880	14800	19800
Calcium (Ca)-Total	mg/kg wwt	587	1160	378	855	1520	1160	972	278	361	416	386	395	2090	810	1080	875	1900	447	1350	1080	1510	737	4750	3320	2800	3710	7420	9200
Cesium (Cs)-Total	mg/kg	0.224	0.0157	0.0119	0.0258	0.0267	0.0498	0.0173	0.0061	<0.0050	0.0078	<0.0050	0.0078	<0.0050	0.0136	<0.0050	0.0050	0.0102	0.0069	0.0215	0.0177	0.0113	<0.0050	0.0383	0.0480	0.0377	0.0689	0.0904	0.0854
Cesium (Cs)-Total	mg/kg wwt	0.0327	0.0046	0.0013	0.0077	0.0112	0.0283	0.0046	<0.0010	<0.0010	0.0011	0.0015	<0.0010	0.0207	0.0056	<0.0010	0.0038	0.0053	0.0023	0.0080	0.0094	0.0047	0.0018	0.0155	0.0205	0.0162	0.0259	0.0454	0.0397
Chromium (Cr)-Total	mg/kg	<0.20	0.082	0.094	<0.20	0.086	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.117	0.20	0.059	<0.050	0.140	0.091	0.28	0.091	0.174	0.057	0.454	0.066	0.201	1.04	0.358	1.07
Chromium (Cr)-Total	mg/kg wwt	<0.040	0.024	0.010	<0.040	0.036	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.064	0.084	0.027	0.023	0.072	0.031	0.105	0.048	0.072	0.021	0.183	0.028	0.086	0.390	0.180	0.499
Cobalt (Co)-Total	mg/kg	0.232	0.072	<0.020	0.368	0.088	0.083	0.070	0.027	<0.020	0.047	0.027	<0.020	0.080	0.059	0.023	0.035	0.215	0.077	0.492	0.160	0.241	0.060	1.34	0.508	0.502	0.884	0.435	0.840
Cobalt (Co)-Total	mg/kg wwt	0.0339	0.0209	<0.0040	0.109	0.0372	0.0474	0.0188	0.0043	<0.0040	0.0107	0.0054	<0.0040	0.0437	0.0242	0.0104	0.0226	0.111	0.0261	0.183	0.0853	0.0996	0.0221	0.539	0.217	0.216	0.332	0.218	0.391
Copper (Cu)-Total	mg/kg	20.5	7.50	4.28	5.59	5.01	9.35	6.33	5.33	4.41	4.35	4.29	3.94	8.82	4.37	5.47	6.18	7.98	7.78	10.2	7.98	6.84	6.45	8.40	4.77	4.28	16.0	11.3	11.7
Copper (Cu)-Total	mg/kg wwt	3.00	2.19	0.475	1.66	2.11	5.31	1.70	0.848	0.759	0.984	0.855	0.727	4.81	1.79	2.50	3.96	4.11	2.64	3.80	4.27	2.83	2.36	3.39	2.04	1.84	6.01	5.66	5.42
Iron (Fe)-Total	mg/kg	109	72.1	35.6	65.3	117	39.9	60.3	36.4	39.6	52.5	53.4	23.3	158	143	62.4	86.7	137	203	273	145	191	139	390	75.0	164	1250	443	1060
Iron (Fe)-Total	mg/kg wwt	16.0	21.1	3.95	19.4	49.1	22.6	16.2	5.8	6.8	11.9	10.6	4.3	86.2	58.7	28.5	55.5	70.3	68.8	102	77.7	78.9	50.7	157	32.0	70.5	468	222	494
Lead (Pb)-Total	mg/kg	<0.050	<0.020	<0.020	<0.050	0.023	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.048	<0.050	0.024	<0.020	0.044	0.028	0.103	0.037	0.051	0.025	0.122	0.026	0.049	0.235	0.135	0.282
Lead (Pb)-Total	mg/kg wwt	<0.010	<0.0040	<0.0040	<0.010	0.0098	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0261	0.014	0.0110	0.0087	0.0224	0.0095	0.038	0.0198	0.0212	0.0090	0.0494	0.0112	0.0212	0.0881	0.0675	0.131
Lithium (Li)-Total	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	0.64
Lithium (Li)-Total	mg/kg wwt	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	0.20	0.11	0.30
Magnesium (Mg)-Total	mg/kg	2210	2870	1440	1310	1070	1990	2360	1500	961	1280	936	1120	1370	780	1070	1480	1290	1300	1630	1280	789	1210	2460	1730	1620	4650	3660	4080
Magnesium (Mg)-Total	mg/kg wwt	323	840	160	388	450	1130	634	238	165	289	187	206	746	320	490	946	665	442	606	682	326	443	993	739	694	1740	1830	1900
Manganese (Mn)-Total	mg/kg	98.0	27.8	3.31	133	167	43.1	47.5	5.78	3.63	34.1	5.09	2.07	123	20.6	93.7	73.1	163	45.9	95.9	115	73.1	122	83.0	63.9	46.9	198	490	447
Manganese (Mn)-Total	mg/kg wwt	14.3	8.12	0.367	39.3	70.1	24.5	12.8	0.921	0.624	7.72	1.02	0.382	67.1	8.44	42.8	46.8	83.8	15.6	35.8	61.6	30.2	44.4	33.5	27.3	20.1	74.5	246	208
Mercury (Hg)-Total	mg/kg	0.0125	0.0065	0.0072	<0.0050	0.0090	<0.0050	<0.0050	0.0053	0.0056	<0.0050	<0.0050	<0.0050	<0.0050	0.0063	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0058	<0.0050	0.0059	0.0067	0.0073	0.0073	0.0094	0.0096	0.0095
Mercury (Hg)-Total	mg/kg wwt	0.0018	0.0019	<0.0010	0.0013	0.0038	0.0023	0.0011	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0024	0.0026	0.0020	0.0018	0.0016	0.0012	0.0018	0.0031	0.0020	0.0022	0.0027	0.0031	0.0032	0.0035	0.0048	0.0044
Molybdenum (Mo)-Total	mg/kg	1.60	1.13	0.048	0.363	0.269	0.826	0.636	0.254	0.073	3.36	0.152	<0.040	6.21	4.02	0.867	1.02	10.7	0.819	2.89	0.960	3.96	0.800	0.669	0.414	0.478	1.53	1.18	2.02
Molybdenum (Mo)-Total	mg/kg wwt	0.234	0.330	0.0053	0.108	0.113	0.469	0.171	0.0405	0.0125	0.760	0.0304	<0.0080	3.38	1.65	0.396	0.651	5.52	0.278	1.08	0.513	1.64	0.292	0.270	0.177	0.205	0.575	0.591	0.938
Nickel (Ni)-Total	mg/kg	4.73	0.79	1.55	1.14	0.92	3.79	1.04	1.45	0.78	0.76	0.57	1.29	0.26	0.21	0.68	<0.20	0.33	0.21	2.94	0.42	0.66	<0.20	2.92	0.94	0.85	2.08	0.98	1.43
Nickel (Ni)-Total	mg/kg wwt	0.691	0.230	0.172	0.338	0.389	2.15	0.278	0.232	0.134	0.173	0.114	0.238	0.139	0.087	0.310	0.052	0.169	0.071	1.10	0.226	0.272	<0.040	1.18	0.404	0.365	0.782	0.490	0.663
Phosphorus (P)-Total	mg/kg	4800	3350	2260	1130	2190	4680	2430	2100	1880	2250	1710	2090	1870	2230	3390	4060	2700	5070	3380	3340	1290	6410	3240	2570	2150	1460	1580	1440
Phosphorus (P)-Total	mg/kg wwt	701	980	251	336	920	2660	652	335	324	510	341	386	1020	916	1550	2600	1390	1720	1260	1780	535	2340	1310	1100	922	547	794	672
Potassium (K)-Total	mg/kg	25300	11200	16400	9660	9140	22500	7740	10400	9920	6780	9070	10800	7340	8750	8990	5060	2820	8000	4680	3200	3500	9750	14900	19700	16800	8220	5020	8550
Potassium (K)-Total	mg/kg wwt	3700	3270	1820	2860	3850	12800	2080	1660	1710	1530	1810	1990	4000	3590	4110	3240	1450	2720	1740	1710	1450	3560	6010	8410	7220	3090	2520	3980
Rubidium (Rb)-Total	mg/kg	74.8	25.5	37.9	26.2	12.8	59.0	18.8	38.9	18.9	5.33	14.8	15.4	6.43	5.95	1.57	3.18	1.85	1.23	3.11	4.89	2.23	3.51	6.04	15.8	10.9	3.86	3.45	4.84
Rubidium (Rb)-Total	mg/kg wwt	10.9	7.44	4.20	7.76	5.39	33.5	5.05	6.20	3.26	1.21	2.96	2.84	3.50	2.44	0.718	2.04	0.952	0.419	1.16	2.61	0.921	1.28	2.44	6.77	4.69	1.45	1.73	2.25
Selenium (Se)-Total	mg/kg	<0.10	<0.050	<0.050	<0.10	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2.50	<0.10	<0.050	0.791	0.339	<0.050	0.11	0.402	0.404	<0.050	0.243	0.175	0.145	0.317	0.137	0.099
Selenium (Se)-Total	mg/kg wwt	<0.020	<0.010	<0.010	<0.020	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	1.36	0.039	<0.010	0.506	0.174	<0.010	0.041	0.215	0.167	<0.010	0.098	0.075	0.062	0.119	0.069	0.046
Sodium (Na)-Total	mg/kg	306	<20	35	21	<20	67	<20	40	60	<20	41	21	<20	<20	<20	<20	<20	<20	30	<20	44	<20	<20	<20	<20	<20	<20	22
Sodium (Na)-Total	mg/kg wwt	44.7	4.1	<4.0	6.1	<4.0	38.1	<4.0	6.3	10.4	<4.0	8.2	<4.0	7.3	<4.0	<4.0	<4.0	9.4	<4.0	11.0	5.8	18.1	<4.0	4.6	<4.0	4.7	6.3	4.9	10.4
Strontium (Sr)-Total	mg/kg	17.7	21.4	19.5	17.2	48.8	11.7	22.2	8.03	9.69	11.0	11.7	15.2	33.8	13.2	18.0	9.62	26.5	8.61	26.4	12.2	24.8	15.7	50.2	40.9	34.1	72.6	94.0	128
Strontium (Sr)-Total	mg/kg wwt	2.59	6.25	2.17	5.10	20.5	6.64	5.97	1.28	1.67	2.50	2.34	2.81	18.4	5.43	8.24	6.15	13.6	2.92	9.83	6.54	10.3	5.73	20.3	17.5	14.6	27.3	47.1	59.4
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0045	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0033	<0.0020	0.0026
Thallium (Tl)-Total	mg/kg wwt	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00102	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00064	<0.00040	<0.00040	<0.00040	0.00057	<0.00040	<0.00040	0.00125	0.00053	0.00119
Tin (Sn)-Total	mg/kg	1.14	1.10	7.39	2.57	<0.10	<0.10	0.38	3.10	7.92	0.70	1.74	1.96	<0.10	<0.10	0.14	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total	mg/kg wwt	0.167	0.322	0.820	0.762	0.024	0.026	0.103	0.494	1.36	0.159	0.346	0.361	<0.020	<0.020	0.062	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.023	<0.020	<0.020	<0.020
Uranium (U)-Total	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	0.0025	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0042	0.0034	<0.0020	<0.0020	0.0038	0.0027	0.0076	0.0065	0.0130	<0.0020	0.0099	0.0025	0.0047	0.0338	0.0122	0.0277
Uranium (U)-Total	mg/kg wwt	<0.00040	<0.00040	<0.00040	<0.00040	0.00106	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00229	0.00140	<0.00040	0.00058	0.00196	0.00093	0.00283	0.00350	0.00538	0.00049	0.00399	0.00107	0.00200	0.0127	0.00614	0.0129
Vanadium (V)-Total	mg/kg	0.20	0.18	<0.10	0.17	0.36	<0.10	0.14	<0.10	<0.10	<0.10	0.14	<0.10	0.42	0.35	<0.10	0.12	0.40	0.54	0.92	0.30	0.52	0.30	0.99	0.16	0.37	3.56	1.38	2.93
Vanadium (V)-Total	mg/kg wwt	0.030	0.052	<0.020	0.052	0.153	0.042	0.039	<0.020	<0.020	<0.020	0.027	<0.020	0.228	0.144	0.033	0.080	0.204	0.182	0.343	0.161	0.215	0.111	0.399	0.068	0.159	1.34	0.690	1.36
Zinc (Zn)-Total	mg/kg	33.0	14.0	13.8	17.5	41.9	16.5	11.1	15.0	12.1	22.2	10.9	11.6	42.4	30.5	57.2	44.0	26.0	50.3	35.4	32.8	14.2	59.2	147	21.6	14.5	16.1	27.0	40.3
Zinc (Zn)-Total	mg/kg wwt	4.82	4.08	1.53	5.20	17.6	9.35	2.97	2.39	2.08	5.02	2.17	2.15	23.1	12.5	26.1	28.2	13.4	17.1	13.2	17.5	5.87	21.6	59.2	9.23	6.21	6.06	13.5	18.8
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.33	<0.20	0.23
Zirconium (Zr)-Total	mg/kg wwt	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.123	0.097	0.106

Notes:
mg/kg = milligram per kilogram dry weight;

Table C-1 - Results of Plant Tissue Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	G0165-2 WILLOW16-11	G0165-3 GRASS16-16	G0165-4 GRASS16-16D	G0165-5 GRASS16-17	G0165-6 GRASS16-BKG-06	G0165-7 GRASS16-BKG-07	G0165-8 GRASS16-BKG-08	G0165-9 GRASS16-BKG-08D	G0165-10 WILLOW16-11	G0165-11 GRASS16-18	G0165-12 GRASS16-19	G0166-1 WILLOW16-18	G0166-2 GRASS16-20	G0166-3 WILLOW16-19	G0166-4 GRASS16-21	G0166-5 WILLOW16-BKG-01	G0166-6 SPRUCE16-BKG-02	G0166-7 BERRY16-BKG-11	G0166-8 WILLOW16-BKG-02	G0166-9 SPRUCE16-BKG-03	G0166-10 WILLOW16-BKG-03	G0166-11 WILLOW16-BKG-04	G0166-12 WILLOW16-BKG-05	G0167-1 SPRUCE-BKG-04	G0167-2 WILLOW16-BKG-06	G0167-3 SPRUCE16-BKG-05	G0167-4 SPRUCE16-08	G0167-5 SPRUCE16-09
Date Sampled		3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016
ALS Sample ID		L1826566-39	L1826566-40	L1826566-41	L1826566-42	L1826566-43	L1826566-44	L1826566-45	L1826566-46	L1826566-47	L1826566-48	L1826566-49	L1826566-50	L1826566-51	L1826566-52	L1826566-53	L1826566-54	L1826566-55	L1826566-56	L1826566-57	L1826566-58	L1826566-59	L1826566-60	L1826566-61	L1826566-62	L1826566-63	L1826566-64	L1826566-65	L1826566-66
Physical Tests																													
% Moisture	%	58.0	60.6	59.6	58.1	69.0	55.2	34.2	50.2	64.4	16.7	35.7	60.7	36.8	61.5	33.0	63.6	55.7	84.6	64.5	56.5	56.6	54.1	57.4	56.1	57.4	53.3	54.9	54.7
Metals																													
Aluminum (Al)-Total	mg/kg	60.1	23.4	28.0	72.0	20.8	29.9	24.5	18.0	190	16.6	63.8	282	118	357	1100	38.0	11.3	11.4	35.8	9.5	71.7	73.2	31.2	21.7	56.5	15.6	23.5	52.7
Aluminum (Al)-Total	mg/kg wwt	25.2	9.23	11.3	30.1	6.45	13.4	16.1	8.97	67.7	13.8	41.0	111	74.7	137	734	13.9	5.02	1.7	12.7	4.15	31.1	33.6	13.3	9.52	24.0	7.28	10.6	23.9
Antimony (Sb)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	<0.010	0.015	0.027	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Antimony (Sb)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0021	<0.0020	<0.0020	0.0033	<0.0020	<0.0020	0.0052	0.0022	0.0057	0.0178	0.0030	<0.0020	<0.0020	<0.0020	<0.0020	0.0025	0.0024	<0.0020	<0.0020	0.0023	<0.0020	0.0021	0.0028
Arsenic (As)-Total	mg/kg	0.087	0.020	<0.020	0.053	<0.020	<0.030	0.022	<0.020	0.119	<0.020	0.040	0.183	0.083	0.235	0.771	0.024	<0.020	<0.030	0.030	<0.020	0.049	0.048	<0.020	<0.020	0.047	<0.020	<0.020	0.039
Arsenic (As)-Total	mg/kg wwt	0.0366	0.0080	0.0062	0.0222	<0.0040	0.0097	0.0147	0.0059	0.0422	0.0129	0.0255	0.0721	0.0528	0.0905	0.517	0.0088	<0.0040	<0.0060	0.0106	<0.0040	0.0211	0.0220	0.0069	<0.0040	0.0201	0.0041	0.0085	0.0178
Barium (Ba)-Total	mg/kg	6.51	4.17	3.68	11.2	3.30	37.5	8.32	5.69	4.84	10.6	35.2	5.05	41.4	6.08	31.8	65.1	52.9	7.19	13.2	59.0	4.93	27.5	9.60	87.7	29.7	117	32.7	68.4
Barium (Ba)-Total	mg/kg wwt	2.73	1.64	1.48	4.70	1.02	16.8	5.48	2.83	1.72	8.85	22.7	1.99	26.2	2.34	21.3	23.7	23.4	1.11	4.68	25.7	2.14	12.6	4.09	38.5	12.6	54.4	14.7	31.0
Beryllium (Be)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	0.042	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0025	<0.0020	0.0044	0.0284	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	0.0029	0.0021	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	mg/kg	24.0	4.0	4.4	5.2	2.4	3.2	5.0	3.5	19.4	3.7	4.1	15.0	8.6	17.3	6.6	25.6	5.2	16.5	7.0	15.7	30.2	30.5	20.1	8.1	32.7	10.7	6.9	8.6
Boron (B)-Total	mg/kg wwt	10.1	1.58	1.77	2.19	0.74	1.44	3.28	1.77	6.88	3.07	2.61	5.90	5.46	6.67	4.45	9.34	2.32	2.54	2.48	6.83	13.1	14.0	8.58	3.58	13.9	5.01	3.13	3.92
Cadmium (Cd)-Total	mg/kg	0.118	0.0076	0.0069	0.0548	0.0079	0.081	0.0205	0.0213	0.327	0.0205	0.0671	0.537	0.0937	0.830	0.170	0.0123	0.114	0.010	1.14	0.0461	0.645	1.60	2.03	0.0545	1.42	0.0163	0.0346	0.119
Cadmium (Cd)-Total	mg/kg wwt	0.0496	0.0030	0.0028	0.0229	0.0024	0.0364	0.0135	0.0106	0.116	0.0171	0.0432	0.211	0.0593	0.319	0.114	0.0045	0.0506	<0.0020	0.404	0.0201	0.280	0.735	0.867	0.0239	0.603	0.0076	0.0156	0.0537
Calcium (Ca)-Total	mg/kg	6480	1490	1480	4910	1170	2020	2040	1710	6240	1290	3240	8730	6840	8840	5160	18900	3030	2000	13000	4250	6190	19200	9560	4670	19600	6800	3750	5500
Calcium (Ca)-Total	mg/kg wwt	2720	587	597	2050	362	906	1340	853	2220	1080	2090	3440	4330	3400	3460	6890	1340	307	4630	1850	2690	8820	4080	2050	8350	3170	1690	2490
Cesium (Cs)-Total	mg/kg	0.0248	0.0091	0.0098	0.0053	<0.0050	0.0058	0.0051	0.0033	0.0310	0.0170	0.0108	0.0290	0.0186	0.0368	0.131	0.0086	0.0415	<0.0050	0.0254	0.0939	0.0591	0.0262	0.0908	0.156	0.0064	0.0091	0.0074	0.0143
Cesium (Cs)-Total	mg/kg wwt	0.0104	0.0036	0.0039	0.0041	0.0016	0.0020	0.0038	0.0025	0.0117	0.0142	0.0070	0.0114	0.0118	0.0142	0.0878	0.0031	0.0184	<0.0010	0.0090	0.0409	0.0256	0.0120	0.0387	0.0686	0.0027	0.0042	0.0034	0.0065
Chromium (Cr)-Total	mg/kg	0.100	<0.050	0.055	0.141	0.083	<0.20	0.052	<0.050	0.364	<0.050	0.146	0.617	0.184	0.387	1.55	0.081	<0.050	<0.20	<0.050	<0.050	0.089	0.099	<0.050	<0.050	0.075	<0.050	<0.050	<0.050
Chromium (Cr)-Total	mg/kg wwt	0.042	0.012	0.022	0.059	0.026	0.041	0.035	0.014	0.130	0.019	0.094	0.243	0.116	0.149	1.04	0.030	0.016	<0.040	0.015	<0.010	0.038	0.046	0.016	0.010	0.032	0.010	0.016	0.021
Cobalt (Co)-Total	mg/kg	0.451	0.037	0.038	0.080	0.048	0.047	0.035	0.041	0.496	0.026	0.055	0.719	0.212	1.36	1.29	0.174	0.063	0.064	1.52	0.110	2.73	1.64	3.53	0.066	1.67	0.046	0.088	0.099
Cobalt (Co)-Total	mg/kg wwt	0.189	0.0147	0.0153	0.0334	0.0147	0.0210	0.0229	0.0202	0.176	0.0220	0.0353	0.283	0.134	0.525	0.867	0.0633	0.0278	0.0099	0.541	0.0477	1.18	0.755	1.51	0.0291	0.712	0.0213	0.0398	0.0449
Copper (Cu)-Total	mg/kg	4.48	7.60	6.34	11.3	5.22	5.96	5.63	5.88	7.64	5.66	6.08	6.86	8.42	16.3	40.3	5.29	4.15	3.74	7.21	2.84	8.97	9.78	4.53	3.07	6.32	3.24	3.93	4.47
Copper (Cu)-Total	mg/kg wwt	1.88	2.99	2.56	4.73	1.62	2.67	3.71	2.93	2.72	4.71	3.91	2.70	5.33	6.27	27.0	1.93	1.84	0.576	2.56	1.24	3.89	4.49	1.93	1.35	2.69	1.51	1.77	2.02
Iron (Fe)-Total	mg/kg	121	73.5	86.0	156	65.1	102	79.0	67.8	331	51.1	128	487	246	628	2370	106	28.9	29.9	111	27.4	177	167	96.9	39.3	148	34.8	57.7	179
Iron (Fe)-Total	mg/kg wwt	50.6	29.0	34.7	65.4	20.1	45.4	52.0	33.8	118	42.5	82.6	191	155	242	1590	38.6	12.8	4.6	39.3	11.9	76.7	76.7	41.3	17.2	63.2	16.3	26.0	81.0
Lead (Pb)-Total	mg/kg	0.031	<0.020	<0.020	0.037	0.028	<0.050	<0.020	<0.020	0.065	<0.020	0.033	0.114	0.042	0.122	0.566	0.027	<0.020	<0.050	0.026	<0.020	0.028	0.040	0.024	<0.020	0.033	<0.020	<0.020	<0.020
Lead (Pb)-Total	mg/kg wwt	0.0129	0.0062	0.0071	0.0157	0.0086	0.013	0.0104	0.0050	0.0230	0.0074	0.0215	0.0449	0.0265	0.0469	0.380	0.0099	0.0047	<0.010	0.0093	<0.0040	0.0119	0.0186	0.0104	0.0051	0.0141	0.0041	0.0045	0.0074
Lithium (Li)-Total	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.21	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium (Li)-Total	mg/kg wwt	0.21	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.81	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total	mg/kg	2210	1290	1150	1400	821	626	1010	989	1430	1270	1470	1740	1550	1840	1630	4490	786	1000	3090	674	2540	2170	2570	599	3000	747	939	836
Magnesium (Mg)-Total	mg/kg wwt	929	507	465	584	254	280	662	493	510	1060	945	686	979	708	1100	1640	348	154	1100	293	1400	997	1100	263	1280	349	423	379
Manganese (Mn)-Total	mg/kg	111	27.4	27.4	44.6	45.8	111	76.5	71.6	28.1	46.9	83.1	62.6	56.7	71.7	149	21.8	225	3.14	53.5	193	399	120	1300	201	80.8	156	73.6	172
Manganese (Mn)-Total	mg/kg wwt	46.4	10.8	11.1	18.7	14.2	49.8	50.3	35.7	9.98	39.1	53.5	24.6	35.9	27.6	100	7.93	99.7	0.484	19.0	84.0	173	54.9	554	88.2	34.4	72.7	33.2	77.8
Mercury (Hg)-Total	mg/kg	<0.0050	<0.0050	<0.0050	0.0060	<0.0050	0.0069	<0.0050	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	0.0050	0.0344	0.0189	0.0094	0.0052	<0.0050	0.0067	0.0066	0.0104	<0.0050	<0.0050	0.0102	0.0101	0.0086	0.0083
Mercury (Hg)-Total	mg/kg wwt	0.0017	0.0011	<0.0010	0.0025	<0.0010	0.0031	0.0027	0.0014	<0.0010	0.0023	0.0043	0.0017	0.0030	0.0019	0.0231	0.0069	0.0042	<0.0010	<0.0010	0.0029	0.0028	0.0048	<0.0010	0.0021	0.0043	0.0047	0.0039	0.0038
Molybdenum (Mo)-Total	mg/kg	0.591	3.52	3.28	5.74	1.47	1.13	1.47	1.56	1.61	1.79	1.37	1.15	6.76	0.845	3.24	3.86	0.023	0.085	0.178	0.112	0.395	0.059	0.543	0.090	0.063	0.059	0.160	0.299
Molybdenum (Mo)-Total	mg/kg wwt	0.248	1.39	1.33	2.40	0.456	0.505	0.969	0.777	0.573	1.49	0.880	0.453	4.28	0.325	2.17	1.41	0.0104	0.0130	0.0631	0.0488	0.171	0.0271	0.232	0.0393	0.0267	0.0275	0.0719	0.135
Nickel (Ni)-Total	mg/kg	0.97	0.25	2.10	0.41	0.63	0.22	0.30	0.46	0.67	<0.20	<0.20	0.95	0.66	1.40	1.69	3.46	1.22	0.77	4.88	1.74	6.28	2.81	2.90	0.95	4.70	0.94	<0.20	0.43
Nickel (Ni)-Total	mg/kg wwt	0.406	0.100	0.848	0.173	0.196	0.096	0.200	0.231	0.239	0.077	0.116	0.372	0.415	0.538	1.13	1.26	0.542	0.118	1.73	0.755	2.72	1.29	1.24	0.419	2.00	0.441	0.077	0.195
Phosphorus (P)-Total	mg/kg	1890	3760	3390	6390	3180	3150	2880	3080	1720	3280	4230	2080	5950	2130	2180	1540	1880	1710	3190	1290	2540	2670	2520	1650	2050	1710	1920	1670
Phosphorus (P)-Total	mg/kg wwt	794	1480	1370	2680	985	1410	1900	1530	611	2730	2720	817	3760	821	1460	561	831	264	1130	561	1100	1220	1070	724	873	799	864	758
Potassium (K)-Total	mg/kg	10400	11400	13800	11200	17100	7350	7080	7170	12900	4480	4550	14600	11200	14400	6460	16000	5730	12800	17400	6040	12000	12200	8570	5960	7100	7950	7830	6880
Potassium (K)-Total	mg/kg wwt	4360	4480	5560	4680	5300	3290	4660	3570	4580	3730	2930	5750	7090	5550	4330	5830	2540	1970	6170	2630	5210	5610	3660	2620	3020	3710	3530	3110
Rubidium (Rb)-Total	mg/kg	6.44	13.9	14.3	7.23	13.0	4.60	9.74	10.7	5.25	3.86	2.38	6.33	6.39	4.91	3.06	11.1	7.48	14.3	20.8	11.4	31.1	24.6	16.8	16.5	4.47	6.24	3.52	8.21
Rubidium (Rb)-Total	mg/kg wwt	2.70	5.45	5.79	3.03	4.01	2.06	6.41	5.35	1.87	3.21	1.53	2.49	4.04	1.89	2.05	4.04	3.31	2.20	7.38	4.95	13.5	11.3	7.15	7.25	1.90	2.91	1.58	3.72
Selenium (Se)-Total	mg/kg	0.223	<0.050	<0.050	0.080	<0.050	<0.10	<0.050	<0.050	0.779	2.35	0.401	1.02	1.06	0.700	1.53	<0.050	<0.050	<0.10	0.078	<0.050	0.063	0.071	0.056	<0.050	<0.050	<0.050	<0.050	<0.050
Selenium (Se)-Total	mg/kg wwt	0.094	0.019	0.016	0.034	<0.010	<0.020	<0.010	<0.010	0.277	1.96	0.258	0.400	0.673	0.269	1.02	<0.010	<0.010	<0.020	0.028	<0.010	0.027	0.032	0.024	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (Na)-Total	mg/kg	<20	<20	<20	35	<20	<20	<20	<20	<20	<20	<20	<20	42	<20	114	<20	<20	26	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Sodium (Na)-Total	mg/kg wwt	4.5	<4.0	<4.0	14.6	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	4.6	<4.0	26.3	7.2	76.1	<4.0	<4.0	4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Strontium (Sr)-Total	mg/kg	45.9	8.62	7.61	23.6	6.93	14.2	10.5	8.54	30.3	24.7	25.4	41.7	51.7	45.9	41.4	109	35.3	11.9	86.3	56.2	36.0	140	67.7	41.8	133	73.1	28.2	42.9
Strontium (Sr)-Total	mg/kg wwt	19.3	3.39	3.07	9.89	2.14	6.37	6.89	4.25	10.8	20.5	16.3	16.4	32.7	17.7	27.7	39.8	15.6	1.84	30.7	24.5	15.6	64.0	28.9	18.3	56.6	34.1	12.7	19.4
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0135	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0067	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0061
Thallium (Tl)-Total	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0027	0.0028	<0.0020	0.0041	<0.0020	<0.0020	<0.0020	0.0023	<0.0020	<0.0020	<0.0020	<0.0020	0.0038	<0.0020	<0.0020	<0.0020	<0.0020
Thallium (Tl)-Total	mg/kg wwt	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00107	0.00175	0.00052	0.00274	<0.00040	0.00043	<0.00040	0.00081	<0.00040	<0.00040	0.00055	0.00049	0.00167	<0.00040	<0.00040	0.00058	0.00048
Tin (Sn)-Total	mg/kg	<0.10	<0.10	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	4.18	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total	mg/kg wwt	<0.020	<0.020	0.053	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.066	<0.020	<0.020	0.644	<0.020	<0.020	<0.020	<0.020	<0.020	0.025	<0.020	<0.020	<0.020	<0.020
Uranium (U)-Total	mg/kg	0.0099	<0.0020	<0.0020	0.0032	<0.0020	<0.0020	<0.0020	<0.0020	0.0082	<0.0020	0.0024	0.0122	0.0045	0.0174	0.0766	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0029	0.0024	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	0.0027
Uranium (U)-Total	mg/kg wwt	0.00415	<0.00040	0.00047	0.00135	<0.00040	0.00062	0.00054	<0.00040	0.00291	0.00044	0.00153	0.00482	0.00283	0.00668	0.0513	0.00044	<0.00040	<0.00040	0.00046	<0.00040	0.00127	0.00112	0.00043	<0.00040	0.00087	<0.00040	<0.00040	0.00122
Vanadium (V)-Total	mg/kg	0.22	0.14	0.19	0.39	<0.10	0.19	0.13	<0.10	0.98	<0.10	0.29	1.08	0.67	2.13	9.17	0.22	<0.10	<0.10	0.23	<0.10	0.48	0.41	0.16	<0.10	0.39	<0.10	0.16	0.64
Vanadium (V)-Total	mg/kg wwt	0.093	0.054	0.076	0.164	0.030	0.087	0.084	0.043	0.349	0.063	0.184	0.424	0.421	0.821	6.14	0.080	<0.020	<0.020	0.081	<0.020	0.210	0.190	0.066	0.042	0.167	0.038	0.071	0.292
Zinc (Zn)-Total	mg/kg	17.0	29.4	29.0	37.5	27.8	39.0	49.5	49.9	56.5	19.0	37.6	73.8	30.1	72.8	31.1	21.7	34.2	8.5	54.5	34.3	43.6	52.2	58.2	37.6	62.8	43.4	35.0	49.3
Zinc (Zn)-Total	mg/kg wwt	7.15	11.6	11.7	15.7	8.62	17.5	32.6	24.9	20.1	15.9	24.2	29.0	19.0	28.0	20.9	7.90	15.2	1.30	19.4	14.9	18.9	24.0	24.8	16.5	26.8	20.2	15.8	22.3
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.39	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zirconium (Zr)-Total	mg/kg wwt	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.261	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

Notes:
mg/kg = milligram per kilogram dry weight;

Table C-1 - Results of Plant Tissue Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	G0167-7 SPRUCE16-10	G0167-8 SPRUCE16-11	G0167-9 SPRUCE16-11D	G0167-10 SPRUCE16-12	G0167-11 SPRUCE16-13	G0167-12 WILLOW16-20	G0168-1 SPRUCE16-14	G0171-7 GRASS16-BKG-10	G0171-8 GRASS16-BKG-11	G0171-9 WILLOW16-BKG-11	G0171-10 SPRUCE16-BKG-12	G0149-7	WILLOW-LHAC-4-16	WILLOW-LHAC-3-16	WILLOW-LHAC-2X-16	WILLOW-LHAC-2-16	WILLOW-LHAC-1-16	WILLOW-LHAC-5-16	SPRUCE-REF-1-16	SPRUCE-UHAC-1-16	SPRUCE-UHAC-1X-16	SPRUCE-UHAC-2-16	SPRUCE-LHAC-1-16	BERRIES-LHAC-2-16	BERRIES-LHAC-3-16	BERRIES-LHAC-1-16	RYEGRASS-UHAC-1-16	RYEGRASS-UHAC-2-16
Date Sampled		4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016		16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	3-Aug-2016	3-Aug-2016	3-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	3-Aug-2016	3-Aug-2016
ALS Sample ID		L1826566-68	L1826566-69	L1826566-70	L1826566-71	L1826566-72	L1826566-73	L1826566-74	L1826566-76	L1826566-77	L1826566-78	L1826566-79	L1826566-80	L1826684-1	L1826684-2	L1826684-3	L1826684-4	L1826684-5	L1826684-6	L1826684-7	L1826684-8	L1826684-9	L1826684-10	L1826684-11	L1826684-12	L1826684-13	L1826684-14	L1826684-15	L1826684-16
Physical Tests																													
% Moisture	%	53.0	53.6	49.9	52.3	52.5	60.2	54.2	14.4	16.8	62.8	55.6	85.7	62.4	59.9	56.1	60.0	57.3	54.0	54.8	57.0	57.9	52.7	55.7	77.3	84.0	86.1	17.3	31.2
Metals																													
Aluminum (Al)-Total	mg/kg	77.3	92.5	60.2	76.0	43.3	39.4	34.4	7.1	12.2	41.6	17.6	23.8	100	384	426	451	962	350	19.8	10.0	9.2	35.4	76.1	5.2	<5.0	7.2	747	1650
Aluminum (Al)-Total	mg/kg wwt	36.3	42.9	30.2	36.3	20.6	15.7	15.7	6.0	10.1	15.8	7.84	3.4	37.8	154	187	180	411	161	8.94	4.29	3.88	16.7	33.7	1.2	<1.0	1.0	618	1130
Antimony (Sb)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	0.032	0.026	0.025	0.043	0.025	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.029	0.060
Antimony (Sb)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	0.0033	<0.0020	0.0023	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0063	0.0128	0.0115	0.0098	0.0183	0.0114	0.0033	0.0033	0.0026	0.0037	0.0040	<0.0020	<0.0020	<0.0020	0.0243	0.0415
Arsenic (As)-Total	mg/kg	0.042	0.060	0.041	0.047	0.032	0.089	<0.020	<0.030	<0.030	0.028	<0.020	<0.030	0.110	0.370	0.439	0.462	0.663	0.479	<0.020	<0.020	<0.020	0.024	0.054	<0.030	<0.030	<0.030	0.573	1.27
Arsenic (As)-Total	mg/kg wwt	0.0196	0.0280	0.0207	0.0225	0.0152	0.0354	0.0087	<0.0060	0.0101	0.0105	0.0049	<0.0060	0.0412	0.148	0.192	0.185	0.283	0.220	0.0057	0.0051	0.0049	0.0115	0.0238	<0.0060	<0.0060	<0.0060	0.474	0.875
Barium (Ba)-Total	mg/kg	81.5	116	105	41.1	59.6	4.78	97.2	3.95	6.48	38.2	120	6.24	14.1	10.3	12.3	12.7	18.9	13.2	72.6	136	99.9	53.1	125	5.92	18.1	2.36	16.0	39.5
Barium (Ba)-Total	mg/kg wwt	38.3	54.0	52.8	19.6	28.3	1.90	44.5	3.38	5.39	14.5	53.2	0.895	5.32	4.13	5.40	5.09	8.07	6.07	32.8	58.5	42.1	25.1	55.4	1.34	2.90	0.329	13.3	27.2
Beryllium (Be)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.014	0.015	0.026	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.034	0.072
Beryllium (Be)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0044	0.0061	0.0059	0.0110	0.0069	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0280	0.0498
Bismuth (Bi)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0039	0.0063
Boron (B)-Total	mg/kg	13.1	10.2	9.9	8.6	5.0	150	19.3	4.6	6.5	30.0	13.2	11.8	27.9	57.3	98.3	103	25.6	75.2	12.3	20.4	17.2	13.4	19.2	26.0	24.6	10.7	19.1	27.8
Boron (B)-Total	mg/kg wwt	6.16	4.74	4.95	4.10	2.36	59.7	8.83	3.94	5.40	11.4	5.85	1.69	10.5	23.0	43.1	41.2	10.9	34.6	5.58	8.78	7.25	6.34	8.50	5.89	3.94	1.48	15.8	19.1
Cadmium (Cd)-Total	mg/kg	0.0053	0.0597	0.0290	0.0329	0.0386	0.455	0.0368	<0.010	<0.010	4.65	0.218	0.041	2.60	0.639	0.708	0.658	1.97	1.87	0.0106	0.188	0.213	<0.0050	0.102	0.058	0.065	<0.010	<0.010	<0.010
Cadmium (Cd)-Total	mg/kg wwt	0.0025	0.0277	0.0145	0.0157	0.0184	0.181	0.0168	<0.0020	<0.0020	1.76	0.0967	0.0059	0.978	0.256	0.311	0.263	0.842	0.860	0.0048	0.0806	0.0896	0.0013	0.0453	0.0132	0.0104	<0.0020	<0.0040	<0.0070
Calcium (Ca)-Total	mg/kg	4480	7070	6210	4750	6970	13500	6020	1670	2040	28000	4150	6040	12600	25600	25000	24600	24300	19900	3490	8630	6550	6010	6680	1470	3720	5100	3740	6910
Calcium (Ca)-Total	mg/kg wwt	2100	3280	3120	2270	3310	5370	2760	1430	1700	10600	1840	866	4760	10300	11000	9830	10400	9150	1580	3710	2760	2850	2960	335	595	709	3090	4750
Cesium (Cs)-Total	mg/kg	0.0335	0.0329	0.0259	0.0148	0.0101	0.0281	0.0423	<0.0050	<0.0050	0.0132	0.0772	0.128	0.0478	0.0555	0.0611	0.0638	0.113	0.0590	0.0972	0.0055	0.0060	0.429	0.142	0.0050	<0.0050	0.110	0.118	0.307
Cesium (Cs)-Total	mg/kg wwt	0.0157	0.0153	0.0130	0.0070	0.0048	0.0112	0.0194	0.0015	0.0040	0.0050	0.0343	0.0183	0.0180	0.0223	0.0268	0.0255	0.0482	0.0271	0.0440	0.0024	0.0025	0.203	0.0629	0.0011	<0.0010	0.0153	0.0973	0.211
Chromium (Cr)-Total	mg/kg	0.076	0.093	0.059	0.079	<0.050	0.073	<0.050	<0.20	<0.20	0.058	<0.050	<0.20	0.287	1.17	0.806	0.996	2.19	0.815	0.375	0.395	0.544	0.256	0.104	0.22	<0.20	<0.20	0.68	1.16
Chromium (Cr)-Total	mg/kg wwt	0.036	0.043	0.030	0.038	0.018	0.029	0.017	<0.040	<0.040	0.022	0.016	<0.040	0.108	0.467	0.354	0.398	0.933	0.375	0.169	0.170	0.229	0.121	0.046	0.050	<0.040	<0.040	0.562	0.800
Cobalt (Co)-Total	mg/kg	0.101	0.135	0.103	0.135	0.110	0.427	0.095	0.022	<0.020	0.920	0.100	0.028	0.779	2.38	7.27	7.54	1.55	2.56	0.056	0.152	0.158	0.070	0.110	0.047	0.024	<0.020	0.746	1.61
Cobalt (Co)-Total	mg/kg wwt	0.0473	0.0627	0.0514	0.0642	0.0524	0.170	0.0435	0.0186	0.0122	0.349	0.0445	<0.0040	0.293	0.955	3.19	3.01	0.663	1.18	0.0251	0.0654	0.0663	0.0330	0.0488	0.0107	<0.0040	<0.0040	0.617	1.11
Copper (Cu)-Total	mg/kg	5.89	7.72	6.10	4.88	4.44	8.56	4.63	4.42	6.67	5.53	3.69	4.44	13.9	9.48	14.6	14.8	12.2	22.3	3.60	6.39	7.05	3.67	6.21	0.80	6.19	1.90	43.5	88.5
Copper (Cu)-Total	mg/kg wwt	2.77	3.58	3.06	2.33	2.11	3.41	2.12	3.78	5.55	2.10	1.64	0.637	5.21	3.80	6.41	5.90	5.19	10.3	1.63	2.75	2.97	1.74	2.75	0.181	0.991	0.265	36.0	60.9
Iron (Fe)-Total	mg/kg	247	266	186	261	126	100	59.8	52.8	45.3	119	46.3	60.1	249	880	1200	1320	1810	1140	75.2	28.9	25.6	116	255	16.8	26.6	27.4	1530	2880
Iron (Fe)-Total	mg/kg wwt	116	123	93.3	124	59.9	39.8	27.4	45.2	37.7	45.1	20.6	8.6	93.7	353	527	527	770	525	34.0	12.4	10.8	54.8	113	3.8	4.3	3.8	1270	1980
Lead (Pb)-Total	mg/kg	0.042	0.042	<0.020	0.033	0.020	0.033	<0.020	<0.050	<0.050	0.033	<0.020	<0.050	0.060	0.256	0.255	0.255	0.499	0.237	<0.020	<0.020	<0.020	<0.020	0.034	<0.050	<0.050	<0.050	0.307	0.602
Lead (Pb)-Total	mg/kg wwt	0.0197	0.0192	0.0099	0.0159	0.0096	0.0133	0.0082	<0.010	<0.010	0.0124	0.0059	<0.010	0.0228	0.103	0.112	0.102	0.213	0.109	0.0048	0.0042	<0.0040	0.0074	0.0151	<0.010	<0.010	<0.010	0.254	0.414
Lithium (Li)-Total	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	0.52	0.54	1.17	0.79	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.88	2.28
Lithium (Li)-Total	mg/kg wwt	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.22	0.23	0.22	0.50	0.36	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.73	1.57
Magnesium (Mg)-Total	mg/kg	970	962	970	838	1030	3470	814	1140	1350	2780	639	1040	4060	4000	3180	3190	2930	2580	737	763	735	939	812	581	1130	1010	1360	2530
Magnesium (Mg)-Total	mg/kg wwt	456	446	486	400	490	1380	372	977	1130	1060	284	150	1530	1600	1390	1280	1250	1190	333	328	310	444	559	132	180	141	1130	1740
Manganese (Mn)-Total	mg/kg	82.6	118	104	171	235	759	247	91.4	61.0	94.9	398	5.26	109	177	223	238	161	320	104	225	195	116	221	2.26	3.45	3.28	110	244
Manganese (Mn)-Total	mg/kg wwt	38.8	54.5	52.3	81.6	111	302	113	78.2	50.7	36.0	177	0.755	41.1	71.0	97.7	95.3	68.9	147	47.2	97.0	81.9	55.0	97.7	0.514	0.552	0.456	91.3	168
Mercury (Hg)-Total	mg/kg	0.0053	0.0092	0.0094	0.0100	0.0076	0.0111	0.0102	<0.0050	0.0058	0.0105	0.0098	0.0052	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)-Total	mg/kg wwt	0.0025	0.0043	0.0047	0.0048	0.0036	0.0044	0.0047	<0.0040	0.0048	0.0039	0.0044	<0.0010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	mg/kg	0.394	0.547	0.447	0.211	0.732	1.96	0.408	1.85	3.19	0.200	0.096	0.186	0.386	0.881	0.808	0.815	0.620	5.73	0.123	1.18	1.22	0.584	0.189	0.059	0.102	0.196	7.68	28.4
Molybdenum (Mo)-Total	mg/kg wwt	0.185	0.254	0.224	0.101	0.348	0.782	0.187	1.59	2.65	0.0760	0.0426	0.0267	0.145	0.353	0.354	0.326	0.265	2.64	0.0555	0.508	0.512	0.277	0.0838	0.0134	0.0163	0.0272	6.35	19.6
Nickel (Ni)-Total	mg/kg	1.65	0.93	0.84	0.82	0.34	0.54	0.50	0.47	<0.20	3.70	1.60	0.77	4.19	7.72	10.6	11.2	2.96	2.23	2.95	1.01	1.14	0.68	0.79	0.26	0.41	<0.20	0.82	1.31
Nickel (Ni)-Total	mg/kg wwt	0.776	0.431	0.422	0.389	0.159	0.213	0.227	0.401	0.109	1.40	0.711	0.110	1.58	3.10	4.64	4.46	1.26	1.02	1.33	0.436	0.480	0.320	0.350	0.059	0.066	<0.040	0.675	0.900
Phosphorus (P)-Total	mg/kg	1970	2700	2590	1710	2020	1790	1810	3220	4430	5320	2060	2020	2250	2440	1550	1530	3440	798	1880	2330	2370	1670	1550	938	3060	1570	339	1660
Phosphorus (P)-Total	mg/kg wwt	926	1250	1300	818	957	714	827	2750	3680	2020	915	289	847	978	680	612	1470	367	848	1000	998	793	684	213	490	218	281	1140
Potassium (K)-Total	mg/kg	6510	7540	7330	5390	5230	13500	6730	4680	6860	11100	8870	11400	10300	9190	8440	8880	6200	10700	8790	7600	8700	9230	8410	8020	12700	9590	4990	12600
Potassium (K)-Total	mg/kg wwt	3060	3500	3670	2570	2490	5370	3080	4010	5710	4200	3940	1630	3870	3690	3710	3550	2650	4930	3980	3270	3660	4370	3720	1820	2030	1330	4120	8670
Rubidium (Rb)-Total	mg/kg	6.50	8.73	8.12	5.77	5.06	4.64	8.99	2.89	7.08	9.62	14.7	29.6	8.22	5.11	3.24	3.43	1.33	4.13	16.7	5.13	5.92	31.1	15.7	11.8	12.1	17.0	2.66	6.75
Rubidium (Rb)-Total	mg/kg wwt	3.05	4.04	4.07	2.76	2.40	1.85	4.11	2.47	5.89	3.65	6.53	4.25	3.09	2.05	1.42	1.37	0.568	1.90	7.56	2.20	2.49	14.7	6.97	2.68	1.94	2.37	2.20	4.64
Selenium (Se)-Total	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.092	<0.050	<0.10	<0.10	0.285	<0.050	<0.10	0.723	0.718	0.374	0.387	0.088	2.67	<0.050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.10	<0.10	1.19	1.69
Selenium (Se)-Total	mg/kg wwt	<0.010	<0.010	<0.010	<0.010	<0.010	0.036	<0.010	0.041	<0.020	0.108	<0.010	<0.020	0.272	0.288	0.164	0.155	0.037	1.23	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	0.986	1.16
Sodium (Na)-Total	mg/kg	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	55	<20	<20	<20	<20	22	42	<20	<20	<20	<20	<20	<20	<20	57	772	2610
Sodium (Na)-Total	mg/kg wwt	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	7.9	5.7	6.8	7.6	6.6	9.3	19.4	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	8.0	639	1790
Strontium (Sr)-Total	mg/kg	42.4	50.4	45.7	30.5	48.7	123	79.0	8.54	11.1	164	36.5	31.0	77.7	143	134	134	87.6	177	28.5	56.8	42.3	43.9	54.9	6.84	15.1	19.2	40.2	73.7
Strontium (Sr)-Total	mg/kg wwt	19.9	23.4	22.9	14.5	23.2	49.0	36.1	7.31	9.26	62.4	16.2	4.45	29.2	57.4	59.0	53.8	37.4	81.2	12.9	24.4	17.8	20.8	24.3	1.55	2.41	2.67	33.2	50.7
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0041	<0.0040	<0.0040	0.0044	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0069
Thallium (Tl)-Total	mg/kg	0.0028	0.0058	0.0058	<0.0020	<0.0020	<0.0020	0.0043	<0.0020	<0.0020	<0.0020	0.0026	<0.0020	<0.0020	0.0043	0.0062	0.0067	0.0089	0.0022	<0.0020	<0.0020	<0.0020	<0.0020	0.0031	<0.0020	<0.0020	<0.0020	0.0028	0.0068
Thallium (Tl)-Total	mg/kg wwt	0.00131	0.00270	0.00293	0.00066	0.00065	0.00065	0.00198	<0.00040	<0.00040	<0.00040	0.00118	<0.00040	0.00060	0.00174	0.00274	0.00269	0.00379	0.00099	<0.00040	0.00050	<0.00040	<0.00040	0.00136	<0.00040	<0.00040	<0.00040	0.00234	0.00469
Tin (Sn)-Total	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.50	0.18	<0.10	0.11	0.12	0.19	0.23	<0.10	0.13	<0.10	<0.10	<0.10	2.22	2.30	1.56	1.13	0.71
Tin (Sn)-Total	mg/kg wwt	<0.020	0.039	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.215	0.067	0.033	0.046	0.046	0.082	0.105	0.037	0.058	0.031	0.040	0.028	0.504	0.368	0.217	0.935	0.488
Uranium (U)-Total	mg/kg	0.0037	0.0038	0.0029	0.0041	<0.0020	0.0059	0.0021	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0077	0.0276	0.0318	0.0340	0.0460	0.0682	<0.0020	<0.0020	<0.0020	0.0024	0.0039	<0.0020	<0.0020	<0.0020	0.138	0.220
Uranium (U)-Total	mg/kg wwt	0.00175	0.00177	0.00146	0.00196	0.00092	0.00236	0.00094	<0.00040	<0.00040	0.00052	<0.00040	<0.00040	0.00291	0.0111	0.0139	0.0136	0.0196	0.0314	0.00050	<0.00040	<0.00040	0.00112	0.00173	<0.00040	<0.00040	<0.00040	0.114	0.151
Vanadium (V)-Total	mg/kg	0.89	0.95	0.65	0.98	0.42	0.22	0.17	<0.10	<0.10	0.26	<0.10	0.14	0.62	1.69	2.94	3.38	3.65	4.28	0.21	<0.10	<0.10	0.41	0.88	<0.10	<0.10	<0.10	6.34	12.0
Vanadium (V)-Total	mg/kg wwt	0.420	0.441	0.327	0.467	0.198	0.088	0.077	0.027	0.042	0.100	0.044	<0.020	0.233	0.678	1.29	1.35	1.56	1.97	0.097	<0.020	<0.020	0.196	0.389	<0.020	<0.020	<0.020	5.24	8.25
Zinc (Zn)-Total	mg/kg	30.5	53.8	43.0	52.0	57.5	7.98	57.2	35.4	40.4	159	38.4	8.4	72.9	33.6	31.4	31.0	65.4	66.7	45.2	58.1	51.9	42.4	54.9	4.5	16.6	5.8	37.9	30.2
Zinc (Zn)-Total	mg/kg wwt	14.3	24.9	21.5	24.8	27.3	3.18	26.2	30.3	33.6	60.5	17.0	1.21	27.4	13.5	13.8	12.4	27.9	30.7	20.4	25.0	21.8	20.1	24.3	1.01	2.66	0.80	31.3	20.8
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.22	0.43	0.31	0.39	0.27	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.55
Zirconium (Zr)-Total	mg/kg wwt	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.052	0.088	0.191	0.124	0.165	0.124	<0.040	<0.040	<0.040	<0.040	0.043	<0.040	<0.040	<0.040	0.136	0.378

Notes:
mg/kg = milligram per kilogram dry weight;

Table C-1 - Results of Plant Tissue Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	P1-Berries-1	P1-Berries-2	P9-Berries	P14-Berries	P20-Berries	P28-Berries	P5-Berries-1	P5-Berries-2	P21-Berries	P23-Berries	P25-Berries	Berries-1	Berries-2	Berries-3	Berries-4	Berries-5	Berries-6	Berries-6-DUP	P1-Spruce	P9-Spruce	P14-Spruce	P2-Spruce	P8-Spruce	P13-Spruce	P25-Spruce	P22-Spruce	P23-Spruce	P23-Spruce-DUP
Date Sampled		28-Jul-2015	28-Jul-2015	30-Jul-2015	31-Jul-2015	2-Aug-2015	3-Aug-2015	29-Jul-2015	29-Jul-2015	2-Aug-2015	2-Aug-2015	4-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	4-Aug-2015	4-Aug-2015	4-Aug-2015	28-Jul-2015	30-Jul-2015	31-Jul-2015	29-Jul-2015	30-Jul-2015	31-Jul-2015	4-Aug-2015	4-Aug-2015	4-Aug-2015	4-Aug-2015
ALS Sample ID		L1656480-1	L1656480-2	L1656480-5	L1656480-6	L1656480-7	L1656480-10	L1656480-3	L1656480-4	L1656480-8	L1656480-9	L1656480-12	L1667546-45	L1667546-46	L1667546-47	L1667546-48	L1656480-11	L1656480-39	L1656480-40	L1656480-25	L1656480-30	L1656480-32	L1656480-26	L1656480-29	L1656480-31	L1656480-33	L1656480-34	L1656480-35	L1656480-36
Physical Tests																													
% Moisture	%	88.4	85.0	81.6	78.7	85.2	71.3	82.1	85.6	83.0	72.3	84.1	73.4	59.8	53.9	71.4	71.5	84.4	81.2	52.2	53.6	52.7	50.4	48.4	55.3	56.5	52.7	58.5	57.1
Metals																													
Aluminum (Al)-Total	mg/kg	6	8	33	6	10	4	31	37	6	9	6	16	53	21	60	15	12	17	31	73	20	77	67	39	31	14	11	8
Aluminum (Al)-Total	mg/kg wwt	1	1	6	1	1	1	6	5	1	3	<1.0	4	21	9	17	4	2	3	15	34	9	38	35	17	13	7	5	3
Antimony (Sb)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Antimony (Sb)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0021	<0.0020	<0.0020	0.0024	<0.0020	<0.0020	<0.0020
Arsenic (As)-Total	mg/kg	<0.020	<0.020	<0.030	<0.020	<0.020	<0.020	0.03	0.03	<0.030	<0.020	<0.030	<0.030	0.04	<0.020	<0.030	<0.030	<0.030	<0.030	<0.020	0.02	<0.020	0.05	0.05	<0.020	0.05	<0.020	<0.020	<0.020
Arsenic (As)-Total	mg/kg wwt	<0.0040	<0.0040	<0.0060	<0.0040	<0.0040	<0.0040	0.005	0.005	<0.0060	<0.0040	<0.0060	<0.0060	0.016	0.006	0.008	<0.0060	<0.0060	<0.0060	0.007	0.009	0.005	0.024	0.027	0.008	0.020	0.009	<0.0040	<0.0040
Barium (Ba)-Total	mg/kg	18.3	9.5	69.2	3.6	2.2	3.6	7.7	15.6	5.1	11.8	8.0	5.5	1.6	15.0	48.3	5.7	7.0	5.6	37.9	50.1	40.3	115.0	65.1	60.0	38.3	77.7	90.4	76.0
Barium (Ba)-Total	mg/kg wwt	2.1	1.4	12.8	0.8	0.3	1.0	1.4	2.2	0.9	3.3	1.3	1.5	0.6	6.9	13.8	1.6	1.1	1.1	18.1	23.2	19.1	57.0	33.6	26.8	16.7	36.8	37.5	32.6
Beryllium (Be)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total	mg/kg	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	0.0025	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0033	0.0030	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	mg/kg	10.1	10.4	13.0	18.9	14.9	6.0	15.8	12.7	12.4	11.9	9.7	14.8	6.1	12.3	16.9	11.3	9.0	7.8	7.4	9.5	9.1	3.5	5.0	7.9	12.2	21.6	22.3	18.1
Boron (B)-Total	mg/kg wwt	1.2	1.6	2.4	4.0	2.2	1.7	2.8	1.8	2.1	3.3	1.5	3.9	2.5	5.7	4.8	3.2	1.4	1.5	3.5	4.4	4.3	1.7	2.6	3.5	5.3	10.2	9.3	7.8
Cadmium (Cd)-Total	mg/kg	0.0209	0.0089	0.023	0.582	0.047	0.236	0.0059	0.0106	0.05	0.0214	0.054	0.02	0.445	0.0153	0.459	<0.010	0.03	0.038	0.208	0.0542	0.0618	0.105	0.0139	0.0518	0.0074	0.11	0.0388	0.0249
Cadmium (Cd)-Total	mg/kg wwt	0.0024	0.0013	0.0042	0.124	0.007	0.0677	0.0011	0.0015	0.0084	0.0059	0.0085	0.0054	0.179	0.007	0.132	<0.0020	0.0047	0.0071	0.0992	0.0251	0.0293	0.052	0.0072	0.0231	0.0032	0.0521	0.0161	0.0107
Calcium (Ca)-Total	mg/kg	4840	1860	10400	9000	1500	876	1480	7870	3320	5660	2730	1860	1220	5630	2890	5270	1820	1850	4920	5910	4260	6590	10600	6870	6270	5010	7210	4530
Calcium (Ca)-Total	mg/kg wwt	562	278	1920	1920	222	251	266	1130	563	1570	434	493	492	2600	828	1500	283	349	2350	2740	2020	3260	5460	3070	2730	2370	2990	1940
Cesium (Cs)-Total	mg/kg	0.042	0.012	0.020	0.054	<0.0050	0.006	0.013	0.293	0.010	0.005	0.013	<0.0050	0.009	0.009	0.040	<0.0050	0.005	0.005	0.027	0.022	0.022	0.024	0.028	0.046	0.120	<0.0050	0.006	0.007
Cesium (Cs)-Total	mg/kg wwt	0.005	0.002	0.004	0.012	<0.0010	0.002	0.002	0.042	0.002	0.002	0.002	<0.0010	0.004	0.004	0.012	0.001	<0.0010	<0.0010	0.013	0.010	0.011	0.012	0.015	0.021	0.052	0.002	0.003	0.003
Chromium (Cr)-Total	mg/kg	<0.050	0.05	<0.20	<0.050	<0.050	<0.050	0.05	0.09	<0.20	<0.050	<0.20	<0.20	0.60	<0.050	<0.20	<0.20	<0.20	<0.20	<0.050	0.07	0.05	0.12	0.10	0.08	0.07	0.08	<0.050	<0.050
Chromium (Cr)-Total	mg/kg wwt	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010	<0.010	0.014	<0.040	<0.010	<0.040	<0.040	0.239	0.013	<0.040	<0.040	<0.040	<0.040	0.016	0.034	0.024	0.057	0.051	0.033	0.029	0.039	<0.010	<0.010
Cobalt (Co)-Total	mg/kg	<0.020	0.05	<0.020	0.09	<0.020	0.02	0.09	0.09	0.04	<0.020	<0.020	<0.020	0.05	0.03	0.10	0.07	<0.020	<0.020	0.07	0.06	0.08	0.11	0.15	0.19	0.06	0.12	0.09	0.06
Cobalt (Co)-Total	mg/kg wwt	<0.0040	0.01	<0.0040	0.02	<0.0040	0.01	0.02	0.01	0.01	0.00	<0.0040	<0.0040	0.02	0.01	0.03	0.02	<0.0040	<0.0040	0.03	0.03	0.04	0.05	0.08	0.09	0.02	0.05	0.04	0.03
Copper (Cu)-Total	mg/kg	4.1	5.5	3.4	9.0	3.6	2.3	4.7	5.2	4.9	7.1	3.7	5.9	8.3	2.9	15.3	5.8	2.8	4.5	4.2	3.7	2.8	5.6	5.0	3.2	2.9	2.5	3.2	2.3
Copper (Cu)-Total	mg/kg wwt	0.5	0.8	0.6	1.9	0.5	0.7	0.8	0.8	0.8	2.0	0.6	1.6	3.4	1.3	4.4	1.7	0.4	0.9	2.0	1.7	1.3	2.8	2.6	1.4	1.3	1.2	1.3	1.0
Iron (Fe)-Total	mg/kg	30	38	42	34	29	15	91	114	29	36	34	35	133	53	128	44	52	53	64	84	41	177	140	84	75	46	27	17
Iron (Fe)-Total	mg/kg wwt	3	6	8	7	4	4	16	16	5	10	5	9	54	25	37	13	8	10	30	39	19	88	72	37	33	22	11	7
Lead (Pb)-Total	mg/kg	<0.020	<0.020	<0.050	<0.020	<0.020	<0.020	<0.020	<0.020	<0.050	<0.020	<0.050	<0.050	0.022	<0.020	<0.050	<0.050	<0.050	<0.050	0.059	0.030	<0.020	0.109	0.052	0.023	0.032	<0.020	<0.020	<0.020
Lead (Pb)-Total	mg/kg wwt	<0.0040	<0.0040	<0.010	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.010	<0.0040	<0.010	<0.010	0.009	<0.0040	<0.010	<0.010	<0.010	<0.010	0.028	0.014	0.009	0.054	0.027	0.010	0.014	0.008	0.007	<0.0040
Lithium (Li)-Total	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium (Li)-Total	mg/kg wwt	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total	mg/kg	1590	1350	1700	3320	1090	606	804	1350	1020	2190	831	973	762	1420	1360	1850	621	768	731	796	772	959	1160	1030	992	558	808	683
Magnesium (Mg)-Total	mg/kg wwt	185	202	313	708	161	174	144	194	173	608	132	258	306	655	390	528	97	145	349	369	366	475	598	461	431	264	336	293
Manganese (Mn)-Total	mg/kg	39	15	15	35	4	9	4	15	3	26	3	3	11	96	894	31	3	4	562	427	160	538	357	396	221	275	214	173
Manganese (Mn)-Total	mg/kg wwt	5	2	3	7	1	3	1	2	0	7	0	1	4	44	256	9	0	1	269	198	76	266	184	177	96	130	89	74
Mercury (Hg)-Total	mg/kg	0.0	0.0	0.0	0.0	0.0	0.0	<0.0050	<0.0050	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mercury (Hg)-Total	mg/kg wwt	<0.0010	<0.0010	0.0	0.0	<0.0010	0.0	<0.0010	<0.0010	0.0	0.0	<0.0010	-	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Molybdenum (Mo)-Total	mg/kg	0.3	0.2	0.1	2.0	0.1	0.4	0.1	0.2	0.1	1.4	0.1	0.1	0.5	0.1	0.4	0.6	0.1	0.1	0.1	0.0	0.4	0.1	0.1	0.3	0.0	0.3	0.7	0.4
Molybdenum (Mo)-Total	mg/kg wwt	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.3	0.2
Nickel (Ni)-Total	mg/kg	0.58	3.88	1.10	7.23	0.61	1.37	0.92	0.53	1.09	0.25	<0.20	2.21	1.30	0.29	1.29	1.13	0.65	1.21	1.31	2.21	0.87	0.48	1.14	0.25	0.72	1.21	0.33
Nickel (Ni)-Total	mg/kg wwt	0.067	0.581	0.203	1.540	0.090	0.394	0.164	0.077	0.184	0.070	<0.040	0.587	0.523	0.133	0.369	0.322	0.102	0.122	0.579	0.609	1.050	0.430	0.247	0.511	0.109	0.341	0.503	0.143
Phosphorus (P)-Total	mg/kg	2800	2620	2120	5340	1960	1750	1360	1840	1550	3410	1640	1600	2610	1570	2110	2380	1170	1540	1970	1610	1770	1110	1530	1940	1930	1590	1840	1700
Phosphorus (P)-Total	mg/kg wwt	325	393	391	1140	291	501	244	265	263	946	261	426	1050	726	605	678	183	289	939	747	836	551	792	865	838	754	763	730
Potassium (K)-Total	mg/kg	20300	16000	12500	36500	12400	8220	9430	11900	12100	10400	8430	7320	8790	12300	10500	6990	11300	9230	5620	6480	6520	3550	4000	6510	6930	6020	7620	8720
Potassium (K)-Total	mg/kg wwt	2360	2400	2310	7780	1830	2360	1690	1710	2050	2890	1340	1940	3540	5670	3010	2000	1760	1740	2680	3010	3090	1760	2060	2910	3010	2850	3160	3740
Rubidium (Rb)-Total	mg/kg	44.50	33.40	15.60	119.00	30.60	9.24	24.90	43.60	38.20	8.88	21.50	18.50	11.30	5.68	20.10	6.00	24.30	22.00	10.00	6.16	9.49	2.94	3.53	10.80	9.59	4.04	4.93	5.20
Rubidium (Rb)-Total	mg/kg wwt	5.17	5.00	2.88	25.40	4.52	2.65	4.46	6.28	6.48	2.46	3.42	4.90	4.56	2.62	5.75	1.71	3.79	4.14	4.78	2.85	4.49	1.46	1.82	4.82	4.17	1.91	2.05	2.23
Selenium (Se)-Total	mg/kg	<0.050	<0.050	<0.10	<0.050	<0.050	<0.050	<0.050	0.05	0.13	<0.050	<0.10	<0.10	<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Selenium (Se)-Total	mg/kg wwt	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	0.02	<0.010	<0.020	<0.020	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	0.02	<0.010	<0.010	<0.010	<0.010
Sodium (Na)-Total	mg/kg	22	20	<20	<20	<20	<20	31	24	<20	<20	<20	<20	29	<20	123	<20	<20	<20	35	28	<20	27	737	<20	<20	<20	<20	<20
Sodium (Na)-Total	mg/kg wwt	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	6	<4.0	<4.0	<4.0	<4.0	5	12	8	35	<4.0	<4.0	<4.0	17	13	<4.0	14	380	5	7	6	6	8
Strontium (Sr)-Total	mg/kg	33.8	13.4	88.4	46.6	5.8	5.4	10.6	45.8	15.7	24.8	13.2	10.0	7.5	38.0	10.4	30.2	11.0	9.6	22.4	23.9	41.2	77.3	76.9	50.5	36.3	31.6	39.2	31.7
Strontium (Sr)-Total	mg/kg wwt	3.9	2.0	16.3	9.9	0.9	1.6	1.9	6.6	2.7	6.9	2.1	2.7	3.0	17.5	3.0	8.6	1.7	1.8	10.7	11.1	19.5	38.3	39.7	22.6	15.8	15.0	16.3	13.6
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0053	0.0064	0.0035	0.0051	<0.0020	0.0143	<0.0020	<0.0020	<0.0020	<0.0020
Thallium (Tl)-Total	mg/kg wwt	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.00253	0.00297	0.00166	0.00254	0.00084	0.00641	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)-Total	mg/kg	3.76	4.31	0.29	0.20	6.59	0.58	4.27	1.71	1.02	1.68	1.04	1.97	0.44	<0.10	1.62	0.82	1.06	0.91	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total	mg/kg wwt	0.437	0.645	0.054	0.043	0.976	0.166	0.766	0.246	0.173	0.465	0.166	0.523	0.176	0.026	0.464	0.235	0.165	0.171	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)-Total	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.004	0.003	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Uranium (U)-Total	mg/kg wwt	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	0.001	0.000	0.000	<0.00040	<0.00040	<0.00040	0.001	0.001	<0.00040	0.002	0.001	0.001	0.001	<0.00040	<0.00040	<0.00040
Vanadium (V)-Total	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.3	0.4	<0.10	<0.10	<0.10	<0.10	0.4	0.2	0.3	<0.10	0.1	0.1	0.2	0.2	<0.10	0.6	0.4	0.3	0.2	<0.10	<0.10	<0.10
Vanadium (V)-Total	mg/kg wwt	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.05	0.05	<0.020	<0.020	<0.020	<0.020	0.18	0.08	0.09	0.03	0.02	0.02	0.08	0.11	0.04	0.29	0.18	0.12	0.08	0.04	<0.020	<0.020
Zinc (Zn)-Total	mg/kg	15.3	13.7	6.5	21.8	9.7	7.7	8.6	8.7	5.2	13.5	7.7	19.7	11.4	5.4	28.4	10.9	5.0	7.5	46.4	46.7	43.3	54.9	47.0	39.0	53.7	35.8	53.7	43.9
Zinc (Zn)-Total	mg/kg wwt	1.8	2.1	1.2	4.7	1.4	2.2	1.5	1.3	0.9	3.7	1.2	5.2	4.6	2.5	8.1	3.1	0.8	1.4	22.2	21.6	20.5	27.2	24.2	17.4	23.3	16.9	22.3	18.8
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zirconium (Zr)-Total	mg/kg wwt	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.061	<0.040	<0.040	<0.040	0.064	0.040	<0.040	0.063	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

Notes:
mg/kg = milligram per kilogram dry weight;

Table C-1 - Results of Plant Tissue Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	Spruce - 1	Willow-1	Willow-2	Willow-3	Willow-3-DUP	Willow-4	Willow-5	Willow-6	Willow-6-DUP	Willow-7	Willow-8	Willow-9	Willow-10	P5-Willow	Willow Seedling-8	Willow Seedling-9	Willow Seedling-1	Willow Wattle-1	Willow Stake-1	Willow Seedling-2	Willow Wattle-2	Willow Stake-2	Willow Seedling-3	Willow Wattle-3	Willow Stake-3	Willow Seedling-4	Willow Wattle-4	Willow Wattle-4-DUP
Date Sampled		4-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	29-Jul-2015	4-Aug-2015	4-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015
ALS Sample ID		L1656480-43	L1667546-33	L1667546-34	L1667546-35	L1667546-36	L1667546-37	L1667546-38	L1667546-39	L1667546-40	L1667546-41	L1667546-42	L1667546-43	L1667546-44	L1656480-28	L1656480-41	L1656480-42	L1667546-13	L1667546-14	L1667546-15	L1667546-16	L1667546-17	L1667546-18	L1667546-19	L1667546-20	L1667546-21	L1667546-22	L1667546-23	L1667546-26
Physical Tests																													
% Moisture	%	54.9	57.5	60.3	64.8	62.3	61.4	61.2	57.7	57.9	55.0	57.9	58.1	58.3	69.6	58.6	54.6	55.0	63.0	57.8	57.0	58.0	56.8	60.0	63.5	57.3	59.8	62.9	62.3
Metals																													
Aluminum (Al)-Total	mg/kg	28	24	90	103	88	41	90	41	49	26	37	117	21	72	361	618	193	139	260	321	293	175	245	99	112	580	160	179
Aluminum (Al)-Total	mg/kg wwt	13	10	36	36	33	16	35	17	20	12	16	49	9	22	150	280	87	51	110	138	123	76	98	36	48	233	59	67
Antimony (Sb)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	0.017	0.026	<0.010	0.054	0.016	0.026	0.016	<0.010	0.017	<0.010	0.011	0.027	0.014	0.014
Antimony (Sb)-Total	mg/kg wwt	<0.0020	<0.0020	0.0025	0.0027	0.0032	<0.0020	0.0051	<0.0020	<0.0020	0.0051	0.0024	<0.0020	<0.0020	<0.0020	0.0070	0.0119	0.0043	0.0200	0.0066	0.0114	0.0066	0.0041	0.0068	0.0023	0.0048	0.0107	0.0052	0.0052
Arsenic (As)-Total	mg/kg	<0.020	0.02	0.09	0.08	0.09	0.05	0.07	0.04	0.04	0.06	0.03	0.06	0.06	0.08	0.39	0.67	0.26	0.20	0.36	0.60	0.32	0.28	0.46	0.16	0.33	0.54	0.83	0.60
Arsenic (As)-Total	mg/kg wwt	0.007	0.009	0.035	0.029	0.032	0.019	0.026	0.016	0.017	0.029	0.011	0.023	0.024	0.023	0.161	0.306	0.115	0.076	0.152	0.258	0.132	0.120	0.182	0.059	0.142	0.217	0.308	0.225
Barium (Ba)-Total	mg/kg	55.1	10.0	5.5	18.0	17.8	93.3	51.2	38.2	38.6	10.9	9.1	2.8	2.3	13.5	11.4	20.6	8.5	5.6	33.2	16.0	5.9	4.7	8.9	12.8	24.1	14.3	6.4	6.4
Barium (Ba)-Total	mg/kg wwt	24.9	4.3	2.2	6.3	6.7	36.0	19.9	16.2	16.2	4.9	3.8	1.2	0.9	4.1	4.7	9.3	3.8	2.1	14.0	6.9	2.5	2.0	3.6	4.7	10.3	5.8	2.4	2.4
Beryllium (Be)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	0.020	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	0.016	<0.010	<0.010
Beryllium (Be)-Total	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0053	0.0091	0.0021	<0.0020	0.0035	0.0051	0.0036	0.0026	0.0036	<0.0020	<0.0020	0.0063	0.0020	0.0021
Bismuth (Bi)-Total	mg/kg	<0.010	0.011	0.028	0.024	0.033	0.019	0.148	0.086	0.059	<0.010	1.37	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.011	0.511	0.02	0.018	0.026	0.014	0.024	0.271	0.075	0.021
Bismuth (Bi)-Total	mg/kg wwt	<0.0020	0.0046	0.0112	0.0086	0.0123	0.0073	0.0574	0.0364	0.0248	0.0024	0.5780	0.0049	0.0024	<0.0020	<0.0020	0.0028	0.0035	0.0039	0.0046	0.2200	0.0083	0.0077	0.0105	0.0050	0.0103	0.1090	0.0278	0.0081
Boron (B)-Total	mg/kg	13.1	24.1	33.0	68.1	79.6	47.6	25.9	54.4	54.3	40.7	31.2	22.8	58.6	27.6	10.5	11.4	19.9	24.6	12.7	60.9	24.4	20.0	19.5	46.9	57.8	19.9	76.9	74.6
Boron (B)-Total	mg/kg wwt	5.9	10.2	13.1	24.0	30.0	18.3	10.0	23.0	22.8	18.3	13.1	9.6	24.4	8.4	4.4	5.2	8.9	9.1	5.4	26.2	10.2	8.7	7.8	17.1	24.7	8.0	28.5	28.2
Cadmium (Cd)-Total	mg/kg	0.0184	1.75	2.29	9.34	9.74	4.83	3.16	1.72	1.94	1.93	4.92	2.82	0.383	0.565	2.45	0.61	0.216	0.248	1.69	0.823	0.366	0.36	1.3	1.01	0.968	0.621	0.4	0.345
Cadmium (Cd)-Total	mg/kg wwt	0.0083	0.744	0.911	3.29	3.67	1.86	1.23	0.727	0.816	0.871	2.07	1.18	0.16	0.172	1.01	0.277	0.0973	0.092	0.715	0.354	0.153	0.156	0.522	0.369	0.413	0.25	0.148	0.13
Calcium (Ca)-Total	mg/kg	5880	22000	20200	24000	24800	24500	20900	20900	21100	20900	32500	19200	17200	10700	10700	13700	7810	12500	22200	17700	9210	9260	11100	20700	17900	15400	15800	16000
Calcium (Ca)-Total	mg/kg wwt	2650	9370	8010	8440	9320	9430	8090	8860	8860	9400	13700	8020	7160	3260	4430	6210	3510	4640	9350	7630	3860	4010	4430	7530	7630	6200	5850	6040
Cesium (Cs)-Total	mg/kg	0.042	0.008	0.027	0.018	0.017	0.056	0.014	0.019	0.021	0.058	0.006	0.016	0.006	0.024	<0.0020	0.139	0.072	0.134	0.059	0.054	0.060	0.039	0.078	0.036	0.030	0.087	0.061	0.069
Cesium (Cs)-Total	mg/kg wwt	0.019	0.004	0.011	0.006	0.006	0.022	0.005	0.008	0.009	0.026	0.003	0.007	0.003	0.042	0.030	0.061	0.026	0.053	0.056	0.023	0.025	0.017	0.031	0.013	0.013	0.035	0.023	0.026
Chromium (Cr)-Total	mg/kg	0.07	0.06	0.17	0.22	0.19	0.17	0.19	0.11	0.12	0.07	0.11	0.25	0.05	0.10	0.75	1.18	0.38	0.29	0.55	0.46	0.65	0.27	0.55	0.16	0.24	1.21	0.35	0.36
Chromium (Cr)-Total	mg/kg wwt	0.033	0.024	0.066	0.075	0.072	0.067	0.073	0.046	0.051	0.030	0.046	0.103	0.021	0.032	0.308	0.535	0.171	0.107	0.234	0.197	0.271	0.117	0.221	0.060	0.101	0.487	0.130	0.136
Cobalt (Co)-Total	mg/kg	0.07	0.50	1.00	1.09	1.20	0.39	0.47	0.46	0.47	2.71	1.35	0.50	0.64	0.76	0.50	0.76	0.31	0.39	0.79	0.61	0.70	0.51	0.65	0.79	0.45	1.11	1.63	1.25
Cobalt (Co)-Total	mg/kg wwt	0.03	0.21	0.40	0.38	0.45	0.15	0.18	0.20	0.20	1.22	0.57	0.21	0.27	0.23	0.21	0.34	0.14	0.15	0.33	0.26	0.29	0.22	0.26	0.29	0.19	0.45	0.60	0.47
Copper (Cu)-Total	mg/kg	2.9	4.2	7.5	7.3	7.4	4.8	5.0	3.9	3.8	4.8	3.7	4.7	5.6	14.8	13.6	14.7	3.7	5.2	7.3	16.5	8.7	5.4	6.9	7.5	8.2	10.4	9.4	9.7
Copper (Cu)-Total	mg/kg wwt	1.3	1.8	3.0	2.6	2.8	1.9	1.9	1.7	1.6	2.2	1.6	2.0	2.4	4.5	5.7	6.7	1.7	1.9	3.1	7.1	3.7	2.3	2.8	2.7	3.5	4.2	3.5	3.7
Iron (Fe)-Total	mg/kg	69	72	202	269	256	107	182	89	104	94	80	205	62	248	812	1350	354	313	587	695	617	371	529	240	245	1070	321	357
Iron (Fe)-Total	mg/kg wwt	31	31	80	95	97	41	70	38	44	42	34	86	26	75	336	614	159	116	248	299	259	160	212	87	105	431	119	135
Lead (Pb)-Total	mg/kg	0.028	0.035	0.072	0.066	0.068	0.038	0.052	0.027	0.028	0.029	0.025	0.065	<0.020	0.048	0.171	0.303	0.162	0.091	0.203	0.162	0.161	0.123	0.188	0.071	0.082	0.285	0.109	0.121
Lead (Pb)-Total	mg/kg wwt	0.013	0.015	0.029	0.023	0.026	0.015	0.020	0.011	0.012	0.013	0.010	0.027	0.008	0.015	0.071	0.138	0.073	0.034	0.086	0.070	0.068	0.053	0.075	0.026	0.035	0.114	0.040	0.046
Lithium (Li)-Total	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	1.18	0.94
Lithium (Li)-Total	mg/kg wwt	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.13	0.26	<0.10	<0.10	0.15	0.24	0.17	0.12	0.13	0.10	<0.10	0.23	0.44	0.36
Magnesium (Mg)-Total	mg/kg	867	1170	1930	1690	1710	3450	2810	2620	2540	3330	2250	1630	2210	2160	2490	2870	1860	3920	5240	4260	2420	2540	2870	5120	4190	3180	4360	4440
Magnesium (Mg)-Total	mg/kg wwt	391	499	765	595	645	1330	1090	1110	1070	1500	944	684	921	656	1030	1300	835	1450	2210	1830	1020	1100	1150	1870	1790	1280	1620	1680
Manganese (Mn)-Total	mg/kg	256	49	75	68	64	27	104	42	40	163	78	79	38	164	53	92	68	196	328	127	90	202	113	167	279	199	111	113
Manganese (Mn)-Total	mg/kg wwt	116	21	30	24	24	10	40	18	17	74	33	33	16	50	22	42	31	73	138	55	38	87	45	61	119	80	41	43
Mercury (Hg)-Total	mg/kg	0.0	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)-Total	mg/kg wwt	0.0	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	mg/kg	0.3	0.1	0.4	0.1	0.2	0.2	0.3	0.1	0.1	0.2	0.1	0.3	0.4	1.9	0.4	0.8	0.3	0.5	0.5	1.7	0.7	2.9	0.6	1.0	0.6	0.7	2.7	2.0
Molybdenum (Mo)-Total	mg/kg wwt	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.2	0.6	0.2	0.4	0.1	0.2	0.2	0.7	0.3	1.2	0.3	0.4	0.3	0.3	1.0	0.8
Nickel (Ni)-Total	mg/kg	1.06	1.58	3.25	4.37	4.47	3.47	1.41	1.29	1.39	1.27	5.75	3.32	1.97	1.55	2.38	1.76	0.75	0.94	2.08	1.38	1.58	0.50	2.00	2.32	1.66	2.54	3.03	2.56
Nickel (Ni)-Total	mg/kg wwt	0.478	0.673	1.290	1.540	1.680	1.340	0.547	0.544	0.584	0.571	2.420	1.390	0.821	0.470	0.987	0.798	0.336	0.348	0.880	0.594	0.662	0.218	0.802	0.844	0.709	1.020	1.120	0.965
Phosphorus (P)-Total	mg/kg	1600	1550	1790	1790	1890	1730	3040	2110	1970	1340	2040	2020	1650	3940	1450	2050	603	895	1600	1110	968	996	1140	988	1110	1460	1210	1290
Phosphorus (P)-Total	mg/kg wwt	722	659	709	631	711	668	1180	894	829	605	857	847	689	1200	601	932	271	331	674	478	406	431	457	360	473	587	449	488
Potassium (K)-Total	mg/kg	8450	7160	11900	11100	10400	8770	9780	7060	7500	4010	10900	10400	12400	18700	9290	9290	3340	4810	4920	5520	9430	7190	6080	8540	5840	7890	9680	11300
Potassium (K)-Total	mg/kg wwt	3810	3040	4740	3900	3920	3380	3790	2990	3150	1810	4570	4350	5170	5670	3850	4220	1500	1780	2080	2370	3960	3110	2440	3110	2490	3170	3590	4250
Rubidium (Rb)-Total	mg/kg	10.60	6.97	13.80	7.82	6.71	5.68	2.82	3.44	3.85	6.40	3.42	5.54	9.26	29.50	6.17	7.70	2.95	5.04	5.92	2.32	7.49	6.50	4.36	6.77	2.96	3.25	6.36	7.43
Rubidium (Rb)-Total	mg/kg wwt	4.80	2.96	5.46	2.75	2.53	2.19	1.09	1.45	1.62	2.88	1.44	2.32	3.86	8.97	2.55	3.49	1.33	1.87	2.50	1.00	3.14	2.81	1.75	2.47	1.26	1.31	2.36	2.80
Selenium (Se)-Total	mg/kg	<0.050	0.10	0.28	0.79	0.93	0.47	<0.050	<0.050	<0.050	<0.050	0.19	0.20	0.05	0.12	0.09	<0.050	0.15	0.55	<0.050	0.76	0.79	0.23	2.22	0.39	0.70	0.09	1.65	1.61
Selenium (Se)-Total	mg/kg wwt	<0.010	0.04	0.11	0.28	0.35	0.18	0.02	0.01	0.02	0.02	0.08	0.08	0.02	0.04	0.04	0.02	0.07	0.20	0.02	0.33	0.33	0.10	0.89	0.14	0.30	0.04	0.61	0.61
Sodium (Na)-Total	mg/kg	24	61	29	58	44	35	38	51	29	30	52	<20	32	111	45	62	<20	<20	32	120	38	79	55	47	28	70	79	50
Sodium (Na)-Total	mg/kg wwt	11	26	11	21	16	13	15	22	12	13	22	7	13	34	19	28	9	8	14	52	16	34	22	17	12	28	29	19
Strontium (Sr)-Total	mg/kg	33.9	109.0	94.1	117.0	125.0	110.0	152.0	124.0	122.0	91.6	152.0	62.8	54.7	79.2	57.6	69.2	39.4	108.0	136.0	111.0	54.9	98.2	47.0	149.0	120.0	54.7	179.0	168.0
Strontium (Sr)-Total	mg/kg wwt	15.3	46.4	37.3	41.1	47.0	42.2	58.9	52.4	51.5	41.2	64.1	26.3	22.8	24.1	23.9	31.4	17.7	40.0	57.4	47.6	23.1	42.5	18.8	54.4	51.1	22.0	66.4	63.3
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	mg/kg	0.0052	<0.0020	0.0086	0.0030	0.0030	0.0035	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0054	0.0108	0.0048	0.0027	0.0053	0.0058	0.0029	<0.0020	0.0116	0.0029	0.0050	0.0076	0.0048	0.0036
Thallium (Tl)-Total	mg/kg wwt	0.00237	<0.00040	0.00341	0.00106	0.00113	0.00135	<0.00040	0.00056	0.00051	0.00043	<0.00040	<0.00040	<0.00040	<0.00040	0.00225	0.00490	0.00214	0.00099	0.00223	0.00248	0.00122	0.00062	0.00465	0.00105	0.00121	0.00306	0.00179	0.00136
Tin (Sn)-Total	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total	mg/kg wwt	<0.020	<0.020	<0.020	<0.020	<0.020	0.049	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.025	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)-Total	mg/kg	<0.0020	<0.0020	0.005	0.006	0.006	0.002	0.004	<0.0020	<0.0020	<0.0020	<0.0020	0.005	<0.0020	0.004	0.024	0.034	0.009	0.007	0.013	0.058	0.028	0.020	0.049	0.008	0.027	0.027	0.017	0.017
Uranium (U)-Total	mg/kg wwt	0.001	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.010	0.015	0.004	0.003	0.006	0.025	0.012	0.009	0.020	0.003	0.011	0.011	0.006	0.006
Vanadium (V)-Total	mg/kg	0.2	<0.10	0.5	0.5	0.4	0.2	0.4	0.2	0.2	0.1	0.2	0.4	<0.10	0.6	2.3	3.7	0.9	0.8	1.4	2.3	1.6	1.1	1.4	0.7	0.6	2.6	0.8	0.9
Vanadium (V)-Total	mg/kg wwt	0.09	0.04	0.18	0.18	0.16	0.09	0.16	0.08	0.09	0.05	0.07	0.17	0.04	0.19	0.95	1.67	0.39	0.28	0.59	1.00	0.65	0.47	0.54	0.24	0.24	1.04	0.28	0.33
Zinc (Zn)-Total	mg/kg	44.1	36.8	75.3	111.0	112.0	62.4	128.0	25.2	25.7	25.1	68.5	84.5	11.1	29.6	103.0	97.6	8.4	7.5	55.5	40.9	14.8	9.2	46.9	26.4	36.6	27.5	16.3	13.0
Zinc (Zn)-Total	mg/kg wwt	19.9	15.6	29.9	39.0	42.3	24.1	49.8	10.7	10.8	11.3	28.8	35.4	4.6	9.0	42.6	44.3	3.8	2.8	23.5	17.6	6.2	4.0	18.8	9.6	15.6	11.0	6.1	4.9
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.25	0.46	<0.20	<0.20	<0.20	0.23	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zirconium (Zr)-Total	mg/kg wwt	<0.040	<0.040	<0.040	<0.040	0.044	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.102	0.211	0.044	0.040	0.073	0.098	0.051	0.054	<0.040	<0.040	<0.040	0.048	0.052	<0.040

Notes:
mg/kg = milligram per kilogram dry weight;

Table C-1 - Results of Plant Tissue Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	Willow Stake-4	Willow Stake-4-DUP	Willow Stake-5	Willow Seedling-5	Willow Wattle-5	Willow Stake-6	Willow Wattle-6	Willow Seedling-6	Rye Grass-1	Rye Grass-2	Rye Grass-3	Rye Grass-4	Rye Grass-4-DUP	Rye Grass-5	Rye Grass-6	Rye Grass-7	Rye Grass-7-DUP	Rye Grass-8	Rye Grass-9	Rye Grass-10	Rye Grass-11
Date Sampled		25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	29-Jul-2015
ALS Sample ID		L1667546-24	L1667546-25	L1667546-27	L1667546-28	L1667546-29	L1667546-30	L1667546-31	L1667546-32	L1667546-1	L1667546-2	L1667546-3	L1667546-4	L1667546-5	L1667546-6	L1667546-7	L1667546-8	L1667546-9	L1667546-10	L1667546-11	L1667546-12	L1656480-27
Physical Tests																						
% Moisture	%	60.8	60.9	58.7	56.3	60.1	59.5	55.5	58.1	67.4	52.9	65.6	61.7	53.2	66.6	76.2	71.1	72.3	62.5	65.0	61.2	58.7
Metals																						
Aluminum (Al)-Total	mg/kg	344	367	250	300	109	199	177	314	207	19	17	155	31	449	37	31	21	54	9	199	39
Aluminum (Al)-Total	mg/kg wwt	135	144	103	131	43	81	79	132	68	9	6	59	15	150	9	9	6	20	3	77	16
Antimony (Sb)-Total	mg/kg	0.015	0.016	0.022	0.026	0.010	0.025	<0.010	0.021	0.013	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Antimony (Sb)-Total	mg/kg wwt	0.0058	0.0064	0.0091	0.0111	0.0040	0.0100	0.0038	0.0089	0.0044	<0.0020	<0.0020	0.0023	<0.0020	0.0048	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0026	<0.0020
Arsenic (As)-Total	mg/kg	0.60	0.64	0.53	0.46	0.16	1.09	0.15	0.40	0.42	0.04	0.03	0.14	0.03	0.34	0.05	0.04	0.03	0.08	0.07	0.10	0.04
Arsenic (As)-Total	mg/kg wwt	0.234	0.248	0.218	0.201	0.065	0.439	0.068	0.168	0.138	0.018	0.009	0.053	0.015	0.113	0.013	0.012	0.009	0.029	0.023	0.039	0.015
Barium (Ba)-Total	mg/kg	9.8	11.0	7.7	7.0	3.3	8.0	3.9	11.6	32.7	29.8	49.1	41.9	21.7	24.8	73.6	21.2	13.2	44.3	19.9	29.7	27.8
Barium (Ba)-Total	mg/kg wwt	3.9	4.3	3.2	3.1	1.3	3.3	1.7	4.9	10.7	14.1	16.9	16.0	10.1	8.3	17.5	6.1	3.7	16.6	7.0	11.5	11.5
Beryllium (Be)-Total	mg/kg	0.012	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)-Total	mg/kg wwt	0.0045	0.0048	0.0034	0.0041	<0.0020	0.0025	0.0021	0.0035	0.0024	<0.0020	<0.0020	0.0028	<0.0020	0.0057	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	<0.0020
Bismuth (Bi)-Total	mg/kg	0.012	0.015	0.497	1.07	0.533	0.976	<0.010	0.573	0.052	0.026	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	mg/kg wwt	0.0045	0.0058	0.2050	0.4680	0.2130	0.3950	0.0030	0.2400	0.0171	0.0124	<0.0020	<0.0020	<0.0020	0.0023	<0.0020	0.0022	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	mg/kg	48.3	49.7	53.8	36.0	30.1	52.3	28.7	25.9	3.6	2.5	2.2	1.6	1.8	2.6	2.6	2.0	1.2	2.3	2.2	4.6	2.6
Boron (B)-Total	mg/kg wwt	18.9	19.4	22.2	15.7	12.0	21.2	12.8	10.9	1.2	1.2	0.8	0.6	0.8	0.9	0.6	0.6	0.3	0.9	0.8	1.8	1.1
Cadmium (Cd)-Total	mg/kg	2.51	2.94	0.577	1.7	0.436	0.569	0.153	1.64	0.137	0.105	0.211	0.102	0.0528	0.0716	0.128	0.17	0.113	0.354	0.0857	0.168	0.351
Cadmium (Cd)-Total	mg/kg wwt	0.982	1.15	0.239	0.744	0.174	0.23	0.0681	0.687	0.0445	0.0495	0.0725	0.0392	0.0247	0.0239	0.0304	0.0491	0.0313	0.133	0.03	0.0654	0.145
Calcium (Ca)-Total	mg/kg	13200	14000	15200	11000	11100	13900	11600	12600	3230	1240	3340	1850	1150	1580	5450	2260	1230	2300	2520	2710	2030
Calcium (Ca)-Total	mg/kg wwt	5170	5500	6280	4790	4440	5610	5150	5290	1050	586	1150	707	540	527	1300	654	341	861	882	1050	837
Cesium (Cs)-Total	mg/kg	0.051	0.063	0.063	0.091	0.037	0.024	0.063	0.075	0.030	<0.0050	0.009	0.186	0.165	0.057	<0.0050	0.011	0.005	0.007	0.015	0.076	0.037
Cesium (Cs)-Total	mg/kg wwt	0.020	0.020	0.026	0.040	0.015	0.010	0.028	0.031	0.010	0.002	0.003	0.071	0.077	0.019	<0.0010	0.003	0.002	0.003	0.005	0.029	0.015
Chromium (Cr)-Total	mg/kg	0.50	0.51	0.52	0.69	0.20	0.38	0.41	0.77	0.29	0.07	0.05	0.14	0.06	0.29	0.10	0.09	0.07	0.08	<0.050	0.39	<0.050
Chromium (Cr)-Total	mg/kg wwt	0.196	0.199	0.214	0.301	0.079	0.155	0.181	0.323	0.096	0.032	0.018	0.054	0.026	0.097	0.025	0.027	0.020	0.029	<0.010	0.151	0.017
Cobalt (Co)-Total	mg/kg	0.51	0.53	0.86	0.80	0.39	0.51	1.04	0.56	0.19	0.02	<0.020	0.18	0.05	0.40	0.07	0.04	0.02	0.05	<0.020	0.14	0.10
Cobalt (Co)-Total	mg/kg wwt	0.20	0.21	0.36	0.35	0.15	0.21	0.46	0.23	0.06	0.01	0.01	0.07	0.02	0.13	0.02	0.01	0.01	0.02	0.01	0.05	0.04
Copper (Cu)-Total	mg/kg	19.0	19.4	8.3	10.9	8.1	8.3	6.3	8.0	14.3	5.4	5.8	12.6	5.6	27.6	7.1	6.2	3.4	5.0	4.9	7.5	8.4
Copper (Cu)-Total	mg/kg wwt	7.4	7.6	3.4	4.8	3.3	3.4	2.8	3.4	4.7	2.6	2.0	4.8	2.6	9.2	1.7	1.8	0.9	1.9	1.7	2.9	3.5
Iron (Fe)-Total	mg/kg	798	821	505	617	279	448	350	572	496	101	67	355	97	1030	87	109	65	101	37	408	83
Iron (Fe)-Total	mg/kg wwt	312	321	209	270	111	181	156	240	162	48	23	136	46	345	21	31	18	38	13	159	34
Lead (Pb)-Total	mg/kg	0.171	0.167	0.159	0.174	0.062	0.118	0.090	0.151	0.423	0.030	0.030	0.073	0.022	0.121	0.037	0.026	0.021	0.036	0.053	0.069	0.021
Lead (Pb)-Total	mg/kg wwt	0.067	0.065	0.066	0.076	0.025	0.048	0.040	0.064	0.138	0.014	0.010	0.028	0.010	0.041	0.009	0.008	0.006	0.014	0.019	0.027	0.009
Lithium (Li)-Total	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium (Li)-Total	mg/kg wwt	0.14	0.14	0.17	0.21	<0.10	0.25	<0.10	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total	mg/kg	2090	2070	3580	3230	3110	4070	2470	3150	984	808	813	811	500	899	1130	665	409	669	811	1070	1000
Magnesium (Mg)-Total	mg/kg wwt	818	809	1480	1410	1240	1650	1100	1320	321	381	280	310	234	300	270	192	113	251	284	414	414
Manganese (Mn)-Total	mg/kg	127	137	188	117	104	295	162	92	33	17	19	40	29	58	61	47	26	65	24	25	83
Manganese (Mn)-Total	mg/kg wwt	50	54	78	51	42	119	72	39	11	8	7	15	14	19	15	14	7	24	8	10	34
Mercury (Hg)-Total	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0050
Mercury (Hg)-Total	mg/kg wwt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0
Molybdenum (Mo)-Total	mg/kg	2.4	2.5	0.9	0.6	0.5	1.5	0.3	0.8	5.8	2.4	2.8	0.8	0.6	1.8	1.2	3.2	2.2	1.5	2.1	8.6	6.7
Molybdenum (Mo)-Total	mg/kg wwt	0.9	1.0	0.4	0.2	0.2	0.6	0.1	0.4	1.9	1.1	0.9	0.3	0.3	0.6	0.3	0.9	0.6	0.6	0.7	3.3	2.8
Nickel (Ni)-Total	mg/kg	2.00	2.94	2.13	2.58	1.30	1.22	1.12	2.01	1.55	0.80	<0.20	0.27	<0.20	0.40	0.36	0.21	<0.20	<0.20	<0.20	0.37	0.41
Nickel (Ni)-Total	mg/kg wwt	0.783	1.150	0.880	1.130	0.520	0.494	0.498	0.842	0.506	0.378	0.050	0.102	0.064	0.133	0.085	0.060	<0.040	0.042	<0.040	0.142	0.167
Phosphorus (P)-Total	mg/kg	2010	1920	1250	1770	862	1170	1040	1930	1620	4290	2090	1660	1770	2530	2920	1050	724	1060	1830	1640	1860
Phosphorus (P)-Total	mg/kg wwt	787	750	516	771	344	475	465	809	527	2020	719	636	827	845	694	303	201	398	641	637	766
Potassium (K)-Total	mg/kg	13100	13000	11200	8220	12400	6850	11700	9390	10600	17100	12700	13200	6410	12500	13500	11400	7580	8050	9740	10100	12100
Potassium (K)-Total	mg/kg wwt	5120	5070	4630	3590	4940	2770	5190	3930	3450	8080	4380	5030	3000	4180	3220	3300	2100	3020	3410	3930	5010
Rubidium (Rb)-Total	mg/kg	5.25	5.18	6.37	6.14	5.29	2.05	8.04	4.95	3.53	4.92	11.10	43.40	24.80	5.86	6.06	7.63	4.40	2.04	5.94	15.60	31.70
Rubidium (Rb)-Total	mg/kg wwt	2.06	2.03	2.63	2.68	2.11	0.83	3.58	2.07	1.15	2.32	3.82	16.60	11.60	1.96	1.44	2.21	1.22	0.76	2.08	6.05	13.10
Selenium (Se)-Total	mg/kg	1.57	1.70	0.44	0.98	0.22	0.65	0.46	0.71	0.24	<0.050	<0.050	0.08	0.06	0.07	0.09	0.09	<0.050	1.48	0.19	0.11	0.08
Selenium (Se)-Total	mg/kg wwt	0.61	0.67	0.18	0.43	0.09	0.26	0.20	0.30	0.08	<0.010	0.01	0.03	0.03	0.02	0.02	0.03	0.01	0.55	0.07	0.04	0.03
Sodium (Na)-Total	mg/kg	57	75	107	62	78	65	27	54	264	48	33	64	28	88	406	60	44	63	670	64	76
Sodium (Na)-Total	mg/kg wwt	22	29	44	27	31	27	12	23	86	22	11	25	13	29	97	17	12	24	235	25	31
Strontium (Sr)-Total	mg/kg	80.3	90.0	118.0	47.3	84.4	166.0	98.9	77.3	31.5	8.8	24.6	15.0	7.5	14.0	38.0	14.7	9.0	21.0	21.4	26.8	24.0
Strontium (Sr)-Total	mg/kg wwt	31.5	35.2	49.0	20.6	33.7	67.1	44.0	32.4	10.3	4.2	8.5	5.7	3.5	4.7	9.0	4.3	2.5	7.9	7.5	10.4	9.9
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	mg/kg	0.0048	0.0058	0.0070	0.0085	<0.0020	<0.0020	<0.0020	0.0146	<0.0020	<0.0020	<0.0020	0.0054	<0.0020	<0.0020	0.0079	<0.0020	<0.0020	<0.0020	<0.0020	0.0053	<0.0020
Thallium (Tl)-Total	mg/kg wwt	0.00188	0.00227	0.00288	0.00371	0.00055	0.00066	0.00076	0.00611	0.00052	<0.00040	<0.00040	0.00206	<0.00040	0.00052	0.00189	<0.00040	<0.00040	<0.00040	<0.00040	0.00207	0.00059
Tin (Sn)-Total	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	0.66	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total	mg/kg wwt	<0.020	<0.020	<0.020	0.035	<0.020	<0.020	<0.020	0.021	<0.020	<0.020	<0.020	0.041	<0.020	0.020	<0.020	0.190	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)-Total	mg/kg	0.025	0.026	0.055	0.060	0.013	0.060	0.012	0.018	0.015	<0.0020	<0.0020	0.011	<0.0020	0.030	<0.0020	0.003	<0.0020	0.005	<0.0020	0.012	0.004
Uranium (U)-Total	mg/kg wwt	0.010	0.010	0.023	0.026	0.005	0.024	0.005	0.008	0.005	0.001	<0.00040	0.004	0.001	0.010	0.000	0.001	<0.00040	0.002	<0.00040	0.004	0.002
Vanadium (V)-Total	mg/kg	2.7	2.8	1.4	1.6	0.9	1.4	0.9	1.5	1.6	0.2	0.1	1.2	0.3	4.0	0.2	0.4	0.2	0.3	<0.10	1.3	0.2
Vanadium (V)-Total	mg/kg wwt	1.04	1.08	0.56	0.68	0.34	0.55	0.40	0.62	0.51	0.08	0.04	0.47	0.12	1.32	0.04	0.11	0.05	0.10	0.02	0.49	0.10
Zinc (Zn)-Total	mg/kg	55.8	62.9	22.0	53.2	15.4	13.9	7.5	42.8	24.3	53.5	21.8	37.1	31.0	24.8	23.0	20.5	17.0	5.5	18.7	17.2	41.1
Zinc (Zn)-Total	mg/kg wwt	21.8	24.6	9.1	23.3	6.1	5.6	3.4	17.9	7.9	25.2	7.5	14.2	14.5	8.3	5.5	5.9	4.7	2.1	6.5	6.7	17.0
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.32	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zirconium (Zr)-Total	mg/kg wwt	0.070	0.048	0.087	<0.040	0.056	0.067	0.065	<0.040	0.050	<0.040	<0.040	0.042	<0.040	0.108	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

Notes:
mg/kg = milligram per kilogram dry weight;

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	WILLOW-LHAC-4-16	WILLOW-LHAC-3-16	WILLOW-LHAC-2X-16	WILLOW-LHAC-2-16	WILLOW-LHAC-1-16	WILLOW-LHAC-5-16	SPRUCE-REF-1-16	SPRUCE-UHAC-1-16	SPRUCE-UHAC-1X-16	SPRUCE-UHAC-2-16	SPRUCE-LHAC-1-16	BERRIES-LHAC-2-16	BERRIES-LHAC-3-16	BERRIES-LHAC-1-16	RYEGRASS-UHAC-1-16	RYEGRASS-UHAC-2-16	CSS16-02	CSS16-03	CSS16-04	CSS16-05	CSS16-06
Date Sampled		16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	3-Aug-2016	3-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	16-Aug-2016	3-Aug-2016	3-Aug-2016	17-Aug-2016	17-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016
ALS Sample ID		L1824887-1	L1824887-2	L1824887-3	L1824887-4	L1824887-5	L1824887-6	L1824887-7	L1824887-8	L1824887-9	L1824887-10	L1824887-11	L1824887-12	L1824887-13	L1824887-14	L1824887-15	L1824887-16	L1826516-1	L1826516-2	L1826516-3	L1826516-4	L1826516-5
Physical Tests																						
pH (1:2 soil:water)	pH	8.06	8.16	8.13	8.23	8.27	8.20	5.86	7.57	8.55	6.18	8.23	7.11	6.86	7.51	8.19	8.22	7.35	6.22	7.06	7.69	6.83
Moisture	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																						
Inorganic Carbon	%	0.357	0.509	0.365	0.490	0.266	0.305	0.208	0.297	0.359	0.287	0.381	0.292	0.380	0.263	0.418	0.552	0.244	0.124	0.235	0.255	0.126
Inorganic Carbon (as CaCO3 Equivalent)	%	2.97	4.24	3.04	4.09	2.21	2.54	1.73	2.47	2.99	2.39	3.18	2.43	3.16	2.19	3.48	4.6	2.03	1.03	1.96	2.13	1.05
Total Carbon by Combustion	%	0.51	0.63	0.60	0.67	0.62	0.37	11.0	17.1	0.51	9.43	0.49	0.31	0.38	3.86	1.75	0.61	2.28	4.31	13.5	1.97	2.87
Total Organic Carbon	%	0.16	<0.13	0.23	0.18	0.35	<0.073	10.8	16.8	0.15	9.14	0.11	<0.063	<0.076	3.6	1.33	<0.12	2.04	4.19	13.3	1.72	2.74
Plant Available Nutrients																						
Total Available Nitrogen	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<3.0	<1.0	32.6	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<2.0	2.5	10.9
Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	<2.0	3.2	2.9	2.7	7.9	<2.0	5.4	8.5	<2.0	4.9	<2.0	<2.0	<2.0	6.7	<2.0	<2.0	4.5	13.1	4.7	2.8	5.4
Available Potassium	mg/kg	66	45	66	59	54	139	188	245	126	187	128	75	123	117	213	387	127	127	92	132	118
Available Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																						
Aluminum (Al)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15400	19100	12200	11900	16700
Antimony (Sb)	mg/kg	0.51	0.54	0.48	0.52	0.71	0.37	0.41	0.39	0.38	0.45	0.37	0.19	0.19	0.34	0.46	0.50	0.35	0.30	0.33	0.27	0.30
Arsenic (As)	mg/kg	10.7	8.09	8.91	7.90	13.8	12.3	6.03	8.60	12.0	8.49	11.7	3.97	3.72	9.32	10.8	14.1	9.12	7.78	9.02	8.54	9.09
Barium (Ba)	mg/kg	131	61.1	80.9	71.6	104	166	180	163	168	298	166	697	339	123	175	224	146	118	184	135	160
Beryllium (Be)	mg/kg	0.50	0.29	0.36	0.32	0.41	0.59	0.76	0.53	0.63	1.22	0.60	0.20	0.15	0.42	0.67	0.84	0.54	0.45	0.48	0.51	0.60
Bismuth (Bi)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.9	<5.0	7.7	6.3	7.2
Cadmium (Cd)	mg/kg	0.227	0.260	0.218	0.189	0.259	0.134	1.08	0.188	0.149	1.09	0.140	3.44	1.39	0.138	0.128	0.169	0.170	0.139	0.254	0.161	0.206
Calcium (Ca)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18500	7090	20600	19200	14000
Chromium (Cr)	mg/kg	29.6	29.0	28.4	26.7	41.6	11.9	43.5	17.9	11.4	62.9	10.9	13.2	13.8	19.6	13.8	10.5	18.0	35.9	13.1	12.8	21.9
Cobalt (Co)	mg/kg	14.3	11.2	12.1	10.7	15.1	16.5	12.7	13.8	16.9	15.7	16.3	7.16	5.57	13.0	17.5	22.6	13.8	10.8	13.2	13.3	15.9
Copper (Cu)	mg/kg	224	55.0	181	120	76.4	770	53.7	492	902	111	833	91.1	42.0	463	688	953	677	148	472	574	458
Iron (Fe)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48400	31900	49000	53700	56500
Lead (Pb)	mg/kg	7.11	5.70	6.33	6.17	8.59	5.34	8.12	4.93	5.03	11.8	4.76	11.1	8.93	4.74	4.89	6.52	5.15	7.88	4.99	4.56	5.49
Lithium (Li)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.3	17.8	12.0	12.8	15.5
Magnesium (Mg)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7280	6530	6650	6670	8010
Manganese (Mn)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	525	574	573	433	624
Mercury (Hg)	mg/kg	0.128	0.068	0.071	0.077	0.086	0.087	0.064	0.085	0.082	0.077	0.080	0.123	0.255	0.080	0.072	0.083	0.102	0.075	0.093	0.070	0.075
Molybdenum (Mo)	mg/kg	1.63	0.78	1.49	1.00	1.21	3.52	0.72	3.26	4.15	1.24	5.04	1.38	1.21	2.85	4.47	5.55	3.56	1.22	3.30	3.57	2.97
Nickel (Ni)	mg/kg	27.4	26.6	25.7	23.4	37.2	9.97	35.6	11.6	9.80	56.6	9.03	12.5	10.4	11.9	10.1	9.67	12.2	21.6	9.89	9.11	14.5
Phosphorus (P)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1080	752	1440	1260	1390
Potassium (K)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1300	1560	950	1090	1360
Selenium (Se)	mg/kg	0.50	0.44	0.53	0.43	0.31	0.90	<0.20	0.89	1.08	0.30	0.96	0.38	0.25	0.71	0.97	1.16	0.84	0.27	0.76	0.86	0.61
Silver (Ag)	mg/kg	0.17	0.13	0.16	0.15	0.14	0.35	0.37	0.26	0.41	0.56	0.35	0.75	0.22	0.24	0.33	0.41	0.34	0.29	0.28	0.33	0.32
Sodium (Na)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	742	231	648	674	681
Strontium (Sr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	131	56.7	139	132	127
Thallium (Tl)	mg/kg	0.100	0.108	0.103	0.101	0.154	<0.050	0.120	<0.050	<0.050	0.160	<0.050	0.100	0.056	<0.050	<0.050	<0.050	<0.050	0.105	<0.050	<0.050	<0.050
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1160	888	1070	799	1010
Uranium (U)	mg/kg	0.847	0.540	0.619	0.557	0.574	0.882	1.04	1.03	0.941	1.57	0.937	0.398	0.269	0.751	1.22	1.34	0.869	0.762	0.875	0.738	0.892
Vanadium (V)	mg/kg	98.9	60.2	76.4	66.0	69.3	175	67.0	185	198	89.4	189	36.2	33.1	187	163	162	177	95.2	185	205	209
Zinc (Zn)	mg/kg	58.4	46.4	48.8	43.8	64.6	54.1	110	49.8	55.5	137	52.6	552	187	44.9	57.9	77.3	51.0	58.1	59.4	45.0	60.3
Zirconium (Zr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	<1.0	3.6	1.9	1.0

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	CSS16-14	CSS16-15	CSS16-23	CSS16-24	CSS16-25	CSS16-26	CSS16-27	CSS16-27D	CSS16-28	CSS16-29	CSS16-30	CSS16-32	CSS16-33	CSS16-34	CSS16-35	CSS16-36	CSS16-37	CSS16-38	CSS16-39	CSS16-39D	CSS16-40
Date Sampled		19-Aug-2016	19-Aug-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016
ALS Sample ID		L1826516-6	L1826516-7	L1826516-8	L1826516-9	L1826516-10	L1826516-11	L1826516-12	L1826516-13	L1826516-14	L1826516-15	L1826516-16	L1826516-17	L1826516-18	L1826516-19	L1826516-20	L1826516-21	L1826516-22	L1826516-23	L1826516-24	L1826516-25	L1826516-26
Physical Tests																						
pH (1:2 soil:water)	pH	7.32	7.59	8.10	7.77	8.05	8.43	7.84	7.86	8.34	8.34	8.48	8.67	8.59	8.31	8.43	7.82	7.83	7.84	7.71	7.67	7.81
Moisture	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																						
Inorganic Carbon	%	0.230	0.268	0.237	0.241	0.315	0.423	0.227	0.213	0.087	0.234	0.320	0.304	0.224	0.232	0.225	0.164	0.232	0.293	0.263	0.261	0.274
Inorganic Carbon (as CaCO3 Equivalent)	%	1.92	2.23	1.97	2.01	2.63	3.52	1.89	1.78	0.72	1.95	2.67	2.53	1.87	1.93	1.87	1.36	1.93	2.44	2.19	2.17	2.28
Total Carbon by Combustion	%	8.65	3.19	0.39	1.02	0.53	0.56	3.69	2.05	0.22	0.48	0.51	0.40	0.31	0.48	0.42	0.79	2.07	2.50	3.13	2.85	1.49
Total Organic Carbon	%	8.42	2.92	0.155	0.779	0.22	0.14	3.46	1.84	0.13	0.247	0.19	0.094	0.083	0.252	0.192	0.63	1.84	2.21	2.87	2.59	1.22
Plant Available Nutrients																						
Total Available Nitrogen	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<2.0	1.6	1.6	<1.0
Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	5.8	5.1	3.2	10.9	2.2	<2.0	10.8	11.0	2.8	6.2	<2.0	2.4	2.2	6.0	3.6	9.4	3.7	2.9	3.3	3.9	3.7
Available Potassium	mg/kg	136	90	59	113	43	42	146	135	46	64	77	56	68	52	56	98	98	98	88	86	93
Available Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																						
Aluminum (Al)	mg/kg	13600	13500	10900	14200	8310	7420	12200	12200	9180	12200	16100	12500	13100	12100	12000	9970	15000	15300	14700	15000	13100
Antimony (Sb)	mg/kg	0.39	0.36	0.31	0.33	0.24	0.22	0.29	0.32	0.37	0.35	0.40	0.35	0.38	0.32	0.31	0.24	0.35	0.39	0.39	0.37	0.33
Arsenic (As)	mg/kg	7.41	9.03	8.39	8.86	4.76	4.67	8.61	8.79	4.96	6.63	7.46	6.87	8.22	8.57	7.73	6.75	8.53	10.0	8.92	8.82	8.13
Barium (Ba)	mg/kg	147	160	90.7	155	58.6	49.0	127	129	72.9	113	107	101	135	80.5	114	82.0	163	170	163	160	138
Beryllium (Be)	mg/kg	0.53	0.52	0.37	0.51	0.26	0.22	0.46	0.49	0.29	0.38	0.40	0.36	0.43	0.41	0.42	0.36	0.54	0.58	0.53	0.54	0.49
Bismuth (Bi)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	mg/kg	7.3	7.5	<5.0	5.9	<5.0	<5.0	7.0	7.3	<5.0	<5.0	<5.0	<5.0	11.1	5.5	6.1	<5.0	7.0	7.9	7.9	7.7	6.8
Cadmium (Cd)	mg/kg	0.245	0.179	0.133	0.196	0.104	0.095	0.161	0.168	0.085	0.181	0.165	0.157	0.149	0.131	0.116	0.103	0.232	0.185	0.211	0.226	0.150
Calcium (Ca)	mg/kg	18100	21200	14700	18200	15900	16000	18200	18300	6940	13300	14900	15800	13100	13400	16300	11800	19900	22600	20800	20900	19300
Chromium (Cr)	mg/kg	17.5	14.8	14.6	19.9	18.6	19.5	14.0	16.3	19.3	26.2	37.5	24.5	21.9	22.2	14.7	14.1	17.2	16.2	16.6	17.2	14.0
Cobalt (Co)	mg/kg	11.9	13.4	10.3	13.6	6.61	7.47	13.3	13.2	7.79	10.8	12.7	10.4	12.2	11.2	10.7	9.84	13.3	14.7	13.6	13.6	12.3
Copper (Cu)	mg/kg	392	541	395	546	48.3	52.5	649	620	74.0	114	80.8	107	324	401	487	449	537	597	539	547	511
Iron (Fe)	mg/kg	40700	50800	29700	37600	20200	19800	49600	48700	22900	29400	30800	27900	32400	34100	31200	32500	42800	54000	49200	47500	47800
Lead (Pb)	mg/kg	5.10	4.52	4.10	5.95	4.02	4.18	4.95	5.91	3.84	6.12	7.76	6.13	5.23	5.49	3.89	3.68	4.72	4.86	4.66	4.74	4.16
Lithium (Li)	mg/kg	13.1	12.3	11.7	14.7	7.3	9.7	12.5	13.1	8.3	13.0	16.4	12.9	13.4	11.9	11.2	10.3	12.8	13.3	12.3	12.5	11.6
Magnesium (Mg)	mg/kg	6210	6930	6660	7990	4040	5290	6430	6380	4250	6420	7640	6420	7670	6560	6220	5330	6650	7350	6600	6560	6000
Manganese (Mn)	mg/kg	509	518	465	600	350	321	532	536	317	524	587	507	567	516	449	397	528	543	520	521	442
Mercury (Hg)	mg/kg	0.097	0.082	0.070	0.066	<0.050	<0.050	0.095	0.094	0.058	0.065	0.069	0.075	0.071	0.067	0.061	0.057	0.101	0.093	0.103	0.110	0.089
Molybdenum (Mo)	mg/kg	3.50	3.30	2.30	2.93	0.43	0.48	3.32	3.11	0.49	0.74	0.75	0.72	1.35	2.48	2.53	2.10	3.45	4.50	3.96	3.69	3.40
Nickel (Ni)	mg/kg	12.8	10.1	10.4	12.3	12.2	17.5	9.89	10.8	14.1	19.9	29.0	18.7	16.3	13.3	11.1	9.42	13.0	11.6	12.0	12.5	9.74
Phosphorus (P)	mg/kg	1150	1320	935	1060	828	596	1120	1090	627	839	709	790	897	878	865	747	1170	1370	1220	1210	1050
Potassium (K)	mg/kg	1240	1150	720	1050	490	660	1100	1120	510	880	1340	890	890	830	930	720	1240	1280	1230	1230	1100
Selenium (Se)	mg/kg	0.85	0.74	0.53	0.69	<0.20	0.24	0.83	0.84	<0.20	0.26	0.28	0.24	0.40	0.52	0.57	0.53	0.83	0.83	0.82	0.77	0.80
Silver (Ag)	mg/kg	0.30	0.31	0.18	0.24	<0.10	<0.10	0.31	0.32	0.16	0.12	0.11	0.12	0.13	0.19	0.24	0.23	0.29	0.33	0.29	0.31	0.28
Sodium (Na)	mg/kg	569	760	629	543	669	197	583	546	147	445	285	639	387	489	683	438	709	786	714	696	698
Strontium (Sr)	mg/kg	152	152	100	122	86.4	89.3	121	135	53.5	95.3	101	114	89.3	91.7	122	78.3	153	163	158	157	146
Thallium (Tl)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.054	0.082	0.052	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	927	1170	605	950	665	560	936	934	658	656	692	786	719	1020	933	796	1030	1250	1170	1110	1060
Uranium (U)	mg/kg	1.23	0.943	0.508	0.741	0.503	0.496	0.812	0.846	0.399	0.527	0.668	0.437	0.470	0.615	0.763	0.514	1.08	1.04	1.23	1.20	0.932
Vanadium (V)	mg/kg	147	193	98.2	134	62.0	49.9	184	180	75.6	83.1	71.0	78.6	106	126	117	119	161	210	187	182	179
Zinc (Zn)	mg/kg	43.8	48.2	40.8	53.9	31.6	32.8	46.1	45.6	33.1	46.4	57.9	48.7	46.5	45.0	40.0	36.7	45.7	48.7	46.1	45.5	39.4
Zirconium (Zr)	mg/kg	1.9	2.8	3.2	2.7	5.2	4.2	2.5	2.2	3.8	2.8	5.8	5.3	4.4	4.4	4.5	2.5	1.6	2.4	2.0	1.9	1.8

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	CSS16-41	CSS16-42	CSS16-BKG-01	CSS16-BKG-07	CSS16-BKG-08	CSS16-BKG-09	CSS16-BKG-10	CSS16-BKG-11	CSS16-BKG-12	CSS16-BKG-13	CSS16-BKG-13D	CSS16-BKG-14	CSS16-BKG-15	CSS16-BKG-16	CSS16-BKG-17	CSS16-BKG-23D	CSS16-BKG-24	CSS16-16	CSS16-31	CSS16-BKG-25	CSS16-07
Date Sampled		4-Sep-2016	5-Sep-2016	19-Aug-2016	19-Aug-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	3-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	4-Sep-2016	5-Sep-2016	5-Sep-2016	19-Aug-2016	3-Sep-2016	5-Sep-2016	19-Aug-2016
ALS Sample ID		L1826516-27	L1826516-28	L1826516-29	L1826516-30	L1826516-31	L1826516-32	L1826516-33	L1826516-34	L1826516-35	L1826516-36	L1826516-37	L1826516-38	L1826516-39	L1826516-40	L1826516-41	L1826516-42	L1826516-43	L1826516-45	L1826516-46	L1826516-47	L1826551-1
Physical Tests																						
pH (1:2 soil:water)	pH	7.78	8.34	5.33	4.88	8.38	6.21	6.65	5.60	5.46	5.48	5.53	5.23	5.70	5.12	5.74	6.78	5.22	7.59	8.69	5.75	8.39
Moisture	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																						
Inorganic Carbon	%	0.298	0.411	0.201	0.120	0.345	0.082	0.077	0.073	0.064	0.157	0.155	0.187	0.242	0.098	0.224	0.078	0.091	0.238	0.468	0.077	-
Inorganic Carbon (as CaCO3 Equivalent)	%	2.48	3.42	1.67	1	2.87	0.68	0.64	0.61	0.54	1.3	1.29	1.56	2.02	0.81	1.87	0.65	0.76	1.98	3.9	0.64	-
Total Carbon by Combustion	%	2.04	0.49	18.6	13.1	0.67	1.62	0.42	2.57	0.97	17.6	18.0	22.4	19.2	7.41	16.8	1.29	7.35	4.10	0.69	8.35	-
Total Organic Carbon	%	1.74	<0.098	18.4	13	0.32	1.54	0.348	2.5	0.905	17.4	17.8	22.2	19	7.31	16.6	1.21	7.26	3.86	0.23	8.27	0.152
Plant Available Nutrients																						
Total Available Nitrogen	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	1.9	<1.0	17.2	<3.0	1.3	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	6.0	6.0	<2.0	<4.0	<1.0	<1.0	1.4	1.4	<3.0	<1.0
Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	4.0	<2.0	2.2	25.9	3.4	136	8.1	73	9.9	55.5	48.9	5.5	4.8	4.8	10.0	16.3	42.4	4.7	3.2	15.6	2.9
Available Potassium	mg/kg	95	164	224	173	67	131	66	96	44	267	252	275	152	89	343	108	104	114	98	127	155
Available Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																						
Aluminum (Al)	mg/kg	14200	15900	31200	19700	18500	14600	15600	14200	15700	14500	14200	39200	43200	11400	44300	10700	7540	14100	18400	15000	16000
Antimony (Sb)	mg/kg	0.34	0.35	0.29	0.23	0.44	0.28	0.35	0.27	0.23	0.51	0.26	0.32	0.45	0.21	0.42	0.36	0.16	0.41	0.48	0.24	0.35
Arsenic (As)	mg/kg	9.65	11.2	3.39	3.93	8.24	4.73	5.50	4.59	4.46	4.22	3.61	4.89	6.11	2.42	5.71	7.14	2.73	9.53	8.76	4.76	11.2
Barium (Ba)	mg/kg	154	158	191	182	104	79.3	86.6	86.8	78.7	176	162	255	282	73.9	280	67.8	139	179	126	137	153
Beryllium (Be)	mg/kg	0.53	0.63	0.93	0.64	0.44	0.35	0.40	0.35	0.35	0.40	0.42	1.15	1.22	0.26	1.13	0.31	0.20	0.52	0.46	0.51	0.59
Bismuth (Bi)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.22	0.29	<0.20	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	mg/kg	7.6	8.8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.1	5.2	<5.0	7.3
Cadmium (Cd)	mg/kg	0.155	0.156	0.542	0.438	0.204	0.246	0.226	0.215	0.096	0.519	0.448	0.281	0.961	0.322	0.619	0.159	0.325	0.203	0.182	0.289	0.134
Calcium (Ca)	mg/kg	21900	25900	6010	5710	14300	4030	4260	4370	3200	8650	8200	3920	11500	3320	9880	4990	3360	20900	22400	5310	23100
Chromium (Cr)	mg/kg	13.9	10.5	53.5	34.5	41.9	33.6	38.8	34.8	32.5	28.9	29.7	43.3	57.8	26.7	64.0	38.0	20.1	15.2	37.9	33.1	11.3
Cobalt (Co)	mg/kg	13.9	16.3	21.8	9.60	16.2	11.3	13.6	9.38	11.4	12.4	11.9	7.53	15.6	5.63	17.5	9.06	7.29	13.6	14.1	8.84	15.8
Copper (Cu)	mg/kg	573	821	54.6	39.9	61.6	24.9	32.3	37.6	19.7	40.4	36.8	69.2	96.2	17.8	81.2	38.7	12.1	522	67.0	32.2	819
Iron (Fe)	mg/kg	51700	45700	27600	24500	35900	25300	27300	25800	25300	21500	22800	19400	35200	17600	39100	24700	16600	48800	32200	23400	47400
Lead (Pb)	mg/kg	4.29	4.92	8.73	8.86	12.2	6.94	7.92	6.46	7.30	7.84	7.78	12.2	12.8	5.73	10.9	5.54	5.94	5.09	7.59	6.42	4.43
Lithium (Li)	mg/kg	12.3	16.1	18.7	13.1	26.2	18.8	17.6	15.6	22.0	15.3	14.8	18.0	29.1	10.7	28.6	10.9	9.2	12.4	18.5	14.6	14.3
Magnesium (Mg)	mg/kg	6850	9670	6940	4760	9040	5870	6720	4860	5900	5820	5540	3590	8310	3270	8630	5570	2410	7100	8970	4590	9460
Manganese (Mn)	mg/kg	517	583	1380	980	619	456	556	484	390	1290	1100	86.1	493	126	969	429	1250	576	649	462	577
Mercury (Hg)	mg/kg	0.095	0.085	0.205	0.129	<0.050	<0.050	<0.050	<0.050	<0.050	0.114	0.120	0.248	0.206	0.052	0.204	0.061	0.058	0.091	0.059	0.094	0.069
Molybdenum (Mo)	mg/kg	3.84	5.60	1.35	0.65	0.58	0.48	0.49	0.50	0.53	1.60	1.38	0.69	1.01	0.56	1.37	0.58	0.58	3.33	0.69	0.62	3.28
Nickel (Ni)	mg/kg	10.1	9.15	33.7	23.0	42.4	25.1	30.1	18.7	24.4	24.3	22.1	52.8	72.8	15.5	58.7	22.1	11.8	11.6	32.3	22.7	9.65
Phosphorus (P)	mg/kg	1320	1190	1540	1130	704	1070	546	934	468	934	873	1540	1390	337	1570	686	589	1270	828	709	1260
Potassium (K)	mg/kg	1210	1400	2000	1170	1580	1240	1440	980	1100	1380	1370	2620	2620	780	2970	920	700	1380	1910	960	1390
Selenium (Se)	mg/kg	0.80	0.93	0.46	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.35	<0.20	0.41	0.72	<0.20	0.50	<0.20	<0.20	0.78	0.31	<0.20	0.97
Silver (Ag)	mg/kg	0.33	0.37	0.64	0.73	0.13	0.18	<0.10	0.13	<0.10	0.27	0.23	0.74	0.95	0.19	0.94	<0.10	0.16	0.30	0.10	0.40	0.34
Sodium (Na)	mg/kg	788	1080	125	109	192	110	152	118	130	89	131	102	121	97	113	162	54	663	544	91	900
Strontium (Sr)	mg/kg	158	169	60.0	54.2	72.7	33.0	38.0	40.5	32.6	58.5	60.2	43.8	111	38.0	89.8	43.2	29.3	161	147	60.1	160
Thallium (Tl)	mg/kg	<0.050	<0.050	0.154	0.105	0.120	0.083	0.093	0.061	0.088	0.098	0.109	0.214	0.221	0.061	0.215	0.077	0.056	<0.050	0.126	0.084	<0.050
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	1190	1310	247	504	674	713	899	842	759	721	806	218	333	397	401	721	295	1330	951	363	1390
Uranium (U)	mg/kg	0.963	0.998	1.21	0.670	0.804	0.564	0.594	0.453	0.521	0.379	0.418	2.41	3.30	0.497	2.03	0.464	0.294	1.09	0.772	0.635	0.875
Vanadium (V)	mg/kg	205	178	57.2	56.2	62.9	57.9	65.1	74.9	57.0	55.1	56.6	32.6	66.3	42.6	67.3	67.4	38.0	181	82.2	56.2	181
Zinc (Zn)	mg/kg	48.9	56.2	97.1	83.1	71.4	59.6	58.5	58.7	51.1	143	126	40.9	89.7	32.7	105	44.2	53.3	51.6	61.0	59.5	53.3
Zirconium (Zr)	mg/kg	2.3	6.9	<1.0	<1.0	5.3	<1.0	1.8	1.3	<1.0	1.3	1.6	1.7	2.5	<1.0	<1.0	2.0	<1.0	3.3	8.0	<1.0	6.2

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	CSS16-08	CSS16-09	CSS16-10	CSS16-11	CSS16-12	CSS16-13	CSS16-17	CSS16-18	CSS16-19	CSS16-20	CSS16-21	CSS16-22	CSS16-43	CSS16-44	CSS16-45	CSS16-46	CSS16-BKG-02	CSS16-BKG-03	CSS16-BKG-04	CSS16-BKG-05	CSS16-BKG-06
Date Sampled		19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	2-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	17-Aug-2016	17-Aug-2016	17-Aug-2016	19-Aug-2016	19-Aug-2016
ALS Sample ID		L1826551-2	L1826551-3	L1826551-4	L1826551-5	L1826551-7	L1826551-8	L1826551-9	L1826551-10	L1826551-11	L1826551-12	L1826551-13	L1826551-14	L1826551-15	L1826551-16	L1826551-17	L1826551-18	L1826551-19	L1826551-20	L1826551-21	L1826551-22	L1826551-23
Physical Tests																						
pH (1:2 soil:water)	pH	7.53	7.33	8.42	7.96	7.46	7.15	7.16	8.04	8.18	8.10	8.49	8.36	8.53	8.18	7.98	8.25	5.49	5.74	6.71	6.23	5.23
Moisture	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																						
Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CaCO3 Equivalent)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Carbon by Combustion	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Organic Carbon	%	6.33	7.88	0.25	1.13	7.47	6.87	0.636	0.48	0.28	0.22	0.164	<0.077	0.123	0.469	6.23	<0.089	1.99	7.55	8.45	8.18	38.6
Plant Available Nutrients																						
Total Available Nitrogen	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	<2.0	<2.0	<1.0	<1.0	<2.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.2	<2.0	<1.0	<1.0	<2.0	<2.0	<2.0	<4.0
Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	3.2	3.6	2.0	4.5	2.6	6.1	<2.0	<2.0	<2.0	<2.0	<2.0	2.5	<2.0	<2.0	2.5	<2.0	54.9	64.6	6.0	7.7	14.7
Available Potassium	mg/kg	168	144	141	123	94	137	35	116	63	68	89	126	140	54	144	165	95	120	142	82	471
Available Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																						
Aluminum (Al)	mg/kg	15600	14600	14600	13600	12600	13800	13200	15500	11900	10900	12600	13800	15500	10600	19300	16200	9280	6680	13500	10400	3690
Antimony (Sb)	mg/kg	0.37	0.39	0.34	0.29	0.34	0.38	0.31	0.40	0.36	0.44	0.40	0.29	0.34	0.45	0.50	0.34	0.21	0.16	0.24	0.21	0.22
Arsenic (As)	mg/kg	10.6	9.44	10.5	9.46	7.71	8.71	10.5	12.1	10.4	12.3	12.5	10.0	11.3	12.6	12.3	11.4	3.61	2.64	4.74	3.47	3.24
Barium (Ba)	mg/kg	151	139	148	139	124	150	92.8	160	107	102	119	145	153	115	201	163	66.9	129	49.7	92.9	83.7
Beryllium (Be)	mg/kg	0.57	0.51	0.57	0.47	0.44	0.48	0.46	0.55	0.38	0.37	0.48	0.50	0.57	0.41	0.64	0.57	0.19	0.15	0.27	0.20	<0.10
Bismuth (Bi)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	mg/kg	8.3	8.0	6.7	5.2	7.4	8.2	<5.0	7.9	<5.0	<5.0	5.4	5.6	6.8	<5.0	7.8	7.8	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd)	mg/kg	0.220	0.306	0.146	0.172	0.209	0.240	0.110	0.178	0.160	0.167	0.157	0.160	0.145	0.175	0.269	0.143	0.221	0.840	0.257	0.488	0.697
Calcium (Ca)	mg/kg	24700	20400	22700	17800	19600	19200	6050	25500	17100	17700	14600	20500	22700	8430	21000	23700	2680	4670	9330	6400	17100
Chromium (Cr)	mg/kg	11.9	17.2	10.4	13.2	17.5	17.1	36.6	13.4	23.8	28.0	19.7	11.0	10.9	30.7	25.4	10.7	28.6	19.9	30.9	21.2	6.07
Cobalt (Co)	mg/kg	15.3	13.4	15.4	13.9	10.9	12.1	9.74	15.8	11.8	12.6	13.1	14.8	16.0	11.0	17.0	16.3	7.89	6.10	9.40	8.27	3.04
Copper (Cu)	mg/kg	624	453	819	706	379	340	60.1	765	313	252	454	826	848	121	455	849	10.5	12.1	27.3	13.0	17.9
Iron (Fe)	mg/kg	38100	34900	46500	40600	33400	33000	26600	48600	38600	44600	37900	44100	48200	27500	40400	48600	22700	14800	23900	19800	4960
Lead (Pb)	mg/kg	4.60	5.89	4.59	4.38	5.36	5.76	6.33	4.70	5.23	5.25	4.87	4.46	4.52	5.26	7.42	4.33	5.85	4.91	5.55	5.59	4.30
Lithium (Li)	mg/kg	14.3	15.0	13.9	12.4	14.7	15.0	14.3	14.4	11.2	11.2	12.6	13.2	14.0	11.3	19.5	14.3	11.2	6.7	16.2	9.6	2.0
Magnesium (Mg)	mg/kg	9460	8010	9010	8120	6440	7130	5550	9460	6660	6870	7680	8720	9460	6490	10200	9710	3550	2600	6460	4910	1570
Manganese (Mn)	mg/kg	611	544	551	555	480	651	365	654	533	583	578	533	572	730	817	618	391	1040	448	844	409
Mercury (Hg)	mg/kg	0.070	0.082	0.079	0.068	0.075	0.082	0.089	0.078	0.061	0.089	0.083	0.070	0.073	0.079	0.101	0.075	<0.050	<0.050	<0.050	<0.050	0.184
Molybdenum (Mo)	mg/kg	3.12	2.82	3.57	2.89	2.63	3.00	1.11	3.87	1.88	1.88	1.99	4.14	3.79	1.48	3.33	4.14	0.51	0.45	0.74	0.79	1.91
Nickel (Ni)	mg/kg	10.7	14.4	8.78	10.5	14.0	13.9	22.7	10.4	17.7	20.4	14.7	8.90	8.96	26.4	21.2	8.83	13.6	11.8	22.5	14.7	5.95
Phosphorus (P)	mg/kg	1210	1070	1240	1090	924	1060	674	1260	992	1130	1030	1200	1250	725	1150	1280	849	674	674	346	710
Potassium (K)	mg/kg	1350	1250	1250	1090	1100	1280	800	1330	970	860	1000	1200	1380	740	1620	1420	680	590	960	560	810
Selenium (Se)	mg/kg	0.95	0.96	0.94	0.80	0.77	0.66	<0.20	0.98	0.54	0.69	0.55	0.85	0.97	0.31	1.00	1.05	<0.20	<0.20	<0.20	<0.20	0.56
Silver (Ag)	mg/kg	0.27	0.26	0.34	0.28	0.23	0.25	0.13	0.30	0.20	0.17	0.20	0.34	0.35	0.13	0.29	0.37	0.13	0.22	<0.10	0.15	0.24
Sodium (Na)	mg/kg	776	571	810	732	520	548	156	877	520	501	498	870	896	393	647	941	71	63	131	82	<50
Strontium (Sr)	mg/kg	157	134	149	126	128	133	61.5	137	105	101	91.7	137	156	80.4	161	157	23.5	34.5	60.8	51.3	136
Thallium (Tl)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.051	<0.050	0.072	<0.050	0.056	0.188	<0.050	<0.050	<0.050	0.070	0.065	<0.050	<0.050	<0.050	0.087	0.055	<0.050
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	1340	1040	1110	919	829	985	690	1470	994	930	981	986	1300	717	1290	1420	743	442	719	774	154
Uranium (U)	mg/kg	1.26	1.26	0.785	0.709	1.17	0.976	1.58	1.01	0.782	0.873	0.734	0.699	0.847	0.643	1.34	0.894	0.295	0.275	0.631	0.299	0.346
Vanadium (V)	mg/kg	145	118	175	147	114	113	71.0	183	130	150	130	167	183	80.1	129	183	57.4	34.8	51.8	56.5	12.9
Zinc (Zn)	mg/kg	59.3	57.6	53.0	54.1	54.4	56.5	43.2	56.4	49.6	50.8	56.7	55.5	53.2	46.9	70.1	56.1	62.5	119	54.3	74.3	46.7
Zirconium (Zr)	mg/kg	5.7	2.9	5.4	3.5	3.0	3.1	1.5	6.3	4.3	3.8	4.2	4.8	6.1	2.4	2.8	6.4	1.2	<1.0	1.2	2.0	1.1

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	CSS16-BKG-18	CSS16-BKG-19	CSS16-BKG-20	CSS16-BKG-20D	CSS16-BKG-21	CSS16-BKG-22	CSS16-BKG-22D	CSS16-BKG-23	OP2 soil - H/A Layer	RYE GRASS SOIL-1	RYE GRASS SOIL-2	RYE GRASS SOIL-3	RYE GRASS SOIL-4	RYE GRASS SOIL-4X	RYE GRASS SOIL-5	RYE GRASS SOIL-6	RYE GRASS SOIL-7	RYE GRASS SOIL-7X	RYE GRASS SOIL-8	RYE GRASS SOIL-9	RYE GRASS SOIL-10
Date Sampled		5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	4-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015	30-Aug-2015
ALS Sample ID		L1826551-24	L1826551-25	L1826551-26	L1826551-27	L1826551-28	L1826551-29	L1826551-30	L1826551-31	L1654527-133	L1667543-1	L1667543-2	L1667543-3	L1667543-4	L1667543-5	L1667543-6	L1667543-7	L1667543-8	L1667543-9	L1667543-10	L1667543-11	L1667543-12
Physical Tests																						
pH (1:2 soil:water)	pH	7.01	6.75	6.46	6.40	6.41	5.55	5.57	6.75	6.07	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-	-	-	-	-	-	-	8.80	16.2	11.9	13.4	13.0	8.37	8.97	14.4	14.9	17.7	7.93	7.79
Organic / Inorganic Carbon																						
Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CaCO3 Equivalent)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Carbon by Combustion	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Organic Carbon	%	22.2	22.1	41.6	41.8	2.27	6.1	6.12	0.898	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																						
Total Available Nitrogen	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	<3.0	<3.0	<5.0	<5.0	<1.0	<2.0	<2.0	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	2.8	<2.0	7.5	8.3	4.2	98	98	14.6	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium	mg/kg	130	51	170	160	59	90	86	112	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																						
Aluminum (Al)	mg/kg	10100	11300	3410	3440	13900	10900	11800	10900	-	16300	11600	15700	17700	16400	17900	16500	15900	15700	26000	14500	17900
Antimony (Sb)	mg/kg	0.28	0.32	0.28	0.24	0.30	0.27	0.24	0.37	0.43	0.37	0.29	0.29	0.38	0.41	0.39	0.27	0.37	0.37	0.54	0.56	0.49
Arsenic (As)	mg/kg	3.46	2.86	1.54	1.47	7.54	6.56	7.18	6.81	7.8	11.2	7.54	6.72	12.1	11.5	12.0	5.64	11.6	11.7	10.0	11.4	7.40
Barium (Ba)	mg/kg	76.9	79.5	58.8	58.4	83.5	132	123	65.8	192	149	114	116	206	202	166	88.9	163	160	153	145	123
Beryllium (Be)	mg/kg	0.27	0.46	0.14	0.12	0.32	0.24	0.22	0.29	0.69	0.60	0.34	0.51	0.68	0.65	0.67	0.41	0.60	0.60	0.61	0.58	0.54
Bismuth (Bi)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.27	<0.20	<0.20
Boron (B)	mg/kg	6.8	5.7	9.9	8.6	<5.0	<5.0	<5.0	<5.0	-	8.3	6.1	<5.0	7.5	6.6	8.1	<5.0	8.9	9.5	<5.0	5.9	<5.0
Cadmium (Cd)	mg/kg	0.499	0.645	1.05	1.06	0.205	0.390	0.375	0.163	0.56	0.179	0.513	0.264	0.157	0.180	0.150	0.108	0.152	0.181	0.272	0.212	0.051
Calcium (Ca)	mg/kg	23800	33000	35100	31300	5030	4600	4050	5060	-	25200	9490	11400	23600	22000	26200	4550	24400	23500	23300	19000	8160
Chromium (Cr)	mg/kg	19.7	23.8	5.66	5.71	31.7	30.3	33.4	28.4	50.1	15.4	30.2	28.1	12.8	13.2	10.6	39.1	11.8	13.4	58.0	17.3	45.8
Cobalt (Co)	mg/kg	7.21	5.72	2.41	2.39	9.30	7.66	8.48	9.01	33.1	16.0	11.0	13.3	18.1	17.3	18.0	12.4	16.4	16.0	21.1	14.7	14.3
Copper (Cu)	mg/kg	117	101	33.1	33.1	21.7	24.1	24.8	36.2	52.4	638	109	216	707	638	809	51.5	775	735	96.1	1020	183
Iron (Fe)	mg/kg	17100	15900	4970	4920	26600	24900	24600	23600	-	44900	28000	33200	43700	40100	49200	27800	49700	50400	47300	44100	41200
Lead (Pb)	mg/kg	3.86	4.38	4.05	3.58	5.09	5.65	4.81	5.00	10.5	5.34	6.33	6.55	5.32	5.51	4.67	7.44	5.06	5.17	13.6	5.92	7.53
Lithium (Li)	mg/kg	10.4	10.9	2.4	2.3	15.4	8.5	7.7	9.8	-	17.2	11.9	18.1	18.9	18.3	16.8	20.2	16.0	15.7	36.3	15.6	14.8
Magnesium (Mg)	mg/kg	4800	3690	2000	1990	5760	4530	5620	5670	-	9690	4910	6850	10900	10200	10700	6490	9420	9390	13100	8310	7120
Manganese (Mn)	mg/kg	261	214	163	165	341	404	452	429	-	630	954	788	735	746	667	477	627	610	760	645	407
Mercury (Hg)	mg/kg	0.101	0.189	0.150	0.151	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	mg/kg	0.83	0.73	0.90	0.80	0.44	0.69	0.58	0.48	1.0	4.03	1.44	1.46	3.87	3.30	4.73	0.65	4.00	4.64	1.15	3.86	1.95
Nickel (Ni)	mg/kg	19.2	29.6	10.7	10.7	22.7	17.6	22.2	21.6	37.5	12.2	16.7	22.3	10.2	10.4	9.25	33.4	8.50	9.18	58.1	13.1	26.7
Phosphorus (P)	mg/kg	1040	1220	858	849	499	1060	1060	720	-	1240	1000	884	1320	1260	1410	555	1340	1300	788	1170	984
Potassium (K)	mg/kg	800	560	490	510	750	650	640	930	-	1630	1310	1440	1480	1390	1610	1440	1450	1380	2560	1110	1200
Selenium (Se)	mg/kg	2.62	3.66	1.45	1.48	<0.20	<0.20	<0.20	<0.20	<0.20	0.91	0.29	0.31	0.89	0.80	1.07	<0.20	0.96	0.91	0.39	0.99	0.31
Silver (Ag)	mg/kg	0.17	0.39	0.31	0.26	<0.10	<0.10	<0.10	<0.10	0.3	0.27	0.25	0.19	0.38	0.33	0.38	0.11	0.34	0.32	0.15	0.50	0.13
Sodium (Na)	mg/kg	178	89	<50	<50	102	93	102	177	-	1530	197	323	840	769	955	145	873	847	369	699	284
Strontium (Sr)	mg/kg	105	184	224	196	43.1	47.3	36.4	38.3	-	159	80.7	77.1	163	153	179	73.3	157	147	146	121	85.0
Thallium (Tl)	mg/kg	0.060	0.088	<0.050	<0.050	0.075	0.059	0.051	0.073	0.124	<0.050	0.053	0.068	<0.050	<0.050	<0.050	0.097	<0.050	<0.050	0.179	<0.050	0.075
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	345	177	78.3	83.4	849	709	750	741	-	1520	794	908	1420	1190	1670	867	1650	1610	1060	1130	827
Uranium (U)	mg/kg	2.87	8.10	3.12	2.63	0.603	0.348	0.290	0.427	0.85	1.04	0.748	0.649	1.06	0.966	1.11	0.942	1.06	1.00	1.10	0.756	0.880
Vanadium (V)	mg/kg	36.6	29.9	9.31	9.45	77.1	66.1	72.2	64.1	90	166	80.8	97.1	163	150	185	61.5	195	194	72.9	160	114
Zinc (Zn)	mg/kg	41.2	27.3	65.1	63.7	64.5	67.2	66.6	43.8	102.0	58.5	90.0	64.0	66.9	65.6	62.7	50.4	55.4	55.8	104	59.1	54.1
Zirconium (Zr)	mg/kg	1.7	4.7	1.6	1.4	1.1	1.3	1.2	1.9	-	5.3	1.1	1.3	3.2	2.7	7.7	1.4	6.3	5.7	9.3	5.7	4.3

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	WILLOW SEEDLING SOIL-1	WILLOW WATTLE SOIL-1	WILLOW STAKE SOIL-1	WILLOW SEEDLING SOIL-2	WILLOW WATTLE SOIL-2
Date Sampled		19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015
ALS Sample ID		L1667543-13	L1667543-14	L1667543-15	L1667543-16	L1667543-17
Physical Tests						
pH (1:2 soil:water)	pH	-	-	-	-	-
Moisture	%	2.78	2.58	5.22	14.5	10.4
Organic / Inorganic Carbon						
Inorganic Carbon	%	-	-	-	-	-
Inorganic Carbon (as CaCO3 Equivalent)	%	-	-	-	-	-
Total Carbon by Combustion	%	-	-	-	-	-
Total Organic Carbon	%	-	-	-	-	-
Plant Available Nutrients						
Total Available Nitrogen	mg/kg	-	-	-	-	-
Total Nitrogen by LECO	mg/kg	-	-	-	-	-
Available Ammonium-N	mg/kg	-	-	-	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-	-	-	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-
Nitrite-N	mg/kg	-	-	-	-	-
Available Phosphate-P	mg/kg	-	-	-	-	-
Available Potassium	mg/kg	-	-	-	-	-
Available Sulfate-S	mg/kg	-	-	-	-	-
Metals						
Aluminum (Al)	mg/kg	9800	10300	11000	10300	14400
Antimony (Sb)	mg/kg	0.44	0.40	0.45	0.41	0.56
Arsenic (As)	mg/kg	9.64	9.57	11.7	7.67	8.67
Barium (Ba)	mg/kg	79.5	139	97.5	80.2	94.4
Beryllium (Be)	mg/kg	0.31	0.31	0.35	0.31	0.40
Bismuth (Bi)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd)	mg/kg	0.141	0.150	0.194	0.151	0.219
Calcium (Ca)	mg/kg	6120	6330	6100	6420	20100
Chromium (Cr)	mg/kg	30.1	28.6	32.3	30.8	33.9
Cobalt (Co)	mg/kg	9.81	9.89	11.1	9.50	12.8
Copper (Cu)	mg/kg	71.0	66.8	51.6	48.9	96.7
Iron (Fe)	mg/kg	24800	24400	26600	23800	30900
Lead (Pb)	mg/kg	4.90	4.99	6.30	4.87	6.21
Lithium (Li)	mg/kg	9.9	9.7	11.2	9.4	14.5
Magnesium (Mg)	mg/kg	6150	5640	6200	6320	9000
Manganese (Mn)	mg/kg	483	473	555	339	616
Mercury (Hg)	mg/kg	-	-	-	-	-
Molybdenum (Mo)	mg/kg	0.66	0.59	0.69	0.63	0.81
Nickel (Ni)	mg/kg	23.8	22.5	25.0	23.8	27.8
Phosphorus (P)	mg/kg	770	726	821	648	934
Potassium (K)	mg/kg	660	710	880	700	1090
Selenium (Se)	mg/kg	<0.20	0.20	<0.20	0.80	0.55
Silver (Ag)	mg/kg	0.12	0.12	0.17	0.13	0.12
Sodium (Na)	mg/kg	201	191	226	256	416
Strontium (Sr)	mg/kg	47.7	75.7	75.6	55.7	106
Thallium (Tl)	mg/kg	0.066	0.082	0.093	0.065	0.072
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	743	778	806	835	1000
Uranium (U)	mg/kg	0.491	0.525	0.574	0.482	0.650
Vanadium (V)	mg/kg	71.6	73.6	74.3	69.3	87.8
Zinc (Zn)	mg/kg	47.1	44.9	49.6	52.1	58.6
Zirconium (Zr)	mg/kg	5.0	4.8	5.0	5.8	7.3

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	WILLOW STAKE SOIL-2	WILLOW SEEDLING SOIL-3	WILLOW WATTLE SOIL-3	WILLOW STAKE SOIL-3	WILLOW SEEDLING SOIL-4	WILLOW WATTLE SOIL-4	WILLOW STAKE SOIL-4	WILLOW STAKE SOIL-4X	WILLOW WATTLE SOIL-4X	WILLOW STAKE SOIL-5	WILLOW SEEDLING SOIL-5	WILLOW WATTLE SOIL-5	WILLOW STAKE SOIL-6	WILLOW WATTLE SOIL-6	WILLOW SEEDLING SOIL-6	WILLOW SOIL-1	WILLOW SOIL-2	WILLOW SOIL-3	WILLOW SOIL-3X	WILLOW SOIL-4	WILLOW SOIL-5
Date Sampled		19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015
ALS Sample ID		L1667543-18	L1667543-19	L1667543-20	L1667543-21	L1667543-22	L1667543-23	L1667543-24	L1667543-25	L1667543-26	L1667543-27	L1667543-28	L1667543-29	L1667543-30	L1667543-31	L1667543-32	L1667543-33	L1667543-34	L1667543-35	L1667543-36	L1667543-37	L1667543-38
Physical Tests																						
pH (1:2 soil:water)	pH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	14.9	6.25	4.36	14.2	7.96	1.42	4.95	5.67	1.30	15.8	7.58	2.96	14.5	9.39	4.41	10.6	10.4	15.3	13.8	10.8	4.79
Organic / Inorganic Carbon																						
Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CaCO3 Equivalent)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Carbon by Combustion	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Organic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																						
Total Available Nitrogen	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Nitrogen by LECO	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Ammonium-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate+Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Phosphate-P	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Potassium	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Available Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																						
Aluminum (Al)	mg/kg	15300	11200	13800	17600	15800	9260	12400	12600	10500	18000	11600	12000	16500	13000	13800	19400	18000	20200	15800	13700	14300
Antimony (Sb)	mg/kg	0.39	0.60	0.43	0.53	0.61	0.45	0.44	0.40	0.46	0.49	0.45	0.36	0.51	0.37	0.51	0.20	0.33	0.52	0.43	0.36	0.49
Arsenic (As)	mg/kg	11.8	15.7	12.3	11.2	11.1	7.56	14.3	12.6	12.6	14.4	10.7	10.9	9.01	10.2	13.6	4.45	5.53	11.0	10.0	12.1	9.73
Barium (Ba)	mg/kg	148	112	133	253	107	48.3	109	103	50.1	174	122	125	139	118	118	82.7	89.9	127	96.7	232	115
Beryllium (Be)	mg/kg	0.59	0.49	0.47	0.59	0.46	0.28	0.45	0.47	0.30	0.66	0.39	0.45	0.49	0.40	0.42	0.40	0.36	0.52	0.40	0.47	0.39
Bismuth (Bi)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	mg/kg	6.6	<5.0	<5.0	6.6	<5.0	<5.0	<5.0	<5.0	<5.0	8.5	<5.0	8.5	6.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd)	mg/kg	0.161	0.297	0.200	0.157	0.218	0.209	0.213	0.198	0.226	0.194	0.178	0.139	0.218	0.182	0.208	0.150	0.121	0.348	0.229	0.742	0.224
Calcium (Ca)	mg/kg	21400	9690	11100	25600	13500	20200	8120	8220	16700	24600	14800	14000	22400	9720	9730	5530	7980	6420	5630	4970	5210
Chromium (Cr)	mg/kg	16.2	37.1	23.4	35.9	39.4	22.7	39.3	33.5	25.3	21.8	29.7	19.5	28.9	30.9	36.2	35.1	37.4	47.7	40.7	34.2	34.8
Cobalt (Co)	mg/kg	15.5	14.1	13.2	16.5	14.6	9.37	12.4	11.5	9.72	16.9	10.9	10.6	14.6	12.3	13.7	10.8	11.3	16.3	12.6	11.1	11.2
Copper (Cu)	mg/kg	608	87.8	148	359	85.6	38.4	96.2	101	39.0	608	115	259	315	192	115	19.0	27.2	51.2	34.3	23.3	48.5
Iron (Fe)	mg/kg	42400	33200	33000	41100	33100	22200	32900	31500	23200	42700	30200	30600	36600	32000	34200	30000	30800	37800	32200	28500	29300
Lead (Pb)	mg/kg	5.76	8.20	6.17	5.64	7.88	4.68	5.76	5.36	4.83	5.79	5.65	4.44	5.98	5.65	6.06	6.92	7.61	9.53	8.11	6.91	6.50
Lithium (Li)	mg/kg	16.3	10.1	15.9	17.3	17.6	10.4	12.6	12.7	10.1	18.7	11.5	11.1	15.7	13.4	13.9	27.8	19.7	28.2	20.0	25.2	13.4
Magnesium (Mg)	mg/kg	9490	6840	9730	13200	8140	5880	7190	6590	6710	11100	6430	7460	10300	7050	8490	7280	8030	8630	6760	4700	6030
Manganese (Mn)	mg/kg	607	503	870	704	601	486	594	572	449	745	574	532	687	615	562	416	441	654	529	1130	540
Mercury (Hg)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	mg/kg	3.17	0.80	1.04	1.87	0.87	0.72	1.24	1.23	0.61	2.92	0.99	1.61	1.74	1.34	0.96	0.72	0.51	0.76	0.64	1.04	0.62
Nickel (Ni)	mg/kg	13.9	32.7	23.6	35.7	32.5	19.9	27.6	22.8	21.1	15.2	20.5	16.6	24.1	22.8	30.1	27.7	28.0	39.8	30.2	24.6	25.1
Phosphorus (P)	mg/kg	1150	919	1060	1250	822	683	882	891	790	1250	849	985	994	869	893	392	751	792	751	595	803
Potassium (K)	mg/kg	1340	740	910	1140	1300	570	870	880	750	1470	960	900	1360	910	1130	880	960	1940	1410	1050	1020
Selenium (Se)	mg/kg	0.83	0.74	0.30	0.55	0.37	0.20	0.37	0.32	0.26	0.83	0.61	0.36	0.75	0.43	0.34	0.23	0.21	0.39	0.35	0.36	<0.20
Silver (Ag)	mg/kg	0.28	0.16	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.20	<0.10	<0.30	<0.10
Sodium (Na)	mg/kg	729	457	501	601	204	259	333	609	371	803	306	570	656	450	285	125	293	233	225	96	107
Strontium (Sr)	mg/kg	136	72.8	88.7	138	74.8	93.2	84.7	78.3	95.1	153	90.9	110	133	77.9	74.4	56.2	61.7	62.3	53.3	49.5	45.7
Thallium (Tl)	mg/kg	<0.050	0.094	0.077	0.053	0.134	0.107	0.084	0.075	0.091	<0.050	0.073	<0.050	0.062	0.064	0.097	0.091	0.097	0.183	0.142	0.251	0.091
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	1270	620	857	1370	881	621	875	906	678	1600	924	938	1190	747	994	768	995	768	695	524	827
Uranium (U)	mg/kg	0.928	0.745	0.482	0.761	0.628	0.438	0.941	0.896	0.595	0.997	1.32	0.651	0.813	0.739	0.749	0.982	0.710	0.755	0.844	1.47	0.517
Vanadium (V)	mg/kg	150	90.7	92.8	132	73.9	57.4	93.3	91.2	61.7	156	90.0	96.2	111	86.3	90.3	60.2	72.1	67.3	61.2	63.4	77.5
Zinc (Zn)	mg/kg	58.6	71.7	58.2	57.1	67.9	43.5	59.9	56.3	44.7	67.8	50.5	48.6	60.8	52.2	60.3	57.5	57.6	92.7	69.6	130	67.3
Zirconium (Zr)	mg/kg	6.4	5.7	5.3	8.2	5.8	5.1	2.9	2.8	5.2	9.4	5.2	6.0	8.9	2.2	4.6	2.0	3.2	1.5	1.1	<1.0	1.9

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	WILLOW SOIL-6
Date Sampled		25-Aug-2015
ALS Sample ID		L1667543-39
Physical Tests		
pH (1:2 soil:water)	pH	-
Moisture	%	3.78
Organic / Inorganic Carbon		
Inorganic Carbon	%	-
Inorganic Carbon (as CaCO3 Equivalent)	%	-
Total Carbon by Combustion	%	-
Total Organic Carbon	%	-
Plant Available Nutrients		
Total Available Nitrogen	mg/kg	-
Total Nitrogen by LECO	mg/kg	-
Available Ammonium-N	mg/kg	-
Available Nitrate-N	mg/kg	-
Nitrate+Nitrite-N	mg/kg	-
Available Nitrate-N	mg/kg	-
Nitrite-N	mg/kg	-
Available Phosphate-P	mg/kg	-
Available Potassium	mg/kg	-
Available Sulfate-S	mg/kg	-
Metals		
Aluminum (Al)	mg/kg	13100
Antimony (Sb)	mg/kg	0.26
Arsenic (As)	mg/kg	6.08
Barium (Ba)	mg/kg	52.4
Beryllium (Be)	mg/kg	0.29
Bismuth (Bi)	mg/kg	<0.20
Boron (B)	mg/kg	<5.0
Cadmium (Cd)	mg/kg	0.078
Calcium (Ca)	mg/kg	3470
Chromium (Cr)	mg/kg	38.1
Cobalt (Co)	mg/kg	9.30
Copper (Cu)	mg/kg	28.4
Iron (Fe)	mg/kg	27800
Lead (Pb)	mg/kg	4.59
Lithium (Li)	mg/kg	14.9
Magnesium (Mg)	mg/kg	5330
Manganese (Mn)	mg/kg	244
Mercury (Hg)	mg/kg	-
Molybdenum (Mo)	mg/kg	0.53
Nickel (Ni)	mg/kg	24.9
Phosphorus (P)	mg/kg	546
Potassium (K)	mg/kg	810
Selenium (Se)	mg/kg	<0.20
Silver (Ag)	mg/kg	<0.10
Sodium (Na)	mg/kg	112
Strontium (Sr)	mg/kg	30.0
Thallium (Tl)	mg/kg	0.065
Tin (Sn)	mg/kg	<2.0
Titanium (Ti)	mg/kg	814
Uranium (U)	mg/kg	0.533
Vanadium (V)	mg/kg	64.1
Zinc (Zn)	mg/kg	38.6
Zirconium (Zr)	mg/kg	2.1

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	WILLOW SOIL-6X	WILLOW SOIL-7	WILLOW SOIL-8	WILLOW SOIL-9	WILLOW SOIL-10	BERRIES SOIL-1	BERRIES SOIL-2	BERRIES SOIL-3	BERRIES SOIL-4	BERRIES TAILINGS-1	BERRIES TAILINGS-2	BERRIES TAILINGS-3	BERRIES TAILINGS-4	P1-Berry - AH Layer	P9 - A Layer	P1-Spruce - AH Layer	P28 - H Layer	P20 - H Layer	P14 - A Layer	Rye Grass soil - 11	Willow Seedling soil - 8
Date Sampled		25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	19-Aug-2015	30-Jul-2015	28-Jul-2015	28-Jul-2015	3-Aug-2015	2-Aug-2015	31-Jul-2015	29-Jul-2015	4-Aug-2015
ALS Sample ID		L1667543-40	L1667543-41	L1667543-42	L1667543-43	L1667543-44	L1667543-45	L1667543-46	L1667543-47	L1667543-48	L1667543-49	L1667543-50	L1667543-51	L1667543-52	L1654527-25	L1654527-24	L1654527-23	L1654527-124	L1654527-90	L1654527-58	L1654527-12	L1654527-136
Physical Tests																						
pH (1:2 soil:water)	pH	-	-	-	-	-	-	-	-	-	-	-	-	-	4.81	5.38	5.11	7.12	5.84	5.59	7.76	7.88
Moisture	%	3.84	2.90	9.84	3.98	7.22	29.2	25.6	16.6	68.3	4.16	9.67	1.90	21.7	34.9	-	-	59.4	41.9	35.2	-	-
Organic / Inorganic Carbon																						
Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CaCO3 Equivalent)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Carbon by Combustion	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Organic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients																						
Total Available Nitrogen	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	10.6	-	-	26.5	24	6	-	-
Total Nitrogen by LECO	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	0.808	-	-	1.78	1.68	0.201	-	-
Available Ammonium-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	10.6	-	-	26.5	24.3	6.0	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	<6.0	-	-	<10	<12	38.7	-	-
Nitrate+Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	<6.0	-	-	<8.0	<12	<2.0	-	-
Available Nitrate-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	<6.0	-	-	<8.0	<12	<2.0	-	-
Nitrite-N	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.2	-	-	<1.6	<2.4	<0.50	-	-
Available Phosphate-P	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	12.4	-	-	12.3	57.7	<2.0	-	-
Available Potassium	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	280	-	-	280	607	92	-	-
Available Sulfate-S	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	16.4	-	-	64	45	10.9	-	-
Metals																						
Aluminum (Al)	mg/kg	12900	8830	16400	14700	18200	25700	20400	8070	3720	13800	12300	11000	12600	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/kg	0.29	0.32	0.39	0.23	0.24	0.36	0.36	0.23	<0.10	0.31	0.31	0.28	0.30	0.35	0.36	0.23	-	0.18	0.36	0.43	0.33
Arsenic (As)	mg/kg	6.90	5.95	8.41	5.19	6.82	6.06	4.86	3.08	1.12	8.61	9.02	9.26	10.1	5.7	4.4	1.8	-	1.83	9.8	12.4	10.1
Barium (Ba)	mg/kg	53.0	49.4	91.3	43.8	101	220	139	149	49.4	147	159	124	125	194	236	173	-	200	176	177	89.7
Beryllium (Be)	mg/kg	0.28	0.24	0.42	0.29	0.38	1.19	0.63	0.20	0.11	0.50	0.49	0.47	0.51	0.87	0.95	0.58	-	0.15	0.8	0.63	0.32
Bismuth (Bi)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	-	-	-	-	-	-	-
Boron (B)	mg/kg	<5.0	<5.0	<5.0	<5.0	8.2	<5.0	<5.0	<5.0	<5.0	6.8	7.3	5.8	7.4	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/kg	0.086	0.145	0.239	0.169	0.160	0.927	0.745	0.333	0.236	0.155	0.145	0.170	0.134	0.42	0.62	0.84	-	3.87	0.66	0.15	0.172
Calcium (Ca)	mg/kg	3570	7210	5210	25200	18300	8100	10700	8730	8790	19100	20000	19100	21400	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/kg	36.4	26.0	35.0	30.3	40.7	41.6	36.2	16.2	5.88	13.5	13.5	8.39	9.56	48.6	60.9	12.4	-	12.0	54.7	11.3	30.8
Cobalt (Co)	mg/kg	9.13	8.49	12.7	11.7	14.0	16.7	11.3	6.52	4.16	13.2	13.2	12.8	13.4	24.0	20.9	8.8	-	11.3	13.5	17.1	10.8
Copper (Cu)	mg/kg	27.9	28.5	43.0	32.0	72.4	88.7	47.1	125	47.5	608	514	1070	927	46.8	59.9	39.4	-	22.1	63.5	807.0	113
Iron (Fe)	mg/kg	27600	22200	30400	29700	35700	33300	26400	17600	6620	47400	52500	47500	50700	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg	4.57	4.57	8.09	7.33	5.35	10.5	8.46	7.29	1.80	4.11	3.95	4.39	4.03	13.4	9.0	5.3	-	7.43	11.7	5.4	5.33
Lithium (Li)	mg/kg	14.8	8.7	16.3	20.3	13.2	18.8	18.7	7.9	2.2	12.3	12.3	11.6	11.5	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/kg	5340	4930	6460	7040	9060	5760	6170	3350	1370	6760	6470	6820	6850	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/kg	244	408	716	489	599	1250	513	1110	661	494	476	443	476	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	0.108	0.230	0.304	-	0.183	0.055	0.070	0.058
Molybdenum (Mo)	mg/kg	0.55	0.45	0.65	0.54	0.60	1.40	0.90	1.64	0.76	4.05	3.23	5.27	4.52	1.3	1.0	1.0	-	1.05	1.0	4.3	1.01
Nickel (Ni)	mg/kg	23.4	18.4	28.8	26.8	27.1	35.1	31.9	8.47	4.15	10.1	9.98	5.78	6.51	28.1	43.4	15.7	-	13.6	39.6	8.7	21.1
Phosphorus (P)	mg/kg	550	638	806	847	963	1140	824	607	322	1120	1320	1040	1210	-	-	-	-	-	-	-	-
Potassium (K)	mg/kg	830	610	1310	1080	1660	1830	1470	970	320	1140	1080	910	990	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg	<0.20	<0.20	0.22	<0.20	<0.20	0.36	<0.20	0.22	<0.20	0.78	0.75	1.15	0.98	<0.20	0.4	0.3	-	0.52	0.2	1.1	0.44
Silver (Ag)	mg/kg	<0.10	<0.10	0.12	<0.10	0.10	0.75	0.23	0.56	0.68	0.30	0.26	0.38	0.32	1.0	0.6	0.8	-	0.59	0.5	0.3	0.11
Sodium (Na)	mg/kg	102	153	136	264	576	241	189	252	167	803	747	881	916	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg	29.3	45.0	44.2	171	146	80.7	83.2	70.0	61.6	148	148	122	134	-	-	-	-	-	-	-	-
Thallium (Tl)	mg/kg	0.064	0.077	0.115	0.100	<0.050	0.138	0.087	0.054	<0.050	<0.050	<0.050	<0.050	<0.050	0.140	0.156	0.065	-	0.098	0.135	<0.050	0.062
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	808	670	811	792	1170	564	484	699	128	1100	1030	822	1170	-	-	-	-	-	-	-	-
Uranium (U)	mg/kg	0.513	0.415	0.502	0.627	0.418	1.17	1.07	0.439	0.281	0.849	0.785	0.604	0.719	0.98	1.33	0.79	-	0.224	1.1	1.04	0.736
Vanadium (V)	mg/kg	64.1	57.1	72.2	53.3	119	68.0	58.7	58.3	16.2	178	192	176	197	84	68	15	-	15.9	97	200	80.4
Zinc (Zn)	mg/kg	38.5	37.6	67.4	54.3	45.6	87.6	83.6	49.9	15.3	41.5	43.7	50.3	48.9	91.3	139.0	54.6	-	89.8	97.0	60.5	48.1
Zirconium (Zr)	mg/kg	1.9	2.5	2.4	4.3	4.7	<1.0	<1.0	<1.0	<1.0	2.0	2.9	4.7	5.7	-	-	-	-	-	-	-	-

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID **Date Sampled** **ALS Sample ID**	Units	Willow Seedling soil - 9 4-Aug-2015 L1654527-131
Physical Tests		
pH (1:2 soil:water)	pH	7.65
Moisture	%	-
Organic / Inorganic Carbon		
Inorganic Carbon	%	-
Inorganic Carbon (as CaCO3 Equivalent)	%	-
Total Carbon by Combustion	%	-
Total Organic Carbon	%	-
Plant Available Nutrients		
Total Available Nitrogen	mg/kg	-
Total Nitrogen by LECO	mg/kg	-
Available Ammonium-N	mg/kg	-
Available Nitrate-N	mg/kg	-
Nitrate+Nitrite-N	mg/kg	-
Available Nitrate-N	mg/kg	-
Nitrite-N	mg/kg	-
Available Phosphate-P	mg/kg	-
Available Potassium	mg/kg	-
Available Sulfate-S	mg/kg	-
Metals		
Aluminum (Al)	mg/kg	-
Antimony (Sb)	mg/kg	0.45
Arsenic (As)	mg/kg	10.1
Barium (Ba)	mg/kg	106
Beryllium (Be)	mg/kg	0.38
Bismuth (Bi)	mg/kg	-
Boron (B)	mg/kg	-
Cadmium (Cd)	mg/kg	0.22
Calcium (Ca)	mg/kg	-
Chromium (Cr)	mg/kg	27.3
Cobalt (Co)	mg/kg	10.6
Copper (Cu)	mg/kg	54.4
Iron (Fe)	mg/kg	-
Lead (Pb)	mg/kg	5.5
Lithium (Li)	mg/kg	-
Magnesium (Mg)	mg/kg	-
Manganese (Mn)	mg/kg	-
Mercury (Hg)	mg/kg	0.052
Molybdenum (Mo)	mg/kg	0.8
Nickel (Ni)	mg/kg	19.0
Phosphorus (P)	mg/kg	-
Potassium (K)	mg/kg	-
Selenium (Se)	mg/kg	0.3
Silver (Ag)	mg/kg	0.1
Sodium (Na)	mg/kg	-
Strontium (Sr)	mg/kg	-
Thallium (Tl)	mg/kg	0.063
Tin (Sn)	mg/kg	<2.0
Titanium (Ti)	mg/kg	-
Uranium (U)	mg/kg	0.7
Vanadium (V)	mg/kg	79
Zinc (Zn)	mg/kg	67.1
Zirconium (Zr)	mg/kg	-

Table C-2: Results of Co-located Soil Analysis
Detailed Site Investigation
Mount Polley Mining Corporation

Client Sample ID	Units	P5 - A Layer	P4 - T Silty Sand	P21 - T Sand	SS15-14	OP2 soil - T	P23 - T Silty Sand & Gravel	Berry soil - 5 - T	P2 - T Sand	SS15-05	P13 - T Silt Sand	SS15-19
Date Sampled		29-Jul-2015	29-Jul-2015	2-Aug-2015	3-Aug-2015	4-Aug-2015	2-Aug-2015	4-Aug-2015	29-Jul-2015	30-Jul-2015	31-Jul-2015	2-Aug-2015
ALS Sample ID		L1654527-10	L1654527-8	L1654527-93	L1654527-110	L1654527-132	L1654527-103	L1654527-135	L1654527-1	L1654527-36	L1654527-31	L1654527-96
Physical Tests												
pH (1:2 soil:water)	pH	6.00	8.40	8.40	8.39	7.51	8.38	8.53	8.46	8.56	7.61	8.68
Moisture	%	45.7	20.5	24.4	-	-	13.7	-	19.4	-	25.8	-
Organic / Inorganic Carbon												
Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CaCO3 Equivalent)	%	-	-	-	-	-	-	-	-	-	-	-
Total Carbon by Combustion	%	-	-	-	-	-	-	-	-	-	-	-
Total Organic Carbon	%	-	-	-	-	-	-	-	-	-	-	-
Plant Available Nutrients												
Total Available Nitrogen	mg/kg	27.9	5.4	3.2	-	-	2.5	-	<2.2	-	3.6	-
Total Nitrogen by LECO	mg/kg	0.456	0.047	0.046	-	-	0.043	-	0.041	-	0.123	-
Available Ammonium-N	mg/kg	27.9	5.4	3.2	-	-	2.5	-	1.7	-	3.6	-
Available Nitrate-N	mg/kg	<4.0	<1.0	<1.0	-	-	<1.0	-	<1.0	-	1.4	-
Nitrate+Nitrite-N	mg/kg	<4.0	<2.0	<2.0	-	-	<2.0	-	<2.0	-	<2.0	-
Available Nitrate-N	mg/kg	<4.0	<2.0	<2.0	-	-	<2.0	-	<2.0	-	<2.0	-
Nitrite-N	mg/kg	<0.80	<0.50	<0.50	-	-	<0.50	-	<0.50	-	<0.50	-
Available Phosphate-P	mg/kg	4.4	<2.0	<2.0	-	-	<2.0	-	<2.0	-	3.6	-
Available Potassium	mg/kg	126	57	71	-	-	116	-	65	-	79	-
Available Sulfate-S	mg/kg	15.2	4.8	11.0	-	-	29.5	-	15.2	-	43.6	-
Metals												
Aluminum (Al)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/kg	0.32	0.30	0.36	0.34	0.30	-	0.33	0.36	0.44	0.40	0.41
Arsenic (As)	mg/kg	4.7	8.8	10.0	8.7	7.2	-	9.1	11.3	11.6	9.0	11.4
Barium (Ba)	mg/kg	144	115	113	124	148	-	120	120	162	159	166
Beryllium (Be)	mg/kg	0.65	0.46	0.48	0.45	0.42	-	0.48	0.55	0.72	0.54	0.63
Bismuth (Bi)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/kg	0.29	0.13	0.16	0.11	0.21	-	0.12	0.17	0.16	0.21	0.18
Calcium (Ca)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/kg	49.8	8.7	14.1	15.3	15.6	-	10.6	11.7	9.3	16.7	10.6
Cobalt (Co)	mg/kg	26.0	12.8	13.0	12.3	11.8	-	12.6	14.7	18.1	13.9	16.1
Copper (Cu)	mg/kg	75.2	1030.0	626.0	469.0	488.0	-	794.0	881.0	784.0	568.0	811.0
Iron (Fe)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg	17.4	3.8	4.2	4.1	4.2	-	4.3	4.7	4.5	4.3	4.5
Lithium (Li)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/kg	0.063	0.080	0.069	0.055	0.083	-	0.065	0.079	0.070	0.079	0.080
Molybdenum (Mo)	mg/kg	1.6	4.4	3.3	3.2	3.1	-	4.3	4.5	4.6	3.7	4.9
Nickel (Ni)	mg/kg	28.8	6.1	9.0	10.1	11.2	-	7.3	7.0	8.5	11.6	8.9
Phosphorus (P)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg	0.2	1.1	0.8	0.7	0.8	-	0.9	1.1	1.1	0.8	1.1
Silver (Ag)	mg/kg	0.5	0.4	0.3	0.2	0.3	-	0.3	0.4	0.4	0.3	0.4
Sodium (Na)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	mg/kg	0.164	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	mg/kg	0.74	0.59	0.83	0.74	0.92	-	0.71	0.95	0.99	1.1	1.07
Vanadium (V)	mg/kg	82	176	210	198	164	-	186	257	171	204	184
Zinc (Zn)	mg/kg	93.8	43.9	46.7	42.2	42.4	-	44.0	52.7	55.5	45.8	55.7
Zirconium (Zr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-

ATTACHMENT D
Results of Plant and Soil QA/QC Analyses

Table D-2: Results of Tissue QA/QC Analyses - Plant Samples
Detailed Site Investigation
Mount Polley Mining Corporation

Sample ID	Units	WILLOW-LHAC-2X-16	WILLOW-LHAC-2-16	Method Detection Limit	Mean	Relative Percent Difference (RPD)	SPRUCE-UHAC-1-16	SPRUCE-UHAC-1X-16	Method Detection Limit	Mean	Relative Percent Difference (RPD)	G0157-8 WILLOW16-14	G0157-9 WILLOW16-14D	Method Detection Limit	Mean	Relative Percent Difference (RPD)
Date Sampled		**16-Aug-2016**	**16-Aug-2016**				**3-Aug-2016**	**3-Aug-2016**				**3-Sep-2016**	**3-Sep-2016**			
QA/QC		**10:23**	**10:23**				**13:45**	**13:45**				**0:00**	**0:00**			
Laboratory (ALS) Sample ID		**L1826684-3**	**L1826684-4**				**L1826684-8**	**L1826684-9**				**L1826566-34**	**L1826566-35**			
												Tissue	**Tissue**			
Physical Tests																
pH	%	56.1	60.0	0.50	58.1	7%	57.0	57.9	0.50	57.5	1.6%	57.3	57.0	0.25	57.2	0.5%
Metals																
Aluminum (Al)	mg/kg	426	451	2.0	439	6%	10.0	9.20	2.0	9.60	NA	42.1	107	2.0	74.6	**87%**
Aluminum (Al)	mg/kg	187	180	0.40	184	4%	4.29	3.88	0.40	4.09	10%	18.0	45.9	0.40	32.0	**87%**
Antimony (Sb)	mg/kg	0.026	0.025	0.010	0.026	NA	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Antimony (Sb)	mg/kg	0.012	0.0098	0.0020	0.011	16%	0.0033	0.0026	0.0020	0.0030	NA	<0.0020	<0.0020	0.0020	NC	NC
Arsenic (As)	mg/kg	0.44	0.46	0.020	0.45	5%	<0.020	<0.020	0.020	NC	NC	0.033	0.059	0.020	0.046	NA
Arsenic (As)	mg/kg	0.19	0.19	0.0040	0.19	4%	0.0051	0.0049	0.0040	0.0050	NA	0.014	0.025	0.0040	0.020	NA
Barium (Ba)	mg/kg	12.3	12.7	0.050	12.5	3%	136	99.9	0.050	118	31%	4.36	3.74	0.050	4.05	15%
Barium (Ba)	mg/kg	5.40	5.09	0.010	5.25	6%	58.5	42.1	0.010	50.3	33%	1.86	1.61	0.010	1.74	14%
Beryllium (Be)	mg/kg	0.014	0.015	0.010	0.015	NA	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Beryllium (Be)	mg/kg	0.0061	0.0059	0.0020	0.0060	NA	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Bismuth (Bi)	mg/kg	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Bismuth (Bi)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Boron (B)	mg/kg	98.3	103	1.0	101	5%	20.4	17.2	1.0	18.8	17%	13.9	19.7	1.0	16.8	35%
Boron (B)	mg/kg	43.1	41.2	0.20	42.2	5%	8.78	7.25	0.20	8.02	19%	5.92	8.45	0.20	7.19	35%
Cadmium (Cd)	mg/kg	0.71	0.66	0.0050	0.68	7%	0.19	0.21	0.0050	0.20	12%	0.33	0.21	0.0050	0.27	42%
Cadmium (Cd)	mg/kg	0.31	0.26	0.0010	0.29	17%	0.081	0.090	0.0010	0.085	11%	0.140	0.092	0.0010	0.12	41%
Calcium (Ca)	mg/kg	25000	24600	20	24800	2%	8630	6550	20	7590	27%	7780	6510	20	7145	18%
Calcium (Ca)	mg/kg	11000	9830	4.0	10415	11%	3710	2760	4.0	3235	29%	3320	2800	4.0	3060	17%
Cesium (Cs)	mg/kg	0.061	0.064	0.0050	0.062	4%	0.0055	0.0060	0.0050	0.0058	NA	0.048	0.038	0.0050	0.043	24%
Cesium (Cs)	mg/kg	0.027	0.026	0.0010	0.026	5%	0.0024	0.0025	0.0010	0.0025	NA	0.021	0.016	0.0010	0.018	23%
Chromium (Cr)	mg/kg	0.81	1.00	0.050	0.90	21%	0.40	0.54	0.050	0.470	32%	0.066	0.201	0.050	0.134	NA
Chromium (Cr)	mg/kg	0.35	0.40	0.010	0.38	12%	0.17	0.23	0.010	0.200	30%	0.028	0.086	0.010	0.057	**102%**
Cobalt (Co)	mg/kg	7.27	7.54	0.020	7.41	4%	0.15	0.16	0.020	0.16	4%	0.51	0.50	0.020	0.51	1%
Cobalt (Co)	mg/kg	3.19	3.01	0.0040	3.10	6%	0.065	0.066	0.0040	0.066	1%	0.22	0.22	0.0040	0.22	0%
Copper (Cu)	mg/kg	14.6	14.8	0.10	14.7	1%	6.39	7.05	0.10	6.72	10%	4.77	4.28	0.10	4.53	11%
Copper (Cu)	mg/kg	6.41	5.90	0.020	6.16	8%	2.75	2.97	0.020	2.86	8%	2.04	1.84	0.020	1.94	10%
Iron (Fe)	mg/kg	1200	1320	3.0	1260	10%	28.9	25.6	3.0	27.3	12%	75.0	164	3.0	119.5	**74%**
Iron (Fe)	mg/kg	527	527	0.60	527	0%	12.4	10.80	0.60	11.6	14%	32.0	70.5	0.60	51.3	**75%**
Lead (Pb)	mg/kg	0.26	0.26	0.020	0.26	0%	<0.020	<0.020	0.020	NC	NC	0.026	0.049	0.020	0.038	NA
Lead (Pb)	mg/kg	0.11	0.10	0.0040	0.11	9%	0.0042	<0.0040	0.0040	NC	NC	0.011	0.021	0.0040	0.016	NA
Lithium (Li)	mg/kg	0.52	0.54	0.50	0.53	NA	<0.50	<0.50	0.50	NC	NC	<0.50	<0.50	0.50	NC	NC
Lithium (Li)	mg/kg	0.23	0.22	0.10	0.23	NA	<0.10	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC
Magnesium (Mg)	mg/kg	3180	3190	2.0	3185	0%	763	735	2.0	749	4%	1730	1620	2.0	1675	7%
Magnesium (Mg)	mg/kg	1390	1280	0.40	1335	8%	328	310	0.40	319	6%	739	694	0.40	717	6%
Manganese (Mn)	mg/kg	223	238	0.050	231	7%	225	195	0.050	210	14%	63.9	46.9	0.050	55.4	31%
Manganese (Mn)	mg/kg	97.7	95.3	0.010	96.5	2%	97.0	81.9	0.010	89.5	17%	27.3	20.1	0.010	23.7	30%
Mercury (Hg)	mg/kg	-	-	-	NC	NC	-	-	-	NC	NC	0.0073	0.0073	0.0050	0.0073	NA
Mercury (Hg)	mg/kg	-	-	-	NC	NC	-	-	-	NC	NC	0.0031	0.0032	0.0010	0.0032	NA
Molybdenum (Mo)	mg/kg	0.81	0.82	0.020	0.81	NA	1.18	1.22	0.020	1.20	3%	0.41	0.48	0.020	0.45	14%
Molybdenum (Mo)	mg/kg	0.35	0.33	0.0040	0.34	8%	0.51	0.51	0.0040	0.51	1%	0.18	0.21	0.0040	0.19	15%
Nickel (Ni)	mg/kg	10.6	11.2	0.20	10.9	NA	1.01	1.14	0.20	1.08	NA	0.94	0.85	0.20	0.90	NA
Nickel (Ni)	mg/kg	4.64	4.46	0.040	4.55	NA	0.44	0.48	0.040	0.46	NA	0.40	0.37	0.040	0.38	10%
Phosphorus (P)	mg/kg	1550	1530	10	1540	1%	2330	2370	10	2350	2%	2570	2150	10	2360	18%
Phosphorus (P)	mg/kg	680	612	2.0	646	11%	1000	998	2.0	999	0%	1100	922	2.0	1011	18%
Potassium (K)	mg/kg	8440	8880	20	8660	5%	7600	8700	20	8150	13%	19700	16800	20	18250	16%
Potassium (K)	mg/kg	3710	3550	4.0	3630	4%	3270	3660	4.0	3465	11%	8410	7220	4.0	7815	15%
Rubidium (Rb)	mg/kg	3.24	3.43	0.050	3.34	6%	5.13	5.92	0.050	5.53	14%	15.8	10.9	0.050	13.4	37%
Rubidium (Rb)	mg/kg	1.42	1.37	0.010	1.40	4%	2.20	2.49	0.010	2.35	12%	6.77	4.69	0.010	5.73	36%
Selenium (Se)	mg/kg	0.37	0.39	0.050	0.38	NA	<0.050	<0.050	0.050	NC	NC	0.18	0.15	0.050	0.16	NA
Selenium (Se)	mg/kg	0.16	0.16	0.010	0.16	NA	<0.010	<0.010	0.010	NC	NC	0.075	0.062	0.010	0.069	19%
Sodium (Na)	mg/kg	<20	<20	20	NC	NC	<20	<20	20	NC	NC	<20	<20	20	NC	NC
Sodium (Na)	mg/kg	7.6	6.6	4.0	7.10	14%	<4.0	<4.0	4.0	NC	NC	<4.0	4.7	4.0	NC	NC
Strontium (Sr)	mg/kg	134	134	0.050	134	0%	56.8	42.3	0.050	49.6	29%	40.9	34.1	0.050	37.5	18%
Strontium (Sr)	mg/kg	59.0	53.8	0.010	56.4	9%	24.4	17.8	0.010	21.1	31%	17.5	14.6	0.010	16.1	18%
Tellurium (Te)	mg/kg	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC
Tellurium (Te)	mg/kg	0.0041	<0.0040	0.0040	NC	NC	<0.0040	<0.0040	0.0040	NC	NC	<0.0040	<0.0040	0.0040	NC	NC
Thallium (Tl)	mg/kg	0.0062	0.0067	0.0020	0.0065	NA	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Thallium (Tl)	mg/kg	0.0027	0.0027	0.00040	0.0027	NA	0.00050	<0.00040	0.00040	NC	NC	<0.00040	<0.00040	0.00040	NC	NC
Tin (Sn)	mg/kg	0.11	0.12	0.10	0.12	9%	0.13	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC
Tin (Sn)	mg/kg	0.046	0.046	0.020	0.046	0%	0.058	0.031	0.020	0.045	**61%**	<0.020	0.023	0.020	NC	NC
Uranium (U)	mg/kg	0.032	0.034	0.0020	0.033	NA	<0.0020	<0.0020	0.0020	NC	NC	0.0025	0.0047	0.0020	0.0036	NA
Uranium (U)	mg/kg	0.014	0.014	0.00040	0.014	NA	<0.00040	<0.00040	0.00040	NC	NC	0.0011	0.0020	0.00040	0.0015	NA
Vanadium (V)	mg/kg	2.9	3.38	0.10	3.16	14%	<0.10	<0.10	0.10	NC	NC	0.16	0.37	0.10	0.27	NA
Vanadium (V)	mg/kg	1.29	1.35	0.020	1.32	5%	<0.020	<0.020	0.020	NC	NC	0.068	0.16	0.020	0.11	**80%**
Zinc (Zn)	mg/kg	31.4	31.0	0.50	31.2	1%	58.1	51.9	0.50	55	11%	21.6	14.5	0.50	18.1	39%
Zinc (Zn)	mg/kg	13.8	12.4	0.10	13.1	11%	25.0	21.8	0.10	23.4	14%	9.23	6.21	0.10	7.72	39%
Zirconium (Zr)	mg/kg	0.43	0.31	0.20	0.37	NC	<0.20	<0.20	0.20	NC	NC	<0.20	<0.20	0.20	NC	NC
Zirconium (Zr)	mg/kg	0.19	0.12	0.040	0.16	NC	<0.040	<0.040	0.040	NC	NC	<0.040	<0.040	0.040	NC	NC

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.

Golders' acceptable RPD for tissue is less than or equal to 50%.
Bold values indicate an exceedance of the acceptable RPD.

Table D-2: Results of Tissue QA/QC Analyses - Plant Samples
Detailed Site Investigation
Mount Polley Mining Corporation

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	G0165-3 GRASS16-16 3-Sep-2016 0:00 L1826566-40 Tissue	G0165-4 GRASS16-16D 3-Sep-2016 0:00 L1826566-41 Tissue	Method Detection Limit	Mean	Relative Percent Difference (RPD)	G0165-8 GRASS16-BKG-08 3-Sep-2016 0:00 L1826566-45 Tissue	G0165-9 GRASS16-BKG-08D 3-Sep-2016 0:00 L1826566-46 Tissue	Method Detection Limit	Mean	Relative Percent Difference (RPD)	G0167-8 SPRUCE16-11 4-Sep-2016 0:00 L1826566-69 Tissue	G0167-9 SPRUCE16-11D 4-Sep-2016 0:00 L1826566-70 Tissue	Method Detection Limit	Mean	Relative Percent Difference (RPD)
Physical Tests																
pH	%	60.6	59.6	0.25	60.1	2%	34.2	50.2	0.25	42.2	37.9%	53.6	49.9	0.25	51.8	7%
Metals																
Aluminum (Al)	mg/kg	23.4	28.0	2.0	25.7	18%	24.5	18.0	2.0	21.25	31%	92.5	60.2	2.0	76.4	42%
Aluminum (Al)	mg/kg	9.23	11.3	0.40	10.27	20%	16.1	8.97	0.40	12.535	**57%**	42.9	30.2	0.40	36.6	35%
Antimony (Sb)	mg/kg	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Antimony (Sb)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Arsenic (As)	mg/kg	0.020	<0.020	0.020	NC	NC	0.022	<0.020	0.020	NC	NC	0.060	0.041	0.020	0.051	NA
Arsenic (As)	mg/kg	0.0080	0.0062	0.0040	0.0071	NA	0.015	0.0059	0.0040	0.0103	NA	0.028	0.021	0.0040	0.024	30%
Barium (Ba)	mg/kg	4.17	3.68	0.050	3.93	12%	8.32	5.69	0.050	7.005	38%	116	105	0.050	111	10%
Barium (Ba)	mg/kg	1.64	1.48	0.010	1.56	10%	5.48	2.83	0.010	4.155	**64%**	54.0	52.8	0.010	53.4	2%
Beryllium (Be)	mg/kg	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Beryllium (Be)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Bismuth (Bi)	mg/kg	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Bismuth (Bi)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Boron (B)	mg/kg	4.0	4.4	1.0	4.2	NA	5.0	3.5	1.0	4.25	NA	10.2	9.9	1.0	10.1	3%
Boron (B)	mg/kg	1.58	1.77	0.20	1.68	11%	3.28	1.77	0.20	2.525	**60%**	4.74	4.95	0.20	4.85	4%
Cadmium (Cd)	mg/kg	0.0076	0.0069	0.0050	0.0073	NA	0.021	0.021	0.0050	0.0209	NA	0.060	0.029	0.0050	0.044	**69%**
Cadmium (Cd)	mg/kg	0.0030	0.0028	0.0010	0.0029	NA	0.014	0.011	0.0010	0.01205	24%	0.028	0.015	0.0010	0.021	**63%**
Calcium (Ca)	mg/kg	1490	1480	20	1485	1%	2040	1710	20	1875	18%	7070	6210	20	6640	13%
Calcium (Ca)	mg/kg	587	597	4.0	592	2%	1340	853	4.0	1096.5	44%	3280	3120	4.0	3200	5%
Cesium (Cs)	mg/kg	0.0091	0.0098	0.0050	0.0095	NA	0.0058	0.0051	0.0050	0.00545	NA	0.033	0.026	0.0050	0.029	24%
Cesium (Cs)	mg/kg	0.0036	0.0039	0.0010	0.0038	NA	0.0038	0.0025	0.0010	0.00315	NA	0.015	0.013	0.0010	0.014	16%
Chromium (Cr)	mg/kg	<0.050	0.055	0.050	NC	NC	0.052	<0.050	0.050	NC	NC	0.093	0.059	0.050	0.076	NA
Chromium (Cr)	mg/kg	0.012	0.022	0.010	0.017	NA	0.035	0.014	0.010	0.0245	NA	0.043	0.030	0.010	0.037	NA
Cobalt (Co)	mg/kg	0.037	0.038	0.020	0.038	NA	0.035	0.041	0.020	0.038	NA	0.135	0.10	0.020	0.12	27%
Cobalt (Co)	mg/kg	0.015	0.015	0.0040	0.015	NA	0.023	0.020	0.0040	0.02155	13%	0.063	0.051	0.0040	0.057	20%
Copper (Cu)	mg/kg	7.60	6.34	0.10	6.97	18%	5.63	5.88	0.10	5.755	4%	7.72	6.10	0.10	6.91	23%
Copper (Cu)	mg/kg	2.99	2.56	0.020	2.78	15%	3.71	2.93	0.020	3.32	23%	3.58	3.06	0.020	3.32	16%
Iron (Fe)	mg/kg	73.5	86.0	3.0	79.8	16%	79.0	67.8	3.0	73.4	15%	266	186	3.0	226	35%
Iron (Fe)	mg/kg	29.0	34.7	0.60	31.9	18%	52.0	33.8	0.60	42.9	42%	123	93.3	0.60	108	27%
Lead (Pb)	mg/kg	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC	0.042	<0.020	0.020	NC	NC
Lead (Pb)	mg/kg	0.0062	0.0071	0.0040	0.0067	NA	0.0104	0.0050	0.0040	0.0077	NA	0.019	0.0099	0.0040	0.015	NA
Lithium (Li)	mg/kg	<0.50	<0.50	0.50	NC	NC	<0.50	<0.50	0.50	NC	NC	<0.50	<0.50	0.50	NC	NC
Lithium (Li)	mg/kg	<0.10	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC
Magnesium (Mg)	mg/kg	1290	1150	2.0	1220	11%	1010	989	2.0	999.5	2%	962	970	2.0	966	1%
Magnesium (Mg)	mg/kg	507	465	0.40	486	9%	662	493	0.40	577.5	29%	446	486	0.40	466	9%
Manganese (Mn)	mg/kg	27.4	27.4	0.050	27.4	0%	76.5	71.6	0.050	74.05	7%	118	104	0.050	111	13%
Manganese (Mn)	mg/kg	10.8	11.1	0.010	11.0	3%	50.3	35.7	0.010	43	34%	54.5	52.3	0.010	53.4	4%
Mercury (Hg)	mg/kg	<0.0050	<0.0050	0.0050	NC	NC	<0.0050	<0.0050	0.0050	NC	NC	0.0092	0.0094	0.0050	0.0093	NA
Mercury (Hg)	mg/kg	0.0011	<0.0010	0.0010	NC	NC	0.0027	0.0014	0.0020	0.00205	NA	0.0043	0.0047	0.0010	0.0045	NA
Molybdenum (Mo)	mg/kg	3.52	3.28	0.020	3.4	7%	1.47	1.56	0.020	1.515	6%	0.55	0.45	0.020	0.50	20%
Molybdenum (Mo)	mg/kg	1.39	1.33	0.0040	1.36	4%	0.97	0.78	0.0040	0.873	22%	0.25	0.22	0.0040	0.24	13%
Nickel (Ni)	mg/kg	0.25	2.10	0.20	1.18	**157%**	0.30	0.46	0.20	0.38	NA	0.93	0.84	0.20	0.89	NA
Nickel (Ni)	mg/kg	0.10	0.85	0.040	0.47	**158%**	0.200	0.231	0.040	0.2155	14%	0.43	0.422	0.040	0.43	2%
Phosphorus (P)	mg/kg	3760	3390	10	3575	10%	2880	3080	10	2980	7%	2700	2590	10	2645	4%
Phosphorus (P)	mg/kg	1480	1370	2.0	1425	8%	1900	1530	2.0	1715	22%	1250	1300	2.0	1275	4%
Potassium (K)	mg/kg	11400	13800	20	12600	19%	7080	7170	20	7125	1%	7540	7330	20	7435	3%
Potassium (K)	mg/kg	4480	5560	4.0	5020	22%	4660	3570	4.0	4115	26%	3500	3670	4.0	3585	5%
Rubidium (Rb)	mg/kg	13.9	14.3	0.050	14.1	3%	9.74	10.7	0.050	10.22	9%	8.73	8.12	0.050	8.43	7%
Rubidium (Rb)	mg/kg	5.45	5.79	0.010	5.62	6%	6.41	5.35	0.010	5.88	18%	4.04	4.07	0.010	4.06	1%
Selenium (Se)	mg/kg	<0.050	<0.050	0.050	NC	NC	<0.050	<0.050	0.050	NC	NC	<0.050	<0.050	0.050	NC	NC
Selenium (Se)	mg/kg	0.019	0.016	0.010	0.018	NA	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Sodium (Na)	mg/kg	<20	<20	20	NC	NC	<20	<20	20	NC	NC	<20	<20	20	NC	NC
Sodium (Na)	mg/kg	<4.0	<4.0	4.0	NC	NC	<4.0	<4.0	4.0	NC	NC	<4.0	<4.0	4.0	NC	NC
Strontium (Sr)	mg/kg	8.62	7.61	0.050	8.12	12%	10.5	8.54	0.050	9.52	21%	50.4	45.7	0.050	48.1	10%
Strontium (Sr)	mg/kg	3.39	3.07	0.010	3.23	10%	6.89	4.25	0.010	5.57	47%	23.4	22.9	0.010	23.2	2%
Tellurium (Te)	mg/kg	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC
Tellurium (Te)	mg/kg	<0.0040	<0.0040	0.0040	NC	NC	<0.0040	<0.0040	0.0040	NC	NC	<0.0040	<0.0040	0.0040	NC	NC
Thallium (Tl)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	0.0058	0.0058	0.0020	0.0058	NA
Thallium (Tl)	mg/kg	<0.00040	<0.00040	0.00040	NC	NC	<0.00040	<0.00040	0.00040	NC	NC	0.0027	0.0029	0.00040	0.0028	8%
Tin (Sn)	mg/kg	<0.10	0.13	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC
Tin (Sn)	mg/kg	<0.020	0.053	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC	0.039	<0.020	0.020	NC	NC
Uranium (U)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	0.0038	0.0029	0.0020	0.0034	NA
Uranium (U)	mg/kg	<0.00040	0.00047	0.00040	NC	NC	0.00054	<0.00040	0.00040	NC	NC	0.0018	0.0015	0.00040	0.0016	NA
Vanadium (V)	mg/kg	0.14	0.19	0.10	0.17	NA	0.13	<0.10	0.10	NC	NC	0.95	0.65	0.10	0.8	38%
Vanadium (V)	mg/kg	0.054	0.076	0.020	0.065	NA	0.084	0.043	0.020	0.0635	NA	0.44	0.33	0.020	0.38	30%
Zinc (Zn)	mg/kg	29.4	29.0	0.50	29.2	1%	49.5	49.9	0.50	49.7	1%	53.8	43.0	0.50	48.4	22%
Zinc (Zn)	mg/kg	11.6	11.7	0.10	11.7	1%	32.6	24.9	0.10	28.75	27%	24.9	21.5	0.10	23.2	15%
Zirconium (Zr)	mg/kg	<0.20	<0.20	0.20	NC	NC	<0.20	<0.20	0.20	NC	NC	<0.20	<0.20	0.20	NC	NC
Zirconium (Zr)	mg/kg	<0.040	<0.040	0.040	NC	NC	<0.040	<0.040	0.040	NC	NC	<0.040	<0.040	0.040	NC	NC

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate

NA = not applicable; NC = not calculated; Mean = average of two values

Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.

Golders' acceptable RPD for tissue is less than or equal to 50%.
Bold values indicate an exceedance of the acceptable RPD.

Table D-2: Results of Tissue QA/QC Analyses - Plant Samples
Detailed Site Investigation
Mount Polley Mining Corporation

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	G0169-2 WILLOW16-BKG-09 5-Sep-2016 0:00 L1826505-45 Tissue	G0169-3 WILLOW16-BKG-09D 5-Sep-2016 0:00 L1826505-46 Tissue	Method Detection Limit	Mean	Relative Percent Difference (RPD)	G0169-4 SPRUCE16-BKG-08 5-Sep-2016 0:00 L1826505-47 Tissue	G0169-5 SPRUCE16-BKG-08D 5-Sep-2016 0:00 L1826505-48 Tissue	Method Detection Limit	Mean	Relative Percent Difference (RPD)	G0171-4 GRASS16-BKG-09 5-Sep-2016 0:00 L1826505-68 Tissue	G0171-5 GRASS16-BKG-09D 5-Sep-2016 0:00 L1826505-69 Tissue	Method Detection Limit	Mean	Relative Percent Difference (RPD)
Physical Tests																
pH	%	55.0	60.9	0.25	58.0	10%	57.6	56.8	0.25	57.2	1%	17.9	16.8	0.25	17.4	6%
Metals																
Aluminum (Al)	mg/kg	22.7	27.9	2.0	25.3	21%	12.7	13.1	2.0	12.9	3%	17.0	19.3	2.0	18.2	13%
Aluminum (Al)	mg/kg	10.2	10.9	0.40	10.6	7%	5.37	5.64	0.40	5.51	5%	13.9	16.0	0.40	15.0	14%
Antimony (Sb)	mg/kg	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Antimony (Sb)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Arsenic (As)	mg/kg	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC
Arsenic (As)	mg/kg	0.0088	0.0075	0.0040	0.0082	NA	<0.0040	0.0059	0.0040	NC	NC	0.0098	0.0092	0.0040	0.0095	NA
Barium (Ba)	mg/kg	6.63	6.42	0.050	6.53	3%	49.2	53.3	0.050	51.3	8%	4.09	5.24	0.050	4.67	25%
Barium (Ba)	mg/kg	2.98	2.51	0.010	2.75	17%	20.9	23.0	0.010	22.0	10%	3.36	4.36	0.010	3.86	26%
Beryllium (Be)	mg/kg	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Beryllium (Be)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Bismuth (Bi)	mg/kg	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Bismuth (Bi)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Boron (B)	mg/kg	31.9	30.3	1.0	31.1	5%	18.6	21.7	1.0	20.2	15%	4.1	4.3	1.0	4.2	NA
Boron (B)	mg/kg	14.4	11.8	0.20	13.1	20%	7.89	9.37	0.20	8.63	17%	3.40	3.60	0.20	3.5	6%
Cadmium (Cd)	mg/kg	2.96	2.68	0.0050	2.82	10%	0.023	0.021	0.0050	0.022	NA	<0.0050	<0.0050	0.0050	NC	NC
Cadmium (Cd)	mg/kg	1.33	1.05	0.0010	1.19	24%	0.0097	0.0092	0.0010	0.0095	5%	0.0024	0.0023	0.0010	0.0024	NA
Calcium (Ca)	mg/kg	21400	21400	20	21400	0%	7710	9260	20	8485	18%	1770	1830	20	1800	3%
Calcium (Ca)	mg/kg	9620	8360	4.0	8990	14%	3270	4000	4.0	3635	20%	1460	1520	4.0	1490	4%
Cesium (Cs)	mg/kg	0.065	0.067	0.0050	0.066	4%	0.021	0.026	0.0050	0.023	NA	<0.0050	<0.0050	0.0050	NC	NC
Cesium (Cs)	mg/kg	0.029	0.026	0.0010	0.028	10%	0.0087	0.011	0.0010	0.010	27%	0.0019	0.0020	0.0010	0.0020	NA
Chromium (Cr)	mg/kg	0.051	0.063	0.050	0.057	NA	<0.050	0.051	0.050	NC	NC	<0.050	<0.050	0.050	NC	NC
Chromium (Cr)	mg/kg	0.023	0.024	0.010	0.024	NA	0.018	0.022	0.010	0.02	NA	0.035	0.041	0.010	0.038	NA
Cobalt (Co)	mg/kg	0.65	0.709	0.020	0.68	9%	0.030	0.029	0.020	0.030	NA	<0.020	<0.020	0.020	NC	NC
Cobalt (Co)	mg/kg	0.29	0.277	0.0040	0.28	5%	0.013	0.013	0.0040	0.013	NA	0.016	0.017	0.0040	0.016	NA
Copper (Cu)	mg/kg	6.10	5.90	0.10	6.00	3%	3.19	3.97	0.10	3.58	22%	4.50	5.56	0.10	5.03	21%
Copper (Cu)	mg/kg	2.75	2.31	0.020	2.53	17%	1.35	1.72	0.020	1.54	24%	3.69	4.63	0.020	4.16	23%
Iron (Fe)	mg/kg	75.4	84.6	3.0	80.0	12%	30.6	33.1	3.0	31.9	8%	59.1	59.9	3.0	59.5	1%
Iron (Fe)	mg/kg	34.0	33.1	0.60	33.6	3%	13.0	14.3	0.60	13.7	10%	48.5	49.9	0.60	49.2	3%
Lead (Pb)	mg/kg	<0.020	0.029	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC
Lead (Pb)	mg/kg	0.0081	0.011	0.0040	0.0097	NA	0.0041	0.0052	0.0040	0.0047	NA	0.0079	0.0075	0.0040	0.0077	NA
Lithium (Li)	mg/kg	<0.50	<0.50	0.50	NC	NC	<0.50	<0.50	0.50	NC	NC	<0.50	<0.50	0.50	NC	NC
Lithium (Li)	mg/kg	<0.10	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC
Magnesium (Mg)	mg/kg	1230	1500	2.0	1365	20%	835	895	2.0	865	7%	1060	1310	2.0	1185	21%
Magnesium (Mg)	mg/kg	553	585	0.40	569	6%	354	386	0.40	370	9%	874	1090	0.40	982	22%
Manganese (Mn)	mg/kg	32.2	28.7	0.050	30.5	11%	148	151	0.050	150	2%	30.2	35.1	0.050	32.7	15%
Manganese (Mn)	mg/kg	14.5	11.2	0.010	12.9	26%	63.0	65.3	0.010	64.2	4%	24.8	29.2	0.010	27	16%
Mercury (Hg)	mg/kg	0.011	0.012	0.0050	0.012	NA	0.013	0.014	0.0050	0.013	NA	<0.0050	0.0050	0.0050	NC	NC
Mercury (Hg)	mg/kg	0.0051	0.0048	0.0010	0.0050	NA	0.0054	0.0061	0.0010	0.0058	12%	0.0034	0.0042	0.0020	0.0038	NA
Molybdenum (Mo)	mg/kg	0.079	0.089	0.020	0.084	NA	0.030	0.040	0.020	0.035	NA	4.12	3.75	0.020	3.94	9%
Molybdenum (Mo)	mg/kg	0.036	0.035	0.0040	0.035	2%	0.013	0.017	0.0040	0.015	NA	3.38	3.12	0.0040	3.25	8%
Nickel (Ni)	mg/kg	5.07	5.70	0.20	5.39	12%	0.41	<0.20	0.20	NC	NC	0.23	0.29	0.20	0.26	NA
Nickel (Ni)	mg/kg	2.28	2.23	0.040	2.26	2%	0.17	0.082	0.040	0.13	NA	0.19	0.240	0.040	0.21	25%
Phosphorus (P)	mg/kg	1470	1620	10	1545	10%	1650	1820	10	1735	10%	3550	4250	10	3900	18%
Phosphorus (P)	mg/kg	660	634	2.0	647	4%	698	785	2.0	742	12%	2920	3540	2.0	3230	19%
Potassium (K)	mg/kg	10400	11400	20	10900	9%	5590	7200	20	6395	25%	4230	4840	20	4535	13%
Potassium (K)	mg/kg	4660	4440	4.0	4550	5%	2370	3110	4.0	2740	27%	3470	4030	4.0	3750	15%
Rubidium (Rb)	mg/kg	19.4	20.9	0.050	20.2	7%	7.10	9.32	0.050	8.21	27%	0.94	0.95	0.050	0.94	1%
Rubidium (Rb)	mg/kg	8.73	8.18	0.010	8.46	7%	3.01	4.03	0.010	3.52	29%	0.77	0.79	0.010	0.78	2%
Selenium (Se)	mg/kg	0.21	0.19	0.050	0.20	NA	<0.050	<0.050	0.050	NC	NC	<0.050	<0.050	0.050	NC	NC
Selenium (Se)	mg/kg	0.093	0.073	0.010	0.083	24%	<0.010	<0.010	0.010	NC	NC	<0.010	<0.010	0.010	NC	NC
Sodium (Na)	mg/kg	<20	<20	20	NC	NC	<20	<20	20	NC	NC	<20	<20	20	NC	NC
Sodium (Na)	mg/kg	<4.0	<4.0	4.0	NC	NC	<4.0	<4.0	4.0	NC	NC	<4.0	<4.0	4.0	NC	NC
Strontium (Sr)	mg/kg	119	113	0.050	116	5%	88.3	101	0.050	94.7	13%	7.08	7.41	0.050	7.25	5%
Strontium (Sr)	mg/kg	53.7	44.0	0.010	48.9	20%	37.5	43.7	0.010	40.6	15%	5.82	6.17	0.010	6.00	6%
Tellurium (Te)	mg/kg	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC
Tellurium (Te)	mg/kg	<0.0040	<0.0040	0.0040	NC	NC	<0.0040	<0.0040	0.0040	NC	NC	<0.0040	<0.0040	0.0040	NC	NC
Thallium (Tl)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Thallium (Tl)	mg/kg	0.00052	<0.00040	0.00040	NC	NC	<0.00040	<0.00040	0.00040	NC	NC	<0.00040	<0.00040	0.00040	NC	NC
Tin (Sn)	mg/kg	<0.10	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC
Tin (Sn)	mg/kg	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC	<0.020	<0.020	0.020	NC	NC
Uranium (U)	mg/kg	0.0023	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	<0.0020	<0.0020	0.0020	NC	NC
Uranium (U)	mg/kg	0.0010	0.00077	0.00040	0.00091	NA	0.00050	0.00062	0.00040	0.00056	NA	0.00046	0.00057	0.00040	0.00052	NA
Vanadium (V)	mg/kg	0.15	0.18	0.10	0.17	NA	<0.10	<0.10	0.10	NC	NC	<0.10	<0.10	0.10	NC	NC
Vanadium (V)	mg/kg	0.066	0.071	0.020	0.069	NA	0.026	0.030	0.020	0.028	NA	0.056	0.061	0.020	0.059	NA
Zinc (Zn)	mg/kg	53.2	53.4	0.50	53.3	0%	53.0	65.3	0.50	59.2	21%	31.3	37.0	0.50	34.2	17%
Zinc (Zn)	mg/kg	24.0	20.8	0.10	22.4	14%	22.5	28.2	0.10	25.4	22%	25.7	30.8	0.10	28.3	18%
Zirconium (Zr)	mg/kg	<0.20	<0.20	0.20	NC	NC	<0.20	<0.20	0.20	NC	NC	<0.20	<0.20	0.20	NC	NC
Zirconium (Zr)	mg/kg	<0.040	<0.040	0.040	NC	NC	<0.040	<0.040	0.040	NC	NC	<0.040	<0.040	0.040	NC	NC

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate

NA = not applicable; NC = not calculated; Mean = average of two values

Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.

Golders' acceptable RPD for tissue is less than or equal to 50%.
Bold values indicate an exceedance of the acceptable RPD.

Table D-2: Results of Soil QA/QC Analyses - Co-located Soil Samples
Detailed Site Investigation
Mount Polley Mining Corporation

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	WILLOW-LHAC-2X-16 16-Aug-2016 10:23 L1824887-3	WILLOW-LHAC-2-16 16-Aug-2016 10:23 L1824887-4	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	SPRUCE-UHAC-1-16 3-Aug-2016 13:45 L1824887-8	SPRUCE-UHAC-1X-16 16-Aug-2016 13:45 L1824887-9	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Tests													
pH	pH	8.13	8.23	0.10	8.18	1%	NA	7.57	8.55	0.10	8.06	12%	NA
Organic / Inorganic Carbon													
Inorganic Carbon	%	0.37	0.490	0.050	0.43	29%	NA	0.30	0.36	0.050	0.33	19%	NA
Inorganic Carbon (as CaCO3 Equivalent)	%	3.04	4.09	0.40	3.57	29%	NA	2.47	2.99	0.40	2.73	19%	NA
Total Carbon by Combustion	%	0.60	0.67	0.05	0.64	11%	NA	17.1	0.51	0.05	8.81	**188%**	NA
Total Organic Carbon	%	0.23	0.18	0.13	0.21	NA	0.37	16.8	0.15	0.10	8.48	**196%**	NA
Plant Available Nutrients													
Available Nitrate-N	mg/kg	<1.0	<1.0	1.0	NC	NC	NC	<3.0	<1.0	1.0	NC	NC	NC
Available Phosphate-P	mg/kg	2.9	2.7	2.0	2.8	NA	0.10	8.5	<2.0	2.0	NC	NC	NC
Available Potassium	mg/kg	66	59	20	62.5	NA	0.35	245	126	20	186	**64%**	NA
Metals													
Aluminum (Al)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/kg	0.48	0.52	0.10	0.5	8%	NA	0.39	0.38	0.10	0.39	NA	0.10
Arsenic (As)	mg/kg	8.91	7.90	0.10	8.41	12%	NA	8.60	12.0	0.10	10.3	33%	NA
Barium (Ba)	mg/kg	80.9	71.6	0.50	76.3	12%	NA	163	168	0.50	166	3%	NA
Beryllium (Be)	mg/kg	0.36	0.32	0.10	0.34	NA	0.40	0.53	0.63	0.10	0.58	17%	NA
Bismuth (Bi)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/kg	0.22	0.19	0.050	0.204	NA	0.58	0.19	0.15	0.050	0.17	NA	0.78
Calcium (Ca)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/kg	28.4	26.7	0.50	27.6	6%	NA	17.9	11.4	0.50	14.7	**44%**	NA
Cobalt (Co)	mg/kg	12.1	10.7	0.10	11.4	12%	NA	13.8	16.9	0.10	15.4	20%	NA
Copper (Cu)	mg/kg	181	120	0.50	151	**41%**	NA	492	902	0.50	697	**59%**	NA
Iron (Fe)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg	6.33	6.17	0.50	6.25	3%	NA	4.93	5.03	0.50	4.98	2%	NA
Lithium (Li)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/kg	0.071	0.077	0.050	0.074	NA	0.12	0.085	0.082	0.050	0.084	NA	0.06
Molybdenum (Mo)	mg/kg	1.49	1.00	0.10	1.25	**39%**	NA	3.26	4.15	0.10	3.71	24%	NA
Nickel (Ni)	mg/kg	25.7	23.4	0.50	24.6	9%	NA	11.6	9.80	0.50	10.7	17%	NA
Phosphorus (P)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg	0.53	0.43	0.20	0.48	NA	0.50	0.89	1.08	0.20	0.99	NA	0.95
Silver (Ag)	mg/kg	0.16	0.15	0.10	0.16	NA	0.10	0.26	0.41	0.10	0.34	NA	1.5
Sodium (Na)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	mg/kg	0.10	0.101	0.050	0.10	NA	0.0	<0.050	<0.050	0.050	NC	NC	NC
Tin (Sn)	mg/kg	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC
Titanium (Ti)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	mg/kg	0.62	0.56	0.050	0.59	11%	NA	1.03	0.94	0.050	0.99	9%	NA
Vanadium (V)	mg/kg	76.4	66.0	0.20	71.2	15%	NA	185	198	0.20	192	7%	NA
Zinc (Zn)	mg/kg	48.8	43.8	2.0	46.3	11%	NA	49.8	55.5	2.0	52.7	11%	NA
Zirconium (Zr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.
Golders' acceptable RPD for soil is less than or equal to 35%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.
Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

Table D-2: Results of Soil QA/QC Analyses - Co-located Soil Samples
Detailed Site Investigation
Mount Polley Mining Corporation

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	CSS16-BKG-20 5-Sep-2016 0:00 L1826551-26	CSS16-BKG-20D 5-Sep-2016 0:00 L1826551-27	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	CSS16-BKG-22 5-Sep-2016 0:00 L1826551-29	CSS16-BKG-22D 5-Sep-2016 0:00 L1826551-30	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	CSS16-27 3-Sep-2016 0:00 L1826516-12	CSS16-27D 3-Sep-2016 0:00 L1826516-13	Method Detection Limit
Physical Tests																
pH	pH	6.46	6.40	0.10	6.43	1%	NA	5.55	5.57	0.10	5.56	0%	NA	7.84	7.86	0.10
Organic / Inorganic Carbon																
Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-	0.23	0.21	0.050
Inorganic Carbon (as CaCO3 Equivalent)	%	-	-	-	-	-	-	-	-	-	-	-	-	1.89	1.78	0.40
Total Carbon by Combustion	%	-	-	-	-	-	-	-	-	-	-	-	-	3.69	2.05	0.05
Total Organic Carbon	%	41.6	41.8	0.050	41.7	0%	NA	6.10	6.12	0.050	6.11	0%	NA	3.46	1.84	0.050
Plant Available Nutrients																
Available Nitrate-N	mg/kg	<5.0	<5.0	5.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<1.0	2.0
Available Phosphate-P	mg/kg	7.5	8.3	4.0	7.9	NC	NC	98	98	20	98	NA	0.0	10.8	11.0	2.0
Available Potassium	mg/kg	170	160	40	165	NC	NC	90	86	20	88	NA	0.20	146	135	20
Metals																
Aluminum (Al)	mg/kg	3410	3440	50	3425	1%	NA	10900	11800	50	11350	8%	NA	12200	12200	50
Antimony (Sb)	mg/kg	0.28	0.24	0.10	0.26	NA	0.40	0.27	0.24	0.10	0.26	NA	0.30	0.29	0.32	0.10
Arsenic (As)	mg/kg	1.54	1.47	0.10	1.51	5%	NA	6.56	7.18	0.10	6.87	9%	NA	8.61	8.79	0.10
Barium (Ba)	mg/kg	58.8	58.4	0.50	58.6	1%	NA	132	123	0.50	128	7%	NA	127	129	0.50
Beryllium (Be)	mg/kg	0.14	0.12	0.10	0.13	NA	0.20	0.24	0.22	0.10	0.23	NA	0.20	0.46	0.49	0.10
Bismuth (Bi)	mg/kg	<0.20	<0.20	0.20	NC	NC	NC	<0.20	<0.20	0.20	NC	NC	NC	<0.20	<0.20	0.20
Boron (B)	mg/kg	9.9	8.6	5.0	9.25	NA	0.26	<5.0	<5.0	5.0	NC	NC	NC	7.0	7.3	5.0
Cadmium (Cd)	mg/kg	1.05	1.06	0.020	1.06	1%	NA	0.39	0.375	0.020	0.38	4%	NA	0.16	0.17	0.020
Calcium (Ca)	mg/kg	35100	31300	50	33200	11%	NA	4600	4050	50	4325	13%	NA	18200	18300	50
Chromium (Cr)	mg/kg	5.66	5.71	0.50	5.69	1%	NA	30.3	33.4	0.50	31.9	10%	NA	14.0	16.3	0.50
Cobalt (Co)	mg/kg	2.41	2.39	0.10	2.40	1%	NA	7.66	8.48	0.10	8.07	10%	NA	13.3	13.2	0.10
Copper (Cu)	mg/kg	33.1	33.1	0.50	33.1	0%	NA	24.1	24.8	0.50	24.5	3%	NA	649	620	0.50
Iron (Fe)	mg/kg	4970	4920	50	4945	1%	NA	24900	24600	50	24750	1%	NA	49600	48700	50
Lead (Pb)	mg/kg	4.05	3.58	0.50	3.82	12%	NA	5.65	4.81	0.50	5.23	16%	NA	4.95	5.91	0.50
Lithium (Li)	mg/kg	2.4	2.3	2.0	2.35	NA	0.05	8.5	7.7	2.0	8.1	NA	0.40	12.5	13.1	2.0
Magnesium (Mg)	mg/kg	2000	1990	20	1995	1%	NA	4530	5620	20	5075	21%	NA	6430	6380	20
Manganese (Mn)	mg/kg	163	165	1.0	164	1%	NA	404	452	1.0	428	11%	NA	532	536	1.0
Mercury (Hg)	mg/kg	0.15	0.15	0.050	0.15	NA	0.02	<0.050	<0.050	0.050	NC	NC	NC	0.095	0.094	0.050
Molybdenum (Mo)	mg/kg	0.90	0.80	0.10	0.85	12%	NA	0.69	0.58	0.10	0.64	17%	NA	3.32	3.11	0.10
Nickel (Ni)	mg/kg	10.7	10.7	0.50	10.7	0%	NA	17.6	22.2	0.50	19.9	23%	NA	9.89	10.8	0.50
Phosphorus (P)	mg/kg	858	849	50	854	1%	NA	1060	1060	50	1060	0%	NA	1120	1090	50
Potassium (K)	mg/kg	490	510	100	500	4%	NA	650	640	100	645	2%	NA	1100	1120	100
Selenium (Se)	mg/kg	1.45	1.48	0.20	1.47	2%	NA	<0.20	<0.20	0.20	NC	NC	NC	0.83	0.84	0.20
Silver (Ag)	mg/kg	0.31	0.26	0.10	0.29	NA	0.50	<0.10	<0.10	0.10	NC	NC	NC	0.31	0.32	0.10
Sodium (Na)	mg/kg	<50	<50	50	NC	NC	NC	93	102	50	97.5	NA	0.18	583	546	50
Strontium (Sr)	mg/kg	224	196	0.50	210	13%	NA	47.3	36.4	0.50	41.9	26%	NA	121	135	0.50
Thallium (Tl)	mg/kg	<0.050	<0.050	0.050	NC	NC	NC	0.059	0.051	0.050	0.055	NA	0.16	<0.050	<0.050	0.050
Tin (Sn)	mg/kg	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0
Titanium (Ti)	mg/kg	78.3	83.4	1.0	80.9	6%	NA	709	750	1.0	730	6%	NA	936	934	1.0
Uranium (U)	mg/kg	3.12	2.63	0.050	2.88	17%	NA	0.35	0.29	0.050	0.32	18%	NA	0.81	0.85	0.050
Vanadium (V)	mg/kg	9.31	9.45	0.20	9.38	1%	NA	66.1	72.2	0.20	69.2	9%	NA	184	180	0.20
Zinc (Zn)	mg/kg	65.1	63.7	2.0	64.4	2%	NA	67.2	66.6	2.0	66.9	1%	NA	46.1	45.6	2.0
Zirconium (Zr)	mg/kg	1.6	1.4	1.0	1.5	NA	0.20	1.3	1.2	1.0	1.25	NA	0.10	2.5	2.2	1.0

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.
Golders' acceptable RPD for soil is less than or equal to 35%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.
Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

Table D-2: Results of Soil QA/QC Analyses - Co-located Soil Samples
Detailed Site Investigation
Mount Polley Mining Corporation

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	CSS16-39 4-Sep-2016 0:00 L1826516-24	CSS16-39D 4-Sep-2016 0:00 L1826516-25	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	CSS16-BKG-13 3-Sep-2016 0:00 L1826516-36	CSS16-BKG-13D 3-Sep-2016 0:00 L1826516-37	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Tests																
pH	pH	7.85	0%	NA	7.71	7.67	0.10	7.69	1%	NA	5.48	5.53	0.10	5.51	1%	NA
Organic / Inorganic Carbon																
Inorganic Carbon	%	0.22	NA	0.28	0.26	0.26	0.050	0.26	1%	NA	0.16	0.16	0.050	0.16	NA	0.04
Inorganic Carbon (as CaCO3 Equivalent)	%	1.84	NA	0.28	2.19	2.17	0.40	2.18	1%	NA	1.3	1.29	0.40	1.30	NA	0.03
Total Carbon by Combustion	%	2.87	**57%**	NA	3.13	2.85	0.05	2.99	9%	NA	17.6	18.0	0.05	17.8	2%	NA
Total Organic Carbon	%	2.65	**61%**	NA	2.87	2.59	0.050	2.73	10%	NA	17.4	17.8	0.050	17.6	2%	NA
Plant Available Nutrients																
Available Nitrate-N	mg/kg	NC	NC	NC	1.6	1.6	1.0	1.6	NA	0.00	<4.0	<4.0	4.0	NC	NC	NC
Available Phosphate-P	mg/kg	10.9	2%	NA	3.3	3.9	2.0	3.6	NA	0.30	55.5	48.9	4.0	52.2	13%	NA
Available Potassium	mg/kg	141	8%	NA	88	86	20	87	NA	0.10	267	252	40	260	6%	NA
Metals																
Aluminum (Al)	mg/kg	12200	0%	NA	14700	15000	50	14850	2%	NA	14500	14200	50	14350	2%	NA
Antimony (Sb)	mg/kg	0.31	NA	0.30	0.39	0.37	0.10	0.38	NA	0.20	0.51	0.26	0.10	0.39	NA	**2.50**
Arsenic (As)	mg/kg	8.7	2%	NA	8.92	8.82	0.10	8.87	1%	NA	4.22	3.61	0.10	3.92	16%	NA
Barium (Ba)	mg/kg	128	2%	NA	163	160	0.50	161.5	2%	NA	176	162	0.50	169	8%	NA
Beryllium (Be)	mg/kg	0.48	NA	0.30	0.53	0.54	0.10	0.54	2%	NA	0.40	0.42	0.10	0.41	NA	0.20
Bismuth (Bi)	mg/kg	NC	NC	NC	<0.20	<0.20	0.20	NC	NC	NC	<0.20	<0.20	0.20	NC	NC	NC
Boron (B)	mg/kg	7.15	NA	0.06	7.9	7.7	5.0	7.8	NA	0.0	5.8	<5.0	5.0	NC	NC	NC
Cadmium (Cd)	mg/kg	0.16	4%	NA	0.21	0.23	0.020	0.22	7%	NA	0.52	0.45	0.020	0.48	15%	NA
Calcium (Ca)	mg/kg	18250	1%	NA	20800	20900	50	20850	0%	NA	8650	8200	50	8425	5%	NA
Chromium (Cr)	mg/kg	15.2	15%	NA	16.6	17.2	0.50	16.9	4%	NA	28.9	29.7	0.50	29.3	3%	NA
Cobalt (Co)	mg/kg	13.3	1%	NA	13.6	13.6	0.10	13.6	0%	NA	12.4	11.9	0.10	12.2	4%	NA
Copper (Cu)	mg/kg	634.5	5%	NA	539	547	0.50	543	1%	NA	40.4	36.8	0.50	38.6	9%	NA
Iron (Fe)	mg/kg	49150	2%	NA	49200	47500	50	48350	4%	NA	21500	22800	50	22150	6%	NA
Lead (Pb)	mg/kg	5.43	18%	NA	4.66	4.74	0.50	4.70	2%	NA	7.84	7.78	0.50	7.81	1%	NA
Lithium (Li)	mg/kg	12.8	5%	NA	12.3	12.5	2.0	12.4	2%	NA	15.3	14.8	2.0	15.1	3%	NA
Magnesium (Mg)	mg/kg	6405	1%	NA	6600	6560	20	6580	1%	NA	5820	5540	20	5680	5%	NA
Manganese (Mn)	mg/kg	534	1%	NA	520	521	1.0	521	0%	NA	1290	1100	1.0	1195	16%	NA
Mercury (Hg)	mg/kg	0.095	NA	0.02	0.10	0.11	0.050	0.11	NA	0.14	0.11	0.12	0.050	0.12	NA	0.12
Molybdenum (Mo)	mg/kg	3.22	7%	NA	3.96	3.69	0.10	3.83	7%	NA	1.60	1.38	0.10	1.49	15%	NA
Nickel (Ni)	mg/kg	10.3	9%	NA	12.0	12.5	0.50	12.3	4%	NA	24.3	22.1	0.50	23.2	9%	NA
Phosphorus (P)	mg/kg	1105	3%	NA	1220	1210	50	1215	1%	NA	934	873	50	904	7%	NA
Potassium (K)	mg/kg	1110	2%	NA	1230	1230	100	1230	0%	NA	1380	1370	100	1375	1%	NA
Selenium (Se)	mg/kg	0.84	NA	0.05	0.82	0.77	0.20	0.80	NA	0.25	0.35	<0.20	0.20	NC	NC	NC
Silver (Ag)	mg/kg	0.32	NA	0.10	0.29	0.31	0.10	0.3	NA	0.20	0.27	0.23	0.10	0.25	NA	0.40
Sodium (Na)	mg/kg	565	7%	NA	714	696	50	705	3%	NA	89	131	50	110	NA	0.84
Strontium (Sr)	mg/kg	128	11%	NA	158	157	0.50	158	1%	NA	58.5	60.2	0.50	59.4	3%	NA
Thallium (Tl)	mg/kg	NC	NC	NC	<0.050	<0.050	0.050	NC	NC	NC	0.098	0.109	0.050	0.10	NA	0.22
Tin (Sn)	mg/kg	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC
Titanium (Ti)	mg/kg	935	0%	NA	1170	1110	1.0	1140	5%	NA	721	806	1.0	763.5	11%	NA
Uranium (U)	mg/kg	0.83	4%	NA	1.23	1.20	0.050	1.22	2%	NA	0.38	0.42	0.050	0.40	10%	NA
Vanadium (V)	mg/kg	182	2%	NA	187	182	0.20	185	3%	NA	55.1	56.6	0.20	55.9	3%	NA
Zinc (Zn)	mg/kg	45.9	1%	NA	46.1	45.5	2.0	45.8	1%	NA	143	126	2.0	135	13%	NA
Zirconium (Zr)	mg/kg	2.35	NA	0.30	2.0	1.9	1.0	1.95	NA	0.10	1.3	1.6	1.0	1.45	NA	0.30

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.

Golders' acceptable RPD for soil is less than or equal to 35%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.

Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

ATTACHMENT E
Analytical Reports

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-DEC-16 13:34 (MT)
Version: FINAL REV. 3

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826505

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0147, G0149, G0150, G0152, G0156, G0157, G0165, G0166, G0167, G0168, G0169, G0170, G0171
Legal Site Desc:

Comments:
16-DEC-2016 Split File #2.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-1	L1826505-3	L1826505-4	L1826505-5	L1826505-6
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
	Sampled Time					
	Client ID	G0149-8 BERRY16-11	G0149-10 BERRY16-12	G0149-11 BERRY16-13	G0149-12 SPRUCE16-02	G0150-1 BERRY16-14
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	77.5	79.9	77.4	57.8	76.6
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<5.0	3.2	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	<1.0	1.33	<1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	0.0028	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.030	<0.030	<0.030	<0.020	<0.030
	Arsenic (As)-Total (mg/kg wwt)	<0.0060	<0.0060	<0.0060	0.0045	<0.0060
	Barium (Ba)-Total (mg/kg)	4.32	4.29	0.609	16.9	3.60
	Barium (Ba)-Total (mg/kg wwt)	0.970	0.860	0.138	7.14	0.843
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	0.0039	<0.0020
	Boron (B)-Total (mg/kg)	18.3	14.5	13.7	38.3	9.2
	Boron (B)-Total (mg/kg wwt)	4.11	2.91	3.10	16.1	2.15
	Cadmium (Cd)-Total (mg/kg)	0.106	0.036	<0.010	0.0263	0.024
	Cadmium (Cd)-Total (mg/kg wwt)	0.0239	0.0072	<0.0020	0.0111	0.0056
	Calcium (Ca)-Total (mg/kg)	2520	3110	2390	6050	1280
	Calcium (Ca)-Total (mg/kg wwt)	566	624	539	2550	300
	Cesium (Cs)-Total (mg/kg)	<0.0050	<0.0050	0.0092	0.0157	<0.0050
	Cesium (Cs)-Total (mg/kg wwt)	<0.0010	<0.0010	0.0021	0.0066	<0.0010
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.050	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.010	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	<0.020	0.024	<0.020	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0055	0.0072	<0.0040
	Copper (Cu)-Total (mg/kg)	5.10	5.20	3.80	2.54	1.01
	Copper (Cu)-Total (mg/kg wwt)	1.15	1.04	0.859	1.07	0.236
	Iron (Fe)-Total (mg/kg)	21.9	20.6	27.3	17.5	5.5
	Iron (Fe)-Total (mg/kg wwt)	4.9	4.1	6.2	7.38	1.3
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.020	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.0040	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	948	968	1380	728	317
	Magnesium (Mg)-Total (mg/kg wwt)	213	194	312	307	74.3
	Manganese (Mn)-Total (mg/kg)	3.45	3.43	18.7	47.4	1.18
	Manganese (Mn)-Total (mg/kg wwt)	0.776	0.688	4.22	20.0	0.277

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-7	L1826505-10	L1826505-11	L1826505-12	L1826505-13
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	19-AUG-16	19-AUG-16	20-AUG-16	20-AUG-16	20-AUG-16
	Sampled Time					
	Client ID	G0150-2 BERRY16-15	G0150-5 SPRUCE16-03	G0150-6 BERRY16-BKG-04	G0150-7 BERRY16-BKG-05	G0150-8 BERRY16-BKG-06
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	75.6	54.0	66.6	45.6	74.5
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	7.8	3.6	6.0	4.8
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	3.60	1.19	3.28	1.23
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.030	0.026	<0.020	<0.020	<0.020
	Arsenic (As)-Total (mg/kg wwt)	<0.0060	0.0119	<0.0040	<0.0040	<0.0040
	Barium (Ba)-Total (mg/kg)	5.90	74.6	4.40	6.56	1.72
	Barium (Ba)-Total (mg/kg wwt)	1.44	34.3	1.47	3.57	0.440
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	17.2	14.4	21.0	9.7	11.2
	Boron (B)-Total (mg/kg wwt)	4.20	6.64	7.02	5.29	2.87
	Cadmium (Cd)-Total (mg/kg)	0.048	0.103	0.0822	0.0067	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.0116	0.0474	0.0274	0.0036	<0.0010
	Calcium (Ca)-Total (mg/kg)	2640	11000	708	4640	5760
	Calcium (Ca)-Total (mg/kg wwt)	644	5070	236	2520	1470
	Cesium (Cs)-Total (mg/kg)	0.0064	0.0212	0.0108	<0.0050	0.0064
	Cesium (Cs)-Total (mg/kg wwt)	0.0016	0.0097	0.0036	0.0011	0.0016
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.010	<0.010	0.015	<0.010
	Cobalt (Co)-Total (mg/kg)	<0.020	0.047	0.023	<0.020	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0214	0.0076	0.0082	<0.0040
	Copper (Cu)-Total (mg/kg)	4.58	2.26	9.88	4.07	5.00
	Copper (Cu)-Total (mg/kg wwt)	1.12	1.04	3.30	2.21	1.28
	Iron (Fe)-Total (mg/kg)	19.6	22.7	25.6	21.0	19.0
	Iron (Fe)-Total (mg/kg wwt)	4.8	10.5	8.54	11.4	4.87
	Lead (Pb)-Total (mg/kg)	<0.050	<0.020	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.010	0.0059	<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1080	635	1520	1970	2110
	Magnesium (Mg)-Total (mg/kg wwt)	263	292	507	1070	539
	Manganese (Mn)-Total (mg/kg)	2.87	114	18.0	24.6	16.9
	Manganese (Mn)-Total (mg/kg wwt)	0.700	52.3	6.00	13.4	4.33

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-14	L1826505-15	L1826505-16	L1826505-17	L1826505-18
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	20-AUG-16	20-AUG-16	20-AUG-16	20-AUG-16	20-AUG-16
	Sampled Time					
	Client ID	G0150-9 BERRY16-BKG-07	G0150-10 BERRY16-BKG-08	G0150-11 BERRY16-BKG-09	G0150-12 BERRY16-16	G0152-1 BERRY16-17
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	87.3	82.5	74.1	79.5	70.9
Metals	Aluminum (Al)-Total (mg/kg)	<5.0	<5.0	<5.0	7.7	<5.0
	Aluminum (Al)-Total (mg/kg wwt)	<1.0	<1.0	<1.0	1.6	1.0
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.030	<0.030	<0.030	<0.030	<0.030
	Arsenic (As)-Total (mg/kg wwt)	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
	Barium (Ba)-Total (mg/kg)	8.04	1.32	4.09	1.69	3.60
	Barium (Ba)-Total (mg/kg wwt)	1.02	0.232	1.06	0.347	1.05
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	21.8	14.1	14.6	13.7	11.0
	Boron (B)-Total (mg/kg wwt)	2.78	2.47	3.77	2.81	3.21
	Cadmium (Cd)-Total (mg/kg)	0.033	<0.010	0.023	0.022	0.021
	Cadmium (Cd)-Total (mg/kg wwt)	0.0042	<0.0020	0.0061	0.0046	0.0062
	Calcium (Ca)-Total (mg/kg)	1980	1980	1870	2880	966
	Calcium (Ca)-Total (mg/kg wwt)	252	346	484	591	281
	Cesium (Cs)-Total (mg/kg)	<0.0050	0.0063	0.0082	0.0108	<0.0050
	Cesium (Cs)-Total (mg/kg wwt)	<0.0010	0.0011	0.0021	0.0022	<0.0010
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	0.036	<0.020	0.026	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.0064	<0.0040	0.0053	<0.0040
	Copper (Cu)-Total (mg/kg)	3.38	3.73	1.96	4.85	1.76
	Copper (Cu)-Total (mg/kg wwt)	0.431	0.653	0.508	0.994	0.512
	Iron (Fe)-Total (mg/kg)	29.7	29.6	9.6	42.2	11.3
	Iron (Fe)-Total (mg/kg wwt)	3.8	5.2	2.5	8.7	3.3
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1200	1260	644	964	372
	Magnesium (Mg)-Total (mg/kg wwt)	153	221	167	198	108
	Manganese (Mn)-Total (mg/kg)	3.74	23.1	1.69	21.0	1.09
	Manganese (Mn)-Total (mg/kg wwt)	0.477	4.04	0.436	4.31	0.316

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-19	L1826505-20	L1826505-21	L1826505-22	L1826505-23
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16
	Sampled Time					
	Client ID	G0152-6 WILLOW16-06	G0152-7 WILLOW16-07	G0152-8 GRASS16-03	G0152-9 GRASS16-04	G0152-10 WILLOW16-08
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	56.4	59.6	61.6	30.5	57.1
Metals	Aluminum (Al)-Total (mg/kg)	476	106	41.2	36.5	65.9
	Aluminum (Al)-Total (mg/kg wwt)	208	42.9	15.8	25.4	28.3
	Antimony (Sb)-Total (mg/kg)	0.019	0.014	<0.010	<0.010	0.011
	Antimony (Sb)-Total (mg/kg wwt)	0.0083	0.0055	0.0022	0.0025	0.0046
	Arsenic (As)-Total (mg/kg)	0.456	0.217	0.045	0.082	0.322
	Arsenic (As)-Total (mg/kg wwt)	0.199	0.0876	0.0172	0.0568	0.138
	Barium (Ba)-Total (mg/kg)	20.8	5.17	2.72	19.8	9.66
	Barium (Ba)-Total (mg/kg wwt)	9.09	2.09	1.04	13.8	4.15
	Beryllium (Be)-Total (mg/kg)	0.014	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0059	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	122	58.0	5.6	7.4	107
	Boron (B)-Total (mg/kg wwt)	53.0	23.4	2.14	5.17	45.9
	Cadmium (Cd)-Total (mg/kg)	1.54	1.45	0.156	0.0247	1.58
	Cadmium (Cd)-Total (mg/kg wwt)	0.669	0.585	0.0600	0.0172	0.680
	Calcium (Ca)-Total (mg/kg)	24100	11900	2260	2640	16300
	Calcium (Ca)-Total (mg/kg wwt)	10500	4810	870	1830	7000
	Cesium (Cs)-Total (mg/kg)	0.0766	0.0287	0.0168	0.0065	0.0115
	Cesium (Cs)-Total (mg/kg wwt)	0.0334	0.0116	0.0064	0.0045	0.0050
	Chromium (Cr)-Total (mg/kg)	1.15	0.128	<0.050	0.074	0.103
	Chromium (Cr)-Total (mg/kg wwt)	0.500	0.052	0.016	0.052	0.044
	Cobalt (Co)-Total (mg/kg)	1.06	0.616	0.052	0.058	0.637
	Cobalt (Co)-Total (mg/kg wwt)	0.461	0.249	0.0200	0.0403	0.273
	Copper (Cu)-Total (mg/kg)	7.74	10.4	5.71	4.22	8.14
	Copper (Cu)-Total (mg/kg wwt)	3.37	4.21	2.19	2.94	3.50
	Iron (Fe)-Total (mg/kg)	831	264	83.0	67.2	168
	Iron (Fe)-Total (mg/kg wwt)	362	107	31.9	46.7	71.9
	Lead (Pb)-Total (mg/kg)	0.224	0.061	0.026	0.022	0.037
	Lead (Pb)-Total (mg/kg wwt)	0.0976	0.0245	0.0099	0.0153	0.0160
	Lithium (Li)-Total (mg/kg)	0.62	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	0.27	0.15	<0.10	<0.10	0.17
	Magnesium (Mg)-Total (mg/kg)	4460	2650	686	985	2890
	Magnesium (Mg)-Total (mg/kg wwt)	1940	1070	263	685	1240
	Manganese (Mn)-Total (mg/kg)	300	203	75.8	110	185
	Manganese (Mn)-Total (mg/kg wwt)	131	82.1	29.1	76.2	79.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-24	L1826505-25	L1826505-26	L1826505-27	L1826505-28
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16
	Sampled Time					
	Client ID	G0152-11 GRASS16-05	G0152-12 GRASS16-06	G0156-1 GRASS16-07	G0156-2 GRASS16-08	G0156-3 WILLOW16-09
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	43.2	36.2	8.72	8.01	55.3
Metals	Aluminum (Al)-Total (mg/kg)	41.7	181	272	330	76.8
	Aluminum (Al)-Total (mg/kg wwt)	23.7	115	248	304	34.3
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	0.010	0.042	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0050	0.0093	0.0382	0.0043
	Arsenic (As)-Total (mg/kg)	0.060	0.218	0.388	0.242	0.269
	Arsenic (As)-Total (mg/kg wwt)	0.0342	0.139	0.354	0.223	0.120
	Barium (Ba)-Total (mg/kg)	7.71	45.9	9.05	7.21	7.92
	Barium (Ba)-Total (mg/kg wwt)	4.38	29.3	8.27	6.63	3.54
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	0.014	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0030	0.0066	0.0132	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	1.8	8.7	8.3	9.2	94.1
	Boron (B)-Total (mg/kg wwt)	1.02	5.56	7.54	8.46	42.1
	Cadmium (Cd)-Total (mg/kg)	0.0147	0.0844	0.0598	0.0163	1.64
	Cadmium (Cd)-Total (mg/kg wwt)	0.0083	0.0538	0.0546	0.0150	0.733
	Calcium (Ca)-Total (mg/kg)	1210	4170	2640	3600	17400
	Calcium (Ca)-Total (mg/kg wwt)	686	2660	2410	3310	7780
	Cesium (Cs)-Total (mg/kg)	0.0067	0.0266	0.0440	0.0636	0.0335
	Cesium (Cs)-Total (mg/kg wwt)	0.0038	0.0170	0.0402	0.0585	0.0150
	Chromium (Cr)-Total (mg/kg)	0.120	0.286	0.464	0.482	0.106
	Chromium (Cr)-Total (mg/kg wwt)	0.068	0.183	0.424	0.443	0.048
	Cobalt (Co)-Total (mg/kg)	0.060	0.174	0.273	0.319	0.566
	Cobalt (Co)-Total (mg/kg wwt)	0.0339	0.111	0.250	0.293	0.253
	Copper (Cu)-Total (mg/kg)	2.00	10.4	12.8	17.5	7.41
	Copper (Cu)-Total (mg/kg wwt)	1.14	6.64	11.7	16.1	3.31
	Iron (Fe)-Total (mg/kg)	81.0	338	441	418	203
	Iron (Fe)-Total (mg/kg wwt)	46.0	215	402	385	90.9
	Lead (Pb)-Total (mg/kg)	0.022	0.134	0.135	0.158	0.045
	Lead (Pb)-Total (mg/kg wwt)	0.0127	0.0856	0.124	0.145	0.0202
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	0.41	0.30	<0.10
	Magnesium (Mg)-Total (mg/kg)	801	1190	982	964	2870
	Magnesium (Mg)-Total (mg/kg wwt)	455	761	897	887	1280
	Manganese (Mn)-Total (mg/kg)	428	62.5	165	135	300
	Manganese (Mn)-Total (mg/kg wwt)	243	39.9	150	124	134

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-29	L1826505-30	L1826505-31	L1826505-32	L1826505-33
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16
	Sampled Time					
	Client ID	G0156-4 GRASS16-10	G0156-5 WILLOW16-10	G0156-6 GRASS16-09	G0156-7 SPRUCE16-06	G0156-8 SPRUCE16-07
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	42.3	57.8	50.7	51.9	51.4
Metals	Aluminum (Al)-Total (mg/kg)	18.2	272	48.8	49.1	34.2
	Aluminum (Al)-Total (mg/kg wwt)	10.5	115	24.1	23.6	16.6
	Antimony (Sb)-Total (mg/kg)	<0.010	0.015	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0062	<0.0020	0.0025	0.0022
	Arsenic (As)-Total (mg/kg)	0.063	0.306	0.048	0.046	0.031
	Arsenic (As)-Total (mg/kg wwt)	0.0361	0.129	0.0238	0.0222	0.0150
	Barium (Ba)-Total (mg/kg)	20.3	9.47	14.8	71.0	95.8
	Barium (Ba)-Total (mg/kg wwt)	11.7	3.99	7.28	34.1	46.6
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0031	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	2.6	53.9	4.6	9.4	9.2
	Boron (B)-Total (mg/kg wwt)	1.51	22.7	2.28	4.54	4.47
	Cadmium (Cd)-Total (mg/kg)	0.0400	0.479	0.0517	0.0776	0.112
	Cadmium (Cd)-Total (mg/kg wwt)	0.0231	0.202	0.0255	0.0373	0.0542
	Calcium (Ca)-Total (mg/kg)	1840	11700	1820	4490	10000
	Calcium (Ca)-Total (mg/kg wwt)	1060	4950	900	2160	4860
	Cesium (Cs)-Total (mg/kg)	0.0212	0.0437	0.0205	0.0172	0.0209
	Cesium (Cs)-Total (mg/kg wwt)	0.0122	0.0184	0.0101	0.0083	0.0102
	Chromium (Cr)-Total (mg/kg)	<0.050	0.468	0.071	0.068	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	0.022	0.197	0.035	0.033	0.024
	Cobalt (Co)-Total (mg/kg)	0.023	0.812	0.071	0.185	0.099
	Cobalt (Co)-Total (mg/kg wwt)	0.0133	0.342	0.0349	0.0887	0.0482
	Copper (Cu)-Total (mg/kg)	4.47	10.4	5.55	4.00	3.43
	Copper (Cu)-Total (mg/kg wwt)	2.58	4.38	2.74	1.92	1.66
	Iron (Fe)-Total (mg/kg)	45.0	626	88.6	115	73.5
	Iron (Fe)-Total (mg/kg wwt)	26.0	264	43.7	55.4	35.7
	Lead (Pb)-Total (mg/kg)	<0.020	0.137	0.023	0.031	0.029
	Lead (Pb)-Total (mg/kg wwt)	0.0087	0.0577	0.0115	0.0149	0.0140
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.16	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	646	2920	1290	683	973
	Magnesium (Mg)-Total (mg/kg wwt)	373	1230	636	328	473
	Manganese (Mn)-Total (mg/kg)	74.1	64.1	69.8	204	404
	Manganese (Mn)-Total (mg/kg wwt)	42.7	27.0	34.4	98.3	196

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-34	L1826505-37	L1826505-38	L1826505-40	L1826505-41
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16
	Sampled Time					
	Client ID	G0168-3 SPRUCE16-15	G0168-6 WILLOW16-BKG-07	G0168-7 SPRUCE16-BKG-06	G0168-9 WILLOW16-BKG-08	G0168-10 SPRUCE16-BKG-07
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	57.0	67.1	60.7	66.1	59.4
Metals	Aluminum (Al)-Total (mg/kg)	9.2	30.5	9.7	32.8	16.7
	Aluminum (Al)-Total (mg/kg wwt)	3.97	10.0	3.79	11.1	6.78
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0027	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	0.031	<0.020	0.025	<0.020
	Arsenic (As)-Total (mg/kg wwt)	0.0051	0.0102	<0.0040	0.0085	0.0059
	Barium (Ba)-Total (mg/kg)	26.3	3.88	13.7	3.75	38.6
	Barium (Ba)-Total (mg/kg wwt)	11.3	1.28	5.36	1.27	15.6
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	18.4	73.7	16.2	42.5	12.0
	Boron (B)-Total (mg/kg wwt)	7.91	24.3	6.37	14.4	4.86
	Cadmium (Cd)-Total (mg/kg)	0.0535	2.12	0.0171	1.45	0.0125
	Cadmium (Cd)-Total (mg/kg wwt)	0.0230	0.698	0.0067	0.494	0.0051
	Calcium (Ca)-Total (mg/kg)	7350	21900	4100	19600	6970
	Calcium (Ca)-Total (mg/kg wwt)	3160	7220	1610	6650	2830
	Cesium (Cs)-Total (mg/kg)	0.0169	0.0120	0.0077	0.0340	0.0310
	Cesium (Cs)-Total (mg/kg wwt)	0.0073	0.0040	0.0030	0.0115	0.0126
	Chromium (Cr)-Total (mg/kg)	<0.050	0.081	<0.050	0.067	0.051
	Chromium (Cr)-Total (mg/kg wwt)	0.013	0.027	0.016	0.023	0.021
	Cobalt (Co)-Total (mg/kg)	0.038	0.429	0.022	1.12	0.048
	Cobalt (Co)-Total (mg/kg wwt)	0.0162	0.141	0.0088	0.379	0.0193
	Copper (Cu)-Total (mg/kg)	3.37	6.07	3.10	7.32	3.78
	Copper (Cu)-Total (mg/kg wwt)	1.45	2.00	1.22	2.49	1.53
	Iron (Fe)-Total (mg/kg)	27.0	78.2	26.7	95.7	46.4
	Iron (Fe)-Total (mg/kg wwt)	11.6	25.7	10.5	32.5	18.8
	Lead (Pb)-Total (mg/kg)	<0.020	0.036	<0.020	0.025	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0119	0.0042	0.0085	0.0051
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1100	2240	728	2900	731
	Magnesium (Mg)-Total (mg/kg wwt)	474	736	286	984	297
	Manganese (Mn)-Total (mg/kg)	63.5	64.5	29.9	43.2	85.0
	Manganese (Mn)-Total (mg/kg wwt)	27.3	21.2	11.7	14.7	34.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-45	L1826505-46	L1826505-47	L1826505-48	L1826505-49
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16
	Sampled Time					
	Client ID	G0169-2 WILLOW16-BKG-09	G0169-3 WILLOW16-BKG-09D	G0169-4 SPRUCE16-BKG-08	G0169-5 SPRUCE16-BKG-08D	G0169-9 WILLOW16-21
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	55.0	60.9	57.6	56.8	65.1
Metals	Aluminum (Al)-Total (mg/kg)	22.7	27.9	12.7	13.1	44.8
	Aluminum (Al)-Total (mg/kg wwt)	10.2	10.9	5.37	5.64	15.6
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0027
	Arsenic (As)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	0.244
	Arsenic (As)-Total (mg/kg wwt)	0.0088	0.0075	<0.0040	0.0059	0.0850
	Barium (Ba)-Total (mg/kg)	6.63	6.42	49.2	53.3	7.43
	Barium (Ba)-Total (mg/kg wwt)	2.98	2.51	20.9	23.0	2.59
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	31.9	30.3	18.6	21.7	40.2
	Boron (B)-Total (mg/kg wwt)	14.4	11.8	7.89	9.37	14.0
	Cadmium (Cd)-Total (mg/kg)	2.96	2.68	0.0228	0.0213	1.42
	Cadmium (Cd)-Total (mg/kg wwt)	1.33	1.05	0.0097	0.0092	0.495
	Calcium (Ca)-Total (mg/kg)	21400	21400	7710	9260	16800
	Calcium (Ca)-Total (mg/kg wwt)	9620	8360	3270	4000	5870
	Cesium (Cs)-Total (mg/kg)	0.0648	0.0673	0.0205	0.0264	0.0127
	Cesium (Cs)-Total (mg/kg wwt)	0.0292	0.0263	0.0087	0.0114	0.0044
	Chromium (Cr)-Total (mg/kg)	0.051	0.063	<0.050	0.051	0.084
	Chromium (Cr)-Total (mg/kg wwt)	0.023	0.024	0.018	0.022	0.029
	Cobalt (Co)-Total (mg/kg)	0.648	0.709	0.030	0.029	0.599
	Cobalt (Co)-Total (mg/kg wwt)	0.292	0.277	0.0128	0.0127	0.209
	Copper (Cu)-Total (mg/kg)	6.10	5.90	3.19	3.97	9.29
	Copper (Cu)-Total (mg/kg wwt)	2.75	2.31	1.35	1.72	3.24
	Iron (Fe)-Total (mg/kg)	75.4	84.6	30.6	33.1	100
	Iron (Fe)-Total (mg/kg wwt)	34.0	33.1	13.0	14.3	34.9
	Lead (Pb)-Total (mg/kg)	<0.020	0.029	<0.020	<0.020	0.036
	Lead (Pb)-Total (mg/kg wwt)	0.0081	0.0113	0.0041	0.0052	0.0126
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1230	1500	835	895	2230
	Magnesium (Mg)-Total (mg/kg wwt)	553	585	354	386	777
	Manganese (Mn)-Total (mg/kg)	32.2	28.7	148	151	287
	Manganese (Mn)-Total (mg/kg wwt)	14.5	11.2	63.0	65.3	100

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-50	L1826505-51	L1826505-52	L1826505-53	L1826505-57
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16
	Sampled Time					
	Client ID	G0169-10 WILLOW16-22	G0169-11 WILLOW16-23	G0169-12 WILLOW16-24	G0170-1 SPRUCE16-16	G0170-5 WILLOW16-BKG-10
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	64.0	72.2	68.9	30.7	55.1
Metals	Aluminum (Al)-Total (mg/kg)	23.9	16.5	25.0	17.0	16.3
	Aluminum (Al)-Total (mg/kg wwt)	8.61	4.57	7.77	11.8	7.32
	Antimony (Sb)-Total (mg/kg)	<0.010	0.015	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0022	0.0041	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.258	0.060	0.081	0.113	0.023
	Arsenic (As)-Total (mg/kg wwt)	0.0927	0.0166	0.0252	0.0781	0.0101
	Barium (Ba)-Total (mg/kg)	8.79	3.49	2.29	40.9	16.0
	Barium (Ba)-Total (mg/kg wwt)	3.16	0.969	0.712	28.4	7.19
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	0.017	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0046	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	46.5	36.5	44.3	6.3	33.3
	Boron (B)-Total (mg/kg wwt)	16.8	10.1	13.8	4.36	14.9
	Cadmium (Cd)-Total (mg/kg)	2.26	1.06	2.04	0.0758	6.74
	Cadmium (Cd)-Total (mg/kg wwt)	0.814	0.295	0.636	0.0525	3.02
	Calcium (Ca)-Total (mg/kg)	19900	11100	8700	7490	22000
	Calcium (Ca)-Total (mg/kg wwt)	7160	3100	2710	5190	9880
	Cesium (Cs)-Total (mg/kg)	0.0516	0.0246	0.0152	0.0114	0.0457
	Cesium (Cs)-Total (mg/kg wwt)	0.0186	0.0068	0.0047	0.0079	0.0205
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	0.050	<0.050	0.050
	Chromium (Cr)-Total (mg/kg wwt)	0.016	0.011	0.016	0.020	0.023
	Cobalt (Co)-Total (mg/kg)	1.49	1.74	4.06	0.422	0.395
	Cobalt (Co)-Total (mg/kg wwt)	0.538	0.484	1.26	0.293	0.177
	Copper (Cu)-Total (mg/kg)	7.02	3.82	6.05	2.71	3.39
	Copper (Cu)-Total (mg/kg wwt)	2.53	1.06	1.88	1.88	1.52
	Iron (Fe)-Total (mg/kg)	85.8	66.8	82.5	49.9	68.1
	Iron (Fe)-Total (mg/kg wwt)	30.9	18.6	25.7	34.6	30.5
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020	0.021	<0.020
	Lead (Pb)-Total (mg/kg wwt)	0.0050	0.0045	0.0054	0.0145	0.0079
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	2930	2300	1740	2390	1530
	Magnesium (Mg)-Total (mg/kg wwt)	1060	640	543	1660	688
	Manganese (Mn)-Total (mg/kg)	161	132	415	445	39.3
	Manganese (Mn)-Total (mg/kg wwt)	57.9	36.8	129	309	17.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-58	L1826505-61	L1826505-64	L1826505-65	L1826505-67
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16
	Sampled Time					
	Client ID	G0170-6 SPRUCE16-BKG-09	G0170-9 SPRUCE16-BKG-10	G0170-12 WILLOW16-25	G0171-1 SPRUCE16-17	G0171-3 SPRUCE16-18
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	56.4	56.4	57.4	55.1	56.7
Metals	Aluminum (Al)-Total (mg/kg)	8.9	23.2	17.5	7.3	9.6
	Aluminum (Al)-Total (mg/kg wwt)	3.87	10.1	7.45	3.26	4.14
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	<0.020	0.024	<0.020	<0.020
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0062	0.0103	<0.0040	0.0067
	Barium (Ba)-Total (mg/kg)	52.7	109	11.0	43.0	83.5
	Barium (Ba)-Total (mg/kg wwt)	23.0	47.3	4.70	19.3	36.1
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	8.9	10.7	40.4	13.4	15.2
	Boron (B)-Total (mg/kg wwt)	3.89	4.68	17.2	6.02	6.59
	Cadmium (Cd)-Total (mg/kg)	0.0243	0.0496	3.79	0.0445	0.0344
	Cadmium (Cd)-Total (mg/kg wwt)	0.0106	0.0216	1.61	0.0200	0.0149
	Calcium (Ca)-Total (mg/kg)	5060	9980	16400	4780	10400
	Calcium (Ca)-Total (mg/kg wwt)	2210	4350	6970	2150	4500
	Cesium (Cs)-Total (mg/kg)	0.0625	0.0117	0.0094	0.0131	0.0104
	Cesium (Cs)-Total (mg/kg wwt)	0.0273	0.0051	0.0040	0.0059	0.0045
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.011	0.020	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg)	0.051	0.127	0.612	0.035	0.053
	Cobalt (Co)-Total (mg/kg wwt)	0.0222	0.0555	0.261	0.0156	0.0228
	Copper (Cu)-Total (mg/kg)	2.95	2.84	5.62	3.80	4.51
	Copper (Cu)-Total (mg/kg wwt)	1.29	1.24	2.39	1.71	1.95
	Iron (Fe)-Total (mg/kg)	25.0	33.3	57.1	23.7	33.0
	Iron (Fe)-Total (mg/kg wwt)	10.9	14.5	24.3	10.7	14.3
	Lead (Pb)-Total (mg/kg)	<0.020	0.023	0.022	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0099	0.0092	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	978	949	1330	607	973
	Magnesium (Mg)-Total (mg/kg wwt)	426	414	566	273	421
	Manganese (Mn)-Total (mg/kg)	166	541	41.6	64.3	71.5
	Manganese (Mn)-Total (mg/kg wwt)	72.4	236	17.7	28.9	31.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-68	L1826505-69	L1826505-70		
	Description	TISSUE	TISSUE	TISSUE		
	Sampled Date	05-SEP-16	05-SEP-16	05-SEP-16		
	Sampled Time					
	Client ID	G0171-4 GRASS16-BKG-09	G0171-5 GRASS16-BKG-09D	G0171-6 SPRUCE16-BKG-11		
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	17.9	16.8	51.9		
Metals	Aluminum (Al)-Total (mg/kg)	17.0	19.3	12.1		
	Aluminum (Al)-Total (mg/kg wwt)	13.9	16.0	5.83		
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Arsenic (As)-Total (mg/kg)	<0.020	<0.020	<0.020		
	Arsenic (As)-Total (mg/kg wwt)	0.0098	0.0092	0.0048		
	Barium (Ba)-Total (mg/kg)	4.09	5.24	112		
	Barium (Ba)-Total (mg/kg wwt)	3.36	4.36	53.7		
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010		
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020		
	Boron (B)-Total (mg/kg)	4.1	4.3	13.2		
	Boron (B)-Total (mg/kg wwt)	3.40	3.60	6.33		
	Cadmium (Cd)-Total (mg/kg)	<0.0050	<0.0050	0.0754		
	Cadmium (Cd)-Total (mg/kg wwt)	0.0024	0.0023	0.0363		
	Calcium (Ca)-Total (mg/kg)	1770	1830	5330		
	Calcium (Ca)-Total (mg/kg wwt)	1460	1520	2560		
	Cesium (Cs)-Total (mg/kg)	<0.0050	<0.0050	<0.0050		
	Cesium (Cs)-Total (mg/kg wwt)	0.0019	0.0020	0.0024		
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.050	<0.050		
	Chromium (Cr)-Total (mg/kg wwt)	0.035	0.041	0.015		
	Cobalt (Co)-Total (mg/kg)	<0.020	<0.020	0.103		
	Cobalt (Co)-Total (mg/kg wwt)	0.0159	0.0165	0.0495		
	Copper (Cu)-Total (mg/kg)	4.50	5.56	3.49		
	Copper (Cu)-Total (mg/kg wwt)	3.69	4.63	1.68		
	Iron (Fe)-Total (mg/kg)	59.1	59.9	36.2		
	Iron (Fe)-Total (mg/kg wwt)	48.5	49.9	17.4		
	Lead (Pb)-Total (mg/kg)	<0.020	<0.020	<0.020		
	Lead (Pb)-Total (mg/kg wwt)	0.0079	0.0075	<0.0040		
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50		
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10		
	Magnesium (Mg)-Total (mg/kg)	1060	1310	850		
	Magnesium (Mg)-Total (mg/kg wwt)	874	1090	409		
	Manganese (Mn)-Total (mg/kg)	30.2	35.1	169		
	Manganese (Mn)-Total (mg/kg wwt)	24.8	29.2	81.3		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-1	L1826505-3	L1826505-4	L1826505-5	L1826505-6
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
	Sampled Time					
	Client ID	G0149-8 BERRY16-11	G0149-10 BERRY16-12	G0149-11 BERRY16-13	G0149-12 SPRUCE16-02	G0150-1 BERRY16-14
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0088	0.0059	0.0066	0.0123	<0.0050
	Mercury (Hg)-Total (mg/kg wwt)	0.0020	0.0012	0.0015	0.0052	<0.0010
	Molybdenum (Mo)-Total (mg/kg)	0.109	0.202	1.86	0.257	<0.040
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0244	0.0405	0.421	0.108	<0.0080
	Nickel (Ni)-Total (mg/kg)	<0.20	0.42	0.80	<0.20	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	<0.040	0.084	0.180	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg)	1900	1680	1910	1670	719
	Phosphorus (P)-Total (mg/kg wwt)	428	338	431	705	169
	Potassium (K)-Total (mg/kg)	8470	9230	6080	7220	6820
	Potassium (K)-Total (mg/kg wwt)	1900	1850	1370	3040	1600
	Rubidium (Rb)-Total (mg/kg)	8.57	21.1	14.9	11.9	8.44
	Rubidium (Rb)-Total (mg/kg wwt)	1.92	4.23	3.37	5.02	1.98
	Selenium (Se)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.050	<0.10
	Selenium (Se)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.010	<0.020
	Sodium (Na)-Total (mg/kg)	39	42	36	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	8.8	8.5	8.1	<4.0	4.2
	Strontium (Sr)-Total (mg/kg)	7.64	10.0	10.2	43.3	5.55
	Strontium (Sr)-Total (mg/kg wwt)	1.72	2.01	2.31	18.2	1.30
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0030	<0.0020	<0.0020	0.0088	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00067	<0.00040	<0.00040	0.00372	<0.00040
	Tin (Sn)-Total (mg/kg)	5.28	3.79	3.32	<0.10	3.76
	Tin (Sn)-Total (mg/kg wwt)	1.19	0.761	0.750	<0.020	0.881
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	13.4	16.4	16.9	45.8	3.1
	Zinc (Zn)-Total (mg/kg wwt)	3.01	3.28	3.81	19.3	0.74
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-7	L1826505-10	L1826505-11	L1826505-12	L1826505-13
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	19-AUG-16	19-AUG-16	20-AUG-16	20-AUG-16	20-AUG-16
	Sampled Time					
	Client ID	G0150-2 BERRY16-15	G0150-5 SPRUCE16-03	G0150-6 BERRY16-BKG-04	G0150-7 BERRY16-BKG-05	G0150-8 BERRY16-BKG-06
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0055	0.0118	<0.0050	<0.0050	<0.0050
	Mercury (Hg)-Total (mg/kg wwt)	0.0013	0.0054	<0.0010	0.0018	<0.0010
	Molybdenum (Mo)-Total (mg/kg)	0.122	1.45	1.36	0.408	1.83
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0298	0.665	0.453	0.222	0.468
	Nickel (Ni)-Total (mg/kg)	0.28	<0.20	2.61	0.52	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	0.069	0.076	0.871	0.284	<0.040
	Phosphorus (P)-Total (mg/kg)	2130	1270	3780	2560	2470
	Phosphorus (P)-Total (mg/kg wwt)	519	585	1260	1390	631
	Potassium (K)-Total (mg/kg)	7490	5750	24900	6620	8210
	Potassium (K)-Total (mg/kg wwt)	1830	2640	8310	3600	2100
	Rubidium (Rb)-Total (mg/kg)	12.4	5.49	21.3	3.66	12.3
	Rubidium (Rb)-Total (mg/kg wwt)	3.02	2.52	7.11	1.99	3.15
	Selenium (Se)-Total (mg/kg)	<0.10	<0.050	<0.050	<0.050	<0.050
	Selenium (Se)-Total (mg/kg wwt)	<0.020	<0.010	<0.010	<0.010	<0.010
	Sodium (Na)-Total (mg/kg)	<20	<20	38	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	12.7	<4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	8.81	92.9	3.91	21.5	25.1
	Strontium (Sr)-Total (mg/kg wwt)	2.15	42.7	1.31	11.7	6.40
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00057	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	2.51	<0.10	0.25	0.26	0.49
	Tin (Sn)-Total (mg/kg wwt)	0.612	<0.020	0.082	0.142	0.126
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00052	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	18.2	52.1	13.1	9.94	6.58
	Zinc (Zn)-Total (mg/kg wwt)	4.43	23.9	4.37	5.41	1.68
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-14 TISSUE 20-AUG-16 G0150-9 BERRY16-BKG-07	L1826505-15 TISSUE 20-AUG-16 G0150-10 BERRY16-BKG-08	L1826505-16 TISSUE 20-AUG-16 G0150-11 BERRY16-BKG-09	L1826505-17 TISSUE 20-AUG-16 G0150-12 BERRY16-16	L1826505-18 TISSUE 20-AUG-16 G0152-1 BERRY16-17
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0094	0.0063	<0.0050	0.0067	<0.0050
	Mercury (Hg)-Total (mg/kg wwt)	0.0012	0.0011	0.0013	0.0014	0.0012
	Molybdenum (Mo)-Total (mg/kg)	0.233	1.08	0.078	0.246	0.048
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0297	0.188	0.0202	0.0504	0.0141
	Nickel (Ni)-Total (mg/kg)	0.31	0.85	<0.20	0.59	0.27
	Nickel (Ni)-Total (mg/kg wwt)	0.040	0.148	0.045	0.122	0.078
	Phosphorus (P)-Total (mg/kg)	2650	1900	1230	1840	753
	Phosphorus (P)-Total (mg/kg wwt)	337	333	319	378	219
	Potassium (K)-Total (mg/kg)	11400	8480	6910	6270	6230
	Potassium (K)-Total (mg/kg wwt)	1450	1480	1790	1290	1810
	Rubidium (Rb)-Total (mg/kg)	21.3	13.4	13.2	12.4	7.05
	Rubidium (Rb)-Total (mg/kg wwt)	2.72	2.35	3.42	2.55	2.05
	Selenium (Se)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Selenium (Se)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Sodium (Na)-Total (mg/kg)	32	27	<20	48	<20
	Sodium (Na)-Total (mg/kg wwt)	4.1	4.7	<4.0	9.8	5.8
	Strontium (Sr)-Total (mg/kg)	14.0	12.9	10.3	15.0	4.24
	Strontium (Sr)-Total (mg/kg wwt)	1.79	2.25	2.66	3.08	1.23
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	5.16	1.99	1.94	2.63	4.05
	Tin (Sn)-Total (mg/kg wwt)	0.657	0.348	0.502	0.539	1.18
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Zinc (Zn)-Total (mg/kg)	14.0	16.0	5.8	20.6	4.7
	Zinc (Zn)-Total (mg/kg wwt)	1.79	2.80	1.51	4.22	1.38
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-19	L1826505-20	L1826505-21	L1826505-22	L1826505-23
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16
	Sampled Time					
	Client ID	G0152-6 WILLOW16-06	G0152-7 WILLOW16-07	G0152-8 GRASS16-03	G0152-9 GRASS16-04	G0152-10 WILLOW16-08
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0142	0.0097	0.0081	<0.0050	0.0114
	Mercury (Hg)-Total (mg/kg wwt)	0.0062	0.0039	0.0031	0.0027	0.0049
	Molybdenum (Mo)-Total (mg/kg)	0.655	1.23	6.31	1.04	1.17
	Molybdenum (Mo)-Total (mg/kg wwt)	0.286	0.496	2.42	0.722	0.501
	Nickel (Ni)-Total (mg/kg)	7.04	1.96	0.56	0.85	2.40
	Nickel (Ni)-Total (mg/kg wwt)	3.07	0.794	0.216	0.589	1.03
	Phosphorus (P)-Total (mg/kg)	1330	1040	860	614	1160
	Phosphorus (P)-Total (mg/kg wwt)	580	419	330	427	496
	Potassium (K)-Total (mg/kg)	6610	9610	2560	3780	7210
	Potassium (K)-Total (mg/kg wwt)	2880	3880	984	2630	3090
	Rubidium (Rb)-Total (mg/kg)	4.51	4.54	2.81	0.748	1.82
	Rubidium (Rb)-Total (mg/kg wwt)	1.97	1.83	1.08	0.520	0.783
	Selenium (Se)-Total (mg/kg)	1.25	1.41	1.05	0.156	1.09
	Selenium (Se)-Total (mg/kg wwt)	0.543	0.570	0.402	0.109	0.469
	Sodium (Na)-Total (mg/kg)	<20	26	<20	<20	36
	Sodium (Na)-Total (mg/kg wwt)	8.4	10.6	<4.0	6.1	15.3
	Strontium (Sr)-Total (mg/kg)	179	80.1	23.9	26.5	150
	Strontium (Sr)-Total (mg/kg wwt)	78.0	32.4	9.17	18.4	64.3
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0048	<0.0020	<0.0020	<0.0020	0.0021
	Thallium (Tl)-Total (mg/kg wwt)	0.00211	<0.00040	<0.00040	0.00044	0.00090
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0486	0.0182	0.0020	0.0044	0.0109
	Uranium (U)-Total (mg/kg wwt)	0.0212	0.00735	0.00077	0.00304	0.00466
	Vanadium (V)-Total (mg/kg)	2.26	0.85	0.17	0.18	0.47
	Vanadium (V)-Total (mg/kg wwt)	0.985	0.344	0.066	0.124	0.202
	Zinc (Zn)-Total (mg/kg)	72.7	148	23.6	25.7	68.0
	Zinc (Zn)-Total (mg/kg wwt)	31.7	59.7	9.06	17.9	29.2
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.081	0.042	<0.040	0.062	<0.040

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826505-24	L1826505-25	L1826505-26	L1826505-27	L1826505-28
Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
Sampled Date	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16	02-SEP-16
Sampled Time					
Client ID	G0152-11 GRASS16-05	G0152-12 GRASS16-06	G0156-1 GRASS16-07	G0156-2 GRASS16-08	G0156-3 WILLOW16-09
Grouping / Analyte					
TISSUE					
Metals					
Mercury (Hg)-Total (mg/kg)	<0.0050	0.0054	0.0089	0.0087	0.0098
Mercury (Hg)-Total (mg/kg wwt)	0.0015	0.0034	0.0081	0.0080	0.0044
Molybdenum (Mo)-Total (mg/kg)	0.435	8.17	3.44	7.52	0.758
Molybdenum (Mo)-Total (mg/kg wwt)	0.247	5.21	3.14	6.92	0.339
Nickel (Ni)-Total (mg/kg)	0.49	0.64	1.14	1.66	1.95
Nickel (Ni)-Total (mg/kg wwt)	0.276	0.411	1.04	1.52	0.871
Phosphorus (P)-Total (mg/kg)	248	1630	776	828	1370
Phosphorus (P)-Total (mg/kg wwt)	141	1040	709	761	615
Potassium (K)-Total (mg/kg)	3780	4650	2850	887	10200
Potassium (K)-Total (mg/kg wwt)	2150	2960	2600	816	4540
Rubidium (Rb)-Total (mg/kg)	0.726	2.08	4.32	1.16	5.17
Rubidium (Rb)-Total (mg/kg wwt)	0.413	1.33	3.94	1.07	2.31
Selenium (Se)-Total (mg/kg)	0.094	0.954	0.842	0.812	0.678
Selenium (Se)-Total (mg/kg wwt)	0.053	0.608	0.768	0.747	0.303
Sodium (Na)-Total (mg/kg)	<20	106	53	225	<20
Sodium (Na)-Total (mg/kg wwt)	<4.0	67.4	48.6	207	5.1
Strontium (Sr)-Total (mg/kg)	8.28	35.3	29.3	40.2	142
Strontium (Sr)-Total (mg/kg wwt)	4.71	22.5	26.7	36.9	63.4
Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total (mg/kg)	0.0030	0.0028	0.0025	<0.0020	0.0136
Thallium (Tl)-Total (mg/kg wwt)	0.00173	0.00181	0.00228	0.00175	0.00607
Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
Uranium (U)-Total (mg/kg)	0.0118	0.0126	0.0132	0.0824	0.0324
Uranium (U)-Total (mg/kg wwt)	0.00672	0.00803	0.0121	0.0758	0.0145
Vanadium (V)-Total (mg/kg)	0.23	0.98	1.05	1.27	0.52
Vanadium (V)-Total (mg/kg wwt)	0.131	0.623	0.960	1.17	0.231
Zinc (Zn)-Total (mg/kg)	<3.0 RRR	22.3	24.6	15.2	80.1
Zinc (Zn)-Total (mg/kg wwt)	<1.8 RRR	14.2	22.5	14.0	35.8
Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-29 TISSUE 02-SEP-16 G0156-4 GRASS16-10	L1826505-30 TISSUE 02-SEP-16 G0156-5 WILLOW16-10	L1826505-31 TISSUE 02-SEP-16 G0156-6 GRASS16-09	L1826505-32 TISSUE 02-SEP-16 G0156-7 SPRUCE16-06	L1826505-33 TISSUE 02-SEP-16 G0156-8 SPRUCE16-07
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0057	0.0107	0.0051	0.0158	0.0151
	Mercury (Hg)-Total (mg/kg wwt)	0.0033	0.0045	0.0025	0.0076	0.0073
	Molybdenum (Mo)-Total (mg/kg)	1.26	0.287	6.29	0.145	0.433
	Molybdenum (Mo)-Total (mg/kg wwt)	0.730	0.121	3.10	0.0699	0.210
	Nickel (Ni)-Total (mg/kg)	0.28	2.36	1.37	0.35	0.32
	Nickel (Ni)-Total (mg/kg wwt)	0.160	0.996	0.675	0.168	0.157
	Phosphorus (P)-Total (mg/kg)	1110	1770	2400	1480	1160
	Phosphorus (P)-Total (mg/kg wwt)	638	745	1180	709	565
	Potassium (K)-Total (mg/kg)	6750	11200	3840	5330	4640
	Potassium (K)-Total (mg/kg wwt)	3890	4730	1900	2560	2250
	Rubidium (Rb)-Total (mg/kg)	3.82	4.67	3.88	3.41	3.91
	Rubidium (Rb)-Total (mg/kg wwt)	2.21	1.97	1.91	1.64	1.90
	Selenium (Se)-Total (mg/kg)	<0.050	0.364	0.684	<0.050	<0.050
	Selenium (Se)-Total (mg/kg wwt)	0.018	0.154	0.338	<0.010	<0.010
	Sodium (Na)-Total (mg/kg)	<20	26	<20	25	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	11.2	<4.0	12.0	<4.0
	Strontium (Sr)-Total (mg/kg)	18.4	55.7	10.6	39.6	77.0
	Strontium (Sr)-Total (mg/kg wwt)	10.6	23.5	5.23	19.0	37.4
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	0.0050	0.0042
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00068	<0.00040	0.00242	0.00204
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0222	<0.0020	0.0027	0.0022
	Uranium (U)-Total (mg/kg wwt)	0.00042	0.00936	0.00089	0.00132	0.00109
	Vanadium (V)-Total (mg/kg)	0.10	1.81	0.20	0.29	0.20
	Vanadium (V)-Total (mg/kg wwt)	0.058	0.764	0.101	0.138	0.096
	Zinc (Zn)-Total (mg/kg)	28.8	28.8	18.1	29.2	59.0
	Zinc (Zn)-Total (mg/kg wwt)	16.6	12.1	8.95	14.0	28.7
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-34 TISSUE 05-SEP-16 G0168-3 SPRUCE16-15	L1826505-37 TISSUE 05-SEP-16 G0168-6 WILLOW16-BKG-07	L1826505-38 TISSUE 05-SEP-16 G0168-7 SPRUCE16-BKG-06	L1826505-40 TISSUE 05-SEP-16 G0168-9 WILLOW16-BKG-08	L1826505-41 TISSUE 05-SEP-16 G0168-10 SPRUCE16-BKG-07
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0121	0.0143	0.0135	0.0123	0.0139
	Mercury (Hg)-Total (mg/kg wwt)	0.0052	0.0047	0.0053	0.0042	0.0056
	Molybdenum (Mo)-Total (mg/kg)	0.438	0.701	0.474	0.467	0.086
	Molybdenum (Mo)-Total (mg/kg wwt)	0.189	0.231	0.186	0.158	0.0349
	Nickel (Ni)-Total (mg/kg)	<0.20	1.15	0.22	3.40	0.23
	Nickel (Ni)-Total (mg/kg wwt)	0.053	0.378	0.088	1.15	0.094
	Phosphorus (P)-Total (mg/kg)	1720	1040	1340	1500	1560
	Phosphorus (P)-Total (mg/kg wwt)	740	342	526	508	635
	Potassium (K)-Total (mg/kg)	5580	9110	7080	13000	6970
	Potassium (K)-Total (mg/kg wwt)	2400	3000	2780	4400	2830
	Rubidium (Rb)-Total (mg/kg)	12.8	7.55	11.3	16.2	15.7
	Rubidium (Rb)-Total (mg/kg wwt)	5.53	2.49	4.45	5.51	6.37
	Selenium (Se)-Total (mg/kg)	<0.050	0.131	<0.050	0.691	<0.050
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.043	<0.010	0.235	<0.010
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	4.1	<4.0
	Strontium (Sr)-Total (mg/kg)	68.1	78.5	45.4	87.4	117
	Strontium (Sr)-Total (mg/kg wwt)	29.3	25.8	17.8	29.7	47.3
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	0.0113
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00052	0.00052	0.00458
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.025	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00058	<0.00040	0.00056	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.20	<0.10	0.19	0.10
	Vanadium (V)-Total (mg/kg wwt)	0.026	0.064	0.022	0.065	0.041
	Zinc (Zn)-Total (mg/kg)	45.1	116	35.1	64.2	44.0
	Zinc (Zn)-Total (mg/kg wwt)	19.4	38.3	13.8	21.8	17.8
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-45 TISSUE 05-SEP-16 G0169-2 WILLOW16-BKG-09	L1826505-46 TISSUE 05-SEP-16 G0169-3 WILLOW16-BKG-09D	L1826505-47 TISSUE 05-SEP-16 G0169-4 SPRUCE16-BKG-08	L1826505-48 TISSUE 05-SEP-16 G0169-5 SPRUCE16-BKG-08D	L1826505-49 TISSUE 05-SEP-16 G0169-9 WILLOW16-21
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0114	0.0124	0.0128	0.0140	0.0113
	Mercury (Hg)-Total (mg/kg wwt)	0.0051	0.0048	0.0054	0.0061	0.0039
	Molybdenum (Mo)-Total (mg/kg)	0.079	0.089	0.030	0.040	2.07
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0356	0.0348	0.0128	0.0172	0.721
	Nickel (Ni)-Total (mg/kg)	5.07	5.70	0.41	<0.20	1.29
	Nickel (Ni)-Total (mg/kg wwt)	2.28	2.23	0.173	0.082	0.451
	Phosphorus (P)-Total (mg/kg)	1470	1620	1650	1820	2450
	Phosphorus (P)-Total (mg/kg wwt)	660	634	698	785	856
	Potassium (K)-Total (mg/kg)	10400	11400	5590	7200	12400
	Potassium (K)-Total (mg/kg wwt)	4660	4440	2370	3110	4330
	Rubidium (Rb)-Total (mg/kg)	19.4	20.9	7.10	9.32	4.39
	Rubidium (Rb)-Total (mg/kg wwt)	8.73	8.18	3.01	4.03	1.53
	Selenium (Se)-Total (mg/kg)	0.206	0.188	<0.050	<0.050	0.214
	Selenium (Se)-Total (mg/kg wwt)	0.093	0.073	<0.010	<0.010	0.075
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	46
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	<4.0	15.9
	Strontium (Sr)-Total (mg/kg)	119	113	88.3	101	111
	Strontium (Sr)-Total (mg/kg wwt)	53.7	44.0	37.5	43.7	38.6
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	0.0037
	Thallium (Tl)-Total (mg/kg wwt)	0.00052	<0.00040	<0.00040	<0.00040	0.00129
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0023	<0.0020	<0.0020	<0.0020	0.0145
	Uranium (U)-Total (mg/kg wwt)	0.00104	0.00077	0.00050	0.00062	0.00505
	Vanadium (V)-Total (mg/kg)	0.15	0.18	<0.10	<0.10	0.24
	Vanadium (V)-Total (mg/kg wwt)	0.066	0.071	0.026	0.030	0.083
	Zinc (Zn)-Total (mg/kg)	53.2	53.4	53.0	65.3	107
	Zinc (Zn)-Total (mg/kg wwt)	24.0	20.8	22.5	28.2	37.2
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-50 TISSUE 05-SEP-16 G0169-10 WILLOW16-22	L1826505-51 TISSUE 05-SEP-16 G0169-11 WILLOW16-23	L1826505-52 TISSUE 05-SEP-16 G0169-12 WILLOW16-24	L1826505-53 TISSUE 05-SEP-16 G0170-1 SPRUCE16-16	L1826505-57 TISSUE 05-SEP-16 G0170-5 WILLOW16-BKG-10
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0096	0.0086	0.0097	0.0145	0.0121
	Mercury (Hg)-Total (mg/kg wwt)	0.0035	0.0024	0.0030	0.0100	0.0054
	Molybdenum (Mo)-Total (mg/kg)	1.19	1.01	1.48	0.103	0.304
	Molybdenum (Mo)-Total (mg/kg wwt)	0.427	0.281	0.460	0.0717	0.136
	Nickel (Ni)-Total (mg/kg)	1.56	1.22	1.93	0.51	2.44
	Nickel (Ni)-Total (mg/kg wwt)	0.560	0.339	0.602	0.350	1.09
	Phosphorus (P)-Total (mg/kg)	4190	2220	2360	2710	1920
	Phosphorus (P)-Total (mg/kg wwt)	1510	617	735	1880	860
	Potassium (K)-Total (mg/kg)	8870	11700	14200	5310	7940
	Potassium (K)-Total (mg/kg wwt)	3190	3260	4410	3680	3560
	Rubidium (Rb)-Total (mg/kg)	5.72	4.71	5.32	3.85	14.3
	Rubidium (Rb)-Total (mg/kg wwt)	2.06	1.31	1.65	2.67	6.41
	Selenium (Se)-Total (mg/kg)	0.173	0.088	0.102	<0.050	0.095
	Selenium (Se)-Total (mg/kg wwt)	0.062	0.024	0.032	<0.010	0.043
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	1140	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	793	<4.0
	Strontium (Sr)-Total (mg/kg)	154	72.1	52.6	69.4	137
	Strontium (Sr)-Total (mg/kg wwt)	55.4	20.0	16.4	48.1	61.4
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0035	0.0032	<0.0020	<0.0020	0.0022
	Thallium (Tl)-Total (mg/kg wwt)	0.00127	0.00090	0.00049	<0.00040	0.00099
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0070	0.0077	0.0032	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00252	0.00213	0.00100	0.00050	0.00041
	Vanadium (V)-Total (mg/kg)	0.14	<0.10	0.16	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	0.050	0.027	0.049	0.064	0.042
	Zinc (Zn)-Total (mg/kg)	143	77.5	138	26.1	120
	Zinc (Zn)-Total (mg/kg wwt)	51.5	21.5	43.0	18.1	53.6
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-58	L1826505-61	L1826505-64	L1826505-65	L1826505-67
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16
	Sampled Time					
	Client ID	G0170-6 SPRUCE16-BKG-09	G0170-9 SPRUCE16-BKG-10	G0170-12 WILLOW16-25	G0171-1 SPRUCE16-17	G0171-3 SPRUCE16-18
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0108	0.0177	0.0134	0.0140	0.0127
	Mercury (Hg)-Total (mg/kg wwt)	0.0047	0.0077	0.0057	0.0063	0.0055
	Molybdenum (Mo)-Total (mg/kg)	0.342	0.042	0.520	0.674	1.16
	Molybdenum (Mo)-Total (mg/kg wwt)	0.149	0.0182	0.222	0.303	0.502
	Nickel (Ni)-Total (mg/kg)	0.34	0.20	2.51	0.23	0.30
	Nickel (Ni)-Total (mg/kg wwt)	0.148	0.089	1.07	0.104	0.128
	Phosphorus (P)-Total (mg/kg)	1240	1680	2510	1670	2260
	Phosphorus (P)-Total (mg/kg wwt)	542	732	1070	752	979
	Potassium (K)-Total (mg/kg)	6440	6010	17600	7270	9850
	Potassium (K)-Total (mg/kg wwt)	2810	2620	7510	3270	4260
	Rubidium (Rb)-Total (mg/kg)	22.1	4.14	7.54	9.04	6.60
	Rubidium (Rb)-Total (mg/kg wwt)	9.65	1.80	3.21	4.07	2.86
	Selenium (Se)-Total (mg/kg)	<0.050	<0.050	0.153	<0.050	<0.050
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.010	0.065	<0.010	0.013
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	<4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	42.0	67.7	93.9	35.7	89.3
	Strontium (Sr)-Total (mg/kg wwt)	18.3	29.5	40.0	16.1	38.7
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00087	0.00063	<0.00040	0.00070
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00041	<0.00040	0.00048
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	0.10	<0.10	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.031	0.045	0.024	0.023
	Zinc (Zn)-Total (mg/kg)	39.0	77.9	125	39.3	65.0
	Zinc (Zn)-Total (mg/kg wwt)	17.0	33.9	53.2	17.7	28.1
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-68	L1826505-69	L1826505-70		
	Description	TISSUE	TISSUE	TISSUE		
	Sampled Date	05-SEP-16	05-SEP-16	05-SEP-16		
	Sampled Time					
	Client ID	G0171-4 GRASS16-BKG-09	G0171-5 GRASS16-BKG-09D	G0171-6 SPRUCE16-BKG-11		
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	<0.0050	0.0050	0.0134		
	Mercury (Hg)-Total (mg/kg wwt)	0.0034	0.0042	0.0065		
	Molybdenum (Mo)-Total (mg/kg)	4.12	3.75	0.200		
	Molybdenum (Mo)-Total (mg/kg wwt)	3.38	3.12	0.0962		
	Nickel (Ni)-Total (mg/kg)	0.23	0.29	1.42		
	Nickel (Ni)-Total (mg/kg wwt)	0.187	0.240	0.685		
	Phosphorus (P)-Total (mg/kg)	3550	4250	2010		
	Phosphorus (P)-Total (mg/kg wwt)	2920	3540	965		
	Potassium (K)-Total (mg/kg)	4230	4840	6280		
	Potassium (K)-Total (mg/kg wwt)	3470	4030	3020		
	Rubidium (Rb)-Total (mg/kg)	0.938	0.945	1.87		
	Rubidium (Rb)-Total (mg/kg wwt)	0.770	0.787	0.902		
	Selenium (Se)-Total (mg/kg)	<0.050	<0.050	<0.050		
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.010	<0.010		
	Sodium (Na)-Total (mg/kg)	<20	<20	<20		
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0		
	Strontium (Sr)-Total (mg/kg)	7.08	7.41	41.6		
	Strontium (Sr)-Total (mg/kg wwt)	5.82	6.17	20.0		
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020		
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040		
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020		
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040		
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10		
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020		
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020		
	Uranium (U)-Total (mg/kg wwt)	0.00046	0.00057	<0.00040		
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10		
	Vanadium (V)-Total (mg/kg wwt)	0.056	0.061	0.031		
	Zinc (Zn)-Total (mg/kg)	31.3	37.0	43.1		
	Zinc (Zn)-Total (mg/kg wwt)	25.7	30.8	20.7		
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20		
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Certified Reference Material	Zinc (Zn)-Total	RM-H	L1826505-10, -19, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -32, -33, -34, -37, -38, -5
Certified Reference Material	Sodium (Na)-Total	RM-H	L1826505-15, -6, -7
Certified Reference Material	Zinc (Zn)-Total	RM-H	L1826505-10, -19, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -32, -33, -34, -37, -38, -5
Certified Reference Material	Sodium (Na)-Total	RM-H	L1826505-15, -6, -7

Qualifiers for Individual Parameters Listed:

Qualifier	Description
RM-H	Reference Material recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
RRR	Refer to Report Remarks for issues regarding this analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Reference Information

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA Tissue % Moisture in Tissues ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0147	G0149	G0150	G0152	G0156
G0157	G0165	G0166	G0167	G0168
G0169	G0170	G0171		

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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COC # G0147

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: aatkinson@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	**Analysis Request**
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-04	G0147-01	17-Aug-16		Tissue	X	1
[redacted]	WORM16-01	G0147-02	17-Aug-16		Tissue	X	1
[redacted]	WORM16-02	G0147-03	17-Aug-16		Tissue	X	1
[redacted]	AR16-02	G0147-04	17-Aug-16		Tissue	X	1
[redacted]	BEETLE16-01	G0147-05	17-Aug-16		Tissue	X	1
[redacted]	ANT16-01	G0147-06	17-Aug-16		Tissue	X	1
[redacted]	BERRY16-05	G0147-07	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-06	G0147-08	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-07	G0147-09	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-08	G0147-10	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-09	G0147-11	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-10	G0147-12	19-Aug-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Lutke ~~Erin Zapfgilje~~	09/09/2016 15:30 ~~06/09/2016 00:00~~		SEP - 9 2016					

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0149

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-01	G0149-01	19-Aug-16		Tissue	X	1
[redacted]	WORM16-03	G0149-02	19-Aug-16		Tissue	X	1
[redacted]	BERRY-BKG-02	G0149-03	19-Aug-16		Tissue	X	1
[redacted]	BERRY-BKG-01	G0149-04	19-Aug-16		Tissue	X	1
[redacted]	BERRY-BKG-03	G0149-05	19-Aug-16		Tissue	X	1
[redacted]	WORM16-BKG-01	G0149-06	19-Aug-16		Tissue	X	1
[redacted]		[illegible]			Tissue	X	1
[redacted]	BERRY16-11	G0149-08	19-Aug-16		Tissue	X	1
[redacted]	ANT16-02	G0149-09	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-12	G0149-10	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-13	G0149-11	19-Aug-16		Tissue	X	1
[redacted]	SPRUCE16-02	G0149-12	19-Aug-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little Evan Zapfgilje	08/09/2016 15:30 ~~08/08/2016 8:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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COC # G0150

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCV	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-14	G0150-01	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-15	G0150-02	19-Aug-16		Tissue	X	1
[redacted]	ANT16-03	G0150-03	19-Aug-16	FDA - G0165-04	Tissue	X	1
[redacted]	ANT16-03d	G0150-04	19-Aug-16	FD - G0165-03	Tissue	X	1
[redacted]	SPRUCE16-03	G0150-05	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-04	G0150-06	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-05	G0150-07	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-06	G0150-08	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-07	G0150-09	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-08	G0150-10	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-09	G0150-11	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-16	G0150-12	20-Aug-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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COC # G0152

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-17	G0152-01	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-18	G0152-02	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-19	G0152-03	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-20	G0152-04	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-10	G0152-05	20-Aug-16		Tissue	X	1
[redacted]	WILLOW16-06	G0152-06	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-07	G0152-07	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-03	G0152-08	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-04	G0152-09	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-08	G0152-10	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-05	G0152-11	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-06	G0152-12	02-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke ~~Evan Zapf-Gilje~~	08/09/2016 15:30 ~~08/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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COC # G0156

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	GRASS16-07	G01S6-01	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-08	G01S6-02	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-09	G01S6-03	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-10	G01S6-04	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-10	G01S6-05	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-09	G01S6-06	02-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-06	G01S6-07	02-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-07	G01S6-08	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-11	G01S6-09	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-01	G01S6-10	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-02	G01S6-11	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-12	G01S6-12	03-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litle	08/09/2016 15:30	JC	SEP - 9 2016	9am	1°C			
~~Evin Zapfgilje~~	~~06/08/2016 0:00~~							

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ANALYTICAL CHEMISTRY & TESTING SERVICES

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Chain of Custody / Analytical Request Form

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COC # G0157

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	GRASS16-13	G0157-01	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-03	G0157-02	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-04	G0157-03	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-14	G0157-04	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-15	G0157-05	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-05	G0157-06	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-13	G0157-07	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-14	G0157-08	03-Sep-16	FDA - G0157-09	Tissue	X	1
[redacted]	WILLOW16-14d	G0157-09	03-Sep-16	FD - G0157-08	Tissue	X	1
[redacted]	WILLOW16-15	G0157-10	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-17	G0157-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-16	G0157-12	04-Sep-16		Tissue	X	1

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke ~~Evin Zapfgilje~~	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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Chain of Custody / Analytical Request Form

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COC # G0165

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab_use_only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]		~~G0165-01~~					
[redacted]	WILLOW16-11	G0165-02	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-16	G0165-03	03-Sep-16	FDA - G0165-04	Tissue	X	1
[redacted]	GRASS16-16d	G0165-04	03-Sep-16	FD - G0165-03	Tissue	X	1
[redacted]	GRASS16-17	G0165-05	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-06	G0165-06	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-07	G0165-07	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-08	G0165-08	03-Sep-16	FDA - G0165-09	Tissue	X	1
[redacted]	GRASS16-BKG-08d	G0165-09	03-Sep-16	FDA - G0165-08	Tissue	X	1
[redacted]	WILLOW16-11	G0165-10	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-18	G0165-11	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-19	G0165-12	03-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lille ~~Erin Zapfgilje~~	08/09/2016 15:3 ~~08/09/2016 [redacted]~~	JC	SEP - 9 2016	9am	1°C			

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Chain of Custody / Analytical Request Form

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COC # G0166

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	WILLOW16-18	G01666-01	04-Sep-16		Tissue	X	1
[redacted]	GRASS16-20	G01666-02	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-19	G01666-03	04-Sep-16		Tissue	X	1
[redacted]	GRASS16-21	G01666-04	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-01	G01666-05	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-02	G01666-06	04-Sep-16		Tissue	X	1
[redacted]	BERRY16-BKG-11	G01666-07	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-02	G01666-08	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-03	G01666-09	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-03	G01666-10	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-04	G01666-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-05	G01666-12	04-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lithe ~~Evin Zapf-Gilje~~	08/09/2016 15:30 ~~08/09/2016 0:00~~	JC	SEP - 9 2016	9am	1C			

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Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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COC # G0167

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Analysis Request
Company:		Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		L1826505-COFC
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE-BKG-04	G0167-01	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-06	G0167-02	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-05	G0167-03	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-08	G0167-04	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-09	G0167-05	04-Sep-16		Tissue	X	1
[redacted]	WORM16-04	G0167-06	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-10	G0167-07	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-11	G0167-08	04-Sep-16	FDA - G0167-09	Tissue	X	1
[redacted]	SPRUCE16-11D	G0167-09	04-Sep-16	FD - G0167-08	Tissue	X	1
[redacted]	SPRUCE16-12	G0167-10	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-13	G0167-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-20	G0167-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lytle	08/09/2016 15:30 [redacted]	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0168

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-14	G0168-01	05-Sep-16		Tissue	X	1
[redacted]	AR16-03	G0168-02	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-15	G0168-03	05-Sep-16		Tissue	X	1
[redacted]	ANT16-04	G0168-04	05-Sep-16		Tissue	X	1
[redacted]	AR16-04	G0168-05	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-07	G0168-06	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-06	G0168-07	05-Sep-16		Tissue	X	1
[redacted]	AR16-BKG-01	G0168-08	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-08	G0168-09	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-07	G0168-10	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-01	G0168-11	05-Sep-16		Tissue	X	1
[redacted]	AR16-BKG-02	G0168-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little Ezwin Zapf-Gilje	08/09/2016 15:30 06/09/2016 0:00	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0169

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact:	Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	WORM16-BKG-02	G0169-01	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-09	G0169-02	05-Sep-16	FDA - G0169-03	Tissue	X	1
[redacted]	WILLOW16-BKG-09d	G0169-03	05-Sep-16	FD - G0169-02	Tissue	X	1
[redacted]	SPRUCE16-BKG-08	G0169-04	05-Sep-16	FDA - G0169-05	Tissue	X	1
[redacted]	SPRUCE16-BKG-08d	G0169-05	05-Sep-16	FD - G0169-04	Tissue	X	1
[redacted]							
[redacted]							
[redacted]							
[redacted]	WILOW16-21	G0169-09	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-22	G0169-10	05-Sep-16		Tissue	X	1
[redacted]	WILOW16-23	G0169-11	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-24	G0169-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke ~~Evin Zapf-Gilje~~	08/09/2016 16:30 ~~08/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0170

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SGS	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-16	G0170 - 01	05-Sep-16		Tissue	X	1
[redacted]	ANT16-05	G0170 - 02	05-Sep-16		Tissue	X	1
[redacted]	AR16-05	G0170 - 03	05-Sep-16		Tissue	X	1
[redacted]	BEETLE16-02	G0170 - 04	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-10	G0170 - 05	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-09	G0170 - 06	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-02	G0170 - 07	05-Sep-16	FDA - G0170-08	Tissue	X	1
[redacted]	ANT16-BKG-02d	G0170 - 08	05-Sep-16	FD- G0170-07	Tissue	X	1
[redacted]	SPRUCE16-BKG-10	G0170 - 09	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-03	G0170 - 10	05-Sep-16	FDA - G0170-11	Tissue	X	1
[redacted]	ANT16-BKG-03d	G0170 - 11	05-Sep-16	FD - G0170-10	Tissue	X	1
[redacted]	WILLOW16-25	G0170 - 12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke	08/09/2016 15:30 ~~00/00/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0171

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-17	G0171-01	05-Sep-16		Tissue	X	1
[redacted]	WORM16-05	G0171-02	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-18	G0171-03	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-09	G0171-04	05-Sep-16	FDA- G0171-05	Tissue	X	1
[redacted]	GRASS16-BKG-09d	G0171-05	05-Sep-16	FD G0171-04	Tissue	X	1
[redacted]	SPRUCE16-BKG-11	G0171-06	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-10	G0171-07	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-11	G0171-08	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-11	G0171-09	05-Sep-16		Tissue	X	1
[redacted]	SPURCE16-BKG-12	G0171-10	05-Sep-16		Tissue	X	1
[redacted]							
[redacted]							

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little Evin ~~Zapfgilje~~	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

L1826505

Group A Tissue

	SCN	Tissue ID
1	G0149-8	BERRY16-11
2	G0149-9	ANT16-02
3	G0149-10	BERRY16-12
4	G0149-11	BERRY16-13
5	G0149-12	SPRUCE16-02
6	G0150-1	BERRY16-14
7	G0150-2	BERRY16-15
8	G0150-3	ANT16-03
9	G0150-4	ANT16-03d
10	G0150-5	SPRUCE16-03
11	G0150-6	BERRY16-BKG-04
12	G0150-7	BERRY16-BKG-05
13	G0150-8	BERRY16-BKG-06
14	G0150-9	BERRY16-BKG-07
15	G0150-10	BERRY16-BKG-08
16	G0150-11	BERRY16-BKG-09
17	G0150-12	BERRY16-16
18	G0152-1	BERRY16-17
19	G0152-6	WILLOW16-06
20	G0152-7	WILLOW16-07
21	G0152-8	GRASS16-03
22	G0152-9	GRASS16-04
23	G0152-10	WILLOW16-08
24	G0152-11	GRASS16-05
25	G0152-12	GRASS16-06
26	G0156-1	GRASS16-07
27	G0156-2	GRASS16-08
28	G0156-3	WILLOW16-09
29	G0156-4	GRASS16-10
30	G0156-5	WILLOW16-10
31	G0156-6	GRASS16-09
32	G0156-7	SPRUCE16-06
33	G0156-8	SPRUCE16-07
34	G0168-3	SPRUCE16-15
35	G0168-4	ANT16-04
36	G0168-5	AR16-04
37	G0168-6	WILLOW15-BKG-07
38	G0168-7	SPRUCE16-BKG-06
39	G0168-8	AR16-BKG-01
40	G0168-9	WILLOW16-BKG-08
41	G0168-10	SPRUCE16-BKG-07
42	G0168-11	ANT16-BKG-01
43	G0168-12	AR16-BKG-02
44	G0169-1	WORM16-BKG-02
45	G0169-2	WILLOW16-BKG-09
46	G0169-3	WILLOW16-BKG-09d
47	G0169-4	SPRUCE16-BKG-08
48	G0169-5	SPRUCE16-BKG-08d
49	G0169-9	WILOW16-21
50	G0169-10	WILLOW16-22
51	G0169-11	WILOW16-23
52	G0169-12	WILLOW16-24
53	G0170-1	SPRUCE16-16
54	G0170-2	ANT16-05
55	G0170-3	AR16-05
56	G0170-4	BEETLE16-02
57	G0170-5	WILLOW16-BKG-10
58	G0170-6	SPRUCE16-BKG-09
59	G0170-7	ANT16-BKG-02
60	G0170-8	ANT16-BKG-02d
61	G0170-9	SPRUCE16-BKG-10
62	G0170-10	ANT16-BKG-03
63	G0170-11	ANT16-BKG-03d
64	G0170-12	WILLOW16-25
65	G171-1	SPRUCE16-17
66	G171-2	WORM16-05
67	G171-3	SPRUCE16-18
68	G171-4	GRASS16-BKG-09
69	G171-5	GRASS16-BKG-09d
70	G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B Soil

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

= all 'Group A' & 'Group B' tissues:
- moisture:
- routine prep
- CCMS metals (wet & dry)
- routine Hg (wet & dry)

(tissues not in A or B list = keep on hold)

MATT:

Group A: E' codes) Sept 16

Group B: routine.

L1826505-COFC

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-DEC-16 14:35 (MT)
Version: FINAL REV. 3

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826566

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0147, G0149, G0150, G0152, G0156, G0157, G0165, G0166, G0167, G0168, G0169, G0170, G0171
Legal Site Desc:

Comments:
16-DEC-2016 Split File #2.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-1	L1826566-7	L1826566-8	L1826566-9	L1826566-10
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	17-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
	Sampled Time					
	Client ID	G0147-1 BERRY16-04	G0147-7 BERRY16-05	G0147-8 BERRY16-06	G0147-9 BERRY16-07	G0147-10 BERRY16-08
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	60.9	80.4	51.0	85.4	70.8
Metals	Aluminum (Al)-Total (mg/kg)	744	21.3	41.1	42.1	36.5
	Aluminum (Al)-Total (mg/kg wwt)	291	4.2	20.2	6.1	10.7
	Antimony (Sb)-Total (mg/kg)	0.028	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0109	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.856	0.062	0.030	0.037	<0.020
	Arsenic (As)-Total (mg/kg wwt)	0.335	0.0121	0.0148	<0.0060	0.0050
	Barium (Ba)-Total (mg/kg)	10.5	2.57	5.12	9.36	4.42
	Barium (Ba)-Total (mg/kg wwt)	4.10	0.505	2.51	1.37	1.29
	Beryllium (Be)-Total (mg/kg)	0.056	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0219	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	0.0030	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	1.5	9.3	10.5	46.5	14.3
	Boron (B)-Total (mg/kg wwt)	0.59	1.83	5.17	6.79	4.18
	Cadmium (Cd)-Total (mg/kg)	1.19	0.163	0.010	0.194	0.0109
	Cadmium (Cd)-Total (mg/kg wwt)	0.464	0.0320	0.0051	0.0284	0.0032
	Calcium (Ca)-Total (mg/kg)	3270	1680	2870	4020	3960
	Calcium (Ca)-Total (mg/kg wwt)	1280	330	1410	587	1160
	Cesium (Cs)-Total (mg/kg)	0.185	0.0330	0.0095	0.224	0.0157
	Cesium (Cs)-Total (mg/kg wwt)	0.0722	0.0065	0.0047	0.0327	0.0046
	Chromium (Cr)-Total (mg/kg)	1.74	<0.20	<0.20	<0.20	0.082
	Chromium (Cr)-Total (mg/kg wwt)	0.682	<0.040	<0.040	<0.040	0.024
	Cobalt (Co)-Total (mg/kg)	0.619	0.100	0.049	0.232	0.072
	Cobalt (Co)-Total (mg/kg wwt)	0.242	0.0196	0.0241	0.0339	0.0209
	Copper (Cu)-Total (mg/kg)	78.5	5.32	6.16	20.5	7.50
	Copper (Cu)-Total (mg/kg wwt)	30.7	1.04	3.02	3.00	2.19
	Iron (Fe)-Total (mg/kg)	1960	60.3	69.2	109	72.1
	Iron (Fe)-Total (mg/kg wwt)	768	11.8	33.9	16.0	21.1
	Lead (Pb)-Total (mg/kg)	0.503	<0.050	<0.050	<0.050	<0.020
	Lead (Pb)-Total (mg/kg wwt)	0.197	<0.010	<0.010	<0.010	<0.0040
	Lithium (Li)-Total (mg/kg)	0.63	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	0.25	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	2160	1320	1960	2210	2870
	Magnesium (Mg)-Total (mg/kg wwt)	845	259	960	323	840
	Manganese (Mn)-Total (mg/kg)	48.7	66.4	28.0	98.0	27.8
	Manganese (Mn)-Total (mg/kg wwt)	19.0	13.0	13.8	14.3	8.12

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-11	L1826566-12	L1826566-13	L1826566-15	L1826566-16
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
	Sampled Time					
	Client ID	G0147-11 BERRY16-09	G0147-12 BERRY16-10	G0149-1 SPRUCE16-01	G0149-3 BERRY-BKG-02	G0149-4 BERRY-BKG-01
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	88.9	70.4	57.9	43.2	73.1
Metals	Aluminum (Al)-Total (mg/kg)	16.3	27.6	52.4	11.9	23.2
	Aluminum (Al)-Total (mg/kg wwt)	1.81	8.2	22.1	6.7	6.2
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	<0.030	0.028	<0.030	<0.030
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	<0.0060	0.0117	0.0060	<0.0060
	Barium (Ba)-Total (mg/kg)	13.7	11.7	63.4	6.74	5.66
	Barium (Ba)-Total (mg/kg wwt)	1.52	3.47	26.7	3.83	1.52
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	18.0	24.9	14.5	20.7	10.3
	Boron (B)-Total (mg/kg wwt)	1.99	7.37	6.09	11.8	2.78
	Cadmium (Cd)-Total (mg/kg)	0.0277	0.176	0.0171	0.043	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	0.0031	0.0521	0.0072	0.0241	0.0023
	Calcium (Ca)-Total (mg/kg)	3410	2890	3610	2040	3620
	Calcium (Ca)-Total (mg/kg wwt)	378	855	1520	1160	972
	Cesium (Cs)-Total (mg/kg)	0.0119	0.0258	0.0267	0.0498	0.0173
	Cesium (Cs)-Total (mg/kg wwt)	0.0013	0.0077	0.0112	0.0283	0.0046
	Chromium (Cr)-Total (mg/kg)	0.094	<0.20	0.086	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	0.010	<0.040	0.036	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	<0.020	0.368	0.088	0.083	0.070
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.109	0.0372	0.0474	0.0188
	Copper (Cu)-Total (mg/kg)	4.28	5.59	5.01	9.35	6.33
	Copper (Cu)-Total (mg/kg wwt)	0.475	1.66	2.11	5.31	1.70
	Iron (Fe)-Total (mg/kg)	35.6	65.3	117	39.9	60.3
	Iron (Fe)-Total (mg/kg wwt)	3.95	19.4	49.1	22.6	16.2
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	0.023	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	<0.010	0.0098	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1440	1310	1070	1990	2360
	Magnesium (Mg)-Total (mg/kg wwt)	160	388	450	1130	634
	Manganese (Mn)-Total (mg/kg)	3.31	133	167	43.1	47.5
	Manganese (Mn)-Total (mg/kg wwt)	0.367	39.3	70.1	24.5	12.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-17	L1826566-19	L1826566-20	L1826566-21	L1826566-22
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	19-AUG-16	20-AUG-16	20-AUG-16	20-AUG-16	20-AUG-16
	Sampled Time					
	Client ID	G0149-5 BERRY-BKG-03	G0152-2 BERRY16-18	G0152-3 BERRY16-19	G0152-4 BERRY16-20	G0152-5 BERRY16-BKG-10
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	84.1	82.8	77.4	80.1	81.5
Metals	Aluminum (Al)-Total (mg/kg)	12.6	14.4	11.5	22.8	9.9
	Aluminum (Al)-Total (mg/kg wwt)	2.0	2.5	2.6	4.5	1.8
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.030	<0.030	<0.030	<0.030	<0.030
	Arsenic (As)-Total (mg/kg wwt)	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
	Barium (Ba)-Total (mg/kg)	4.13	7.17	1.64	9.51	8.17
	Barium (Ba)-Total (mg/kg wwt)	0.657	1.23	0.370	1.90	1.51
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	22.4	12.6	12.7	13.3	13.4
	Boron (B)-Total (mg/kg wwt)	3.57	2.18	2.87	2.66	2.47
	Cadmium (Cd)-Total (mg/kg)	0.019	0.062	<0.010	0.019	0.011
	Cadmium (Cd)-Total (mg/kg wwt)	0.0030	0.0106	<0.0020	0.0038	0.0020
	Calcium (Ca)-Total (mg/kg)	1740	2100	1840	1930	2140
	Calcium (Ca)-Total (mg/kg wwt)	278	361	416	386	395
	Cesium (Cs)-Total (mg/kg)	0.0061	<0.0050	<0.0050	0.0078	<0.0050
	Cesium (Cs)-Total (mg/kg wwt)	<0.0010	<0.0010	0.0011	0.0015	<0.0010
	Chromium (Cr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Chromium (Cr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040
	Cobalt (Co)-Total (mg/kg)	0.027	<0.020	0.047	0.027	<0.020
	Cobalt (Co)-Total (mg/kg wwt)	0.0043	<0.0040	0.0107	0.0054	<0.0040
	Copper (Cu)-Total (mg/kg)	5.33	4.41	4.35	4.29	3.94
	Copper (Cu)-Total (mg/kg wwt)	0.848	0.759	0.984	0.855	0.727
	Iron (Fe)-Total (mg/kg)	36.4	39.6	52.5	53.4	23.3
	Iron (Fe)-Total (mg/kg wwt)	5.8	6.8	11.9	10.6	4.3
	Lead (Pb)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Lead (Pb)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1500	961	1280	936	1120
	Magnesium (Mg)-Total (mg/kg wwt)	238	165	289	187	206
	Manganese (Mn)-Total (mg/kg)	5.78	3.63	34.1	5.09	2.07
	Manganese (Mn)-Total (mg/kg wwt)	0.921	0.624	7.72	1.02	0.382

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-23	L1826566-24	L1826566-25	L1826566-26	L1826566-27
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
	Sampled Time					
	Client ID	G0156-9 GRASS16-11	G0156-10 GRASS16-BKG-01	G0156-11 GRASS16-BKG-02	G0156-12 GRASS16-12	G0157-1 GRASS16-13
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	45.5	59.0	54.3	36.0	48.5
Metals	Aluminum (Al)-Total (mg/kg)	88.8	50.9	19.0	26.5	101
	Aluminum (Al)-Total (mg/kg wwt)	48.4	20.9	8.67	17.0	51.9
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0021	<0.0020	<0.0020	<0.0020	0.0037
	Arsenic (As)-Total (mg/kg)	0.089	0.037	<0.020	<0.020	0.063
	Arsenic (As)-Total (mg/kg wwt)	0.0484	0.0151	0.0046	0.0120	0.0324
	Barium (Ba)-Total (mg/kg)	66.0	21.5	71.6	14.3	34.3
	Barium (Ba)-Total (mg/kg wwt)	36.0	8.80	32.7	9.17	17.7
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	5.8	<1.0	3.7	3.3	7.6
	Boron (B)-Total (mg/kg wwt)	3.16	0.35	1.68	2.14	3.90
	Cadmium (Cd)-Total (mg/kg)	0.450	0.065	0.167	0.0618	0.0416
	Cadmium (Cd)-Total (mg/kg wwt)	0.245	0.0266	0.0761	0.0395	0.0214
	Calcium (Ca)-Total (mg/kg)	3840	1970	2370	1370	3690
	Calcium (Ca)-Total (mg/kg wwt)	2090	810	1080	875	1900
	Cesium (Cs)-Total (mg/kg)	0.0381	0.0136	<0.0050	0.0060	0.0102
	Cesium (Cs)-Total (mg/kg wwt)	0.0207	0.0056	<0.0010	0.0038	0.0053
	Chromium (Cr)-Total (mg/kg)	0.117	0.20	0.059	<0.050	0.140
	Chromium (Cr)-Total (mg/kg wwt)	0.064	0.084	0.027	0.023	0.072
	Cobalt (Co)-Total (mg/kg)	0.080	0.059	0.023	0.035	0.215
	Cobalt (Co)-Total (mg/kg wwt)	0.0437	0.0242	0.0104	0.0226	0.111
	Copper (Cu)-Total (mg/kg)	8.82	4.37	5.47	6.18	7.98
	Copper (Cu)-Total (mg/kg wwt)	4.81	1.79	2.50	3.96	4.11
	Iron (Fe)-Total (mg/kg)	158	143	62.4	86.7	137
	Iron (Fe)-Total (mg/kg wwt)	86.2	58.7	28.5	55.5	70.3
	Lead (Pb)-Total (mg/kg)	0.048	<0.050	0.024	<0.020	0.044
	Lead (Pb)-Total (mg/kg wwt)	0.0261	0.014	0.0110	0.0087	0.0224
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1370	780	1070	1480	1290
	Magnesium (Mg)-Total (mg/kg wwt)	746	320	490	946	665
	Manganese (Mn)-Total (mg/kg)	123	20.6	93.7	73.1	163
	Manganese (Mn)-Total (mg/kg wwt)	67.1	8.44	42.8	46.8	83.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-28	L1826566-29	L1826566-30	L1826566-31	L1826566-32
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
	Sampled Time					
	Client ID	G0157-2 GRASS16-BKG-03	G0157-3 GRASS16-BKG-04	G0157-4 GRASS16-14	G0157-5 GRASS16-15	G01157-6 GRASS16-BKG-05
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	66.1	62.7	46.5	58.7	63.5
Metals	Aluminum (Al)-Total (mg/kg)	73.8	193	74.0	112	44.8
	Aluminum (Al)-Total (mg/kg wwt)	25.1	71.9	39.6	46.5	16.4
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0024	<0.0020	0.0026	<0.0020
	Arsenic (As)-Total (mg/kg)	0.040	0.117	0.051	0.104	0.029
	Arsenic (As)-Total (mg/kg wwt)	0.0136	0.0437	0.0270	0.0431	0.0105
	Barium (Ba)-Total (mg/kg)	15.8	27.3	15.7	34.0	48.4
	Barium (Ba)-Total (mg/kg wwt)	5.38	10.2	8.37	14.1	17.7
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0024	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	3.5	4.0	2.9	9.3	3.8
	Boron (B)-Total (mg/kg wwt)	1.20	1.51	1.54	3.83	1.38
	Cadmium (Cd)-Total (mg/kg)	0.0333	0.106	0.0155	0.0098	0.0575
	Cadmium (Cd)-Total (mg/kg wwt)	0.0113	0.0397	0.0083	0.0041	0.0210
	Calcium (Ca)-Total (mg/kg)	1320	3630	2030	3650	2020
	Calcium (Ca)-Total (mg/kg wwt)	447	1350	1080	1510	737
	Cesium (Cs)-Total (mg/kg)	0.0069	0.0215	0.0177	0.0113	<0.0050
	Cesium (Cs)-Total (mg/kg wwt)	0.0023	0.0080	0.0094	0.0047	0.0018
	Chromium (Cr)-Total (mg/kg)	0.091	0.28	0.091	0.174	0.057
	Chromium (Cr)-Total (mg/kg wwt)	0.031	0.105	0.048	0.072	0.021
	Cobalt (Co)-Total (mg/kg)	0.077	0.492	0.160	0.241	0.060
	Cobalt (Co)-Total (mg/kg wwt)	0.0261	0.183	0.0853	0.0996	0.0221
	Copper (Cu)-Total (mg/kg)	7.78	10.2	7.98	6.84	6.45
	Copper (Cu)-Total (mg/kg wwt)	2.64	3.80	4.27	2.83	2.36
	Iron (Fe)-Total (mg/kg)	203	273	145	191	139
	Iron (Fe)-Total (mg/kg wwt)	68.8	102	77.7	78.9	50.7
	Lead (Pb)-Total (mg/kg)	0.028	0.103	0.037	0.051	0.025
	Lead (Pb)-Total (mg/kg wwt)	0.0095	0.038	0.0198	0.0212	0.0090
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1300	1630	1280	789	1210
	Magnesium (Mg)-Total (mg/kg wwt)	442	606	682	326	443
	Manganese (Mn)-Total (mg/kg)	45.9	95.9	115	73.1	122
	Manganese (Mn)-Total (mg/kg wwt)	15.6	35.8	61.6	30.2	44.4

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-33	L1826566-34	L1826566-35	L1826566-36	L1826566-37
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	04-SEP-16
	Sampled Time					
	Client ID	G0157-7 WILLOW16-13	G0157-8 WILLOW16-14	G0157-9 WILLOW16-14D	G0157-10 WILLOW16-15	G0157-11 WILLOW16-17
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	59.7	57.3	57.0	62.4	49.8
Metals	Aluminum (Al)-Total (mg/kg)	291	42.1	107	610	257
	Aluminum (Al)-Total (mg/kg wwt)	117	18.0	45.9	229	129
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	0.021	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0037	<0.0020	<0.0020	0.0081	0.0047
	Arsenic (As)-Total (mg/kg)	0.207	0.033	0.059	0.355	0.201
	Arsenic (As)-Total (mg/kg wwt)	0.0835	0.0140	0.0253	0.133	0.101
	Barium (Ba)-Total (mg/kg)	6.89	4.36	3.74	8.94	21.9
	Barium (Ba)-Total (mg/kg wwt)	2.78	1.86	1.61	3.36	11.0
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	0.017	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0028	<0.0020	<0.0020	0.0066	0.0035
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	17.8	13.9	19.7	41.9	6.2
	Boron (B)-Total (mg/kg wwt)	7.17	5.92	8.45	15.7	3.10
	Cadmium (Cd)-Total (mg/kg)	0.949	0.328	0.214	1.19	0.915
	Cadmium (Cd)-Total (mg/kg wwt)	0.383	0.140	0.0921	0.446	0.459
	Calcium (Ca)-Total (mg/kg)	11800	7780	6510	9880	14800
	Calcium (Ca)-Total (mg/kg wwt)	4750	3320	2800	3710	7420
	Cesium (Cs)-Total (mg/kg)	0.0383	0.0480	0.0377	0.0689	0.0904
	Cesium (Cs)-Total (mg/kg wwt)	0.0155	0.0205	0.0162	0.0259	0.0454
	Chromium (Cr)-Total (mg/kg)	0.454	0.066	0.201	1.04	0.358
	Chromium (Cr)-Total (mg/kg wwt)	0.183	0.028	0.086	0.390	0.180
	Cobalt (Co)-Total (mg/kg)	1.34	0.508	0.502	0.884	0.435
	Cobalt (Co)-Total (mg/kg wwt)	0.539	0.217	0.216	0.332	0.218
	Copper (Cu)-Total (mg/kg)	8.40	4.77	4.28	16.0	11.3
	Copper (Cu)-Total (mg/kg wwt)	3.39	2.04	1.84	6.01	5.66
	Iron (Fe)-Total (mg/kg)	390	75.0	164	1250	443
	Iron (Fe)-Total (mg/kg wwt)	157	32.0	70.5	468	222
	Lead (Pb)-Total (mg/kg)	0.122	0.026	0.049	0.235	0.135
	Lead (Pb)-Total (mg/kg wwt)	0.0494	0.0112	0.0212	0.0881	0.0675
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	0.53	<0.50
	Lithium (Li)-Total (mg/kg wwt)	0.11	<0.10	<0.10	0.20	0.11
	Magnesium (Mg)-Total (mg/kg)	2460	1730	1620	4650	3660
	Magnesium (Mg)-Total (mg/kg wwt)	993	739	694	1740	1830
	Manganese (Mn)-Total (mg/kg)	83.0	63.9	46.9	198	490
	Manganese (Mn)-Total (mg/kg wwt)	33.5	27.3	20.1	74.5	246

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-38	L1826566-39	L1826566-40	L1826566-41	L1826566-42
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	04-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
	Sampled Time					
	Client ID	G0157-12 WILLOW16-16	G0165-2 WILLOW16-11	G0165-3 GRASS16-16	G0165-4 GRASS16-16D	G0165-5 GRASS16-17
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	53.5	58.0	60.6	59.6	58.1
Metals	Aluminum (Al)-Total (mg/kg)	629	60.1	23.4	28.0	72.0
	Aluminum (Al)-Total (mg/kg wwt)	292	25.2	9.23	11.3	30.1
	Antimony (Sb)-Total (mg/kg)	0.019	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0087	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.398	0.087	0.020	<0.020	0.053
	Arsenic (As)-Total (mg/kg wwt)	0.185	0.0366	0.0080	0.0062	0.0222
	Barium (Ba)-Total (mg/kg)	17.9	6.51	4.17	3.68	11.2
	Barium (Ba)-Total (mg/kg wwt)	8.33	2.73	1.64	1.48	4.70
	Beryllium (Be)-Total (mg/kg)	0.015	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0071	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	23.6	24.0	4.0	4.4	5.2
	Boron (B)-Total (mg/kg wwt)	11.0	10.1	1.58	1.77	2.19
	Cadmium (Cd)-Total (mg/kg)	1.24	0.118	0.0076	0.0069	0.0548
	Cadmium (Cd)-Total (mg/kg wwt)	0.576	0.0496	0.0030	0.0028	0.0229
	Calcium (Ca)-Total (mg/kg)	19800	6480	1490	1480	4910
	Calcium (Ca)-Total (mg/kg wwt)	9200	2720	587	597	2050
	Cesium (Cs)-Total (mg/kg)	0.0854	0.0248	0.0091	0.0098	0.0098
	Cesium (Cs)-Total (mg/kg wwt)	0.0397	0.0104	0.0036	0.0039	0.0041
	Chromium (Cr)-Total (mg/kg)	1.07	0.100	<0.050	0.055	0.141
	Chromium (Cr)-Total (mg/kg wwt)	0.499	0.042	0.012	0.022	0.059
	Cobalt (Co)-Total (mg/kg)	0.840	0.451	0.037	0.038	0.080
	Cobalt (Co)-Total (mg/kg wwt)	0.391	0.189	0.0147	0.0153	0.0334
	Copper (Cu)-Total (mg/kg)	11.7	4.48	7.60	6.34	11.3
	Copper (Cu)-Total (mg/kg wwt)	5.42	1.88	2.99	2.56	4.73
	Iron (Fe)-Total (mg/kg)	1060	121	73.5	86.0	156
	Iron (Fe)-Total (mg/kg wwt)	494	50.6	29.0	34.7	65.4
	Lead (Pb)-Total (mg/kg)	0.282	0.031	<0.020	<0.020	0.037
	Lead (Pb)-Total (mg/kg wwt)	0.131	0.0129	0.0062	0.0071	0.0157
	Lithium (Li)-Total (mg/kg)	0.64	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	0.30	0.21	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	4080	2210	1290	1150	1400
	Magnesium (Mg)-Total (mg/kg wwt)	1900	929	507	465	584
	Manganese (Mn)-Total (mg/kg)	447	111	27.4	27.4	44.6
	Manganese (Mn)-Total (mg/kg wwt)	208	46.4	10.8	11.1	18.7

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-43	L1826566-44	L1826566-45	L1826566-46	L1826566-47
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
	Sampled Time					
	Client ID	G0165-6 GRASS16-BKG-06	G0165-7 GRASS16-BKG-07	G0165-8 GRASS16-BKG-08	G0165-9 GRASS16-BKG-08D	G0165-10 WILLOW16-11
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	69.0	55.2	34.2	50.2	64.4
Metals	Aluminum (Al)-Total (mg/kg)	20.8	29.9	24.5	18.0	190
	Aluminum (Al)-Total (mg/kg wwt)	6.45	13.4	16.1	8.97	67.7
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0021	<0.0020	<0.0020	0.0033
	Arsenic (As)-Total (mg/kg)	<0.020	<0.030	0.022	<0.020	0.119
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0097	0.0147	0.0059	0.0422
	Barium (Ba)-Total (mg/kg)	3.30	37.5	8.32	5.69	4.84
	Barium (Ba)-Total (mg/kg wwt)	1.02	16.8	5.48	2.83	1.72
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	2.4	3.2	5.0	3.5	19.4
	Boron (B)-Total (mg/kg wwt)	0.74	1.44	3.28	1.77	6.88
	Cadmium (Cd)-Total (mg/kg)	0.0079	0.081	0.0205	0.0213	0.327
	Cadmium (Cd)-Total (mg/kg wwt)	0.0024	0.0364	0.0135	0.0106	0.116
	Calcium (Ca)-Total (mg/kg)	1170	2020	2040	1710	6240
	Calcium (Ca)-Total (mg/kg wwt)	362	906	1340	853	2220
	Cesium (Cs)-Total (mg/kg)	0.0053	<0.0050	0.0058	0.0051	0.0330
	Cesium (Cs)-Total (mg/kg wwt)	0.0016	0.0020	0.0038	0.0025	0.0117
	Chromium (Cr)-Total (mg/kg)	0.083	<0.20	0.052	<0.050	0.364
	Chromium (Cr)-Total (mg/kg wwt)	0.026	0.041	0.035	0.014	0.130
	Cobalt (Co)-Total (mg/kg)	0.048	0.047	0.035	0.041	0.496
	Cobalt (Co)-Total (mg/kg wwt)	0.0147	0.0210	0.0229	0.0202	0.176
	Copper (Cu)-Total (mg/kg)	5.22	5.96	5.63	5.88	7.64
	Copper (Cu)-Total (mg/kg wwt)	1.62	2.67	3.71	2.93	2.72
	Iron (Fe)-Total (mg/kg)	65.1	102	79.0	67.8	331
	Iron (Fe)-Total (mg/kg wwt)	20.1	45.4	52.0	33.8	118
	Lead (Pb)-Total (mg/kg)	0.028	<0.050	<0.020	<0.020	0.065
	Lead (Pb)-Total (mg/kg wwt)	0.0086	0.013	0.0104	0.0050	0.0230
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	821	626	1010	989	1430
	Magnesium (Mg)-Total (mg/kg wwt)	254	280	662	493	510
	Manganese (Mn)-Total (mg/kg)	45.8	111	76.5	71.6	28.1
	Manganese (Mn)-Total (mg/kg wwt)	14.2	49.8	50.3	35.7	9.98

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-48	L1826566-49	L1826566-50	L1826566-51	L1826566-52
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
	Sampled Time					
	Client ID	G0165-11 GRASS16-18	G0165-12 GRASS16-19	G0166-1 WILLOW16-18	G0166-2 GRASS16-20	G0166-3 WILLOW16-19
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	16.7	35.7	60.7	36.8	61.5
Metals	Aluminum (Al)-Total (mg/kg)	16.6	63.8	282	118	357
	Aluminum (Al)-Total (mg/kg wwt)	13.8	41.0	111	74.7	137
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	0.013	<0.010	0.015
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0052	0.0022	0.0057
	Arsenic (As)-Total (mg/kg)	<0.020	0.040	0.183	0.083	0.235
	Arsenic (As)-Total (mg/kg wwt)	0.0129	0.0255	0.0721	0.0528	0.0905
	Barium (Ba)-Total (mg/kg)	10.6	35.2	5.05	41.4	6.08
	Barium (Ba)-Total (mg/kg wwt)	8.85	22.7	1.99	26.2	2.34
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.012
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0025	<0.0020	0.0044
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	3.7	4.1	15.0	8.6	17.3
	Boron (B)-Total (mg/kg wwt)	3.07	2.61	5.90	5.46	6.67
	Cadmium (Cd)-Total (mg/kg)	0.0205	0.0671	0.537	0.0937	0.830
	Cadmium (Cd)-Total (mg/kg wwt)	0.0171	0.0432	0.211	0.0593	0.319
	Calcium (Ca)-Total (mg/kg)	1290	3240	8730	6840	8840
	Calcium (Ca)-Total (mg/kg wwt)	1080	2090	3440	4330	3400
	Cesium (Cs)-Total (mg/kg)	0.0170	0.0108	0.0290	0.0186	0.0368
	Cesium (Cs)-Total (mg/kg wwt)	0.0142	0.0070	0.0114	0.0118	0.0142
	Chromium (Cr)-Total (mg/kg)	<0.050	0.146	0.617	0.184	0.387
	Chromium (Cr)-Total (mg/kg wwt)	0.019	0.094	0.243	0.116	0.149
	Cobalt (Co)-Total (mg/kg)	0.026	0.055	0.719	0.212	1.36
	Cobalt (Co)-Total (mg/kg wwt)	0.0220	0.0353	0.283	0.134	0.525
	Copper (Cu)-Total (mg/kg)	5.66	6.08	6.86	8.42	16.3
	Copper (Cu)-Total (mg/kg wwt)	4.71	3.91	2.70	5.33	6.27
	Iron (Fe)-Total (mg/kg)	51.1	128	487	246	628
	Iron (Fe)-Total (mg/kg wwt)	42.5	82.6	191	155	242
	Lead (Pb)-Total (mg/kg)	<0.020	0.033	0.114	0.042	0.122
	Lead (Pb)-Total (mg/kg wwt)	0.0074	0.0215	0.0449	0.0265	0.0469
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	0.10
	Magnesium (Mg)-Total (mg/kg)	1270	1470	1740	1550	1840
	Magnesium (Mg)-Total (mg/kg wwt)	1060	945	686	979	708
	Manganese (Mn)-Total (mg/kg)	46.9	83.1	62.6	56.7	71.7
	Manganese (Mn)-Total (mg/kg wwt)	39.1	53.5	24.6	35.9	27.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-53	L1826566-54	L1826566-55	L1826566-56	L1826566-57
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
	Sampled Time					
	Client ID	G0166-4 GRASS16-21	G0166-5 WILLOW16-BKG-01	G0166-6 SPRUCE16-BKG-02	G0166-7 BERRY16-BKG-11	G0166-8 WILLOW16-BKG-02
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	33.0	63.6	55.7	84.6	64.5
Metals	Aluminum (Al)-Total (mg/kg)	1100	38.0	11.3	11.4	35.8
	Aluminum (Al)-Total (mg/kg wwt)	734	13.9	5.02	1.7	12.7
	Antimony (Sb)-Total (mg/kg)	0.027	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0178	0.0030	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	0.771	0.024	<0.020	<0.030	0.030
	Arsenic (As)-Total (mg/kg wwt)	0.517	0.0088	<0.0040	<0.0060	0.0106
	Barium (Ba)-Total (mg/kg)	31.8	65.1	52.9	7.19	13.2
	Barium (Ba)-Total (mg/kg wwt)	21.3	23.7	23.4	1.11	4.68
	Beryllium (Be)-Total (mg/kg)	0.042	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0284	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	0.0050	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	6.6	25.6	5.2	16.5	7.0
	Boron (B)-Total (mg/kg wwt)	4.45	9.34	2.32	2.54	2.48
	Cadmium (Cd)-Total (mg/kg)	0.170	0.0123	0.114	0.010	1.14
	Cadmium (Cd)-Total (mg/kg wwt)	0.114	0.0045	0.0506	<0.0020	0.404
	Calcium (Ca)-Total (mg/kg)	5160	18900	3030	2000	13000
	Calcium (Ca)-Total (mg/kg wwt)	3460	6890	1340	307	4630
	Cesium (Cs)-Total (mg/kg)	0.131	0.0086	0.0415	<0.0050	0.0254
	Cesium (Cs)-Total (mg/kg wwt)	0.0878	0.0031	0.0184	<0.0010	0.0090
	Chromium (Cr)-Total (mg/kg)	1.55	0.081	<0.050	<0.20	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	1.04	0.030	0.016	<0.040	0.015
	Cobalt (Co)-Total (mg/kg)	1.29	0.174	0.063	0.064	1.52
	Cobalt (Co)-Total (mg/kg wwt)	0.867	0.0633	0.0278	0.0099	0.541
	Copper (Cu)-Total (mg/kg)	40.3	5.29	4.15	3.74	7.21
	Copper (Cu)-Total (mg/kg wwt)	27.0	1.93	1.84	0.576	2.56
	Iron (Fe)-Total (mg/kg)	2370	106	28.9	29.9	111
	Iron (Fe)-Total (mg/kg wwt)	1590	38.6	12.8	4.6	39.3
	Lead (Pb)-Total (mg/kg)	0.566	0.027	<0.020	<0.050	0.026
	Lead (Pb)-Total (mg/kg wwt)	0.380	0.0099	0.0047	<0.010	0.0093
	Lithium (Li)-Total (mg/kg)	1.21	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	0.81	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1630	4490	786	1000	3090
	Magnesium (Mg)-Total (mg/kg wwt)	1100	1640	348	154	1100
	Manganese (Mn)-Total (mg/kg)	149	21.8	225	3.14	53.5
	Manganese (Mn)-Total (mg/kg wwt)	100	7.93	99.7	0.484	19.0

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	Sample ID	L1826566-58	L1826566-59	L1826566-60	L1826566-61	L1826566-62
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
	Sampled Time					
	Client ID	G0166-9 SPRUCE16-BKG-03	G0166-10 WILLOW16-BKG-03	G0166-11 WILLOW16-BKG-04	G0166-12 WILLOW16-BKG-05	G0167-1 SPRUCE-BKG-04
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	56.5	56.6	54.1	57.4	56.1
Metals	Aluminum (Al)-Total (mg/kg)	9.5	71.7	73.2	31.2	21.7
	Aluminum (Al)-Total (mg/kg wwt)	4.15	31.1	33.6	13.3	9.52
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0025	0.0024	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	0.049	0.048	<0.020	<0.020
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0211	0.0220	0.0069	<0.0040
	Barium (Ba)-Total (mg/kg)	59.0	4.93	27.5	9.60	87.7
	Barium (Ba)-Total (mg/kg wwt)	25.7	2.14	12.6	4.09	38.5
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0020	0.0029	0.0021	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	15.7	30.2	30.5	20.1	8.1
	Boron (B)-Total (mg/kg wwt)	6.83	13.1	14.0	8.58	3.58
	Cadmium (Cd)-Total (mg/kg)	0.0461	0.645	1.60	2.03	0.0545
	Cadmium (Cd)-Total (mg/kg wwt)	0.0201	0.280	0.735	0.867	0.0239
	Calcium (Ca)-Total (mg/kg)	4250	6190	19200	9560	4670
	Calcium (Ca)-Total (mg/kg wwt)	1850	2690	8820	4080	2050
	Cesium (Cs)-Total (mg/kg)	0.0939	0.0591	0.0262	0.0908	0.156
	Cesium (Cs)-Total (mg/kg wwt)	0.0409	0.0256	0.0120	0.0387	0.0686
	Chromium (Cr)-Total (mg/kg)	<0.050	0.089	0.099	<0.050	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.038	0.046	0.016	0.010
	Cobalt (Co)-Total (mg/kg)	0.110	2.73	1.64	3.53	0.066
	Cobalt (Co)-Total (mg/kg wwt)	0.0477	1.18	0.755	1.51	0.0291
	Copper (Cu)-Total (mg/kg)	2.84	8.97	9.78	4.53	3.07
	Copper (Cu)-Total (mg/kg wwt)	1.24	3.89	4.49	1.93	1.35
	Iron (Fe)-Total (mg/kg)	27.4	177	167	96.9	39.3
	Iron (Fe)-Total (mg/kg wwt)	11.9	76.7	76.7	41.3	17.2
	Lead (Pb)-Total (mg/kg)	<0.020	0.028	0.040	0.024	<0.020
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0119	0.0186	0.0104	0.0051
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	674	2540	2170	2570	599
	Magnesium (Mg)-Total (mg/kg wwt)	293	1100	997	1100	263
	Manganese (Mn)-Total (mg/kg)	193	399	120	1300	201
	Manganese (Mn)-Total (mg/kg wwt)	84.0	173	54.9	554	88.2

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-63 TISSUE 04-SEP-16 G0167-2 WILLOW16-BKG-06	L1826566-64 TISSUE 04-SEP-16 G0167-3 SPRUCE16-BKG-05	L1826566-65 TISSUE 04-SEP-16 G0167-4 SPRUCE16-08	L1826566-66 TISSUE 04-SEP-16 G0167-5 SPRUCE16-09	L1826566-68 TISSUE 04-SEP-16 G0167-7 SPRUCE16-10
TISSUE						
Physical Tests	% Moisture (%)	57.4	53.3	54.9	54.7	53.0
Metals	Aluminum (Al)-Total (mg/kg)	56.5	15.6	23.5	52.7	77.3
	Aluminum (Al)-Total (mg/kg wwt)	24.0	7.28	10.6	23.9	36.3
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0023	<0.0020	0.0021	0.0028	<0.0020
	Arsenic (As)-Total (mg/kg)	0.047	<0.020	<0.020	0.039	0.042
	Arsenic (As)-Total (mg/kg wwt)	0.0201	0.0041	0.0085	0.0178	0.0196
	Barium (Ba)-Total (mg/kg)	29.7	117	32.7	68.4	81.5
	Barium (Ba)-Total (mg/kg wwt)	12.6	54.4	14.7	31.0	38.3
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	32.7	10.7	6.9	8.6	13.1
	Boron (B)-Total (mg/kg wwt)	13.9	5.01	3.13	3.92	6.16
	Cadmium (Cd)-Total (mg/kg)	1.42	0.0163	0.0346	0.119	0.0053
	Cadmium (Cd)-Total (mg/kg wwt)	0.603	0.0076	0.0156	0.0537	0.0025
	Calcium (Ca)-Total (mg/kg)	19600	6800	3750	5500	4480
	Calcium (Ca)-Total (mg/kg wwt)	8350	3170	1690	2490	2100
	Cesium (Cs)-Total (mg/kg)	0.0064	0.0091	0.0074	0.0143	0.0335
	Cesium (Cs)-Total (mg/kg wwt)	0.0027	0.0042	0.0034	0.0065	0.0157
	Chromium (Cr)-Total (mg/kg)	0.075	<0.050	<0.050	<0.050	0.076
	Chromium (Cr)-Total (mg/kg wwt)	0.032	0.010	0.016	0.021	0.036
	Cobalt (Co)-Total (mg/kg)	1.67	0.046	0.088	0.099	0.101
	Cobalt (Co)-Total (mg/kg wwt)	0.712	0.0213	0.0398	0.0449	0.0473
	Copper (Cu)-Total (mg/kg)	6.32	3.24	3.93	4.47	5.89
	Copper (Cu)-Total (mg/kg wwt)	2.69	1.51	1.77	2.02	2.77
	Iron (Fe)-Total (mg/kg)	148	34.8	57.7	179	247
	Iron (Fe)-Total (mg/kg wwt)	63.2	16.3	26.0	81.0	116
	Lead (Pb)-Total (mg/kg)	0.033	<0.020	<0.020	<0.020	0.042
	Lead (Pb)-Total (mg/kg wwt)	0.0141	0.0041	0.0045	0.0074	0.0197
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	3000	747	939	836	970
	Magnesium (Mg)-Total (mg/kg wwt)	1280	349	423	379	456
	Manganese (Mn)-Total (mg/kg)	80.8	156	73.6	172	82.6
	Manganese (Mn)-Total (mg/kg wwt)	34.4	72.7	33.2	77.8	38.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-69	L1826566-70	L1826566-71	L1826566-72	L1826566-73
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
	Sampled Time					
	Client ID	G0167-8 SPRUCE16-11	G0167-9 SPRUCE16-11D	G0167-10 SPRUCE16-12	G0167-11 SPRUCE16-13	G0167-12 WILLOW16-20
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	53.6	49.9	52.3	52.5	60.2
Metals	Aluminum (Al)-Total (mg/kg)	92.5	60.2	76.0	43.3	39.4
	Aluminum (Al)-Total (mg/kg wwt)	42.9	30.2	36.3	20.6	15.7
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0033	<0.0020	0.0023
	Arsenic (As)-Total (mg/kg)	0.060	0.041	0.047	0.032	0.089
	Arsenic (As)-Total (mg/kg wwt)	0.0280	0.0207	0.0225	0.0152	0.0354
	Barium (Ba)-Total (mg/kg)	116	105	41.1	59.6	4.78
	Barium (Ba)-Total (mg/kg wwt)	54.0	52.8	19.6	28.3	1.90
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	10.2	9.9	8.6	5.0	150
	Boron (B)-Total (mg/kg wwt)	4.74	4.95	4.10	2.36	59.7
	Cadmium (Cd)-Total (mg/kg)	0.0597	0.0290	0.0329	0.0386	0.455
	Cadmium (Cd)-Total (mg/kg wwt)	0.0277	0.0145	0.0157	0.0184	0.181
	Calcium (Ca)-Total (mg/kg)	7070	6210	4750	6970	13500
	Calcium (Ca)-Total (mg/kg wwt)	3280	3120	2270	3310	5370
	Cesium (Cs)-Total (mg/kg)	0.0329	0.0259	0.0148	0.0101	0.0281
	Cesium (Cs)-Total (mg/kg wwt)	0.0153	0.0130	0.0070	0.0048	0.0112
	Chromium (Cr)-Total (mg/kg)	0.093	0.059	0.079	<0.050	0.073
	Chromium (Cr)-Total (mg/kg wwt)	0.043	0.030	0.038	0.018	0.029
	Cobalt (Co)-Total (mg/kg)	0.135	0.103	0.135	0.110	0.427
	Cobalt (Co)-Total (mg/kg wwt)	0.0627	0.0514	0.0642	0.0524	0.170
	Copper (Cu)-Total (mg/kg)	7.72	6.10	4.88	4.44	8.56
	Copper (Cu)-Total (mg/kg wwt)	3.58	3.06	2.33	2.11	3.41
	Iron (Fe)-Total (mg/kg)	266	186	261	126	100
	Iron (Fe)-Total (mg/kg wwt)	123	93.3	124	59.9	39.8
	Lead (Pb)-Total (mg/kg)	0.042	<0.020	0.033	0.020	0.033
	Lead (Pb)-Total (mg/kg wwt)	0.0192	0.0099	0.0159	0.0096	0.0133
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	0.11
	Magnesium (Mg)-Total (mg/kg)	962	970	838	1030	3470
	Magnesium (Mg)-Total (mg/kg wwt)	446	486	400	490	1380
	Manganese (Mn)-Total (mg/kg)	118	104	171	235	759
	Manganese (Mn)-Total (mg/kg wwt)	54.5	52.3	81.6	111	302

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-74	L1826566-76	L1826566-77	L1826566-78	L1826566-79
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	04-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16
	Sampled Time					
	Client ID	G0168-1 SPRUCE16-14	G0171-7 GRASS16-BKG-10	G0171-8 GRASS16-BKG-11	G0171-9 WILLOW16-BKG-11	G0171-10 SPRUCE16-BKG-12
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	54.2	14.4	16.8	62.8	55.6
Metals	Aluminum (Al)-Total (mg/kg)	34.4	7.1	12.2	41.6	17.6
	Aluminum (Al)-Total (mg/kg wwt)	15.7	6.0	10.1	15.8	7.84
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg)	<0.020	<0.030	<0.030	0.028	<0.020
	Arsenic (As)-Total (mg/kg wwt)	0.0087	<0.0060	0.0101	0.0105	0.0049
	Barium (Ba)-Total (mg/kg)	97.2	3.95	6.48	38.2	120
	Barium (Ba)-Total (mg/kg wwt)	44.5	3.38	5.39	14.5	53.2
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	19.3	4.6	6.5	30.0	13.2
	Boron (B)-Total (mg/kg wwt)	8.83	3.94	5.40	11.4	5.85
	Cadmium (Cd)-Total (mg/kg)	0.0368	<0.010	<0.010	4.65	0.218
	Cadmium (Cd)-Total (mg/kg wwt)	0.0168	<0.0020	<0.0020	1.76	0.0967
	Calcium (Ca)-Total (mg/kg)	6020	1670	2040	28000	4150
	Calcium (Ca)-Total (mg/kg wwt)	2760	1430	1700	10600	1840
	Cesium (Cs)-Total (mg/kg)	0.0423	<0.0050	<0.0050	0.0132	0.0772
	Cesium (Cs)-Total (mg/kg wwt)	0.0194	0.0015	0.0040	0.0050	0.0343
	Chromium (Cr)-Total (mg/kg)	<0.050	<0.20	<0.20	0.058	<0.050
	Chromium (Cr)-Total (mg/kg wwt)	0.017	<0.040	<0.040	0.022	0.016
	Cobalt (Co)-Total (mg/kg)	0.095	0.022	<0.020	0.920	0.100
	Cobalt (Co)-Total (mg/kg wwt)	0.0435	0.0186	0.0122	0.349	0.0445
	Copper (Cu)-Total (mg/kg)	4.63	4.42	6.67	5.53	3.69
	Copper (Cu)-Total (mg/kg wwt)	2.12	3.78	5.55	2.10	1.64
	Iron (Fe)-Total (mg/kg)	59.8	52.8	45.3	119	46.3
	Iron (Fe)-Total (mg/kg wwt)	27.4	45.2	37.7	45.1	20.6
	Lead (Pb)-Total (mg/kg)	<0.020	<0.050	<0.050	0.033	<0.020
	Lead (Pb)-Total (mg/kg wwt)	0.0082	<0.010	<0.010	0.0124	0.0059
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	814	1140	1350	2780	639
	Magnesium (Mg)-Total (mg/kg wwt)	372	977	1130	1060	284
	Manganese (Mn)-Total (mg/kg)	247	91.4	61.0	94.9	398
	Manganese (Mn)-Total (mg/kg wwt)	113	78.2	50.7	36.0	177

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-80				
	Description					
	Sampled Date					
	Sampled Time					
	Client ID	G0149-7				
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	85.7				
Metals	Aluminum (Al)-Total (mg/kg)	23.8				
	Aluminum (Al)-Total (mg/kg wwt)	3.4				
	Antimony (Sb)-Total (mg/kg)	<0.010				
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020				
	Arsenic (As)-Total (mg/kg)	<0.030				
	Arsenic (As)-Total (mg/kg wwt)	<0.0060				
	Barium (Ba)-Total (mg/kg)	6.24				
	Barium (Ba)-Total (mg/kg wwt)	0.895				
	Beryllium (Be)-Total (mg/kg)	<0.010				
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020				
	Bismuth (Bi)-Total (mg/kg)	<0.010				
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020				
	Boron (B)-Total (mg/kg)	11.8				
	Boron (B)-Total (mg/kg wwt)	1.69				
	Cadmium (Cd)-Total (mg/kg)	0.041				
	Cadmium (Cd)-Total (mg/kg wwt)	0.0059				
	Calcium (Ca)-Total (mg/kg)	6040				
	Calcium (Ca)-Total (mg/kg wwt)	866				
	Cesium (Cs)-Total (mg/kg)	0.128				
	Cesium (Cs)-Total (mg/kg wwt)	0.0183				
	Chromium (Cr)-Total (mg/kg)	<0.20				
	Chromium (Cr)-Total (mg/kg wwt)	<0.040				
	Cobalt (Co)-Total (mg/kg)	0.028				
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040				
	Copper (Cu)-Total (mg/kg)	4.44				
	Copper (Cu)-Total (mg/kg wwt)	0.637				
	Iron (Fe)-Total (mg/kg)	60.1				
	Iron (Fe)-Total (mg/kg wwt)	8.6				
	Lead (Pb)-Total (mg/kg)	<0.050				
	Lead (Pb)-Total (mg/kg wwt)	<0.010				
	Lithium (Li)-Total (mg/kg)	<0.50				
	Lithium (Li)-Total (mg/kg wwt)	<0.10				
	Magnesium (Mg)-Total (mg/kg)	1040				
	Magnesium (Mg)-Total (mg/kg wwt)	150				
	Manganese (Mn)-Total (mg/kg)	5.26				
	Manganese (Mn)-Total (mg/kg wwt)	0.755				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-1 TISSUE 17-AUG-16 G0147-1 BERRY16-04	L1826566-7 TISSUE 19-AUG-16 G0147-7 BERRY16-05	L1826566-8 TISSUE 19-AUG-16 G0147-8 BERRY16-06	L1826566-9 TISSUE 19-AUG-16 G0147-9 BERRY16-07	L1826566-10 TISSUE 19-AUG-16 G0147-10 BERRY16-08
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.098 DLIS	<0.0050	0.0054	0.0125	0.0065
	Mercury (Hg)-Total (mg/kg wwt)	0.0381 DLIS	<0.0010	0.0026	0.0018	0.0019
	Molybdenum (Mo)-Total (mg/kg)	0.446	1.14	0.742	1.60	1.13
	Molybdenum (Mo)-Total (mg/kg wwt)	0.174	0.224	0.364	0.234	0.330
	Nickel (Ni)-Total (mg/kg)	1.78	1.12	0.61	4.73	0.79
	Nickel (Ni)-Total (mg/kg wwt)	0.696	0.221	0.300	0.691	0.230
	Phosphorus (P)-Total (mg/kg)	10700	2490	2440	4800	3350
	Phosphorus (P)-Total (mg/kg wwt)	4180	489	1200	701	980
	Potassium (K)-Total (mg/kg)	11700	9730	8940	25300	11200
	Potassium (K)-Total (mg/kg wwt)	4570	1910	4380	3700	3270
	Rubidium (Rb)-Total (mg/kg)	9.52	17.3	17.2	74.8	25.5
	Rubidium (Rb)-Total (mg/kg wwt)	3.72	3.39	8.45	10.9	7.44
	Selenium (Se)-Total (mg/kg)	3.75	<0.10	<0.10	<0.10	<0.050
	Selenium (Se)-Total (mg/kg wwt)	1.47	<0.020	<0.020	<0.020	<0.010
	Sodium (Na)-Total (mg/kg)	5050	21	<20	306	<20
	Sodium (Na)-Total (mg/kg wwt)	1980	4.1	5.1	44.7	4.1
	Strontium (Sr)-Total (mg/kg)	15.6	9.52	15.7	17.7	21.4
	Strontium (Sr)-Total (mg/kg wwt)	6.09	1.87	7.67	2.59	6.25
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0052	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00203	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	0.29	1.47	0.19	1.14	1.10
	Tin (Sn)-Total (mg/kg wwt)	0.112	0.289	0.092	0.167	0.322
	Uranium (U)-Total (mg/kg)	0.0978	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.0382	<0.00040	0.00083	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	4.68	0.11	0.21	0.20	0.18
	Vanadium (V)-Total (mg/kg wwt)	1.83	0.022	0.102	0.030	0.052
	Zinc (Zn)-Total (mg/kg)	144	24.2	9.9	33.0	14.0
	Zinc (Zn)-Total (mg/kg wwt)	56.4	4.75	4.86	4.82	4.08
	Zirconium (Zr)-Total (mg/kg)	1.27	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.496	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-11 TISSUE 19-AUG-16 G0147-11 BERRY16-09	L1826566-12 TISSUE 19-AUG-16 G0147-12 BERRY16-10	L1826566-13 TISSUE 19-AUG-16 G0149-1 SPRUCE16-01	L1826566-15 TISSUE 19-AUG-16 G0149-3 BERRY-BKG-02	L1826566-16 TISSUE 19-AUG-16 G0149-4 BERRY-BKG-01
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0072	<0.0050	0.0090	<0.0050	<0.0050
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0013	0.0038	0.0023	0.0011
	Molybdenum (Mo)-Total (mg/kg)	0.048	0.363	0.269	0.826	0.636
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0053	0.108	0.113	0.469	0.171
	Nickel (Ni)-Total (mg/kg)	1.55	1.14	0.92	3.79	1.04
	Nickel (Ni)-Total (mg/kg wwt)	0.172	0.338	0.389	2.15	0.278
	Phosphorus (P)-Total (mg/kg)	2260	1130	2190	4680	2430
	Phosphorus (P)-Total (mg/kg wwt)	251	336	920	2660	652
	Potassium (K)-Total (mg/kg)	16400	9660	9140	22500	7740
	Potassium (K)-Total (mg/kg wwt)	1820	2860	3850	12800	2080
	Rubidium (Rb)-Total (mg/kg)	37.9	26.2	12.8	59.0	18.8
	Rubidium (Rb)-Total (mg/kg wwt)	4.20	7.76	5.39	33.5	5.05
	Selenium (Se)-Total (mg/kg)	<0.050	<0.10	<0.050	<0.10	<0.10
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.020	<0.010	<0.020	<0.020
	Sodium (Na)-Total (mg/kg)	35	21	<20	67	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	6.1	<4.0	38.1	<4.0
	Strontium (Sr)-Total (mg/kg)	19.5	17.2	48.8	11.7	22.2
	Strontium (Sr)-Total (mg/kg wwt)	2.17	5.10	20.5	6.64	5.97
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	7.39	2.57	<0.10	<0.10	0.38
	Tin (Sn)-Total (mg/kg wwt)	0.820	0.762	0.024	0.026	0.103
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	0.0025	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00106	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.17	0.36	<0.10	0.14
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.052	0.153	0.042	0.039
	Zinc (Zn)-Total (mg/kg)	13.8	17.5	41.9	16.5	11.1
	Zinc (Zn)-Total (mg/kg wwt)	1.53	5.20	17.6	9.35	2.97
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-17 TISSUE 19-AUG-16 G0149-5 BERRY-BKG-03	L1826566-19 TISSUE 20-AUG-16 G0152-2 BERRY16-18	L1826566-20 TISSUE 20-AUG-16 G0152-3 BERRY16-19	L1826566-21 TISSUE 20-AUG-16 G0152-4 BERRY16-20	L1826566-22 TISSUE 20-AUG-16 G0152-5 BERRY16-BKG-10
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0053	0.0056	<0.0050	<0.0050	<0.0050
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	<0.0010	0.0010	<0.0010	<0.0010
	Molybdenum (Mo)-Total (mg/kg)	0.254	0.073	3.36	0.152	<0.040
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0405	0.0125	0.760	0.0304	<0.0080
	Nickel (Ni)-Total (mg/kg)	1.45	0.78	0.76	0.57	1.29
	Nickel (Ni)-Total (mg/kg wwt)	0.232	0.134	0.173	0.114	0.238
	Phosphorus (P)-Total (mg/kg)	2100	1880	2250	1710	2090
	Phosphorus (P)-Total (mg/kg wwt)	335	324	510	341	386
	Potassium (K)-Total (mg/kg)	10400	9920	6780	9070	10800
	Potassium (K)-Total (mg/kg wwt)	1660	1710	1530	1810	1990
	Rubidium (Rb)-Total (mg/kg)	38.9	18.9	5.33	14.8	15.4
	Rubidium (Rb)-Total (mg/kg wwt)	6.20	3.26	1.21	2.96	2.84
	Selenium (Se)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Selenium (Se)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Sodium (Na)-Total (mg/kg)	40	60	<20	41	21
	Sodium (Na)-Total (mg/kg wwt)	6.3	10.4	<4.0	8.2	<4.0
	Strontium (Sr)-Total (mg/kg)	8.03	9.69	11.0	11.7	15.2
	Strontium (Sr)-Total (mg/kg wwt)	1.28	1.67	2.50	2.34	2.81
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	0.0045	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00102	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	3.10	7.92	0.70	1.74	1.96
	Tin (Sn)-Total (mg/kg wwt)	0.494	1.36	0.159	0.346	0.361
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	<0.10	<0.10	0.14	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.027	<0.020
	Zinc (Zn)-Total (mg/kg)	15.0	12.1	22.2	10.9	11.6
	Zinc (Zn)-Total (mg/kg wwt)	2.39	2.08	5.02	2.17	2.15
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-23	L1826566-24	L1826566-25	L1826566-26	L1826566-27
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
	Sampled Time					
	Client ID	G0156-9 GRASS16-11	G0156-10 GRASS16-BKG-01	G0156-11 GRASS16-BKG-02	G0156-12 GRASS16-12	G0157-1 GRASS16-13
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	<0.0050	0.0063	<0.0050	<0.0050	<0.0050
	Mercury (Hg)-Total (mg/kg wwt)	0.0024	0.0026	0.0020	0.0018	0.0016
	Molybdenum (Mo)-Total (mg/kg)	6.21	4.02	0.867	1.02	10.7
	Molybdenum (Mo)-Total (mg/kg wwt)	3.38	1.65	0.396	0.651	5.52
	Nickel (Ni)-Total (mg/kg)	0.26	0.21	0.68	<0.20	0.33
	Nickel (Ni)-Total (mg/kg wwt)	0.139	0.087	0.310	0.052	0.169
	Phosphorus (P)-Total (mg/kg)	1870	2230	3390	4060	2700
	Phosphorus (P)-Total (mg/kg wwt)	1020	916	1550	2600	1390
	Potassium (K)-Total (mg/kg)	7340	8750	8990	5060	2820
	Potassium (K)-Total (mg/kg wwt)	4000	3590	4110	3240	1450
	Rubidium (Rb)-Total (mg/kg)	6.43	5.95	1.57	3.18	1.85
	Rubidium (Rb)-Total (mg/kg wwt)	3.50	2.44	0.718	2.04	0.952
	Selenium (Se)-Total (mg/kg)	2.50	<0.10	<0.050	0.791	0.339
	Selenium (Se)-Total (mg/kg wwt)	1.36	0.039	<0.010	0.506	0.174
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	7.3	<4.0	<4.0	<4.0	9.4
	Strontium (Sr)-Total (mg/kg)	33.8	13.2	18.0	9.62	26.5
	Strontium (Sr)-Total (mg/kg wwt)	18.4	5.43	8.24	6.15	13.6
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	0.14	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.062	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0042	0.0034	<0.0020	<0.0020	0.0038
	Uranium (U)-Total (mg/kg wwt)	0.00229	0.00140	<0.00040	0.00058	0.00196
	Vanadium (V)-Total (mg/kg)	0.42	0.35	<0.10	0.12	0.40
	Vanadium (V)-Total (mg/kg wwt)	0.228	0.144	0.033	0.080	0.204
	Zinc (Zn)-Total (mg/kg)	42.4	30.5	57.2	44.0	26.0
	Zinc (Zn)-Total (mg/kg wwt)	23.1	12.5	26.1	28.2	13.4
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID	L1826566-28	L1826566-29	L1826566-30	L1826566-31	L1826566-32
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
	Sampled Time					
	Client ID	G0157-2 GRASS16-BKG-03	G0157-3 GRASS16-BKG-04	G0157-4 GRASS16-14	G0157-5 GRASS16-15	G01157-6 GRASS16-BKG-05
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	<0.0050	<0.0050	0.0058	<0.0050	0.0059
	Mercury (Hg)-Total (mg/kg wwt)	0.0012	0.0018	0.0031	0.0020	0.0022
	Molybdenum (Mo)-Total (mg/kg)	0.819	2.89	0.960	3.96	0.800
	Molybdenum (Mo)-Total (mg/kg wwt)	0.278	1.08	0.513	1.64	0.292
	Nickel (Ni)-Total (mg/kg)	0.21	2.94	0.42	0.66	<0.20
	Nickel (Ni)-Total (mg/kg wwt)	0.071	1.10	0.226	0.272	<0.040
	Phosphorus (P)-Total (mg/kg)	5070	3380	3340	1290	6410
	Phosphorus (P)-Total (mg/kg wwt)	1720	1260	1780	535	2340
	Potassium (K)-Total (mg/kg)	8000	4680	3200	3500	9750
	Potassium (K)-Total (mg/kg wwt)	2720	1740	1710	1450	3560
	Rubidium (Rb)-Total (mg/kg)	1.23	3.11	4.89	2.23	3.51
	Rubidium (Rb)-Total (mg/kg wwt)	0.419	1.16	2.61	0.921	1.28
	Selenium (Se)-Total (mg/kg)	<0.050	0.11	0.402	0.404	<0.050
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.041	0.215	0.167	<0.010
	Sodium (Na)-Total (mg/kg)	<20	30	<20	44	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	11.0	5.8	18.1	<4.0
	Strontium (Sr)-Total (mg/kg)	8.61	26.4	12.2	24.8	15.7
	Strontium (Sr)-Total (mg/kg wwt)	2.92	9.83	6.54	10.3	5.73
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00064	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0027	0.0076	0.0065	0.0130	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00093	0.00283	0.00350	0.00538	0.00049
	Vanadium (V)-Total (mg/kg)	0.54	0.92	0.30	0.52	0.30
	Vanadium (V)-Total (mg/kg wwt)	0.182	0.343	0.161	0.215	0.111
	Zinc (Zn)-Total (mg/kg)	50.3	35.4	32.8	14.2	59.2
	Zinc (Zn)-Total (mg/kg wwt)	17.1	13.2	17.5	5.87	21.6
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-33	L1826566-34	L1826566-35	L1826566-36	L1826566-37
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	04-SEP-16
	Sampled Time					
	Client ID	G0157-7 WILLOW16-13	G0157-8 WILLOW16-14	G0157-9 WILLOW16-14D	G0157-10 WILLOW16-15	G0157-11 WILLOW16-17
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0067	0.0073	0.0073	0.0094	0.0096
	Mercury (Hg)-Total (mg/kg wwt)	0.0027	0.0031	0.0032	0.0035	0.0048
	Molybdenum (Mo)-Total (mg/kg)	0.669	0.414	0.478	1.53	1.18
	Molybdenum (Mo)-Total (mg/kg wwt)	0.270	0.177	0.205	0.575	0.591
	Nickel (Ni)-Total (mg/kg)	2.92	0.94	0.85	2.08	0.98
	Nickel (Ni)-Total (mg/kg wwt)	1.18	0.404	0.365	0.782	0.490
	Phosphorus (P)-Total (mg/kg)	3240	2570	2150	1460	1580
	Phosphorus (P)-Total (mg/kg wwt)	1310	1100	922	547	794
	Potassium (K)-Total (mg/kg)	14900	19700	16800	8220	5020
	Potassium (K)-Total (mg/kg wwt)	6010	8410	7220	3090	2520
	Rubidium (Rb)-Total (mg/kg)	6.04	15.8	10.9	3.86	3.45
	Rubidium (Rb)-Total (mg/kg wwt)	2.44	6.77	4.69	1.45	1.73
	Selenium (Se)-Total (mg/kg)	0.243	0.175	0.145	0.317	0.137
	Selenium (Se)-Total (mg/kg wwt)	0.098	0.075	0.062	0.119	0.069
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	4.6	<4.0	4.7	6.3	4.9
	Strontium (Sr)-Total (mg/kg)	50.2	40.9	34.1	72.6	94.0
	Strontium (Sr)-Total (mg/kg wwt)	20.3	17.5	14.6	27.3	47.1
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	0.0033	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00057	<0.00040	<0.00040	0.00125	0.00053
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.023	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0099	0.0025	0.0047	0.0338	0.0122
	Uranium (U)-Total (mg/kg wwt)	0.00399	0.00107	0.00200	0.0127	0.00614
	Vanadium (V)-Total (mg/kg)	0.99	0.16	0.37	3.56	1.38
	Vanadium (V)-Total (mg/kg wwt)	0.399	0.068	0.159	1.34	0.690
	Zinc (Zn)-Total (mg/kg)	147	21.6	14.5	16.1	27.0
	Zinc (Zn)-Total (mg/kg wwt)	59.2	9.23	6.21	6.06	13.5
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	0.33	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	0.123	0.097

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-38 TISSUE 04-SEP-16 G0157-12 WILLOW16-16	L1826566-39 TISSUE 03-SEP-16 G0165-2 WILLOW16-11	L1826566-40 TISSUE 03-SEP-16 G0165-3 GRASS16-16	L1826566-41 TISSUE 03-SEP-16 G0165-4 GRASS16-16D	L1826566-42 TISSUE 03-SEP-16 G0165-5 GRASS16-17
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0095	<0.0050	<0.0050	<0.0050	0.0060
	Mercury (Hg)-Total (mg/kg wwt)	0.0044	0.0017	0.0011	<0.0010	0.0025
	Molybdenum (Mo)-Total (mg/kg)	2.02	0.591	3.52	3.28	5.74
	Molybdenum (Mo)-Total (mg/kg wwt)	0.938	0.248	1.39	1.33	2.40
	Nickel (Ni)-Total (mg/kg)	1.43	0.97	0.25	2.10	0.41
	Nickel (Ni)-Total (mg/kg wwt)	0.663	0.406	0.100	0.848	0.173
	Phosphorus (P)-Total (mg/kg)	1440	1890	3760	3390	6390
	Phosphorus (P)-Total (mg/kg wwt)	672	794	1480	1370	2680
	Potassium (K)-Total (mg/kg)	8550	10400	11400	13800	11200
	Potassium (K)-Total (mg/kg wwt)	3980	4360	4480	5560	4680
	Rubidium (Rb)-Total (mg/kg)	4.84	6.44	13.9	14.3	7.23
	Rubidium (Rb)-Total (mg/kg wwt)	2.25	2.70	5.45	5.79	3.03
	Selenium (Se)-Total (mg/kg)	0.099	0.223	<0.050	<0.050	0.080
	Selenium (Se)-Total (mg/kg wwt)	0.046	0.094	0.019	0.016	0.034
	Sodium (Na)-Total (mg/kg)	22	<20	<20	<20	35
	Sodium (Na)-Total (mg/kg wwt)	10.4	4.5	<4.0	<4.0	14.6
	Strontium (Sr)-Total (mg/kg)	128	45.9	8.62	7.61	23.6
	Strontium (Sr)-Total (mg/kg wwt)	59.4	19.3	3.39	3.07	9.89
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0026	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00119	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	0.13	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	0.053	<0.020
	Uranium (U)-Total (mg/kg)	0.0277	0.0099	<0.0020	<0.0020	0.0032
	Uranium (U)-Total (mg/kg wwt)	0.0129	0.00415	<0.00040	0.00047	0.00135
	Vanadium (V)-Total (mg/kg)	2.93	0.22	0.14	0.19	0.39
	Vanadium (V)-Total (mg/kg wwt)	1.36	0.093	0.054	0.076	0.164
	Zinc (Zn)-Total (mg/kg)	40.3	17.0	29.4	29.0	37.5
	Zinc (Zn)-Total (mg/kg wwt)	18.8	7.15	11.6	11.7	15.7
	Zirconium (Zr)-Total (mg/kg)	0.23	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.106	<0.040	<0.040	<0.040	<0.040

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	Sample ID	L1826566-43	L1826566-44	L1826566-45	L1826566-46	L1826566-47
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
	Sampled Time					
	Client ID	G0165-6 GRASS16-BKG-06	G0165-7 GRASS16-BKG-07	G0165-8 GRASS16-BKG-08	G0165-9 GRASS16-BKG-08D	G0165-10 WILLOW16-11
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	<0.0050	0.0069	<0.0050	<0.0050	<0.0050
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0031	0.0027	0.0014	<0.0010
	Molybdenum (Mo)-Total (mg/kg)	1.47	1.13	1.47	1.56	1.61
	Molybdenum (Mo)-Total (mg/kg wwt)	0.456	0.505	0.969	0.777	0.573
	Nickel (Ni)-Total (mg/kg)	0.63	0.22	0.30	0.46	0.67
	Nickel (Ni)-Total (mg/kg wwt)	0.196	0.096	0.200	0.231	0.239
	Phosphorus (P)-Total (mg/kg)	3180	3150	2880	3080	1720
	Phosphorus (P)-Total (mg/kg wwt)	985	1410	1900	1530	611
	Potassium (K)-Total (mg/kg)	17100	7350	7080	7170	12900
	Potassium (K)-Total (mg/kg wwt)	5300	3290	4660	3570	4580
	Rubidium (Rb)-Total (mg/kg)	13.0	4.60	9.74	10.7	5.25
	Rubidium (Rb)-Total (mg/kg wwt)	4.01	2.06	6.41	5.35	1.87
	Selenium (Se)-Total (mg/kg)	<0.050	<0.10	<0.050	<0.050	0.779
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.020	<0.010	<0.010	0.277
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	<4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	6.93	14.2	10.5	8.54	30.3
	Strontium (Sr)-Total (mg/kg wwt)	2.14	6.37	6.89	4.25	10.8
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	0.0082
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00062	0.00054	<0.00040	0.00291
	Vanadium (V)-Total (mg/kg)	<0.10	0.19	0.13	<0.10	0.98
	Vanadium (V)-Total (mg/kg wwt)	0.030	0.087	0.084	0.043	0.349
	Zinc (Zn)-Total (mg/kg)	27.8	39.0	49.5	49.9	56.5
	Zinc (Zn)-Total (mg/kg wwt)	8.62	17.5	32.6	24.9	20.1
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-48	L1826566-49	L1826566-50	L1826566-51	L1826566-52
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	03-SEP-16	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
	Sampled Time					
	Client ID	G0165-11 GRASS16-18	G0165-12 GRASS16-19	G0166-1 WILLOW16-18	G0166-2 GRASS16-20	G0166-3 WILLOW16-19
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	<0.0050	0.0067	<0.0050	<0.0050	0.0050
	Mercury (Hg)-Total (mg/kg wwt)	0.0023	0.0043	0.0017	0.0030	0.0019
	Molybdenum (Mo)-Total (mg/kg)	1.79	1.37	1.15	6.76	0.845
	Molybdenum (Mo)-Total (mg/kg wwt)	1.49	0.880	0.453	4.28	0.325
	Nickel (Ni)-Total (mg/kg)	<0.20	<0.20	0.95	0.66	1.40
	Nickel (Ni)-Total (mg/kg wwt)	0.077	0.116	0.372	0.415	0.538
	Phosphorus (P)-Total (mg/kg)	3280	4230	2080	5950	2130
	Phosphorus (P)-Total (mg/kg wwt)	2730	2720	817	3760	821
	Potassium (K)-Total (mg/kg)	4480	4550	14600	11200	14400
	Potassium (K)-Total (mg/kg wwt)	3730	2930	5750	7090	5550
	Rubidium (Rb)-Total (mg/kg)	3.86	2.38	6.33	6.39	4.91
	Rubidium (Rb)-Total (mg/kg wwt)	3.21	1.53	2.49	4.04	1.89
	Selenium (Se)-Total (mg/kg)	2.35	0.401	1.02	1.06	0.700
	Selenium (Se)-Total (mg/kg wwt)	1.96	0.258	0.400	0.673	0.269
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	42	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	4.6	<4.0	26.3	7.2
	Strontium (Sr)-Total (mg/kg)	24.7	25.4	41.7	51.7	45.9
	Strontium (Sr)-Total (mg/kg wwt)	20.5	16.3	16.4	32.7	17.7
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	0.0027	0.0028	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00107	0.00175	0.00052
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	<0.0020	0.0024	0.0122	0.0045	0.0174
	Uranium (U)-Total (mg/kg wwt)	0.00044	0.00153	0.00482	0.00283	0.00668
	Vanadium (V)-Total (mg/kg)	<0.10	0.29	1.08	0.67	2.13
	Vanadium (V)-Total (mg/kg wwt)	0.063	0.184	0.424	0.421	0.821
	Zinc (Zn)-Total (mg/kg)	19.0	37.6	73.8	30.1	72.8
	Zinc (Zn)-Total (mg/kg wwt)	15.9	24.2	29.0	19.0	28.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-53 TISSUE 04-SEP-16 G0166-4 GRASS16-21	L1826566-54 TISSUE 04-SEP-16 G0166-5 WILLOW16-BKG-01	L1826566-55 TISSUE 04-SEP-16 G0166-6 SPRUCE16-BKG-02	L1826566-56 TISSUE 04-SEP-16 G0166-7 BERRY16-BKG-11	L1826566-57 TISSUE 04-SEP-16 G0166-8 WILLOW16-BKG-02
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0344	0.0189	0.0094	0.0052	<0.0050
	Mercury (Hg)-Total (mg/kg wwt)	0.0231	0.0069	0.0042	<0.0010	<0.0010
	Molybdenum (Mo)-Total (mg/kg)	3.24	3.86	0.023	0.085	0.178
	Molybdenum (Mo)-Total (mg/kg wwt)	2.17	1.41	0.0104	0.0130	0.0631
	Nickel (Ni)-Total (mg/kg)	1.69	3.46	1.22	0.77	4.88
	Nickel (Ni)-Total (mg/kg wwt)	1.13	1.26	0.542	0.118	1.73
	Phosphorus (P)-Total (mg/kg)	2180	1540	1880	1710	3190
	Phosphorus (P)-Total (mg/kg wwt)	1460	561	831	264	1130
	Potassium (K)-Total (mg/kg)	6460	16000	5730	12800	17400
	Potassium (K)-Total (mg/kg wwt)	4330	5830	2540	1970	6170
	Rubidium (Rb)-Total (mg/kg)	3.06	11.1	7.48	14.3	20.8
	Rubidium (Rb)-Total (mg/kg wwt)	2.05	4.04	3.31	2.20	7.38
	Selenium (Se)-Total (mg/kg)	1.53	<0.050	<0.050	<0.10	0.078
	Selenium (Se)-Total (mg/kg wwt)	1.02	<0.010	<0.010	<0.020	0.028
	Sodium (Na)-Total (mg/kg)	114	<20	<20	26	<20
	Sodium (Na)-Total (mg/kg wwt)	76.1	<4.0	<4.0	4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	41.4	109	35.3	11.9	86.3
	Strontium (Sr)-Total (mg/kg wwt)	27.7	39.8	15.6	1.84	30.7
	Tellurium (Te)-Total (mg/kg)	0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	0.0135	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0041	<0.0020	<0.0020	<0.0020	0.0023
	Thallium (Tl)-Total (mg/kg wwt)	0.00274	<0.00040	0.00043	<0.00040	0.00081
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	4.18	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.066	<0.020	<0.020	0.644	<0.020
	Uranium (U)-Total (mg/kg)	0.0766	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.0513	0.00044	<0.00040	<0.00040	0.00046
	Vanadium (V)-Total (mg/kg)	9.17	0.22	<0.10	<0.10	0.23
	Vanadium (V)-Total (mg/kg wwt)	6.14	0.080	<0.020	<0.020	0.081
	Zinc (Zn)-Total (mg/kg)	31.1	21.7	34.2	8.5	54.5
	Zinc (Zn)-Total (mg/kg wwt)	20.9	7.90	15.2	1.30	19.4
	Zirconium (Zr)-Total (mg/kg)	0.39	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.261	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-58 TISSUE 04-SEP-16 G0166-9 SPRUCE16-BKG-03	L1826566-59 TISSUE 04-SEP-16 G0166-10 WILLOW16-BKG-03	L1826566-60 TISSUE 04-SEP-16 G0166-11 WILLOW16-BKG-04	L1826566-61 TISSUE 04-SEP-16 G0166-12 WILLOW16-BKG-05	L1826566-62 TISSUE 04-SEP-16 G0167-1 SPRUCE-BKG-04
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0067	0.0066	0.0104	<0.0050	<0.0050
	Mercury (Hg)-Total (mg/kg wwt)	0.0029	0.0028	0.0048	<0.0010	0.0021
	Molybdenum (Mo)-Total (mg/kg)	0.112	0.395	0.059	0.543	0.090
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0488	0.171	0.0271	0.232	0.0393
	Nickel (Ni)-Total (mg/kg)	1.74	6.28	2.81	2.90	0.95
	Nickel (Ni)-Total (mg/kg wwt)	0.755	2.72	1.29	1.24	0.419
	Phosphorus (P)-Total (mg/kg)	1290	2540	2670	2520	1650
	Phosphorus (P)-Total (mg/kg wwt)	561	1100	1220	1070	724
	Potassium (K)-Total (mg/kg)	6040	12000	12200	8570	5960
	Potassium (K)-Total (mg/kg wwt)	2630	5210	5610	3660	2620
	Rubidium (Rb)-Total (mg/kg)	11.4	31.1	24.6	16.8	16.5
	Rubidium (Rb)-Total (mg/kg wwt)	4.95	13.5	11.3	7.15	7.25
	Selenium (Se)-Total (mg/kg)	<0.050	0.063	0.071	0.056	<0.050
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.027	0.032	0.024	<0.010
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	<4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	56.2	36.0	140	67.7	41.8
	Strontium (Sr)-Total (mg/kg wwt)	24.5	15.6	64.0	28.9	18.3
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0067	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	0.0038
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00055	0.00049	0.00167
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	0.025
	Uranium (U)-Total (mg/kg)	<0.0020	0.0029	0.0024	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00127	0.00112	0.00043	<0.00040
	Vanadium (V)-Total (mg/kg)	<0.10	0.48	0.41	0.16	<0.10
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.210	0.190	0.066	0.042
	Zinc (Zn)-Total (mg/kg)	34.3	43.6	52.2	58.2	37.6
	Zinc (Zn)-Total (mg/kg wwt)	14.9	18.9	24.0	24.8	16.5
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-63	L1826566-64	L1826566-65	L1826566-66	L1826566-68
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
	Sampled Time					
	Client ID	G0167-2 WILLOW16-BKG-06	G0167-3 SPRUCE16-BKG-05	G0167-4 SPRUCE16-08	G0167-5 SPRUCE16-09	G0167-7 SPRUCE16-10
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0102	0.0101	0.0086	0.0083	0.0053
	Mercury (Hg)-Total (mg/kg wwt)	0.0043	0.0047	0.0039	0.0038	0.0025
	Molybdenum (Mo)-Total (mg/kg)	0.063	0.059	0.160	0.299	0.394
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0267	0.0275	0.0719	0.135	0.185
	Nickel (Ni)-Total (mg/kg)	4.70	0.94	<0.20	0.43	1.65
	Nickel (Ni)-Total (mg/kg wwt)	2.00	0.441	0.077	0.195	0.776
	Phosphorus (P)-Total (mg/kg)	2050	1710	1920	1670	1970
	Phosphorus (P)-Total (mg/kg wwt)	873	799	864	758	926
	Potassium (K)-Total (mg/kg)	7100	7950	7830	6880	6510
	Potassium (K)-Total (mg/kg wwt)	3020	3710	3530	3110	3060
	Rubidium (Rb)-Total (mg/kg)	4.47	6.24	3.52	8.21	6.50
	Rubidium (Rb)-Total (mg/kg wwt)	1.90	2.91	1.58	3.72	3.05
	Selenium (Se)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	<0.010
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	<4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	133	73.1	28.2	42.9	42.4
	Strontium (Sr)-Total (mg/kg wwt)	56.6	34.1	12.7	19.4	19.9
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	0.0061	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0020	<0.0020	<0.0020	0.0028
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	<0.00040	0.00058	0.00048	0.00131
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0020	<0.0020	<0.0020	0.0027	0.0037
	Uranium (U)-Total (mg/kg wwt)	0.00087	<0.00040	<0.00040	0.00122	0.00175
	Vanadium (V)-Total (mg/kg)	0.39	<0.10	0.16	0.64	0.89
	Vanadium (V)-Total (mg/kg wwt)	0.167	0.038	0.071	0.292	0.420
	Zinc (Zn)-Total (mg/kg)	62.8	43.4	35.0	49.3	30.5
	Zinc (Zn)-Total (mg/kg wwt)	26.8	20.2	15.8	22.3	14.3
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-69 TISSUE 04-SEP-16 G0167-8 SPRUCE16-11	L1826566-70 TISSUE 04-SEP-16 G0167-9 SPRUCE16-11D	L1826566-71 TISSUE 04-SEP-16 G0167-10 SPRUCE16-12	L1826566-72 TISSUE 04-SEP-16 G0167-11 SPRUCE16-13	L1826566-73 TISSUE 04-SEP-16 G0167-12 WILLOW16-20
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0092	0.0094	0.0100	0.0076	0.0111
	Mercury (Hg)-Total (mg/kg wwt)	0.0043	0.0047	0.0048	0.0036	0.0044
	Molybdenum (Mo)-Total (mg/kg)	0.547	0.447	0.211	0.732	1.96
	Molybdenum (Mo)-Total (mg/kg wwt)	0.254	0.224	0.101	0.348	0.782
	Nickel (Ni)-Total (mg/kg)	0.93	0.84	0.82	0.34	0.54
	Nickel (Ni)-Total (mg/kg wwt)	0.431	0.422	0.389	0.159	0.213
	Phosphorus (P)-Total (mg/kg)	2700	2590	1710	2020	1790
	Phosphorus (P)-Total (mg/kg wwt)	1250	1300	818	957	714
	Potassium (K)-Total (mg/kg)	7540	7330	5390	5230	13500
	Potassium (K)-Total (mg/kg wwt)	3500	3670	2570	2490	5370
	Rubidium (Rb)-Total (mg/kg)	8.73	8.12	5.77	5.06	4.64
	Rubidium (Rb)-Total (mg/kg wwt)	4.04	4.07	2.76	2.40	1.85
	Selenium (Se)-Total (mg/kg)	<0.050	<0.050	<0.050	<0.050	0.092
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.010	<0.010	<0.010	0.036
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	<4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	50.4	45.7	30.5	48.7	123
	Strontium (Sr)-Total (mg/kg wwt)	23.4	22.9	14.5	23.2	49.0
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0058	0.0058	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00270	0.00293	0.00066	0.00065	0.00065
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.039	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0038	0.0029	0.0041	<0.0020	0.0059
	Uranium (U)-Total (mg/kg wwt)	0.00177	0.00146	0.00196	0.00092	0.00236
	Vanadium (V)-Total (mg/kg)	0.95	0.65	0.98	0.42	0.22
	Vanadium (V)-Total (mg/kg wwt)	0.441	0.327	0.467	0.198	0.088
	Zinc (Zn)-Total (mg/kg)	53.8	43.0	52.0	57.5	7.98
	Zinc (Zn)-Total (mg/kg wwt)	24.9	21.5	24.8	27.3	3.18
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-74 TISSUE 04-SEP-16 G0168-1 SPRUCE16-14	L1826566-76 TISSUE 05-SEP-16 G0171-7 GRASS16-BKG-10	L1826566-77 TISSUE 05-SEP-16 G0171-8 GRASS16-BKG-11	L1826566-78 TISSUE 05-SEP-16 G0171-9 WILLOW16-BKG-11	L1826566-79 TISSUE 05-SEP-16 G0171-10 SPRUCE16-BKG-12
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0102	<0.0050 DLIS	0.0058	0.0105	0.0098
	Mercury (Hg)-Total (mg/kg wwt)	0.0047	<0.0040	0.0048	0.0039	0.0044
	Molybdenum (Mo)-Total (mg/kg)	0.408	1.85	3.19	0.200	0.096
	Molybdenum (Mo)-Total (mg/kg wwt)	0.187	1.59	2.65	0.0760	0.0426
	Nickel (Ni)-Total (mg/kg)	0.50	0.47	<0.20	3.70	1.60
	Nickel (Ni)-Total (mg/kg wwt)	0.227	0.401	0.109	1.40	0.711
	Phosphorus (P)-Total (mg/kg)	1810	3220	4430	5320	2060
	Phosphorus (P)-Total (mg/kg wwt)	827	2750	3680	2020	915
	Potassium (K)-Total (mg/kg)	6730	4680	6860	11100	8870
	Potassium (K)-Total (mg/kg wwt)	3080	4010	5710	4200	3940
	Rubidium (Rb)-Total (mg/kg)	8.99	2.89	7.08	9.62	14.7
	Rubidium (Rb)-Total (mg/kg wwt)	4.11	2.47	5.89	3.65	6.53
	Selenium (Se)-Total (mg/kg)	<0.050	<0.10	<0.10	0.285	<0.050
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.041	<0.020	0.108	<0.010
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	<4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	79.0	8.54	11.1	164	36.5
	Strontium (Sr)-Total (mg/kg wwt)	36.1	7.31	9.26	62.4	16.2
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0043	<0.0020	<0.0020	<0.0020	0.0026
	Thallium (Tl)-Total (mg/kg wwt)	0.00198	<0.00040	<0.00040	<0.00040	0.00118
	Tin (Sn)-Total (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg)	0.0021	<0.0020	<0.0020	<0.0020	<0.0020
	Uranium (U)-Total (mg/kg wwt)	0.00094	<0.00040	<0.00040	0.00052	<0.00040
	Vanadium (V)-Total (mg/kg)	0.17	<0.10	<0.10	0.26	<0.10
	Vanadium (V)-Total (mg/kg wwt)	0.077	0.027	0.042	0.100	0.044
	Zinc (Zn)-Total (mg/kg)	57.2	35.4	40.4	159	38.4
	Zinc (Zn)-Total (mg/kg wwt)	26.2	30.3	33.6	60.5	17.0
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1826566-80				
		Description					
		Sampled Date					
		Sampled Time					
		Client ID	G0149-7				
Grouping	**Analyte**						
TISSUE							
Metals	Mercury (Hg)-Total (mg/kg)		0.0052				
	Mercury (Hg)-Total (mg/kg wwt)		<0.0010				
	Molybdenum (Mo)-Total (mg/kg)		0.186				
	Molybdenum (Mo)-Total (mg/kg wwt)		0.0267				
	Nickel (Ni)-Total (mg/kg)		0.77				
	Nickel (Ni)-Total (mg/kg wwt)		0.110				
	Phosphorus (P)-Total (mg/kg)		2020				
	Phosphorus (P)-Total (mg/kg wwt)		289				
	Potassium (K)-Total (mg/kg)		11400				
	Potassium (K)-Total (mg/kg wwt)		1630				
	Rubidium (Rb)-Total (mg/kg)		29.6				
	Rubidium (Rb)-Total (mg/kg wwt)		4.25				
	Selenium (Se)-Total (mg/kg)		<0.10				
	Selenium (Se)-Total (mg/kg wwt)		<0.020				
	Sodium (Na)-Total (mg/kg)		55				
	Sodium (Na)-Total (mg/kg wwt)		7.9				
	Strontium (Sr)-Total (mg/kg)		31.0				
	Strontium (Sr)-Total (mg/kg wwt)		4.45				
	Tellurium (Te)-Total (mg/kg)		<0.020				
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040				
	Thallium (Tl)-Total (mg/kg)		<0.0020				
	Thallium (Tl)-Total (mg/kg wwt)		<0.00040				
	Tin (Sn)-Total (mg/kg)		1.50				
	Tin (Sn)-Total (mg/kg wwt)		0.215				
	Uranium (U)-Total (mg/kg)		<0.0020				
	Uranium (U)-Total (mg/kg wwt)		<0.00040				
	Vanadium (V)-Total (mg/kg)		0.14				
	Vanadium (V)-Total (mg/kg wwt)		<0.020				
	Zinc (Zn)-Total (mg/kg)		8.4				
	Zinc (Zn)-Total (mg/kg wwt)		1.21				
	Zirconium (Zr)-Total (mg/kg)		<0.20				
	Zirconium (Zr)-Total (mg/kg wwt)		<0.040				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Thallium (Tl)-Total	DUP-H	L1826566-1, -15, -16, -20, -21, -22, -7, -8
Duplicate	Tin (Sn)-Total	DUP-H	L1826566-1, -15, -16, -20, -21, -22, -7, -8
Duplicate	Tin (Sn)-Total	DUP-H	L1826566-12, -17, -19, -80, -9
Duplicate	Lead (Pb)-Total	DUP-H	L1826566-27, -28, -36, -39, -46, -47, -48, -50, -51, -52, -54, -58, -59, -60, -63, -64, -65, -66, -70, -71
Duplicate	Thallium (Tl)-Total	DUP-H	L1826566-1, -15, -16, -20, -21, -22, -7, -8
Duplicate	Tin (Sn)-Total	DUP-H	L1826566-1, -15, -16, -20, -21, -22, -7, -8
Duplicate	Tin (Sn)-Total	DUP-H	L1826566-12, -17, -19, -80, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLIS	Detection Limit Adjusted: Insufficient Sample
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA Tissue Mercury in Tissue by CVAFS Micro (DRY) EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA Tissue Mercury in Tissue by CVAFS (WET) EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA Tissue Mercury in Tissue by CVAFS Micro (WET) EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA Tissue Metals in Tissue by CRC ICPMS (DRY) EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (DRY) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA Tissue Metals in Tissue by CRC ICPMS (WET) EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

Reference Information

MET-WET-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (WET) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA Tissue % Moisture in Tissues ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0147	G0149	G0150	G0152	G0156
G0157	G0165	G0166	G0167	G0168
G0169	G0170	G0171		

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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COC # G0149

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	SPRUCE16-01	G0149-01	19-Aug-16		Tissue	X	1
	WORM16-03	G0149-02	19-Aug-16		Tissue	X	1
	BERRY-BKG-02	G0149-03	19-Aug-16		Tissue	X	1
	BERRY-BKG-01	G0149-04	19-Aug-16		Tissue	X	1
	BERRY-BKG-03	G0149-05	19-Aug-16		Tissue	X	1
	WORM16-BKG-01	G0149-06	19-Aug-16		Tissue	X	1
		(F			Tissue	X	1
	BERRY16-11	G0149-08	19-Aug-16		Tissue	X	1
	ANT16-02	G0149-09	19-Aug-16		Tissue	X	1
	BERRY16-12	G0149-10	19-Aug-16		Tissue	X	1
	BERRY16-13	G0149-11	19-Aug-16		Tissue	X	1
	SPRUCE16-02	G0149-12	19-Aug-16		Tissue	X	1

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little	08/09/2016 15:30	JC	SEP - 9 2016	9am	1°C			

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COC # G0150

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCV	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-14	G0150-01	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-15	G0150-02	19-Aug-16		Tissue	X	1
[redacted]	ANT16-03	G0150-03	19-Aug-16	FDA - G0165-04	Tissue	X	1
[redacted]	ANT16-03d	G0150-04	19-Aug-16	FD - G0165-03	Tissue	X	1
[redacted]	SPRUCE16-03	G0150-05	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-04	G0150-06	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-05	G0150-07	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-06	G0150-08	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-07	G0150-09	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-08	G0150-10	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-09	G0150-11	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-16	G0150-12	20-Aug-16		Tissue	X	1

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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COC # G0152

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-17	G0152-01	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-18	G0152-02	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-19	G0152-03	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-20	G0152-04	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-10	G0152-05	20-Aug-16		Tissue	X	1
[redacted]	WILLOW16-06	G0152-06	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-07	G0152-07	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-03	G0152-08	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-04	G0152-09	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-08	G0152-10	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-05	G0152-11	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-06	G0152-12	02-Sep-16		Tissue	X	1

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke ~~Evan Zapfgilje~~	08/09/2016 15:30 ~~08/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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COC # G0156

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	Please Indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	GRASS16-07	G0156-01	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-08	G0156-02	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-09	G0156-03	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-10	G0156-04	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-10	G0156-05	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-09	G0156-06	02-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-06	G0156-07	02-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-07	G0156-08	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-11	G0156-09	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-01	G0156-10	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-02	G0156-11	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-12	G0156-12	03-Sep-16		Tissue	X	1

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litle ~~Evin Zapfgilje~~	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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Environmental Division

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COC # G0157

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample # [redacted]	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	GRASS16-13	G0157-01	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-03	G0157-02	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-04	G0157-03	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-14	G0157-04	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-15	G0157-05	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-05	G0157-06	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-13	G0157-07	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-14	G0157-08	03-Sep-16	FDA - G0157-09	Tissue	X	1
[redacted]	WILLOW16-14d	G0157-09	03-Sep-16	FD - G0157-08	Tissue	X	1
[redacted]	WILLOW16-15	G0157-10	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-17	G0157-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-16	G0157-12	04-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lutke ~~Evin Zapfgilje~~	08/09/2016 15:30 ~~06/09/2016 8:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # G0165

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]		~~G0165-01~~					
[redacted]	WILLOW16-11	G0165-02	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-16	G0165-03	03-Sep-16	FDA - G0165-04	Tissue	X	1
[redacted]	GRASS16-16d	G0165-04	03-Sep-16	FD - G0165-03	Tissue	X	1
[redacted]	GRASS16-17	G0165-05	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-06	G0165-06	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-07	G0165-07	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-08	G0165-08	03-Sep-16	FDA - G0165-09	Tissue	X	1
[redacted]	GRASS16-BKG-08d	G0165-09	03-Sep-16	FDA - G0165-08	Tissue	X	1
[redacted]	WILLOW16-11	G0165-10	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-18	G0165-11	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-19	G0165-12	03-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litle ~~Evin Zapfgilje~~	08/09/2016 15:30 ~~08/09/2016 17:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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COC # G0166

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	WILLOW16-18	G01666-01	04-Sep-16		Tissue	X	1
	GRASS16-20	G01666-02	04-Sep-16		Tissue	X	1
	WILLOW16-19	G01666-03	04-Sep-16		Tissue	X	1
	GRASS16-21	G01666-04	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-01	G01666-05	04-Sep-16		Tissue	X	1
	SPRUCE16-BKG-02	G01666-06	04-Sep-16		Tissue	X	1
	BERRY16-BKG-11	G01666-07	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-02	G01666-08	04-Sep-16		Tissue	X	1
	SPRUCE16-BKG-03	G01666-09	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-03	G01666-10	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-04	G01666-11	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-05	G01666-12	04-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lithe	08/09/2016 15:30	JC	SEP - 9 2016	9am	1°C			
Evin Zapfgilje	~~08/09/2016 3:00~~							

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # G0167

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE-BKG-04	G0167-01	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-06	G0167-02	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-05	G0167-03	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-08	G0167-04	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-09	G0167-05	04-Sep-16		Tissue	X	1
[redacted]	WORM16-04	G0167-06	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-10	G0167-07	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-11	G0167-08	04-Sep-16	FDA - G0167-09	Tissue	X	1
[redacted]	SPRUCE16-11D	G0167-09	04-Sep-16	FD - G0167-08	Tissue	X	1
[redacted]	SPRUCE16-12	G0167-10	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-13	G0167-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-20	G0167-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # G0168

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-14	G0168-01	05-Sep-16		Tissue	X	1
[redacted]	AR16-03	G0168-02	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-15	G0168-03	05-Sep-16		Tissue	X	1
[redacted]	ANT16-04	G0168-04	05-Sep-16		Tissue	X	1
[redacted]	AR16-04	G0168-05	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-07	G0168-06	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-06	G0168-07	05-Sep-16		Tissue	X	1
[redacted]	AR16-BKG-01	G0168-08	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-08	G0168-09	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-07	G0168-10	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-01	G0168-11	05-Sep-16		Tissue	X	1
[redacted]	AR16-BKG-02	G0168-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Littler Evin Zapfgilje	08/09/2016 15:30 06/09/2016 0:00	JC	SEP - 9 2016	9am	1C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0169

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	WORM16-BKG-02	G0169-01	05-Sep-16		Tissue	X	1
	WILLOW16-BKG-09	G0169-02	05-Sep-16	FDA - G0169-03	Tissue	X	1
	WILLOW16-BKG-09d	G0169-03	05-Sep-16	FD - G0169-02	Tissue	X	1
	SPRUCE16-BKG-08	G0169-04	05-Sep-16	FDA - G0169-05	Tissue	X	1
	SPRUCE16-BKG-08d	G0169-05	05-Sep-16	FD - G0169-04	Tissue	X	1
	WILOW16-21	G0169-09	05-Sep-16		Tissue	X	1
	WILLOW16-22	G0169-10	05-Sep-16		Tissue	X	1
	WILOW16-23	G0169-11	05-Sep-16		Tissue	X	1
	WILLOW16-24	G0169-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke ~~Evin Zapf-Gilje~~	08/09/2016 16:30 ~~08/09/2016 00:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0170

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SGW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-16	G0170 - 01	05-Sep-16		Tissue	X	1
[redacted]	ANT16-05	G0170 - 02	05-Sep-16		Tissue	X	1
[redacted]	AR16-05	G0170 - 03	05-Sep-16		Tissue	X	1
[redacted]	BEETLE16-02	G0170 - 04	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-10	G0170 - 05	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-09	G0170 - 06	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-02	G0170 - 07	05-Sep-16	FDA - G0170-08	Tissue	X	1
[redacted]	ANT16-BKG-02d	G0170 - 08	05-Sep-16	FD- G0170-07	Tissue	X	1
[redacted]	SPRUCE16-BKG-10	G0170 - 09	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-03	G0170 - 10	05-Sep-16	FDA - G0170-11	Tissue	X	1
[redacted]	ANT16-BKG-03d	G0170 - 11	05-Sep-16	FD - G0170-10	Tissue	X	1
[redacted]	WILLOW16-25	G0170 - 12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke ~~Evin Zapfgilje~~	09/09/2016 15:30 ~~00/00/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0171

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only):	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-17	G0171-01	05-Sep-16		Tissue	X	1
[redacted]	WORM16-05	G0171-02	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-18	G0171-03	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-09	G0171-04	05-Sep-16	FDA- G0171-05	Tissue	X	1
[redacted]	GRASS16-BKG-09d	G0171-05	05-Sep-16	FD G0171-04	Tissue	X	1
[redacted]	SPRUCE16-BKG-11	G0171-06	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-10	G0171-07	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-11	G0171-08	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-11	G0171-09	05-Sep-16		Tissue	X	1
[redacted]	SPURCE16-BKG-12	G0171-10	05-Sep-16		Tissue	X	1
[redacted]							
[redacted]							

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawn Little ~~Evan Zapf-Gilje~~	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

L1826505 9/9/2016

Group A Tissue

	SCN	Tissue ID
1	G0149-8	BERRY16-11
2	G0149-9	ANT16-02
3	G0149-10	BERRY16-12
4	G0149-11	BERRY16-13
5	G0149-12	SPRUCE16-02
6	G0150-1	BERRY16-14
7	G0150-2	BERRY16-15
8	G0150-3	ANT16-03
9	G0150-4	ANT16-03d
10	G0150-5	SPRUCE16-03
11	G0150-6	BERRY16-BKG-04
12	G0150-7	BERRY16-BKG-05
13	G0150-8	BERRY16-BKG-06
14	G0150-9	BERRY16-BKG-07
15	G0150-10	BERRY16-BKG-08
16	G0150-11	BERRY16-BKG-09
17	G0150-12	BERRY16-16
18	G0152-1	BERRY16-17
19	G0152-6	WILLOW16-06
20	G0152-7	WILLOW16-07
21	G0152-8	GRASS16-03
22	G0152-9	GRASS16-04
23	G0152-10	WILLOW16-08
24	G0152-11	GRASS16-05
25	G0152-12	GRASS16-06
26	G0156-1	GRASS16-07
27	G0156-2	GRASS16-08
28	G0156-3	WILLOW16-09
29	G0156-4	GRASS16-10
30	G0156-5	WILLOW16-10
31	G0156-6	GRASS16-09
32	G0156-7	SPRUCE16-06
33	G0156-8	SPRUCE16-07
34	G0168-3	SPRUCE16-15
35	G0168-4	ANT16-04
36	G0168-5	AR16-04
37	G0168-6	WILLOW16-BKG-07
38	G0168-7	SPRUCE16-BKG-06
39	G0168-8	AR16-BKG-01
40	G0168-9	WILLOW16-BKG-08
41	G0168-10	SPRUCE16-BKG-07
42	G0168-11	ANT16-BKG-01
43	G0168-12	AR16-BKG-02
44	G0169-1	WORM16-BKG-02
45	G0169-2	WILLOW16-BKG-09
46	G0169-3	WILLOW16-BKG-09d
47	G0169-4	SPRUCE16-BKG-08
48	G0169-5	SPRUCE16-BKG-08d
49	G0169-9	WILOW16-21
50	G0169-10	WILLOW16-22
51	G0169-11	WILOW16-23
52	G0169-12	WILLOW16-24
53	G0170-1	SPRUCE16-16
54	G0170-2	ANT16-05
55	G0170-3	AR16-05
56	G0170-4	BEETLE16-02
57	G0170-5	WILLOW16-BKG-10
58	G0170-6	SPRUCE16-BKG-09
59	G0170-7	ANT16-BKG-02
60	G0170-8	ANT16-BKG-02d
61	G0170-9	SPRUCE16-BKG-10
62	G0170-10	ANT16-BKG-03
63	G0170-11	ANT16-BKG-03d
64	G0170-12	WILLOW16-25
65	G171-1	SPRUCE16-17
66	G171-2	WORM16-05
67	G171-3	SPRUCE16-18
68	G171-4	GRASS16-BKG-09
69	G171-5	GRASS16-BKG-09d
70	G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

	SCN	Tissue ID
	G0147-1	BERRY16-04
	G0147-2	WORM16-01
	G0147-3	WORM16-02
	G0147-4	AR16-02
	G0147-5	BEETLE16-01
	G0147-6	ANT16-01
	G0147-7	BERRY16-05
	G0147-8	BERRY16-06
	G0147-9	BERRY16-07
	G0147-10	BERRY16-08
	G0147-11	BERRY16-09
	G0147-12	BERRY16-10
13	G0149-1	SPRUCE16-01
14	G0149-2	WORM16-03
15	G0149-3	BERRY-BKG-02
16	G0149-4	BERRY-BKG-01
17	G0149-5	BERRY-BKG-03
18	G0149-6	WORM16-BKG-01
19	G0152-2	BERRY16-18
20	G0152-3	BERRY16-19
21	G0152-4	BERRY16-20
22	G0152-5	BERRY16-BKG-10
23	G0156-9	GRASS16-11
24	G0156-10	GRASS16-BKG-01
25	G0156-11	GRASS16-BKG-02
26	G0156-12	GRASS16-12
27	G0157-1	GRASS16-13
28	G0157-2	GRASS16-BKG-03
29	G0157-3	GRASS16-BKG-04
30	G0157-4	GRASS16-14
31	G0157-5	GRASS16-15
32	G0157-6	GRASS16-BKG-05
33	G0157-7	WILLOW16-13
34	G0157-8	WILLOW16-14
35	G0157-9	WILLOW16-14d
36	G0157-10	WILLOW16-15
37	G0157-11	WILLOW16-17
38	G0157-12	WILLOW16-16
39	G0165-2	WILLOW16-11
40	G0165-3	GRASS16-16
41	G0165-4	GRASS16-16d
42	G0165-5	GRASS16-17
43	G0165-6	GRASS16-BKG-06
44	G0165-7	GRASS16-BKG-07
45	G0165-8	GRASS16-BKG-08
46	G0165-9	GRASS16-BKG-08d
47	G0165-10	WILLOW16-11
48	G0165-11	GRASS16-18
49	G0165-12	GRASS16-19
50	G0166-1	WILLOW16-18
51	G0166-2	GRASS16-20
52	G0166-3	WILLOW16-19
53	G0166-4	GRASS16-21
54	G0166-5	WILLOW16-BKG-01
55	G0166-6	SPRUCE16-BKG-02
56	G0166-7	BERRY16-BKG-11
57	G0166-8	WILLOW16-BKG-02
58	G0166-9	SPRUCE16-BKG-03
59	G0166-10	WILLOW16-BKG-03
60	G0166-11	WILLOW16-BKG-04
61	G0166-12	WILLOW16-BKG-05
62	G0167-1	SPRUCE-BKG-04
63	G0167-2	WILLOW16-BKG-06
64	G0167-3	SPRUCE16-BKG-05
65	G0167-4	SPRUCE16-08
66	G0167-5	SPRUCE16-09
67	G0167-6	WORM16-04
68	G0167-7	SPRUCE16-10
69	G0167-8	SPRUCE16-11
70	G0167-9	SPRUCE16-11D
71	G0167-10	SPRUCE16-12
72	G0167-11	SPRUCE16-13
73	G0167-12	WILLOW16-20
74	G0168-1	SPRUCE16-14
75	G0168-2	AR16-03
76	G171-7	GRASS16-BKG-10
77	G171-8	GRASS16-BKG-11
78	G171-9	WILLOW16-BKG-11
79	G171-10	SPURCE16-BKG-12

Group B Soil

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

- all 'Group A' & 'Group B' tissues:
  - moisture
  - routine prep
  - CCMS metals (wet + dry)
  - routine Hg (wet & dry)

tissues not in A or B list = Keep on hold.

TAT:

Group A: 5' codes) Sept 16

Group B: routine.

L1826566-COFC

MOUNT POLLEY MINING CORP.
ATTN: Katie McMahen
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-NOV-16 17:22 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826684

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: F0205
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826684-1 Tissue 16-AUG-16 11:02 WILLOW-LHAC-4-16	L1826684-2 Tissue 16-AUG-16 10:40 WILLOW-LHAC-3-16	L1826684-3 Tissue 16-AUG-16 10:23 WILLOW-LHAC-2X-16	L1826684-4 Tissue 16-AUG-16 10:23 WILLOW-LHAC-2-16	L1826684-5 Tissue 16-AUG-16 10:15 WILLOW-LHAC-1-16
TISSUE						
Physical Tests	% Moisture (%)	62.4	59.9	56.1	60.0	57.3
Metals	Aluminum (Al)-Total (mg/kg)	100	384	426	451	962
	Aluminum (Al)-Total (mg/kg wwt)	37.8	154	187	180	411
	Antimony (Sb)-Total (mg/kg)	0.017	0.032	0.026	0.025	0.043
	Antimony (Sb)-Total (mg/kg wwt)	0.0063	0.0128	0.0115	0.0098	0.0183
	Arsenic (As)-Total (mg/kg)	0.110	0.370	0.439	0.462	0.663
	Arsenic (As)-Total (mg/kg wwt)	0.0412	0.148	0.192	0.185	0.283
	Barium (Ba)-Total (mg/kg)	14.1	10.3	12.3	12.7	18.9
	Barium (Ba)-Total (mg/kg wwt)	5.32	4.13	5.40	5.09	8.07
	Beryllium (Be)-Total (mg/kg)	<0.010	0.011	0.014	0.015	0.026
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0044	0.0061	0.0059	0.0110
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0038
	Boron (B)-Total (mg/kg)	27.9	57.3	98.3	103	25.6
	Boron (B)-Total (mg/kg wwt)	10.5	23.0	43.1	41.2	10.9
	Cadmium (Cd)-Total (mg/kg)	2.60	0.639	0.708	0.658	1.97
	Cadmium (Cd)-Total (mg/kg wwt)	0.978	0.256	0.311	0.263	0.842
	Calcium (Ca)-Total (mg/kg)	12600	25600	25000	24600	24300
	Calcium (Ca)-Total (mg/kg wwt)	4760	10300	11000	9830	10400
	Cesium (Cs)-Total (mg/kg)	0.0478	0.0555	0.0611	0.0638	0.113
	Cesium (Cs)-Total (mg/kg wwt)	0.0180	0.0223	0.0268	0.0255	0.0482
	Chromium (Cr)-Total (mg/kg)	0.287	1.17	0.806	0.996	2.19
	Chromium (Cr)-Total (mg/kg wwt)	0.108	0.467	0.354	0.398	0.933
	Cobalt (Co)-Total (mg/kg)	0.779	2.38	7.27	7.54	1.55
	Cobalt (Co)-Total (mg/kg wwt)	0.293	0.955	3.19	3.01	0.663
	Copper (Cu)-Total (mg/kg)	13.9	9.48	14.6	14.8	12.2
	Copper (Cu)-Total (mg/kg wwt)	5.21	3.80	6.41	5.90	5.19
	Iron (Fe)-Total (mg/kg)	249	880	1200	1320	1810
	Iron (Fe)-Total (mg/kg wwt)	93.7	353	527	527	770
	Lead (Pb)-Total (mg/kg)	0.060	0.256	0.255	0.255	0.499
	Lead (Pb)-Total (mg/kg wwt)	0.0228	0.103	0.112	0.102	0.213
	Lithium (Li)-Total (mg/kg)	<0.50	0.54	0.52	0.54	1.17
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.22	0.23	0.22	0.50
	Magnesium (Mg)-Total (mg/kg)	4060	4000	3180	3190	2930
	Magnesium (Mg)-Total (mg/kg wwt)	1530	1600	1390	1280	1250
	Manganese (Mn)-Total (mg/kg)	109	177	223	238	161
	Manganese (Mn)-Total (mg/kg wwt)	41.1	71.0	97.7	95.3	68.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826684-6	L1826684-7	L1826684-8	L1826684-9	L1826684-10
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	16-AUG-16	03-AUG-16	03-AUG-16	03-AUG-16	16-AUG-16
	Sampled Time	11:11	14:05	13:45	13:45	14:30
	Client ID	WILLOW-LHAC-5-16	SPRUCE-REF-1-16	SPRUCE-UHAC-1-16	SPRUCE-UHAC-1X-16	SPRUCE-UHAC-2-16
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	54.0	54.8	57.0	57.9	52.7
Metals	Aluminum (Al)-Total (mg/kg)	350	19.8	10.0	9.2	35.4
	Aluminum (Al)-Total (mg/kg wwt)	161	8.94	4.29	3.88	16.7
	Antimony (Sb)-Total (mg/kg)	0.025	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0114	0.0033	0.0033	0.0026	0.0037
	Arsenic (As)-Total (mg/kg)	0.479	<0.020	<0.020	<0.020	0.024
	Arsenic (As)-Total (mg/kg wwt)	0.220	0.0057	0.0051	0.0049	0.0115
	Barium (Ba)-Total (mg/kg)	13.2	72.6	136	99.9	53.1
	Barium (Ba)-Total (mg/kg wwt)	6.07	32.8	58.5	42.1	25.1
	Beryllium (Be)-Total (mg/kg)	0.015	<0.010	<0.010	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0069	<0.0020	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	75.2	12.3	20.4	17.2	13.4
	Boron (B)-Total (mg/kg wwt)	34.6	5.58	8.78	7.25	6.34
	Cadmium (Cd)-Total (mg/kg)	1.87	0.0106	0.188	0.213	<0.0050
	Cadmium (Cd)-Total (mg/kg wwt)	0.860	0.0048	0.0806	0.0896	0.0013
	Calcium (Ca)-Total (mg/kg)	19900	3490	8630	6550	6010
	Calcium (Ca)-Total (mg/kg wwt)	9150	1580	3710	2760	2850
	Cesium (Cs)-Total (mg/kg)	0.0590	0.0972	0.0055	0.0060	0.429
	Cesium (Cs)-Total (mg/kg wwt)	0.0271	0.0440	0.0024	0.0025	0.203
	Chromium (Cr)-Total (mg/kg)	0.815	0.375	0.395	0.544	0.256
	Chromium (Cr)-Total (mg/kg wwt)	0.375	0.169	0.170	0.229	0.121
	Cobalt (Co)-Total (mg/kg)	2.56	0.056	0.152	0.158	0.070
	Cobalt (Co)-Total (mg/kg wwt)	1.18	0.0251	0.0654	0.0663	0.0330
	Copper (Cu)-Total (mg/kg)	22.3	3.60	6.39	7.05	3.67
	Copper (Cu)-Total (mg/kg wwt)	10.3	1.63	2.75	2.97	1.74
	Iron (Fe)-Total (mg/kg)	1140	75.2	28.9	25.6	116
	Iron (Fe)-Total (mg/kg wwt)	525	34.0	12.4	10.8	54.8
	Lead (Pb)-Total (mg/kg)	0.237	<0.020	<0.020	<0.020	<0.020
	Lead (Pb)-Total (mg/kg wwt)	0.109	0.0048	0.0042	<0.0040	0.0074
	Lithium (Li)-Total (mg/kg)	0.79	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	0.36	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	2580	737	763	735	939
	Magnesium (Mg)-Total (mg/kg wwt)	1190	333	328	310	444
	Manganese (Mn)-Total (mg/kg)	320	104	225	195	116
	Manganese (Mn)-Total (mg/kg wwt)	147	47.2	97.0	81.9	55.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826684-11 Tissue 16-AUG-16 15:20 SPRUCE-LHAC-1-16	L1826684-12 Tissue 16-AUG-16 13:45 BERRIES-LHAC-2-16	L1826684-13 Tissue 16-AUG-16 15:42 BERRIES-LHAC-3-16	L1826684-14 Tissue 16-AUG-16 12:28 BERRIES-LHAC-1-16	L1826684-15 Tissue 03-AUG-16 15:15 RYEGRASS-UHAC-1-16
TISSUE						
Physical Tests	% Moisture (%)	55.7	77.3	84.0	86.1	17.3
Metals	Aluminum (Al)-Total (mg/kg)	76.1	5.2	<5.0	7.2	747
	Aluminum (Al)-Total (mg/kg wwt)	33.7	1.2	<1.0	1.0	618
	Antimony (Sb)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.029
	Antimony (Sb)-Total (mg/kg wwt)	0.0040	<0.0020	<0.0020	<0.0020	0.0243
	Arsenic (As)-Total (mg/kg)	0.054	<0.030	<0.030	<0.030	0.573
	Arsenic (As)-Total (mg/kg wwt)	0.0238	<0.0060	<0.0060	<0.0060	0.474
	Barium (Ba)-Total (mg/kg)	125	5.92	18.1	2.36	16.0
	Barium (Ba)-Total (mg/kg wwt)	55.4	1.34	2.90	0.329	13.3
	Beryllium (Be)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.034
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0280
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	0.0039
	Boron (B)-Total (mg/kg)	19.2	26.0	24.6	10.7	19.1
	Boron (B)-Total (mg/kg wwt)	8.50	5.89	3.94	1.48	15.8
	Cadmium (Cd)-Total (mg/kg)	0.102	0.058	0.065	<0.010	<0.010
	Cadmium (Cd)-Total (mg/kg wwt)	0.0453	0.0132	0.0104	<0.0020	<0.0040 DLM
	Calcium (Ca)-Total (mg/kg)	6680	1470	3720	5100	3740
	Calcium (Ca)-Total (mg/kg wwt)	2960	335	595	709	3090
	Cesium (Cs)-Total (mg/kg)	0.142	0.0050	<0.0050	0.110	0.118
	Cesium (Cs)-Total (mg/kg wwt)	0.0629	0.0011	<0.0010	0.0153	0.0973
	Chromium (Cr)-Total (mg/kg)	0.104	0.22	<0.20	<0.20	0.68
	Chromium (Cr)-Total (mg/kg wwt)	0.046	0.050	<0.040	<0.040	0.562
	Cobalt (Co)-Total (mg/kg)	0.110	0.047	0.024	<0.020	0.746
	Cobalt (Co)-Total (mg/kg wwt)	0.0488	0.0107	<0.0040	<0.0040	0.617
	Copper (Cu)-Total (mg/kg)	6.21	0.80	6.19	1.90	43.5
	Copper (Cu)-Total (mg/kg wwt)	2.75	0.181	0.991	0.265	36.0
	Iron (Fe)-Total (mg/kg)	255	16.8	26.6	27.4	1530
	Iron (Fe)-Total (mg/kg wwt)	113	3.8	4.3	3.8	1270
	Lead (Pb)-Total (mg/kg)	0.034	<0.050	<0.050	<0.050	0.307
	Lead (Pb)-Total (mg/kg wwt)	0.0151	<0.010	<0.010	<0.010	0.254
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	0.88
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	0.73
	Magnesium (Mg)-Total (mg/kg)	812	581	1130	1010	1360
	Magnesium (Mg)-Total (mg/kg wwt)	359	132	180	141	1130
	Manganese (Mn)-Total (mg/kg)	221	2.26	3.45	3.28	110
	Manganese (Mn)-Total (mg/kg wwt)	97.7	0.514	0.552	0.456	91.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826684-16				
	Description	Tissue				
	Sampled Date	03-AUG-16				
	Sampled Time	15:35				
	Client ID	RYEGRASS-UHAC-2-16				
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	31.2				
Metals	Aluminum (Al)-Total (mg/kg)	1650				
	Aluminum (Al)-Total (mg/kg wwt)	1130				
	Antimony (Sb)-Total (mg/kg)	0.060				
	Antimony (Sb)-Total (mg/kg wwt)	0.0415				
	Arsenic (As)-Total (mg/kg)	1.27				
	Arsenic (As)-Total (mg/kg wwt)	0.875				
	Barium (Ba)-Total (mg/kg)	39.5				
	Barium (Ba)-Total (mg/kg wwt)	27.2				
	Beryllium (Be)-Total (mg/kg)	0.072				
	Beryllium (Be)-Total (mg/kg wwt)	0.0498				
	Bismuth (Bi)-Total (mg/kg)	<0.010				
	Bismuth (Bi)-Total (mg/kg wwt)	0.0063				
	Boron (B)-Total (mg/kg)	27.8				
	Boron (B)-Total (mg/kg wwt)	19.1				
	Cadmium (Cd)-Total (mg/kg)	<0.010				
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0070 DLM				
	Calcium (Ca)-Total (mg/kg)	6910				
	Calcium (Ca)-Total (mg/kg wwt)	4750				
	Cesium (Cs)-Total (mg/kg)	0.307				
	Cesium (Cs)-Total (mg/kg wwt)	0.211				
	Chromium (Cr)-Total (mg/kg)	1.16				
	Chromium (Cr)-Total (mg/kg wwt)	0.800				
	Cobalt (Co)-Total (mg/kg)	1.61				
	Cobalt (Co)-Total (mg/kg wwt)	1.11				
	Copper (Cu)-Total (mg/kg)	88.5				
	Copper (Cu)-Total (mg/kg wwt)	60.9				
	Iron (Fe)-Total (mg/kg)	2880				
	Iron (Fe)-Total (mg/kg wwt)	1980				
	Lead (Pb)-Total (mg/kg)	0.602				
	Lead (Pb)-Total (mg/kg wwt)	0.414				
	Lithium (Li)-Total (mg/kg)	2.28				
	Lithium (Li)-Total (mg/kg wwt)	1.57				
	Magnesium (Mg)-Total (mg/kg)	2530				
	Magnesium (Mg)-Total (mg/kg wwt)	1740				
	Manganese (Mn)-Total (mg/kg)	244				
	Manganese (Mn)-Total (mg/kg wwt)	168				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826684-1 Tissue 16-AUG-16 11:02 WILLOW-LHAC-4-16	L1826684-2 Tissue 16-AUG-16 10:40 WILLOW-LHAC-3-16	L1826684-3 Tissue 16-AUG-16 10:23 WILLOW-LHAC-2X-16	L1826684-4 Tissue 16-AUG-16 10:23 WILLOW-LHAC-2-16	L1826684-5 Tissue 16-AUG-16 10:15 WILLOW-LHAC-1-16
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.386	0.881	0.808	0.815	0.620
	Molybdenum (Mo)-Total (mg/kg wwt)	0.145	0.353	0.354	0.326	0.265
	Nickel (Ni)-Total (mg/kg)	4.19	7.72	10.6	11.2	2.96
	Nickel (Ni)-Total (mg/kg wwt)	1.58	3.10	4.64	4.46	1.26
	Phosphorus (P)-Total (mg/kg)	2250	2440	1550	1530	3440
	Phosphorus (P)-Total (mg/kg wwt)	847	978	680	612	1470
	Potassium (K)-Total (mg/kg)	10300	9190	8440	8880	6200
	Potassium (K)-Total (mg/kg wwt)	3870	3690	3710	3550	2650
	Rubidium (Rb)-Total (mg/kg)	8.22	5.11	3.24	3.43	1.33
	Rubidium (Rb)-Total (mg/kg wwt)	3.09	2.05	1.42	1.37	0.568
	Selenium (Se)-Total (mg/kg)	0.723	0.718	0.374	0.387	0.088
	Selenium (Se)-Total (mg/kg wwt)	0.272	0.288	0.164	0.155	0.037
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	<20	22
	Sodium (Na)-Total (mg/kg wwt)	5.7	6.8	7.6	6.6	9.3
	Strontium (Sr)-Total (mg/kg)	77.7	143	134	134	87.6
	Strontium (Sr)-Total (mg/kg wwt)	29.2	57.4	59.0	53.8	37.4
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0041	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0043	0.0062	0.0067	0.0089
	Thallium (Tl)-Total (mg/kg wwt)	0.00060	0.00174	0.00274	0.00269	0.00379
	Tin (Sn)-Total (mg/kg)	0.18	<0.10	0.11	0.12	0.19
	Tin (Sn)-Total (mg/kg wwt)	0.067	0.033	0.046	0.046	0.082
	Uranium (U)-Total (mg/kg)	0.0077	0.0276	0.0318	0.0340	0.0460
	Uranium (U)-Total (mg/kg wwt)	0.00291	0.0111	0.0139	0.0136	0.0196
	Vanadium (V)-Total (mg/kg)	0.62	1.69	2.94	3.38	3.65
	Vanadium (V)-Total (mg/kg wwt)	0.233	0.678	1.29	1.35	1.56
	Zinc (Zn)-Total (mg/kg)	72.9	33.6	31.4	31.0	65.4
	Zinc (Zn)-Total (mg/kg wwt)	27.4	13.5	13.8	12.4	27.9
	Zirconium (Zr)-Total (mg/kg)	<0.20	0.22	0.43	0.31	0.39
	Zirconium (Zr)-Total (mg/kg wwt)	0.052	0.088	0.191	0.124	0.165

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826684-6	L1826684-7	L1826684-8	L1826684-9	L1826684-10
	Description	Tissue	Tissue	Tissue	Tissue	Tissue
	Sampled Date	16-AUG-16	03-AUG-16	03-AUG-16	03-AUG-16	16-AUG-16
	Sampled Time	11:11	14:05	13:45	13:45	14:30
	Client ID	WILLOW-LHAC-5-16	SPRUCE-REF-1-16	SPRUCE-UHAC-1-16	SPRUCE-UHAC-1X-16	SPRUCE-UHAC-2-16
Grouping	**Analyte**					
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	5.73	0.123	1.18	1.22	0.584
	Molybdenum (Mo)-Total (mg/kg wwt)	2.64	0.0555	0.508	0.512	0.277
	Nickel (Ni)-Total (mg/kg)	2.23	2.95	1.01	1.14	0.68
	Nickel (Ni)-Total (mg/kg wwt)	1.02	1.33	0.436	0.480	0.320
	Phosphorus (P)-Total (mg/kg)	798	1880	2330	2370	1670
	Phosphorus (P)-Total (mg/kg wwt)	367	848	1000	998	793
	Potassium (K)-Total (mg/kg)	10700	8790	7600	8700	9230
	Potassium (K)-Total (mg/kg wwt)	4930	3980	3270	3660	4370
	Rubidium (Rb)-Total (mg/kg)	4.13	16.7	5.13	5.92	31.1
	Rubidium (Rb)-Total (mg/kg wwt)	1.90	7.56	2.20	2.49	14.7
	Selenium (Se)-Total (mg/kg)	2.67	<0.050	<0.050	<0.050	<0.050
	Selenium (Se)-Total (mg/kg wwt)	1.23	<0.010	<0.010	<0.010	<0.010
	Sodium (Na)-Total (mg/kg)	42	<20	<20	<20	<20
	Sodium (Na)-Total (mg/kg wwt)	19.4	<4.0	<4.0	<4.0	<4.0
	Strontium (Sr)-Total (mg/kg)	177	28.5	56.8	42.3	43.9
	Strontium (Sr)-Total (mg/kg wwt)	81.2	12.9	24.4	17.8	20.8
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	0.0044	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0022	<0.0020	<0.0020	<0.0020	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	0.00099	<0.00040	0.00050	<0.00040	<0.00040
	Tin (Sn)-Total (mg/kg)	0.23	<0.10	0.13	<0.10	<0.10
	Tin (Sn)-Total (mg/kg wwt)	0.105	0.037	0.058	0.031	0.040
	Uranium (U)-Total (mg/kg)	0.0682	<0.0020	<0.0020	<0.0020	0.0024
	Uranium (U)-Total (mg/kg wwt)	0.0314	0.00050	<0.00040	<0.00040	0.00112
	Vanadium (V)-Total (mg/kg)	4.28	0.21	<0.10	<0.10	0.41
	Vanadium (V)-Total (mg/kg wwt)	1.97	0.097	<0.020	<0.020	0.196
	Zinc (Zn)-Total (mg/kg)	66.7	45.2	58.1	51.9	42.4
	Zinc (Zn)-Total (mg/kg wwt)	30.7	20.4	25.0	21.8	20.1
	Zirconium (Zr)-Total (mg/kg)	0.27	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.124	<0.040	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826684-11 Tissue 16-AUG-16 15:20 SPRUCE-LHAC-1-16	L1826684-12 Tissue 16-AUG-16 13:45 BERRIES-LHAC-2-16	L1826684-13 Tissue 16-AUG-16 15:42 BERRIES-LHAC-3-16	L1826684-14 Tissue 16-AUG-16 12:28 BERRIES-LHAC-1-16	L1826684-15 Tissue 03-AUG-16 15:15 RYEGRASS-UHAC-1-16
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	0.189	0.059	0.102	0.196	7.68
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0838	0.0134	0.0163	0.0272	6.35
	Nickel (Ni)-Total (mg/kg)	0.79	0.26	0.41	<0.20	0.82
	Nickel (Ni)-Total (mg/kg wwt)	0.350	0.059	0.066	<0.040	0.675
	Phosphorus (P)-Total (mg/kg)	1550	938	3060	1570	339
	Phosphorus (P)-Total (mg/kg wwt)	684	213	490	218	281
	Potassium (K)-Total (mg/kg)	8410	8020	12700	9590	4990
	Potassium (K)-Total (mg/kg wwt)	3720	1820	2030	1330	4120
	Rubidium (Rb)-Total (mg/kg)	15.7	11.8	12.1	17.0	2.66
	Rubidium (Rb)-Total (mg/kg wwt)	6.97	2.68	1.94	2.37	2.20
	Selenium (Se)-Total (mg/kg)	<0.050	<0.10	<0.10	<0.10	1.19
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.020	<0.020	<0.020	0.986
	Sodium (Na)-Total (mg/kg)	<20	<20	<20	57	772
	Sodium (Na)-Total (mg/kg wwt)	<4.0	<4.0	<4.0	8.0	639
	Strontium (Sr)-Total (mg/kg)	54.9	6.84	15.1	19.2	40.2
	Strontium (Sr)-Total (mg/kg wwt)	24.3	1.55	2.41	2.67	33.2
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	0.0031	<0.0020	<0.0020	<0.0020	0.0028
	Thallium (Tl)-Total (mg/kg wwt)	0.00136	<0.00040	<0.00040	<0.00040	0.00234
	Tin (Sn)-Total (mg/kg)	<0.10	2.22	2.30	1.56	1.13
	Tin (Sn)-Total (mg/kg wwt)	0.028	0.504	0.368	0.217	0.935
	Uranium (U)-Total (mg/kg)	0.0039	<0.0020	<0.0020	<0.0020	0.138
	Uranium (U)-Total (mg/kg wwt)	0.00173	<0.00040	<0.00040	<0.00040	0.114
	Vanadium (V)-Total (mg/kg)	0.88	<0.10	<0.10	<0.10	6.34
	Vanadium (V)-Total (mg/kg wwt)	0.389	<0.020	<0.020	<0.020	5.24
	Zinc (Zn)-Total (mg/kg)	54.9	4.5	16.6	5.8	37.9
	Zinc (Zn)-Total (mg/kg wwt)	24.3	1.01	2.66	0.80	31.3
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.043	<0.040	<0.040	<0.040	0.136

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826684-16				
	Description	Tissue				
	Sampled Date	03-AUG-16				
	Sampled Time	15:35				
	Client ID	RYEGRASS-UHAC-2-16				
Grouping	**Analyte**					
TISSUE						
Metals	Molybdenum (Mo)-Total (mg/kg)	28.4				
	Molybdenum (Mo)-Total (mg/kg wwt)	19.6				
	Nickel (Ni)-Total (mg/kg)	1.31				
	Nickel (Ni)-Total (mg/kg wwt)	0.900				
	Phosphorus (P)-Total (mg/kg)	1660				
	Phosphorus (P)-Total (mg/kg wwt)	1140				
	Potassium (K)-Total (mg/kg)	12600				
	Potassium (K)-Total (mg/kg wwt)	8670				
	Rubidium (Rb)-Total (mg/kg)	6.75				
	Rubidium (Rb)-Total (mg/kg wwt)	4.64				
	Selenium (Se)-Total (mg/kg)	1.69				
	Selenium (Se)-Total (mg/kg wwt)	1.16				
	Sodium (Na)-Total (mg/kg)	2610				
	Sodium (Na)-Total (mg/kg wwt)	1790				
	Strontium (Sr)-Total (mg/kg)	73.7				
	Strontium (Sr)-Total (mg/kg wwt)	50.7				
	Tellurium (Te)-Total (mg/kg)	<0.020				
	Tellurium (Te)-Total (mg/kg wwt)	0.0069				
	Thallium (Tl)-Total (mg/kg)	0.0068				
	Thallium (Tl)-Total (mg/kg wwt)	0.00469				
	Tin (Sn)-Total (mg/kg)	0.71				
	Tin (Sn)-Total (mg/kg wwt)	0.488				
	Uranium (U)-Total (mg/kg)	0.220				
	Uranium (U)-Total (mg/kg wwt)	0.151				
	Vanadium (V)-Total (mg/kg)	12.0				
	Vanadium (V)-Total (mg/kg wwt)	8.25				
	Zinc (Zn)-Total (mg/kg)	30.2				
	Zinc (Zn)-Total (mg/kg wwt)	20.8				
	Zirconium (Zr)-Total (mg/kg)	0.55				
	Zirconium (Zr)-Total (mg/kg wwt)	0.378				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Magnesium (Mg)-Total	MB-LOR	L1826684-15, -16
Method Blank	Magnesium (Mg)-Total	MB-LOR	L1826684-15, -16

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (WET)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

F0205

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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COC # F0205

Page 1 of 2

Report to:		**Report Format / Distribution**	**Service Requested:** (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Katie McMahen	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	**Analysis Request**
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	

[redacted] Lab Work Order # [redacted] (lab use only)

ALS Contact: Can Dang **Sampler:** GH,KM

[redacted] Sample # [redacted]	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	Willow-LHAC-4-16	16-Aug-16	11:02	Tissue	X	1
[redacted]	Willow-LHAC-3-16	16-Aug-16	10:40	Tissue	X	1
[redacted]	Willow-LHAC-2X-16	16-Aug-16	10:23	Tissue	X	1
[redacted]	Willow-LHAC-2-16	16-Aug-16	10:23	Tissue	X	1
[redacted]	Willow-LHAC-1-16	16-Aug-16	10:15	Tissue	X	1
[redacted]	Willow-LHAC-5-16	16-Aug-16	11:11	Tissue	X	1
[redacted]	Spruce-REF-1-16	03-Aug-16	14:05	Tissue	X	1
[redacted]	Spruce-UHAC-1-16	03-Aug-16	13:45	Tissue	X	1
[redacted]	Spruce-UHAC-1X-16	03-Aug-16	13:45	Tissue	X	1
[redacted]	Spruce-UHAC-2-16	16-Aug-16	14:30	Tissue	X	1
[redacted]	Spruce-LHAC-1-16	16-Aug-16	15:20	Tissue	X	1
[redacted]	Berries-LHAC-2-16	16-Aug-16	13:45	Tissue	X	1

L1826684-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
		JC	SEP - 9 2016	9am	1°C			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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GENF 18.00 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # F0205

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: GH,KM

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	Berries-LHAC-3-16	16-Aug-16	15:42	Tissue	X	1
[redacted]	Berries-LHAC-1-16	16-Aug-16	12:28	Tissue	X	1
[redacted]	Ryegrass-UHAC-1-16	03-Aug-16	15:15	Tissue	X	1
[redacted]	Ryegrass-UHAC-2-16	03-Aug-16	15:35	Tissue	X	1
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
		JC	SEP - 9 2016	9am	1°C			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 07-SEP-16
Report Date: 23-SEP-16 14:39 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1824887

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: F0205
Legal Site Desc:

Comments:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1824887-1	L1824887-2	L1824887-3	L1824887-4	L1824887-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16	16-AUG-16
Sampled Time	11:02	10:40	10:23	10:23	10:15
Client ID	WILLOW-LHAC-4-16	WILLOW-LHAC-3-16	WILLOW-LHAC-2X-16	WILLOW-LHAC-2-16	WILLOW-LHAC-1-16
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.06	8.16	8.13	8.23	8.27
Organic / Inorganic Carbon Inorganic Carbon (%)	0.357	0.509	0.365	0.490	0.266
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.97	4.24	3.04	4.09	2.21
Total Carbon by Combustion (%)	0.51	0.63	0.60	0.67	0.62
Total Organic Carbon (%)	0.16	<0.13	0.23	0.18	0.35
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Available Phosphate-P (mg/kg)	<2.0	3.2	2.9	2.7	7.9
Available Potassium (mg/kg)	66	45	66	59	54
Metals Antimony (Sb) (mg/kg)	0.51	0.54	0.48	0.52	0.71
Arsenic (As) (mg/kg)	10.7	8.09	8.91	7.90	13.8
Barium (Ba) (mg/kg)	131	61.1	80.9	71.6	104
Beryllium (Be) (mg/kg)	0.50	0.29	0.36	0.32	0.41
Cadmium (Cd) (mg/kg)	0.227	0.260	0.218	0.189	0.259
Chromium (Cr) (mg/kg)	29.6	29.0	28.4	26.7	41.6
Cobalt (Co) (mg/kg)	14.3	11.2	12.1	10.7	15.1
Copper (Cu) (mg/kg)	224	55.0	181	120	76.4
Lead (Pb) (mg/kg)	7.11	5.70	6.33	6.17	8.59
Mercury (Hg) (mg/kg)	0.128	0.068	0.071	0.077	0.086
Molybdenum (Mo) (mg/kg)	1.63	0.78	1.49	1.00	1.21
Nickel (Ni) (mg/kg)	27.4	26.6	25.7	23.4	37.2
Selenium (Se) (mg/kg)	0.50	0.44	0.53	0.43	0.31
Silver (Ag) (mg/kg)	0.17	0.13	0.16	0.15	0.14
Thallium (Tl) (mg/kg)	0.100	0.108	0.103	0.101	0.154
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium (U) (mg/kg)	0.847	0.540	0.619	0.557	0.574
Vanadium (V) (mg/kg)	98.9	60.2	76.4	66.0	69.3
Zinc (Zn) (mg/kg)	58.4	46.4	48.8	43.8	64.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1824887-6	L1824887-7	L1824887-8	L1824887-9	L1824887-10
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	16-AUG-16	03-AUG-16	03-AUG-16	16-AUG-16	16-AUG-16
Sampled Time	11:11	14:05	13:45	13:45	14:30
Client ID	WILLOW-LHAC-5-16	SPRUCE-REF-1-16	SPRUCE-UHAC-1-16	SPRUCE-UHAC-1X-16	SPRUCE-UHAC-2-16
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.20	5.86	7.57	8.55	6.18
Organic / Inorganic Carbon Inorganic Carbon (%)	0.305	0.208	0.297	0.359	0.287
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.54	1.73	2.47	2.99	2.39
Total Carbon by Combustion (%)	0.37	11.0	17.1	0.51	9.43
Total Organic Carbon (%)	<0.073	10.8	16.8	0.15	9.14
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<2.0 DLR	<3.0 DLR	<1.0	32.6 DLR
Available Phosphate-P (mg/kg)	<2.0	5.4	8.5	<2.0	4.9
Available Potassium (mg/kg)	139	188	245	126	187
Metals Antimony (Sb) (mg/kg)	0.37	0.41	0.39	0.38	0.45
Arsenic (As) (mg/kg)	12.3	6.03	8.60	12.0	8.49
Barium (Ba) (mg/kg)	166	180	163	168	298
Beryllium (Be) (mg/kg)	0.59	0.76	0.53	0.63	1.22
Cadmium (Cd) (mg/kg)	0.134	1.08	0.188	0.149	1.09
Chromium (Cr) (mg/kg)	11.9	43.5	17.9	11.4	62.9
Cobalt (Co) (mg/kg)	16.5	12.7	13.8	16.9	15.7
Copper (Cu) (mg/kg)	770	53.7	492	902	111
Lead (Pb) (mg/kg)	5.34	8.12	4.93	5.03	11.8
Mercury (Hg) (mg/kg)	0.087	0.064	0.085	0.082	0.077
Molybdenum (Mo) (mg/kg)	3.52	0.72	3.26	4.15	1.24
Nickel (Ni) (mg/kg)	9.97	35.6	11.6	9.80	56.6
Selenium (Se) (mg/kg)	0.90	<0.20	0.89	1.08	0.30
Silver (Ag) (mg/kg)	0.35	0.37	0.26	0.41	0.56
Thallium (Tl) (mg/kg)	<0.050	0.120	<0.050	<0.050	0.160
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium (U) (mg/kg)	0.882	1.04	1.03	0.941	1.57
Vanadium (V) (mg/kg)	175	67.0	185	198	89.4
Zinc (Zn) (mg/kg)	54.1	110	49.8	55.5	137

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1824887-11 Soil/Sediment 16-AUG-16 15:20 SPRUCE-LHAC-1-16	L1824887-12 Soil/Sediment 16-AUG-16 13:45 BERRIES-LHAC-2-16	L1824887-13 Soil/Sediment 16-AUG-16 15:42 BERRIES-LHAC-3-16	L1824887-14 Soil/Sediment 16-AUG-16 12:28 BERRIES-LHAC-1-16	L1824887-15 Soil/Sediment 03-AUG-16 15:15 RYEGRASS-UHAC-1-16
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	8.23	7.11	6.86	7.51	8.19
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.381	0.292	0.380	0.263	0.418
	Inorganic Carbon (as CaCO3 Equivalent) (%)	3.18	2.43	3.16	2.19	3.48
	Total Carbon by Combustion (%)	0.49	0.31	0.38	3.86	1.75
	Total Organic Carbon (%)	0.110	<0.063	<0.076	3.60	1.33
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<2.0 DLR	<1.0
	Available Phosphate-P (mg/kg)	<2.0	<2.0	<2.0	6.7	<2.0
	Available Potassium (mg/kg)	128	75	123	117	213
Metals	Antimony (Sb) (mg/kg)	0.37	0.19	0.19	0.34	0.46
	Arsenic (As) (mg/kg)	11.7	3.97	3.72	9.32	10.8
	Barium (Ba) (mg/kg)	166	697	339	123	175
	Beryllium (Be) (mg/kg)	0.60	0.20	0.15	0.42	0.67
	Cadmium (Cd) (mg/kg)	0.140	3.44	1.39	0.138	0.128
	Chromium (Cr) (mg/kg)	10.9	13.2	13.8	19.6	13.8
	Cobalt (Co) (mg/kg)	16.3	7.16	5.57	13.0	17.5
	Copper (Cu) (mg/kg)	833	91.1	42.0	463	688
	Lead (Pb) (mg/kg)	4.76	11.1	8.93	4.74	4.89
	Mercury (Hg) (mg/kg)	0.080	0.123	0.255	0.080	0.072
	Molybdenum (Mo) (mg/kg)	5.04	1.38	1.21	2.85	4.47
	Nickel (Ni) (mg/kg)	9.03	12.5	10.4	11.9	10.1
	Selenium (Se) (mg/kg)	0.96	0.38	0.25	0.71	0.97
	Silver (Ag) (mg/kg)	0.35	0.75	0.22	0.24	0.33
	Thallium (Tl) (mg/kg)	<0.050	0.100	0.056	<0.050	<0.050
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Uranium (U) (mg/kg)	0.937	0.398	0.269	0.751	1.22
	Vanadium (V) (mg/kg)	189	36.2	33.1	187	163
	Zinc (Zn) (mg/kg)	52.6	552	187	44.9	57.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1824887-16
	Description	Soil/Sediment
	Sampled Date	03-AUG-16
	Sampled Time	15:35
	Client ID	RYEGRASS-UHAC-2-16
Grouping	**Analyte**	
SOIL		
Physical Tests	pH (1:2 soil:water) (pH)	8.22
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.552
	Inorganic Carbon (as CaCO3 Equivalent) (%)	4.60
	Total Carbon by Combustion (%)	0.61
	Total Organic Carbon (%)	<0.12
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR
	Available Phosphate-P (mg/kg)	<2.0
	Available Potassium (mg/kg)	387
Metals	Antimony (Sb) (mg/kg)	0.50
	Arsenic (As) (mg/kg)	14.1
	Barium (Ba) (mg/kg)	224
	Beryllium (Be) (mg/kg)	0.84
	Cadmium (Cd) (mg/kg)	0.169
	Chromium (Cr) (mg/kg)	10.5
	Cobalt (Co) (mg/kg)	22.6
	Copper (Cu) (mg/kg)	953
	Lead (Pb) (mg/kg)	6.52
	Mercury (Hg) (mg/kg)	0.083
	Molybdenum (Mo) (mg/kg)	5.55
	Nickel (Ni) (mg/kg)	9.67
	Selenium (Se) (mg/kg)	1.16
	Silver (Ag) (mg/kg)	0.41
	Thallium (Tl) (mg/kg)	<0.050
	Tin (Sn) (mg/kg)	<2.0
	Uranium (U) (mg/kg)	1.34
	Vanadium (V) (mg/kg)	162
	Zinc (Zn) (mg/kg)	77.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

F0205

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

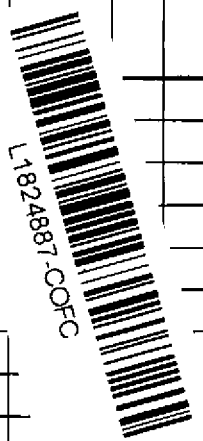
Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # F0205

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: GH,KM

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	Willow-LHAC-4-16	16-Aug-16	11:02	Tissue	X	1
	Willow-LHAC-3-16	16-Aug-16	10:40	Tissue	X	1
	Willow-LHAC-2X-16	16-Aug-16	10:23	Tissue	X	1
	Willow-LHAC-2-16	16-Aug-16	10:23	Tissue	X	1
	Willow-LHAC-1-16	16-Aug-16	10:15	Tissue	X	1
	Willow-LHAC-5-16	16-Aug-16	11:11	Tissue	X	1
	Spruce-REF-1-16	03-Aug-16	14:05	Tissue	X	1
	Spruce-UHAC-1-16	03-Aug-16	13:45	Tissue	X	1
	Spruce-UHAC-1X-16	03-Aug-16	13:45	Tissue	X	1
	Spruce-UHAC-2-16	16-Aug-16	14:30	Tissue	X	1
	Spruce-LHAC-1-16	16-Aug-16	15:20	Tissue	X	1
	Berries-LHAC-2-16	16-Aug-16	13:45	Tissue	X	1



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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Teresa Snodgrass	Sept. 6/16 15:30	SE	Sept 7/16	9:25am	5, 6, 6, 8, 8			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # F0205

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file, Arainn_Atkinson@golder.com	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: Evin_Zapf-Gilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: GH,KM

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	Berries-LHAC-3-16	16-Aug-16	15:42	Tissue	X	1
	Berries-LHAC-1-16	16-Aug-16	12:28	Tissue	X	1
	Ryegrass-UHAC-1-16	03-Aug-16	15:15	Tissue	X	1
	Ryegrass-UHAC-2-16	03-Aug-16	15:35	Tissue	X	1

L1824887-COFC

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Teresa Snodgrass	Sept. 6/16 15:30	SC	Sept 7/16	9:25am	5,6,6,8,8C			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 31-OCT-16 10:44 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826516

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0148
Legal Site Desc:

Comments: ADDITIONAL 25-OCT-16 18:04

31-OCT-2016 Revision 2: As requested, additional analyses were performed on the samples ALS identify as l1826516-45 and L1826516-46.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-1	L1826516-2	L1826516-3	L1826516-4	L1826516-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	17-AUG-16	17-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-02	CSS16-03	CSS16-04	CSS16-05	CSS16-06
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	7.35	6.22	7.06	7.69	6.83
Organic / Inorganic Carbon Inorganic Carbon (%)	0.244	0.124	0.235	0.255	0.126
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.03	1.03	1.96	2.13	1.05
Total Carbon by Combustion (%)	2.28	4.31	13.5	1.97	2.87
Total Organic Carbon (%)	2.04	4.19	13.3	1.72	2.74
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	<2.0 DLR	2.5	10.9
Available Phosphate-P (mg/kg)	4.5	13.1	4.7	2.8	5.4
Available Potassium (mg/kg)	127	127	92	132	118
Metals Aluminum (Al) (mg/kg)	15400	19100	12200	11900	16700
Antimony (Sb) (mg/kg)	0.35	0.30	0.33	0.27	0.30
Arsenic (As) (mg/kg)	9.12	7.78	9.02	8.54	9.09
Barium (Ba) (mg/kg)	146	118	184	135	160
Beryllium (Be) (mg/kg)	0.54	0.45	0.48	0.51	0.60
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	6.9	<5.0	7.7	6.3	7.2
Cadmium (Cd) (mg/kg)	0.170	0.139	0.254	0.161	0.206
Calcium (Ca) (mg/kg)	18500	7090	20600	19200	14000
Chromium (Cr) (mg/kg)	18.0	35.9	13.1	12.8	21.9
Cobalt (Co) (mg/kg)	13.8	10.8	13.2	13.3	15.9
Copper (Cu) (mg/kg)	677	148	472	574	458
Iron (Fe) (mg/kg)	48400	31900	49000	53700	56500
Lead (Pb) (mg/kg)	5.15	7.88	4.99	4.56	5.49
Lithium (Li) (mg/kg)	12.3	17.8	12.0	12.8	15.5
Magnesium (Mg) (mg/kg)	7280	6530	6650	6670	8010
Manganese (Mn) (mg/kg)	525	574	573	433	624
Mercury (Hg) (mg/kg)	0.102	0.075	0.093	0.070	0.075
Molybdenum (Mo) (mg/kg)	3.56	1.22	3.30	3.57	2.97
Nickel (Ni) (mg/kg)	12.2	21.6	9.89	9.11	14.5
Phosphorus (P) (mg/kg)	1080	752	1440	1260	1390
Potassium (K) (mg/kg)	1300	1560	950	1090	1360
Selenium (Se) (mg/kg)	0.84	0.27	0.76	0.86	0.61
Silver (Ag) (mg/kg)	0.34	0.29	0.28	0.33	0.32
Sodium (Na) (mg/kg)	742	231	648	674	681
Strontium (Sr) (mg/kg)	131	56.7	139	132	127
Thallium (Tl) (mg/kg)	<0.050	0.105	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-6	L1826516-7	L1826516-8	L1826516-9	L1826516-10
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	03-SEP-16	03-SEP-16	03-SEP-16
Sampled Time					
Client ID	CSS16-14	CSS16-15	CSS16-23	CSS16-24	CSS16-25
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	7.32	7.59	8.10	7.77	8.05
Organic / Inorganic Carbon Inorganic Carbon (%)	0.230	0.268	0.237	0.241	0.315
Inorganic Carbon (as CaCO3 Equivalent) (%)	1.92	2.23	1.97	2.01	2.63
Total Carbon by Combustion (%)	8.65	3.19	0.39	1.02	0.53
Total Organic Carbon (%)	8.42	2.92	0.155	0.779	0.22
Plant Available Nutrients Available Nitrate-N (mg/kg)	<2.0 DLR	<1.0	<1.0	<1.0	<1.0
Available Phosphate-P (mg/kg)	5.8	5.1	3.2	10.9	2.2
Available Potassium (mg/kg)	136	90	59	113	43
Metals Aluminum (Al) (mg/kg)	13600	13500	10900	14200	8310
Antimony (Sb) (mg/kg)	0.39	0.36	0.31	0.33	0.24
Arsenic (As) (mg/kg)	7.41	9.03	8.39	8.86	4.76
Barium (Ba) (mg/kg)	147	160	90.7	155	58.6
Beryllium (Be) (mg/kg)	0.53	0.52	0.37	0.51	0.26
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	7.3	7.5	<5.0	5.9	<5.0
Cadmium (Cd) (mg/kg)	0.245	0.179	0.133	0.196	0.104
Calcium (Ca) (mg/kg)	18100	21200	14700	18200	15900
Chromium (Cr) (mg/kg)	17.5	14.8	14.6	19.9	18.6
Cobalt (Co) (mg/kg)	11.9	13.4	10.3	13.6	6.61
Copper (Cu) (mg/kg)	392	541	395	546	48.3
Iron (Fe) (mg/kg)	40700	50800	29700	37600	20200
Lead (Pb) (mg/kg)	5.10	4.52	4.10	5.95	4.02
Lithium (Li) (mg/kg)	13.1	12.3	11.7	14.7	7.3
Magnesium (Mg) (mg/kg)	6210	6930	6660	7990	4040
Manganese (Mn) (mg/kg)	509	518	465	600	350
Mercury (Hg) (mg/kg)	0.097	0.082	0.070	0.066	<0.050
Molybdenum (Mo) (mg/kg)	3.50	3.30	2.30	2.93	0.43
Nickel (Ni) (mg/kg)	12.8	10.1	10.4	12.3	12.2
Phosphorus (P) (mg/kg)	1150	1320	935	1060	828
Potassium (K) (mg/kg)	1240	1150	720	1050	490
Selenium (Se) (mg/kg)	0.85	0.74	0.53	0.69	<0.20
Silver (Ag) (mg/kg)	0.30	0.31	0.18	0.24	<0.10
Sodium (Na) (mg/kg)	569	760	629	543	669
Strontium (Sr) (mg/kg)	152	152	100	122	86.4
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-11	L1826516-12	L1826516-13	L1826516-14	L1826516-15
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
Sampled Time					
Client ID	CSS16-26	CSS16-27	CSS16-27D	CSS16-28	CSS16-29
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.43	7.84	7.86	8.34	8.34
Organic / Inorganic Carbon Inorganic Carbon (%)	0.423	0.227	0.213	0.087	0.234
Inorganic Carbon (as CaCO3 Equivalent) (%)	3.52	1.89	1.78	0.72	1.95
Total Carbon by Combustion (%)	0.56	3.69	2.05	0.22	0.48
Total Organic Carbon (%)	0.14	3.46	1.84	0.130	0.247
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<2.0 DLR	<1.0	<1.0	<1.0
Available Phosphate-P (mg/kg)	<2.0	10.8	11.0	2.8	6.2
Available Potassium (mg/kg)	42	146	135	46	64
Metals Aluminum (Al) (mg/kg)	7420	12200	12200	9180	12200
Antimony (Sb) (mg/kg)	0.22	0.29	0.32	0.37	0.35
Arsenic (As) (mg/kg)	4.67	8.61	8.79	4.96	6.63
Barium (Ba) (mg/kg)	49.0	127	129	72.9	113
Beryllium (Be) (mg/kg)	0.22	0.46	0.49	0.29	0.38
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	<5.0	7.0	7.3	<5.0	<5.0
Cadmium (Cd) (mg/kg)	0.095	0.161	0.168	0.085	0.181
Calcium (Ca) (mg/kg)	16000	18200	18300	6940	13300
Chromium (Cr) (mg/kg)	19.5	14.0	16.3	19.3	26.2
Cobalt (Co) (mg/kg)	7.47	13.3	13.2	7.79	10.8
Copper (Cu) (mg/kg)	52.5	649	620	74.0	114
Iron (Fe) (mg/kg)	19800	49600	48700	22900	29400
Lead (Pb) (mg/kg)	4.18	4.95	5.91	3.84	6.12
Lithium (Li) (mg/kg)	9.7	12.5	13.1	8.3	13.0
Magnesium (Mg) (mg/kg)	5290	6430	6380	4250	6420
Manganese (Mn) (mg/kg)	321	532	536	317	524
Mercury (Hg) (mg/kg)	<0.050	0.095	0.094	0.058	0.065
Molybdenum (Mo) (mg/kg)	0.48	3.32	3.11	0.49	0.74
Nickel (Ni) (mg/kg)	17.5	9.89	10.8	14.1	19.9
Phosphorus (P) (mg/kg)	596	1120	1090	627	839
Potassium (K) (mg/kg)	660	1100	1120	510	880
Selenium (Se) (mg/kg)	0.24	0.83	0.84	<0.20	0.26
Silver (Ag) (mg/kg)	<0.10	0.31	0.32	0.16	0.12
Sodium (Na) (mg/kg)	197	583	546	147	445
Strontium (Sr) (mg/kg)	89.3	121	135	53.5	95.3
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	0.054
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-16	L1826516-17	L1826516-18	L1826516-19	L1826516-20
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-30	CSS16-32	CSS16-33	CSS16-34	CSS16-35
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.48	8.67	8.59	8.31	8.43
Organic / Inorganic Carbon Inorganic Carbon (%)	0.320	0.304	0.224	0.232	0.225
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.67	2.53	1.87	1.93	1.87
Total Carbon by Combustion (%)	0.51	0.40	0.31	0.48	0.42
Total Organic Carbon (%)	0.19	0.094	0.083	0.252	0.192
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<1.0	1.0
Available Phosphate-P (mg/kg)	<2.0	2.4	2.2	6.0	3.6
Available Potassium (mg/kg)	77	56	68	52	56
Metals Aluminum (Al) (mg/kg)	16100	12500	13100	12100	12000
Antimony (Sb) (mg/kg)	0.40	0.35	0.38	0.32	0.31
Arsenic (As) (mg/kg)	7.46	6.87	8.22	8.57	7.73
Barium (Ba) (mg/kg)	107	101	135	80.5	114
Beryllium (Be) (mg/kg)	0.40	0.36	0.43	0.41	0.42
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	<5.0	<5.0	11.1	5.5	6.1
Cadmium (Cd) (mg/kg)	0.165	0.157	0.149	0.131	0.116
Calcium (Ca) (mg/kg)	14900	15800	13100	13400	16300
Chromium (Cr) (mg/kg)	37.5	24.5	21.9	22.2	14.7
Cobalt (Co) (mg/kg)	12.7	10.4	12.2	11.2	10.7
Copper (Cu) (mg/kg)	80.8	107	324	401	487
Iron (Fe) (mg/kg)	30800	27900	32400	34100	31200
Lead (Pb) (mg/kg)	7.76	6.13	5.23	5.49	3.89
Lithium (Li) (mg/kg)	16.4	12.9	13.4	11.9	11.2
Magnesium (Mg) (mg/kg)	7640	6420	7670	6560	6220
Manganese (Mn) (mg/kg)	587	507	567	516	449
Mercury (Hg) (mg/kg)	0.069	0.075	0.071	0.067	0.061
Molybdenum (Mo) (mg/kg)	0.75	0.72	1.35	2.48	2.53
Nickel (Ni) (mg/kg)	29.0	18.7	16.3	13.3	11.1
Phosphorus (P) (mg/kg)	709	790	897	878	865
Potassium (K) (mg/kg)	1340	890	890	830	930
Selenium (Se) (mg/kg)	0.28	0.24	0.40	0.52	0.57
Silver (Ag) (mg/kg)	0.11	0.12	0.13	0.19	0.24
Sodium (Na) (mg/kg)	285	639	387	489	683
Strontium (Sr) (mg/kg)	101	114	89.3	91.7	122
Thallium (Tl) (mg/kg)	0.082	0.052	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-21 Soil/Sediment 04-SEP-16 CSS16-36	L1826516-22 Soil/Sediment 04-SEP-16 CSS16-37	L1826516-23 Soil/Sediment 04-SEP-16 CSS16-38	L1826516-24 Soil/Sediment 04-SEP-16 CSS16-39	L1826516-25 Soil/Sediment 04-SEP-16 CSS16-39D
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.82	7.83	7.84	7.71	7.67
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.164	0.232	0.293	0.263	0.261
	Inorganic Carbon (as CaCO3 Equivalent) (%)	1.36	1.93	2.44	2.19	2.17
	Total Carbon by Combustion (%)	0.79	2.07	2.50	3.13	2.85
	Total Organic Carbon (%)	0.630	1.84	2.21	2.87	2.59
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<2.0 DLR	1.6	1.6
	Available Phosphate-P (mg/kg)	9.4	3.7	2.9	3.3	3.9
	Available Potassium (mg/kg)	98	98	98	88	86
Metals	Aluminum (Al) (mg/kg)	9970	15000	15300	14700	15000
	Antimony (Sb) (mg/kg)	0.24	0.35	0.39	0.39	0.37
	Arsenic (As) (mg/kg)	6.75	8.53	10.0	8.92	8.82
	Barium (Ba) (mg/kg)	82.0	163	170	163	160
	Beryllium (Be) (mg/kg)	0.36	0.54	0.58	0.53	0.54
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	7.0	7.9	7.9	7.7
	Cadmium (Cd) (mg/kg)	0.103	0.232	0.185	0.211	0.226
	Calcium (Ca) (mg/kg)	11800	19900	22600	20800	20900
	Chromium (Cr) (mg/kg)	14.1	17.2	16.2	16.6	17.2
	Cobalt (Co) (mg/kg)	9.84	13.3	14.7	13.6	13.6
	Copper (Cu) (mg/kg)	449	537	597	539	547
	Iron (Fe) (mg/kg)	32500	42800	54000	49200	47500
	Lead (Pb) (mg/kg)	3.68	4.72	4.86	4.66	4.74
	Lithium (Li) (mg/kg)	10.3	12.8	13.3	12.3	12.5
	Magnesium (Mg) (mg/kg)	5330	6650	7350	6600	6560
	Manganese (Mn) (mg/kg)	397	528	543	520	521
	Mercury (Hg) (mg/kg)	0.057	0.101	0.093	0.103	0.110
	Molybdenum (Mo) (mg/kg)	2.10	3.45	4.50	3.96	3.69
	Nickel (Ni) (mg/kg)	9.42	13.0	11.6	12.0	12.5
	Phosphorus (P) (mg/kg)	747	1170	1370	1220	1210
	Potassium (K) (mg/kg)	720	1240	1280	1230	1230
	Selenium (Se) (mg/kg)	0.53	0.83	0.83	0.82	0.77
	Silver (Ag) (mg/kg)	0.23	0.29	0.33	0.29	0.31
	Sodium (Na) (mg/kg)	438	709	786	714	696
	Strontium (Sr) (mg/kg)	78.3	153	163	158	157
	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID / Description / Sampled Date / Sampled Time / Client ID				
		L1826516-26 Soil/Sediment 04-SEP-16 CSS16-40	L1826516-27 Soil/Sediment 04-SEP-16 CSS16-41	L1826516-28 Soil/Sediment 05-SEP-16 CSS16-42	L1826516-29 Soil/Sediment 19-AUG-16 CSS16-BKG-01	L1826516-30 Soil/Sediment 19-AUG-16 CSS16-BKG-07
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.81	7.78	8.34	5.33	4.88
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.274	0.298	0.411	0.201	0.120
	Inorganic Carbon (as CaCO3 Equivalent) (%)	2.28	2.48	3.42	1.67	1.00
	Total Carbon by Combustion (%)	1.49	2.04	0.49	18.6	13.1
	Total Organic Carbon (%)	1.22	1.74	<0.098	18.4	13.0
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	1.9	<1.0	17.2 DLR	<3.0 DLR
	Available Phosphate-P (mg/kg)	3.7	4.0	<2.0	2.2	25.9
	Available Potassium (mg/kg)	93	95	164	224	173
Metals	Aluminum (Al) (mg/kg)	13100	14200	15900	31200	19700
	Antimony (Sb) (mg/kg)	0.33	0.34	0.35	0.29	0.23
	Arsenic (As) (mg/kg)	8.13	9.65	11.2	3.39	3.93
	Barium (Ba) (mg/kg)	138	154	158	191	182
	Beryllium (Be) (mg/kg)	0.49	0.53	0.63	0.93	0.64
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	6.8	7.6	8.8	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.150	0.155	0.156	0.542	0.438
	Calcium (Ca) (mg/kg)	19300	21900	25900	6010	5710
	Chromium (Cr) (mg/kg)	14.0	13.9	10.5	53.5	34.5
	Cobalt (Co) (mg/kg)	12.3	13.9	16.3	21.8	9.60
	Copper (Cu) (mg/kg)	511	573	821	54.6	39.9
	Iron (Fe) (mg/kg)	47800	51700	45700	27600	24500
	Lead (Pb) (mg/kg)	4.16	4.29	4.92	8.73	8.86
	Lithium (Li) (mg/kg)	11.6	12.3	16.1	18.7	13.1
	Magnesium (Mg) (mg/kg)	6000	6850	9670	6940	4760
	Manganese (Mn) (mg/kg)	442	517	583	1380	980
	Mercury (Hg) (mg/kg)	0.089	0.095	0.085	0.205	0.129
	Molybdenum (Mo) (mg/kg)	3.40	3.84	5.60	1.35	0.65
	Nickel (Ni) (mg/kg)	9.74	10.1	9.15	33.7	23.0
	Phosphorus (P) (mg/kg)	1050	1320	1190	1540	1130
	Potassium (K) (mg/kg)	1100	1210	1400	2000	1170
	Selenium (Se) (mg/kg)	0.80	0.80	0.93	0.46	<0.20
	Silver (Ag) (mg/kg)	0.28	0.33	0.37	0.64	0.73
	Sodium (Na) (mg/kg)	698	788	1080	125	109
	Strontium (Sr) (mg/kg)	146	158	169	60.0	54.2
	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	0.154	0.105
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-31 Soil/Sediment 03-SEP-16 CSS16-BKG-08	L1826516-32 Soil/Sediment 03-SEP-16 CSS16-BKG-09	L1826516-33 Soil/Sediment 03-SEP-16 CSS16-BKG-10	L1826516-34 Soil/Sediment 03-SEP-16 CSS16-BKG-11	L1826516-35 Soil/Sediment 03-SEP-16 CSS16-BKG-12
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	8.38	6.21	6.65	5.60	5.46
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.345	0.082	0.077	0.073	0.064
	Inorganic Carbon (as CaCO3 Equivalent) (%)	2.87	0.68	0.64	0.61	0.54
	Total Carbon by Combustion (%)	0.67	1.62	0.42	2.57	0.97
	Total Organic Carbon (%)	0.32	1.54	0.348	2.50	0.905
Plant Available Nutrients	Available Nitrate-N (mg/kg)	1.3	<1.0	<1.0	<1.0	<1.0
	Available Phosphate-P (mg/kg)	3.4	136 DLHC	8.1	73 DLHC	9.9
	Available Potassium (mg/kg)	67	131	66	96	44
Metals	Aluminum (Al) (mg/kg)	18500	14600	15600	14200	15700
	Antimony (Sb) (mg/kg)	0.44	0.28	0.35	0.27	0.23
	Arsenic (As) (mg/kg)	8.24	4.73	5.50	4.59	4.46
	Barium (Ba) (mg/kg)	104	79.3	86.6	86.8	78.7
	Beryllium (Be) (mg/kg)	0.44	0.35	0.40	0.35	0.35
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.204	0.246	0.226	0.215	0.096
	Calcium (Ca) (mg/kg)	14300	4030	4260	4370	3200
	Chromium (Cr) (mg/kg)	41.9	33.6	38.8	34.8	32.5
	Cobalt (Co) (mg/kg)	16.2	11.3	13.6	9.38	11.4
	Copper (Cu) (mg/kg)	61.6	24.9	32.3	37.6	19.7
	Iron (Fe) (mg/kg)	35900	25300	27300	25800	25300
	Lead (Pb) (mg/kg)	12.2	6.94	7.92	6.46	7.30
	Lithium (Li) (mg/kg)	26.2	18.8	17.6	15.6	22.0
	Magnesium (Mg) (mg/kg)	9040	5870	6720	4860	5900
	Manganese (Mn) (mg/kg)	619	456	556	484	390
	Mercury (Hg) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	0.58	0.48	0.49	0.50	0.53
	Nickel (Ni) (mg/kg)	42.4	25.1	30.1	18.7	24.4
	Phosphorus (P) (mg/kg)	704	1070	546	934	468
	Potassium (K) (mg/kg)	1580	1240	1440	980	1100
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.13	0.18	<0.10	0.13	<0.10
	Sodium (Na) (mg/kg)	192	110	152	118	130
	Strontium (Sr) (mg/kg)	72.7	33.0	38.0	40.5	32.6
	Thallium (Tl) (mg/kg)	0.120	0.083	0.093	0.061	0.088
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-36	L1826516-37	L1826516-38	L1826516-39	L1826516-40
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-BKG-13	CSS16-BKG-13D	CSS16-BKG-14	CSS16-BKG-15	CSS16-BKG-16
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	5.48	5.53	5.23	5.70	5.12
Organic / Inorganic Carbon Inorganic Carbon (%)	0.157	0.155	0.187	0.242	0.098
Inorganic Carbon (as CaCO3 Equivalent) (%)	1.30	1.29	1.56	2.02	0.81
Total Carbon by Combustion (%)	17.6	18.0	22.4	19.2	7.41
Total Organic Carbon (%)	17.4	17.8	22.2	19.0	7.31
Plant Available Nutrients Available Nitrate-N (mg/kg)	<4.0 DLR	<4.0 DLR	6.0 DLR	6.0 DLR	<2.0 DLR
Available Phosphate-P (mg/kg)	55.5 DLM	48.9	5.5 DLM	4.8 DLM	4.8
Available Potassium (mg/kg)	267 DLM	252	275 DLM	152 DLM	89
Metals Aluminum (Al) (mg/kg)	14500	14200	39200	43200	11400
Antimony (Sb) (mg/kg)	0.51	0.26	0.32	0.45	0.21
Arsenic (As) (mg/kg)	4.22	3.61	4.89	6.11	2.42
Barium (Ba) (mg/kg)	176	162	255	282	73.9
Beryllium (Be) (mg/kg)	0.40	0.42	1.15	1.22	0.26
Bismuth (Bi) (mg/kg)	<0.20	<0.20	0.22	0.29	<0.20
Boron (B) (mg/kg)	5.8	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd) (mg/kg)	0.519	0.448	0.281	0.961	0.322
Calcium (Ca) (mg/kg)	8650	8200	3920	11500	3320
Chromium (Cr) (mg/kg)	28.9	29.7	43.3	57.8	26.7
Cobalt (Co) (mg/kg)	12.4	11.9	7.53	15.6	5.63
Copper (Cu) (mg/kg)	40.4	36.8	69.2	96.2	17.8
Iron (Fe) (mg/kg)	21500	22800	19400	35200	17600
Lead (Pb) (mg/kg)	7.84	7.78	12.2	12.8	5.73
Lithium (Li) (mg/kg)	15.3	14.8	18.0	29.1	10.7
Magnesium (Mg) (mg/kg)	5820	5540	3590	8310	3270
Manganese (Mn) (mg/kg)	1290	1100	86.1	493	126
Mercury (Hg) (mg/kg)	0.114	0.120	0.248	0.206	0.052
Molybdenum (Mo) (mg/kg)	1.60	1.38	0.69	1.01	0.56
Nickel (Ni) (mg/kg)	24.3	22.1	52.8	72.8	15.5
Phosphorus (P) (mg/kg)	934	873	1540	1390	337
Potassium (K) (mg/kg)	1380	1370	2620	2620	780
Selenium (Se) (mg/kg)	0.35	<0.20	0.41	0.72	<0.20
Silver (Ag) (mg/kg)	0.27	0.23	0.74	0.95	0.19
Sodium (Na) (mg/kg)	89	131	102	121	97
Strontium (Sr) (mg/kg)	58.5	60.2	43.8	111	38.0
Thallium (Tl) (mg/kg)	0.098	0.109	0.214	0.221	0.061
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-41	L1826516-42	L1826516-43	L1826516-45	L1826516-46
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	04-SEP-16	05-SEP-16	05-SEP-16	19-AUG-16	03-SEP-16
Sampled Time					
Client ID	CSS16-BKG-17	CSS16-BKG-23D	CSS16-BKG-24	CSS16-16	CSS16-31
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	5.74	6.78	5.22	7.59	8.69
Organic / Inorganic Carbon Inorganic Carbon (%)	0.224	0.078	0.091	0.238	0.468
Inorganic Carbon (as CaCO3 Equivalent) (%)	1.87	0.65	0.76	1.98	3.90
Total Carbon by Combustion (%)	16.8	1.29	7.35	4.10	0.69
Total Organic Carbon (%)	16.6	1.21	7.26	3.86	0.23
Plant Available Nutrients Available Nitrate-N (mg/kg)	<4.0 DLR	<1.0	<1.0	1.4	1.4
Available Phosphate-P (mg/kg)	10.0	16.3	42.4	4.7	3.2
Available Potassium (mg/kg)	343	108	104	114	98
Metals Aluminum (Al) (mg/kg)	44300	10700	7540	14100	18400
Antimony (Sb) (mg/kg)	0.42	0.36	0.16	0.41	0.48
Arsenic (As) (mg/kg)	5.71	7.14	2.73	9.53	8.76
Barium (Ba) (mg/kg)	280	67.8	139	179	126
Beryllium (Be) (mg/kg)	1.13	0.31	0.20	0.52	0.46
Bismuth (Bi) (mg/kg)	0.25	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	<5.0	<5.0	<5.0	8.1	5.2
Cadmium (Cd) (mg/kg)	0.619	0.159	0.325	0.203	0.182
Calcium (Ca) (mg/kg)	9880	4990	3360	20900	22400
Chromium (Cr) (mg/kg)	64.0	38.0	20.1	15.2	37.9
Cobalt (Co) (mg/kg)	17.5	9.06	7.29	13.6	14.1
Copper (Cu) (mg/kg)	81.2	38.7	12.1	522	67.0
Iron (Fe) (mg/kg)	39100	24700	16600	48800	32200
Lead (Pb) (mg/kg)	10.9	5.54	5.94	5.09	7.59
Lithium (Li) (mg/kg)	28.6	10.9	9.2	12.4	18.5
Magnesium (Mg) (mg/kg)	8630	5570	2410	7100	8970
Manganese (Mn) (mg/kg)	969	429	1250	576	649
Mercury (Hg) (mg/kg)	0.204	0.061	0.058	0.091	0.059
Molybdenum (Mo) (mg/kg)	1.37	0.58	0.58	3.33	0.69
Nickel (Ni) (mg/kg)	58.7	22.1	11.8	11.6	32.3
Phosphorus (P) (mg/kg)	1570	686	589	1270	828
Potassium (K) (mg/kg)	2970	920	700	1380	1910
Selenium (Se) (mg/kg)	0.50	<0.20	<0.20	0.78	0.31
Silver (Ag) (mg/kg)	0.94	<0.10	0.16	0.30	0.10
Sodium (Na) (mg/kg)	113	162	54	663	544
Strontium (Sr) (mg/kg)	89.8	43.2	29.3	161	147
Thallium (Tl) (mg/kg)	0.215	0.077	0.056	<0.050	0.126
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826516-47				
	Description					
	Sampled Date	05-SEP-16				
	Sampled Time					
	Client ID	CSS16-BKG-25				
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	5.75				
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.077				
	Inorganic Carbon (as CaCO3 Equivalent) (%)	0.64				
	Total Carbon by Combustion (%)	8.35				
	Total Organic Carbon (%)	8.27				
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<3.0 DLR				
	Available Phosphate-P (mg/kg)	15.6				
	Available Potassium (mg/kg)	127				
Metals	Aluminum (Al) (mg/kg)	15000				
	Antimony (Sb) (mg/kg)	0.24				
	Arsenic (As) (mg/kg)	4.76				
	Barium (Ba) (mg/kg)	137				
	Beryllium (Be) (mg/kg)	0.51				
	Bismuth (Bi) (mg/kg)	<0.20				
	Boron (B) (mg/kg)	<5.0				
	Cadmium (Cd) (mg/kg)	0.289				
	Calcium (Ca) (mg/kg)	5310				
	Chromium (Cr) (mg/kg)	33.1				
	Cobalt (Co) (mg/kg)	8.84				
	Copper (Cu) (mg/kg)	32.2				
	Iron (Fe) (mg/kg)	23400				
	Lead (Pb) (mg/kg)	6.42				
	Lithium (Li) (mg/kg)	14.6				
	Magnesium (Mg) (mg/kg)	4590				
	Manganese (Mn) (mg/kg)	462				
	Mercury (Hg) (mg/kg)	0.094				
	Molybdenum (Mo) (mg/kg)	0.62				
	Nickel (Ni) (mg/kg)	22.7				
	Phosphorus (P) (mg/kg)	709				
	Potassium (K) (mg/kg)	960				
	Selenium (Se) (mg/kg)	<0.20				
	Silver (Ag) (mg/kg)	0.40				
	Sodium (Na) (mg/kg)	91				
	Strontium (Sr) (mg/kg)	60.1				
	Thallium (Tl) (mg/kg)	0.084				
	Tin (Sn) (mg/kg)	<2.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-1 Soil/Sediment 17-AUG-16 CSS16-02	L1826516-2 Soil/Sediment 17-AUG-16 CSS16-03	L1826516-3 Soil/Sediment 19-AUG-16 CSS16-04	L1826516-4 Soil/Sediment 19-AUG-16 CSS16-05	L1826516-5 Soil/Sediment 19-AUG-16 CSS16-06
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	1160	888	1070	799	1010
	Uranium (U) (mg/kg)	0.869	0.762	0.875	0.738	0.892
	Vanadium (V) (mg/kg)	177	95.2	185	205	209
	Zinc (Zn) (mg/kg)	51.0	58.1	59.4	45.0	60.3
	Zirconium (Zr) (mg/kg)	1.8	<1.0	3.6	1.9	1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-6 Soil/Sediment 19-AUG-16 CSS16-14	L1826516-7 Soil/Sediment 19-AUG-16 CSS16-15	L1826516-8 Soil/Sediment 03-SEP-16 CSS16-23	L1826516-9 Soil/Sediment 03-SEP-16 CSS16-24	L1826516-10 Soil/Sediment 03-SEP-16 CSS16-25
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	927	1170	605	950	665
	Uranium (U) (mg/kg)	1.23	0.943	0.508	0.741	0.503
	Vanadium (V) (mg/kg)	147	193	98.2	134	62.0
	Zinc (Zn) (mg/kg)	43.8	48.2	40.8	53.9	31.6
	Zirconium (Zr) (mg/kg)	1.9	2.8	3.2	2.7	5.2

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-11	L1826516-12	L1826516-13	L1826516-14	L1826516-15
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16	03-SEP-16
Sampled Time					
Client ID	CSS16-26	CSS16-27	CSS16-27D	CSS16-28	CSS16-29
Grouping / **Analyte**					
SOIL					
Metals					
Titanium (Ti) (mg/kg)	560	936	934	658	656
Uranium (U) (mg/kg)	0.496	0.812	0.846	0.399	0.527
Vanadium (V) (mg/kg)	49.9	184	180	75.6	83.1
Zinc (Zn) (mg/kg)	32.8	46.1	45.6	33.1	46.4
Zirconium (Zr) (mg/kg)	4.2	2.5	2.2	3.8	2.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-16	L1826516-17	L1826516-18	L1826516-19	L1826516-20
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	03-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-30	CSS16-32	CSS16-33	CSS16-34	CSS16-35
Grouping / **Analyte**					
SOIL					
Metals					
Titanium (Ti) (mg/kg)	692	786	719	1020	933
Uranium (U) (mg/kg)	0.668	0.437	0.470	0.615	0.763
Vanadium (V) (mg/kg)	71.0	78.6	106	126	117
Zinc (Zn) (mg/kg)	57.9	48.7	46.5	45.0	40.0
Zirconium (Zr) (mg/kg)	5.8	5.3	4.4	4.4	4.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-21	L1826516-22	L1826516-23	L1826516-24	L1826516-25
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16	04-SEP-16
Sampled Time					
Client ID	CSS16-36	CSS16-37	CSS16-38	CSS16-39	CSS16-39D
Grouping / **Analyte**					
SOIL					
Metals Titanium (Ti) (mg/kg)	796	1030	1250	1170	1110
Uranium (U) (mg/kg)	0.514	1.08	1.04	1.23	1.20
Vanadium (V) (mg/kg)	119	161	210	187	182
Zinc (Zn) (mg/kg)	36.7	45.7	48.7	46.1	45.5
Zirconium (Zr) (mg/kg)	2.5	1.6	2.4	2.0	1.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-26	L1826516-27	L1826516-28	L1826516-29	L1826516-30
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	04-SEP-16	04-SEP-16	05-SEP-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-40	CSS16-41	CSS16-42	CSS16-BKG-01	CSS16-BKG-07
Grouping / **Analyte**					
SOIL					
Metals					
Titanium (Ti) (mg/kg)	1060	1190	1310	247	504
Uranium (U) (mg/kg)	0.932	0.963	0.998	1.21	0.670
Vanadium (V) (mg/kg)	179	205	178	57.2	56.2
Zinc (Zn) (mg/kg)	39.4	48.9	56.2	97.1	83.1
Zirconium (Zr) (mg/kg)	1.8	2.3	6.9	<1.0	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-31 Soil/Sediment 03-SEP-16 CSS16-BKG-08	L1826516-32 Soil/Sediment 03-SEP-16 CSS16-BKG-09	L1826516-33 Soil/Sediment 03-SEP-16 CSS16-BKG-10	L1826516-34 Soil/Sediment 03-SEP-16 CSS16-BKG-11	L1826516-35 Soil/Sediment 03-SEP-16 CSS16-BKG-12
SOIL						
Metals	Titanium (Ti) (mg/kg)	674	713	899	842	759
	Uranium (U) (mg/kg)	0.804	0.564	0.594	0.453	0.521
	Vanadium (V) (mg/kg)	62.9	57.9	65.1	74.9	57.0
	Zinc (Zn) (mg/kg)	71.4	59.6	58.5	58.7	51.1
	Zirconium (Zr) (mg/kg)	5.3	<1.0	1.8	1.3	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-36 Soil/Sediment 03-SEP-16 CSS16-BKG-13	L1826516-37 Soil/Sediment 03-SEP-16 CSS16-BKG-13D	L1826516-38 Soil/Sediment 04-SEP-16 CSS16-BKG-14	L1826516-39 Soil/Sediment 04-SEP-16 CSS16-BKG-15	L1826516-40 Soil/Sediment 04-SEP-16 CSS16-BKG-16
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	721	806	218	333	397
	Uranium (U) (mg/kg)	0.379	0.418	2.41	3.30	0.497
	Vanadium (V) (mg/kg)	55.1	56.6	32.6	66.3	42.6
	Zinc (Zn) (mg/kg)	143	126	40.9	89.7	32.7
	Zirconium (Zr) (mg/kg)	1.3	1.6	1.7	2.5	<1.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-41 Soil/Sediment 04-SEP-16 CSS16-BKG-17	L1826516-42 Soil/Sediment 05-SEP-16 CSS16-BKG-23D	L1826516-43 Soil/Sediment 05-SEP-16 CSS16-BKG-24	L1826516-45 Soil/Sediment 19-AUG-16 CSS16-16	L1826516-46 Soil/Sediment 03-SEP-16 CSS16-31
SOIL						
Metals	Titanium (Ti) (mg/kg)	401	721	295	1330	951
	Uranium (U) (mg/kg)	2.03	0.464	0.294	1.09	0.772
	Vanadium (V) (mg/kg)	67.3	67.4	38.0	181	82.2
	Zinc (Zn) (mg/kg)	105	44.2	53.3	51.6	61.0
	Zirconium (Zr) (mg/kg)	<1.0	2.0	<1.0	3.3	8.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826516-47				
	Description					
	Sampled Date	05-SEP-16				
	Sampled Time					
	Client ID	CSS16-BKG-25				
Grouping	**Analyte**					
SOIL						
Metals	Titanium (Ti) (mg/kg)	363				
	Uranium (U) (mg/kg)	0.635				
	Vanadium (V) (mg/kg)	56.2				
	Zinc (Zn) (mg/kg)	59.5				
	Zirconium (Zr) (mg/kg)	<1.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Titanium (Ti)	DUP-H	L1826516-18

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

G0148

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

RUSH

Priority processing

please log all highlighted soils for:

- CSR + Full Metals
- TOC/TIC
- Avail N, P, K

"Group A" soils are due Sept 15 with 'P' codes

"Group B" soils are due Sept 21, no priority code

SK sublets should go out Monday.

Group A Tissue

SCN	Tissue ID
G0149-8	BERRY16-11
G0149-9	ANT16-02
G0149-10	BERRY16-12
G0149-11	BERRY16-13
G0149-12	SPRUCE16-02
G0150-1	BERRY16-14
G0150-2	BERRY16-15
G0150-3	ANT16-03
G0150-4	ANT16-03d
G0150-5	SPRUCE16-03
G0150-6	BERRY16-BKG-04
G0150-7	BERRY16-BKG-05
G0150-8	BERRY16-BKG-06
G0150-9	BERRY16-BKG-07
G0150-10	BERRY16-BKG-08
G0150-11	BERRY16-BKG-09
G0150-12	BERRY16-16
G0152-1	BERRY16-17
G0152-6	WILLOW16-06
G0152-7	WILLOW16-07
G0152-8	GRASS16-03
G0152-9	GRASS16-04
G0152-10	WILLOW16-08
G0152-11	GRASS16-05
G0152-12	GRASS16-06
G0156-1	GRASS16-07
G0156-2	GRASS16-08
G0156-3	WILLOW16-09
G0156-4	GRASS16-10
G0156-5	WILLOW16-10
G0156-6	GRASS16-09
G0156-7	SPRUCE16-06
G0156-8	SPRUCE16-07
G0168-3	SPRUCE16-15
G0168-4	ANT16-04
G0168-5	AR16-04
G0168-6	WILLOW16-BKG-07
G0168-7	SPRUCE16-BKG-06
G0168-8	AR16-BKG-01
G0168-9	WILLOW16-BKG-08
G0168-10	SPRUCE16-BKG-07
G0168-11	ANT16-BKG-01
G0168-12	AR16-BKG-02
G0169-1	WORM16-BKG-02
G0169-2	WILLOW16-BKG-09
G0169-3	WILLOW16-BKG-09d
G0169-4	SPRUCE16-BKG-08
G0169-5	SPRUCE16-BKG-08d
G0169-9	WILOW16-21
G0169-10	WILLOW16-22
G0169-11	WILOW16-23
G0169-12	WILLOW16-24
G0170-1	SPRUCE16-16
G0170-2	ANT16-05
G0170-3	AR16-05
G0170-4	BEETLE16-02
G0170-5	WILLOW16-BKG-10
G0170-6	SPRUCE16-BKG-09
G0170-7	ANT16-BKG-02
G0170-8	ANT16-BKG-02d
G0170-9	SPRUCE16-BKG-10
G0170-10	ANT16-BKG-03
G0170-11	ANT16-BKG-03d
G0170-12	WILLOW16-25
G171-1	SPRUCE16-17
G171-2	WORM16-05
G171-3	SPRUCE16-18
G171-4	GRASS16-BKG-09
G171-5	GRASS16-BKG-09d
G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B So

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

B 13
V 36
INV 14

= 63

47 + 23 = 70

L1826516-COFC

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COC # G0148

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	aatkinson@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only):	[redacted]	ALS Contact:	Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hold	Number of Containers
[redacted]	CSS16-01	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-04	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-01	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-07	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-08	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-09	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-10	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-11	19-Aug-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

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Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-04	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-12	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-13	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-14	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-15	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-16	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-07	19-Aug-16		Soil/Sediment	x	2
[redacted]						

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(4) JC	SEP - 9 2016	9am	3,4,10°c			

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		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	CSS16-17	02-Sep-16		Soil/Sediment	x	2
	CSS16-18	02-Sep-16		Soil/Sediment	x	2
	CSS16-19	02-Sep-16		Soil/Sediment	x	2
	CSS16-20	02-Sep-16		Soil/Sediment	x	2
	CSS16-21	02-Sep-16		Soil/Sediment	x	2
	CSS16-22	02-Sep-16		Soil/Sediment	x	2
	CSS16-23	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-08	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-09	03-Sep-16		Soil/Sediment	x	2
	CSS16-24	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-10	03-Sep-16		Soil/Sediment	x	2
	CSS16-25	03-Sep-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

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[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-11	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-26	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-27	03-Sep-16	FDA - G0162-04	Soil/Sediment	x	2
[redacted]	CSS16-27d	03-Sep-16	FD - G0162-03	Soil/Sediment	x	2
[redacted]	CSS16-BKG-12	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-13	03-Sep-16	FDA - G0162-07	Soil/Sediment	x	2
[redacted]	CSS16-BKG-13d	03-Sep-16	FD - G0162-06	Soil/Sediment	x	2
[redacted]	CSS16-28	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-29	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-30	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-31	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-32	04-Sep-16		Soil/Sediment	x	2

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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only):	[redacted]	ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-33	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-34	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-35	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-14	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-15	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-16	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-17	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-36	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-37	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-38	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-39	04-Sep-16	FDA - G0163-12	Soil/Sediment	x	2
[redacted]	CSS16-39d	04-Sep-16	FD - G0163- 11	Soil/Sediment	x	2

L1826516-COFC

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3,4,10'c			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # G0148

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-40	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-41	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-42	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-18	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-19	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20d	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-44	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-21	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-22	05-Sep-16	FDA- G0165-01	Soil/Sediment	x	2

L1826516-COFC

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3, 4, 10°c			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0148

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-22d	05-Sep-16	FD - G0164-12	Soil/Sediment	x	2
[redacted]	CSS16-45	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-46	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-23	05-Sep-16	FDA-G0165-05	Soil/Sediment	x	2
[redacted]	CSS16-BKG-23d	05-Sep-16	FD-G0165-04	Soil/Sediment	x	2
[redacted]	CSS16-BKG-24	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-25	05-Sep-16		Soil/Sediment	x	2
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

L1826516-COFC

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-SEP-16 17:02 (MT)
Version: FINAL

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826551

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0148
Legal Site Desc:

Comments: Note - The samples 'CSS16-11D' and 'CSS16-BKG-23D' were not received.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-1	L1826551-2	L1826551-3	L1826551-4	L1826551-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-07	CSS16-08	CSS16-09	CSS16-10	CSS16-11
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	8.39	7.53	7.33	8.42	7.96
Organic / Inorganic Carbon Total Organic Carbon (%)	0.152	6.33	7.88	0.25	1.13
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<2.0 DLR	<2.0 DLR	<1.0	<1.0
Available Phosphate-P (mg/kg)	2.9	3.2	3.6	2.0	4.5
Available Potassium (mg/kg)	155	168	144	141	123
Metals Aluminum (Al) (mg/kg)	16000	15600	14600	14600	13600
Antimony (Sb) (mg/kg)	0.35	0.37	0.39	0.34	0.29
Arsenic (As) (mg/kg)	11.2	10.6	9.44	10.5	9.46
Barium (Ba) (mg/kg)	153	151	139	148	139
Beryllium (Be) (mg/kg)	0.59	0.57	0.51	0.57	0.47
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	7.3	8.3	8.0	6.7	5.2
Cadmium (Cd) (mg/kg)	0.134	0.220	0.306	0.146	0.172
Calcium (Ca) (mg/kg)	23100	24700	20400	22700	17800
Chromium (Cr) (mg/kg)	11.3	11.9	17.2	10.4	13.2
Cobalt (Co) (mg/kg)	15.8	15.3	13.4	15.4	13.9
Copper (Cu) (mg/kg)	819	624	453	819	706
Iron (Fe) (mg/kg)	47400	38100	34900	46500	40600
Lead (Pb) (mg/kg)	4.43	4.60	5.89	4.59	4.38
Lithium (Li) (mg/kg)	14.3	14.3	15.0	13.9	12.4
Magnesium (Mg) (mg/kg)	9460	9460	8010	9010	8120
Manganese (Mn) (mg/kg)	577	611	544	551	555
Mercury (Hg) (mg/kg)	0.069	0.070	0.082	0.079	0.068
Molybdenum (Mo) (mg/kg)	3.28	3.12	2.82	3.57	2.89
Nickel (Ni) (mg/kg)	9.65	10.7	14.4	8.78	10.5
Phosphorus (P) (mg/kg)	1260	1210	1070	1240	1090
Potassium (K) (mg/kg)	1390	1350	1250	1250	1090
Selenium (Se) (mg/kg)	0.97	0.95	0.96	0.94	0.80
Silver (Ag) (mg/kg)	0.34	0.27	0.26	0.34	0.28
Sodium (Na) (mg/kg)	900	776	571	810	732
Strontium (Sr) (mg/kg)	160	157	134	149	126
Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti) (mg/kg)	1390	1340	1040	1110	919
Uranium (U) (mg/kg)	0.875	1.26	1.26	0.785	0.709
Vanadium (V) (mg/kg)	181	145	118	175	147

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-7 Soil/Sediment 19-AUG-16 CSS16-12	L1826551-8 Soil/Sediment 19-AUG-16 CSS16-13	L1826551-9 Soil/Sediment 02-SEP-16 CSS16-17	L1826551-10 Soil/Sediment 02-SEP-16 CSS16-18	L1826551-11 Soil/Sediment 02-SEP-16 CSS16-19
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.46	7.15	7.16	8.04	8.18
Organic / Inorganic Carbon	Total Organic Carbon (%)	7.47	6.87	0.636	0.48	0.28
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR	<2.0 DLR	<1.0	<2.0 DLR	<1.0
	Available Phosphate-P (mg/kg)	2.6	6.1	<2.0	<2.0	<2.0
	Available Potassium (mg/kg)	94	137	35	116	63
Metals	Aluminum (Al) (mg/kg)	12600	13800	13200	15500	11900
	Antimony (Sb) (mg/kg)	0.34	0.38	0.31	0.40	0.36
	Arsenic (As) (mg/kg)	7.71	8.71	10.5	12.1	10.4
	Barium (Ba) (mg/kg)	124	150	92.8	160	107
	Beryllium (Be) (mg/kg)	0.44	0.48	0.46	0.55	0.38
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	7.4	8.2	<5.0	7.9	<5.0
	Cadmium (Cd) (mg/kg)	0.209	0.240	0.110	0.178	0.160
	Calcium (Ca) (mg/kg)	19600	19200	6050	25500	17100
	Chromium (Cr) (mg/kg)	17.5	17.1	36.6	13.4	23.8
	Cobalt (Co) (mg/kg)	10.9	12.1	9.74	15.8	11.8
	Copper (Cu) (mg/kg)	379	340	60.1	765	313
	Iron (Fe) (mg/kg)	33400	33000	26600	48600	38600
	Lead (Pb) (mg/kg)	5.36	5.76	6.33	4.70	5.23
	Lithium (Li) (mg/kg)	14.7	15.0	14.3	14.4	11.2
	Magnesium (Mg) (mg/kg)	6440	7130	5550	9460	6660
	Manganese (Mn) (mg/kg)	480	651	365	654	533
	Mercury (Hg) (mg/kg)	0.075	0.082	0.089	0.078	0.061
	Molybdenum (Mo) (mg/kg)	2.63	3.00	1.11	3.87	1.88
	Nickel (Ni) (mg/kg)	14.0	13.9	22.7	10.4	17.7
	Phosphorus (P) (mg/kg)	924	1060	674	1260	992
	Potassium (K) (mg/kg)	1100	1280	800	1330	970
	Selenium (Se) (mg/kg)	0.77	0.66	<0.20	0.98	0.54
	Silver (Ag) (mg/kg)	0.23	0.25	0.13	0.30	0.20
	Sodium (Na) (mg/kg)	520	548	156	877	520
	Strontium (Sr) (mg/kg)	128	133	61.5	137	105
	Thallium (Tl) (mg/kg)	0.051	<0.050	0.072	<0.050	0.056
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	829	985	690	1470	994
	Uranium (U) (mg/kg)	1.17	0.976	1.58	1.01	0.782
	Vanadium (V) (mg/kg)	114	113	71.0	183	130

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-12 Soil/Sediment 02-SEP-16 CSS16-20	L1826551-13 Soil/Sediment 02-SEP-16 CSS16-21	L1826551-14 Soil/Sediment 02-SEP-16 CSS16-22	L1826551-15 Soil/Sediment 05-SEP-16 CSS16-43	L1826551-16 Soil/Sediment 05-SEP-16 CSS16-44
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	8.10	8.49	8.36	8.53	8.18
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.22	0.164	<0.077	0.123	0.469
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	<1.0	2.2
	Available Phosphate-P (mg/kg)	<2.0	<2.0	2.5	<2.0	<2.0
	Available Potassium (mg/kg)	68	89	126	140	54
Metals	Aluminum (Al) (mg/kg)	10900	12600	13800	15500	10600
	Antimony (Sb) (mg/kg)	0.44	0.40	0.29	0.34	0.45
	Arsenic (As) (mg/kg)	12.3	12.5	10.0	11.3	12.6
	Barium (Ba) (mg/kg)	102	119	145	153	115
	Beryllium (Be) (mg/kg)	0.37	0.48	0.50	0.57	0.41
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	5.4	5.6	6.8	<5.0
	Cadmium (Cd) (mg/kg)	0.167	0.157	0.160	0.145	0.175
	Calcium (Ca) (mg/kg)	17700	14600	20500	22700	8430
	Chromium (Cr) (mg/kg)	28.0	19.7	11.0	10.9	30.7
	Cobalt (Co) (mg/kg)	12.6	13.1	14.8	16.0	11.0
	Copper (Cu) (mg/kg)	252	454	826	848	121
	Iron (Fe) (mg/kg)	44600	37900	44100	48200	27500
	Lead (Pb) (mg/kg)	5.25	4.87	4.46	4.52	5.26
	Lithium (Li) (mg/kg)	11.2	12.6	13.2	14.0	11.3
	Magnesium (Mg) (mg/kg)	6870	7680	8720	9460	6490
	Manganese (Mn) (mg/kg)	583	578	533	572	730
	Mercury (Hg) (mg/kg)	0.089	0.083	0.070	0.073	0.079
	Molybdenum (Mo) (mg/kg)	1.88	1.99	4.14	3.79	1.48
	Nickel (Ni) (mg/kg)	20.4	14.7	8.90	8.96	26.4
	Phosphorus (P) (mg/kg)	1130	1030	1200	1250	725
	Potassium (K) (mg/kg)	860	1000	1200	1380	740
	Selenium (Se) (mg/kg)	0.69	0.55	0.85	0.97	0.31
	Silver (Ag) (mg/kg)	0.17	0.20	0.34	0.35	0.13
	Sodium (Na) (mg/kg)	501	498	870	896	393
	Strontium (Sr) (mg/kg)	101	91.7	137	156	80.4
	Thallium (Tl) (mg/kg)	0.188	<0.050	<0.050	<0.050	0.070
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	930	981	986	1300	717
	Uranium (U) (mg/kg)	0.873	0.734	0.699	0.847	0.643
	Vanadium (V) (mg/kg)	150	130	167	183	80.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-17 Soil/Sediment 05-SEP-16 CSS16-45	L1826551-18 Soil/Sediment 05-SEP-16 CSS16-46	L1826551-19 Soil/Sediment 17-AUG-16 CSS16-BKG-02	L1826551-20 Soil/Sediment 17-AUG-16 CSS16-BKG-03	L1826551-21 Soil/Sediment 17-AUG-16 CSS16-BKG-04
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.98	8.25	5.49	5.74	6.71
Organic / Inorganic Carbon	Total Organic Carbon (%)	6.23	<0.089	1.99	7.55	8.45
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR	<1.0	<1.0	<2.0 DLR	<2.0 DLR
	Available Phosphate-P (mg/kg)	2.5	<2.0	54.9	64.6	6.0
	Available Potassium (mg/kg)	144	165	95	120	142
Metals	Aluminum (Al) (mg/kg)	19300	16200	9280	6680	13500
	Antimony (Sb) (mg/kg)	0.50	0.34	0.21	0.16	0.24
	Arsenic (As) (mg/kg)	12.3	11.4	3.61	2.64	4.74
	Barium (Ba) (mg/kg)	201	163	66.9	129	49.7
	Beryllium (Be) (mg/kg)	0.64	0.57	0.19	0.15	0.27
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	7.8	7.8	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.269	0.143	0.221	0.840	0.257
	Calcium (Ca) (mg/kg)	21000	23700	2680	4670	9330
	Chromium (Cr) (mg/kg)	25.4	10.7	28.6	19.9	30.9
	Cobalt (Co) (mg/kg)	17.0	16.3	7.89	6.10	9.40
	Copper (Cu) (mg/kg)	455	849	10.5	12.1	27.3
	Iron (Fe) (mg/kg)	40400	48600	22700	14800	23900
	Lead (Pb) (mg/kg)	7.42	4.33	5.85	4.91	5.55
	Lithium (Li) (mg/kg)	19.5	14.3	11.2	6.7	16.2
	Magnesium (Mg) (mg/kg)	10200	9710	3550	2600	6460
	Manganese (Mn) (mg/kg)	817	618	391	1040	448
	Mercury (Hg) (mg/kg)	0.101	0.075	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	3.33	4.14	0.51	0.45	0.74
	Nickel (Ni) (mg/kg)	21.2	8.83	13.6	11.8	22.5
	Phosphorus (P) (mg/kg)	1150	1280	849	674	674
	Potassium (K) (mg/kg)	1620	1420	680	590	960
	Selenium (Se) (mg/kg)	1.00	1.05	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.29	0.37	0.13	0.22	<0.10
	Sodium (Na) (mg/kg)	647	941	71	63	131
	Strontium (Sr) (mg/kg)	161	157	23.5	34.5	60.8
	Thallium (Tl) (mg/kg)	0.065	<0.050	<0.050	<0.050	0.087
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	1290	1420	743	442	719
	Uranium (U) (mg/kg)	1.34	0.894	0.295	0.275	0.631
	Vanadium (V) (mg/kg)	129	183	57.4	34.8	51.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-22 Soil/Sediment 19-AUG-16 CSS16-BKG-05	L1826551-23 Soil/Sediment 19-AUG-16 CSS16-BKG-06	L1826551-24 Soil/Sediment 05-SEP-16 CSS16-BKG-18	L1826551-25 Soil/Sediment 05-SEP-16 CSS16-BKG-19	L1826551-26 Soil/Sediment 05-SEP-16 CSS16-BKG-20
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	6.23	5.23	7.01	6.75	6.46
Organic / Inorganic Carbon	Total Organic Carbon (%)	8.18	38.6	22.2	22.1	41.6
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<2.0 DLR	<4.0 DLR	<3.0 DLR	<3.0 DLR	<5.0 DLR
	Available Phosphate-P (mg/kg)	7.7	14.7 DLR	2.8	<2.0	7.5 DLR
	Available Potassium (mg/kg)	82	471 DLR	130	51	170 DLR
Metals	Aluminum (Al) (mg/kg)	10400	3690	10100	11300	3410
	Antimony (Sb) (mg/kg)	0.21	0.22	0.28	0.32	0.28
	Arsenic (As) (mg/kg)	3.47	3.24	3.46	2.86	1.54
	Barium (Ba) (mg/kg)	92.9	83.7	76.9	79.5	58.8
	Beryllium (Be) (mg/kg)	0.20	<0.10	0.27	0.46	0.14
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	6.8	5.7	9.9
	Cadmium (Cd) (mg/kg)	0.488	0.697	0.499	0.645	1.05
	Calcium (Ca) (mg/kg)	6400	17100	23800	33000	35100
	Chromium (Cr) (mg/kg)	21.2	6.07	19.7	23.8	5.66
	Cobalt (Co) (mg/kg)	8.27	3.04	7.21	5.72	2.41
	Copper (Cu) (mg/kg)	13.0	17.9	117	101	33.1
	Iron (Fe) (mg/kg)	19800	4960	17100	15900	4970
	Lead (Pb) (mg/kg)	5.59	4.30	3.86	4.38	4.05
	Lithium (Li) (mg/kg)	9.6	2.0	10.4	10.9	2.4
	Magnesium (Mg) (mg/kg)	4910	1570	4800	3690	2000
	Manganese (Mn) (mg/kg)	844	409	261	214	163
	Mercury (Hg) (mg/kg)	<0.050	0.184	0.101	0.189	0.150
	Molybdenum (Mo) (mg/kg)	0.79	1.91	0.83	0.73	0.90
	Nickel (Ni) (mg/kg)	14.7	5.95	19.2	29.6	10.7
	Phosphorus (P) (mg/kg)	346	710	1040	1220	858
	Potassium (K) (mg/kg)	560	810	800	560	490
	Selenium (Se) (mg/kg)	<0.20	0.56	2.62	3.66	1.45
	Silver (Ag) (mg/kg)	0.15	0.24	0.17	0.39	0.31
	Sodium (Na) (mg/kg)	82	<50	178	89	<50
	Strontium (Sr) (mg/kg)	51.3	136	105	184	224
	Thallium (Tl) (mg/kg)	0.055	<0.050	0.060	0.088	<0.050
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	774	154	345	177	78.3
	Uranium (U) (mg/kg)	0.299	0.346	2.87	8.10	3.12
	Vanadium (V) (mg/kg)	56.5	12.9	36.6	29.9	9.31

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-27 Soil/Sediment 05-SEP-16 CSS16-BKG-20D	L1826551-28 Soil/Sediment 05-SEP-16 CSS16-BKG-21	L1826551-29 Soil/Sediment 05-SEP-16 CSS16-BKG-22	L1826551-30 Soil/Sediment 05-SEP-16 CSS16-BKG-22D	L1826551-31 Soil/Sediment 05-SEP-16 CSS16-BKG-23
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	6.40	6.41	5.55	5.57	6.75
Organic / Inorganic Carbon	Total Organic Carbon (%)	41.8	2.27	6.10	6.12	0.898
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<5.0 DLR	<1.0	<2.0 DLR	<2.0 DLR	<1.0
	Available Phosphate-P (mg/kg)	8.3 DLR	4.2	98 DLHC	98 DLHC	14.6
	Available Potassium (mg/kg)	160 DLR	59	90	86	112
Metals	Aluminum (Al) (mg/kg)	3440	13900	10900	11800	10900
	Antimony (Sb) (mg/kg)	0.24	0.30	0.27	0.24	0.37
	Arsenic (As) (mg/kg)	1.47	7.54	6.56	7.18	6.81
	Barium (Ba) (mg/kg)	58.4	83.5	132	123	65.8
	Beryllium (Be) (mg/kg)	0.12	0.32	0.24	0.22	0.29
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	8.6	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	1.06	0.205	0.390	0.375	0.163
	Calcium (Ca) (mg/kg)	31300	5030	4600	4050	5060
	Chromium (Cr) (mg/kg)	5.71	31.7	30.3	33.4	28.4
	Cobalt (Co) (mg/kg)	2.39	9.30	7.66	8.48	9.01
	Copper (Cu) (mg/kg)	33.1	21.7	24.1	24.8	36.2
	Iron (Fe) (mg/kg)	4920	26600	24900	24600	23600
	Lead (Pb) (mg/kg)	3.58	5.09	5.65	4.81	5.00
	Lithium (Li) (mg/kg)	2.3	15.4	8.5	7.7	9.8
	Magnesium (Mg) (mg/kg)	1990	5760	4530	5620	5670
	Manganese (Mn) (mg/kg)	165	341	404	452	429
	Mercury (Hg) (mg/kg)	0.151	<0.050	<0.050	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	0.80	0.44	0.69	0.58	0.48
	Nickel (Ni) (mg/kg)	10.7	22.7	17.6	22.2	21.6
	Phosphorus (P) (mg/kg)	849	499	1060	1060	720
	Potassium (K) (mg/kg)	510	750	650	640	930
	Selenium (Se) (mg/kg)	1.48	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.26	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	<50	102	93	102	177
	Strontium (Sr) (mg/kg)	196	43.1	47.3	36.4	38.3
	Thallium (Tl) (mg/kg)	<0.050	0.075	0.059	0.051	0.073
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	83.4	849	709	750	741
	Uranium (U) (mg/kg)	2.63	0.603	0.348	0.290	0.427
	Vanadium (V) (mg/kg)	9.45	77.1	66.1	72.2	64.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-1	L1826551-2	L1826551-3	L1826551-4	L1826551-5
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16	19-AUG-16
Sampled Time					
Client ID	CSS16-07	CSS16-08	CSS16-09	CSS16-10	CSS16-11
Grouping / **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	53.3	59.3	57.6	53.0	54.1
Zirconium (Zr) (mg/kg)	6.2	5.7	2.9	5.4	3.5

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-7 Soil/Sediment 19-AUG-16 CSS16-12	L1826551-8 Soil/Sediment 19-AUG-16 CSS16-13	L1826551-9 Soil/Sediment 02-SEP-16 CSS16-17	L1826551-10 Soil/Sediment 02-SEP-16 CSS16-18	L1826551-11 Soil/Sediment 02-SEP-16 CSS16-19
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Zinc (Zn) (mg/kg)	54.4	56.5	43.2	56.4	49.6
	Zirconium (Zr) (mg/kg)	3.0	3.1	1.5	6.3	4.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-12	L1826551-13	L1826551-14	L1826551-15	L1826551-16
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	02-SEP-16	02-SEP-16	02-SEP-16	05-SEP-16	05-SEP-16
Sampled Time					
Client ID	CSS16-20	CSS16-21	CSS16-22	CSS16-43	CSS16-44
Grouping **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	50.8	56.7	55.5	53.2	46.9
Zirconium (Zr) (mg/kg)	3.8	4.2	4.8	6.1	2.4

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-17 Soil/Sediment 05-SEP-16 CSS16-45	L1826551-18 Soil/Sediment 05-SEP-16 CSS16-46	L1826551-19 Soil/Sediment 17-AUG-16 CSS16-BKG-02	L1826551-20 Soil/Sediment 17-AUG-16 CSS16-BKG-03	L1826551-21 Soil/Sediment 17-AUG-16 CSS16-BKG-04
SOIL						
Metals	Zinc (Zn) (mg/kg)	70.1	56.1	62.5	119	54.3
	Zirconium (Zr) (mg/kg)	2.8	6.4	1.2	<1.0	1.2

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-22 Soil/Sediment 19-AUG-16 CSS16-BKG-05	L1826551-23 Soil/Sediment 19-AUG-16 CSS16-BKG-06	L1826551-24 Soil/Sediment 05-SEP-16 CSS16-BKG-18	L1826551-25 Soil/Sediment 05-SEP-16 CSS16-BKG-19	L1826551-26 Soil/Sediment 05-SEP-16 CSS16-BKG-20
Sample ID **Description** **Sampled Date** **Sampled Time** **Client ID**						
SOIL						
Metals	Zinc (Zn) (mg/kg)	74.3	46.7	41.2	27.3	65.1
	Zirconium (Zr) (mg/kg)	2.0	1.1	1.7	4.7	1.6

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-27 Soil/Sediment 05-SEP-16 CSS16-BKG-20D	L1826551-28 Soil/Sediment 05-SEP-16 CSS16-BKG-21	L1826551-29 Soil/Sediment 05-SEP-16 CSS16-BKG-22	L1826551-30 Soil/Sediment 05-SEP-16 CSS16-BKG-22D	L1826551-31 Soil/Sediment 05-SEP-16 CSS16-BKG-23
Sample ID / **Description** / **Sampled Date** / **Sampled Time** / **Client ID**						
SOIL						
Metals	Zinc (Zn) (mg/kg)	63.7	64.5	67.2	66.6	43.8
	Zirconium (Zr) (mg/kg)	1.4	1.1	1.3	1.2	1.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Lithium (Li)	DUP-H,J	L1826551-21, -22, -23, -24, -25, -26, -27, -28, -29, -30, -31

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0148

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

RUSH

Priority processing

Please log all highlighted soils for:

- CSR + Full Metals
- TOC/TIC
- Avail N, P, K

"Group A" soils are due Sept 16 with 'P' codes

"Group B" soils are due Sept 21, no priority code.

SK sublets should go out Monday.

Group A Tissue

SCN	Tissue ID
G0149-8	BERRY16-11
G0149-9	ANT16-02
G0149-10	BERRY16-12
G0149-11	BERRY16-13
G0149-12	SPRUCE16-02
G0150-1	BERRY16-14
G0150-2	BERRY16-15
G0150-3	ANT16-03
G0150-4	ANT16-03d
G0150-5	SPRUCE16-03
G0150-6	BERRY16-BKG-04
G0150-7	BERRY16-BKG-05
G0150-8	BERRY16-BKG-06
G0150-9	BERRY16-BKG-07
G0150-10	BERRY16-BKG-08
G0150-11	BERRY16-BKG-09
G0150-12	BERRY16-16
G0152-1	BERRY16-17
G0152-6	WILLOW16-06
G0152-7	WILLOW16-07
G0152-8	GRASS16-03
G0152-9	GRASS16-04
G0152-10	WILLOW16-08
G0152-11	GRASS16-05
G0152-12	GRASS16-06
G0156-1	GRASS16-07
G0156-2	GRASS16-08
G0156-3	WILLOW16-09
G0156-4	GRASS16-10
G0156-5	WILLOW16-10
G0156-6	GRASS16-09
G0156-7	SPRUCE16-06
G0156-8	SPRUCE16-07
G0168-3	SPRUCE16-15
G0168-4	ANT16-04
G0168-5	AR16-05
G0168-6	WILLOW16-BKG-07
G0168-7	SPRUCE16-BKG-06
G0168-8	AR16-BKG-01
G0168-9	WILLOW16-BKG-08
G0168-10	SPRUCE16-BKG-07
G0168-11	ANT16-BKG-01
G0168-12	AR16-BKG-02
G0169-1	WORM16-BKG-02
G0169-2	WILLOW16-BKG-09
G0169-3	WILLOW16-BKG-09d
G0169-4	SPRUCE16-BKG-08
G0169-5	SPRUCE16-BKG-08d
G0169-9	WILOW16-21
G0169-10	WILLOW16-22
G0169-11	WILOW16-23
G0169-12	WILLOW16-24
G0170-1	SPRUCE16-16
G0170-2	ANT16-05
G0170-3	AR16-05
G0170-4	BEETLE16-02
G0170-5	WILLOW16-BKG-10
G0170-6	SPRUCE16-BKG-09
G0170-7	ANT16-BKG-02
G0170-8	ANT16-BKG-02d
G0170-9	SPRUCE16-BKG-10
G0170-10	ANT16-BKG-03
G0170-11	ANT16-BKG-03d
G0170-12	WILLOW16-25
G171-1	SPRUCE16-17
G171-2	WORM16-05
G171-3	SPRUCE16-18
G171-4	GRASS16-BKG-09
G171-5	GRASS16-BKG-09d
G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B So

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

B 13
V 36 } 63
INV 14

49 + 14 = 70

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Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: aatkinson@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hold	Number of Containers
[redacted]	CSS16-01	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-04	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-01	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-07	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-08	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-09	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-10	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-11	19-Aug-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3, 4, 10°C			

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		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD											Number of Containers
[redacted]	CSS16-BKG-02	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-03	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-04	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-05	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-06	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-12	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-13	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-14	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-15	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-16	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-07	19-Aug-16		Soil/Sediment	x											2
[redacted]																

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(4) JC	SEP - 9 2016	9am	3,4,10°C			

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Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-17	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-18	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-19	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-20	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-21	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-22	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-23	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-08	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-09	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-24	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-10	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-25	03-Sep-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

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Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-11	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-26	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-27	03-Sep-16	FDA - G0162-04	Soil/Sediment	x	2
[redacted]	CSS16-27d	03-Sep-16	FD - G0162-03	Soil/Sediment	x	2
[redacted]	CSS16-BKG-12	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-13	03-Sep-16	FDA - G0162-07	Soil/Sediment	x	2
[redacted]	CSS16-BKG-13d	03-Sep-16	FD - G0162-06	Soil/Sediment	x	2
[redacted]	CSS16-28	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-29	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-30	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-31	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-32	04-Sep-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

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Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

[redacted] Sample # [redacted]	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-33	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-34	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-35	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-14	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-15	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-16	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-17	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-36	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-37	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-38	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-39	04-Sep-16	FDA - G0163-12	Soil/Sediment	x	2
[redacted]	CSS16-39d	04-Sep-16	FD - G0163- 11	Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3,4,10'c			

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[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-40	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-41	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-42	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-18	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-19	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20d	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-44	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-21	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-22	05-Sep-16	FDA- G0165-01	Soil/Sediment	x	2

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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	**ALS Contact:** Can Dang	**Sampler:** EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-22d	05-Sep-16	FD - G0164-12	Soil/Sediment	x	2
[redacted]	CSS16-45	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-46	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-23	05-Sep-16	FDA-G0165-05	Soil/Sediment	x	2
[redacted]	CSS16-BKG-23d	05-Sep-16	FD-G0165-04	Soil/Sediment	x	2
[redacted]	CSS16-BKG-24	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-25	05-Sep-16		Soil/Sediment	x	2
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

APPENDIX E-1.2

Addendum to Tissue Data Report for Plants Collected Along Hazeltine Channel

11 May 2017
Reference No. 1662612-086-R-Rev0-22392

Golder Associates

TECHNICAL MEMORANDUM

DATE 19 May 2017 **REFERENCE No.** 1662612-152-TM-Rev0-22343

TO 'Lyn Anglin, Ph.D., P.Geo.
Imperial Metals Corporation

CC Don Parsons (MPMC)

FROM Arainn Atkinson and Lee Nikl **EMAIL** Arainn_Atkinson@golder.com; Lee_Nikl@golder.com

ALUMINUM CONCENTRATIONS IN PLANTS COLLECTED ALONG HAZELTINE CHANNEL CORRIDOR – MOUNT POLLEY MINE

Golder Associates Ltd. (Golder) is pleased to provide Mount Polley Mining Corporation (MPMC) with the following addendum to the 2016 Plant Tissue Data Report (Golder 2017) that summarized the tissue chemistry results of plant samples collected from the Hazeltine Channel floodplain and halo (herein referred to as the "Hazeltine corridor") in 2015 and 2016. This addendum is intended to provide presentation of aluminum concentrations in plant tissue and some context for the tissue concentrations measured. Aluminum concentrations in tailings were less than in some of the natural soils collected from background areas; however, an evaluation of aluminum in plants was requested by project reviewers.

This addendum should be read in conjunction with the 2016 Plant Tissue Data Report (Golder 2017). Details of sampling methods are not provided in this addendum.

1.0 BACKGROUND

Samples of plants considered edible for human and/or ecological receptors (berries, spruce, willow, and rye/barley grass) were collected in summer 2015 and summer 2016 from the terrestrial area (i.e., Hazeltine corridor) impacted by the flood of debris resulting from the 2014 Tailings Storage Facility (TSF) embankment foundational failure (herein referred to as the 'TSF embankment breach') to evaluate whether concentrations of contaminants of concern in plant tissue have changed as a result of tailings deposition. Two areas within the Hazeltine corridor have been identified. The 'floodplain' area is where the forest and portions of native soils were removed by the flood of debris from the TSF embankment breach. The area along the Hazeltine corridor where tailings were deposited on top of the native organic soil is referred to as the 'halo' area (Figures A-1 through A-14 in Attachment A of Golder 2017). There were no signs of toxicity in plant samples collected from either the floodplain, halo, or background areas (Golder 2017). This memorandum refers to 'tailings deposited' along the Hazeltine corridor; however, in reality, the deposited material is a heterogeneous mixture of tailings, scoured native till, and TSF embankment construction materials.

Aluminum is the most abundant metal in the Earth's crust (Delhaize and Ryan 1995). Despite its prevalence in the environment, aluminium has no known biological function (Poschenrieder et al. 2008). Aluminium is considered to be well tolerated by plants and animals and to have extremely low acute toxicity. Aluminum bioavailability and toxicity is largely restricted to acidic soil conditions (Delhaize and Ryan 1995, Poschenrieder et al. 2008). High aluminum resistance is also a trait of many forest tree species that are well adapted to the acidification processes in their habitats (Poschenrieder et al. 2008).

2.0 SAMPLE COLLECTION

Detailed sample collection methods are provided in the 2016 Plant Tissue Data Report (Golder 2017). The locations of tissue and co-located soil samples can be found in Figures A-1 through A-14 in Attachment A of the 2016 Plant Tissue Data Report (Golder 2017).

3.0 ANALYSES

Consistent with the data analysis in the 2016 Plant Tissue Data Report (Golder 2017), tissue data were separated for analysis based on tissue type by plant functional group (i.e., berries from berry-producing shrubs, leaves from other shrubs, conifers, grasses) and sample area (i.e., background, halo, floodplain). Table 1 provides a summary of the samples available for each parameter.

Table 1: Number of Each Type of Plant Tissue Sample Collected along Hazeltine Channel Corridor

Tissue	Halo	Floodplain	Background
Berry	32	-	16
Shrub	7	39	21
Conifer	26	-	15
Grass	2	30	11

A baseline study of plant tissue sampling at the Mount Polley Mine (the "Mine") property was conducted by Hallam Knight Piésold to document pre-Mine concentrations of metals in plants on or near the Mine site; however, aluminum was not measured in the historic plant samples. Thus, comparison to baseline was not conducted for aluminum.

Summary statistics (minimum, maximum, mean, median, number of samples, and number of detected samples) were reported for each plant tissue type separated by area. Mean and median values were calculated using the full detection limit for samples with non-detects. Using the full detection limit is conservative because in reality the true concentration is less than the detection limit. Statistical testing of the aluminum plant tissue data was not conducted for this memorandum.

Individual plant samples collected from the floodplain and halo areas were plotted for comparison to background samples. Boxplots were created for each plant tissue type to compare concentrations across areas (i.e., halo, floodplain, background). Boxplots indicate median, 5th percentile, 25th percentile, 75th percentile, and 95th percentile values, and outliers.

Metal concentrations in plant tissue were also compared to the co-located soil samples to determine tissue:soil ratios (i.e., bioaccumulation factors [BAFs]). Individual plant tissue concentrations were plotted against co-located soil concentrations to visualize the relationship. BAFs were plotted against soil concentrations to examine if there was a soil concentration-dependence of metal accumulation in plants.

4.0 RESULTS

Raw plant tissue and soil chemistry data are provided in Attachment C of the 2016 Plant Tissue Data Report (Golder 2017) and are plotted in Figure 1. Summary statistics of aluminum concentrations in the various plant tissue types from the halo, floodplain, and background are presented in Table 2. Boxplots for the various plant tissue types are presented below in Figure 2.

In co-located soil from the halo and floodplain, aluminum concentrations ranged from 3,720 to 26,000 milligrams per kilogram dry weight (mg/kg dw), and in background soil, aluminum concentrations ranged from 3,410 to 44,300 mg/kg dw (Table C-2 in Attachment C of Golder 2017). Aluminum concentrations in plant tissue samples collected from the halo and floodplain ranged from 3.2 to 1,650 mg/kg dw with a median concentration of 51 mg/kg dw (Table 2; Figure 1). Aluminum concentrations in background plant tissue samples ranged from 3.6 to 193 mg/kg dw with a median concentration of 21 mg/kg dw (Table 2; Figure 1).

Plant tissue aluminum concentrations varied within a narrow range of soil concentrations. Plant samples from the halo appeared to have similar aluminum concentrations as plant samples from the background forest. However, even though soil concentrations in the floodplain were similar to background, plant samples from the floodplain area tended to have higher aluminum concentrations than background (Figure 1). The soil samples from the floodplain were composed of tailings and till, had negligible soil development, and were largely absent of organic matter, unlike the halo and background areas. The variation in aluminum in plant tissues may reflect the wider range of chemical, physical, and biological conditions in the substrates among areas rather than aluminum in the soil alone.

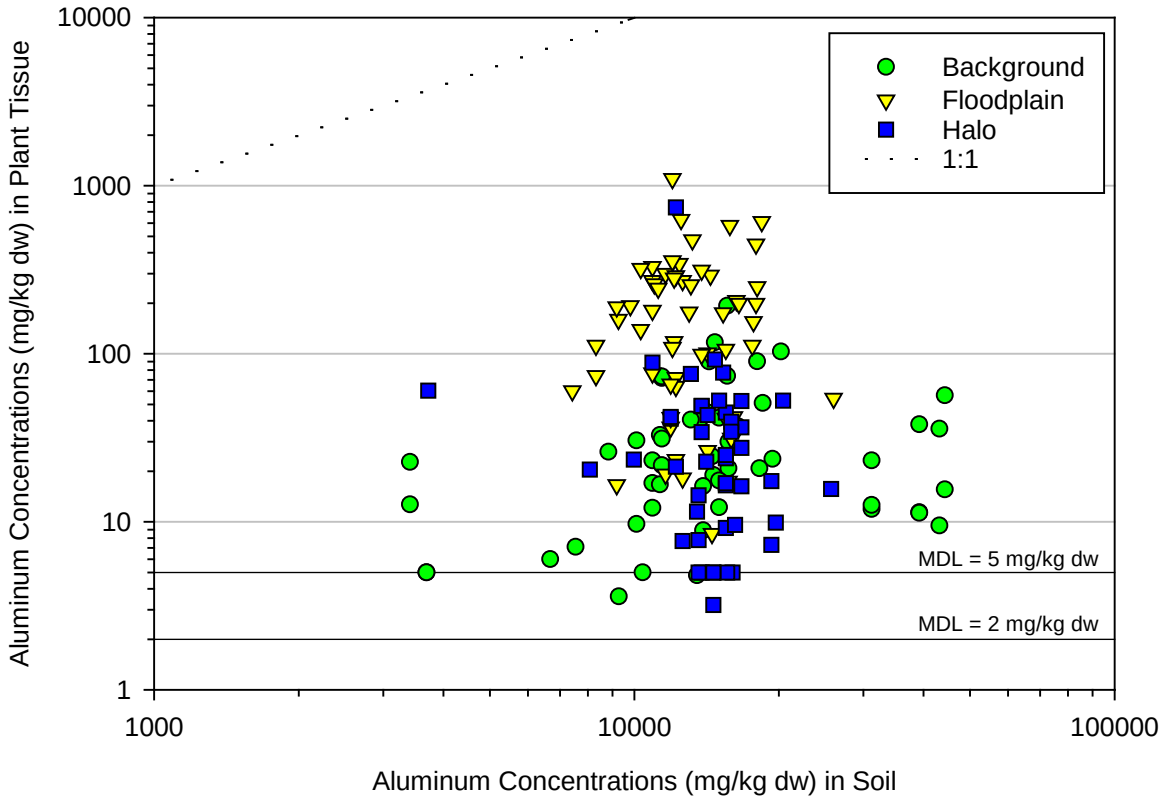


Figure 1: Aluminum Concentrations in Plant Tissue versus Soil

Note: MDL = method detection limit. The standard MDL for aluminum analysis is 2 mg/kg dw. The MDL was raised for some samples from 2 to 5 mg/kg dw. For some of those samples a concentration greater than 5 was not detected so the result was reported as <5 mg/kg dw. The solid lines indicate the MDLs of <2 and <5 mg/kg dw.

Grass and shrub samples were primarily collected from the floodplain, and berry and conifer samples were primarily collected from the halo. Comparison of median aluminum concentrations between specific plant types from the halo or floodplain versus background (Table 2; Figure 2) indicated:

- Berries and conifers generally had higher aluminum concentrations in samples from the halo than from the background forest.
- Leaves from shrubs in the halo generally had lower aluminum concentrations than leaves from the background forest, whereas leaves from shrubs in the floodplain generally had higher aluminum concentrations than leaves from the background forest.
- Grass generally had higher aluminum concentrations in samples from the halo and floodplain than from the background forest.

Table 2: Summary Statistics of Aluminum Concentrations in Plant Tissue

Tissue		Halo	Floodplain	Background
Berries	N	32	-	16
	N detect	24	-	13
	Min	5.0	-	3.6
	Max	744	-	33
	Mean	41	-	9.7
	Median	13	-	6.0
Shrubs	N	7	39	21
	N detect	7	39	21
	Min	17	42	16
	Max	72	962	117
	Mean	34	287	49
	Median	25	260	38
Conifers	N	26	-	15
	N detect	26	-	15
	Min	3.2	-	8.9
	Max	93	-	73
	Mean	38	-	20
	Median	34	-	17
Grasses	N	2	30	11
	N detect	2	30	11
	Min	49	8.5	7.1
	Max	89	1,650	193
	Mean	69	208	45
	Median	69	68	25

Notes: Plant tissue concentrations are in milligrams per kilogram dry weight (mg/kg dw). N = number of samples; N detect = number of samples with detected concentrations of aluminum; Min = minimum; Max = maximum.

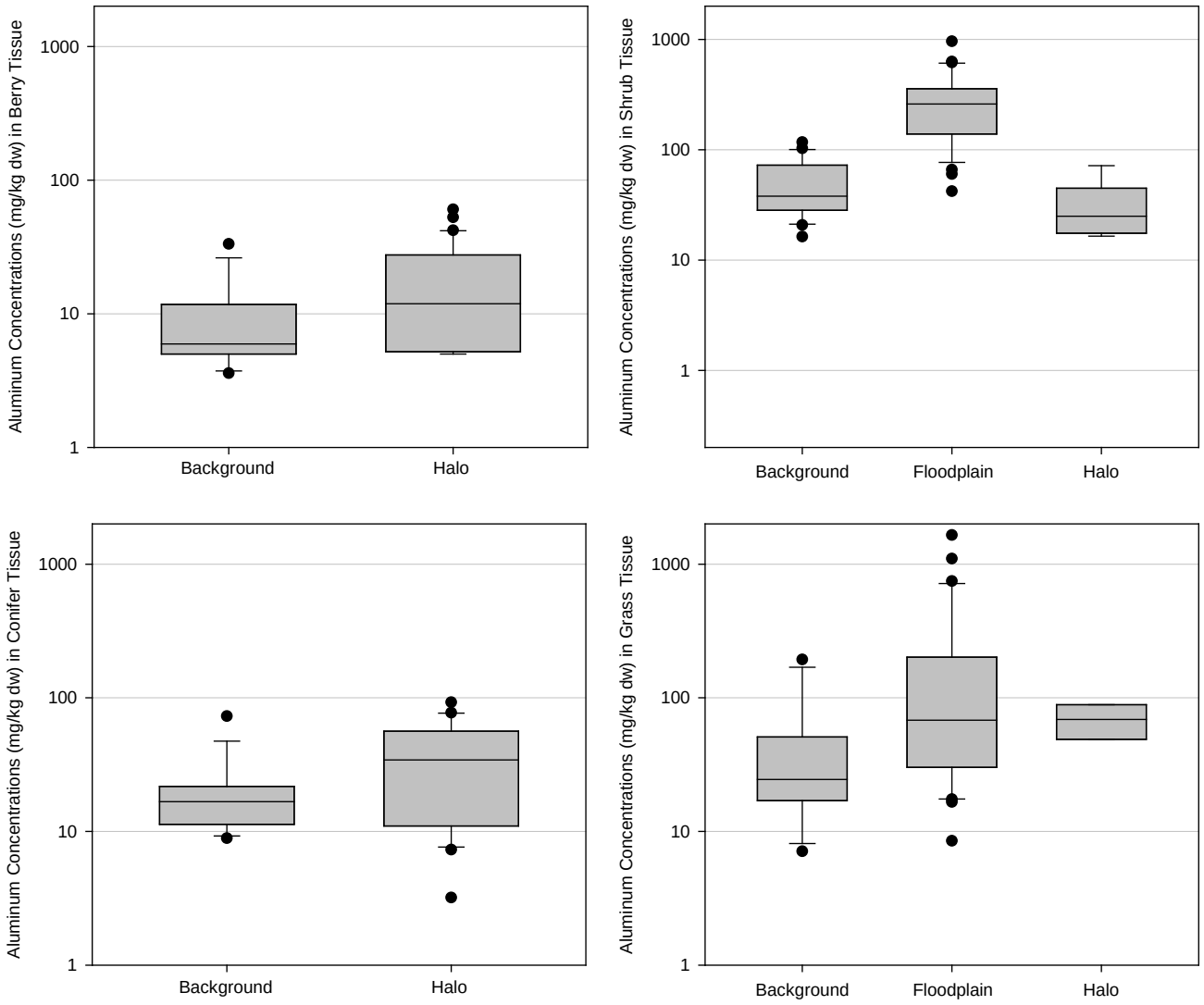


Figure 2: Aluminum Concentrations in Berry, Shrub, Conifer, and Grass Tissue Samples from the Halo or Floodplain Compared to Background

Notes: The number of samples of each plant type are provided in Table 2.

Aluminum BAFs for all plant samples were below 1.0 (Figure 3). Background data may indicate a slight linear decrease in the BAF with increasing soil aluminum concentrations, and do indicate that under background conditions aluminum is regulated by the plants. However, the observed variability in the aluminum concentration in plant tissue suggests that factors in addition to aluminum concentration in soil have a role in aluminum concentrations in plants.

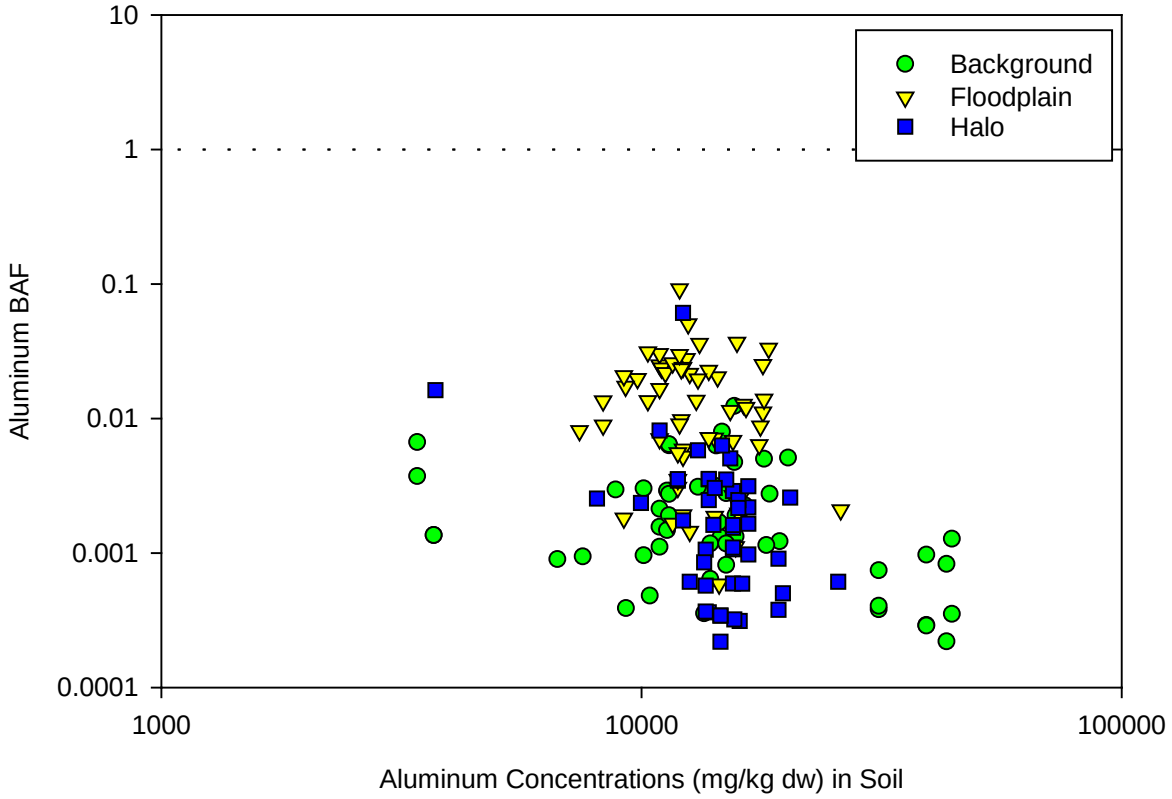


Figure 3: Aluminum Bioaccumulation Factors versus Soil Concentrations in Plants from the Halo, Floodplain, and Background Areas

5.0 SUMMARY OF FINDINGS

None of the samples had symptoms of toxicity and BAF values were lower than 1.0. There were some differences in aluminum concentrations among floodplain, halo, and background plant samples. In general, plant tissue concentrations of aluminum were highest in the floodplain, and were higher in the halo than the background forest. However, the range of aluminum concentrations in plants from the halo and background area overlapped. The generally greater concentrations observed in floodplain than halo plants may be attributed to soil conditions in the floodplain. The soil samples from the floodplain were composed of tailings and till, had negligible soil development, and were largely absent of organic matter, unlike the halo and background areas.

Uncertainty with the data analysis is mostly due to other factors that can affect metal uptake within plants, such as plant growth, species diversity, plant age, growth stage (e.g., planted vs established), season, microsite variability, rooting depth, and soil type. Soil conditions vary with respect to concentrations of nutrients, organic carbon, soil structure, and the soil food web community, including the soil microbial community. The variation in aluminum concentrations in tissues may reflect the wider range of chemical, physical, and biological conditions in the soil among areas rather than aluminum concentration in the soil alone.

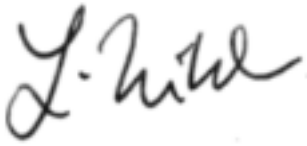
6.0 CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this memorandum.

We trust the above meets your present requirements. If you have any questions or requirements, please contact the undersigned.

GOLDER ASSOCIATES LTD.

Reviewed by:



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Attachment: Study Limitations

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Poschenrieder C, Gunsé B, Corrales I, Barceló J. 2008. A glance into aluminum toxicity and resistance in plants. Science of the Total Environment. 400:356-368.

STUDY LIMITATIONS

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APPENDIX E-2

Tissue Data Report for Soil Invertebrates Collected Along Hazeltine Channel

11 May 2017
Reference No. 1662612-086-R-Rev0-22392

TECHNICAL MEMORANDUM

DATE 12 April 2017 **REFERENCE No.** 1662612-046-TM-Rev1-22300

TO 'Lyn Anglin and Colleen Hughes (MPMC)
Imperial Metals Corporation

CC Don Parsons and Art Frye (MPMC)

FROM Arainn Atkinson and Trish Miller **EMAIL** Arainn_Atkinson@golder.com; Trish_Miller@golder.com

2016 TISSUE DATA REPORT FOR SOIL INVERTEBRATES COLLECTED ALONG HAZELTINE CHANNEL – MOUNT POLLEY MINE

Golder Associates Ltd. (Golder) is pleased to provide Mount Polley Mining Corporation (MPMC) with this technical memorandum that summarizes the tissue chemistry results of soil invertebrate samples collected from the Hazeltine Channel in 2015 and 2016. This memorandum updates the findings of the *Terrestrial Invertebrate Data Report* (dated 25 May 2016) included as Appendix J of the Post-event Environmental Impact Assessment Report (PEEIAR), update report dated 3 June 2016 (Golder 2016). This memorandum is intended as a data report and presents the data collected in 2015 and 2016. The upcoming ecological risk assessment will evaluate potential risks associated with metal concentrations in soil invertebrate tissue.

1.0 BACKGROUND

Samples of soil invertebrates (ants, beetles, worms, and slugs) were collected in summer 2015 from the terrestrial area impacted by the tailings storage facility (TSF) embankment breach (i.e., Hazeltine Channel), to evaluate whether concentrations of copper, selenium, and vanadium in soil invertebrate tissue have increased as a result of tailings deposition along Hazeltine Channel. Copper and vanadium were previously identified (MPMC 2015 Appendix D) to be of concern because concentrations in tailings exceeded the BC Contaminated Sites Regulation (CSR) soil standard for copper that is protective of toxicity to soil invertebrates and plants and the generic parkland soil standard for vanadium (BC MoE 2014). Selenium was included in the analysis on request from project reviewers although tailings concentrations were below the CSR standard and are similar to or below concentrations in native glacial sediments from Hazeltine Creek collected prior to the Tailings Storage Facility embankment breach (MPMC 2015 Appendix C). The area along Hazeltine Channel where tailings had deposited on top of the native soil is referred to as the ‘halo’ area. The ‘floodplain’ area is where the forest and portions of native soils were removed by the flood of debris from the TSF embankment breach.

The preliminary survey of soil invertebrate tissue conducted in 2015 indicated that concentrations of copper, selenium, and vanadium in soil invertebrates from the halo and floodplain were similar to local background concentrations, based on visual comparison of results as data were insufficient for statistical comparison. Additional sampling of invertebrates along Hazeltine Channel was recommended to increase the data set and reduce uncertainty in the 2015 findings.

2.0 METHODS

2.1 Sample Collection

Consistent with the methods used in 2015, samples of terrestrial invertebrates (ants, beetles, spiders, and worms) were collected between 19 August and 5 September 2016 by Golder field staff from the Hazeltine Channel and background areas. Background locations were at least 20 metres outside of the area of visual impact of the tailings material. Sample locations are shown on Figures 1-1 to 1-7. Invertebrate samples were collected by hand and transferred to clean, laboratory supplied glass jars as per the *BC Field Sampling Manual* (BC MoE 2013). Invertebrates of the same type from a given location were composited with the exception of worms, which were sampled separately. Additional effort to remove particulate matter from samples was included in the 2016 sampling program. Ant, beetle and spider samples were rinsed with distilled water twice. After each rinsing individual invertebrates were blotted dry with kimwipes. Worm samples were left in ambient temperature overnight to allow depuration. Worm samples were rinsed and blotted dry with kimwipes before being transferred to a clean jar. Samples were frozen and kept on ice until submitted to the laboratory.

Co-located soil samples were collected at the same time and location as each invertebrate sample. Surface soil within the top 0.2 m was collected using a hand shovel. From background areas, the humus layer was removed and not included in the sample. Soil was homogenized in a stainless steel bowl prior to transfer to clean, laboratory supplied glass jars with Teflon™ lined lids.

Tissue samples were submitted to ALS Environmental (Burnaby, BC; ALS) for analysis of metals and moisture content. Soil samples were submitted to ALS for analysis of metals, nutrients, Total Organic Carbon (TOC), and pH. For quality assurance and quality control (QA/QC), field duplicate samples were collected from at least 10% of locations.

2.2 Data Analyses

Copper, selenium, and vanadium concentrations in soil invertebrates collected from the floodplain and halo areas in 2016 were compared to samples from those areas in 2015 and from background areas in both years. Table 1 provides a summary of the samples available for each dataset.

Table 1: Number of Each Type of Tissue Sample along Hazeltine Channel (2015 and 2016)

Tissue	Floodplain		Halo		Background	
Year Collected	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**
Worms & Slug	0	3	3	2	2	2
Spiders	0	1	0	3	0	2
Beetles & Ants	0	3	8	4	0	3

Summary statistics, including number of samples, minimum, maximum, and mean concentrations were calculated for each tissue type separated by area. Where concentrations were reported below the detection limit, values were set to the detection limit to calculate summary statistics. Within the copper, selenium, and vanadium datasets for soil invertebrates and soil, five values were reported below the detection limit. Further statistical analysis was not conducted because the data sets are not of sufficient size to perform meaningful non-parametric tests.

For visual comparison, individual soil invertebrate samples were plotted by invertebrate type and sampled area. Plots included the minimum and maximum of background tissue samples (all types combined due to limited number of data points). Individual soil invertebrate tissue concentrations were also plotted against co-located soil concentrations (normalized to bulk density) to visualize the uptake relationship. The soil invertebrate and soil chemistry data were normalized to bulk density so that the ratio of metal concentration in invertebrate to that in soil could be calculated (i.e., bioaccumulation factor [BAF]). For soil invertebrates, a worm bulk density of 1 gram per centimetre (g/cm^3) was used (Armitage 2004, Hughes et al. 2005). The bulk density of mineral soil is between 1 to 2 g/cm^3, with the value dependent on organic carbon content of the soil. For soils with very low organic carbon content, like the tailings, 1.5 g/cm^3 was selected as a reasonable estimate based on the equations given in Hossain et al. (2015) and Alexander (1989).

2.3 Quality Assurance / Quality Control

2.3.1 Field Quality Assurance / Quality Control

Soil invertebrate samples were hand collected by field staff wearing nitrile gloves. Re-usable equipment (e.g., bowls and trowels) was decontaminated between samples. Care was taken to minimize the introduction of foreign material into the samples or loss of material of interest from the samples prior to analysis. As per the *BC Field Sampling Manual* (BC MoE 2013), field notes were maintained to document the field sampling program. Each sample was labelled with a unique identifier and the date sampled. Chain-of-custody forms were updated as samples were collected, and were checked to verify the information recorded before samples were submitted.

Three duplicate soil invertebrate samples and seven duplicate soil samples were collected. Soil invertebrate duplicate samples were separate composites of ants from the same areas. Because the duplicate samples consisted of separate living and mobile organisms, they should not be used to determine sampler variability or laboratory variability; instead, the duplicate samples provide a measure of the environmental variability. Duplicate samples of soil were collected from the same sample location, but were homogenized separately in a metal bowl before being placed in sample containers. Soil duplicates were collected to provide an indication of sample variation and the reproducibility of the laboratory test methods.

The relative percent difference (RPD) was used to evaluate variability between duplicate samples. An RPD value of >50% was used to identify notable differences between original and duplicate tissue samples, when values were greater than or equal to five times the method detection limit (MDL). An RPD value of >35% was used for soil samples. The RPD value used for tissue is relatively high because a higher degree of natural variability is expected for this biological matrix. For values less than five times the MDL, a difference factor (DF) was calculated. In general, samples should have a difference factor of less than 2.0.

2.3.2 Laboratory Quality Assurance / Quality Control

ALS Laboratory (ALS) is an accredited laboratory (locally, Canadian Association for Laboratory Accreditation Inc. and Standard Council of Canada) and methods are based on International Organization for Standards / International Electrotechnical Commission (ISO/IEC) 17025:2005. ALS analytical methods are based on well established, internationally-recognized procedures such as those published by the United States Environmental Protection Agency and the American Public Health Association, as well as local country standards. All approved methods included quality control and performance criteria that must be achieved prior to releasing the data.

Laboratory quality control for chemistry samples included analysis of method blanks, laboratory duplicates, spiked samples, and control samples using certified reference materials to assess precision and accuracy of chemical analyses. Laboratory data quality control reports were reviewed upon receipt to confirm that the laboratory data quality objectives (DQOs) had been met and that the appropriate quality control information had been reported.

3.0 RESULTS

3.1 Copper

Analytical results are provided in Attachment A. Summary statistics of soil invertebrate copper concentrations are provided in Table 2. Copper concentrations in individual soil invertebrate samples are plotted in Figure 2. Soil invertebrate copper concentrations are plotted relative to soil copper concentrations in Figure 3. The following observations were made:

- Copper concentrations of the three invertebrate groups overlapped, but were generally highest in spiders, followed by worms/slug and beetles/ants (Figure 2; Table 2). The range of concentrations in samples from the halo overlapped with samples from the floodplain.
- In 2016, copper concentrations in beetles/ants and worms/slug collected from the floodplain and halo areas were generally higher relative to copper concentrations in the background area. In spiders, the highest copper concentration observed in 2016 was collected from the background area; concentrations in floodplain and halo area samples were within the range of samples from background areas (Figure 2; Table 2).
- In beetles/ants and worms/slug collected from the halo area, copper concentrations were lower in 2016 relative to 2015, except for one worm sample collected in 2015 that had the lowest copper concentration (Figure 2).
- Overall, copper concentrations measured in soil invertebrates from the floodplain and halo were within the range of copper concentrations measured in soil invertebrates from the background area (Figure 2; Table 2).
- Copper concentrations (normalized to bulk density) in co-located soil samples from the floodplain and halo exceeded the BC CSR soil standard for copper that is protective of toxicity to soil invertebrates and plants (150 mg/kg; Figure 2).
- When normalized to bulk density, ratios of soil invertebrate to soil concentration were less than one, except for one pair collected from the background area in 2016 (Figure 3). The general trend (i.e., ratio less than one) indicates that there is not a linear relationship between soil and soil invertebrate concentrations of copper, and indicates regulation of copper is occurring. Copper is known to be physiologically regulated as an essential micronutrient (Wood et al. 2011), and is stored in metal binding proteins for use at times of low concentration in the environment. Copper is continuously excreted and stimulated excretion occurs when environmental concentrations are high (Wood et al. 2011).

Table 2: Summary Statistics of Tissue Copper Concentrations (mg/kg) from 2015 and 2016

Tissue		Floodplain	Halo	Background
Worms & Slug	N	3	5	4
	Min	25	6.8	8
	Max	99	237	91
	Mean	54	126	31
Beetles & Ants	N	3	12	3
	Min	16	14	8.0
	Max	53	62	11
	Mean	37	34	9.1
Spiders	N	1	3	2
	Min	-	71	83
	Max	307	180	508
	Mean	-	135	296

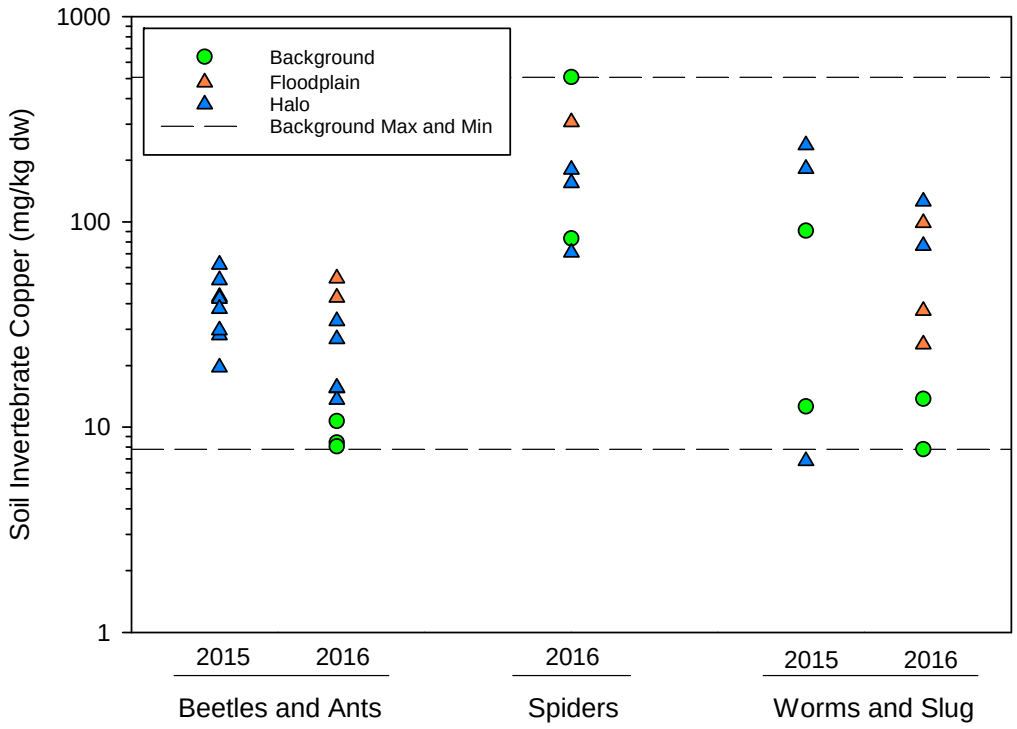

Figure 1: Copper Concentrations in Soil Invertebrates Collected in 2015 and 2016. The copper concentrations appeared to be higher for some invertebrates but the range of concentrations found for floodplain and halo soil invertebrate samples fell within the range of concentrations measured in background.

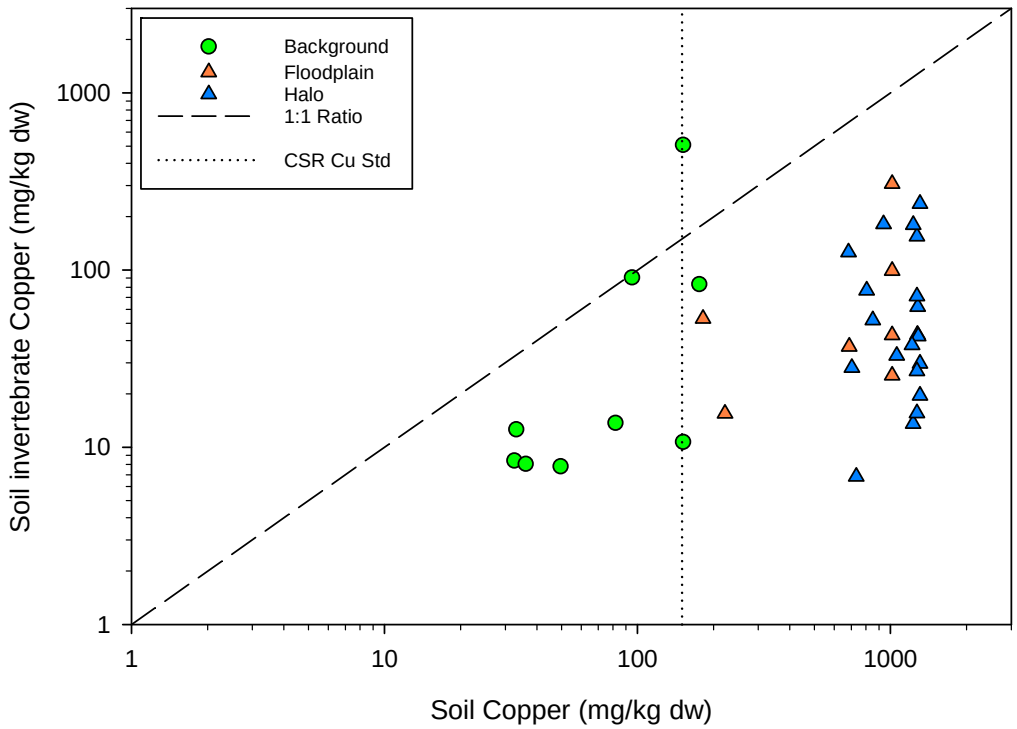

Figure 2: Copper Concentrations in Soil Invertebrates Versus Soil Collected in 2015 and 2016. The general trend (i.e., ratio less than one) indicates there is not a linear relationship between soil and soil invertebrate concentrations of copper, and indicates regulation of copper is occurring. Applicable CSR Schedule 5 Standard for copper is 150 mg/kg for the protection of soil invertebrates and plants.

3.2 Selenium

Analytical results are provided in Attachment A. Summary statistics of soil invertebrate selenium concentrations are provided in Table 3. Selenium concentrations in individual soil invertebrate samples are plotted in Figure 4. Soil invertebrate selenium concentrations and BAFs are plotted relative to soil selenium concentrations in Figure 5. The following observations were made:

- Selenium concentrations of the three invertebrate groups overlapped, but were generally highest in worms/slug, followed by spiders and beetles/ants (Figure 4; Table 3). The range of concentrations in samples from the halo overlapped with samples from the floodplain.
- Selenium concentrations in beetles/ants and worms/slug collected from the floodplain and halo areas were generally higher relative to copper concentrations in the background area. In spiders, selenium concentrations in floodplain and halo area samples were within the range of samples from background areas (Figure 4; Table 3).
- With two exceptions, selenium concentrations measured in soil invertebrates from the floodplain and halo were within or less than the range of selenium concentrations measured in soil invertebrates from the background area (Figure 4; Table 3).

- Selenium concentrations (normalized to bulk density) in most co-located soil samples from the floodplain and halo were less than the BC CSR generic agriculture soil standard for selenium (2 mg/kg; Figure 4). When normalized to bulk density, ratios of soil invertebrate to soil concentration were greater than one in approximately half of pairs, including five of nine pairs from the background area (Figure 5). In general, the ratios of soil to soil invertebrate selenium for samples from the floodplain and halo fell within the range of ratios for background samples. The range of selenium concentrations in soil was relatively small in comparison to the corresponding range of selenium concentrations in soil invertebrates. In addition, the range of selenium concentrations in soil from the floodplain and halo was relatively narrow and fell within the more broad range of selenium concentrations measured in soil from background areas. Selenium is known to be physiologically regulated as an essential micronutrient (Wood et al. 2011) and at low environmental concentrations uptake tends to be relatively large compared to uptake at higher environmental concentrations (e.g., de Bruyn et al. 2013; Presser and Luoma 2010). The ratio-based approach has limitations to predicting accumulation because uptake and transfer of selenium may not be linear.

Table 3: Summary Statistics of Tissue Selenium Concentrations (mg/kg) from 2015 and 2016

Tissue		Floodplain	Halo	Background
Worms & Slug	N	3	5	4
	Min	1.8	4.4	0.72
	Max	8.0	19	4.0
	Mean	4.3	7.9	1.9
Beetles & Ants	N	3	12	3
	Min	<0.1	0.17	0.29
	Max	2.7	1.9	0.49
	Mean	1.1	0.63	0.42
Spiders	N	1	3	2
	Min	-	2.0	1.3
	Max	2.3	2.8	6.5
	Mean	-	2.5	3.9

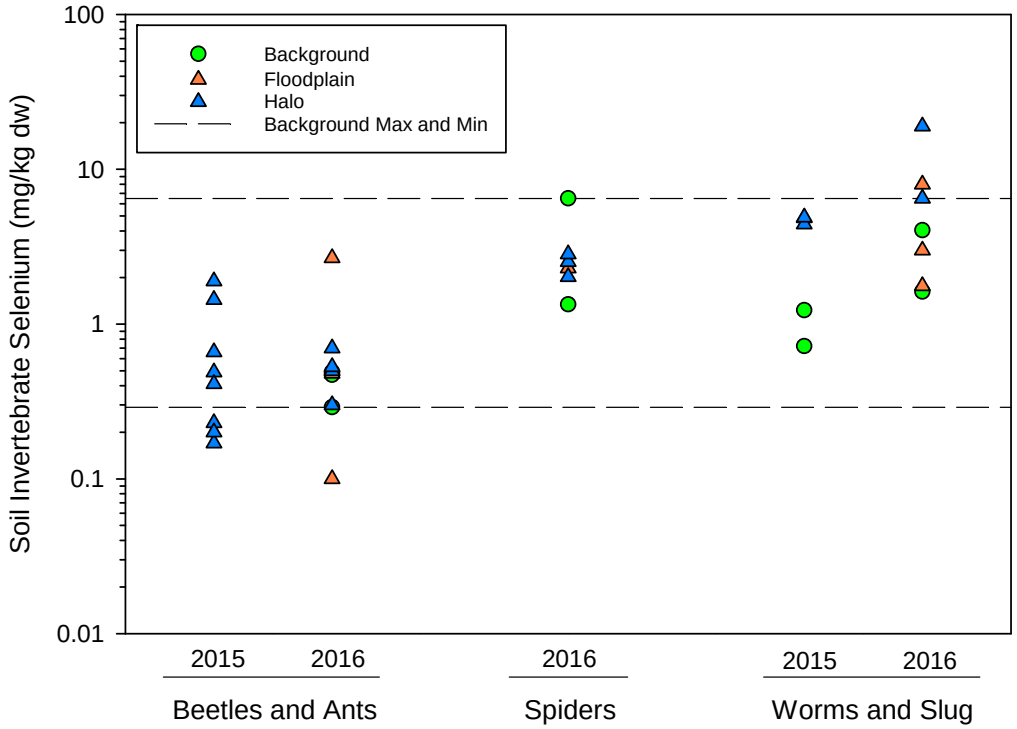

Figure 3: Selenium Concentrations in Soil Invertebrates Collected in 2015 and 2016. In general, selenium concentrations in soil invertebrate samples from the floodplain and halo were within or less than the range of concentrations measured in background.

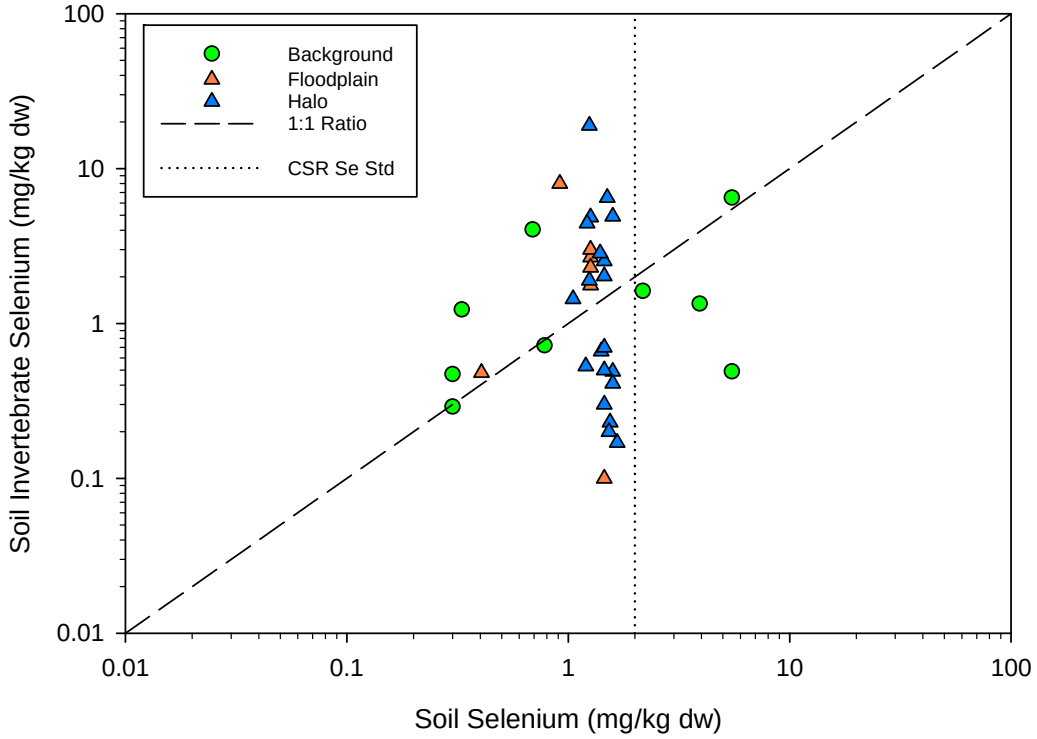

Figure 4: Selenium Concentrations in Soil Invertebrates versus Soil Collected in 2015 and 2016. The range of selenium concentrations in soil from the floodplain and halo fell within the more broad range of selenium concentrations measured in soil from background areas. The ratios of soil to soil invertebrate selenium also fell within the range of background. Applicable CSR Schedule 4 Standard for selenium is 2 mg/kg.

3.3 Vanadium

Analytical results are provided in Attachment A. Summary statistics of soil invertebrate vanadium concentrations are provided in Table 4. Vanadium concentrations in individual soil invertebrate samples are plotted in Figure 6. Soil invertebrate vanadium concentrations and BAFs are plotted relative to soil vanadium concentrations in Figure 7. The following observations were made:

- Vanadium concentrations of the three invertebrate groups overlapped, but were generally highest in worms/slug, followed by spiders and beetles/ants (Figure 6; Table 4). The range of concentrations in samples from the halo overlapped with samples from the floodplain.
- In 2016, vanadium concentrations in the three soil invertebrate groups collected from the floodplain and halo areas were generally higher relative to vanadium concentrations in the background area (Figure 6; Table 4).
- Twenty of 27 soil invertebrates samples from the floodplain and halo, had vanadium concentrations measured within the range of vanadium concentrations measured in soil invertebrates from the background area (Figure 6; Table 4).
- Vanadium concentrations (normalized to bulk density) in most co-located soil samples from the floodplain and halo exceeded the BC CSR generic parkland soil standard for vanadium (200 mg/kg; Figure 6).
- When normalized to bulk density, ratios of soil invertebrate to soil concentration were less than one for all pairs collected from the floodplain, halo and background areas (Figure 7). The general trend (i.e., ratio less than one) indicates that there is not a linear relationship between soil and soil invertebrate concentrations of vanadium, and indicates regulation of vanadium is occurring.

Table 4: Summary Statistics of Tissue Vanadium Concentrations (mg/kg) from 2015 and 2016

Tissue		Floodplain	Halo	Background
Worms & Slug	N	3	5	4
	Min	0.67	1.7	0.39
	Max	25	34	7.6
	Mean	12	18	2.4
Beetles & Ants	N	3	12	3
	Min	0.48	0.14	<0.1
	Max	1.3	5.2	0.31
	Mean	0.8	2.2	0.22
Spiders	N	1	3	2
	Min	-	0.67	0.21
	Max	2.4	18	<0.4
	Mean	-	10	0.31

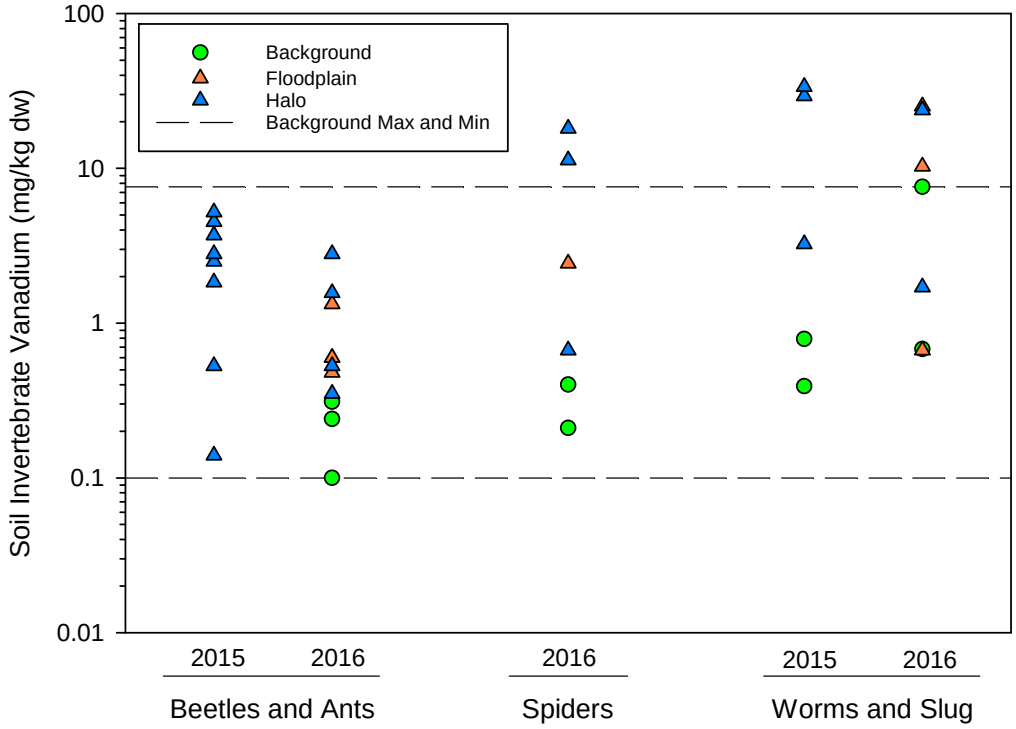

Figure 5: Vanadium Concentrations in Soil Invertebrates Collected in 2015 and 2016. The concentrations of vanadium measured in soil invertebrates tended to be highest in the halo samples.

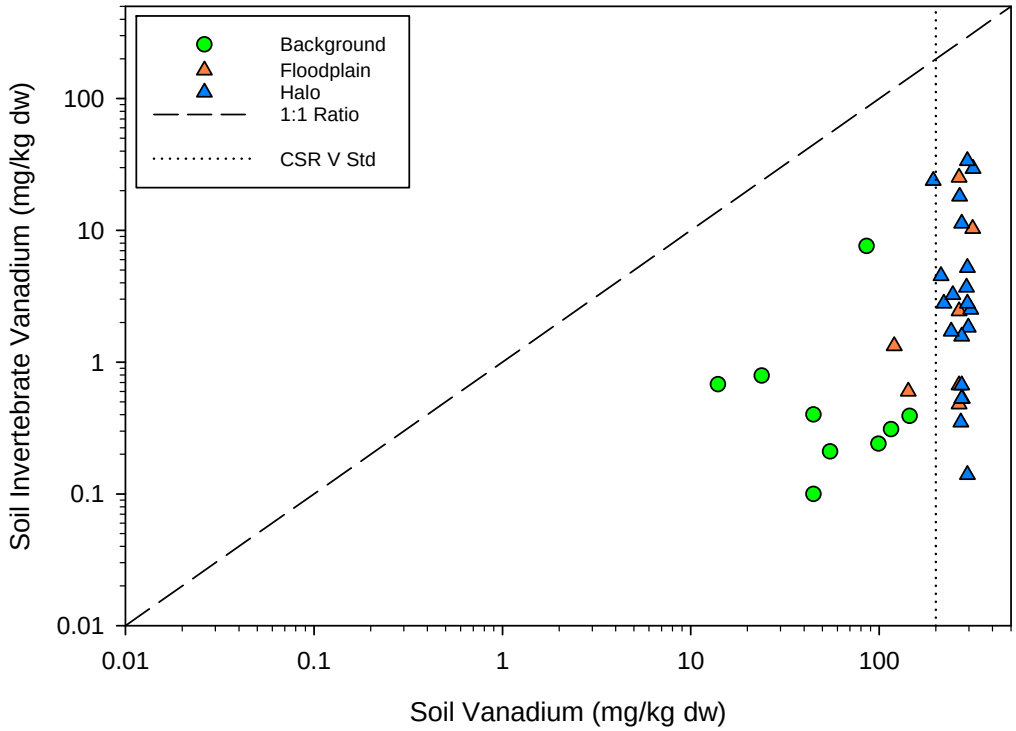

Figure 6: Vanadium Concentrations in Soil Invertebrates versus Soil Collected in 2015 and 2016. The general trend (i.e., ratio less than one) indicates that there is not a linear relationship between soil and soil invertebrate concentrations of vanadium, and indicates regulation of vanadium is occurring. Applicable CSR Schedule 4 Standard for vanadium is 200 mg/kg.

3.4 Quality Assurance/Quality Control

3.4.1 Field

The duplicate analyses for are provided in Attachment B, Tables B-1 (soil invertebrates) and B-2 (soil).

The RPD in soil invertebrate tissue duplicates exceeded the 50% RPD criteria or DF of 2 criteria in one or more duplicate samples for the following parameters: aluminum, antimony, arsenic, barium, boron, cadmium, calcium, cesium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, phosphorus, potassium, selenium, sodium, strontium, tin, uranium, vanadium, and zinc. Because the duplicate samples consisted of separate living and mobile organisms, they should not be used to determine sampler variability or laboratory variability; instead, the duplicate samples provide a measure of the environmental variability. Overall, the differences between duplicate samples are not considered to have affected the reliability of these datasets.

In soil, RPDs were greater than the 35% for the following parameters: copper, chromium, molybdenum, total carbon, total organic carbon and potassium. Elevated RPDs were observed in two of the seven duplicate samples, both of which were collected in floodplain area. The majority of the observed duplicate variability is likely attributed to the higher heterogeneity of floodplain soils. Although this variability could affect the precision of the individual results, selection of the duplicate samples was random, meaning that there would be no systematic bias in results due to the variability.

3.4.2 Laboratory

Laboratory data reports for samples collected during field sampling are provided in Attachment C. The following data quality issues were identified in the ALS laboratory reports for soil:

- Recommended hold times were exceeded prior to analysis of organic carbon, inorganic carbon, available nitrate, pH, and mercury in some samples.
- Detection limits for several nutrients were adjusted in some samples due to high concentrations of test analytes, sample matrix effects, limited sample amount, or high percent moisture.

The following data quality issues were identified in the ALS laboratory reports for invertebrate tissue:

- Detection limits for several metals were adjusted in some samples due to insufficient sample volume or because the analyte was detected at a comparable level in the method blank.
- Duplicate results were outside of the ALS DQOs for beryllium, cobalt, and uranium due to sample heterogeneity.
- Certified reference material recovery for sodium and zinc was outside of the ALS DQO for sodium and zinc. The recoveries of these two analytes were above the limits established, indicating a possible high bias for these analytes.

The DQO were met for copper, selenium and vanadium in all samples and were met for the majority of samples for other parameters; therefore, the data were considered reliable for the purposes of this memorandum.

4.0 CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this memorandum.

We trust the information provided in this technical memorandum meets your present requirements. If you have any questions, please contact the undersigned.

GOLDER ASSOCIATES LTD.

Arainn Atkinson, BA, RBTech, EPt
Environmental Scientist

Trish Miller, MSc, RPBio
Principal, Senior Environmental Scientist

AA/SS/TM/kp

Attachments: Study Limitation
Figures 1-1 to 1-7
Attachment A: Analytical Results Tables
Attachment B: QA/QC Results Tables
Attachment C: Analytical Reports

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LEGEND

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- POST BREACH AFFECTED AREA EXTENT
- WATERBODY

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2016 SOIL INVERTEBRATE TISSUE DATA REPORT

TITLE
INVERTEBRATE SAMPLE OVERVIEW

PROJECT NO.	PHASE/DOC	REV.	FIGURE
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WORM16-BKG-01

WORM16-03

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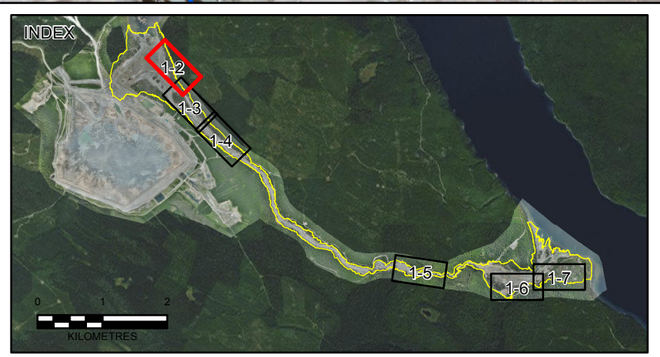

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- INVERTEBRATE SAMPLE
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
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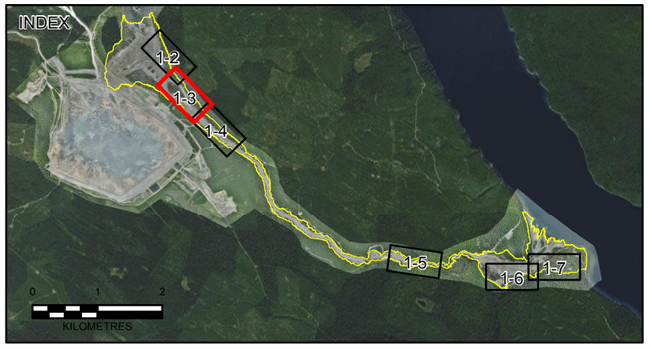

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LEGEND

- INVERTEBRATE SAMPLE
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- GAVIN LAKE ROAD
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REFERENCES

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LEGEND

- INVERTEBRATE SAMPLE
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- POST BREACH AFFECTED AREA EXTENT

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LEGEND

- INVERTEBRATE SAMPLE
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- DITCH ROAD
- POST BREACH AFFECTED AREA EXTENT

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LEGEND

- INVERTEBRATE SAMPLE
- NEW HAZELTINE CREEK CHANNEL (APPROXIMATE)
- NEW EDNEY CREEK CHANNEL (APPROXIMATE)
- DITCH ROAD
- POST BREACH AFFECTED AREA EXTENT

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ATTACHMENT A
Analytical Results Tables

Table A-1. Results of Soil Invertebrate Tissue Analysis

Client Sample ID	**Units**	G0149-9 ANT16-02	G0150-3 ANT16-03	G0150-4 ANT16-03D	G0168-4 ANT16-04	G0168-5 AR16-04	G0168-8 AR16-BKG-01	G0168-11 ANT16-BKG-01	G0168-12 AR16-BKG-02	G0169-1 WORM16-BKG-02	G0170-2 ANT16-05	G0170-3 AR16-05	G0170-4 BEETLE16-02	G0170-7 ANT16-BKG-02	G0170-8 ANT16-BKG-02D
Date Sampled		19-Aug-2016	19-Aug-2016	19-Aug-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016
ALS Sample ID		L1826505-2	L1826505-8	L1826505-9	L1826505-35	L1826505-36	L1826505-39	L1826505-42	L1826505-43	L1826505-44	L1826505-54	L1826505-55	L1826505-56	L1826505-59	L1826505-60
QA/QC			FDA	FD										FDA	FD
Invertebrate Type		Ant	Ant	Ant	Ant	Spider	Spider	Ant	Spider	Worm	Ant	Spider	Beetle	Ant	Ant
Area Sampled		Halo	Halo	Halo	Halo	Halo	Background	Background	Background	Background	Halo	Halo	Floodplain	Background	Background
Physical Tests															
% Moisture	%	55.3	71.7	68.1	70.9	67.3	70.5	56.2	95.6	73.5	61.5	59.6	55.3	62.3	73.5
Metals															
Aluminum (Al)-Total	mg/kg	53.8	291	133	307	112	40	27.5	81	174	66.5	1140	206	119	1810
Antimony (Sb)-Total	mg/kg	<0.010	0.123	0.013	0.015	<0.010	0.025	<0.010	<0.040	0.014	<0.010	0.041	<0.010	<0.010	0.037
Arsenic (As)-Total	mg/kg	0.329	1.16	11.1	0.346	0.144	0.181	0.090	0.23	0.196	0.527	0.885	1.47	0.460	0.851
Barium (Ba)-Total	mg/kg	12.2	34.7	20.3	17.6	2.80	3.68	8.85	5.37	12.2	10.2	13.4	172	20.9	49.9
Beryllium (Be)-Total	mg/kg	<0.010	0.018	<0.010	0.012	<0.010	<0.020	<0.010	<0.040	<0.010	<0.010	0.046	<0.010	<0.010	0.068
Bismuth (Bi)-Total	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.040	<0.010	<0.010	<0.010	<0.010	<0.010	0.021
Boron (B)-Total	mg/kg	16.8	18.9	16.9	18.7	3.4	5.9	17.0	19.3	3.6	17.0	3.1	27.9	7.7	6.4
Cadmium (Cd)-Total	mg/kg	3.73	2.42	2.62	4.97	4.47	6.27	6.91	51.6	22.8	2.86	2.97	0.588	2.61	1.97
Calcium (Ca)-Total	mg/kg	1140	3640	1310	1320	1990	6360	738	15800	7630	1060	5360	722	745	3230
Cesium (Cs)-Total	mg/kg	0.0148	0.0451	0.0414	0.0425	0.0333	0.086	0.0139	0.252	0.0726	0.0170	0.181	0.0279	0.0271	0.207
Chromium (Cr)-Total	mg/kg	0.38	0.68	0.53	0.67	0.21	0.66	<0.20	4.60	0.31	0.44	1.00	0.33	0.87	3.04
Cobalt (Co)-Total	mg/kg	0.220	0.455	0.307	0.414	0.099	0.216	0.130	0.706	0.828	0.326	1.06	0.268	0.133	2.18
Copper (Cu)-Total	mg/kg	13.6	32.9	19.6	26.9	71.1	83.1	10.7	508	7.79	15.6	155	53.2	8.41	13.3
Iron (Fe)-Total	mg/kg	195	846	340	546	262	137	90.5	631	392	256	2800	483	191	2310
Lead (Pb)-Total	mg/kg	0.067	0.218	0.116	0.156	<0.050	0.16	<0.050	<0.20	0.659	0.066	0.321	0.131	0.067	1.21
Lithium (Li)-Total	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<0.50	<0.50	1.25	<0.50	<0.50	1.55
Magnesium (Mg)-Total	mg/kg	733	919	885	1140	1600	1930	733	13400	1110	824	2400	1120	726	980
Manganese (Mn)-Total	mg/kg	181	234	230	228	29.5	52.4	175	273	50.0	133	81.6	53.6	184	373
Mercury (Hg)-Total	mg/kg	0.020	0.0283	0.0271	0.027	0.059	0.082	0.025	0.359	0.080	0.019	0.056	0.0090	0.042	0.078
Molybdenum (Mo)-Total	mg/kg	1.42	27.8	2.43	1.80	0.320	0.378	0.732	1.28	0.998	1.20	1.08	0.141	0.950	0.977
Nickel (Ni)-Total	mg/kg	0.37	0.66	0.51	0.82	0.44	0.68	0.25	2.31	0.58	0.34	0.88	0.53	0.60	3.10
Phosphorus (P)-Total	mg/kg	5250	4790	5850	5910	7700	8240	4400	56800	7650	5000	9280	4410	4510	3500
Potassium (K)-Total	mg/kg	5790	5020	6350	5520	7660	8860	4720	55300	7190	6390	9250	5110	4610	3130
Rubidium (Rb)-Total	mg/kg	3.10	3.47	4.94	4.38	8.29	16.2	4.12	83.5	9.68	2.88	9.55	1.80	7.78	9.22
Selenium (Se)-Total	mg/kg	0.30	0.53	0.38	0.70	2.02	1.34	0.49	6.48	1.62	0.50	2.53	<0.10	0.29	0.27
Sodium (Na)-Total	mg/kg	1080	1100	1200	2160	2210	3450	1130	16400	1480	1420	3220	66	1260	971
Strontium (Sr)-Total	mg/kg	20.7	36.6	28.4	21.9	8.59	11.2	14.1	44.7	40.1	20.4	46.2	13.4	15.6	28.7
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.040	<0.020	<0.080	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Thallium (Tl)-Total	mg/kg	<0.0020	<0.0040	<0.0020	0.0155	<0.017	<0.023	<0.0020	<0.041	0.0224	<0.0030	<0.0060	0.0040	<0.0030	0.0189
Tin (Sn)-Total	mg/kg	<0.10	0.37	0.11	1.53	0.73	1.18	0.46	0.84	0.13	0.44	0.22	<0.10	<0.10	0.48
Uranium (U)-Total	mg/kg	0.0053	0.216	0.0266	0.0183	0.0179	0.0099	0.0053	0.0302	0.0489	0.0109	0.135	0.0141	0.0101	0.300
Vanadium (V)-Total	mg/kg	0.35	2.80	0.83	1.57	0.67	0.21	<0.10	<0.40	0.68	0.53	11.3	1.33	0.31	4.94
Zinc (Zn)-Total	mg/kg	231	242	246	298	205	319	214	2170	389	217	211	130	186	136
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	<0.20	0.21	<0.20	<0.40	<0.20	<0.80	<0.20	<0.20	0.74	<0.20	<0.20	0.82

Notes:
QA/QC - quality assurance / quality control; FDA - field duplicate available; FD - field duplicate

Table A-1. Results of Soil Invertebrate Tissue Analysis

Client Sample ID	Units	G0170-10 ANT16-BKG-03	G0170-11 ANT16-BKG-03D	G0171-2 WORM16-05	G0147-2 WORM16-01	G0147-3 WORM16-02	G0147-4 AR16-02	G0147-5 BEETLE16-01	G0147-6 ANT16-01	G0149-2 WORM16-03	G0149-6 WORM16-BKG-01	G0167-6 WORM16-04	G0168-2 AR16-03
Date Sampled		5-Sep-2016	5-Sep-2016	5-Sep-2016	17-Aug-2016	17-Aug-2016	17-Aug-2016	17-Aug-2016	17-Aug-2016	19-Aug-2016	19-Aug-2016	4-Sep-2016	4-Sep-2016
ALS Sample ID		L1826505-62	L1826505-63	L1826505-66	L1826566-2	L1826566-3	L1826566-4	L1826566-5	L1826566-6	L1826566-14	L1826566-18	L1826566-67	L1826566-75
QA/QC		FDA	FD										
Invertebrate Type		Ant	Ant	Worm	Worm	Worm	Spider	Beetle	Ant	Worm	Worm	Worm	Spider
Area Sampled		Background	Background	Halo	Floodplain	Floodplain	Floodplain	Floodplain	Floodplain	Floodplain	Background	Halo	Halo
Physical Tests													
% Moisture	%	65.7	69.5	74.6	65.8	64.0	46.5	78.9	49.3	69.0	77.0	72.0	73.7
Metals													
Aluminum (Al)-Total	mg/kg	92.2	336	4930	58.7	2810	274	35	128	3210	4540	155	2060
Antimony (Sb)-Total	mg/kg	<0.010	0.012	0.070	<0.010	0.064	0.016	<0.020	<0.010	0.034	0.036	0.021	0.072
Arsenic (As)-Total	mg/kg	0.228	0.345	4.74	0.334	2.75	0.353	0.468	4.69	2.21	1.51	3.86	1.52
Barium (Ba)-Total	mg/kg	20.4	28.0	51.7	31.6	73.2	4.24	4.14	8.20	25.3	30.0	7.29	24.4
Beryllium (Be)-Total	mg/kg	<0.010	<0.010	0.170	<0.010	0.103	0.011	0.054	<0.010	0.092	0.121	<0.010	0.085
Bismuth (Bi)-Total	mg/kg	<0.010	<0.010	0.030	<0.010	0.019	<0.010	<0.020	<0.010	0.019	0.023	<0.010	<0.010
Boron (B)-Total	mg/kg	3.5	3.6	3.2	<1.0	2.0	1.0	2.4	2.2	1.6	1.8	1.1	4.4
Cadmium (Cd)-Total	mg/kg	2.04	2.04	2.27	0.344	0.112	9.13	0.523	0.464	1.90	4.87	4.89	5.19
Calcium (Ca)-Total	mg/kg	527	889	8600	9800	108000	4120	1570	659	3050	3020	4980	8520
Cesium (Cs)-Total	mg/kg	0.0102	0.0452	0.587	0.0148	0.344	0.0511	0.012	0.0245	0.346	0.448	0.0280	0.305
Chromium (Cr)-Total	mg/kg	0.34	1.05	6.01	0.41	4.83	0.44	<0.40	0.38	5.75	7.84	0.37	1.46
Cobalt (Co)-Total	mg/kg	0.088	0.310	4.48	0.358	2.69	0.295	0.249	0.126	3.20	3.85	0.964	2.03
Copper (Cu)-Total	mg/kg	8.04	8.31	126	25.4	99.1	307	42.9	15.5	37.0	13.7	76.7	180
Iron (Fe)-Total	mg/kg	142	490	6870	425	10100	822	182	250	3710	3290	616	4740
Lead (Pb)-Total	mg/kg	0.158	0.337	2.22	0.070	2.10	0.148	<0.10	0.070	1.12	1.19	0.123	0.554
Lithium (Li)-Total	mg/kg	<0.50	<0.50	5.27	<0.50	3.03	<0.50	<1.0	<0.50	2.69	2.71	<0.50	2.33
Magnesium (Mg)-Total	mg/kg	623	660	3190	2960	4440	3170	2090	843	1660	1540	744	3420
Manganese (Mn)-Total	mg/kg	211	236	268	102	842	54.5	45.8	96.4	161	173	10.8	113
Mercury (Hg)-Total	mg/kg	0.035	0.0433	0.0742	0.213	0.0788	0.258	0.103	0.0158	0.187	0.250	0.838	0.0742
Molybdenum (Mo)-Total	mg/kg	0.838	0.904	1.24	1.89	2.19	0.711	0.690	0.805	0.731	0.620	1.38	2.40
Nickel (Ni)-Total	mg/kg	0.35	0.76	5.53	0.53	3.56	0.40	<0.40	0.27	4.35	5.47	0.89	1.73
Phosphorus (P)-Total	mg/kg	4380	4390	7640	9060	4750	14500	12200	5560	7460	6920	8930	12000
Potassium (K)-Total	mg/kg	3920	3690	8130	6860	6760	14400	12900	5460	6800	6210	7100	10900
Rubidium (Rb)-Total	mg/kg	2.57	3.13	6.87	1.57	2.91	9.13	3.16	1.59	9.92	10.2	4.18	10.4
Selenium (Se)-Total	mg/kg	0.47	0.43	6.49	3.00	1.77	2.30	2.68	0.48	8.01	4.04	19.0	2.84
Sodium (Na)-Total	mg/kg	1300	972	1980	5810	2380	6200	5420	1390	2970	2900	3580	3780
Strontium (Sr)-Total	mg/kg	13.1	17.0	45.8	78.7	699	23.4	9.37	5.21	17.2	18.0	20.4	82.2
Tellurium (Te)-Total	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.040	<0.020	<0.020	<0.020	0.030	<0.020
Thallium (Tl)-Total	mg/kg	<0.0020	<0.0040	0.0351	<0.0020	0.0110	0.0044	<0.0040	<0.0020	0.0300	0.0487	0.0120	0.0037
Tin (Sn)-Total	mg/kg	0.10	0.24	0.36	1.17	1.97	0.31	<0.20	0.21	0.32	0.87	0.86	0.57
Uranium (U)-Total	mg/kg	0.0062	0.0331	0.402	0.0142	0.139	0.0384	0.0061	0.0078	0.190	0.260	0.128	0.218
Vanadium (V)-Total	mg/kg	0.24	1.09	23.8	0.67	25.2	2.44	0.48	0.60	10.3	7.60	1.71	18.1
Zinc (Zn)-Total	mg/kg	206	211	178	134	40.7	385	156	134	189	189	265	260
Zirconium (Zr)-Total	mg/kg	<0.20	<0.20	1.84	<0.20	1.65	0.20	<0.40	<0.20	0.57	0.59	<0.20	1.16

Notes:
QA/QC - quality assurance / quality control; FDA - field duplicate available; FD - field duplicate

Attachment A:
Analytical Results Tables
Table A-2. Results of Soil Analysis

Client Sample ID	Units	CSS16-02	CSS16-03	CSS16-06	CSS16-37	CSS16-42	CSS16-BKG-01	CSS16-07	CSS16-11	CSS16-43	CSS16-44	CSS16-45	CSS16-BKG-18	CSS16-BKG-19	CSS16-BKG-20	CSS16-BKG-21	CSS16-BKG-22
Date Sampled		17-Aug-2016	17-Aug-2016	19-Aug-2016	4-Sep-2016	5-Sep-2016	19-Aug-2016	19-Aug-2016	19-Aug-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016	5-Sep-2016
ALS Sample ID		L1826516-1	L1826516-2	L1826516-5	L1826516-22	L1826516-28	L1826516-29	L1826551-1	L1826551-5	L1826551-15	L1826551-16	L1826551-17	L1826551-24	L1826551-25	L1826551-26	L1826551-28	L1826551-29
Paired Soil Invertebrate Samples		L1826566-5 L1826566-4 L1826566-2 L1826566-3	L1826566-6	L1826566-14	L1826566-67	L1826566-75	L1826566-18	L1826505-2	L1826505-8	L1826505-35 L1826505-54 L1826505-36 L1826505-55	L1826505-56	L1826505-66	L1826505-39	L1826505-42 L1826505-43	L1826505-44	L1826505-59	L1826505-62
Physical Tests																	
pH (1:2 soil:water)	pH	7.35	6.22	6.83	7.83	8.34	5.33	8.39	7.96	8.53	8.18	7.98	7.01	6.75	6.46	6.41	5.55
Organic / Inorganic Carbon																	
Inorganic Carbon	%	0.244	0.124	0.126	0.232	0.411	0.201										
Inorganic Carbon (as CaCO3 Equivalent)	%	2.03	1.03	1.05	1.93	3.42	1.67										
Total Carbon by Combustion	%	2.28	4.31	2.87	2.07	0.49	18.6										
Total Organic Carbon	%	2.04	4.19	2.74	1.84	<0.098	18.4	0.152	1.13	0.123	0.469	6.23	22.2	22.1	41.6	2.27	6.1
Plant Available Nutrients																	
Available Nitrate-N	mg/kg	<1.0	<1.0	10.9	<1.0	<1.0	17.2	<1.0	<1.0	<1.0	2.2	<2.0	<3.0	<3.0	<5.0	<1.0	<2.0
Available Phosphate-P	mg/kg	4.5	13.1	5.4	3.7	<2.0	2.2	2.9	4.5	<2.0	<2.0	2.5	2.8	<2.0	7.5	4.2	98
Available Potassium	mg/kg	127	127	118	98	164	224	155	123	140	54	144	130	51	170	59	90
Metals																	
Aluminum (Al)	mg/kg	15400	19100	16700	15000	15900	31200	16000	13600	15500	10600	19300	10100	11300	3410	13900	10900
Antimony (Sb)	mg/kg	0.35	0.30	0.30	0.35	0.35	0.29	0.35	0.29	0.34	0.45	0.50	0.28	0.32	0.28	0.30	0.27
Arsenic (As)	mg/kg	9.12	7.78	9.09	8.53	11.2	3.39	11.2	9.46	11.3	12.6	12.3	3.46	2.86	1.54	7.54	6.56
Barium (Ba)	mg/kg	146	118	160	163	158	191	153	139	153	115	201	76.9	79.5	58.8	83.5	132
Beryllium (Be)	mg/kg	0.54	0.45	0.60	0.54	0.63	0.93	0.59	0.47	0.57	0.41	0.64	0.27	0.46	0.14	0.32	0.24
Bismuth (Bi)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	mg/kg	6.9	<5.0	7.2	7.0	8.8	<5.0	7.3	5.2	6.8	<5.0	7.8	6.8	5.7	9.9	<5.0	<5.0
Cadmium (Cd)	mg/kg	0.170	0.139	0.206	0.232	0.156	0.542	0.134	0.172	0.145	0.175	0.269	0.499	0.645	1.05	0.205	0.390
Calcium (Ca)	mg/kg	18500	7090	14000	19900	25900	6010	23100	17800	22700	8430	21000	23800	33000	35100	5030	4600
Chromium (Cr)	mg/kg	18.0	35.9	21.9	17.2	10.5	53.5	11.3	13.2	10.9	30.7	25.4	19.7	23.8	5.66	31.7	30.3
Cobalt (Co)	mg/kg	13.8	10.8	15.9	13.3	16.3	21.8	15.8	13.9	16.0	11.0	17.0	7.21	5.72	2.41	9.30	7.66
Copper (Cu)	mg/kg	677	148	458	537	821	54.6	819	706	848	121	455	117	101	33.1	21.7	24.1
Iron (Fe)	mg/kg	48400	31900	56500	42800	45700	27600	47400	40600	48200	27500	40400	17100	15900	4970	26600	24900
Lead (Pb)	mg/kg	5.15	7.88	5.49	4.72	4.92	8.73	4.43	4.38	4.52	5.26	7.42	3.86	4.38	4.05	5.09	5.65
Lithium (Li)	mg/kg	12.3	17.8	15.5	12.8	16.1	18.7	14.3	12.4	14.0	11.3	19.5	10.4	10.9	2.4	15.4	8.5
Magnesium (Mg)	mg/kg	7280	6530	8010	6650	9670	6940	9460	8120	9460	6490	10200	4800	3690	2000	5760	4530
Manganese (Mn)	mg/kg	525	574	624	528	583	1380	577	555	572	730	817	261	214	163	341	404
Mercury (Hg)	mg/kg	0.102	0.075	0.075	0.101	0.085	0.205	0.069	0.068	0.073	0.079	0.101	0.101	0.189	0.150	<0.050	<0.050
Molybdenum (Mo)	mg/kg	3.56	1.22	2.97	3.45	5.60	1.35	3.28	2.89	3.79	1.48	3.33	0.83	0.73	0.90	0.44	0.69
Nickel (Ni)	mg/kg	12.2	21.6	14.5	13.0	9.15	33.7	9.65	10.5	8.96	26.4	21.2	19.2	29.6	10.7	22.7	17.6
Phosphorus (P)	mg/kg	1080	752	1390	1170	1190	1540	1260	1090	1250	725	1150	1040	1220	858	499	1060
Potassium (K)	mg/kg	1300	1560	1360	1240	1400	2000	1390	1090	1380	740	1620	800	560	490	750	650
Selenium (Se)	mg/kg	0.84	0.27	0.61	0.83	0.93	0.46	0.97	0.80	0.97	0.31	1.00	2.62	3.66	1.45	<0.20	<0.20
Silver (Ag)	mg/kg	0.34	0.29	0.32	0.29	0.37	0.64	0.34	0.28	0.35	0.13	0.29	0.17	0.39	0.31	<0.10	<0.10
Sodium (Na)	mg/kg	742	231	681	709	1080	125	900	732	896	393	647	178	89	<50	102	93
Strontium (Sr)	mg/kg	131	56.7	127	153	169	60.0	160	126	156	80.4	161	105	184	224	43.1	47.3
Thallium (Tl)	mg/kg	<0.050	0.105	<0.050	<0.050	<0.050	0.154	<0.050	<0.050	<0.050	0.070	0.065	0.060	0.088	<0.050	0.075	0.059
Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	mg/kg	1160	888	1010	1030	1310	247	1390	919	1300	717	1290	345	177	78.3	849	709
Uranium (U)	mg/kg	0.869	0.762	0.892	1.08	0.998	1.21	0.875	0.709	0.847	0.643	1.34	2.87	8.10	3.12	0.603	0.348
Vanadium (V)	mg/kg	177	95.2	209	161	178	57.2	181	147	183	80.1	129	36.6	29.9	9.31	77.1	66.1
Zinc (Zn)	mg/kg	51.0	58.1	60.3	45.7	56.2	97.1	53.3	54.1	53.2	46.9	70.1	41.2	27.3	65.1	64.5	67.2
Zirconium (Zr)	mg/kg	1.8	<1.0	1.0	1.6	6.9	<1.0	6.2	3.5	6.1	2.4	2.8	1.7	4.7	1.6	1.1	1.3

ATTACHMENT B
QA/QC Results Tables

Attachment B:
QA/QC Results Tables
Table B-1. Results of Soil Invertebrate Tissue QA/QC Analyses

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	G0150-3 ANT16-03 19-Aug-2016 0:00 L1826505-8	G0150-4 ANT16-03D 19-Aug-2016 0:00 L1826505-9	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	G0170-7 ANT16-BKG-02 5-Sep-2016 0:00 L1826505-59 Tissue	G0170-8 ANT16-BKG-02D 5-Sep-2016 0:00 L1826505-60 Tissue	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	G0170-10 ANT16-BKG-03 5-Sep-2016 0:00 L1826505-62 Tissue	G0170-11 ANT16-BKG-03D 5-Sep-2016 0:00 L1826505-63 Tissue	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Tests																			
pH	%	71.7	68.1	0.25	69.9	5.2%	NA	62.3	73.5	0.25	67.9	16%	NA	65.7	69.5	0.25	67.6	6%	NA
Metals																			
Aluminum (Al)	mg/kg	291	133	5.0	212	**75%**	NA	119	1810	5.0	965	**175%**	NA	92.2	336	5.0	214	**114%**	NA
Aluminum (Al)	mg/kg	82.3	42.4	1.0	62.4	**64%**	NA	44.7	481	1.0	263	**166%**	NA	31.6	102	1.0	66.8	**105%**	NA
Antimony (Sb)	mg/kg	0.12	0.013	0.010	0.068	**162%**	NA	<0.010	0.037	0.010	NC	NC	NC	<0.010	0.012	0.010	NC	NC	NC
Antimony (Sb)	mg/kg	0.035	0.0043	0.0020	0.020	**156%**	NA	<0.0020	0.0097	0.0020	NC	NC	NC	<0.0020	0.0036	0.0020	NC	NC	NC
Arsenic (As)	mg/kg	1.16	11.1	0.030	6.13	**162%**	NA	0.46	0.85	0.030	0.66	**60%**	NA	0.23	0.35	0.030	0.29	41%	NA
Arsenic (As)	mg/kg	0.33	3.54	0.0060	1.93	**166%**	NA	0.17	0.23	0.0060	0.20	27%	NA	0.078	0.11	0.0060	0.092	29%	NA
Barium (Ba)	mg/kg	34.7	20.3	0.050	27.5	**52%**	NA	20.9	49.9	0.050	35.4	**82%**	NA	20.4	28.0	0.050	24.2	31%	NA
Barium (Ba)	mg/kg	9.83	6.47	0.010	8.15	41%	NA	7.89	13.2	0.010	10.5	**50%**	NA	7.00	8.54	0.010	7.77	20%	NA
Beryllium (Be)	mg/kg	0.018	<0.010	0.010	NC	NC	NC	<0.010	0.068	0.010	NC	NC	NC	<0.010	<0.010	0.010	NC	NC	NC
Beryllium (Be)	mg/kg	0.0051	0.0023	0.0020	0.0037	NA	1.40	<0.0020	0.018	0.0020	NC	NC	NC	<0.0020	0.0029	0.0020	NC	NC	NC
Bismuth (Bi)	mg/kg	<0.010	<0.010	0.010	NC	NC	NC	<0.010	0.021	0.010	NC	NC	NC	<0.010	<0.010	0.010	NC	NC	NC
Bismuth (Bi)	mg/kg	<0.0020	<0.0020	0.0020	NC	NC	NC	<0.0020	0.0056	0.0020	NC	NC	NC	<0.0020	<0.0020	0.0020	NC	NC	NC
Boron (B)	mg/kg	18.9	16.9	1.0	17.9	11%	NA	7.7	6.4	1.0	7.05	18%	NA	3.5	3.6	1.0	3.55	NA	0.10
Boron (B)	mg/kg	5.36	5.41	0.20	5.39	1%	NA	2.91	1.70	0.20	2.31	**52%**	NA	1.21	1.09	0.20	1.15	10%	NA
Cadmium (Cd)	mg/kg	2.42	2.62	0.010	2.52	8%	NA	2.61	1.97	0.010	2.29	28%	NA	2.04	2.04	0.010	2.04	0%	NA
Cadmium (Cd)	mg/kg	0.69	0.84	0.0020	0.76	20%	NA	0.98	0.52	0.0020	0.75	**61%**	NA	0.70	0.62	0.0020	0.66	11%	NA
Calcium (Ca)	mg/kg	3640	1310	20	2475	**94%**	NA	745	3230	20	1988	**125%**	NA	527	889	20	708	**51%**	NA
Calcium (Ca)	mg/kg	1030	419	4.0	724.5	**84%**	NA	281	856	4.0	569	**101%**	NA	181	271	4.0	226	40%	NA
Cesium (Cs)	mg/kg	0.045	0.041	0.0050	0.043	9%	NA	0.027	0.21	0.0050	0.12	**154%**	NA	0.010	0.045	0.0050	0.028	**126%**	NA
Cesium (Cs)	mg/kg	0.013	0.013	0.0010	0.013	3%	NA	0.010	0.055	0.0010	0.033	**137%**	NA	0.0035	0.014	0.0010	0.0087	**119%**	NA
Chromium (Cr)	mg/kg	0.68	0.53	0.20	0.61	NA	0.75	0.87	3.04	0.20	1.96	**111%**	NA	0.34	1.05	0.20	0.70	NA	**3.55**
Chromium (Cr)	mg/kg	0.19	0.17	0.040	0.18	NA	0.60	0.33	0.81	0.040	0.57	**85%**	NA	0.12	0.32	0.040	0.22	**94%**	NA
Cobalt (Co)	mg/kg	0.46	0.31	0.020	0.38	39%	NA	0.13	2.18	0.020	1.16	**177%**	NA	0.088	0.31	0.020	0.20	**112%**	NA
Cobalt (Co)	mg/kg	0.13	0.098	0.0040	0.11	27%	NA	0.050	0.58	0.0040	0.31	**168%**	NA	0.030	0.095	0.0040	0.063	**103%**	NA
Copper (Cu)	mg/kg	32.9	19.6	0.20	26.3	**51%**	NA	8.41	13.3	0.20	10.9	45%	NA	8.04	8.31	0.20	8.18	3%	NA
Copper (Cu)	mg/kg	9.31	6.26	0.040	7.79	39%	NA	3.17	3.52	0.040	3.35	10%	NA	2.75	2.54	0.040	2.65	8%	NA
Iron (Fe)	mg/kg	846	340	5.0	593	**85%**	NA	191	2310	5.0	1251	**169%**	NA	142	490	5.0	316	**110%**	NA
Iron (Fe)	mg/kg	240	108	1.0	174	**76%**	NA	72.0	613	1.0	343	**158%**	NA	48.7	150	1.0	99.4	**102%**	NA
Lead (Pb)	mg/kg	0.22	0.12	0.050	0.17	NA	**2.04**	0.067	1.21	0.050	0.64	**179%**	NA	0.16	0.34	0.050	0.25	NA	**3.58**
Lead (Pb)	mg/kg	0.062	0.037	0.010	0.050	NA	**2.50**	0.025	0.32	0.010	0.17	**171%**	NA	0.054	0.10	0.010	0.079	**62%**	NA
Lithium (Li)	mg/kg	<0.50	<0.50	0.50	NC	NC	NC	<0.50	1.55	0.50	NC	NC	NC	<0.50	<0.50	0.50	NC	NC	NC
Lithium (Li)	mg/kg	<0.10	<0.10	0.10	NC	NC	NC	<0.10	0.41	0.10	NC	NC	NC	<0.10	<0.10	0.10	NC	NC	NC
Magnesium (Mg)	mg/kg	919	885	2.0	902	4%	NA	726	980	2.0	853	30%	NA	623	660	2.0	642	6%	NA
Magnesium (Mg)	mg/kg	260	282	0.40	271	8%	NA	274	260	0.40	267	5%	NA	214	202	0.40	208	6%	NA
Manganese (Mn)	mg/kg	234	230	0.050	232	2%	NA	184	373	0.050	279	**68%**	NA	211	236	0.050	224	11%	NA
Manganese (Mn)	mg/kg	66.4	73.3	0.010	69.9	10%	NA	69.3	98.8	0.010	84.1	35%	NA	72.1	71.9	0.010	72	0%	NA
Mercury (Hg)	mg/kg	0.028	0.027	0.0050	0.028	4%	NA	0.042	0.078	0.010	0.060	**60%**	NA	0.035	0.043	0.0050	0.039	21%	NA
Mercury (Hg)	mg/kg	0.0080	0.0087	0.0020	0.0084	NA	0.35	0.016	0.021	0.0040	0.018	NA	1.23	0.012	0.013	0.0040	0.013	NA	0.28
Molybdenum (Mo)	mg/kg	27.8	2.43	0.040	15.1	**168%**	NA	0.95	0.98	0.040	0.96	3%	NA	0.84	0.90	0.040	0.87	8%	NA
Molybdenum (Mo)	mg/kg	7.87	0.775	0.0080	4.32	**164%**	NA	0.36	0.26	0.0080	0.31	32%	NA	0.29	0.28	0.0080	0.28	4%	NA
Nickel (Ni)	mg/kg	0.66	0.51	0.20	0.59	NA	0.75	0.60	3.10	0.20	1.85	**135%**	NA	0.35	0.76	0.20	0.56	NA	**2.05**
Nickel (Ni)	mg/kg	0.19	0.16	0.040	0.18	NA	0.63	0.23	0.82	0.040	0.52	**113%**	NA	0.12	0.23	0.040	0.18	NA	**2.80**
Phosphorus (P)	mg/kg	4790	5850	10	5320	20%	NA	4510	3500	10	4005	25%	NA	4380	4390	10	4385	0%	NA
Phosphorus (P)	mg/kg	1360	1870	2.0	1615	32%	NA	1700	927	2.0	1314	**59%**	NA	1500	1340	2.0	1420	11%	NA
Potassium (K)	mg/kg	5020	6350	20	5685	23%	NA	4610	3130	20	3870	38%	NA	3920	3690	20	3805	6%	NA
Potassium (K)	mg/kg	1420	2030	4.0	1725	35%	NA	1740	829	4.0	1285	**71%**	NA	1340	1130	4.0	1235	17%	NA
Rubidium (Rb)	mg/kg	3.47	4.94	0.050	4.21	35%	NA	7.78	9.22	0.050	8.5	17%	NA	2.57	3.13	0.050	2.85	20%	NA
Rubidium (Rb)	mg/kg	0.98	1.58	0.010	1.28	47%	NA	2.93	2.45	0.010	2.69	18%	NA	0.88	0.95	0.010	0.92	8%	NA
Selenium (Se)	mg/kg	0.53	0.38	0.10	0.46	NA	1.50	0.29	0.27	0.10	0.28	NA	0.20	0.47	0.43	0.10	0.45	NA	0.40
Selenium (Se)	mg/kg	0.15	0.122	0.020	0.14	21%	NA	0.11	0.070	0.020	0.090	NA	**2.00**	0.16	0.13	0.020	0.15	20%	NA
Sodium (Na)	mg/kg	1100	1200	20	1150	9%	NA	1260	971	20	1116	26%	NA	1300	972	20	1136	29%	NA
Sodium (Na)	mg/kg	311	383	4.0	347	21%	NA	473	257	4.0	365	**59%**	NA	447	297	4.0	372	40%	NA
Strontium (Sr)	mg/kg	36.6	28.4	0.10	32.5	25%	NA	15.6	28.7	0.10	22.2	**59%**	NA	13.1	17.0	0.10	15.1	26%	NA
Strontium (Sr)	mg/kg	10.4	9.05	0.020	9.73	14%	NA	5.88	7.61	0.020	6.75	26%	NA	4.50	5.20	0.020	4.85	14%	NA
Tellurium (Te)	mg/kg	<0.020	<0.020	0.020	NC	NC	NC	<0.020	<0.020	0.020	NC	NC	NC	<0.020	<0.020	0.020	NC	NC	NC
Tellurium (Te)	mg/kg	<0.0040	<0.0040	0.0040	NC	NC	NC	<0.0040	<0.0040	0.0040	NC	NC	NC	<0.0040	<0.0040	0.0040	NC	NC	NC
Thallium (Tl)	mg/kg	<0.0040	<0.0020	0.0040	NC	NC	NC	<0.0030	0.0189	0.0030	NC	NC	NC	<0.0020	<0.0040	0.0040	NC	NC	NC
Thallium (Tl)	mg/kg	<0.00090	<0.00060	0.00090	NC	NC	NC	<0.0010	0.0050	0.0010	NC	NC	NC	<0.00060	<0.0015	0.0015	NC	NC	NC
Tin (Sn)	mg/kg	0.37	0.11	0.10	0.24	NA	**2.60**	<0.10	0.48	0.10	NC	NC	NC	0.10	0.24	0.10	0.17	NA	1.40
Tin (Sn)	mg/kg	0.10	0.036	0.020	0.070	NA	**3.40**	0.030	0.13	0.020	0.078	NA	**4.80**	0.036	0.073	0.020	0.055	NA	1.85
Uranium (U)	mg/kg	0.22	0.027	0.0020	0.12	**156%**	NA	0.010	0.30	0.0020	0.16	**187%**	NA	0.0062	0.033	0.0020	0.020	**137%**	NA
Uranium (U)	mg/kg	0.061	0.0085	0.00040	0.035	**151%**	NA	0.0038	0.080	0.00040	0.042	**182%**	NA	0.0021	0.010	0.00040	0.0061	**131%**	NA
Vanadium (V)	mg/kg	2.80	0.83	0.10	1.82	**109%**	NA	0.31	4.94	0.10	2.63	**176%**	NA	0.24	1.09	0.10	0.67	**128%**	NA
Vanadium (V)	mg/kg	0.79	0.27	0.020	0.53	**100%**	NA	0.116	1.31	0.020	0.71	**167%**	NA	0.081	0.33	0.020	0.21	**122%**	NA
Zinc (Zn)	mg/kg	242	246	1.0	244	2%	NA	186	136	1.0	161	31%	NA	206	211	1.0	209	2%	NA
Zinc (Zn)	mg/kg	68.4	78.6	0.20	73.5	14%	NA	70.0	36.1	0.20	53.1	**64%**	NA	70.5	64.4	0.20	67.5	9%	NA
Zirconium (Zr)	mg/kg	<0.20	<0.20	0.20	NC	NC	NC	<0.20	0.82	0.20	NC	NC	NC	<0.20	<0.20	0.20	NC	NC	NC
Zirconium (Zr)	mg/kg	0.050	<0.040	0.040	NC	NC	NC	<0.040	0.22	0.040	NC	NC	NC	<0.040	0.051	0.040	NC	NC	NC

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.
Golders' acceptable RPD for tissue is less than or equal to 50%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.
Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

Attachment B:
QA/QC Results Tables
Table B-2. Results of Soil QA/QC Analyses

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	WILLOW-LHAC-2X-16 16-Aug-2016 10:23 L1824887-3	WILLOW-LHAC-2-16 16-Aug-2016 10:23 L1824887-4	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	SPRUCE-UHAC-1-16 3-Aug-2016 13:45 L1824887-8	SPRUCE-UHAC-1X-16 16-Aug-2016 13:45 L1824887-9	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Tests													
pH	pH	8.13	8.23	0.10	8.18	1%	NA	7.57	8.55	0.10	8.06	12%	NA
Organic / Inorganic Carbon													
Inorganic Carbon	%	0.37	0.490	0.050	0.43	29%	NA	0.30	0.36	0.050	0.33	19%	NA
Inorganic Carbon (as CaCO3 Equivalent)	%	3.04	4.09	0.40	3.57	29%	NA	2.47	2.99	0.40	2.73	19%	NA
Total Carbon by Combustion	%	0.60	0.67	0.05	0.64	11%	NA	17.1	0.51	0.05	8.81	**188%**	NA
Total Organic Carbon	%	0.23	0.18	0.13	0.21	NA	0.37	16.8	0.15	0.10	8.48	**196%**	NA
Plant Available Nutrients													
Available Nitrate-N	mg/kg	<1.0	<1.0	1.0	NC	NC	NC	<3.0	<1.0	1.0	NC	NC	NC
Available Phosphate-P	mg/kg	2.9	2.7	2.0	2.8	NA	0.10	8.5	<2.0	2.0	NC	NC	NC
Available Potassium	mg/kg	66	59	20	62.5	NA	0.35	245	126	20	186	**64%**	NA
Metals													
Aluminum (Al)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/kg	0.48	0.52	0.10	0.5	8%	NA	0.39	0.38	0.10	0.39	NA	0.10
Arsenic (As)	mg/kg	8.91	7.90	0.10	8.41	12%	NA	8.60	12.0	0.10	10.3	33%	NA
Barium (Ba)	mg/kg	80.9	71.6	0.50	76.3	12%	NA	163	168	0.50	166	3%	NA
Beryllium (Be)	mg/kg	0.36	0.32	0.10	0.34	NA	0.40	0.53	0.63	0.10	0.58	17%	NA
Bismuth (Bi)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/kg	0.22	0.19	0.050	0.204	NA	0.58	0.19	0.15	0.050	0.17	NA	0.78
Calcium (Ca)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/kg	28.4	26.7	0.50	27.6	6%	NA	17.9	11.4	0.50	14.7	**44%**	NA
Cobalt (Co)	mg/kg	12.1	10.7	0.10	11.4	12%	NA	13.8	16.9	0.10	15.4	20%	NA
Copper (Cu)	mg/kg	181	120	0.50	151	**41%**	NA	492	902	0.50	697	**59%**	NA
Iron (Fe)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/kg	6.33	6.17	0.50	6.25	3%	NA	4.93	5.03	0.50	4.98	2%	NA
Lithium (Li)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/kg	0.071	0.077	0.050	0.074	NA	0.12	0.085	0.082	0.050	0.084	NA	0.06
Molybdenum (Mo)	mg/kg	1.49	1.00	0.10	1.25	**39%**	NA	3.26	4.15	0.10	3.71	24%	NA
Nickel (Ni)	mg/kg	25.7	23.4	0.50	24.6	9%	NA	11.6	9.80	0.50	10.7	17%	NA
Phosphorus (P)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/kg	0.53	0.43	0.20	0.48	NA	0.50	0.89	1.08	0.20	0.99	NA	0.95
Silver (Ag)	mg/kg	0.16	0.15	0.10	0.16	NA	0.10	0.26	0.41	0.10	0.34	NA	1.5
Sodium (Na)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	mg/kg	0.10	0.101	0.050	0.10	NA	0.0	<0.050	<0.050	0.050	NC	NC	NC
Tin (Sn)	mg/kg	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC
Titanium (Ti)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	mg/kg	0.62	0.56	0.050	0.59	11%	NA	1.03	0.94	0.050	0.99	9%	NA
Vanadium (V)	mg/kg	76.4	66.0	0.20	71.2	15%	NA	185	198	0.20	192	7%	NA
Zinc (Zn)	mg/kg	48.8	43.8	2.0	46.3	11%	NA	49.8	55.5	2.0	52.7	11%	NA
Zirconium (Zr)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.
Golders' acceptable RPD for soil is less than or equal to 35%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.
Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

40.53% 0.58 58.82% 1.50

Attachment B:
QA/QC Results Tables
Table B-2. Results of Soil QA/QC Analyses

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	CSS16-BKG-20 5-Sep-2016 0:00 L1826551-26	CSS16-BKG-20D 5-Sep-2016 0:00 L1826551-27	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	CSS16-BKG-22 5-Sep-2016 0:00 L1826551-29	CSS16-BKG-22D 5-Sep-2016 0:00 L1826551-30	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Tests													
pH	pH	6.46	6.40	0.10	6.43	1%	NA	5.55	5.57	0.10	5.56	0%	NA
Organic / Inorganic Carbon													
Inorganic Carbon	%	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon (as CaCO3 Equivalent)	%	-	-	-	-	-	-	-	-	-	-	-	-
Total Carbon by Combustion	%	-	-	-	-	-	-	-	-	-	-	-	-
Total Organic Carbon	%	41.6	41.8	0.050	41.7	0%	NA	6.10	6.12	0.050	6.11	0%	NA
Plant Available Nutrients													
Available Nitrate-N	mg/kg	<5.0	<5.0	5.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC
Available Phosphate-P	mg/kg	7.5	8.3	4.0	7.9	NC	NC	98	98	20	98	NA	0.0
Available Potassium	mg/kg	170	160	40	165	NC	NC	90	86	20	88	NA	0.20
Metals													
Aluminum (Al)	mg/kg	3410	3440	50	3425	1%	NA	10900	11800	50	11350	8%	NA
Antimony (Sb)	mg/kg	0.28	0.24	0.10	0.26	NA	0.40	0.27	0.24	0.10	0.26	NA	0.30
Arsenic (As)	mg/kg	1.54	1.47	0.10	1.51	5%	NA	6.56	7.18	0.10	6.87	9%	NA
Barium (Ba)	mg/kg	58.8	58.4	0.50	58.6	1%	NA	132	123	0.50	128	7%	NA
Beryllium (Be)	mg/kg	0.14	0.12	0.10	0.13	NA	0.20	0.24	0.22	0.10	0.23	NA	0.20
Bismuth (Bi)	mg/kg	<0.20	<0.20	0.20	NC	NC	NC	<0.20	<0.20	0.20	NC	NC	NC
Boron (B)	mg/kg	9.9	8.6	5.0	9.25	NA	0.26	<5.0	<5.0	5.0	NC	NC	NC
Cadmium (Cd)	mg/kg	1.05	1.06	0.020	1.06	1%	NA	0.39	0.375	0.020	0.38	4%	NA
Calcium (Ca)	mg/kg	35100	31300	50	33200	11%	NA	4600	4050	50	4325	13%	NA
Chromium (Cr)	mg/kg	5.66	5.71	0.50	5.69	1%	NA	30.3	33.4	0.50	31.9	10%	NA
Cobalt (Co)	mg/kg	2.41	2.39	0.10	2.40	1%	NA	7.66	8.48	0.10	8.07	10%	NA
Copper (Cu)	mg/kg	33.1	33.1	0.50	33.1	0%	NA	24.1	24.8	0.50	24.5	3%	NA
Iron (Fe)	mg/kg	4970	4920	50	4945	1%	NA	24900	24600	50	24750	1%	NA
Lead (Pb)	mg/kg	4.05	3.58	0.50	3.82	12%	NA	5.65	4.81	0.50	5.23	16%	NA
Lithium (Li)	mg/kg	2.4	2.3	2.0	2.35	NA	0.05	8.5	7.7	2.0	8.1	NA	0.40
Magnesium (Mg)	mg/kg	2000	1990	20	1995	1%	NA	4530	5620	20	5075	21%	NA
Manganese (Mn)	mg/kg	163	165	1.0	164	1%	NA	404	452	1.0	428	11%	NA
Mercury (Hg)	mg/kg	0.15	0.15	0.050	0.15	NA	0.02	<0.050	<0.050	0.050	NC	NC	NC
Molybdenum (Mo)	mg/kg	0.90	0.80	0.10	0.85	12%	NA	0.69	0.58	0.10	0.64	17%	NA
Nickel (Ni)	mg/kg	10.7	10.7	0.50	10.7	0%	NA	17.6	22.2	0.50	19.9	23%	NA
Phosphorus (P)	mg/kg	858	849	50	854	1%	NA	1060	1060	50	1060	0%	NA
Potassium (K)	mg/kg	490	510	100	500	4%	NA	650	640	100	645	2%	NA
Selenium (Se)	mg/kg	1.45	1.48	0.20	1.47	2%	NA	<0.20	<0.20	0.20	NC	NC	NC
Silver (Ag)	mg/kg	0.31	0.26	0.10	0.29	NA	0.50	<0.10	<0.10	0.10	NC	NC	NC
Sodium (Na)	mg/kg	<50	<50	50	NC	NC	NC	93	102	50	97.5	NA	0.18
Strontium (Sr)	mg/kg	224	196	0.50	210	13%	NA	47.3	36.4	0.50	41.9	26%	NA
Thallium (Tl)	mg/kg	<0.050	<0.050	0.050	NC	NC	NC	0.059	0.051	0.050	0.055	NA	0.16
Tin (Sn)	mg/kg	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC
Titanium (Ti)	mg/kg	78.3	83.4	1.0	80.9	6%	NA	709	750	1.0	730	6%	NA
Uranium (U)	mg/kg	3.12	2.63	0.050	2.88	17%	NA	0.35	0.29	0.050	0.32	18%	NA
Vanadium (V)	mg/kg	9.31	9.45	0.20	9.38	1%	NA	66.1	72.2	0.20	69.2	9%	NA
Zinc (Zn)	mg/kg	65.1	63.7	2.0	64.4	2%	NA	67.2	66.6	2.0	66.9	1%	NA
Zirconium (Zr)	mg/kg	1.6	1.4	1.0	1.5	NA	0.20	1.3	1.2	1.0	1.25	NA	0.10
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.						17.04%	0.50					26.05%	0.40

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Golders' acceptable RPD for soil is less than or equal to 35%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.
Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

Attachment B:
QA/QC Results Tables
Table B-2. Results of Soil QA/QC Analyses

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	CSS16-27 3-Sep-2016 0:00 L1826516-12	CSS16-27D 3-Sep-2016 0:00 L1826516-13	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)	CSS16-39 4-Sep-2016 0:00 L1826516-24	CSS16-39D 4-Sep-2016 0:00 L1826516-25	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Tests													
pH	pH	7.84	7.86	0.10	7.85	0%	NA	7.71	7.67	0.10	7.69	1%	NA
Organic / Inorganic Carbon													
Inorganic Carbon	%	0.23	0.21	0.050	0.22	NA	0.28	0.26	0.26	0.050	0.26	1%	NA
Inorganic Carbon (as CaCO3 Equivalent)	%	1.89	1.78	0.40	1.84	NA	0.28	2.19	2.17	0.40	2.18	1%	NA
Total Carbon by Combustion	%	3.69	2.05	0.05	2.87	**57%**	NA	3.13	2.85	0.05	2.99	9%	NA
Total Organic Carbon	%	3.46	1.84	0.050	2.65	**61%**	NA	2.87	2.59	0.050	2.73	10%	NA
Plant Available Nutrients													
Available Nitrate-N	mg/kg	<2.0	<1.0	2.0	NC	NC	NC	1.6	1.6	1.0	1.6	NA	0.00
Available Phosphate-P	mg/kg	10.8	11.0	2.0	10.9	2%	NA	3.3	3.9	2.0	3.6	NA	0.30
Available Potassium	mg/kg	146	135	20	141	8%	NA	88	86	20	87	NA	0.10
Metals													
Aluminum (Al)	mg/kg	12200	12200	50	12200	0%	NA	14700	15000	50	14850	2%	NA
Antimony (Sb)	mg/kg	0.29	0.32	0.10	0.31	NA	0.30	0.39	0.37	0.10	0.38	NA	0.20
Arsenic (As)	mg/kg	8.61	8.79	0.10	8.7	2%	NA	8.92	8.82	0.10	8.87	1%	NA
Barium (Ba)	mg/kg	127	129	0.50	128	2%	NA	163	160	0.50	161.5	2%	NA
Beryllium (Be)	mg/kg	0.46	0.49	0.10	0.48	NA	0.30	0.53	0.54	0.10	0.54	2%	NA
Bismuth (Bi)	mg/kg	<0.20	<0.20	0.20	NC	NC	NC	<0.20	<0.20	0.20	NC	NC	NC
Boron (B)	mg/kg	7.0	7.3	5.0	7.15	NA	0.06	7.9	7.7	5.0	7.8	NA	0.0
Cadmium (Cd)	mg/kg	0.16	0.17	0.020	0.16	4%	NA	0.21	0.23	0.020	0.22	7%	NA
Calcium (Ca)	mg/kg	18200	18300	50	18250	1%	NA	20800	20900	50	20850	0%	NA
Chromium (Cr)	mg/kg	14.0	16.3	0.50	15.2	15%	NA	16.6	17.2	0.50	16.9	4%	NA
Cobalt (Co)	mg/kg	13.3	13.2	0.10	13.3	1%	NA	13.6	13.6	0.10	13.6	0%	NA
Copper (Cu)	mg/kg	649	620	0.50	634.5	5%	NA	539	547	0.50	543	1%	NA
Iron (Fe)	mg/kg	49600	48700	50	49150	2%	NA	49200	47500	50	48350	4%	NA
Lead (Pb)	mg/kg	4.95	5.91	0.50	5.43	18%	NA	4.66	4.74	0.50	4.70	2%	NA
Lithium (Li)	mg/kg	12.5	13.1	2.0	12.8	5%	NA	12.3	12.5	2.0	12.4	2%	NA
Magnesium (Mg)	mg/kg	6430	6380	20	6405	1%	NA	6600	6560	20	6580	1%	NA
Manganese (Mn)	mg/kg	532	536	1.0	534	1%	NA	520	521	1.0	521	0%	NA
Mercury (Hg)	mg/kg	0.095	0.094	0.050	0.095	NA	0.02	0.10	0.11	0.050	0.11	NA	0.14
Molybdenum (Mo)	mg/kg	3.32	3.11	0.10	3.22	7%	NA	3.96	3.69	0.10	3.83	7%	NA
Nickel (Ni)	mg/kg	9.89	10.8	0.50	10.3	9%	NA	12.0	12.5	0.50	12.3	4%	NA
Phosphorus (P)	mg/kg	1120	1090	50	1105	3%	NA	1220	1210	50	1215	1%	NA
Potassium (K)	mg/kg	1100	1120	100	1110	2%	NA	1230	1230	100	1230	0%	NA
Selenium (Se)	mg/kg	0.83	0.84	0.20	0.84	NA	0.05	0.82	0.77	0.20	0.80	NA	0.25
Silver (Ag)	mg/kg	0.31	0.32	0.10	0.32	NA	0.10	0.29	0.31	0.10	0.3	NA	0.20
Sodium (Na)	mg/kg	583	546	50	565	7%	NA	714	696	50	705	3%	NA
Strontium (Sr)	mg/kg	121	135	0.50	128	11%	NA	158	157	0.50	158	1%	NA
Thallium (Tl)	mg/kg	<0.050	<0.050	0.050	NC	NC	NC	<0.050	<0.050	0.050	NC	NC	NC
Tin (Sn)	mg/kg	<2.0	<2.0	2.0	NC	NC	NC	<2.0	<2.0	2.0	NC	NC	NC
Titanium (Ti)	mg/kg	936	934	1.0	935	0%	NA	1170	1110	1.0	1140	5%	NA
Uranium (U)	mg/kg	0.81	0.85	0.050	0.83	4%	NA	1.23	1.20	0.050	1.22	2%	NA
Vanadium (V)	mg/kg	184	180	0.20	182	2%	NA	187	182	0.20	185	3%	NA
Zinc (Zn)	mg/kg	46.1	45.6	2.0	45.9	1%	NA	46.1	45.5	2.0	45.8	1%	NA
Zirconium (Zr)	mg/kg	2.5	2.2	1.0	2.35	NA	0.30	2.0	1.9	1.0	1.95	NA	0.10

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit.
Golders' acceptable RPD for soil is less than or equal to 35%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.
Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

17.68% 0.30 7.06% 0.25

Attachment B:
QA/QC Results Tables
Table B-2. Results of Soil QA/QC Analyses

Sample ID Date Sampled QA/QC Laboratory (ALS) Sample ID	Units	CSS16-BKG-13 3-Sep-2016 0:00 L1826516-36	CSS16-BKG-13D 3-Sep-2016 0:00 L1826516-37	Method Detection Limit	Mean	Relative Percent Difference (RPD)	Difference Factor (DF)
Physical Tests							
pH	pH	5.48	5.53	0.10	5.51	1%	NA
Organic / Inorganic Carbon							
Inorganic Carbon	%	0.16	0.16	0.050	0.16	NA	0.04
Inorganic Carbon (as CaCO3 Equivalent)	%	1.3	1.29	0.40	1.30	NA	0.03
Total Carbon by Combustion	%	17.6	18.0	0.05	17.8	2%	NA
Total Organic Carbon	%	17.4	17.8	0.050	17.6	2%	NA
Plant Available Nutrients							
Available Nitrate-N	mg/kg	<4.0	<4.0	4.0	NC	NC	NC
Available Phosphate-P	mg/kg	55.5	48.9	4.0	52.2	13%	NA
Available Potassium	mg/kg	267	252	40	260	6%	NA
Metals							
Aluminum (Al)	mg/kg	14500	14200	50	14350	2%	NA
Antimony (Sb)	mg/kg	0.51	0.26	0.10	0.39	NA	**2.50**
Arsenic (As)	mg/kg	4.22	3.61	0.10	3.92	16%	NA
Barium (Ba)	mg/kg	176	162	0.50	169	8%	NA
Beryllium (Be)	mg/kg	0.40	0.42	0.10	0.41	NA	0.20
Bismuth (Bi)	mg/kg	<0.20	<0.20	0.20	NC	NC	NC
Boron (B)	mg/kg	5.8	<5.0	5.0	NC	NC	NC
Cadmium (Cd)	mg/kg	0.52	0.45	0.020	0.48	15%	NA
Calcium (Ca)	mg/kg	8650	8200	50	8425	5%	NA
Chromium (Cr)	mg/kg	28.9	29.7	0.50	29.3	3%	NA
Cobalt (Co)	mg/kg	12.4	11.9	0.10	12.2	4%	NA
Copper (Cu)	mg/kg	40.4	36.8	0.50	38.6	9%	NA
Iron (Fe)	mg/kg	21500	22800	50	22150	6%	NA
Lead (Pb)	mg/kg	7.84	7.78	0.50	7.81	1%	NA
Lithium (Li)	mg/kg	15.3	14.8	2.0	15.1	3%	NA
Magnesium (Mg)	mg/kg	5820	5540	20	5680	5%	NA
Manganese (Mn)	mg/kg	1290	1100	1.0	1195	16%	NA
Mercury (Hg)	mg/kg	0.11	0.12	0.050	0.12	NA	0.12
Molybdenum (Mo)	mg/kg	1.60	1.38	0.10	1.49	15%	NA
Nickel (Ni)	mg/kg	24.3	22.1	0.50	23.2	9%	NA
Phosphorus (P)	mg/kg	934	873	50	904	7%	NA
Potassium (K)	mg/kg	1380	1370	100	1375	1%	NA
Selenium (Se)	mg/kg	0.35	<0.20	0.20	NC	NC	NC
Silver (Ag)	mg/kg	0.27	0.23	0.10	0.25	NA	0.40
Sodium (Na)	mg/kg	89	131	50	110	NA	0.84
Strontium (Sr)	mg/kg	58.5	60.2	0.50	59.4	3%	NA
Thallium (Tl)	mg/kg	0.098	0.109	0.050	0.10	NA	0.22
Tin (Sn)	mg/kg	<2.0	<2.0	2.0	NC	NC	NC
Titanium (Ti)	mg/kg	721	806	1.0	763.5	11%	NA
Uranium (U)	mg/kg	0.38	0.42	0.050	0.40	10%	NA
Vanadium (V)	mg/kg	55.1	56.6	0.20	55.9	3%	NA
Zinc (Zn)	mg/kg	143	126	2.0	135	13%	NA
Zirconium (Zr)	mg/kg	1.3	1.6	1.0	1.45	NA	0.30

Notes:
QA/QC = quality assurance/quality control; FDA = field duplicate available; FD = field duplicate
NA = not applicable; NC = not calculated; Mean = average of two values
Relative percent difference (RPD) = the difference between two values divided by the mean of the two values. RPD is calculated when the concentration is greater than five times the detection limit. 15.90% 2.50
Golders' acceptable RPD for soil is less than or equal to 35%.
Difference factor (DF) = absolute difference between two values divided by the method detection limit. The DF is calculated when the concentration is less than five times the detection limit.
Golders' acceptable DF is less than or equal to 2.0.
Bold values indicate an exceedance of the acceptable RPD or DF.

ATTACHMENT C
Analytical Reports

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-DEC-16 13:52 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826566

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0147, G0149, G0150, G0152, G0156, G0157, G0165, G0166, G0167, G0168, G0169, G0170, G0171
Legal Site Desc:

Comments:
16-DEC-2016 Split File #1.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-2	L1826566-3	L1826566-4	L1826566-5	L1826566-6
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	17-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16
	Sampled Time					
	Client ID	G0147-2 WORM16-01	G0147-3 WORM16-02	G0147-4 AR16-02	G0147-5 BEETLE16-01	G0147-6 ANT16-01
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	65.8	64.0	46.5	78.9	49.3
Metals	Aluminum (Al)-Total (mg/kg)	58.7	2810	274	35	128
	Aluminum (Al)-Total (mg/kg wwt)	20.1	1010	147	7.4	64.7
	Antimony (Sb)-Total (mg/kg)	<0.010	0.064	0.016	<0.020 DLIS	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0032	0.0232	0.0086	<0.0040 DLIS	0.0024
	Arsenic (As)-Total (mg/kg)	0.334	2.75	0.353	0.468	4.69
	Arsenic (As)-Total (mg/kg wwt)	0.114	0.992	0.189	0.099	2.38
	Barium (Ba)-Total (mg/kg)	31.6	73.2	4.24	4.14	8.20
	Barium (Ba)-Total (mg/kg wwt)	10.8	26.4	2.27	0.872	4.16
	Beryllium (Be)-Total (mg/kg)	<0.010	0.103	0.011	0.054	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0371	0.0059	0.0114	0.0022
	Bismuth (Bi)-Total (mg/kg)	<0.010	0.019	<0.010	<0.020 DLIS	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0069	<0.0040 DLIS	<0.0040 DLIS	<0.0020
	Boron (B)-Total (mg/kg)	<1.0	2.0	1.0	2.4	2.2
	Boron (B)-Total (mg/kg wwt)	0.31	0.71	0.54	0.51	1.11
	Cadmium (Cd)-Total (mg/kg)	0.344	0.112	9.13	0.523	0.464
	Cadmium (Cd)-Total (mg/kg wwt)	0.118	0.0403	4.89	0.110	0.235
	Calcium (Ca)-Total (mg/kg)	9800	108000	4120	1570	659
	Calcium (Ca)-Total (mg/kg wwt)	3350	38800	2200	330	334
	Cesium (Cs)-Total (mg/kg)	0.0148	0.344	0.0511	0.012	0.0245
	Cesium (Cs)-Total (mg/kg wwt)	0.0051	0.124	0.0273	0.0025	0.0124
	Chromium (Cr)-Total (mg/kg)	0.41	4.83	0.44	<0.40 DLIS	0.38
	Chromium (Cr)-Total (mg/kg wwt)	0.139	1.74	0.238	<0.080 DLIS	0.190
	Cobalt (Co)-Total (mg/kg)	0.358	2.69	0.295	0.249	0.126
	Cobalt (Co)-Total (mg/kg wwt)	0.123	0.968	0.158	0.0525	0.0639
	Copper (Cu)-Total (mg/kg)	25.4	99.1	307	42.9	15.5
	Copper (Cu)-Total (mg/kg wwt)	8.70	35.7	164	9.04	7.88
	Iron (Fe)-Total (mg/kg)	425	10100	822	182	250
	Iron (Fe)-Total (mg/kg wwt)	145	3640	440	38.3	127
	Lead (Pb)-Total (mg/kg)	0.070	2.10	0.148	<0.10 DLIS	0.070
	Lead (Pb)-Total (mg/kg wwt)	0.024	0.758	0.079	<0.020 DLIS	0.035
	Lithium (Li)-Total (mg/kg)	<0.50	3.03	<0.50	<1.0 DLIS	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	1.09	<0.20 DLIS	<0.20 DLIS	<0.10
	Magnesium (Mg)-Total (mg/kg)	2960	4440	3170	2090	843
	Magnesium (Mg)-Total (mg/kg wwt)	1010	1600	1700	439	427
	Manganese (Mn)-Total (mg/kg)	102	842	54.5	45.8	96.4
	Manganese (Mn)-Total (mg/kg wwt)	34.9	303	29.2	9.65	48.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-14	L1826566-18	L1826566-67	L1826566-75	
	Description	TISSUE	TISSUE	TISSUE	TISSUE	
	Sampled Date	19-AUG-16	19-AUG-16	04-SEP-16	04-SEP-16	
	Sampled Time					
	Client ID	G0149-2 WORM16-03	G0149-6 WORM16-BKG-01	G0167-6 WORM16-04	G0168-2 AR16-03	
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	69.0	77.0	72.0	73.7	
Metals	Aluminum (Al)-Total (mg/kg)	3210	4540	155	2060	
	Aluminum (Al)-Total (mg/kg wwt)	994	1040	43.4	542	
	Antimony (Sb)-Total (mg/kg)	0.034	0.036	0.021	0.072	
	Antimony (Sb)-Total (mg/kg wwt)	0.0104	0.0084	0.0057	0.0190	
	Arsenic (As)-Total (mg/kg)	2.21	1.51	3.86	1.52	
	Arsenic (As)-Total (mg/kg wwt)	0.685	0.346	1.08	0.401	
	Barium (Ba)-Total (mg/kg)	25.3	30.0	7.29	24.4	
	Barium (Ba)-Total (mg/kg wwt)	7.82	6.89	2.04	6.41	
	Beryllium (Be)-Total (mg/kg)	0.092	0.121	<0.010	0.085	
	Beryllium (Be)-Total (mg/kg wwt)	0.0284	0.0278	<0.0020	0.0224	
	Bismuth (Bi)-Total (mg/kg)	0.019	0.023	<0.010	<0.010	
	Bismuth (Bi)-Total (mg/kg wwt)	0.0058	0.0053	<0.0020	0.0023	
	Boron (B)-Total (mg/kg)	1.6	1.8	1.1	4.4	
	Boron (B)-Total (mg/kg wwt)	0.50	0.42	0.31	1.16	
	Cadmium (Cd)-Total (mg/kg)	1.90	4.87	4.89	5.19	
	Cadmium (Cd)-Total (mg/kg wwt)	0.587	1.12	1.37	1.37	
	Calcium (Ca)-Total (mg/kg)	3050	3020	4980	8520	
	Calcium (Ca)-Total (mg/kg wwt)	943	694	1390	2240	
	Cesium (Cs)-Total (mg/kg)	0.346	0.448	0.0280	0.305	
	Cesium (Cs)-Total (mg/kg wwt)	0.107	0.103	0.0078	0.0802	
	Chromium (Cr)-Total (mg/kg)	5.75	7.84	0.37	1.46	
	Chromium (Cr)-Total (mg/kg wwt)	1.78	1.80	0.103	0.384	
	Cobalt (Co)-Total (mg/kg)	3.20	3.85	0.964	2.03	
	Cobalt (Co)-Total (mg/kg wwt)	0.990	0.885	0.269	0.535	
	Copper (Cu)-Total (mg/kg)	37.0	13.7	76.7	180	
	Copper (Cu)-Total (mg/kg wwt)	11.4	3.14	21.4	47.3	
	Iron (Fe)-Total (mg/kg)	3710	3290	616	4740	
	Iron (Fe)-Total (mg/kg wwt)	1150	755	172	1250	
	Lead (Pb)-Total (mg/kg)	1.12	1.19	0.123	0.554	
	Lead (Pb)-Total (mg/kg wwt)	0.347	0.273	0.034	0.146	
	Lithium (Li)-Total (mg/kg)	2.69	2.71	<0.50	2.33	
	Lithium (Li)-Total (mg/kg wwt)	0.83	0.62	<0.10	0.61	
	Magnesium (Mg)-Total (mg/kg)	1660	1540	744	3420	
	Magnesium (Mg)-Total (mg/kg wwt)	514	353	208	900	
	Manganese (Mn)-Total (mg/kg)	161	173	10.8	113	
	Manganese (Mn)-Total (mg/kg wwt)	49.7	39.7	3.02	29.7	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826566-2	L1826566-3	L1826566-4	L1826566-5	L1826566-6
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	17-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16
	Sampled Time					
	Client ID	G0147-2 WORM16-01	G0147-3 WORM16-02	G0147-4 AR16-02	G0147-5 BEETLE16-01	G0147-6 ANT16-01
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.213	0.0788	0.258 DLIS	0.103 DLIS	0.0158
	Mercury (Hg)-Total (mg/kg wwt)	0.0728	0.0284 DLIS	0.138 DLIS	0.0218 DLIS	0.0080
	Molybdenum (Mo)-Total (mg/kg)	1.89	2.19	0.711	0.690	0.805
	Molybdenum (Mo)-Total (mg/kg wwt)	0.646	0.790	0.380	0.145	0.408
	Nickel (Ni)-Total (mg/kg)	0.53	3.56	0.40	<0.40 DLIS	0.27
	Nickel (Ni)-Total (mg/kg wwt)	0.180	1.28	0.214	<0.080 DLIS	0.138
	Phosphorus (P)-Total (mg/kg)	9060	4750	14500	12200	5560
	Phosphorus (P)-Total (mg/kg wwt)	3100	1710	7790	2570	2820
	Potassium (K)-Total (mg/kg)	6860	6760	14400	12900	5460
	Potassium (K)-Total (mg/kg wwt)	2350	2430	7700	2720	2770
	Rubidium (Rb)-Total (mg/kg)	1.57	2.91	9.13	3.16	1.59
	Rubidium (Rb)-Total (mg/kg wwt)	0.538	1.05	4.89	0.667	0.804
	Selenium (Se)-Total (mg/kg)	3.00	1.77	2.30	2.68	0.48
	Selenium (Se)-Total (mg/kg wwt)	1.03	0.636	1.23	0.565	0.241
	Sodium (Na)-Total (mg/kg)	5810	2380	6200	5420	1390
	Sodium (Na)-Total (mg/kg wwt)	1990	856	3320	1140	703
	Strontium (Sr)-Total (mg/kg)	78.7	699	23.4	9.37	5.21
	Strontium (Sr)-Total (mg/kg wwt)	26.9	252	12.5	1.97	2.64
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.040 DLIS	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	0.0063	<0.0080 DLIS	<0.0080 DLIS	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0020	0.0110	0.0044	<0.0040 DLIS	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00396	0.00236	<0.00080 DLIS	0.00051
	Tin (Sn)-Total (mg/kg)	1.17	1.97	0.31	<0.20 DLIS	0.21
	Tin (Sn)-Total (mg/kg wwt)	0.401	0.708	0.165	<0.040 DLIS	0.106
	Uranium (U)-Total (mg/kg)	0.0142	0.139	0.0384	0.0061	0.0078
	Uranium (U)-Total (mg/kg wwt)	0.00487	0.0500	0.0206	0.00129	0.00398
	Vanadium (V)-Total (mg/kg)	0.67	25.2	2.44	0.48	0.60
	Vanadium (V)-Total (mg/kg wwt)	0.228	9.07	1.31	0.101	0.305
	Zinc (Zn)-Total (mg/kg)	134	40.7	385	156	134
	Zinc (Zn)-Total (mg/kg wwt)	46.0	14.6	206	32.9	68.1
	Zirconium (Zr)-Total (mg/kg)	<0.20	1.65	0.20	<0.40 DLIS	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.594	0.107	<0.080 DLIS	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826566-14 TISSUE 19-AUG-16 G0149-2 WORM16-03	L1826566-18 TISSUE 19-AUG-16 G0149-6 WORM16-BKG-01	L1826566-67 TISSUE 04-SEP-16 G0167-6 WORM16-04	L1826566-75 TISSUE 04-SEP-16 G0168-2 AR16-03	
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.187	0.250	0.838 DLIS	0.0742	
	Mercury (Hg)-Total (mg/kg wwt)	0.0578	0.0575	0.234	0.0195	
	Molybdenum (Mo)-Total (mg/kg)	0.731	0.620	1.38	2.40	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.226	0.142	0.385	0.632	
	Nickel (Ni)-Total (mg/kg)	4.35	5.47	0.89	1.73	
	Nickel (Ni)-Total (mg/kg wwt)	1.35	1.26	0.248	0.455	
	Phosphorus (P)-Total (mg/kg)	7460	6920	8930	12000	
	Phosphorus (P)-Total (mg/kg wwt)	2310	1590	2500	3160	
	Potassium (K)-Total (mg/kg)	6800	6210	7100	10900	
	Potassium (K)-Total (mg/kg wwt)	2100	1430	1990	2870	
	Rubidium (Rb)-Total (mg/kg)	9.92	10.2	4.18	10.4	
	Rubidium (Rb)-Total (mg/kg wwt)	3.07	2.34	1.17	2.74	
	Selenium (Se)-Total (mg/kg)	8.01	4.04	19.0	2.84	
	Selenium (Se)-Total (mg/kg wwt)	2.48	0.928	5.32	0.748	
	Sodium (Na)-Total (mg/kg)	2970	2900	3580	3780	
	Sodium (Na)-Total (mg/kg wwt)	919	666	1000	994	
	Strontium (Sr)-Total (mg/kg)	17.2	18.0	20.4	82.2	
	Strontium (Sr)-Total (mg/kg wwt)	5.32	4.14	5.70	21.6	
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	0.030	<0.020	
	Tellurium (Te)-Total (mg/kg wwt)	0.0048	0.0042	0.0084	<0.0040	
	Thallium (Tl)-Total (mg/kg)	0.0300	0.0487	0.0120	0.0037	
	Thallium (Tl)-Total (mg/kg wwt)	0.00929	0.0112	0.00334	0.00097	
	Tin (Sn)-Total (mg/kg)	0.32	0.87	0.86	0.57	
	Tin (Sn)-Total (mg/kg wwt)	0.100	0.200	0.242	0.150	
	Uranium (U)-Total (mg/kg)	0.190	0.260	0.128	0.218	
	Uranium (U)-Total (mg/kg wwt)	0.0587	0.0596	0.0357	0.0573	
	Vanadium (V)-Total (mg/kg)	10.3	7.60	1.71	18.1	
	Vanadium (V)-Total (mg/kg wwt)	3.19	1.75	0.478	4.77	
	Zinc (Zn)-Total (mg/kg)	189	189	265	260	
	Zinc (Zn)-Total (mg/kg wwt)	58.4	43.4	74.2	68.5	
	Zirconium (Zr)-Total (mg/kg)	0.57	0.59	<0.20	1.16	
	Zirconium (Zr)-Total (mg/kg wwt)	0.177	0.136	<0.040	0.304	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Thallium (Tl)-Total	DUP-H	L1826566-14, -3, -4, -6, -75
Duplicate	Tin (Sn)-Total	DUP-H	L1826566-14, -3, -4, -6, -75
Duplicate	Tin (Sn)-Total	DUP-H	L1826566-18, -2, -5, -67
Duplicate	Thallium (Tl)-Total	DUP-H	L1826566-14, -3, -4, -6, -75
Duplicate	Tin (Sn)-Total	DUP-H	L1826566-14, -3, -4, -6, -75
Duplicate	Tin (Sn)-Total	DUP-H	L1826566-18, -2, -5, -67

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLIS	Detection Limit Adjusted: Insufficient Sample
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA Tissue Mercury in Tissue by CVAFS Micro (DRY) EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA Tissue Mercury in Tissue by CVAFS (WET) EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA Tissue Mercury in Tissue by CVAFS Micro (WET) EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA Tissue Metals in Tissue by CRC ICPMS (DRY) EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (DRY) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA Tissue Metals in Tissue by CRC ICPMS (WET) EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

Reference Information

MET-WET-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (WET) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA Tissue % Moisture in Tissues ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0147	G0149	G0150	G0152	G0156
G0157	G0165	G0166	G0167	G0168
G0169	G0170	G0171		

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0149

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	SPRUCE16-01	G0149-01	19-Aug-16		Tissue	X	1
	WORM16-03	G0149-02	19-Aug-16		Tissue	X	1
	BERRY-BKG-02	G0149-03	19-Aug-16		Tissue	X	1
	BERRY-BKG-01	G0149-04	19-Aug-16		Tissue	X	1
	BERRY-BKG-03	G0149-05	19-Aug-16		Tissue	X	1
	WORM16-BKG-01	G0149-06	19-Aug-16		Tissue	X	1
		(F			Tissue	X	1
	BERRY16-11	G0149-08	19-Aug-16		Tissue	X	1
	ANT16-02	G0149-09	19-Aug-16		Tissue	X	1
	BERRY16-12	G0149-10	19-Aug-16		Tissue	X	1
	BERRY16-13	G0149-11	19-Aug-16		Tissue	X	1
	SPRUCE16-02	G0149-12	19-Aug-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little	08/09/2016 15:30	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

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COC # G0150

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCV	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-14	G0150-01	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-15	G0150-02	19-Aug-16		Tissue	X	1
[redacted]	ANT16-03	G0150-03	19-Aug-16	FDA - G0165-04	Tissue	X	1
[redacted]	ANT16-03d	G0150-04	19-Aug-16	FD - G0165-03	Tissue	X	1
[redacted]	SPRUCE16-03	G0150-05	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-04	G0150-06	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-05	G0150-07	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-06	G0150-08	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-07	G0150-09	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-08	G0150-10	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-09	G0150-11	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-16	G0150-12	20-Aug-16		Tissue	X	1

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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COC # G0152

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-17	G0152-01	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-18	G0152-02	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-19	G0152-03	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-20	G0152-04	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-10	G0152-05	20-Aug-16		Tissue	X	1
[redacted]	WILLOW16-06	G0152-06	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-07	G0152-07	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-03	G0152-08	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-04	G0152-09	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-08	G0152-10	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-05	G0152-11	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-06	G0152-12	02-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke ~~Evan Zapfgilje~~	08/09/2016 15:30 ~~08/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

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COC # G0156

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	Please Indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	GRASS16-07	G0156-01	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-08	G0156-02	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-09	G0156-03	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-10	G0156-04	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-10	G0156-05	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-09	G0156-06	02-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-06	G0156-07	02-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-07	G0156-08	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-11	G0156-09	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-01	G0156-10	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-02	G0156-11	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-12	G0156-12	03-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litle ~~Evin Zapfgilje~~	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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Environmental Division

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COC # G0157

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample # [redacted]	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	GRASS16-13	G0157-01	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-03	G0157-02	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-04	G0157-03	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-14	G0157-04	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-15	G0157-05	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-05	G0157-06	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-13	G0157-07	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-14	G0157-08	03-Sep-16	FDA - G0157-09	Tissue	X	1
[redacted]	WILLOW16-14d	G0157-09	03-Sep-16	FD - G0157-08	Tissue	X	1
[redacted]	WILLOW16-15	G0157-10	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-17	G0157-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-16	G0157-12	04-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lutke ~~Evin Zapfgilje~~	08/09/2016 15:30 ~~06/09/2016 8:00~~	JC	SEP - 9 2016	9am	1°C			

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COC # G0165

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]		~~G0165-01~~					
[redacted]	WILLOW16-11	G0165-02	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-16	G0165-03	03-Sep-16	FDA - G0165-04	Tissue	X	1
[redacted]	GRASS16-16d	G0165-04	03-Sep-16	FD - G0165-03	Tissue	X	1
[redacted]	GRASS16-17	G0165-05	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-06	G0165-06	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-07	G0165-07	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-08	G0165-08	03-Sep-16	FDA - G0165-09	Tissue	X	1
[redacted]	GRASS16-BKG-08d	G0165-09	03-Sep-16	FDA - G0165-08	Tissue	X	1
[redacted]	WILLOW16-11	G0165-10	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-18	G0165-11	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-19	G0165-12	03-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litle ~~Evin Zapfgilje~~	08/09/2016 15:30 ~~08/09/2016 17:00~~	JC	SEP - 9 2016	9am	1°C			

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COC # G0166

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	WILLOW16-18	G01666-01	04-Sep-16		Tissue	X	1
	GRASS16-20	G01666-02	04-Sep-16		Tissue	X	1
	WILLOW16-19	G01666-03	04-Sep-16		Tissue	X	1
	GRASS16-21	G01666-04	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-01	G01666-05	04-Sep-16		Tissue	X	1
	SPRUCE16-BKG-02	G01666-06	04-Sep-16		Tissue	X	1
	BERRY16-BKG-11	G01666-07	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-02	G01666-08	04-Sep-16		Tissue	X	1
	SPRUCE16-BKG-03	G01666-09	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-03	G01666-10	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-04	G01666-11	04-Sep-16		Tissue	X	1
	WILLOW16-BKG-05	G01666-12	04-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lithe	08/09/2016 15:30	JC	SEP - 9 2016	9am	1°C			
Evin Zapfgilje	~~08/09/2016 3:00~~							

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ANALYTICAL CHEMISTRY & TESTING SERVICES

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Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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COC # G0167

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE-BKG-04	G0167-01	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-06	G0167-02	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-05	G0167-03	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-08	G0167-04	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-09	G0167-05	04-Sep-16		Tissue	X	1
[redacted]	WORM16-04	G0167-06	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-10	G0167-07	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-11	G0167-08	04-Sep-16	FDA - G0167-09	Tissue	X	1
[redacted]	SPRUCE16-11D	G0167-09	04-Sep-16	FD - G0167-08	Tissue	X	1
[redacted]	SPRUCE16-12	G0167-10	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-13	G0167-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-20	G0167-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

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Chain of Custody / Analytical Request Form

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COC # G0168

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		**Analysis Request**
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-14	G0168-01	05-Sep-16		Tissue	X	1
[redacted]	AR16-03	G0168-02	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-15	G0168-03	05-Sep-16		Tissue	X	1
[redacted]	ANT16-04	G0168-04	05-Sep-16		Tissue	X	1
[redacted]	AR16-04	G0168-05	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-07	G0168-06	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-06	G0168-07	05-Sep-16		Tissue	X	1
[redacted]	AR16-BKG-01	G0168-08	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-08	G0168-09	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-07	G0168-10	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-01	G0168-11	05-Sep-16		Tissue	X	1
[redacted]	AR16-BKG-02	G0168-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Littler Evin Zapfgilje	08/09/2016 15:30 06/09/2016 0:00	JC	SEP - 9 2016	9am	1C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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COC # G0169

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	WORM16-BKG-02	G0169-01	05-Sep-16		Tissue	X	1
	WILLOW16-BKG-09	G0169-02	05-Sep-16	FDA - G0169-03	Tissue	X	1
	WILLOW16-BKG-09d	G0169-03	05-Sep-16	FD - G0169-02	Tissue	X	1
	SPRUCE16-BKG-08	G0169-04	05-Sep-16	FDA - G0169-05	Tissue	X	1
	SPRUCE16-BKG-08d	G0169-05	05-Sep-16	FD - G0169-04	Tissue	X	1
	WILOW16-21	G0169-09	05-Sep-16		Tissue	X	1
	WILLOW16-22	G0169-10	05-Sep-16		Tissue	X	1
	WILOW16-23	G0169-11	05-Sep-16		Tissue	X	1
	WILLOW16-24	G0169-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke ~~Evin Zapf-Gilje~~	08/09/2016 16:30 ~~08/09/2016 00:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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COC # G0170

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SGW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-16	G0170 - 01	05-Sep-16		Tissue	X	1
[redacted]	ANT16-05	G0170 - 02	05-Sep-16		Tissue	X	1
[redacted]	AR16-05	G0170 - 03	05-Sep-16		Tissue	X	1
[redacted]	BEETLE16-02	G0170 - 04	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-10	G0170 - 05	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-09	G0170 - 06	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-02	G0170 - 07	05-Sep-16	FDA - G0170-08	Tissue	X	1
[redacted]	ANT16-BKG-02d	G0170 - 08	05-Sep-16	FD- G0170-07	Tissue	X	1
[redacted]	SPRUCE16-BKG-10	G0170 - 09	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-03	G0170 - 10	05-Sep-16	FDA - G0170-11	Tissue	X	1
[redacted]	ANT16-BKG-03d	G0170 - 11	05-Sep-16	FD - G0170-10	Tissue	X	1
[redacted]	WILLOW16-25	G0170 - 12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke ~~Evin Zapfgilje~~	09/09/2016 15:30 ~~00/00/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0171

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only):	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826566-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-17	G0171-01	05-Sep-16		Tissue	X	1
[redacted]	WORM16-05	G0171-02	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-18	G0171-03	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-09	G0171-04	05-Sep-16	FDA- G0171-05	Tissue	X	1
[redacted]	GRASS16-BKG-09d	G0171-05	05-Sep-16	FD G0171-04	Tissue	X	1
[redacted]	SPRUCE16-BKG-11	G0171-06	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-10	G0171-07	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-11	G0171-08	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-11	G0171-09	05-Sep-16		Tissue	X	1
[redacted]	SPURCE16-BKG-12	G0171-10	05-Sep-16		Tissue	X	1
[redacted]							
[redacted]							

Special Instructions / Regulations / Hazardous Details

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By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawn Little ~~Evan Zapf-Gilje~~	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

L1826505 9/9/2016

Group A Tissue

	SCN	Tissue ID
1	G0149-8	BERRY16-11
2	G0149-9	ANT16-02
3	G0149-10	BERRY16-12
4	G0149-11	BERRY16-13
5	G0149-12	SPRUCE16-02
6	G0150-1	BERRY16-14
7	G0150-2	BERRY16-15
8	G0150-3	ANT16-03
9	G0150-4	ANT16-03d
10	G0150-5	SPRUCE16-03
11	G0150-6	BERRY16-BKG-04
12	G0150-7	BERRY16-BKG-05
13	G0150-8	BERRY16-BKG-06
14	G0150-9	BERRY16-BKG-07
15	G0150-10	BERRY16-BKG-08
16	G0150-11	BERRY16-BKG-09
17	G0150-12	BERRY16-16
18	G0152-1	BERRY16-17
19	G0152-6	WILLOW16-06
20	G0152-7	WILLOW16-07
21	G0152-8	GRASS16-03
22	G0152-9	GRASS16-04
23	G0152-10	WILLOW16-08
24	G0152-11	GRASS16-05
25	G0152-12	GRASS16-06
26	G0156-1	GRASS16-07
27	G0156-2	GRASS16-08
28	G0156-3	WILLOW16-09
29	G0156-4	GRASS16-10
30	G0156-5	WILLOW16-10
31	G0156-6	GRASS16-09
32	G0156-7	SPRUCE16-06
33	G0156-8	SPRUCE16-07
34	G0168-3	SPRUCE16-15
35	G0168-4	ANT16-04
36	G0168-5	AR16-04
37	G0168-6	WILLOW16-BKG-07
38	G0168-7	SPRUCE16-BKG-06
39	G0168-8	AR16-BKG-01
40	G0168-9	WILLOW16-BKG-08
41	G0168-10	SPRUCE16-BKG-07
42	G0168-11	ANT16-BKG-01
43	G0168-12	AR16-BKG-02
44	G0169-1	WORM16-BKG-02
45	G0169-2	WILLOW16-BKG-09
46	G0169-3	WILLOW16-BKG-09d
47	G0169-4	SPRUCE16-BKG-08
48	G0169-5	SPRUCE16-BKG-08d
49	G0169-9	WILOW16-21
50	G0169-10	WILLOW16-22
51	G0169-11	WILOW16-23
52	G0169-12	WILLOW16-24
53	G0170-1	SPRUCE16-16
54	G0170-2	ANT16-05
55	G0170-3	AR16-05
56	G0170-4	BEETLE16-02
57	G0170-5	WILLOW16-BKG-10
58	G0170-6	SPRUCE16-BKG-09
59	G0170-7	ANT16-BKG-02
60	G0170-8	ANT16-BKG-02d
61	G0170-9	SPRUCE16-BKG-10
62	G0170-10	ANT16-BKG-03
63	G0170-11	ANT16-BKG-03d
64	G0170-12	WILLOW16-25
65	G171-1	SPRUCE16-17
66	G171-2	WORM16-05
67	G171-3	SPRUCE16-18
68	G171-4	GRASS16-BKG-09
69	G171-5	GRASS16-BKG-09d
70	G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

	SCN	Tissue ID
	G0147-1	BERRY16-04
	G0147-2	WORM16-01
	G0147-3	WORM16-02
	G0147-4	AR16-02
	G0147-5	BEETLE16-01
	G0147-6	ANT16-01
	G0147-7	BERRY16-05
	G0147-8	BERRY16-06
	G0147-9	BERRY16-07
	G0147-10	BERRY16-08
	G0147-11	BERRY16-09
	G0147-12	BERRY16-10
13	G0149-1	SPRUCE16-01
14	G0149-2	WORM16-03
15	G0149-3	BERRY-BKG-02
16	G0149-4	BERRY-BKG-01
17	G0149-5	BERRY-BKG-03
18	G0149-6	WORM16-BKG-01
19	G0152-2	BERRY16-18
20	G0152-3	BERRY16-19
21	G0152-4	BERRY16-20
22	G0152-5	BERRY16-BKG-10
23	G0156-9	GRASS16-11
24	G0156-10	GRASS16-BKG-01
25	G0156-11	GRASS16-BKG-02
26	G0156-12	GRASS16-12
27	G0157-1	GRASS16-13
28	G0157-2	GRASS16-BKG-03
29	G0157-3	GRASS16-BKG-04
30	G0157-4	GRASS16-14
31	G0157-5	GRASS16-15
32	G0157-6	GRASS16-BKG-05
33	G0157-7	WILLOW16-13
34	G0157-8	WILLOW16-14
35	G0157-9	WILLOW16-14d
36	G0157-10	WILLOW16-15
37	G0157-11	WILLOW16-17
38	G0157-12	WILLOW16-16
39	G0165-2	WILLOW16-11
40	G0165-3	GRASS16-16
41	G0165-4	GRASS16-16d
42	G0165-5	GRASS16-17
43	G0165-6	GRASS16-BKG-06
44	G0165-7	GRASS16-BKG-07
45	G0165-8	GRASS16-BKG-08
46	G0165-9	GRASS16-BKG-08d
47	G0165-10	WILLOW16-11
48	G0165-11	GRASS16-18
49	G0165-12	GRASS16-19
50	G0166-1	WILLOW16-18
51	G0166-2	GRASS16-20
52	G0166-3	WILLOW16-19
53	G0166-4	GRASS16-21
54	G0166-5	WILLOW16-BKG-01
55	G0166-6	SPRUCE16-BKG-02
56	G0166-7	BERRY16-BKG-11
57	G0166-8	WILLOW16-BKG-02
58	G0166-9	SPRUCE16-BKG-03
59	G0166-10	WILLOW16-BKG-03
60	G0166-11	WILLOW16-BKG-04
61	G0166-12	WILLOW16-BKG-05
62	G0167-1	SPRUCE-BKG-04
63	G0167-2	WILLOW16-BKG-06
64	G0167-3	SPRUCE16-BKG-05
65	G0167-4	SPRUCE16-08
66	G0167-5	SPRUCE16-09
67	G0167-6	WORM16-04
68	G0167-7	SPRUCE16-10
69	G0167-8	SPRUCE16-11
70	G0167-9	SPRUCE16-11D
71	G0167-10	SPRUCE16-12
72	G0167-11	SPRUCE16-13
73	G0167-12	WILLOW16-20
74	G0168-1	SPRUCE16-14
75	G0168-2	AR16-03
76	G171-7	GRASS16-BKG-10
77	G171-8	GRASS16-BKG-11
78	G171-9	WILLOW16-BKG-11
79	G171-10	SPURCE16-BKG-12

Group B Soil

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

- all 'Group A' & 'Group B' tissues:
  - moisture
  - routine prep
  - CCMS metals (wet + dry)
  - routine Hg (wet & dry)

tissues not in A or B list = Keep on hold.

TAT:

Group A: 5' codes) Sept 16

Group B: routine.

L1826566-COFC

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-DEC-16 13:12 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826505

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0147, G0149, G0150, G0152, G0156, G0157, G0165, G0166, G0167, G0168, G0169, G0170, G0171
Legal Site Desc:

Comments:
16-DEC-2016 Split File #1.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-2 TISSUE 19-AUG-16 G0149-9 ANT16-02	L1826505-8 TISSUE 19-AUG-16 G0150-3 ANT16-03	L1826505-9 TISSUE 19-AUG-16 G0150-4 ANT16-03D	L1826505-35 TISSUE 05-SEP-16 G0168-4 ANT16-04	L1826505-36 TISSUE 05-SEP-16 G0168-5 AR16-04
TISSUE						
Physical Tests	% Moisture (%)	55.3	71.7	68.1	70.9	67.3
Metals	Aluminum (Al)-Total (mg/kg)	53.8	291	133	307	112
	Aluminum (Al)-Total (mg/kg wwt)	24.0	82.3	42.4	89.2	36.7
	Antimony (Sb)-Total (mg/kg)	<0.010	0.123	0.013	0.015	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0348	0.0043	0.0043	<0.0040 DLIS
	Arsenic (As)-Total (mg/kg)	0.329	1.16	11.1	0.346	0.144
	Arsenic (As)-Total (mg/kg wwt)	0.147	0.328	3.54	0.101	0.047
	Barium (Ba)-Total (mg/kg)	12.2	34.7	20.3	17.6	2.80
	Barium (Ba)-Total (mg/kg wwt)	5.46	9.83	6.47	5.12	0.914
	Beryllium (Be)-Total (mg/kg)	<0.010	0.018	<0.010	0.012	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0051	0.0023	0.0034	<0.0040 DLIS
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0040 DLIS
	Boron (B)-Total (mg/kg)	16.8	18.9	16.9	18.7	3.4
	Boron (B)-Total (mg/kg wwt)	7.52	5.36	5.41	5.44	1.11
	Cadmium (Cd)-Total (mg/kg)	3.73	2.42	2.62	4.97	4.47
	Cadmium (Cd)-Total (mg/kg wwt)	1.66	0.685	0.835	1.44	1.46
	Calcium (Ca)-Total (mg/kg)	1140	3640	1310	1320	1990
	Calcium (Ca)-Total (mg/kg wwt)	509	1030	419	383	651
	Cesium (Cs)-Total (mg/kg)	0.0148	0.0451	0.0414	0.0425	0.0333
	Cesium (Cs)-Total (mg/kg wwt)	0.0066	0.0128	0.0132	0.0124	0.0109
	Chromium (Cr)-Total (mg/kg)	0.38	0.68	0.53	0.67	0.21
	Chromium (Cr)-Total (mg/kg wwt)	0.171	0.192	0.168	0.196	<0.080 DLIS
	Cobalt (Co)-Total (mg/kg)	0.220	0.455	0.307	0.414	0.099
	Cobalt (Co)-Total (mg/kg wwt)	0.0984	0.129	0.0979	0.121	0.0324
	Copper (Cu)-Total (mg/kg)	13.6	32.9	19.6	26.9	71.1
	Copper (Cu)-Total (mg/kg wwt)	6.07	9.31	6.26	7.83	23.2
	Iron (Fe)-Total (mg/kg)	195	846	340	546	262
	Iron (Fe)-Total (mg/kg wwt)	87.1	240	108	159	85.7
	Lead (Pb)-Total (mg/kg)	0.067	0.218	0.116	0.156	<0.050
	Lead (Pb)-Total (mg/kg wwt)	0.030	0.062	0.037	0.045	<0.020 DLIS
	Lithium (Li)-Total (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	0.14	<0.20 DLIS
	Magnesium (Mg)-Total (mg/kg)	733	919	885	1140	1600
	Magnesium (Mg)-Total (mg/kg wwt)	328	260	282	333	523
	Manganese (Mn)-Total (mg/kg)	181	234	230	228	29.5
	Manganese (Mn)-Total (mg/kg wwt)	80.8	66.4	73.3	66.4	9.65

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-39	L1826505-42	L1826505-43	L1826505-44	L1826505-54
	Description	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
	Sampled Date	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16
	Sampled Time					
	Client ID	G0168-8 AR16-BKG-01	G0168-11 ANT16-BKG-01	G0168-12 AR16-BKG-02	G0169-1 WORM16-BKG-02	G0170-2 ANT16-05
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	70.5	56.2	95.6	73.5	61.5
Metals	Aluminum (Al)-Total (mg/kg)	40	27.5	81	174	66.5
	Aluminum (Al)-Total (mg/kg wwt)	11.8	12.1	3.6	46.1	25.6
	Antimony (Sb)-Total (mg/kg)	0.025	<0.010	<0.040 DLIS	0.014	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0075	<0.0040 DLIS	<0.0020	0.0037	0.0020
	Arsenic (As)-Total (mg/kg)	0.181	0.090	0.23	0.196	0.527
	Arsenic (As)-Total (mg/kg wwt)	0.054	0.039	0.0103	0.0519	0.203
	Barium (Ba)-Total (mg/kg)	3.68	8.85	5.37	12.2	10.2
	Barium (Ba)-Total (mg/kg wwt)	1.09	3.88	0.239	3.24	3.92
	Beryllium (Be)-Total (mg/kg)	<0.020 DLIS	<0.010	<0.040 DLIS	<0.010	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	<0.0040 DLIS	<0.0040 DLIS	<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.020 DLIS	<0.010	<0.040 DLIS	<0.010	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0040 DLIS	<0.0040 DLIS	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg)	5.9	17.0	19.3	3.6	17.0
	Boron (B)-Total (mg/kg wwt)	1.75	7.46	0.86	0.95	6.54
	Cadmium (Cd)-Total (mg/kg)	6.27	6.91	51.6	22.8	2.86
	Cadmium (Cd)-Total (mg/kg wwt)	1.85	3.03	2.30	6.05	1.10
	Calcium (Ca)-Total (mg/kg)	6360	738	15800	7630	1060
	Calcium (Ca)-Total (mg/kg wwt)	1880	324	705	2020	409
	Cesium (Cs)-Total (mg/kg)	0.086	0.0139	0.252	0.0726	0.0170
	Cesium (Cs)-Total (mg/kg wwt)	0.0253	0.0061	0.0112	0.0192	0.0065
	Chromium (Cr)-Total (mg/kg)	0.66	<0.20	4.60	0.31	0.44
	Chromium (Cr)-Total (mg/kg wwt)	0.196	<0.080 DLIS	0.204	0.081	0.169
	Cobalt (Co)-Total (mg/kg)	0.216	0.130	0.706	0.828	0.326
	Cobalt (Co)-Total (mg/kg wwt)	0.0639	0.0572	0.0314	0.219	0.125
	Copper (Cu)-Total (mg/kg)	83.1	10.7	508	7.79	15.6
	Copper (Cu)-Total (mg/kg wwt)	24.6	4.68	22.6	2.06	6.00
	Iron (Fe)-Total (mg/kg)	137	90.5	631	392	256
	Iron (Fe)-Total (mg/kg wwt)	40.6	39.6	28.0	104	98.7
	Lead (Pb)-Total (mg/kg)	0.16	<0.050	<0.20 DLIS	0.659	0.066
	Lead (Pb)-Total (mg/kg wwt)	0.048	<0.020 DLIS	<0.010	0.174	0.026
	Lithium (Li)-Total (mg/kg)	<1.0 DLIS	<0.50	<2.0 DLIS	<0.50	<0.50
	Lithium (Li)-Total (mg/kg wwt)	<0.20 DLIS	<0.20 DLIS	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg)	1930	733	13400	1110	824
	Magnesium (Mg)-Total (mg/kg wwt)	569	321	596	294	317
	Manganese (Mn)-Total (mg/kg)	52.4	175	273	50.0	133
	Manganese (Mn)-Total (mg/kg wwt)	15.5	76.5	12.1	13.2	51.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-55 TISSUE 05-SEP-16 G0170-3 AR16-05	L1826505-56 TISSUE 05-SEP-16 G0170-4 BEETLE16-02	L1826505-59 TISSUE 05-SEP-16 G0170-7 ANT16-BKG-02	L1826505-60 TISSUE 05-SEP-16 G0170-8 ANT16-BKG-02D	L1826505-62 TISSUE 05-SEP-16 G0170-10 ANT16-BKG-03
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
TISSUE						
Physical Tests	% Moisture (%)	59.6	55.3	62.3	73.5	65.7
Metals	Aluminum (Al)-Total (mg/kg)	1140	206	119	1810	92.2
	Aluminum (Al)-Total (mg/kg wwt)	460	91.8	44.7	481	31.6
	Antimony (Sb)-Total (mg/kg)	0.041	<0.010	<0.010	0.037	<0.010
	Antimony (Sb)-Total (mg/kg wwt)	0.0164	0.0030	<0.0020	0.0097	<0.0020
	Arsenic (As)-Total (mg/kg)	0.885	1.47	0.460	0.851	0.228
	Arsenic (As)-Total (mg/kg wwt)	0.358	0.657	0.173	0.226	0.0782
	Barium (Ba)-Total (mg/kg)	13.4	172	20.9	49.9	20.4
	Barium (Ba)-Total (mg/kg wwt)	5.42	76.7	7.89	13.2	7.00
	Beryllium (Be)-Total (mg/kg)	0.046	<0.010	<0.010	0.068	<0.010
	Beryllium (Be)-Total (mg/kg wwt)	0.0184	0.0034	<0.0020	0.0181	<0.0020
	Bismuth (Bi)-Total (mg/kg)	<0.010	<0.010	<0.010	0.021	<0.010
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0040 DLIS	<0.0020	<0.0020	0.0056	<0.0020
	Boron (B)-Total (mg/kg)	3.1	27.9	7.7	6.4	3.5
	Boron (B)-Total (mg/kg wwt)	1.27	12.4	2.91	1.70	1.21
	Cadmium (Cd)-Total (mg/kg)	2.97	0.588	2.61	1.97	2.04
	Cadmium (Cd)-Total (mg/kg wwt)	1.20	0.263	0.983	0.522	0.698
	Calcium (Ca)-Total (mg/kg)	5360	722	745	3230	527
	Calcium (Ca)-Total (mg/kg wwt)	2170	322	281	856	181
	Cesium (Cs)-Total (mg/kg)	0.181	0.0279	0.0271	0.207	0.0102
	Cesium (Cs)-Total (mg/kg wwt)	0.0732	0.0125	0.0102	0.0549	0.0035
	Chromium (Cr)-Total (mg/kg)	1.00	0.33	0.87	3.04	0.34
	Chromium (Cr)-Total (mg/kg wwt)	0.403	0.148	0.327	0.806	0.116
	Cobalt (Co)-Total (mg/kg)	1.06	0.268	0.133	2.18	0.088
	Cobalt (Co)-Total (mg/kg wwt)	0.429	0.120	0.0501	0.578	0.0302
	Copper (Cu)-Total (mg/kg)	155	53.2	8.41	13.3	8.04
	Copper (Cu)-Total (mg/kg wwt)	62.9	23.8	3.17	3.52	2.75
	Iron (Fe)-Total (mg/kg)	2800	483	191	2310	142
	Iron (Fe)-Total (mg/kg wwt)	1130	216	72.0	613	48.7
	Lead (Pb)-Total (mg/kg)	0.321	0.131	0.067	1.21	0.158
	Lead (Pb)-Total (mg/kg wwt)	0.130	0.059	0.025	0.322	0.054
	Lithium (Li)-Total (mg/kg)	1.25	<0.50	<0.50	1.55	<0.50
	Lithium (Li)-Total (mg/kg wwt)	0.51	0.11	<0.10	0.41	<0.10
	Magnesium (Mg)-Total (mg/kg)	2400	1120	726	980	623
	Magnesium (Mg)-Total (mg/kg wwt)	971	499	274	260	214
	Manganese (Mn)-Total (mg/kg)	81.6	53.6	184	373	211
	Manganese (Mn)-Total (mg/kg wwt)	33.0	23.9	69.3	98.8	72.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-63	L1826505-66			
	Description	TISSUE	TISSUE			
	Sampled Date	05-SEP-16	05-SEP-16			
	Sampled Time					
	Client ID	G0170-11 ANT16-BKG-03D	G0171-2 WORM16-05			
Grouping	**Analyte**					
TISSUE						
Physical Tests	% Moisture (%)	69.5	74.6			
Metals	Aluminum (Al)-Total (mg/kg)	336	4930			
	Aluminum (Al)-Total (mg/kg wwt)	102	1250			
	Antimony (Sb)-Total (mg/kg)	0.012	0.070			
	Antimony (Sb)-Total (mg/kg wwt)	0.0036	0.0179			
	Arsenic (As)-Total (mg/kg)	0.345	4.74			
	Arsenic (As)-Total (mg/kg wwt)	0.105	1.20			
	Barium (Ba)-Total (mg/kg)	28.0	51.7			
	Barium (Ba)-Total (mg/kg wwt)	8.54	13.1			
	Beryllium (Be)-Total (mg/kg)	<0.010	0.170			
	Beryllium (Be)-Total (mg/kg wwt)	0.0029	0.0432			
	Bismuth (Bi)-Total (mg/kg)	<0.010	0.030			
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0077			
	Boron (B)-Total (mg/kg)	3.6	3.2			
	Boron (B)-Total (mg/kg wwt)	1.09	0.82			
	Cadmium (Cd)-Total (mg/kg)	2.04	2.27			
	Cadmium (Cd)-Total (mg/kg wwt)	0.624	0.578			
	Calcium (Ca)-Total (mg/kg)	889	8600			
	Calcium (Ca)-Total (mg/kg wwt)	271	2180			
	Cesium (Cs)-Total (mg/kg)	0.0452	0.587			
	Cesium (Cs)-Total (mg/kg wwt)	0.0138	0.149			
	Chromium (Cr)-Total (mg/kg)	1.05	6.01			
	Chromium (Cr)-Total (mg/kg wwt)	0.322	1.53			
	Cobalt (Co)-Total (mg/kg)	0.310	4.48			
	Cobalt (Co)-Total (mg/kg wwt)	0.0948	1.14			
	Copper (Cu)-Total (mg/kg)	8.31	126			
	Copper (Cu)-Total (mg/kg wwt)	2.54	31.9			
	Iron (Fe)-Total (mg/kg)	490	6870			
	Iron (Fe)-Total (mg/kg wwt)	150	1750			
	Lead (Pb)-Total (mg/kg)	0.337	2.22			
	Lead (Pb)-Total (mg/kg wwt)	0.103	0.564			
	Lithium (Li)-Total (mg/kg)	<0.50	5.27			
	Lithium (Li)-Total (mg/kg wwt)	<0.10	1.34			
	Magnesium (Mg)-Total (mg/kg)	660	3190			
	Magnesium (Mg)-Total (mg/kg wwt)	202	811			
	Manganese (Mn)-Total (mg/kg)	236	268			
	Manganese (Mn)-Total (mg/kg wwt)	71.9	68.0			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-2 TISSUE 19-AUG-16 G0149-9 ANT16-02	L1826505-8 TISSUE 19-AUG-16 G0150-3 ANT16-03	L1826505-9 TISSUE 19-AUG-16 G0150-4 ANT16-03D	L1826505-35 TISSUE 05-SEP-16 G0168-4 ANT16-04	L1826505-36 TISSUE 05-SEP-16 G0168-5 AR16-04
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.020	0.0283	0.0271	0.027	0.059
	Mercury (Hg)-Total (mg/kg wwt)	0.0089	0.0080	0.0087	0.0080	0.0192
	Molybdenum (Mo)-Total (mg/kg)	1.42	27.8	2.43	1.80	0.320
	Molybdenum (Mo)-Total (mg/kg wwt)	0.636	7.87	0.775	0.525	0.104
	Nickel (Ni)-Total (mg/kg)	0.37	0.66	0.51	0.82	0.44
	Nickel (Ni)-Total (mg/kg wwt)	0.167	0.188	0.163	0.237	0.144
	Phosphorus (P)-Total (mg/kg)	5250	4790	5850	5910	7700
	Phosphorus (P)-Total (mg/kg wwt)	2350	1360	1870	1720	2520
	Potassium (K)-Total (mg/kg)	5790	5020	6350	5520	7660
	Potassium (K)-Total (mg/kg wwt)	2590	1420	2030	1610	2500
	Rubidium (Rb)-Total (mg/kg)	3.10	3.47	4.94	4.38	8.29
	Rubidium (Rb)-Total (mg/kg wwt)	1.39	0.983	1.58	1.27	2.71
	Selenium (Se)-Total (mg/kg)	0.30	0.53	0.38	0.70	2.02
	Selenium (Se)-Total (mg/kg wwt)	0.132	0.150	0.122	0.202	0.662
	Sodium (Na)-Total (mg/kg)	1080	1100	1200	2160	2210
	Sodium (Na)-Total (mg/kg wwt)	483	311	383	628	721
	Strontium (Sr)-Total (mg/kg)	20.7	36.6	28.4	21.9	8.59
	Strontium (Sr)-Total (mg/kg wwt)	9.26	10.4	9.05	6.37	2.81
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080 DLIS
	Thallium (Tl)-Total (mg/kg)	<0.0020	<0.0040 DLB	<0.0020	0.0155	<0.017 DLB
	Thallium (Tl)-Total (mg/kg wwt)	<0.00080 DLB	<0.00090 DLB	<0.00060 DLB	0.00452	<0.0060 DLB
	Tin (Sn)-Total (mg/kg)	<0.10	0.37	0.11	1.53	0.73
	Tin (Sn)-Total (mg/kg wwt)	0.041	0.104	0.036	0.444	0.237
	Uranium (U)-Total (mg/kg)	0.0053	0.216	0.0266	0.0183	0.0179
	Uranium (U)-Total (mg/kg wwt)	0.00235	0.0612	0.00848	0.00533	0.00586
	Vanadium (V)-Total (mg/kg)	0.35	2.80	0.83	1.57	0.67
	Vanadium (V)-Total (mg/kg wwt)	0.158	0.793	0.266	0.455	0.220
	Zinc (Zn)-Total (mg/kg)	231	242	246	298	205
	Zinc (Zn)-Total (mg/kg wwt)	103	68.4	78.6	86.8	67.1
	Zirconium (Zr)-Total (mg/kg)	<0.20	<0.20	<0.20	0.21	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.050	<0.040	0.060	<0.080 DLIS

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-39 TISSUE 05-SEP-16 G0168-8 AR16-BKG-01	L1826505-42 TISSUE 05-SEP-16 G0168-11 ANT16-BKG-01	L1826505-43 TISSUE 05-SEP-16 G0168-12 AR16-BKG-02	L1826505-44 TISSUE 05-SEP-16 G0169-1 WORM16-BKG-02	L1826505-54 TISSUE 05-SEP-16 G0170-2 ANT16-05
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.082	0.025	0.359	0.080	0.019
	Mercury (Hg)-Total (mg/kg wwt)	0.0241	0.011	0.0160	0.0213	0.0071
	Molybdenum (Mo)-Total (mg/kg)	0.378	0.732	1.28	0.998	1.20
	Molybdenum (Mo)-Total (mg/kg wwt)	0.112	0.321	0.0567	0.264	0.460
	Nickel (Ni)-Total (mg/kg)	0.68	0.25	2.31	0.58	0.34
	Nickel (Ni)-Total (mg/kg wwt)	0.201	0.109	0.103	0.154	0.132
	Phosphorus (P)-Total (mg/kg)	8240	4400	56800	7650	5000
	Phosphorus (P)-Total (mg/kg wwt)	2430	1930	2530	2030	1920
	Potassium (K)-Total (mg/kg)	8860	4720	55300	7190	6390
	Potassium (K)-Total (mg/kg wwt)	2620	2070	2460	1900	2460
	Rubidium (Rb)-Total (mg/kg)	16.2	4.12	83.5	9.68	2.88
	Rubidium (Rb)-Total (mg/kg wwt)	4.80	1.81	3.71	2.56	1.11
	Selenium (Se)-Total (mg/kg)	1.34	0.49	6.48	1.62	0.50
	Selenium (Se)-Total (mg/kg wwt)	0.397	0.215	0.288	0.429	0.192
	Sodium (Na)-Total (mg/kg)	3450	1130	16400	1480	1420
	Sodium (Na)-Total (mg/kg wwt)	1020	494	728	392	546
	Strontium (Sr)-Total (mg/kg)	11.2	14.1	44.7	40.1	20.4
	Strontium (Sr)-Total (mg/kg wwt)	3.31	6.16	1.99	10.6	7.84
	Tellurium (Te)-Total (mg/kg)	<0.040 DLIS	<0.020	<0.080 DLIS	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0080 DLIS	<0.0080 DLIS	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.023 DLB	<0.0020	<0.041 DLB	0.0224	<0.0030 DLB
	Thallium (Tl)-Total (mg/kg wwt)	<0.0070 DLB	<0.00090 DLB	<0.0020 DLB	0.00593	<0.00090 DLB
	Tin (Sn)-Total (mg/kg)	1.18	0.46	0.84	0.13	0.44
	Tin (Sn)-Total (mg/kg wwt)	0.349	0.201	0.037	0.034	0.168
	Uranium (U)-Total (mg/kg)	0.0099	0.0053	0.0302	0.0489	0.0109
	Uranium (U)-Total (mg/kg wwt)	0.00292	0.00230	0.00135	0.0129	0.00418
	Vanadium (V)-Total (mg/kg)	0.21	<0.10	<0.40 DLIS	0.68	0.53
	Vanadium (V)-Total (mg/kg wwt)	0.063	0.042	<0.020	0.179	0.204
	Zinc (Zn)-Total (mg/kg)	319	214	2170	389	217
	Zinc (Zn)-Total (mg/kg wwt)	94.1	93.8	96.7	103	83.7
	Zirconium (Zr)-Total (mg/kg)	<0.40 DLIS	<0.20	<0.80 DLIS	<0.20	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	<0.080 DLIS	<0.080 DLIS	<0.040	<0.040	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826505-55 TISSUE 05-SEP-16 G0170-3 AR16-05	L1826505-56 TISSUE 05-SEP-16 G0170-4 BEETLE16-02	L1826505-59 TISSUE 05-SEP-16 G0170-7 ANT16-BKG-02	L1826505-60 TISSUE 05-SEP-16 G0170-8 ANT16-BKG-02D	L1826505-62 TISSUE 05-SEP-16 G0170-10 ANT16-BKG-03
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.056	0.0090	0.042	0.078	0.035
	Mercury (Hg)-Total (mg/kg wwt)	0.0225	0.0040	0.0157	0.0206	0.0121
	Molybdenum (Mo)-Total (mg/kg)	1.08	0.141	0.950	0.977	0.838
	Molybdenum (Mo)-Total (mg/kg wwt)	0.436	0.0632	0.358	0.259	0.287
	Nickel (Ni)-Total (mg/kg)	0.88	0.53	0.60	3.10	0.35
	Nickel (Ni)-Total (mg/kg wwt)	0.358	0.236	0.227	0.822	0.120
	Phosphorus (P)-Total (mg/kg)	9280	4410	4510	3500	4380
	Phosphorus (P)-Total (mg/kg wwt)	3750	1970	1700	927	1500
	Potassium (K)-Total (mg/kg)	9250	5110	4610	3130	3920
	Potassium (K)-Total (mg/kg wwt)	3740	2280	1740	829	1340
	Rubidium (Rb)-Total (mg/kg)	9.55	1.80	7.78	9.22	2.57
	Rubidium (Rb)-Total (mg/kg wwt)	3.86	0.804	2.93	2.45	0.880
	Selenium (Se)-Total (mg/kg)	2.53	<0.10	0.29	0.27	0.47
	Selenium (Se)-Total (mg/kg wwt)	1.02	<0.020	0.110	0.070	0.162
	Sodium (Na)-Total (mg/kg)	3220	66	1260	971	1300
	Sodium (Na)-Total (mg/kg wwt)	1300	29.5	473	257	447
	Strontium (Sr)-Total (mg/kg)	46.2	13.4	15.6	28.7	13.1
	Strontium (Sr)-Total (mg/kg wwt)	18.7	5.98	5.88	7.61	4.50
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	Tellurium (Te)-Total (mg/kg wwt)	<0.0080 DLIS	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg)	<0.0060 DLB	0.0040	<0.0030 DLB	0.0189	<0.0020
	Thallium (Tl)-Total (mg/kg wwt)	<0.0030 DLB	0.00178	<0.0010 DLB	0.00501	<0.00060 DLB
	Tin (Sn)-Total (mg/kg)	0.22	<0.10	<0.10	0.48	0.10
	Tin (Sn)-Total (mg/kg wwt)	0.088	<0.020	0.030	0.126	0.036
	Uranium (U)-Total (mg/kg)	0.135	0.0141	0.0101	0.300	0.0062
	Uranium (U)-Total (mg/kg wwt)	0.0547	0.00631	0.00380	0.0795	0.00211
	Vanadium (V)-Total (mg/kg)	11.3	1.33	0.31	4.94	0.24
	Vanadium (V)-Total (mg/kg wwt)	4.58	0.592	0.116	1.31	0.081
	Zinc (Zn)-Total (mg/kg)	211	130	186	136	206
	Zinc (Zn)-Total (mg/kg wwt)	85.2	58.0	70.0	36.1	70.5
	Zirconium (Zr)-Total (mg/kg)	0.74	<0.20	<0.20	0.82	<0.20
	Zirconium (Zr)-Total (mg/kg wwt)	0.298	0.070	<0.040	0.217	<0.040

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826505-63	L1826505-66			
	Description	TISSUE	TISSUE			
	Sampled Date	05-SEP-16	05-SEP-16			
	Sampled Time					
	Client ID	G0170-11 ANT16-BKG-03D	G0171-2 WORM16-05			
Grouping	**Analyte**					
TISSUE						
Metals	Mercury (Hg)-Total (mg/kg)	0.0433	0.0742			
	Mercury (Hg)-Total (mg/kg wwt)	0.0132	0.0188			
	Molybdenum (Mo)-Total (mg/kg)	0.904	1.24			
	Molybdenum (Mo)-Total (mg/kg wwt)	0.276	0.316			
	Nickel (Ni)-Total (mg/kg)	0.76	5.53			
	Nickel (Ni)-Total (mg/kg wwt)	0.232	1.40			
	Phosphorus (P)-Total (mg/kg)	4390	7640			
	Phosphorus (P)-Total (mg/kg wwt)	1340	1940			
	Potassium (K)-Total (mg/kg)	3690	8130			
	Potassium (K)-Total (mg/kg wwt)	1130	2070			
	Rubidium (Rb)-Total (mg/kg)	3.13	6.87			
	Rubidium (Rb)-Total (mg/kg wwt)	0.954	1.75			
	Selenium (Se)-Total (mg/kg)	0.43	6.49			
	Selenium (Se)-Total (mg/kg wwt)	0.132	1.65			
	Sodium (Na)-Total (mg/kg)	972	1980			
	Sodium (Na)-Total (mg/kg wwt)	297	502			
	Strontium (Sr)-Total (mg/kg)	17.0	45.8			
	Strontium (Sr)-Total (mg/kg wwt)	5.20	11.6			
	Tellurium (Te)-Total (mg/kg)	<0.020	<0.020			
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	0.0046			
	Thallium (Tl)-Total (mg/kg)	<0.0040 DLB	0.0351			
	Thallium (Tl)-Total (mg/kg wwt)	<0.0015 DLB	0.00891			
	Tin (Sn)-Total (mg/kg)	0.24	0.36			
	Tin (Sn)-Total (mg/kg wwt)	0.073	0.091			
	Uranium (U)-Total (mg/kg)	0.0331	0.402			
	Uranium (U)-Total (mg/kg wwt)	0.0101	0.102			
	Vanadium (V)-Total (mg/kg)	1.09	23.8			
	Vanadium (V)-Total (mg/kg wwt)	0.334	6.04			
	Zinc (Zn)-Total (mg/kg)	211	178			
	Zinc (Zn)-Total (mg/kg wwt)	64.4	45.3			
	Zirconium (Zr)-Total (mg/kg)	<0.20	1.84			
	Zirconium (Zr)-Total (mg/kg wwt)	0.051	0.468			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Beryllium (Be)-Total	DUP-H	L1826505-2, -35, -36, -39, -42, -43, -44, -54, -55, -56, -59, -60, -62, -63, -66, -8, -9
Duplicate	Cobalt (Co)-Total	DUP-H	L1826505-2, -35, -36, -39, -42, -43, -44, -54, -55, -56, -59, -60, -62, -63, -66, -8, -9
Duplicate	Uranium (U)-Total	DUP-H	L1826505-2, -35, -36, -39, -42, -43, -44, -54, -55, -56, -59, -60, -62, -63, -66, -8, -9
Duplicate	Beryllium (Be)-Total	DUP-H	L1826505-2, -35, -36, -39, -42, -43, -44, -54, -55, -56, -59, -60, -62, -63, -66, -8, -9
Duplicate	Cobalt (Co)-Total	DUP-H	L1826505-2, -35, -36, -39, -42, -43, -44, -54, -55, -56, -59, -60, -62, -63, -66, -8, -9
Duplicate	Uranium (U)-Total	DUP-H	L1826505-2, -35, -36, -39, -42, -43, -44, -54, -55, -56, -59, -60, -62, -63, -66, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLIS	Detection Limit Adjusted: Insufficient Sample
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-DRY-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (DRY)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAFS (WET)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-WET-MICR-CVAF-VA	Tissue	Mercury in Tissue by CVAFS Micro (WET)	EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-DRY-MICR-HRMS-VA	Tissue	Metals in Tissue by HR-ICPMS Micro (DRY)	EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on dry weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (WET)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Reference Information

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-WET-MICR-HRMS-VA Tissue Metals in Tissue by HR-ICPMS Micro (WET) EPA 200.3/200.8

Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MOISTURE-TISS-VA Tissue % Moisture in Tissues ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0147	G0149	G0150	G0152	G0156
G0157	G0165	G0166	G0167	G0168
G0169	G0170	G0171		

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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COC # G0147

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: aatkinson@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	**Client / Project Information:**	**Analysis Request**
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-04	G0147-01	17-Aug-16		Tissue	X	1
[redacted]	WORM16-01	G0147-02	17-Aug-16		Tissue	X	1
[redacted]	WORM16-02	G0147-03	17-Aug-16		Tissue	X	1
[redacted]	AR16-02	G0147-04	17-Aug-16		Tissue	X	1
[redacted]	BEETLE16-01	G0147-05	17-Aug-16		Tissue	X	1
[redacted]	ANT16-01	G0147-06	17-Aug-16		Tissue	X	1
[redacted]	BERRY16-05	G0147-07	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-06	G0147-08	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-07	G0147-09	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-08	G0147-10	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-09	G0147-11	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-10	G0147-12	19-Aug-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Lutke ~~Erin Zapfgilje~~	09/09/2016 15:30 ~~06/09/2016 00:00~~		SEP - 9 2016					

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COC # G0149

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-01	G0149-01	19-Aug-16		Tissue	X	1
[redacted]	WORM16-03	G0149-02	19-Aug-16		Tissue	X	1
[redacted]	BERRY-BKG-02	G0149-03	19-Aug-16		Tissue	X	1
[redacted]	BERRY-BKG-01	G0149-04	19-Aug-16		Tissue	X	1
[redacted]	BERRY-BKG-03	G0149-05	19-Aug-16		Tissue	X	1
[redacted]	WORM16-BKG-01	G0149-06	19-Aug-16		Tissue	X	1
[redacted]		[illegible]			Tissue	X	1
[redacted]	BERRY16-11	G0149-08	19-Aug-16		Tissue	X	1
[redacted]	ANT16-02	G0149-09	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-12	G0149-10	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-13	G0149-11	19-Aug-16		Tissue	X	1
[redacted]	SPRUCE16-02	G0149-12	19-Aug-16		Tissue	X	1

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little Evan Zapfgilje	08/09/2016 15:30 ~~08/08/2016 8:00~~	JC	SEP - 9 2016	9am	1°C			

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COC # G0150

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCV	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-14	G0150-01	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-15	G0150-02	19-Aug-16		Tissue	X	1
[redacted]	ANT16-03	G0150-03	19-Aug-16	FDA - G0165-04	Tissue	X	1
[redacted]	ANT16-03d	G0150-04	19-Aug-16	FD - G0165-03	Tissue	X	1
[redacted]	SPRUCE16-03	G0150-05	19-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-04	G0150-06	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-05	G0150-07	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-06	G0150-08	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-07	G0150-09	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-08	G0150-10	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-09	G0150-11	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-16	G0150-12	20-Aug-16		Tissue	X	1

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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COC # G0152

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	BERRY16-17	G0152-01	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-18	G0152-02	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-19	G0152-03	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-20	G0152-04	20-Aug-16		Tissue	X	1
[redacted]	BERRY16-BKG-10	G0152-05	20-Aug-16		Tissue	X	1
[redacted]	WILLOW16-06	G0152-06	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-07	G0152-07	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-03	G0152-08	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-04	G0152-09	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-08	G0152-10	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-05	G0152-11	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-06	G0152-12	02-Sep-16		Tissue	X	1

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke ~~Evan Zapf-Gilje~~	08/09/2016 15:30 ~~08/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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COC # G0156

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	GRASS16-07	G01S6-01	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-08	G01S6-02	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-09	G01S6-03	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-10	G01S6-04	02-Sep-16		Tissue	X	1
[redacted]	WILLOW16-10	G01S6-05	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-09	G01S6-06	02-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-06	G01S6-07	02-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-07	G01S6-08	02-Sep-16		Tissue	X	1
[redacted]	GRASS16-11	G01S6-09	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-01	G01S6-10	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-02	G01S6-11	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-12	G01S6-12	03-Sep-16		Tissue	X	1

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litle	08/09/2016 15:30	JC	SEP - 9 2016	9am	1°C			
~~Evin Zapfgilje~~	~~06/08/2016 0:00~~							

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COC # G0157

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	GRASS16-13	G0157-01	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-03	G0157-02	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-04	G0157-03	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-14	G0157-04	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-15	G0157-05	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-05	G0157-06	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-13	G0157-07	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-14	G0157-08	03-Sep-16	FDA - G0157-09	Tissue	X	1
[redacted]	WILLOW16-14d	G0157-09	03-Sep-16	FD - G0157-08	Tissue	X	1
[redacted]	WILLOW16-15	G0157-10	03-Sep-16		Tissue	X	1
[redacted]	WILLOW16-17	G0157-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-16	G0157-12	04-Sep-16		Tissue	X	1

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke ~~Evin Zapfgilje~~	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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COC # G0165

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab_use_only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]		~~G0165-01~~					
[redacted]	WILLOW16-11	G0165-02	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-16	G0165-03	03-Sep-16	FDA - G0165-04	Tissue	X	1
[redacted]	GRASS16-16d	G0165-04	03-Sep-16	FD - G0165-03	Tissue	X	1
[redacted]	GRASS16-17	G0165-05	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-06	G0165-06	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-07	G0165-07	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-08	G0165-08	03-Sep-16	FDA - G0165-09	Tissue	X	1
[redacted]	GRASS16-BKG-08d	G0165-09	03-Sep-16	FDA - G0165-08	Tissue	X	1
[redacted]	WILLOW16-11	G0165-10	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-18	G0165-11	03-Sep-16		Tissue	X	1
[redacted]	GRASS16-19	G0165-12	03-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lille ~~Erin Zapfgilje~~	08/09/2016 15:3 ~~08/09/2016 [redacted]~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0166

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	WILLOW16-18	G01666-01	04-Sep-16		Tissue	X	1
[redacted]	GRASS16-20	G01666-02	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-19	G01666-03	04-Sep-16		Tissue	X	1
[redacted]	GRASS16-21	G01666-04	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-01	G01666-05	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-02	G01666-06	04-Sep-16		Tissue	X	1
[redacted]	BERRY16-BKG-11	G01666-07	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-02	G01666-08	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-03	G01666-09	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-03	G01666-10	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-04	G01666-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-05	G01666-12	04-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lithe ~~Evin Zapf-Gilje~~	08/09/2016 15:30 ~~08/09/2016 0:00~~	JC	SEP - 9 2016	9am	1C			

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ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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COC # G0167

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Analysis Request
Company:		Job #:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		L1826505-COFC
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE-BKG-04	G0167-01	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-06	G0167-02	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-05	G0167-03	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-08	G0167-04	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-09	G0167-05	04-Sep-16		Tissue	X	1
[redacted]	WORM16-04	G0167-06	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-10	G0167-07	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-11	G0167-08	04-Sep-16	FDA - G0167-09	Tissue	X	1
[redacted]	SPRUCE16-11D	G0167-09	04-Sep-16	FD - G0167-08	Tissue	X	1
[redacted]	SPRUCE16-12	G0167-10	04-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-13	G0167-11	04-Sep-16		Tissue	X	1
[redacted]	WILLOW16-20	G0167-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Lytle	08/09/2016 15:30 [redacted]	JC	SEP - 9 2016	9am	1°C			

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ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0168

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCW	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-14	G0168-01	05-Sep-16		Tissue	X	1
[redacted]	AR16-03	G0168-02	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-15	G0168-03	05-Sep-16		Tissue	X	1
[redacted]	ANT16-04	G0168-04	05-Sep-16		Tissue	X	1
[redacted]	AR16-04	G0168-05	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-07	G0168-06	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-06	G0168-07	05-Sep-16		Tissue	X	1
[redacted]	AR16-BKG-01	G0168-08	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-08	G0168-09	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-07	G0168-10	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-01	G0168-11	05-Sep-16		Tissue	X	1
[redacted]	AR16-BKG-02	G0168-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little Ezwin Zapf-Gilje	08/09/2016 15:30 06/09/2016 0:00	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # G0169

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact:	Can Dang	Sampler: EZG

L1826505-COFC

[redacted] Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	WORM16-BKG-02	G0169-01	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-09	G0169-02	05-Sep-16	FDA - G0169-03	Tissue	X	1
[redacted]	WILLOW16-BKG-09d	G0169-03	05-Sep-16	FD - G0169-02	Tissue	X	1
[redacted]	SPRUCE16-BKG-08	G0169-04	05-Sep-16	FDA - G0169-05	Tissue	X	1
[redacted]	SPRUCE16-BKG-08d	G0169-05	05-Sep-16	FD - G0169-04	Tissue	X	1
[redacted]							
[redacted]							
[redacted]							
[redacted]	WILOW16-21	G0169-09	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-22	G0169-10	05-Sep-16		Tissue	X	1
[redacted]	WILOW16-23	G0169-11	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-24	G0169-12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use)		[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke ~~Evin Zapf-Gilje~~	08/09/2016 16:30 ~~08/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

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ANALYTICAL CHEMISTRY & TESTING SERVICES

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Chain of Custody / Analytical Request Form
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COC # G0170

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SGS	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-16	G0170 - 01	05-Sep-16		Tissue	X	1
[redacted]	ANT16-05	G0170 - 02	05-Sep-16		Tissue	X	1
[redacted]	AR16-05	G0170 - 03	05-Sep-16		Tissue	X	1
[redacted]	BEETLE16-02	G0170 - 04	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-10	G0170 - 05	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-BKG-09	G0170 - 06	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-02	G0170 - 07	05-Sep-16	FDA - G0170-08	Tissue	X	1
[redacted]	ANT16-BKG-02d	G0170 - 08	05-Sep-16	FD- G0170-07	Tissue	X	1
[redacted]	SPRUCE16-BKG-10	G0170 - 09	05-Sep-16		Tissue	X	1
[redacted]	ANT16-BKG-03	G0170 - 10	05-Sep-16	FDA - G0170-11	Tissue	X	1
[redacted]	ANT16-BKG-03d	G0170 - 11	05-Sep-16	FD - G0170-10	Tissue	X	1
[redacted]	WILLOW16-25	G0170 - 12	05-Sep-16		Tissue	X	1

Special Instructions / Regulations / Hazardous Details

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[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Litke	08/09/2016 15:30 ~~00/00/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
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COC # G0171

Report to:		Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

L1826505-COFC

Sample #	Sample Identification (This description will appear on the report)	SCN	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	SPRUCE16-17	G0171-01	05-Sep-16		Tissue	X	1
[redacted]	WORM16-05	G0171-02	05-Sep-16		Tissue	X	1
[redacted]	SPRUCE16-18	G0171-03	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-09	G0171-04	05-Sep-16	FDA- G0171-05	Tissue	X	1
[redacted]	GRASS16-BKG-09d	G0171-05	05-Sep-16	FD G0171-04	Tissue	X	1
[redacted]	SPRUCE16-BKG-11	G0171-06	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-10	G0171-07	05-Sep-16		Tissue	X	1
[redacted]	GRASS16-BKG-11	G0171-08	05-Sep-16		Tissue	X	1
[redacted]	WILLOW16-BKG-11	G0171-09	05-Sep-16		Tissue	X	1
[redacted]	SPURCE16-BKG-12	G0171-10	05-Sep-16		Tissue	X	1
[redacted]							
[redacted]							

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[redacted] SHIPMENT RELEASE (client use) [redacted]		[redacted] SHIPMENT RECEPTION (lab use only) [redacted]				[redacted] SHIPMENT VERIFICATION (lab use only) [redacted]		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shawna Little Evin ~~Zapfgilje~~	08/09/2016 15:30 ~~06/09/2016 0:00~~	JC	SEP - 9 2016	9am	1°C			

L1826505

Group A Tissue

	SCN	Tissue ID
1	G0149-8	BERRY16-11
2	G0149-9	ANT16-02
3	G0149-10	BERRY16-12
4	G0149-11	BERRY16-13
5	G0149-12	SPRUCE16-02
6	G0150-1	BERRY16-14
7	G0150-2	BERRY16-15
8	G0150-3	ANT16-03
9	G0150-4	ANT16-03d
10	G0150-5	SPRUCE16-03
11	G0150-6	BERRY16-BKG-04
12	G0150-7	BERRY16-BKG-05
13	G0150-8	BERRY16-BKG-06
14	G0150-9	BERRY16-BKG-07
15	G0150-10	BERRY16-BKG-08
16	G0150-11	BERRY16-BKG-09
17	G0150-12	BERRY16-16
18	G0152-1	BERRY16-17
19	G0152-6	WILLOW16-06
20	G0152-7	WILLOW16-07
21	G0152-8	GRASS16-03
22	G0152-9	GRASS16-04
23	G0152-10	WILLOW16-08
24	G0152-11	GRASS16-05
25	G0152-12	GRASS16-06
26	G0156-1	GRASS16-07
27	G0156-2	GRASS16-08
28	G0156-3	WILLOW16-09
29	G0156-4	GRASS16-10
30	G0156-5	WILLOW16-10
31	G0156-6	GRASS16-09
32	G0156-7	SPRUCE16-06
33	G0156-8	SPRUCE16-07
34	G0168-3	SPRUCE16-15
35	G0168-4	ANT16-04
36	G0168-5	AR16-04
37	G0168-6	WILLOW15-BKG-07
38	G0168-7	SPRUCE16-BKG-06
39	G0168-8	AR16-BKG-01
40	G0168-9	WILLOW16-BKG-08
41	G0168-10	SPRUCE16-BKG-07
42	G0168-11	ANT16-BKG-01
43	G0168-12	AR16-BKG-02
44	G0169-1	WORM16-BKG-02
45	G0169-2	WILLOW16-BKG-09
46	G0169-3	WILLOW16-BKG-09d
47	G0169-4	SPRUCE16-BKG-08
48	G0169-5	SPRUCE16-BKG-08d
49	G0169-9	WILOW16-21
50	G0169-10	WILLOW16-22
51	G0169-11	WILOW16-23
52	G0169-12	WILLOW16-24
53	G0170-1	SPRUCE16-16
54	G0170-2	ANT16-05
55	G0170-3	AR16-05
56	G0170-4	BEETLE16-02
57	G0170-5	WILLOW16-BKG-10
58	G0170-6	SPRUCE16-BKG-09
59	G0170-7	ANT16-BKG-02
60	G0170-8	ANT16-BKG-02d
61	G0170-9	SPRUCE16-BKG-10
62	G0170-10	ANT16-BKG-03
63	G0170-11	ANT16-BKG-03d
64	G0170-12	WILLOW16-25
65	G171-1	SPRUCE16-17
66	G171-2	WORM16-05
67	G171-3	SPRUCE16-18
68	G171-4	GRASS16-BKG-09
69	G171-5	GRASS16-BKG-09d
70	G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B Soil

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

= all 'Group A' & 'Group B' tissues:
- moisture:
- routine prep
- CCMS metals (wet & dry)
- routine Hg (wet & dry)

(tissues not in A or B list = keep on hold)

MATT:

Group A: E' codes) Sept 16

Group B: routine.

L1826505-COFC

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-DEC-16 14:46 (MT)
Version: FINAL REV. 3

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826516

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0148
Legal Site Desc:

Comments:
16-DEC-2016 Split File issued.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826516-1	L1826516-2	L1826516-5	L1826516-22	L1826516-28
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	17-AUG-16	17-AUG-16	19-AUG-16	04-SEP-16	05-SEP-16
Sampled Time					
Client ID	CSS16-02	CSS16-03	CSS16-06	CSS16-37	CSS16-42
Grouping / **Analyte**					
SOIL					
Physical Tests pH (1:2 soil:water) (pH)	7.35	6.22	6.83	7.83	8.34
Organic / Inorganic Carbon Inorganic Carbon (%)	0.244	0.124	0.126	0.232	0.411
Inorganic Carbon (as CaCO3 Equivalent) (%)	2.03	1.03	1.05	1.93	3.42
Total Carbon by Combustion (%)	2.28	4.31	2.87	2.07	0.49
Total Organic Carbon (%)	2.04	4.19	2.74	1.84	<0.098
Plant Available Nutrients Available Nitrate-N (mg/kg)	<1.0	<1.0	10.9	<1.0	<1.0
Available Phosphate-P (mg/kg)	4.5	13.1	5.4	3.7	<2.0
Available Potassium (mg/kg)	127	127	118	98	164
Metals Aluminum (Al) (mg/kg)	15400	19100	16700	15000	15900
Antimony (Sb) (mg/kg)	0.35	0.30	0.30	0.35	0.35
Arsenic (As) (mg/kg)	9.12	7.78	9.09	8.53	11.2
Barium (Ba) (mg/kg)	146	118	160	163	158
Beryllium (Be) (mg/kg)	0.54	0.45	0.60	0.54	0.63
Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B) (mg/kg)	6.9	<5.0	7.2	7.0	8.8
Cadmium (Cd) (mg/kg)	0.170	0.139	0.206	0.232	0.156
Calcium (Ca) (mg/kg)	18500	7090	14000	19900	25900
Chromium (Cr) (mg/kg)	18.0	35.9	21.9	17.2	10.5
Cobalt (Co) (mg/kg)	13.8	10.8	15.9	13.3	16.3
Copper (Cu) (mg/kg)	677	148	458	537	821
Iron (Fe) (mg/kg)	48400	31900	56500	42800	45700
Lead (Pb) (mg/kg)	5.15	7.88	5.49	4.72	4.92
Lithium (Li) (mg/kg)	12.3	17.8	15.5	12.8	16.1
Magnesium (Mg) (mg/kg)	7280	6530	8010	6650	9670
Manganese (Mn) (mg/kg)	525	574	624	528	583
Mercury (Hg) (mg/kg)	0.102	0.075	0.075	0.101	0.085
Molybdenum (Mo) (mg/kg)	3.56	1.22	2.97	3.45	5.60
Nickel (Ni) (mg/kg)	12.2	21.6	14.5	13.0	9.15
Phosphorus (P) (mg/kg)	1080	752	1390	1170	1190
Potassium (K) (mg/kg)	1300	1560	1360	1240	1400
Selenium (Se) (mg/kg)	0.84	0.27	0.61	0.83	0.93
Silver (Ag) (mg/kg)	0.34	0.29	0.32	0.29	0.37
Sodium (Na) (mg/kg)	742	231	681	709	1080
Strontium (Sr) (mg/kg)	131	56.7	127	153	169
Thallium (Tl) (mg/kg)	<0.050	0.105	<0.050	<0.050	<0.050
Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826516-29				
	Description	Soil/Sediment				
	Sampled Date	19-AUG-16				
	Sampled Time					
	Client ID	CSS16-BKG-01				
Grouping	**Analyte**					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	5.33				
Organic / Inorganic Carbon	Inorganic Carbon (%)	0.201				
	Inorganic Carbon (as CaCO3 Equivalent) (%)	1.67				
	Total Carbon by Combustion (%)	18.6				
	Total Organic Carbon (%)	18.4				
Plant Available Nutrients	Available Nitrate-N (mg/kg)	17.2 DLR				
	Available Phosphate-P (mg/kg)	2.2				
	Available Potassium (mg/kg)	224				
Metals	Aluminum (Al) (mg/kg)	31200				
	Antimony (Sb) (mg/kg)	0.29				
	Arsenic (As) (mg/kg)	3.39				
	Barium (Ba) (mg/kg)	191				
	Beryllium (Be) (mg/kg)	0.93				
	Bismuth (Bi) (mg/kg)	<0.20				
	Boron (B) (mg/kg)	<5.0				
	Cadmium (Cd) (mg/kg)	0.542				
	Calcium (Ca) (mg/kg)	6010				
	Chromium (Cr) (mg/kg)	53.5				
	Cobalt (Co) (mg/kg)	21.8				
	Copper (Cu) (mg/kg)	54.6				
	Iron (Fe) (mg/kg)	27600				
	Lead (Pb) (mg/kg)	8.73				
	Lithium (Li) (mg/kg)	18.7				
	Magnesium (Mg) (mg/kg)	6940				
	Manganese (Mn) (mg/kg)	1380				
	Mercury (Hg) (mg/kg)	0.205				
	Molybdenum (Mo) (mg/kg)	1.35				
	Nickel (Ni) (mg/kg)	33.7				
	Phosphorus (P) (mg/kg)	1540				
	Potassium (K) (mg/kg)	2000				
	Selenium (Se) (mg/kg)	0.46				
	Silver (Ag) (mg/kg)	0.64				
	Sodium (Na) (mg/kg)	125				
	Strontium (Sr) (mg/kg)	60.0				
	Thallium (Tl) (mg/kg)	0.154				
	Tin (Sn) (mg/kg)	<2.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826516-1 Soil/Sediment 17-AUG-16 CSS16-02	L1826516-2 Soil/Sediment 17-AUG-16 CSS16-03	L1826516-5 Soil/Sediment 19-AUG-16 CSS16-06	L1826516-22 Soil/Sediment 04-SEP-16 CSS16-37	L1826516-28 Soil/Sediment 05-SEP-16 CSS16-42
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
SOIL						
Metals	Titanium (Ti) (mg/kg)	1160	888	1010	1030	1310
	Uranium (U) (mg/kg)	0.869	0.762	0.892	1.08	0.998
	Vanadium (V) (mg/kg)	177	95.2	209	161	178
	Zinc (Zn) (mg/kg)	51.0	58.1	60.3	45.7	56.2
	Zirconium (Zr) (mg/kg)	1.8	<1.0	1.0	1.6	6.9

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1826516-29				
	Description	Soil/Sediment				
	Sampled Date	19-AUG-16				
	Sampled Time					
	Client ID	CSS16-BKG-01				
Grouping	**Analyte**					
SOIL						
Metals	Titanium (Ti) (mg/kg)	247				
	Uranium (U) (mg/kg)	1.21				
	Vanadium (V) (mg/kg)	57.2				
	Zinc (Zn) (mg/kg)	97.1				
	Zirconium (Zr) (mg/kg)	<1.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0148

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

RUSH

Priority processing

please log all highlighted soils for:

- CSR + Full Metals
- TOC/TIC
- Avail N, P, K

"Group A" soils are due Sept 15 with 'P' codes

"Group B" soils are due Sept 21, no priority code

SK sublets should go out Monday.

Group A Tissue

SCN	Tissue ID
G0149-8	BERRY16-11
G0149-9	ANT16-02
G0149-10	BERRY16-12
G0149-11	BERRY16-13
G0149-12	SPRUCE16-02
G0150-1	BERRY16-14
G0150-2	BERRY16-15
G0150-3	ANT16-03
G0150-4	ANT16-03d
G0150-5	SPRUCE16-03
G0150-6	BERRY16-BKG-04
G0150-7	BERRY16-BKG-05
G0150-8	BERRY16-BKG-06
G0150-9	BERRY16-BKG-07
G0150-10	BERRY16-BKG-08
G0150-11	BERRY16-BKG-09
G0150-12	BERRY16-16
G0152-1	BERRY16-17
G0152-6	WILLOW16-06
G0152-7	WILLOW16-07
G0152-8	GRASS16-03
G0152-9	GRASS16-04
G0152-10	WILLOW16-08
G0152-11	GRASS16-05
G0152-12	GRASS16-06
G0156-1	GRASS16-07
G0156-2	GRASS16-08
G0156-3	WILLOW16-09
G0156-4	GRASS16-10
G0156-5	WILLOW16-10
G0156-6	GRASS16-09
G0156-7	SPRUCE16-06
G0156-8	SPRUCE16-07
G0168-3	SPRUCE16-15
G0168-4	ANT16-04
G0168-5	AR16-04
G0168-6	WILLOW16-BKG-07
G0168-7	SPRUCE16-BKG-06
G0168-8	AR16-BKG-01
G0168-9	WILLOW16-BKG-08
G0168-10	SPRUCE16-BKG-07
G0168-11	ANT16-BKG-01
G0168-12	AR16-BKG-02
G0169-1	WORM16-BKG-02
G0169-2	WILLOW16-BKG-09
G0169-3	WILLOW16-BKG-09d
G0169-4	SPRUCE16-BKG-08
G0169-5	SPRUCE16-BKG-08d
G0169-9	WILOW16-21
G0169-10	WILLOW16-22
G0169-11	WILOW16-23
G0169-12	WILLOW16-24
G0170-1	SPRUCE16-16
G0170-2	ANT16-05
G0170-3	AR16-05
G0170-4	BEETLE16-02
G0170-5	WILLOW16-BKG-10
G0170-6	SPRUCE16-BKG-09
G0170-7	ANT16-BKG-02
G0170-8	ANT16-BKG-02d
G0170-9	SPRUCE16-BKG-10
G0170-10	ANT16-BKG-03
G0170-11	ANT16-BKG-03d
G0170-12	WILLOW16-25
G171-1	SPRUCE16-17
G171-2	WORM16-05
G171-3	SPRUCE16-18
G171-4	GRASS16-BKG-09
G171-5	GRASS16-BKG-09d
G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B So

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

B 13
V 36
INV 14

= 63

47 + 23 = 70

L1826516-COFC

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ANALYTICAL CHEMISTRY & TESTING SERVICES

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COC # G0148

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1:	on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2:	aatkinson@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
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Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only):	[redacted]	ALS Contact:	Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hold	Number of Containers
[redacted]	CSS16-01	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-04	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-01	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-07	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-08	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-09	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-10	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-11	19-Aug-16		Soil/Sediment	x	2

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Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

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Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-04	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-12	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-13	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-14	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-15	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-16	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-07	19-Aug-16		Soil/Sediment	x	2
[redacted]						

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Shauna Litke	08/09/2016 15:30	(4) JC	SEP - 9 2016	9am	3,4,10°c			

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Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:		Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:	
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
	CSS16-17	02-Sep-16		Soil/Sediment	x	2
	CSS16-18	02-Sep-16		Soil/Sediment	x	2
	CSS16-19	02-Sep-16		Soil/Sediment	x	2
	CSS16-20	02-Sep-16		Soil/Sediment	x	2
	CSS16-21	02-Sep-16		Soil/Sediment	x	2
	CSS16-22	02-Sep-16		Soil/Sediment	x	2
	CSS16-23	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-08	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-09	03-Sep-16		Soil/Sediment	x	2
	CSS16-24	03-Sep-16		Soil/Sediment	x	2
	CSS16-BKG-10	03-Sep-16		Soil/Sediment	x	2
	CSS16-25	03-Sep-16		Soil/Sediment	x	2

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Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

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Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-11	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-26	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-27	03-Sep-16	FDA - G0162-04	Soil/Sediment	x	2
[redacted]	CSS16-27d	03-Sep-16	FD - G0162-03	Soil/Sediment	x	2
[redacted]	CSS16-BKG-12	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-13	03-Sep-16	FDA - G0162-07	Soil/Sediment	x	2
[redacted]	CSS16-BKG-13d	03-Sep-16	FD - G0162-06	Soil/Sediment	x	2
[redacted]	CSS16-28	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-29	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-30	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-31	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-32	04-Sep-16		Soil/Sediment	x	2

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Shauna Litke	08/09/2016 15:30	(A) JC	SEP - 9 2016	9am	3,4,10°C			

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Phone:	250-790-2215 Fax:		
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Analysis Request
Company:		Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only):	[redacted]	ALS Contact: Can Dang	Sampler: EZG

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-33	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-34	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-35	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-14	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-15	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-16	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-17	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-36	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-37	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-38	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-39	04-Sep-16	FDA - G0163-12	Soil/Sediment	x	2
[redacted]	CSS16-39d	04-Sep-16	FD - G0163- 11	Soil/Sediment	x	2

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Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3,4,10'c			

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Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-40	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-41	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-42	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-18	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-19	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20d	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-44	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-21	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-22	05-Sep-16	FDA- G0165-01	Soil/Sediment	x	2

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Shauna Litke	08/09/2016 15:30	JC (A)	SEP - 9 2016	9am	3, 4, 10°c			

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Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-22d	05-Sep-16	FD - G0164-12	Soil/Sediment	x	2
[redacted]	CSS16-45	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-46	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-23	05-Sep-16	FDA-G0165-05	Soil/Sediment	x	2
[redacted]	CSS16-BKG-23d	05-Sep-16	FD-G0165-04	Soil/Sediment	x	2
[redacted]	CSS16-BKG-24	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-25	05-Sep-16		Soil/Sediment	x	2
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

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Shauna Litke	08/09/2016 15:30	JC	SEP - 9 2016	9am	3,4,10°C			

MOUNT POLLEY MINING CORP.
ATTN: Colleen Hughes
PO Box 12
Likely BC V0L 1N0

Date Received: 09-SEP-16
Report Date: 16-DEC-16 14:59 (MT)
Version: FINAL REV. 2

Client Phone: 250-790-2215

Certificate of Analysis

Lab Work Order #: L1826551

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: G0148
Legal Site Desc:

Comments:
16-DEC-2016 Split File issued.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-1 Soil/Sediment 19-AUG-16 CSS16-07	L1826551-5 Soil/Sediment 19-AUG-16 CSS16-11	L1826551-15 Soil/Sediment 05-SEP-16 CSS16-43	L1826551-16 Soil/Sediment 05-SEP-16 CSS16-44	L1826551-17 Soil/Sediment 05-SEP-16 CSS16-45
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	8.39	7.96	8.53	8.18	7.98
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.152	1.13	0.123	0.469	6.23
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<1.0	<1.0	<1.0	2.2	<2.0 DLR
	Available Phosphate-P (mg/kg)	2.9	4.5	<2.0	<2.0	2.5
	Available Potassium (mg/kg)	155	123	140	54	144
Metals	Aluminum (Al) (mg/kg)	16000	13600	15500	10600	19300
	Antimony (Sb) (mg/kg)	0.35	0.29	0.34	0.45	0.50
	Arsenic (As) (mg/kg)	11.2	9.46	11.3	12.6	12.3
	Barium (Ba) (mg/kg)	153	139	153	115	201
	Beryllium (Be) (mg/kg)	0.59	0.47	0.57	0.41	0.64
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	7.3	5.2	6.8	<5.0	7.8
	Cadmium (Cd) (mg/kg)	0.134	0.172	0.145	0.175	0.269
	Calcium (Ca) (mg/kg)	23100	17800	22700	8430	21000
	Chromium (Cr) (mg/kg)	11.3	13.2	10.9	30.7	25.4
	Cobalt (Co) (mg/kg)	15.8	13.9	16.0	11.0	17.0
	Copper (Cu) (mg/kg)	819	706	848	121	455
	Iron (Fe) (mg/kg)	47400	40600	48200	27500	40400
	Lead (Pb) (mg/kg)	4.43	4.38	4.52	5.26	7.42
	Lithium (Li) (mg/kg)	14.3	12.4	14.0	11.3	19.5
	Magnesium (Mg) (mg/kg)	9460	8120	9460	6490	10200
	Manganese (Mn) (mg/kg)	577	555	572	730	817
	Mercury (Hg) (mg/kg)	0.069	0.068	0.073	0.079	0.101
	Molybdenum (Mo) (mg/kg)	3.28	2.89	3.79	1.48	3.33
	Nickel (Ni) (mg/kg)	9.65	10.5	8.96	26.4	21.2
	Phosphorus (P) (mg/kg)	1260	1090	1250	725	1150
	Potassium (K) (mg/kg)	1390	1090	1380	740	1620
	Selenium (Se) (mg/kg)	0.97	0.80	0.97	0.31	1.00
	Silver (Ag) (mg/kg)	0.34	0.28	0.35	0.13	0.29
	Sodium (Na) (mg/kg)	900	732	896	393	647
	Strontium (Sr) (mg/kg)	160	126	156	80.4	161
	Thallium (Tl) (mg/kg)	<0.050	<0.050	<0.050	0.070	0.065
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	1390	919	1300	717	1290
	Uranium (U) (mg/kg)	0.875	0.709	0.847	0.643	1.34
	Vanadium (V) (mg/kg)	181	147	183	80.1	129

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1826551-24 Soil/Sediment 05-SEP-16 CSS16-BKG-18	L1826551-25 Soil/Sediment 05-SEP-16 CSS16-BKG-19	L1826551-26 Soil/Sediment 05-SEP-16 CSS16-BKG-20	L1826551-28 Soil/Sediment 05-SEP-16 CSS16-BKG-21	L1826551-29 Soil/Sediment 05-SEP-16 CSS16-BKG-22
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.01	6.75	6.46	6.41	5.55
Organic / Inorganic Carbon	Total Organic Carbon (%)	22.2	22.1	41.6	2.27	6.10
Plant Available Nutrients	Available Nitrate-N (mg/kg)	<3.0 DLR	<3.0 DLR	<5.0 DLR	<1.0	<2.0 DLR
	Available Phosphate-P (mg/kg)	2.8	<2.0	7.5 DLR	4.2	98 DLHC
	Available Potassium (mg/kg)	130	51	170 DLR	59	90
Metals	Aluminum (Al) (mg/kg)	10100	11300	3410	13900	10900
	Antimony (Sb) (mg/kg)	0.28	0.32	0.28	0.30	0.27
	Arsenic (As) (mg/kg)	3.46	2.86	1.54	7.54	6.56
	Barium (Ba) (mg/kg)	76.9	79.5	58.8	83.5	132
	Beryllium (Be) (mg/kg)	0.27	0.46	0.14	0.32	0.24
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	6.8	5.7	9.9	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.499	0.645	1.05	0.205	0.390
	Calcium (Ca) (mg/kg)	23800	33000	35100	5030	4600
	Chromium (Cr) (mg/kg)	19.7	23.8	5.66	31.7	30.3
	Cobalt (Co) (mg/kg)	7.21	5.72	2.41	9.30	7.66
	Copper (Cu) (mg/kg)	117	101	33.1	21.7	24.1
	Iron (Fe) (mg/kg)	17100	15900	4970	26600	24900
	Lead (Pb) (mg/kg)	3.86	4.38	4.05	5.09	5.65
	Lithium (Li) (mg/kg)	10.4	10.9	2.4	15.4	8.5
	Magnesium (Mg) (mg/kg)	4800	3690	2000	5760	4530
	Manganese (Mn) (mg/kg)	261	214	163	341	404
	Mercury (Hg) (mg/kg)	0.101	0.189	0.150	<0.050	<0.050
	Molybdenum (Mo) (mg/kg)	0.83	0.73	0.90	0.44	0.69
	Nickel (Ni) (mg/kg)	19.2	29.6	10.7	22.7	17.6
	Phosphorus (P) (mg/kg)	1040	1220	858	499	1060
	Potassium (K) (mg/kg)	800	560	490	750	650
	Selenium (Se) (mg/kg)	2.62	3.66	1.45	<0.20	<0.20
	Silver (Ag) (mg/kg)	0.17	0.39	0.31	<0.10	<0.10
	Sodium (Na) (mg/kg)	178	89	<50	102	93
	Strontium (Sr) (mg/kg)	105	184	224	43.1	47.3
	Thallium (Tl) (mg/kg)	0.060	0.088	<0.050	0.075	0.059
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	345	177	78.3	849	709
	Uranium (U) (mg/kg)	2.87	8.10	3.12	0.603	0.348
	Vanadium (V) (mg/kg)	36.6	29.9	9.31	77.1	66.1

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-1	L1826551-5	L1826551-15	L1826551-16	L1826551-17
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	19-AUG-16	19-AUG-16	05-SEP-16	05-SEP-16	05-SEP-16
Sampled Time					
Client ID	CSS16-07	CSS16-11	CSS16-43	CSS16-44	CSS16-45
Grouping **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	53.3	54.1	53.2	46.9	70.1
Zirconium (Zr) (mg/kg)	6.2	3.5	6.1	2.4	2.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1826551-24	L1826551-25	L1826551-26	L1826551-28	L1826551-29
Description	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment	Soil/Sediment
Sampled Date	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16	05-SEP-16
Sampled Time					
Client ID	CSS16-BKG-18	CSS16-BKG-19	CSS16-BKG-20	CSS16-BKG-21	CSS16-BKG-22
Grouping **Analyte**					
SOIL					
Metals Zinc (Zn) (mg/kg)	41.2	27.3	65.1	64.5	67.2
Zirconium (Zr) (mg/kg)	1.7	4.7	1.6	1.1	1.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Lithium (Li)	DUP-H,J	L1826551-24, -25, -26, -28, -29

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLR	Detection Limit Raised due to required dilution, limited sample amount, and/or high moisture content (soil samples)
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	SSSA (1996) P. 973-974

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAFS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.

MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Method = Alberta Ag (1988)

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passage of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

Reference:
Recommended Methods of Soil Analysis for Canadian Prairie Agricultural Soils. Alberta Agriculture (1988) p. 19 and 28

PH-1:2-VA	Soil	pH in Soil (1:2 Soil:Water Extraction)	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PO4/K-AVAIL-SK	Soil	Plant Available Phosphorus and Potassium	Comm. Soil Sci. Plant Anal, 25 (5&6)

Plant available phosphorus and potassium are extracted from the soil usng Modified Kelowna solution. Phosphorous in the soil extract is determined colorimetrically at 880 nm, while potassiumis determined by flame emission at 770 nm.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

G0148

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

RUSH

Priority processing

Please log all highlighted soils for:

- CSR + Full Metals
- TOC/TIC
- Avail N, P, K

"Group A" soils are due Sept 16 with 'P' codes

"Group B" soils are due Sept 21, no priority code.

SK sublets should go out Monday.

Group A Tissue

SCN	Tissue ID
G0149-8	BERRY16-11
G0149-9	ANT16-02
G0149-10	BERRY16-12
G0149-11	BERRY16-13
G0149-12	SPRUCE16-02
G0150-1	BERRY16-14
G0150-2	BERRY16-15
G0150-3	ANT16-03
G0150-4	ANT16-03d
G0150-5	SPRUCE16-03
G0150-6	BERRY16-BKG-04
G0150-7	BERRY16-BKG-05
G0150-8	BERRY16-BKG-06
G0150-9	BERRY16-BKG-07
G0150-10	BERRY16-BKG-08
G0150-11	BERRY16-BKG-09
G0150-12	BERRY16-16
G0152-1	BERRY16-17
G0152-6	WILLOW16-06
G0152-7	WILLOW16-07
G0152-8	GRASS16-03
G0152-9	GRASS16-04
G0152-10	WILLOW16-08
G0152-11	GRASS16-05
G0152-12	GRASS16-06
G0156-1	GRASS16-07
G0156-2	GRASS16-08
G0156-3	WILLOW16-09
G0156-4	GRASS16-10
G0156-5	WILLOW16-10
G0156-6	GRASS16-09
G0156-7	SPRUCE16-06
G0156-8	SPRUCE16-07
G0168-3	SPRUCE16-15
G0168-4	ANT16-04
G0168-5	AR16-05
G0168-6	WILLOW16-BKG-07
G0168-7	SPRUCE16-BKG-06
G0168-8	AR16-BKG-01
G0168-9	WILLOW16-BKG-08
G0168-10	SPRUCE16-BKG-07
G0168-11	ANT16-BKG-01
G0168-12	AR16-BKG-02
G0169-1	WORM16-BKG-02
G0169-2	WILLOW16-BKG-09
G0169-3	WILLOW16-BKG-09d
G0169-4	SPRUCE16-BKG-08
G0169-5	SPRUCE16-BKG-08d
G0169-9	WILOW16-21
G0169-10	WILLOW16-22
G0169-11	WILOW16-23
G0169-12	WILLOW16-24
G0170-1	SPRUCE16-16
G0170-2	ANT16-05
G0170-3	AR16-05
G0170-4	BEETLE16-02
G0170-5	WILLOW16-BKG-10
G0170-6	SPRUCE16-BKG-09
G0170-7	ANT16-BKG-02
G0170-8	ANT16-BKG-02d
G0170-9	SPRUCE16-BKG-10
G0170-10	ANT16-BKG-03
G0170-11	ANT16-BKG-03d
G0170-12	WILLOW16-25
G171-1	SPRUCE16-17
G171-2	WORM16-05
G171-3	SPRUCE16-18
G171-4	GRASS16-BKG-09
G171-5	GRASS16-BKG-09d
G171-6	SPRUCE16-BKG-11

Group A Soil

Soil ID
CSS16-07
CSS16-08
CSS16-09
CSS16-10
CSS16-11
CSS16-11D
CSS16-12
CSS16-13
CSS16-17
CSS16-18
CSS16-19
CSS16-20
CSS16-21
CSS16-22
CSS16-43
CSS16-44
CSS16-45
CSS16-46
CSS16-BKG-02
CSS16-BKG-03
CSS16-BKG-04
CSS16-BKG-05
CSS16-BKG-06
CSS16-BKG-18
CSS16-BKG-19
CSS16-BKG-20
CSS16-BKG-20d
CSS16-BKG-21
CSS16-BKG-22
CSS16-BKG-22d
CSS16-BKG-23
CSS16-BKG-23d

Group B Tissue

SCN	Tissue ID
G0147-1	BERRY16-04
G0147-2	WORM16-01
G0147-3	WORM16-02
G0147-4	AR16-02
G0147-5	BEETLE16-01
G0147-6	ANT16-01
G0147-7	BERRY16-05
G0147-8	BERRY16-06
G0147-9	BERRY16-07
G0147-10	BERRY16-08
G0147-11	BERRY16-09
G0147-12	BERRY16-10
G0149-1	SPRUCE16-01
G0149-2	WORM16-03
G0149-3	BERRY-BKG-02
G0149-4	BERRY-BKG-01
G0149-5	BERRY-BKG-03
G0149-6	WORM16-BKG-01
G0152-2	BERRY16-18
G0152-3	BERRY16-19
G0152-4	BERRY16-20
G0152-5	BERRY16-BKG-10
G0156-9	GRASS16-11
G0156-10	GRASS16-BKG-01
G0156-11	GRASS16-BKG-02
G0156-12	GRASS16-12
G0157-1	GRASS16-13
G0157-2	GRASS16-BKG-03
G0157-3	GRASS16-BKG-04
G0157-4	GRASS16-14
G0157-5	GRASS16-15
G0157-6	GRASS16-BKG-05
G0157-7	WILLOW16-13
G0157-8	WILLOW16-14
G0157-9	WILLOW16-14d
G0157-10	WILLOW16-15
G0157-11	WILLOW16-17
G0157-12	WILLOW16-16
G0165-2	WILLOW16-11
G0165-3	GRASS16-16
G0165-4	GRASS16-16d
G0165-5	GRASS16-17
G0165-6	GRASS16-BKG-06
G0165-7	GRASS16-BKG-07
G0165-8	GRASS16-BKG-08
G0165-9	GRASS16-BKG-08d
G0165-10	WILLOW16-11
G0165-11	GRASS16-18
G0165-12	GRASS16-19
G0166-1	WILLOW16-18
G0166-2	GRASS16-20
G0166-3	WILLOW16-19
G0166-4	GRASS16-21
G0166-5	WILLOW16-BKG-01
G0166-6	SPRUCE16-BKG-02
G0166-7	BERRY16-BKG-11
G0166-8	WILLOW16-BKG-02
G0166-9	SPRUCE16-BKG-03
G0166-10	WILLOW16-BKG-03
G0166-11	WILLOW16-BKG-04
G0166-12	WILLOW16-BKG-05
G0167-1	SPRUCE-BKG-04
G0167-2	WILLOW16-BKG-06
G0167-3	SPRUCE16-BKG-05
G0167-4	SPRUCE16-08
G0167-5	SPRUCE16-09
G0167-6	WORM16-04
G0167-7	SPRUCE16-10
G0167-8	SPRUCE16-11
G0167-9	SPRUCE16-11D
G0167-10	SPRUCE16-12
G0167-11	SPRUCE16-13
G0167-12	WILLOW16-20
G0168-1	SPRUCE16-14
G0168-2	AR16-03
G171-7	GRASS16-BKG-10
G171-8	GRASS16-BKG-11
G171-9	WILLOW16-BKG-11
G171-10	SPURCE16-BKG-12

Group B So

Soil ID
CSS16-02
CSS16-03
CSS16-04
CSS16-05
CSS16-06
CSS16-14
CSS16-15
CSS16-20
CSS16-23
CSS16-24
CSS16-25
CSS16-26
CSS16-27
CSS16-27d
CSS16-28
CSS16-29
CSS16-30
CSS16-32
CSS16-33
CSS16-34
CSS16-35
CSS16-36
CSS16-37
CSS16-38
CSS16-39
CSS16-39D
CSS16-40
CSS16-41
CSS16-42
CSS16-BKG-01
CSS16-BKG-07
CSS16-BKG-08
CSS16-BKG-09
CSS16-BKG-10
CSS16-BKG-11
CSS16-BKG-12
CSS16-BKG-13
CSS16-BKG-13d
CSS16-BKG-14
CSS16-BKG-15
CSS16-BKG-16
CSS16-BKG-17
CSS16-BKG-24
CSS16-BKG-25

B 13
V 36 } 63
INV 14

49 + 14 = 70

L1826551-COFC

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # G0148

Report to:		Report Format / Distribution		Service Requested: (rush - subject to availability)
Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other		◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax		○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file		○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: aatkinson@golder.com; ezapfgilje@golder.com		○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	250-790-2215 Fax:			Analysis Request
Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #:		
Contact:		PO / AFE:		
Address:		Legal Site Description:		
Phone:	Fax:	Quote #:		
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG	

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hold	Number of Containers
[redacted]	CSS16-01	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-02	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-03	17-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-04	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-05	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-06	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-01	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-07	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-08	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-09	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-10	19-Aug-16		Soil/Sediment	x	2
[redacted]	CSS16-11	19-Aug-16		Soil/Sediment	x	2

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Company:	MOUNT POLLEY MINING CORP.	☐ Standard ☑ Other	◉ Regular (Default)
Contact:	Colleen Hughes	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-3 Business Days) - 50% Surcharge
Address:	PO BOX 12, Likely, BC, V0L 1N0	Email 1: on file	○ Emergency (1 Business Day) - 100% Surcharge
		Email 2: abruemmer@golder.com; ezapfgilje@golder.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
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Invoice To:	Same as Report ? ◉ Yes ○ No	Client / Project Information:	Please indicate below Filtered, Preserved or both (F, P, F/P)
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[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD											Number of Containers
[redacted]	CSS16-BKG-02	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-03	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-04	17-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-05	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-06	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-12	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-13	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-14	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-15	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-16	19-Aug-16		Soil/Sediment	x											2
[redacted]	CSS16-BKG-07	19-Aug-16		Soil/Sediment	x											2
[redacted]																

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Contact:		PO / AFE:	
Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
[redacted] Lab Work Order # (lab use only)	[redacted]	ALS Contact: Can Dang	Sampler: EZG

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[redacted]	CSS16-17	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-18	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-19	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-20	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-21	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-22	02-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-23	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-08	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-09	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-24	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-10	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-25	03-Sep-16		Soil/Sediment	x	2

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Address:		Legal Site Description:	
Phone:	Fax:	Quote #:	
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[redacted] Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-BKG-11	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-26	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-27	03-Sep-16	FDA - G0162-04	Soil/Sediment	x	2
[redacted]	CSS16-27d	03-Sep-16	FD - G0162-03	Soil/Sediment	x	2
[redacted]	CSS16-BKG-12	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-13	03-Sep-16	FDA - G0162-07	Soil/Sediment	x	2
[redacted]	CSS16-BKG-13d	03-Sep-16	FD - G0162-06	Soil/Sediment	x	2
[redacted]	CSS16-28	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-29	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-30	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-31	03-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-32	04-Sep-16		Soil/Sediment	x	2

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Phone:	Fax:	Quote #:		
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[redacted] Sample # [redacted]	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	HOLD	Number of Containers
[redacted]	CSS16-33	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-34	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-35	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-14	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-15	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-16	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-17	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-36	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-37	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-38	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-39	04-Sep-16	FDA - G0163-12	Soil/Sediment	x	2
[redacted]	CSS16-39d	04-Sep-16	FD - G0163- 11	Soil/Sediment	x	2

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[redacted]	CSS16-40	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-41	04-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-42	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-18	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-19	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-20d	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-43	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-44	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-21	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-22	05-Sep-16	FDA- G0165-01	Soil/Sediment	x	2

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[redacted]	CSS16-BKG-22d	05-Sep-16	FD - G0164-12	Soil/Sediment	x	2
[redacted]	CSS16-45	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-46	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-23	05-Sep-16	FDA-G0165-05	Soil/Sediment	x	2
[redacted]	CSS16-BKG-23d	05-Sep-16	FD-G0165-04	Soil/Sediment	x	2
[redacted]	CSS16-BKG-24	05-Sep-16		Soil/Sediment	x	2
[redacted]	CSS16-BKG-25	05-Sep-16		Soil/Sediment	x	2
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

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Europe	+ 44 1628 851851
North America	+ 1 800 275 3281
South America	+ 56 2 2616 2000

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