Appendix 6.7-B

2014 Fish and Aquatic Baseline Report Update

AJAX PROJECT

Environmental Assessment Certificate Application / Environmental Impact Statement for a Comprehensive Study

KGHM AJAX MINING INC.
AJAX PROJECT


2014 FISH AND AQUATIC BASELINE REPORT UPDATE

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AJAX PROJECT

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VA101-246/35-1

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EXECUTIVE SUMMARY

The purpose of this report is to present the results of the fisheries and aquatic baseline monitoring program conducted between 2007 and 2011 and in 2014 in support of the Ajax Project (the Project), a proposed copper and gold mine located near the city of Kamloops, BC. The objectives of the program are:

- To characterize baseline conditions at potentially affected sites (impact sites) and at sites not anticipated to have any interaction with the Project (control sites) to support the assessment of any Project related changes in the aquatic environment
- Establish a baseline data set for the monitoring of Project effects in the future, and
- To determine which waterbodies in the Project area contain fish and therefore contribute to commercial, recreational, or Aboriginal fisheries under the *Fisheries Act.*

The Project will require an Environmental Assessment Certificate in accordance with the provincial *Environmental Assessment Act* as well as approval under the *Canadian Environmental Assessment Act.* "Fish Populations and Fish Habitat" is identified as a Valued Component in the Application Information Requirements and Environmental Impact Statement Guidelines document for the Ajax Project. The main Project footprint will be within the Peterson Creek watershed. A portion of the site access road and water supply line will be in the Cherry Creek watershed, and a water intake will be located on the south bank of Kamloops Lake.

Aquatic studies are required in lake and stream systems potentially impacted by the Project (Jacko Lake, Peterson Creek, Goose Lake, Keynes Creek, and Humphrey Creek). Monitoring sites were established in Edith Lake, Scuitto Lake, McConnell Lake, Anderson Creek, and Cherry Creek to act as control sites for any monitoring programs required for Project environmental certificates, approvals, and permits. The indicators that are used to characterize Fish Populations and Fish Habitat include:

- Fish population abundance, distribution, life history characteristics, and fish habitat utilization.
- Metal concentrations in fish tissue.
- Physical habitat (channel form and function), in situ water quality (temperature, dissolved oxygen).
- Sediment quality (metal concentration).
- Phytoplankton, periphyton, zooplankton, and benthic macroinvertebrate community indices and metrics.

The study designs and sampling methodology for each component of the monitoring program were adapted from applicable provincial and federal guidelines and standards. Rainbow trout are the only fish species present in the Project area. Physical habitats of lake and stream sites are characterized with respect to optimum parameters for rainbow trout rearing, spawning, and overwintering. Analytical results for fish muscle and for whole body tissue metal concentrations are compared to guidelines for the consumption of fish: guidelines for human consumption are available for lead (0.8 µg/g wet weight), mercury (0.1 µg/g wet weight when the weekly consumption is 1050 grams wet weight to 0.5 µg/g wet weight when the weekly consumption is 210 grams wet weight) (Ministry of Environment 2001a), and selenium (4 µg/g wet weight) (Beatty and Russo 2014). The guideline concentration of methyl mercury in fish or shellfish consumed by wildlife is 0.033 µg/g wet weight (Ministry of Environment 2001a; Canadian Council of Ministers of the Environment 2000). Sediment samples were analysed for metal concentrations and results are assessed against provincial and federal sediment quality guidelines for the protection of aquatic health. Primary and secondary productivity is assessed through collection of phytoplankton, zooplankton, and benthic macroinvertebrates in lakes (lentic environments), and periphyton and benthic macroinvertebrates in streams (lotic environments). Descriptive statistics used to characterize the phytoplankton, periphyton, zooplankton, and benthic macroinvertebrates include density; taxon richness; and taxonomic composition. In addition, biological indices that incorporate abundance and richness measures are calculated for each site, including the Simpson's and Shannon-Wiener Diversity and evenness indices; the Bray-Curtis Similarity index and Ephemeroptera-Plecoptera-Trichoptera are calculated for stream benthic macroinvertebrates only.

Jacko Lake

A dam at the outlet of Jacko Lake was originally constructed in the early 1900s for the purpose of storing water for irrigation and conservation. The dam height was raised at least twice, which resulted flooding of low lying areas and an increase in productive littoral area in the arms of the lake. Although provincial fisheries records note that no fish were present in Jacko Lake in 1939, it is reported that local First Nations fished for rainbow trout and kokanee before the arrival of Europeans. Rainbow trout have been stocked in Jacko Lake on an annual basis (with the exception of 1990) since 1954. Water temperatures in the epilimnion (surface water layer) of Jacko Lake were above the optimum temperature range for rainbow trout rearing of 16°C to 18°C by the end of June and exceeded 20°C in July and August of 2014. Dissolved oxygen concentrations were less than the instantaneous minimum recommended concentration of 5 mg/l for fish at depths below approximately 5 m in Jacko Lake in September 2014. Jacko Lake supports a recreational fishery, and a traditional Aboriginal fishery has recently been reported at the lake outlet.

Sediment concentrations of chromium, copper, manganese, mercury, nickel and selenium exceeded the respective federal and provincial guidelines for the protection of aquatic life in one or more samples collected from Jacko Lake between 2007 and 2014. Phytoplankton samples were collected from Jacko Lake at the surface and from within the euphotic zone in 2014. Phytoplankton abundance was higher in the surface sample compared to the euphotic zone sample; however, taxon richness was lower. Simpson's diversity and evenness were higher in the surface sample, while Shannon-Wiener diversity and evenness were higher in the euphotic zone sample.

The Simpson's and Shannon-Wiener evenness indices for benthic macroinvertebrates showed high mean values and large variances, likely influenced by the low density of organisms, and the Simpson's diversity index was also relatively high. Benthic macroinvertebrate density in Jacko Lake is highly variable inter-annually.

Rainbow trout captured from Jacko Lake in 2014 for the purpose of tissue metal concentration analysis ranged in size between 173 mm and 221 mm and were two and three years old. Muscle samples from the two Jacko Lake fish collected for metals analysis exceeded the methyl mercury guideline for wildlife consumption but were below the lead, mercury and selenium guidelines. Five of nine Jacko Lake whole body tissue samples exceeded the mercury guideline for human consumption and all of the samples exceeded the methyl mercury guideline for wildlife consumption.

Peterson Creek

Rainbow trout adults from Jacko Lake are present in spring and early summer in low numbers in Peterson Creek within the Project area. The fish are able to move downstream from Jacko Lake when the spillway is flowing, typically during April through June, and are stranded in the creek when the spillway ceases flowing, as there is no means of upstream passage over the dam. No juvenile fish or fry have been captured in Peterson Creek within the Project area in sampling programs conducted since 2007. Peterson Creek within the Project area downstream of Jacko Lake offers marginal rainbow trout spawning and rearing habitat due to the high silt content of the substrate, lack of instream cover and low channel complexity, minimal riparian habitat, and high summer water temperatures and low dissolved oxygen concentration due to low flows. Rainbow trout in Peterson Creek in the proposed Project area therefore do not support a recreational fishery or contribute to the productivity of the Jacko Lake rainbow trout population.

Juvenile and adult rainbow trout are present in Peterson Creek within the city of Kamloops boundary; to date the most upstream population has been observed approximately 9 km downstream of the Project area, within Peterson Creek Park above Bridal Veil Falls. This population likely became established and is sustained by intermittent seeding from the stocked rainbow trout population in Jacko Lake during high flow events when fish are able to pass over the Jacko Lake spillway and through the series of wetlands and beaver dams upstream. A bedrock cascade and falls approximately 8 km downstream of the Project area prevents the return passage of fish. Juvenile and adult rainbow trout and coho salmon fry have been observed within the short (approximately 150 m) section of Peterson Creek near the confluence with the South Thompson River. Juvenile and adult rainbow trout are also present upstream of the approximately 1 km concrete culvert that carries Peterson Creek flows under downtown Kamloops. Bridal Veil Falls prevents the upstream passage of fish into the upper reaches of Peterson Creek.

Water temperatures typically exceed the optimum incubation temperature range of 10.0°C to 12.0°C and optimum spawning temperature range of 10.0°C to 15.5°C by May of each year in all of the Peterson Creek sampling sites. Upper lethal temperatures are approached and exceeded in some years in Peterson Creek where it flows through the wetland approximately 3 km downstream of Jacko Lake.

Sediment concentrations of arsenic, chromium, copper, iron, manganese, and nickel exceeded the respective federal and provincial guidelines for the protection of aquatic life at all of the sites on Peterson Creek. Peterson Creek in downtown Kamloops had the lowest periphyton density and richness of all of the stream sample sites, but the highest Simpson's and Shannon-Wiener diversity indices and evenness in 2014. Peterson Creek upstream of Bridal Veil Falls had the highest periphyton density but the lowest Simpson's and Shannon-Wiener diversity indices and evenness compared to the other stream sample sites in 2014. Benthic macroinvertebrate density was low at Peterson Creek sites in downtown Kamloops and above Bridal Veil Falls. The family richness metric was low in the Peterson Creek samples collected in downtown Kamloops. The Ephemeroptera-Plecoptera-Trichoptera index for the Peterson Creek site in downtown Kamloops indicates degraded water quality.

Goose Lake

The Keynes Creek watershed, which includes Goose Lake, is within the Project footprint. Goose Lake, with an average depth of approximately 1 m, is mapped as the headwater lake of an unnamed tributary to Keynes Creek. Provincial mapping indicates that an outlet channel is present at the southwest end of Goose Lake, however no alluvial channel has been observed. There are no provincial records of fish in Goose Lake, and no indication that it has been used as an Aboriginal fishery. No fish were captured or observed using electrofishing or baited minnow traps in 2014. Goose Lake does not contribute to the productivity of the Jacko Lake or Peterson Creek rainbow trout populations.

Sediment chromium, copper, and nickel concentrations exceeded the respective federal and provincial guidelines for the protection of aquatic life in samples collected from Goose Lake. Goose Lake had the lowest Shannon-Wiener diversity and evenness values and lowest Simpson’s diversity in the phytoplankton samples collected in 2014 compared to the other lakes in the baseline program. Zooplankton density was higher in Goose Lake than in the other lakes in the monitoring program. The Simpson’s and Shannon-Wiener diversity index and evenness for zooplankton were similar between all sites, with the highest values seen in the Jacko Lake and Goose Lake samples.

Keynes Creek

Keynes Creek is mapped as flowing from a wetland located approximately 2 km south of Jacko Lake into Peterson Creek at the downstream end of the Jacko Lake spillway. No visible outlet channel was noted from the wetland, and no evidence of scour or alluvial deposition was found in the location where Keynes Creek is mapped as confluent with Peterson Creek. The Keynes Creek channel is intermittent and flow is ephemeral; the channel was dry from approximately mid-June through October in 2014. There are no provincial records of fish in the Keynes Creek watershed, and no fish were captured in baited minnow traps set within the headwater wetland in 2014. Keynes Creek is too shallow and the channel too narrow for fish sampling using electrofishing or minnow trapping. Due to the lack of flow and surface connectivity to Peterson Creek, Keynes Creek does not support a commercial, recreational, or Aboriginal fishery, and does not contribute to the productivity of the Jacko Lake or Peterson Creek rainbow trout populations. No sediment, periphyton, or benthic invertebrate samples were collected in Keynes Creek in 2014 due to the lack of flow.

Edith Lake

Edith Lake is the natural headwater lake of Humphrey Creek. Provincial fisheries records indicate that no fish were present in Edith Lake prior to 1950, when rainbow trout were first stocked. Rainbow trout were stocked intermittently between 1991 and 1994, and have been stocked annually since 1995. Eastern brook trout were stocked in Edith Lake in 1965, and then annually between 1978 and 2014. Eight of nine whole body fish tissue samples from Edith Lake had methyl mercury concentrations that exceeded the guideline for wildlife consumption; lead, mercury, and selenium guidelines were not exceeded in any of the samples. Edith Lake is a popular recreational fishery; no information on Aboriginal use was available at the time of writing.

High water temperatures and low oxygen temperatures were recorded throughout the water column in Edith Lake in 2014: temperatures in the epilimnion exceeded 20°C by July, while dissolved oxygen concentrations were less than 5 mg/l at depths below 6.5 m in September. Sediment chromium, copper, manganese and nickel exceeded the applicable provincial and federal guidelines for the protection of aquatic life. Phytoplankton abundance in Edith Lake was similar to numbers seen in Jacko Lake. The Simpson's and Shannon-Wiener phytoplankton diversity indices in the Edith Lake shallow and euphotic zone samples were similar to Jacko Lake; the Edith Lake euphotic zone sample had the lowest Simpson's evenness value of all of the lake samples. Edith Lake had the lowest zooplankton Simpson's and Shannon-Wiener diversity and evenness values, although evenness values at all sites were relatively low. Benthic macroinvertebrate density was relatively high in Edith Lake, second only to that seen in Scuitto Lake. Benthic invertebrate family richness was also relatively high in Edith Lake, but the Shannon-Wiener evenness and Simpson's diversity index values were low compared to the other lakes in the sampling program.

Humphrey Creek

Humphrey Creek receives flow from Edith Lake through an outlet pipe in the dam to provide additional Peterson Creek flows for downstream water licence holders. Edith Lake is supplemented by flows from Anderson Creek, in the adjacent watershed to the south. Humphrey Creek flows through a defined channel from Edith Lake to approximately 70 m from Peterson Creek, at which point the channel becomes undefined, discharging to a pasture before seeping into the ground. No fish sampling was conducted in 2014 in Humphrey Creek due to the narrow channel width and shallow flows, which did not permit placement of minnow traps or the electrofisher anode. Humphrey Creek would provide marginal fish habitat due to the narrow channel width, ephemeral flow, and lack of surface connection to Peterson Creek. Any fish that would be displaced from Edith Lake over the dam spillway during high flow events would be stranded in Humphrey Creek as flow subsides, since there is no means of upstream passage into Edith Lake. Humphrey Creek therefore does not contribute to any commercial, recreational, or Aboriginal fishery in Edith Lake or in Peterson Creek. No sediment, periphyton, or benthic invertebrate samples were collected in Humphrey Creek in 2014 due to the lack of flow.

Cherry Creek

Cherry Creek is located east of the Peterson Creek watershed and discharges into the south shore of Kamloops Lake. The overall distribution of juvenile and adult rainbow trout within Cherry Creek is relatively continuous between a water diversion located 500 m from the mouth of the creek upstream to the Chuwhels Lake outlet. Five of eight Cherry Creek rainbow trout samples in 2014 exceeded the methyl mercury guideline for wildlife consumption; none of the samples exceeded the lead, mercury or selenium guidelines for human consumption. Cherry Creek temperatures are generally within the optimum incubation and spawning temperature range for rainbow trout, but are below the optimum range for rearing.

No sediment samples were collected from Cherry Creek in 2014 due to the lack of fine substrates. Cherry Creek had similar periphyton density as Peterson Creek upstream of Bridal Veil Falls but higher Simpson's and Shannon-Wiener diversity indices and evenness. Benthic macroinvertebrate density was higher in the Cherry Creek site compared to the other stream sites in 2014. The benthic macroinvertebrate Simpson's and Shannon-Wiener diversity indices were relatively high in Cherry Creek in 2014.

Anderson Creek Watershed

McConnell Lake

McConnell Lake is the headwater lake of Anderson Creek. Similar to Jacko Lake, McConnell Lake has been modified by installation of a dam at the outlet. The dam regulates flow and is an obstacle to fish passage, with movement between the lake and outlet creek possible only at high flow. Fish and aquatic sampling was conducted in McConnell Lake in October 2014, a month after sampling on the other lakes due to a delay in receiving a Park Use Permit. Rainbow trout were observed in McConnell Lake in 1935, but it is likely that the fish were stocked, since lack of spawning habitat is noted as a constraint to fisheries production in the provincial fisheries database. McConnell Lake has been stocked annually with rainbow trout since 1935, with the exception of 1955 and 1957. One of the McConnell Lake rainbow trout whole body tissue samples collected in 2014 exceeded the mercury guideline for human consumption and all samples exceeded the methyl mercury guideline for wildlife consumption. Surface water temperature in McConnell Lake averaged 8.6°C and dissolved oxygen concentrations averaged 8.6 mg/l in October 2014. Dissolved oxygen concentrations were less than 1 mg/l in the hypolimnion.

Sediment samples collected from McConnell Lake in 2014 exceeded the federal and provincial chromium, manganese, and nickel guidelines for the protection of aquatic life. Phytoplankton abundance was lower in the surface sample than in the euphotic zone sample but taxon richness was higher. The highest phytoplankton Simpson's and Shannon-Wiener diversity and evenness values were seen in the McConnell Lake surface samples. Zooplankton density was lower in the McConnell Lake samples compared to the other lakes, which may be explained by the later sampling period. Taxa richness was similar for all sites. McConnell Lake had the lowest density of benthic macroinvertebrates compared to the other lake sites. Benthic macroinvertebrate family richness values were low but similar to numbers seen in Jacko Lake; the Simpson's evenness index and Simpson's diversity index were relatively high.

Anderson Creek

Anderson Creek flows generally east and then north into the Campbell Creek watershed, which discharges to the South Thompson River upstream of the Peterson Creek and South Thompson River confluence. Two stream control sites were established on Anderson Creek: one site approximately 5 km downstream of McConnell Lake, and the other approximately 16 km downstream from McConnell Lake. Rainbow trout were captured at the upper Anderson Creek control site in 2014; no fish were captured or observed at the lower site. Methyl mercury concentrations in two of six fish whole body tissue samples exceeded the guideline for wildlife consumption; lead, mercury, and selenium guidelines were not exceeded in any of the samples. Water temperatures in Anderson Creek exceeded optimum incubation and spawning temperatures by early May or mid-June in 2014 but were below the optimum rearing temperatures of 16°C to 18°C for most of the summer. The rainbow trout population within Anderson Creek would be considered a recreational fishery; no information on Aboriginal use is available.

Sediment chromium, copper, iron, manganese, and nickel exceeded provincial and federal guidelines for the protection of aquatic life in one or more of the samples collected from Anderson Creek in 2014. Periphyton density was almost twice as high at the upper Anderson Creek site than at the lower site, but taxon richness was higher at the lower site. Simpson's diversity and evenness and

Shannon-Wiener evenness values were higher at the upper site, whereas the Shannon-Wiener diversity value was lower. Benthic macroinvertebrate density was also more than twice as high at the upper Anderson Creek site compared to the lower site; taxon richness Simpson's diversity and evenness, and Shannon-Wiener diversity and evenness values were all greater at the upper Anderson Creek site.

Scuitto Lake

Scuitto Lake is located approximately 21 km southeast of Jacko Lake. There are two dams on Scuitto Lake; in addition, a dam upstream of the lake on Scuitto Creek regulates flows from Campbell Lake, located approximately 1 km upstream. Resident populations of rainbow trout are present in the Scuitto Lake watershed; rainbow trout were intermittently stocked in Scuitto Lake between 1925 and 1989 and were stocked annually between 2005 and 2011. The majority of rainbow trout tissue samples analyzed in 2014 exceeded the mercury guideline for human consumption and the methyl mercury guideline for wildlife consumption. No in situ water quality data are available for the lake due to high winds and inclement weather during the sampling program in September 2014. The lake is used as a recreational fishery; no information on traditional or current Aboriginal use of the lake is available.

Sediment chromium, copper, iron, and nickel concentrations exceeded federal and provincial guidelines for the protection of aquatic life in 2014. Scuitto Lake phytoplankton abundance and taxon richness were lower than the other lakes sampled in September 2014. Simpson's diversity and the Shannon-Wiener phytoplankton diversity and evenness values were lower in the surface water sample in Scuitto Lake compared to the other lakes, while the Simpson's evenness value was similar to the other lakes. Zooplankton density and taxon richness in Scuitto Lake were similar to values seen in Jacko Lake in 2014, while the Simpson's and Shannon-Wiener diversity and evenness values were lower. Scuitto Lake benthic macroinvertebrate density and taxon richness were higher than seen at the other lake sites in 2014. The Simpson's and Shannon-Wiener benthic macroinvertebrate diversity values were highest in the Scuitto Lake samples compared to the other lakes; evenness values were similar to those seen in the other lake samples.

Summary

Any activity that may cause serious harm to fish that support or contribute to a Commercial, Recreational, or Aboriginal fishery must be authorized by the Minister of Fisheries and Oceans. One of the goals of the federal *Fisheries Act* is the protection of the sustainability and ongoing productivity of fisheries, and the requirements to offset for any reduction in fisheries productivity from habitat impacts or the death of fish (Rice et al. 2015). The primary limiting factor to increased fish production in streams within the Project area is water quantity. Peak stream flows occur in the spring (between April and June) in response to snowmelt. Flows are low in the summer and fall. Habitat quality in Peterson Creek within the Project area for rainbow trout spawning, rearing, and incubation is low due to these seasonal low flows that result in dewatered sections of the creek, and high temperatures and low dissolved oxygen concentrations. The results of the baseline monitoring program will inform effects assessment to fully understand the fish and fish habitat values potentially impacted by the Ajax Project. The baseline monitoring program is continuing in 2015.

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ABBREVIATIONS

Ajax Project	Project
AIR	Application Information Requirements
ANDR	Anderson Creek
BACI	Before-After-Control-Impact
BC	British Columbia
B-C	Bray-Curtis
British Columbia Environmental Assessment Act	BCEAA
CC	Cherry Creek
CEAA	Canadian Environmental Assessment Act
CEA Agency	Canadian Environmental Assessment Agency
CCME	Canadian Council of Ministers of the Environment
CPUE	Catch Per Unit Effort
EA	Environmental Assessment
EAO	Environmental Assessment Office
EDITH	Edith Lake
EIS Guidelines	Environmental Impact Statement Guidelines
EMRSF	East Mine Rock Storage Facility
EPT	Ephemeroptera-Plecoptera-Trichoptera
IPMRSF	In-Pit Mine Rock Storage Facility
ISQG	Interim Sediment Quality Guideline
JACL	Jacko Lake
KAM	KGHM Ajax Mining Inc.
KC	Keynes Creek
KP	Knight Piésold Ltd.
LEL	Lowest Effect Level
MCC	McConnell Lake
MDL	Method Detection Limit
MOE	Ministry of Environment
MRSFs	Mine Rock Storage Facilities
PC	Peterson Creek
PEL	Probable Effect Level
RCA	Reference Condition Approach
SCUITTO	Scuitto Lake
S.D.	Standard Deviation
S.E.	Standard Error
SEL	Severe Effect Level
SMRSF	South Mine Rock Storage Facility
SSN	Stk'emlupsemc te Secwepemc Nation
TEMRSF	Tailings Embankment Mine Rock Storage Facility
TSF	Tailings Storage Facility
VC	Valued Component

UNITS

cm .... centimetre
°C .... degrees Celsius
g .... grams
kg .... kilogram
km .... kilometre
l .... litre
m .... metre
µg/g .... microgram per gram
µm .... micrometre
µS/cm .... microSiemen per cm
mg .... milligram
mg/l .... milligram per litre
ml .... millilitre
mm .... millimetre

1 – INTRODUCTION

1.1 PURPOSE

The purpose of this report is to present the results of the fish and aquatic baseline sampling program conducted in the lakes and streams within and around the footprint of the proposed Ajax Project in support of the environmental assessment.

KGHM Ajax Mining Inc. proposes to develop the Ajax Project (Project), an open pit copper-gold mine at the historic Afton Mining Camp, south of the City of Kamloops, British Columbia (BC) (ERM Rescan 2015). The Project is located in the South-Central Interior of British Columbia, southeast of the junction of the Trans-Canada Highway No. 1 and the Coquihalla Highway (No. 5), within the Thompson Nicola Regional District (ERM Rescan 2015).

The Project lies in the traditional territory of the Secwepemc Nation. Within the Secwepemc Nation, the Tk'emlúps te Secwepemc and the Skeetchestn Indian Band are the Aboriginal groups in closest proximity to the Project (ERM Rescan 2015). In a cooperative effort, the Tk'emlúps te Secwepemc and Skeetchestn Indian Bands have formed the Stk'emlupsemc te Secwepemc Nation (SSN), as a division of the greater Secwepemc Nation (ERM Rescan 2015). The Ashcroft Indian Band and Lower Nicola Indian Band, whose members are part of the Nlaka'pamux Nation also assert their Aboriginal rights to the Project area- an area of common interest with the SSN (ERM Rescan 2015).

The Ajax property includes two historic pits: the Ajax West Pit, and the Ajax East Pit. Both pits were formerly mined in the 1980s and 1990s (ERM Rescan 2015). As many as 25 rock types have been recognized in the Project area, some of which are "hybrid" units resulting from the intermixing of multiple rock types (ERM Rescan 2015).

Key Project facilities include the Tailings Storage Facility (TSF), which is planned as a conventional tailings storage facility; water management ponds; Peterson Creek diversion, and the Tailings Embankments, which will be constructed using mine rock; and four mine rock storage facilities (MRSFs) (ERM Rescan 2015). The four MRSFs include:

- The South Mine Rock Storage Facility (SMRSF)
- East Mine Rock Storage Facility (EMRSF)
- Tailings Embankment Mine Rock Storage Facility (TEMRSF), and
- The In-Pit Mine Rock Storage Facility (IPMRSF).

Several facilities that will be part of the operation phase but not remain after project closure include the:

- Plant facilities and administration buildings
- Reclamation stockpiles
- Explosives facility
- Truck stop and fuel storage
- Power lines, and
- Access roads.

The mine plan for the Project predicts an operation based on a mill throughput of 65,000 tonnes of ore per day from the Ajax Pit with up to a 23 year mine life (ERM Rescan 2015). The construction phase of the Project will be approximately two and a half years, and following the 23 year operation the decommissioning and closure phase is expected to take up to 5 years (ERM Rescan 2015). Over the mine life the Project will produce approximately 140 million pounds of copper and 130,000 ounces of gold annually with the concentrate shipped by truck to the Port of Vancouver (ERM Rescan 2015).

1.2 REGULATORY CONTEXT

In British Columbia (BC), major projects are required to obtain an Environmental Assessment Certificate in accordance with provincial *Environmental Assessment Act* (BCEAA). The Project is also subject to a comprehensive study Environmental Assessment (EA) under the *Canadian Environmental Assessment Act* (CEAA) because it is a proposed metal mine, other than a gold mine, with an ore production capacity of 3,000 tonnes per day or more, as well as a proposed gold mine that exceeds the ore production capacity threshold of 600 tonnes per day, and proposes construction of a metal mill that is anticipated to exceed the ore input capacity threshold of 4,000 tonnes per day. To initiate the EA process, the Project Description for the Ajax Project was originally submitted to the Environmental Assessment Office (EAO) and Canadian Environmental Assessment Agency (CEA Agency) on December 6, 2010. The final version of the Project Description, which incorporated comments from the EAO, CEA Agency, and Transport Canada, was posted to the EAO website on July 6, 2011. Revision 1 of the Approved Application Information Requirements (AIR) and Environmental Impact Statement Guidelines (EIS Guidelines) document was issued in final on June 3, 2013 and posted to the EAO website on June 25, 2013. The AIR/EIS Guidelines specify the baseline information that will be needed to support the provincial and federal EA processes, including where, when, and how sampling will occur, and how data will be analyzed and reported. Fish Populations and Fish Habitat was identified as a Valued Component (VC) in the AIR/EIS Guidelines; VCs are defined in the AIR/EIS Guidelines as “aspects of the environment considered important by the Proponent (KAM and its consultants), the public, Aboriginal groups, and government agencies involved in the EA process”.

Following approval of Revision 1 of the AIR/EIS Guidelines, KAM temporarily suspended baseline monitoring programs in order to reconsider the design of the Project. A revised AIR/EIS Guidelines specific to the revised Project design was approved by the EAO and CEA Agency in 2015. In accordance with this document, the following water bodies are included in the baseline fisheries and aquatic resources baseline monitoring program:

- Jacko Lake
- Peterson Creek upstream and downstream of Jacko Lake (note that the inlet to Jacko Lake is erroneously referred to as Jacko Creek on some historical maps; the gazetted name is Peterson Creek)
- Goose Lake
- Keynes Creek, and
- Humphrey Creek.

In addition to these waterbodies noted in the AIR/EIS Guidelines, monitoring was also conducted in streams and lakes in neighbouring watersheds to characterize regional aquatic resources. These waterbodies include:

- Edith Lake
- Scuitto Lake

- McConnell Lake
- Anderson Creek, and
- Cherry Creek.

The following indicators are used to characterize the fish population and fish habitat baseline environment:

- Rainbow trout population abundance, distribution, life history characteristics, and fish habitat utilization (spawning, rearing, overwintering) in the Project area watersheds (note that rainbow trout is the only species present in Peterson Creek in the Project area).
- Fish habitat utilization and any critical or important habitat in Kamloops Lake adjacent to the proposed water line intake and pump station.
- Migratory corridors in the Thompson River downstream of the proposed water line intake.
- Sediment quality and benthic macroinvertebrate diversity at lake and stream sites.
- Periphyton diversity and biomass at stream sites; phytoplankton and zooplankton diversity in Jacko Lake and Goose Lake.
- Metals in fish tissue.

Detailed information for the 2014 sampling program is presented in this report; information will be drawn from the previous baseline reports for comparison or to provide context as necessary. Samples were collected at consistent sites throughout all sampling years and additional sites were added to the 2014 monitoring program in response to proposed changes to the Project footprint.

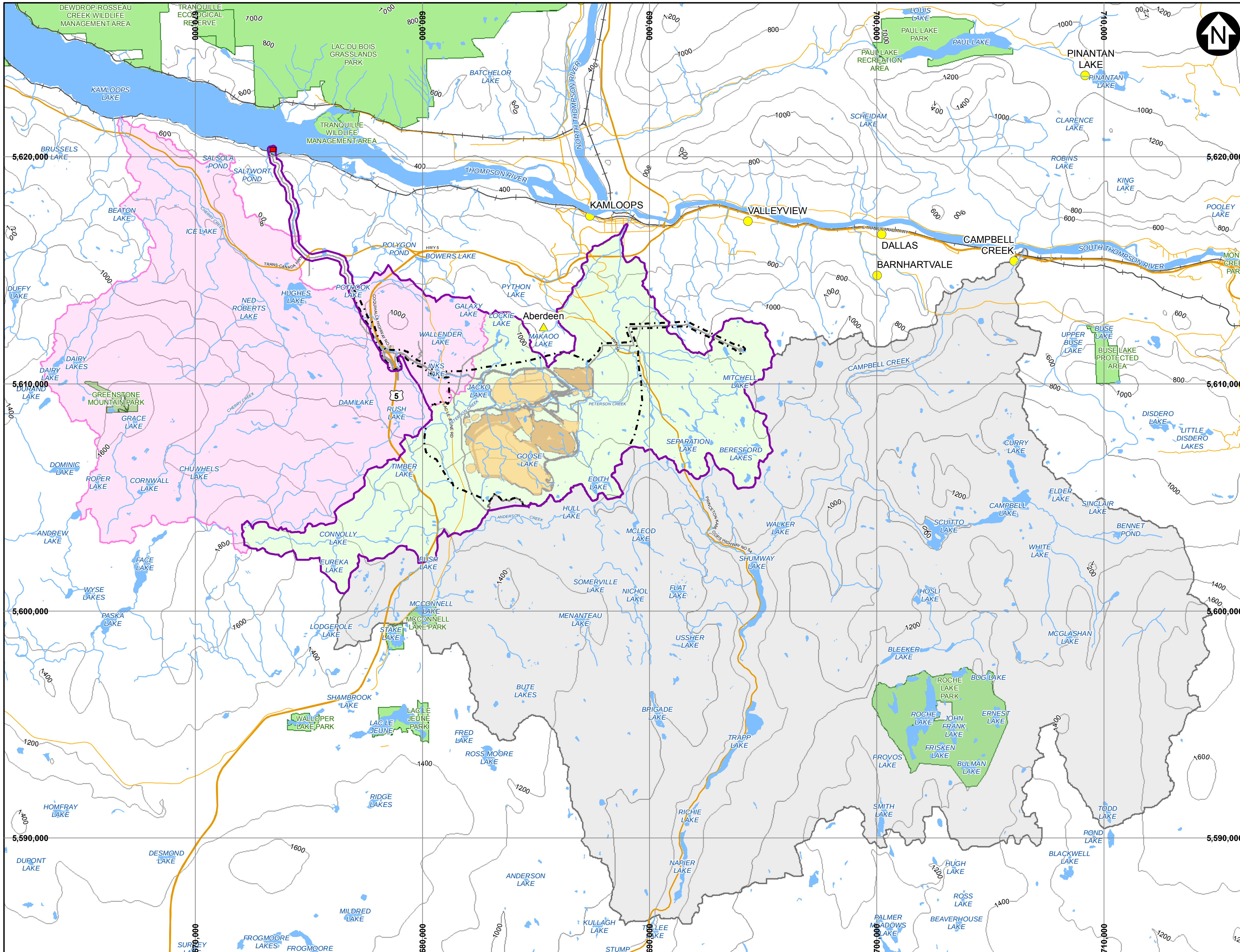
The federal *Fisheries Act* regulates the sustainability and ongoing productivity of fisheries, and includes requirements to offset for any reduction in fisheries productivity from habitat impacts or the death of fish (Rice et al. 2015). Any activity that may cause serious harm must be authorized by the Minister of Fisheries and Oceans, taking into consideration, among other things, the contribution of the relevant fish to the ongoing productivity of a Commercial, Recreational, or Aboriginal fishery, and fisheries management objectives (Rice et al. 2015).

2 – STUDY DESIGN AND METHODOLOGY

2.1 STUDY AREA

In previous designs the Project footprint was largely within the Peterson Creek and Cherry Creek watersheds, with some components of the mine located within Kamloops city limits. Baseline fisheries and aquatic studies conducted in the Project area by Knight Piésold Ltd. (KP) were initiated in 2007, focusing on areas to the north of Peterson Creek and within the Cherry Creek watershed; the results of these studies were presented in a baseline fisheries report (Knight Piésold Ltd. 2013a) and an aquatic ecology baseline report (Knight Piésold Ltd. 2013b). In 2013 KGHM Ajax Mining Inc. (KAM) revised the Project design, shifting some Project components to the south of Peterson Creek. The Project footprint is proposed to be constructed within the Peterson Creek watershed, with Project infrastructure located around Jacko Lake. Linear facilities (site access roads, water supply line) will be located in the Cherry Creek drainage, and a water intake will be located on the south bank of Kamloops Lake (Figure 2.1-1).

In 2014 KP was retained to continue the fisheries and aquatic baseline monitoring program, in order to characterize the streams and waterbodies that could potentially be affected by Project activities in the watershed area south of Peterson Creek. Monitoring locations in the 2014 program coincided with sites established in the 2007 through 2011 program, with additional sites added to reflect the revised Project design and footprint. New control sites were established in Anderson Creek, McConnell Lake, Edith Lake and Scuitto Lake in 2014.



LEGEND:

GENERAL

- CITY/TOWN
- SUBDIVISION
- MAJOR/PAVED ROAD
- CONTOUR (200 M)
- RAILWAY
- EXISTING TRANSMISSION LINE
- RIVER/CREEK
- LAKE
- PROVINCIAL PARK
- CHERRY CREEK WATERSHED
- PETERSON CREEK WATERSHED
- CAMPBELL CREEK WATERSHED

PROPOSED FACILITIES

- INTAKE
- MINE INFRASTRUCTURE
- MINE SITE
- LOCAL STUDY AREA (LSA)
- REGIONAL STUDY AREA (RSA)

NOTES:

1. BASE MAP: ESRI ARCGIS ONLINE MAP.
2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:170,000 FOR 11X17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.
4. CONTOUR INTERVAL IS 200 METRES. DATA SOURCED FROM NRCAN NTS 1:250K MAPPING.
5. MINE LAYOUT PROVIDED BY KGHM AJAX MINING INC.

2 1 0 2 4 6 8 10 km

KGHM AJAX MINING INC.

AJAX PROJECT

FISH AND FISH HABITAT STUDY AREA

Knight Piésold CONSULTING

P/A NO.	REF NO.
VA101-246/35	-

FIGURE 2.1-1	REV 0

0	13JUL'15	ISSUED WITH REPORT	SCE	AMD	RCB
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED

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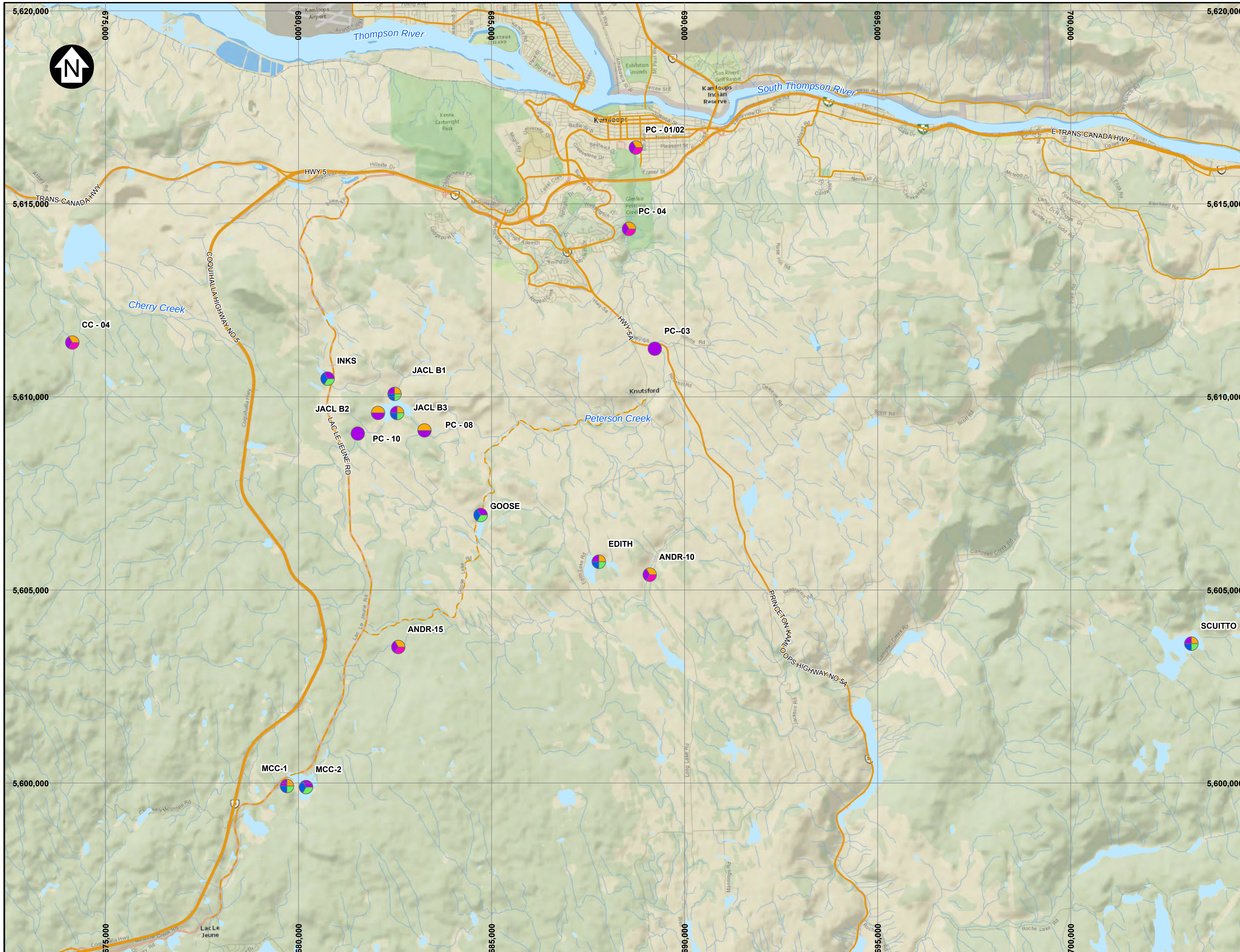
2.2 BACKGROUND

Sampling methodology for sediment chemistry, phytoplankton, periphyton, zooplankton, and fish follow applicable provincial guidelines, which are identified in each of the following sub-sections. The overall purpose of the program is to characterize baseline conditions at potentially affected sites (e.g., impact sites in aquatic systems downstream or downslope of Project components) prior to proposed Project influence and at sites not anticipated to have any interaction with the Project (control sites). Establishment of a robust baseline data set will enable comparison to future monitoring data to assess any Project related changes. The study design and selection of parameters is in accordance with the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2012). The study design recommended for sediment and tissue residue monitoring is termed the Spatial Variance Program; the Reference Condition Approach is recommended for the benthic invertebrate sampling program, while the “before, after, control, impact” (BACI) experimental design is recommended for the fisheries program (Ministry of Environment 2012). The study designs and rationale for their use are presented in the following sections.

A summary of the parameters that were collected and the timing is provided in Table 2.2-1. Sample locations are illustrated on Figure 2.2-1.

Table 2.2-1 Benthic Macroinvertebrate, Sediment, Plankton and Periphyton Sampling Summary 2007 - 2014

Watershed	Site Code	UTM Coordinates (Zone 10)		Site Location	Site Type	Sept 2007	July/ Aug 2008	Sept 2008	June 2010	Aug/Sept 2010	Aug/Sept 2011	Sept / Oct 2014
		East	North									
Peterson Creek	PC - 01/02	688738	5616460	Peterson Creek downtown Kamloops	Impact	Invertebrate Sediment	Invertebrate Sediment	Invertebrate				Invertebrate Sediment Periphyton
Peterson Creek	PC - 04	688560	5614351	Peterson Creek upstream of Bridal Veil Falls	Impact				Invertebrate Sediment	Invertebrate Sediment Periphyton	Invertebrate Sediment Periphyton	Invertebrate Periphyton
Peterson Creek	PC--03	689229	5611248	Peterson Creek upstream of Highway 5	Impact							Sediment
Peterson Creek	PC - 08	683263	5609131	Peterson Creek downstream of Jacko Lake	Impact		Invertebrate Sediment		Invertebrate Sediment	Invertebrate Sediment	Sediment	Sediment
Peterson Creek	JACL B1	682481	5609804	Jacko Lake - near north arm	Impact	Invertebrate Sediment	Invertebrate Sediment	Invertebrate Sediment	Invertebrate Sediment			
Peterson Creek	JACL B2	682487	5609673	Jacko Lake - mid lake	Impact		Invertebrate Sediment	Invertebrate Sediment	Invertebrate Sediment Phytoplankton Zooplankton	Phytoplankton Zooplankton	Phytoplankton Zooplankton	
Peterson Creek	JACL B3	682554	5609585	Jacko Lake - near south shore	Impact							Invertebrate Sediment Phytoplankton Zooplankton
Peterson Creek	PC - 10	681537	5609050	Peterson Creek upstream of Jacko Lake	Impact							Sediment
Peterson Creek	EDITH	687779	5605730	Edith Lake	Impact							Invertebrate Sediment Phytoplankton Zooplankton
Peterson Creek	GOOSE	684717	5606940	Goose Lake	Impact							Sediment Phytoplankton Zooplankton
Cherry Creek	CC - 02	672154	5615701	Cherry Creek downstream of Alkali Creek confluence	Impact	Invertebrate Sediment	Invertebrate Sediment	Invertebrate Sediment		Invertebrate Sediment Periphyton	Invertebrate Sediment Periphyton	
Cherry Creek	CC - 04	674141	5611409	Cherry Creek upstream of Alkali Creek confluence	Control	Invertebrate Sediment	Invertebrate Sediment	Invertebrate Sediment		Invertebrate Sediment Periphyton	Invertebrate Periphyton	Invertebrate Periphyton
Cherry Creek	INKS	680754	5610473	Inks Lake - south shore	Impact					Sediment Phytoplankton Zooplankton		
Anderson Creek	ANDR-10	689097	5605395	Anderson Creek 600 m downstream of McLeod Lake tributary confluence	Control							Invertebrate Sediment Periphyton
Anderson Creek	ANDR-15	682586	5603521	Anderson Creek 4.8 km downstream of McConnell Lake	Control							Invertebrate Sediment Periphyton
Anderson Creek	MCC-1	679965	5599919	McConnell Lake	Control							Invertebrate Sediment Phytoplankton Zooplankton
Anderson Creek	MCC-2	680196	5599893	McConnell Lake	Control							Sediment Phytoplankton Zooplankton
Scuitto Creek	SCUITTO	703125	5603608	Scuitto Lake	Control							Invertebrate Sediment Phytoplankton Zooplankton



LEGEND:

GENERAL

- MAJOR/PAVED ROAD
- LOCAL ROAD
- RIVER/CREEK
- LAKE

AQUATIC LIFE

- INVERTEBRATE
- SEDIMENT
- PERIPHYTON
- PHYTOPLANKTON
- ZOOPLANKTON

NOTES:

1. BASE MAP: ESRI ARCGIS ONLINE MAPS.
2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:100,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

SCALE 1 0.5 0 1 2 3 4 5 km

KGHM AJAX MINING INC.

AJAX PROJECT

SEDIMENT AND AQUATIC ECOLOGY SAMPLE SITES 2007 – 2014

Knight Piésold CONSULTING

P/A NO. VA101-246/35 | REF NO. 1

FIGURE 2.2-1 REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
0	06MAY'15	ISSUED WITH REPORT	SCE	AMD	RCB

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2.3 SEDIMENT PROGRAM

2.3.1 Study Design

Sediment characterization is a necessary component of baseline assessments, since bottom sediments support aquatic life, providing habitat for algae, aquatic plants, and sediment microorganisms, which provide a food source for local fish (Ministry of Environment 2012). Aquatic sediments store insoluble particles that are discharged to the water and dissolved contaminant fractions that preferentially bind to sediments. Finer sediment particles are of greater interest in terms of contaminant loads, because most chemical contaminants preferentially bind to silts and clays. These smaller sediment fractions are also more commonly ingested by benthos, which are at risk of contaminant bioaccumulation and often represent a low trophic level and therefore can impact many organisms in a given food chain or food web (BC Ministry of Environment 2012). Substances released into the environment may enter aquatic ecosystems and be deposited into bed sediments, where they accumulate over time (Canadian Council of Ministers of the Environment (CCME) 2001). Exposure to certain substances in sediments may represent a potential hazard to the health of organisms that live in or on the sediment, and in turn to the organisms in higher trophic levels[1]. Sediment samples were therefore collected from fish-bearing waters or from waters that contributed to downstream fish populations or habitat, as well as from Goose Lake. The purpose of the sediment program is to establish a baseline data set, determine differences in the existing benthic invertebrate community and if differences were observed whether they could be attributed to habitat (Environment Canada 2012a).

In accordance with the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (BC Ministry of Environment 2012) a literature review was conducted to compile any existing aquatic sediment information. Historical information is summarized prior to the presentation of the Ajax Project baseline sampling program results to provide context, and, where applicable, for comparison (e.g., samples collected using the same methods and timing).

The Spatial Variance Program outlined in the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (BC Ministry of Environment 2012) was followed, comprised of collection and analysis of replicate samples from each site once per year. Sampling was completed during late summer or fall, which is typically a low flow period.

2.3.2 Sample Collection Methodology

2.3.2.1 Streams

The field sampling protocol for streams followed methods outlined in the British Columbia Field Sampling Manual (Clark 2003). Sediment sampling in creeks involved collecting grab samples at random locations; the mouth of an open ended jar was inserted into the substrate and a stainless steel spatula was slid underneath to isolate the sample and prevent fines from escaping. Five replicates were collected per site, with each replicate a composite of a minimum of three

[1] The trophic level of an organism is the position it occupies in a food chain which indicates how organisms are related with each other by the food they eat.

scoops, depending on the presence and abundance of fine-grained sediments. Samples were collected from each site working in an upstream direction. All sampling equipment was washed with site water before proceeding to the next replicate site or sample site. The samples were packed upright in coolers with ice packs and packing material to ensure that the containers would not shift during transport. The laboratory chain of custody was completed; a copy of the form was sealed in a plastic bag and placed into the cooler with the samples.

Sediments were collected from depositional areas as close to the erosional areas where benthic invertebrates were collected wherever possible. All sample sites were geo-referenced using a handheld GPS and photographed (upstream and downstream, banks, substrate).

2.3.2.2 Lakes

The protocol for lake sediment sampling followed methods outlined in the Lake and Stream Bottom Sediment Sampling Manual (Resources Inventory Committee 1997) and the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (BC Ministry of Environment 2012). Five replicates were collected from each lake, with each replicate consisting of three composited sub-samples. Sediment samples were collected from the deep basin of each lake using a 15 cm by 15 cm stainless steel Ekman grab deployed from a boat, with the exception of Goose Lake, which was sampled through the ice in winter 2014 using an Ekman grab. A sediment sample was collected from each grab if all of the following criteria were met:

- The grab was completely closed when raised from the lake bed.
- The grab was not inserted into the bottom substrate at an angle (the surface of the sediment in the grab will be even if the sampler was inserted into the substrate correctly).
- The grab penetrated the substrate to a depth of 10 cm to 15 cm.

Subsample sites were spaced at least 20 m apart to ensure that an undisturbed portion of the substrate was being collected.

2.3.3 Data Analysis

2.3.3.1 Laboratory Analysis

Samples were stored upright in a cooler with ice packs and sent by courier to ALS Environmental in Burnaby, BC, for analysis of the parameters shown in Table 2.3-1. The Detection Limit Objectives shown in this table, as recommended by the BC Ministry of Environment (2012), are less than the respective water quality guideline for each parameter by an order of magnitude. The objectives may not be achievable for all samples due to matrix effects where sample dilution is required due to high dissolved solids.

The BC Strong Acid Leachable Metals digestion method was used for analysis of sediments <63 micrometres (μm) in accordance with the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (BC Ministry of Environment 2012). Grain size analysis of the <63 μm fraction was performed on particles sizes in the <3 μm, 3 μm to 39 μm, and 39 μm to 63 μm ranges in order to allow data normalization between replicates and sites, as well as for a Quality Assurance check of sample variability.

2.3.3.2 Sediment Quality Guidelines

Sediment quality guidelines provide reference points for evaluating the potential for adverse biological effects in aquatic systems (CCME 2001). Provincial guidelines are all considered as "Working Guidelines"; the working guidelines provide benchmarks for substances that have not been fully assessed, and are obtained from other jurisdictions, primarily the CCME and the Ontario Ministry of the Environment (Nagpal et al. 2006). The CCME guidelines include the Interim Sediment Quality Guideline (ISQG) and the Probable Effect Level (PEL) guideline. The PEL defines the level above which adverse effects are expected to occur frequently: PELs are derived following a formal protocol that uses a modified National Status and Trends Program approach and a spiked-sediment toxicity test approach (CCME 2001). The ISQGs are recommended if information is available to support only one of these approaches. Canadian ISQGs are intended to be used in conjunction with other supporting information such as site-specific background concentrations of the parameter of interest as well as concentrations of other naturally occurring substances; biological assessments; and parameter concentrations in other media (water, tissue) (CCME 2001). British Columbia guidelines for iron, manganese, and nickel are described for two levels: the Lowest Effect Level (LEL) and the Severe Effect Level (SEL) (Nagpal et al. 2006). The LEL indicates that the contaminant level will not affect the majority of benthic organisms, while the SEL indicates contaminant levels that would be detrimental to the majority of benthic species (Jaagumagi 1992).

Table 2.3-1 Sediment Parameters[1]

Parameter	Detection Limit Objectives (μg/g)	Parameter	Detection Limit Objectives (μg/g)
Aluminum	100	Mercury	0.05
Antimony	0.1	Molybdenum	0.1
Arsenic	0.2	Nickel	0.8
Barium	1	Phosphorus	10
Beryllium	0.1	Potassium	100
Bismuth	0.1	Selenium	0.1
Boron	5	Silver	0.1
Cadmium	0.05	Sodium	100
Calcium	100	Strontium	0.1
Chromium	1	Thallium	0.1
Cobalt	0.3	Tin	0.2
Copper	0.5	Titanium	1
Iron	100	Uranium	0.05
Lead	0.1	Vanadium	2
Magnesium	10	Zinc	2
Sulphur	200		

NOTES:

1. DETECTION LIMITS OBJECTIVES SET BY WATER AND AIR BASELINE MONITORING GUIDANCE DOCUMENT FOR MINE PROPONENTS AND OPERATORS (BC MINISTRY OF ENVIRONMENT 2012).

2.3.3.3 Statistical Analysis

Data were summarized by site and sampling date; statistical summaries for each parameter include: number of values, minimum, maximum, mean, median, number of results below detection limit, standard deviation, and standard error. Only values above the detection limit were included in the statistical summaries. Data units are reported as dry weight. Laboratory detection limits and sediment guidelines for aquatic life (CCME 2001, Nagpal et al. 2006) were tabulated along with the data; any values that exceed the guidelines were highlighted. Particle size distribution was compared between sites and was examined to determine if there was any correlation between particle size and metal concentration.

2.3.4 Quality Assurance/Quality Control

The following procedures were followed to ensure collection of scientifically defensible data:

- Clean sample containers provided by the laboratory were used.
- Care was taken to ensure that nothing other than the sample itself touched the inner portion of sample container and caps.
- Samples were immediately capped following transfer of the sediment.
- Samples collected in the field were stored upright in coolers and transported to the analyzing laboratory within the holding time of the most sensitive parameter.
- Sampling equipment was rinsed with surface water between sites and replicates to prevent cross contamination.
- Replicate samples were collected to measure heterogeneity in the environment.
- Samples were sent to a laboratory accredited under the Canadian Association for Laboratory Accreditation Inc.

2.4 AQUATIC LIFE

The study design for aquatic life sampling followed methods outlined in the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (BC Ministry of Environment 2012). Phytoplankton, periphyton, zooplankton, and benthic macroinvertebrates are often used as biotic indicators in the assessment of magnitude and geographic extent studies for environmental effects monitoring programs (Environment Canada 2012a). Phytoplankton and zooplankton are monitored in lentic sites (lakes and wetlands); periphyton are monitored in lotic sites (flowing water systems). Benthic invertebrates are monitored in both lentic and lotic sites using different sampling equipment.

A BACI study design was selected for each of the aquatic life parameters. Sampling sites were selected to allow continued monitoring before, during, and throughout Project development by choosing locations that would likely persist throughout the Project duration. Sampling locations were selected in consideration of the following:

- Potential environmental receptors
- Consistency of physical habitats among sites
- Degree to which the sites are representative of the study area
- Existing development in the area, and
- Land ownership (e.g., private land).

2.4.1 Phytoplankton Study Design and Sampling Methodology

Phytoplankton are free-floating microscopic plants that are mostly unicellular and produce chemical energy from light (i.e., primary production). Phytoplankton play a critical role in nutrient cycling and comprise a significant proportion of the primary production in aquatic systems. The purpose of phytoplankton sampling in lakes is to characterize the existing community structure and to allow for comparisons with future monitoring data. Phytoplankton samples were collected from lake sites for community composition (taxonomy) analysis and chlorophyll-a analysis. Sampling procedures were in accordance with the British Columbia Field Sampling Manual (Clark 2003) and Protocols Manual for Water Quality Sampling in Canada (CCME 2011).

Phytoplankton sampling in 2014 consisted of the collection of two, one-litre water samples from each lake site – one from near the surface and one from within half a metre of the bottom of the euphotic zone. The euphotic zone is the surface layer of water in which the majority of photosynthesis occurs. The depth of the euphotic zone was calculated as twice the Secchi depth measurement. A Secchi disk measures water transparency; it is attached to a line and lowered slowly over the shaded side of a boat into the water. The depth at which the disk is no longer visible is taken as a measure of the transparency of the water.

Phytoplankton samples for analysis of chlorophyll-a were stored in a plastic bottle wrapped in aluminum foil and taken to ALS Environmental laboratory in Kamloops within 24 hours of sampling to ensure that they were filtered through a 45 μm filter within 48 hours of sampling. ALS Environmental analysed the chlorophyll-a content of the phytoplankton (and periphyton) using the Chlorophyll-a by Fluorometer test method, where Chlorophyll-a is determined by a routine acetone extraction followed with analysis by fluorometry using the non-acidification procedure. Samples for taxonomic analysis were preserved with approximately 3 ml of Lugol's solution, tightly capped, and placed in a cooler for transport to Fraser Environmental Services for identification and enumeration (dominant organisms to species and non-dominant organisms to genera).

2.4.2 Periphyton Study Design and Sampling Methodology

In accordance with the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (BC Ministry of Environment 2012) a literature review was conducted to compile any existing information on provincial or regional periphyton populations. Any historical information is summarized prior to the presentation of the Ajax Project baseline sampling program results to provide context, and, where applicable, for comparison (e.g., samples collected using the same methods and timing).

Benthic algal communities living on substrate surfaces are referred to as periphyton (Clark 2003). The purpose of periphyton sampling in streams is to characterize the existing chlorophyll-a concentration and community structure. Chlorophyll-a analysis gives an indication of the total amount of live biomass in the sample. For protection of aquatic life in streams, the BC water quality guideline for nutrients and algae is a maximum biomass of 100 mg/m^2 chlorophyll; no guideline is recommended for lakes (Nordin 2001). The guideline is designed to protect fish habitat and changes in invertebrate communities (Nordin 2001). Community structure is assessed through taxonomic analysis and calculation of various metrics and indices to describe a population.

The study design for periphyton sampling for chlorophyll-a and community structure analyses followed the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and

Operators (BC Ministry of Environment 2012). Five replicates were collected from each site to assess variability, with each replicate a composite of three sub-samples. For each replicate three rocks (cobble to boulder sized) were randomly selected. All periphyton within a 12.57 cm^2 template was removed from the rock using a toothbrush and/or scalpel. Each replicate was comprised of three sub-samples for a total area of 37.71 cm^2. Variability between sample sites, replicates, and sub-samples was reduced by targeting habitats with the same depth, velocity, substrate, and shade wherever possible. Periphyton was collected from the same sites sampled for sediment and invertebrates where conditions allowed. Sampling procedures followed those outlined in the British Columbia Field Sampling Manual (Clark 2003) and the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2012). Separate periphyton samples were collected for the analysis of biomass (as chlorophyll-a) and taxonomic composition; in order to ensure representative samples were collected the biomass and taxonomy samples were collected independently.

Periphyton samples for analysis of chlorophyll-a were stored in a glass jar wrapped in aluminum foil and taken to ALS Environmental in Kamloops within 24 hours of sampling to ensure that they would reach the analyzing laboratory within 48 hours for filtering through a 45 µm filter. Samples for taxonomic analysis were preserved with approximately 3 ml of Lugol’s solution, tightly capped, and placed in a cooler for transport to Fraser Environmental Services for identification and enumeration (dominant organisms to species and non-dominant organisms to genera.

2.4.3 Zooplankton Study Design and Sampling Methodology

Zooplankton are unicellular or multicellular planktonic animals found free-floating or suspended in open waters (Clark 2003). The objective of the zooplankton sampling program was to characterize the existing community structure (abundance, diversity) and provide a baseline for future operational monitoring comparison.

Sampling methodology in 2014 followed protocols outlined in Protocols Manual for Water Quality Sampling in Canada (Canadian Council of Ministers of the Environment 2011) for the Jacko, Edith, Scuitto, and McConnell lake sites. Zooplankton samples were collected from a boat using a vertical plankton tow net with a mesh size of 256 µm and an opening of 20 cm. Three sub-samples were collected and composited per site. Goose Lake sampling used a different method due to the shallow depth of the lake (approximately 1 m during the late summer sampling event). The Goose Lake sample was collected from shore using a 1 litre sample bottle attached to a swing sampler. Zooplankton samples were preserved in 95% ethanol and transported to Biologica Environmental Service Ltd. in Victoria, BC for identification and enumeration to lowest possible taxonomic unit.

2.4.4 Lake Benthic Macroinvertebrates Study Design and Sampling Methodology

Benthic invertebrate samples were collected from fish-bearing lakes or from lakes that contributed to downstream populations or habitat, as well as from Goose Lake. The objective of the lake benthic macroinvertebrate program is to characterize benthic community composition through determination of total invertebrate density, number of taxa, and diversity and evenness indices. Benthic macroinvertebrates are used in aquatic biomonitoring because they commonly inhabit lakes and streams; the "benthic" refers to organisms that usually inhabit bottom substrates for at least part of their life cycle (Environment Canada 2012b). The word ‘macro’ refers to the size of the organism, typically to organisms retained by nets with mesh sizes of 200 µm to 500 µm (Environment Canada

2012b). Aquatic insects (primarily larval forms) comprise approximately 70% of known species of major groups of aquatic macroinvertebrates; the remaining 30% are non-insects such as worms, nematodes, and mites (Environment Canada 2012b).

Benthic macroinvertebrates were sampled from the deepest basin in Jacko Lake, and toward the north and west arms of the lake, between 2007 and 2011, as reported in Knight Piésold (2013b). The benthic invertebrate sampling sites in Jacko Lake were moved toward the south shore of the lake for the 2014 sampling to reflect the revised Project footprint. Although the provincial guidance document recommends sampling at the deepest point of a lake, Rosenberger et al. (1997) note that anoxic conditions in lake bottoms often make the substrate uninhabitable to most benthic macroinvertebrates. Sampling sites remained within the profundal (deep, located below light penetration) zone in 2014 to avoid any interference from submerged vegetation, but were not in the deepest basin.

In 2014, benthic macroinvertebrate samples were also collected from Edith, Scuitto, and McConnell lakes (Table 2.2-1); the additional lakes were added as potential impact and control sites for future operational monitoring programs and to assess regional characteristics. Sample collection occurred in September in Jacko, Edith, and Scuitto lakes. Due to delays in receiving a park use research permit for McConnell Lake, sampling was conducted at this location in October.

Field sampling procedures for benthic macroinvertebrate collection in lakes were in accordance with the British Columbia Field Sampling Manual (Clark 2003). Benthic macroinvertebrates from lake substrates were collected using an Ekman grab sampler (15 cm by 15 cm) deployed from a boat. The Ekman jaws were opened over a 500 μm mesh sieve box and the sediment was gently washed through the mesh using lake water; the benthic organisms that remained on the mesh were transferred to pre-labelled jars and fixed with 10% formalin.

Benthic macroinvertebrate samples were sent to Sandpiper Biological Consulting Ltd. in Victoria, BC for identification and enumeration. In order to ensure that identification and enumeration could be completed for inclusion in the baseline assessment, samples were sieved through a 500 μm mesh in the laboratory, and only those organisms retained on the mesh were identified to Family and carried forward in the assessment. The smaller organisms (those passing through the 500 μm mesh) were preserved and archived.

2.4.5 Stream Benthic Macroinvertebrates Study Design and Sampling Methodology

The objective of the stream benthic macroinvertebrate program is to characterize benthic community composition through determination of total invertebrate density, number of taxa, and diversity and evenness indices. Table 2.4-1 summarizes some of the commonly used benthic study designs Bowman and Somers (2005). The Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2012) recommends the Reference Condition Approach (RCA) as the study design for the sampling of benthic macroinvertebrates in streams. The RCA is designed to assess sites following an impact, without knowing when or where the impact has occurred. Since an impact associated with the proposed Project has not occurred, a BACI study design was selected, based on the criteria presented in Table 2.4-1, to characterize existing conditions, with monitoring sites established both upstream ("control" sites) and downstream ("impact" sites) of the Project. With a BACI design, sites are established prior to disturbance both upstream (and in similar nearby water bodies) and downstream. Ideally upstream (control) and downstream (impact) sites should share similar physical habitat features (e.g., slope, substrate, velocity, depth, shade, riparian vegetation, etc.).

Table 2.4-1 Benthic Invertebrate Study Design Criteria

Design Name	Has the impact occurred?	Is when and where known?	Is there a control area?
Before-After-Control Impact	No	Yes	Yes
Before-After (Temporal)	No	Yes	No
Monitoring	No	No	Yes/No
Control-Impact (Spatial)	Yes	Yes	Yes
Degree of Impact (Spatial)	Yes	Yes	Yes
Reference Condition Approach	Yes	No	Yes
Modern Analog Approach	Yes	No	No

The Metal Mining Technical Guidance for Environmental Effects Monitoring (Environment Canada 2012a) was considered in determining the required sample size for the baseline monitoring sites to act as operational monitoring sites. The Metal Mining Technical Guidance for Environmental Effects Monitoring (Environment Canada 2012) recommends that the benthic invertebrate community survey should have sufficient statistical power to detect a critical effect size of plus or minus two standard deviations, which in most cases results in a minimum sample size of five. Therefore, five replicates were collected per site, comprised of three composites, using a Surber sampler with 210 µm mesh. Sampling was conducted in the fall to be consistent with previous sampling programs and provincial guidance documents, targeting the period when benthic communities tend to be the most stable (Clark 2003). Sample locations for the 2014 baseline monitoring program are shown on Figure 2.2-1. Benthic invertebrate sampling was focussed on erosional substrates; sites were selected to ensure that habitat features such as slope, substrate, velocity, depth, shade, and riparian vegetation were as similar as possible to reduce variability (Ministry of Environment 2012).

Benthic macroinvertebrate samples were sent to Sandpiper Biological Consulting Ltd. in Victoria, BC for identification and enumeration. Due to the number of organisms collected, in order to ensure that identification and enumeration could be completed for inclusion in the baseline assessment, samples were sieved through a 500 µm mesh in the laboratory, and only those organisms retained on the mesh were identified to Family and carried forward in the assessment. The smaller organisms (those passing through the 500 µm mesh) were preserved and archived.

2.4.6 Rainbow Trout Tissue Study Design and Sampling Methodology

The purpose of the fish tissue sampling program is to characterize existing tissue contaminant loads and provide a baseline data set that can be used as reference for future construction, operation and closure monitoring programs. The study design for fish sampling for collection of fish tissue followed the Spatial Variance Program outlined in the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2012). The Water and Air Baseline

Monitoring Guidance Document for Mine Proponents and Operators recommends sampling both a sport-fish and a non-sport fish species, with at least one of the species having high site fidelity (Ministry of Environment 2012). Although the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2012) notes that rainbow trout may only be moderately useful, it is the only species present in the Project area watersheds. A total of eight rainbow trout (replicates) per creek or lake was sacrificed for tissue sampling in accordance with the provincial fish collection permit. If additional mortalities occurred during sampling the fish were also retained for tissue analysis. Sampling occurred between June and October in order to acquire the requisite number of fish.

Sites were selected in consideration of the following criteria:

- Organism availability and mobility
- Life stage and maturity of the organism
- Land ownership, and
- The presence of, access to, and safety of sampling the organism’s preferred habitat.

Rainbow trout were captured using methods applicable to the habitat type: electrofishing and minnow trapping were used to capture rainbow trout in creeks and along shallow lake margins, while gill nets were used to collect rainbow trout in lakes.

Gill nets consist of single or multiple panels of monofilament mesh with square openings fastened to a line at the top and a lead line at the bottom. Each panel is 15 m long by 2.4 m deep. The number of panels and mesh sizes vary in the gill nets used, which was determined by site conditions. A five panel gill net with stretched mesh sizes of 25 mm, 38 mm, 51 mm, 64 mm and 76 mm was used in areas free of emergent vegetation, trees, and where the net would not obstruct recreational anglers. A single panel or triple panel net was used in areas in small bays or in areas where obstructions would have precluded the use of the longer net. Gill nets were set for three hours or less and monitored frequently to minimize mortality.

A Smith-Root 12B POW backpack electrofisher was used in streams and along lake shores. Electrofisher voltage, duty cycle and frequency settings varied between the sample sites and dates, and were dependant on water chemistry and size of fish present in each system. Single pass open site electrofishing was conducted to provide a relative index of abundance between sites. The number of seconds of electrofishing effort was recorded for each site.

Minnow traps are used along lake margins and in lower velocity pools in streams to passively capture fish. Minnow traps were baited with dry cat food and left to soak overnight. The minnow traps were standard galvanized metal with 6.3 mm mesh and 2 cm diameter openings; the traps were tied to a stationary object on shore and the object was flagged for ease of trap retrieval.

Captured rainbow trout were anesthetised using an oil of clove mix, identified, weighed (g) and measured (fork length, mm). Dorsolateral scales were taken for aging. Rainbow trout retained for tissue analysis were sacrificed. Rainbow trout were frozen whole and sent to ALS Environmental in Burnaby, BC for either dissection for analysis of metals in muscle and liver tissue (July sampling) or for whole body metals concentration analysis (September sampling). Since it was not always possible to meet the recommended detection limits for antimony, magnesium, thallium and uranium due to small tissue weights of the muscle and especially liver samples collected in July 2014 it was necessary to increase the detection limit by a factor of between two to eight times. For this reason, rainbow trout collected during the fall 2014 sampling program were analysed for whole body metals concentration. Tissue samples were analyzed for the parameters shown in Table 2.4-2.

Rainbow trout scales were sent to North/South Consultants in Winnipeg, Manitoba for aging. For quality assurance and quality control 10% of the scales were also read by Hamaguchi Fish Aging Ltd of Kamloops, BC.

Wherever possible, fish tissues were collected from fish sampling sites that corresponded with sediment sampling locations. However, this was not always possible, since the sediment sampling program targeted finer sediments (<63 μm) common to depositional areas, while rainbow trout often inhabit riffles, which are erosional areas containing larger grained sediments, depending on the flow.

Table 2.4-2 Fish Tissue Parameters Analysis

Parameter	**Detection Limit Objectives** (μg/g)	**Parameter**	**Detection Limit Objectives** (μg/g)
Moisture Content	1% wet weight	Mercury	0.002
Aluminum	0.4	Molybdenum	0.01
Antimony	0.002	Nickel	0.01
Arsenic	0.005	Phosphorus	5
Barium	0.01	Potassium	10
Beryllium	0.002	Selenium	0.02
Bismuth	0.02	Silver	0.01
Cadmium	0.002	Sodium	2
Calcium	2	Strontium	0.01
Chromium	0.01	Thallium	0.001
Cobalt	0.004	Tin	0.02
Copper	0.01	Titanium	0.06
Iron	1	Uranium	0.001
Lead	0.004	Vanadium	0.02
Magnesium	0.02	Zinc	0.1

NOTES:

1. DETECTION LIMIT OBJECTIVES FROM MINISTRY OF ENVIRONMENT. 2012. WATER AND AIR BASELINE MONITORING GUIDANCE DOCUMENT FOR MINE PROPONENTS AND OPERATORS.

2.4.7 Aquatic Life Statistical Analysis

2.4.7.1 *Phytoplankton and Periphyton*

Descriptive statistics calculated to characterize phytoplankton and periphyton assemblages at each sample site were:

- Total phytoplankton density.
- Species richness: calculated based on counts of the number of species (or groups assumed to be species) present at each site.
- Taxonomic composition: number of individuals per phylum was calculated for each site and then divided by the total number of individuals.
- Simpson's Diversity index and evenness: Assess the probability that any two individuals drawn at random from an infinitely large community will belong to the same taxa.
- Shannon-Wiener Diversity index and evenness: quantifies biodiversity by measuring the probability of two individuals in a sample belonging to the same family, while accounting for taxonomic richness and abundance patterns. The higher the index, the greater the biodiversity and the less likely that two individuals drawn at random from a sample will belong to the same taxon.

Taxa that were enumerated to be "less-than" a value were assigned a value of half the "less-than" value, as was done in previous sampling programs to ensure that all taxa present in the system were included in the site characterization. Calculation and interpretation of the indices is explained in detail in the following section on benthic macroinvertebrates.

2.4.7.2 *Zooplankton*

Total zooplankton density per site was reported as organisms per volume, with volume calculated based on the net opening area and the depth of the sample tow. Zooplankton were grouped into Cladocera (Daphnids), Cladocera (Non-daphnids), Copepoda (Cyclopoida), Copepoda (Calanoida), and Rotifera. Zooplankton densities, taxa richness, taxonomic composition, and Shannon-Wiener and Simpson's Diversity index and evenness were calculated. Organisms with higher level classifications and unidentified individuals were assumed to belong to the same organism in a lower classification level, to represent the variety of taxa within the study. This method may underestimate the diversity and evenness values; but to a lesser extent than would not including the unidentified organisms.

2.4.7.3 *Benthic Macroinvertebrates*

Aquatic macroinvertebrate assemblages are commonly used to provide a measure of water chemistry and physical stream conditions and indicate the overall health of a system. Quantifiable attributes ("metrics") of the benthic macroinvertebrate community, such as structure and composition, are used in these assessments.

Several metrics were examined to characterize benthic macroinvertebrate communities at each sample site, following the Metal Mining Technical Guidance for Environmental Effects Monitoring (Environment Canada 2012a). The family metrics calculated included total invertebrate density (abundance per sampling area), family richness, Ephemeroptera-Plecoptera-Trichoptera (EPT) index (for streams only), and taxonomic composition by order. In addition, biological indices that incorporate both abundance and family richness were calculated for each site, including the Simpson's and Shannon-Wiener Diversity indices, the Simpson's and Shannon-Wiener evenness indices, and the Bray-Curtis Similarity index. The Hilsenhoff Family Biotic index, which calculates water quality based on family-level organic pollution tolerance values, was also calculated for each site. Descriptive statistics were generated for each metric and index – means, standard deviations, standard errors, and minimum / maximum values are presented.

Mean taxon richness at each site was calculated based on the mean number of families at each site. Efforts were made to include as many taxa as possible in the statistical analyses. Different levels of classification were achieved in the laboratory analysis, from the species level to the phylum level, with most individuals being identified to family. Given that metrics should compare taxa from the same classification level, organisms with higher level classifications were assumed to belong to one family. The same method was applied to unidentified individuals within an order; all unidentified individuals were assumed to be from one family. This assumption was made for several organisms in order to represent the variety of taxa within the study. This method may underestimate the diversity and evenness values; but to a lesser extent than if the unidentified organisms were not included.

The mean total invertebrate density per site was calculated as organisms per square metre (m^2). For the creek sites, the total sample area was calculated based on Surber sampler area (0.0929 m^2 by three composite samples, for a total area of 0.2787 m^2 per replicate station). For the lake sites the sample area was calculated based on the area of the Ekman sampler (0.0225 m^2 by three composite samples for a total area of 0.0675 m^2 per replicate station).

Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies) live mainly in clean and well-oxygenated waters; the composition and distribution of the orders is determined by their physiological tolerance to environmental variables such as altitude and dissolved oxygen content (Stoyanova et al. 2014). The EPT index is applied in streams and is calculated using the number of taxa belonging to the Ephemeroptera, Plecoptera, and Trichoptera orders. Organisms within these orders are sensitive to pollution; therefore, the EPT index generally increases with increasing water quality. The EPT classification is rated as follows (Taccogna and Munro 1995):

- Good: EPT >8
- Acceptable: EPT 5-8
- Marginal: 2-5, and
- Poor: 0-1.

Biological indices (Simpson's and Shannon-Wiener Diversity) and evenness values were calculated for each sampling site. These indices and values consider both species diversity and the relative contribution of each species to the total abundance. Healthy and stable benthic communities typically have an even proportional representation, though individual abundance may vary in magnitude (Barbour et al. 1999). While the *Metal Mining Technical Guidance for Environmental Effects Monitoring* (Environment Canada 2012a) requires only the Simpson's index be calculated, diversity indices have strengths and weaknesses, so it is useful to calculate more than one index for comparison and for continuity with previous baseline monitoring. Evenness indices portray the equitability with which individuals are distributed among the different families sampled. The Simpson's and Shannon-Wiener evenness indices both range from 0 - 1, with 1 indicating perfectly even dispersion. Since the Shannon-Wiener Diversity index uses "log", the "weight" of abundant species is reduced slightly relative to the more rare species; the Simpson's index, conversely, squares the relative abundance, so that the weight of rare species is reduced relatively more than that of the abundant species.

Simpson's Diversity index and evenness were evaluated for each site to assess the abundance and richness of the benthic communities. The Simpson's index is calculated by determining for each family at a site, the proportion of individuals that contribute to the total of the station (Krebs 1985):

$$D = 1 - \sum_{i=1}^{S} (p_i)^2$$

Where *D* is Simpson's index of diversity; *S* is the total number of families at the site, and p_i is the proportion of the i^{th} family at the station. Simpson's D increases as diversity increases.

Simpson's evenness (or Equitability) is Simpson's index as a proportion of the maximum value D could assume if individuals in the community were completely evenly distributed (Smith and Wilson 1996); it is calculated using the following equation:

$$E = 1/\sum_{i=1}^{S} (p_i)^2 / S$$

Where *E* is Simpson's evenness, *S* is the total number of families at the site, and p_i is the proportion of the i^{th} family at the station. evenness takes a value between 0 and 1, with 1 being complete evenness.

The Shannon-Wiener Diversity index and evenness were evaluated for each site to contribute additional information regarding the composition and diversity of the benthic communities. Because multiple diversity indices have strengths and weaknesses, it is optimal to calculate more than one index. The Shannon-Wiener Diversity index quantifies biodiversity by measuring the probability of two individuals in a sample belonging to the same taxa, while accounting for richness and abundance patterns. The higher the index, the greater the biodiversity and the less likely that two individuals will belong to the same taxon.

Shannon-Wiener's H' Diversity index (Molles 1999) is calculated using the following equation:

$$H' = -\sum_{i=1}^{S} (p_i log_e p_i)$$

Where *H'* is the Shannon-Wiener diversity index, *S* is the total number of families at the site, p_i is the proportion of the i^{th} family at the site, and $log_e p_i$ is the natural log (or ln) of p_i.

Shannon-Wiener evenness, J', was calculated using the following equation:

$$J^i = {H^i}/{H'_{max}} = {H^i}/{\ln(S)}$$

Where H'_{max} is the theoretical maximum value of *H'* [i.e., *ln(S)*], and where *S* is the total number of families at the site. evenness measures the similarity in abundance of different taxa (family in this case); values closer to 1 indicate that organisms of different taxa are similar in abundance and an evenness value of 0 indicates that only one taxon is present.

The Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish (Barbour et al. 1999), presents tolerance designations for benthic macroinvertebrates in order to calculate the Hilsenhoff Family Biotic index (Hilsenhoff 1988). The Family Biotic index is used to assess water quality in streams by assigning a tolerance value ranging from 0 to 10 to different families, with 0 indicating organisms most sensitive to organic pollution and 10 being the most pollution tolerant. The Hilsenhoff index uses values calculated from 53 Wisconsin streams. This assessment adopted the northwest region tolerance values developed by the Idaho Department of Environmental Protection and the Nova Scotia tolerance values developed by the Soil and Water Conservation Society of Metro Halifax (2013). These tolerance values were deemed to be more applicable to the Project area than the Hilsenhoff values. The index is calculated for each stream site using the following equation:

$$\text{Family Biotic index Value } = \frac{\sum(n_i * t_i)}{N}$$

Where n_i is the number of individuals of each family *i*, t_i is the tolerance value of family *i*, and N is the total number of organisms at the site. Where tolerance values were missing for a specific family, the median value for the order in which that family belongs was taken so as to avoid false zeroes, which artificially predict higher water quality values. Where the family and order were missing a tolerance value, the value was given as zero; sensitivity analyses on the consequence of these false zeroes indicated a negligible difference to the mean Family Biotic index when averaged over replicate sites.

Each site was then compared against an evaluation of water quality using the Family Biotic index values in Table 2.4-3.

Table 2.4-3 Family-Level Biotic index Ranking

Family Biotic index Range of Values	Water Quality	Degree of Organic Pollution
0.00-3.75	Excellent	Organic pollution unlikely
3.76-4.25	Very good	Possible slight organic pollution
4.26-5.00	Good	Some organic pollution probable
5.01-5.75	Fair	Fairly substantial pollution likely
5.76-6.50	Fairly poor	Substantial pollution likely
6.51-7.25	Poor	Very substantial pollution likely
7.26-10.00	Very poor	Severe organic pollution likely

NOTES:

1. SOURCE: SOIL & WATER CONSERVATION SOCIETY OF METRO HALIFAX. 2013. TAXA TOLERANCE VALUES.

The Bray-Curtis (B-C) Similarity index was also calculated for each site in accordance with Environment Canada (2012). The B-C index calculates a distance co-efficient that reaches a maximum value of 1 for two sites that are entirely different and a minimum value of 0 for two sites that possess identical descriptors. The B-C coefficients measure the amount of association between sites and are calculated from the reference median. The distance statistic is calculated as follows:

$$B - C \ = \frac{\sum_{i=1}^{n} |y_{i1} - y_{i2}|}{\sum_{i=1}^{n} (y_{i1} y_{i2})}$$

Where $B - C$ is the Bray-Curtis distance between a site and the median value for the reference or exposure site, y_{i1} is the median count for taxon i at one site, y_{i2} is the median count for taxon i at all control or impact sites, and n is the total number of taxa present at the sites. Standard statistical calculations were conducted for rainbow trout tissue metal concentrations (minimum, maximum, average, median, standards deviation, standard error).

2.5 FISH AND FISH HABITAT

2.5.1 Study Design

The purpose of the fish and fish habitat assessment as identified in the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators. (Ministry of Environment 2012) is to "fully understand the fish and fish habitat values to be impacted locally and be able to place these impacts in the context of the wider landscape." Fish monitoring is required any time there is a potential population level impact such as loss of habitat, habitat alteration due to sedimentation or effluent, or improved access that could increase harvest pressure.

The program study design and methodology was based on the following guidance documents and standards:

- Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2012).
- Reconnaissance (1:20,000) Fish and Fish Habitat Inventory Standards and Procedures (BC Fisheries 2001).
- Fish Collection Methods and Standards. Version 4. (Ministry of Environment, Lands and Parks 1997).
- Freshwater Biological Sampling Manual. (Cavanagh et al. 1997).
- Assessment Methods for Aquatic Habitat and Instream Flow Characteristics in Support of Applications to Dam, Divert, or Extract Water from Streams in British Columbia. (Lewis et al. 2004).

The Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2012) notes that the fish and fish habitat monitoring program should have the following objectives:

- Describe the abundance and distribution of fish habitats in the project area.
- Determine to what extent the proposed development will affect fish habitat.
- Determine to what extent the population is likely to be able to sustain itself through an understanding of population dynamics including sustaining recruitment needs to adult habitats (streams, lakes, reservoirs and rivers).
- Determine how alterations to fish habitats and connectivity between habitats required seasonally and/or by different life stages will affect fish population processes and productivity.
- Identify potential physical and biological bottlenecks to fish productivity and survival, and corroborate them with population data whenever possible.
- Lay the foundation for monitoring programs that will measure project effects during mine construction, operation, and closure.

The fish and fish habitat program was therefore comprised of:

- Fish distribution and habitat characterization (including instream flow requirements).
- Collection of fish tissue for the quantification of contaminant levels.

Monitoring sites were established within the Peterson Creek watershed in the vicinity of and downstream of the proposed Project. Topographical maps, air photos, and provincial web-based maps (iMapBC) and databases (Fisheries Information Summary System) were used to select control sites within the same ecoregion that had similar hydrological characteristics, water chemistry, fish populations, and habitat characteristics to the impact sites (Ministry of Environment 2012). One stream sampling site on Cherry Creek established in 2007 was retained as a control site for temporal continuity. Two new stream sampling sites were established on Anderson Creek, in the watershed south of Peterson Creek. Scuitto Lake and McConnell Lake were selected as control lakes in order to characterize the existing fisheries values in the context of the wider landscape. Areas that were likely to contain fish and that could be safely and effectively sampled (e.g., riffle habitat rather than wetland complexes) were targeted. Sites were selected in areas that were publicly accessible, unless prior permission had been received from the landowners to access areas on private property. Sample site locations and dates between 2007 and 2014 are provided in Table 2.5-1.

Table 2.5-1 2007 – 2014 Fish and Fish Habitat Sample Sites

				Sampling Date											
Site Code 2007 - 2011	Site Code 2014	Watershed	Location	14 -20 September 2007	29 July - 2 August 2008	22 - 26 September 2008	31 May - 4 June 2010	30 Aug - 3 September 2010	27 - 30 June 2011	August 29 - 30 2011	27 - 29 September 2011	3 - 6 June 2014	22 - 24 July 2014	15 - 19 September 2014	22 - 23 October 2014
PC-AL-01	N/A	Peterson Creek	Peterson Creek at mouth	EF	EF	EF									
PC-AL-02	PC-01	Peterson Creek	Peterson Creek downtown Kamloops	EF	EF	EF							EF	EF	
PC-AL-03	N/A	Peterson Creek	Peterson Creek upstream of Highway 5A						EF	MT					
PC-AL-04	PC-04	Peterson Creek	Peterson Creek upstream of Bridal Veil Falls		EF	EF	EF	EF	EF				EF		
PC-AL-05	PC-05	Peterson Creek	Peterson Creek near Humphrey Creek							MT		EF			
PC-AL-06	PC-03	Peterson Creek	Peterson Creek at Goose Lake Road						EF	EF		EF	EF		
PC-AL-08	PC-08	Peterson Creek	Peterson Creek downstream Jacko Lake	MT	EF MT		EF MT		EF	MT	EF	EF	EF		
N/A	PC-10/15	Peterson Creek	Peterson Creek upstream Jacko Lake									EF MT	EF		
JACL	JACL	Peterson Creek	Jacko Lake	MT AN	MT		GN MT	MT TN					GN	GN	
N/A	JACKO-WL	Peterson Creek	Jacko Lake wetland near southwest arm									MT			
N/A	KC-05	Peterson Creek	Keynes Creek lower									MT			
N/A	KC-10	Peterson Creek	Keynes Creek upper									HAB			
N/A	KC-WL	Peterson Creek	Keynes Creek wetland									MT			
N/A	HC-05	Peterson Creek	Humphrey Creek									HAB			
N/A	EDITH	Peterson Creek	Edith Lake											GN	
N/A	GOOSE	Peterson Creek	Goose Lake									EF MT			
NSP	N/A	Peterson Creek	North seepage pond					MT TN	EF TN		GN				
CC-AL-01	N/A	Cherry Creek	Cherry Creek mouth			EF									
CC-AL-02	N/A	Cherry Creek	Cherry Creek at Gardi Road	EF	EF	EF									
CC-AL-04	N/A	Cherry Creek	Cherry Creek at Greenstone Road	EF	EF	EF		EF			EF				
CC-AL-05	N/A	Cherry Creek	Cherry Creek 650 m upstream of Afton TSF Alkali Cr diversion	EF	EF	EF									
CC-AL-06	CC-04	Cherry Creek	Cherry Creek 2.5 km upstream of Afton TSF Alkali Cr diversion	EF	EF	EF		EF			EF			EF	
CC-AL-07	N/A	Cherry Creek	Cherry Creek downstream Chuwhels Lake			EF									
CC-AL-08	N/A	Cherry Creek	Cherry Creek near Chuwhels Lake outlet			MT									
INKS	N/A	Cherry Creek	Inks Lake					GN MT	EF		MT				
N/A	ANDR-10	Anderson Creek	Anderson Creek lower									EF			
N/A	ANDR-15	Anderson Creek	Anderson Creek upper									EF		EF	
N/A	MCCONNELL	Anderson Creek	McConnell Lake												GN
N/A	SCUITTO	Scuitto Creek	Scuitto Lake											GN	

NOTES:

1. ABBREVIATIONS AN = ANGLING EF = ELECTROFISHING GN = GILL NETTING HAB = HABITAT ONLY MT = MINNOW TRAPPING TN = TRAP NETTING.

2.5.2 Sample Collection Methodology

Prior to commencement of field programs, provincial and federal fish collection permits and research permits were obtained. All fish sampling for the 2014 program was completed in accordance with the following permits and licences:

- Fish Collection Permit KA14-146103 obtained from the Ministry of Forests, Lands and Natural Resource Operations
- Licence XHAB 58 2014 – Amendment 1 obtained from Fisheries and Oceans Canada, and
- Park Use Permit 107323 under the *Parks Act*.

The Park Use Permit pertained to sampling all aquatic biota, as well as water and sediment, within McConnell Lake Provincial Park. A detailed application was submitted to Forests, Lands and Natural Resource Operations in April of 2014 and the permit was received in October. Sampling in McConnell Lake was therefore not conducted until October 22 and 23, 2014, approximately one month following completion of sampling in the other lakes. The delay in sampling for this site may confound some of the biophysical and chemical parameters that show seasonal variability (e.g., phytoplankton and zooplankton) and therefore results between lakes may not be comparable, as the BACI study design assumes that samples are collected simultaneously at the impact and control sites.

Two levels of fish sampling and habitat characterization were completed:

- For areas that will be permanently affected by the Project footprint, aquatic areas were surveyed, documented, measured quantitatively, and mapped, as recommended in the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment. 2012).
- For Project access roads, transmission lines, and other linear developments, habitat data and fish presence information at the crossing sites were documented to establish types of crossing structures, construction timing windows, and to guide Environmental Management Plans in accordance with the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment. 2012).

Fish habitat at each site was characterized by:

- Confinement
- Channel width
- Wetted width
- Gradient
- Stream morphology
- Cover density and type
- Riparian vegetation and crown closure, and
- Substrate (dominant and sub-dominant).

Photographs were taken at each site (upstream, downstream, cross section) to document conditions. Site lengths varied, since the primary purpose of the 2014 program was to document fish distribution and collect tissue samples for analysis of metals loading, but were typically at least ten times the channel width (Appendix C2).

2.5.3 Data Analysis

Rainbow trout populations were characterized using: mean length (mm), mean weight (g), mean age, and Catch per Unit Effort (CPUE). The CPUE for each of the sampling methods is reported as:

- Electrofishing CPUE was calculated as number of fish captured per electrofishing seconds.
- CPUE for minnow traps was calculated as number of rainbow trout caught per trap per total trap hours (number of traps by total time for each trap).
- CPUE for gill nets was reported as number of rainbow trout caught per panel per hour.

A wide variety of indices and statistical measures have been used to calculate condition factor, or indices of well-being for individual fish or populations of fish. Condition factors are based on the analysis of fish length and weight data, and can either refer to the condition of an individual fish or the condition of a sub-population (Bolger and Connolly 1989). Condition factors are influenced by age of fish, sex, season, stage of maturation, amount of fat reserve and degree of muscular development. Condition factors were calculated for sites with a sufficient sample size and compared to historical values available for the region. Ricker (1963) notes that fish weight varies as some power of length according to the following equation:

$$W = aLb^b$$

Where W is weight, L is length, and b is the slope of a fitted line of logarithm of weight against logarithm of length. A value of b equal to 3 assumes isometric growth, or growth with unchanging body proportion or form (Ricker 1963, Bolger and Connolly 1989).

For comparison with regional values, Population condition factor for each sample site was calculated following the method used by the Ministry of Environment (1999) for comparison of stocked rainbow trout and brook trout populations in the Kamloops region. Condition factor was calculated as the slope of the regression line of a plot of rainbow trout weight (in grams) against the cube of rainbow trout length (mm) divided by 100.

The Ministry of Environment index appears to be a variation of Fulton's condition factor equation:

$$K = \left(\frac{W}{L^3}\right)X$$

Where K is the condition factor, W is weight, L is length, and x is an arbitrary scaling constant that varies with units of measure.

These condition factors must be interpreted with caution, given the small sample sizes, different habitats sampled (stream vs. lake), and sampling method (different sampling methods can be size selective). In addition, condition factor comparisons should be limited to fish of similar lengths, since condition factor increases with length for fish that become more rotund as length increases (Nielson and Johnson 1983).

3 – RESULTS

3.1 SEDIMENT

3.1.1 Sediment Data at Project Site

Sediment samples were collected at sites within Peterson Creek, Jacko Lake, Inks Lake, and Cherry Creek from 2007 to 2011 in order to establish baseline physio-chemical conditions at each site (Knight Piésold Ltd. 2013b). Sediment results from the 2007 through 2011 program for the sites that were carried forward into the 2014 sampling program are discussed in this section. Stream and lake sediment samples were collected in 2014 from potentially impacted sites in the Peterson Creek watershed and from control sites on Anderson Creek, as summarized in Table 2.2-1 and shown on Figure 2.2-1. Five replicates were collected from each lake site, and, where possible, from each stream site. Samples were not collected at three of the aquatic habitat stream sites due to a lack of fine substrates (<64 µm); in addition, only one replicate was collected at the lowermost Peterson Creek site due to sparse fines.

The following sections present the results of the 2014 stream and lake sediment sampling program, with a discussion of guideline exceedances for any of the parameters, and a comparison of values between and among sites for a spatial and temporal comparison. Sample results were compared to the provincial and federal guidelines for metals shown in Table 3.1-1.

Table 3.1-1 Sediment Guidelines for Aquatic Life

Parameter	Unit	BC Working Guidelines for the Sediment		Canadian Environmental Quality Guidelines / BC Working Guidelines for the Sediment	
		LEL	SEL	ISQG	PEL
Arsenic	mg/kg			5.9	17
Cadmium	mg/kg			0.6	3.5
Chromium	mg/kg			37.3	90
Copper	mg/kg			35.7	197
Iron	mg/kg	21,200	43,766		
Lead	mg/kg			35	91.3
Manganese	mg/kg	460	1100		
Mercury	mg/kg			0.17	0.486
Nickel	mg/kg	16	75		
Selenium	mg/kg		2		
Zinc	mg/kg			123	315

3.1.1.1 Stream Metals

Guideline Comparison

Analytical results for the 2014 stream sediment samples are compared to provincial and federal guidelines in Appendix A1. Statistical summaries for each of the sites are provided in Appendix A2. The 2014 results indicate the following:

- The federal and provincial ISQG for arsenic was exceeded in the Peterson Creek sample collected within downtown Kamloops (PC-01).
- Bismuth concentrations were lower than the Method Detection Limit (MDL) at all sites in 2014 except for ANDR-15.
- Boron concentrations were below or slightly above the MDL in all replicates from all sites.
- Cadmium concentrations were all less than the ISQG.
- Chromium ISQGs were exceeded in samples from most of the sites, the exception being the upstream site on Anderson Creek (ANDR-15), where three of the five replicates were less than the guideline. All five replicates from site Peterson Creek within Knutsford (PC-03) were above the PEL guideline; two of the three replicates at site Peterson Creek at the outlet of Jacko Lake (PC-08) also exceeded the guideline.
- For copper, all five replicates collected from the upper Anderson Creek site (ANDR-15) and one replicate from the lower Anderson Creek site (ANDR-10) were below the ISQG; replicates from all remaining sites exceeded the ISQG guideline.
- The LEL for iron was exceeded in all replicates from all sites, with the exception of one replicate from the upper Anderson Creek site (ANDR-15). One replicate from Peterson Creek at the outlet of Jacko Lake (PC-08) exceeded the SEL.
- Manganese concentrations were above the LEL in all replicates except two from the upper Anderson Creek site (ANDR-15). All replicates from the lower Anderson Creek site (ANDR-10) exceeded the SEL, as did one replicate each from the Peterson Creek sites in Knutsford (PC-03) and above Jacko Lake (PC-10).
- The LEL for nickel was exceeded in all replicates from all sites; one replicate from the Peterson Creek site in Knutsford (PC-03) also exceeded the SEL.
- Zinc concentrations were below guidelines at all of the sample sites.

The following guideline exceedances were noted in the 2007 to 2011 stream samples:

- The arsenic ISQG was exceeded in two of the three samples collected from Peterson Creek downstream of Jacko Lake (PC-08) between 2008 and 2011.
- Chromium exceeded the lower ISQG in all three of the samples collected from Peterson Creek within downtown Kamloops (PC-01) and two of the three samples collected from Peterson Creek downstream of Jacko Lake (PC-08).
- Copper exceeded the ISQG guideline PC-08 (Peterson Creek downstream of Jacko Lake) samples.
- Nickel exceeded the LEL in Peterson Creek within downtown Kamloops (PC-01), and Peterson Creek downstream of Jacko Lake (PC-08) samples.
- Two of the three samples collected from Peterson Creek downstream of Jacko Lake (PC-08) had selenium concentrations below the MDL.

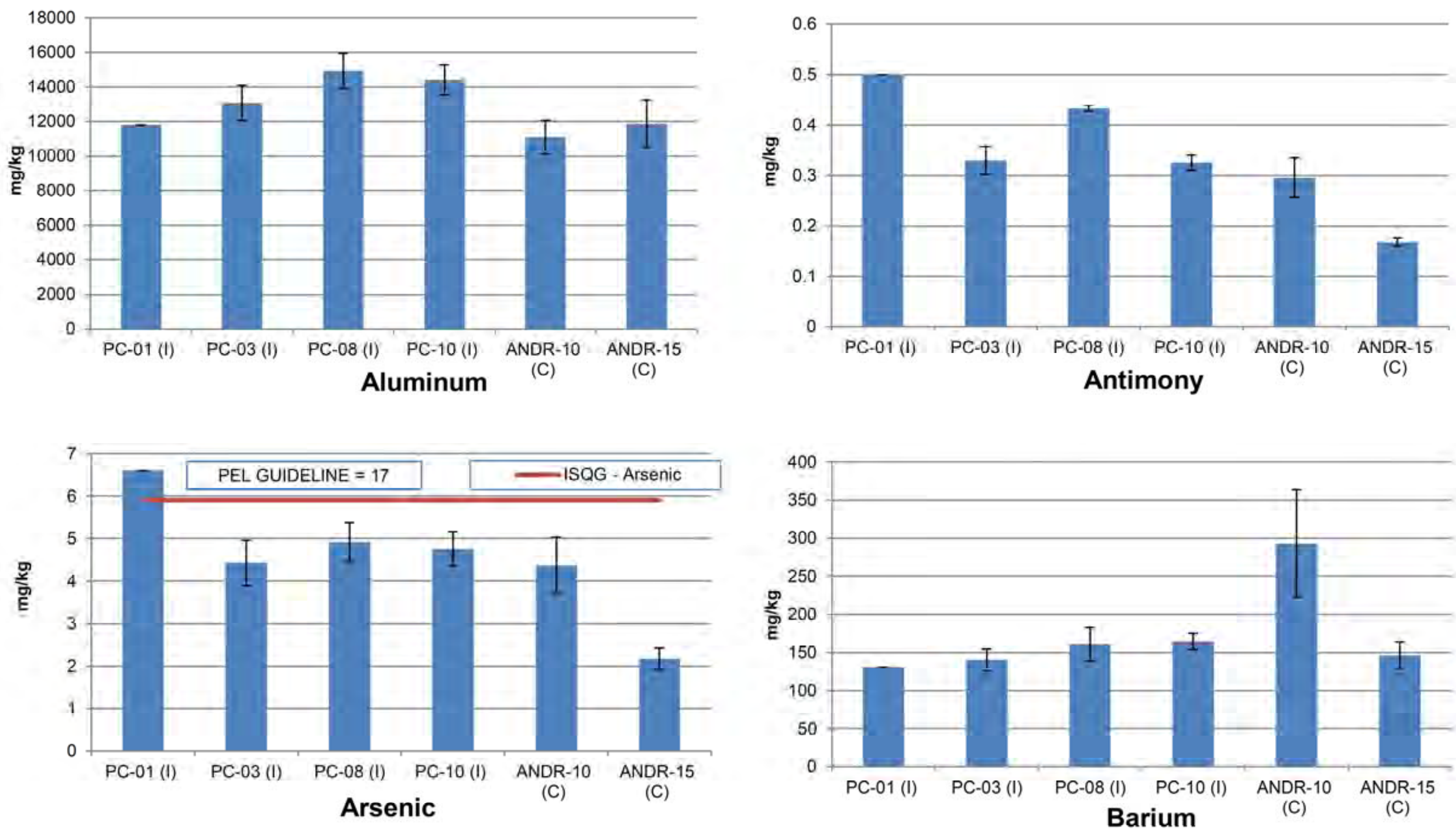
Lead was below the MDL in all but one of the samples collected between 2007 and 2011; however, the MDL dropped from 30 mg/kg in the 2007 to 2008 samples to 0.1 mg/kg in the 2011 and later samples.

A comparison of the mean (± standard deviation) and median concentrations in the 2007 to 2011 and 2014 samples is provided in Appendix A5. For values less than the respective parameter MDL, mean and median were calculated based on the MDL. In some cases the MDLs varied substantially between the two sampling programs (e.g., MDL for lead in 2007 through 2011 was 30 mg/kg, compared to 0.1 mg/kg in 2014). There was on average an approximately 20% difference in parameter means between the 2007 through 2011 and 2014 concentrations, discounting the parameters that were reported as less than the MDL.

Site Comparison

Average concentrations for the metals for sediment samples collected in 2014 are shown on Figure 3.1-1 through Figure 3.1-8. Parameter concentrations varied by site – none of the sites reported consistently higher sediment parameter concentrations:

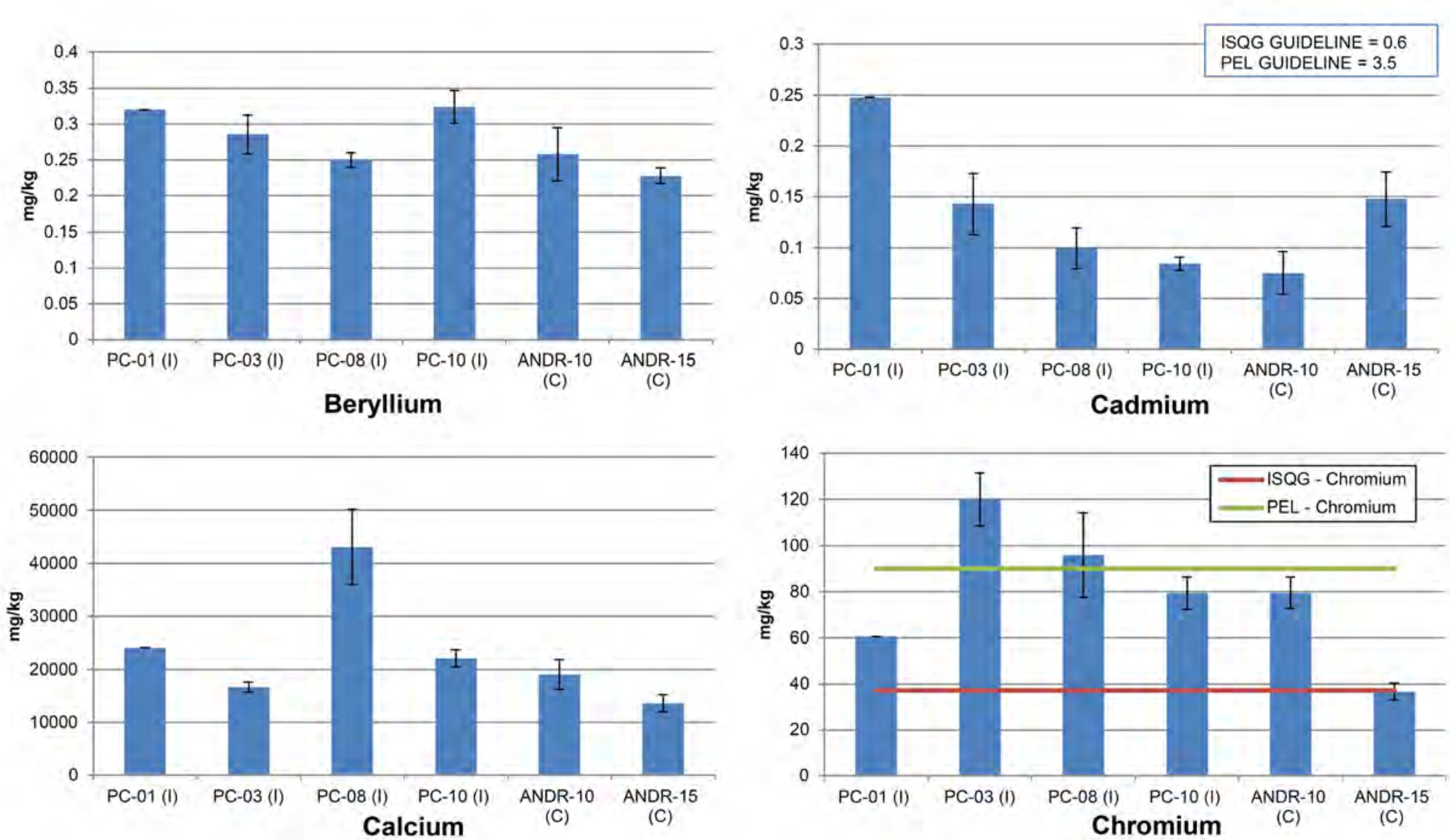
- The Peterson Creek site within Kamloops city limits (PC-01) had the highest average concentrations of antimony, arsenic (with the single sample exceeding the ISQG), lead, silver, and zinc, but none of the parameters exceeded their respective guidelines.
- The Peterson Creek site in Knutsford (PC-03) had the highest average concentrations of chromium, mercury, molybdenum, nickel, selenium, sodium, sulfur, thallium, tin, and titanium. All five replicates were above the PEL guideline for chromium; mercury was lower than the guideline; nickel exceeded the LEL in all replicates, and one replicate also exceeded the SEL; selenium concentrations were below the SEL guideline.
- Peterson Creek at the outlet of Jacko Lake (PC-08) had the highest average concentrations of aluminum, calcium, cobalt, copper (as previously noted, all sites with the exception of the ANDR-15 control site exceeded the ISQG), iron (with all three replicates exceeding the LEL and one replicate exceeding the SEL), magnesium, strontium, and vanadium.
- Phosphorus was greatest at the Peterson Creek site upstream of Jacko Lake (PC-10).
- The downstream Anderson Creek site (ANDR-10) had the highest average concentrations of barium, beryllium and manganese (with all replicates above the SEL).
- Average lithium, potassium, and uranium were highest at the upstream Anderson Creek site (ANDR-15).



NOTES:

1. ABBREVIATIONS: PC = PETERSON CREEK; ANDR = ANDERSON CREEK; PEL = BC WORKING WATER QUALITY PROBABLE EFFECT; (I) = IMPACT SITE; (C) = CONTROL SITE. SD = STANDARD DEVIATION.
2. SITE CODE NUMBERING INCREASES IN UPSTREAM DIRECTION.

Figure 3.1-1 Average (±SD) Stream Sediment Metal Concentrations by Site 2014 (Aluminum, Antimony, Arsenic, Barium)

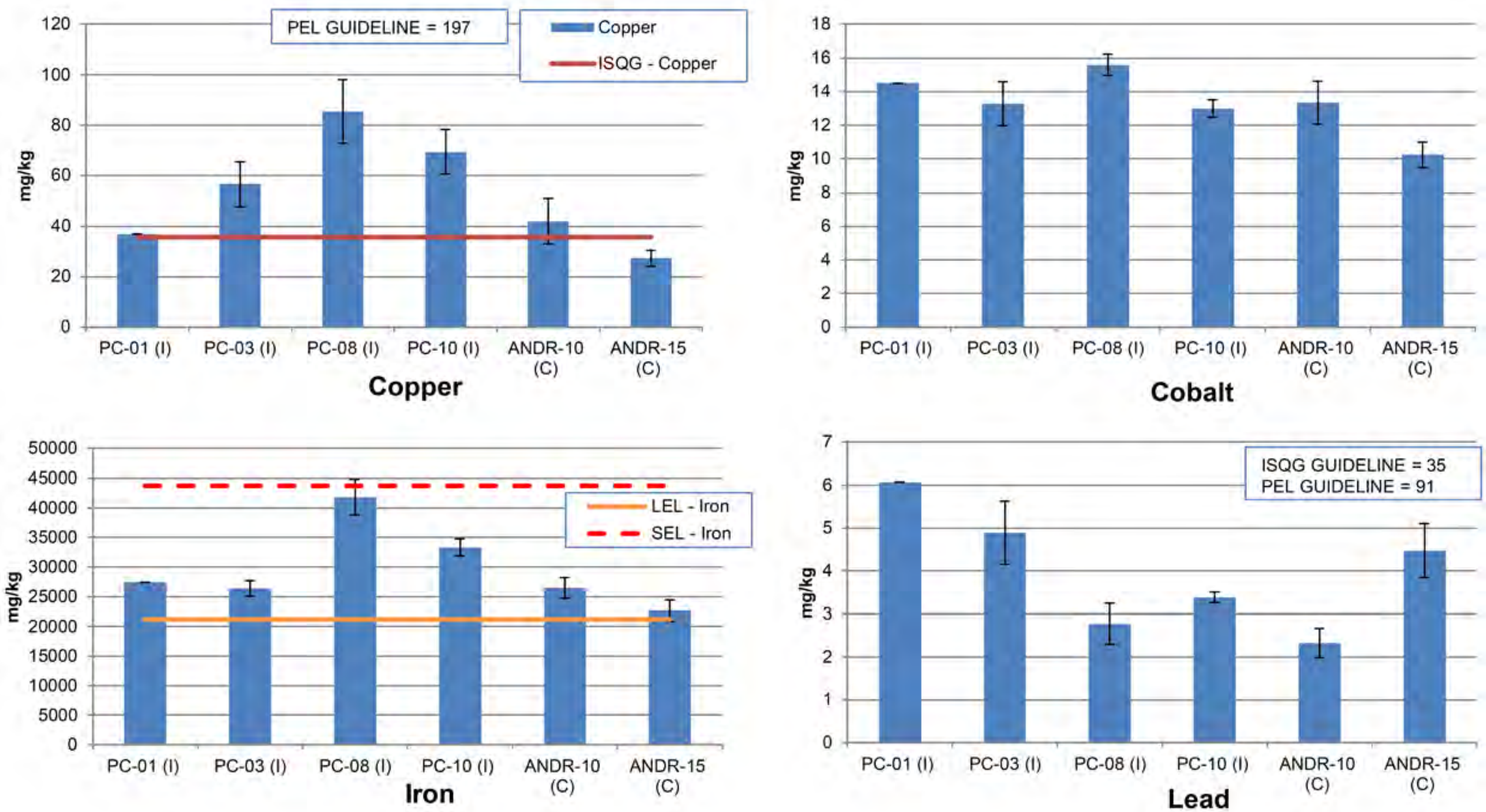


NOTES:

1. ABBREVIATIONS: PC = PETERSON CREEK; ANDR = ANDERSON CREEK; ISQG = BC WORKING WATER QUALITY INTERIM SEDIMENT QUALITY GUIDELINES; PEL = BC WORKING WATER QUALITY PROBABLE EFFECT LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE.
2. SITE CODE NUMBERING INCREASES IN UPSTREAM DIRECTION.

Figure 3.1-2 Average (±SD) Stream Sediment Metal Concentrations by Site 2014 (Beryllium, Cadmium, Calcium, Chromium)

Knight Piésold CONSULTING

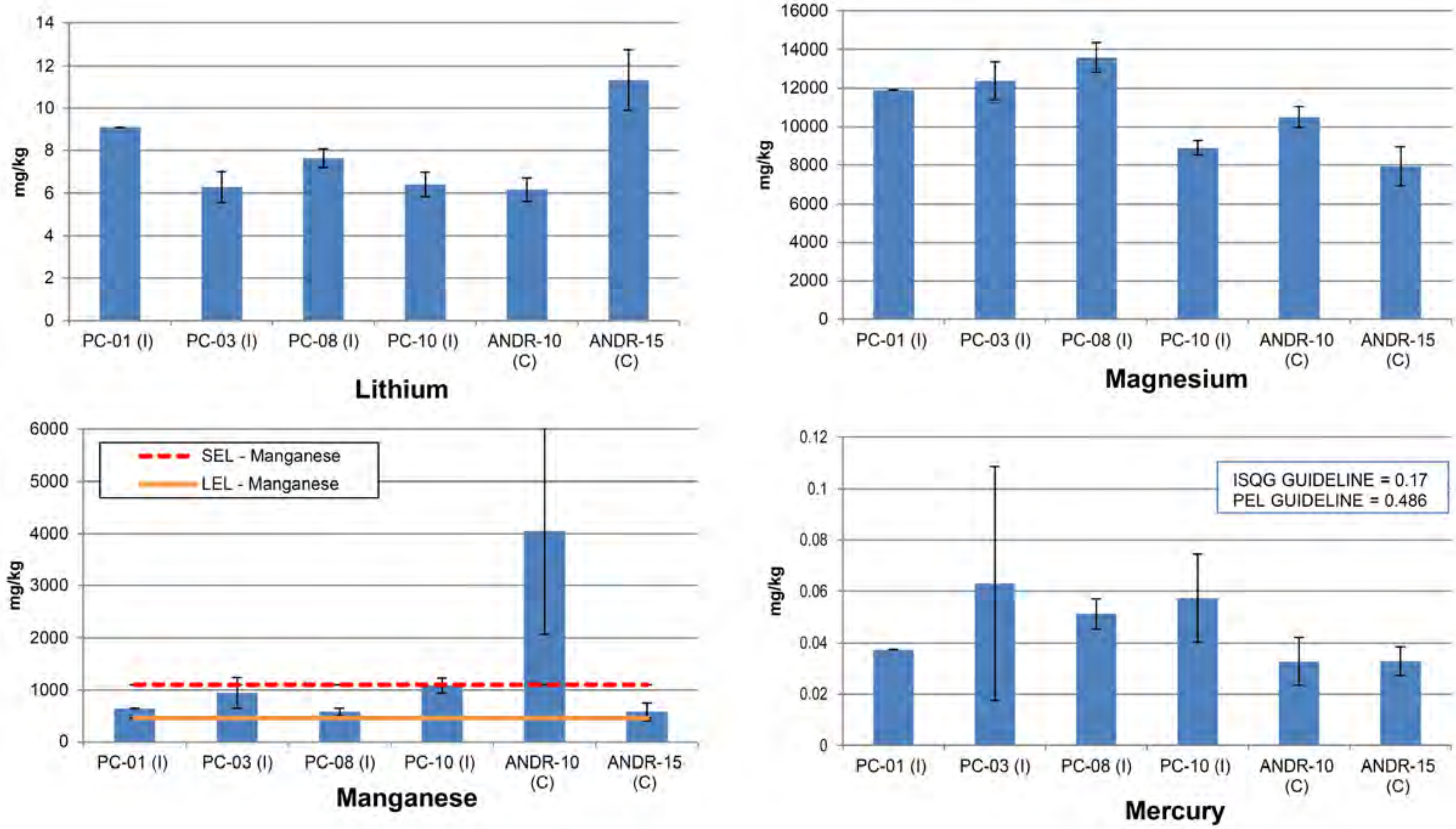


NOTES:

1. ABBREVIATIONS: PC = PETERSON CREEK; ANDR = ANDERSON CREEK; ISQG = BC WORKING WATER QUALITY INTERIM SEDIMENT QUALITY GUIDELINES; LEL = BC WORKING WATER QUALITY LOWER EFFECTS LEVEL; SEL = BC WORKING WATER QUALITY SEVERE EFFECTS LEVEL; PEL = BC WORKING WATER QUALITY PROBABLE EFFECT LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE.
2. SITE CODE NUMBERING INCREASES IN UPSTREAM DIRECTION.

Figure 3.1-3 Average (±SD) Stream Sediment Metal Concentrations by Site 2014 (Copper, Cobalt, Iron, Lead)

Knight Piésold
CONSULTING

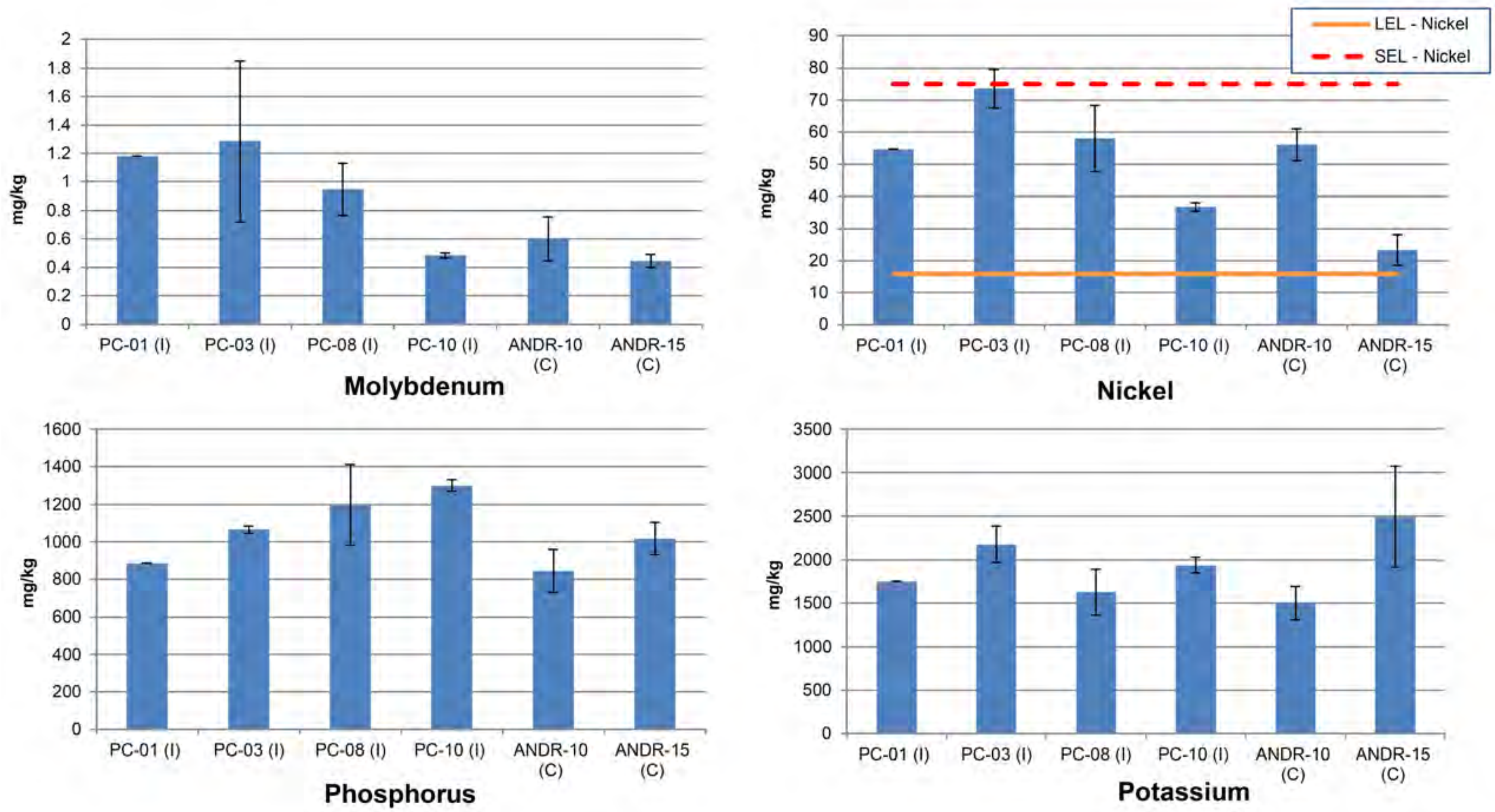


NOTES:

1. ABBREVIATIONS: PC = PETERSON CREEK; ANDR = ANDERSON CREEK; ISQG = BC WORKING WATER QUALITY INTERIM SEDIMENT QUALITY GUIDELINES; LEL = BC WORKING WATER QUALITY LOWER EFFECTS LEVEL. . BC SEL = BC WORKING WATER QUALITY SEVERE EFFECTS LEVEL; PEL = BC WORKING WATER QUALITY PROBABLE EFFECT LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE.
2. SITE CODE NUMBERING INCREASES IN UPSTREAM DIRECTION

Figure 3.1-4 Average (±SD) Stream Sediment Metal Concentrations by Site 2014 (Lithium, Magnesium, Manganese, Mercury)

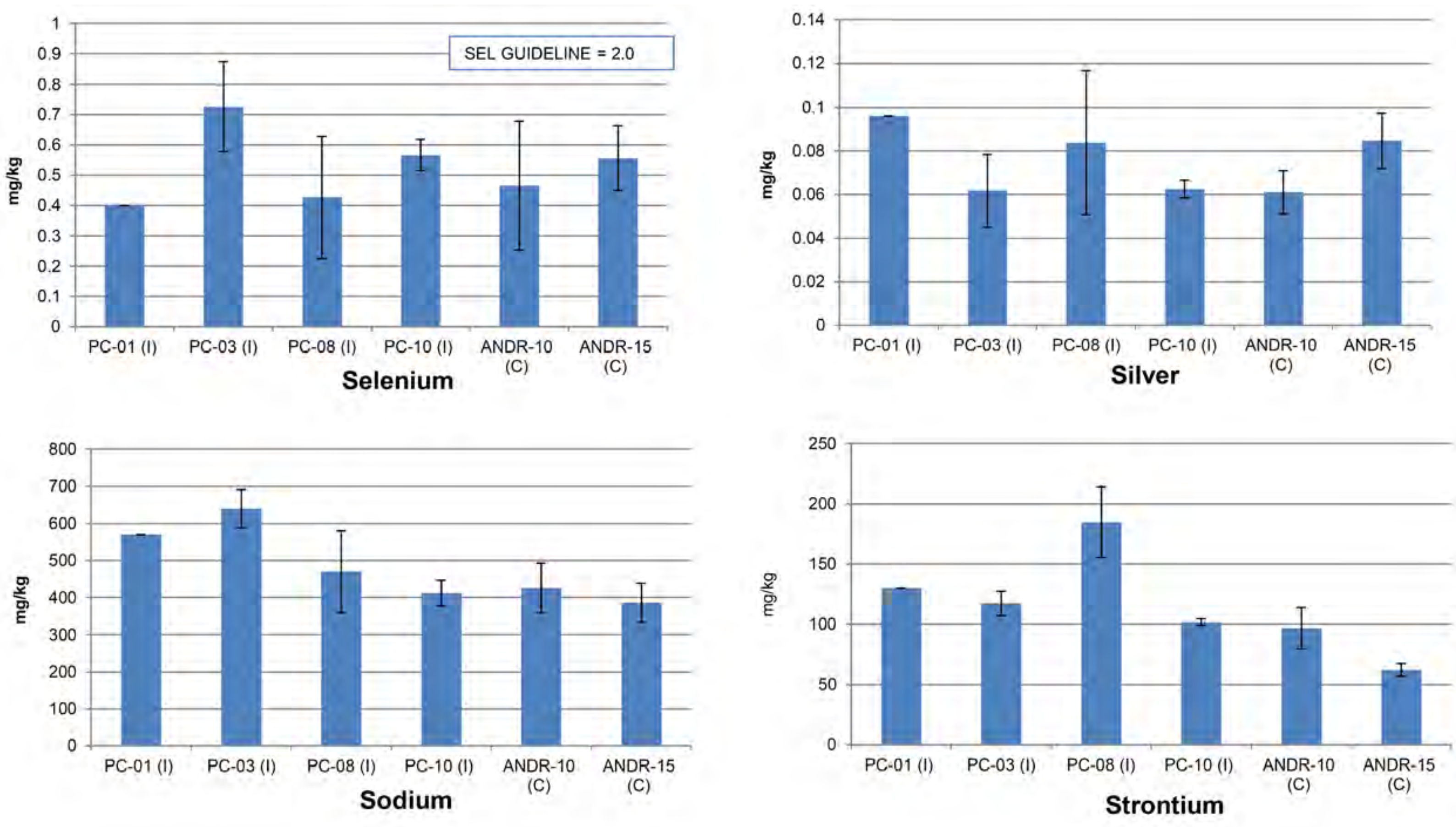
Knight Piésold CONSULTING



NOTES:

1. ABBREVIATIONS: PC = PETERSON CREEK; ANDR = ANDERSON CREEK; LEL = BC WORKING WATER QUALITY LOWER EFFECTS LEVEL; SEL = BC WORKING WATER QUALITY SEVERE EFFECTS LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE.
2. SITE CODE NUMBERING INCREASES IN UPSTREAM DIRECTION.

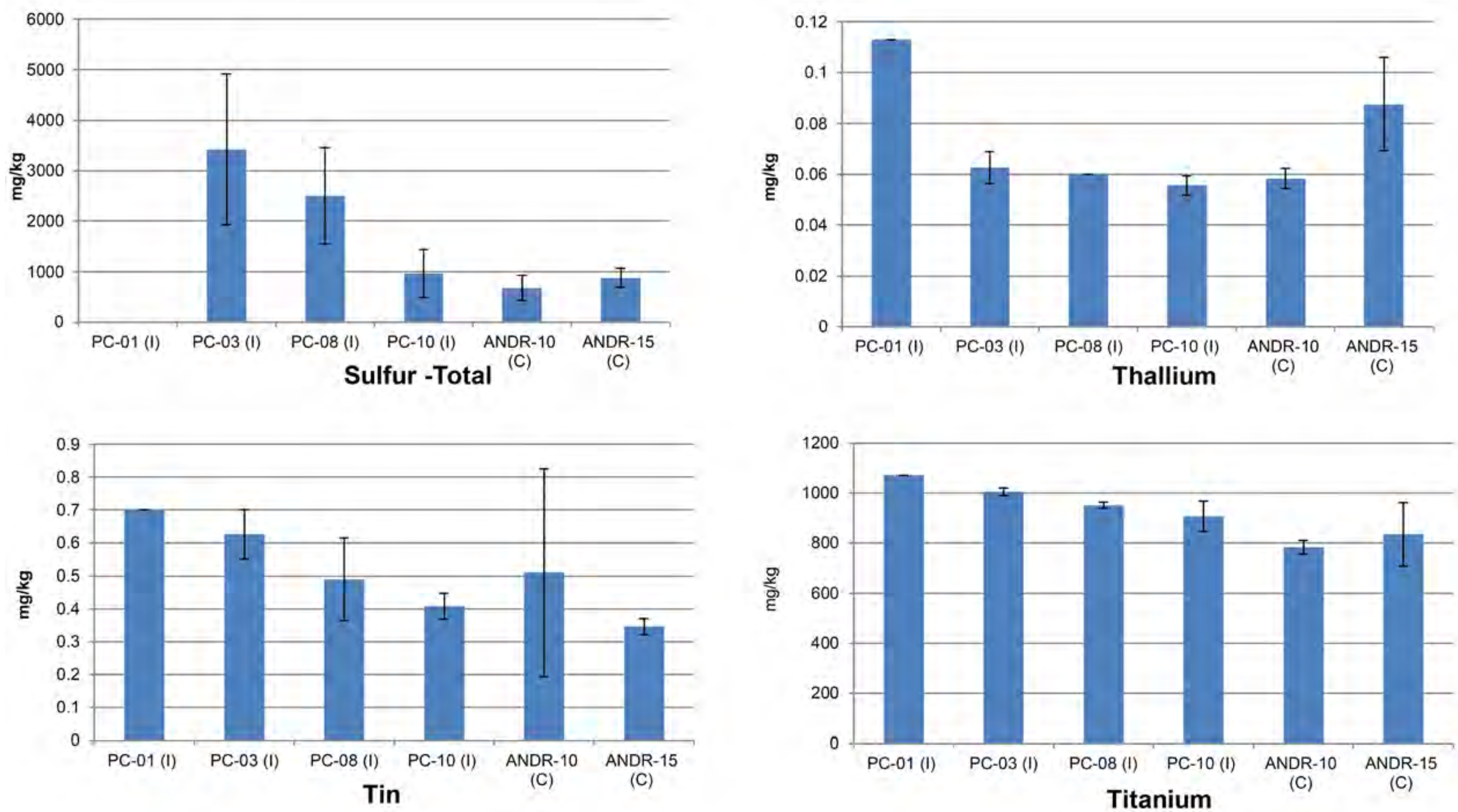
Figure 3.1-5 Average (±SD) Stream Sediment Metal Concentrations by Site 2014 (Molybdenum, Nickel, Phosphorus, Potassium)



NOTES:

1. ABBREVIATIONS: PC = PETERSON CREEK; ANDR = ANDERSON CREEK; SEL = BC WORKING WATER QUALITY SEVERE EFFECTS LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE.
2. SITE CODE NUMBERING INCREASES IN UPSTREAM DIRECTION.

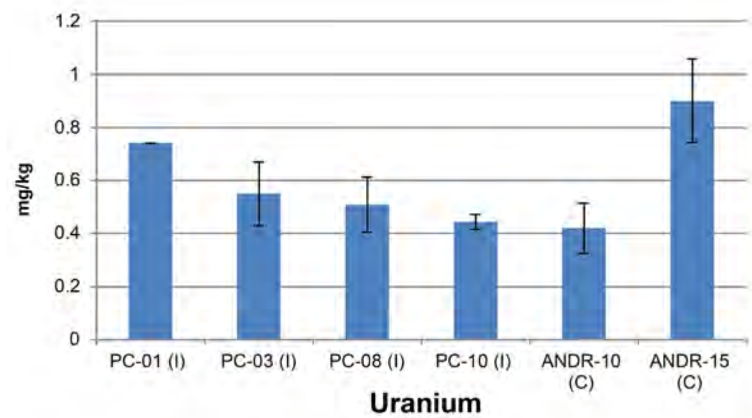
Figure 3.1-6 Average (±SD) Stream Sediment Metal Concentrations by Site 2014 (Selenium, Silver, Sodium, Strontium)

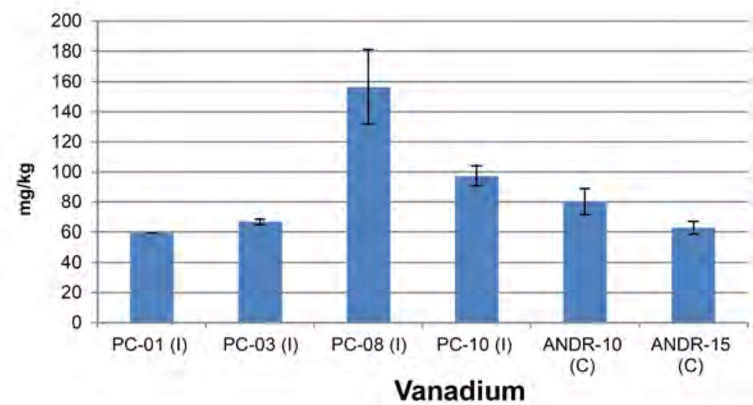


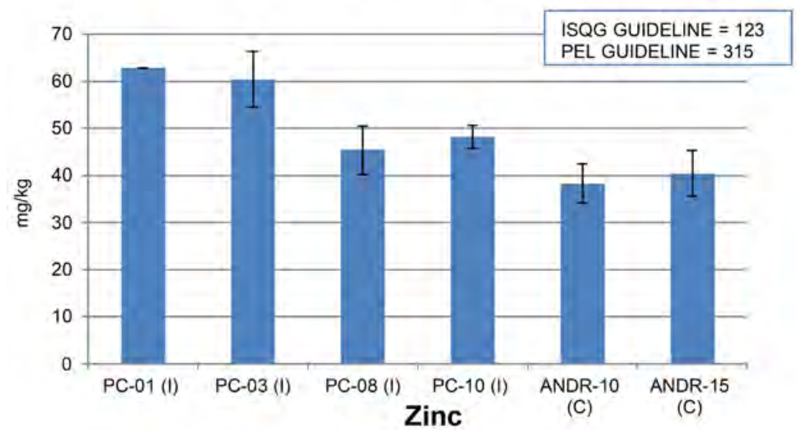
NOTES:

1. ABBREVIATIONS: PC = PETERSON CREEK; ANDR = ANDERSON CREEK; SEL = BC WORKING WATER QUALITY SEVERE EFFECTS LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE.
2. SITE CODE NUMBERING INCREASES IN UPSTREAM DIRECTION.

Figure 3.1-7 Average (±SD) Stream Sediment Metal Concentrations by Site 2014 (Selenium, Silver, Sodium, Strontium)







NOTES:

1. ABBREVIATIONS: PC = PETERSON CREEK; ANDR = ANDERSON CREEK; ISQG = BC WORKING WATER QUALITY INTERIM SEDIMENT QUALITY GUIDELINES; PEL = BC WORKING WATER QUALITY PROBABLE EFFECT LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE.
2. SITE CODE NUMBERING INCREASES IN UPSTREAM DIRECTION.

Figure 3.1-8 Average (±SD) Stream Sediment Metal Concentrations by Site 2014 (Uranium, Vanadium, Zinc)

3.1.1.2 Lake Metals

Guideline Comparison

Analytical results for the 2014 lake sediment samples are compared to provincial and federal guidelines in Appendix A3. Statistical summaries for each of the sites are provided in Appendix A4. The 2014 results indicate the following:

- None of the lake sediment samples exceeded the arsenic or cadmium ISQGs.
- The chromium ISQG was exceeded in one replicate each from the MCC-2, JACL, and GOOSE samples; the chromium ISQG was exceeded in all the Scuitto Lake replicates. Four of the five Edith Lake replicates exceeded the ISQG, with one of the five reporting above the PEL guideline.
- Copper concentrations exceeded the ISQG in all five replicates from each of Jacko Lake, Scuitto Lake, and Edith Lake, and in two of the replicates from Goose Lake.
- The iron ISQG was exceeded in all Scuitto Lake replicates; no other samples from the other lakes reported above the guideline.
- Lead concentrations were below the ISQG in all replicates from all lakes.
- Manganese concentrations were above the ISQG in two of the five McConnell Lake deep samples (MCC-1) and in one of the five McConnell Lake shallow samples (MCC-2); all JACL and EDITH replicates exceeded the ISQG.
- The mercury ISQG was almost three times higher than the highest concentration from any of the lake samples.
- Nickel concentrations exceeded the ISQG in all five replicates from each of JACL, SCUITTO and EDITH, and in one of the replicates each from GOOSE and McConnell Lake shallow samples (MCC-2).
- None of the replicates exceeded the selenium ISQGs.

The following guideline exceedances were noted in the 2007 to 2011 lake samples:

- Copper exceeded the ISQG guideline in all Jacko Lake (JACL) samples.
- Manganese exceeded the LEL guideline in the Jacko Lake (JACL) 2011 sample – manganese was not analyzed in previous years.
- Mercury exceeded the PEL in the Jacko Lake (JACL) sample collected in 2007.
- Nickel exceeded the LEL in all Jacko Lake (JACL) samples.
- Selenium exceeded the SEL in one Jacko Lake (JACL) sample; in seven of the twelve samples collected between 2007 and 2011 concentrations were below the MDL.

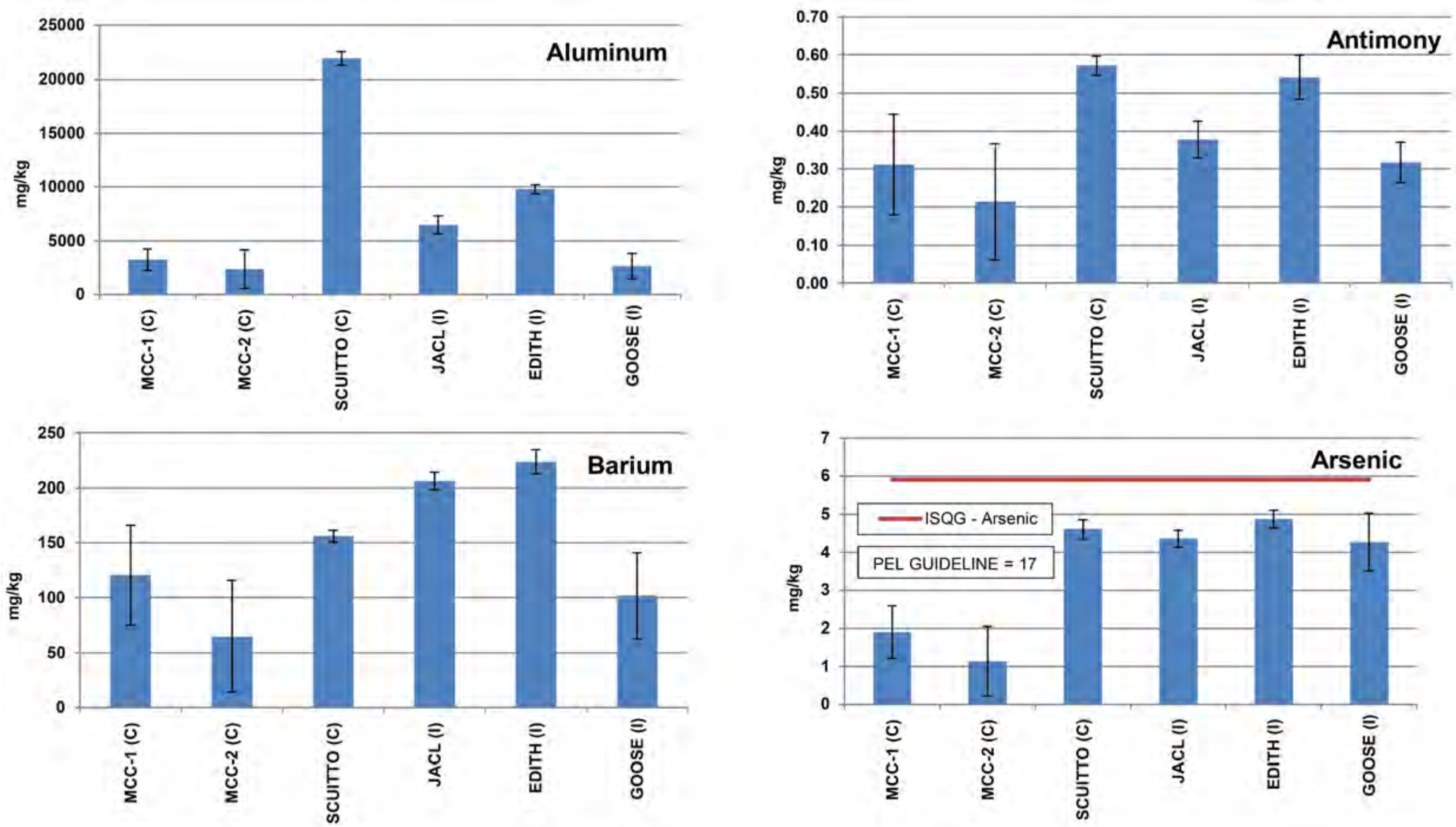
Site Comparison

Average lake sediment metal concentrations in lakes are shown on Figure 3.1-9 through Figure 3.1-16. Parameter concentrations varied by lake – none of the lakes reported consistently higher sediment parameter concentrations:

- Jacko Lake had the highest concentrations of calcium, mercury (although none of the replicates exceeded the ISQG), molybdenum, phosphorous, selenium (although none of the replicates exceeded the SEL), and strontium.
- Edith Lake showed high concentrations of chromium (with three of the five samples exceeding the ISQG and one of the samples exceeding the PEL), magnesium, manganese (with all five samples exceeding the LEL), and sodium.

- Goose Lake had the highest magnesium, potassium, sodium, and strontium concentrations.
- Scuitto Lake had the highest concentrations of aluminum, antimony, beryllium, chromium (with all replicates higher than the ISQG), cobalt, iron, lithium, nickel (with all replicates higher than the LEL), potassium, silver, thallium, titanium, vanadium, and zinc (although none of the replicates exceeded the ISQG).
- The McConnell Lake samples (MCC-1, MCC-2) had high sulfur, tin, and uranium.

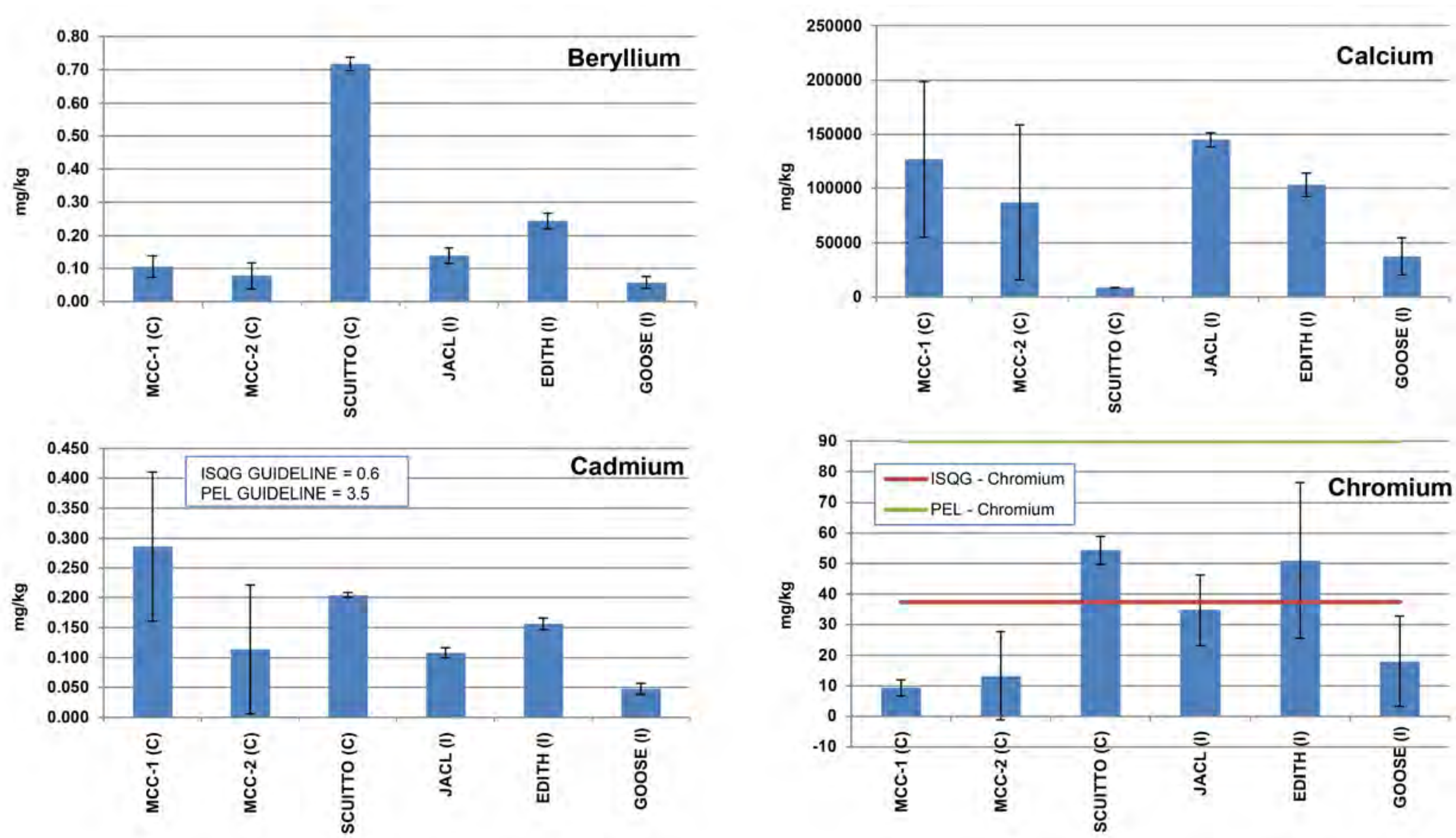
On average, concentrations of cadmium, calcium, lead, molybdenum, selenium, strontium, sulfur, tin, and uranium were notably higher in the lake samples compared to the stream samples. The differences may be explained by the different particle sizes in the streams compared to the lakes.



NOTES:

1. ABBREVIATIONS: ISQG = CANADIAN ENVIRONMENTAL INTERIM SEDIMENT QUALITY GUIDELINES; PEL = CANADIAN ENVIRONMENTAL PROBABLE EFFECT LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE. . MCC = MCCONNELL.

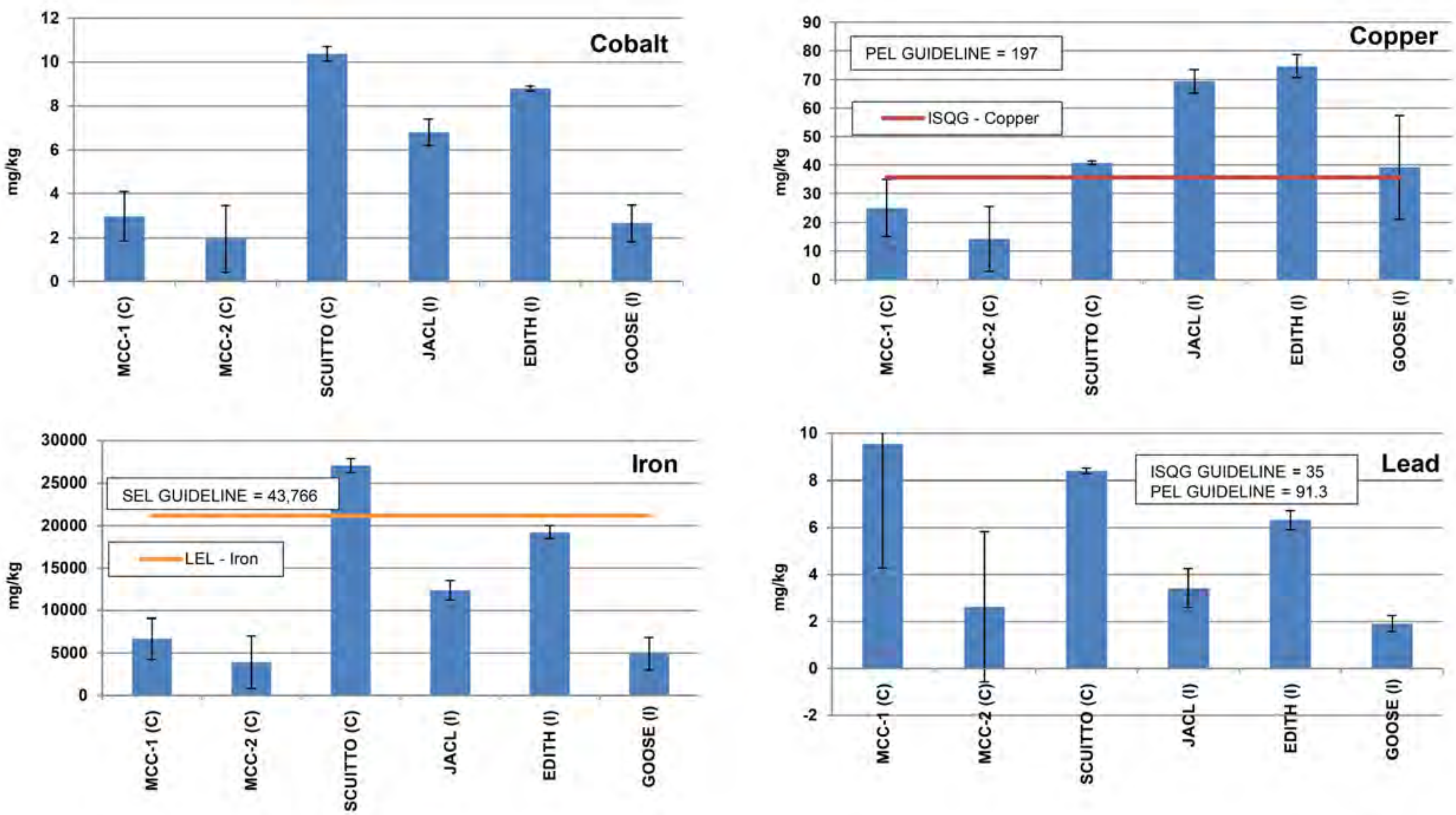
Figure 3.1-9 Average (±SD) Lake Sediment Metal Concentrations by Site 2014 (Aluminum, Antimony, Arsenic, Barium)



NOTES:

1. ABBREVIATIONS: : ISQG = CANADIAN ENVIRONMENTAL INTERIM SEDIMENT QUALITY GUIDELINES; PEL = CANADIAN ENVIRONMENTAL PROBABLE EFFECT LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE. . MCC = MCCONNELL.

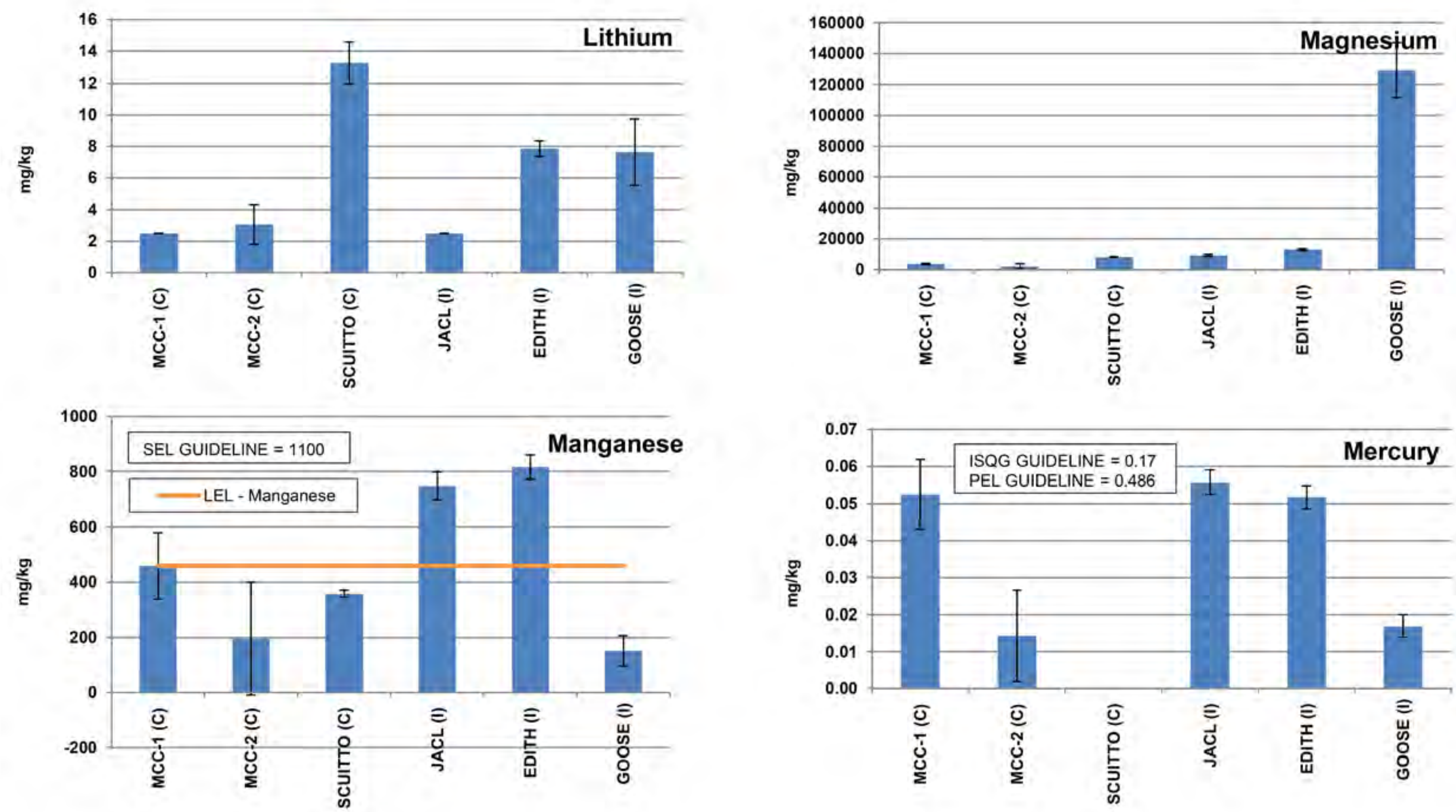
Figure 3.1-10 Average (±SD) Lake Sediment Metal Concentrations by Site 2014 (Beryllium, Cadmium, Calcium, Chromium)



NOTES:

1. ABBREVIATIONS: ISQG = CANADIAN ENVIRONMENTAL INTERIM SEDIMENT QUALITY GUIDELINES; PEL = CANADIAN ENVIRONMENTAL PROBABLE EFFECT LEVEL; LEL = BC WORKING WATER QUALITY LOWER EFFECTS LEVEL; SEL = BC WORKING WATER QUALITY SEVERE EFFECTS LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE. . MCC = MCCONNELL.

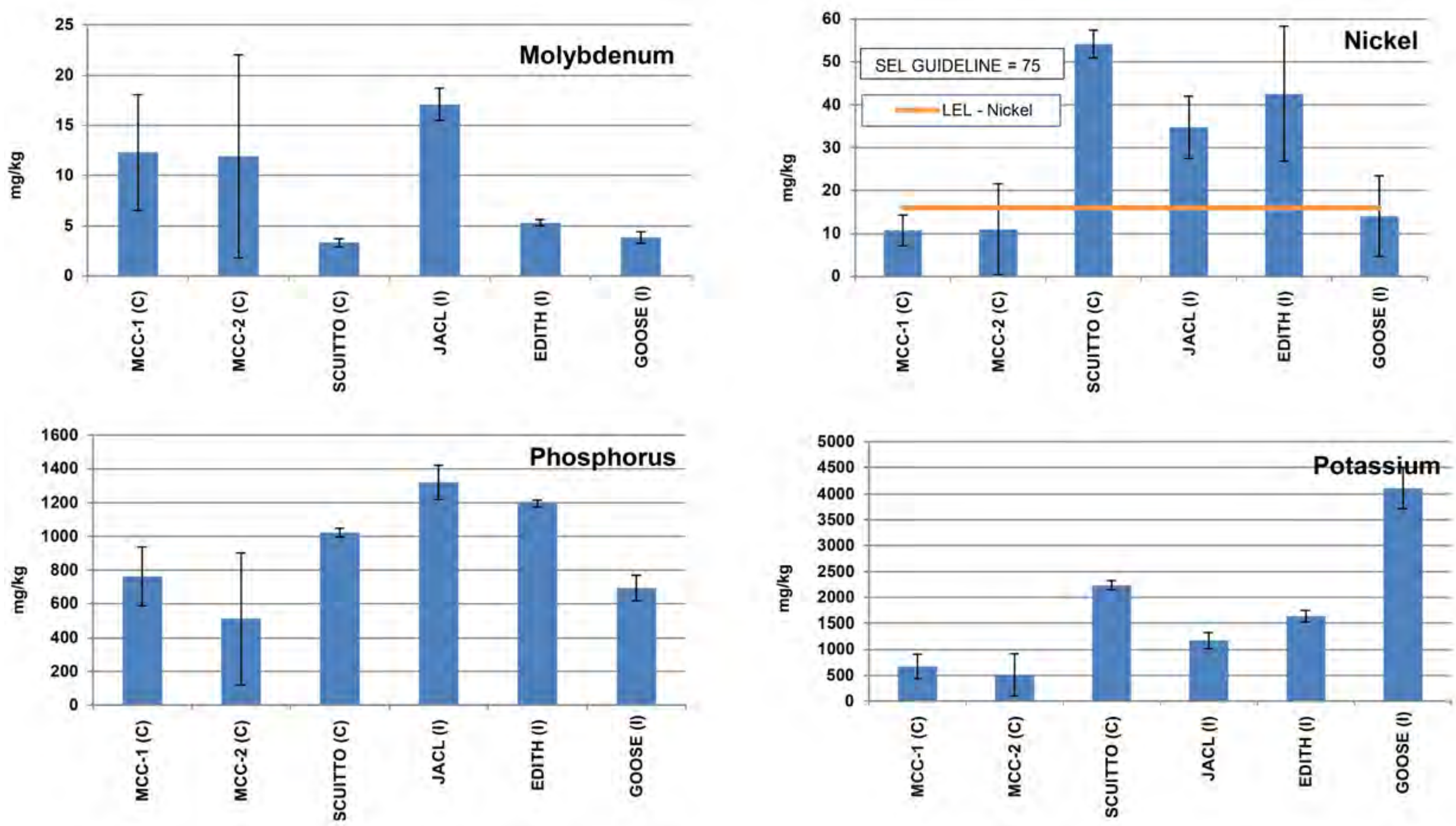
Figure 3.1-11 Average (±SD) Lake Sediment Metal Concentrations by Site 2014 (Copper, Cobalt, Iron, Lead)



NOTES:

1. ABBREVIATIONS: ISQG = CANADIAN ENVIRONMENTAL INTERIM SEDIMENT QUALITY GUIDELINES; PEL = CANADIAN ENVIRONMENTAL PROBABLE EFFECT LEVEL; LEL = BC WORKING WATER QUALITY LOWER EFFECTS LEVEL; SEL = BC WORKING WATER QUALITY SEVERE EFFECTS LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE. . MCC = MCCONNELL.

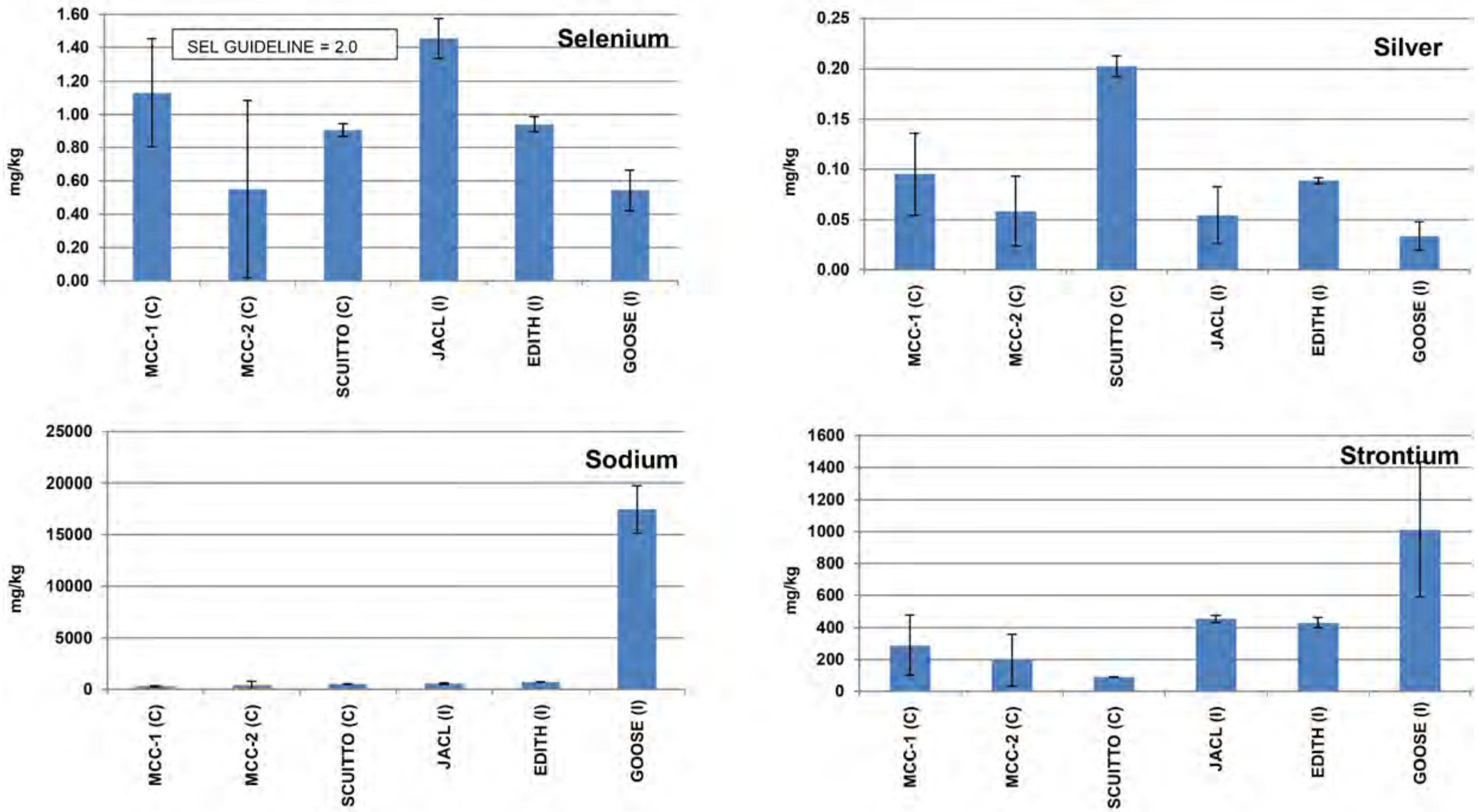
Figure 3.1-12 Average (±SD) Lake Sediment Metal Concentrations by Site 2014 (Lithium, Magnesium, Manganese, Mercury)



NOTES:

1. ABBREVIATIONS: LEL = BC WORKING WATER QUALITY LOWER EFFECTS LEVEL; SEL = BC WORKING WATER QUALITY SEVERE EFFECTS LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE. . MCC = MCCONNELL.

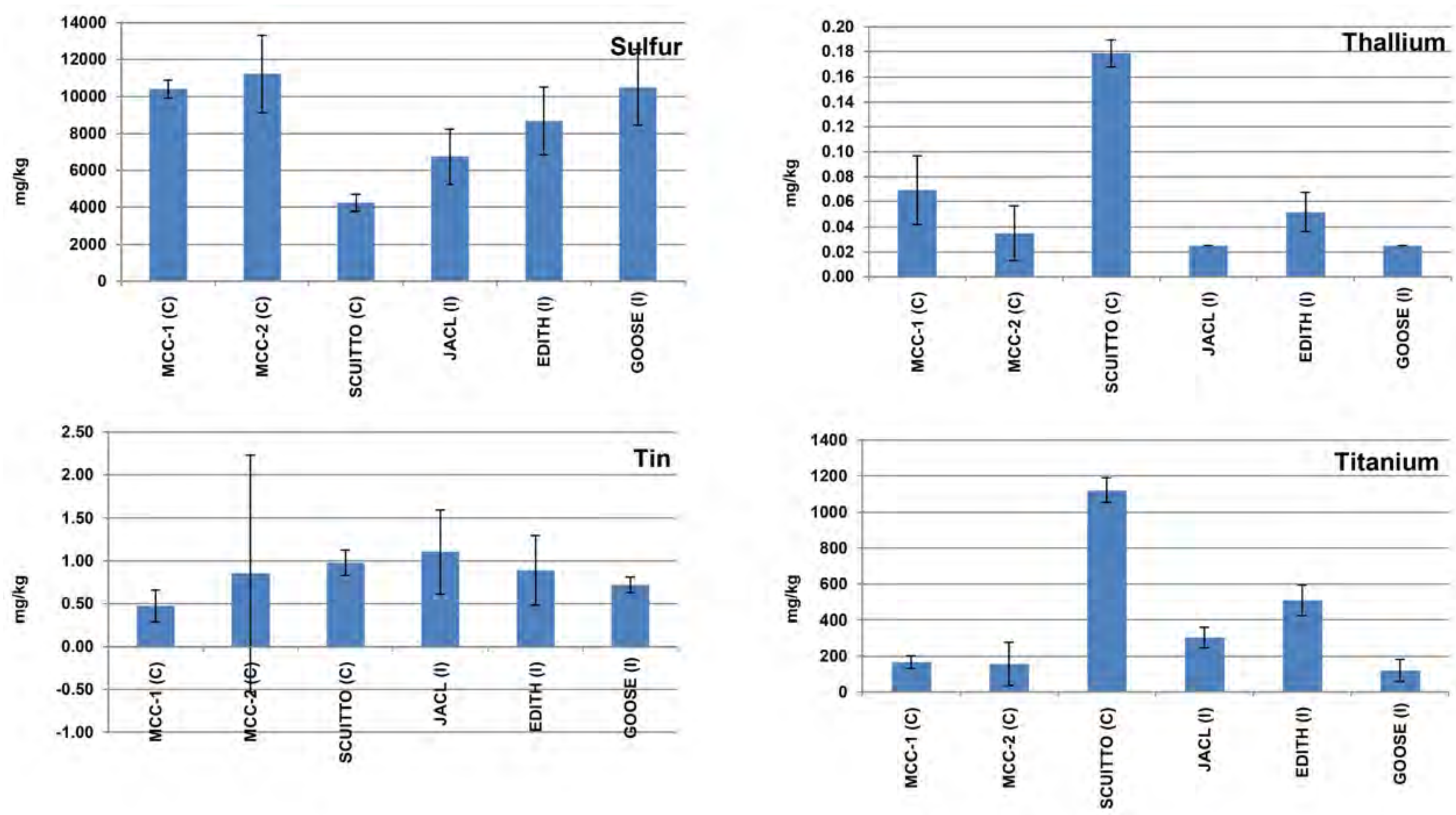
Figure 3.1-13 Average (±SD) Lake Sediment Metal Concentrations by Site 2014 (Molybdenum, Nickel, Phosphorus, Potassium)



NOTES:

1. ABBREVIATIONS: SEL = BC WORKING WATER QUALITY SEVERE EFFECTS LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE.

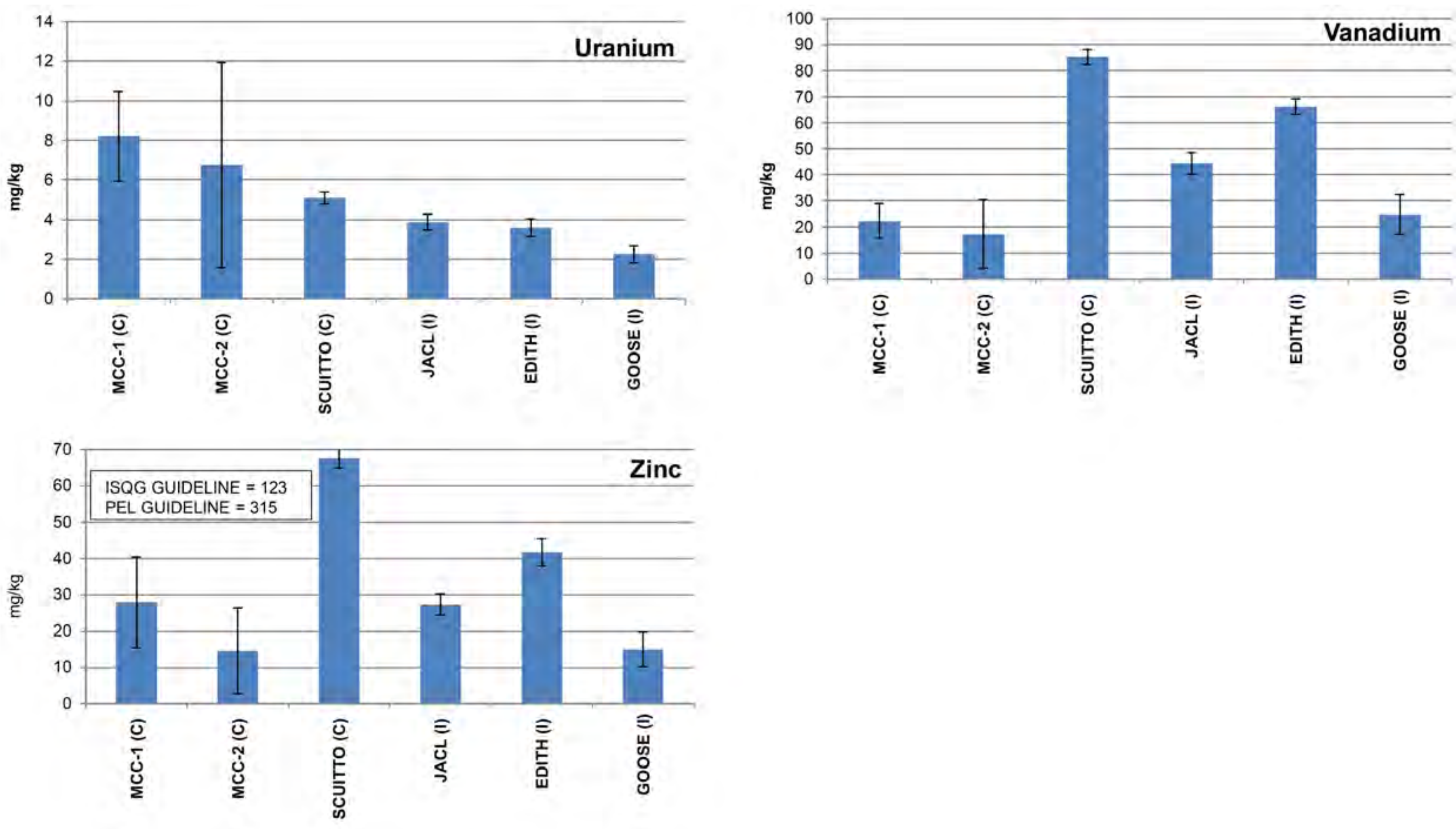
Figure 3.1-14 Average (±SD) Lake Sediment Metal Concentrations by Site 2014 (Selenium, Silver, Sodium, Strontium)



NOTES:

1. ABBREVIATIONS: (I) = IMPACT SITE; (C) = CONTROL SITE. . MCC = MCCONNELL.

Figure 3.1-15 Average (±SD) Lake Sediment Metal Concentrations by Site 2014 (Sulphur, Thallium, Tin, Titanium)



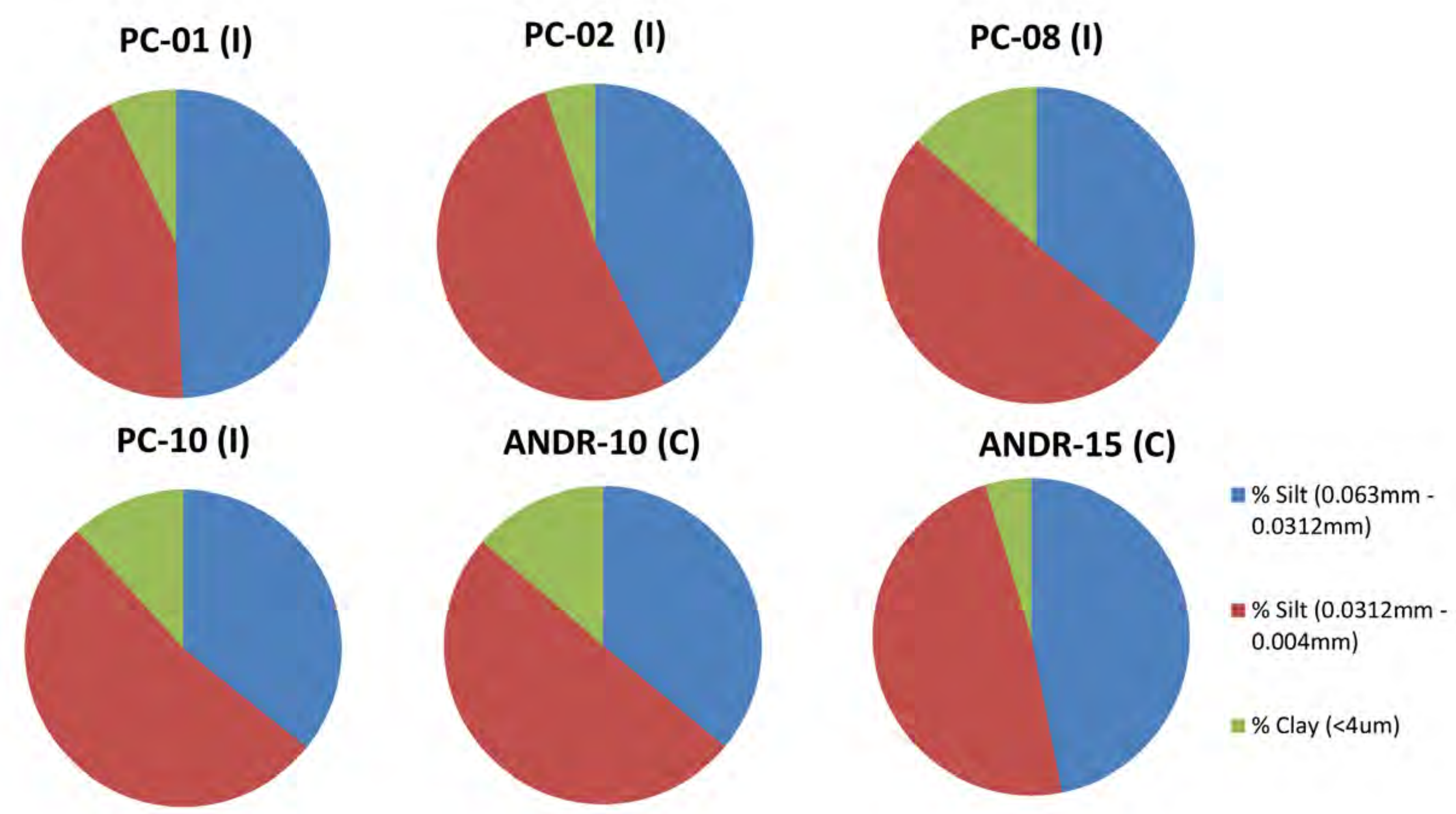
NOTES:

1. ABBREVIATIONS: ISQG = CANADIAN ENVIRONMENTAL INTERIM SEDIMENT QUALITY GUIDELINES; PEL = CANADIAN ENVIRONMENTAL PROBABLE EFFECT LEVEL; (I) = IMPACT SITE; (C) = CONTROL SITE. MCC = MCCONNELL.

Figure 3.1-16 Average (±SD) Lake Sediment Metal Concentrations by Site 2014 (Uranium, Vanadium, Zinc)

3.1.1.3 Particle Size Analysis

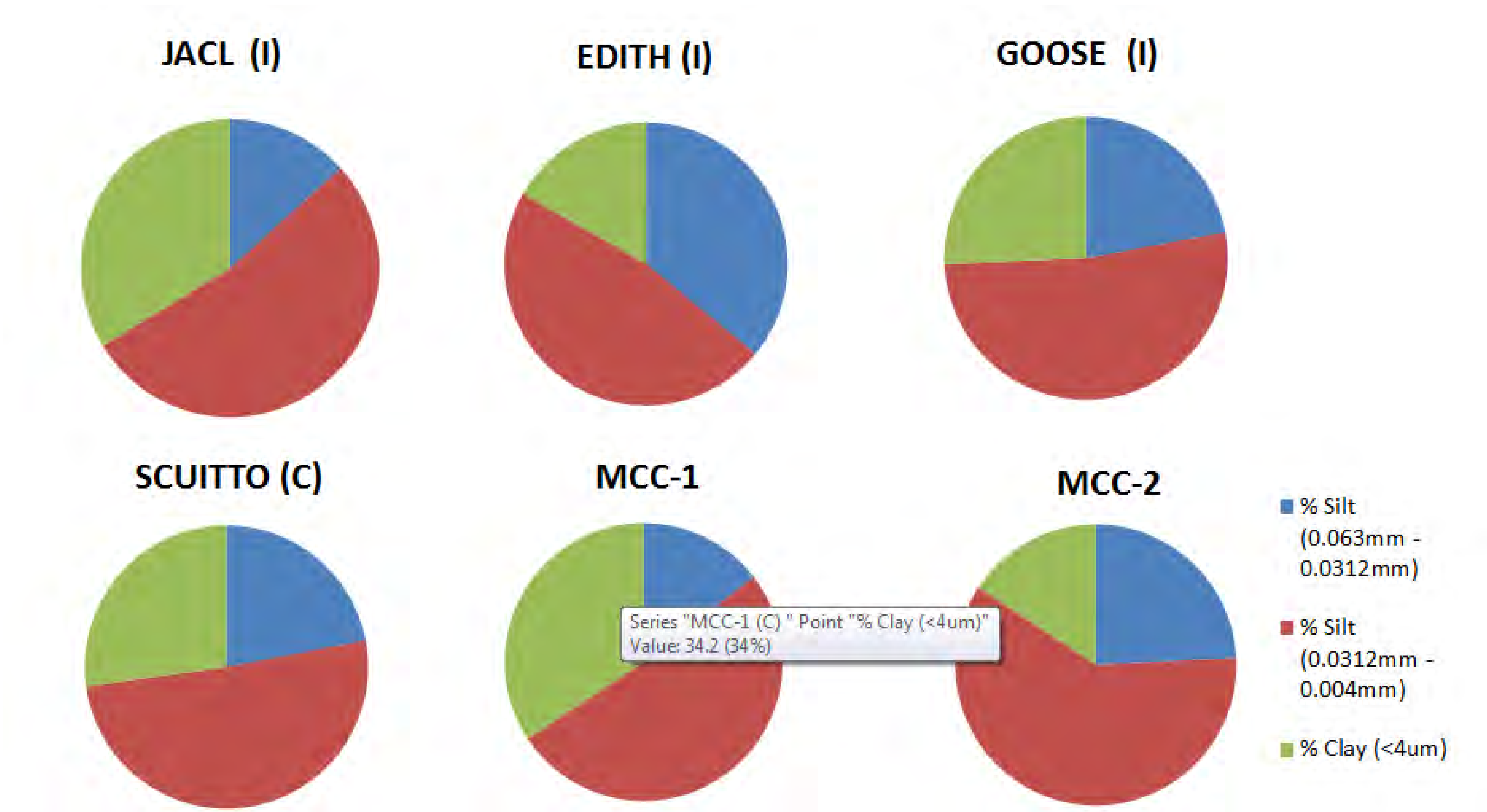
Fine-grained sediments are collected in order to allow data normalization between sites and replicates, and support interpretation of the sediment chemistry (Ministry of Environment 2012). As previously mentioned, finer sediment particles are of greater interest in terms of contaminant loads, because most chemical contaminants preferentially bind to silts and clays. Sediment collection in 2014 therefore targeted the fine-grained silt and clay fraction of the sediments (< 63 µm), in accordance with sampling guidelines (Ministry of Environment 2012). Sediment sampling in previous years (2007 to 2011) did not specifically target the <63 µm fraction, and the particle size analysis did not use the same grain size categories as the 2014 assessment; therefore, direct comparisons of the data cannot be made. The particle size distributions of the 2014 stream and lake sites (a single composite sample from each site) are shown on Figure 3.1-17 and Figure 3.1-18, respectively. Silts in the 0.0312 mm to 0.004 mm fraction were predominant in all of the stream and lake samples. Clays made up a larger proportion of the samples in the lakes compared to the streams.



NOTES:

1. (I) = IMPACT SITE (C) = CONTROL SITE.

Figure 3.1-17 Stream Sediment Grain Size (2014)



NOTES:
1. (I) = IMPACT SITE (C) = CONTROL SITE.

Figure 3.1-18 Lake Sediment Grain Size (2014)

3.1.2 Existing Sediment Data

A literature search was conducted to obtain regional sediment information for comparison with the Project site data. The following sources were reviewed:

- Metal Concentrations in Bottom Sediments from Uncontaminated BC Lakes (Rieberger 1992a).
- Geoscience BC Report 2010-4 (Jackaman 2010).

Metal concentrations were assessed from bottom sediments in 390 uncontaminated lakes in BC between 1982 and 1987 by Ministry of Environment fisheries staff (Rieberger 1992a). The data were presented by tectonic region, since bedrock geology is a major factor in determining lake sediment composition (Rieberger 1992a). The Project area falls within the southern Interior Plateau tectonic region, characterized as consisting mainly of un-metamorphosed sedimentary and volcanic rock, with copper and molybdenum deposits, as well as areas associated with chromite and nickel (Rieberger 1992 a). The results of this sampling program are reproduced in Table 3.1-2. A comparison of the mean values with sediment quality guidelines indicates that metal levels are naturally elevated in lakes in the region. Average arsenic, chromium, and copper were above the PEL guidelines, while iron, manganese, and selenium were above the SEL guidelines. Average cadmium concentrations were above the ISQG but below the PEL guideline, while nickel concentrations exceeded the LEL but were below the SEL.

Table 3.1-2 Southern Interior Plateau Sediment Variable Concentrations from Uncontaminated BC Lakes 1982 – 1987[1]

Parameter	# Samples	Mean (mg/kg)	Parameter	# Samples	Mean (mg/kg)
Aluminum	60	9750	Manganese	60	1331
Arsenic	60	24.38	Mercury	42	0.15
Barium	60	147.5	Molybdenum	60	17.08
Beryllium	26	1.04	Nickel	60	22.4
Boron	26	21.5	Phosphorous	60	1296
Cadmium	60	1.25	Selenium	60	16.83
Calcium	60	68,740	Strontium	60	311
Chromium	60	330.3	Sulphur	34	7838
Cobalt	60	13.47	Tin	56	11.34
Copper	60	355.5	Titanium	26	195.2
Iron	60	256,000	Vanadium	30	35.2
Lead	60	31.85	Zinc	60	62.37
Magnesium	60	81,390			

NOTES:

1. Reproduced From Rieberger, K. 1992. Metal Concentrations in Bottom Sediments From Uncontaminated B.C. Lakes. Ministry Of Environment, Lands and Parks Water Quality Branch, Water Management Division.
2. Red highlighting indicates values exceeds SEL or PEL Guideline; green highlighting indicates value exceeds LEL or ISQG.

Archived stream sediment samples collected by Ministry of Environment fisheries staff in 1981 in and around the Project area were reanalyzed as part of the QUEST South project by Geoscience BC (Jackaman 2010). Single samples were collected at the following sites proximate to the Project area:

- Anderson Creek near Long Lake Road
- Peterson Creek upstream of Jacko Lake near Lac Le Jeune Road
- Two sites on Beaton Creek (a tributary to Cherry Creek) upstream of a forest service road
- Cherry Creek near Greenstone Road, and
- Unnamed tributary to Cherry Creek.

The results for the parameters analyzed are shown in Table 3.1-3. The following guideline exceedances were noted:

- Chromium concentrations exceeded the current ISQG at all sites and the PEL at both sites on Beaton Creek.
- Copper concentrations exceeded the ISQG at all sites.
- Manganese concentrations exceeded the LEL guideline at the sites on Cherry Creek and Anderson Creek; concentrations also exceeded the SEL guidelines in the sample taken at the unnamed tributary to Cherry Creek.
- Mercury exceeded the ISQG in one Beaton Creek sample.
- Nickel concentrations were higher than the LEL guidelines at all sites and the SEL guidelines at both sites on Beaton Creek.

Table 3.1-3 Stream Sediment Variable Concentrations 1981[1]

Parameter	Stream					
	Anderson Creek	Peterson Creek	Beaton Creek	Beaton Creek	Cherry Creek	Cherry Creek tributary
Antimony	0.27	0.26	0.47	0.42	0.38	0.58
Arsenic	2.1	3.1	4.0	3.6	4.1	5.8
Barium	130.5	86.6	112.5	121	153.5	206.0
Bismuth	0.04	0.05	0.04	0.04	0.07	0.51
Boron	<10	<10	10	<10	<10	<10
Cadmium	0.05	0.04	0.05	0.06	0.05	0.13
Chromium	59.6	52.1	232.0	233.0	42.8	39.7
Cobalt	9.4	10.2	15	15.1	14.8	15.5
Copper	46.3	35.9	40.0	36.8	61.8	94.6
Lead	2.5	2.4	3.3	3.5	2.7	8.1
Manganese	705	387	418	411	522	1570
Mercury	0.027	0.037	0.086	0.265	0.036	0.113
Molybdenum	0.44	0.27	0.58	0.65	0.73	7.25
Nickel	28.4	25.7	115.0	114.5	22.0	23.1
Selenium	0.3	0.3	0.7	0.7	0.4	1.9
Silver	0.039	0.039	0.035	0.034	0.033	0.148
Strontium	56.1	58.1	130.0	133.0	65.5	82.8
Tellerium	<0.01	<0.02	<0.03	<0.04	<0.05	<0.06
Thallium	0.03	0.03	0.02	0.02	0.02	0.04
Uranium	0.24	0.28	0.34	0.37	0.29	0.54
Vanadium	83	90	105	105	114	77
Zinc	30.9	31.6	38.9	39.7	38.9	47.5

NOTES:

1. REPRODUCED FROM JACKAMAN, W. (2010): QUEST-SOUTH PROJECT SAMPLE REANALYSIS; GEOSCIENCE BC, REPORT 2010-4. WATER MANAGEMENT DIVISION.
2. UNITS ARE IN MG/KG, CONVERTED FROM PPB AND PPM.
3. SAMPLES WERE COLLECTED IN 1981 AS PART OF MOE FISHERIES PROGRAM, AND REANALYZED FOR 2010 REPORT.
4. RED HIGHLIGHTING INDICATES VALUES EXCEEDS SEL /PEL GUIDELINE; GREEN HIGHLIGHTING INDICATES VALUE EXCEEDS LEL /ISQG.

3.2 AQUATIC LIFE

3.2.1 Phytoplankton

Phytoplankton samples were collected from the following sites in 2010 and 2011:

- Jacko Lake in June 2010 and August 2011 (one shallow and one deep); deep samples from were taken within the thermocline at a depth of approximately 7 m.
- Shallow samples only were collected from Jacko Lake in August 2010.
- Shallow samples only were collected from Inks Lake in August 2010.

Detailed information on the 2010 and 2011 sampling program is provided in KGHM Ajax Mining Inc. Ajax Project Aquatic Ecology Baseline Report (Knight Piésold Ltd. 2013b).

Shallow and deep samples were collected from single sites in Jacko Lake, Edith Lake, Scuitto Lake, and Goose Lake in September 2014, and from two sites in McConnell Lake in October 2014. Deep plankton samples were taken from near the bottom of the euphotic zone in each lake in 2014, calculated as twice the depth of the Secchi disk reading. The following Secchi depths were recorded in 2014:

- Scuitto Lake 2 m
- Edith Lake 2.5 m
- Jacko Lake 3.5 m, and
- McConnell Lake 5.5 m.

The depth of Goose Lake was estimated visually at approximately 1 m at the time of sampling – no Secchi disk measurements were recorded. The descriptive metrics and biological indices for each site sampled in 2014 are summarized in Table 3.2-1. Raw data for 2014 are presented in Appendix B.1.

Within each lake, phytoplankton abundance was typically higher in the shallow samples compared to the deep samples; the exception to this was McConnell Lake. Conversely, taxon richness was higher in the deeper samples compared to the shallow samples; again the exception was McConnell Lake, with higher taxon richness in the shallow sample. Phytoplankton abundance was highest in the Goose Lake sample and lowest in the Scuitto Lake deep sample in 2014. The Simpson's diversity index and Shannon-Wiener diversity index were similar in the Jacko Lake and Edith Lake shallow and deep samples. The highest diversity and evenness values were seen in the McConnell Lake shallow samples; Goose Lake had the lowest Shannon-Wiener diversity and evenness values and lowest Simpson's diversity. The Edith Lake deep sample had the lowest Simpson's evenness, but the value was similar to that of Goose Lake. Evenness at all sites was relatively low, and none of the samples approach complete equitability.

Table 3.2-1 2014 Phytoplankton Community Indices

Site	Site Type	Abundance (cells/ml)	Taxon Richness	Simpson's		Shannon-Wiener	
				Diversity	Evenness	Diversity	Evenness
Edith Shallow	Impact	9363	40	0.665	0.075	1.47	0.400
Edith Deep	Impact	6559	51	0.507	0.040	1.36	0.347
JACL Shallow	Impact	8731	30	0.623	0.088	1.28	0.375
JACL Deep	Impact	1180	37	0.622	0.071	1.55	0.429
Scuitto Shallow	Control	756	16	0.290	0.088	0.69	0.247
Scuitto Deep	Control	274	24	0.566	0.096	1.23	0.386
MCC-1 Shallow	Control	350	44	0.811	0.120	2.10	0.555
MCC-1 Deep	Control	1288	20	0.292	0.071	0.59	0.196
MCC-2 Shallow	Control	496	54	0.809	0.097	2.12	0.531
Goose Shallow	Impact	55,456	27	0.222	0.048	0.54	0.163

The taxonomic breakdown for the control and impact lakes in 2014 is illustrated on Figure 3.2-1. Cyanophytes were the dominant organisms at most of the sites, with the exception of the McConnell Lake shallow site, where they comprised only 15% of the shallow sample, and the Jacko Lake shallow site, where they comprised 44% of the sample. Cyanophyta (also known as Cyanobacteria, and sometimes referred to as blue-green algae) comprised 98% of the Goose Lake sample, dominated primarily by *Limnothrix sp*.(88%), *Anacystis spp*. (6%), and *Agmenellum tenuissima* (3%). The blue-green algae *Anacystis spp*. and *Agmenellum tenuissima* are common in organically enriched areas.

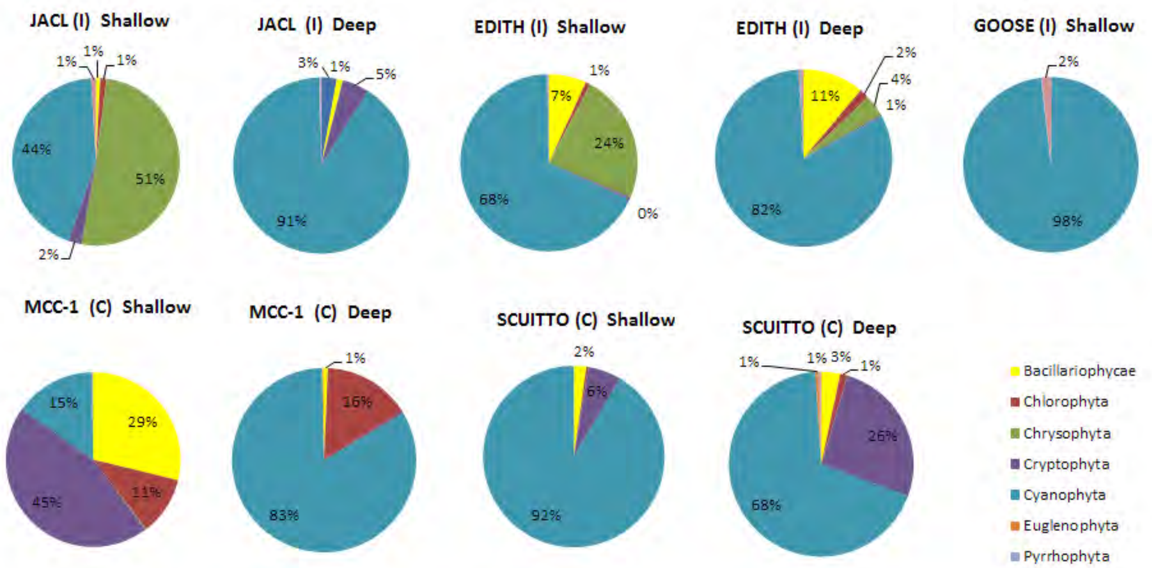


Figure 3.2-1 2014 Plankton Taxonomic Composition (Control and Impact Lakes)

The Jacko Lake 2010, 2011, and 2014 shallow and deep samples are illustrated on Figure 3.2-2 and Figure 3.2-3, respectively. These figures demonstrate the inter- and intra-annual variability in taxonomic composition.

Phytoplankton was collected in Edith Lake by vertical plankton tows in June and July 1961 by the Fish and Game Branch of the Department of Recreation and Conservation (Mason 1963). From this 1963 study, phytoplankton species were primarily *Zygnema sp.* and *Aphanizomenon flos-aquae;* peak abundance was noted in July. Only two zygnematales species were reported in Edith Lake in 2014, and these were reported at very low numbers. The Cyanophyte *Aphanizomenon flos-aquae* comprised approximately 51% of the shallow sample and 69% of the deep sample in Edith Lake in September 2014.

Only one diatom (*Fragilaria sp*.) was found in one of the sampling periods in 1963 (June); however, the author notes that the large mesh size used in the vertical tows likely missed many of the smaller forms. The Bacillariophycae *Fragilaria crotonensis* comprised approximately 51% of the shallow sample and 69% of the deep sample in Edith Lake in September 2014. Current provincial sampling guidelines note that vertical plankton nets are not recommended for collection of phytoplankton samples, since they are size selective and non-quantitative (Cavanagh et al. 1997); therefore, the

1963 data give an idea of the larger phytoplankton species present in the lake but are not useful for numerical comparison to data collected using updated sampling guidelines.

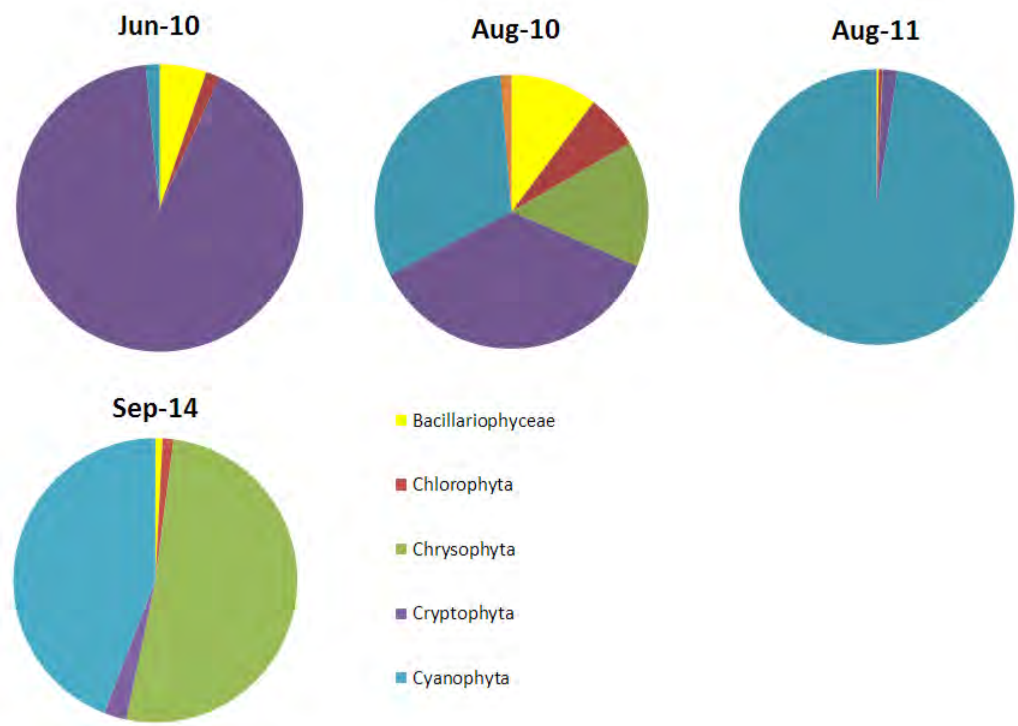


Figure 3.2-2 Jacko Lake Plankton Taxonomic Composition Shallow Samples (2010, 2011, 2014)

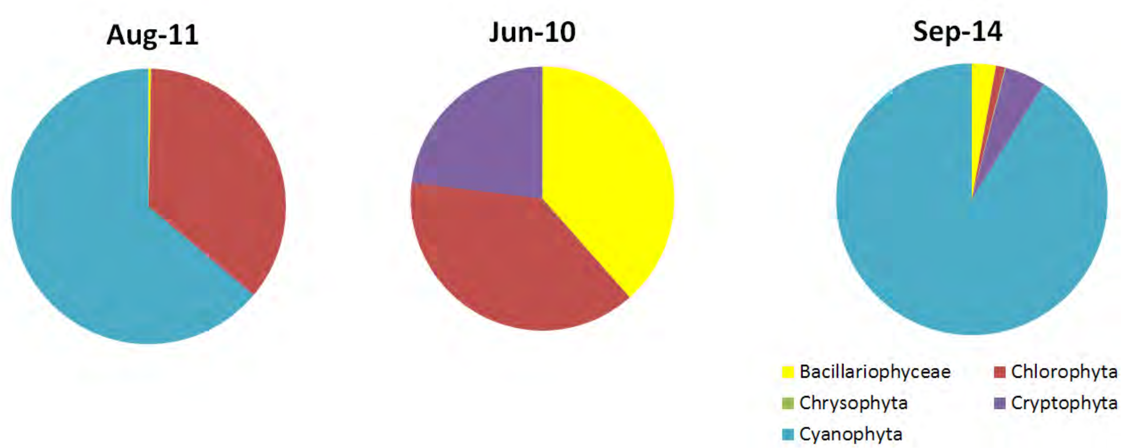


Figure 3.2-3 Jacko Lake Plankton Taxonomic Composition Deep Samples (2010, 2011, 2014)

3.2.2 Periphyton

Periphyton samples were collected at two potential impact sites in Peterson Creek (PC-01, in downtown Kamloops and PC-04 upstream of Bridal Veil Falls), and at two control sites on Anderson Creek (ANDR-10 and ANDR-15), as well as one control site on Cherry Creek (CC-04) in September 2014. Site PC-04 and CC-04 correspond to September 2010 and August 2011 sampling locations. Periphyton raw data for 2014 are provided in Appendix B2. Detailed information on the 2010 and 2011 sampling program are provided in KGHM Ajax Mining Inc. Ajax Project Aquatic Ecology Baseline Report (Knight Piésold Ltd. 2013b). Density and richness metrics as well as Simpson's diversity index and evenness for each sample replicate collected in 2014 are summarized in Table 3.2-2; raw data are provided in Appendix B3, while the site summary statistics are provided in Appendix B4. In summary:

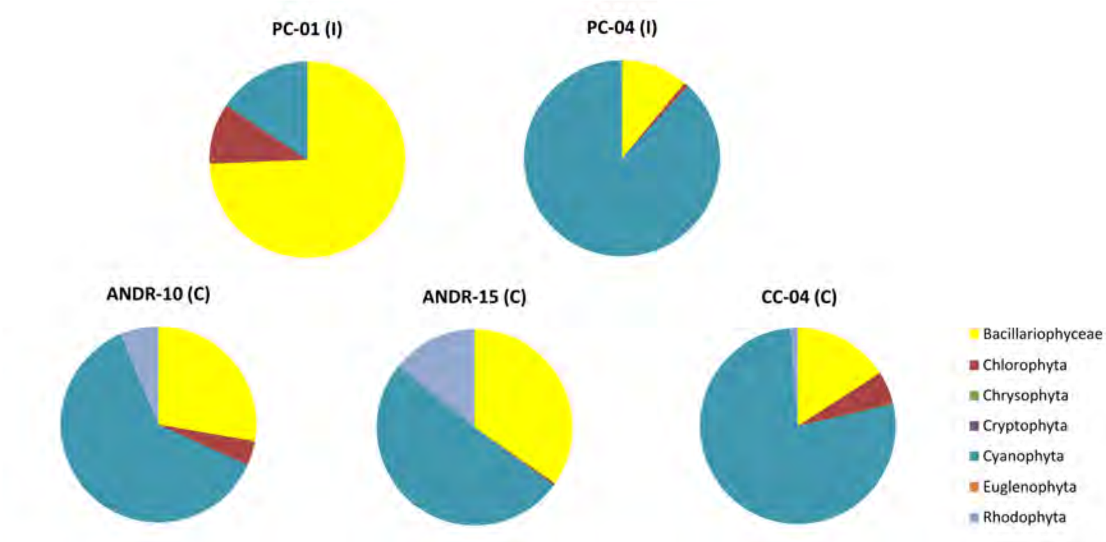
- Site PC-01, the furthest downstream site on Peterson Creek, and a potential impact site, had the lowest density of organisms and the lowest richness of all of the sites in 2014, but the highest Simpson's and Shannon-Wiener diversity indices and evenness.
- The highest periphyton density in 2014 was found at the Peterson Creek site above Bridal Veil Falls (PC-04); this site had the lowest Simpson's and Shannon-Wiener diversity indices and evenness. Density at site PC-04 varied from a low of 81,034 organisms/cm^2 in August 2011 to a high of 1,878,692 organisms/cm^2 in September 2014. Taxa richness was higher in 2014 compared to the 2010 and 2011 samples, but the Shannon-Wiener Diversity index and evenness were lower.
- Density was lower in 2014 at the Cherry Creek site (CC-04) compared to 2010 and 2011: numbers ranged from 2,738,760 organisms/cm^2 in August 2011 to 4,184,452 in September 2010. Taxa richness was similar in the 2010 and 2014 samples (50 and 46, respectively); the Shannon-Wiener Diversity index and evenness were higher in the 2014 samples compared to the 2010 samples (1.59 and 0.33, respectively) and 2011 samples (1.48 and 0.28 respectively).

Cyanophytes dominated the samples at all the sites in 2014, with the exception of PC-01, where Bacillariophyceae (diatoms) were predominant (Figure 3.2-4). Cyanophytes comprised approximately 97% of the organisms at CC-04 in 2010 and approximately 94% in 2011, compared to 77% in 2014. Bacillariophyceae were the predominant organisms at PC-04 in 2010 (57%), whereas cyanophytes were the predominant organisms in 2011 (60%). Cyanophytes comprised 88% of the organisms at this site in 2014.

The variability in abundance across years could be explained by the heterogeneous (patchy) distribution of periphyton in streams; since colonization of stream substrates is affected by factors such as light intensity, depth, velocity, and substrate texture. Periphyton chlorophyll-a concentrations reflected the density of organisms at each site, with the highest concentration at PC-04 (average of five replicates 1801 µg/l) and lowest at PC-01 (440 µg/l); all sites would be considered eutrophic based on this parameter.

Table 3.2-2 Periphyton Metrics Analysis Site Summary 2014

Site	Site Type	Location	Density (organisms per cm^2)	Richness	Simpson's Diversity	Simpson's Evenness	Shannon-Wiener Diversity	Shannon-Wiener Evenness
PC-01	Impact	Peterson Creek downtown Kamloops	301,602	37	0.789	0.13	1.94	0.536
PC-04	Impact	Peterson Creek above Bridal Veil Falls	1,878,692	40	0.390	0.05	0.90	0.245
ANDR-10	Control	Anderson Creek lower site	344,660	54	0.667	0.08	1.81	0.456
ANDR-15	Control	Anderson Creek upper site	644,864	44	0.743	0.10	1.76	0.468
CC-04	Control	Cherry Creek	1,779,217	46	0.732	0.08	1.76	0.461



NOTES:
1. VALUES ARE ORGANISMS PER SQUARE CENTIMETRE.
2. TAXONOMIC CLASSIFICATION WAS BASED ON THE AVERAGE ORGANISM DENSITY REPORTED FOR FIVE REPLICATES.
3. DATA LABELS ARE SHOWN ONLY FOR TAXA WITH VISIBLE REPRESENTATION.

Figure 3.2-4 Summary of Average Periphyton Taxonomic Composition 2014

3.2.3 Zooplankton

Zooplankton samples were collected using horizontal plankton net tows approximately 1 m below the surface from Jacko Lake in June and August 2010, and using one vertical and one horizontal plankton net tow in August 2011. Detailed information on the 2010 and 2011 sampling program is provided in KGHM Ajax Mining Inc. Ajax Project Aquatic Ecology Baseline Report

(Knight Piésold Ltd. 2013b). In September and October 2014 zooplankton samples were collected from Jacko Lake, Edith Lake, Scuitto Lake, and McConnell Lake using a vertical plankton net tow and from Goose Lake using a 1 l bottle grab sample. Raw data are provided in Appendix B4.

Community metrics and indices for the 2014 data are provided in Table 3.2-3. Similar to the phytoplankton samples, zooplankton density was highest in the Goose Lake sample compared to all other sites, in this case orders of magnitude higher. Density was lowest in the McConnell Lake sample, which may be explained by the later sampling date in McConnell Lake (October compared to September for the other lakes). Zooplankton biomass (milligrams dry weight per 1 L volume for site comparison) was highest at Goose Lake (2.03 mg/dry weight/L) and lowest in McConnell Lake (0.03 mg/ dry weight/L) in 2014. Taxa richness was similar for all sites. The Simpson's and Shannon-Wiener diversity index and evenness were highest in the Jacko Lake and Goose Lake samples. Edith Lake had the lowest Simpson's and Shannon-Wiener diversity and evenness values. Evenness values at all sites were relatively low.

The 2014 Jacko Lake samples had similar density to the samples collected by vertical plankton tow net in 2011 (20 organisms/l); taxon richness was slightly less in 2011 (nine unique taxa compared to eleven unique taxa in the 2014 sample); the Shannon-Wiener diversity index and evenness were calculated as 1.57 and 0.52, respectively, in 2011. No comparisons are made with the 2010 samples collected from Jacko Lake as a different sampling method was used.

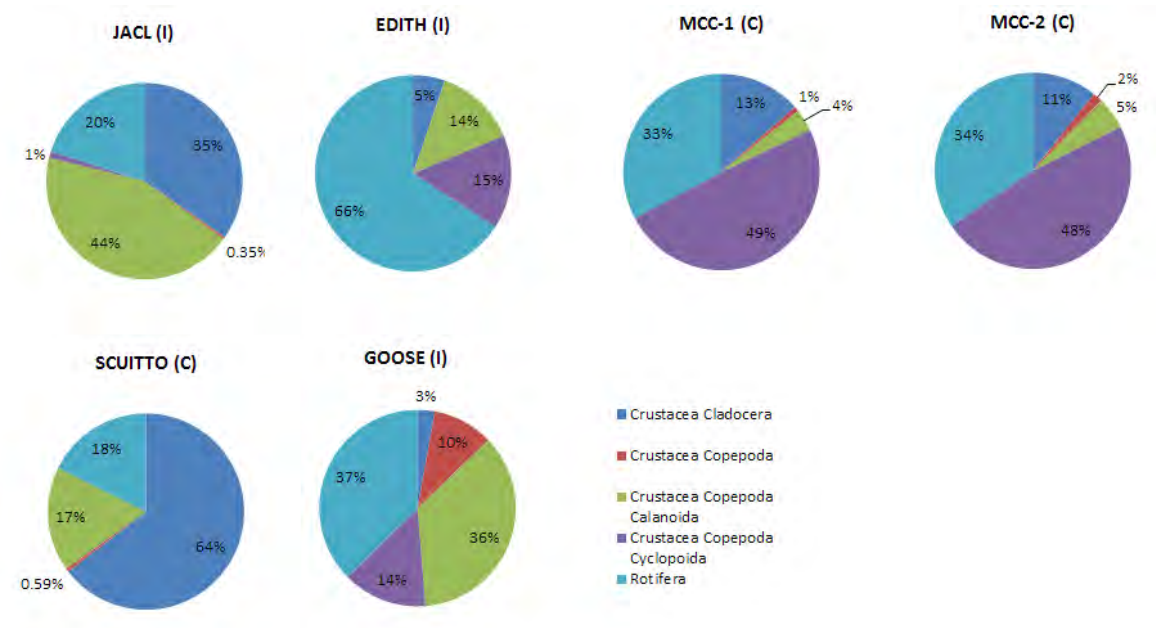
The taxonomic composition of organisms at each site in 2014 is shown on Figure 3.2-5. Dominant organisms were highly variable between the lakes in 2014: calanoid copepods dominated the Jacko Lake sample (44%); Rotifera dominated the Edith Lake sample (66%); Cladocera dominated the Scuitto Lake sample (64%); and cyclopoid copoepods dominated the McConnell Lake samples (48% and 49%).

Rotifers were the dominant organisms in the sample collected by a vertical tow net from Jacko Lake in August 2011 at 62%. Cyclopoida copepods were the second most abundant organisms at 19% in 2011, compared to only 1% of the sample in 2014. Calanoid copepods comprised 44% of the sample in 2014, compared to 13% of the sample in 2011.

Zooplankton were collected from Edith Lake in 1961 and 1962 by Mason (1963); samples were comprised primarily of copepods and cladocerans, as well as planktonic Gammarids. Copepods comprised approximately 30% of the Edith Lake sample in 2014, while Cladocera comprised 5% of the sample. Only one species of Cladocera (*Daphnia schodleri Sars*) and one species of calanoid copepod (*Diaptomous wilsonae*) were found in the study by Mason (1963). Two different species of Cladocera were found in the 2014 samples (*Ceriodaphnia lacustris* and *Daphnia pulicaria*). The calanoid copepod taxa also differed in 2014 (*Leptodiaptomus sicilis* and an indeterminate juvenile and Nauplius organism).

Table 3.2-3 2014 Zooplankton Metrics

Sample	Site Type	Density (org./L)	Richness	Simpson's		Shannon-Wiener	
				Diversity	Evenness	Diversity	Evenness
JACL	Impact	14.3	11	0.820	0.504	1.910	0.797
EDITH	Impact	72.5	12	0.585	0.201	1.379	0.555
GOOSE	Impact	1338.3	11	0.813	0.487	1.921	0.801
SCUITTO	Control	15.0	11	0.623	0.241	1.457	0.607
MCC 1	Control	7.5	12	0.728	0.306	1.745	0.702
MCC 2	Control	7.9	15	0.760	0.278	1.913	0.706



NOTES:
1. (I) = POTENTIAL IMPACT SITE (C) = CONTROL SITE.

Figure 3.2-5 2014 Zooplankton Taxonomic Composition

3.2.4 Benthic Macroinvertebrates

Benthic macroinvertebrate sampling in the Ajax Project area was conducted in Peterson Creek and Cherry Creek between 2007 and 2011; monitoring was continued at the following sites in the 2014 program:

- Peterson Creek in downtown Kamloops (PC-01) in September 2007 and in August and September 2008.
- Peterson Creek above Bridal Veil Falls (PC-04) in June and August 2010 and in August 2011.
- Peterson Creek downstream of Jacko Lake (PC-08) in July or August 2008and June 2010.
- Jacko Lake (JACL) in September 2007, July or August 2008, September 2008, June 2010.
- Cherry Creek upstream of the Alkali Creek confluence (CC-04) in September 2007, July or August 2008, September 2008 and in August or September 2010 and 2011.

Benthic macroinvertebrate sampling in the Ajax Project area was conducted in lakes and streams in September and October 2014. Sites in Anderson Creek lower (ANDR-10) and upper (ANDR-15) and Edith Lake (EDITH), Scuito Lake (SCUITTO), McConnell Lake (MCC) were added to the program in 2014. Three replicates were collected per site in the 2007, 2008, and June 2010 sampling programs; five replicates were collected per site in the 2010 and 2011 programs.

The means for benthic macroinvertebrate descriptive metrics and biological indices for each site sampled in 2014 are summarized in Table 3.2-4. Raw data for abundance and presence/absence by family for each site replicate for 2014 data are presented in Appendix B5. Detailed statistics for 2014 data showing the mean, standard deviation, standard error, maximum, and minimum values for each set of metrics and biological indices at each site and for the entire area are available in Appendix B6.

Table 3.2-4 2014 Benthic Macroinvertebrate Summary Statistics and Community Indices

Site	Lake / Stream	Site Type	Density (org/m^2)	Family Richness	EPT Index	EPT Water Quality	Simpson's		Shannon-Wiener		Hilsenhoff Family Biotic Index	Hilsenhoff Water Quality Rating	Taxonomic Composition
							Diversity	Evenness	Diversity	Evenness			
EDITH	Lake	Impact	5677	6	N/A	N/A	0.068	0.176	0.20	0.110	N/A	N/A	Diptera (97%); Cladocera (2%); Oligochaeta (1%)
JACL	Lake	Impact	148	2	N/A	N/A	0.505	0.660	0.53	0.505	N/A	N/A	Cladocera (62%); Copepoda (28%); Hydracarina (4%)
SCUITTO	Lake	Control	9324	9	N/A	N/A	0.618	0.311	1.21	0.562	N/A	N/A	Diptera (42%); Cladocera (42%); Oligochaeta (13%)
MCC-1	Lake	Control	21	1	N/A	N/A	0.656	0.338	0.09	0.130	N/A	N/A	Cladocera (71%); Diptera (29%)
PC-01	Stream	Impact	326	19	4	Marginal	0.648	0.162	1.78	0.613	5.13	Fairly poor	Diptera (65%); Oligochaeta (10%); Plecoptera (5%); Ephemeroptera (4%)
PC-04	Stream	Impact	1642	27	8	Acceptable	0.794	0.185	2.03	0.614	3.67	Excellent	Ephemeroptera (33%); Plecoptera (21%); Diptera (21%); Trichoptera (14%)
ANDR-10	Stream	Control	1834	35	8	Acceptable	0.825	0.201	2.37	0.670	5.87	Very poor	Diptera (41%); Ephemeroptera (11%); Oligochaeta (10%); Ostracoda (9%)
ANDR-15	Stream	Control	4806	30	12	Good	0.875	0.271	2.41	0.709	3.00	Excellent	Plecoptera (46%); Ephemeroptera (13%); Coleoptera (12%); Ostracoda (9%)
CC-04	Stream	Control	8537	28	15	Good	0.847	0.231	2.20	0.659	3.69	Excellent	Ephemeroptera (45%); Plecoptera (28%); Diptera (21%); Trichoptera (4%)

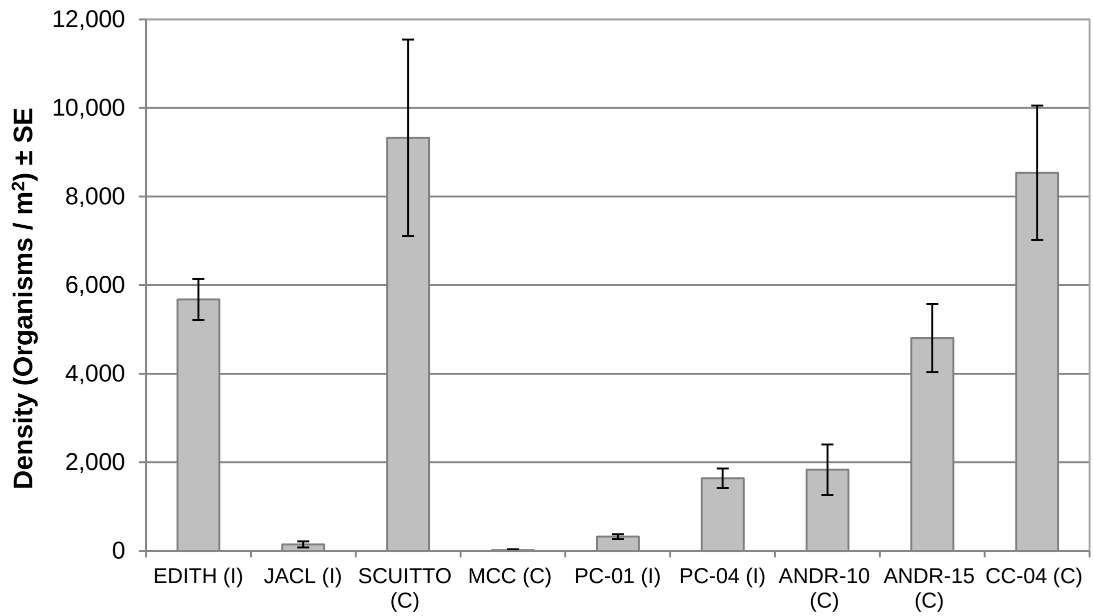
In terms of relative abundance by Order for lakes in 2014, the samples collected from Jacko Lake (JACL), were predominantly comprised of Cladocera individuals (water fleas) from the Family Daphniidae, but also consisted of Copepoda, and to a lesser degree Hydracarina (water mites) and Amphipoda. The Edith Lake site (EDITH) was dominated by Diptera (flies, mosquitos, gnats and midges), which was primarily due to the presence of individuals from the Family Chaoboridae (commonly known as phantom midges) (Table 3.2-4; Appendix B5). Scuitto Lake (SCUITTO) was predominantly comprised of individuals from the Orders Diptera and Cladocera, and some individuals from Oligochaeta (worms). McConnell Lake (MCC-1) had limited numbers of individuals in any of the replicates; Cladocera was the most abundant Order, followed by Diptera.

Of the stream sites in 2014, the two sites on Peterson Creek showed divergent assemblages of taxa by Order, with PC-01 predominantly composed of Diptera, and smaller numbers of individuals from the Orders Oligochaeta (worms), Plecoptera (stoneflies), and Ephemeroptera (mayflies) (Table 3.2-4; Appendix B5). Site PC-04 displayed a more even distribution of taxa, with similar numbers of individuals from Ephemeroptera, Plecoptera and Diptera, as well as some individuals from Trichoptera (caddisflies). The two sites along Anderson Creek also showed divergent taxa assemblages; ANDR-10 consisted mostly of Diptera from several families, as well as some individuals from Ostracoda, Ephemeroptera, and Oligochaeta. However, ANDR-15 consisted mostly of Plecoptera, with some individuals from Ephemeroptera, Coleoptera, and Ostracoda. Cherry Creek (CC-04) was composed predominantly of individuals from the Order Ephemeroptera, with some from Plecoptera and Diptera as well.

The mean density of individuals at lake sites in 2014 varied widely, from 21 organisms/m^2 in MCC-1 to 9324 organisms/m^2 in SCUITTO (Table 3.2-4). The lake site with the highest mean density was SCUITTO, followed by EDITH. The lowest mean density was at MCC-1, with low mean densities also seen at JACL. The later sampling period may explain the low density in McConnell Lake samples (MCC-1), since seasonal variability of benthic communities is known to be high due to various physical, chemical and biotic factors, such as weather, nutrient supply, and interspecific interactions (Rosenberg et al 1997).

Density in Jacko Lake was highly variable in previous years sampling, ranging from no individuals in July or August 2008 and 1 organism/m^2 in September 2010 to 36,709 organisms/m^2 in September 2008. The mean density of individuals at stream sites in 2014 was slightly more similar between sites than at lake sites, with between 326 and 8537 organisms/m^2 (Table 3.2-4, Figure 3.2-6). The stream site with the highest mean density was CC-04, with a high mean density also at ANDR-15 (both control sites). The lowest mean density was at PC-01 (potential impact site), while the remaining two stream sites showed median densities.

Density at site PC-01 in previous sampling years ranged from 365 organisms/m^2 in September 2007 (similar to the 325 organisms/m^2 in 2014) to 1427 organisms/m^2 in July or August 2008. Density at site PC-04 in previous sampling years ranged from 131 organisms/m^2 in June 2010 to 1808 organisms/m^2 in September 2010 (the 2010 value was similar to the 1641 organisms/m^2 in 2014). Density at site PC-08 ranged from 7147 organisms/m^2 in June 2010 to 76,587 organisms/m^2 in July or August 2008. Density in Jacko Lake in 2014 was significantly lower (148 organisms/m^2) compared to previous years. Density at site CC-04 ranged from 822 organisms/m^2 in September 2011 to 2914 organisms/m^2 in September 2008, lower than the 8537 organisms/m^2 in 2014.



NOTES:
1. M:\1\01\00246\35\A\Data\Laboratory Results\Sandpiper benthic taxonomy\Ajax_2014_BenthicAnalysis.xlsx.
2. ABBREVIATIONS: (I) = IMPACT; (C) = CONTROL.
3. SITE CODES ANDR = ANDERSON CC = CHERRY CREEK JACL = JACKO MCC = MCCONNELL PC = PETERSON CREEK.

Figure 3.2-6 Mean Density (±S.E.) Benthic Macroinvertebrate Densities 2014

The mean taxonomic richness for lake sites in 2014 ranged from one to nine families (Table 3.2-4). Family richness was highest at Scuitto Lake, with a relatively high value also seen at Edith Lake. Family richness values were lowest for MCC-1 and JACL, with one and two families, respectively. Sampling depth and lake morphometry may explain the differences between the EDITH and SCUITTO samples compared to the JACL and MCC-1 samples; Edith Lake is shallow (maximum depth of 10 m) compared to Jacko Lake and McConnell Lake (maximum depths of 24.8 m and 24.2 m, respectively). Taxonomic richness has been reported to decrease substantially with depth in lakes, potentially a result of reduced habitat and resource heterogeneity, increased abiotic stress, or other factors that vary with depth (Babler et al. 2008). Taxonomic richness in Jacko Lake between 2007 and 2010 ranged from one family (July or August 2008 and September 2010) to seven families (September 2008).

The mean taxonomic richness for stream sites in 2014 was much higher than for the lake sites. Richness ranged from 19 to 35 families (Table 3.2-4, Figure 3.2-7. The highest family richness values were seen in the Anderson Creek sites. Sites PC-04 and CC-04 showed high richness while PC-01 had the lowest richness of the stream sites. Taxonomic richness in Peterson Creek in previous sampling increased in an upstream direction, with a value of 6 to 26 at site PC-01; 18 to 25 at site PC-04; and 26 to 33 at site PC-08. Taxonomic richness ranged between 24 (September 2011) and 33 (September 2008) at site CC-04, similar to 2014 values.

The EPT index for most stream sites in 2014 (Table 3.2-4, Figure 3.2-7) was rated as either acceptable (5 to 8) or good (8 or higher): all sites had an EPT index value of 8 or higher, except PC-04, which had an EPT index value of 4, indicating marginal water quality. The EPT indices at the Peterson Creek sites in previous years were lower, and ranged between 2 (marginal) at PC-01 in September 2007 and 7 (acceptable) at site PC-04 in September 2010 and September 2011. The EPT indices at the Cherry Creek site were all rated as good, and ranged from 12 in September 2010 to 17 in September 2008.

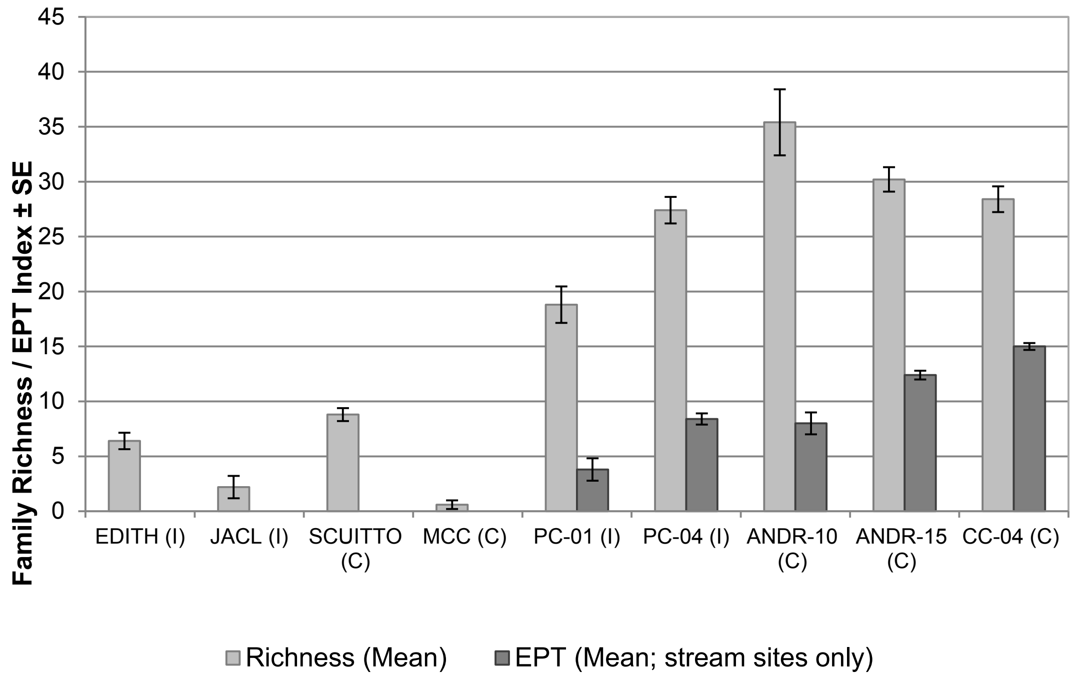


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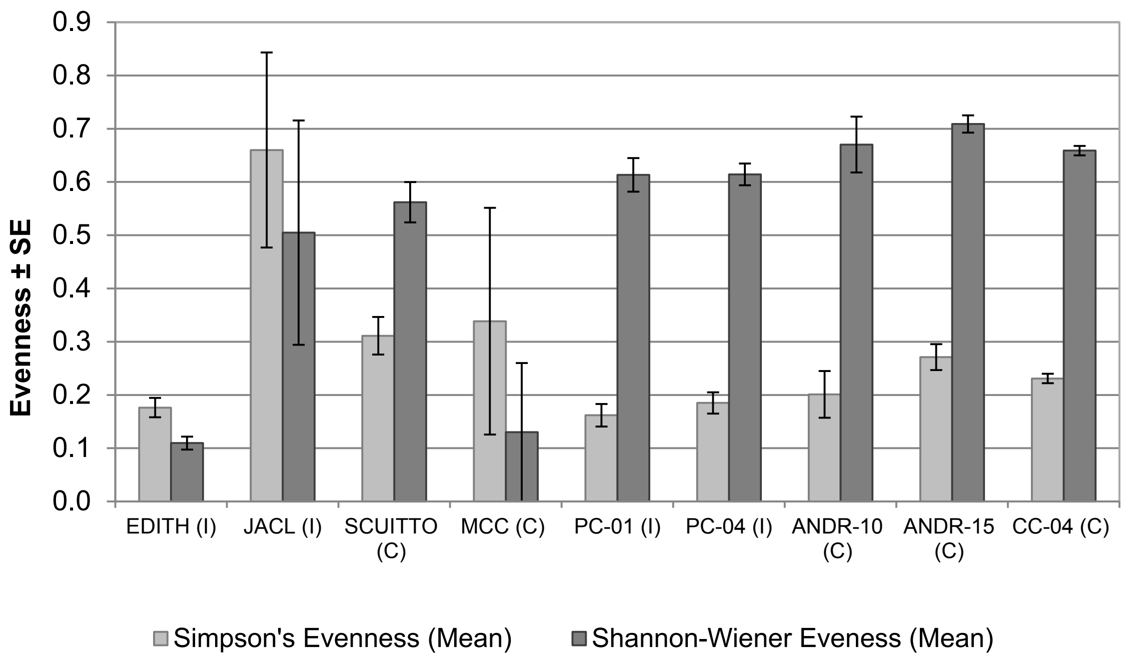
Figure 3.2-7 Mean (±S.E.) Benthic Macroinvertebrate Family Richness and EPT Index 2014

The Simpson's evenness index was highly variable across lake sites, ranging from 0.176 to a more even value of 0.660. This index showed the highest mean values with the largest variances at lake sites JACL and MCC-1 (Table 3.2-4, Figure 3.2-8); this is likely influenced by the small sample sizes, as these sites also had the lowest number of individuals. EDITH displayed the lowest mean Simpson's evenness value of the lake sites. The Shannon-Wiener evenness values showed markedly different trends than the Simpson's evenness values. Jacko Lake and Scuitto Lake were both similar and had relatively high Shannon-Wiener evenness values, while Edith Lake and McConnell Lake showed low mean evenness values of approximately 0.1. These results likely occurred because EDITH was comprised almost completely of Diptera Chaoboridae individuals and MCC-1 was comprised of only two families.

The Simpson's and Shannon-Wiener evenness indices were quite well-conserved for the stream sites, and showed similar trends between the indices. Site ANDR-15 showed the highest mean evenness values for all stream sites (Table 3.2-4, Figure 3.2-8). All other stream sites had slightly lower but similar values for both evenness indices.



NOTES:
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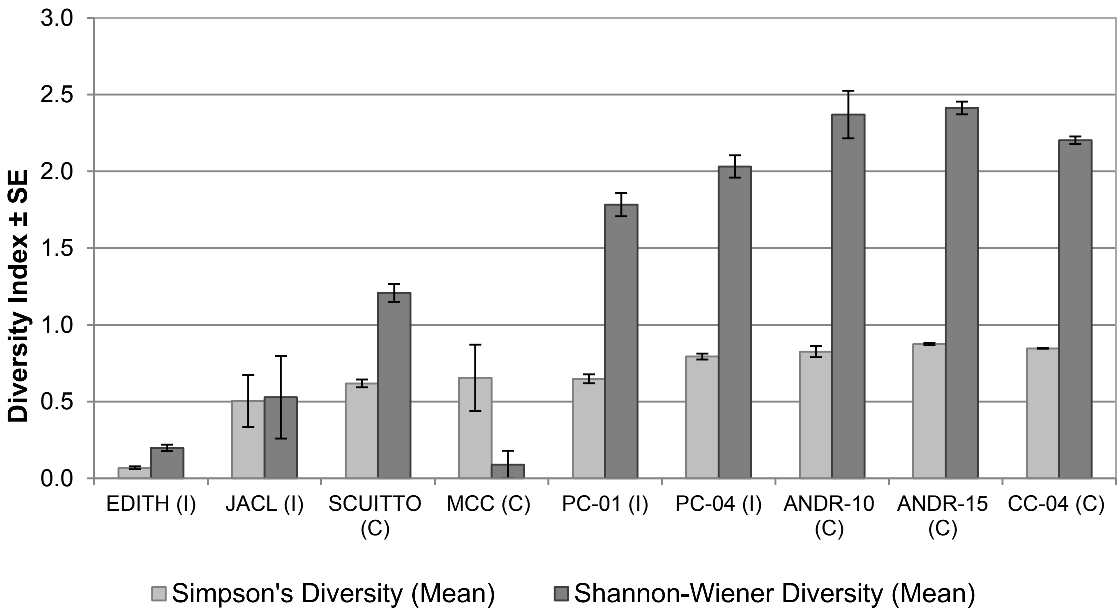
2. ABBREVIATIONS: (I) = IMPACT; (C) = CONTROL.
3. SITE CODES ANDR = ANDERSON CC = CHERRY CREEK JACL = JACKO MCC = MCCONNELL PC = PETERSON CREEK.

Figure 3.2-8 Benthic Macroinvertebrate Evenness Indices (Mean ±S.E.)

The Simpson's diversity index was relatively high in the JACL, SCUITTO, and MCC-1 samples but low for EDITH, due to its high proportion of Diptera Chaoboridae (Table 3.2-4, Figure 3.2-9). The SCUITTO site showed the highest mean Shannon-Wiener Diversity index, while the mean diversity values were lowest in EDITH and MCC-1, which had very low abundance overall.

While the absolute values differed between the Simpson's and Shannon-Wiener diversity indices, general trends between stream sites were apparent. For both indices, mean diversity values were highest in the Anderson Creek sites and the Cherry Creek control sites and relatively low for the Peterson Creek potential impact sites, although the values for both indices were well-conserved between stream sites (Table 3.2-4, Figure 3.2-9).



NOTES:
1.M:\1\01\00246\35\A\Data\Laboratory Results\Sandpiper benthic taxonomy\Ajax_2014_BenthicAnalysis.xlsx.
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Figure 3.2-9 Benthic Macroinvertebrate Diversity Indices (Mean ±S.E.)

The mean Hilsenhoff Family Biotic index value was calculated for each stream site in 2014 to assess water quality in terms of organic pollutants. Sites PC-04, ANDR-15, and CC-04 showed excellent water quality based on the Family Biotic index values (Table 3.2-4). The sites with the lowest mean Family Biotic index values (organisms least tolerant to poor water quality) were PC-01 and ANDR-10, with predicted water quality ratings of fairly poor and very poor, respectively. The 2007 through 2010 Peterson Creek, Cherry Creek and Jacko Lake samples were also rated as good to excellent. This is in contrast to the EPT water quality rating.

The mean Bray-Curtis similarity indices for the control and impact sites, shown in Table 3.2-5, were calculated separately for lake and stream sites according to Metal Mining Technical Guidance for Environmental Effects Monitoring (Environment Canada 2012a). For the lake sites, the mean distance values for the impact and control sites were very similar, at 0.63 and 0.67, respectively. This indicates that the sites were quite different from the median values for the grouped impact or control sites.

The mean Bray-Curtis values for impact and control stream sites were similar to each other in community composition (Table 3.2-5). In general, they were lower than for the lakes, which indicates that the streams are likely more similar to each other than the lake sites are to each other (a value of zero indicates that sites have the same species composition, while a value of one indicates that they do not share any of the same species).

Table 3.2-5 Bray-Curtis Similarity Index for Benthic Macroinvertebrate Sites

Location	Type	Site	$\Sigma \mid y_{i1}-y_{i2} \mid$	$\Sigma (y_{i1}y_{i2})$	B-C	Mean	SE
Lake	Impact	EDITH	184	558	0.33	0.63	0.30
		JACL	184	198	0.93		
	Control	SCUITTO	249.5	748.5	0.33	0.67	0.33
		MCC-1	249.5	249.5	1.00		
Stream	Impact	PC- 02	211.5	329.5	0.64	0.48	0.16
		PC- 04	211.5	672.5	0.31		
	Control	ANDR-10	592	894	0.66	0.40	0.20
		ANDR-15	755	1915	0.00		
		CC-04	1481	2717	0.55		

Mason (1963) sampled the benthos in Edith Lake in 1961 and 1962 and noted that the highest standing crops were found in the shallower areas (2 m). Mason (1963) also noted the following:

- Oligochaeta were present in 79% of the samples, with some evidence of greater abundance in deeper waters (4.8 m to 5.5 m); only one species was found (*Aelosoma niveum*).
- Hirudinea were present in half of the samples, and were absent at all samples taken at depths greater than 4.2 m.
- Two species of Mollusca were found but were uncommon: *Pisidium sp*. was found in two samples and one empty gastropod shell (*Physa sp*.) was found in one sample.
- *Gammarus lacustris* was the only Gammaridae found; few were taken from samples taken at depths greater than 4.8 m.
- Chironomidae were found in most samples, with two forms identified (*Tendipes sp*. and *Procladius sp*.); organisms were most abundant in samples collected from shallow areas.

Edith Lake samples in 2014, in contrast, were dominated by Diptera (97%), with only small numbers of Cladocera (2%) and Oligochaetes (1%). Management of Edith Lake to increase angling opportunities has included fish stocking and lake aeration; Andrusak (2000, citing Ashley 1987) notes that little information is available on the effects of lake aeration on benthic invertebrate production, but surmised that artificial circulation would change the species composition of benthic invertebrates, zooplankton, and phytoplankton. This may in part explain the difference between the 1963 and the 2010 through 2014 samples.

Stocked fish also have an effect on benthic invertebrate populations and impact the natural aquatic ecosystem (Andrusak 2000). As of 2000, as reported by Andrusak (2000) none of the aeration projects in the province had been formally evaluated with respect to effectiveness, and likely no monitoring has been conducted to determine the effects on benthic invertebrate, zooplankton, and phytoplankton communities.

3.3 FISH AND FISH HABITAT

3.3.1 Streams

The BC Ministry if Environment (MOE) Fisheries Information Summary System provides digital maps that include streams from the 1:50,000 BC Watershed atlas digital map base. These maps are subdivided into pre-defined stream segments called macroreaches. Each macroreach is a homogeneous stream segment that has been delineated by the MOE based on interpretation of topographic map features from the published 50,000 National Topographic Series mapsheets. The interpreted map features typically recorded include:

- Stream gradient: slope, in percent.
- Channel type and pattern: type of material through which streams flow and morphology of the channel; channel types and patterns used in the fisheries information summary system include:
  - Alluvial, anastomosed
  - Alluvial, braided
  - Alluvial, irregular
  - Lake
  - Rock-controlled, and
  - Underground.
- Stream length.
- Stream valley length: linear measurement of axis of the valley.
- Sinuosity: describes the degree of wandering – sinuosity values greater than 1.5 are considered highly sinuous, and typically indicate high channel movement, high sediment deposition, and low stream energy.

Macroreach characteristics are summarized in tabular format for Peterson Creek, Cherry Creek, and Anderson Creek in the following sections. The macroreaches within which fish and fish habitat sampling occurred in 2014 are noted in the tables. Habitat suitability at each sample site is discussed in terms of water depth, water velocity, substrate, and cover. Habitat summary sheets are provided in Appendix C1. Reaches that were not sampled are described based on a desktop analysis of orthophotos, topographical maps, provincial fisheries database information, and literature review; no assessment is provided for habitat suitability.

Fish habitat, sampling effort and capture data are discussed by individual streams in Sections 3.3.1.1 through Section 3.3.1.3. Fish sampling effort, capture data, and fish population characteristics from each of the sites are compared in Section 3.3.1.4.

3.3.1.1 Peterson Creek

Peterson Creek (watershed code 128-009700) is a fourth order stream with a total length of approximately 40 km. Peterson Creek starts at a small, unnamed lake and wetland at elevation 1449 m, and flows north for a short distance to Connolly Lake before turning in an easterly direction. After crossing under Highway 5 the creek flows north and then east to flow under Lac Le Jeune Road approximately 800 m downstream of the confluence with Jacko Creek before flowing in to Jacko Lake. From Jacko Lake the creek continues east before flowing north as it nears the confluence with Davidson Brook. Peterson Creek discharges to the South Thompson River approximately 1.2 km upstream from the North Thompson River confluence. The provincial mapping website describes 13 macroreaches for Peterson Creek (iMapBC 2015). Table 3.3-1 presents summary information for the Peterson Creek macroreaches. Macroreach breaks and sampling locations are shown on Figure 3.3-1. The Peterson Creek longitudinal profile from the South Thompson River to the confluence with Jacko Creek is illustrated on Figure 3.3-2.

Peterson Creek and Jacko Lake flows are regulated for irrigation and conservation. There are 36 current water licences on Peterson Creek (including Jacko Lake); seven of the licences have no identified purpose or quantity (iMapBC 2015). The total volume by identified purpose is:

- Domestic 15.911 m^3/day
- Irrigation 1,133,657 m^3/year
- Stockwatering 6.819 m^3/day
- Storage - non-power 493,515 m^3/year, and
- Conservation - stored water 432,335 m^3/year.

Individual licence purpose and quantity for Peterson Creek are shown in Table 3.3-2. During periods of low water returns the MOE conservation water license has been utilized for irrigation, which resulted in extreme low water conditions and loss of production capacity for the Jacko Lake fishery (Maricle 2012).

In addition to flow regulation, other anthropogenic impacts on Peterson Creek have included channel dredging, channel diversion, and flood control works. The Peterson Creek channel at the outlet of Jacko Lake was packed with impervious till for approximately 1 km to reduce seepage loss and maintain water for downstream licence holders in 1990 (Price 1991). Afton Mines increased the dam height on Jacko Lake by approximately 1 m as mitigation for mine development and allocated the new storage license to the MOE (Maricle 2012).

Although the Peterson Creek macroreach downstream of Jacko Lake provides marginal fish spawning, incubation, and rearing habitat, due to the seasonal presence of fish it would be considered as contributing to a commercial, recreational, or Aboriginal fishery, as defined in the *Fisheries Act*. Peterson Creek rainbow trout downstream of Jacko Lake do not contribute to the productivity of the stocked Jacko Lake rainbow trout population, as barriers (impassable falls, the spillway channel during low flow conditions) prevent the return passage of fish into Jacko Lake. AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in the macroreaches of Peterson Creek between the mouth of the creek and the outflow of the spillway of Jacko Lake.

Table 3.3-1 Peterson Creek Macroreach and Sample Site Locations

Macro Reach	Upstream Measure (m)	Upstream Elevation (m)	Macro Reach Length (m)	Stream Valley Length	Gradient (%)	Sinuosity	Channel Type	Description	Fish Sampling Sites & Habitat Assessment	Contribute to Commericial, Recreational, Aboriginal Fishery
1	1225	384	1225		3.6		Underground, Alluvial, Irregular	From confluence with South Thompson River upstream to Columbia Street in downtown Kamloops - majority of creek flows underground.	PC-AL-01 (2007-08)	Y
2	1856	405	631	650	3.3	1	Alluvial, Irregular	Within downtown Kamloops - linear and industrial commercial along each bank. Upstream reach break at confluence with unnamed first order tributary from west.	PC-AL-02 (2007-2008) PC-01 (2014)	Y
3	3155	549	1299	1200	11.1	1.1	Rock Alluvial, Irregular	High gradient, confined section; Bridal Veil Falls within reach		Y
4	7033	762	3878	3050	5.5	1.3	Alluvial, Irregular	Meandering channel; confined and entrenched sections; upper end of macroreach near Highway 5A	PC-AL-04 (2008, 2010-11) PC-04 (2014)	Y
5	17605	899	10572	8650	1.30	1.2	Alluvial, Irregular	Low gradient, unconfined sinuous channel flowing through agricultural areas; Jacko Lake at upper end	PC-AL-03 (2011) PC-AL-06 (2011) PC-AL-08 (2007-08, 2010-11) PC-2.8 (2014) PC-03 (2014) PC-06 (2014) PC-08 (2014)	Y
6	18472	899	867	850	0.00	1.0	Lake	Jacko Lake	JACL-TN (2010) JACL-GN-F (2010) JACL-GN-S (2010) JACL-MT 01 - 04 (2007-08, 2010) JACKO-GN-01 (2014) JACKO-GN-02 (2014)	Y
7	21176	920	2704	1750	0.8	1.5	Alluvial, Irregular	Upstream of Jacko Lake to confluence with Jacko Creek; meandering channel, unconfined	PC-10 (2014) PC-15 (2014)	Y
8	24759	1044	3583	2950	3.5	1.2	Alluvial, Irregular	Meandering, unconfined		UK
9	30132	1338	5373	4000	5.5	1.3	Alluvial, Irregular	Meandering, unconfined		UK
10	30306	1338	174	200	0.0	0.9	Lake	Wetland		UK
11	32448	1417	2142	2100	3.7	1.0	Alluvial, Irregular	Sinuous channel interspersed with wetland complex		UK
12	32780	1417	332	250	0.0	1.3	Lake	Connolly Lake		UK
13	33569	1439	789	800	2.8	1.0	Alluvial, Irregular	Sinuous channel; headwaters in wetland complex		UK

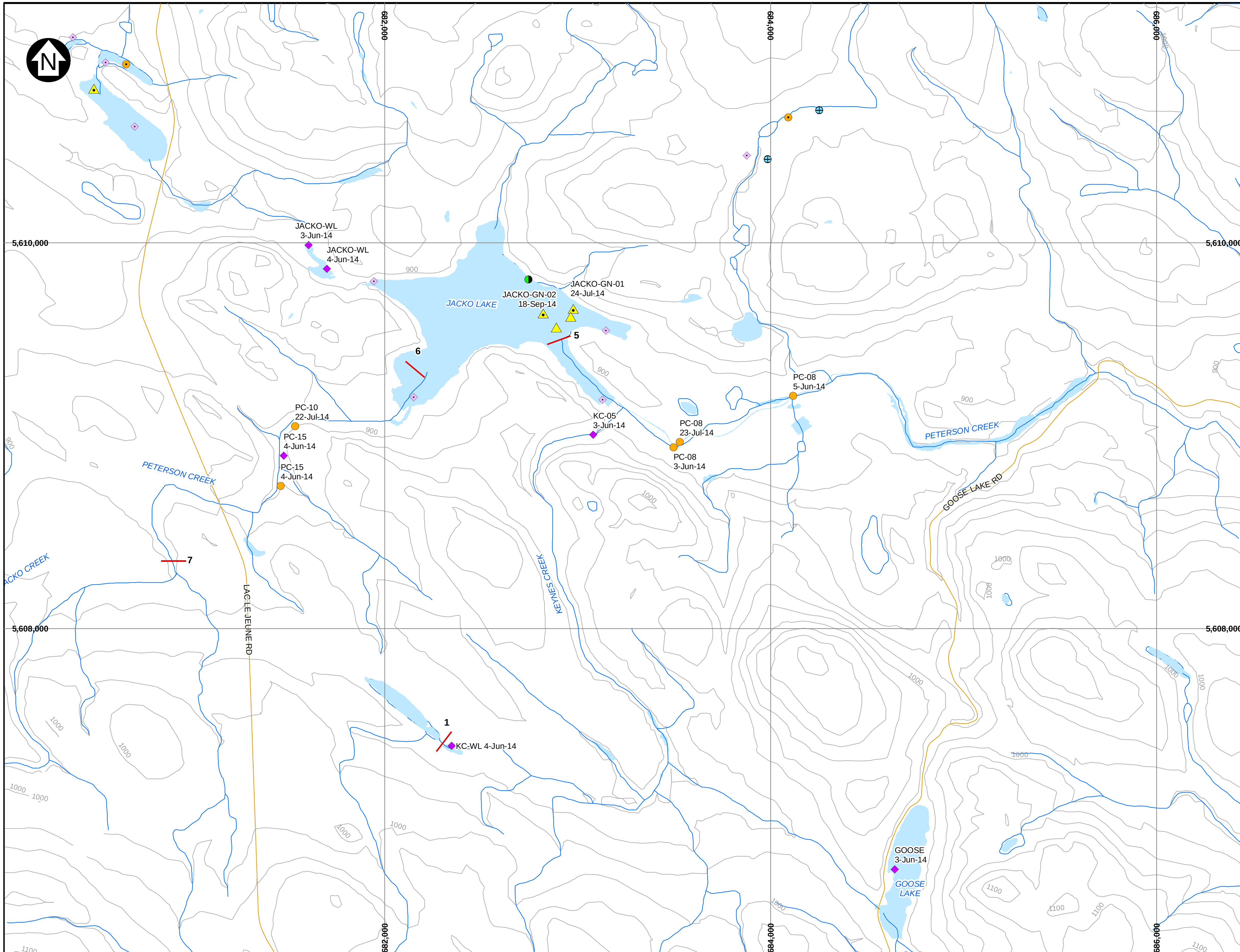
NOTES:

1. SOURCE iMapBC 2.0 AVAILABLE AT http://www.data.gov.bc.ca/dbc/geographic/view_and_analyze/imapbc/index.page. ACCESSED NOVEMBER 2014.
2. CODE - Y = YES, N = NO, UK = UNKNOWN.

Table 3.3-2 Peterson Creek Water Licence Points of Diversion

LICENCE NO	PURPOSE	QUANTITY	UNITS
C132063	Conserv -Stored Water	432335.39	m^3/year
C035096	Domestic	4.55	m^3/day
C061554	Domestic	2.27	m^3/day
C118289	Domestic	2.27	m^3/day
C035560	Domestic	4.55	m^3/day
C118288	Domestic	2.27	m^3/day
C118287	Irrigation	176585.00	m^3/year
C045893	Irrigation	82519.81	m^3/year
F065640	Irrigation	39594.71	m^3/year
C035096	Irrigation	9621.14	m^3/year
F049860	Irrigation	38484.58	m^3/year
C130927	Irrigation	255824.17	m^3/year
C045894	Irrigation	5180.62	m^3/year
C130927	Irrigation	255824.17	m^3/year
C130927	Irrigation	255824.17	m^3/year
C118288	Irrigation	6475.77	m^3/year
C118289	Irrigation	6475.77	m^3/year
C130927	Stockwatering	2.27	m^3/day
C130927	Stockwatering	2.27	m^3/day
C130927	Stockwatering	2.27	m^3/day
C035561	Storage-Non Power	1233.48	m^3/year
C132065	Storage-Non Power	19797.00	m^3/year
F019453	Storage-Non Power	255823.75	m^3/year
F021539	Storage-Non Power	38484.58	m^3/year
F019450	Storage-Non Power	9621.14	m^3/year
C132064	Storage-Non Power	41260.00	m^3/year
C045898	Storage-Non Power	82519.81	m^3/year
C045895	Storage-Non Power	5180.62	m^3/year
F065641	Storage-Non Power	39594.71	m^3/year

NOTES:
1. CURRENT WATER LICENCES AVAILABLE AT IMAPBC, ACCESSED MARCH 24, 2015.
2. LIST DOES NOT INCLUDE 7 ADDITIONAL WATER LICENCES WITH NO IDENTIFIED PURPOSE OR QUANTITY.



LEGEND:

GENERAL

- UPPER REACH BREAK
- RIVER/CREEK
- CONTOUR (20 m)
- ROAD
- LAKE

FISH AND FISH HABITAT SAMPLE SITES 2014

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING SITE

FISH AND FISH HABITAT SAMPLE SITES 2007 - 2011

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING
- SEINE NETTING
- TRAP NETTING

NOTES:

1. BASE MAP: BC TRIM MAPS.
2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:20,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

200 100 0 200 400 600 800 1,000 m

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AJAX PROJECT

PETERSON CREEK WATERSHED REACHES AND FISH AND FISH HABITAT SAMPLE SITES SHEET 1 OF 4

Knight Piésold CONSULTING

P/A NO.	REF NO.
VA101-246/35	1

FIGURE 3.3-1 REV 0

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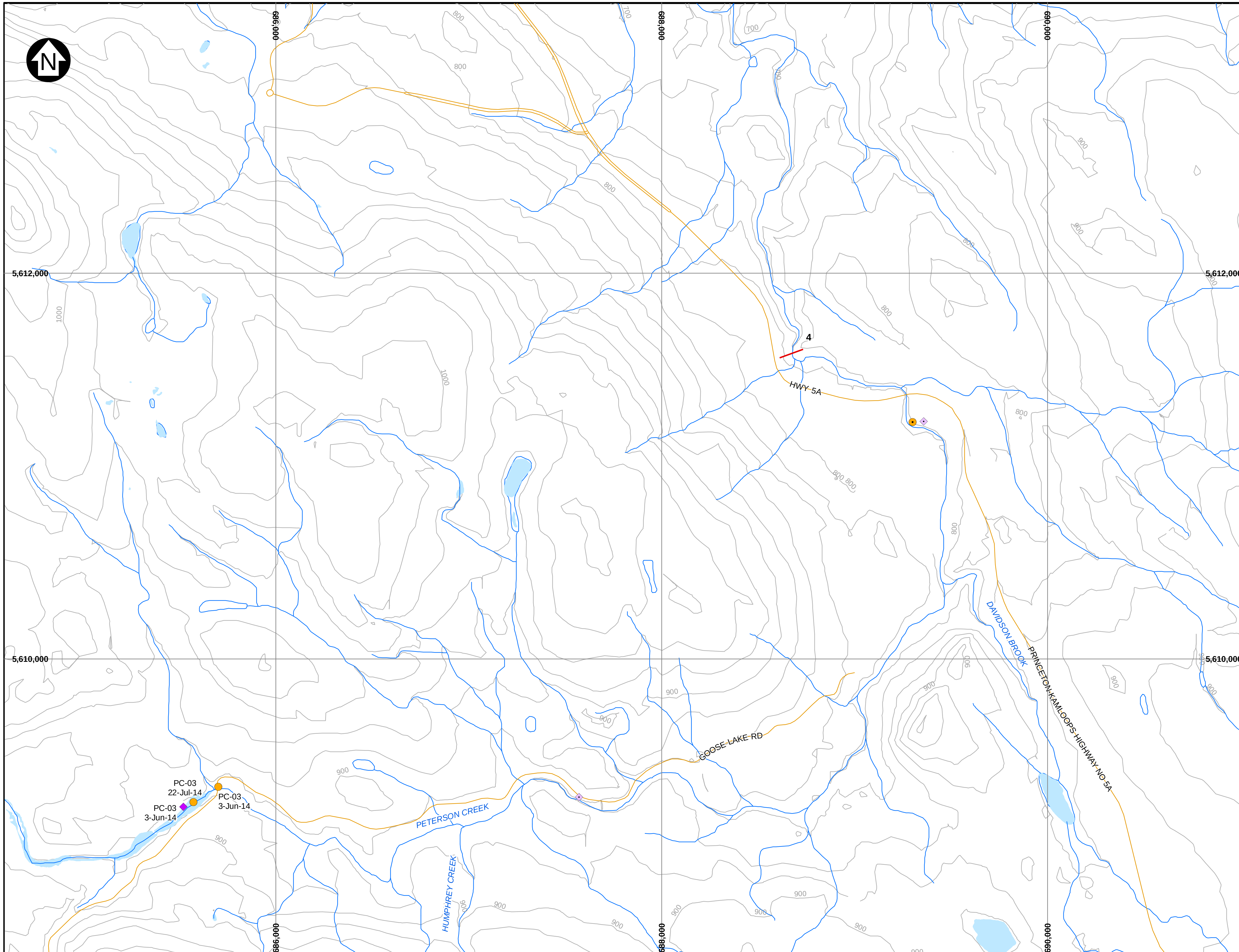

LEGEND:

GENERAL

- UPPER REACH BREAK
- RIVER/CREEK
- CONTOUR (20 m)
- ROAD
- LAKE

FISH AND FISH HABITAT SAMPLE SITES 2014

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING SITE

FISH AND FISH HABITAT SAMPLE SITES 2007 - 2011

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING
- SEINE NETTING
- TRAP NETTING

NOTES:

1. BASE MAP: BC TRIM MAPS.
2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:20,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

200 100 0 200 400 600 800 1,000 m

KGHM AJAX MINING INC.

AJAX PROJECT

PETERSON CREEK WATERSHED REACHES AND FISH AND FISH HABITAT SAMPLE SITES SHEET 2 OF 4

Knight Piésold CONSULTING

P/A NO.	REF NO.
VA101-246/35	1

FIGURE 3.3-1	REV 0

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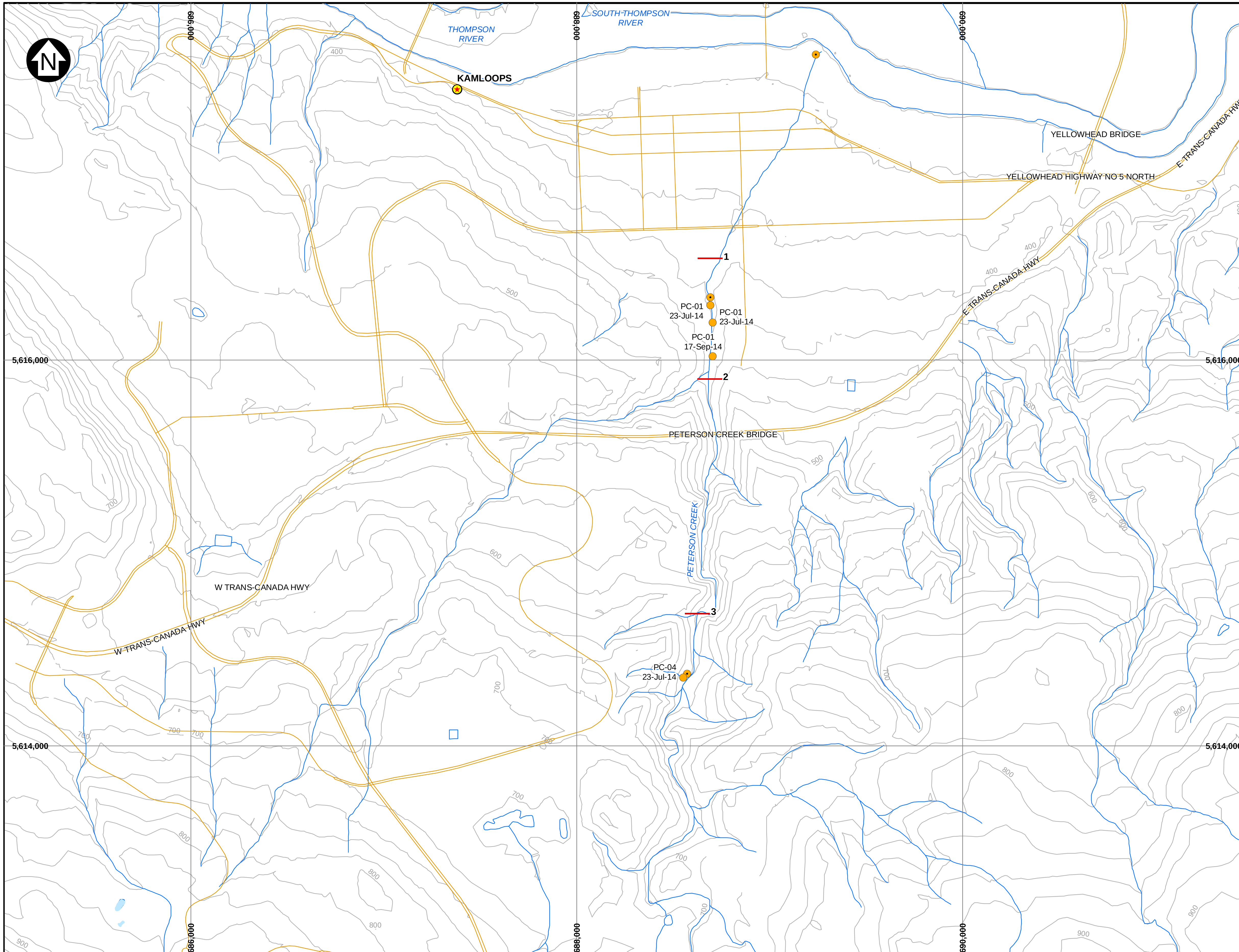

LEGEND:

GENERAL

- COMMUNITY
- UPPER REACH BREAK
- RIVER/CREEK
- CONTOUR (20 m)
- ROAD
- LAKE

FISH AND FISH HABITAT SAMPLE SITES 2014

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING SITE

FISH AND FISH HABITAT SAMPLE SITES 2007 - 2011

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING
- SEINE NETTING
- TRAP NETTING

NOTES:

1. BASE MAP: BC TRIM MAPS.
2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:20,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

200 100 0 200 400 600 800 1,000 m

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PETERSON CREEK WATERSHED REACHES AND FISH AND FISH HABITAT SAMPLE SITES SHEET 3 OF 4

Knight Piésold CONSULTING

P/A NO.	REF NO.
VA101-246/35	1

FIGURE 3.3-1 REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
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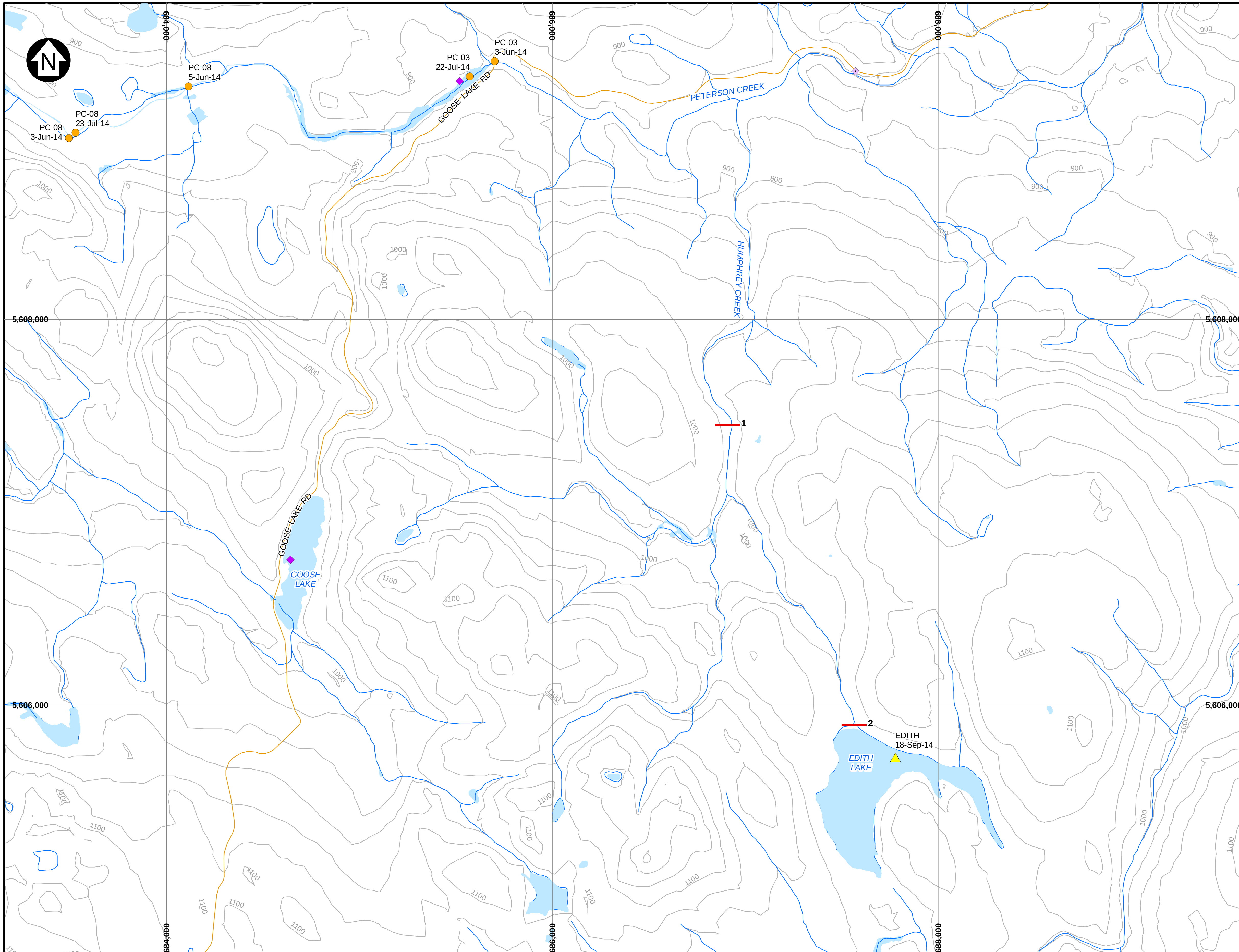

LEGEND:

GENERAL

- UPPER REACH BREAK
- RIVER/CREEK
- CONTOUR (20 m)
- ROAD
- LAKE

FISH AND FISH HABITAT SAMPLE SITES 2014

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING SITE

FISH AND FISH HABITAT SAMPLE SITES 2007 - 2011

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING
- SEINE NETTING
- TRAP NETTING

NOTES:

1. BASE MAP: ESRI ARCGIS ONLINE MAPS.
2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:20,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

200 100 0 200 400 600 800 1,000 m

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AJAX PROJECT

PETERSON CREEK WATERSHED REACHES AND FISH AND FISH HABITAT SAMPLE SITES SHEET 4 OF 4

Knight Piésold CONSULTING

P/A NO. VA101-246/35 | REF NO. 1

FIGURE 3.3-1 | REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
0	13JUL'15	ISSUED WITH REPORT	SCE	AMD	RCB

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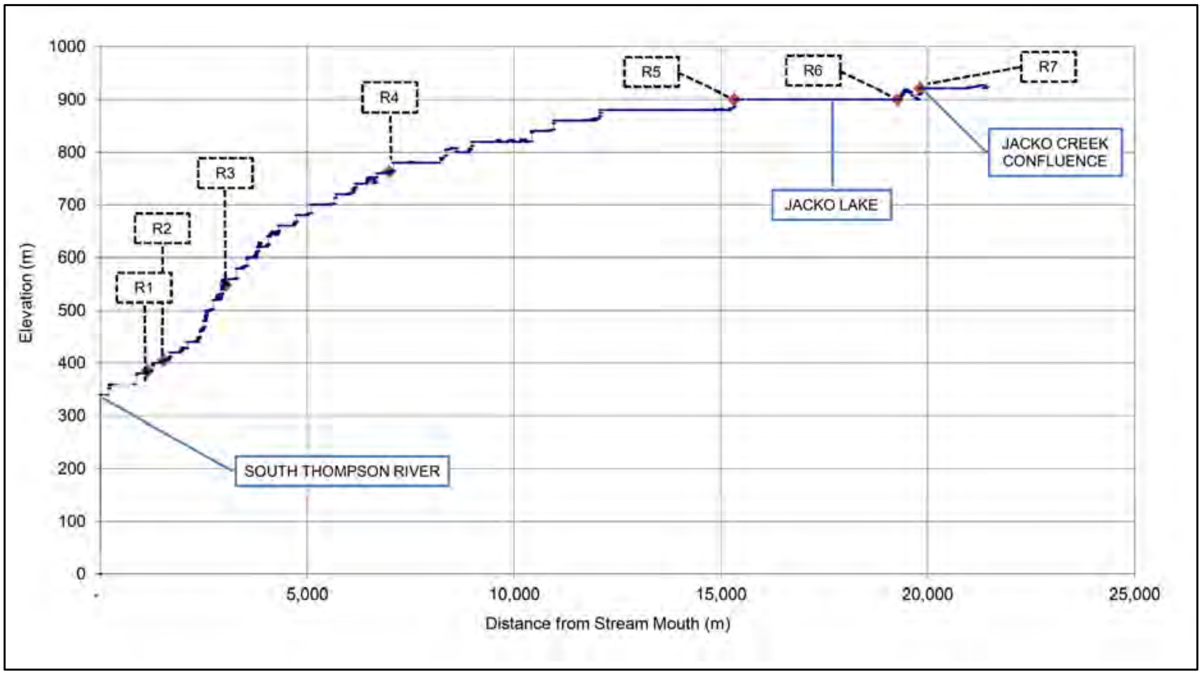

NOTES:
1. STREAM PROFILE SOURCE ESRI.
2. "R" DENOTES UPPER REACH BREAK.

Figure 3.3-2 Peterson Creek Longitudinal Profile

Macroreach 1

The first macroreach extends from the confluence with the South Thompson River upstream for a distance of 1225 m. The channel has three distinct sections. The first 150 m is an open, natural alluvial channel with cobble and gravel substrate and low gradient. Upstream of this point for approximately 100 m the creek is confined within an open, 4.5 m wide, box concrete culvert with vertical walls. Peterson Creek flows underground (through culverts) for a distance of approximately 800 m before daylighting into an alluvial channel near the upper end of the macroreach. The upper approximately 170 m of creek is a straight, open, alluvial channel with gravel and cobble substrate. The creek is confined by linear and commercial development along both banks.

Stalberg et al. (1997) rated the lower 150 m of Peterson Creek confluent with the South Thompson River as “class 1 habitat” (requiring protection) due to the presence of instream cobble and gravel substrate offering potential rainbow trout and coho salmon spawning habitat. Upstream of this point the creek flows through an approximately 4.5 m wide box culvert; Stalberg et al. (1997) rated this section as “class 3 habitat” (requiring a minimum level of protection), since the streambank is armoured with concrete and lacks any riparian vegetation.

AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach. As defined in the Fisheries Act, the rainbow trout in this macroreach would contribute to a recreational fishery.

Macroreach 2

Macroreach 2 is a 630 m long, straight, alluvial channel with an average gradient of 3.3%. The macroreach remains within downtown Kamloops and is confined by linear and commercial development along both banks. The upper reach break is at the confluence with an unnamed tributary from the west.

Site PC-01 was established within the second macroreach, approximately 240 m upstream of the lower macroreach break. The creek in this section is a straight, moderate gradient (5.7%) channel, confined on both banks, with primarily riffle and cascade morphology and only small amounts of side pools or scour pools. The channel has likely been modified by the surrounding development, as it has relatively steep and uniform banks.

At a flow of 0.05 m^3/s on July 23, 2014 the average wetted width was 1.45 m, average water depth was 0.09 m, and average velocity was 0.35 m/s. At a flow of 0.008 m^3/s on September 16, 2014 wetted width was 1.15 m and average depth was 0.02 m. At a similar low flow (0.01 m^3/s) on November 5, 2014, the average wetted width was 1.1 m and average depth was 0.05 m.

The substrate is dominated by cobbles and boulders. The channel shows little complexity, with cover primarily provided by overhanging vegetation and some cutbanks. Instream boulders, large woody debris, and occasional small pools offer additional cover (Figure 3.3-3). The riparian vegetation is a mixed, mature deciduous - coniferous system with willows, alders, and pine. Banks are vertical, comprised of fines and boulders.

Electrofishing was conducted at this site on July 23, 2014 and September 17, 2014. Fish capture rates varied seasonally and inter-annually. In July 2014 a total of 16 rainbow trout were captured by electrofishing for 273 seconds over a distance of 115 m, for a CPUE of 0.059 fish/second. The rainbow trout ranged in size from109 mm to 175 mm. Scales were obtained for ageing from all captured fish; estimated ages ranged from 2 to 4years. The CPUE in July 2008 was 0.004 fish/second, with fish ranging in size from 138 mm to 215 mm fork length.

Fish sampling has been conducted in this macroreach in September of 2007, 2008, and 2014. The CPUE in September 2007 was 0.043 fish/second, with rainbow trout (the only species captured) ranging in size from 56 mm to 79 mm fork length, while in September 2008 the CPUE was 0.016 fish/second, with rainbow trout ranging in size from 95 mm to 165 mm fork length. In September 2014 electrofishing was conducted for 117 seconds over a total distance of 75 m. A total of 14 rainbow trout were captured for a CPUE of 0.12 fish/second. The rainbow trout ranged in size from 111 mm to 181 mm fork length. Scales were obtained for ageing from all fish captured from this site in 2014; estimated ages ranged from 1 (one fish) to 2 years (Appendix C2 and C3). Since capture efficiency changes with fish characteristics, habitat characteristics, and operating conditions, no conclusion can be drawn regarding the difference in capture among sites and years.

Habitat in the riffle-step pool section of the creek is rated as moderate for juvenile rearing based on abundant cover. Spawning habitat is rated as moderate – few large gravel patches are present. Overwintering habitat is poor due to lack of deep pools. Overall, habitat suitability is characterised as moderate at moderate flows, based on water depths and velocity.

AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach. As defined in the Fisheries Act, the rainbow trout in this macroreach would contribute to a recreational fishery.

PANEL1. SITE PC-01, UPSTREAM VIEW OF PETERSON CREEK, JULY 22, 2014

PANEL 2. SITE PC-01, PETERSON CREEK DOWNSTREAM VIEW, SEPTEMBER 17, 2014.

Figure 3.3-3 Peterson Creek, Site PC-01, downtown Kamloops, September 17, 2014

Macroreach 3

The third macroreach is an approximately 1300 m long bedrock and alluvial channel with an overall gradient of 11.1%. Bridal Veil Falls is located approximately mid-way through the reach and is a barrier to the upstream passage of fish in Peterson Creek.

A large precipitation event occurred in Kamloops on July 23, 2014 and caused extensive erosion and channel widening in Peterson creek at the lower end of the macroreach. Turbid flows were noticed on September 17, 2014 resulting from the fine materials entrained into the creek from the eroding banks (Figure 3.3-4).

PANEL 1. UPSTREAM VIEW OF PETERSON CREEK, LOWER MACROREACH 3, SEPTEMBER 17, 2014

PANEL 2. DOWNSTREAM VIEW OF PETERSON CREEK, LOWER MACROREACH 3, SEPTEMBER 17, 2014

Figure 3.3-4 Peterson Creek lower Macroreach 3

Above Bridal Veil Falls the channel is an entrenched canyon confined by vertical bedrock walls, with boulder cascades (up to 18% gradient), and boulder falls with heights of up to 2 m (Figure 3.3-5). No fish sampling has been conducted in this macroreach.

AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach. As defined in the Fisheries Act, the rainbow trout in this macroreach would contribute to a recreational fishery.

PANEL1. UPSTREAM VIEW OF PETERSON CREEK, UPPER MACROREACH 3, VIEW OF 2 m FALLS, SEPTEMBER 19, 2014

PANEL 2. DOWNSTREAM VIEW OF PETERSON CREEK, UPPER MACROREACH 3, SEPTEMBER 19, 2014

Figure 3.3-5 Peterson Creek Upper Macroreach 3

Macroreach 4

The fourth macroreach is a 3878 m long, alluvial and bedrock channel. The upper end of the macroreach is approximately 900 m downstream of Highway 5A. At the lower end of the macroreach the creek flows within a canyon, with cobble, boulder, and bedrock substrate. The morphology is primarily cascade, with some riffle and pools. The channel is confined on both banks by steep walls, with some entrenched sections. Overhanging vegetation, boulders, and pools provide cover. Sample site PC-04 is within this macroreach (Figure 3.3-6). Channel width ranges from 1.7 m to 3.5 m in the first 500 m of the reach. On July 23, 2014 at a discharge of 0.043 m^3/s the average wetted width at the sample site was 1.7 m and average water depth was 0.06 m. Residual pool depth in July averaged 0.16 m. On September 17, 2014 at a discharge of 0.004 m^3/s the average wetted width remained at 1.7 m and average water depth decreased to 0.04 m. On November 5, 2014 at a discharge of 0.003 m^3/s the average wetted width decreased to 1.3 m and average depth was 0.05 m. Average gradient at the sample site is approximately 8%. The riparian vegetation is dominated by alder, mountain ash, wild rose, horsetail, and grasses. Overhanging vegetation and some large woody debris provide the only cover.

The only species captured at this site was rainbow trout. The CPUE in August 2008 was 0.022 fish/second; the CPUE in September 2008 was slightly less at 0.012 fish/second. The electrofishing CPUE in June 2010 was an order of magnitude lower, at 0.002 fish/second. No fish were captured at the same site in September 2010, despite 466 seconds of electrofishing, but three rainbow trout were captured on June 30, 2011, for a CPUE of 0.012 fish/second. Rainbow trout captured during August 2008 were young-of-the-year fry (32 mm to 48 mm), as were the rainbow trout captured during September 2008 (58 mm to 77 mm). Rainbow trout captured during June 2010 were juveniles with fork lengths of 105 mm to 125 mm, and rainbow trout captured during June 2011 were juveniles or mature fish (180 mm to 190 mm).

Open site electrofishing was conducted at site PC-04 on July 23, 2014 for 398 seconds over a distance of 131 m. A total of eight rainbow trout were captured for a CPUE of 0.02 fish/second. The rainbow trout ranged in size from131 mm to 176 mm. Scales were obtained for ageing from all captured fish; estimated ages ranged from 2 to 4 years.

Habitat is rated as good for juvenile rearing based on abundant cover and presence of pocket pools that provide a velocity refuge from high flows. Spawning habitat is rated as poor due to the lack of gravels. Overwintering habitat is moderate due to the presence of small pools.

Upstream of the sampling site the channel gradient increases, the channel width decreases, and the canopy and overhanging vegetation become denser. The channel remains confined within high gradient walls for approximately 1 km. A high gradient bedrock cascade approximately 2.5 km from the upper reach break is a barrier to the upstream passage of fish. There is also evidence of an old slide on the southeast canyon wall at the same location. Upstream of the slide the gradient decreases and the channel becomes sinuous as the creek flows through developed areas (ranches, quarry).

AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach. As defined in the Fisheries Act, the rainbow trout in this macroreach would contribute to a recreational fishery.

PANEL1. UPSTREAM VIEW OF PETERSON CREEK, SITE PC-04, JULY 23, 2014

PANEL2. DOWNSTREAM VIEW OF PETERSON CREEK, PC-04, JULY 23, 2014

Figure 3.3-6 Peterson Creek Site PC-04

Macroreach 5

Macroreach 5 of Peterson Creek extends from 900 m downstream of Highway 5A up to Jacko Lake. Peterson Creek downstream of Jacko Lake flows between the historic Afton Mine for approximately 2.3 km, with the Ajax east and west pits to the north and a reclaimed waste rock storage facility to the south. Peterson Creek flows under Highway 5A through an approximately 1.5 m diameter culvert. Upstream of Highway 5A, the creek is a low gradient glide with undefined banks (Figure 3.3-7, Panel 1) and shows extensive disturbance from cattle (Figure 3.3-7, Panel 2).

No fish were captured or observed in 292 seconds of electrofishing at site PC-03 between the Highway 5A culvert and upstream wetland in June 2011. Six baited minnow traps were set in the stream and wetland on August 30, 2011 and left to soak for 24 hours; no fish were captured. Habitat is rated as poor for juvenile rearing and spawning due to the lack of channel complexity and abundant fine substrate. Overwintering habitat is poor due to the lack of pools.

PANEL1. DOWNSTREAM VIEW OF PETERSON CREEK ABOVE HIGHWAY 5A AT SITE PC-03, SEPTEMBER 16, 2014

PANEL 2. CROSS SECTION VIEW OF PETERSON CREEK ABOVE HIGHWAY 5A AT SITE PC-03, SHOWING CATTLE DISTURBANCE, SEPTEMBER 16, 2014

Figure 3.3-7 Peterson Creek near Highway 5A (September 2014)

Electrofishing was conducted for a distance of 70 m between two wetlands near Humphrey Creek on June 6, 2014. Despite a sampling effort of 382 seconds, no fish were captured or observed. The channel in this section of the creek is low gradient and meandering, with undefined banks comprised primarily of fine sediments, with the flowing channel interspersed between wetlands (Figure 3.3-8). The channel is intermittent (spatially discontinuous) and flow is ephemeral (seasonal). Habitat is rated as poor for juvenile rearing and spawning due to the lack of channel complexity, abundant fine substrate and low flow. Overwintering habitat is poor due to the lack of pools. Streamflows in the Project area are typically at a minimum from late summer through February and March (BGC 2015).

PANEL1. DOWNSTREAM VIEW OF PETERSON CREEK DOWNSTREAM OF HUMPHREY CREEK, JUNE 6 2014.

PANEL 2. VIEW NORTH OF PETERSON CREEK WETLAND NEAR HUMPHREY CREEK, JUNE 6 2014.

Figure 3.3-8 Peterson Creek near Humphrey Creek (June 2014)

Fish sampling in the creek upstream of Goose Lake Road (PC-03) was conducted on the following dates:

- On June 29, 2011 electrofishing was conducted for 292 seconds in the approximately 40 m alluvial channel upstream of Goose Lake Road. No fish were captured or observed.
- Minnow trapping in August 2011 captured one rainbow trout juvenile (60 mm fork length).
- Electrofishing in the approximately 40 m alluvial channel upstream of Goose Lake Road, and along both the north and south banks of a wetland upstream of this section on June 3, 2014, for a total sampling effort of 204 seconds. No fish were captured or observed.

- On June 3, 2014 eight minnow traps baited with dry cat food were set in the wetland and left to soak overnight (19 hours) for a total sampling effort of 152 minnow trap hours. No fish were captured or observed.
- Electrofishing was also conducted along the north bank of the wetland 200 m upstream of the Goose Lake Road crossing on July 22, 2014 for 261 seconds over a linear distance of 70 m. No fish were captured or observed.

The stream bed is comprised of sand with small gravels and cobbles in the centre of the channel. One mature rainbow trout was observed exhibiting spawning behaviour (redd digging) in the approximately 10 m^2 patch of gravel between Goose Lake Road and the beaver pond on May 30, 2011. An incidental observation was reported on May 25, 2013 of eight mature rainbow trout in the creek at this site. During September 2014 the channel in the vicinity of Goose Lake Road was dry (see Figure 3.3-9, showing the same location on Peterson Creek upstream of Goose Lake Road on July 22, 2014 (Panel 1) and September 16, 2014 (Panel 2). At the hydrology monitoring station located upstream of the culvert under Goose Lake Road the channel is 2.5 m wide and the banks are overgrown with small shrubs. The peak instantaneous discharge at the station was 0.476 m^3/s in May 2014.

PANEL1. UPSTREAM VIEW OF PETERSON CREEK IMMEDIATELY UPSTREAM OF GOOSE LAKE ROAD, JULY 22 2014.

PANEL 2. UPSTREAM VIEW OF PETERSON CREEK IMMEDIATELY UPSTREAM OF GOOSE LAKE ROAD, SEPTEMBER 16, 2014.

Figure 3.3-9 Peterson Creek near Goose Lake Road, July and September 2014

The 1 km section downstream of the outlet of Jacko Lake (PC-08) is a straight trapezoidal channel with glide morphology and bankfull widths ranging between 4 m and 8 m. A thick layer (approximately 20 cm) of silts and fines lined the bed of the creek on June 3, 2014. Peak discharge at the hydrology monitoring station records discharge typically only between July and September; the peak instantaneous discharge in 2014 was 0.23 m^3/s, and occurred in August. The channel is occasionally dredged to remove the fines and maintain channel capacity. The only instream cover is provided by emergent vegetation, primarily bulrushes (*Scirpus spp*); riparian vegetation is grasses. A canopy is absent, as the channel flows through rangeland. Thick mats of filamentous algae choke the channel in late summer. Flow in this section of the creek is typically ephemeral (seasonal), with high flows during freshet as the elevation of Jacko Lake exceeds the elevation of the dam spillway, and low flows during late summer and fall when the Jacko Lake gate is closed.

Downstream of the trapezoidal channel the creek morphology abruptly changes to an unconfined wetland with undefined banks. The morphology is primarily glide, banks are undefined, substrate is dominated by silts and fines, and riparian vegetation is typically grasses and sedges, with some willow and alder.

Fish sampling was conducted at PC-08 on the following dates:

- A total of nine baited minnow traps were set in Peterson Creek downstream of Jacko Lake over a distance of approximately 1.3 km on September 18, 2007 and left to soak for between eight and 26 hours; no fish were captured.
- No fish were captured or observed during electrofishing and minnow trapping in this same section on July 31, 2008 and May 31, 2010. No fish were captured.
- A total of six baited minnow traps were set in the creek downstream of Jacko Lake on August 29, 2011 and left to soak for 23.5 hours.
- Electrofishing was conducted on September 29, 2011; no fish were captured.
- Electrofishing was conducted over a distance of 350 m on June 3, 2014; five mature rainbow trout were captured, for a CPUE of 0.01 fish/second, ranging in size from 465 mm to 520 mm; fish ages were estimated as 4 to 7 years. Water was flowing over the Jacko Lake spillway at the time, allowing the stocked rainbow trout in Jacko Lake downstream access to Peterson Creek. Several mature, dead and decomposing rainbow trout were observed in the channel in June. Water temperature was recorded as 20°C and dissolved oxygen concentration was 6.6 mg/L.
- Electrofishing continued in the lower 560 m of the trapezoidal channel on June 5, 2014 for a total of 400 seconds. No fish were captured but two adult rainbow trout were observed approximately 480 m downstream of Jacko Lake.
- Electrofishing was also conducted at Site PC- 08 over a distance of 200 m on July 23, 2014. No fish were captured or observed. Water temperature was 19.15°C and dissolved oxygen was 6.55 mg/l.

Rainbow trout habitat (rearing, wintering, spawning) in the 1 km section downstream of Jacko Lake is rated as marginal, due to the lack of complexity, abundant fine substrates, lack of cover, lack of pools (rainbow trout are only able to return to Jacko Lake when the spillway is flowing), high water temperature, low dissolved oxygen, and flow regime (Panel 2 of Figure 3.3-10).

Habitat is rated as poor for juvenile rearing due to the lack of channel complexity and abundant fine substrate. Other than the approximately 10 m^2 gravel patch between Goose Lake Road and the upstream wetland, spawning habitat is non-existent. Overwintering habitat is poor due to the lack of pools; upstream passage into Jacko Lake is prevented by lack of flows in the spillway.

PANEL 1. UPSTREAM VIEW OF JACKO LAKE DAM AND SPILLWAY, JULY 23, 2014.

PANEL 2. UPSTREAM VIEW OF JACKO LAKE DAM AND SPILLWAY SEPTEMBER 16, 2014.

Figure 3.3-10 Peterson Creek at Jacko Lake Outlet, July and September 2014

AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach. As defined in the Fisheries Act, the rainbow trout in this macroreach would contribute to a recreational fishery.

Macroreach 6

Jacko Lake comprises Macroreach 6 of Peterson Creek. Information is presented in Section 3.3.2.1.

Macroreach 7

Peterson Creek upstream of Jacko Lake is a low gradient, meandering glide with undefined banks as it flows through a wetland for a distance of approximately 400 m. Upstream of the wetland the channel becomes more defined, with a bankfull width of approximately 1 m and bankfull heights ranging from 0.15 m to 0.40 m. Substrate is predominantly silt, with the exception of a short stretch (approximately 30 m long by 1.5 m wide) containing rounded gravels of uniform size; this is presumably the site of spawning platforms placed by fisheries agencies mentioned anecdotally (Panel 1 of Figure 3.3-11 is an upstream view of this section of the creek on July 23, 2014; Panel 2 is the same area on September 16, 2014 when the channel was dry). The channel lacks complexity (no boulders, instream vegetation, or large woody debris) and the only cover is offered by overhanging vegetation and some undercut banks.

Fish sampling in this macroreach was comprised of:

- Electrofishing over a distance of 50 m for 163 seconds on June 3, 2014; one juvenile rainbow trout (fork length 91 mm, age 1) was captured, for a CPUE of 0.006 fish/second.
- Five baited minnow traps were left to soak for 20 hours between June 3, 2014 and June 4, 2014; one juvenile rainbow trout (fork length 94 mm, age 1) was captured, for a CPUE of 0.01 fish/hour.
- Electrofishing over a distance of 207 m for 551 seconds on July 22, 2014; two juvenile rainbow trout were captured (fork lengths of 95 mm and 114 mm, ages 1 and 2) for a CPUE of 0.004 fish/second.

Habitat is rated as moderate for juvenile rearing due to the lack of channel complexity. Spawning habitat is rated as poor – the 30 m long by 1.5 m wide section containing visible gravels were embedded in abundant fine substrates, which predominated throughout the macroreach.

Overwintering habitat within the stream is poor due to the lack of pools; however, downstream passage into Jacko Lake for overwintering may be possible during high flow conditions.

PANEL1. SITE PC-10, UNIFORM SHAPE AND SIZE LARGE GRAVEL SUBSTRATE, JULY 23, 2014

PANEL 2. SITE PC-10, UNIFORM SHAPE AND SIZE LARGE GRAVEL SUBSTRATE, SEPTEMBER 16, 2014.

Figure 3.3-11 Peterson Creek Upstream of Jacko Lake (PC-10)

Peterson Creek flows through an approximately 1.4 m diameter culvert under Lac Le Jeune Road. Upstream of Lac Le Jeune Road for a distance of approximately 200 m flow is through a confined channel with an average gradient of 3%. Flow is ephemeral and exhibits relatively low flows even during freshet (the peak instantaneous flow in 2014 at the hydrology station located upstream of the highway was 0.48 m^3/s, which occurred in May (BGC 2015); limited rainbow trout habitat is available due to its ephemeral nature and ongoing agricultural disturbances (Knight Piésold Ltd 2013a). Substrate comprised primarily of sand or silt and organics with large woody debris scattered throughout (BGC 2015). Riparian vegetation is comprised of alder and willow; cover is provided by overhanging vegetation and undercut banks. Peterson Creek upstream of this point to the confluence with Jacko Creek becomes a low-gradient, open, sinuous channel as it flows through a cattle ranch yard. No fish or fish habitat sampling sites were established in this section of the macroreach.

AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach. As defined in the Fisheries Act, the rainbow trout in this macroreach would contribute to a recreational fishery.

Tributary Reaches

Davidson Brook (watershed code 128-009700-23400), Humphrey Creek (watershed code 128-009700-34600), and several unnamed, primarily first order creeks (including the locally named Keynes Creek, watershed code 128-009700-48900) are mapped as flowing into Peterson Creek in the fifth macroreach. No evidence of scour or alluvial deposition was found in the areas where the unnamed tributaries, Humphrey Creek, and Keynes Creek are mapped as flowing into Peterson Creek. No site surveys were conducted on Davidson Brook as it is not within the Project footprint. Streams noted on terrain resource inventory maps often have no visible channel, indicating incorrect mapping or subsurface flow (BC Environment 1998). AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in these tributaries. As defined in the Fisheries Act, the rainbow trout in this macroreach would contribute to a recreational fishery.

The provincial Fisheries Information Summary System has no record of fish presence in the Davidson Brook watershed, Humphrey Creek, or Keynes Creek watersheds. Rainbow trout and eastern brook trout are stocked in Edith Lake, the headwater lake of Humphrey Creek.

Davidson Brook

Downstream of the study area, Davidson Brook, a third-order stream with a mainstem length of 3.5 km, flows north between Long Lake Road and Highway 5A. Several small (less than 15 ha area) lakes are present in the Davidson Brook watershed. No fish or habitat sampling was conducted in this sub-watershed.

Humphrey Creek

Humphrey Creek, the outlet of Edith Lake, is mapped as flowing into Peterson Creek from the south midway through macroreach 5 of Peterson Creek. Humphrey Creek is mapped as a third order stream, with two macroreaches and a mainstem length of 4.6 km. The first macroreach, with a length of approximately 1.9 km, has an average gradient of 5.7%. The second macroreach extends to the outlet of Edith Lake and has an average gradient of 2.9%.

There are 10 current water licences on Humphrey Creek at two diversion points. One diversion point is adjacent to the southeast side of the proposed process plant location and the other at the outlet of Edith Lake for conservation and storage, with a total quantity of 591,577 m^3/year.

No fish sampling was conducted in 2014 in Humphrey Creek due to the narrow width of the channel and the shallow flows, which did not permit placement of minnow traps or the electrofisher anode. As previously noted, there was no surface connection between Humphrey Creek and Peterson Creek during the 2014 sampling program. In recent years Humphrey Creek only received surface flow from Edith Lake during high water (Ministry of Environment 1999); prior to 2014 there had been no surface releases from Edith Lake for at least a decade due to declining lake water levels. In 2014 water was diverted from Anderson Creek into Edith Lake to improve the fishery and augment Peterson Creek flows for downstream water licence holders, and in July 2014 water was released from Edith Lake through a flow control structure to lower the lake level and allow repairs to be made to the dam.

Humphrey Creek flows through a defined channel from Edith Lake to approximately 70 m from Peterson Creek, at which point the channel becomes undefined, discharging to a pasture before seeping into the ground (Figure 3.3-12, Panel 1). Upstream of the pasture the channel is a narrow (0.20 m to 0.25 m), shallow riffle (bankfull depth of 0.10 m to 0.15 m). Dense riparian vegetation obscures the channel and in sections the channel is choked with small woody debris; in other sections the channel widens where it has been disturbed by cattle (Figure 3.3-12, Panel 2 and Panel 3). The substrate is comprised mainly of silts, with some gravel.

Humphrey Creek between the Edith Lake dam and Edith Lake Road is a low gradient, unconfined seep with no defined banks (Figure 3.3-13, Panel 1). Riparian vegetation is comprised of grasses and substrate is silt. The channel was dredged in late fall 2014 (Figure 3.3-13, Panel 2), presumably to contain anticipated flows from the lake during freshet.

PANEL 1. HUMPHREY CREEK 70 m FROM PETERSON CREEK - NO DEFINED CHANNEL. JUNE 2014.

PANEL 2. HUMPHREY CREEK 1.3 km FROM PETERSON CREEK, NOVEMBER 2014

PANEL 3. HUMPHREY CREEK 2.2 km FROM PETERSON CREEK, NOVEMBER 2014.

Figure 3.3-12 Lower Humphrey Creek

PANEL 1. HUMPHREY CREEK UPSTREAM VIEW, EDITH LAKE DAM IN BACKGROUND, JULY 15, 2014.

PANEL 2. HUMPHREY CREEK UPSTREAM VIEW, EDITH LAKE DAM IN BACKGROUND, OCTOBER 23, 2014.

Figure 3.3-13 Upper Humphrey Creek

Keynes Creek

Provincial mapping shows an unnamed, second order creek, locally known as Keynes Creek, flowing into Peterson Creek at the downstream end of the Jacko Lake spillway. An unnamed second order creek (watershed code 128-009700-48900-54900) is mapped as flowing from the southeast into Keynes Creek approximately 2.3 km from the mouth. Goose Lake is mapped as the headwater lake of a tributary to Keynes Creek. The mainstem length is recorded as 3.1 km and the gradient is reported as 1.2% in the provincial database (iMap BC 2015). No channel bed has been observed at the location where Keynes Creek is reportedly confluent with Peterson Creek and no alluvial material or signs of scour have been observed in the vicinity. It is possible that Keynes Creek reports subsurface flows to Peterson Creek at the spillway outlet, as a small pool (approximately 30 cm by 30 cm) is noted at the bottom of the spillway and flow is apparent (though low) even when the level of Jacko Lake is below the spillway crest. A 2.2 ha long and narrow wetland is shown on provincial mapping as being the headwater of Keynes Creek. The wetland had no inlet or outlet flows and there was no evidence of an alluvial channel at the time of the sampling in early June.

There is one water licence with two points of diversion on Keynes Creek within the footprint of the Project. The water licence at the two diversion points is for stockwatering (combined 18.184 m^3/day), irrigation (combined 55,012 m^3/year) and storage – non power (combined 61,674 m^3/year).

The Keynes Creek channel is intermittent and flow is ephemeral. A defined channel with signs of scour is present approximately 200 m from Peterson Creek, but only small, isolated pools with stagnant water were present in June 2014 (Figure 3.3-14, Panel 1). Approximately 800 m upstream of this point, at the crossing of a dirt road, where isolated pools were found, the channel is discontinuous, with widths ranging from 1 m to 2 m; in June water depth was measured as 2 cm (Figure 3.3-14, Panel 2 and Panel 3). Upstream of this point the channel disappears.

The unnamed tributary to Keynes Creek in which Goose Lake is located has three mapped macroreaches. The first macroreach is approximately 1.5 km long and has an overall gradient of 2.4%. Above Goose Lake the tributary is mapped as having two additional macroreaches, for a total length of 1.7 m, with moderate gradients (4.3% in the second macroreach and 8.6% in the third macroreach). On June 3, 2014 a narrow, approximately 150 m long channel with shallow flow (water depths ranged from 2 cm to 5 cm) was observed upstream of Goose Lake; however, above this point the channel and flow disappeared, indicating either subsurface flow or a headwater stream.

Fish sampling in the Keynes Creek watershed in 2014 was comprised of:

- One minnow trap set in Keynes Creek in the isolated pool near Peterson Creek on June 3, 2014; low flows at the time left large stretches of the creek dewatered, with only shallow, stagnant pools.
- Eight baited minnow traps were set from the shore in a headwater wetland pond of Keynes Creek for 17 hours on June 3 and June 4, 2014.

No fish were captured or observed, and the wetland pond had no alluvial inlet or outlet channels.

PANEL 1. KEYNES CREEK ISOLATED POOL NEAR PETERSON CREEK OUTLET, JUNE 2014

PANEL 2. KEYNES CREEK AT ROAD CROSSING APPROXIMATELY 1 km FROM PETERSON CREEK, JUNE 2014.

PANEL 3. KEYNES CREEK VEGETATED DRY SWALE DOWNSLOPE FROM ROAD, JUNE 2014

Figure 3.3-14 Keynes Creek

Jacko Creek

Jacko Creek (watershed code 128-009700-61300) flows into Peterson Creek approximately 150 m upstream of where Peterson Creek flows under Lac Le Jeune Road, within macroreach 7 of Peterson Creek. Jacko Creek is a first order creek with three macroreaches that has a total length of approximately 8 km. It flows from west of Highway 5 in a northeast direction to Peterson Creek and is upstream of any potential interaction with the Project; therefore, no fish or fish habitat sampling has been conducted as part of the baseline monitoring program for the Project, as the creek is outside of the Project area. Rainbow trout from Jacko Lake could potentially access the creek during high flow events, therefore it would be considered a recreational fishery if it supports fish. AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in these tributaries.

3.3.1.2 Cherry Creek

The Cherry Creek watershed (watershed code 120-862000), covering 13,039 ha, is located approximately 10 km west of Kamloops, with the mainstem flowing in a northerly direction into Kamloops Lake (Dobson Engineering Ltd. 2000). A diversion structure located in the lower 500 m of Cherry Creek prevents upstream passage of fish from Kamloops Lake and also prevents the movement of water downstream to Kamloops Lake during low flows - the lower section of Cherry Creek can become dewatered when water from the creek is being stored for local water users (Knight Piésold Ltd. 2013a). The creek has been delineated into five macroreaches over its 23.4 km length, including two small (5.7 ha and 1.8 ha) headwater lakes (iMapBC 2015). In the two lower reaches the channel is sinuous and low gradient (2.6% and 2.7%). The macroreach information for the Cherry Creek watershed and the macroreaches in which the fish and fish habitat sampling site have been located are summarized in Table 3.3-3 and shown on Figure 3.3-15. Chuwhels Lake flows into Cherry Creek approximately 2 km downstream of the headwater lakes within the fifth macroreach. Chuwhels Lake has a surface area of 12.5 ha and a maximum depth of 9 m (Fisheries Information Summary System 2015). A small number (1500) of rainbow trout were stocked in Chuwhels Lake in 1997 and again in 2005 (Freshwater Fisheries Society of BC 2015). Chuwhels Lake has a natural population of rainbow trout; good spawning areas are present in the inlet creek (Ministry of Environment 1976). Chuwhels Lake has a 5.7 m high, 33 m long earthfill water management storage dam at the outlet which is recorded as an obstacle to fish passage (iMapBC 2015). The Ministry of Environment (1976) report also notes a 3 m drop below the lake outlet that is a barrier to upstream fish passage. Rainbow trout are recorded throughout the Cherry Creek watershed in the provincial database; brook trout are also recorded in Dairy Lake, within the Beaton Creek watershed (tributary to Cherry Creek), and there is one observation of a bull trout in a tributary to Chuwhels Lake in 1995. A detailed description of Cherry Creek is presented in the Baseline Fisheries Report (Knight Piésold 2013a). This section presents the results of the 2014 fish and fish habitat sampling program conducted in the third macroreach only.

There are 34 current water licences on Cherry Creek; the total volume by identified purpose is:

- Domestic 11.365 m^3/day
- Enterprise 6.819 m^3/day
- Irrigation 1,562,079 m^3/year
- Stockwatering 12.502 m^3/day, and
- Storage - non-power 180,704 m^3/year.

Individual licence purpose and quantity are shown in Table 3.3-4.

AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in Cherry Creek. The resident rainbow trout population found throughout the mainstem of Cherry Creek would be considered as contributing to a recreational fishery, as defined in the *Fisheries Act*. Alkali Creek at the confluence of Cherry Creek likely supports rainbow trout and would also therefore be considered a recreational fishery.

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Table 3.3-3 Cherry Creek Watershed Macroreach and Sample Site Locations

Creek	Macro Reach	UTM Coordinate Upper Reach Break		Upstream Measure (m)	Upstream Elevation (m)	Macro Reach Length (m)	Stream Valley Length	Gradient (%)	Sinuosity	Channel Type	Description	Fish and Fish Habitat Sampling Sites	Contribute to Commericial, Recreational, Aboriginal Fishery
		Easting	Northing										
Cherry Creek	1	670,499	5,617,720	6622	518	6622	6300	2.7	1.1	Alluvial, Irregular Rock	barrier 500 metres from mouth	CC-AL-01 (2008) CC-AL-02 (2007-08)	Y
Cherry Creek	2	672,364	5,614,986	10117	610	3495	3350	2.6	1.0	Alluvial, Irregular Rock		CC-AL-04 (2007-08, 2010-11)	Y
Cherry Creek	3	673,549	5,610,050	15960	914	5843	5550	5.2	1.1	Alluvial, Irregular		CC-04 (2014) CC-AL-05 (2007-08) CC-AL-06 (2007-08, 2010-11)	Y
Cherry Creek	4	671,229	5,608,429	18962	1250	3002	2850	11.2	1.1	Rock Alluvial, Irregular			Y
Cherry Creek	5	669,175	5,604,888	23416	1433	4454	4250	4.1	1.0	Alluvial, Irregular Lake		CC-AL-07 (2008) CC-AL-08 (2008)	Y
Alkali Creek	1	673,747	5,614,317	2091	640	2091	1950	2.5	1.1	Alluvial, Irregular Lake	channel diverted around historic Afton Tailings Storage Facility, with some flow into the pond		Y
Alkali Creek	2	677,231	5,609,263	10242	960	8151	6100	3.5	1.3	Alluvial, Irregular Not Mapped	discontinuous channel		UK
Alkali Creek	3	676,969	5,609,106	10545	960	303	300	0.0	1.0	Lake	Dam Lake - 3.6 ha		UK
"Rush Creek"	1	679,345	5,608,561	6405	939	6405	5750	2.4	1.1	Alluvial, Irregular	No natural channel observed at location of water line crossing from Kamloops Lake (RC-AL-01) - ditch parallel to Afton Mine Haul Road and Highway 5	RC-AL-01 (2010-11, 2014) RC-AL-02 (2010-11) RC-AL-03 (2010-11) RC-AL-04 (2010-11)	N

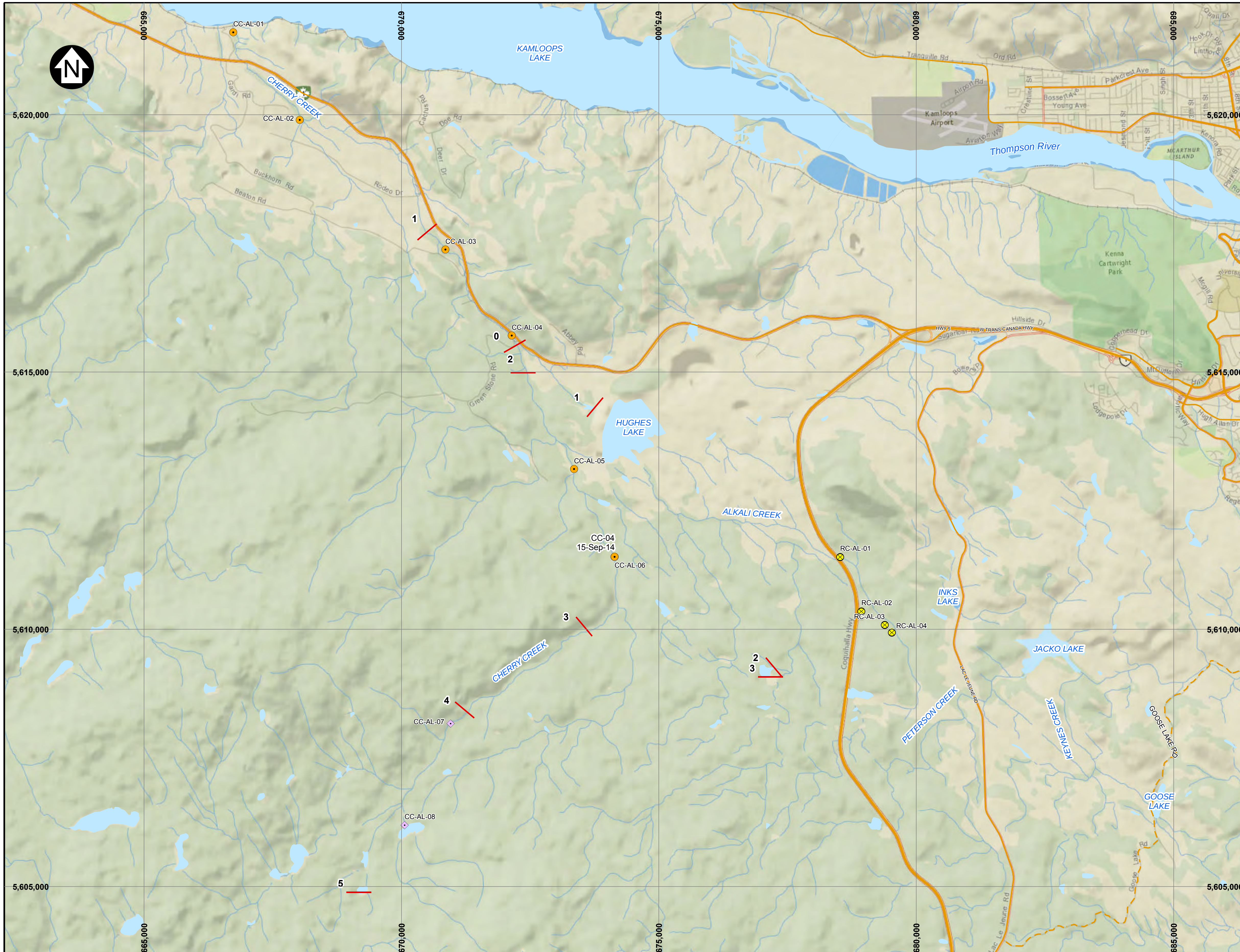
NOTES:

1. SOURCE iMapBC 2.0 AVAILABLE AT http://www.data.gov.bc.ca/dbc/geographic/view_and_analyze/imapbc/index.page. ACCESSED NOVEMBER 2014.
2. CODE - Y = YES, N = NO, UK = UNKNOWN.

Table 3.3-4 Cherry Creek Water Licence Points of Diversion

LICENCE NO	PURPOSE	QUANTITY	UNITS
F040520	Domestic	2.273	m^3/day
C059167	Domestic	4.546	m^3/day
F061512	Domestic	2.273	m^3/day
F018230	Domestic	2.273	m^3/day
C059166	Enterprise	4.546	m^3/day
C059167	Enterprise	2.273	m^3/day
C131119	Irrigation	48475.764	m^3/year
C104597	Irrigation	65362.105	m^3/year
C068403	Irrigation	2837.004	m^3/year
C047146	Irrigation	107929.5	m^3/year
C129803	Irrigation	41568.276	m^3/year
C110581	Irrigation	3700.44	m^3/year
C114726	Irrigation	608722.38	m^3/year
C104599	Irrigation	7400.88	m^3/year
C046351	Irrigation	1110.132	m^3/year
C046352	Irrigation	3700.44	m^3/year
C054718	Irrigation	37004.4	m^3/year
F061512	Irrigation	210098.648	m^3/year
F060853	Irrigation	61674	m^3/year
C048123	Irrigation	56740.08	m^3/year
F019330	Irrigation	61674	m^3/year
C048122	Irrigation	109162.98	m^3/year
F019746	Irrigation	70925.1	m^3/year
C046352	Irrigation	3700.44	m^3/year
C046350	Irrigation	2220.264	m^3/year
C104598	Irrigation	34512.77	m^3/year
C129405	Irrigation	23559.468	m^3/year
C110581	Stockwatering	2.273	m^3/day
C104597	Stockwatering	3.41	m^3/day
C104598	Stockwatering	6.819	m^3/day
F061564	Storage-Non Power	72775.32	m^3/year
C054719	Storage-Non Power	11594.712	m^3/year
F019747	Storage-Non Power	70925.1	m^3/year
C054935	Storage-Non Power	25409.688	m^3/year

NOTES:
1. CURRENT WATER LICENCES AVAILABLE AT IMAPBC, ACCESSED MARCH 24, 2015.



LEGEND:

GENERAL

- UPPER REACH BREAK
- RIVER/CREEK
- LAKE

FISH AND FISH HABITAT SAMPLE SITES 2014

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING

FISH AND FISH HABITAT SAMPLE SITES 2007 - 2011

- ELECTROFISHING
- HABITAT SITE
- MINNOW TRAPPING

ELECTROFISHING SITE LENGTH 2014

Site Code	Date	Distance Sampled
CC-04	15-Sep-14	90

NOTES:

1. BASE MAP: ESRI ARCGIS ONLINE MAPS.
2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:75,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

SCALE 0.5 0.25 0 0.5 1 1.5 2 2.5 3 km

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CHERRY CREEK REACHES AND FISH AND FISH HABITAT SAMPLE SITES

Knight Piésold CONSULTING

P/A NO. VA101-246/35 | REF NO. 1

FIGURE 3.3-15 | REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
0	06MAY'15	ISSUED WITH REPORT	SCE	AMD	RCB

SAVED: M:\1\01\00246\35\A\GIS\Figs\Report1_FishAquaticBaseline\CherryCrFish&FishHabitat.mxd; May 06, 2015 3:00 PM; adinca

Macroreach 3

Cherry Creek in the third macroreach has a moderate gradient (5.2%), meandering channel. The 2014 fish and fish habitat sampling and aquatic monitoring site is located in the third macroreach: this site (CC-04) corresponds to site CC-AL-06 in the 2007 through 2011 sampling program.

The CPUE calculated for fish sampling between 2007 and 2011 ranged from a low of 0.008 fish/second in July 2008 to a high of 0.079 fish/second in September 2007. Median fish lengths (fork length) ranged from 52 mm in both September 2007 and September 2010 to 100 mm in September 2011. Electrofishing was conducted on September 15, 2014 over a distance of 90 m and sampling time of 96 seconds. A total of 18 rainbow trout were captured and an additional 20 rainbow trout were observed; eight rainbow trout were retained for tissue metals analysis. The rainbow trout retained for tissue analysis ranged in size from 99 mm to 122 mm. The CPUE was the highest recorded at all of the stream sites in 2014 (0.188 fish/second). The difference in CPUE between the 2014 sampling and the 2007 through 2011 sampling program could be attributed to the fact that the purpose of the 2014 sampling was to capture fish for metals analysis; therefore, spot electrofishing was conducted that targeted areas with optimal fish habitat (overhanging cover, deep pools, cutbanks, etc.) rather than sampling all habitat types.

Rainbow trout rearing habitat is rated as good, based on channel complexity and abundant cover (Figure 3.3-16). Good quality spawning habitat is present throughout the creek between the diversion structure in the lower 500 m of the creek and the fish barrier downstream of Chuwhels Lake (Knight Piésold Ltd. 2013a). Pools provide overwintering habitat. The presence of juvenile and adult rainbow trout life stages suggests that Cherry Creek contains a self-sustaining rainbow trout population (Knight Piésold Ltd. 2013a). AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach. As defined in the *Fisheries Act*, the rainbow trout in this macroreach would contribute to a recreational fishery.

PANEL1. DOWNSTREAM VIEW OF CHERRY CREEK, SITE CC-04, SEPTEMBER 15, 2014.

PANEL 2. UPSTREAM VIEW OF SITE CC-04, SEPTEMBER 15, 2014.

Figure 3.3-16 Cherry Creek Sampling Site (CC-04), September 15 2014

Tributary Reaches

Alkali Creek

Alkali Creek flows from the east into the second macroreach of Cherry Creek, near the upper reach break. The Alkali Creek watershed has an area of 4,703 ha. Many of the historic Afton Mine components are within the Alkali Creek watershed, including the tailings storage facility (the former Hughes Lake) and Pothook Lake.

It is likely that rainbow trout from Cherry Creek access the first macroreach of Alkali Creek, therefore, as defined in the *Fisheries Act*, this macroreach would contribute to a recreational fishery. AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach.

The water line from Kamloops Lake for the Ajax Project will cross the outlet creek from Rush Lake an unnamed tributary of Alkali Creek (watershed code 120-862000-40700-61400) east of Highway 5, near the former Afton Mine Haul Road. No evidence of a natural creek was found at this location; however, a rip-rapped ditch runs parallel to and then under the former Afton Mine Haul Road through a 1.85 m diameter culvert near Highway 5 (Figure 3.3-17, Panel 1). An additional culvert runs under the former Afton Mine Haul Road from a ditch along the east side of Highway 5. The culverts converge on the north side of the Afton Mine Haul Road, reporting to an approximately 60 m long ditch that ends in a 1.85 m diameter culvert under Highway 5 (Figure 3.3-17, Panel 2).

PANEL1. VIEW EAST FROM SOUTH SIDE OF AFTON MINE HAUL ROAD SHOWING DRAINAGE DITCH AT MAPPED LOCATION OF ALKALI CREEK UNNAMED TRIBUTARY. SEPTEMBER 15, 2014.

PANEL 2. VIEW NORTH OF DITCH PARALLEL TO HIGHWAY 5 ON NORTH SIDE OF HISTORICAL AFTON MINE HAUL ROAD. SEPTEMBER 15, 2014.

Figure 3.3-17 Unnamed Tributary to Alkali Creek at Site of Ajax Project Waterline Crossing

3.3.1.3 Anderson Creek

Anderson Creek (watershed code 128-123700-56200) is a third order stream with a total stream length of approximately 25.4 km that flows into Campbell Creek (watershed code 128-123700), a tributary of the South Thompson River. Anderson Creek is divided into seven macroreaches, with McConnell Lake as the uppermost reach. Macroreach characteristics are summarized in Table 3.3-5 and shown on Figure 3.3-18.

There are 28 current water licences on Anderson Creek; the total volume by identified purpose is:

- Conservation - stored water 232,881 m^3/year
- Irrigation 1,303,209 m^3/year
- Stockwatering 2.27 m^3/day, and
- Storage - non-power 606,009 m^3/year.

Individual licence purpose and quantity are shown in Table 3.3-6.

No fish are recorded in Anderson Creek in the provincial database. Rainbow trout are reported in Hull Lake, a small (approximately 2.5 ha), private lake approximately 1 km southwest of Edith Lake. The provincial database contains historical records of cutthroat trout (1911 observation) and brook trout (1965 observation) in McLeod Lake.

Knight Piésold CONSULTING

Table 3.3-5 Anderson Creek Macroreach and Sample Site Locations

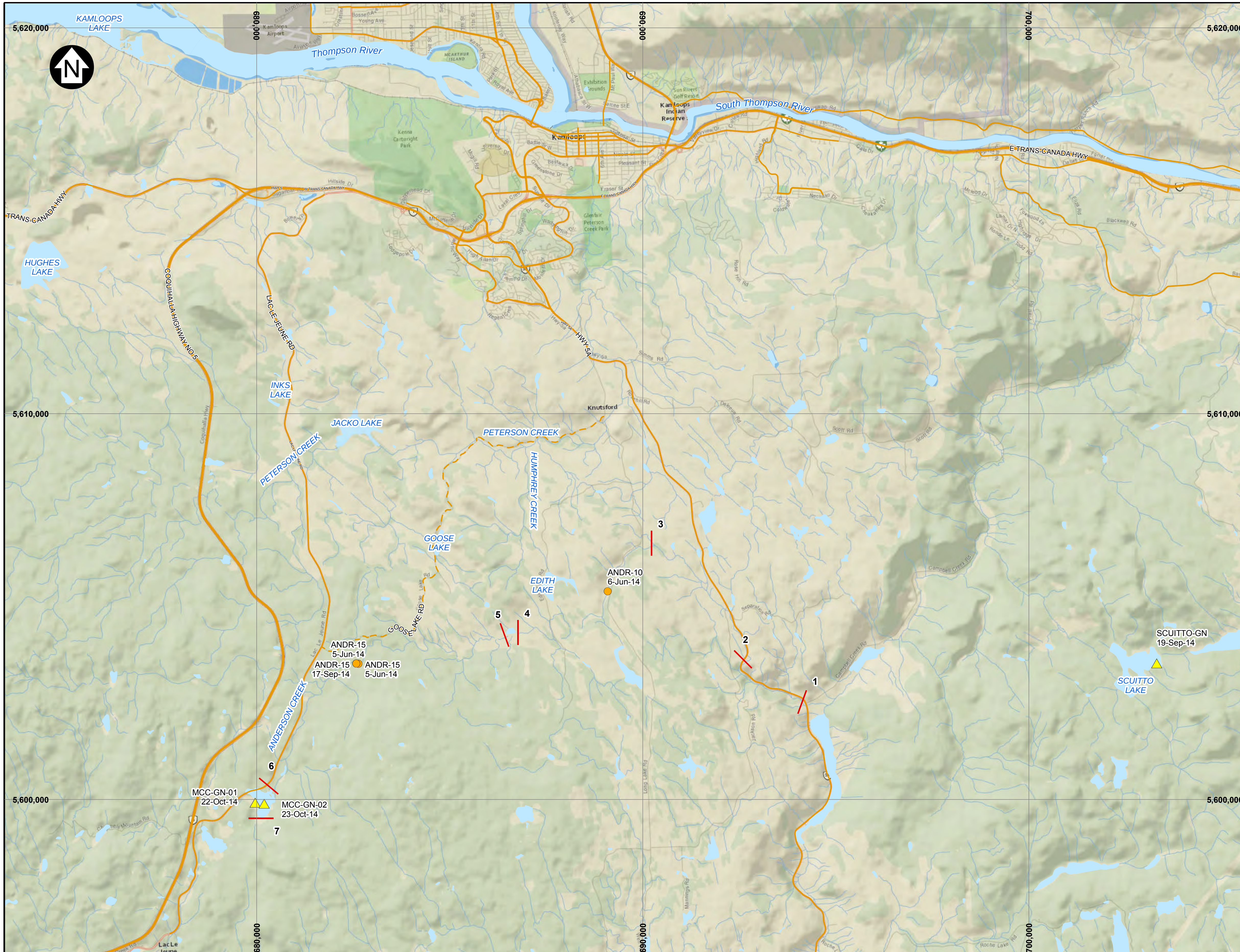
Macro Reach	UTM Coordinate Upper Reach Break		Upstream Measure (m)	Upstream Elevation (m)	Macro Reach Length (m)	Stream Valley Length	Gradient (%)	Sinuosity	Channel Type	2014 Fish and Fish Habitat Sampling Sites	Contribute to Commericial, Recreational, Aboriginal Fishery
	Easting	Northing									
1	694,128	5,602,528	649	701	649	650	2.2	1.0	AI		UK
2	692,598	5,603,631	2945	853	2296	2150	6.6	1.1	AI		UK
3	690,228	5,606,645	7401	937	4456	4050	1.9	1.1	AI		UK
4	686,771	5,604,329	13440	1032	6039	4550	1.6	1.3	AR, AI	ANDR-10	UK
5	686,420	5,604,262	13759	1032	319	250	0.0	1.3	L		UK
6	680,422	5,600,241	24578	1301	10819	8300	2.5	1.3	AI, L	ANDR-15	Y
7	680,122	5,599,513	25378	1301	800	850	0.0	0.9	L	MCC-01 MCC-02	Y

Table 3.3-6 Anderson Creek Water Licence Points of Diversion

LICENCE NO	PURPOSE	QUANTITY	UNITS
F132035	Conservation - Stored Water	39594.708	m^3/year
C132033	Conservation - Stored Water	5180.616	m^3/year
C131014	Conservation - Stored Water	12334.819	m^3/year
C131015	Conservation - Stored Water	12334.819	m^3/year
F129343	Conservation - Stored Water	163436.1	m^3/year
C036058	Irrigation	9621.144	m^3/year
C115107	Irrigation	11101.32	m^3/year
C067082	Irrigation	186662.528	m^3/year
F049859	Irrigation	38484.576	m^3/year
C045886	Irrigation	82519.812	m^3/year
F007306	Irrigation	98678.4	m^3/year
C130930	Irrigation	255824.167	m^3/year
F065638	Irrigation	39594.708	m^3/year
C045896	Irrigation	5180.616	m^3/year
F011081	Irrigation	15418.5	m^3/year
C115106	Irrigation	16651.98	m^3/year
C116098	Irrigation	31207.044	m^3/year
F016529	Irrigation	240528.6	m^3/year
C116098	Irrigation	31207.044	m^3/year
F016529	Irrigation	240528.6	m^3/year
C116098	Stockwatering	2.273	m^3/day
F021540	Storage-Non Power	38484.576	m^3/year
F019451	Storage-Non Power	9621.144	m^3/year
F007307	Storage-Non Power	98678.4	m^3/year
C045887	Storage-Non Power	82519.812	m^3/year
C130933	Storage-Non Power	61797.45	m^3/year
C130934	Storage-Non Power	194026.719	m^3/year
C024354	Storage-Non Power	120881.04	m^3/year

NOTES:

1. CURRENT WATER LICENCES AVAILABLE AT IMAP BC, ACCESSED MARCH 24, 2015.
2. TOTAL VOLUME BY PURPOSE: CONSERVATION - STORED WATER 232,881 m^3/year; IRRIGATION TOTAL QUANTITY 1,303,209 m^3/year; STOCKWATERING 2.27 m^3/day; STORAGE - NON-POWER 606,009 m^3/year.



LEGEND:

GENERAL

- UPPER REACH BREAK
- RIVER/CREEK
- LAKE

FISH AND FISH HABITAT SAMPLE SITES

- ELECTROFISHING
- GILL NETTING
- MINNOW TRAPPING SITE

ELECTROFISHING SITE LENGTH 2014

Site Code	Date	Distance Sampled
ANDR-10	6-Jun-14	150
ANDR-15	5-Jun-14	30
ANDR-15	5-Jun-14	50
ANDR-15	17-Sep-14	150

NOTES:

1. BASE MAP: ESRI ARCGIS ONLINE MAPS.
2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:100,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

SCALE 1 0.5 0 1 2 3 4 5 km

KGHM AJAX MINING INC.

AJAX PROJECT

ANDERSON CREEK AND SCUITTO LAKE SAMPLE SITES

Knight Piésold CONSULTING

P/A NO. VA101-246/35 | REF NO. 1

FIGURE 3.3-18 | REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
0	06MAY'15	ISSUED WITH REPORT	SCE	AMD	RCB

SAVED: M:\1\01\00246\35\A\GIS\Figs\Report1_FishAquaticBaseline\AndersonCrFish&FishHabitat.mxd; May 06, 2015 3:02 PM; adinca

Macroreach 4

The fourth macroreach of Anderson Creek has an average map gradient of 1.6% and an alluvial channel. Monitoring site ANDR-10 is located approximately 4.7 km downstream of Hull Lake, which marks the upper reach break.

Stream morphology in the sampling section of the reach is a confined riffle and step-pool (Figure 3.3-19 Panel 1) downstream of an open, marshy section Figure 3.3-19, Panel 2). The substrate is dominated by large cobbles and gravels embedded in fine materials (Figure 3.3-19, Panel 3). Channel width averages 4 m; in June 2014 the average wetted width was 2.78 m and discharge was measured as 0.046 m^3/s. Water depths ranged between 0.19 m and 0.26 m. Cover is primarily overhanging vegetation and small woody debris. Riparian vegetation is a mixed, mature forest. Disturbance indicators include eroding and sloughing banks in the confined section, and cattle encroachment causing unstable banks in the marshy section.

Electrofishing was conducted over a 150 m section of the creek for a total of 309 seconds on June 6, 2015; no fish were captured or observed. Water temperature at the time was 15.35°C and specific conductivity was 675 µS/cm.

Habitat in the riffle-step pool section of the creek is rated as moderate for juvenile rearing based on channel complexity and abundant cover. Spawning habitat is rated as moderate based on abundant gravel. Overwintering habitat is poor due to lack of deep pools. No fish were captured during sampling in 2014; however, no barriers are noted in the provincial database therefore rainbow trout from Hull Lake upstream or from the Campbell Creek watershed downstream can potentially access this macroreach. The macroreach would therefore be described as contributing to a commercial, recreational, or Aboriginal fishery. AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach.

PANEL 1. DOWNSTREAM VIEW OF CONFINED CHANNEL, JUNE 6, 2014.

PANEL 3. UPSTREAM VIEW OF CREEK AT UPSTREAM END OF SAMPLE SITE, SEPTEMBER 22, 2014.

PANEL 3. VIEW OF CHANNEL BED, SEPTEMBER 22, 2014.

Figure 3.3-19 Anderson Creek Lower Sample Site (ANDR-10)

Macroreach 5

Hull Lake comprises the fifth macroreach of Anderson Creek. Rainbow trout are reported in Hull Lake. The macroreach would therefore be described as contributing to a commercial, recreational, or Aboriginal fishery. AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach.

Macroreach 6

The macroreach downstream of McConnell Lake is a meandering channel with a gradient of 2.5%. The upper monitoring site (ANDR-15) is located in this macroreach, approximately 5 km downstream of McConnell Lake, at a single lane road crossing. Near the downstream end of the sampling site the creek flows through an approximately 1.4 m diameter hanging culvert, a vertical barrier to upstream passage at most flows. Downstream of the culvert the gradient ranges from 4% to 6%, the channel width is 3 m and in early June the wetted width averaged 1.5 m. The dominant substrate is angular cobble. The channel is entrenched. Abundant large woody debris is present in the wetted channel.

Fish sampling in 2014 consisted of:

- An 80 m section of the creek was electrofished on June 5, 2015 for a total of 885 seconds; 12 rainbow trout were captured, ranging in size from 90 mm to 184 mm. Ages were assessed as between 1 and 3 years. The CPUE was 0.014 fish/second. Water temperature at the time of sampling was 9.21°C and specific conductivity was 670 µS/cm.
- Electrofishing was also conducted on September 17, 2014 over a total distance of 150 m and duration of 410 seconds. A total of 37 rainbow trout were captured, ranging in size from 39 mm to 270 mm, and in ages from 0 to 4. The CPUE was 0.09 fish/second.

Stream morphology upstream of the culvert at the upper site is primarily riffle, with a short glide immediately upstream of the culvert Figure 3.3-20, Panel 1 and Panel 2). The channel is confined within a low valley. The substrate is dominated by large cobbles and gravels (Figure 3.3-20, Panel 3) and banks are well defined and comprised of boulders and fine substrate. Channel width ranges between 2 m and 5 m; in June 2014 the wetted width was between 1.7 m and 2 m at a discharge of 0.046 m^3/s. Cover is abundant and provided by overhanging vegetation, undercut banks, small scour pools, and large woody debris. Riparian vegetation is a mixed, mature forest. Rainbow trout habitat is rated as good for rearing, spawning, and overwintering, primarily due to defined habitat units, abundant cover, presence of deep pools, and an intact riparian buffer.

PANEL 1. DOWNSTREAM VIEW OF CHANNEL, JUNE 6, 2014.
PANEL 2. DOWNSTREAM VIEW OF CHANNEL, JUNE 6, 2014.
PANEL 3. DOWNSTREAM VIEW OF CHANNEL SEPTEMBER 18, 2014.

Figure 3.3-20 Anderson Creek Upper Sample Site (ANDR-15)

The macroreach would be described as contributing to a commercial, recreational, or Aboriginal fishery, as it contains a self-sustaining population of rainbow trout. AMEC, in their review of Aboriginal Cultural Heritage Study, found no evidence of Aboriginal fishing in this macroreach.

3.3.1.4 Summary – Fish Capture and Condition Factor Comparison

The electrofishing CPUE for each of the stream sites sampled in 2014, along with fish lengths and ages, is summarized in Table 3.3-7. Minnow trapping CPUE is summarized in Table 3.3-8.

Condition factors for each of the stream populations were calculated following the methodology presented in Stock Assessment Report Edith Lake (Ministry of Environment 1999). Condition factor is a comparison of the fork length versus weight – higher values indicate better condition. The highest condition factor (13.3) for the Peterson Creek sites is seen at PC01 in September (Figure 3.3-21). A slightly lower factor (12.0) was seen in the population present in Peterson Creek upstream of Bridal Veil Falls (PC-04).

Table 3.3-7 Electrofishing Effort and Capture (Streams)

Site Code	Date	Distance Sampled (m)	EF effort (seconds)	# Fish Captured	CPUE	Fish Length (mm)		Age	
						Min	Max	Min	Max
PC-01	23-Jul-14	115	273	16	0.059	109	175	2+	4+
PC-01	17-Sep-14	75	117	14	0.120	111	181	1+	2+
PC-04	23-Jul-14	131	398	8	0.020	131	176	2+	4+
PC-05	06-Jun-14	70	382	NFC	0				
PC-03	03-Jun-14	45	204	NFC	0				
PC-03	22-Jul-14	70	261	NFC	0				
PC-08	05-Jun-14	560	400	NFC	0				
PC-08	03-Jun-14	350	502	5	0.010	465	520	4+	7+
PC-08	23-Jul-14	200	653	NFC	0				
PC-10	22-Jul-14	207	551	2	0.004	95	114	1+	2+
PC-15	04-Jun-14	50	163	1	0.006	91	91	1+	1+
ANDR-15	05-Jun-14	80	885	12	0.014	90	184	1+	3+
ANDR-15	17-Sep-14	150	410	37	0.090	39	270	1+	4+
ANDR-10	06-Jun-14	150	309	NFC					
CC-04	15-Sep-14	90	96	18	0.188	99	122	1+	2+

NOTES:

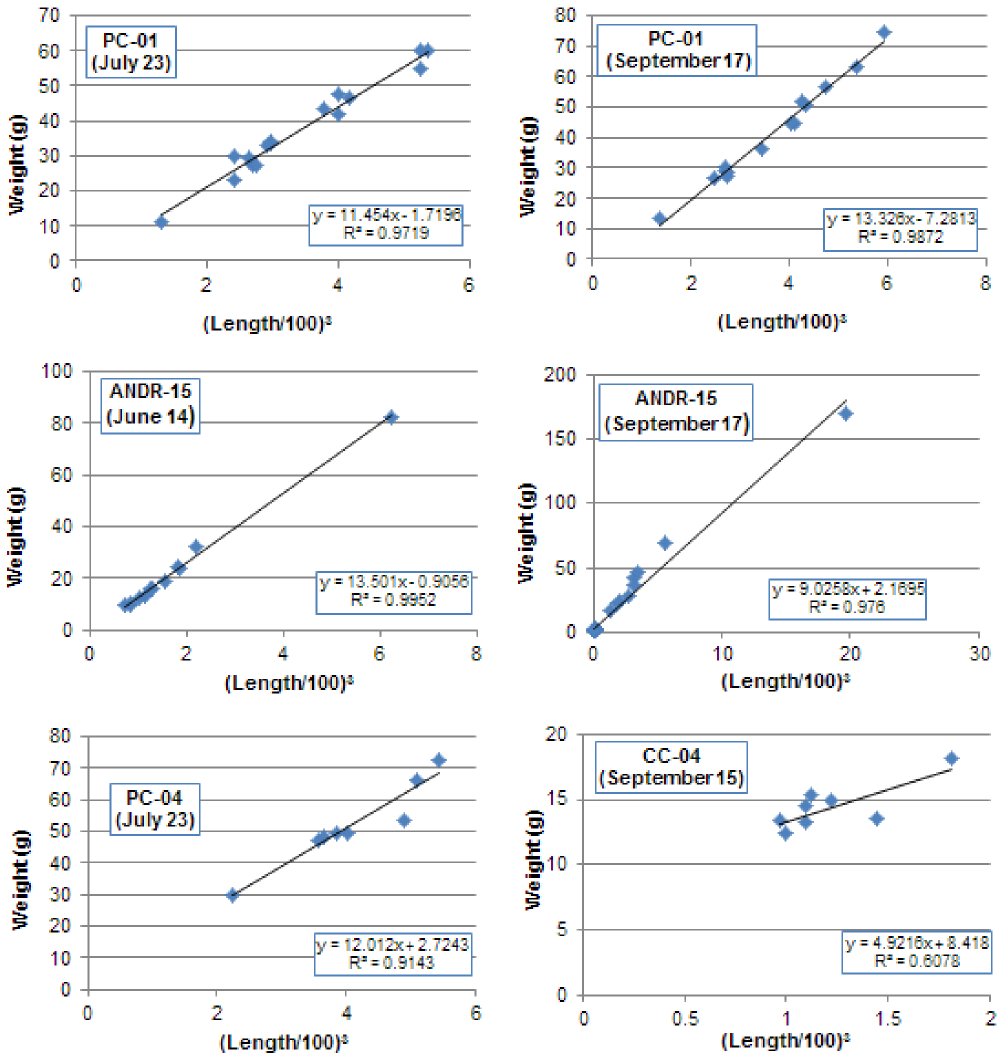
1. FISH LENGTH REFERS TO FORK LENGTH.
2. CPUE IS # FISH CAPTURED / ELECTROFISHING SECONDS.
3. NFC = NO FISH CAUGHT.

Table 3.3-8 Minnow Trapping Effort and Capture

Site Code	Date	# MT	# Hours/ Trap	Total MT hours	# Fish	CPUE
GOOSE	03-Jun-14	24	22	528	NFC	
JACKO-WL	03-Jun-14	6	22.5	135	NFC	
JACKO-WL	04-Jun-14	8	19	152	NFC	
KC-05	03-Jun-14	1	22	22	NFC	
KC-WL	04-Jun-14	8	17	136	NFC	
PC-03	03-Jun-14	8	19	152	NFC	
PC-15	04-Jun-14	5	20	100	1	0.01

NOTES:

1. CPUE IS # FISH CAPTURED / TOTAL MINNOW TRAP HOURS.



NOTES:

1. CONDITION FACTORS ARE THE SLOPES OF THE REGRESSION LINES.

Figure 3.3-21 Condition Factors for Stream Rainbow Trout Populations

3.3.2 Lakes

3.3.2.1 Jacko Lake

Habitat

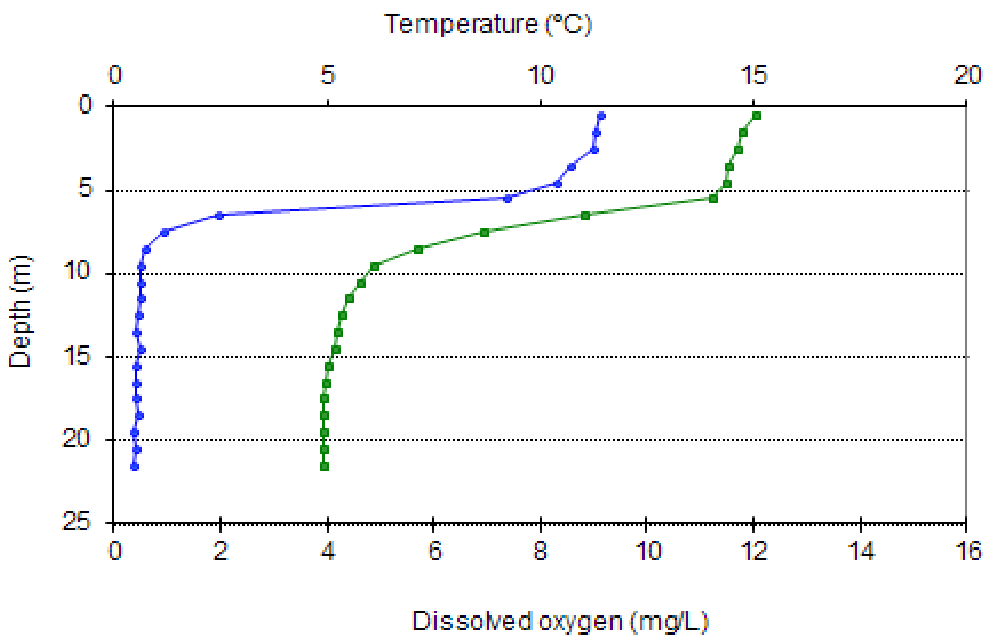
Jacko Lake (watershed code 128-009700) is classified as macroreach six of Peterson Creek by BC MOE. Jacko Lake has been described as one of the most valuable small lake fisheries in the region, however more than a decade of extreme low water conditions has led to a loss of fisheries production capacity (Maricle 2012). Road access to the lake is via Lac Le Jeune Road and an unnamed gravel road that leads to a boat ramp on the north arm. The total catchment area of Jacko Lake is approximately 3970 ha (iMapBC 2015). Peterson Creek flows into the southwest arm of the lake and flows out the southeast arm (see Figure 3.3-1). A 3 m high earthfill dam with a crest elevation of 892.3 m is located on the outlet arm. A screened low level outlet within the dam allows for regulated releases of water from Jacko Lake to Peterson Creek for purposes of irrigation; the gate is manually operated and is controlled by the water bailiff. Bathymetric mapping from 1950 shows a small lake with a perimeter of 3,700 m and surface area of 40 ha. The lake was raised during the 1970s through construction of the dam at the Peterson Creek outlet, and updated mapping from 1978 shows an expanded lake, with the creation of the northeast and southeast arms and expansion of the two westerly arms. Provincial records indicate that Jacko Lake has a perimeter of 4925 m, maximum depth of 24.8 m, mean depth of 10.9 m; surface area of 46.7 ha and littoral area of 21.5 ha; however, this information is based on a bathymetric and plan survey conducted in 1978 when the spillway crest elevation and high water level were 891.09 m elevation. Price (1991) reported that the outlet dam was raised by one metre in 1989 in order to double the live storage with the purpose of retaining water for irrigation in drier years. The live storage of Jacko Lake at the dam spillway sill elevation was estimated as 901 acre-feet (1,111,367 m^3) by BC Rivers Consulting Ltd. (2011).

There are seven current water licences on Jacko Lake for the purposes of storage (non-power) and conservation, with the point of diversion at the Peterson Creek outlet (licence numbers and quantities are included in Table 3.3-2; the total quantity allocated is 924,616 m^3/year (iMapBC 2015). Releases from Jacko Lake are not permitted when lake level drops to 1.24 m below the spillway crest level of 2.60 m (as measured on the lake staff gauge affixed to the low level outlet box) (BC Rivers Consulting Ltd. 2011).

Other than creel survey data, little public information is available on Jacko Lake in the provincial fisheries information summary system database. A lake survey in 1950 noted that the Peterson Creek outlet provided the only suitable spawning area and the Peterson Creek inlet was small and only flowed in the spring (Bison 1989). Secchi depth readings ranged from 1 m in May 1950 to 3.5 m in August 1950 (Bison 1989).

Oxygen-temperature profiles were recorded by KAM in Jacko Lake between January 9 and October 21, 2014; detailed results are reported in the baseline water quality report (Knight Piésold 2014). The lake was approximately isothermal on January 9, 2014, with temperatures ranging between 2.98°C at a depth of 1.5 m and 3.28 at a depth of 18.5 m. A weak thermocline (the water layer in which water changes more rapidly with depth than it does in the layers above or below) was seen between 8.5 m and 11.5 m on April 28, with epilimnion (the top-most layer in a thermally stratified lake) temperatures ranging from 8.2°C at the surface to 6.8°C at 8.5 m; hypolimnion (the dense, bottom layer of water in a thermally-stratified lake) temperatures ranged from 4.6°C at 11.5 m to 3.8°C at 23.5 m. The thermocline appeared to shift slightly in May, ranging between 5.5 m and 10.5 m; hypolimnion temperatures ranged from 5.1°C and 4.3°C at depth; a similar pattern was seen on May 26, with the top of the thermocline at approximately 4.5 m. Surface temperatures near the end of May had warmed to 15.3°C. The thermocline remained between approximately 4.5 m and 10.5 m until September. Toward the end of June epilimnion (surface to 4.5 m) temperatures were approaching 20.0°C; epilimnion temperatures exceeded 20°C in the July and August sampling. Water column temperatures were starting to become isothermal by mid-September, with the epilimnion temperatures dropping to approximately 14.0°C; hypolimnion temperatures remained at approximately 5.5°C. The lake had not turned over by the October 21 sampling event; the epilimnion extended to a depth of 7.5 m and the temperature had decreased to 10.3°C, while a gradient was starting in the hypolimnion, with temperatures near the top at 6.3°C.

Dissolved oxygen concentrations on January 9, 2014 ranged from 5.9 mg/l at the surface (under the ice) to 2.1 mg/l at a depth of 18 m. Concentrations had increased above 12 mg/l in the upper 8.5 m by April 28 but sharply declined to less than 2 mg/l below 15.5 m. Oxygen concentrations in the surface layer had declined to approximately 11 mg/l by the end of May, dropping to 7.9 mg/l at 9.5 m. The 30-day mean oxygen concentration for the protection of aquatic life is 8 mg/l, while the instantaneous minimum is 5 mg/l. Concentrations were less than 8 mg/l below a depth of 4.5 m by the end of June; by July 22 concentrations had decreased to less than 5 mg/l at depths below 5.5 m. By mid-September oxygen concentrations were less than 2 mg/l at depths below 6.5 m (Figure 3.3-22). Stratification was still seen in the October measurements, but it appears that the water column was starting to mix.



NOTES:
1. DEPTH UNITS ARE METRES BELOW SURFACE.
2. TEMPERATURE IS SHOWN ON THE PRIMARY X-AXIS.
3. DISSOLVED OXYGEN IS SHOWN ON THE SECONDARY X-AXIS.
4. REPRODUCED FROM BASELINE WATER QUALITY REPORT, KNIGHT PIÉSOLD LTD. 2015.

Figure 3.3-22 September 2014 Jacko Lake Dissolved Oxygen and Temperature Depth Profiles

Fish Population

Provincial records report that no fish were present in the waterbody in 1939 (BC Ministry of Environment Fisheries Information Summary System 2015). However, anecdotal reports suggest that Jacko Lake was an important rainbow trout fishery before the arrival of Europeans, and that local First Nations fished for rainbow trout and kokanee (AMEC 2014). Provincial stocking records date from 1954 (when 74,000 rainbow trout were stocked); in the last two decades numbers have ranged from 6500 to 16,000 rainbow trout per year (Freshwater Fisheries Society of BC 2015). Since 2010, both Pennask (diploid) and Fraser Valley (triploid) strains have been released into Jacko Lake, from fingerling to fall catchable life stages (Freshwater Fisheries Society of BC 2015). Between 2010 and 2014 a total of 55,500 rainbow trout were released (Freshwater Fisheries Society of BC 2015). In April 2015 6500 all-female Pennask strain yearlings and 3500 triploid Fraser Valley fingerlings were released. Rainbow trout are typically released in the spring (between April and June) as yearlings and fingerlings. An additional release of fall catchable rainbow trout occurred in September 2010. Release data for the period 2010 through 2014 indicates fingerling stocks are a triploid Fraser Valley strain with an average weight of 6.582 grams; yearlings are diploid Pennask strain with average weight of 10.154 grams. The “fall catchable” life stage release was a triploid Fraser Valley strain with an average weight of 68.21 grams.

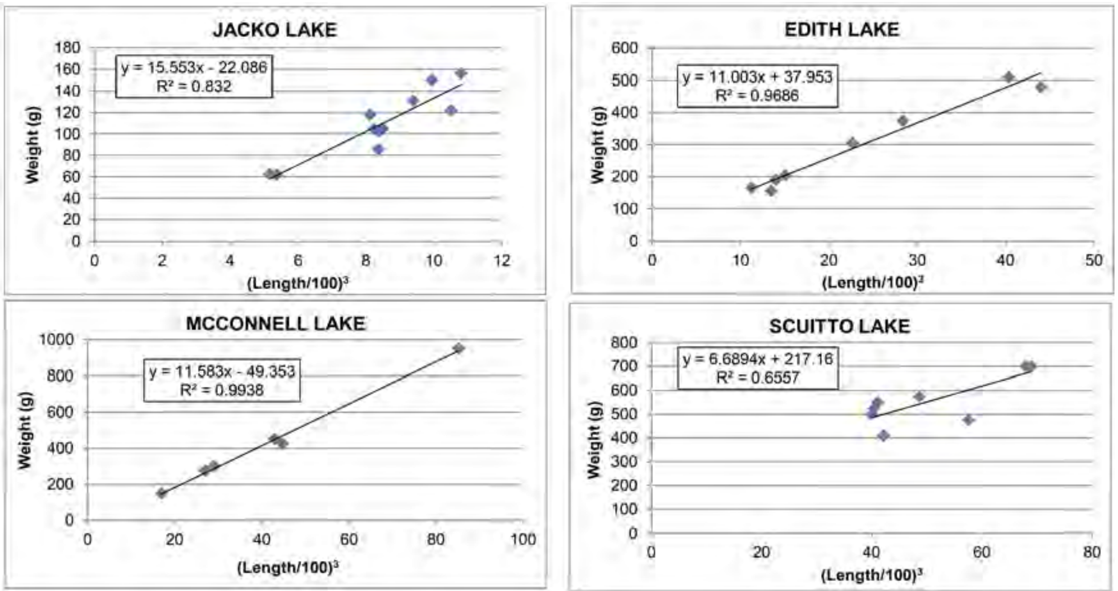
The Freshwater Fisheries Society of BC creates triploid and all-female stocks of fish to improve the fishery (Freshwater Fisheries Society of BC 2004). Triploidization results in sterility in both males and females. The benefits of sterility are described by the Freshwater Fisheries Society of BC as increased size, since energy usually diverted into reproductive development goes to somatic growth, reduction in natural post-spawning mortality, longer life, and the reduction in the risk of potential genetic interaction with wild fish (Freshwater Fisheries Society of BC 2004, 2015). Female triploids exhibit no ovary development or behavioural changes, while male triploids continue to produce hormones that cause changes associated with maturation and demonstrate false spawning behaviour (Freshwater Fisheries Society of BC 2004).

Rainbow trout captured in Jacko Lake in 2010 by gill netting ranged in size from 275 mm to 505 mm (Knight Piésold Ltd. 2013a). The condition factor estimated for these data is 16.4, comparable to the 2014 results. The CPUE reported for the floating five panel gill net was 6 rainbow trout per panel per hour, while the CPUE reported for the sinking one panel gill net was 0.245 rainbow trout per panel per hour (Knight Piésold Ltd. 2013a).

Gill nets were set in Jacko Lake in 2014 for the purpose of tissue collection for metals analysis. One single panel 8 m long by 2 m deep gill net was set from shore in Jacko Lake on July 24, 2014 and left to soak for 1.4 hours; two rainbow trout were captured, with fork lengths of 201 mm and 211 mm. The CPUE was 1.4 rainbow trout per net per hour. A four-panel gill net was set on September 17, 2014 and left to soak for 0.83 hours; a total of nine rainbow trout were captured, for a CPUE of 2.71 rainbow trout per panel per hour. The rainbow trout ranged in size 173 mm and 221 mm (see Appendix C2). Minnow traps were set in the wetland above the northwest arm of Jacko Lake on June 3 and June 4, 2014. In total, 14 traps were set for a combined duration of 287 hours; no rainbow trout were captured or observed.

Condition factors for Jacko Lake rainbow trout collected by the provincial fisheries agencies in 1949 to 1950 and 1967 (Bison 1989) were calculated as 13.9 and 12.4, respectively. The condition factor for the 2014 sample calculated following the methodology of Ministry of Environment (1999) was 15.5 (Figure 3.3-23). As previously noted; however, given the small sample size this value cannot be taken to indicate that the population condition factor has improved between the 2014 and previous surveys, and further, as mentioned in Section 2.5.3, since condition factor increases as length increases for fish that become rounder with age, only fish of similar sizes should be compared.

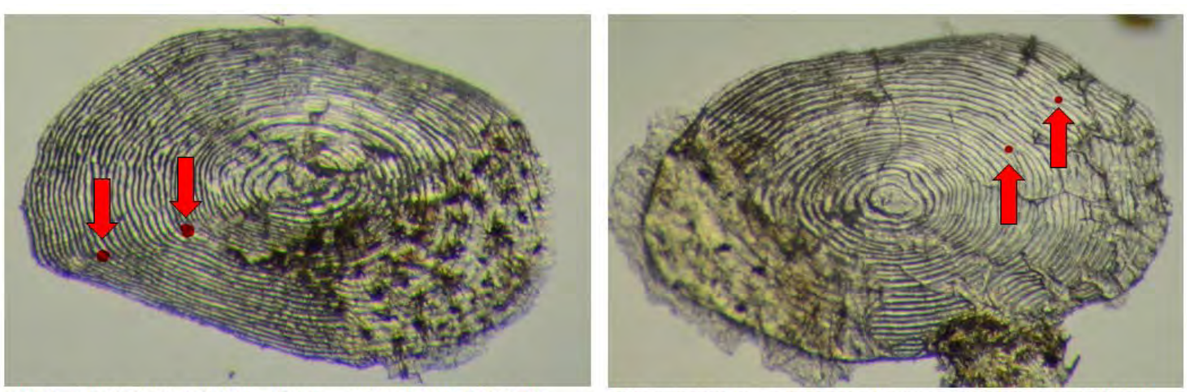
Comparisons with other lakes have to be viewed with caution as well, due to the fact that the body shape of the Pennask strain is leaner than that of the Fraser Valley strain, which would likely produce a different condition factor if calculated separately.



NOTES:
1. CONDITION FACTORS ARE THE SLOPES OF THE REGRESSION LINES.

Figure 3.3-23 Condition Factors in Project Lakes 2014

All rainbow trout captured from Jacko Lake in 2014 were aged as 2 and 3 (Appendices C2, C3). Digital microscopic images were taken of a sub-sample of each of the scales; Panel 1 on Figure 3.3-24 is of a scale from a rainbow trout with fork length of 175 mm and weight of 61.8 g, while the image in Panel 2 is of a scale from a rainbow trout with fork length of 219 mm and weight of 121.8 g. Both rainbow trout were aged as 2 years (with annuli indicated by the red dots). Jacko Lake is a popular recreational fishery; no information was found regarding Aboriginal use of the lake in their review of the Cultural Heritage Study.



PANEL 1. RED DOTS INDICATE ANNULI - 2+ YEAR OLD RAINBOW TROUT WITH FORK LENGTH OF 175 mm AND WEIGHT OF 61.8 g.

PANEL 2. RED DOTS INDICATE ANNULI - 2+ YEAR OLD RAINBOW TROUT WITH FORK LENGTH OF 219 mm AND WEIGHT OF 121.8 g.

Figure 3.3-24 Jacko Lake Rainbow Trout Aging Structures

3.3.2.2 Edith Lake

Habitat

Edith Lake (watershed code 128-009700-34600) is the headwater lake of Humphrey Creek, a tributary of Peterson Creek. Edith Lake is accessed from Kamloops via Highway 5A, Long Lake Road, and Edith Lake Road (Figure 3.3-1). Edith Lake Road runs along the western shore of the lake. The lake has a surface area of 28.9 ha and a maximum depth of 13 metres (Fisheries Information Summary System 2015); the average elevation is 1029 m (iMap BC). Mean depth is reported as 6.2 m (Andrusak 2000). There are no natural inlet streams (Mason 1962, Ministry of Environment 1999). Edith Lake has been described as one of the most productive and valuable small lake fisheries in the Kamloops region (Maricle 2012).

The Edith Lake Dam located at the outlet serves as an irrigation weir and discharges to Humphrey Creek only during high water or when additional flows are required for irrigation for water licence holders on Peterson Creek (BC Rivers Consulting Ltd. 2011). Flows are released through an outlet pipe. The dam is an earthfill structure with a height of 3.3 m, length of 60 m, and a crest elevation at 1023.2 m (BC Water Resources Atlas 2015). The outlet dam was upgraded in 2014, which required releasing water from Edith Lake into Humphrey Creek.

A water diversion and weir to deliver and store water within Edith Lake from Anderson Creek had not been utilized for approximately 12 years prior to 2012, which, according to Maricle (2012) resulted in pH levels of 9.0, which compromised the trout productivity within the lake. All Anderson Creek flow is licensed to go into Edith Lake in the winter (October 1 through March 31), while freshet flow in excess of that needed for licenses downstream on Anderson Creek is allotted for diversion in the spring (BC Rivers Consulting Ltd. 2011).

There are 10 current water licences on Humphrey Creek and Edith Lake for the purposes of storage (non-power) and conservation storage (Table 3.3-9); the total quantity allocated is 591,577 m^3/year (iMapBC accessed 2015). The Fish and Wildlife Branch of the ministry of Forests, Lands, and Natural Resource Operations holds four of the licences (combined volume of 277,286 m^3/year) and has an active application for a water licence for the purpose of conservation of 740,089 m^3/year. KGHM Ajax Mining Inc. holds three of the licences for storage (non-power) with a combined volume of 160,352 m^3/year (iMapBC accessed 2015).

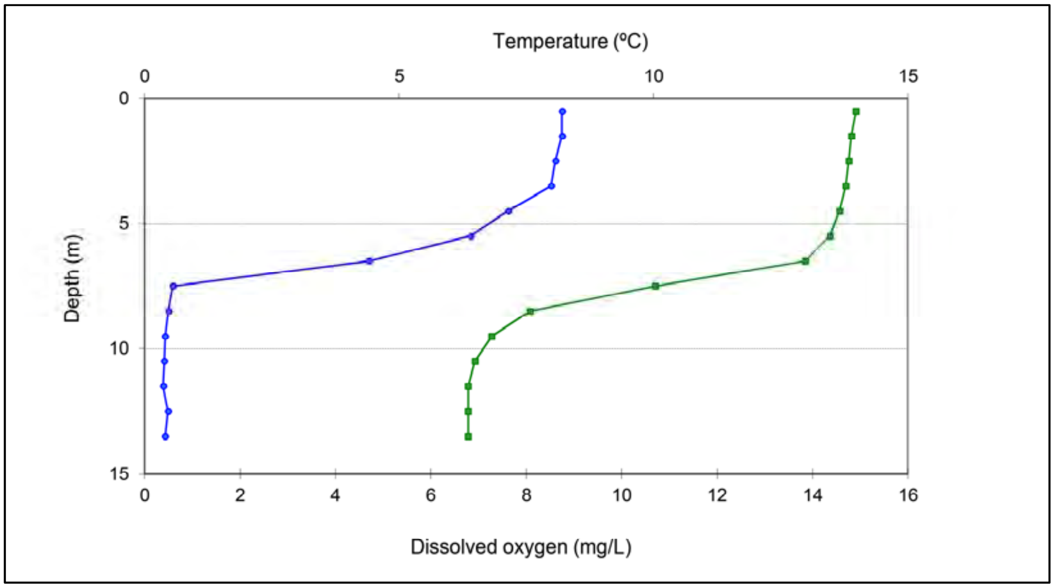
Table 3.3-9 Water Licence Points of Diversion Humphrey Creek

LICENCE NO	PURPOSE	QUANTITY	UNITS
F132035	Conserv.-Stored Water	39594.708	m^3/year
F007306		0	m^3/year
C132033	Conserv.-Stored Water	5180.616	m^3/year
F021540	Storage-Non Power	38484.576	m^3/year
C045887	Storage-Non Power	82519.812	m^3/year
C130934	Storage-Non Power	194026.719	m^3/year
C130933	Storage-Non Power	61797.45	m^3/year
F019451	Storage-Non Power	9621.144	m^3/year
F007308	Storage-Non Power	61674	m^3/year
F007307	Storage-Non Power	98678.4	m^3/year

NOTES:
1. CURRENT WATER LICENCES AVAILABLE AT IMAP BC, ACCESSED MARCH 24, 2015.
2. TOTAL VOLUME BY PURPOSE: CONSERVATION - STORED WATER 44,775 m3/year; STORAGE - NON-POWER 546,802 m3/year.

A historic biophysical survey of the lake in 1961 and 1962 noted low oxygen conditions in both summer and winter, with anaerobic conditions reported below a depth of 1.5 m on February 7, 1962 (Mason 1962). The lake was noted to stratify in both summer and winter; the summer thermocline occurred between approximately 3.6 m and 7.6 m (Mason 1962). Anoxic conditions were reported below 4.5 m in June and July; fall overturn was reported to have occurred sometime between September 5 and November 2, 1961, while spring overturn occurred in April 1962 (Mason 1962). Mason (1963) noted that only 40% of the total lake area was associated with oxygen concentrations greater than 1 mg/l in midsummer, with this area reduced to 15% in mid-winter.

Oxygen-temperature profiles recorded by KAM between April 30 and October 21, 2014 showed a similar pattern to those noted by Mason (1962, 1963); detailed results are reported in the Baseline Water Quality Report (Knight Piésold 2014). A weak thermocline was observed between 5.5 m and 8.5 m on April 30, with approximate temperatures of 7°C in the epilimnion and 4°C in the hypolimnion. Oxygen levels on April 30 ranged from approximately 12.5 mg/l at the surface, increasing slightly to 15.3 mg/l at a depth of 5.5 m, then sharply declining to approximately 3 mg/l near the bottom. In early July surface temperatures exceeded 20 C and the thermocline occurred between 3.5 m and 9.5 m, with temperatures sharply declining from 20°C to 6.4°C; the thermocline remained approximately the same until early August. By August oxygen concentrations in the upper 4.5 m ranged from approximately 4.6 mg/l at the surface to less than 2 mg/l at 5.5 m below the surface, and less than 1 mg/l at depths below approximately 6.5 m. By mid-September the lake was starting to turn over, with the upper 6.5 m being isothermal at approximately 13.5 C (Figure 3.3-25). By October 21, 2014 the water column was completely mixed, with a temperature of 9.6°C. By the third week of October dissolved oxygen concentrations in the upper 10.5 m of the water column ranged from 7.07 mg/l to 6.38 mg/l.



NOTES:
1. DEPTH UNITS ARE METRES BELOW SURFACE.
2. TEMPERATURE IS SHOWN ON THE PRIMARY X-AXIS.
3. DISSOLVED OXYGEN IS SHOWN ON THE SECONDARY X-AXIS.

Figure 3.3-25 September 2014 Edith Lake Dissolved Oxygen and Temperature Depth Profiles

Fish Population

Edith Lake was reported to have high standing crops of phytoplankton and a simple trophic structure because of the lack of fish, due to unsuitable conditions caused by the anoxic conditions and high summer temperatures (Mason 1963). Extended periods of ice cover, lack of sufficient wind for spring overturn, and high productivity with resultant high biological oxygen demand combine to create low oxygen conditions and cause winter fish mortality in lakes (Andrusak 2000). Edith Lake was reported to occasionally experience partial or total winter-kill events (Ministry of Environment 1999). Sustainable fisheries in winterkill lakes are not possible without management intervention: provincial fisheries management of Edith Lake has included annual stocking, aeration, and stream diversion (Andrusak 2000, Ministry of Environment 1999).

The Freshwater Fisheries Society of BC records 10,000 rainbow trout stocked in Edith Lake in 1950; rainbow trout were stocked intermittently between 1991 and 1994, and have been stocked annually since 1995 (ranging from a low of 600 fish in 1991 to a high of 15,617 fish in 2014 (Freshwater Fisheries Society of BC 2015). A total of 10,000 eastern brook trout were stocked in 1965, and then annually between 1978 and 2014, ranging from a high of 12,000 per year between 1987 and 1991 to a low of 4500 per year in various years. Since 2010, all female fingerling triploid (sterile) Aylmer strains of eastern brook trout have been released into Edith Lake (a total of 25,460 between 2010 and 2014 inclusive) in the spring. Triploid and all-female triploid Pennask and Fraser Valley rainbow trout strains have been released into Edith Lake since 2010, from fingerling to fall catchable life stage (Freshwater Fisheries Society of BC 2015). Releases typically occur in the spring (fingerlings and yearlings); exceptions to this pattern occurred in 2010, when 2000 fall catchable sized fish were released, and in October 2014 when an additional 5000 fry were released. A total of 42,329 rainbow trout and 25,460 eastern brook trout were released into Edith Lake between 2010 and 2014.

A three panel floating gill net was set from shore in Edith Lake on September 18, 2014 for the purpose of tissue collection for metals analysis. The net was set for a duration of 2.5 hours and monitored to minimize fish mortality; a total of eight rainbow trout and six brook trout were captured, for a CPUE of 5.6 fish per net per hour. The rainbow trout that were retained for tissue analysis ranged in size from 224 mm to 353 mm and were aged between 2 and 4 years. The brook trout were released in accordance with the provincial scientific collection permit; lengths were estimated to be between 220 mm and 320 mm. The condition factor for the rainbow trout sample was calculated as 11, lower than the value reported for the Ministry of Environment sampling program in 1999 (Figure 3.3-23).

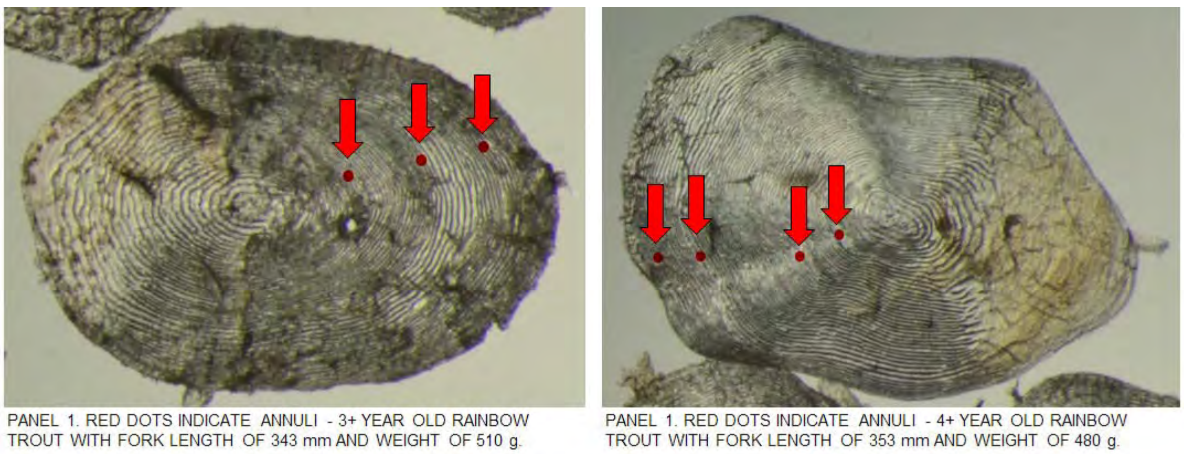


Figure 3.3-26 Edith Lake Rainbow Trout Aging Structures

The Ministry of Environment conducted a study in 1999 to assess the stocking success of the brook trout and rainbow trout in Edith Lake; two gill nets were set on October 19, 1999 and left to soak for a combined time of two and a half hours, with the objective of catching 30 of each species (Ministry of Environment 1999). A total of 30 rainbow trout and 116 brook trout were captured; the rainbow trout ranged in size from 31.9 cm to 52.8 cm, while the brook trout were between 20.3 cm and 38 cm (Ministry of Environment 1999). The condition factor calculated for each species was 16.40 for brook trout and 15.98 for rainbow trout; the Ministry reported that these values were similar to results of five of the seven additional surveyed lakes (Ministry of Environment 1999).

Edith Lake supports a popular recreational fishery; no information is available on the Aboriginal use of the lake.

3.3.2.3 Goose Lake

Habitat

Goose Lake is a small (approximately 6.14 ha), shallow lake with a north-south orientation within an unnamed tribuatary watershed of Keynes Creek (Figure 3.3-1). The lake has a perimeter of 1.4 km and sits at an elevation of 969 m. The unnamed tributary is a non-classified drainage as it does not have a continuous channel bed or definable, visibly continuous banks upstream of the marsh. At the time of the field survey in June the channel was approximately 20 cm wide and the water was 2 cm deep. A shallow seep also flows into an approximately 1 ha marsh on the south end of the lake from the east. Provincial mapping indicates that an outlet channel is present at the southwest end of the lake. A 0.4 m diameter culvert runs under Goose Lake Road at the approximate location of the channel shown on provincial maps; however, no channel is present on either side of the road and the culvert is located approximately 75 m from the edge of Goose Lake (see Panel 1 and Panel 2 Figure 3.3-27). Goose Lake Road runs approximately north-south along the western shore of the lake, 20 m to 50 m from the top of bank. On June 3, 2014 lake depth was visually estimated as 1 m; an extensive algal mat was present over much of the lake (see Panel 3 on Figure 3.3-27). The lake shore and banks are gently sloping, and the lake substrate is comprised of fine silts and organics. Riparian vegetation is composed of grasses and sedges.

PANEL 1. GOOSE LAKE CULVERT, VIEW NORTH FROM EAST SIDE OF GOOSE LAKE ROAD, JUNE 3, 2014. RED ARROW INDICATES CULVERT WHERE KEYNES CREEK LOCATION IS MAPPED.

PANEL 2. GOOSE LAKE CULVERT, VIEW SOUTH FROM WEST SIDE OF GOOSE LAKE ROAD, JUNE 3, 2014.

PANEL 3. GOOSE LAKE, VIEW WEST FROM EAST SHORE JUNE 3, 2014. NOTE LOW WATER LEVEL AND THICK ALGAL MAT ON LAKE BOTTOM.

Figure 3.3-27 Goose Lake

Bi-weekly water samples and in situ readings have been collected by KAM since April 2014. Several of the measured parameters are outside the recommended guidelines for aquatic life, including dissolved oxygen, pH, chloride, sulphate, ammonia, and dissolved arsenic. The following points were noted in the KGHM Ajax Mining Inc. Ajax Project Baseline Water Quality Report (Knight Piésold Ltd. 2014):

- Goose Lake has very high total dissolved solids (ranging between 3165 mg/l and 4550 mg/l) and is therefore classified as moderately saline.
- Samples collected from Goose Lake are of the bicarbonate-magnesium type with significant calcium and sodium concentrations (e.g, total calcium 5.23 mg/l to 9.82 mg/l; total sodium 691 mg/l to 1350 mg/l); the water type is similar to that of the surrounding shallow groundwater samples.
- Samples collected from Keynes Creek downstream were of the sodium-sulphate type with significant magnesium concentrations, indicating that Goose Lake is unlikely to be the main source of water to the creek.
- Sulphate concentrations ranged between 997 mg/l and 2,170 mg/l. Provincial sulphate guidelines are hardness dependent: the approved 30-day average water quality guidelines to protect aquatic life in BC for sulphate for hardness concentrations greater than 250 mg/l need to be determined on a site-specific basis. The minimum hardness value recorded in Goose Lake during the 2014 sampling was 676 mg/l.

- Ammonia exceeded the pH and temperature dependent federal guidelines for aquatic life in all samples.
- Arsenic exceeded the provincial and federal aquatic life guidelines in all samples collected.
- Total aluminum, chromium, iron, and vanadium exceeded aquatic life guidelines in single samples.

Nine of the 11 dissolved oxygen concentrations recorded in 2014 were less than the provincially recommended 30-day mean value of 8 mg/l for the protection of aquatic life; the concentrations in May, August, and September were also below the instantaneous minimum recommended value of 5 mg/l. In situ and analytical pH values were higher than the upper Canadian Environmental Quality Guideline for the protection of aquatic life value of 9 on all sampling dates. In situ temperatures ranged from 8.3°C in April to 27°C in July; all temperatures recorded between June and August exceeded the upper optimum temperature range from rainbow trout rearing of 18°C.

Fish Population

Goose Lake is not considered a recreational or aboriginal fishery. There are no provincial records of fish in either Keynes Creek or Goose Lake. No evidence of a historic or current Secwépemc fishery on Goose Lake was found by AMEC (2012) during traditional use studies completed for the proposed Project. A total of 24 baited minnow traps were set around the perimeter of the lake on June 3, 2014 and left overnight to fish for a period of 22 hours; no fish were caught. Spot electrofishing was conducted around the lake perimeter on June 4, using a Smith-Root 12B POW electrofisher for a total of 505 seconds (settings were 200 volts, frequency 25 Hz, pulse width 2 ms); no fish were caught or observed. Specific conductivity at the time of sampling was 4974 µS/cm and water temperature was 21.1°C. There is no surface connection between Goose Lake and any fish-bearing watercourse.

3.3.2.4 McConnell Lake

McConnell Lake was selected as a control site for the baseline monitoring program due to its similarity to Jacko Lake in terms of surface area, depth, elevation, water management regime, stocking history, and proximity. McConnell Lake is within a provincial park and therefore required a Park Use Research Permit under the *Parks Act*; an application was submitted in spring of 2014 and the permit was received in early October. Sampling was conducted in the lake on October 22 and 23, 2014, a month after sampling on the other lakes. McConnell Lake is accessed via a gravel road from Lac Le Jeune Road.

Habitat

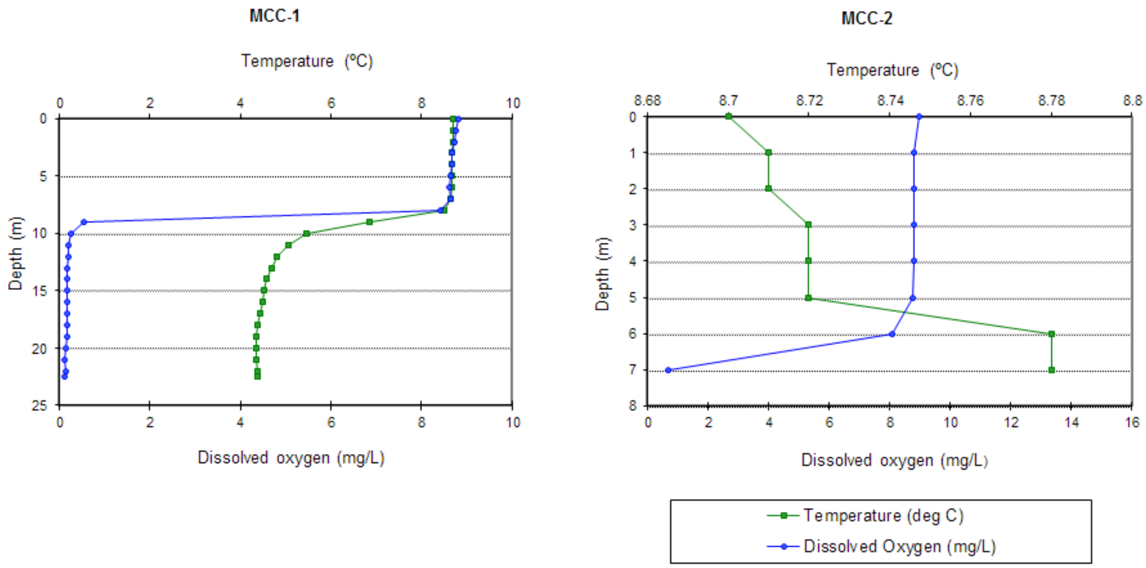
McConnell Lake (macroreach 5 of Anderson Creek) is located approximately 10 km south-southwest of Jacko Lake at an elevation of 1301 m (iMapBC 2015). McConnell Lake has a surface area of 38.7 ha, littoral area of 16.9 ha, a maximum depth of 24.2 metres, and a mean depth of 8.7 metres (Fisheries Information Summary System Report 2015). Two small islands are present in the lake (total area of approximately 0.20 ha), located 75 m from the outlet on the northeast bend of the lake. The lake has a drainage area of 2.2 m^2 and a volume of 3,375,000 m^3 (Coombes 1990). Anderson Creek, the outlet of McConnell Lake, flows north into Campbell Creek approximately 300 m downstream of Shumway Lake and 7 km upstream of the Scuitto Creek and Campbell Creek confluence. Campbell Creek flows into the South Thompson River.

Similar to Jacko Lake, McConnell Lake has been modified by installation of a dam at the outlet. The dam regulates flow and is an obstacle to fish passage, with movement between the lake and outlet creek possible only at high flow (Coombes 1990). The dam is an earthfill structure 1.7 m high with a crest length of 17 m. A bathymetric map from a survey conducted in 1950 shows the lake area as 32.37 ha and the volume as 3,453,749 m^3. An oxygen and temperature profile recorded by Coombes (1990) in September 1990 showed a thermocline present between 8 m and 14 m, with temperatures in the epilimnion between 11.1°C and 16.3°C, and temperatures in the hypolimnion ranging from 4.6°C to 5°C. Oxygen concentrations quickly dropped from 12.4 mg/l at the top of the thermocline to 1.5 mg/l at a depth of 12 m; conditions were completely anoxic below this point.

The western shore has a steep drop-off, while the gradients on the northern and eastern shores are gradual. Aquatic plants are dense in the littoral zone; Coombes (1990) documented the following species:

- *Carex rostrate* (beaked sedge)
- *Chara sp.*(stonewort)
- *Eleocharis palustris* (spike rush)
- *Equisetum arvense* (horsetail)
- *Hippuris vulgaris* (mare’s tail)
- *Myriophyllum sibiricum* (water milfoil)
- *Polygonum amphibium* (smartweed), and
- *Potamogeton pectinatus, P. perfoliatus, P. robbinsii* (pondweeds).

Water samples were collected in October 2014 from two sites within the lake: one at the deepest basin (where a surface and deep sample were collected), and one near the outlet; results were compared to provincial and federal guidelines. Fluoride exceeded the Canadian Environmental Quality Guidelines for the protection of aquatic life value of 0.12 mg/l in all samples; none of the other parameters exceeded their respective guidelines. Temperature and dissolved oxygen profiles recorded on October 22 indicate that the lake remained stratified at the deeper site (MCC-1) although the thermocline was only approximately 2 m deep (Figure 3.3-28). The deep site (MCC-1) had a maximum depth of 22.5 m and a sharp thermocline between 8 m and 10 m. Within the epilimnion temperature varied between 8.5°C and 8.7°C and dissolved oxygen concentrations were between 8.4 mg/l and 8.82 mg/l. Temperatures in the hypolimnion averaged 4.5°C and oxygen levels dropped to less than 1 mg/l. Maximum depth at site MCC-2 was 7 m; temperatures were isothermal and remained above 8°C throughout the water column. Dissolved oxygen concentrations remained above 8 mg/l until the bottom, when anoxic conditions were recorded.



NOTES:
1. DEPTH UNITS ARE METRES BELOW SURFACE.
2. TEMPERATURE IS SHOWN ON THE PRIMARY X-AXIS.
3. DISSOLVED OXYGEN IS SHOWN ON THE SECONDARY X-AXIS.

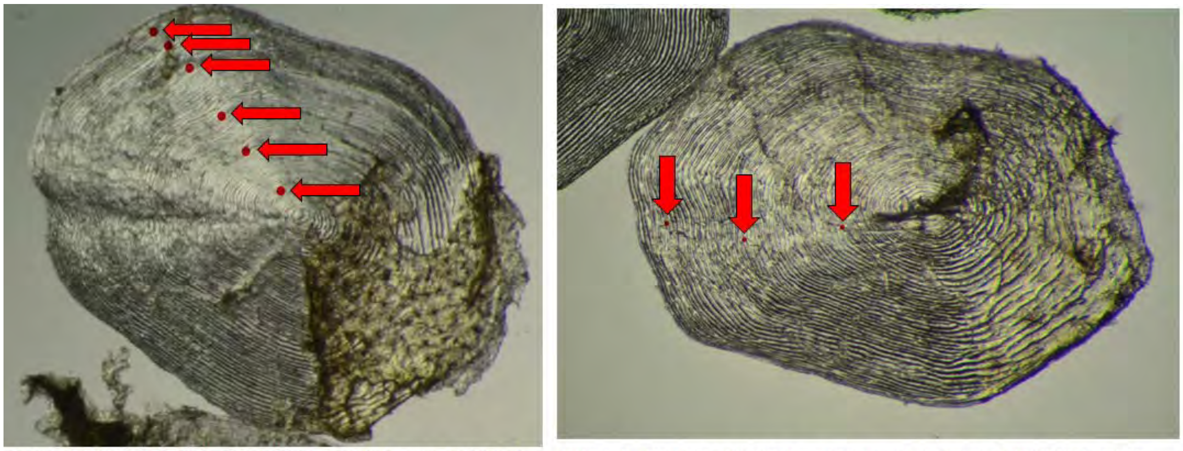
Figure 3.3-28 McConnell Lake Dissolved Oxygen and Temperature Depth Profiles

The Fish and Wildlife Branch (Kamloops Fisheries) holds a water licence for conservation storage of 163,436 m^3 per year; there are no other water licences within McConnell Lake.

Fish Population

McConnell Lake has been stocked annually with rainbow trout since 1935, with the exception of 1955 and 1957 (Freshwater Fisheries Society of BC 2015). In total, 792,449 rainbow trout have been stocked over this period. Between 2010 and 2014, 40,000 rainbow trout were released, with all releases of the Pennask strain, either all-female (2010) or triploid female (2011 through 2014) (Freshwater Fisheries Society of BC 2015). Coombes (1990) noted that McConnell Lake lacks sufficient spawning gravel for recruitment purposes. Between 2010 and 2013 yearling rainbow trout were released in the spring; in 2013 and 2014 fry were released in the fall.

For this study, rainbow trout were collected for the analysis of tissue metals concentration as a control site. One floating, five-panel gill net was set in the northwestern arm of the lake perpendicular to shore on October 22, 2014 and left for a period of 6.41 hours (between 10:05 and 16:30); a total of four rainbow trout were captured, ranging in size between 300 mm and 440 mm. Rainbow trout ages were estimated to be between 3 and 6 years (see Figure 3.3-29). The net was re-deployed along the east arm of the lake near two small vegetated islands on October 23 between 9:15 and 16:35. Two rainbow trout (257 mm, aged 2 and 250 mm, aged 3) were captured. The CPUE is calculated as 0.12 rainbow trout per panel per hour on the first day and 0.06 rainbow trout per panel per hour on the second day. The condition factor for the sample (11.6) is similar to that calculated for the Edith Lake sample and lower than the Jacko Lake sample (Figure 3.3-23).



PANEL 1. RED DOTS INDICATE ANNULI - 6+ YEAR OLD RAINBOW TROUT WITH FORK LENGTH OF 440 mm AND WEIGHT OF 950 g.

PANEL 2. RED DOTS INDICATE ANNULI - 3+ YEAR OLD RAINBOW TROUT WITH FORK LENGTH OF 300 mm AND WEIGHT OF 275 g.

Figure 3.3-29 McConnell Lake Rainbow Trout Aging Structures

McConnell Lake is considered a recreational fishery. AMEC found no indication of an Aboriginal fishery in their review of the Cultural Heritage Study.

3.3.2.5 Scuitto Lake

Habitat

Scuitto Lake (watershed code 128-123700-38400) was sampled in September 2014 as a potential control lake for Jacko Lake in the absence of the Park Use Permit for McConnell Lake (Figure 3.3-18). The Scuitto Creek watershed encompasses approximately 122 km^2 and is a fifth order tributary of Campbell Creek, which flows into the South Thompson River approximately 20 km upstream from its confluence with the North Thompson River (ARC Environmental Ltd. 1998). Scuitto Lake is accessed from Highway 1 east of Kamloops, via Barnhartvale Road, Campbell Creek Road, and Scuitto Lake Forest Road. Scuitto Lake Forest Road runs along the northern shore of the lake.

Scuitto Lake is approximately 21 km southeast of Jacko Lake and was selected as a control lake following discussion with representatives from the Ministry of Environment and Ministry of Forests, Lands and Natural Resource Operations (2014). A dam was first constructed on Scuitto Lake in 1942 and raised approximately 1 m in 1948 to allow construction of a new spillway to the north of the dam (BC Water Surveys Unit 1966). Scuitto Lake presently has a surface area of 100.72 ha and a maximum depth of 27 m; the surface area and depth were previously recorded as 93.77 ha and 8 m, respectively (Fisheries Information Summary System 2015). There are two dams on the lake – the Scuitto Lake Cut-Off Dam, a 10.6 m high, earthfill, saddle dam; and the main Scuitto Lake Dam, a 5.1 m high earthfill dam with a crest elevation of 914.4 m and crest length of 86.9 m (iMapBC 2015). Various angling websites refer to Scuitto Lake as a reservoir, and note that it is subject to drawdown in the summer. An additional dam is located upstream of Scuitto Lake, the 1.7 m high, 24.4 m long Campbell Lake Dam, which regulates flow between the two lakes (iMapBC 2015). Campbell Lake, located approximately 1 km upstream of Scuitto Lake, has a surface area of 137 ha and a maximum depth of 6.1 m. No open source information is available on the installation date of the present dams.

There are 12 current water licences on Scuitto Creek and Scuitto Lake; several of these have multiple points of diversion and different uses and quantities associated with them (Table 3.3-10). The total quantity allocated is 6,581,974 m^3/year for the purposes of irrigation and storage (non-power and conservation) and 2.27 m^3/day for domestic use (iMapBC 2015).

Due to inclement weather at the time of aquatic sampling in 2014, no in situ water quality information was recorded.

Table 3.3-10 Water Licence Points of Diversion Scuitto Lake And Scuitto Creek

NAME	LICENCE NO	PURPOSE	QUANTITY	UNITS
Scuitto Creek	C014085			
Scuitto Creek	C067230	Conserv.-Construct.Works	-	Total flow (non consumptive)
Scuitto Creek	C067230	Conserv.-Stored Water	146,784.12	m^3/year
Scuitto Lake	C046342	Domestic	2.27	m^3/day
Scuitto Creek	C129046	Irrigation	163,066.06	m^3/year
Scuitto Creek	F012404	Irrigation	37,004.40	m^3/year
Scuitto Creek	C129046	Irrigation	163,066.06	m^3/year
Scuitto Creek	C102825	Irrigation	61,674.00	m^3/year
Scuitto Creek	C058164	Irrigation	185,022.00	m^3/year
Scuitto Creek	C045571	Irrigation	74,008.80	m^3/year
Scuitto Creek	C129046	Irrigation	163,066.06	m^3/year
Scuitto Creek	C046133	Irrigation	17,268.72	m^3/year
Scuitto Creek	C110393	Irrigation	32,687.22	m^3/year
Scuitto Creek	C058164	Irrigation	185,022.00	m^3/year
Scuitto Creek	F042064	Irrigation	12,334.80	m^3/year
Scuitto Creek	C014085	Storage-Non Power	2,096,916.00	m^3/year
Scuitto Creek	C014085	Storage-Non Power	3,170,043.60	m^3/year
Scuitto Creek	C045762	Storage-Non Power	74,008.80	m^3/year

NOTES:

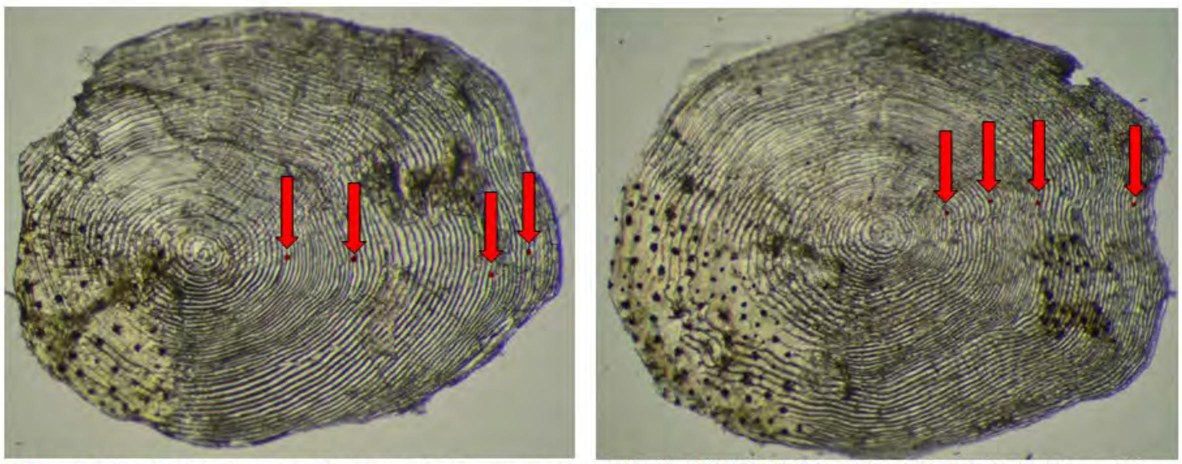
1. CURRENT WATER LICENCES AVAILABLE AT IMAP BC, ACCESSED MARCH 24, 2015.
2. TOTAL VOLUME BY PURPOSE: CONSERVATION - STORED WATER 146,784 m3/year; IRRIGATION TOTAL QUANTITY 1,094,220 m3/year; STORAGE - NON-POWER 5,340,968 m3/year; DOMESTIC 2.27 m3/day.

Fish Population

Resident populations of rainbow trout are present in the Scuitto Lake watershed; populations are augmented with hatchery rainbow trout (Arc Environmental Ltd. 1998). Cutthroat trout were stocked in the upper reaches of Scuitto Creek possibly by government agencies in the 1920s; the original stocked population is thought to have hybridized with the resident rainbow trout population to the point where the two species are no longer distinguishable (Arc Environmental Ltd. 1998). Within Campbell Lake, provincial records indicate that cutthroat trout were stocked in 1911, brook trout were stocked in 1957, and rainbow trout were stocked between 1984 and 2008 (Fisheries Information Summary System 2015). The Campbell Lake Dam is noted as being an obstacle to fish passage (Fisheries Information Summary System 2015). The lake is used as a recreational fishery; no information on traditional or current Aboriginal use of the lake is available.

Rainbow trout were intermittently stocked in Scuitto Lake between 1925 and 1989 and were stocked annually between 2005 and 2011 (Freshwater Fisheries Society of BC 2015). The Freshwater Fisheries Society of BC last stocked the lake in 2010 and 2011 with all female triploid Pennask Yearlings (Freshwater Fisheries Society of BC 2015).

A five panel gill net was set in Scuitto Lake on September 19, 2014 and left to soak for three hours; a total of nine rainbow trout were captured, ranging in size between 342 mm and 410 mm. The CPUE is 0.6 rainbow trout per panel per hour. Rainbow trout ages were all estimated at 4 and 5 years; Figure 3.3-30 includes the digital images of scales from two of the Scuitto Lake rainbow trout.



PANEL 1. RAINBOW TROUT WITH FORK LENGTH OF 348 mm AND WEIGHT OF 410 g. NORTH/SOUTH CONSULTANTS ESTIMATED AGE AS 4+ YEARS (RED DOTS INDICATE ANNULI); B. HAMAGUCHI ESTIMATED AGE AS 3+.

PANEL2. RAINBOW TROUT WITH FORK LENGTH OF 342 mm AND WEIGHT OF 500 gNORTH/SOUTH CONSULTANTS ESTIMATED AGE AS 4+ YEARS (RED DOTS INDICATE ANNULI); B. HAMAGUCHI ESTIMATED AGE AS 3+.

Figure 3.3-30 Scuitto Lake Rainbow Trout Aging Structures

The condition factor for the rainbow trout sample (6.7) is much lower than the values calculated for the other sample lake populations (see Figure 3.3-23).

3.3.2.6 Kamloops Lake Intake Site

The City of Kamloops is located on Kamloops Lake, a riverine lake, situated downstream of the confluence of the North Thompson and South Thompson rivers. A raw water pump station intake is proposed on Kamloops Lake to provide freshwater to the Project site via pipeline for potable and process water. The approximate location of the pump station in relation to downtown Kamloops is shown on Figure 2.1-1. Therefore a brief description of fish habitat is provided for this proposed site as part of this baseline characterization.

Kamloops Lake has a surface area of 5584 ha, a maximum depth of 150.9 m, and a mean depth of 74.1 m (Fisheries Information Summary System 2015). Kamloops Lake has been described as a widening and deepening of the Thompson River with a lake volume of 3.7 km^3 (Wijtkamp 2011). The residence time of Kamloops Lake has been estimated as eight weeks (Macdonald et al. 1999, Wijtkamp 2011). Nordin and Holmes (1992) describe Kamloops Lake as a long, narrow, steep-sided lake physically dominated by inflow from the Thompson River. Due to the short residence time, seasonally high turbidity, and low available nutrient input Kamloops Lake has relatively low biological productivity (Nordin and Holmes 1992). The low levels of phosphorous in Kamloops Lake make it oligotrophic, which limits biological production (Thompson Nicola Regional District 2013).

The intake is proposed at the vicinity of the existing pump station used by the New Afton Mine, located approximately 10 km west of Kamloops (Figure 2.1-1; see Panel 1 of Figure 3.3-31). Urban Systems Ltd. (2008) describes the area where the New Afton intake is situated as a steep rip-rap embankment and an un-vegetated mixed boulder and cobble shoreline; no aquatic macrophytes were noted (see Figure 3.3-31, Panel 2 and Figure 3.3-32, Panel 1). Substrate below the low water level is composed of very fine, mobile sediments (Figure 3.3-32, Panel 2) (Urban Systems Ltd. 2008). Due to the large size of substrates along the shoreline, Urban Systems (2008) noted that this area provides poor quality spawning habitat for most species of fish, and that it would be unlikely for salmon to spawn in the area.

PANEL 1. VIEW EAST OF NEW AFTON WATER INTAKE SITE ON KAMLOOPS LAKE FROM ACCESS ROAD, MARCH 26, 2013.

PANEL 2. VIEW WEST OF KAMLOOPS LAKE SOUTH SHORE NEAR NEW AFTON WATER INTAKE SITE, MARCH 26, 2013.

Figure 3.3-31 Kamloops Lake at Proposed Water Intake Site, March 2013

PANEL 1. SOUTHEAST VIEW OF KAMLOOPS LAKE RIPARIAN AREA ALONG SOUTH SHORE, EAST OF NEW AFTON MINE PUMP STATION, APRIL 27, 2011.

PANEL 2. VIEW OF KAMLOOPS LAKE SOUTH SHORE, NEAR NEW AFTON MINE PUMP STATION, APRIL 27, 2011.

Figure 3.3-32 Kamloops Lake at Proposed Water Intake Site, April 2011

Provincial records indicate that four species of salmon (chinook, coho, sockeye, pink), one species of trout (rainbow or steelhead), and two char (Dolly Varden, bull trout) are found within Kamloops Lake (Fisheries Information Summary System 2014). Largescale sucker, longnose sucker, mountain whitefish, northern pikeminnow, peamouth chub, burbot, prickly sculpin, redside shiner, peamouth chub, and lamprey are also present (Fisheries Information Summary System 2014). Beniston and Lister (1985) reported that coho, chinook, and sockeye salmon; rainbow trout; and mountain whitefish utilize Kamloops Lake for rearing. Beniston and Lister (1985) found that juvenile chinook were the main salmonid species rearing along the shoreline in June, although only two yearling chinook were captured, leading the authors to conclude that smolts from the North Thompson River migrate seaward during late March to early May. Similarly, Beniston and Lister (1985) captured only two yearling sockeye in August (compared to 26 in June), suggesting that juveniles move to steeper off-shore rearing areas in late. There are no known salmon spawning areas in Kamloops Lake; spawning primarily occurs in Shuswap Lake and North Thompson River tributaries (Urban Systems Ltd. 2008). The non-anadromous species found in the lake either require gravel substrate for spawning, or streams (Urban Systems Ltd. 2008). During construction monitoring for the refurbishment of the New Afton water intake in 2011, the only fish captured by minnow trapping and electrofishing were northern pikeminnow, as well as species of sculpin and lamprey (Urban Systems Ltd. 2012).

The Thompson River is noted as being a major migration corridor for salmon stocks in the North and South Thompson rivers, provides valuable rearing habitat for chinook salmon and rainbow trout, and spawning habitat for pink, chinook, and coho salmon in the mainstem at Ashcroft (Department of Fisheries and Oceans 1998). A Department of Fisheries and Oceans (1998) report noted that water withdrawal for mining accounted for the second largest water user in the Thompson River, but the concern for water quantity was low based on the large instream water volume (mean annual flow of 759 m^3/s).

Kamloops Lake provides a recreational and Aboriginal fishery.

3.3.3 Rainbow Trout Tissue

3.3.3.1 Fish Tissue Guidelines

The only guidelines currently available to determine the level of metal concentrations in fish tissue safe for human consumption are for lead, mercury, and selenium:

- A total lead concentration of 0.8 µg/g wet weight (equivalent to 0.8 mg/kg) in the edible portion of fish is considered as an alert level; if the total lead concentration approaches or exceeds this value then site-specific studies are recommended (Ministry of Environment, Lands and Parks 1987).
- Mercury guidelines for fish tissue are set based on a safe quantity for human consumption on a weekly basis: total mercury concentrations in edible portions of fish vary from 0.5 µg/g wet weight when the weekly consumption is 210 grams wet weight, to 0.1 µg/g wet weight when the weekly consumption is 1050 grams wet weight (Ministry of Environment 2001a).
- The guideline concentration of methyl mercury in fish or shellfish consumed by wildlife is 0.033 µg/g wet weight (Ministry of Environment 2001a; Canadian Council of Ministers of the Environment 2000).

- The selenium whole-body tissue guideline is 4 µg/g (equivalent to 4 mg/kg) (Beatty and Russo 2014).

Mercury in fish is almost exclusively in the form of methylmercury; fish are reported to accumulate most of their mercury body burden through diet (Canadian Council of Ministers of the Environment 2000).

3.3.3.2 Tissue Concentrations

Liver tissues were collected from eight fish from Jacko Lake during early June 2010 and liver and muscle samples were collected from ten and eight fish from lower and upper Cherry Creek, respectively, during September 2011; results are reported in the Baseline Fisheries Report for the Ajax Project (Knight Piésold Ltd 2013a).

Rainbow trout were retained from sites on Peterson Creek, Cherry Creek, Jacko Lake, Edith Lake, Anderson Creek, Scuitto Lake, and McConnell Lake from sampling programs in July, September, and October 2014. Samples collected during July were dissected, and liver and muscle tissue were analysed for metal concentrations. To reduce the chance of contamination, fish were kept on ice in a cooler upon capture, stored in a freezer at site before being sent whole to the analyzing laboratory for dissection. Due to the small sizes of the rainbow trout captured, the minimum volume of tissue could not always be collected in order to meet the provincial Detection Limit Objectives specified in the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2012), especially for the liver samples. Detection limits are the minimum concentration of a substance that can be measured and reported with 99% confidence that the parameter concentration is greater than zero. The provincial Detection Limit Objectives are compared to the analytical MDL for each parameter in Table 3.3-11 for the July 2014 samples (when liver and muscle were analyzed separately) and the September and October samples (when whole body analysis was done). The switch to whole body analysis was done for the following reasons:

- To collect a sufficient sample volume to meet the detection limit objectives.
- Whole fish are considered to reflect the importance of the ecological health of the stream system, rather than just human health concerns.
- Selenium guidelines are currently established for whole-body concentrations.

The switch to whole body analysis resulted in lower MDLs for aluminum, chromium, copper, lead, strontium, titanium, and zinc; however, the calcium, copper, nickel, and sodium remained above the Detection Limit Objectives.

Laboratory results for 2014 data are presented in Table 3.3-12 through Table 3.3-18. A comparison of the average 2010 and 2014 Jacko Lake liver metal concentrations is provided in Table 3.3-19. A comparison of the average 2011 and 2014 Cherry Creek (CC-04) muscle and whole body metal concentrations is provided in Table 3.3-20. Site comparisons for 2014 results are presented graphically in Appendix C5.

Table 3.3-11 Tissue Detection Limit Objectives

PARAMETER	METHOD DETECTION LIMIT			
	OBJECTIVES	JULY 2014 RESULTS	SEPTEMBER 2014 RESULTS	OCTOBER 2014 RESULTS
Aluminum	0.4	1	0.4	0.4
Antimony	0.002	0.002	0.002	0.002
Arsenic	0.005	0.006	0.004	0.004
Barium	0.01	0.01	0.01	0.01
Beryllium	0.002	0.002	0.002	0.002
Bismuth	0.02	0.002	0.002	0.002
Cadmium	0.002	0.002	0.001	0.001
Calcium	2	4	4	4
Chromium	0.01	0.04	0.01	0.01
Cobalt	0.004	0.004	0.004	0.004
Copper	0.01	0.04	0.02	0.02
Iron	1	1	0.6	0.6
Lead	0.004	0.01	0.004	0.004
Magnesium	2	0.4	0.4	0.4
Manganese	0.02	0.01	0.01	0.01
Mercury	0.002	0.001	0.001	0.001
Methyl mercury	0.002	0.001	0.001	0.001
Molybdenum	0.01	0.008	0.004	0.004
Nickel	0.01	0.04	0.04	0.04
Phosphorus	5	2	2	2
Potassium	10	4	4	4
Selenium	0.02	0.02	0.01	0.01
Silver	0.01	0.001	0.001	0.001
Sodium	2	4	4	4
Strontium	0.01	0.02	0.01	0.01
Thallium	0.001	0.0004	0.0004	0.0004
Tin	0.02	0.02	0.02	0.02
Titanium	0.06	0.1	0.02	0.02
Uranium	0.001	0.0004	0.0004	0.0004
Vanadium	0.02	0.02	0.02	0.02
Zinc	0.1	0.2	0.1	0.1

NOTES:

1. OBJECTIVES FROM MINISTRY OF ENVIRONMENT. 2012. WATER AND AIR BASELINE MONITORING GUIDANCE DOCUMENT FOR MINE PROPONENTS AND OPERATORS.
2. SHADING INDICATES ANALYTICAL METHOD DETECTION LIMITS EXCEED PROVINCIAL OBJECTIVES METHOD DETECTION LIMITS.
3. UNITS ARE mg/kg wwt.

In the July 2014 program, all of the liver and muscle samples for Peterson Creek rainbow trout in downtown Kamloops (PC-01) and above Bridal Veil Falls (PC-04) and Jacko lake reported above the MDLs for arsenic, calcium, copper, sodium, strontium, and zinc, with results exceeding the respective MDL by four (for arsenic) to 100 times (for sodium). One or more samples were below the MDL for aluminum, chromium, lead, nickel, and titanium. All of the lead concentrations were below the provincial guideline. None of the muscle tissue samples (the “edible” portion) reported above the lower mercury guidelines for human consumption but three of the liver samples exceeded that value (Table 3.3-12). Both of the liver and muscle samples from Jacko Lake rainbow trout were above the methyl mercury guidelines, as was one of the samples collected from Peterson Creek upstream of

Jacko Lake (PC-10). None of the muscle samples exceeded the selenium whole-body tissue guideline.

In September and October 2014; rainbow trout were captured from potential impact sites (PC-01 and Jacko Lake) and control sites (CC-01, ANDR-15, Edith Lake, Scuitto Lake and McConnell Lake) and retained for whole body metals analysis.

All of the whole body sample results for Peterson Creek rainbow trout within downtown Kamloops (PC-01) and Jacko Lake in September 2014 were below the provincial guideline for lead (Table 3.3-13). Five of the nine Jacko Lake samples exceeded the lower mercury guidelines for human consumption and all of the Jacko Lake samples exceeded the methyl mercury guideline for wildlife consumption. None of the samples exceeded the selenium guideline.

All of the Cherry Creek (control site) rainbow trout whole body samples in September 2014 had lead concentrations below the provincial guideline (Table 3.3-14). None of the samples exceeded the lower mercury guidelines for human consumption but five of the eight samples exceeded the methyl mercury guideline for wildlife. None of the samples exceeded the selenium guideline.

Eight of the nine whole body tissue samples from Edith Lake had methyl mercury concentrations that exceeded the guideline for wildlife (Table 3.3-15). Lead, mercury, and selenium guidelines were not exceeded in any of the other samples.

Two of the six whole body tissue samples from the upper control site on Anderson Creek site (ANDR-15) had methyl mercury concentrations that exceeded the guideline for wildlife (Table 3.3-16). Lead, mercury, and selenium guidelines were not exceeded in any of the other samples.

Scuitto Lake (control site) rainbow trout exceeded the lower mercury guideline for human consumption in eight of nine samples and the methyl mercury guideline for wildlife consumption in seven of the nine samples (Table 3.3-17).

One of the samples exceeded the mercury guideline for human consumption and all six of the samples exceeded the methyl mercury guideline for wildlife consumption in the McConnell Lake (control site) whole body samples collected in October 2014 (Table 3.3-18).

Most of the parameters were within the range of variability between the 2010 and 2014 liver samples from Jacko Lake (Table 3.3-19). Seven of the eight samples reported below the MDL for lead in 2010 compared to both samples reporting above in 2014; note that the MDL was lower in the 2010 samples compared to the 2014 samples (0.004 mg/kg wwt compared to 0.01 mg/kg). Mercury was analyzed only in muscle samples in 2010; seven of the eight samples exceeded the lower mercury guidelines for human consumption. Six of the eight liver samples collected in 2010 exceeded the whole body selenium guideline; none of the 2014 samples exceeded the guideline.

Liver and muscle samples were collected from the Cherry Creek site in 2011 (Table 3.3-20). Of the parameters that had concentrations consistently above the respective MDL, metal concentrations were generally higher in the whole body sample compared to the muscle sample; the exceptions to this were mercury, potassium, and rubidium. One of the muscle samples collected in 2011 exceeded the lower guideline for human consumption. Lead was below the MDL in all samples collected in 2011 compared to 2014, where seven of the eight samples were above the MDL. Methyl mercury was not analyzed in the 2011 samples.

Table 3.3-12 Liver and Muscle Metal Concentrations July 2014 Peterson Creek and Jacko Lake

Sample ID	MDL	PC-01-16 LIVER	PC-01-05 LIVER	PC-01-06 LIVER	PC-04-6 LIVER	PC-04-7 LIVER	PC-04-8 LIVER	JACKO-1 LIVER	JACKO-2 LIVER	PC-10-01 LIVER	PC-10-02 LIVER
Site Type		Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact
Date Sampled		23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	24-JUL-14	24-JUL-14	22-JUL-14	22-JUL-14
Time Sampled		08:30	08:30	08:30	12:20	12:20	12:20	11:00	11:00	15:30	15:30
ALS Sample ID		L1492166-15	L1492166-17	L1492166-19	L1492166-5	L1492166-7	L1492166-9	L1492166-1	L1492166-3	L1492166-11	L1492166-13
% Moisture		75.0	75.4	75.6	69.1	74.0	76.3	76.0	76.4	60.9	75.1
Aluminum	1.0	2.2	82.8	<1.0	<1.0	<1.0	<1.0	8.7	<1.0	<1.0	<1.0
Antimony	0.0020	<0.0020	0.0068	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic	0.0060	0.183	0.269	0.114	0.193	0.137	0.184	0.0589	0.0393	0.229	0.111
Barium	0.010	0.076	1.99	0.091	0.117	0.044	0.060	0.155	0.030	0.088	0.033
Beryllium	0.0020	<0.0020	0.0021	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium	0.0020	0.122	0.115	0.178	0.187	0.125	0.121	0.0022	<0.0020	0.0433	0.0138
Calcium	4.0	299	527	535	322	354	276	335	374	561	237
Cesium	0.0010	0.0039	0.0110	0.0021	0.0044	0.0033	0.0036	0.0021	0.0021	0.0013	<0.0010
Chromium	0.040	<0.040	0.376	<0.040	<0.040	<0.040	<0.040	0.041	<0.040	<0.040	<0.040
Cobalt	0.0040	0.185	0.240	0.123	0.208	0.165	0.164	0.0317	0.0150	0.0794	0.0679
Copper	0.040	130	53.5	151	126	114	70.9	34.5	41.5	160	82.7
Iron	1.0	129	392	236	230	180	175	197	157	198	162
Lead	0.010	0.010	0.074	<0.010	<0.010	<0.010	0.077	0.354	0.309	<0.010	<0.010
Lithium	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	0.40	315	342	205	352	225	188	201	187	440	238
Manganese	0.010	1.84	5.14	0.612	2.24	0.828	1.12	1.89	1.02	3.90	1.22
Mercury	0.0010	0.048	0.0362	0.0572	0.0624	0.0350	0.0466	0.113	0.118	0.112	0.0635
Methyl mercury	0.0010	-	-	-	-	-	0.0233	0.0774	0.0771	-	-
Molybdenum	0.0080	0.335	0.298	0.314	0.279	0.230	0.175	0.145	0.171	0.352	0.163
Nickel	0.040	0.148	0.460	0.041	0.107	0.066	0.067	<0.040	<0.040	0.065	<0.040
Phosphorus	2.0	3580	2600	2610	3890	3070	2430	2840	3030	5320	2900
Potassium	4.0	4230	3020	2940	3640	2870	2870	3190	3290	8300	3860
Rubidium	0.010	0.551	0.629	0.460	0.558	0.458	0.442	0.462	0.506	0.488	0.215
Selenium	0.020	43.2	27.8	55.1	30.7	24.7	16.6	3.49	3.72	14.0	8.87
Silver	0.0010	0.298	0.305	0.616	0.584	0.316	0.342	0.0360	0.0303	0.186	0.126
Sodium	4.0	1340	1150	1260	1430	1010	1270	1010	1120	2720	1270
Strontium	0.020	0.966	2.93	2.66	1.40	1.14	0.875	0.504	0.660	0.629	0.271
Tellurium	0.0040	0.0049	<0.0040	0.0056	0.0176	0.0076	0.0078	<0.0040	<0.0040	0.0070	0.0088
Thallium	0.00040	0.0396	0.0275	0.0332	0.0352	0.0359	0.0248	0.00063	<0.00040	0.00807	0.00709
Tin	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Titanium	0.10	0.16	6.04	<0.10	<0.10	0.20	<0.10	0.41	<0.10	<0.10	<0.10
Uranium	0.00040	0.00439	0.0269	0.00478	0.00086	0.00042	0.00054	0.00070	<0.00040	0.00042	<0.00040
Vanadium	0.020	0.026	0.425	0.062	0.028	0.023	0.045	0.039	<0.020	0.027	<0.020
Zinc	0.20	41.9	58.7	55.3	45.7	29.7	28.6	29.8	27.1	106	42.0
Zirconium	0.040	<0.040	0.090	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

Sample ID	PC-01-16 MUSCLE	PC-01-05 MUSCLE	PC-01-06 MUSCLE	PC-04-6 MUSCLE	PC-04-7 MUSCLE	PC-04-8 MUSCLE	JACKO-1 MUSCLE	JACKO-2 MUSCLE	PC-10-01 MUSCLE	PC-10-02 MUSCLE
Site Type	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact
Date Sampled	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	24-JUL-14	24-JUL-14	22-JUL-14	22-JUL-14
Time Sampled	08:30	08:30	08:30	12:20	12:20	12:20	11:00	11:00	15:30	15:30
ALS Sample ID	L1492166-16	L1492166-18	L1492166-20	L1492166-6	L1492166-8	L1492166-10	L1492166-2	L1492166-4	L1492166-12	L1492166-14
% Moisture	77.8	78.2	74.0	77.2	76.4	71.5	75.4	76.7	77.9	76.4
Aluminum	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Antimony	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic	0.0517	0.0574	0.0472	0.174	0.151	0.186	0.0263	0.0235	0.0268	0.0373
Barium	0.020	0.041	0.029	0.030	0.021	0.018	0.024	0.030	0.037	0.030
Beryllium	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium	0.0061	0.0124	0.0025	0.0054	0.0082	0.0125	<0.0020	<0.0020	0.0044	<0.0020
Calcium	315	447	416	260	244	185	317	243	379	304
Cesium	0.0037	0.0026	0.0029	0.0048	0.0046	0.0052	0.0015	0.0017	<0.0010	<0.0010
Chromium	4.13	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Cobalt	0.0586	0.0416	0.0236	0.0331	0.0315	0.0421	<0.0040	<0.0040	0.0171	0.0247
Copper	0.477	0.347	0.463	0.427	0.665	0.454	0.243	0.243	0.432	0.376
Iron	16.9	4.4	5.5	3.1	4.8	6.2	2.2	2.4	6.9	3.9
Lead	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.315	0.110	<0.010	<0.010
Lithium	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	243	244	245	258	271	242	260	235	238	257
Manganese	0.409	0.214	0.092	0.169	0.153	0.140	0.147	0.111	0.220	0.145
Mercury	0.0350	0.0214	0.0368	0.0445	0.0305	0.0418	0.0709	0.0543	0.0588	0.0745
Methyl mercury	0.0196	0.0192	0.0149	0.0238	0.0175	0.0329	0.0500	0.0332	0.0243	0.0642
Molybdenum	0.0572	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
Nickel	1.53	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Phosphorus	1890	2110	2240	2160	2280	2130	2400	2230	2120	2280
Potassium	4060	3990	4120	4070	4010	4040	4250	4050	4320	4370
Rubidium	0.491	0.515	0.517	0.480	0.493	0.535	0.424	0.480	0.252	0.256
Selenium	1.38	1.20	1.07	0.626	0.735	0.689	0.156	0.126	0.506	0.454
Silver	<0.0010	<0.0010	<0.0010	<0.0010	0.0016	0.0012	<0.0010	<0.0010	<0.0010	<0.0010
Sodium	640	635	693	591	554	594	407	427	670	566
Strontium	0.844	1.73	1.55	0.604	0.559	0.396	0.404	0.391	0.343	0.273
Tellurium	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium	0.00174	0.00210	0.00216	0.00259	0.00274	0.00305	<0.00040	<0.00040	0.00047	0.00074
Tin	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Titanium	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	<0.00040	0.00056	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Vanadium	0.023	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc	7.51	8.57	6.96	4.74	4.35	5.77	4.70	4.12	8.12	5.50
Zirconium	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

NOTES:

1. WATER QUALITY CRITERIA FOR LEAD: TOTAL LEAD CONCENTRATION OF 0.8 µG/G WET WEIGHT (EQUIVALENT TO 0.8 MG/KG) IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL.
2. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH VARY FROM 0.5 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001.
3. THE GUIDELINE CONCENTRATION OF METHYL MERCURY IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µG/G WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
4. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 µG/G (EQUIVALENT TO 4 MG/KG) (BEATTY AND RUSSO 2014)
5. UNITS ARE mg/kg wwt.

Table 3.3-13 Whole Body Metal Concentrations September 2014 Peterson Creek and Jacko Lake

Sample ID	MDL	PC-01-12	PC-01-13	PC-01-14	JACKO LK 1	JACKO LK 2	JACKO LK 3	JACKO LK 4	JACKO LK 5	JACKO LK 6	JACKO LK 7	JACKO LK 8	JACKO LK 9
Site Type		Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact
Date Sampled		17-SEP-14	17-SEP-14	17-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14
Time Sampled		00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID		L1522144-13	L1522144-14	L1522144-15	L1522144-46	L1522144-47	L1522144-48	L1522144-49	L1522144-26	L1522144-27	L1522144-28	L1522144-29	L1522144-30
% Moisture		75.5	78.6	75.8	71.5	74.4	72.7	75.1	72.5	73.4	75.4	75.7	73.7
Aluminum	0.40	9.52	29.3	22.7	6.16	4.85	8.33	2.09	5.51	4.99	2.03	1.37	4.05
Antimony	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
Arsenic	0.0040	0.0701	0.0768	0.0658	0.0625	0.0455	0.0720	0.0506	0.0626	0.0618	0.0531	0.0442	0.0480
Barium	0.010	0.410	1.12	0.833	1.36	0.430	1.61	0.509	1.62	1.19	1.93	0.652	1.17
Beryllium	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	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	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
Cadmium	0.0010	0.0106	0.0175	0.0157	<0.0010	0.0012	<0.0010	<0.0010	0.0011	<0.0010	0.0016	<0.0010	<0.0010
Calcium	4.0	7440	8280	9440	3850	3730	7890	8180	8340	5920	4960	2710	8290
Cesium	0.0010	0.0034	0.0045	0.0041	0.0050	0.0026	0.0043	0.0023	0.0034	0.0035	0.0017	0.0029	0.0040
Chromium	0.010	0.027	0.129	0.075	0.022	0.016	0.030	<0.010	0.018	0.013	<0.010	<0.010	0.011
Cobalt	0.0040	0.0603	0.0691	0.0981	0.0227	0.0167	0.0220	0.0142	0.0242	0.0206	0.0336	0.0178	0.0176
Copper	0.020	1.69	2.62	1.75	2.36	0.902	2.30	0.756	2.80	2.04	0.676	1.36	1.66
Iron	0.60	28.8	62.7	46.8	18.3	19.0	19.6	11.3	20.8	16.0	12.5	11.1	14.5
Lead	0.0040	0.0094	0.0184	0.0167	0.144	0.198	0.164	0.158	0.146	0.122	0.168	0.0519	0.171
Lithium	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	0.40	357	389	434	295	304	365	391	392	339	338	303	389
Manganese	0.010	1.13	1.94	2.45	1.35	0.834	2.48	1.11	1.90	1.53	1.09	0.592	1.73
Mercury	0.0010	0.0219	0.0394	0.0254	0.0762	0.134	0.0885	0.115	0.121	0.0923	0.0538	0.137	0.109
Methyl Mercury	0.0010	0.0233	0.0318	0.0235	0.0844	0.105	0.0535	0.0964	0.125	0.103	0.0693	0.138	0.102
Molybdenum	0.0040	0.0116	0.0283	0.0257	0.0173	0.0112	0.0198	0.0095	0.0181	0.0190	0.0074	0.0095	0.0136
Nickel	0.040	0.045	0.100	0.103	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Phosphorus	2.0	6030	6900	7670	4180	4000	5990	6510	6030	5090	4900	3780	6790
Potassium	4.0	3350	3520	3330	3430	3470	3390	3590	3660	3540	3870	3820	3660
Rubidium	0.010	0.416	0.436	0.430	0.661	0.435	0.578	0.462	0.535	0.560	0.488	0.533	0.600
Selenium	0.010	1.71	2.12	1.65	0.651	0.415	0.546	0.356	0.548	0.528	0.242	0.397	0.534
Silver	0.0010	0.0034	0.0064	0.0034	<0.0010	0.0021	0.0011	<0.0010	0.0018	0.0011	<0.0010	<0.0010	<0.0010
Sodium	4.0	1020	1200	995	687	632	722	724	735	743	835	738	727
Strontium	0.010	16.7	23.6	27.7	11.6	7.36	17.7	13.2	18.3	13.7	8.18	5.96	16.3
Tellurium	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	0.00040	0.00253	0.00398	0.00344	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin	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
Titanium	0.020	1.48	3.17	2.60	0.697	0.535	0.925	0.900	0.736	0.621	0.687	0.300	0.730
Uranium	0.00040	0.00781	0.0153	0.0157	0.00159	0.00127	0.00340	0.00201	0.00339	0.00256	0.00232	0.00141	0.00594
Vanadium	0.020	0.053	0.156	0.122	0.034	0.021	0.047	<0.020	0.038	0.025	0.022	<0.020	0.030
Zinc	0.10	29.0	34.5	41.6	18.0	17.3	24.5	21.7	27.1	20.6	20.1	18.6	23.4
Zirconium	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:

1. WATER QUALITY CRITERIA FOR LEAD: TOTAL LEAD CONCENTRATION OF 0.8 µG/G WET WEIGHT (EQUIVALENT TO 0.8 MG/KG) IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL.
2. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH VARY FROM 0.5 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001.
3. THE GUIDELINE CONCENTRATION OF METHYL MERCURY IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µG/G WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
4. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 µG/G (EQUIVALENT TO 4 MG/KG) (BEATTY AND RUSSO 2014)
5. UNITS ARE mg/kg wwt.

Table 3.3-14 Whole Body Metal Concentrations September 2014 Cherry Creek

Sample ID	MDL	CC-01-1	CC-01-2	CC-01-3	CC-01-4	CC-01-5	CC-01-6	CC-01-7	CC-01-8
Site Type		Control	Control	Control	Control	Control	Control	Control	Control
Date Sampled		15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14
Time Sampled		00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID		L1522144-31	L1522144-32	L1522144-33	L1522144-34	L1522144-35	L1522144-36	L1522144-37	L1522144-16
% Moisture		75.5	74.1	76.7	74.9	74.7	74.5	72.9	74.3
Aluminum	0.40	15.0	3.79	17.7	55.9	32.5	21.9	46.7	9.04
Antimony	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic	0.0040	0.113	0.0923	0.0498	0.115	0.0445	0.0733	0.0464	0.0694
Barium	0.010	1.56	1.13	1.43	0.874	1.11	1.22	0.941	0.899
Beryllium	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium	0.0010	0.0134	0.0072	0.0099	0.0093	0.0097	0.0068	0.0050	0.0093
Calcium	4.0	8060	8950	7260	5070	7720	8960	7010	6860
Cesium	0.0010	0.0065	0.0031	0.0063	0.0070	0.0062	0.0064	0.0079	0.0057
Chromium	0.010	0.030	<0.010	0.047	0.101	0.075	0.033	0.060	0.026
Cobalt	0.0040	0.0594	0.0211	0.0420	0.0646	0.0591	0.0713	0.0617	0.0630
Copper	0.020	1.05	1.03	1.45	1.15	0.984	0.937	0.873	0.958
Iron	0.60	30.7	18.0	37.6	87.2	58.6	48.8	71.5	25.1
Lead	0.0040	0.0097	0.0049	0.0146	0.0084	0.0091	0.0067	0.0090	<0.0040
Lithium	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	0.40	374	349	343	317	393	345	386	339
Manganese	0.010	2.63	2.20	1.83	2.62	2.20	3.05	2.77	1.25
Mercury	0.0010	0.0323	0.0416	0.0398	0.0335	0.0325	0.0240	0.0337	0.0393
Methyl Mercury	0.0010	0.0349	0.0410	0.0363	0.0345	0.0300	0.0200	0.0279	0.0490
Molybdenum	0.0040	0.0296	0.0304	0.0253	0.0196	0.0368	0.0162	0.0210	0.0321
Nickel	0.040	<0.040	<0.040	<0.040	0.078	0.063	<0.040	<0.040	<0.040
Phosphorus	2.0	7120	6730	6070	4880	6470	7630	5880	6290
Potassium	4.0	3610	3480	3430	3570	3450	3400	3570	3590
Rubidium	0.010	2.61	1.29	1.49	2.08	2.00	2.24	2.32	2.06
Selenium	0.010	0.298	0.188	0.326	0.336	0.309	0.310	0.229	0.322
Silver	0.0010	0.0012	0.0028	0.0023	0.0012	0.0015	<0.0010	0.0011	0.0013
Sodium	4.0	958	967	971	1020	897	958	912	1080
Strontium	0.010	5.96	5.42	5.34	3.94	4.80	6.25	4.48	4.58
Tellurium	0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium	0.00040	0.00347	0.00291	0.00319	0.00343	0.00306	0.00439	0.00379	0.00356
Tin	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Titanium	0.020	1.89	0.985	2.08	4.65	3.51	2.64	4.61	1.26
Uranium	0.00040	0.00125	0.00068	0.00132	0.00140	0.00126	0.00120	0.00132	0.00094
Vanadium	0.020	0.082	0.027	0.098	0.340	0.208	0.172	0.257	0.070
Zinc	0.10	32.5	31.0	29.4	26.0	32.2	29.9	30.0	31.2
Zirconium	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

NOTES:

1. WATER QUALITY CRITERIA FOR LEAD: TOTAL LEAD CONCENTRATION OF 0.8 µG/G WET WEIGHT (EQUIVALENT TO 0.8 MG/KG) IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL.
2. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH VARY FROM 0.5 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001.
3. THE GUIDELINE CONCENTRATION OF METHYL MERCURY IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µG/G WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
4. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 µG/G (EQUIVALENT TO 4 MG/KG) (BEATTY AND RUSSO 2014).
5. UNITS ARE mg/kg wwt.

Table 3.3-15 Whole Body Metal Concentrations September 2014 Edith Lake

Sample ID	MDL	EDITH LAKE 1	EDITH LAKE 2	EDITH LAKE 3	EDITH LAKE 4	EDITH LAKE 5	EDITH LAKE 6	EDITH LAKE 7	EDITH LAKE 8
Site Type		IMPACT	IMPACT	IMPACT	IMPACT	IMPACT	IMPACT	IMPACT	IMPACT
Date Sampled		18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14
Time Sampled		00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID		L1522144-38	L1522144-39	L1522144-40	L1522144-41	L1522144-42	L1522144-43	L1522144-44	L1522144-45
% Moisture		67.4	64.8	72.4	69.4	72.9	72.6	68.9	71.6
Aluminum	0.40	<0.40	1.91	00.8	00.5	01.6	00.9	00.9	9.06
Antimony	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic	0.0040	0.029	0.0312	0.0397	0.033	0.0640	0.0286	0.0416	0.0386
Barium	0.010	0.07	0.29	0.43	0.089	0.49	0.25	0.431	0.587
Beryllium	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium	0.0010	<0.0010	<0.0010	0.0011	<0.0010	0.0014	<0.0010	<0.0010	<0.0010
Calcium	4.0	0694	6410	5290	0689	8520	2820	3810	1590
Cesium	0.0010	0.0064	0.0040	0.0041	0.0042	0.0047	0.0070	0.0045	0.0066
Chromium	0.010	<0.010	<0.010	0.017	<0.010	<0.010	<0.010	<0.010	0.021
Cobalt	0.0040	0.0096	0.0144	0.0146	0.0099	0.0167	0.0131	0.0132	0.0145
Copper	0.020	0.97	0.52	0.65	0.41	0.795	0.835	0.521	0.994
Iron	0.60	08.5	20.4	13.0	05.9	14.5	12.4	13.8	23.9
Lead	0.0040	<0.0040	0.0133	<0.0040	<0.0040	<0.0040	0.0050	0.0047	<0.0040
Lithium	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	0.40	238	305	305	274	366	292	301	256
Manganese	0.010	0.19	1.03	1.45	0.23	1.87	0.62	1.30	0.93
Mercury	0.0010	0.0856	0.0760	0.0642	0.0608	0.0594	0.0963	0.0788	0.0398
Methyl Mercury	0.0010	0.0482	0.0528	0.0193	0.0542	0.0575	0.0664	0.0471	0.0343
Molybdenum	0.0040	0.0045	0.0073	0.0085	0.0047	0.0091	0.0055	0.0074	0.0107
Nickel	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Phosphorus	2.0	2500	5610	5090	2770.000	7160.000	3890	4450	2840
Potassium	4.0	3290	2970	3400	3850	3340	3410	3490	3740
Rubidium	0.010	0.691	0.428	0.516	0.599	0.558	0.753	0.597	0.791
Selenium	0.010	0.19	0.22	0.23	0.20	0.31	0.21	0.25	0.18
Silver	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.001	0.001	<0.0010	<0.0010
Sodium	4.0	467	890	665	513	752	586	652	612
Strontium	0.010	1.28	9.95	9.32	1.31	13.20	5.49	7.26	4.43
Tellurium	0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium	0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Titanium	0.020	0.133	0.475	0.307	0.334	0.925	0.26	0.317	1.12
Uranium	0.00040	<0.00040	0.001	0.00	<0.00040	0.00	0.00	0.00	0.00
Vanadium	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.06600
Zinc	0.10	9.220	26.800	23.400	8.760	23.000	16.800	19.300	11.300
Zirconium	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

NOTES:

1. WATER QUALITY CRITERIA FOR LEAD: TOTAL LEAD CONCENTRATION OF 0.8 µG/G WET WEIGHT (EQUIVALENT TO 0.8 MG/KG) IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL.
2. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH VARY FROM 0.5 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001.
3. THE GUIDELINE CONCENTRATION OF METHYL MERCURY IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µG/G WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
4. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 µG/G (EQUIVALENT TO 4 MG/KG) (BEATTY AND RUSSO 2014).
5. UNITS ARE mg/kg wwt.

Table 3.3-16 Whole Body Metal Concentrations September 2014
Anderson Creek Upper Site

Sample ID	MDL	ANDR-15 32	ANDR-15 33	ANDR-15 34	ANDR-15 35	ANDR-15 36	ANDR-15 37
Site Type		CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL
Date Sampled		17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14
Time Sampled		00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID		L1522144-7	L1522144-8	L1522144-9	L1522144-10	L1522144-11	L1522144-12
% Moisture		71.1	73.2	76.0	76.1	73.3	74.6
Aluminum	0.40	4.74	32.0	25.5	32.1	15.2	29.1
Antimony	0.0020	<0.0020	0.0023	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic	0.0040	0.0672	0.0772	0.141	0.155	0.110	0.0571
Barium	0.010	0.682	1.51	0.680	1.98	0.697	0.872
Beryllium	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium	0.0010	0.0096	0.0091	0.0179	0.0139	0.0095	0.0059
Calcium	4.0	6980	7470	3130	10800	4610	6380
Cesium	0.0010	0.0015	0.0031	0.0028	0.0034	0.0023	0.0025
Chromium	0.010	<0.010	0.057	0.074	0.098	0.024	0.063
Cobalt	0.0040	0.0296	0.0440	0.0359	0.0409	0.0321	0.0360
Copper	0.020	0.977	0.857	1.27	0.708	0.718	0.768
Iron	0.60	23.6	64.2	49.3	63.7	32.8	54.3
Lead	0.0040	0.0055	0.0109	0.0109	0.0127	0.0050	0.0121
Lithium	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	0.40	354	373	232	374	296	358
Manganese	0.010	3.14	4.60	2.34	6.18	1.97	5.33
Mercury	0.0010	0.0546	0.0420	0.0429	0.0455	0.0371	0.0559
Methyl Mercury	0.040	0.0328	0.0290	0.0315	0.0346	0.0286	0.0414
Molybdenum	0.0010	0.0096	0.0166	0.0404	0.0149	0.0166	0.0131
Nickel	0.0040	<0.040	0.044	0.045	0.050	<0.040	<0.040
Phosphorus	0.040	6080	6250	4230	8910	5180	6260
Potassium	2.0	3490	3450	3360	3480	3500	3320
Rubidium	4.0	0.365	0.404	0.463	0.414	0.417	0.452
Selenium	0.010	0.761	0.716	0.826	0.646	0.674	0.658
Silver	0.010	0.0028	0.0025	0.0059	0.0043	0.0030	0.0014
Sodium	0.0010	921	880	889	894	917	884
Strontium	4.0	5.19	6.49	2.96	9.84	3.81	5.07
Tellurium	0.010	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium	0.0040	0.00236	0.00300	0.00434	0.00399	0.00268	0.00234
Tin	0.00040	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Titanium	0.020	0.938	3.22	2.44	3.35	1.55	3.28
Uranium	0.020	0.00294	0.00528	0.00523	0.00719	0.00299	0.00542
Vanadium	0.00040	0.034	0.168	0.125	0.171	0.063	0.164
Zinc	0.020	25.7	27.8	21.3	31.5	21.1	25.2
Zirconium	0.10	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

NOTES:

1. WATER QUALITY CRITERIA FOR LEAD: TOTAL LEAD CONCENTRATION OF 0.8 µG/G WET WEIGHT (EQUIVALENT TO 0.8 MG/KG) IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL.
2. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH VARY FROM 0.5 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001.
3. THE GUIDELINE CONCENTRATION OF METHYL MERCURY IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µG/G WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
4. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 µG/G (EQUIVALENT TO 4 MG/KG) (BEATTY AND RUSSO 2014).
5. UNITS ARE mg/kg wwt.

Table 3.3-17 Whole Body Metal Concentrations September 2014 Scuitto Lake

Sample ID	MDL	SCUITTO LAKE 1	SCUITTO LAKE 2	SCUITTO LAKE 3	SCUITTO LAKE 4	SCUITTO LAKE 5	SCUITTO LAKE 6	SCUITTO LAKE 7	SCUITTO LAKE 8	SCUITTO LAKE 9
Site Type		CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL
Date Sampled		19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14
Time Sampled		00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID		L1522144-17	L1522144-18	L1522144-19	L1522144-20	L1522144-21	L1522144-22	L1522144-23	L1522144-24	L1522144-25
% Moisture		74.5	78.4	75.1	71.3	70.5	72.0	68.7	72.6	72.8
Aluminum	0.40	1.60	8.05	1.67	4.40	3.82	3.77	5.29	5.11	8.61
Antimony	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic	0.0040	0.0222	0.0139	0.0138	0.0178	0.0335	0.0291	0.0315	0.0088	0.0155
Barium	0.010	0.088	0.357	0.185	0.272	0.172	0.282	0.576	0.200	0.570
Beryllium	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium	0.0010	0.0019	0.0014	0.0018	0.0017	0.0018	0.0019	0.0022	0.0010	<0.0010
Calcium	4.0	1310	6660	2470	6120	2710	7460	14600	2330	11400
Cesium	0.0010	0.0030	0.0026	0.0032	0.0033	0.0032	0.0032	0.0032	0.0022	0.0031
Chromium	0.010	0.042	0.018	0.024	0.278	<0.010	0.046	<0.010	0.080	0.017
Cobalt	0.0040	0.0160	0.0129	0.0137	0.0171	0.0126	0.0154	0.0208	0.0105	0.0161
Copper	0.020	0.709	0.655	0.888	1.23	0.609	0.830	0.577	1.92	1.09
Iron	0.60	20.0	35.9	24.2	27.1	17.5	27.1	17.9	29.4	24.9
Lead	0.0040	0.0056	0.0133	0.0146	0.0093	0.0073	0.0467	0.0117	0.0476	0.0474
Lithium	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	0.40	273	333	270	368	322	353	525	283	442
Manganese	0.010	0.605	1.82	0.867	1.75	1.42	1.92	3.28	0.758	2.78
Mercury	0.0010	0.253	0.234	0.251	0.145	0.223	0.178	0.162	0.102	0.0645
Methyl Mercury	0.0010	0.0369	0.201	0.0511	0.152	0.156	0.0271	0.204	0.0256	0.0632
Molybdenum	0.0040	0.0115	0.0129	0.0167	0.0180	0.0088	0.0132	0.0103	0.0076	0.0085
Nickel	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Phosphorus	2.0	2980	5600	3270	5600	3930	6130	10700	3460	8590
Potassium	4.0	3510	3090	3400	3420	3510	3320	3570	3460	3550
Rubidium	0.010	1.21	1.18	1.18	1.43	1.30	1.43	1.28	1.20	1.61
Selenium	0.010	0.178	0.168	0.243	0.281	0.232	0.266	0.187	0.252	0.198
Silver	0.0010	0.0061	0.0016	0.0150	0.0206	0.0019	0.0118	0.0026	0.0129	0.0066
Sodium	4.0	681	1180	870	694	798	700	635	624	942
Strontium	0.010	2.62	12.0	4.70	11.4	5.15	13.7	28.8	4.94	16.6
Tellurium	0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium	0.00040	0.00232	0.00109	0.00137	0.00311	0.00199	0.00282	0.00426	0.00051	0.00153
Tin	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Titanium	0.020	0.411	0.972	0.250	0.898	0.737	0.597	0.980	0.477	1.43
Uranium	0.00040	0.00080	0.00195	0.00082	0.00116	0.00072	0.00081	0.00109	0.00113	0.00757
Vanadium	0.020	0.036	0.098	0.054	0.081	0.043	0.077	0.154	0.039	0.142
Zinc	0.10	12.2	26.6	16.1	21.4	15.0	18.2	25.7	14.7	23.5
Zirconium	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

NOTES:

1. WATER QUALITY CRITERIA FOR LEAD: TOTAL LEAD CONCENTRATION OF 0.8 µG/G WET WEIGHT (EQUIVALENT TO 0.8 MG/KG) IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL.
2. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH VARY FROM 0.5 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001.
3. THE GUIDELINE CONCENTRATION OF METHYL MERCURY IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µG/G WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
4. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 µG/G (EQUIVALENT TO 4 MG/KG) (BEATTY AND RUSSO 2014).
5. UNITS ARE mg/kg wwt.

Table 3.3-18 McConnell Lake Whole Body Metal Concentrations October 2014

Sample ID	MDL	MCCONNELL LAKE FISH 1	MCCONNELL LAKE FISH 2	MCCONNELL LAKE FISH 3	MCCONNELL LAKE FISH 4	MCCONNELL LAKE FISH 5	MCCONNELL LAKE FISH 6
Site Type		CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL
Date Sampled		22-OCT-14	22-OCT-14	22-OCT-14	22-OCT-14	22-OCT-14	22-OCT-14
Time Sampled		16:30	16:30	16:30	16:30	16:35	16:35
ALS Sample ID		L1537826-1	L1537826-2	L1537826-3	L1537826-4	L1537826-5	L1537826-6
% Moisture		74.0	68.1	75.2	76.2	77.5	80.5
Aluminum (Al)-Total	0.40	1.07	1.61	0.51	0.44	4.00	4.12
Antimony (Sb)-Total	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)-Total	0.0040	0.0221	0.0226	0.0228	0.0119	0.0366	0.0219
Barium (Ba)-Total	0.010	1.06	0.904	0.227	0.334	1.61	0.551
Beryllium (Be)-Total	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	0.20	<0.20	3.82	2.72	<0.20	<0.20	<0.20
Cadmium (Cd)-Total	0.0010	0.0011	0.0018	0.0018	0.0010	0.0039	0.0015
Calcium (Ca)-Total	4.0	7120	3990	4060	7320	7740	5580
Cesium (Cs)-Total	0.0010	0.0115	0.0101	0.0024	0.0090	0.0091	0.0069
Chromium (Cr)-Total	0.010	<0.010	<0.010	<0.010	<0.010	0.045	0.021
Cobalt (Co)-Total	0.0040	0.0077	0.0089	0.0100	0.0089	0.0105	0.0102
Copper (Cu)-Total	0.020	1.59	1.64	0.857	0.960	1.73	0.994
Iron (Fe)-Total	0.60	9.19	10.9	15.5	9.20	12.0	18.1
Lead (Pb)-Total	0.0040	<0.0040	<0.0040	<0.0040	0.0208	0.0227	0.0278
Lithium (Li)-Total	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total	0.400	359	305	299	371	365	305
Manganese (Mn)-Total	0.010	0.916	0.524	0.914	0.815	1.17	1.21
Mercury (Hg)-Total	0.0010	0.0679	0.0595	0.104	0.0820	0.0440	0.0927
Methyl Mercury	0.0010	0.0488	0.0370	0.0745	0.0427	0.0393	0.0442
Molybdenum (Mo)-Total	0.0040	0.0129	0.0142	0.0067	0.0100	0.0147	0.0105
Nickel (Ni)-Total	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Phosphorus (P)-Total	2.0	6130	4340	4480	6530	6090	5340
Potassium (K)-Total	4.0	3620	3600	3640	3940	3640	3540
Rubidium (Rb)-Total	0.010	1.52	1.56	0.679	1.36	1.19	0.974
Selenium (Se)-Total	0.010	0.144	0.180	0.146	0.154	0.110	0.132
Silver (Ag)-Total	0.0010	0.0023	0.0023	0.0021	0.0015	0.0047	0.0017
Sodium (Na)-Total	4.0	851	719	734	798	823	871
Strontium (Sr)-Total	0.010	9.61	6.45	3.96	8.49	11.0	7.01
Tellurium (Te)-Total	0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	0.00040	0.00072	0.00078	0.00107	0.00083	0.00171	0.00113
Tin (Sn)-Total	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Titanium (Ti)-Total	0.020	0.753	0.573	0.292	0.717	0.859	0.779
Uranium (U)-Total	0.00040	0.00138	0.00152	0.00098	0.00158	0.00302	0.00330
Vanadium (V)-Total	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.023
Zinc (Zn)-Total	0.10	20.7	29.0	18.8	77.7	21.6	24.4
Zirconium (Zr)-Total	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040

NOTES:

1. WATER QUALITY CRITERIA FOR LEAD: TOTAL LEAD CONCENTRATION OF 0.8 µG/G WET WEIGHT (EQUIVALENT TO 0.8 MG/KG) IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL.
2. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH VARY FROM 0.5 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001.
3. THE GUIDELINE CONCENTRATION OF METHYL MERCURY IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µG/G WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
4. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 µG/G (EQUIVALENT TO 4 MG/KG) (BEATTY AND RUSSO 2014).
5. UNITS ARE mg/kg wwt.

Table 3.3-19 Liver Metal Concentrations Jacko Lake 2010 and 2014

Sample ID	MDL	Jacko Lake Liver Samples 2010					Jacko Lake Liver Samples 2014				
Date Sampled		N	N<MDL	Mean	St Dev	St Error	N	N<MDL	Mean	St Dev	St Error
% Moisture	0.1	8		80.83	1.46	0.52	2		76.2	0.3	0.2
Aluminum	0.4	8	7	5.48			2	1	8.7		
Antimony	0.002	8	8				2	2			
Arsenic	0.004	8		0.0200	0.0128	0.0045	2		0.0491	0.0139	0.0098
Barium	0.01	8	4	1.07	2.09	1.05	2		0.0925	0.0884	0.0625
Beryllium	0.002	8	8				2	2			
Bismuth	0.002	8	8				2	2			
Boron	0.2	8	7	0.23			2	2			
Cadmium	0.002	8	8				2	1	0.0022		
Calcium	2.5	8		353.4	699.6	247.3	2		355	28	20
Cesium	0.001	8		0.0031	0.0019	0.0007	2		0.0021		
Chromium	0.01	8		0.349	0.238	0.084	2	1	0.0410		
Cobalt	0.004	8		0.0376	0.0129	0.0046	2		0.0234	0.0118	0.0084
Copper	0.01	8		80	63	22	2		38.0	4.9	3.5
Iron	0.2	8		129	53	19	2		177	28	20
Lead	0.004	8	7	0.03			2		0.3315	0.0318	0.0225
Lithium	0.02	8	8				2	2			
Magnesium	5	8		166	32	11	2		194	10	7
Manganese	0.004	8		2.05	0.30	0.11	2		1.46	0.62	0.43
Mercury	0.008 - 0.01	8	8				2		0.1155	0.0035	0.0025
Methyl mercury							2		0.0773	0.0002	0.0001
Molybdenum	0.004	8		0.212	0.068	0.024	2		0.1580	0.0184	0.0130
Nickel	0.01	8		0.181	0.116	0.041	2	2			
Phosphorus	25	8		3031	567	200	2		2935	134	95
Potassium	100	8		2956	300	106	2		3240	71	50
Rubidium	0.01	8		0.968	0.268	0.095	2		0.4840	0.0311	0.0220
Selenium	0.02	8		6.47	5.47	1.93	2		3.6050	0.1626	0.1150
Silver							2		0.0332	0.0040	0.0029
Sodium	100	8		1806	333	118	2		1065	78	55
Strontium	0.01	8		1.656	4.100	1.450	2		0.582	0.110	0.078
Tellurium	0.004	8	4	0.0106	0.0050	0.0025	2	2			
Thallium	0.0004	8		0.00155	0.00070	0.00025	2	1	0.0006		
Tin	0.004	8	4	0.0070	0.0026	0.0013	2	2			
Titanium	0.01	8	3	0.079	0.151	0.067	2	1	0.41		
Uranium	0.0004	8		0.00117	0.00054	0.00019	2	1	0.0007		
Vanadium	0.004	8		0.0454	0.0162	0.0057	2	1	0.0390		
Zinc	0.1	8		54.8	57.3	20.3	2		28	2	1
Zirconium	0.04	8	8				2	2			

NOTES:

1. WATER QUALITY CRITERIA FOR LEAD: TOTAL LEAD CONCENTRATION OF 0.8 µG/G WET WEIGHT (EQUIVALENT TO 0.8 MG/KG) IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL.
2. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH VARY FROM 0.5 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001.
3. THE GUIDELINE CONCENTRATION OF METHYL MERCURY IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µG/G WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
4. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 µG/G (EQUIVALENT TO 4 MG/KG) (BEATTY AND RUSSO 2014).
5. UNITS ARE mg/kg wwt.

Table 3.3-20 Cherry Creek Metal Concentrations in Muscle Tissue 2011 and Whole Body Tissue 2014

	MDL	Cherry Creek Upper Site Muscle Tissue Samples 2011					Cherry Creek Upper Site Whole Body Tissue Samples 2014				
		N	N<MDL	Mean	St Dev	St Error	N	N<MDL	Mean	St Dev	St Error
% Moisture	0.1	8		77.29	1.37	6.84	8		74.7	1.1	0.4
Aluminum	0.4 - 4.0	8	5	0.49	0.06	12.71	8		25.3	18.3	6.5
Antimony	0.002 - 0.02	8	8				8	8			
Arsenic	0.004 - 0.04	8		0.0726	0.0708	30.0572	8		0.0755	0.0287	0.0101
Barium	0.01 - 0.1	8		0.047	0.018	60.111	8		1.146	0.250	0.088
Beryllium	0.002 - 0.02	8	8				8	8			
Bismuth	0.002 - 0.02	8	8				8	8			
Boron	0.2 - 2.0	8	4	1.10	0.64	4.99	8	8			
Cadmium	0.001 - 0.02	8		0.0048	0.0020	179.7115	8		0.0088	0.0025	0.00
Calcium	4 - 200	8		368	123	1	8		7486	1265	0
Cesium	0.001 - 0.01	8		0.0056	0.0013	223.9680	8		0.0061	0.0014	0.0005
Chromium	0.01 - 0.1	8	1	0.043	0.061	28.273	8	1	0.053	0.027	0.010
Cobalt	0.004 - 0.04	8		0.0252	0.0140	67.6279	8		0.055	0.016	0.006
Copper	0.01 - 0.1	8		0.557	0.318	14.176	8		1.054	0.180	0.064
Iron	0.2 - 2.0	8		4.53	0.96	8.17	8		47.2	24.0	8.5
Lead	0.004 - 0.04	8	8				8	1	0.0089	0.0030	0.0011
Lithium	0.07 - 1.1	8	8				8	8			
Magnesium	0.4 - 400	8		271	27	2	8		356	26	9
Manganese	0.004 - 0.04	8		0.20	0.12	23.00	8		2.32	0.58	0.20
Mercury	0.001 - 0.037	8		0.0595	0.0488	36.2167	8		0.0346	0.0056	0.0020
Molybdenum	0.004 - 0.04	8		0.0177	0.0023	165.1316	8		0.0264	0.0070	0.0025
Nickel	0.02 - 0.8	8	8				8	6	0.071	0.011	0.007
Phosphorus	2 - 2,000	8		2411	138	1	8		6384	832	294
Potassium	4 - 8,000	8		4488	190	1	8		3513	82	29
Rubidium	0.01 - 0.1	8		2.04	0.66	9.84	8		2.01	0.43	0.15
Selenium	0.01 - 0.2	8		0.245	0.061	32.337	8		0.290	0.053	0.019
Silver	0.001	8	8				8	1	0.0016	0.0007	0.0002
Sodium	4 - 8,000	8		781	105	1	8		970	58	21
Strontium	0.01 - 0.35	8		0.23	0.08	28.23	8		5.10	0.78	0.28
Tellurium	0.004 - 0.04	8	8				8	8			
Thallium	0.0004 - 0.004	8		0.0030	0.0010	251.8265	8		0.0035	0.0005	0.0002
Tin	0.004 - 0.04	8	8				8	8			
Titanium	0.01 - 0.1	8	7	0.01			8		2.70	1.42	0.50
Uranium	0.0004 - 0.004	8	8				8		0.00117	0.00024	0.00009
Vanadium	0.004 - 0.04	8	8				8		0.157	0.107	0.038
Zinc	0.1 - 1.0	8		8.29	1.34	6.91	8		30.3	2.0	0.7
Zirconium	0.04 - 0.4	8	8				8	8			

NOTES:

1. WATER QUALITY CRITERIA FOR LEAD: TOTAL LEAD CONCENTRATION OF 0.8 µG/G WET WEIGHT (EQUIVALENT TO 0.8 MG/KG) IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL.
2. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH VARY FROM 0.5 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µG/G WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001).
3. THE GUIDELINE CONCENTRATION OF METHYL MERCURY IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µG/G WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
4. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 µG/G (EQUIVALENT TO 4 MG/KG) (BEATTY AND RUSSO 2014).
5. HIGHLIGHTING INDICATES VALUE EXCEEDS APPLICABLE GUIDELINE.

3.3.3.3 Regional Tissue Residue Information

A literature search was conducted to obtain regional baseline information for comparison with the Project site data. The following sources were reviewed:

- Metal Concentrations in Fish Tissues from Uncontaminated BC Lakes. Rieberger 1992b.
- Water Quality Criteria for Lead. Overview Report. Ministry of Environment, Lands and Parks. 1987.
- Water Quality Ambient Water Quality Guidelines for Mercury. Ministry of Environment. 2001.
- Ambient Water Quality Criteria for Mercury. Technical Appendix. Nagpal 1989.
- Ambient Water Quality Guidelines for Selenium Technical Report Update. Beatty and Russo. 2014.

Rieberger (1992b) summarized muscle and liver concentration data collected between 1982 and 1987 from 54 uncontaminated lakes in BC; mean metal concentrations for rainbow trout liver and muscle tissues are reproduced in Table 3.3-21. Average mercury concentrations in muscle approached the lower guideline limit, while the average lead concentration was approximately half the current guideline. Methyl mercury and selenium were not analysed.

Ministry of Environment, Lands and Parks (1987) reported in a literature review that lead concentrations in livers of fish from 62 BC lakes ranged from 0.1 mg/kg to 5.3 mg/kg wet weight, and that lead levels in livers of fish in the Fraser River were generally less than those in other BC waters. Average lead levels in fish from the Columbia River ranged from 0.016 mg/kg wet weight to 0.49 mg/kg wet weight (Ministry of Environment, Lands and Parks 1987).

The concentration of mercury in muscle tissue in several species of fish from pristine lakes in BC ranged from 0.05 mg/kg wet weight to 1.5 mg/kg wet weight (Nagpal 1989). The accumulation of mercury in aquatic organisms depends on size, age, trophic level, biology and feeding habits of the organisms, as well as the concentration and chemical form of mercury in the environment (Nagpal 1989).

Beatty and Russo (2014) reported that selenium concentrations in fish from Canadian freshwaters are generally comparable across the country. In cutthroat trout in the Elk River (southeastern BC), average muscle concentration was 4 mg/kg dry weight (equal to the guideline); in rainbow trout in Blind Creek (northeastern BC), mean whole-body concentration in juvenile rainbow trout was 3.4 mg/kg dry weight (Beatty and Russo 2014).

Table 3.3-21 Rainbow Trout Tissue Metal Concentrations from Uncontaminated Lakes 1982 – 1987[1]

Metal	Mean Liver Concentration (mg/kg wet weight)	Standard Deviation	n	Mean Muscle Concentration (mg/kg wet weight)	Standard Deviation	n
Aluminum	2.15	2.67	110	1.24	1.55	112
Arsenic	0.18	0.63	98	0.15	0.52	100
Barium	0.32	0.22	110	0.24	0.07	112
Beryllium	0.31	0.21	110	0.23	0.03	112
Cadmium	0.31	0.22	110	0.23	0.03	112
Calcium	82.3	81.7	110	378	597	112
Copper	51.1	46.8	110	0.39	0.29	112
Iron	318	213	110	7.5	7.76	112
Lead	0.74	1.88	113	0.41	0.52	115
Manganese	1.57	1.19	110	0.27	0.13	112
Mercury	0.11	0.1	17	0.09	0.05	97
Nickel	1.6	1.05	110	1.2	0.4	112
Phosphorous	3051	922	110	2424	449	112
Zinc	28.8	16.8	110	4.28	1.35	112

NOTES:
1. REPRODUCED FROM RIEBERGER, K. 1992B. METAL CONCENTRATIONS IN FISH TISSUES FROM UNCONTAMINATED BC LAKES. MINISTRY OF ENVIRONMENT, LANDS AND PARKS WATER QUALITY BRANCH, WATER MANAGEMENT DIVISION.
2. UNITS ARE IN MG/KG, CONVERTED FROM MICROGRAM PER GRAM.

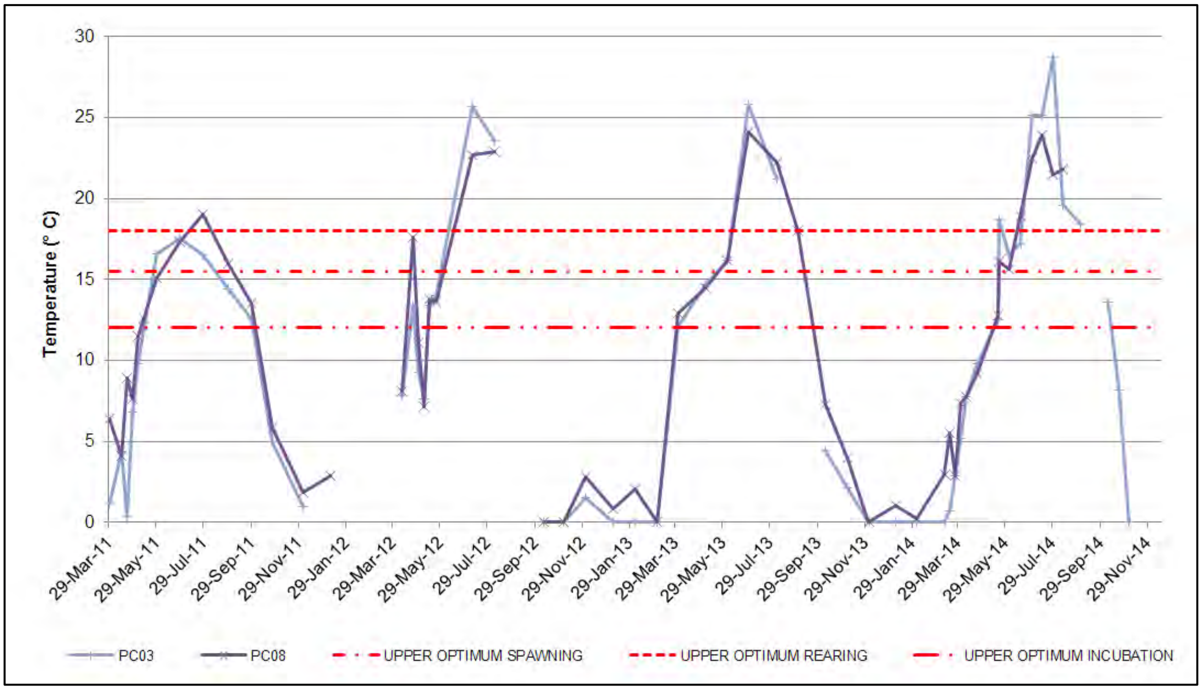
3.3.4 Water Temperature

Optimum temperature ranges for rainbow trout by life history stage provided in the Water Quality Guidelines for Temperature Overview Report (Ministry of Environment 2001b) are:

- Incubation: 10.0°C-12.0°C
- Rearing: 16.0°C-18.0°C, and
- Spawning: 10.0°C-15.5°C.

Water temperature has been measured at the Project water quality monitoring sites at varying frequencies since 2007, ranging from four times per year to weekly during freshet. Several of the water quality monitoring sites correspond to the fish sampling and aquatic life monitoring sites; monthly water temperature at these sites are provided on Figure 3.3-33 to Figure 3.3-37. The upper optimum temperature range for each of the rainbow trout life history stages is also provided on the figures.

Water temperature in Peterson Creek typically exceeds the optimum incubation temperature by May of each year at each of the sites, and exceeds the optimum spawning temperature by late May or early June. The upper optimum rearing temperature is exceeded in some years between July and September. Temperatures at the outlet of Jacko Lake (PC-08) are noticeably higher than the site in Knutsford upstream of Highway 5A (PC- 03).

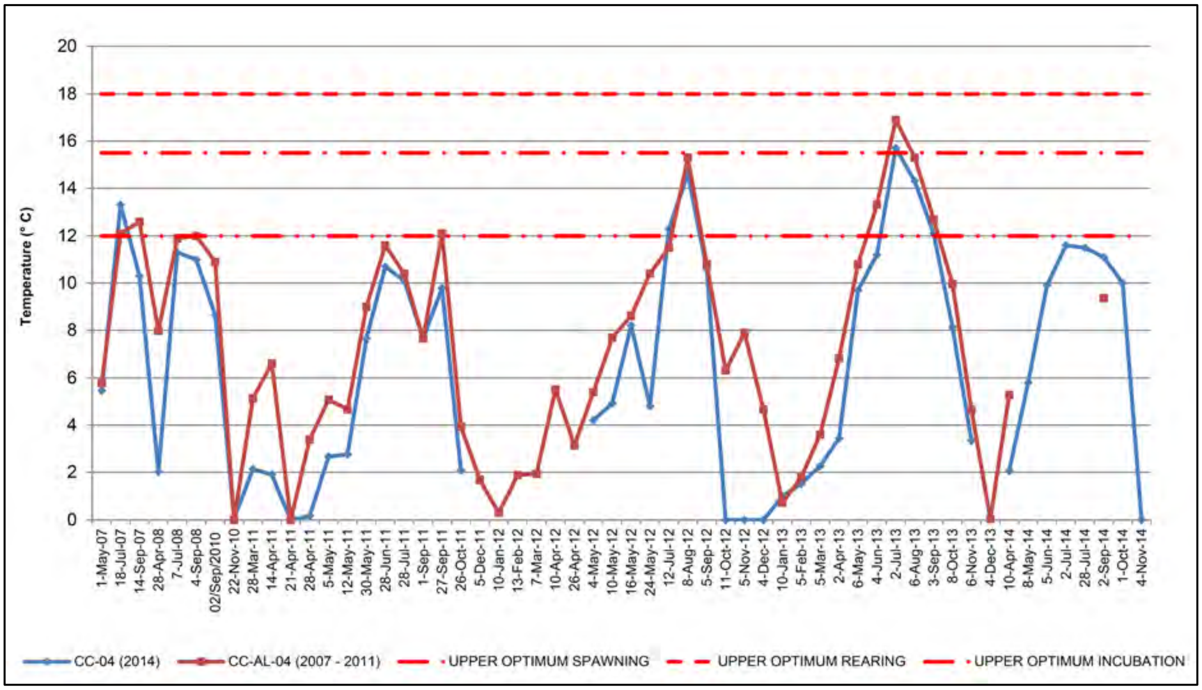


NOTES:

1. PC -03 WATER QUALITY SITE UPSTREAM OF HIGHWAY 5A (FURTHEST SITE DOWNSTREAM).
2. PC-05 WATER QUALITY SITE NEAR HUMPHREY CREEK.
3. PC03 WATER QUALITY SITE UPSTREAM OF GOOSE LAKE ROAD.
4. PC08 WATER QUALITY SITE AT JACKO LAKE OUTLET DOWNSTREAM OF SPILLWA - (FURTHEST SITE DOWNSTREAM).

Figure 3.3-33 Peterson Creek Water Temperatures 2011 – 2014

Cherry Creek temperatures also exceed the upper incubation temperature by June and July in some years but are generally within the optimum incubation temperature ranges. Temperatures fall within the optimum spawning temperature range between spring and late summer, but are below the optimum range for rearing during the same period.

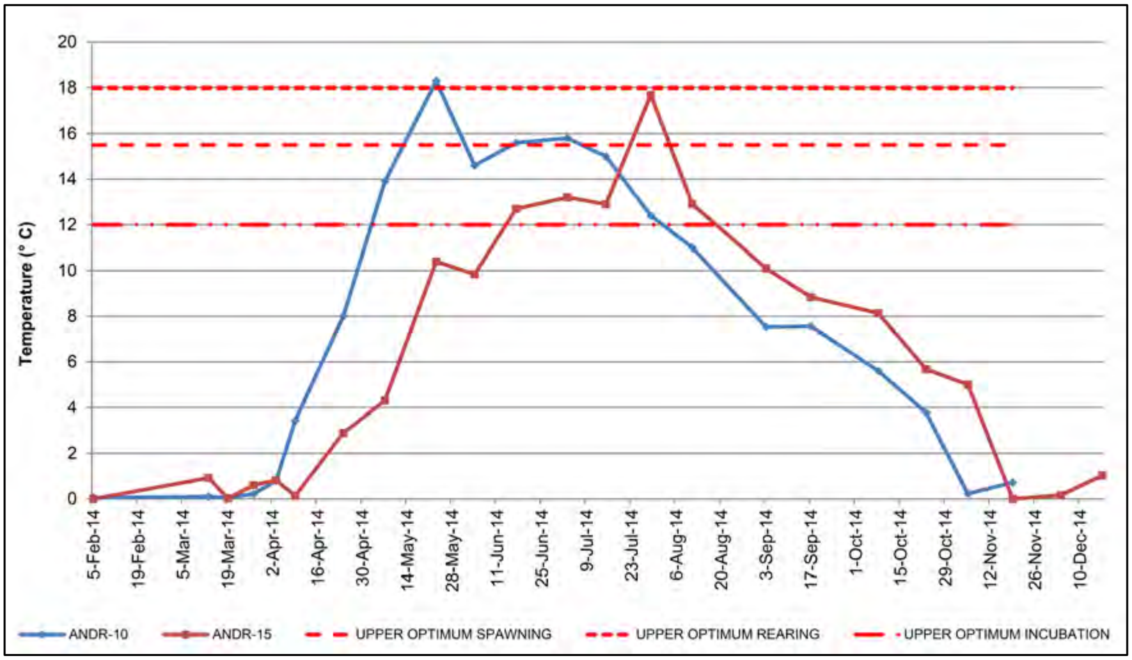


NOTES:

1. CC- 04 NEAR HIGHWAY 1 (FURTHEST SITE DOWNSTREAM).
2. CC-O4 WATER QUALITY SITE OFF GREENSTONE ROAD (FURTHEST SITE UPSTREAM).

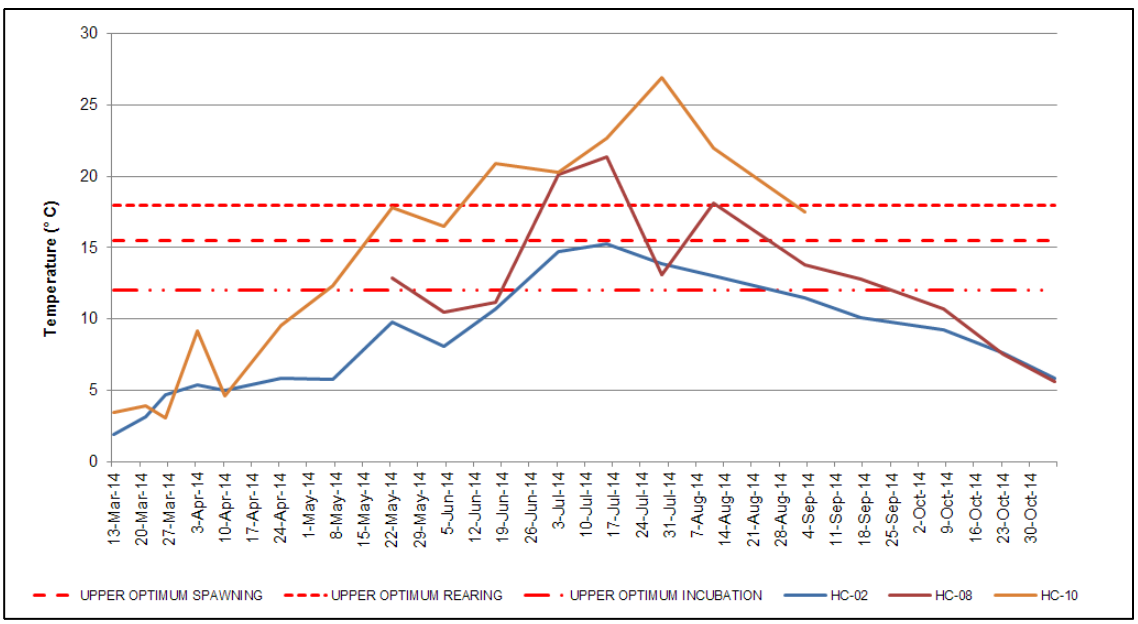
Figure 3.3-34 Cherry Creek Water Temperature 2007 – 2014

Water temperatures in Anderson Creek exceeded the upper incubation temperature by early May at the downstream site (ANDR-10) and by mid-June at the upper site in 2014. The upper optimum spawning temperature was exceeded in early May until early July at ANDR-10 and only for a short period in July at ANDR-15. Anderson Creek water temperatures were below the optimum rearing temperatures of between 16°C and 18°C for most of the summer. Monthly temperatures at ANDR-10 were higher than at ANDR-15 between April and early July; the pattern was reversed between July and November. Temperatures were similar at the two sites between December and April.



NOTES:
1. ANDR-10 DOWNSTREAM SITE.
2. ANDR-15 UPSTREAM SITE.

Figure 3.3-35 Anderson Creek Water Temperatures 2014



NOTES:
1. HC-02 DOWNSTREAM SITE. HC-08 MID SITE. HC-10 UPSTREAM SITE.

Figure 3.3-36 Humphrey Creek Water Temperatures 2014

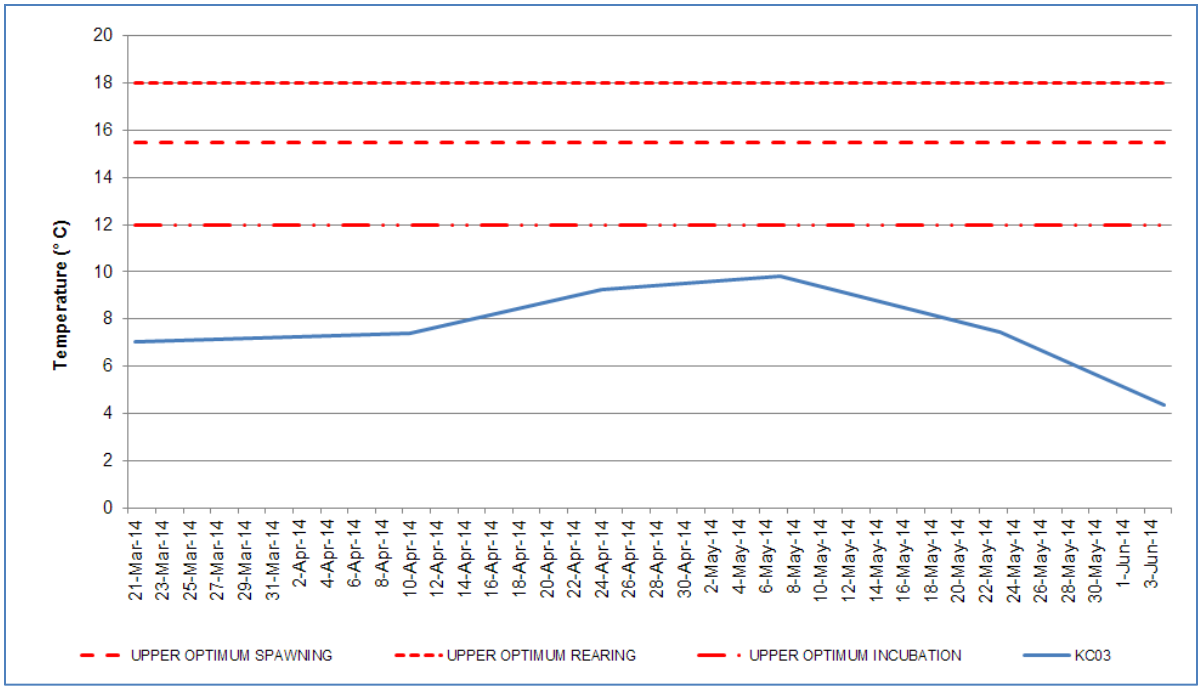


Figure 3.3-37 Keynes Creek Water Temperatures 2014

4 – DISCUSSION AND CONCLUSIONS

Monitoring programs were initiated in 2007 to characterize the baseline aquatic resources in and around the area of the Ajax Project, a proposed copper-gold mine near Kamloops, BC. As outlined in the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2012) the key objectives of fish and fish habitat monitoring related to mining are:

- Describe the abundance and distribution of fish and fish habitat in the project area.
- Determine whether previous land and water uses have affected the habitats.
- Identify potential physical and biological bottlenecks to fish productivity and survival (e.g., water temperature or trophic regimes).
- Establish baseline conditions for monitoring programs that will measure project effects during mine construction, operation, and closure.

4.1 FISH ABUNDANCE AND DISTRIBUTION

Most of the angling lakes in the Kamloops region of BC that are 100 m or more above the valley floors of major rivers were originally fishless, with their current trout populations the result of stocking programs (McPhail 2007). Five lakes were sampled as part of the baseline monitoring program for the Project: three impact lakes (Jacko Lake, Edith Lake, and McConnell Lake) and two control lakes (McConnell Lake and Scuitto Lake). Provincial fisheries records indicate that no fish were present in Jacko Lake in 1939 or in Edith Lake prior to 1950. No information is available on Goose Lake in the provincial database. Rainbow trout were observed in McConnell Lake in 1935; it is likely that the fish were stocked, since lack of spawning habitat is noted as a constraint to fisheries production. Rainbow trout were observed in Scuitto Lake in 1925.

Rainbow trout are a cool water species, preferring temperatures between 7°C and 18°C; the upper lethal temperature is approximately 27°C (McPhail 2007). In small lakes adult rainbow trout typically use all parts of the lake but are often associated with cover in the lower littoral zone; they prefer areas below the 18°C isotherm (McPhail 2007). Juveniles typically remain inshore near cover during winter and early spring.

In small streams overhead cover in the form of riparian vegetation and large woody debris is an important component of the habitat (McPhail 2007). In spring and summer adult and juvenile rainbow trout occupy riffles, runs, and pools, with the juveniles found in shallower and slower water than the adults. In the fall adult rainbow will move into primary pools (those that cover the width of the channel) dominated by cobble and boulder substrate to overwinter, while juveniles shelter within the substrate during the day and emerge at night (McPhail 2007).

Rainbow trout spawn in the spring or summer, normally in flowing water, when water temperatures are 15°C to 18°C. Spawning migrations of freshwater resident rainbow trout typically begins in late April to May, and egg deposition occurs from late April to July, depending on latitude and altitude. Incubation time varies with temperature and by population; time to 50% hatch has been reported as 60 days at 5°C and 18 to 19 days at 14°C; temperatures outside of this range produce increased egg mortality and sub-vital fry (McPhail 2007). Time to fry emergence from the gravel also varies with temperature, ranging from 42 days at 5°C to 32 days at 14°C. At hatching, rainbow trout alevins range from 11 mm to 13 mm total length; fry are 18 mm to 21 mm in length when they emerge from the gravel, and in southern rivers can reach 120 mm by fall. Newly emerged fry remain in shallow water along the stream margin, moving into mid-channel areas as they grow. Larger fry (85 mm to 140 mm) are found in mid-channel by the autumn (McPhail 2007).

Rainbow trout are currently the only fish species present in Jacko Lake and in Peterson Creek within the proposed Ajax Project area. The original area of Jacko Lake was approximately 40 ha; the size of the lake was enhanced through construction of a dam at the lake outlet (Peterson Creek) in the 1970s. The outlet dam was raised by one metre in 1989 in order to double the live storage of the lake to retain water for irrigation and for conservation. The elevated water level resulted in creation of four shallow “arms” of the lake.

The first record of fish stocking in Jacko Lake was in 1954, and stocking has occurred annually with few exceptions since then. The Freshwater Fisheries Society of BC currently stocks a mixture of Fraser Valley and Pennask strains into Jacko Lake. Since 2010 the Fraser Valley stocks have been triploid, fish that have undergone a sterilization process in order to improve the recreational fishery (Freshwater Fisheries Society of BC 2015). Triploid fish potentially live longer, result in more, larger fish available for the fishery, and minimize interactions with wild fish populations. All-female stocks, such as the Pennask strain released in 2015, have slower maturation compared to mixed male and female stocks, which makes them available to the fishery for longer (Freshwater Fisheries Society of BC 2015). Between 2010 and 2014 a total of 55,500 rainbow trout were released (Freshwater Fisheries Society of BC 2015).

Resident rainbow trout populations in Peterson Creek are limited to the first two macroreaches in downtown Kamloops. Juvenile and adult rainbow trout have been observed in Peterson Creek where it runs through downtown Kamloops, and juvenile coho salmon (33 mm to 90 mm fork length) were observed close to the confluence with the South Thompson River in September 2008.

Bridal Veil Falls, within the third macroreach, prevents upstream passage of fish. A small population of stream resident rainbow trout is present above the falls, in the fourth macroreach within Peterson Creek Park. The population likely became established in the creek as a result of seeding from the stocked rainbow trout population in Jacko Lake during high flow events when fish were able to negotiate through the series of wetlands and beaver dams upstream. Fish captured in July 2014 ranged from 131 mm to 176 mm fork length and were aged from two to four years. A steep bedrock cascade approximately 4 km downstream of Highway 5A prevents upstream passage of fish.

Mature, large-bodied rainbow trout from Jacko Lake are able to access Peterson Creek only when lake water levels exceed the dam spillway elevation, and are stranded in the creek when the spillway ceases flowing, as there is no means of upstream fish passage over the dam. Rainbow trout have been captured or observed in the trapezoidal channel immediately downstream of Jacko Lake for a distance downstream of 400 m, and in the short alluvial channel between two wetland areas approximately 3 km downstream during high flow events. All fish captured or observed in this area of Peterson Creek between 2007 and 2011 and again in 2014 were mature rainbow trout from Jacko Lake. In June 2014 the captured fish ranged in size from 465 mm to 520 mm and were aged as four to seven years. Several decomposing fish were also observed in the channel at the time. No fish were captured or observed in the same area in subsequent sampling programs in July and September 2014.

No fish were captured in 2014 in Goose Lake, an isolated lake in the Peterson Creek watershed, despite 528 hours of minnow trapping and 505 seconds of electrofishing around the perimeter using a backpack electrofisher.

Humphrey Creek, the outlet of Edith Lake, has no natural surface channel connecting to Peterson Creek, with flow instead fanning out over a grassy swale in the Peterson Creek floodplain before seeping into the ground approximately 70 m from the creek. Since 2010 triploid and all-female triploid Pennask, triploid Fraser Valley, and all-female triploid Aylmer rainbow trout strains, as well as all-female eastern brook trout have been stocked into Edith Lake. The outlet dam on Edith Lake prevents fish from accessing Humphrey Creek at most flows. No fish have been observed in Humphrey Creek; no sampling has been conducted because the channel is too narrow and shallow to allow placement of an electrofisher electrode or a minnow trap.

In contrast to the Peterson Creek watershed, the overall distribution of rainbow trout within Cherry Creek, the Project control creek to the west of the Peterson Creek watershed, is relatively continuous between the water diversion located 500 m from the mouth of the creek to the outlet of Chuwhels Lake (Knight Piésold Ltd 2013a). Rainbow trout abundance was higher in Cherry Creek relative to Peterson Creek, with the CPUE averaged across all sites and sampling events between 2007 and 2011 over five times higher within Cherry Creek (Knight Piésold Ltd. 2013a). Rainbow trout captured between 2007 and 2011 ranged from young of year fry (28 mm fork length) to mature fish (192 mm fork length). Fish captured in September 2011 were 126 mm to 186 mm in fork length and were aged as 2+ to 4+ years, consistent with rainbow trout length at age data from other small bodied stream resident populations (Knight Piésold Ltd. 2013a). The presence of fry in the creek indicates that this is a self-sustaining population.

Fish sampling was initiated in the Anderson Creek watershed in 2014 at two stream sites and in McConnell Lake, the creek headwater, to establish additional control sites for future operational monitoring programs. McConnell Lake is similar to Jacko Lake in terms of morphology, use, and fish stocking history. McConnell Lake has a dam at the outlet, with downstream movement between the lake and Anderson Creek possible only at high flow. The lake has a similar stocking history to Jacko Lake, with the first record of fish stocking in 1935. Between 2010 and 2014, 40,000 rainbow trout were released, with all releases of the Pennask strain, either all-female or triploid female. Fish sampling in October 2014 found fish ranging in size from 257 mm to 440 mm fork length. Rainbow trout were captured at the upper Anderson Creek site, located approximately 5 km downstream of McConnell Lake. Fish captured in September 2014 ranged in size from 39 mm to 270 mm fork length and were aged as young of year (zero-aged fry) to four years. No fish were found in the lower sample site (located approximately 15 km downstream from McConnell Lake) in June 2014.

Scuitto Lake, located in the Campbell Creek watershed to the east of the Peterson Creek watershed, differs from the impact lakes in having a larger surface area (approximately 100 ha compared to approximately 46 ha for Jacko Lake and 29 ha for Edith Lake) and different stocking regime (intermittent stocking historically and no recent stocking). It also has a higher drawdown than the other lakes in the monitoring program, which confounds interpretation of the sampling results.

Habitat that was common to all the stream sites where fish have been captured in Peterson Creek, Cherry Creek and Anderson Creek includes ample cover in the form of riparian vegetation, undercut banks, large woody debris, pocket pools; defined and stable banks; continuous flow; and substrate comprised of cobbles, boulders, and gravel. Sites where no resident fish were found have undefined banks and intermittent channels: little instream cover; little channel complexity (straight glides with uniform bottom profile rather than riffle-pool morphology); sparse or no riparian vegetation; substrate dominated by silt; and ephemeral flow.

4.2 LAND AND WATER USES

Land use in the Peterson Creek watershed includes urban development, quarries, linear features, ranching, agriculture, and recreation. Water use includes withdrawal of surface water and groundwater for irrigation and storage. All of these activities can impact the natural morphology and functioning of a watercourse. Runoff from urban areas can carry fertilizers, grease, organic contaminants, heavy metals, pesticides, antifreeze, salt, sediment, sewage treatment plant and industrial effluent, affecting water quality. Urban development can also impact the hydrological regime in a creek due to the presence of impervious ground cover, drainage systems, and flood control works. These alterations increase runoff to creeks and create a larger volume, velocity, and duration of flow, which affects channel morphology as well as the biotic organisms in the creek. Activities such as dredging and channel realignment, as was done in Peterson Creek at the outlet of Jacko Lake, reduce habitat complexity. Livestock grazing when animals graze in, around, and upland of streams and wetlands can cause soil erosion, decreased stream bank stability, decreased water quality, and increased stream temperature.

Peterson Creek was ranked as the highest risk small watershed in terms of water quality due to the high proportion of urban development, agriculture, and mining (which includes quarries and well development) within the watershed (Cooper 2011). Cherry Creek was ranked as the seventh highest risk watershed in this same study. Similar land uses are found in the other study watersheds, although to a lesser extent than is seen in the Peterson Creek watershed.

4.3 PHYSICAL AND BIOLOGICAL LIMITING FACTORS

Physical and biological bottlenecks to fish production are shortages of, or a lack of access to, habitat features that are crucial to each stage of a fishes' lifecycle. These habitat features include water quality (including temperature) and quantity; substrate type and quality; cover; and food in the form of primary and secondary producers.

Water quality has been described in detail in the Ajax Project Baseline Water Quality Report (Knight Piésold Ltd. 2014). Water quality and quantity in the local area is influenced significantly by the arid climate conditions; in general, flows are low in the creeks and groundwater is a significant contributor. In the Peterson Creek watershed (including Keynes Creek and Humphrey Creek), Anderson Creek, Cherry Creek and Alkali Creek aluminum, copper, and iron frequently exceeded the aquatic life guideline limits. In Jacko Lake selenium, zinc, and aluminum were occasionally found above aquatic life guideline limits.

Water temperatures are cooler in Cherry Creek and Anderson Creek compared to Peterson Creek. Monthly water temperature in Peterson Creek between the Jacko Lake outlet and where the creek flows under Highway 5A exceeded the upper optimum spawning and incubation temperature between May and July in the last four years of monitoring, while upper optimum rearing temperatures were exceeded between June and September. Water temperature in Peterson Creek in the wetland upstream of Goose Lake Road approached the upper lethal temperature in July of 2012 and 2013, and exceeded it in July 2014. Cherry Creek temperatures exceeded the upper incubation temperature by June and July in 2012 and 2013 but were within the optimum incubation temperature ranges between 2007 and 2011 and again in 2014. Water temperatures at the downstream sampling site in Anderson Creek, where no fish were captured or observed, exceeded both the upper optimum spawning and incubation temperatures between early May and July in 2014. The upper optimum incubation temperature was exceeded at the upstream monitoring site between mid-June and early August, and the upper optimum spawning temperature was not exceeded until July 2014.

The primary bottleneck to increased fish production in the creeks is water quantity. Hydrology monitoring found that peak streamflows generally occur in the spring (between April and June) in response to snowmelt and low flows occur during the remainder of the year (BGC 2015). Flows remain low in the summer and fall following large rainstorm events, due to relatively permeable and dry soils that readily absorb rainfall, resulting in limited runoff to the creeks (BGC 2015). Several of the monitoring sites were dry during summer site visits: the Jacko Lake spillway channel was dry during field inspections from July through October 2014 and Keynes Creek was dry from mid-June through October (BGC 2015). Dewatered sections of Peterson Creek were also observed downstream of the Jacko Lake spillway and upstream of the lake in the fisheries and aquatics field programs. Dewatered channels result in suffocation of incubating eggs and alevins; stranding of fish in isolated pools or dry creek beds; and prevention of downstream transport of food and nutrients (benthic invertebrates).

Low flows affect water temperature: higher temperature water holds less oxygen. The instantaneous minimum recommended criteria for the protection of aquatic life is 9 mg/l for buried embryos or alevins and 5 mg/l oxygen for all other life stages. Water temperatures recorded at each of the sites during monthly sampling indicated:

- Cherry Creek - the lowest recorded oxygen concentration was 7.5 mg/l on July 28, 2014. Values were occasionally less than the instantaneous minimum recommended criteria for buried embryos or alevins.
- Peterson Creek - dissolved oxygen concentrations were frequently less than 9 mg/l in spring and early summer, when embryos and alevins are typically in the gravel, at all of the fish and aquatic sample sites. Concentrations less than 5 mg/l were recorded on three occasions at site PC-03, and on four occasions at PC-08 since 2007.
- Anderson Creek sites (ANDR-10) - dissolved oxygen concentrations were above 5 mg/l on all sampling dates, but less than 9 mg/l between mid-June through August at the upper sample site (ANDR-15) and less than 9 mg/l from early June through September at the lower sample site.

The predominantly silt substrate in the low-gradient meandering channel within Peterson Creek both upstream and downstream of Jacko Lake provides limited spawning and juvenile overwintering habitat. The spawning gravels that were placed in Peterson Creek upstream of Jacko Lake by regional fisheries biologists have been infilled with fine silts due to the lack of flushing flows. Disturbance by cattle has also resulted in eroding stream banks, introducing a source of fine sediment into the channel. Sediments had a high proportion of fines and silts.

Although several sediment metal concentrations exceeded provincial and federal guidelines for the protection of aquatic life (chromium, copper, iron, manganese, nickel) at many of the sites, a comparison with samples collected in 1981 by provincial ministry staff indicates that metals are naturally elevated in streams in the region. Parameter concentrations varied by site, with none of the sites showing consistently higher concentrations (Jackaman 2010).

4.4 COMMERCIAL, RECREATIONAL OR ABORIGIONAL FISHERIES

The following table summarizes the use of each of the waterbodies as a commercial or recreational fishery.

Table 4.4-1 Commercial, Recreational, Aboriginal Fisheries Potential Use of Project Area Streams

Waterbody	Recreational Fishery	Aboriginal Fishery	Comments
Jacko Lake	Yes	Yes	Productive regional fishery
Goose Lake	No	No	Non fish-bearing lake due to poor water quality
Edith Lake	Yes	Unknown	Productive regional fishery
Scuitto Lake	Yes	Unknown	Productive regional fishery
McConnell Lake	Yes	Unknown	Productive regional fishery
Peterson Creek	Yes	Yes	Some sections of creek provide good habitat for all rainbow trout life stages
Anderson Creek	Yes	Unknown	Some sections of creek provide good habitat for all rainbow trout life stages
Cherry Creek	Yes	Unknown	Some sections of creek provide good habitat for all rainbow trout life stages
Alkali Creek	Unknown	Unknown	Some sections of creek provide good habitat for all rainbow trout life stages

4.5 MONITORING PROGRAMS

Potential stream impact sites were established in the Peterson Creek mainstem, as well as in tributaries to Peterson Creek in the Project area, including Humphrey Creek and Keynes Creek. Stream control sites were established in Anderson Creek, the watershed south of Peterson Creek, and in upper Cherry Creek. Monitoring sites were also established in potentially impacted lake sites: Jacko Lake, within the Project footprint, and Edith Lake, to the east of the tailings storage facility, and in two control sites, Scuitto Lake further east and McConnell Lake to the south. Goose Lake will be within the footprint of the project – biophysical samples were collected to characterize the baseline condition of the lake. Baseline monitoring will continue at the established impact and control sites in 2015 to assess spatial and temporal variability in sediment quality, water temperature (through installation of continuous temperature data loggers), primary and secondary productivity, and fish distribution and abundance.

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6 – CERTIFICATION

This report was prepared and reviewed by the undersigned.

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Approval that this document adheres to Knight Piésold Quality Systems:

APPENDIX A

STREAM SEDIMENT GUIDELINE EXCEEDANCES

APPENDIX A1

STREAM SEDIMENT METALS GUIDELINE COMPARISON

(Pages A1-1 to A1-2)

Knight Piésold CONSULTING

TABLE A.1

KGHM AJAX MINING INC.
AJAX PROJECT
STREAM SEDIMENT METALS GUIDELINE COMPARISON

Site ID	Units	MDL PC-01	PC-01	MDL PC-02	PC-03					MDL PC-08	PC-08			MDL PC-10	PC-10				
Replicate			A		A	B	C	D	E		A	B	C		A	B	C	D	E
Date Sampled			17-SEP-14		16-SEP-14	16-SEP-14	16-SEP-14	16-SEP-14	16-SEP-14		16-SEP-14	16-SEP-14	16-SEP-14		16-SEP-14	16-SEP-14	16-SEP-14	16-SEP-14	16-SEP-14
Time Sampled			11:30		16:15	16:15	16:15	16:15	16:15		12:30	12:30	12:30		11:00	11:00	11:00	11:00	11:00
ALS Sample ID			L1519944-6		L1520000-5	L1520000-6	L1520000-7	L1520000-8	L1520000-9		L1520000-1	L1520000-2	L1520000-3		L1520000-18	L1520000-19	L1520000-20	L1520000-21	L1520000-22
Matrix			Soil		Soil	Soil	Soil	Soil	Soil		Soil	Soil	Soil		Soil	Soil	Soil	Soil	Soil
Physical Tests																			
Moisture	%				45.1	28.1	48.5	23.2	42.8	0.25	74.0	35.8	67.9	0.25	35.9	21.2	41.6	18.6	22.3
pH (1:2 soil:water)	pH	0.10	8.78		7.88	8.05	7.87	8.09	7.87	0.10	7.60	7.98	7.85	0.10	8.22	8.34	8.08	8.49	8.38
Metals																			
Aluminum (Al)	mg/kg	50	11800	50	13200	12300	14800	12400	12800	50	16100	14300	14400	50	15900	13900	13900	13900	14500
Antimony (Sb)	mg/kg	0.10	0.50	0.10	0.33	0.31	0.37	0.30	0.34	0.10	0.44	0.43	0.43	0.10	0.33	0.32	0.32	0.35	0.31
Arsenic (As)	mg/kg	0.050	6.60	0.050	4.09	4.25	5.32	3.99	4.48	0.050	5.00	5.33	4.41	0.050	4.98	4.39	4.32	4.78	5.27
Barium (Ba)	mg/kg	0.50	131	0.50	145	131	163	133	131	0.50	178	136	169	0.50	171	153	161	159	180
Beryllium (Be)	mg/kg	0.10	0.32	0.10	0.27	0.26	0.33	0.28	0.29	0.10	0.25	0.24	0.26	0.10	0.36	0.31	0.32	0.30	0.33
Bismuth (Bi)	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
Boron (B)	mg/kg	10	<10	10	<10	<10	11	<10	<10	10	11	<10	<10	10	<10	<10	<10	<10	<10
Cadmium (Cd)	mg/kg	0.050	0.248	0.050	0.144	0.131	0.194	0.126	0.120	0.050	0.123	0.087	0.089	0.050	0.077	0.083	0.085	0.082	0.095
Calcium (Ca)	mg/kg	50	24100	50	17100	16400	18100	15700	16000	50	47000	34900	47400	50	19600	23000	23900	21500	22300
Chromium (Cr)	mg/kg	0.50	60.5	0.50	112	130	104	127	127	0.50	104	74.8	109	0.50	82.1	85.3	74.2	85.5	69.8
Cobalt (Co)	mg/kg	0.10	14.5	0.10	13.0	12.3	15.6	12.7	12.8	0.10	15.8	16.1	14.9	0.10	12.7	12.6	13.0	12.8	13.9
Copper (Cu)	mg/kg	0.50	37.0	0.50	55.4	50.5	71.6	49.7	55.9	0.50	99.5	74.8	82.1	0.50	83.8	62.8	66.1	62.4	72.0
Iron (Fe)	mg/kg	50	27400	50	25700	25700	28500	25300	26800	50	38400	44200	42800	50	35000	33000	31300	34300	32800
Lead (Pb)	mg/kg	0.10	6.07	0.10	4.96	4.23	6.12	4.46	4.69	0.10	3.30	2.37	2.65	0.10	3.46	3.27	3.33	3.29	3.57
Lithium (Li)	mg/kg	5.0	9.1	5.0	6.5	6.1	7.4	5.6	5.8	5.0	8.1	7.6	7.2	5.0	7.2	6.2	6.2	5.7	6.7
Magnesium (Mg)	mg/kg	10	11900	10	12600	11500	14000	11900	11900	10	14400	12900	13500	10	9190	8540	8700	8630	9400
Manganese (Mn)	mg/kg	0.20	646	0.20	976	832	1440	816	671	0.20	659	569	521	0.20	1060	961	982	1090	1330
Mercury (Hg)	mg/kg	0.0050	0.0374	0.0050	0.0442	0.0349	0.0564	0.0366	0.143	0.0050	0.0576	0.0464	0.0496	0.0050	0.0482	0.0868	0.0496	0.0445	0.0580
Molybdenum (Mo)	mg/kg	0.10	1.18	0.10	1.04	2.26	1.24	0.81	1.08	0.10	1.16	0.85	0.84	0.10	0.50	0.46	0.47	0.49	0.50
Nickel (Ni)	mg/kg	0.50	54.7	0.50	73.2	68.4	83.8	72.0	70.6	0.50	68.9	48.4	56.8	0.50	37.1	35.7	35.8	36.6	38.8
Phosphorus (P)	mg/kg	50	886	50	1080	1060	1090	1040	1060	50	1340	948	1300	50	1290	1320	1260	1300	1340
Potassium (K)	mg/kg	100	1750	100	2230	2010	2520	2030	2100	100	1870	1350	1670	100	2060	1850	1920	1860	1990
Selenium (Se)	mg/kg	0.10	0.40	0.10	0.66	0.73	0.96	0.56	0.72	0.10	0.65	0.26	0.37	0.10	0.56	0.55	0.61	0.49	0.62
Silver (Ag)	mg/kg	0.050	0.096	0.050	0.059	<0.050	0.086	0.051	0.051	0.050	0.121	0.071	0.059	0.050	0.066	<0.050	<0.050	0.058	0.063
Sodium (Na)	mg/kg	100	570	100	660	620	720	590	610	100	580	360	470	100	470	410	410	390	380
Strontium (Sr)	mg/kg	0.10	130	0.10	121	112	133	110	110	0.10	201	151	202	0.10	98.6	104	105	98.3	102
Sulfur (S)-Total	mg/kg			500	2800	3000	5700	1700	3900	500	3000	1400	3100	500	1500	600	800	<500	<500
Thallium (Tl)	mg/kg	0.050	0.113	0.050	0.066	0.056	0.070	0.065	0.056	0.050	0.060	<0.050	<0.050	0.050	0.053	<0.050	<0.050	0.060	0.054
Tin (Sn)	mg/kg	0.20	0.70	0.20	0.53	0.59	0.72	0.68	0.61	0.20	0.63	0.45	0.39	0.20	0.38	0.41	0.36	0.46	0.43
Titanium (Ti)	mg/kg	1.0	1070	1.0	1000	1000	1020	982	1020	1.0	940	963	948	1.0	928	943	901	955	804
Uranium (U)	mg/kg	0.050	0.742	0.050	0.513	0.738	0.590	0.438	0.468	0.050	0.620	0.414	0.490	0.050	0.487	0.434	0.455	0.421	0.419
Vanadium (V)	mg/kg	0.20	59.5	0.20	64.6	66.4	68.4	65.6	69.0	0.20	131	180	159	0.20	96.0	103	92.5	106	90.1
Zinc (Zn)	mg/kg	1.0	62.8	1.0	61.0	56.8	70.4	58.7	55.2	1.0	51.0	41.0	44.2	1.0	45.8	47.6	48.1	47.1	52.2

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NOTES:
1. ABBREVIATIONS: PC =
2. RED HIGHLIGHTING

0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE A.1

KGHM AJAX MINING INC.
AJAX PROJECT
STREAM SEDIMENT METALS GUIDELINE COMPARISON

Print Jul/12/15 20:06:44

Site ID	Units	MDL PC-01	MDL ANDR-10	ANDR-10					MDL ANDR-15	ANDR-15					BC Working Guidelines for the Sediment		BC Working Guidelines for the Sediment / CCME	
Replicate				A	B	C	D	E		A	B	C	D	E	LOWER EFFECTS LEVEL	SEVERE EFFECTS LEVEL	INTERIM SEDIMENT QUALITY GUIDELINES	PROBABLE EFFECTS LEVEL
Date Sampled				18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14		18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14				
Time Sampled				10:30	10:30	10:30	10:30	10:30		14:00	14:00	14:00	14:00	14:00				
ALS Sample ID				L1520711-12	L1520711-13	L1520711-14	L1520711-15	L1520711-16		L1520711-1	L1520711-2	L1520711-3	L1520711-4	L1520711-5				
Matrix				Soil	Soil	Soil	Soil	Soil		Soil	Soil	Soil	Soil	Soil				
Physical Tests																		
Moisture	%		0.25	26.2	55.7	36.7	35.5	29.0	0.25	42.3	45.2	52.5	54.3	55.5				
pH (1:2 soil:water)	pH	0.10	0.10	8.37	7.90	8.33	8.42	8.17	0.10	8.13	8.04	8.17	8.20	8.20				
Metals																		
Aluminum (Al)	mg/kg	50	50	10400	12700	11300	10800	10300	50	11400	14000	12400	10500	11000				
Antimony (Sb)	mg/kg	0.10	0.10	0.27	0.36	0.29	0.30	0.26	0.10	0.16	0.17	0.17	0.16	0.18				
Arsenic (As)	mg/kg	0.050	0.050	4.21	5.51	4.16	3.78	4.21	0.050	1.95	2.06	2.60	2.18	2.08			5.9	17
Barium (Ba)	mg/kg	0.50	0.50	246	382	357	251	228	0.50	135	170	157	144	125				
Beryllium (Be)	mg/kg	0.10	0.10	0.21	0.30	0.29	0.24	0.25	0.10	0.22	0.24	0.24	0.22	0.22				
Bismuth (Bi)	mg/kg	0.10	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.16	0.26	0.24	0.19	0.20				
Boron (B)	mg/kg	10	10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10				
Cadmium (Cd)	mg/kg	0.050	0.050	0.053	0.105	0.088	0.069	0.061	0.050	0.109	0.145	0.183	0.156	0.146			0.6	3.5
Calcium (Ca)	mg/kg	50	50	16600	22300	21700	18300	16400	50	14400	12200	15300	14500	11500				
Chromium (Cr)	mg/kg	0.50	0.50	73.4	81.1	89.8	79.8	73.4	0.50	35.9	40.3	39.4	37.0	31.0			37.3	90
Cobalt (Co)	mg/kg	0.10	0.10	13.2	15.1		12.2	12.1	0.10	9.80	11.1	11.0	9.49	9.77				
Copper (Cu)	mg/kg	0.50	0.50	32.6	55.6	45.7	36.2	40.2	0.50	23.4	30.2	31.1	26.2	25.7			35.7	197
Iron (Fe)	mg/kg	50	50	28200	27400	27400	24500	24600	50	21500	25000	23900	20700	22100	21200	43,766		
Lead (Pb)	mg/kg	0.10	0.10	2.08	2.90	2.38	2.16	2.11	0.10	3.69	5.20	5.04	4.22	4.22			35	91
Lithium (Li)	mg/kg	5.0	5.0	6.0	7.0	6.4	5.7	5.7	5.0	10.3	13.4	12.1	10.0	10.8				
Magnesium (Mg)	mg/kg	10	10	10000	11300	10600	10600	9990	10	7270	8790	9280	7110	7250				
Manganese (Mn)	mg/kg	0.20	0.20	2570	7120	4930	3090	2530	0.20	442	406	792	723	535	460	1100		
Mercury (Hg)	mg/kg	0.0050	0.0050	0.0241	0.0462	0.0388	0.0282	0.0267	0.0050	0.0258	0.0304	0.0368	0.0400	0.0315			0.17	0.486
Molybdenum (Mo)	mg/kg	0.10	0.10	0.39	0.78	0.65	0.50	0.68	0.10	0.40	0.48	0.50	0.45	0.40				
Nickel (Ni)	mg/kg	0.50	0.50	50.9	62.4	59.1	56.4	51.4	0.50	20.1	23.2	31.4	22.8	19.4	16	75		
Phosphorus (P)	mg/kg	50	50	736	1010	915	775	786	50	974	1070	1130	904	1010				
Potassium (K)	mg/kg	100	100	1400	1830	1500	1430	1350	100	2350	3450	2580	1980	2110				
Selenium (Se)	mg/kg	0.10	0.10	0.23	0.77	0.58	0.35	0.40	0.10	0.41	0.54	0.71	0.57	0.55		2		
Silver (Ag)	mg/kg	0.050	0.050	<0.050	0.068	0.054	<0.050	<0.050	0.050	0.070	0.098	0.098	0.078	0.079				
Sodium (Na)	mg/kg	100	100	380	530	450	410	360	100	340	420	460	370	340				
Strontium (Sr)	mg/kg	0.10	0.10	80.7	119	109	93.9	80.9	0.10	59.6	62.3	71.1	62.0	56.5				
Sulfur (S)-Total	mg/kg		500	500	1100	700	500	600	500	700	900	1200	800	800				
Thallium (Tl)	mg/kg	0.050	0.050	0.054	0.062	0.059	<0.050	<0.050	0.050	0.077	0.117	0.094	0.074	0.076				
Tin (Sn)	mg/kg	0.20	0.20	0.35	0.38	1.06	0.48	0.28	0.20	0.37	0.37	0.35	0.32	0.32				
Titanium (Ti)	mg/kg	1.0	1.0	794	801	810	763	745	1.0	866	1020	852	692	742				
Uranium (U)	mg/kg	0.050	0.050	0.343	0.580	0.403	0.357	0.410	0.050	0.936	1.14	0.900	0.728	0.797				
Vanadium (V)	mg/kg	0.20	0.20	94.4	78.9	81.9	71.9	74.9	0.20	63.5	67.1	64.5	55.9	63.2				
Zinc (Zn)	mg/kg	1.0	1.0	34.6	43.8	41.3	37.0	34.9	1.0	36.0	46.9	44.1	36.9	38.3			123	315

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NOTES:
1. ABBREVIATIONS: PC =
2. RED HIGHLIGHTING

0	04MAR'15	ISSUED WITH REPORT 101-246/35-1
REV	DATE	DESCRIPTION

APPENDIX A2

STREAM SEDIMENT METALS STATISTICAL SUMMARY

(Pages A2-1 to A2-3)

Knight Piésold CONSULTING

APPENDIX A.2

KGHM AJAX MINING INC.
AJAX PROJECT

SEDIMENT CHEMISTRY RESULTS
STREAM SEDIMENT METALS STATISTICAL SUMMARY

Sample ID	Units	MDL	PC-01								PC-03							
Date Sampled			17-SEP-14								16-Sep-14							
Time Sampled			11:30								16:15							
ALS Sample ID			L1519944-6								L1520000							
Matrix			Soil								Soil							
Physical Tests			Min	Max	Mean	Median	St. Dev	St. Error	N	N < MDL	Min	Max	Mean	Median	St. Dev	St. Error	N	N < MDL
Moisture	%									1	23.20	48.50	37.54	42.80	11.18	4.998	5	
pH (1:2 soil:water)	pH	0.10	8.78	8.78	8.78	8.78					7.87	8.09	7.95	7.88	0.11	0.049	5	
Metals																		
Aluminum (Al)	mg/kg	50	11800	11800	11800	11800			1		12300	14800	13100	12800	1015	454	5	
Antimony (Sb)	mg/kg	0.10	0.50	0.50	0.50	0.50			1		0.30	0.37	0.33	0.33	0.03	0.012	5	
Arsenic (As)	mg/kg	0.050	6.6	6.6	6.6	6.6			1		3.99	5.32	4.43	4.25	0.53	0.238	5	
Barium (Ba)	mg/kg	0.50	131	131	131	131			1		131	163	141	133	14	6.177	5	
Beryllium (Be)	mg/kg	0.10	0.32	0.32	0.32	0.32			1		0.26	0.33	0.29	0.28	0.03	0.012	5	
Bismuth (Bi)	mg/kg	0.10								1								5
Boron (B)	mg/kg	10								1	11.0	11.0	11.0	11.0	*n/a*		1	4
Cadmium (Cd)	mg/kg	0.050	0.248	0.248	0.248	0.248			1		0.120	0.194	0.143	0.131	0.030	0.013	5	
Calcium (Ca)	mg/kg	50	24100	24100	24100	24100			1		15700	18100	16660	16400	961	430	5	
Chromium (Cr)	mg/kg	0.50	60.5	60.5	60.5	60.5			1		104.0	130.0	120.0	127.0	11.4	5.089	5	
Cobalt (Co)	mg/kg	0.10	14.5	14.5	14.5	14.5			1		12.3	15.6	13.3	12.8	1.3	0.591	5	
Copper (Cu)	mg/kg	0.50	37	37	37	37			1		49.7	71.6	56.6	55.4	8.8	3.948	5	
Iron (Fe)	mg/kg	50	27400	27400	27400	27400			1		25300	28500	26400	25700	1300	581	5	
Lead (Pb)	mg/kg	0.10	6.07	6.07	6.07	6.07			1		4.23	6.12	4.89	4.69	0.74	0.330	5	
Lithium (Li)	mg/kg	5.0	9.1	9.1	9.1	9.1			1		5.6	7.4	6.3	6.1	0.7	0.318	5	
Magnesium (Mg)	mg/kg	10	11900	11900	11900	11900			1		11500	14000	12380	11900	988	442	5	
Manganese (Mn)	mg/kg	0.20	646	646	646	646			1		671	1440	947	832	296	132	5	
Mercury (Hg)	mg/kg	0.0050	0.0374	0.0374	0.0374	0.0374			1		0.0349	0.1430	0.0630	0.0442	0.0455	0.020	5	
Molybdenum (Mo)	mg/kg	0.10	1.18	1.18	1.18	1.18			1		0.81	2.26	1.29	1.08	0.57	0.253	5	
Nickel (Ni)	mg/kg	0.50	54.7	54.7	54.7	54.7			1		68.4	83.8	73.6	72.0	6.0	2.672	5	
Phosphorus (P)	mg/kg	50	886	886	886	886			1		1040	1090	1066	1060	19	9	5	
Potassium (K)	mg/kg	100	1750	1750	1750	1750			1		2010	2520	2178	2100	210	94	5	
Selenium (Se)	mg/kg	0.10	0.4	0.4	0.4	0.4			1		0.56	0.96	0.73	0.72	0.15	0.066	5	
Silver (Ag)	mg/kg	0.050	0.096	0.096	0.096	0.096			1		0.051	0.086	0.062	0.055	0.017	0.008	4	1
Sodium (Na)	mg/kg	100	570	570	570	570			1		590	720	640	620	51	23	5	
Strontium (Sr)	mg/kg	0.10	130	130	130	130			1		110.0	133.0	117.2	112.0	9.9	4.443	5	
Sulfur (S)-Total	mg/kg				*n/a*	*n/a*				1	1700	5700	3420	3000	1496	669	5	
Thallium (Tl)	mg/kg	0.050	0.113	0.113	0.113	0.113			1		0.056	0.070	0.063	0.065	0.006	0.003	5	
Tin (Sn)	mg/kg	0.20	0.7	0.7	0.7	0.7			1		0.53	0.72	0.63	0.61	0.08	0.034	5	
Titanium (Ti)	mg/kg	1.0	1070	1070	1070	1070			1		982	1020	1004	1000	16	7.167	5	
Uranium (U)	mg/kg	0.050	0.742	0.742	0.742	0.742			1		0.438	0.738	0.549	0.513	0.120	0.054	5	
Vanadium (V)	mg/kg	0.20	59.5	59.5	59.5	59.5			1		64.6	69.0	66.8	66.4	1.9	0.832	5	
Zinc (Zn)	mg/kg	1.0	62.8	62.8	62.8	62.8			1		55.2	70.4	60.4	58.7	6.0	2.676	5	

M:\1\01\00246\35\A\Report\1- Fish Aquatic Baseline Report\Rev 0\Tables & Figures\[Sediment Tables & Figs Rev 0.xlsx] A.2

0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

Knight Piésold CONSULTING

APPENDIX A.2

KGHM AJAX MINING INC.
AJAX PROJECT

SEDIMENT CHEMISTRY RESULTS
STREAM SEDIMENT METALS STATISTICAL SUMMARY

Sample ID	Units	MDL	PC-08								PC-10							
Date Sampled			16-Sep-14								16-Sep-14							
Time Sampled			12:30								11:00							
ALS Sample ID			L1520000								L1520000							
Matrix			Soil								Soil							
Physical Tests			Min	Max	Mean	Median	St. Dev	St. Error	N	N < MDL	Min	Max	Mean	Median	St. Dev	St. Error	N	N < MDL
Moisture	%		35.80	74.00	59.23	67.900	20.52	11.85	3		18.60	41.60	27.92	22.30	10.18	4.55	5	
pH (1:2 soil:water)	pH	0.10	7.60	7.98	7.81	7.850	0.19	0.11	3		8.08	8.49	8.30	8.34	0.16	0.07	5	
Metals																		
Aluminum (Al)	mg/kg	50	14300	16100	14933	14400	1012	584	3		13900	15900	14420	13900	867	388	5	
Antimony (Sb)	mg/kg	0.10	0.43	0.44	0.43	0.430	0.01	0.00	3		0.31	0.35	0.33	0.32	0.02	0.01	5	
Arsenic (As)	mg/kg	0.050	4.41	5.33	4.91	5.000	0.47	0.27	3		4.32	5.27	4.75	4.78	0.40	0.18	5	
Barium (Ba)	mg/kg	0.50	136	178	161	169.000	22	12.77	3		153	180	165	161	11	4.78	5	
Beryllium (Be)	mg/kg	0.10	0.24	0.26	0.25	0.250	0.01	0.01	3		0.30	0.36	0.32	0.32	0.02	0.01	5	
Bismuth (Bi)	mg/kg	0.10								3								5
Boron (B)	mg/kg	10	11	11	11	11			1	2								5
Cadmium (Cd)	mg/kg	0.050	0.087	0.123	0.10	0.089	0.02	0.01	3		0.077	0.095	0.084	0.083	0.007	0.00	5	
Calcium (Ca)	mg/kg	50	34900	47400	43100	47000	7104	4102	3		19600	23900	22060	22300	1635	731	5	
Chromium (Cr)	mg/kg	0.50	74.8	109.0	95.93	104.000	18.47	10.66	3		69.8	85.5	79.4	82.1	7.0	3.15	5	
Cobalt (Co)	mg/kg	0.10	14.9	16.1	15.60	15.800	0.62	0.36	3		12.6	13.9	13.0	12.8	0.5	0.23	5	
Copper (Cu)	mg/kg	0.50	74.8	99.5	85.47	82.100	12.69	7.33	3		62.4	83.8	69.4	66.1	8.9	3.98	5	
Iron (Fe)	mg/kg	50	38400	44200	41800	42800	3027	1747	3		31300	35000	33280	33000	1434	641	5	
Lead (Pb)	mg/kg	0.10	2.37	3.30	2.77	2.650	0.48	0.28	3		3.27	3.57	3.38	3.33	0.13	0.06	5	
Lithium (Li)	mg/kg	5.0	7.2	8.1	7.63	7.600	0.45	0.26	3		5.7	7.2	6.4	6.2	0.6	0.25	5	
Magnesium (Mg)	mg/kg	10	12900	14400	13600	13500	755	436	3		8540	9400	8892	8700	380	170	5	
Manganese (Mn)	mg/kg	0.20	521	659	583	569	70.06	40.45	3		961	1330	1085	1060	147	66	5	
Mercury (Hg)	mg/kg	0.0050	0.0464	0.0576	0.05	0.050	0.01	0.00	3		0.0445	0.0868	0.0574	0.0496	0.0172	0.01	5	
Molybdenum (Mo)	mg/kg	0.10	0.84	1.16	0.95	0.850	0.18	0.11	3		0.46	0.50	0.48	0.49	0.02	0.01	5	
Nickel (Ni)	mg/kg	0.50	48.4	68.9	58.03	56.800	10.31	5.95	3		35.7	38.8	36.8	36.6	1.3	0.56	5	
Phosphorus (P)	mg/kg	50	948	1340	1196	1300	216	125	3		1260	1340	1302	1300	30	14	5	
Potassium (K)	mg/kg	100	1350	1870	1630	1670	262	151	3		1850	2060	1936	1920	89	40	5	
Selenium (Se)	mg/kg	0.10	0.26	0.65	0.43	0.370	0.20	0.12	3		0.49	0.62	0.57	0.56	0.05	0.02	5	
Silver (Ag)	mg/kg	0.050	0.059	0.121	0.08	0.071	0.03	0.02	3		0.058	0.066	0.062	0.063	0.004	0.00	3	2
Sodium (Na)	mg/kg	100	360	580	470	470	110	64	3		380	470	412	410	35	15.62	5	
Strontium (Sr)	mg/kg	0.10	151.0	202.0	185	201	29	17	3		98.3	105.0	101.6	102.0	3.1	1.37	5	
Sulfur (S)-Total	mg/kg		1400	3100	2500	3000	954	551	3		600	1500	967	800	473	273	3	2
Thallium (Tl)	mg/kg	0.050	0.060	0.060	0.06	0.060			1	2	0.053	0.060	0.056	0.054	0.004	0.00	3	2
Tin (Sn)	mg/kg	0.20	0.39	0.63	0.49	0.450	0.12	0.07	3		0.36	0.46	0.41	0.41	0.04	0.02	5	
Titanium (Ti)	mg/kg	1.0	940	963	950	948	12	7	3		804	955	906	928	61	27	5	
Uranium (U)	mg/kg	0.050	0.414	0.620	0.51	0.490	0.10	0.06	3		0.419	0.487	0.443	0.434	0.028	0.01	5	
Vanadium (V)	mg/kg	0.20	131.0	180.0	156.67	159.000	24.58	14.19	3		90.1	106.0	97.5	96.0	6.8	3.04	5	
Zinc (Zn)	mg/kg	1.0	41.0	51.0	45.40	44.200	5.11	2.95	3		45.8	52.2	48.2	47.6	2.4	1.08	5	

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0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

Knight Piésold CONSULTING

APPENDIX A.2

KGHM AJAX MINING INC.
AJAX PROJECT

SEDIMENT CHEMISTRY RESULTS
STREAM SEDIMENT METALS STATISTICAL SUMMARY

Sample ID	Units	MDL	ANDR-10								ANDR-15							
Date Sampled			18-Sep-14								18-Sep-14							
Time Sampled			10:30								14:00							
ALS Sample ID			L1520711								L1520711							
Matrix			Soil								Soil							
Physical Tests			Min	Max	Mean	Median	St. Dev	St. Error	N	N<MDL	Min	Max	Mean	Median	St. Dev	St. Error	N	N<MDL
Moisture	%		26.20	55.70	36.62	35.50	11.53	5.16	5		42.30	55.50	49.96	52.50	5.86	2.62	5	
pH (1:2 soil:water)	pH	0.10	7.90	8.42	8.24	8.33	0.21	0.09	5		8.04	8.20	8.15	8.17	0.07	0.03	5	
Metals																		
Aluminum (Al)	mg/kg	50	10300	12700	11100	10800	977	437	5		10500	14000	11860	11400	1385	619	5	
Antimony (Sb)	mg/kg	0.10	0.26	0.36	0.30	0.29	0.04	0.02	5		0.16	0.18	0.17	0.17	0.01	0.00	5	
Arsenic (As)	mg/kg	0.050	3.78	5.51	4.37	4.21	0.66	0.30	5		1.95	2.60	2.17	2.08	0.25	0.11	5	
Barium (Ba)	mg/kg	0.50	228	382	293	251	71	32	5		125	170	146	144	18	7.95	5	
Beryllium (Be)	mg/kg	0.10	0.21	0.30	0.26	0.25	0.04	0.02	5		0.22	0.24	0.23	0.22	0.01	0.00	5	
Bismuth (Bi)	mg/kg	0.10								5	0.16	0.26	0.21	0.20	0.04	0.02	5	
Boron (B)	mg/kg	10								5								5
Cadmium (Cd)	mg/kg	0.050	0.053	0.105	0.075	0.069	0.021	0.01	5		0.109	0.183	0.15	0.15	0.03	0.01	5	
Calcium (Ca)	mg/kg	50	16400	22300	19060	18300	2792	1248	5		11500	15300	13580.00	14400.00	1636.15	732	5	
Chromium (Cr)	mg/kg	0.50	73.4	89.8	79.5	79.8	6.8	3.03	5		31.0	40.3	36.72	37.00	3.66	1.64	5	
Cobalt (Co)	mg/kg	0.10	12.1	15.1	13.3	13.2	1.3	0.57	5		9.5	11.1	10.23	9.80	0.76	0.34	5	
Copper (Cu)	mg/kg	0.50	32.6	55.6	42.1	40.2	9.0	4.02	5		23.4	31.1	27.32	26.20	3.23	1.45	5	
Iron (Fe)	mg/kg	50	24500	28200	26420	27400	1738	777	5		20700	25000	22640	22100	1769	791	5	
Lead (Pb)	mg/kg	0.10	2.08	2.90	2.33	2.16	0.34	0.15	5		3.69	5.20	4.47	4.22	0.63	0.28	5	
Lithium (Li)	mg/kg	5.0	5.7	7.0	6.2	6.0	0.6	0.25	5		10.0	13.4	11.32	10.80	1.41	0.63	5	
Magnesium (Mg)	mg/kg	10	9990	11300	10498	10600	541	242	5		7110	9280	7940	7270	1016	455	5	
Manganese (Mn)	mg/kg	0.20	2530	7120	4048	3090	1976	884	5		406	792	580	535	171	76	5	
Mercury (Hg)	mg/kg	0.0050	0.0241	0.0462	0.0328	0.0282	0.0093	0.00	5		0.0258	0.0400	0.03	0.03	0.01	0.00	5	
Molybdenum (Mo)	mg/kg	0.10	0.39	0.78	0.60	0.65	0.15	0.07	5		0.40	0.50	0.45	0.45	0.05	0.02	5	
Nickel (Ni)	mg/kg	0.50	50.9	62.4	56.0	56.4	4.9	2.21	5		19.4	31.4	23.38	22.80	4.78	2.14	5	
Phosphorus (P)	mg/kg	50	736	1010	844	786	114	51	5		904	1130	1018	1010	87	39	5	
Potassium (K)	mg/kg	100	1350	1830	1502	1430	191	86	5		1980	3450	2494	2350	582	260	5	
Selenium (Se)	mg/kg	0.10	0.23	0.77	0.47	0.40	0.21	0.09	5		0.41	0.71	0.56	0.55	0.11	0.05	5	
Silver (Ag)	mg/kg	0.050	0.054	0.068	0.061	0.061	0.010	0.01	2	3	0.070	0.098	0.08	0.08	0.01	0.01	5	
Sodium (Na)	mg/kg	100	360	530	426	410	67	30	5		340	460	386	370	53	24	5	
Strontium (Sr)	mg/kg	0.10	80.7	119.0	96.7	93.9	17.0	7.62	5		56.5	71.1	62.30	62.00	5.44	2.43	5	
Sulfur (S)-Total	mg/kg		500	1100	680	600	249	111	5		700	1200	880	800	192	86	5	
Thallium (Tl)	mg/kg	0.050	0.054	0.062	0.058	0.059	0.004	0.00	3	2	0.074	0.117	0.09	0.08	0.02	0.01	5	
Tin (Sn)	mg/kg	0.20	0.28	1.06	0.51	0.38	0.32	0.14	5		0.32	0.37	0.35	0.35	0.03	0.01	5	
Titanium (Ti)	mg/kg	1.0	745	810	783	794	27	12.28	5		692	1020	834	852	127	57	5	
Uranium (U)	mg/kg	0.050	0.343	0.580	0.419	0.403	0.095	0.04	5		0.728	1.140	0.90	0.90	0.16	0.07	5	
Vanadium (V)	mg/kg	0.20	71.9	94.4	80.4	78.9	8.7	3.89	5		55.9	67.1	62.84	63.50	4.17	1.87	5	
Zinc (Zn)	mg/kg	1.0	34.6	43.8	38.3	37.0	4.1	1.82	5		36.0	46.9	40.44	38.30	4.79	2.14	5	

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APPENDIX A3

LAKE SEDIMENT METALS GUIDELINE COMPARISON

(Pages A3-1 to A3-2)

Knight Piésold CONSULTING

APPENDIX A.3

KGHM AJAX MINING INC.
AJAX PROJECT

LAKE SEDIMENT METALS GUIDELINE COMPARISON

Sample ID	Units	MDL	MCC-1	MCC-1	MCC-1	MCC-1	MCC-1	MCC-2	MCC-2	MCC-2	MCC-2	MCC-2	SCUITTO	SCUITTO	SCUITTO	SCUITTO	SCUITTO	JACL
Replicate			**A**	**B**	**C**	**D**	**E**	**A**	**B**	**C**	**D**	**E**	**A**	**B**	**C**	**D**	**E**	**A**
Date Sampled			**22-OCT-14**	**22-OCT-14**	**22-OCT-14**	**22-OCT-14**	**22-OCT-14**	**23-OCT-14**	**23-OCT-14**	**23-OCT-14**	**23-OCT-14**	**23-OCT-14**	**19-SEP-14**	**19-SEP-14**	**19-SEP-14**	**19-SEP-14**	**19-SEP-14**	**16-SEP-14**
Time Sampled			**14:00**	**14:30**	**15:00**	**15:30**	**16:00**	**12:30**	**13:00**	**13:30**	**14:00**	**14:30**	**00:00**	**00:00**	**00:00**	**00:00**	**00:00**	**12:30**
ALS Sample ID			**L1537830-1**	**L1537830-2**	**L1537830-3**	**L1537830-4**	**L1537830-5**	**L1537830-7**	**L1537830-8**	**L1537830-9**	**L1537830-10**	**L1537830-11**	**L1522144-1**	**L1522144-2**	**L1522144-3**	**L1522144-4**	**L1522144-5**	**L1520000-11**
Matrix			**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Physical Tests																		
Moisture	%	0.25	92.1	92.8	91.9	92.7	91.7	95.2	96.2	95.8	93.8	88.7	-	-	-	-	-	89.6
pH (1:2 soil:water)	pH	0.10	7.96	7.90	7.94	8.00	7.86	8.10	8.19	8.19	8.14	8.01						7.96
Organic / Inorganic Carbon																		
Total Organic Carbon	%	0.1	17.8	17.8	18.1	18.0	18.5	31.0	32.5	31.5	26.9	17.5	9.94	11.0	12.7	12.5	12.9	
Metals																		
Aluminum	mg/kg	50	3890	3090	4050	3680	1580	469	4140	424	3030	3710	20900	22200	22000	21900	22600	7250
Antimony	mg/kg	0.10	0.47	0.28	0.34	0.36	0.11	<0.10	0.37	<0.10	0.31	0.29	0.55	0.61	0.55	0.58	0.57	0.43
Arsenic	mg/kg	0.050	2.43	1.82	2.23	2.28	0.75	0.19	1.92	0.15	1.42	2.02	4.38	4.33	4.65	4.83	4.87	4.60
Barium	mg/kg	0.50	83.4	87.4	126	110	196	9.67	94.6	9.49	102	109	150	152	154	161	163	215
Beryllium	mg/kg	0.10	0.12	0.11	0.13	0.12	<0.10	<0.10	0.11	<0.10	<0.10	0.13	0.70	0.74	0.70	0.71	0.74	0.16
Bismuth	mg/kg	0.10	0.16	0.12	0.18	0.16	<0.10	<0.10	0.33	<0.10	0.10	0.15	0.15	0.15	0.14	0.16	0.17	<0.10
Boron	mg/kg	10	11	<10	13	11	<10	<10	17	<10	12	12	<10	<10	<10	<10	<10	18
Cadmium	mg/kg	0.050	0.390	0.273	0.329	0.359	0.076	<0.050	0.142	<0.050	0.090	0.286	0.199	0.202	0.204	0.208	0.209	0.117
Calcium	mg/kg	50	67900	84900	126000	107000	249000	13000	135000	12200	169000	106000	8180	8410	8280	8530	8500	151000
Chromium	mg/kg	0.50	12.9	8.84	10.2	9.53	5.53	3.14	37.7	2.36	12.9	9.86	46.8	55.2	54.9	59.5	55.5	55.1
Cobalt	mg/kg	0.10	3.50	2.94	3.76	3.63	1.06	0.36	3.32	0.34	2.25	3.48	10.0	10.2	10.2	10.6	10.8	7.44
Copper	mg/kg	0.50	34.5	24.1	28.9	29.4	8.70	2.52	23.3	2.35	16.9	26.6	39.9	41.7	40.8	40.7	41.0	73.1
Iron	mg/kg	50	8450	6580	7800	8100	2530	732	6450	689	4720	7190	25900	26600	27000	28000	27700	13600
Lead	mg/kg	0.10	16.1	8.57	9.45	11.9	1.68	0.34	2.38	0.26	2.05	8.07	8.34	8.53	8.24	8.36	8.49	3.19
Lithium	mg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.3	<5.0	<5.0	<5.0	12.1	12.8	12.1	14.9	14.4	<5.0
Magnesium	mg/kg	10	3160	3030	4310	3740	4110	354	3410	340	2800	3790	7930	8160	7960	8230	8420	10100
Manganese	mg/kg	0.20	412	414	617	542	309	22.2	215	20.9	194	522	340	355	353	371	367	815
Mercury	mg/kg	0.0050	0.0678	0.0438	0.0491	0.0548	0.0470	<0.0050	0.0298	<0.0050	0.0235	0.0130						0.0573
Molybdenum	mg/kg	0.10	16.7	11.9	13.6	16.7	2.70	2.28	26.4	2.57	16.0	12.2	2.77	3.13	3.36	3.84	3.50	19.0
Nickel	mg/kg	0.50	13.6	10.6	12.6	12.2	4.54	2.42	28.0	1.93	10.9	11.7	48.7	55.4	53.6	57.1	55.7	47.5
Phosphorus	mg/kg	50	847	730	898	867	469	92	814	75	735	837	1040	1050	1000	995	1030	1390
Potassium	mg/kg	100	790	640	850	800	270	110	970	<100	670	750	2130	2190	2190	2310	2340	1320
Selenium	mg/kg	0.10	1.33	1.08	1.36	1.29	0.58	<0.10	0.82	<0.10	0.53	1.30	0.85	0.94	0.90	0.94	0.90	1.63
Silver	mg/kg	0.050	0.115	0.098	0.126	0.112	<0.050	<0.050	0.078	<0.050	0.059	0.105	0.210	0.213	0.205	0.190	0.194	0.083
Sodium	mg/kg	100	370	250	300	320	350	<100	890	<100	730	290	480	500	550	530	540	610
Strontium	mg/kg	0.10	159	184	258	227	616	29.2	306	27.4	389	227	86.7	92.6	91.8	92.5	92.6	485
Sulfur	mg/kg	500	11000	9800	10800	10200	10300	11200	13800	12600	10000	8500	4200	3900	4000	5000	4100	4600
Thallium	mg/kg	0.050	0.084	0.063	0.095	0.080	<0.050	<0.050	<0.050	<0.050	<0.050	0.074	0.169	0.171	0.172	0.191	0.190	<0.050
Tin	mg/kg	0.20	0.73	0.42	0.49	0.51	0.21	<0.20	3.31	<0.20	0.37	0.38	1.16	1.12	0.85	0.88	0.87	1.75
Titanium	mg/kg	1.0	200	147	202	172	121	36.4	306	30.4	230	184	1030	1100	1110	1170	1200	378
Uranium	mg/kg	0.050	9.98	7.22	8.83	10.3	4.77	1.31	12.6	1.39	10.4	8.03	4.89	5.59	5.02	4.80	5.12	4.49
Vanadium	mg/kg	0.20	25.1	21.0	27.8	26.2	11.2	3.40	31.8	3.23	22.6	25.2	81.7	85.9	83.4	85.7	89.4	48.2
Zinc	mg/kg	1.0	39.0	27.8	31.3	34.6	7.0	2.7	23.3	2.5	15.8	28.5	63.3	70.6	67.5	68.3	68.2	31.4

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2. RED HIGHLIGHTING INDICATES VALUE EXCEEDS LOWER GUIDELINE VALUE; GREEN HIGHLIGHTING INDICATES VALUE EXCEEDS LOWER AND HIGHER GUIDELINE VALUE

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APPENDIX A.3

KGHM AJAX MINING INC.
AJAX PROJECT

LAKE SEDIMENT METALS GUIDELINE COMPARISON

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JACL	JACL	JACL	JACL	EDITH	EDITH	EDITH	EDITH	EDITH	BC Working Guidelines for the Sediment		BC Working Guidelines for the Sediment / CCME	
B	C	D	E	A	B	C	D	E	LOWER EFFECTS LEVEL	SEVERE EFFECTS LEVEL	INTERIM SEDIMENT QUALITY GUIDELINES	PROBABLE EFFECTS LEVEL
16-SEP-14	16-SEP-14	16-SEP-14	16-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14				
12:30	12:30	12:30	12:30	00:00	00:00	00:00	00:00	00:00				
L1520000-12	L1520000-13	L1520000-14	L1520000-15	L1520711-23	L1520711-24	L1520711-25	L1520711-26	L1520711-27				
Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
87.3	88.4	88.0	87.2	84.9	87.0	86.7	87.2	84.4				
8.03	8.00	8.05	7.94	8.19	8.26	8.22	8.26	8.33				
5180	7030	6810	6150	9860	9430	9340	9820	10400				
0.30	0.40	0.37	0.39	0.47	0.51	0.54	0.62	0.57				
4.23	4.56	4.32	4.08	4.84	4.58	4.71	5.12	5.11			5.9	17
205	207	210	194	241	212	227	220	218				
0.11	0.15	0.16	0.12	0.24	0.23	0.22	0.28	0.25				
<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10				
16	18	18	16	13	13	13	13	13				
0.103	0.111	0.114	0.097	0.151	0.147	0.151	0.171	0.159			0.6	4
152000	139000	143000	139000	122000	93300	103000	99700	98900				
30.6	31.0	31.0	26.0	32.3	95.5	42.4	39.4	45.5			37	90
6.07	7.24	6.98	6.24	8.73	8.89	8.65	8.85	8.92				
69.7	71.3	71.0	62.5	81.1	71.2	75.2	71.8	74.3			36	197
10900	13200	12700	11400	18500	18800	18800	19900	20200	21200	43766		
4.85	3.17	3.14	2.69	6.69	5.77	6.32	6.10	6.72			35	91
<5.0	<5.0	<5.0	<5.0	7.7	7.3	7.5	8.3	8.4				
8350	9670	9480	8850	13800	12100	13200	12600	12800				
684	748	773	723	885	777	834	787	799	460	1100		
0.0555	0.0595	0.0557	0.0507	0.0559	0.0528	0.0517	0.0471	0.0512			0.170	0.486
15.3	16.4	16.2	18.6	5.28	4.98	5.36	5.77	5.23				
29.7	31.0	31.7	33.9	34.0	70.6	37.2	33.8	37.5	16	75		
1170	1420	1340	1280	1170	1220	1180	1210	1200				
920	1260	1210	1160	1780	1510	1540	1620	1710				
1.42	1.51	1.39	1.32	0.98	0.99	0.88	0.92	0.93		2		
0.079	<0.050	<0.050	0.059	0.093	0.089	0.085	0.087	0.089				
480	600	550	680	730	720	690	680	710				
461	442	443	432	477	403	435	426	411				
5900	7000	8000	8200	5500	9200	9700	10100	8900				
<0.050	<0.050	<0.050	<0.050	0.060	0.053	<0.050	0.063	0.059				
1.14	1.36	0.81	0.47	0.47	0.85	0.86	0.71	1.56				
219	323	287	315	397	507	469	549	624				
3.91	3.82	3.70	3.45	4.27	3.00	3.52	3.65	3.56				
38.5	48.1	45.0	42.0	64.2	63.5	66.1	66.5	71.1				
27.0	27.5	27.4	23.3	36.1	46.0	42.7	40.1	43.8			123	315

APPENDIX A4

LAKE SEDIMENT METALS STATISTICAL SUMMARY

(Pages A4-1 to A4-5)

Knight Piésold CONSULTING

TABLE A.4

KGHM AJAX MINING INC.
AJAX PROJECT

SEDIMENT CHEMISTRY RESULTS
LAKE SEDIMENT METALS STATISTICAL SUMMARY

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Sample ID	Units	MCC-1							
Date Sampled		22-OCT-14							
Time Sampled		14:00							
ALS Sample ID		L1537830							
Matrix		Soil							
Summary		Min	Max	Mean	Median	St. Dev	St. Error	N	N<MDL
Physical Tests									
Moisture	%	91.70	92.80	92.24	92.10	0.49	0.22	5	
pH (1:2 soil:water)	pH	7.86	8.00	7.93	7.94	0.05	0.02	5	
Organic / Inorganic Carbon									
Total Organic Carbon	%	17.8	18.5	18.0	18.0	0.29	0.13	5	
Metals									
Aluminum	mg/kg	1580	4050	3258	3680	1006	450	5	
Antimony	mg/kg	0.11	0.47	0.31	0.34	0.13	0.06	5	
Arsenic	mg/kg	0.75	2.43	1.90	2.23	0.68	0.31	5	
Barium	mg/kg	83	196	121	110	46	20	5	
Beryllium	mg/kg	0.11	0.13	0.12	0.12	0.01	0.00	4	1
Bismuth	mg/kg	0.12	0.18	0.16	0.16	0.03	0.01	4	1
Boron	mg/kg	11.00	13.00	11.67	11.00	1.15	0.67	3	2
Cadmium	mg/kg	0.08	0.39	0.29	0.33	0.12	0.06	5	
Calcium	mg/kg	67900	249000	126960	107000	71677	32055	5	
Chromium	mg/kg	5.53	12.90	9.40	9.53	2.66	1.19	5	
Cobalt	mg/kg	1.06	3.76	2.98	3.50	1.12	0.50	5	
Copper	mg/kg	8.70	34.50	25.12	28.90	9.89	4.42	5	
Iron	mg/kg	2530	8450	6692	7800	2431	1087	5	
Lead	mg/kg	1.68	16.10	9.54	9.45	5.28	2.36	5	
Lithium	mg/kg								5
Magnesium	mg/kg	3030	4310	3670	3740	565	253	5	
Manganese	mg/kg	309	617	459	414	121	54	5	
Mercury	mg/kg	0.04	0.07	0.05	0.05	0.01	0.00	5	
Molybdenum	mg/kg	2.70	16.70	12.32	13.60	5.76	2.58	5	
Nickel	mg/kg	4.54	13.60	10.71	12.20	3.61	1.62	5	
Phosphorus	mg/kg	469	898	762	847	176	79	5	
Potassium	mg/kg	270	850	670	790	237	106	5	
Selenium	mg/kg	0.58	1.36	1.13	1.29	0.33	0.15	5	
Silver	mg/kg	0.10	0.13	0.11	0.11	0.01	0.01	4	1
Sodium	mg/kg	250	370	318	320	47	21	5	
Strontium	mg/kg	159	616	289	227	187	84	5	
Sulfur	mg/kg	9800	11000	10420	10300	482	215	5	
Thallium	mg/kg	0.06	0.10	0.08	0.08	0.01	0.01	4	1
Tin	mg/kg	0.21	0.73	0.47	0.49	0.19	0.08	5	
Titanium	mg/kg	121	202	168	172	35	16	5	
Uranium	mg/kg	4.77	10.30	8.22	8.83	2.27	1.02	5	
Vanadium	mg/kg	11.20	27.80	22.26	25.10	6.67	2.98	5	
Zinc	mg/kg	7.00	39.00	27.94	31.30	12.41	5.55	5	

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0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

Knight Piésold CONSULTING

TABLE A.4

KGHM AJAX MINING INC.
AJAX PROJECT

SEDIMENT CHEMISTRY RESULTS
LAKE SEDIMENT METALS STATISTICAL SUMMARY

Print Jul/12/15 21:06:44

Sample ID	Units	MCC-2							
Date Sampled		23-Oct-14							
Time Sampled		12:30							
ALS Sample ID		L1537830							
Matrix		Soil							
Summary		Min	Max	Mean	Median	St. Dev	St. Error	N	N<MDL
Physical Tests									
Moisture	%	88.70	96.20	93.94	95.20	3.07	1.37	5	
pH (1:2 soil:water)	pH	8.01	8.19	8.13	8.14	0.08	0.03	5	
Organic / Inorganic Carbon									
Total Organic Carbon	%	17.5	32.5	27.9	31.0	6.18	2.76	5	
Metals									
Aluminum	mg/kg	424	4140	2355	3030	1786	799	5	
Antimony	mg/kg	0.29	0.37	0.32	0.31	0.04	0.02	3	2
Arsenic	mg/kg	0.15	2.02	1.14	1.42	0.91	0.41	5	
Barium	mg/kg	9.49	109.00	64.95	94.60	50.80	22.72	5	
Beryllium	mg/kg	0.11	0.13	0.12	0.12	0.01	0.01	2	3
Bismuth	mg/kg	0.10	0.33	0.19	0.15	0.12	0.07	3	2
Boron	mg/kg	12.00	17.00	13.67	12.00	2.89	1.67	3	2
Cadmium	mg/kg	0.09	0.29	0.17	0.14	0.10	0.06	3	2
Calcium	mg/kg	12200	169000	87040	106000	71519	31984	5	
Chromium	mg/kg	2.36	37.70	13.19	9.86	14.41	6.44	5	
Cobalt	mg/kg	0.34	3.48	1.95	2.25	1.54	0.69	5	
Copper	mg/kg	2.35	26.60	14.33	16.90	11.41	5.10	5	
Iron	mg/kg	689	7190	3956	4720	3096	1384	5	
Lead	mg/kg	0.26	8.07	2.62	2.05	3.20	1.43	5	
Lithium	mg/kg	5.30	5.30	5.30	5.30			1	4
Magnesium	mg/kg	340	3790	2139	2800	1673	748	5	
Manganese	mg/kg	20.90	522.00	194.82	194.00	204.63	91.52	5	
Mercury	mg/kg	0.01	0.03	0.02	0.02	0.01	0.00	3	2
Molybdenum	mg/kg	2.28	26.40	11.89	12.20	10.08	4.51	5	
Nickel	mg/kg	1.93	28.00	10.99	10.90	10.55	4.72	5	
Phosphorus	mg/kg	75	837	511	735	392	175	5	
Potassium	mg/kg	110	970	625	710	366	183	4	1
Selenium	mg/kg	0.53	1.30	0.88	0.82	0.39	0.22	3	2
Silver	mg/kg	0.06	0.11	0.08	0.08	0.02	0.01	3	2
Sodium	mg/kg	290	890	637	730	311	179	3	2
Strontium	mg/kg	27.40	389.00	195.72	227.00	163.22	72.99	5	
Sulfur	mg/kg	8500	13800	11220	11200	2089	934	5	
Thallium	mg/kg	0.07	0.07	0.07	0.07			1	4
Tin	mg/kg	0.37	3.31	1.35	0.38	1.69	0.98	3	2
Titanium	mg/kg	30.40	306.00	157.36	184.00	121.27	54.24	5	
Uranium	mg/kg	1.31	12.60	6.75	8.03	5.18	2.32	5	
Vanadium	mg/kg	3.23	31.80	17.25	22.60	13.15	5.88	5	
Zinc	mg/kg	2.50	28.50	14.56	15.80	11.81	5.28	5	

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0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

Knight Piésold CONSULTING

TABLE A.4

KGHM AJAX MINING INC.
AJAX PROJECT

SEDIMENT CHEMISTRY RESULTS
LAKE SEDIMENT METALS STATISTICAL SUMMARY

Print Jul/12/15 21:06:44

Sample ID	Units	SCUITTO							
Date Sampled		19-SEP-14							
Time Sampled		00:00							
ALS Sample ID		L1522144							
Matrix		Soil							
Summary		Min	Max	Mean	Median	St. Dev	St. Error	N	N<MDL
Physical Tests									
Moisture	%								
pH (1:2 soil:water)	pH								
Organic / Inorganic Carbon									
Total Organic Carbon	%	09.9	12.9	*11.8*	*12.5*	1.29	0.57	5	
Metals									
Aluminum	mg/kg	20900	22600	21920	22000	630	282	5	
Antimony	mg/kg	0.55	0.61	*0.57*	*0.57*	0.02	0.01	5	
Arsenic	mg/kg	4.33	4.87	*4.61*	*4.65*	0.25	0.11	5	
Barium	mg/kg	150	163	156	154	6	3	5	
Beryllium	mg/kg	0.70	0.74	*0.72*	*0.71*	0.02	0.01	5	
Bismuth	mg/kg	0.14	0.17	*0.15*	*0.15*	0.01	0.01	5	
Boron	mg/kg								5
Cadmium	mg/kg	0.20	0.21	*0.20*	*0.20*	0.00	0.00	5	
Calcium	mg/kg	8180	8530	8380	8410	148	66	5	
Chromium	mg/kg	46.80	59.50	*54.38*	*55.20*	4.63	2.07	5	
Cobalt	mg/kg	10.00	10.80	*10.36*	*10.20*	0.33	0.15	5	
Copper	mg/kg	39.90	41.70	*40.82*	*40.80*	0.65	0.29	5	
Iron	mg/kg	25900	28000	27040	27000	844	378	5	
Lead	mg/kg	8.24	8.53	*8.39*	*8.36*	0.12	0.05	5	
Lithium	mg/kg	12.10	14.90	*13.26*	*12.80*	1.31	0.59	5	
Magnesium	mg/kg	7930	8420	8140	8160	202	90	5	
Manganese	mg/kg	340	371	357	355	12	5	5	
Mercury	mg/kg								
Molybdenum	mg/kg	2.77	3.84	*3.32*	*3.36*	0.40	0.18	5	
Nickel	mg/kg	48.70	57.10	*54.10*	*55.40*	3.27	1.46	5	
Phosphorus	mg/kg	995	1050	1023	1030	24	11	5	
Potassium	mg/kg	2130	2340	2232	2190	89	40	5	
Selenium	mg/kg	0.85	0.94	*0.91*	*0.90*	0.04	0.02	5	
Silver	mg/kg	0.19	0.21	*0.20*	*0.21*	0.01	0.00	5	
Sodium	mg/kg	480	550	520	530	29	13	5	
Strontium	mg/kg	86.70	92.60	*91.24*	*92.50*	2.56	1.14	5	
Sulfur	mg/kg	3900	5000	4240	4100	439	196	5	
Thallium	mg/kg	0.17	0.19	*0.18*	*0.17*	0.01	0.00	5	
Tin	mg/kg	0.85	1.16	*0.98*	*0.88*	0.15	0.07	5	
Titanium	mg/kg	1030	1200	1122	1110	66	30	5	
Uranium	mg/kg	4.80	5.59	*5.08*	*5.02*	0.31	0.14	5	
Vanadium	mg/kg	81.70	89.40	*85.22*	*85.70*	2.91	1.30	5	
Zinc	mg/kg	63.30	70.60	*67.58*	*68.20*	2.66	1.19	5	

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0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

Knight Piésold CONSULTING

TABLE A.4

KGHM AJAX MINING INC.
AJAX PROJECT

SEDIMENT CHEMISTRY RESULTS
LAKE SEDIMENT METALS STATISTICAL SUMMARY

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Sample ID	Units	JACL							
Date Sampled		16-Sep-14							
Time Sampled		12:30							
ALS Sample ID		L1520000							
Matrix		Soil							
Summary		Min	Max	Mean	Median	St. Dev	St. Error	N	N<MDL
Physical Tests									
Moisture	%	87.20	89.60	88.10	88.00	0.97	0.44	5	
pH (1:2 soil:water)	pH	7.94	8.05	8.00	8.00	0.05	0.02	5	
Organic / Inorganic Carbon									
Total Organic Carbon	%	9.9	12.9	*11.8*	*12.5*	1.29	0.57	5	
Metals									
Aluminum	mg/kg	5180	7250	6484	6810	837	374	5	
Antimony	mg/kg	0.3	0.43	0.378	0.39	0.05	0.02	5	
Arsenic	mg/kg	4.08	4.6	4.358	4.32	0.22	0.10	5	
Barium	mg/kg	194	215	206.2	207	8	3	5	
Beryllium	mg/kg	0.11	0.16	0.14	0.15	0.02	0.01	5	
Bismuth	mg/kg								5
Boron	mg/kg	16	18	17.2	18	1	0	5	
Cadmium	mg/kg	0.097	0.117	0.1084	0.111	0.008	0.004	5	
Calcium	mg/kg	139000	152000	144800	143000	6340	2835	5	
Chromium	mg/kg	26	55.1	34.74	31	12	5	5	
Cobalt	mg/kg	6.07	7.44	6.794	6.98	0.61	0.27	5	
Copper	mg/kg	62.5	73.1	69.52	71	4.11	1.84	5	
Iron	mg/kg	10900	13600	12360	12700	1163	520	5	
Lead	mg/kg	2.69	4.85	3.408	3.17	0.83	0.37	5	
Lithium	mg/kg								5
Magnesium	mg/kg	8350	10100	9290	9480	692	309	5	
Manganese	mg/kg	684	815	749	748	50	22	5	
Mercury	mg/kg	0.0507	0.0595	0.0557	0.0557	0.003	0.0014	5	
Molybdenum	mg/kg	15.3	19	17.1	16.4	1.6	0.7	5	
Nickel	mg/kg	29.7	47.5	34.76	31.7	7.3	3.3	5	
Phosphorus	mg/kg	1170	1420	1320	1340	99	44	5	
Potassium	mg/kg	920	1320	1174	1210	154	69	5	
Selenium	mg/kg	1.32	1.63	1.454	1.42	0.12	0.05	5	
Silver	mg/kg	0.059	0.083	0.074	0.079	0.013	0.007	3	2
Sodium	mg/kg	480	680	584	600	74	33	5	
Strontium	mg/kg	432	485	452.6	443	21	9	5	
Sulfur	mg/kg	4600	8200	6740	7000	1506	673	5	
Thallium	mg/kg								5
Tin	mg/kg	0.47	1.75	1.106	1.14	0.49	0.22	5	
Titanium	mg/kg	219	378	304.4	315	58	26	5	
Uranium	mg/kg	3.45	4.49	3.874	3.82	0.39	0.17	5	
Vanadium	mg/kg	38.5	48.2	44.36	45	4.2	1.9	5	
Zinc	mg/kg	23.3	31.4	27.32	27.4	2.9	1.3	5	

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0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

Knight Piésold CONSULTING

TABLE A.4

KGHM AJAX MINING INC.
AJAX PROJECT

SEDIMENT CHEMISTRY RESULTS
LAKE SEDIMENT METALS STATISTICAL SUMMARY

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Sample ID	Units	EDITH							
Date Sampled		18-Sep-14							
Time Sampled		12:30							
ALS Sample ID		L1520711							
Matrix		Soil							
Summary		**Min**	**Max**	**Mean**	**Median**	**St. Dev**	**St. Error**	**N**	**N<MDL**
Physical Tests									
Moisture	%	84.40	87.20	86.04	86.70	1.29	0.58	5	
pH (1:2 soil:water)	pH	8.19	8.33	8.25	8.26	0.05	0.02	5	
Organic / Inorganic Carbon									
Total Organic Carbon	%								
Metals									
Aluminum	mg/kg	9340.00	10400.00	9770.00	9820.00	420.71	188.15	5	
Antimony	mg/kg	0.47	0.62	0.54	0.54	0.06	0.03	5	
Arsenic	mg/kg	4.58	5.12	4.87	4.84	0.24	0.11	5	
Barium	mg/kg	212	241	224	220	11	5	5	
Beryllium	mg/kg	0.22	0.28	0.24	0.24	0.02	0.01	5	
Bismuth	mg/kg								5
Boron	mg/kg	13	13	13	13			5	
Cadmium	mg/kg	0.15	0.17	0.16	0.15	0.01	0.00	5	
Calcium	mg/kg	93300	122000	103380	99700	10978	4910	5	
Chromium	mg/kg	32.30	95.50	51.02	42.40	25.34	11.33	5	
Cobalt	mg/kg	8.65	8.92	8.81	8.85	0.11	0.05	5	
Copper	mg/kg	71.20	81.10	74.72	74.30	3.94	1.76	5	
Iron	mg/kg	18500	20200	19240	18800	757	339	5	
Lead	mg/kg	5.77	6.72	6.32	6.32	0.40	0.18	5	
Lithium	mg/kg	7.30	8.40	7.84	7.70	0.49	0.22	5	
Magnesium	mg/kg	12100	13800	12900	12800	640	286	5	
Manganese	mg/kg	777	885	816	799	44	20	5	
Mercury	mg/kg	0.05	0.06	0.05	0.05	0.00	0.00	5	
Molybdenum	mg/kg	4.98	5.77	5.32	5.28	0.29	0.13	5	
Nickel	mg/kg	33.80	70.60	42.62	37.20	15.74	7.04	5	
Phosphorus	mg/kg	1170	1220	1196	1200	21	9	5	
Potassium	mg/kg	1510	1780	1632	1620	113	51	5	
Selenium	mg/kg	0.88	0.99	0.94	0.93	0.05	0.02	5	
Silver	mg/kg	0.09	0.09	0.09	0.09	0.00	0.00	5	
Sodium	mg/kg	680	730	706	710	21	9	5	
Strontium	mg/kg	403	477	430	426	29	13	5	
Sulfur	mg/kg	5500	10100	8680	9200	1836	821	5	
Thallium	mg/kg	0.05	0.06	0.06	0.06	0.00	0.00	4	1
Tin	mg/kg	0.47	1.56	0.89	0.85	0.41	0.18	5	
Titanium	mg/kg	397	624	509	507	85	38	5	
Uranium	mg/kg	3.00	4.27	3.60	3.56	0.45	0.20	5	
Vanadium	mg/kg	63.50	71.10	66.28	66.10	2.97	1.33	5	
Zinc	mg/kg	36.10	46.00	41.74	42.70	3.80	1.70	5	

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0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

APPENDIX A5

SEDIMENT CHEMISTRY RESULTS 2007 – 2011 COMPARED TO 2014 RESULTS

(Pages A5-1 to A5-3)

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TABLE A5.1

KGHM AJAX MINING INC.
AJAX PROJECT

JACL SEDIMENT CHEMISTRY RESULTS
2007 - 2011 COMPARED TO 2014 RESULTS

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	2007 - 2011					2014				
	N	N>Guideline		Mean (SD)	Median	N	N>Guideline		Mean (SD)	Median
		CCME	BC				CCME	BC		
pH pH	9			8.12(0.10)	8.12	5			8.00(0.05)	8
Nutrients										
Nitrate (Available) mg/kg	6			2.96(2.13)	2.4					
Nitrogen (Total) %	8			0.93(0.10)	0.969					
Phosphate (Available) mg/kg	7			16.20(12.08)	13.7					
Phosphorus (Available) mg/kg	1				8					
Sediment Metals										
Aluminum (Sediment) mg/kg	1				6220	5			6484(837.13)	6810
Antimony (Sediment) mg/kg	9			8.93(3.22)	10	5			0.38(0.05)	0.39
Arsenic (Sediment) mg/kg	9			4.92(0.23)	5	5			4.36(0.22)	4.32
Barium (Sediment) mg/kg	9			240.22(18.93)	234	5			206.20(7.79)	207
Beryllium (Sediment) mg/kg	9			0.46(0.12)	0.5	5			0.14(0.02)	0.15
Bismuth (Sediment) mg/kg	1				0.05	5			0.05(0.00)	0.05
Cadmium (Sediment) mg/kg	9			0.46(0.13)	0.5	5			0.11(0.01)	0.111
Calcium (Sediment) mg/kg	1				159000	5			144800(6340.35)	143000
Chromium (Sediment) mg/kg	9			26.58(3.55)	25.1	5	1		34.74(11.58)	31
Cobalt (Sediment) mg/kg	9			6.54(0.70)	6.3	5			6.79(0.61)	6.98
Copper (Sediment) mg/kg	9		9	92.60(18.80)	93.2	5	5		69.52(4.11)	71
Iron (Sediment) mg/kg	1				12600	5			12360(1163.19)	12700
Lead (Sediment) mg/kg	9			27.10(8.71)	30	5			3.41(0.83)	3.17
Magnesium (Sediment) mg/kg	1				9930	5			9290(691.70)	9480
Manganese (Sediment) mg/kg	1		1		720	5		5	748.60(49.58)	748
Mercury (Sediment) mg/kg	9		1	0.45(1.15)	0.0591	5			0.06(0.00)	0.0557
Molybdenum (Sediment) mg/kg	9			18.34(4.76)	19.4	5			17.10(1.61)	16.4
Nickel (Sediment) mg/kg	9		9	27.24(4.41)	27	5		5	34.76(7.28)	31.7
Phosphorus (Sediment) mg/kg	1				1150	5			1320(99.25)	1340
Potassium (Sediment) mg/kg	1				1150	5			1174(153.88)	1210
Selenium (Sediment) mg/kg	9		1	2.03(0.23)	2	5			1.45(0.12)	1.42
Silver (Sediment) mg/kg	9			1.79(0.64)	2	5			0.05(0.03)	0.059
Sodium (Sediment) mg/kg	1				480	5			584(74.36)	600
Strontium (Sediment) mg/kg	1				494	5			452.60(20.91)	443
Thallium (Sediment) mg/kg	9			0.45(0.15)	0.5	5			0.03(0.00)	0.025
Tin (Sediment) mg/kg	9			4.48(1.57)	5	5			1.11(0.49)	1.14
Titanium (Sediment) mg/kg	1				274	5			304.40(58.03)	315
Uranium (Sediment) mg/kg	4			4.44(1.55)	4.135	5			3.87(0.39)	3.82
Vanadium (Sediment) mg/kg	9			40.89(3.13)	41.3	5			44.36(4.15)	45
Zinc (Sediment) mg/kg	9			25.92(3.02)	27.5	5			27.32(2.87)	27.4
Organics										
Carbon Organic (Total) %	8			9.65(0.56)	9.6					
Particle Size										
% Clay (<4um) %	10			31.45(15.21)	28.15					
% Gravel (>2mm) %	10			3.97(11.12)	0.5					
% Sand (0.09mm - 0.063mm) %	2			0.50(0.00)	0.5					
% Sand (0.25mm - 0.125mm) %	2			0.50(0.00)	0.5					
% Sand (0.5mm - 0.25mm) %	2			0.50(0.00)	0.5					
% Sand (1mm - 0.5mm) %	2			0.50(0.00)	0.5					
% Sand (2mm - 0.063mm) %	8			1.32(1.28)	0.845					
% Sand (2mm - 1mm) %	2			0.50(0.00)	0.5					
% Silt (0.0312mm - 0.004mm) %	2			56.00(4.24)	56					
% Silt (0.063mm - 0.0312mm) %	2			8.50(0.71)	8.5					
% Silt (0.063mm - 4um) %	8			63.43(16.84)	61.5					

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NOTES:

1. ABBREVIATIONS: BC = BC WORKING WATER QUALITY GUIDELINES; CCME = CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT GUIDELINES.
2. FOR VALUES <MDL MEAN AND MEDIAN WERE BASED ON THE MDL VALUE

0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

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TABLE A5.2

KGHM AJAX MINING INC.
AJAX PROJECT

PC-08 SEDIMENT CHEMISTRY RESULTS
2007 - 2011 RESULTS COMPARED TO 2014 RESULTS

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	2007 - 2011					2014				
		N>Guideline					N>Guideline			
	N	CCME	BC	Mean (SD)	Median	N	CCME	BC	Mean (SD)	Median
pH pH	3			8.63(0.16)	8.62	3			7.81(0.19)	7.85
Nutrients										
Nitrate (Available) mg/kg	2			0.73(0.39)	0.725					
Nitrogen (Total) %	2			0.03(0.01)	0.031					
Phosphate (Available) mg/kg	2			1.00(0.00)	1					
Phosphorus (Available) mg/kg										
Sediment Metals										
Aluminum (Sediment) mg/kg	1				19100	3			14933(1011.60)	14400
Antimony (Sediment) mg/kg	3			3.52(2.56)	5	3			0.43(0.01)	0.43
Arsenic (Sediment) mg/kg	3		2	8.40(3.21)	7.7	3			4.91(0.47)	5
Barium (Sediment) mg/kg	3			176.33(55.19)	171	3			161.00(22.11)	169
Beryllium (Sediment) mg/kg	3			0.53(0.35)	0.41	3			0.25(0.01)	0.25
Bismuth (Sediment) mg/kg	1				0.05					
Cadmium (Sediment) mg/kg	3			0.22(0.05)	0.25	3			0.10(0.02)	0.089
Calcium (Sediment) mg/kg	1				31700	3			43100(7104.22)	47000
Chromium (Sediment) mg/kg	3		3	80.17(58.75)	47.2	3	3	3	95.93(18.47)	104
Cobalt (Sediment) mg/kg	3			21.60(6.72)	18.6	3			15.60(0.62)	15.8
Copper (Sediment) mg/kg	3		3	102.70(26.31)	95	3	3	3	85.47(12.69)	82.1
Iron (Sediment) mg/kg	1		1		49400	3		3	41800(3026.55)	42800
Lead (Sediment) mg/kg	3			11.32(6.37)	15	3			2.77(0.48)	2.65
Magnesium (Sediment) mg/kg	1				26300	3			13600.00(754.98)	13500
Manganese (Sediment) mg/kg	1		1		1040	3	3		583.00(70.06)	569
Mercury (Sediment) mg/kg	3			0.06(0.01)	0.0597	3			0.05(0.01)	0.0496
Molybdenum (Sediment) mg/kg	3			1.63(0.64)	2	3			0.95(0.18)	0.85
Nickel (Sediment) mg/kg	3		3	65.83(56.53)	36.5	3		3	58.03(10.31)	56.8
Phosphorus (Sediment) mg/kg	1				1570	3			1196.00(215.70)	1300
Potassium (Sediment) mg/kg	1				3160	3			1630.00(262.30)	1670
Selenium (Sediment) mg/kg	3			0.80(0.35)	1	3			0.43(0.20)	0.37
Silver (Sediment) mg/kg	3			0.70(0.52)	1	3			0.08(0.03)	0.071
Sodium (Sediment) mg/kg	1				590	3			470.00(110.00)	470
Strontium (Sediment) mg/kg	1				187	3			184.67(29.16)	201
Thallium (Sediment) mg/kg	3			0.35(0.26)	0.5	1				0.06
Tin (Sediment) mg/kg	3			1.84(1.14)	2.5	3			0.49(0.12)	0.45
Titanium (Sediment) mg/kg	1				1140	3			950.33(11.68)	948
Uranium (Sediment) mg/kg	2			0.37(0.05)	0.3695	3			0.51(0.10)	0.49
Vanadium (Sediment) mg/kg	3			188.00(23.39)	201	3			156.67(24.58)	159
Zinc (Sediment) mg/kg	3			52.47(11.47)	50.2	3			45.40(5.11)	44.2
Organics										
Carbon Organic (Total) %	2			0.23(0.04)	0.23					
Particle Size										
% Clay (<4um) %	4			6.68(2.68)	7.93					
% Gravel (>2mm) %	4			27.57(13.07)	30.1					
% Sand (0.09mm - 0.063mm) %										
% Sand (0.25mm - 0.125mm) %										
% Sand (0.5mm - 0.25mm) %										
% Sand (1mm - 0.5mm) %										
% Sand (2mm - 0.063mm) %	4			50.30(19.48)	43.95					
% Sand (2mm - 1mm) %										
% Silt (0.0312mm - 0.004mm) %										
% Silt (0.063mm - 0.0312mm) %										
% Silt (0.063mm - 4um) %	4			15.50(4.64)	15.55					

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NOTES:

1. ABBREVIATIONS: BC = BC WORKING WATER QUALITY GUIDELINES; CCME = CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT GUIDELINES.
2. FOR VALUES <MDL MEAN AND MEDIAN WERE BASED ON THE MDL VALUE

0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

Knight Piésold CONSULTING

TABLE A5.3

KGHM AJAX MINING INC.
AJAX PROJECT

PC-01 SEDIMENT CHEMISTRY RESULTS
2007 - 2011 RESULTS COMPARED TO 2014 RESULTS

Print Jul/12/15 21:06:44

	2007 - 2011					2014				
	N	N>Guideline		Mean +/_ SD	Median	N	N>Guideline		Value	Median
		CCME	BC				CCME	BC		
pH pH	3			8.68(0.06)	8.72	1			8.78	
Nutrients										
Nitrate (Available) mg/kg	3			1.30(0.36)	1.4					
Nitrogen (Total) %	3			0.04(0.02)	0.03					
Phosphate (Available) mg/kg	2			7.00(1.41)	7					
Phosphorus (Available) mg/kg	1				5					
Sediment Metals										
Aluminum (Sediment) mg/kg						1			11800	
Antimony (Sediment) mg/kg	3			5.00(0.00)	5	1			0.5	
Arsenic (Sediment) mg/kg	3			2.50(0.00)	2.5	1	1	1	6.6	
Barium (Sediment) mg/kg	3			115.00(12.00)	115	1			131	
Beryllium (Sediment) mg/kg	3			0.25(0.00)	0.25	1			0.32	
Bismuth (Sediment) mg/kg									<0.10	
Cadmium (Sediment) mg/kg	3			0.25(0.00)	0.25	1			0.248	
Calcium (Sediment) mg/kg						1			24100	
Chromium (Sediment) mg/kg	3		3	49.67(7.86)	49.3	1	1	1	60.5	
Cobalt (Sediment) mg/kg	3			8.80(0.44)	9	1			14.5	
Copper (Sediment) mg/kg	3			30.53(3.98)	29.6	1	1	1	37	
Iron (Sediment) mg/kg						1		1	27400	
Lead (Sediment) mg/kg	3			15.00(0.00)	15	1			6.07	
Magnesium (Sediment) mg/kg						1			11900	
Manganese (Sediment) mg/kg						1		1	646	
Mercury (Sediment) mg/kg	3			0.05(0.05)	0.0228	1			0.0374	
Molybdenum (Sediment) mg/kg	3			2.00(0.00)	2	1			1.18	
Nickel (Sediment) mg/kg	3		3	37.57(2.76)	36.9	1		1	54.7	
Phosphorus (Sediment) mg/kg						1			886	
Potassium (Sediment) mg/kg						1			1750	
Selenium (Sediment) mg/kg	3			1.33(0.58)	1	1			0.4	
Silver (Sediment) mg/kg	3			1.00(0.00)	1	1			0.096	
Sodium (Sediment) mg/kg						1			570	
Strontium (Sediment) mg/kg						1			130	
Thallium (Sediment) mg/kg	3			0.50(0.00)	0.5	1			0.113	
Tin (Sediment) mg/kg	3			2.50(0.00)	2.5	1			0.7	
Titanium (Sediment) mg/kg						1			1070	
Uranium (Sediment) mg/kg						1			0.742	
Vanadium (Sediment) mg/kg	3			54.50(3.80)	55.9	1			59.5	
Zinc (Sediment) mg/kg	3			73.87(38.60)	57.2	1			62.8	
Organics										
Carbon Organic (Total) %	3			0.55(0.30)	0.4					
Particle Size										
% Clay (<4um) %	3			2.33(0.58)	2					
% Gravel (>2mm) %	3			34.00(3.61)	35					
% Sand (0.09mm - 0.063mm) %	1				6					
% Sand (0.25mm - 0.125mm) %	1				10					
% Sand (0.5mm - 0.25mm) %	1				13					
% Sand (1mm - 0.5mm) %	1				12					
% Sand (2mm - 0.063mm) %	2			61.00(8.49)	61					
% Sand (2mm - 1mm) %	1				15					
% Silt (0.0312mm - 0.004mm) %	1				2					
% Silt (0.063mm - 0.0312mm) %	1				3					
% Silt (0.063mm - 4um) %	2			4.50(4.95)	4.5					

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NOTES:

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2. FOR VALUES <MDL MEAN AND MEDIAN WERE BASED ON THE MDL VALUE

0	04MAR'15	ISSUED WITH REPORT 101-246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

APPENDIX B

AQUATIC LIFE ANALYSIS RESULTS

APPENDIX B1

PHYTOPLANKTON TAXA AND ABUNDANCE FOR AJAX PROJECT

(Pages B1-1 to B1-2)

Knight Piésold
CONSULTING

TABLE B.1

KGHM AJAX MINING INC
AJAX PROJECT

PHYTOPLANKTON TAXA AND ABUNDANCE FOR AJAX PROJECT
FRASER ENVIRONMENTAL SERVICES

Print Jul/12/15 23:02:24

		FES Sample Number	140252	140253	140254	140255	140256	140257	140258	140331	140332	140333
		Sampling ID	Jacko Lake	Jacko Lake	Edith Lake	Edith Lake	Scuitto Lake	Scuitto Lake	Goose Lake	MCC-1-S	MCC-1-D	MCC-2-S
			Shallow	Deep	Shallow	Deep	Shallow	Deep	Shallow	Shallow	Deep	Shallow
Sampling Date										Oct.22, 2014	Oct.22, 2014	Oct.23, 2014
Phylum	Order	Genera and Species										
Bacillariophycae	Centrales	*Cyclotella cf. bodanica*									<2.8	<1.4
		Cyclotella cf. glomerata	35.6	11.2	17.8	106.8		2.8		1.4		5.6
		Cyclotella sp.		<2.8		17.8	<2.8			1.4	2.8	1.4
	Pennales	*Achnanthes minutissima*	<17.8			<17.8	<2.8	<1.4		1.4	<2.8	
		Amphora ovalis		<2.8				<1.4		<1.4		<1.4
		Amphora sp.				<17.8						<1.4
		Asterionella formosa			<17.8	<17.8				85.4	<2.8	89.6
		Ceratoneis arcus						<1.4				
		Ceratoneis sp. ?		<2.8	<17.8	<17.8	<2.8	<1.4		<1.4		<1.4
		Cocconeis placentula	<17.8	2.8		<17.8	<2.8					<1.4
		Cocconeis sp.	<17.8	<2.8		<17.8						
		Cymbella cf. minuta								<1.4		
		Cymbella spp.				<17.8			17.8	<1.4		<1.4
		Diatoma sp. ?			<17.8							1.4
		Epithemia turgida								<1.4		
		Eunotia spp.						<1.4				
		Fragilaria crotonensis		5.6	569.6	498.4						
		Fragilaria spp.	<17.8				5.6			1.4		
		Frustulia sp.					<2.8					<1.4
		Gomphonema spp.		2.8			<2.8			<1.4		
		Navicula cf. radiosa								1.4		
		Navicula spp.		<2.8	<17.8	<17.8		<1.4		<1.4	<2.8	<1.4
		Nitzschia sp.				<17.8				<1.4		<1.4
		Nitzschia sp. ?				<17.8				<1.4		<1.4
		Pinnularia sp.										<1.4
		Pleurosigma / Gyrosigma										<1.4
		Stauroneis sp.								<1.4		<1.4
		Synedra ulna		2.8						<1.4		<1.4
		Synedra spp.			<17.8	<17.8	<2.8	<1.4				
		UID girdle view		<2.8	<17.8			<1.4				<1.4
		UID Pennales				<17.8	<2.8	<1.4	<17.8	<1.4		1.4
Chlorophyta	Chlorococcales	*Ankistrodesmus cf. falcatus*	<17.8	<2.8						<1.4		<1.4
		Ankistrodesmus sp.	<17.8					<1.4		4.2		5.6
		Botryococcus braunii	<17.8		<17.8	<17.8	<2.8	<1.4	<17.8	22.4	<2.8	<1.4
		Closteriopsis sp.			<17.8	<17.8						
		Coelastrum sp. ?				<17.8						
		Crucigenia tetrapedia ?									190.4	
		Crucigenia sp.		<2.8								
		Elakatothrix gelatinosa	<17.8							<1.4		<1.4
		Oocystis cf. lacustris				<17.8				<1.4		<1.4
		Oocystis spp.		<2.8	<17.8	<17.8				2.8	<2.8	11.2
		Oocystis sp. ?	<17.8									<1.4
		Pediastrum Boryanum			<17.8	<17.8			<17.8			<1.4
		Pediastrum spp.			<17.8	<17.8				<1.4	<2.8	4.2
		Quadrigula cf. lacustris	<17.8							<1.4		<1.4
		Scenedemus bijuga								<1.4	<2.8	<1.4
		Scenedesmus sp.							<17.8			
		Schroederia cf. setigera	<17.8	<2.8						<1.4		<1.4
		Schroederia sp.	17.8			<17.8		1.4				
		Schroederia sp. ?		<2.8			<2.8					
		Selenastrum minutum		<2.8								
		Selenastrum sp.	<17.8			<17.8						
		Sphaerocystis schroeteri	<17.8	<2.8	<17.8	<17.8				<1.4		<1.4
		Sphaerocystis schroeteri ?		<2.8				<1.4				
		Tetraedron minimum							<17.8	2.8	<2.8	5.6
	Oedogoniales	*Oedogonium sp. ?*							<17.8			
	Tetrasporales	*Gloeocystis ampla*			<17.8	<17.8						<1.4
		Gloeocystis sp. ?		<2.8								4.2
	Volvocales	*Chlamydomonas sp.*										
		UID	<17.8									
	Zygnematales	*Closterium sp.*							<17.8		<2.8	
		Cosmarium spp.							<17.8			
		Euastrum sp.							<17.8			
		Staurastrum cf. paradoxum			<17.8	<17.8						
		Staurastrum sp.			<17.8	<17.8						
Chrysophyta	Ochromonadales	*Dinobryon cf. bavaricum*										
		Dinobryon divergens			2,153.8	213.6						<1.4
		Dinobryon cf. sertularia				<17.8						
		Dinobryon spp.			<17.8	17.8						
		Kephyrion / Pseudokephyrion			<17.8	<17.8						
		Ochromonas sp. ?	4,432.2		<17.8							<1.4
		Synura sp. ?		<2.8	35.6	<17.8				<1.4		

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TABLE B.1

KGHM AJAX MINING INC
AJAX PROJECT

PHYTOPLANKTON TAXA AND ABUNDANCE FOR AJAX PROJECT
FRASER ENVIRONMENTAL SERVICES

Print Jul/12/15 23:02:24

		FES Sample Number	140252	140253	140254	140255	140256	140257	140258	140331	140332	140333
		Sampling ID	Jacko Lake Shallow	Jacko Lake Deep	Edith Lake Shallow	Edith Lake Deep	Scuitto Lake Shallow	Scuitto Lake Deep	Goose Lake Shallow	MCC-1-S Shallow	MCC-1-D Deep	MCC-2-S Shallow
Sampling Date										Oct.22, 2014	Oct.22, 2014	Oct.23, 2014
Phylum	Order	Genera and Species										
Cryptophyta	Cryptomonadales	*Chroomonas acuta*	160.2	47.6	17.8		44.8	70.0		103.6	2.8	107.8
		Cryptomonas ovata / erosa	17.8	8.4	17.8	<17.8		1.4		53.2	2.8	56.0
		Cryptomonas sp.	35.6	<2.8	<17.8	17.8			<17.8	<1.4		2.8
		UID	<17.8		<17.8							
Cyanophyta	Chroococcales	*Agmenellum tenuissima*							1,637.6			
		Anacystis cf. aeruginosa			<17.8	<17.8	<2.8	21.0	<17.8	<1.4		154.0
		Anacystis cf. limneticus			<17.8	106.8	<2.8		<17.8	<1.4	<2.8	<1.4
		Anacystis cf. Prescottii				<17.8			35.6			
		Anacystis spp.		<2.8	1,335.0	<17.8			3,382.0	<1.4	<2.8	<1.4
		Dactylococcopsis cf. Smithii										<1.4
		Gomphosphaeria cf. aponina								<1.4		<1.4
		Gomphosphaeria cf. Naegelianum			<17.8	<17.8						
		Gomphosphaeria cf. pallidum	<17.8	56.0	<17.8	<17.8			<17.8			
		Gomphosphaeria sp.			<17.8				<17.8			
	Nostocales	*Anabaena cf. circinalis*	<17.8	<2.8								
		Anabaena cf. flos-aquae	907.8	<2.8	<17.8							<1.4
		Anabaena spp.	<17.8	126.0	<17.8	<17.8			445.0	5.6		<1.4
		Anabaena sp. ?							<17.8			
		Aphanizomenon flos-aquae	2,865.8	694.4	4,752.6	4,521.2	632.8	165.2				
		Nostoc sp. ?								<1.4		<1.4
		UID Nostocales	<17.8							<1.4		
	Oscillatoriales	*Limnothrix sp. ?*							48,772.0	<1.4		<1.4
		Lyngbya Birgei			<17.8						<2.8	
		Lyngbya cf. limnetica		<2.8	<17.8	<17.8		<1.4				<1.4
		Lyngbya sp.										
		Lyngbya sp. ?		42.0								
		Oscillatoria cf. tenuis							<17.8			
		Oscillatoria spp.	<17.8		178.0		56.0	<1.4				
		Oscillatoria sp. ?		145.6		676.4						
		Pseudanabaena sp. ?		<2.8					<17.8	42.0	1,066.8	18.2
		Spirulina sp.							<17.8			
Euglenophyta	Euglenales	*Euglena spp.*				<17.8					<2.8	
		Euglena sp.?						<1.4			2.8	
		Trachelomonas sp.						<1.4				
		Trachelomonas sp. ?										
Pyrrhophyta	Dinokontae	*Ceratium hirundinella*		<2.8	<17.8	<17.8						
		cyst of *Ceratium hirundinella*				<17.8						
		Gymnodinium sp. ?							89.0			
		Peridinium cf. inconspicuum										
		Peridinium / Glenodinium										
		UID cyst ?				<17.8			<17.8			
UID		UID filamentous algae										
		UID branched filamentous algae										
		UID colonial algae	<17.8	<2.8	<17.8	<17.8						<1.4
		UID unicellular algae	71.2	<2.8		17.8		<1.4	907.8	<1.4		<1.4
		UID cyst			<17.8			<1.4				
		UID flagellates										

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NOTES:

1. UNITS = cells/ml.
2. UID FLAGELLATES OBSERVED BUT NOT COUNTED. UID = UNIDENTIFIED DUE TO LACK OF SIZE AND / OR MISSING MORPHOLOGICAL CHARACTERS. CF. = (CONFERTIM = CLOSE TOGETHER) = POSSIBLY FOR SPECIES. ? = POSSIBLY FOR GENUS

0	15APR'15	ISSUED WITH REPORT VA-101/246/35-1	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

APPENDIX B2

PERIPHYTON RAW DATA

(Pages B2-1 to B2-2)

Knight Piésold CONSULTING

APPENDIX B2
KGHM AJAX MINING INC.
AJAX PROJECT

PERIPHYTON RAW DATA
DENSITY COUNT

		Sample ID	PC-AL-01	PC-AL-01	PC-AL-01	PC-AL-01	PC-AL-01	PC-AL-04	PC-AL-04	PC-AL-04	PC-AL-04	PC-AL-04	ANDR-10	ANDR-10
		Sample Replicate	A	B	C	D	E	A	B	C	D	E	A	B
		Sampling Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Area Sampled	37.7cm3	37.7cm2	37.7cm1	37.7cm0	37.7cm1	37.7cm2	37.7cm3	37.7cm4	37.7cm5	37.7cm6	37.7cm7	37.7cm8
Phylum	**Order**	**Genera and Species**												
Bacillariophyceae	Centrales	Aulacoseira sp.												
Bacillariophyceae	Centrales	Cyclotella spp.											19	537
Bacillariophyceae	Centrales	Melosira varians						0	11		8	11	19	45
Bacillariophyceae	Pennales	Achnanthes lanceolata	4428	1843	10825	7630	22875	2660	888	537	1139	871	3546	29358
Bacillariophyceae	Pennales	Achnanthes minutissima	575	284	804	661	7379		0		0	135	591	694
Bacillariophyceae	Pennales	Achnanthes spp.	658	851	1005	496	9593		0		0	11	887	2081
Bacillariophyceae	Pennales	Amphipleura pellucida		0					0		0			0
Bacillariophyceae	Pennales	Amphora pediculus	12019	9821	68042	94098	73790	58622	16390	227172	24841	52914	38	0
Bacillariophyceae	Pennales	Amphora spp.		9	13		49		0		8		19	45
Bacillariophyceae	Pennales	Caloneis spp.			13				0	9	0	11	114	537
Bacillariophyceae	Pennales	Cocconeis pediculus		9				16	23	9	16	696	19	45
Bacillariophyceae	Pennales	Cocconeis placentula	9489	2269	30155	22889	87810	124687	75119	87771	37496	73008	7388	11101
Bacillariophyceae	Pennales	Cymatopleura solea			13				11	9			19	45
Bacillariophyceae	Pennales	Cymbella affinis											0	0
Bacillariophyceae	Pennales	Cymbella aspera											19	90
Bacillariophyceae	Pennales	Cymbella cistula												0
Bacillariophyceae	Pennales	Cymbella lanceolata												0
Bacillariophyceae	Pennales	Cymbella mexicana												0
Bacillariophyceae	Pennales	Cymbella minuta												0
Bacillariophyceae	Pennales	Cymbella sinuata												0
Bacillariophyceae	Pennales	Cymbella spp.												0
Bacillariophyceae	Pennales	Diatoma mesodon	11											0
Bacillariophyceae	Pennales	Diatoma moniliformis	233	476	3616	496	18448	16	4260	17	49	4875	0	0
Bacillariophyceae	Pennales	Diploneis spp.			13							0	19	45
Bacillariophyceae	Pennales	Epithemia turgida									8	0	19	45
Bacillariophyceae	Pennales	Epithemia sp.										0	0	0
Bacillariophyceae	Pennales	Eunotia spp.		9								0	19	45
Bacillariophyceae	Pennales	Fragilaria construens	5									0	0	0
Bacillariophyceae	Pennales	Fragilaria vaucheriae	21	73	402	43	2300	62	458	35	16	522	381	179
Bacillariophyceae	Pennales	Fragilaria spp.	106	18	207	11	383		137	9		1045	305	4857
Bacillariophyceae	Pennales	Frustulia rhomboides	5		13							0	19	90
Bacillariophyceae	Pennales	Gomphonema acuminatum										0	304	358
Bacillariophyceae	Pennales	Gomphonema angustatum/parvulum	21	18	259	85	49	62	23	9	33	135	381	2081
Bacillariophyceae	Pennales	Gomphonema olivaceum	84	55	104	128	3642			9	8	180	0	0
Bacillariophyceae	Pennales	Gomphonema truncatum										11	0	45
Bacillariophyceae	Pennales	Gomphonema spp.					25	16			8	11	1067	4163
Bacillariophyceae	Pennales	Gyrosigma sp.	5	9	26	11	25	16	23	17	16	23	19	90
Bacillariophyceae	Pennales	Hantzschia sp.	0			11				9	8	11	19	45
Bacillariophyceae	Pennales	Meridion circulare								9		11	73	45
Bacillariophyceae	Pennales	Navicula capitata	5	9			12		11	9		11	0	45
Bacillariophyceae	Pennales	Navicula cryptonella	42	37	52	85	767	242	355	35	33	174	686	5550
Bacillariophyceae	Pennales	Navicula cuspidata								9				0
Bacillariophyceae	Pennales	Navicula halophila	4439	2127	13918	5722	53867	686	2308	242	196	2089	5319	11795
Bacillariophyceae	Pennales	Navicula lanceolata	170	18	363	21	3067	31	504	9	16	675	0	0
Bacillariophyceae	Pennales	Navicula nivalis						16						0
Bacillariophyceae	Pennales	Navicula pupula												0
Bacillariophyceae	Pennales	Navicula pygmaea						16	11	9				0
Bacillariophyceae	Pennales	Navicula radiosa										0	19	358
Bacillariophyceae	Pennales	Navicula rhynchocephala												0
Bacillariophyceae	Pennales	Navicula tripunctata	127	109	466	298	1342	998	1603	208	359	1567	4137	10407
Bacillariophyceae	Pennales	Navicula viridula												90
Bacillariophyceae	Pennales	Navicula trivialis										0	19	180
Bacillariophyceae	Pennales	Navicula spp.	1562	709	3214	1487	3642	484	1065	17	33	522	2069	21351
Bacillariophyceae	Pennales	Neidium spp.												45
Bacillariophyceae	Pennales	Nitzschia acicularis												0
Bacillariophyceae	Pennales	Nitzschia dissipata	5											0
Bacillariophyceae	Pennales	Nitzschia inconspicua	52822	57288	110568	90919	136512	37220	26633	44918	38902	50235	0	0
Bacillariophyceae	Pennales	Nitzschia spp.	3163	1276	10052	3469	41322	2902	4083	2416	1012	5571	5910	11101
Bacillariophyceae	Pennales	Placoneis sp.												45
Bacillariophyceae	Pennales	Pinnularia spp.											19	90
Bacillariophyceae	Pennales	Rhoicosphenia curvata	64	9	259	170	494	499	550	104	33	4004	14785	72060
Bacillariophyceae	Pennales	Rhopalodia gibba						16				11	38	90
Bacillariophyceae	Pennales	Rhopalodia sp.				11				9	8			0
Bacillariophyceae	Pennales	Stauroneis smithii										0	19	45
Bacillariophyceae	Pennales	Stauroneis sp.												0
Bacillariophyceae	Pennales	Surirella spp.	11	9	207	43	247	16	11	9	8	23	229	358
Bacillariophyceae	Pennales	Synedra ulna	42	9	13	11	12				8	11	76	716
Bacillariophyceae	Pennales	Synedra spp.		9			12							0
Bacillariophyceae	Pennales	Tryblionella sp.				11				9				0
Bacillariophyceae	Pennales	UID girdle view			13	11					8	11	19	0
Bacillariophyceae	Pennales	Deformed Diatoms	11				777	242	533	134	380	348	229	537
Chlorophyta	Chlorococcales	Ankistrodesmus spp.?	5	9					11			0	19	0
Chlorophyta	Chlorococcales	Coccomyxa like cells 1	17397	18005	41753	8901	33943	8375	10244	7745	12655	24783	0	0
Chlorophyta	Chlorococcales	Scenedesmus sp.						16						0
Chlorophyta	Cladophorales	Cladophora sp.	5	9	13			16	2107			293	0	0
Chlorophyta	Cladophorales	Oedogonium sp.				11						0	19	0
Chlorophyta	Ulothricales	Microspora sp.												0
Chlorophyta	Ulothricales	Ulothrix zonata												0
Chlorophyta	Ulothricales	Ulothrix spp.												0
Chlorophyta	Zygnematales	Closterium spp.										0	19	45
Chlorophyta	Zygnematales	Cosmarium sp.												0
Chlorophyta	Zygnematales	Staurastrum sp.												0
Chlorophyta	Zygnematales	UID Chlorophyta basal cells	1891	17459	4420		12			277	1518	11	2660	0
Chlorophyta	Zygnematales	UID Chlorophyta flagellate	1265	4365	1205	330		484	1243		1139	174	0	0
Chlorophyta	Zygnematales	UID Chlorophyta unicellular						16		403		0	887	0
Chrysophyta		UID Chrysophyta colonial												0
Chrysophyta		UID Chrysophyta cyst	5				49	62			16	45	229	358
Chrysophyta		UID Chrysophyta unicellular	42		13	21	1534	62	710	268	253	696	152	0
Cryptophyta	Cryptomonadales	Cryptomonas sp.												0
Cryptophyta	Cryptomonadales	UID Cryptomonadales												0
Cyanophyta	Chamaesiphonales	Chamaesiphon spp.	16448	75293	20876	5722	1917	303343	2519606	1302526	1180133	2270502	20471	0
Cyanophyta	Chroococcales	Aphanocapsa spp.							11					0
Cyanophyta	Chroococcales	Merismopedia sp.												0
Cyanophyta	Chroococcales	Pleurocapsa sp.	4850	91115	7032		12	91189	107215	97064	91397	235100	257030	0
Cyanophyta	Chroococcales	UID Chroococcales			13	11		16			8	0	19	0
Cyanophyta	Nostocales	Anabaena / Nostoc sp.								9		11	19	0
Cyanophyta	Nostocales	Stigonema sp. ?	5	9	13		12		11	9	8			0
Cyanophyta	Nostocales	UID Nostocales		201										0
Cyanophyta	Oscillatoriales	Homoeothrix varians	212	3120	6429	298		1186	49169	3087	28122	4701	3658	17345
Cyanophyta	Oscillatoriales	Lyngbya spp.												0
Cyanophyta	Oscillatoriales	Oscillatoria agardhii												0
Cyanophyta	Oscillatoriales	Pseudanabaena sp.												0
Cyanophyta	Oscillatoriales	UID Oscillatoriales		9					11		8	0	19	627
Cyanophyta	Oscillatoriales	UID Oscillatoriales <2um		9			12	16	11	9				0
Euglenophyta	Euglenales	Euglena sp.												45
Euglenophyta	Euglenales	Phacus sp.												45
Euglenophyta	Euglenales	Trachelomonas sp.										0	19	0
Rhodophyta	Nemanionales	Audouinella sp. 2		55	78			16	366	225	8	11	19	1969
Rhodophyta	Nemanionales	Batrachospermum sp.												0
Rhodophyta	Nemanionales	Rhodophyta basal cells												0
Unidentified		UID colonial												45
Unidentified		UID filamentous												0
Unidentified		UID unicellular	247	142	603	661	575	725	355	134	506	348	2069	2775

M:\1\01\00246\35\A\Report\1- Fish Aquatic Baseline Report\Rev 0\Tables & Figures\[Periphyton Tables & Figs Rev 0.xlsx]Appendix B2

NOTES:
1. UNITS ARE INDIVIDUALS PER SQUARE CENTIMETRE.
2. THE AREA SAMPLED PER SUBSAMPLE IS 4.91 cm^2.
3. THREE SUBSAMPLES WERE COLLECTED PER REPLICATE, MAKING A TOTAL REPLICATE SAMPLE AREA OF 14.73 cm^2.
4. ALL VALUES LESS THAN THE MDL WERE ASSUMED EQUAL TO THE MDL

0	7JAN'15	ISSUED WITH REPORT	CJ	SCE	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

APPENDIX B2
KGHM AJAX MINING INC.
AJAX PROJECT

PERIPHYTON RAW DATA
DENSITY COUNT

Print Jul/13/15 11:18:45

		Sample ID	ANDR-10	ANDR-10	ANDR-10	ANDR-15	ANDR-15	ANDR-15	ANDR-15	ANDR-15	CC-AL-04	CC-AL-04	CC-AL-04	CC-AL-04	CC-AL-04
		Sample Replicate	C	D	E	A	B	C	D	E	A	B	C	D	E
		Sampling Date	N/A	N/A	N/A	40438	40438	40438	40438	40438	N/A	N/A	N/A	N/A	N/A
		Area Sampled	37.7cm9	37.7cm10	37.7cm11	37.7cm12	37.7cm13	37.7cm14	37.7cm15	37.7cm16	37.7cm17	37.7cm18	37.7cm19	37.7cm20	37.7cm21
Phylum	**Order**	**Genera and Species**													
Bacillariophyceae	Centrales	Aulacoseira sp.	28	27	0	0	0	0	0	24	0	0	0	0	0
Bacillariophyceae	Centrales	Cyclotella spp.	220	218	229	0	0	0	0	0	19	16	0	0	0
Bacillariophyceae	Centrales	Melosira varians	0	0	29	0	0	0	0	0	985	19366	14	624	158
Bacillariophyceae	Pennales	Achnanthes lanceolata	5551	16019	4876	4559	4431	6720	4155	3712	37300	14517	11430	18588	5880
Bacillariophyceae	Pennales	Achnanthes minutissima	427	2529	887	3039	1772	22733	5997	1484	118682	18388	19594	71564	4116
Bacillariophyceae	Pennales	Achnanthes spp.	2135	5059	1330	1823	1477	9743	779	742	16955	2903	3266	9294	306
Bacillariophyceae	Pennales	Amphipleura pellucida	0	0	0	39	19	27	34	96	0	259	14	16	10
Bacillariophyceae	Pennales	Amphora pediculus	0	0	0	0	0	0	0	0	287	1509	212	15800	1375
Bacillariophyceae	Pennales	Amphora spp.	28	218	114	78	0	27	34	24	0	0	0	0	0
Bacillariophyceae	Pennales	Caloneis spp.	110	435	458	0	19	109	17	24	0	0	0	0	0
Bacillariophyceae	Pennales	Cocconeis pediculus	0	27	0	0	0	0	0	0	0	16	0	0	0
Bacillariophyceae	Pennales	Cocconeis placentula	6405	13490	5320	2431	1477	3376	1558	7424	18085	15485	22859	20447	26460
Bacillariophyceae	Pennales	Cymatopleura solea	28	27	29	0	0	0	17	0	0	0	0	16	0
Bacillariophyceae	Pennales	Cymbella affinis	0	0	0	0	0	0	0	0	19	194	110	62	39
Bacillariophyceae	Pennales	Cymbella aspera	28	0	57	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Cymbella cistula	0	0	0	0	0	0	0	0	0	16	0	16	0
Bacillariophyceae	Pennales	Cymbella lanceolata	0	0	0	0	0	0	0	0	19	32	0	0	0
Bacillariophyceae	Pennales	Cymbella mexicana	0	0	0	0	0	0	0	0	19	32	0	16	10
Bacillariophyceae	Pennales	Cymbella minuta	0	0	0	0	0	27	0	24	0	0	0	0	0
Bacillariophyceae	Pennales	Cymbella sinuata	0	0	0	20	0	0	17	48	14694	5807	2333	966	1834
Bacillariophyceae	Pennales	Cymbella spp.	0	27	0	0	0	0	0	0	19	0	14	0	0
Bacillariophyceae	Pennales	Diatoma mesodon	0	0	0	0	0	0	0	0	0	32	0	31	0
Bacillariophyceae	Pennales	Diatoma moniliformis	0	0	0	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Diploneis spp.	28	27	29	20	0	54	34	24	0	16	0	0	0
Bacillariophyceae	Pennales	Epithemia turgida	28	27	57	0	0	27	0	24	0	16	0	0	0
Bacillariophyceae	Pennales	Epithemia sp.	28	0	0	0	19	0	0	0	0	0	0	0	10
Bacillariophyceae	Pennales	Eunotia spp.	28	27	29	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Fragilaria construens	0	0	0	0	0	0	17	0	0	0	0	0	0
Bacillariophyceae	Pennales	Fragilaria vaucheriae	220	218	0	78	0	0	0	192	76	0	27	0	39
Bacillariophyceae	Pennales	Fragilaria spp.	2562	4216	1773	627	19	218	201	383	0	0	0	0	0
Bacillariophyceae	Pennales	Frustulia rhomboides	220	109	57	20	19	54	0	24	0	16	0	0	0
Bacillariophyceae	Pennales	Gomphonema acuminatum	28	218	57	20	0	27	0	24	76	2767	164	250	20
Bacillariophyceae	Pennales	Gomphonema angustatum/parvulum	854	1686	443	608	229	109	519	96	881	1006	212	187	10
Bacillariophyceae	Pennales	Gomphonema olivaceum	0	0	0	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Gomphonema truncatum	28	0	29	39	0	27	17	24	114	842	0	62	10
Bacillariophyceae	Pennales	Gomphonema spp.	3843	2529	2660	3951	5022	6330	4415	2970	20345	14517	12246	3623	8820
Bacillariophyceae	Pennales	Gyrosigma sp.	441	27	0	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Hantzschia sp.	0	27	0	0	0	0	17	0	19	0	14	0	0
Bacillariophyceae	Pennales	Meridion circulare	28	326	29	118	76	435	134	862	227	454	14	16	118
Bacillariophyceae	Pennales	Navicula capitata	0	0	57	20	19	27	17	24	0	0	0	0	0
Bacillariophyceae	Pennales	Navicula cryptonella	1708	3372	4433	2431	886	1688	1558	742	587	252	55	62	79
Bacillariophyceae	Pennales	Navicula cuspidata	0	27	29	0	0	27	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Navicula halophila	8540	5059	2217	1216	229	12990	1818	1054	0	0	0	0	0
Bacillariophyceae	Pennales	Navicula lanceolata	0	0	0	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Navicula nivalis	28	0	0	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Navicula pupula	0	27	0	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Navicula pygmaea	0	0	0	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Navicula radiosa	331	218	229	39	38	109	134	48	19	32	0	31	39
Bacillariophyceae	Pennales	Navicula rhynchocephala	0	0	0	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Navicula tripunctata	5978	9274	2660	74854	35235	215965	159920	122860	2937	7294	986	5796	19404
Bacillariophyceae	Pennales	Navicula viridula	28	27	0	20	19	0	17	24	19	16	0	16	10
Bacillariophyceae	Pennales	Navicula trivialis	110	27	229	20	19	27	34	48	19	16	0	0	0
Bacillariophyceae	Pennales	Navicula spp.	7686	11803	8423	5774	1182	14614	5713	3712	10280	17420	329	2657	1222
Bacillariophyceae	Pennales	Neidium spp.	28	27	57	0	0	0	17	24	0	16	0	16	0
Bacillariophyceae	Pennales	Nitzschia acicularis	0	0	0	118	229	109	335	575	0	0	0	0	0
Bacillariophyceae	Pennales	Nitzschia dissipata	0	0	0	0	0	0	0	0	1175	116136	1485	19517	1528
Bacillariophyceae	Pennales	Nitzschia inconspicua	0	0	0	0	0	0	0	0	1469	252	212	1691	0
Bacillariophyceae	Pennales	Nitzschia spp.	8113	34567	34120	17544	4136	7174	30984	6310	27127	44519	1061	20467	1070
Bacillariophyceae	Pennales	Placoneis sp.	28	0	0	0	0	0	17	0	0	0	0	0	0
Bacillariophyceae	Pennales	Pinnularia spp.	28	218	114	20	19	0	17	24	19	0	0	0	0
Bacillariophyceae	Pennales	Rhoicosphenia curvata	14945	38783	58004	10526	13639	4642	4415	5939	49733	118072	102866	146845	42336
Bacillariophyceae	Pennales	Rhopalodia gibba	220	54	343	0	0	27	34	24	19	16	14	16	10
Bacillariophyceae	Pennales	Rhopalodia sp.	0	27	114	20	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	Stauroneis smithii	0	0	29	0	0	0	0	0	0	0	0	16	0
Bacillariophyceae	Pennales	Stauroneis sp.	0	0	29	0	0	0	0	24	0	0	0	0	0
Bacillariophyceae	Pennales	Surirella spp.	110	653	458	20	19	27	17	48	0	0	0	0	0
Bacillariophyceae	Pennales	Synedra ulna	55	218	57	78	38	326	268	287	40691	10646	164	312	315
Bacillariophyceae	Pennales	Synedra spp.	0	0	0	20	0	0	0	0	0	32	55	0	0
Bacillariophyceae	Pennales	Tryblionella sp.	0	0	0	0	0	0	0	0	0	0	0	0	0
Bacillariophyceae	Pennales	UID girdle view	0	0	0	0	0	0	0	24	0	0	0	0	0
Bacillariophyceae	Pennales	Deformed Diatoms	331	843	443	304	76	218	134	383	379	503	212	242	79
Chlorophyta	Chlorococcales	Ankistrodesmus spp.?	0	0	114	20	0	27	0	0	0	0	0	0	0
Chlorophyta	Chlorococcales	Coccomyxa like cells 1	0	0	0	0	0	0	0	0	96076	2903	0	725	0
Chlorophyta	Chlorococcales	Scenedesmus sp.	28	0	229	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Claodophorales	Cladophora sp.	0	0	0	0	0	0	0	0	0	0	0	0	177
Chlorophyta	Claodophorales	Oedogonium sp.	28	0	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Ulothricales	Microspora sp.	28	0	29	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Ulothricales	Ulothrix zonata	0	0	0	0	0	0	0	0	92685	2268	1918	0	0
Chlorophyta	Ulothricales	Ulothrix spp.	0	0	0	0	0	0	0	0	280314	778	14	0	0
Chlorophyta	Zygnematales	Closterium spp.	28	0	29	0	0	27	0	24	38	130	14	31	20
Chlorophyta	Zygnematales	Cosmarium sp.	0	27	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta	Zygnematales	Staurastrum sp.	0	0	0	0	0	0	0	0	0	0	0	16	0
Chlorophyta	Zygnematales	UID Chlorophyta basal cells	28	0	0	314	115933	14614	871	0	341	3521	0	0	0
Chlorophyta	Zygnematales	UID Chlorophyta flagellate	0	27	0	0	0	0	0	192	0	0	0	0	0
Chlorophyta	Zygnematales	UID Chlorophyta unicellular	0	0	0	0	0	0	0	0	0	0	0	0	39
Chrysophyta		UID Chrysophyta colonial	0	0	0	0	0	0	0	0	7930	2515	3818	966	1222
Chrysophyta		UID Chrysophyta cyst	0	435	114	20	19	27	17	96	19	0	0	0	0
Chrysophyta		UID Chrysophyta unicellular	0	653	0	0	0	0	67	0	76	0	27	62	0
Cryptophyta	Cryptomonadales	Cryptomonas sp.	0	0	29	0	0	0	0	0	0	0	0	0	0
Cryptophyta	Cryptomonadales	UID Cryptomonadales	28	0	29	0	0	0	17	0	0	0	0	0	0
Cyanophyta	Chamaesiphonales	Chamaesiphon spp.	3416	3064	0	159066	156851	110418	252874	54287	565150	155816	1626269	395924	305760
Cyanophyta	Chroococcales	Aphanocapsa spp.	0	0	0	0	0	0	0	0	0	0	0	16	0
Cyanophyta	Chroococcales	Merismopedia sp.	0	0	29	0	0	0	0	0	0	0	0	0	0
Cyanophyta	Chroococcales	Pleurocapsa sp.	504462	3372	17289	34341	42054	60081	59970	10022	93815	9557	444122	70634	74088
Cyanophyta	Chroococcales	UID Chroococcales	0	0	0	0	0	0	0	0	0	0	0	0	0
Cyanophyta	Nostocales	Anabaena / Nostoc sp.	0	0	29	0	0	0	17	24	19	0	0	0	0
Cyanophyta	Nostocales	Stigonema sp. ?	0	0	0	0	0	0	0	0	0	0	14	0	0
Cyanophyta	Nostocales	UID Nostocales	0	0	0	0	0	0	0	0	0	16	0	0	0
Cyanophyta	Oscillatoriales	Homoeothrix varians	8967	19391	3103	493571	177310	164004	174913	35264	1460348	342601	804970	323431	171696
Cyanophyta	Oscillatoriales	Lyngbya spp.	0	0	0	20	19	0	0	0	0	0	0	0	3191
Cyanophyta	Oscillatoriales	Oscillatoria agardhii	0	0	0	0	0	0	0	0	0	14336	658	0	355
Cyanophyta	Oscillatoriales	Pseudanabaena sp.	0	27	400	20	0	381	0	24	0	0	0	0	0
Cyanophyta	Oscillatoriales	UID Oscillatoriales	1653	762	1373	1098	0	27	302	24	341	6036	712	1123	0
Cyanophyta	Oscillatoriales	UID Oscillatoriales <2um	1322	27	0	0	686	0	17	0	0	583	0	0	0
Euglenophyta	Euglenales	Euglena sp.	0	0	0	0	0	0	0	0	0	0	0	0	0
Euglenophyta	Euglenales	Phacus sp.	0	27	29	0	0	0	0	0	0	0	0	0	0
Euglenophyta	Euglenales	Trachelomonas sp.	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyta	Nemanionales	Audouinella sp. 2	119954	113819	7093	11852	14179	24476	149250	5197	190	1426	3562	312	630
Rhodophyta	Nemanionales	Batrachospermum sp.	0	0	0	0	0	0	0	0	0	518	0	0	0
Rhodophyta	Nemanionales	Rhodophyta basal cells	0	0	0	0	0	0	0	0	1213	0	78374	1934	24295
Unidentified		UID colonial	0	0	0	0	0	0	0	0	0	0	0	0	0
Unidentified		UID filamentous	0	0	0	0	0	0	0	0	0	16	0	0	0
Unidentified		UID unicellular	1281	2529	2217	912	1182	2110	1039	1485	587	252	212	483	611

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NOTES:
1. UNITS ARE INDIVIDUALS PER SQUARE CENTIMETRE.
2. THE AREA SAMPLED PER SUBSAMPLE IS 4.91 cm^2.
3. THREE SUBSAMPLES WERE COLLECTED PER REPLICATE, MAKING A TOTAL REPLICATE SAMPLE A
4. ALL VALUES LESS THAN THE MDL WERE ASSUMED EQUAL TO THE MDL

0	7JAN'15	ISSUED WITH REPORT	CJ	SCE	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

APPENDIX B3

PERIPHYTON METRICS ANALYSIS AND SUMMARY STATISTICS

(Pages B3-1 to B3-2)

Knight Piésold
CONSULTING

APPENDIX B3.1

KGHM AJAX MINING INC
AJAX PROJECT

METRICS ANALYSIS
REPLICATE SAMPLES

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Sample ID	Sample Replicate	Area Sampled	Density (individuals per square centimetre)	Richness	Simpson's Diversity	Simpson's Evenness	SWI Diversity	SWI Evenness
PC-AL-01	A	14.73 cm^2	132496	39	0.79	0.12	2.02	0.55
PC-AL-01	B	14.73 cm^2	287154	40	0.78	0.11	1.81	0.49
PC-AL-01	C	14.73 cm^2	337079	39	0.82	0.14	2.11	0.58
PC-AL-01	D	14.73 cm^2	244770	33	0.70	0.10	1.56	0.45
PC-AL-01	E	14.73 cm^2	506510	35	0.85	0.19	2.19	0.62
PC-AL-04	A	14.73 cm^2	635041	36	0.70	0.09	1.51	0.42
PC-AL-04	B	14.73 cm^2	2826081	37	0.20	0.03	0.54	0.15
PC-AL-04	C	14.73 cm^2	1775506	41	0.44	0.04	0.95	0.26
PC-AL-04	D	14.73 cm^2	1420420	40	0.30	0.04	0.75	0.20
PC-AL-04	E	14.73 cm^2	2736411	44	0.30	0.03	0.73	0.19
ANDR-10	A	14.73 cm^2	336181	55	0.41	0.03	1.13	0.28
ANDR-10	B	14.73 cm^2	214775	51	0.84	0.12	2.33	0.59
ANDR-10	C	14.73 cm^2	712778	53	0.47	0.04	1.14	0.29
ANDR-10	D	14.73 cm^2	296899	54	0.81	0.10	2.24	0.56
ANDR-10	E	14.73 cm^2	162666	55	0.81	0.10	2.22	0.55
ANDR-15	A	14.73 cm^2	831722	44	0.60	0.06	1.38	0.36
ANDR-15	B	14.73 cm^2	578594	36	0.78	0.13	1.80	0.50
ANDR-15	C	14.73 cm^2	684209	43	0.80	0.12	2.01	0.53
ANDR-15	D	14.73 cm^2	862759	47	0.80	0.11	1.83	0.48
ANDR-15	E	14.73 cm^2	267035	50	0.73	0.07	1.80	0.46
CC-AL-04	A	14.73 cm^2	2962432	49	0.71	0.07	1.76	0.45
CC-AL-04	B	14.73 cm^2	956701	55	0.81	0.10	2.17	0.54
CC-AL-04	C	14.73 cm^2	3144644	41	0.65	0.07	1.33	0.36
CC-AL-04	D	14.73 cm^2	1134916	45	0.77	0.10	1.84	0.48
CC-AL-04	E	14.73 cm^2	697391	40	0.73	0.09	1.71	0.46

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NOTES:

1. VALUES ARE UNITLESS UNLESS OTHERWISE INDICATED.

0	7JAN'15	ISSUED WITH REPORT	CJ	SCE	KJB
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APPENDIX B3.2

KGHM AJAX MINING INC
AJAX PROJECT

METRICS ANALYSIS
SITE SUMMARY STATISTICS

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Sample ID	Mean	Standard Deviation	Standard Error	Maximum	Minimum
Density (individuals per square centimetre)					
PC-AL-01	301,602	137,187	61,352	506,510	132,496
PC-AL-04	1,878,692	922,030	1,878,692	2,826,081	635,041
ANDR-10	344,660	216,712	344,660	712,778	162,666
ANDR-15	644,864	240,358	644,864	862,759	267,035
CC-AL-04	1,779,217	1,175,414	1,779,217	3,144,644	697,391
Richness					
PC-AL-01	37	3	37	40	33
PC-AL-04	40	3	40	44	36
ANDR-10	54	2	54	55	51
ANDR-15	44	5	44	50	36
CC-AL-04	46	6	46	55	40
Simpson's Diversity					
PC-AL-01	0.789	0.055	0.789	0.849	0.702
PC-AL-04	0.390	0.193	0.390	0.700	0.203
ANDR-10	0.667	0.210	0.667	0.840	0.408
ANDR-15	0.743	0.086	0.743	0.805	0.601
CC-AL-04	0.732	0.063	0.732	0.811	0.645
Simpson's Evenness					
PC-AL-01	0.13	0.03	0.13	0.19	0.10
PC-AL-04	0.05	0.03	0.05	0.09	0.03
ANDR-10	0.08	0.04	0.08	0.12	0.03
ANDR-15	0.10	0.03	0.10	0.13	0.06
CC-AL-04	0.08	0.01	0.08	0.10	0.07
SWI Diversity					
PC-AL-01	1.94	0.25	1.94	2.19	1.56
PC-AL-04	0.90	0.37	0.90	1.51	0.54
ANDR-10	1.81	0.62	1.81	2.33	1.13
ANDR-15	1.76	0.23	1.76	2.01	1.38
CC-AL-04	1.76	0.30	1.76	2.17	1.33
SWI Evenness					
PC-AL-01	0.536	0.068	0.536	0.616	0.446
PC-AL-04	0.245	0.105	0.245	0.421	0.151
ANDR-10	0.456	0.157	0.456	0.593	0.281
ANDR-15	0.468	0.064	0.468	0.534	0.365
CC-AL-04	0.461	0.067	0.461	0.543	0.359

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NOTES:

1. VALUES ARE UNITLESS UNLESS OTHERWISE SPECIFIED.
2. SUMMARY STATISTICS ARE BASED ON FIVE REPLICATES PER SITE.

0	7JAN'15	ISSUED WITH REPORT	CJ	SCE	KJB
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APPENDIX B4

ZOOPLANKTON RAW DATA

(Pages B4-1 to B4-2)

APPENDIX B.4
Knight Piesold/ KGHM Ajax 2014 Zooplankton Data
Prepared by Biologica Environmental Services Ltd.

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Client	Project	Year	Biologica Sample ID	KP Sample ID	Sample Date	Split	Fraction	Groupcode	Major Group	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Average Ind. Biomass (mg DW)	Total Biomass (mg DW)	Biomass Notes
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	I-IV	60	33	2000	0.001217952	2.435904503	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Ceriodaphnia lacustris	F	9	33	300	0.006301445	1.890433365	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Ceriodaphnia lacustris	J	17	33	567	0.000765076	0.43354289	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	I-IV	113	33	3767	0.000350291	1.319427888	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	V	24	33	800	0.000961953	0.769562011	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	F	8	33	267	0.057914388	15.44383693	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	J	20	33	667	0.057914388	38.60959233	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Leptodiaptomus sicilis	VIf	2	33	67	0.012719693	0.84797952	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Leptodiaptomus sicilis	VIm	1	33	33	0.007578634	0.252621128	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCO	Crustacea Copepoda Calanoida		Leptodiaptomus sicilis	V	68	33	2267	0.009613337	21.79023133	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		3/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Microcyclops sp.	VIm	18	33	600	0.000961953	0.577171508	CV weight used
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		1/100	Micro	ROTI	Rotifera	Asplanchnidae	Asplanchna sp. 1	n/a	19	33	633	0.001247461	0.790058445	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		1/100	Micro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	Nauplius	7	33	233	4.56084E-05	0.010641956	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		1/100	Micro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	Nauplius	3	33	100	8.96489E-06	0.000896489	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella quadrata	n/a	6	33	200	0.000105538	0.021107625	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 1	n/a	636	33	21200	6.95313E-07	0.014740625	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 2	n/a	6	33	200	3.30781E-06	0.000661563	
Knight Piesold	Ajax	2014	14-39-02	Edith Lake		1/100	Micro	ROTI	Rotifera	Synchaetidae	Polyarthra sp.	n/a	7	33	233	2.83377E-05	0.006612122	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	I-IV	65	1	65	0.001217952	0.079166896	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCL	Crustacea Cladocera	Daphniidae	Ceriodaphnia lacustris	F	7	1	7	0.006301445	0.044110112	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCL	Crustacea Cladocera	Daphniidae	Ceriodaphnia lacustris	J	10	1	10	0.000765076	0.007650757	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	I-IV	51	1	51	0.000350291	0.01786482	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	V	2	1	2	0.000961953	0.001923905	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	F	20	1	20	0.057914388	1.15828777	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	J	1	1	1	0.057914388	0.057914388	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Leptodiaptomus sicilis	VIf	5	1	5	0.012719693	0.063598464	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Leptodiaptomus sicilis	VIm	9	1	9	0.007578634	0.068207705	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		Whole	Macro	CRCO	Crustacea Copepoda Calanoida		Leptodiaptomus sicilis	V	35	1	35	0.009613337	0.336466807	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		1/100	Micro	ROTI	Rotifera	Asplanchnidae	Asplanchna sp. 2	n/a	1	33	33	0.001496168	0.049872266	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		1/100	Micro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	Nauplius	11	33	367	4.56084E-05	0.016723074	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		1/100	Micro	CRCO	Crustacea Copepoda		Copepoda indet.	Nauplius	4	33	133	1.17652E-05	0.001568688	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		1/100	Micro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	Nauplius	4	33	133	8.96489E-06	0.001195318	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Kellicottia sp.	n/a	3	33	100	1.27615E-05	0.001276151	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella quadrata	n/a	3	33	100	0.000105538	0.010553813	
Knight Piesold	Ajax	2014	14-39-04	Goose Lake		1/100	Micro	ROTI	Rotifera		Rotifera indet.	n/a	8	33	267	0.000413467	0.11025787	average rotifer weight used
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	I-IV	125	20	2500	0.001217952	3.044880628	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCL	Crustacea Cladocera	Daphniidae	Ceriodaphnia lacustris	F	36	20	720	0.006301445	4.537040076	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCL	Crustacea Cladocera	Daphniidae	Ceriodaphnia lacustris	J	20	20	400	0.000765076	0.306030275	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	I-IV	4	20	80	0.000350291	0.028023247	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	V	1	20	20	8.96489E-06	0.000179298	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	F	59	20	1180	0.057914388	68.33897842	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	J	49	20	980	0.057914388	56.75610072	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Leptodiaptomus tyrelli	V	35	20	700	0.003761732	2.633212494	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Leptodiaptomus tyrelli	VIf	1	20	20	0.004477179	0.089543589	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Leptodiaptomus tyrelli	VIm	6	20	120	0.003836738	0.460408599	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	V	25	20	500	0.026374316	13.18715784	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/20	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	VIm	10	20	200	0.026628574	5.325714863	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/100	Micro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	Nauplius	3	33	100	4.56084E-05	0.004560838	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/100	Micro	CRCO	Crustacea Copepoda		Copepoda indet.	Nauplius	1	33	33	1.17652E-05	0.000392172	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 1	n/a	50	33	1667	6.95313E-07	0.001158854	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 2	n/a	5	33	167	3.30781E-06	0.000551302	
Knight Piesold	Ajax	2014	14-39-01	Jacko Lake		1/100	Micro	ROTI	Rotifera	Synchaetidae	Polyarthra sp.	n/a	2	33	67	2.83377E-05	0.001889178	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	I-IV	2	3	7	0.001217952	0.008119682	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	I-IV	243	3	810	0.000350291	0.283735378	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	V	42	3	140	0.000961953	0.134673352	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	F	25	3	83	0.026977109	2.248092433	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	M	10	3	33	0.026977109	0.899236973	assume same as F
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	F	13	3	43	0.057914388	2.509623501	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia sp.	J	36	3	120	0.00595275	0.714330038	average juv weight
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIf	5	3	17	0.001096152	0.018269202	assume same as CVIm
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIm	22	3	73	0.001096152	0.080384488	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	VIm	6	3	20	0.026628574	0.532571486	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	30/100	Macro	CRCO	Crustacea Copepoda Calanoida		Skistodiaptomus pallidus	V	6	3	20	0.026374316	0.527486313	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	1/100	Micro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	Nauplius	1	33	33	8.96489E-06	0.00029883	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Kellicottia sp.	n/a	6	33	200	1.27615E-05	0.002552302	
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella hiemalis	n/a	3	33	100	0.000413467	0.041346701	average rotifer weight used
Knight Piesold	Ajax	2014	14-39-05	MCC-1 Rep 1	10/22/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 1	n/a	3	33	100	6.95313E-07	6.95313E-05	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	I-IV	173	1	173	0.000350291	0.060600272	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	V	52	1	52	0.000961953	0.050021531	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	F	39	1	39	0.026977109	1.052107259	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	M	6	1	6	0.026977109	0.161862655	assume same as F
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	F	15	1	15	0.057914388	0.868715827	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	M	2	1	2	0.057914388	0.115828777	assume same as F
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia sp.	J	26	1	26	0.00595275	0.154771508	average juv weight
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIf	1	1	1	0.001096152	0.001096152	assume same as CVIm
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIm	27	1	27	0.001096152	0.029596107	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	VIm	4	1	4	0.026628574	0.106514297	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	Whole	Macro	CRCO	Crustacea Copepoda Calanoida		Skistodiaptomus pallidus	V	10	1	10	0.026374316	0.263743157	

Knight Piésold
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APPENDIX B.4
Knight Piesold/ KGHM Ajax 2014 Zooplankton Data
Prepared by Biologica Environmental Services Ltd.

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Client	Project	Year	Biologica Sample ID	KP Sample ID	Sample Date	Split	Fraction	Groupcode	Major Group	Family	Taxon	Stage	Raw Abundance	Split Multiplier	Total Abundance	Average Ind. Biomass (mg DW)	Total Biomass (mg DW)	Biomass Notes
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	1/100	Micro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	Nauplius	1	33	33	4.56084E-05	0.001520279	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	1/100	Micro	CRCO	Crustacea Copepoda		Copepoda indet.	Nauplius	1	33	33	1.17652E-05	0.000392172	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	1/100	Micro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	Nauplius	1	33	33	8.96489E-06	0.00029883	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Kellicottia sp.	n/a	3	33	100	1.27615E-05	0.001276151	
Knight Piesold	Ajax	2014	14-39-06	MCC-1 Rep 2	10/22/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 1	n/a	2	33	67	6.95313E-07	4.63542E-05	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	I-IV	205	3	513	0.000350291	0.179523927	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	V	22	3	55	0.000961953	0.052907388	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	F	30	3	75	0.026977109	2.02328319	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	M	18	3	45	0.026977109	1.213969914	assume same as F
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	F	9	3	23	0.057914388	1.303073741	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia sp.	J	15	3	38	0.00595275	0.223228137	average juv weight
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIf	4	3	10	0.001096152	0.010961521	assume same as CVIm
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIm	26	3	65	0.001096152	0.071249887	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	VIm	4	3	10	0.026628574	0.266285743	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	40/100	Macro	CRCO	Crustacea Copepoda Calanoida		Skistodiaptomus pallidus	V	5	3	13	0.026374316	0.329678946	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	1/100	Micro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	Nauplius	1	33	33	4.56084E-05	0.001520279	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	1/100	Micro	ROTI	Rotifera	Filiniidae	Filinia terminalis	n/a	1	33	33	0.000413467	0.013782234	average rotifer weight used
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Kellicottia sp.	n/a	14	33	467	1.27615E-05	0.005955372	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella hiemalis	n/a	2	33	67	0.000413467	0.027564468	average rotifer weight used
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella quadrata	n/a	3	33	100	0.000105538	0.010553813	
Knight Piesold	Ajax	2014	14-39-07	MCC-1 Rep 3	10/22/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 1	n/a	3	33	100	6.95313E-07	6.95313E-05	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	I-IV	242	3	605	0.000350291	0.211925807	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	V	22	3	55	0.000961953	0.052907388	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida sp. 2	VIf	1	3	3	0.000961953	0.002404881	assume same as CV
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	F	23	3	58	0.026977109	1.551183779	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	M	9	3	23	0.026977109	0.606984957	assume same as F
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	F	6	3	15	0.057914388	0.868715827	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia sp.	J	17	3	43	0.00595275	0.252991889	average juv weight
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIf	4	3	10	0.001096152	0.010961521	assume same as CVIm
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIm	31	3	78	0.001096152	0.084951788	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	VIm	5	3	13	0.026628574	0.332857179	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Calanoida		Skistodiaptomus pallidus	V	2	3	5	0.026374316	0.131871578	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	1/100	Micro	ROTI	Rotifera	Asplanchnidae	Asplanchna sp.	n/a	1	33	33	0.001371814	0.045727145	average sp. 1 and sp. 2
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	1/100	Micro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	Nauplius	1	33	33	4.56084E-05	0.001520279	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	1/100	Micro	CRCO	Crustacea Copepoda		Copepoda indet.	Nauplius	1	33	33	1.17652E-05	0.000392172	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	1/100	Micro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	Nauplius	1	33	33	8.96489E-06	0.00029883	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Kellicottia sp.	n/a	5	33	167	1.27615E-05	0.002126918	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella quadrata	n/a	1	33	33	0.000105538	0.003517938	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 1	n/a	1	33	33	6.95313E-07	2.31771E-05	
Knight Piesold	Ajax	2014	14-39-08	MCC-2 Rep 1	10/23/2014	1/100	Micro	ROTI	Rotifera	Synchaetidae	Polyarthra sp.	n/a	1	33	33	2.83377E-05	0.000944589	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	I-IV	194	3	485	0.000350291	0.169890936	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	V	26	3	65	0.000961953	0.062526913	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	F	37	3	93	0.026977109	2.495382601	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	M	13	3	33	0.026977109	0.876756049	assume same as F
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	F	10	3	25	0.057914388	1.447859712	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia sp.	J	24	3	60	0.00595275	0.357165019	average juv weight
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIf	6	3	15	0.001096152	0.016442282	assume same as CVIm
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIm	21	3	53	0.001096152	0.057547986	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	VIm	6	3	15	0.026628574	0.399428615	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	40/100	Macro	CRCO	Crustacea Copepoda Calanoida		Skistodiaptomus pallidus	V	2	3	5	0.026374316	0.131871578	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	1/100	Micro	ROTI	Rotifera	Asplanchnidae	Asplanchna sp.	n/a	1	33	33	0.001371814	0.045727145	average sp. 1 and sp. 2
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	1/100	Micro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	Nauplius	5	33	167	8.96489E-06	0.001494148	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Kellicottia sp.	n/a	12	33	400	1.27615E-05	0.005104604	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella hiemalis	n/a	2	33	67	0.000413467	0.027564468	average rotifer weight used
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 1	n/a	6	33	200	6.95313E-07	0.000139063	
Knight Piesold	Ajax	2014	14-39-09	MCC-2 Rep 2	10/23/2014	1/100	Micro	ROTI	Rotifera	Synchaetidae	Polyarthra sp.	n/a	5	33	167	2.83377E-05	0.004722944	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	60/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	I-IV	180	2	300	0.000350291	0.105087177	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	60/100	Macro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	V	20	2	33	0.000961953	0.032065084	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	60/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	F	35	2	58	0.026977109	1.573664703	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	60/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	J	18	2	30	0.007314881	0.219446417	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	60/100	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia longiremis	M	6	2	10	0.026977109	0.269771092	assume same as F
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	60/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIf	5	2	8	0.001096152	0.009134601	assume same as CVIm
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	60/100	Macro	CRCO	Crustacea Copepoda Cyclopoida	Cyclopidae	Diacyclops thomasi	VIm	30	2	50	0.001096152	0.054807605	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	60/100	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	V	6	2	10	0.026374316	0.263743157	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	60/100	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	VIm	3	2	5	0.026628574	0.133142872	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	1/100	Micro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	Nauplius	4	33	133	4.56084E-05	0.006081118	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	1/100	Micro	CRCO	Crustacea Copepoda		Copepoda indet.	Nauplius	1	33	33	1.17652E-05	0.000392172	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	1/100	Micro	CRCO	Crustacea Copepoda Cyclopoida		Cyclopoida indet.	Nauplius	1	33	33	8.96489E-06	0.00029883	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Kellicottia sp.	n/a	4	33	133	1.27615E-05	0.001701535	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella quadrata	n/a	2	33	67	0.000105538	0.007035875	
Knight Piesold	Ajax	2014	14-39-10	MCC-2 Rep 3	10/23/2014	1/100	Micro	ROTI	Rotifera	Synchaetidae	Polyarthra sp.	n/a	2	33	67	2.83377E-05	0.001889178	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/10	Macro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	I-IV	67	10	670	0.001217952	0.816028008	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/10	Macro	CRCL	Crustacea Cladocera	Daphniidae	Ceriodaphnia lacustris	F	13	10	130	0.006301445	0.819187791	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/10	Macro	CRCL	Crustacea Cladocera	Daphniidae	Ceriodaphnia lacustris	J	5	10	50	0.000765076	0.038253784	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/10	Macro	CRCL	Crustacea Cladocera		Cladocera indet.	Nauplius	15	10	150	0.000713131	0.106969674	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/10	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	F	264	10	2640	0.057914388	152.8939856	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/10	Macro	CRCL	Crustacea Cladocera	Daphniidae	Daphnia pulicaria	J	68	10	680	0.057914388	39.38178418	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/10	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	VIf	1	10	10	0.029600196	0.296001963	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/10	Macro	CRCO	Crustacea Copepoda Calanoida	Diaptomidae	Skistodiaptomus pallidus	VIm	2	10	20	0.026628574	0.532571486	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/10	Macro	CRCO	Crustacea Copepoda Calanoida		Skistodiaptomus pallidus	V	24	10	240	0.026374316	6.329835762	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/100	Micro	CRCO	Crustacea Copepoda Calanoida		Calanoida indet.	Nauplius	1	33	33	4.56084E-05	0.001520279	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/100	Micro	CRCO	Crustacea Copepoda		Copepoda indet.	Nauplius	1	33	33	1.17652E-05	0.000392172	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Kellicottia sp.	n/a	2	33	67	1.27615E-05	0.000850767	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella quadrata	n/a	12	33	400	0.000105538	0.04221525	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 1	n/a	15	33	500	6.95313E-07	0.000347656	
Knight Piesold	Ajax	2014	14-39-03	Scuitto Lake		1/100	Micro	ROTI	Rotifera	Brachionidae	Keratella sp. 2	n/a	1	33	33	3.30781E-06	0.00011026	

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0	08JAN1	ISSUED WITH REPORT VA101-	SCE	WOG
REV	DATE	DESCRIPTION	PREP	REV

APPENDIX B5

BENTHIC INVERTEBRATE RAW DATA ABUNDANCE AND PRESENCE / ABSENCE SUMMARY METRICS

(Pages B5-1 to B5-2)

![Knight Piésold Consulting]

APPENDIX B.5.1

KGHM AJAX MINING INC.
AJAX PROJECT

RAW DATA ABUNDANCE DATA AND SUMMARY METRICS FOR EACH SITE REPLICATE

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Order	Family	FBI Tolerance[1]	EDITH-A	EDITH-B	EDITH-C	EDITH-D	EDITH-E	JACL-A	JACL-B	JACL-C	JACL-D	JACL-E	SCUITTO-A	SCUITTO-B	SCUITTO-C	SCUITTO-D	SCUITTO-E	MCC-1 A	MCC-1 B	MCC-1 C	MCC-1 D	MCC-1 E	PC-01 A	PC-01 B	PC-01 C	PC-01 D	PC-01 E	PC-04 A	PC-04 B	PC-04 C	PC-04 D	PC-04 E	ANDR-10A	ANDR-10B	ANDR-10C	ANDR-10D	ANDR-10E	ANDR-15A	ANDR-15B	ANDR-15C	ANDR-15D	ANDR-15E	CC-04 A	CC-04 B	CC-04 C	CC-04 D	CC-04 E
Ephemeroptera	Unidentified	0																					1		1			1	1	3		2		1		2		35	32	26	12	4	61	150	62	105	76
	Ameletidae	0																																					1		1		14	6		4	
	Baetidae	4																					1	4	2	7	1	53	163	212	155	168	32	35	10	148	58	13	23	92	68	8	155	1018	372	421	600
	Ephemerellidae	1																																									5	20	12	20	28
	Heptageniidae	4																										3										100	68	166	167	65	99	696	429	453	521
Plecoptera	Unidentified	0																										3	2	9	3	2				3	3	1	2	6	4	8	1	4	3		
	Capniidae	1	1																				1	1	6			48	103	64	96	100		1		1	1	80	154	390	563	316	37	101	31	21	40
	Chloroperlidae	1																										1	1		1	1			1	4	16	77	126	115	281	84	121	327	247	161	160
	Leuctridae	0																												1										1	1				7	20	8
	Nemouridae	2																					6	3	3			4	6	9	3	7	13	6	2	5	11	36	28	156	187	153	120	620	460	481	272
	Perlidae	1																							2			3	2	3	3	4											3		10	8	16
	Perlodidae	2																																				28	16	52	64	125	4				
	Pteronarcyidae	0																																											1	5	
Trichoptera	Unidentified	0																														3		10	10	3	12	7	5	14	8	16	167	14	9	16	17
	Apataniidae	3																																										5			4
	Brachycentridae	1																																		4											
	Glossosomatidae	0																																				16	116	149	172	37			1		1
	Hydropsychidae	4																					1	4	5	2		46	96	33	92	49	4	1	5	11	4					3	1	42	42	23	40
	Hydroptilidae	4																															2	1		1	7										
	Lepidostomatidae	3																															1		3	2							7	4	24	15	41
	Limnephilidae	4																																4	3		4			1		1					
	Rhyacophilidae	1																					1									2						2	1	8	2	5	2	6	6	4	8
Coleoptera	Unidentified	4																							1		1						3														
	Curculionidae	5																									3	3	1	2	2	2											1		1		
	Dytiscidae	5																					1			1							1	1	1	2	6						3				
	Elmidae	4																					1	1	1	2	1	10	13	6	6	11	1	8		1	5	100	166	196	181	166			1	12	
	Staphylinidae	8																								1																					
Megaloptera	Coccinellidae	4																								1																					
Diptera	Unidentified	0			1																			4	4	4			2	10	6	4			1				1	1	1		3		1		4
	Ceratopogonidae	6																											2		1		1	3	9	3	4	12	42	17	21	11	5	12	19	12	20
	Chaoboridae	8	483	374	327	358	307				1		228	190	302	307	252		1		1																										
	Chironomidae	6	2	4	2	2							11	4	8	6	5						48	40	61	93	26	13	18	20	16	31	47	69	39	375	444	15	46	34	51	56	445	422	104	114	84
	Dixidae	1																									1			1			1		1	3	1					1					
	Ephydridae	6																						1																							
	Empididae	6																														1	2			4	15			2				2	1		
	Muscidae	6																																			1										
	Pelecorhynchidae	4																																											6		
	Psychodidae	8																										1					3					2	7	2	2	4	138	424	246	183	186
	Simuliidae	6																						1	2	1	1	40	8	33	91	188					1							4			
	Stratiomyidae	7																								1				1		1					3										
	Tabanidae	5																																1	2	1											
	Tipulidae	3																					2	1		2						2	2	6	2	7	5	1	1	9	7	6	5	4	4	2	12
Collembola	Unidentified	5																										1			1																
	Hypogastruridae	5																								3			1	2														2			
	Isotomidae	5																											1	3	2		8	5		6	17	1		1	1	1					
	Onychiuridae	5																											1																		
Hemiptera	Unidentified	5																						1	2	1		1		10	6	1					1	1									
	Gerridae	5																															1														
Homoptera	Unidentified	0																						1	2	2	1	1	3	3	1	3											1				
	Aphididae	0	1										1										2	4	1	1	1	6	14	13	17	5	5			7	78			2	1						
Hymenoptera	Unidentified	0																					2	2	1		2	1		1	1						1	1				1			1		
	Formicidae	0																					2	2	2			1				1															4
Lepidoptera	Unidentified	5																								1						1															
Psocoptera	Unidentified	0																																						1							
Thysanoptera	Unidentified	0																								2				1	1			1			1						2	2			
Araneae	Unidentified	0																						2		1		1	1		1			2	1	1	1	1	3	1		1	1				
Siphonaptera	Unidentified	0																													1																
Hydracarina	Unidentified	0																							1	3		2		1		1					1		2	4							
	Hygrobatidae	8																															1			1	2						13				
	Lebertiidae	8																																1		1	2	3	1	5	4	11	2	6			
	Unionicolidae	0									1																																				
	Phthiracaridae	0																																	1												
	Pionidae	0	1	2		2	1				1				1	1																															
	Sperchontidae	0																													2		1	1	1	4	4		2	3	1	1			7	1	8
	Torrenticolidae	0																																				4	5	2	1		2	6	5	5	12
	Hydryphantidae	0																																													4
Mite	Unidentified	0																												2																	
Amphipoda	Gammaridae	6																																1			2										
	Hyalellidae	8		1							1																						1	1													
Isopoda	Armadillidiidae	7																												1		1															
Cladocera	Unidentified	8	1	1		1	1						11	6	3	24	7																				1										
	Daphnidae	8	4	4	5	13	5		20	5	6		105	153	106	783	131		5																												
Copepoda	Calanoida	8							5	4	5		5	6	11	8	8																														
	Cyclopoida	8																									1								2		2										
	Harpacticoida	8																																									1				
Ostracoda	Unidentified	8																								1						1	23	3		96	88					2					
	Candonidae	8																																7	2		3	73	346	49	49	108	10	65	4	37	64
	Cyclocyprididae	8																										2		1																	
Hirudinea	Erpobdellidae	8																																		1	2										
Oligochaeta	Enchytraidae	10																					1	1					2	2	6	10	1	1	8	3	3		4	7	15	6	1	2		4	4
	Lumbricidae	8																					2			1	1	1	1	2	1	3	1								1	1					
	Tubificidae	10	2	3	3	2	1						77	51	107	87	98						1	1	2	2	2			1		3	15	55	21	29	102	1	3	28	1				5		
	Naididae	8	1												2								9	4	6	6	6	1	2		8	11	4				6										
Mollusca	Unidentified	7																																					1								
Bivalva	Unidentified	8														1																2	3	20	44	1	1	1	1			4					
	Pisidiinae	8										1	6	2	9	3	13											1					1	18	70	2	4		2			1					
Gastropoda	Unidentified	7																															4	3		4	9										
	Lymnaeidae	6																															1	1	1		2										
	Physidae	8																															8	17	18	8	34										
	Planorbidae	7																															1	1	3	1	9				1	1					
Platyhelminthes	Unidentified	4																																1													
	Planariidae	4																										1	1				3			1		22	66	86	45	46			3		4
Hydra	Unidentified	5																																	1	1	1										
Nematoda	Unidentified	0											3	2	2	1								1		1							6	20	15	21	26		1					6		4	4
	SUM INDIVIDUALS		496	389	338	378	315	0	25	9	15	1	447	414	551	1221	514	0	6	0	1	0	82	79	105	140	48	249	445	450	523	621	201	306	277	768	1004	633	1272	1626	1913	1253	1430	3970	2124	2131	2242
	RICHNESS (COUNT)		9	7	5	6	5	0	2	2	6	1	9	8	10	10	7	0	2	0	1	0	17	20	19	24	14	27	24	29	26	31	33	33	28	37	46	26	31	32	30	32	31	27	31	25	28
	DENSITY		7348.1	5763.0	5007.4	5600.0	4666.7	0.0	370.4	133.3	222.2	14.8	6622.2	6133.3	8163.0	18088.9	7614.8	0.0	88.9	0.0	14.8	0.0	294.2	283.4	376.7	502.3	172.2	893.4	1596.6	1614.6	1876.5	2228.1	721.2	1097.9	993.9	2755.6	3602.3	2271.2	4563.9	5834.0	6863.8	4495.7	5130.8	14244.2	7620.8	7646.0	8044.2
	REFERENCE		Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference

M:\1\01\00246\35\A\Report\1- Fish Aquatic Baseline Report\Rev 0\Tables & Figures\[Appendix B5 B6 _BenthicAnalysis Rev 0.xlsx]App B.5.1

NOTES:

1. THE FBI TOLERANCE VALUES WERE MODIFIED FROM THE NORTHWEST REGION OF IDAHO AND HALIFAX; WHERE A FAMILY WAS MISSING A TOLERANCE VALUE, THE MEDIAN FOR THE ORDER WAS TAKEN. IF NO VALUE FOR THE ORDER WAS AVAILABLE, IT IS LISTED AS 0.

0	24DEC'2014	ISSUED WITH REPORT 1	CAC	SCE	WOG
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

Knight Piésold CONSULTING

APPENDIX B.5.2

KGHM AJAX MINING INC.
AJAX PROJECT

PRESENCE / ABSENCE RAW DATA FOR EACH SITE REPLICATE

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Order	Family	EDITH-A	EDITH-B	EDITH-C	EDITH-D	EDITH-E	JACL-A	JACL-B	JACL-C	JACL-D	JACL-E	SCUITTO-A	SCUITTO-B	SCUITTO-C	SCUITTO-D	SCUITTO-E	MCC-1 A	MCCL-1 B	MCC-1 C	MCC-1 D	MCC-1 E	PC-01 A	PC-01 B	PC-01 C	PC-01 D	PC-01 E	PC-04 A	PC-04 B	PC-04 C	PC-04 D	PC-04 E	ANDR-10A	ANDR-10B	ANDR-10C	ANDR-10D	ANDR-10E	ANDR-15A	ANDR-15B	ANDR-15C	ANDR-15D	ANDR-15E	CC-04 A	CC-04 B	CC-04 C	CC-04 D	CC-04 E
Ephemeroptera	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1
	Ameletidae	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	0	0	0	0	1	0	1	0	1	1	0	1	0
	Baetidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
	Ephemerellidae	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	0	0	0	0	0	0	0	0	1	1	1	1	1
	Heptageniidae	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	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
Plecoptera	Unidentified	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	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0
	Capniidae	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1
	Chloroperlidae	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	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
	Leuctridae	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	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	1
	Nemouridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Perlidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
	Perlodidae	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	0	0	0	1	1	1	1	1	1	0	0	0	0
	Pteronarcyidae	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	0	0	0	0	0	0	0	0	0	0	1	1	0
Trichoptera	Unidentified	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	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Apataniidae	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	0	0	0	0	0	0	0	0	0	1	0	0	1
	Brachycentridae	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	0	1	0	0	0	0	0	0	0	0	0	0	0
	Glossosomatidae	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	0	0	0	1	1	1	1	1	0	0	1	0	1
	Hydropsychidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
	Hydroptilidae	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	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0
	Lepidostomatidae	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	1	0	1	1	0	0	0	0	0	0	1	1	1	1	1
	Limnephilidae	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	1	1	0	1	0	0	1	0	1	0	0	0	0	0
	Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
Coleoptera	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Curculionidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
	Dytiscidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	0	0	0	0
	Elmidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	1	1	0
	Staphylinidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Megaloptera	Coccinellidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diptera	Unidentified	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1	1	1	0	0	1	0	0	0	1	1	1	0	1	0	1	0	1
	Ceratopogonidae	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	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Chaoboridae	1	1	1	1	1	0	0	0	1	0	1	1	1	1	1	0	1	0	1	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
	Chironomidae	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	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
	Dixidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	1	1	0	0	0	0	1	0	0	0	0	0
	Ephydridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Empididae	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	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0
	Muscidae	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	0	0	1	0	0	0	0	0	0	0	0	0	0
	Pelecorhynchidae	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	0	0	0	0	0	0	0	0	0	0	1	0	0
	Psychodidae	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	1	0	0	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	Simuliidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
	Stratiomyidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	Tabanidae	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	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	Tipulidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Collembola	Unidentified	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	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hypogastruridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	Isotomidae	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	1	1	1	0	1	1	0	1	1	1	0	1	1	1	0	0	0	0	0
	Onychiuridae	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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hemiptera	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
	Gerridae	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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Homoptera	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	Aphididae	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0
Hymenoptera	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	1	0	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0
	Formicidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lepidoptera	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Psocoptera	Unidentified	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	0	0	0	0	0	1	0	0	0	0	0	0	0
Thysanoptera	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	0
Araneae	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	1	0	0	1	1	1	1	1	1	1	0	1	1	0	0	0	0
Siphonaptera	Unidentified	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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydracarina	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0
	Hygrobatidae	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	1	0	0	1	1	0	0	0	0	0	1	0	0	0	0
	Lebertiidae	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	1	0	1	1	1	1	1	1	1	1	1	0	0	0
	Unionicolidae	0	0	0	0	0	0	0	0	1	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	0	0	0	0
	Phthiracaridae	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	1	0	0	0	0	0	0	0	0	0	0	0	0
	Pionidae	1	1	0	1	1	0	0	0	1	0	0	0	1	1	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
	Sperchontidae	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	1	0	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1
	Torrenticolidae	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	0	0	0	1	1	1	1	0	1	1	1	1	1
	Hydryphantidae	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	0	0	0	0	0	0	0	0	0	0	0	0	1
Mite	Unidentified	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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amphipoda	Gammaridae	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	1	0	0	1	0	0	0	0	0	0	0	0	0	0
	Hyalellidae	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Isopoda	Armadillidiidae	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	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cladocera	Unidentified	1	1	0	1	1	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	Daphnidae	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	0	1	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
Copepoda	Calanoida	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	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
	Cyclopoida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
	Harpacticoida	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	0	0	0	0	0	0	0	0	1	0	0	0	0
Ostracoda	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	1	1	0	0	0	0	1	0	0	0	0	0
	Candonidae	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	1	1	0	1	1	1	1	1	1	1	1	1	1	1
	Cyclocyprididae	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	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hirudinea	Erpobdellidae	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	0	1	1	0	0	0	0	0	0	0	0	0	0
Oligochaeta	Enchytraeidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1
	Lumbricidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	Tubificidae	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0
	Naididae	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Mollusca	Unidentified	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	0	0	0	0	1	0	0	0	0	0	0	0	0
Bivalva	Unidentified	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	0
	Pisidiinae	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1	1	0	1	0	0	1	0	0	0	0	0
Gastropoda	Unidentified	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	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0
	Lymnaeidae	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	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0
	Physidae	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	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	Planorbidae	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	1	1	1	1	1	0	0	0	1	1	0	0	0	0	0
Platyhelminthes	Unidentified	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	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Planariidae	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	1	1	0	0	0	1	0	0	1	0	1	1	1	1	1	0	0	1	0	1
Hydra	Unidentified	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	1	1	1	0	0	0	0	0	0	0	0	0	0
Nematoda	Unidentified	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	1	1	1	0	1	0	0	0	0	1	0	1	1

M:\1\01\00246\35\A\Report\1- Fish Aquatic Baseline Report\Rev 0\Tables & Figures\[Appendix B5 B6 _BenthicAnalysis Rev 0.xlsx]App. B.5.2

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	24DEC'2014	ISSUED WITH REPORT 1	CAC	SCE	WOG

APPENDIX B6

BENTHIC INVERTEBRATES DETAILED STATISTICS FOR ALL METRICS AND BIOLOGICAL INDICES AT EACH SITE

(Page B6-1)

Knight Piésold CONSULTING

APPENDIX B.6

KGHM AJAX MINING INC.
AJAX PROJECT

DETAILED STATISTICS FOR ALL METRICS AND

Print Jul/13/15 15:52:50

Site	Mean	Standard Deviation	Standard Error	Maximum	Minimum
Density					
EDITH (I)	5,677	1,034	462	7,348	4,667
JACL (I)	148	154	69	370	0
SCUITTO (C)	9,324	4,964	2,220	18,089	6,133
MCCONNELL-1 (C)	21	39	17	89	0
PC-01 (I)	326	123	55	502	172
PC-04 (I)	1,642	490	219	2,228	893
ANDR-10 (C)	1,834	1,271	568	3,602	721
ANDR-15 (C)	4,806	1,723	770	6,864	2,271
CC-04 (C)	8,537	3,393	1,517	14,244	5,131
Richness					
EDITH (I)	6	2	1	9	5
JACL (I)	2	2	1	6	0
SCUITTO (C)	9	1	1	10	7
MCCONNELL-1 (C)	1	1	0	2	0
PC-01 (I)	19	4	2	24	14
PC-04 (I)	27	3	1	31	24
ANDR-10 (C)	35	7	3	46	28
ANDR-15 (C)	30	2	1	32	26
CC-04 (C)	28	3	1	31	25
EPT Index					
PC-01 (I)	4	2	1	6	1
PC-04 (I)	8	1	1	10	7
ANDR-10 (C)	8	2	1	11	5
ANDR-15 (C)	12	1	0	13	11
CC-04 (C)	15	1	0	16	14
Simpson's Diversity					
EDITH (I)	0.068	0.021	0.010	0.102	0.050
JACL (I)	0.505	0.380	0.170	1.000	0.000
SCUITTO (C)	0.618	0.057	0.025	0.657	0.520
MCCONNELL-1 (C)	0.656	0.482	0.215	1.000	0.000
PC-01 (I)	0.648	0.065	0.029	0.726	0.551
PC-04 (I)	0.794	0.043	0.019	0.852	0.742
ANDR-10 (C)	0.825	0.082	0.037	0.890	0.706
ANDR-15 (C)	0.875	0.016	0.007	0.894	0.853
CC-04 (C)	0.847	0.003	0.001	0.850	0.843
Simpson's Evenness					
EDITH (I)	0.176	0.041	0.018	0.214	0.117
JACL (I)	0.660	0.410	0.183	1.000	0.000
SCUITTO (C)	0.311	0.079	0.035	0.417	0.208
MCCONNELL-1 (C)	0.338	0.476	0.213	1.000	0.000
PC-01 (I)	0.162	0.048	0.021	0.223	0.093
PC-04 (I)	0.185	0.045	0.020	0.249	0.134
ANDR-10 (C)	0.201	0.098	0.044	0.280	0.092
ANDR-15 (C)	0.271	0.055	0.024	0.364	0.227
CC-04 (C)	0.231	0.020	0.009	0.259	0.210
Shannon-Wiener Diversity					
EDITH (I)	0.199	0.048	0.021	0.266	0.146
JACL (I)	0.528	0.601	0.269	1.455	0.000
SCUITTO (C)	1.209	0.130	0.058	1.324	0.989
MCCONNELL-1 (C)	0.090	0.201	0.090	0.451	0.000
PC-01 (I)	1.783	0.170	0.076	2.056	1.611
PC-04 (I)	2.031	0.162	0.073	2.270	1.812
ANDR-10 (C)	2.370	0.347	0.155	2.696	1.825
ANDR-15 (C)	2.413	0.093	0.042	2.504	2.275
CC-04 (C)	2.202	0.057	0.025	2.267	2.124
Shannon-Wiener Evenness					
EDITH (I)	0.110	0.027	0.012	0.149	0.078
JACL (I)	0.505	0.471	0.211	0.991	0.000
SCUITTO (C)	0.562	0.070	0.031	0.686	0.507
MCCONNELL-1 (C)	0.130	0.046	0.020	0.689	0.570
PC-01 (I)	0.613	0.117	0.052	0.771	0.505
PC-04 (I)	0.614	0.036	0.016	0.764	0.669
ANDR-10 (C)	0.670	0.084	0.038	0.655	0.429
ANDR-15 (C)	0.709	0.020	0.009	0.680	0.637
CC-04 (C)	0.659	0.291	0.130	0.650	0.000
Hilsenhoff FBI					
PC-01 (I)	5.1	0.5	0.2	5.7	4.5
PC-04 (I)	3.7	0.4	0.2	4.3	3.2
ANDR-10 (C)	5.9	0.4	0.2	6.5	5.6
ANDR-15 (C)	3.0	0.7	0.3	4.0	2.2
CC-04 (C)	3.7	0.2	0.1	3.9	3.5
All Sites - 2014					
Density	3,591	1,466	655	5,926	2,221
Richness	18	3	1	21	14
EPT Index	10	1	1	11	8
Simpson's Diversity	0.648	0.128	0.057	0.775	0.474
Simpson's Evenness	0.282	0.141	0.063	0.445	0.120
Shannon-Wiener Diversity	1.425	0.201	0.090	1.699	1.198
Shannon-Wiener Evenness	0.508	0.129	0.058	0.671	0.377
Hilsenhoff FBI	4.3	0.4	0.2	4.9	3.8
Bray-Curtis Similarity Index	0.53	0.32	0.11	1.00	0.00

M:\1\01\00246\35\A\Report\1- Fish Aquatic Baseline Report\Rev 0\Tables & Figures\[Appendix B5 B6 _BenthicAnalysis Rev 0.xlsx]App. B.6

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	24DEC'2014	ISSUED WITH REPORT 1	CAC	SCE	WOG

APPENDIX C

FISHERIES INFORMATION

APPENDIX C1

HABITAT SUMMARY SHEETS

(Pages C1-1 to C1-10)

SITE - PC-01

UTM Coordinates
E 688709 N 5616085

Water Course Name: KGHM - AJAX

Peterson Creek VA10100246/35

Upstream View 23-Jul-14

Downstream View 17-Sept-14

Biophysical Data

Mean channel width (m): 1.5
Mean bank full depth (m): 1.8
Channel gradient (%): 6

Temperature range: 11.86 ˚C
Conductivity range: 1904 µS/cm
pH range: 8.36

Functioning LWD: None
Fish cover total: Moderate
Confinement: Confined

General Site Comments:

Left Bank (LB)
LB shape: Undercut
LB texture: Gravel
LB riparian veg: Mixed
LB veg. stage: Mixed

Right Bank (RB)
RB shape: Sloping
RB texture: Gravel

Habitat:

Pool	5%
Boulder	5%
Instream Veg.	0%
Overhanging veg.	75%
Undercut bank	10%
LWD	0%

SITE - PC-02

UTM Coordinates
E 689228 N 5611248

Water Course Name: Peterson Creek

KGHM - AJAX
VA10100246/35

Upstream View 16-Sept-14

Downstream View 16-Sept-14

Biophysical Data

Mean channel width (m): 1.4
Mean bank full depth (m): 2.7
Channel gradient (%): 4

Temperature range: 0.039 - 18.3 ˚C
Conductivity range: 356 - 1302 µS/cm
pH range: 7.22 - 8.53

Functioning LWD: Few
Fish cover total: Moderate
Confinement: Occasional
General Site Comments:

Left Bank (LB)
LB shape: Sloping
LB texture: Fines
LB riparian Veg: Mixed
LB veg. stage: SHR

Right Bank (RB)
RB shape: Sloping
RB texture: Fines

Habitat:

Pool	10%
Boulder	15%
Instream Veg.	15%
Overhanging veg.	10%
Undercut bank	20%
LWD	20%

SITE - PC-03

UTM Coordinates
E 685692 N 5609339

Water Course Name:

Peterson Creek

KGHM - AJAX

VA10100246/35

Upstream View 03-Jun-14

Downstream View 16-Sept-14

Biophysical Data

Mean channel width (m): 1.7
Mean bank full depth (m): 1.8
Channel gradient (%): 3

Temperature range: 0.02 - 28.68 ˚C
Conductivity range: 438 - 1174 µS/cm
pH range: 7.68 - 9.18

Functioning LWD: None
Fish cover total: Moderate
Confinement: Confined

Left Bank (LB)
LB shape: Sloping
LB texture: Gravel
LB riparian Veg: Grass
LB veg. stage: SHR

Right Bank (RB)
RB shape: Sloping
RB texture: Gravel

Habitat:

Pool	10%
Boulder	10%
Instream Veg.	0%
Overhanging veg.	80%
Undercut bank	0%
LWD	0%

General Site Comments:

SITE - PC-04

UTM Coordinates
E 0688617 N 5614343

Water Course Name:

Peterson Creek

KGHM - AJAX

VA10100246/35

Upstream View 22-Sept-14

Downstream View 22-Sept-14

Biophysical Data

Mean channel width (m): 1.9
Mean bank full depth (m): 3.1
Channel gradient (%): 18

Temperature range: 12.58˚C
Conductivity range: 1495 µS/cm
pH range: 8.39

Functioning LWD: None
Fish cover total: Moderate
Confinement: Entrenched

General Site Comments:

Left Bank (LB)
LB shape: Vertical
LB texture: Bedrock
LB riparian Veg: Mixed
LB veg. stage: YF

Right Bank (RB)
RB shape: Vertical
RB texture: Bedrock

Habitat:

Pool	10%
Boulder	15%
Instream Veg.	20%
Overhanging veg.	15%
Undercut bank	20%
LWD	15%

SITE - PC-08

UTM Coordinates
E 0683266 N 5609145

Water Course Name:

Peterson Creek

KGHM - AJAX

VA10100246/35

Upstream View 22-Sept-14

Downstream View 22-Sept-14

Biophysical Data

Mean channel width (m): 1.8
Mean bank full depth (m): 3.4
Channel gradient (%): 6

Temperature range: 0.22 - 23.85 ˚C
Conductivity range: 290 - 633 µS/cm
pH range: 7.33 - 8.91

Functioning LWD: None
Fish cover total: Low
Confinement: Unconfined

General Site Comments:

Left Bank (LB)
LB shape: Vertical
LB texture: Fines
LB riparian veg: Grass
LB veg. stage: SHR

Right Bank (RB)
RB shape: Vertical
RB texture: Fines

Habitat:

Pool	40%
Boulder	0%
Instream Veg.	5%
Overhanging veg.	20%
Undercut bank	35%
LWD	0%

SITE - CC-04

UTM Coordinates
E 0674141 N 5611408

Water Course Name:

Cherry Creek

KGHM - AJAX

VA10100246/35

Upstream View 15-Sept-14

Downstream View 15-Sept-14

Biophysical Data

Mean channel width (m): 1.9
Mean bank full depth (m): 3.8
Channel gradient (%): 4

Temperature range: 2.06 - 11.3 ˚C
Conductivity range: 133 - 197 µS/cm
pH range: 7.53 - 8.27

Functioning LWD: Few
Fish cover total: Moderate
Confinement: Confined

General Site Comments:

Left Bank (LB)
LB shape: Vertical
LB texture: Cobble
LB riparian veg: Mixed
LB veg. stage: YF

Right Bank (RB)
RB shape: Vertical
RB texture: Cobble

Habitat:

Pool	10%
Boulder	20%
Instream Veg.	15%
Overhanging veg.	10%
Undercut bank	30%
LWD	15%

SITE - Ander-10

UTM Coordinates
E 0689097 N 5605395

Water Course Name: KGHM - AJAX

Anderson Creek VA10100246/35

Upstream View 18-Sept-14

Downstream View 18-Sept-14

Biophysical Data

Mean channel width (m): 2.1
Mean bank full depth (m): 3.2
Channel gradient (%): 4

Temperature range: 0.72 - 18.26 ˚C
Conductivity range: 373 - 627 µS/cm
pH range: 7.63 - 8.36

Functioning LWD: Few
Fish cover total: Moderate
Confinement: Confined
General Site Comments:

Left Bank (LB)
LB shape: Sloped
LB texture: Fines
LB riparian veg: Mixed
LB veg. stage: YF

Right Bank (RB)
RB shape: Vertical
RB texture: Gravel

Habitat:

Pool	15%
Boulder	15%
Instream Veg.	10%
Overhanging veg.	30%
Undercut bank	10%
LWD	10%

SITE - Ander-15

UTM Coordinates
E 0682517 N 5603542

Water Course Name:

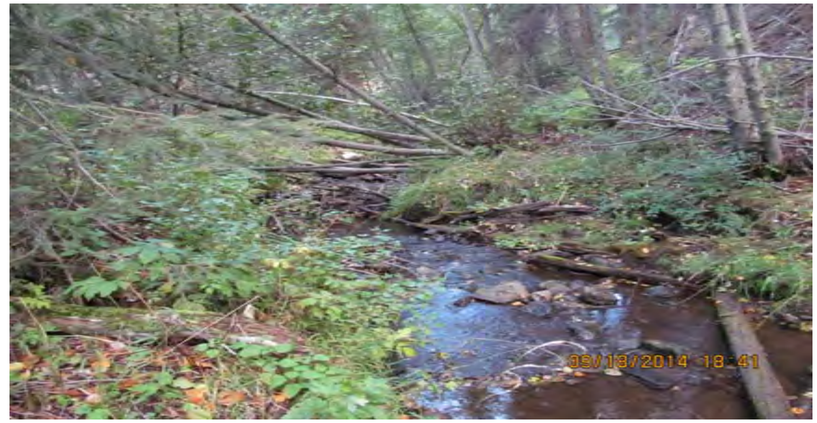
Anderson Creek

KGHM - AJAX

VA10100246/35

Upstream View 18-Sept-14

Downstream View 18-Sept-14



Biophysical Data

Mean channel width (m): 2.5
Mean bank full depth (m): 3.0
Channel gradient (%): 5

Temperature range: -0.25 - 17.66˚C
Conductivity range: 295 - 598 µS/cm
pH range: 8.02 - 8.65

Functioning LWD: Few
Fish cover total: Abundant
Confinement: Confined

Left Bank (LB)
LB shape: Sloped
LB texture: Gravel
LB riparian veg: Mixed
LB veg. stage: MF

Right Bank (RB)
RB shape: Sloped
RB texture: Gravel

Habitat:

Pool	30%
Boulder	10%
Instream Veg.	0%
Overhanging veg.	30%
Undercut bank	15%
LWD	10%

General Site Comments:

SITE - Keynes Creek

UTM Coordinates
E 0682853 N 5608490

Water Course Name: KGHM - AJAX

Keynes Creek VA10100246/35

Upstream View 05-Jun-14

Downstream View 05-Jun-14

Biophysical Data

Mean channel width (m): 2.5
Mean bank full depth (m): 3.0
Channel gradient (%): 2

Temperature range: ˚C
Conductivity range: µS/cm
pH range:

Functioning LWD: none
Fish cover total: none
Confinement: Dry/Intermittent
<u>General Site Comments:</u>

Left Bank (LB)
LB shape: Sloped
LB texture: Fines
LB riparian veg: Grass
LB veg. stage: MF

Right Bank (RB)
RB shape: Sloped
RB texture: Fines

Habitat:

Pool	0%
Boulder	0%
Instream Veg.	70%
Overhanging veg.	30%
Undercut bank	0%
LWD	0%

SITE - Humphrey Creek

UTM Coordinates
E 0686977 N 5608949

Water Course Name:

Humphrey Creek

KGHM - AJAX

VA10100246/35

Upstream View 06-Jun-14

Downstream View 06-Jun-14

Biophysical Data

Mean channel width (m): 0.5
Mean bank full depth (m): 0.75
Channel gradient (%): 3

Temperature range: 1.87 - 15.27 ˚C
Conductivity range: 600 - 920 µS/cm
pH range: 8.14 - 8.43

Functioning LWD: none
Fish cover total: none
Confinement: (regulated, ephemeral)

General Site Comments:

Left Bank (LB)
LB shape: Sloped
LB texture: Fines
LB riparian veg: Grass
LB veg. stage: SHR

Right Bank (RB)
RB shape: Sloped
RB texture: Fines

Habitat:

Pool	0%
Boulder	0%
Instream Veg.	80%
Overhanging veg.	20%
Undercut bank	0%
LWD	0%

APPENDIX C2

2014 RAINBOW TROUT SAMPLING EFFORT AND CAPTURE DATA

(Pages C2-1 to C2-2)

APPENDIX C2
KGHM AJAX MINING INC.
AJAX PROJECT

2014 FISH SAMPLING EFFORT AND CAPTURE DATA

No.	Gazetted Name / Alias	DATE	MACRO REACH	Site Code for Report	SITE CODE	RIVER KM	UTM ZONE	UTM EAST	UTM NORTH	Sample Method	Habitat Only	DISTANCE SAMPLED (m)	Time in/start	Time out/ finish	GN Effort (hours)	EF effort (seconds)	EF Volts	EF Hz	EF Pulse (ms)	# MT	MT soak hours	Total MT hours	FISH SPECIES	FORK LENGTH (mm)	WEIGHT (g)	Male/ female	Maturity / Age	scale sample code	Age
1	Goose Lake	4-Jun-14	1	GOOSE	GOOSE-EF	1.46	10	684,666	5,606,891	EF		1370	9:30	10:30		505	100	25	2				nfc						
2	Goose Lake	3-Jun-14	1	GOOSE	GOOSE-MT	1.46	10	684,644	5,606,753	MT			10:40 - 12:05	9:19 - 10:31						24	22	528	nfc						
3	Peterson Creek	3-Jun-14	5	PC-08	PC-DN-08	16.8	10	683,497	5,608,941	DN													RB	530		?	M	PC-08-01	6
4	Peterson Creek	3-Jun-14	5	PC-08	PC-EF-08	16.8	10	683,497	5,608,941	EF		350	14:10:00 PM	14:35:00 PM		502	100 - 400	60	3				RB	465		F	M	PC-08-02	5
5	Peterson Creek	3-Jun-14	5	PC-08	PC-EF-08	16.8	10	683,497	5,608,941	EF		350	14:10:00 PM	14:35:00 PM		502	100 - 400	60	3				RB	520		F	M	PC-08-03	7
6	Peterson Creek	3-Jun-14	5	PC-08	PC-EF-08	16.8	10	683,497	5,608,941	EF		350	14:10:00 PM	14:35:00 PM		502	100 - 400	60	3				RB	470		F	M	PC-08-04	6
7	Peterson Creek	3-Jun-14	5	PC-08	PC-EF-08	16.8	10	683,497	5,608,941	EF		350	14:10:00 PM	14:35:00 PM		502	100 - 400	60	3				RB	500		F	M	PC-08-05	7
8	Peterson Creek	3-Jun-14	5	PC-08	PC-EF-08	16.8	10	683,497	5,608,941	EF		350	14:10:00 PM	14:35:00 PM		502	100 - 400	60	3				RB	520		?	M	PC-08-06	4
9	Peterson Creek	3-Jun-14	5	PC-08	PC-EF-08	16.8	10	683,497	5,608,941	DN													RB	410		?		PC-08-07	3
10	Keynes Creek	3-Jun-14	1	KC-05	KC-MT-05	0.2	10	683,081	5,609,005	MT			14:05	12:33						1	22	22	nfc						
11	Peterson Creek	3-Jun-14	5	PC-03	PC-MT-03	14.2	10	685,522	5,609,234	MT			16:05	11:30						8	19	152	nfc						
12	Peterson Creek	3-Jun-14	5	PC-03	PC-EF-03	14	10	685,703	5,609,338	EF		45	15:30	16:05		204	200	50	3				nfc						
13	Jacko Lake	3-Jun-14	n/a	JACKO-WL	JACKO-WL-MT-01	n/a	10	681,605	5,609,989	MT			17:15	15:50						6	22.5	135	nfc						
14	Jacko Lake	4-Jun-14	n/a	JACKO-WL	JACKO-WL-MT-02	n/a	10	681,701	5,609,865	MT			16:10	11:30						8	19	152	nfc						
15	Peterson Creek	4-Jun-14	7	PC-15	PC-EF-15	19.6	10	681,461	5,608,740	EF		50	13:30	13:55		163	200	50	3				RB	91	9.29	?	IM	PC-15-01	1
16	Peterson Creek	4-Jun-14	7	PC-15	PC-MT-15	19.6	10	681,477	5,608,897	MT			14:10	10:40						5	20	100	RB	94	9.51	?	IM	PC-15-02	1
17	Keynes Creek	4-Jun-14	1	KC-WL	KC-MT-WL-15	3.5	10	682,347	5,607,392	MT			15:00	8:40						8	17	136	nfc						
18	Keynes Creek	4-Jun-14	2	KC-WL	KC-WL-14	3.7	10	682,027	5,607,687	n/a	y												n/a						
19	Keynes Creek	5-Jun-14	1	KC-10	KC-10	0.8	10	682,851	5,608,582	n/a	y												n/a						
20	Peterson Creek	5-Jun-14	5	PC-08	PC-EF-06	16.1	10	684,116	5,609,207	EF		560	13:10	13:45		400	200	50	3				nfc						
21	Peterson Creek	6-Jun-14	5	PC-05	PC-EF-02.8	12	10	687,276	5,609,324	EF		70	9:05	9:30		382	200	50	3				nfc						
22	Humphrey Creek	6-Jun-14	1	HC-05	HC-05	0.15	10	686,959	5,609,003	n/a	y												nfc						
23	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,637	5,603,519	EF		30	12:30	12:50		383	300	50	3				RB	95	9.92	?		ANDR-15-01	1
24	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,637	5,603,519	EF		30	12:30	12:50		383	300	50	3				RB	130	32.43	?		ANDR-15-02	2
25	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,637	5,603,519	EF		30	12:30	12:50		383	300	50	3				RB	116	19.04	?		ANDR-15-03	2
26	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,637	5,603,519	EF		30	12:30	12:50		383	300	50	3				RB	105	13.45	?		ANDR-15-04	1
27	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,637	5,603,519	EF		30	12:30	12:50		383	300	50	3				RB	90	10	?		ANDR-15-05	1
28	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,637	5,603,519	EF		30	12:30	12:50		383	300	50	3				RB	101	12.41	?		ANDR-15-06	1
29	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,637	5,603,519	EF		30	12:30	12:50		383	300	50	3				RB	95	10.28	?		ANDR-15-07	1
30	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		50	13:40	14:15		502	200	50	3				RB	184	82.43	?		ANDR-15-08	3
31	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		50	13:40	14:15		502	200	50	3				RB	122	24.8	?		ANDR-15-09	2
32	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		50	13:40	14:15		502	200	50	3				RB	109	15.83	?		ANDR-15-10	2
33	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		50	13:40	14:15		502	200	50	3				RB	108	15.95	?		ANDR-15-11	1
34	Anderson Creek	5-Jun-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		50	13:40	14:15		502	200	50	3				RB	123	24.1	?		ANDR-15-12	2
35	Anderson Creek	6-Jun-14	4	ANDR-10	ANDR-10	9.2	10	689,097	5,605,395	EF		150	11:25	11:55		309	200	50	3										
36	Peterson Creek	22-Jul-14	7	PC-10	PC-EF-10	19.6	10	681,537	5,609,050	EF		207	15:05	15:30		551	200	60	3				RB	95	10.3	?	IM	PC-10-01	1
37	Peterson Creek	22-Jul-14	7	PC-10	PC-EF-10	19.6	10	681,537	5,609,050	EF		207	15:05	15:30		551	200	60	3				RB	114	20.2	?	IM	PC-10-02	2
38	Peterson Creek	22-Jul-14	5	PC-03	PC-EF-03	14	10	685,574	5,609,259	EF		70	15:00	15:12		261	200	50	3				nfc						
39	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.47	10	688,692	5,616,283	EF		51	8:21	8:38		163	200	50	3				RB	175	59.8	?		PC-01-EF-1	4
40	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.47	10	688,692	5,616,283	EF		51	8:21	8:38		163	200	50	3				RB	144	33.4	?		PC-01-EF-2	3
41	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.47	10	688,692	5,616,283	EF		51	8:21	8:38		163	200	50	3				RB	174	59.95	?		PC-01-EF-3	4
42	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.47	10	688,692	5,616,283	EF		51	8:21	8:38		163	200	50	3				RB	144	34.05	?		PC-01-EF-4	3
43	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.47	10	688,692	5,616,283	EF		51	8:21	8:38		163	200	50	3				RB	139	27.22	?		PC-01-EF-5	4
44	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.47	10	688,692	5,616,283	EF		51	8:21	8:38		163	200	50	3				RB	174	54.84	?		PC-01-EF-6	4
45	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	134	30	?		PC-01-EF-7	3
46	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	159	47.7	?		PC-01-EF-8	2
47	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	156	43.2	?		PC-01-EF-9	3
48	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	159	41.8	?		PC-01-EF-10	3
49	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	161	46.3	?		PC-01-EF-11	4
50	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	134	23.2	?		PC-01-EF-12	4
51	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	140	27.1	?		PC-01-EF-13	4
52	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	138	29.3	?		PC-01-EF-14	3
53	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	143	32.9	?		PC-01-EF-15	3
54	Peterson Creek	23-Jul-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,194	EF		64	9:17	9:30		110	200	50	3				RB	109	11.3	?		PC-01-EF-16	2
55	Peterson Creek	23-Jul-14	4	PC-04	PC-EF-04	3.29	10	688,552	5,614,353	EF		131	12:00	12:25		398	200	50	3				RB	131	29.7	?		PC-EF-04-1	3
56	Peterson Creek	23-Jul-14	4	PC-04	PC-EF-04	3.29	10	688,552	5,614,353	EF		131	12:00	12:25		398	200	50	3				RB	153	47.4	?		PC-EF-04-2	3
57	Peterson Creek	23-Jul-14	4	PC-04	PC-EF-04	3.29	10	688,552	5,614,353	EF		131	12:00	12:25		398	200	50	3				RB	159	49.2	?		PC-EF-04-3	4
58	Peterson Creek	23-Jul-14	4	PC-04	PC-EF-04	3.29	10	688,552	5,614,353	EF		131	12:00	12:25		398	200	50	3				RB	154	48.2	?		PC-EF-04-4	3
59	Peterson Creek	23-Jul-14	4	PC-04	PC-EF-04	3.29	10	688,552	5,614,353	EF		131	12:00	12:25		398	200	50	3				RB	170	53.5	?		PC-EF-04-5	4
60	Peterson Creek	23-Jul-14	4	PC-04	PC-EF-04	3.29	10	688,552	5,614,353	EF		131	12:00	12:25		398	200	50	3				RB	157	49.4	?		PC-EF-04-6	3
61	Peterson Creek	23-Jul-14	4	PC-04	PC-EF-04	3.29	10	688,552	5,614,353	EF		131	12:00	12:25		398	200	50	3				RB	172	66.2	?		PC-EF-04-7	2
62	Peterson Creek	23-Jul-14	4	PC-04	PC-EF-04	3.29	10	688,552	5,614,353	EF		131	12:00	12:25		398	200	50	3				RB	176	72.5	?		PC-EF-04-8	3
63	Peterson Creek	23-Jul-14	5	PC-08	PC-EF-08	16.74	10	683,530	5,608,967	EF		200	15:55	16:14		653	200	50	3				nfc						
64	Jacko Lake	24-Jul-14	6	JACKO	JACKO-GN-01	17.6	10	682,964	5,609,618	GN		n/a	9:35	11:00	1.41								RB	211	131	?		JACKO-GN-01	3
65	Jacko Lake	24-Jul-14	6	JACKO	JACKO-GN-01	17.6	10	682,964	5,609,618	GN		n/a	9:35	11:00	1.41								RB	201	118	?		JACKO-GN-02	3
66	Cherry Creek	15-Sep-14	3	CC-04	CC-EF-04	8.4	10	674,141	5,611,409	EF		90				96							RB	99	13.4			CC-AL-04-1	1
67	Cherry Creek	15-Sep-14	3	CC-04	CC-EF-04	8.4	10	674,141	5,611,409	EF		90				96							RB	104	15.4			CC-AL-04-2	1
68	Cherry Creek	15-Sep-14	3	CC-04	CC-EF-04	8.4	10	674,141	5,611,409	EF		90				96							RB	103	13.2			CC-AL-04-3	1
69	Cherry Creek	15-Sep-14	3	CC-04	CC-EF-04	8.4	10	674,141	5,611,409	EF		90				96							RB	113	13.5			CC-AL-04-4	1
70	Cherry Creek	15-Sep-14	3	CC-04	CC-EF-04	8.4	10	674,141	5,611,409	EF		90				96							RB	122	18.1			CC-AL-04-5	2
71	Cherry Creek	15-Sep-14	3	CC-04	CC-EF-04	8.4	10	674,141	5,611,409	EF		90				96							RB	107	14.9			CC-AL-04-6	1
72	Cherry Creek	15-Sep-14	3	CC-04	CC-EF-04	8.4	10	674,141	5,611,409	EF		90				96							RB	100	12.4			CC-AL-04-7	1
73	Cherry Creek	15-Sep-14	3	CC-04	CC-EF-04	8.4	10	674,141	5,611,409	EF		90				96							RB	103	14.5			CC-AL-04-8	1
74	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	163	50.7			PC-01-EF-1	2
75	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	181	74.5			PC-01-EF-2	1
76	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	162	51.7			PC-01-EF-3	2
77	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	168	56.8			PC-01-EF-4	2
78	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	160	44.7			PC-01-EF-5	2
79	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	159	44.5			PC-01-EF-6	2
80	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	175	63			PC-01-EF-7	2
81	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	139	30			PC-01-EF-8	2
82	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	111	13.5			PC-01-EF-9	2
83	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	151	35.9			PC-01-EF-10	2
84	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	139	28.7			PC-01-EF-11	2
85	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	140	28.2			PC-01-EF-12	2
86	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	140	27.2			PC-01-EF-13	2
87	Peterson Creek	17-Sep-14	2	PC-01	PC-EF-01	1.56	10	688,704	5,616,019	EF		75	13:00	13:30		117	200	60	3				RB	135	26.4			PC-01-EF-14	2

APPENDIX C2
KGHM AJAX MINING INC.
AJAX PROJECT

2014 FISH SAMPLING EFFORT AND CAPTURE DATA

No.	Gazetted Name / Alias	DATE	MACRO REACH	Site Code for Report	SITE CODE	RIVER KM	UTM ZONE	UTM EAST	UTM NORTH	Sample Method	Habitat Only	DISTANCE SAMPLED (m)	Time in/start	Time out/ finish	GN Effort (hours)	EF effort (seconds)	EF Volts	EF Hz	EF Pulse (ms)	# MT	MT soak hours	Total MT hours	FISH SPECIES	FORK LENGTH (mm)	WEIGHT (g)	Male/ female	Maturity / Age	scale sample code	Age
88	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	51	1.9				
89	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	48	1.5				
90	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	51	2				
91	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	148	42.4			ANDR-15-4	2
92	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	177	69			ANDR-15-5	3
93	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	270	169.3			ANDR-15-6	4
94	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	48	1.5				
95	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	53	2.3				
96	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	51	1.8				
97	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	52	1.7				
98	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	52	2.1				
99	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	45	1.2				
100	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	56	2.1				
101	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	52	1.5				
102	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	54	1.8				
103	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	50	2.3				
104	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	39	0.6				
105	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	47	1.2				
106	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	48	2				
107	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	40	0.7				
108	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	52	2.3				
109	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	52	1.7				
110	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	44	1.1				
111	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	42	1.1				
112	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	54	2.2				
113	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	50	1.5				
114	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	39	1				
115	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	40	0.9				
116	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	49	1.8				
117	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	41	0.9				
118	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	45	1.4				
119	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	146	36.3			ANDR-15-32	2
120	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	128	23.2			ANDR-15-33	2
121	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	152	47.1			ANDR-15-34	2
122	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	124	21.9			ANDR-15-35	1
123	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	139	28.8			ANDR-15-36	1
124	Anderson Creek	17-Sep-14	6	ANDR-15	ANDR-15	19.9	10	682,586	5,603,521	EF		150	16:00	16:34		410	200	50	3				RB	110	16.2			ANDR-15-37	1
125	Jacko Lake	18-Sep-14	6	JACKO	JACKO-GN-02	17.6	10	682,889	5,609,562	GN		n/a	16:40	17:27	0.83								RB	215	150.3			JACKO-LK-01	2
126	Jacko Lake	18-Sep-14	6	JACKO	JACKO-GN-02	17.6	10	682,889	5,609,562	GN		n/a	16:40	17:27	0.83								RB	203	85.8			JACKO-LK-02	2
127	Jacko Lake	18-Sep-14	6	JACKO	JACKO-GN-02	17.6	10	682,889	5,609,562	GN		n/a	16:40	17:27	0.83								RB	203	102.2			JACKO-LK-03	2
128	Jacko Lake	18-Sep-14	6	JACKO	JACKO-GN-02	17.6	10	682,889	5,609,562	GN		n/a	16:40	17:27	0.83								RB	175	61.8			JACKO-LK-04	2
129	Jacko Lake	18-Sep-14	6	JACKO	JACKO-GN-02	17.6	10	682,889	5,609,562	GN		n/a	16:40	17:27	0.83								RB	202	104.7			JACKO-LK-05	2
130	Jacko Lake	18-Sep-14	6	JACKO	JACKO-GN-02	17.6	10	682,889	5,609,562	GN		n/a	16:40	17:27	0.83								RB	204	104.8			JACKO-LK-06	2
131	Jacko Lake	18-Sep-14	6	JACKO	JACKO-GN-02	17.6	10	682,889	5,609,562	GN		n/a	16:40	17:27	0.83								RB	173	62.8			JACKO-LK-07	2
132	Jacko Lake	18-Sep-14	6	JACKO	JACKO-GN-02	17.6	10	682,889	5,609,562	GN		n/a	16:40	17:27	0.83								RB	219	121.8			JACKO-LK-08	2
133	Jacko Lake	18-Sep-14	6	JACKO	JACKO-GN-02	17.6	10	682,889	5,609,562	GN		n/a	16:40	17:27	0.83								RB	221	156.4			JACKO-LK-09	2
134	Edith Lake	18-Sep-14	3	EDITH	EDITH-GN	3.9	10	687,779	5,605,730	GN		n/a	10:10	12:40	2.50								RB	305	375			EDITH-01	3
135	Edith Lake	18-Sep-14	3	EDITH	EDITH-GN	3.9	10	687,779	5,605,730	GN		n/a	10:10	12:40	2.50								RB	343	510			EDITH-02	3
136	Edith Lake	18-Sep-14	3	EDITH	EDITH-GN	3.9	10	687,779	5,605,730	GN		n/a	10:10	12:40	2.50								RB	283	305			EDITH-03	2
137	Edith Lake	18-Sep-14	3	EDITH	EDITH-GN	3.9	10	687,779	5,605,730	GN		n/a	10:10	12:40	2.50								RB	241	190			EDITH-04	2
138	Edith Lake	18-Sep-14	3	EDITH	EDITH-GN	3.9	10	687,779	5,605,730	GN		n/a	10:10	12:40	2.50								RB	224	165			EDITH-05	2
139	Edith Lake	18-Sep-14	3	EDITH	EDITH-GN	3.9	10	687,779	5,605,730	GN		n/a	10:10	12:40	2.50								RB	353	480			EDITH-06	4
140	Edith Lake	18-Sep-14	3	EDITH	EDITH-GN	3.9	10	687,779	5,605,730	GN		n/a	10:10	12:40	2.50								RB	247	205			EDITH-07	2
141	Edith Lake	18-Sep-14	3	EDITH	EDITH-GN	3.9	10	687,779	5,605,730	GN		n/a	10:10	12:40	2.50								RB	238	155			EDITH-08	2
142	Scuitto Lake	19-Sep-14	3	SCUITTO	SCUITTO-GN	5.6	10	703313	5603531	GN		n/a	10:30	13:30	3.00								RB	410	700			SCUITTO-1	5
143	Scuitto Lake	19-Sep-14	3	SCUITTO	SCUITTO-GN	5.6	10	703313	5603531	GN		n/a	10:30	13:30	3.00								RB	386	475			SCUITTO-2	4
144	Scuitto Lake	19-Sep-14	3	SCUITTO	SCUITTO-GN	5.6	10	703313	5603531	GN		n/a	10:30	13:30	3.00								RB	348	410			SCUITTO-3	4
145	Scuitto Lake	19-Sep-14	3	SCUITTO	SCUITTO-GN	5.6	10	703313	5603531	GN		n/a	10:30	13:30	3.00								RB	342	500			SCUITTO-4	4
146	Scuitto Lake	19-Sep-14	3	SCUITTO	SCUITTO-GN	5.6	10	703313	5603531	GN		n/a	10:30	13:30	3.00								RB	345	550			SCUITTO-5	4
147	Scuitto Lake	19-Sep-14	3	SCUITTO	SCUITTO-GN	5.6	10	703313	5603531	GN		n/a	10:30	13:30	3.00								RB	343	525			SCUITTO-6	4
148	Scuitto Lake	19-Sep-14	3	SCUITTO	SCUITTO-GN	5.6	10	703313	5603531	GN		n/a	10:30	13:30	3.00								RB	410	700			SCUITTO-7	5
149	Scuitto Lake	19-Sep-14	3	SCUITTO	SCUITTO-GN	5.6	10	703313	5603531	GN		n/a	10:30	13:30	3.00								RB	408	700			SCUITTO-8	4
150	Scuitto Lake	19-Sep-14	3	SCUITTO	SCUITTO-GN	5.6	10	703313	5603531	GN		n/a	10:30	13:30	3.00								RB	365	575			SCUITTO-9	4
151	McConnell Lake	22-Oct-14	7	MCC	MCC-GN-01	24.5	10	679965	5599919	GN		n/a	10:05	16:30	6.41								RB	440	950			MCC-1	6
152	McConnell Lake	22-Oct-14	7	MCC	MCC-GN-01	24.5	10	679965	5599919	GN		n/a	10:05	16:30	6.41								RB	307	300			MCC-2	3
153	McConnell Lake	22-Oct-14	7	MCC	MCC-GN-01	24.5	10	679965	5599919	GN		n/a	10:05	16:30	6.41								RB	355	425			MCC-3	4
154	McConnell Lake	22-Oct-14	7	MCC	MCC-GN-01	24.5	10	679965	5599919	GN		n/a	10:05	16:30	6.41								RB	300	275			MCC-4	3
155	McConnell Lake	23-Oct-14	7	MCC	MCC-GN-02	24.5	10	680196	5599893	GN		n/a	9:15	16:35	7.33								RB	350	450			MCC-5	3
156	McConnell Lake	23-Oct-14	7	MCC	MCC-GN-02	24.5	10	680196	5599893	GN		n/a	9:15	16:35	7.33								RB	257	150			MCC-6	2

Rev 0\Tables & Figures\[Fish Sampling Effort & Capture Rev 0.xlsx]App C2

APPENDIX C3

RAINBOW TROUT AGING RESULTS

(Pages C3-1 to C3-5)

2014/2015

NSC Ageing ID:
Company Name: Knight Piesold
Project Name or #: KGHM Ajax Mine #207420
Client Contact: Stephanie Eagen
Phone #:
Email:
 # & Type of Structures: 106 SC + 6 SC
Work to be Completed:
Invoice: 112 SC
4 - digital images + 0.5 hrs for image marking

Location	Date	Sample/Fish	Envelope	Age	Con. Index	QA/QC	Comments
Peterson Creek	3-Jun-14	5	PC-08-03	7	F		
Peterson Creek	3-Jun-14	6	PC-08-04	6	F		
Peterson Creek	3-Jun-14	7	PC-08-05	7	F		
Anderson Creek	5-Jun-14	30	ANDR-15-08	3	F	2	
Anderson Creek	5-Jun-14	31	ANDR-15-09	2	F		
Peterson Creek	22-Jul-14	36	PC-10-01	1	F		
Peterson Creek	23-Jul-14	39	PC-01-EF-1	4	F		
Peterson Creek	23-Jul-14	43	PC-01-EF-5	4	F	3	
Peterson Creek	17-Sep-14	79	PC-01-EF-6	2	F		
Peterson Creek	17-Sep-14	85	PC-01-EF-12	2	F		
Anderson Creek	17-Sep-14	93	ANDR-15-6	4	F		
Anderson Creek	17-Sep-14	122	ANDR-15-35	1	F		
Jacko Lake	18-Sep-14	128	JACKO-LK-04	2	F		
Jacko Lake	18-Sep-14	132	JACKO-LK-08	2	F		
Edith Lake	18-Sep-14	135	EDITH-02	3	F		
Edith Lake	18-Sep-14	136	EDITH-03	2	F		
Edith Lake	18-Sep-14	139	EDITH-06	4	F		
Scuitto Lake	19-Sep-14	144	SCUITTO-3	4	F		
Scuitto Lake	19-Sep-14	145	SCUITTO-4	4	F		
McConell Lake	22-Oct-14	151	MCC-1	6	F		
McConell Lake	22-Oct-14	154	MCC-4	3	F	4	
		#	**#**	**MB**		**KA**	
Peterson Creek	3-Jun-14	3	PC-08-01	6	F	6	
Peterson Creek	3-Jun-14	4	PC-08-02	5	F		
Peterson Creek	3-Jun-14	8	PC-08-06	4	F		
Peterson Creek	3-Jun-14	9	PC-08-07	3	F		
Peterson Creek	4-Jun-14	15	PC-15-01	1	F		
Peterson Creek	4-Jun-14	16	PC-15-02	1	F	1	
Anderson Creek	5-Jun-14	23	ANDR-15-01	1	F	1	
Anderson Creek	5-Jun-14	24	ANDR-15-02	2	F		
Anderson Creek	5-Jun-14	25	ANDR-15-03	2	F		
Anderson Creek	5-Jun-14	26	ANDR-15-04	1	F		
Anderson Creek	5-Jun-14	27	ANDR-15-05	1	F		
Anderson Creek	5-Jun-14	28	ANDR-15-06	1	F		
Anderson Creek	5-Jun-14	29	ANDR-15-07	1	F		
Anderson Creek	5-Jun-14	32	ANDR-15-10	2	F		
Anderson Creek	5-Jun-14	33	ANDR-15-11	1	F		
Anderson Creek	5-Jun-14	34	ANDR-15-12	2	F	2	
Peterson Creek	22-Jul-14	37	PC-10-02	2	F		
Peterson Creek	23-Jul-14	40	PC-01-EF-2	3	F		

Location	Date	Sample/Fish	Envelope	Age	Con. Index	QA/QC	Comments
Peterson Creek	23-Jul-14	41	PC-01-EF-3	4	F		
Peterson Creek	23-Jul-14	42	PC-01-EF-4	3	F		
Peterson Creek	23-Jul-14	44	PC-01-EF-6	4	F		
Peterson Creek	23-Jul-14	45	PC-01-EF-7	3	F		
Peterson Creek	23-Jul-14	46	PC-01-EF-8	2	VP		ALL REGEN
Peterson Creek	23-Jul-14	47	PC-01-EF-9	3	F		
Peterson Creek	23-Jul-14	48	PC-01-EF-10	3	F		
Peterson Creek	23-Jul-14	49	PC-01-EF-11	4	F		
Peterson Creek	23-Jul-14	50	PC-01-EF-12	4	F		
Peterson Creek	23-Jul-14	51	PC-01-EF-13	4	F		
Peterson Creek	23-Jul-14	52	PC-01-EF-14	3	F		
Peterson Creek	23-Jul-14	53	PC-01-EF-15	3	F		
Peterson Creek	23-Jul-14	54	PC-01-EF-16	2	F		
Peterson Creek	23-Jul-14	55	PC-EF-04-1	3	F		
Peterson Creek	23-Jul-14	56	PC-EF-04-2	3	F		
Peterson Creek	23-Jul-14	57	PC-EF-04-3	4	F		
Peterson Creek	23-Jul-14	58	PC-EF-04-4	3	F		
Peterson Creek	23-Jul-14	59	PC-EF-04-5	4	F		
Peterson Creek	23-Jul-14	60	PC-EF-04-6	3	F		Photo
Peterson Creek	23-Jul-14	61	PC-EF-04-7	2	F		
Peterson Creek	23-Jul-14	62	PC-EF-04-8	3	F		
Jacko Lake	24-Jul-14	64	JACKO-GN-01	3	F		
Jacko Lake	24-Jul-14	65	JACKO-GN-02	3	F		
Cherry Creek	15-Sep-14	66	CC-AL-04-1	2	F		Photo
Cherry Creek	15-Sep-14	67	CC-AL-04-2	1	F		Photo
Cherry Creek	15-Sep-14	68	CC-AL-04-3	1	F		
Cherry Creek	15-Sep-14	69	CC-AL-04-4	1	F	1	
Cherry Creek	15-Sep-14	70	CC-AL-04-5	2	F		Photo
Cherry Creek	15-Sep-14	71	CC-AL-04-6	1	F		
Cherry Creek	15-Sep-14	72	CC-AL-04-7	1	F		
Cherry Creek	15-Sep-14	73	CC-AL-04-8	1	F		
Peterson Creek	17-Sep-14	74	PC-01-EF-1	2	VP		all regen
Peterson Creek	17-Sep-14	75	PC-01-EF-2	1	F		
Peterson Creek	17-Sep-14	76	PC-01-EF-3	2	F		
Peterson Creek	17-Sep-14	77	PC-01-EF-4	2	F		
Peterson Creek	17-Sep-14	78	PC-01-EF-5	2	F		
Peterson Creek	17-Sep-14	80	PC-01-EF-7	2	F		
Peterson Creek	17-Sep-14	81	PC-01-EF-8	2	F		
Peterson Creek	17-Sep-14	82	PC-01-EF-9	2	F		
Peterson Creek	17-Sep-14	83	PC-01-EF-10	2	F		
Peterson Creek	17-Sep-14	84	PC-01-EF-11	2	F		
Peterson Creek	17-Sep-14	86	PC-01-EF-13	2	F		
Peterson Creek	17-Sep-14	87	PC-01-EF-14	2	F	1	
Anderson Creek	17-Sep-14	91	ANDR-15-4	2	F		
Anderson Creek	17-Sep-14	92	ANDR-15-5	3	F		
Anderson Creek	17-Sep-14	119	ANDR-15-32	2	F		
Anderson Creek	17-Sep-14	120	ANDR-15-33	2	F		
Anderson Creek	17-Sep-14	121	ANDR-15-34	2	F		
Anderson Creek	17-Sep-14	123	ANDR-15-36	1	F		
Anderson Creek	17-Sep-14	124	ANDR-15-37	1	F		
Jacko Lake	18-Sep-14	125	JACKO-LK-01	2	F		
Jacko Lake	18-Sep-14	126	JACKO-LK-02	2	F		

Location	Date	Sample/Fish	Envelope	Age	Con. Index	QA/QC	Comments
Jacko Lake	18-Sep-14	127	JACKO-LK-03	2	F		
Jacko Lake	18-Sep-14	129	JACKO-LK-05	2	F		
Jacko Lake	18-Sep-14	130	JACKO-LK-06	2	F		
Jacko Lake	18-Sep-14	131	JACKO-LK-07	2	F	2	
Jacko Lake	18-Sep-14	133	JACKO-LK-09	2	F		
Edith Lake	18-Sep-14	134	EDITH-01	3	F		
Edith Lake	18-Sep-14	137	EDITH-04	2	F		
Edith Lake	18-Sep-14	138	EDITH-05	2	F		
Edith Lake	18-Sep-14	140	EDITH-07	2	F	2	
Edith Lake	18-Sep-14	141	EDITH-08	2	F		
Scuitto Lake	19-Sep-14	142	SCUITTO-1	5	F		
Scuitto Lake	19-Sep-14	143	SCUITTO-2	4	F		
Scuitto Lake	19-Sep-14	146	SCUITTO-5	4	F		
Scuitto Lake	19-Sep-14	147	SCUITTO-6	4	F		
Scuitto Lake	19-Sep-14	148	SCUITTO-7	5	F		
Scuitto Lake	19-Sep-14	149	SCUITTO-8	4	F		
Scuitto Lake	19-Sep-14	150	SCUITTO-9	4	F		
McConell Lake	22-Oct-14	152	MCC-2	3	F		
McConell Lake	22-Oct-14	153	MCC-3	4	F		
McConell Lake	23-Oct-14	155	MCC-5	3	F		
McConell Lake	23-Oct-14	156	MCC-6	2	F		

2014/2015	Qualitative characteristics (pattern clarity)
Very Good (VG)	annuli are clear with no interpretation problems
Good (G)	annuli are clear with a few easy interpretation problems
Fair (F)	annuli are fairly clear with some areas presenting easy and moderate interpretation problems
Poor (P)	annuli are fairly unclear presenting a number of difficult interpretation problems
Very Poor (VP)	annuli are very unclear presenting significant interpretation problems

KGHM – AJAX MINE - 2014 RAINBOW TROUT SCALES							
DATE Scales Taken	**ENVELOPE NO.**	**SAMPLE NO**	**LENGTH MM**	**WEIGHT GR**	**NORTH SOUTH AGE**	**HAMAGUCHI SCALE AGE**	**COMMENTS**
PETERSON CREEK							
2-JUNE	PC-08-05	7	500	**N/A**	**7**	7+	
22-JULY	PC-10-01	36	N/A	**N/A**	1	1+	
SCUITTO LAKE – SAMPLES TAKEN -19- SEPTEMBER, 2014							
19-SEPT	SCUITTO -3	144	348	**410**	4	3+	
19-SEPT	SCUITTO -4	145	342	500	4	3+	

KGHM – AJAX MINE - 2014 RAINBOW TROUT SCALES							
DATE Scales Taken	**ENVELOPE NO.**	**SAMPLE NO**	**LENGTH MM**	**WEIGHT GR**	**NORTH SOUTH AGE**	**HAMAGUCHI SCALE AGE**	**COMMENTS**
ANDERSON CREEK - SAMPLES TAKEN JUNE 5, 2014							
5-JUNE	ANDR-15-6	28	270	169.3	4	3+	RESORBED COULD BE 4+
5-JUNE	ANDR-15-08	30	184	42.5	3	3+	
5-JUNE	ANDR-15-09	31	148	42.4	2	2+	
5-JUNE	ANDR-15-35	122	124	21.9	1	1+	
EDITH LAKE - SAMPLES TAKEN SEPTEMBER 18, 2014							
18-SEPT	EDITH-02	135	343	510	3	3+	
18-SEPT	EDITH-03	136	283	305	2	3+	
18-SEPT	EDITH-06	139	353	480	3	3+	
JACKCO LAKE – SAMPLES TAKEN – 24 JULY, 2014							
18-SEPT	JACKCO-LK-04	128	175	[illegible]61.8	2	2+	
18-SEPT	JACKCO LK-08	132	219	121.8	2	2+	
CHERRY CREEK - SAMPLES TAKEN - 15 SEPTEMBER – 14 2014							
15-SEPT	CC-AL-04-1	66	99	13.4	2	2+	
15-SEPT	CC-AL-04-2	67	104	15.4	1	1+	ALL SCALES REGEN – POSS 2+
15-SEPT	CC-AL-04-5	70	122	18.1	2	2+	
15-SEPT	CC-AL-04-6	72	100	12.4	3	2+	
McCONNELL LAKE SAMPLES TAKEN – 22, OCTOBER - 14							
22-OCT.	MCC - 1	151	440	950	6	6+	
22-OCT.	MCC - 4	154	300?	275	3	3+	
PETERSON CREEK							
17-SEPT	PC-01-EF-1	39	163	50.7	4	C/A	CANNOT AGE –REGEN.
17-SEPT	PC-01-EF-3	41	162	51.7	3	3+	
17-SEPT	PC-01-EF-6	44	159	44.5	4	3+	
17-SEPT	PC-01-EF-12	50	140	28.2	4	3+	
2-JUNE	PC-08-03	5	520	N/A	7	7+	
2-JUNE	PC-08-04	6	470	N/A	6	6+	

APPENDIX C4

RAINBOW TROUT TISSUE METALS CONCENTRATIONS - RAW DATA

(Pages C4-1 to C4-29)

Project	101-246/35 AJAX	
Report To	Stephanie Eagen, KNIGHT PIESOLD LTD.	
ALS File No.	L1492166	
Date Received	24-Jul-14 17:05	
Date	15-Sep-14	

RESULTS OF ANALYSIS

Sample ID	JACKO-1 LIVER	JACKO-1 MUSCLE	JACKO-2 LIVER	JACKO-2 MUSCLE	PC-EF-04-6 LIVER	PC-EF-04-6 MUSCLE	PC-EF-04-7 LIVER	PC-EF-04-7 MUSCLE	PC-EF-04-8 LIVER	PC-EF-04-8 MUSCLE	PC-10-01 LIVER	PC-10-01 MUSCLE	PC-10-02 LIVER	PC-10-02 MUSCLE	PC-EF-01-16 LIVER	PC-EF-01-16 MUSCLE	PC-01-EF-05 LIVER	PC-01-EF-05 MUSCLE	PC-01-EF-06 LIVER	PC-01-EF-06 MUSCLE
Date Sampled	24-JUL-14	24-JUL-14	24-JUL-14	24-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	22-JUL-14	22-JUL-14	22-JUL-14	22-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14
Time Sampled	11:00	11:00	11:00	11:00	12:20	12:20	12:20	12:20	12:20	12:20	15:30	15:30	15:30	15:30	08:30	08:30	08:30	08:30	08:30	08:30
ALS Sample ID	L1492166-1	L1492166-2	L1492166-3	L1492166-4	L1492166-5	L1492166-6	L1492166-7	L1492166-8	L1492166-9	L1492166-10	L1492166-11	L1492166-12	L1492166-13	L1492166-14	L1492166-15	L1492166-16	L1492166-17	L1492166-18	L1492166-19	L1492166-20
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests																				
% Moisture	76.0	75.4	76.4	76.7	69.1	77.2	74.0	76.4	76.3	71.5	60.9	77.9	75.1	76.4	75.0	77.8	75.4	78.2	75.6	74.0
Metals																				
Aluminum (Al)-Total	36.4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<10	<5.0	336	<5.0	<5.0	<5.0
Aluminum (Al)-Total	8.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.2	<1.0	82.8	<1.0	<1.0	<1.0
Antimony (Sb)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.020	<0.010	0.028	<0.010	<0.010	<0.010
Antimony (Sb)-Total	<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	0.0068	<0.0020	<0.0020	<0.0020
Arsenic (As)-Total	0.246	0.107	0.166	0.101	0.624	0.762	0.525	0.638	0.775	0.651	0.586	0.121	0.447	0.158	0.732	0.233	1.09	0.264	0.464	0.182
Arsenic (As)-Total	0.0589	0.0263	0.0393	0.0235	0.193	0.174	0.137	0.151	0.184	0.186	0.229	0.0268	0.111	0.0373	0.183	0.0517	0.269	0.0574	0.114	0.0472
Barium (Ba)-Total	0.649	0.099	0.129	0.130	0.378	0.133	0.168	0.089	0.254	0.061	0.22	0.167	0.133	0.128	0.30	0.088	8.10	0.190	0.374	0.112
Barium (Ba)-Total	0.155	0.024	0.030	0.030	0.117	0.030	0.044	0.021	0.060	0.018	0.088	0.037	0.033	0.030	0.076	0.020	1.99	0.041	0.091	0.029
Beryllium (Be)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)-Total	<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	<0.0020
Bismuth (Bi)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	<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	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0
Boron (B)-Total	<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
Cadmium (Cd)-Total	<0.010	<0.010	<0.010	<0.010	0.606	0.024	0.479	0.035	0.509	0.044	0.111	0.020	0.055	<0.010	0.487	0.027	0.466	0.057	0.728	<0.010
Cadmium (Cd)-Total	0.0022	<0.0020	<0.0020	<0.0020	0.187	0.0054	0.125	0.0082	0.121	0.0125	0.0433	0.0044	0.0138	<0.0020	0.122	0.0061	0.115	0.0124	0.178	0.0025
Calcium (Ca)-Total	1400	1290	1580	1040	1040	1140	1360	1030	1160	649	1430	1720	952	1290	1200	1420	2140	2050	2190	1600
Calcium (Ca)-Total	335	317	374	243	322	260	354	244	276	185	561	379	237	304	299	315	527	447	535	416
Cesium (Cs)-Total	0.0088	0.0061	0.0089	0.0073	0.0144	0.0209	0.0125	0.0194	0.0153	0.0181	<0.010	<0.0050	<0.0050	<0.0050	0.016	0.0165	0.0445	0.0120	0.0084	0.0110
Cesium (Cs)-Total	0.0021	0.0015	0.0021	0.0017	0.0044	0.0048	0.0033	0.0046	0.0036	0.0052	0.0013	<0.0010	<0.0010	<0.0010	0.0039	0.0037	0.0110	0.0026	0.0021	0.0029
Chromium (Cr)-Total	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.40	18.6	1.53	<0.20	<0.20	<0.20
Chromium (Cr)-Total	0.041	<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	4.13	0.376	<0.040	<0.040	<0.040
Cobalt (Co)-Total	0.132	<0.020	0.064	<0.020	0.674	0.145	0.636	0.134	0.692	0.148	0.203	0.077	0.273	0.105	0.739	0.264	0.975	0.191	0.502	0.091
Cobalt (Co)-Total	0.0317	<0.0040	0.0150	<0.0040	0.208	0.0331	0.165	0.0315	0.164	0.0421	0.0794	0.0171	0.0679	0.0247	0.185	0.0586	0.240	0.0416	0.123	0.0236
Copper (Cu)-Total	144	0.99	176	1.04	409	1.87	438	2.81	299	1.59	409	1.96	332	1.59	520	2.15	217	1.60	619	1.78
Copper (Cu)-Total	34.5	0.243	41.5	0.243	126	0.427	114	0.665	70.9	0.454	160	0.432	82.7	0.376	130	0.477	53.5	0.347	151	0.463
Iron (Fe)-Total	822	8.9	665	10.1	744	13.5	691	20.4	738	21.7	506	31.4	651	16.3	518	76.2	1590	20.3	967	21.4
Iron (Fe)-Total	197	2.2	157	2.4	230	3.1	180	4.8	175	6.2	198	6.9	162	3.9	129	16.9	392	4.4	236	5.5
Lead (Pb)-Total	1.48	1.28	1.31	0.472	<0.050	<0.050	<0.050	<0.050	0.322	<0.050	<0.10	<0.050	<0.050	<0.050	<0.10	<0.050	0.302	<0.050	<0.050	<0.050
Lead (Pb)-Total	0.354	0.315	0.309	0.110	<0.010	<0.010	<0.010	<0.010	0.077	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.074	<0.010	<0.010	<0.010
Lithium (Li)-Total	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium (Li)-Total	<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
Magnesium (Mg)-Total	839	1060	794	1010	1140	1130	866	1150	790	849	1130	1080	955	1090	1260	1090	1390	1120	840	942
Magnesium (Mg)-Total	201	260	187	235	352	258	225	271	188	242	440	238	238	257	315	243	342	244	205	245
Manganese (Mn)-Total	7.87	0.596	4.31	0.475	7.24	0.740	3.19	0.649	4.70	0.491	9.97	0.998	4.91	0.615	7.35	1.84	20.9	0.984	2.51	0.353
Manganese (Mn)-Total	1.89	0.147	1.02	0.111	2.24	0.169	0.828	0.153	1.12	0.140	3.90	0.220	1.22	0.145	1.84	0.409	5.14	0.214	0.612	0.092
Mercury (Hg)-Total	0.471	0.288	0.501	0.233	0.202	0.195	0.135	0.129	0.196	0.147	0.286	0.266	0.255	0.315	0.190	0.157	0.147	0.0981	0.234	0.141
Mercury (Hg)-Total	0.113	0.0709	0.118	0.0543	0.0624	0.0445	0.0350	0.0305	0.0466	0.0418	0.112	0.0588	0.0635	0.0745	0.048	0.0350	0.0362	0.0214	0.0572	0.0368
Molybdenum (Mo)-Total	0.603	<0.040	0.723	<0.040	0.902	<0.040	0.885	<0.040	0.735	<0.040	0.902	<0.040	0.654	<0.040	1.34	0.257	1.21	<0.040	1.28	<0.040
Molybdenum (Mo)-Total	0.145	<0.0080	0.171	<0.0080	0.279	<0.0080	0.230	<0.0080	0.175	<0.0080	0.352	<0.0080	0.163	<0.0080	0.335	0.0572	0.298	<0.0080	0.314	<0.0080
Nickel (Ni)-Total	<0.20	<0.20	<0.20	<0.20	0.35	<0.20	0.25	<0.20	0.28	<0.20	<0.40	<0.20	<0.20	<0.20	0.59	6.88	1.87	<0.20	<0.20	<0.20
Nickel (Ni)-Total	<0.040	<0.040	<0.040	<0.040	0.107	<0.040	0.066	<0.040	0.067	<0.040	0.065	<0.040	<0.040	<0.040	0.148	1.53	0.460	<0.040	0.041	<0.040
Phosphorus (P)-Total	11800	9750	12800	9550	12600	9460	11800	9670	10200	7470	13600	9610	11600	9670	14300	8500	10600	9680	10700	8610
Phosphorus (P)-Total	2840	2400	3030	2230	3890	2160	3070	2280	2430	2130	5320	2120	2900	2280	3580	1890	2600	2110	2610	2240
Potassium (K)-Total	13300	17300	13900	17400	11800	17800	11100	17000	12100	14200	21200	19500	15500	18500	16900	18300	12300	18300	12000	15900
Potassium (K)-Total	3190	4250	3290	4050	3640	4070	2870	4010	2870	4040	8300	4320	3860	4370	4230	4060	3020	3990	2940	4120
Rubidium (Rb)-Total	1.93	1.72	2.14	2.06	1.81	2.10	1.76	2.09	1.86	1.88	1.25	1.14	0.865	1.08	2.21	2.21	2.55	2.37	1.88	1.99
Rubidium (Rb)-Total	0.462	0.424	0.506	0.480	0.558	0.480	0.458	0.493	0.442	0.535	0.488	0.252	0.215	0.256	0.551	0.491	0.629	0.515	0.460	0.517
Selenium (Se)-Total	14.6	0.63	15.8	0.54	99.3	2.74	95.2	3.11	69.7	2.42	35.8	2.29	35.6	1.92	173	6.19	113	5.50	225	4.13
Selenium (Se)-Total	3.49	0.156	3.72	0.126	30.7	0.626	24.7	0.735	16.6	0.689	14.0	0.506	8.87	0.454	43.2	1.38	27.8	1.20	55.1	1.07
Silver (Ag)-Total	0.150	<0.0050	0.128	<0.0050	1.89	<0.0050	1.22	0.0069	1.44	<0.0050	0.475	<0.0050	0.507	<0.0050	1.19	<0.0050	1.24	<0.0050	2.52	<0.0050
Silver (Ag)-Total	0.0360	<0.0010	0.0303	<0.0010	0.584	<0.0010	0.316	0.0016	0.342	0.0012	0.186	<0.0010	0.126	<0.0010	0.298	<0.0010	0.305	<0.0010	0.616	<0.0010
Sodium (Na)-Total	4220	1650	4730	1830	4610	2590	3900	2350	5330	2080	6970	3030	5100	2390	5370	2880	4660	2920	5140	2670
Sodium (Na)-Total	1010	407	1120	427	1430	591	1010	554	1270	594	2720	670	1270	566	1340	640	1150	635	1260	693
Strontium (Sr)-Total	2.10	1.64	2.80	1.68	4.54	2.65	4.41	2.37	3.68	1.39	1.61	1.55	1.09	1.16	3.86	3.80	11.9	7.93	10.9	5.97
Strontium (Sr)-Total	0.504	0.404	0.660	0.391	1.40	0.604	1.14	0.559	0.875	0.396	0.629	0.343	0.271	0.273	0.966	0.844	2.93	1.73	2.66	1.55
Tellurium (Te)-Total	<0.020	<0.020	<0.020	<0.020	0.057	<0.020	0.029	<0.020	0.033	<0.020	<0.040	<0.020	0.036	<0.020	<0.040	<0.020	<0.020	<0.020	0.023	<0.020
Tellurium (Te)-Total	<0.0040	<0.0040	<0.0040	<0.0040	0.0176	<0.0040	0.0076	<0.0040	0.0078	<0.0040	0.0070	<0.0040	0.0088	<0.0040	0.0049	<0.0040	<0.0040	<0.0040	0.0056	<0.0040
Thallium (Tl)-Total	0.0026	<0.0020	<0.0020	<0.0020	0.114	0.0113	0.138	0.0116	0.105	0.0107	0.0207	0.0021	0.0285	0.0031	0.159	0.0078	0.112	0.0097	0.136	0.0083
Thallium (Tl)-Total	0.00063	<0.00040	<0.00040	<0.00040	0.0352	0.00259	0.0359	0.00274	0.0248	0.00305	0.00807	0.00047	0.00709	0.00074	0.0396	0.00174	0.0275	0.00210	0.0332	0.00216
Tin (Sn)-Total	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total	<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
Titanium (Ti)-Total	1.69	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	24.5	<0.50	<0.50	<0.50
Titanium (Ti)-Total	0.41	<0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.16	<0.10	6.04	<0.10	<0.10	<0.10
Uranium (U)-Total	0.0029	<0.0020	<0.0020	<0.0020	0.0028	<0.0020	<0.0020	<0.0020	0.0023	<0.0020	<0.0040	<0.0020	<0.0020	<0.0020	0.0175	<0.0020	0.109	0.0026	0.0195	<0.0020
Uranium (U)-Total	0.00070	<0.00040	<0.00040	<0.00040	0.00086	<0.00040	0.00042	<0.00040	0.00054	<0.00040	0.00042	<0.00040	<0.00040	<0.00040	0.00439	<0.00040	0.0269	0.00056	0.00478	<0.00040
Vanadium (V)-Total	0.16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.19	<0.10	<0.20	<0.10	<0.10	<0.10	<0.20	0.10	1.73	<0.10	0.25	<0.10
Vanadium (V)-Total	0.039	<0.020	<0.020	<0.020	0.028	<0.020	0.023	<0.020	0.045	<0.020	0.027	<0.020	<0.020	<0.020	0.026	0.023	0.425	<0.020	0.062	<0.020
Zinc (Zn)-Total	124	19.1	115	17.7	148	20.8	114	18.4	120	20.2	272	36.7	169	23.3	168	33.8	239	39.4	226	26.8
Zinc (Zn)-Total	29.8	4.70	27.1	4.12	45.7	4.74	29.7	4.35	28.6	5.77	106	8.12	42.0	5.50	41.9	7.51	58.7	8.57	55.3	6.96
Zirconium (Zr)-Total	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.40	<0.20	0.37	<0.20	<0.20	<0.20
Zirconium (Zr)-Total	<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	0.090	<0.040	<0.040	<0.040
Speciated Metals																				
Methyl Mercury	0.323	0.203	0.327	0.142	-	0.104	-	0.0741	0.0982	0.116	-	0.110	-	0.272	-	0.0883	-	0.0879	-	0.0572
Methyl Mercury	0.0774	0.0500	0.0771	0.0332	-	0.0238	-	0.0175	0.0233	0.0329	-	0.0243	-	0.0642	-	0.0196	-	0.0192	-	0.0149

Project 101-246/35 AJAX
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1492166
Date Received 24-Jul-14 17:05
Date 15-Sep-14

DETECTION LIMITS

Sample ID	JACKO-1 LIVER	JACKO-1 MUSCLE	JACKO-2 LIVER	JACKO-2 MUSCLE	PC-EF-04-6 LIVER	PC-EF-04-6 MUSCLE	PC-EF-04-7 LIVER	PC-EF-04-7 MUSCLE	PC-EF-04-8 LIVER	PC-EF-04-8 MUSCLE	PC-10-01 LIVER	PC-10-01 MUSCLE	PC-10-02 LIVER	PC-10-02 MUSCLE	PC-EF-01-16 LIVER	PC-EF-01-16 MUSCLE	PC-01-EF-05 LIVER	PC-01-EF-05 MUSCLE	PC-01-EF-06 LIVER	PC-01-EF-06 MUSCLE
Date Sampled	24-JUL-14	24-JUL-14	24-JUL-14	24-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	22-JUL-14	22-JUL-14	22-JUL-14	22-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14
Time Sampled	11:00	11:00	11:00	11:00	12:20	12:20	12:20	12:20	12:20	12:20	15:30	15:30	15:30	15:30	08:30	08:30	08:30	08:30	08:30	08:30
ALS Sample ID	L1492166-1	L1492166-2	L1492166-3	L1492166-4	L1492166-5	L1492166-6	L1492166-7	L1492166-8	L1492166-9	L1492166-10	L1492166-11	L1492166-12	L1492166-13	L1492166-14	L1492166-15	L1492166-16	L1492166-17	L1492166-18	L1492166-19	L1492166-20
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests																				
% Moisture	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
Metals																				
Aluminum (Al)-Total	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10	5.0	5.0	5.0	10	5.0	5.0	5.0	5.0	5.0
Aluminum (Al)-Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Antimony (Sb)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.010	0.010
Antimony (Sb)-Total	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
Arsenic (As)-Total	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.060	0.030	0.030	0.030	0.060	0.030	0.030	0.030	0.030	0.030
Arsenic (As)-Total	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060
Barium (Ba)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.10	0.050	0.050	0.050	0.10	0.050	0.050	0.050	0.050	0.050
Barium (Ba)-Total	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	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.010	0.010
Beryllium (Be)-Total	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	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.010	0.010
Bismuth (Bi)-Total	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	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0
Boron (B)-Total	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
Cadmium (Cd)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.020	0.010	0.010	0.010	0.010	0.010
Cadmium (Cd)-Total	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
Calcium (Ca)-Total	20	20	20	20	20	20	20	20	20	20	40	20	20	20	40	20	20	20	20	20
Calcium (Ca)-Total	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Cesium (Cs)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.010	0.0050	0.0050	0.0050	0.010	0.0050	0.0050	0.0050	0.0050	0.0050
Cesium (Cs)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Chromium (Cr)-Total	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.40	0.20	0.20	0.20	0.40	0.20	0.20	0.20	0.20	0.20
Chromium (Cr)-Total	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
Cobalt (Co)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.040	0.020	0.020	0.020	0.040	0.020	0.020	0.020	0.020	0.020
Cobalt (Co)-Total	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
Copper (Cu)-Total	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.40	0.20	0.20	0.20	0.40	0.20	0.20	0.20	0.20	0.20
Copper (Cu)-Total	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
Iron (Fe)-Total	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10	5.0	5.0	5.0	10	5.0	5.0	5.0	5.0	5.0
Iron (Fe)-Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead (Pb)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.10	0.050	0.050	0.050	0.10	0.050	0.050	0.050	0.050	0.050
Lead (Pb)-Total	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
Lithium (Li)-Total	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	1.0	0.50	0.50	0.50	1.0	0.50	0.50	0.50	0.50	0.50
Lithium (Li)-Total	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
Magnesium (Mg)-Total	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0	2.0	2.0	2.0	4.0	2.0	2.0	2.0	2.0	2.0
Magnesium (Mg)-Total	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Manganese (Mn)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.10	0.050	0.050	0.050	0.10	0.050	0.050	0.050	0.050	0.050
Manganese (Mn)-Total	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
Mercury (Hg)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.010	0.0050	0.010	0.0050	0.050	0.0050	0.015	0.0050	0.070	0.0050	0.010	0.0050	0.010	0.0050
Mercury (Hg)-Total	0.0010	0.0010	0.0010	0.0010	0.0020	0.0010	0.0020	0.0010	0.0020	0.0010	0.020	0.0010	0.0040	0.0010	0.017	0.0010	0.0030	0.0010	0.0020	0.0010
Molybdenum (Mo)-Total	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.080	0.040	0.040	0.040	0.080	0.040	0.040	0.040	0.040	0.040
Molybdenum (Mo)-Total	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080
Nickel (Ni)-Total	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.40	0.20	0.20	0.20	0.40	0.20	0.20	0.20	0.20	0.20
Nickel (Ni)-Total	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
Phosphorus (P)-Total	10	10	10	10	10	10	10	10	10	10	20	10	10	10	20	10	10	10	10	10
Phosphorus (P)-Total	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
Potassium (K)-Total	20	20	20	20	20	20	20	20	20	20	40	20	20	20	40	20	20	20	20	20
Potassium (K)-Total	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Rubidium (Rb)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.10	0.050	0.050	0.050	0.10	0.050	0.050	0.050	0.050	0.050
Rubidium (Rb)-Total	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
Selenium (Se)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.10	0.10
Selenium (Se)-Total	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
Silver (Ag)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.010	0.0050	0.0050	0.0050	0.010	0.0050	0.0050	0.0050	0.0050	0.0050
Silver (Ag)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Sodium (Na)-Total	20	20	20	20	20	20	20	20	20	20	40	20	20	20	40	20	20	20	20	20
Sodium (Na)-Total	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Strontium (Sr)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.10	0.10
Strontium (Sr)-Total	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	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.040	0.020	0.020	0.020	0.040	0.020	0.020	0.020	0.020	0.020
Tellurium (Te)-Total	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	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0040	0.0020	0.0020	0.0020	0.0040	0.0020	0.0020	0.0020	0.0020	0.0020
Thallium (Tl)-Total	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	0.00040	0.00040
Tin (Sn)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.10	0.10
Tin (Sn)-Total	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
Titanium (Ti)-Total	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	1.0	0.50	0.50	0.50	1.0	0.50	0.50	0.50	0.50	0.50
Titanium (Ti)-Total	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
Uranium (U)-Total	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0040	0.0020	0.0020	0.0020	0.0040	0.0020	0.0020	0.0020	0.0020	0.0020
Uranium (U)-Total	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	0.00040	0.00040
Vanadium (V)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.10	0.10
Vanadium (V)-Total	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
Zinc (Zn)-Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0
Zinc (Zn)-Total	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	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.40	0.20	0.20	0.20	0.40	0.20	0.20	0.20	0.20	0.20
Zirconium (Zr)-Total	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
Speciated Metals																				
Methyl Mercury	0.0050	0.0050	0.0050	0.0050	-	0.0050	-	0.0050	0.0050	0.0050	-	0.0050	-	0.0050	-	0.0050	-	0.0050	-	0.0050
Methyl Mercury	0.0010	0.0010	0.0010	0.0010	-	0.0010	-	0.0010	0.0010	0.0010	-	0.0010	-	0.0010	-	0.0010	-	0.0010	-	0.0010

Project	101-246/35 AJAX
Report To	Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No.	L1492166
Date Received	24-Jul-14 17:05
Date	15-Sep-14

UNITS

Sample ID	JACKO-1 LIVER	JACKO-1 MUSCLE	JACKO-2 LIVER	JACKO-2 MUSCLE	PC-EF-04-6 LIVER	PC-EF-04-6 MUSCLE	PC-EF-04-7 LIVER	PC-EF-04-7 MUSCLE	PC-EF-04-8 LIVER	PC-EF-04-8 MUSCLE	PC-10-01 LIVER	PC-10-01 MUSCLE	PC-10-02 LIVER	PC-10-02 MUSCLE	PC-EF-01-16 LIVER	PC-EF-01-16 MUSCLE	PC-01-EF-05 LIVER	PC-01-EF-05 MUSCLE	PC-01-EF-06 LIVER	PC-01-EF-06 MUSCLE
Date Sampled	24-JUL-14	24-JUL-14	24-JUL-14	24-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	22-JUL-14	22-JUL-14	22-JUL-14	22-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14	23-JUL-14
Time Sampled	11:00	11:00	11:00	11:00	12:20	12:20	12:20	12:20	12:20	12:20	15:30	15:30	15:30	15:30	08:30	08:30	08:30	08:30	08:30	08:30
ALS Sample ID	L1492166-1	L1492166-2	L1492166-3	L1492166-4	L1492166-5	L1492166-6	L1492166-7	L1492166-8	L1492166-9	L1492166-10	L1492166-11	L1492166-12	L1492166-13	L1492166-14	L1492166-15	L1492166-16	L1492166-17	L1492166-18	L1492166-19	L1492166-20
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests																				
% Moisture	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Metals																				
Aluminum (Al)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum (Al)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Antimony (Sb)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony (Sb)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Arsenic (As)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic (As)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Barium (Ba)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Barium (Ba)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Beryllium (Be)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Beryllium (Be)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Bismuth (Bi)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Bismuth (Bi)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Boron (B)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Boron (B)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Cadmium (Cd)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cadmium (Cd)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Calcium (Ca)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Calcium (Ca)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Cesium (Cs)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cesium (Cs)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Chromium (Cr)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium (Cr)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Cobalt (Co)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cobalt (Co)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Copper (Cu)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Copper (Cu)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Iron (Fe)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Iron (Fe)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Lead (Pb)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Lead (Pb)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Lithium (Li)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Lithium (Li)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Magnesium (Mg)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Magnesium (Mg)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Manganese (Mn)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Manganese (Mn)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Mercury (Hg)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Mercury (Hg)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Molybdenum (Mo)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Molybdenum (Mo)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Nickel (Ni)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Nickel (Ni)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Phosphorus (P)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Phosphorus (P)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Potassium (K)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Potassium (K)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Rubidium (Rb)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Rubidium (Rb)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Selenium (Se)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Selenium (Se)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Silver (Ag)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Silver (Ag)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Sodium (Na)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sodium (Na)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Strontium (Sr)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Strontium (Sr)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Tellurium (Te)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Tellurium (Te)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Thallium (Tl)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Thallium (Tl)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Tin (Sn)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Tin (Sn)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Titanium (Ti)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Titanium (Ti)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Uranium (U)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Uranium (U)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Vanadium (V)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Vanadium (V)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Zinc (Zn)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Zinc (Zn)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Zirconium (Zr)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Zirconium (Zr)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Speciated Metals																				
Methyl Mercury	mg/kg	mg/kg	mg/kg	mg/kg	-	mg/kg	-	mg/kg	mg/kg	mg/kg	-	mg/kg	-	mg/kg	-	mg/kg	-	mg/kg	-	mg/kg
Methyl Mercury	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	-	mg/kg wwt	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	-	mg/kg wwt	-	mg/kg wwt	-	mg/kg wwt	-	mg/kg wwt	-	mg/kg wwt

Project 101-246/35 AJAX
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1492166
Date Received 24-Jul-14 17:05
Date 15-Sep-14

REPLICATE RESULTS

Sample ID	Matrix	ALS ID	Analyte	Replicate 1	Replicate 2	Units	RPD	RPD Limit	Diff	Diff Limit	Qualifier
Physical Tests											
L1492166-4	Tissue	WG1942860-1	% Moisture	76.7	74.0	%	3.5	20	-	-	-
Metals											
L1492166-4	Tissue	WG1946476-4	Aluminum (Al)-Total	<5.0	<5.0	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Aluminum (Al)-Total	<1.0	<1.0	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Antimony (Sb)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Antimony (Sb)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Arsenic (As)-Total	0.101	0.095	mg/kg	5.8	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Arsenic (As)-Total	0.0235	0.0221	mg/kg wwt	5.8	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Barium (Ba)-Total	0.030	0.031	mg/kg wwt	2.5	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Barium (Ba)-Total	0.130	0.133	mg/kg	2.5	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Beryllium (Be)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Beryllium (Be)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Bismuth (Bi)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Bismuth (Bi)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Boron (B)-Total	<1.0	<1.0	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Boron (B)-Total	<0.20	<0.20	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Cadmium (Cd)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Cadmium (Cd)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Calcium (Ca)-Total	243	226	mg/kg wwt	7.2	60	-	-	-
L1492166-4	Tissue	WG1946476-4	Calcium (Ca)-Total	1040	970	mg/kg	7.2	60	-	-	-
L1492166-4	Tissue	WG1946476-4	Cesium (Cs)-Total	0.0073	0.0071	mg/kg	2.3	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Cesium (Cs)-Total	0.0017	0.0017	mg/kg wwt	2.3	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Chromium (Cr)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Chromium (Cr)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Cobalt (Co)-Total	<0.020	<0.020	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Cobalt (Co)-Total	<0.0040	<0.0040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Copper (Cu)-Total	1.04	1.02	mg/kg	1.9	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Copper (Cu)-Total	0.243	0.238	mg/kg wwt	1.9	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Iron (Fe)-Total	2.4	2.2	mg/kg wwt	5.9	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Iron (Fe)-Total	10.1	9.5	mg/kg	5.9	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Lead (Pb)-Total	0.472	0.384	mg/kg	21	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Lead (Pb)-Total	0.110	0.089	mg/kg wwt	21	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Lithium (Li)-Total	<0.50	<0.50	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Magnesium (Mg)-Total	235	235	mg/kg wwt	0.2	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Magnesium (Mg)-Total	1010	1010	mg/kg	0.2	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Manganese (Mn)-Total	0.111	0.078	mg/kg wwt	34	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Manganese (Mn)-Total	0.475	0.336	mg/kg	34	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Mercury (Hg)-Total	0.0543	0.0532	mg/kg wwt	2.1	30	-	-	-
L1492166-4	Tissue	WG1946476-4	Mercury (Hg)-Total	0.233	0.228	mg/kg	2.1	30	-	-	-
L1492166-4	Tissue	WG1946476-4	Molybdenum (Mo)-Total	<0.0080	<0.0080	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Molybdenum (Mo)-Total	<0.040	<0.040	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Nickel (Ni)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Nickel (Ni)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Phosphorus (P)-Total	9550	9050	mg/kg	5.4	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Phosphorus (P)-Total	2230	2110	mg/kg wwt	5.4	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Potassium (K)-Total	4050	3920	mg/kg wwt	3.3	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Potassium (K)-Total	17400	16800	mg/kg	3.3	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Rubidium (Rb)-Total	0.480	0.471	mg/kg wwt	1.8	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Rubidium (Rb)-Total	2.06	2.02	mg/kg	1.8	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Selenium (Se)-Total	0.126	0.129	mg/kg wwt	1.8	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Selenium (Se)-Total	0.54	0.55	mg/kg	1.8	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Silver (Ag)-Total	<0.0010	0.0053	mg/kg wwt	N/A	40	-	-	DUP-H
L1492166-4	Tissue	WG1946476-4	Silver (Ag)-Total	<0.0050	0.0225	mg/kg	N/A	40	-	-	DUP-H
L1492166-4	Tissue	WG1946476-4	Sodium (Na)-Total	427	432	mg/kg wwt	1.2	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Sodium (Na)-Total	1830	1850	mg/kg	1.2	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Strontium (Sr)-Total	0.391	0.425	mg/kg wwt	8.2	60	-	-	-
L1492166-4	Tissue	WG1946476-4	Strontium (Sr)-Total	1.68	1.82	mg/kg	8.2	60	-	-	-
L1492166-4	Tissue	WG1946476-4	Tellurium (Te)-Total	<0.0040	<0.0040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Tellurium (Te)-Total	<0.020	<0.020	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Thallium (Tl)-Total	<0.00040	<0.00040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Thallium (Tl)-Total	<0.0020	<0.0020	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Tin (Sn)-Total	<0.020	<0.020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Tin (Sn)-Total	<0.10	<0.10	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Titanium (Ti)-Total	<0.10	<0.10	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Titanium (Ti)-Total	<0.50	<0.50	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Uranium (U)-Total	<0.0020	<0.0020	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Uranium (U)-Total	<0.00040	<0.00040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Vanadium (V)-Total	<0.020	<0.020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Vanadium (V)-Total	<0.10	<0.10	mg/kg	N/A	40	-	-	RPD-NA
L1492166-4	Tissue	WG1946476-4	Zinc (Zn)-Total	4.12	3.82	mg/kg wwt	7.7	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Zinc (Zn)-Total	17.7	16.4	mg/kg	7.7	40	-	-	-
L1492166-4	Tissue	WG1946476-4	Zirconium (Zr)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
Speciated Metals											
L1492166-2	Tissue	WG1949566-6	Methyl Mercury	0.203	0.178	mg/kg	13	40	-	-	-
L1492166-2	Tissue	WG1949599-6	Methyl Mercury	0.0500	0.0438	mg/kg wwt	13	40	-	-	-
Metals											
L1492166-4	Tissue	WG1946476-4	Zirconium (Zr)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA

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QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Metals										
Tissue	CRM	Arsenic (As)-Total	WG1946476-5	VA-NRC-TORT3	61.0	59.5	mg/kg	102.6	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1946476-5	VA-NRC-TORT3	61.0	59.5	mg/kg wwt	102.6	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1946476-5	VA-NRC-TORT3	38.5	42.3	mg/kg	91.1	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1946476-5	VA-NRC-TORT3	38.5	42.3	mg/kg wwt	91.1	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1946476-5	VA-NRC-TORT3	1.92	1.95	mg/kg	98.2	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1946476-5	VA-NRC-TORT3	1.92	1.95	mg/kg wwt	98.2	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1946476-5	VA-NRC-TORT3	0.901	1.06	mg/kg	85.0	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1946476-5	VA-NRC-TORT3	0.901	1.06	mg/kg wwt	85.0	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1946476-5	VA-NRC-TORT3	394	497	mg/kg	79.4	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1946476-5	VA-NRC-TORT3	394	497	mg/kg wwt	79.4	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1946476-5	VA-NRC-TORT3	157	179	mg/kg wwt	87.8	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1946476-5	VA-NRC-TORT3	157	179	mg/kg	87.8	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1946476-5	VA-NRC-TORT3	0.185	0.225	mg/kg	82.4	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1946476-5	VA-NRC-TORT3	0.185	0.225	mg/kg wwt	82.4	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1946476-5	VA-NRC-TORT3	15.5	15.6	mg/kg wwt	99.1	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1946476-5	VA-NRC-TORT3	15.5	15.6	mg/kg	99.1	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1946476-5	VA-NRC-TORT3	0.262	0.292	mg/kg wwt	89.8	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1946476-5	VA-NRC-TORT3	0.262	0.292	mg/kg	89.8	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1946476-5	VA-NRC-TORT3	0.262	0.292	mg/kg	89.8	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1946476-5	VA-NRC-TORT3	0.262	0.292	mg/kg wwt	89.8	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1946476-5	VA-NRC-TORT3	3.91	3.44	mg/kg	113.7	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1946476-5	VA-NRC-TORT3	3.91	3.44	mg/kg wwt	113.7	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1946476-5	VA-NRC-TORT3	4.45	5.30	mg/kg	84.0	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1946476-5	VA-NRC-TORT3	4.45	5.30	mg/kg wwt	84.0	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1946476-5	VA-NRC-TORT3	9.43	10.9	mg/kg	86.5	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1946476-5	VA-NRC-TORT3	9.43	10.9	mg/kg wwt	86.5	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1946476-5	VA-NRC-TORT3	37.1	36.5	mg/kg wwt	101.6	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1946476-5	VA-NRC-TORT3	37.1	36.5	mg/kg	101.6	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1946476-5	VA-NRC-TORT3	9.39	9.10	mg/kg	103.2	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1946476-5	VA-NRC-TORT3	9.39	9.10	mg/kg wwt	103.2	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1946476-5	VA-NRC-TORT3	116	136	mg/kg wwt	85.4	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1946476-5	VA-NRC-TORT3	116	136	mg/kg	85.4	70-130	
Tissue	CRM	Antimony (Sb)-Total	WG1946476-6	VA-NIST-1566B	<0.010	0.011	mg/kg	0.009	.001-.021	
Tissue	CRM	Antimony (Sb)-Total	WG1946476-6	VA-NIST-1566B	0.0094	0.0110	mg/kg wwt	0.0094	.001-.021	
Tissue	CRM	Arsenic (As)-Total	WG1946476-6	VA-NIST-1566B	7.06	7.65	mg/kg wwt	92.2	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1946476-6	VA-NIST-1566B	7.06	7.65	mg/kg	92.2	70-130	
Tissue	CRM	Barium (Ba)-Total	WG1946476-6	VA-NIST-1566B	8.39	8.60	mg/kg wwt	97.6	70-130	
Tissue	CRM	Barium (Ba)-Total	WG1946476-6	VA-NIST-1566B	8.39	8.60	mg/kg	97.6	70-130	
Tissue	CRM	Boron (B)-Total	WG1946476-6	VA-NIST-1566B	4.88	4.50	mg/kg wwt	108.5	70-130	
Tissue	CRM	Boron (B)-Total	WG1946476-6	VA-NIST-1566B	4.9	4.5	mg/kg	108.5	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1946476-6	VA-NIST-1566B	2.69	2.48	mg/kg wwt	108.4	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1946476-6	VA-NIST-1566B	2.69	2.48	mg/kg	108.4	70-130	
Tissue	CRM	Calcium (Ca)-Total	WG1946476-6	VA-NIST-1566B	883	838	mg/kg	105.3	70-130	
Tissue	CRM	Calcium (Ca)-Total	WG1946476-6	VA-NIST-1566B	883	838	mg/kg wwt	105.3	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1946476-6	VA-NIST-1566B	0.344	0.371	mg/kg wwt	92.7	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1946476-6	VA-NIST-1566B	0.344	0.371	mg/kg	92.7	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1946476-6	VA-NIST-1566B	72.9	71.6	mg/kg wwt	101.8	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1946476-6	VA-NIST-1566B	72.9	71.6	mg/kg	101.8	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1946476-6	VA-NIST-1566B	196	206	mg/kg wwt	95.2	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1946476-6	VA-NIST-1566B	196	206	mg/kg	95.2	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1946476-6	VA-NIST-1566B	0.315	0.308	mg/kg wwt	102.3	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1946476-6	VA-NIST-1566B	0.315	0.308	mg/kg	102.3	70-130	
Tissue	CRM	Magnesium (Mg)-Total	WG1946476-6	VA-NIST-1566B	1120	1090	mg/kg	103.0	70-130	
Tissue	CRM	Magnesium (Mg)-Total	WG1946476-6	VA-NIST-1566B	1120	1090	mg/kg wwt	103.0	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1946476-6	VA-NIST-1566B	21.5	18.5	mg/kg	116.4	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1946476-6	VA-NIST-1566B	21.5	18.5	mg/kg wwt	116.4	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1946476-6	VA-NIST-1566B	0.0339	0.0371	mg/kg wwt	91.5	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1946476-6	VA-NIST-1566B	0.0339	0.0371	mg/kg	91.5	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1946476-6	VA-NIST-1566B	0.0339	0.0371	mg/kg wwt	91.5	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1946476-6	VA-NIST-1566B	0.0339	0.0371	mg/kg	91.5	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1946476-6	VA-NIST-1566B	0.987	1.04	mg/kg wwt	94.9	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1946476-6	VA-NIST-1566B	0.99	1.04	mg/kg	94.9	70-130	
Tissue	CRM	Potassium (K)-Total	WG1946476-6	VA-NIST-1566B	6560	6520	mg/kg wwt	100.7	70-130	
Tissue	CRM	Potassium (K)-Total	WG1946476-6	VA-NIST-1566B	6560	6520	mg/kg	100.7	70-130	
Tissue	CRM	Rubidium (Rb)-Total	WG1946476-6	VA-NIST-1566B	2.98	3.26	mg/kg	91.4	70-130	
Tissue	CRM	Rubidium (Rb)-Total	WG1946476-6	VA-NIST-1566B	2.98	3.26	mg/kg wwt	91.4	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1946476-6	VA-NIST-1566B	2.05	2.06	mg/kg	99.6	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1946476-6	VA-NIST-1566B	2.05	2.06	mg/kg wwt	99.6	70-130	
Tissue	CRM	Silver (Ag)-Total	WG1946476-6	VA-NIST-1566B	0.695	0.666	mg/kg	104.4	70-130	
Tissue	CRM	Silver (Ag)-Total	WG1946476-6	VA-NIST-1566B	0.695	0.666	mg/kg wwt	104.4	70-130	
Tissue	CRM	Sodium (Na)-Total	WG1946476-6	VA-NIST-1566B	3270	3300	mg/kg wwt	99.1	70-130	
Tissue	CRM	Sodium (Na)-Total	WG1946476-6	VA-NIST-1566B	3270	3300	mg/kg	99.1	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1946476-6	VA-NIST-1566B	7.05	6.80	mg/kg wwt	103.7	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1946476-6	VA-NIST-1566B	7.05	6.80	mg/kg	103.7	70-130	
Tissue	CRM	Uranium (U)-Total	WG1946476-6	VA-NIST-1566B	0.294	0.255	mg/kg wwt	115.5	70-130	
Tissue	CRM	Uranium (U)-Total	WG1946476-6	VA-NIST-1566B	0.294	0.255	mg/kg	115.5	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1946476-6	VA-NIST-1566B	0.467	0.577	mg/kg wwt	81.0	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1946476-6	VA-NIST-1566B	0.47	0.58	mg/kg	81.0	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1946476-6	VA-NIST-1566B	1390	1420	mg/kg wwt	97.3	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1946476-6	VA-NIST-1566B	1390	1420	mg/kg	97.3	70-130	
Tissue	MB	Aluminum (Al)-Total	WG1946476-1		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Aluminum (Al)-Total	WG1946476-1		<5.0	<5	mg/kg	-	5	
Tissue	MB	Antimony (Sb)-Total	WG1946476-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Antimony (Sb)-Total	WG1946476-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1946476-1		<0.030	<0.03	mg/kg	-	0.03	
Tissue	MB	Arsenic (As)-Total	WG1946476-1		<0.0060	<0.006	mg/kg wwt	-	0.006	
Tissue	MB	Barium (Ba)-Total	WG1946476-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Barium (Ba)-Total	WG1946476-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1946476-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1946476-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1946476-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1946476-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Boron (B)-Total	WG1946476-1		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Boron (B)-Total	WG1946476-1		<1.0	<1	mg/kg	-	1	
Tissue	MB	Cadmium (Cd)-Total	WG1946476-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Cadmium (Cd)-Total	WG1946476-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Calcium (Ca)-Total	WG1946476-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Calcium (Ca)-Total	WG1946476-1		<20	<20	mg/kg	-	20	
Tissue	MB	Cesium (Cs)-Total	WG1946476-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Cesium (Cs)-Total	WG1946476-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Chromium (Cr)-Total	WG1946476-1		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Chromium (Cr)-Total	WG1946476-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Cobalt (Co)-Total	WG1946476-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Cobalt (Co)-Total	WG1946476-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Copper (Cu)-Total	WG1946476-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Copper (Cu)-Total	WG1946476-1		<0.040	<0.04	mg/kg wwt	-	0.04	

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QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	MB	Iron (Fe)-Total	WG1946476-1		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Iron (Fe)-Total	WG1946476-1		<5.0	<5	mg/kg	-	5	
Tissue	MB	Lead (Pb)-Total	WG1946476-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Lead (Pb)-Total	WG1946476-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Lithium (Li)-Total	WG1946476-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Lithium (Li)-Total	WG1946476-1		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Magnesium (Mg)-Total	WG1946476-1		<2.0	<2	mg/kg	-	2	
Tissue	MB	Magnesium (Mg)-Total	WG1946476-1		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Manganese (Mn)-Total	WG1946476-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Manganese (Mn)-Total	WG1946476-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Mercury (Hg)-Total	WG1946476-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1946476-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Mercury (Hg)-Total	WG1946476-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Mercury (Hg)-Total	WG1946476-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1946476-1		<0.0080	<0.008	mg/kg wwt	-	0.008	
Tissue	MB	Molybdenum (Mo)-Total	WG1946476-1		<0.040	<0.04	mg/kg	-	0.04	
Tissue	MB	Nickel (Ni)-Total	WG1946476-1		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Nickel (Ni)-Total	WG1946476-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Phosphorus (P)-Total	WG1946476-1		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Phosphorus (P)-Total	WG1946476-1		<10	<10	mg/kg	-	10	
Tissue	MB	Potassium (K)-Total	WG1946476-1		<20	<20	mg/kg	-	20	
Tissue	MB	Potassium (K)-Total	WG1946476-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Rubidium (Rb)-Total	WG1946476-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Rubidium (Rb)-Total	WG1946476-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Selenium (Se)-Total	WG1946476-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Selenium (Se)-Total	WG1946476-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Silver (Ag)-Total	WG1946476-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Silver (Ag)-Total	WG1946476-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Sodium (Na)-Total	WG1946476-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Sodium (Na)-Total	WG1946476-1		<20	<20	mg/kg	-	20	
Tissue	MB	Strontium (Sr)-Total	WG1946476-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Strontium (Sr)-Total	WG1946476-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Tellurium (Te)-Total	WG1946476-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Tellurium (Te)-Total	WG1946476-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Thallium (Tl)-Total	WG1946476-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Thallium (Tl)-Total	WG1946476-1		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Tin (Sn)-Total	WG1946476-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Tin (Sn)-Total	WG1946476-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Titanium (Ti)-Total	WG1946476-1		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Titanium (Ti)-Total	WG1946476-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Uranium (U)-Total	WG1946476-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Uranium (U)-Total	WG1946476-1		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Vanadium (V)-Total	WG1946476-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Vanadium (V)-Total	WG1946476-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Zinc (Zn)-Total	WG1946476-1		<1.0	<1	mg/kg	-	1	
Tissue	MB	Zinc (Zn)-Total	WG1946476-1		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Zirconium (Zr)-Total	WG1946476-1		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Zirconium (Zr)-Total	WG1946476-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Aluminum (Al)-Total	WG1946476-2		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Aluminum (Al)-Total	WG1946476-2		<5.0	<5	mg/kg	-	5	
Tissue	MB	Antimony (Sb)-Total	WG1946476-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Antimony (Sb)-Total	WG1946476-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Arsenic (As)-Total	WG1946476-2		<0.0060	<0.006	mg/kg wwt	-	0.006	
Tissue	MB	Arsenic (As)-Total	WG1946476-2		<0.030	<0.03	mg/kg	-	0.03	
Tissue	MB	Barium (Ba)-Total	WG1946476-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Barium (Ba)-Total	WG1946476-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1946476-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Beryllium (Be)-Total	WG1946476-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Bismuth (Bi)-Total	WG1946476-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Bismuth (Bi)-Total	WG1946476-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Boron (B)-Total	WG1946476-2		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Boron (B)-Total	WG1946476-2		<1.0	<1	mg/kg	-	1	
Tissue	MB	Calcium (Ca)-Total	WG1946476-2		<20	<20	mg/kg	-	20	
Tissue	MB	Calcium (Ca)-Total	WG1946476-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Cesium (Cs)-Total	WG1946476-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Cesium (Cs)-Total	WG1946476-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Chromium (Cr)-Total	WG1946476-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Chromium (Cr)-Total	WG1946476-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Cobalt (Co)-Total	WG1946476-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Cobalt (Co)-Total	WG1946476-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Copper (Cu)-Total	WG1946476-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Copper (Cu)-Total	WG1946476-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Iron (Fe)-Total	WG1946476-2		<5.0	<5	mg/kg	-	5	
Tissue	MB	Iron (Fe)-Total	WG1946476-2		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Lead (Pb)-Total	WG1946476-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Lead (Pb)-Total	WG1946476-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Lithium (Li)-Total	WG1946476-2		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Lithium (Li)-Total	WG1946476-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1946476-2		<2.0	<2	mg/kg	-	2	
Tissue	MB	Magnesium (Mg)-Total	WG1946476-2		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Manganese (Mn)-Total	WG1946476-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Manganese (Mn)-Total	WG1946476-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1946476-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1946476-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Mercury (Hg)-Total	WG1946476-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1946476-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Molybdenum (Mo)-Total	WG1946476-2		<0.0080	<0.008	mg/kg wwt	-	0.008	
Tissue	MB	Molybdenum (Mo)-Total	WG1946476-2		<0.040	<0.04	mg/kg	-	0.04	
Tissue	MB	Nickel (Ni)-Total	WG1946476-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Nickel (Ni)-Total	WG1946476-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Phosphorus (P)-Total	WG1946476-2		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Phosphorus (P)-Total	WG1946476-2		<10	<10	mg/kg	-	10	
Tissue	MB	Potassium (K)-Total	WG1946476-2		<20	<20	mg/kg	-	20	
Tissue	MB	Potassium (K)-Total	WG1946476-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Rubidium (Rb)-Total	WG1946476-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Rubidium (Rb)-Total	WG1946476-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Selenium (Se)-Total	WG1946476-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Selenium (Se)-Total	WG1946476-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Silver (Ag)-Total	WG1946476-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Silver (Ag)-Total	WG1946476-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Sodium (Na)-Total	WG1946476-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Sodium (Na)-Total	WG1946476-2		<20	<20	mg/kg	-	20	
Tissue	MB	Strontium (Sr)-Total	WG1946476-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Strontium (Sr)-Total	WG1946476-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Tellurium (Te)-Total	WG1946476-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Tellurium (Te)-Total	WG1946476-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Thallium (Tl)-Total	WG1946476-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Thallium (Tl)-Total	WG1946476-2		<0.00040	<0.0004	mg/kg wwt	-	0.0004	

Project 101-246/35 AJAX
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1492166
Date Received 24-Jul-14 17:05
Date 15-Sep-14

QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	MB	Tin (Sn)-Total	WG1946476-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Tin (Sn)-Total	WG1946476-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Titanium (Ti)-Total	WG1946476-2		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Titanium (Ti)-Total	WG1946476-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Uranium (U)-Total	WG1946476-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Uranium (U)-Total	WG1946476-2		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Vanadium (V)-Total	WG1946476-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Vanadium (V)-Total	WG1946476-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Zinc (Zn)-Total	WG1946476-2		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Zinc (Zn)-Total	WG1946476-2		<1.0	<1	mg/kg	-	1	
Tissue	MB	Zirconium (Zr)-Total	WG1946476-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Zirconium (Zr)-Total	WG1946476-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Aluminum (Al)-Total	WG1946476-3		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Aluminum (Al)-Total	WG1946476-3		<5.0	<5	mg/kg	-	5	
Tissue	MB	Antimony (Sb)-Total	WG1946476-3		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Antimony (Sb)-Total	WG1946476-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1946476-3		<0.030	<0.03	mg/kg	-	0.03	
Tissue	MB	Arsenic (As)-Total	WG1946476-3		<0.0060	<0.006	mg/kg wwt	-	0.006	
Tissue	MB	Barium (Ba)-Total	WG1946476-3		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1946476-3		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Beryllium (Be)-Total	WG1946476-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1946476-3		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1946476-3		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1946476-3		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Boron (B)-Total	WG1946476-3		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Boron (B)-Total	WG1946476-3		<1.0	<1	mg/kg	-	1	
Tissue	MB	Calcium (Ca)-Total	WG1946476-3		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Calcium (Ca)-Total	WG1946476-3		<20	<20	mg/kg	-	20	
Tissue	MB	Cesium (Cs)-Total	WG1946476-3		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Cesium (Cs)-Total	WG1946476-3		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Chromium (Cr)-Total	WG1946476-3		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Chromium (Cr)-Total	WG1946476-3		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Cobalt (Co)-Total	WG1946476-3		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Cobalt (Co)-Total	WG1946476-3		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Copper (Cu)-Total	WG1946476-3		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Copper (Cu)-Total	WG1946476-3		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Iron (Fe)-Total	WG1946476-3		<1.0	<1	mg/kg wwt	-	1	
Tissue	MB	Iron (Fe)-Total	WG1946476-3		<5.0	<5	mg/kg	-	5	
Tissue	MB	Lead (Pb)-Total	WG1946476-3		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Lead (Pb)-Total	WG1946476-3		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Lithium (Li)-Total	WG1946476-3		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Lithium (Li)-Total	WG1946476-3		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Magnesium (Mg)-Total	WG1946476-3		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Magnesium (Mg)-Total	WG1946476-3		<2.0	<2	mg/kg	-	2	
Tissue	MB	Manganese (Mn)-Total	WG1946476-3		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Manganese (Mn)-Total	WG1946476-3		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1946476-3		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1946476-3		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Mercury (Hg)-Total	WG1946476-3		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1946476-3		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Molybdenum (Mo)-Total	WG1946476-3		<0.0080	<0.008	mg/kg wwt	-	0.008	
Tissue	MB	Molybdenum (Mo)-Total	WG1946476-3		<0.040	<0.04	mg/kg	-	0.04	
Tissue	MB	Nickel (Ni)-Total	WG1946476-3		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Nickel (Ni)-Total	WG1946476-3		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Phosphorus (P)-Total	WG1946476-3		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Phosphorus (P)-Total	WG1946476-3		<10	<10	mg/kg	-	10	
Tissue	MB	Potassium (K)-Total	WG1946476-3		<20	<20	mg/kg	-	20	
Tissue	MB	Potassium (K)-Total	WG1946476-3		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Rubidium (Rb)-Total	WG1946476-3		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Rubidium (Rb)-Total	WG1946476-3		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Selenium (Se)-Total	WG1946476-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Selenium (Se)-Total	WG1946476-3		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Silver (Ag)-Total	WG1946476-3		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Silver (Ag)-Total	WG1946476-3		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Sodium (Na)-Total	WG1946476-3		<20	<20	mg/kg	-	20	
Tissue	MB	Sodium (Na)-Total	WG1946476-3		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Strontium (Sr)-Total	WG1946476-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Strontium (Sr)-Total	WG1946476-3		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Tellurium (Te)-Total	WG1946476-3		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Tellurium (Te)-Total	WG1946476-3		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Tin (Sn)-Total	WG1946476-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Tin (Sn)-Total	WG1946476-3		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Titanium (Ti)-Total	WG1946476-3		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Titanium (Ti)-Total	WG1946476-3		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Uranium (U)-Total	WG1946476-3		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Uranium (U)-Total	WG1946476-3		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1946476-3		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Vanadium (V)-Total	WG1946476-3		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1946476-3		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Zinc (Zn)-Total	WG1946476-3		<1.0	<1	mg/kg	-	1	
Tissue	MB	Zirconium (Zr)-Total	WG1946476-3		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Zirconium (Zr)-Total	WG1946476-3		<0.040	<0.04	mg/kg wwt	-	0.04	
Speciated Metals										
Tissue	CRM	Methyl Mercury	WG1949566-3	VA-NRC-TORT3	0.112	0.147	mg/kg	76.4	70-130	
Tissue	CRM	Methyl Mercury	WG1949566-4	VA-NRC-DORM4	0.327	0.380	mg/kg	86.1	70-130	
Tissue	CRM	Methyl Mercury	WG1949599-4	VA-NRC-DORM4	0.317	0.380	mg/kg wwt	83.5	70-130	
Tissue	CRM	Methyl Mercury	WG1949599-5	VA-NRC-TORT3	0.109	0.147	mg/kg wwt	74.1	70-130	
Tissue	LCS	Methyl Mercury	WG1949566-2		0.0879	0.100	mg/kg	87.9	70-130	
Tissue	LCS	Methyl Mercury	WG1949599-3		0.0879	0.100	mg/kg wwt	87.9	70-130	
Tissue	MB	Methyl Mercury	WG1949566-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Methyl Mercury	WG1949566-5		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Methyl Mercury	WG1949599-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Methyl Mercury	WG1949599-2		<0.0010	<0.001	mg/kg wwt	-	0.001	

Project	101-246/35 AJAX
Report To	Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No.	L1492166
Date Received	24-Jul-14 17:05
Date	15-Sep-14

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.

QUALIFIER	DESCRIPTION
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Qualifier Key for Sample Parameters Listed Below:

Qualifier	Description
DLIV	Detection Limit Adjusted: Lower Initial Volume

Samples with Parameter Qualifiers as Listed Above:

Sample Number	Client Sample ID	Parameters	Qualifier
L1492166-11	PC-10-01 LIVER	Nickel (Ni)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Chromium (Cr)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Uranium (U)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Bismuth (Bi)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Titanium (Ti)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Vanadium (V)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Lead (Pb)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Tin (Sn)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Lithium (Li)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Antimony (Sb)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Cesium (Cs)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Boron (B)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Aluminum (Al)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Tellurium (Te)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Beryllium (Be)-Total	DLIV
L1492166-11	PC-10-01 LIVER	Zirconium (Zr)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Beryllium (Be)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Aluminum (Al)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Boron (B)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Vanadium (V)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Chromium (Cr)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Tellurium (Te)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Titanium (Ti)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Zirconium (Zr)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Lead (Pb)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Tin (Sn)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Bismuth (Bi)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Antimony (Sb)-Total	DLIV
L1492166-15	PC-EF-01-16 LIVER	Lithium (Li)-Total	DLIV

Project	AJAX 101-246/35
Report To	Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No.	L1522144
Date Received	23-Sep-14 13:00
Date	07-Nov-14

RESULTS OF ANALYSIS

Sample ID	SCUITTO LK A	SCUITTO LK B	SCUITTO LK C	SCUITTO LK D	SCUITTO LK E	SCUITTO LK GRAIN SIZE	ANDR-15 32 WHOLE FISH	ANDR-15 33 WHOLE FISH	ANDR-15 34 WHOLE FISH	ANDR-15 35 WHOLE FISH	ANDR-15 36 WHOLE FISH	ANDR-15 37 WHOLE FISH	PC-AL-01 12 WHOLE FISH	PC-AL-01 13 WHOLE FISH	PC-AL-01 14 WHOLE FISH
Date Sampled	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1522144-1	L1522144-2	L1522144-3	L1522144-4	L1522144-5	L1522144-6	L1522144-7	L1522144-8	L1522144-9	L1522144-10	L1522144-11	L1522144-12	L1522144-13	L1522144-14	L1522144-15
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests															
% Moisture	-	-	-	-	-	-	71.1	73.2	76.0	76.1	73.3	74.6	75.5	78.6	75.8
Particle Size															
% Gravel (>2mm)	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-
% Sand (2.00mm - 1.00mm)	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-
% Sand (1.00mm - 0.50mm)	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-
% Sand (0.50mm - 0.25mm)	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-
% Sand (0.25mm - 0.125mm)	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-
% Sand (0.125mm - 0.063mm)	-	-	-	-	-	<0.10	-	-	-	-	-	-	-	-	-
% Silt (0.063mm - 0.0312mm)	-	-	-	-	-	22.0	-	-	-	-	-	-	-	-	-
% Silt (0.0312mm - 0.004mm)	-	-	-	-	-	50.8	-	-	-	-	-	-	-	-	-
% Clay (<4um)	-	-	-	-	-	27.2	-	-	-	-	-	-	-	-	-
Texture	-	-	-	-	-	Silt loam	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon															
Total Organic Carbon	9.94	11.0	12.7	12.5	12.9	-	-	-	-	-	-	-	-	-	-
Metals															
Aluminum (Al)	20900	22200	22000	21900	22600	-	-	-	-	-	-	-	-	-	-
Aluminum (Al)-Total	-	-	-	-	-	-	16.4	119	106	134	57.0	114	38.9	136	94.2
Aluminum (Al)-Total	-	-	-	-	-	-	4.74	32.0	25.5	32.1	15.2	29.1	9.52	29.3	22.7
Antimony (Sb)	0.55	0.61	0.55	0.58	0.57	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)-Total	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Antimony (Sb)-Total	-	-	-	-	-	-	<0.0020	0.0023	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)	4.38	4.33	4.65	4.83	4.87	-	-	-	-	-	-	-	-	-	-
Arsenic (As)-Total	-	-	-	-	-	-	0.233	0.288	0.587	0.648	0.411	0.225	0.286	0.358	0.272
Arsenic (As)-Total	-	-	-	-	-	-	0.0672	0.0772	0.141	0.155	0.110	0.0571	0.0701	0.0768	0.0658
Barium (Ba)	150	152	154	161	163	-	-	-	-	-	-	-	-	-	-
Barium (Ba)-Total	-	-	-	-	-	-	2.36	5.62	2.83	8.26	2.61	3.43	1.68	5.22	3.45
Barium (Ba)-Total	-	-	-	-	-	-	0.682	1.51	0.680	1.98	0.697	0.872	0.410	1.12	0.833
Beryllium (Be)	0.70	0.74	0.70	0.71	0.74	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)-Total	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)-Total	-	-	-	-	-	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)	0.15	0.15	0.14	0.16	0.17	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)-Total	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	-	-	-	-	-	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)	<10	<10	<10	<10	<10	-	-	-	-	-	-	-	-	-	-
Boron (B)-Total	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Boron (B)-Total	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium (Cd)	0.199	0.202	0.204	0.208	0.209	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)-Total	-	-	-	-	-	-	0.0333	0.0341	0.0746	0.0583	0.0357	0.0233	0.0435	0.0815	0.0649
Cadmium (Cd)-Total	-	-	-	-	-	-	0.0096	0.0091	0.0179	0.0139	0.0095	0.0059	0.0106	0.0175	0.0157
Calcium (Ca)	8180	8410	8280	8530	8500	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Total	-	-	-	-	-	-	24200	27800	13100	45300	17300	25100	30400	38600	39100
Calcium (Ca)-Total	-	-	-	-	-	-	6980	7470	3130	10800	4610	6380	7440	8280	9440
Cesium (Cs)-Total	-	-	-	-	-	-	0.0053	0.0114	0.0115	0.0141	0.0084	0.0100	0.0137	0.0212	0.0170
Cesium (Cs)-Total	-	-	-	-	-	-	0.0015	0.0031	0.0028	0.0034	0.0023	0.0025	0.0034	0.0045	0.0041
Chromium (Cr)	46.8	55.2	54.9	59.5	55.5	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)-Total	-	-	-	-	-	-	<0.050	0.212	0.307	0.412	0.088	0.247	0.110	0.603	0.311
Chromium (Cr)-Total	-	-	-	-	-	-	<0.010	0.057	0.074	0.098	0.024	0.063	0.027	0.129	0.075
Cobalt (Co)	10.0	10.2	10.2	10.6	10.8	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)-Total	-	-	-	-	-	-	0.102	0.164	0.150	0.171	0.120	0.142	0.246	0.322	0.406
Cobalt (Co)-Total	-	-	-	-	-	-	0.0296	0.0440	0.0359	0.0409	0.0321	0.0360	0.0603	0.0691	0.0981
Copper (Cu)	39.9	41.7	40.8	40.7	41.0	-	-	-	-	-	-	-	-	-	-
Copper (Cu)-Total	-	-	-	-	-	-	3.38	3.20	5.32	2.96	2.69	3.02	6.90	12.2	7.25
Copper (Cu)-Total	-	-	-	-	-	-	0.977	0.857	1.27	0.708	0.718	0.768	1.69	2.62	1.75
Iron (Fe)	25900	26600	27000	28000	27700	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Total	-	-	-	-	-	-	81.6	239	206	267	123	214	118	293	194
Iron (Fe)-Total	-	-	-	-	-	-	23.6	64.2	49.3	63.7	32.8	54.3	28.8	62.7	46.8
Lead (Pb)	8.34	8.53	8.24	8.36	8.49	-	-	-	-	-	-	-	-	-	-
Lead (Pb)-Total	-	-	-	-	-	-	<0.020	0.041	0.046	0.053	<0.020	0.048	0.038	0.086	0.069
Lead (Pb)-Total	-	-	-	-	-	-	0.0055	0.0109	0.0109	0.0127	0.0050	0.0121	0.0094	0.0184	0.0167
Lithium (Li)	12.1	12.8	12.1	14.9	14.4	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Total	-	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium (Li)-Total	-	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)	7930	8160	7960	8230	8420	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)-Total	-	-	-	-	-	-	1230	1390	968	1570	1110	1410	1460	1820	1790
Magnesium (Mg)-Total	-	-	-	-	-	-	354	373	232	374	296	358	357	389	434
Manganese (Mn)	340	355	353	371	367	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)-Total	-	-	-	-	-	-	10.9	17.2	9.76	25.9	7.37	21.0	4.62	9.04	10.1
Manganese (Mn)-Total	-	-	-	-	-	-	3.14	4.60	2.34	6.18	1.97	5.33	1.13	1.94	2.45
Mercury (Hg)-Total	-	-	-	-	-	-	0.189	0.157	0.179	0.190	0.139	0.220	0.0896	0.184	0.105
Mercury (Hg)-Total	-	-	-	-	-	-	0.0546	0.0420	0.0429	0.0455	0.0371	0.0559	0.0219	0.0394	0.0254
Molybdenum (Mo)	2.77	3.13	3.36	3.84	3.50	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	-	-	-	-	-	-	0.033	0.062	0.169	0.062	0.062	0.052	0.047	0.132	0.106
Molybdenum (Mo)-Total	-	-	-	-	-	-	0.0096	0.0166	0.0404	0.0149	0.0166	0.0131	0.0116	0.0283	0.0257
Nickel (Ni)	48.7	55.4	53.6	57.1	55.7	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)-Total	-	-	-	-	-	-	<0.20	<0.20	<0.20	0.21	<0.20	<0.20	<0.20	0.46	0.43
Nickel (Ni)-Total	-	-	-	-	-	-	<0.040	0.044	0.045	0.050	<0.040	<0.040	0.045	0.100	0.103
Phosphorus (P)	1040	1050	1000	995	1030	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)-Total	-	-	-	-	-	-	21100	23300	17700	37300	19400	24700	24600	32200	31800
Phosphorus (P)-Total	-	-	-	-	-	-	6080	6250	4230	8910	5180	6260	6030	6900	7670
Potassium (K)	2130	2190	2190	2310	2340	-	-	-	-	-	-	-	-	-	-
Potassium (K)-Total	-	-	-	-	-	-	12100	12900	14000	14500	13100	13100	13700	16400	13800
Potassium (K)-Total	-	-	-	-	-	-	3490	3450	3360	3480	3500	3320	3350	3520	3330
Rubidium (Rb)-Total	-	-	-	-	-	-	1.26	1.51	1.93	1.73	1.56	1.78	1.70	2.03	1.78
Rubidium (Rb)-Total	-	-	-	-	-	-	0.365	0.404	0.463	0.414	0.417	0.452	0.416	0.436	0.430
Selenium (Se)	0.85	0.94	0.90	0.94	0.90	-	-	-	-	-	-	-	-	-	-
Selenium (Se)-Total	-	-	-	-	-	-	2.63	2.67	3.45	2.70	2.52	2.59	6.97	9.90	6.83
Selenium (Se)-Total	-	-	-	-	-	-	0.761	0.716	0.826	0.646	0.674	0.658	1.71	2.12	1.65
Silver (Ag)	0.210	0.213	0.205	0.190	0.194	-	-	-	-	-	-	-	-	-	-
Silver (Ag)-Total	-	-	-	-	-	-	0.0097	0.0093	0.0248	0.0181	0.0112	0.0056	0.0140	0.0299	0.0142
Silver (Ag)-Total	-	-	-	-	-	-	0.0028	0.0025	0.0059	0.0043	0.0030	0.0014	0.0034	0.0064	0.0034
Sodium (Na)	480	500	550	530	540	-	-	-	-	-	-	-	-	-	-
Sodium (Na)-Total	-	-	-	-	-	-	3190	3280	3710	3740	3430	3480	4170	5580	4120
Sodium (Na)-Total	-	-	-	-	-	-	921	880	889	894	917	884	1020	1200	995
Strontium (Sr)	86.7	92.6	91.8	92.5	92.6	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)-Total	-	-	-	-	-	-	18.0	24.2	12.3	41.1	14.3	20.0	68.1	110	115
Strontium (Sr)-Total	-	-	-	-	-	-	5.19	6.49	2.96	9.84	3.81	5.07	16.7	23.6	27.7
Sulfur (S)-Total	4200	3900	4000	5000	4100	-	-	-	-	-	-	-	-	-	-
Tellurium (Te)-Total	-	-	-	-	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	-	-	-	-	-	-	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)	0.169	0.171	0.172	0.191	0.190	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)-Total	-	-	-	-	-	-	0.0082	0.0112	0.0181	0.0167	0.0100	0.0092	0.0103	0.0185	0.0142
Thallium (Tl)-Total	-	-	-	-	-	-	0.00236	0.00300	0.00434	0.00399	0.00268	0.00234	0.00253	0.00398	0.00344
Tin (Sn)	1.16	1.12	0.85	0.88	0.87	-	-	-	-	-	-	-	-	-	-
Tin (Sn)-Total	-	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total	-	-	-	-	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Titanium (Ti)	1030	1100	1110	1170	1200	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)-Total	-	-	-	-	-	-	3.25	12.0	10.2	14.0	5.81	12.9	6.06	14.8	10.8
Titanium (Ti)-Total	-	-	-	-	-	-	0.938	3.22	2.44	3.35	1.55	3.28	1.48	3.17	2.60
Uranium (U)	4.89	5.59	5.02	4.80	5.12	-	-	-	-	-	-	-	-	-	-
Uranium (U)-Total	-	-	-	-	-	-	0.0102	0.0197	0.0218	0.0301	0.0112	0.0213	0.0319	0.0713	0.0651
Uranium (U)-Total	-	-	-	-	-	-	0.00294	0.00528	0.00523	0.00719	0.00299	0.00542	0.00781	0.0153	0.0157
Vanadium (V)	81.7	85.9	83.4	85.7	89.4	-	-	-	-	-	-	-	-	-	-
Vanadium (V)-Total	-	-	-	-	-	-	0.12	0.63	0.52	0.71	0.24	0.65	0.22	0.73	0.51
Vanadium (V)-Total	-	-	-	-	-	-	0.034	0.168	0.125	0.171	0.063	0.164	0.053	0.156	0.122
Zinc (Zn)	63.3	70.6	67.5	68.3	68.2	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)-Total	-	-	-	-	-	-	89.1	104	88.9	132	78.9	99.0	118	161	172
Zinc (Zn)-Total	-	-	-	-	-	-	25.7	27.8	21.3	31.5	21.1	25.2	29.0	34.5	41.6
Zirconium (Zr)-Total	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zirconium (Zr)-Total	-	-	-	-	-	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Speciated Metals															
Methyl Mercury	-	-	-	-	-	-	0.113	0.108	0.131	0.145	0.107	0.163	0.0949	0.148	0.0971
Methyl Mercury	-	-	-	-	-	-	0.0328	0.0290	0.0315	0.0346	0.0286	0.0414	0.0233	0.0318	0.0235

Sample ID	CC-AL-01-8 WHOLE FISH	SCUITTO LAKE 1 WHOLE FISH	SCUITTO LAKE 2 WHOLE FISH	SCUITTO LAKE 3 WHOLE FISH	SCUITTO LAKE 4 WHOLE FISH	SCUITTO LAKE 5 WHOLE FISH	SCUITTO LAKE 6 WHOLE FISH	SCUITTO LAKE 7 WHOLE FISH	SCUITTO LAKE 8 WHOLE FISH	SCUITTO LAKE 9 WHOLE FISH	JACKO LK 5 WHOLE FISH	JACKO LK 6 WHOLE FISH	JACKO LK 7 WHOLE FISH	JACKO LK 8 WHOLE FISH
Date Sampled	15-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1522144-16	L1522144-17	L1522144-18	L1522144-19	L1522144-20	L1522144-21	L1522144-22	L1522144-23	L1522144-24	L1522144-25	L1522144-26	L1522144-27	L1522144-28	L1522144-29
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests														
% Moisture	74.3	74.5	78.4	75.1	71.3	70.5	72.0	68.7	72.6	72.8	72.5	73.4	75.4	75.7
Particle Size														
% Gravel (>2mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (2.00mm - 1.00mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (1.00mm - 0.50mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.50mm - 0.25mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.25mm - 0.125mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.125mm - 0.063mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.063mm - 0.0312mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.0312mm - 0.004mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Clay (<4um)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Texture	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon														
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals														
Aluminum (Al)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum (Al)-Total	35.2	6.3	37.3	6.7	15.3	12.9	13.5	16.9	18.6	31.7	20.1	18.8	8.3	5.6
Aluminum (Al)-Total	9.04	1.60	8.05	1.67	4.40	3.82	3.77	5.29	5.11	8.61	5.51	4.99	2.03	1.37
Antimony (Sb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)-Total	<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	<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
Arsenic (As)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)-Total	0.270	0.087	0.064	0.055	0.062	0.114	0.104	0.101	0.032	0.057	0.228	0.232	0.216	0.182
Arsenic (As)-Total	0.0694	0.0222	0.0139	0.0138	0.0178	0.0335	0.0291	0.0315	0.0088	0.0155	0.0626	0.0618	0.0531	0.0442
Barium (Ba)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)-Total	3.50	0.344	1.65	0.744	0.948	0.585	1.01	1.84	0.729	2.10	5.91	4.48	7.83	2.68
Barium (Ba)-Total	0.899	0.088	0.357	0.185	0.272	0.172	0.282	0.576	0.200	0.570	1.62	1.19	1.93	0.652
Beryllium (Be)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)-Total	<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	<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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)-Total	<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	<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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)-Total	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Boron (B)-Total	<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
Cadmium (Cd)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)-Total	0.0362	0.0075	0.0066	0.0072	0.0060	0.0061	0.0069	0.0070	<0.0050	<0.0050	<0.0050	<0.0050	0.0064	<0.0050
Cadmium (Cd)-Total	0.0093	0.0019	0.0014	0.0018	0.0017	0.0018	0.0019	0.0022	0.0010	<0.0010	0.0011	<0.0010	0.0016	<0.0010
Calcium (Ca)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Total	26700	5150	30800	9900	21300	9180	26700	46700	8500	41900	30300	22200	20100	11200
Calcium (Ca)-Total	6860	1310	6660	2470	6120	2710	7460	14600	2330	11400	8340	5920	4960	2710
Cesium (Cs)-Total	0.0224	0.0119	0.0122	0.0128	0.0114	0.0108	0.0115	0.0101	0.0080	0.0114	0.0123	0.0132	0.0069	0.0117
Cesium (Cs)-Total	0.0057	0.0030	0.0026	0.0032	0.0033	0.0032	0.0032	0.0032	0.0022	0.0031	0.0034	0.0035	0.0017	0.0029
Chromium (Cr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)-Total	0.103	0.165	0.085	0.098	0.971	<0.050	0.163	<0.050	0.293	0.062	0.067	0.050	<0.050	<0.050
Chromium (Cr)-Total	0.026	0.042	0.018	0.024	0.278	<0.010	0.046	<0.010	0.080	0.017	0.018	0.013	<0.010	<0.010
Cobalt (Co)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)-Total	0.245	0.063	0.060	0.055	0.060	0.043	0.055	0.067	0.038	0.059	0.088	0.078	0.137	0.073
Cobalt (Co)-Total	0.0630	0.0160	0.0129	0.0137	0.0171	0.0126	0.0154	0.0208	0.0105	0.0161	0.0242	0.0206	0.0336	0.0178
Copper (Cu)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)-Total	3.73	2.78	3.03	3.56	4.28	2.07	2.96	1.84	7.00	4.01	10.2	7.67	2.75	5.60
Copper (Cu)-Total	0.958	0.709	0.655	0.888	1.23	0.609	0.830	0.577	1.92	1.09	2.80	2.04	0.676	1.36
Iron (Fe)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Total	97.7	78.7	166	97.1	94.6	59.2	96.7	57.3	107	91.5	75.6	60.3	51.0	45.6
Iron (Fe)-Total	25.1	20.0	35.9	24.2	27.1	17.5	27.1	17.9	29.4	24.9	20.8	16.0	12.5	11.1
Lead (Pb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)-Total	<0.020	0.022	0.062	0.059	0.032	0.025	0.167	0.037	0.174	0.174	0.529	0.457	0.685	0.214
Lead (Pb)-Total	<0.0040	0.0056	0.0133	0.0146	0.0093	0.0073	0.0467	0.0117	0.0476	0.0474	0.146	0.122	0.168	0.0519
Lithium (Li)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Total	<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	<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
Magnesium (Mg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)-Total	1320	1070	1540	1080	1280	1090	1260	1680	1030	1620	1430	1270	1380	1250
Magnesium (Mg)-Total	339	273	333	270	368	322	353	525	283	442	392	339	338	303
Manganese (Mn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)-Total	4.86	2.38	8.43	3.48	6.12	4.80	6.84	10.5	2.76	10.2	6.91	5.73	4.42	2.44
Manganese (Mn)-Total	1.25	0.605	1.82	0.867	1.75	1.42	1.92	3.28	0.758	2.78	1.90	1.53	1.09	0.592
Mercury (Hg)-Total	0.153	0.993	1.08	1.01	0.505	0.758	0.638	0.518	0.371	0.237	0.441	0.347	0.219	0.565
Mercury (Hg)-Total	0.0393	0.253	0.234	0.251	0.145	0.223	0.178	0.162	0.102	0.0645	0.121	0.0923	0.0538	0.137
Molybdenum (Mo)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	0.125	0.045	0.060	0.067	0.063	0.030	0.047	0.033	0.028	0.031	0.066	0.071	0.030	0.039
Molybdenum (Mo)-Total	0.0321	0.0115	0.0129	0.0167	0.0180	0.0088	0.0132	0.0103	0.0076	0.0085	0.0181	0.0190	0.0074	0.0095
Nickel (Ni)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)-Total	<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
Nickel (Ni)-Total	<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
Phosphorus (P)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)-Total	24500	11700	25900	13100	19500	13300	21900	34200	12600	31600	21900	19100	19900	15600
Phosphorus (P)-Total	6290	2980	5600	3270	5600	3930	6130	10700	3460	8590	6030	5090	4900	3780
Potassium (K)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)-Total	14000	13800	14300	13600	11900	11900	11800	11400	12600	13100	13300	13300	15700	15800
Potassium (K)-Total	3590	3510	3090	3400	3420	3510	3320	3570	3460	3550	3660	3540	3870	3820
Rubidium (Rb)-Total	8.04	4.75	5.46	4.73	4.97	4.41	5.12	4.08	4.38	5.94	1.95	2.10	1.99	2.20
Rubidium (Rb)-Total	2.06	1.21	1.18	1.18	1.43	1.30	1.43	1.28	1.20	1.61	0.535	0.560	0.488	0.533
Selenium (Se)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)-Total	1.25	0.700	0.779	0.975	0.981	0.787	0.949	0.597	0.918	0.727	1.99	1.98	0.985	1.63
Selenium (Se)-Total	0.322	0.178	0.168	0.243	0.281	0.232	0.266	0.187	0.252	0.198	0.548	0.528	0.242	0.397
Silver (Ag)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)-Total	<0.0050	0.0241	0.0074	0.0601	0.0718	0.0065	0.0421	0.0083	0.0470	0.0243	0.0064	<0.0050	<0.0050	<0.0050
Silver (Ag)-Total	0.0013	0.0061	0.0016	0.0150	0.0206	0.0019	0.0118	0.0026	0.0129	0.0066	0.0018	0.0011	<0.0010	<0.0010
Sodium (Na)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)-Total	4200	2670	5460	3490	2420	2700	2500	2030	2270	3470	2670	2790	3390	3040
Sodium (Na)-Total	1080	681	1180	870	694	798	700	635	624	942	735	743	835	738
Strontium (Sr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)-Total	17.9	10.3	55.4	18.9	39.7	17.5	48.8	91.9	18.0	61.2	66.6	51.3	33.2	24.5
Strontium (Sr)-Total	4.58	2.62	12.0	4.70	11.4	5.15	13.7	28.8	4.94	16.6	18.3	13.7	8.18	5.96
Sulfur (S)-Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tellurium (Te)-Total	<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	<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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)-Total	0.0138	0.0091	0.0051	0.0055	0.0108	0.0068	0.0101	0.0136	<0.0020	0.0056	<0.0020	<0.0020	<0.0020	<0.0020
Thallium (Tl)-Total	0.00356	0.00232	0.00109	0.00137	0.00311	0.00199	0.00282	0.00426	0.00051	0.00153	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)-Total	<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	<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
Titanium (Ti)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)-Total	4.89	1.61	4.50	1.00	3.13	2.50	2.13	3.13	1.74	5.27	2.68	2.33	2.79	1.24
Titanium (Ti)-Total	1.26	0.411	0.972	0.250	0.898	0.737	0.597	0.980	0.477	1.43	0.736	0.621	0.687	0.300
Uranium (U)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)-Total	0.0037	0.0031	0.0090	0.0033	0.0041	0.0025	0.0029	0.0035	0.0041	0.0278	0.0123	0.0096	0.0094	0.0058
Uranium (U)-Total	0.00094	0.00080	0.00195	0.00082	0.00116	0.00072	0.00081	0.00109	0.00113	0.00757	0.00339	0.00256	0.00232	0.00141
Vanadium (V)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)-Total	0.27	0.14	0.45	0.22	0.28	0.15	0.27	0.49	0.14	0.52	0.14	<0.10	<0.10	<0.10
Vanadium (V)-Total	0.070	0.036	0.098	0.054	0.081	0.043	0.077	0.154	0.039	0.142	0.038	0.025	0.022	<0.020
Zinc (Zn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)-Total	122	47.8	123	64.6	74.8	50.9	64.9	82.3	53.5	86.4	98.7	77.2	81.8	76.8
Zinc (Zn)-Total	31.2	12.2	26.6	16.1	21.4	15.0	18.2	25.7	14.7	23.5	27.1	20.6	20.1	18.6
Zirconium (Zr)-Total	<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	<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
Speciated Metals														
Methyl Mercury	0.190	0.145	0.932	0.205	0.529	0.530	0.0966	0.653	0.0933	0.232	0.455	0.389	0.282	0.566
Methyl Mercury	0.0490	0.0369	0.201	0.0511	0.152	0.156	0.0271	0.204	0.0256	0.0632	0.125	0.103	0.0693	0.138

Project
Report To
ALS File No.
Date Received
Date

RESULTS OF ANALYSIS

	JACKO LK 9 WHOLE FISH	CC-AL-01-1 WHOLE FISH	CC-AL-01-2 WHOLE FISH	CC-AL-01-3 WHOLE FISH	CC-AL-01-4 WHOLE FISH	CC-AL-01-5 WHOLE FISH	CC-AL-01-6 WHOLE FISH	CC-AL-01-7 WHOLE FISH	EDITH LAKE 1 WHOLE FISH	EDITH LAKE 2 WHOLE FISH	EDITH LAKE 3 WHOLE FISH	EDITH LAKE 4 WHOLE FISH	EDITH LAKE 5 WHOLE FISH	EDITH LAKE 6 WHOLE FISH	EDITH LAKE 7 WHOLE FISH	EDITH LAKE 8 WHOLE FISH	JACKO LK 1 WHOLE FISH	JACKO LK 2 WHOLE FISH	JACKO LK 3 WHOLE FISH	JACKO LK 4 WHOLE FISH
Sample ID																				
Date Sampled	18-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1522144-30	L1522144-31	L1522144-32	L1522144-33	L1522144-34	L1522144-35	L1522144-36	L1522144-37	L1522144-38	L1522144-39	L1522144-40	L1522144-41	L1522144-42	L1522144-43	L1522144-44	L1522144-45	L1522144-46	L1522144-47	L1522144-48	L1522144-49
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests																				
% Moisture	73.7	75.5	74.1	76.7	74.9	74.7	74.5	72.9	67.4	64.8	72.4	69.4	72.9	72.6	68.9	71.6	71.5	74.4	72.7	75.1
Particle Size																				
% Gravel (>2mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (2.00mm - 1.00mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (1.00mm - 0.50mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.50mm - 0.25mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.25mm - 0.125mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.125mm - 0.063mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.063mm - 0.0312mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.0312mm - 0.004mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Clay (<4um)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Texture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																				
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																				
Aluminum (Al)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum (Al)-Total	15.4	61.5	14.6	75.7	223	128	85.8	173	<2.0	5.4	2.8	<2.0	6.0	3.2	2.9	31.9	21.6	18.9	30.5	8.4
Aluminum (Al)-Total	4.05	15.0	3.79	17.7	55.9	32.5	21.9	46.7	<0.40	1.91	0.77	0.45	1.62	0.89	0.89	9.06	6.16	4.85	8.33	2.09
Antimony (Sb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)-Total	<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	<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
Arsenic (As)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)-Total	0.183	0.462	0.356	0.214	0.456	0.176	0.287	0.171	0.089	0.089	0.144	0.107	0.236	0.105	0.134	0.136	0.219	0.178	0.264	0.203
Arsenic (As)-Total	0.0480	0.113	0.0923	0.0498	0.115	0.0445	0.0733	0.0464	0.0290	0.0312	0.0397	0.0327	0.0640	0.0286	0.0416	0.0386	0.0625	0.0455	0.0720	0.0506
Barium (Ba)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)-Total	4.44	6.39	4.34	6.15	3.48	4.37	4.76	3.48	0.211	0.828	1.56	0.291	1.79	0.921	1.39	2.07	4.77	1.68	5.87	2.04
Barium (Ba)-Total	1.17	1.56	1.13	1.43	0.874	1.11	1.22	0.941	0.069	0.291	0.430	0.089	0.486	0.252	0.431	0.587	1.36	0.430	1.61	0.509
Beryllium (Be)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)-Total	<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	<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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)-Total	<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	<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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)-Total	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Boron (B)-Total	<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
Cadmium (Cd)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)-Total	<0.0050	0.0549	0.0279	0.0423	0.0372	0.0382	0.0266	0.0184	<0.0050	<0.0050	<0.0050	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cadmium (Cd)-Total	<0.0010	0.0134	0.0072	0.0099	0.0093	0.0097	0.0068	0.0050	<0.0010	<0.0010	0.0011	<0.0010	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010
Calcium (Ca)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Total	31600	32900	34500	31100	20200	30400	35100	25900	2130	18200	19200	2250	31400	10300	12300	5580	13500	14600	28900	32800
Calcium (Ca)-Total	8290	8060	8950	7260	5070	7720	8960	7010	694	6410	5290	689	8520	2820	3810	1590	3850	3730	7890	8180
Cesium (Cs)-Total	0.0151	0.0268	0.0118	0.0268	0.0277	0.0246	0.0252	0.0290	0.0196	0.0115	0.0148	0.0139	0.0174	0.0255	0.0146	0.0232	0.0175	0.0101	0.0156	0.0093
Cesium (Cs)-Total	0.0040	0.0065	0.0031	0.0063	0.0070	0.0062	0.0064	0.0079	0.0064	0.0040	0.0041	0.0042	0.0047	0.0070	0.0045	0.0066	0.0050	0.0026	0.0043	0.0023
Chromium (Cr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)-Total	<0.050	0.121	<0.050	0.201	0.403	0.297	0.129	0.220	<0.050	<0.050	0.060	<0.050	<0.050	<0.050	<0.050	0.072	0.076	0.063	0.111	<0.050
Chromium (Cr)-Total	0.011	0.030	<0.010	0.047	0.101	0.075	0.033	0.060	<0.010	<0.010	0.017	<0.010	<0.010	<0.010	<0.010	0.021	0.022	0.016	0.030	<0.010
Cobalt (Co)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)-Total	0.067	0.243	0.081	0.180	0.257	0.233	0.279	0.228	0.029	0.041	0.053	0.032	0.062	0.048	0.043	0.051	0.080	0.065	0.081	0.057
Cobalt (Co)-Total	0.0176	0.0594	0.0211	0.0420	0.0646	0.0591	0.0713	0.0617	0.0096	0.0144	0.0146	0.0099	0.0167	0.0131	0.0132	0.0145	0.0227	0.0167	0.0220	0.0142
Copper (Cu)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)-Total	6.31	4.27	3.96	6.20	4.57	3.88	3.67	3.23	2.97	1.49	2.35	1.34	2.93	3.05	1.67	3.50	8.26	3.52	8.41	3.03
Copper (Cu)-Total	1.66	1.05	1.03	1.45	1.15	0.984	0.937	0.873	0.967	0.523	0.649	0.411	0.795	0.835	0.521	0.994	2.36	0.902	2.30	0.756
Iron (Fe)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Total	55.0	125	69.5	161	347	231	191	264	26.2	57.9	47.3	19.3	53.5	45.2	44.4	84.0	64.1	74.0	71.9	45.3
Iron (Fe)-Total	14.5	30.7	18.0	37.6	87.2	58.6	48.8	71.5	8.53	20.4	13.0	5.90	14.5	12.4	13.8	23.9	18.3	19.0	19.6	11.3
Lead (Pb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)-Total	0.650	0.040	<0.020	0.063	0.033	0.036	0.026	0.033	<0.020	0.038	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.506	0.772	0.599	0.635
Lead (Pb)-Total	0.171	0.0097	0.0049	0.0146	0.0084	0.0091	0.0067	0.0090	<0.0040	0.0133	<0.0040	<0.0040	<0.0040	0.0050	0.0047	<0.0040	0.144	0.198	0.164	0.158
Lithium (Li)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Total	<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	<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
Magnesium (Mg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)-Total	1480	1530	1350	1470	1260	1550	1350	1430	730	866	1110	896	1350	1060	968	902	1030	1190	1340	1570
Magnesium (Mg)-Total	389	374	349	343	317	393	345	386	238	305	305	274	366	292	301	256	295	304	365	391
Manganese (Mn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)-Total	6.59	10.8	8.47	7.86	10.4	8.66	11.9	10.2	0.590	2.92	5.26	0.740	6.88	2.26	4.17	3.29	4.74	3.25	9.06	4.46
Manganese (Mn)-Total	1.73	2.63	2.20	1.83	2.62	2.20	3.05	2.77	0.192	1.03	1.45	0.227	1.87	0.619	1.30	0.934	1.35	0.834	2.48	1.11
Mercury (Hg)-Total	0.416	0.132	0.160	0.171	0.133	0.128	0.0941	0.125	0.263	0.216	0.233	0.198	0.219	0.352	0.253	0.140	0.267	0.522	0.324	0.459
Mercury (Hg)-Total	0.109	0.0323	0.0416	0.0398	0.0335	0.0325	0.0240	0.0337	0.0856	0.0760	0.0642	0.0608	0.0594	0.0963	0.0788	0.0398	0.0762	0.134	0.0885	0.115
Molybdenum (Mo)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	0.052	0.121	0.117	0.108	0.078	0.145	0.063	0.078	<0.020	0.021	0.031	<0.020	0.034	0.020	0.024	0.038	0.061	0.044	0.072	0.038
Molybdenum (Mo)-Total	0.0136	0.0296	0.0304	0.0253	0.0196	0.0368	0.0162	0.0210	0.0045	0.0073	0.0085	0.0047	0.0091	0.0055	0.0074	0.0107	0.0173	0.0112	0.0198	0.0095
Nickel (Ni)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)-Total	<0.20	<0.20	<0.20	<0.20	0.31	0.25	<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
Nickel (Ni)-Total	<0.040	<0.040	<0.040	<0.040	0.078	0.063	<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
Phosphorus (P)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)-Total	25800	29100	25900	26000	19400	25500	29900	21700	7670	15900	18500	9050	26400	14200	14300	10000	14700	15600	21900	26100
Phosphorus (P)-Total	6790	7120	6730	6070	4880	6470	7630	5880	2500	5610	5090	2770	7160	3890	4450	2840	4180	4000	5990	6510
Potassium (K)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)-Total	13900	14700	13400	14700	14200	13600	13300	13200	10100	8440	12300	12600	12300	12400	11200	13200	12000	13500	12400	14400
Potassium (K)-Total	3660	3610	3480	3430	3570	3450	3400	3570	3290	2970	3400	3850	3340	3410	3490	3740	3430	3470	3390	3590
Rubidium (Rb)-Total	2.28	10.7	4.98	6.40	8.27	7.89	8.78	8.56	2.12	1.22	1.87	1.96	2.06	2.75	1.92	2.78	2.32	1.70	2.11	1.86
Rubidium (Rb)-Total	0.600	2.61	1.29	1.49	2.08	2.00	2.24	2.32	0.691	0.428	0.516	0.599	0.558	0.753	0.597	0.791	0.661	0.435	0.578	0.462
Selenium (Se)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)-Total	2.03	1.22	0.723	1.40	1.34	1.22	1.21	0.848	0.591	0.633	0.847	0.667	1.12	0.765	0.789	0.632	2.28	1.62	2.00	1.43
Selenium (Se)-Total	0.534	0.298	0.188	0.326	0.336	0.309	0.310	0.229	0.193	0.223	0.233	0.204	0.305	0.210	0.245	0.180	0.651	0.415	0.546	0.356
Silver (Ag)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)-Total	<0.0050	<0.0050	0.0109	0.0097	<0.0050	0.0058	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0080	<0.0050	<0.0050
Silver (Ag)-Total	<0.0010	0.0012	0.0028	0.0023	0.0012	0.0015	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0021	0.0011	<0.0010
Sodium (Na)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)-Total	2770	3910	3730	4160	4060	3540	3750	3370	1430	2530	2410	1670	2770	2140	2100	2150	2410	2470	2640	2900
Sodium (Na)-Total	727	958	967	971	1020	897	958	912	467	890	665	513	752	586	652	612	687	632	722	724
Strontium (Sr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)-Total	62.0	24.3	20.9	22.9	15.7	18.9	24.5	16.5	3.93	28.3	33.8	4.29	48.7	20.0	23.4	15.6	40.7	28.7	64.7	53.1
Strontium (Sr)-Total	16.3	5.96	5.42	5.34	3.94	4.80	6.25	4.48	1.28	9.95	9.32	1.31	13.2	5.49	7.26	4.43	11.6	7.36	17.7	13.2
Sulfur (S)-Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tellurium (Te)-Total	<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	<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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)-Total	<0.0020	0.0142	0.0112	0.0137	0.0136	0.0121	0.0172	0.0140	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Thallium (Tl)-Total	<0.00040	0.00347	0.00291	0.00319	0.00343	0.00306	0.00439	0.00379	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Tin (Sn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)-Total	<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	<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
Titanium (Ti)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)-Total	2.78	7.71	3.80	8.91	18.5	13.8	10.3	17.0	0.41	1.35	1.12	1.09	3.41	0.95	1.02	3.93	2.45	2.09	3.39	3.61
Titanium (Ti)-Total	0.730	1.89	0.985	2.08	4.65	3.51	2.64	4.61	0.133	0.475	0.307	0.334	0.925	0.260	0.317	1.12	0.697	0.535	0.925	0.900
Uranium (U)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)-Total	0.0226	0.0051	0.0026	0.0057	0.0056	0.0050	0.0047	0.0049	<0.0020	<0.0020	0.0054	<0.0020	0.0091	<0.0020	0.0023	0.0039	0.0056	0.0049	0.0124	0.0080
Uranium (U)-Total	0.00594	0.00125	0.00068	0.00132	0.00140	0.00126	0.00120	0.00132	<0.00040	0.00055	0.00149	<0.00040	0.00246	0.00050	0.00072	0.00109	0.00159	0.00127	0.00340	0.00201
Vanadium (V)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)-Total	0.12	0.33	0.10	0.42	1.35	0.82	0.68	0.95	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.23	0.12	<0.10	0.17	<0.10
Vanadium (V)-Total	0.030	0.082	0.027	0.098	0.340	0.208	0.172	0.257	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.066	0.034	0.021	0.047	<0.020
Zinc (Zn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)-Total	88.8	133	120	126	103	127	117	111	28.3	76.0	84.8	28.6	84.8	61.4	62.0	39.8	63.2	67.5	89.8	87.0
Zinc (Zn)-Total	23.4	32.5	31.0	29.4	26.0	32.2	29.9	30.0	9.22	26.8	23.4	8.76	23.0	16.8	19.3	11.3	18.0	17.3	24.5	21.7
Zirconium (Zr)-Total	<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	<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
Speciated Metals																				
Methyl Mercury	0.387	0.143	0.160	0.156	0.137	0.119	0.0784	0.103	0.148	0.150	0.0699	0.197	0.212	0.242	0.151	0.121	0.296	0.412	0.196	0.387
Methyl Mercury	0.102	0.0349	0.0410	0.0363	0.0345	0.0300	0.0200	0.0279	0.0482	0.0528	0.0193	0.0542	0.0575	0.0664	0.0471	0.0343	0.0844	0.105	0.0535	0.0964

Project AJAX 101-246/35
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1522144
Date Received 23-Sep-14 13:00
Date 07-Nov-14

DETECTION LIMITS

Sample ID	SCUITTO LK A	SCUITTO LK B	SCUITTO LK C	SCUITTO LK D	SCUITTO LK E	SCUITTO LK GRAIN SIZE
Date Sampled	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1522144-1	L1522144-2	L1522144-3	L1522144-4	L1522144-5	L1522144-6
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Physical Tests						
% Moisture	-	-	-	-	-	-
Particle Size						
% Gravel (>2mm)	-	-	-	-	-	0.10
% Sand (2.00mm - 1.00mm)	-	-	-	-	-	0.10
% Sand (1.00mm - 0.50mm)	-	-	-	-	-	0.10
% Sand (0.50mm - 0.25mm)	-	-	-	-	-	0.10
% Sand (0.25mm - 0.125mm)	-	-	-	-	-	0.10
% Sand (0.125mm - 0.063mm)	-	-	-	-	-	0.10
% Silt (0.063mm - 0.0312mm)	-	-	-	-	-	0.10
% Silt (0.0312mm - 0.004mm)	-	-	-	-	-	0.10
% Clay (<4um)	-	-	-	-	-	0.10
Texture	-	-	-	-	-	-
Organic / Inorganic Carbon						
Total Organic Carbon	0.10	0.10	0.10	0.10	0.10	-
Metals						
Aluminum (Al)	50	50	50	50	50	-
Aluminum (Al)-Total	-	-	-	-	-	-
Aluminum (Al)-Total	-	-	-	-	-	-
Antimony (Sb)	0.10	0.10	0.10	0.10	0.10	-
Antimony (Sb)-Total	-	-	-	-	-	-
Antimony (Sb)-Total	-	-	-	-	-	-
Arsenic (As)	0.050	0.050	0.050	0.050	0.050	-
Arsenic (As)-Total	-	-	-	-	-	-
Arsenic (As)-Total	-	-	-	-	-	-
Barium (Ba)	0.50	0.50	0.50	0.50	0.50	-
Barium (Ba)-Total	-	-	-	-	-	-
Barium (Ba)-Total	-	-	-	-	-	-
Beryllium (Be)	0.10	0.10	0.10	0.10	0.10	-
Beryllium (Be)-Total	-	-	-	-	-	-
Beryllium (Be)-Total	-	-	-	-	-	-
Bismuth (Bi)	0.10	0.10	0.10	0.10	0.10	-
Bismuth (Bi)-Total	-	-	-	-	-	-
Bismuth (Bi)-Total	-	-	-	-	-	-
Boron (B)	10	10	10	10	10	-
Boron (B)-Total	-	-	-	-	-	-
Boron (B)-Total	-	-	-	-	-	-
Cadmium (Cd)	0.050	0.050	0.050	0.050	0.050	-
Cadmium (Cd)-Total	-	-	-	-	-	-
Cadmium (Cd)-Total	-	-	-	-	-	-
Calcium (Ca)	50	50	50	50	50	-
Calcium (Ca)-Total	-	-	-	-	-	-
Calcium (Ca)-Total	-	-	-	-	-	-
Cesium (Cs)-Total	-	-	-	-	-	-
Cesium (Cs)-Total	-	-	-	-	-	-
Chromium (Cr)	0.50	0.50	0.50	0.50	0.50	-
Chromium (Cr)-Total	-	-	-	-	-	-
Chromium (Cr)-Total	-	-	-	-	-	-
Cobalt (Co)	0.10	0.10	0.10	0.10	0.10	-
Cobalt (Co)-Total	-	-	-	-	-	-
Cobalt (Co)-Total	-	-	-	-	-	-
Copper (Cu)	0.50	0.50	0.50	0.50	0.50	-
Copper (Cu)-Total	-	-	-	-	-	-
Copper (Cu)-Total	-	-	-	-	-	-
Iron (Fe)	50	50	50	50	50	-
Iron (Fe)-Total	-	-	-	-	-	-
Iron (Fe)-Total	-	-	-	-	-	-
Lead (Pb)	0.10	0.10	0.10	0.10	0.10	-
Lead (Pb)-Total	-	-	-	-	-	-
Lead (Pb)-Total	-	-	-	-	-	-
Lithium (Li)	5.0	5.0	5.0	5.0	5.0	-
Lithium (Li)-Total	-	-	-	-	-	-
Lithium (Li)-Total	-	-	-	-	-	-
Magnesium (Mg)	10	10	10	10	10	-
Magnesium (Mg)-Total	-	-	-	-	-	-
Magnesium (Mg)-Total	-	-	-	-	-	-
Manganese (Mn)	0.20	0.20	0.20	0.20	0.20	-
Manganese (Mn)-Total	-	-	-	-	-	-
Manganese (Mn)-Total	-	-	-	-	-	-
Mercury (Hg)-Total	-	-	-	-	-	-
Mercury (Hg)-Total	-	-	-	-	-	-
Molybdenum (Mo)	0.10	0.10	0.10	0.10	0.10	-
Molybdenum (Mo)-Total	-	-	-	-	-	-
Molybdenum (Mo)-Total	-	-	-	-	-	-
Nickel (Ni)	0.50	0.50	0.50	0.50	0.50	-
Nickel (Ni)-Total	-	-	-	-	-	-
Nickel (Ni)-Total	-	-	-	-	-	-
Phosphorus (P)	50	50	50	50	50	-
Phosphorus (P)-Total	-	-	-	-	-	-
Phosphorus (P)-Total	-	-	-	-	-	-
Potassium (K)	100	100	100	100	100	-
Potassium (K)-Total	-	-	-	-	-	-
Potassium (K)-Total	-	-	-	-	-	-
Rubidium (Rb)-Total	-	-	-	-	-	-
Rubidium (Rb)-Total	-	-	-	-	-	-
Selenium (Se)	0.10	0.10	0.10	0.10	0.10	-
Selenium (Se)-Total	-	-	-	-	-	-
Selenium (Se)-Total	-	-	-	-	-	-
Silver (Ag)	0.050	0.050	0.050	0.050	0.050	-
Silver (Ag)-Total	-	-	-	-	-	-
Silver (Ag)-Total	-	-	-	-	-	-
Sodium (Na)	100	100	100	100	100	-
Sodium (Na)-Total	-	-	-	-	-	-
Sodium (Na)-Total	-	-	-	-	-	-
Strontium (Sr)	0.10	0.10	0.10	0.10	0.10	-
Strontium (Sr)-Total	-	-	-	-	-	-
Strontium (Sr)-Total	-	-	-	-	-	-
Sulfur (S)-Total	500	500	500	500	500	-
Tellurium (Te)-Total	-	-	-	-	-	-
Tellurium (Te)-Total	-	-	-	-	-	-
Thallium (Tl)	0.050	0.050	0.050	0.050	0.050	-
Thallium (Tl)-Total	-	-	-	-	-	-
Thallium (Tl)-Total	-	-	-	-	-	-
Tin (Sn)	0.20	0.20	0.20	0.20	0.20	-
Tin (Sn)-Total	-	-	-	-	-	-
Tin (Sn)-Total	-	-	-	-	-	-
Titanium (Ti)	1.0	1.0	1.0	1.0	1.0	-
Titanium (Ti)-Total	-	-	-	-	-	-
Titanium (Ti)-Total	-	-	-	-	-	-
Uranium (U)	0.050	0.050	0.050	0.050	0.050	-
Uranium (U)-Total	-	-	-	-	-	-
Uranium (U)-Total	-	-	-	-	-	-
Vanadium (V)	0.20	0.20	0.20	0.20	0.20	-
Vanadium (V)-Total	-	-	-	-	-	-
Vanadium (V)-Total	-	-	-	-	-	-
Zinc (Zn)	1.0	1.0	1.0	1.0	1.0	-
Zinc (Zn)-Total	-	-	-	-	-	-
Zinc (Zn)-Total	-	-	-	-	-	-
Zirconium (Zr)-Total	-	-	-	-	-	-
Zirconium (Zr)-Total	-	-	-	-	-	-
Speciated Metals						
Methyl Mercury	-	-	-	-	-	-
Methyl Mercury	-	-	-	-	-	-

Sample ID	ANDR-15 32 WHOLE FISH	ANDR-15 33 WHOLE FISH	ANDR-15 34 WHOLE FISH	ANDR-15 35 WHOLE FISH	ANDR-15 36 WHOLE FISH	ANDR-15 37 WHOLE FISH	PC-AL-01 12 WHOLE FISH	PC-AL-01 13 WHOLE FISH	PC-AL-01 14 WHOLE FISH	CC-AL-01-8 WHOLE FISH
Date Sampled	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	15-SEP-14
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1522144-7	L1522144-8	L1522144-9	L1522144-10	L1522144-11	L1522144-12	L1522144-13	L1522144-14	L1522144-15	L1522144-16
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests										
% Moisture	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Particle Size										
% Gravel (>2mm)	-	-	-	-	-	-	-	-	-	-
% Sand (2.00mm - 1.00mm)	-	-	-	-	-	-	-	-	-	-
% Sand (1.00mm - 0.50mm)	-	-	-	-	-	-	-	-	-	-
% Sand (0.50mm - 0.25mm)	-	-	-	-	-	-	-	-	-	-
% Sand (0.25mm - 0.125mm)	-	-	-	-	-	-	-	-	-	-
% Sand (0.125mm - 0.063mm)	-	-	-	-	-	-	-	-	-	-
% Silt (0.063mm - 0.0312mm)	-	-	-	-	-	-	-	-	-	-
% Silt (0.0312mm - 0.004mm)	-	-	-	-	-	-	-	-	-	-
% Clay (<4um)	-	-	-	-	-	-	-	-	-	-
Texture	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon										
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-
Metals										
Aluminum (Al)	-	-	-	-	-	-	-	-	-	-
Aluminum (Al)-Total	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Aluminum (Al)-Total	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Antimony (Sb)	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Antimony (Sb)-Total	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Arsenic (As)	-	-	-	-	-	-	-	-	-	-
Arsenic (As)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Arsenic (As)-Total	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040
Barium (Ba)	-	-	-	-	-	-	-	-	-	-
Barium (Ba)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Barium (Ba)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Beryllium (Be)	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Beryllium (Be)-Total	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Bismuth (Bi)	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Bismuth (Bi)-Total	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Boron (B)	-	-	-	-	-	-	-	-	-	-
Boron (B)-Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Boron (B)-Total	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Cadmium (Cd)	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Cadmium (Cd)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Calcium (Ca)	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Total	20	20	20	20	20	20	20	20	20	20
Calcium (Ca)-Total	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Cesium (Cs)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Cesium (Cs)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Chromium (Cr)	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Chromium (Cr)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Cobalt (Co)	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Cobalt (Co)-Total	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040
Copper (Cu)	-	-	-	-	-	-	-	-	-	-
Copper (Cu)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Copper (Cu)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Iron (Fe)	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Total	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Iron (Fe)-Total	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Lead (Pb)	-	-	-	-	-	-	-	-	-	-
Lead (Pb)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Lead (Pb)-Total	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040
Lithium (Li)	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Total	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Lithium (Li)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Magnesium (Mg)	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)-Total	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Magnesium (Mg)-Total	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Manganese (Mn)	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Manganese (Mn)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Mercury (Hg)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Mercury (Hg)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Molybdenum (Mo)	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Molybdenum (Mo)-Total	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040
Nickel (Ni)	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)-Total	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Nickel (Ni)-Total	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
Phosphorus (P)	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)-Total	10	10	10	10	10	10	10	10	10	10
Phosphorus (P)-Total	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Potassium (K)	-	-	-	-	-	-	-	-	-	-
Potassium (K)-Total	20	20	20	20	20	20	20	20	20	20
Potassium (K)-Total	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Rubidium (Rb)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Rubidium (Rb)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Selenium (Se)	-	-	-	-	-	-	-	-	-	-
Selenium (Se)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Selenium (Se)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Silver (Ag)	-	-	-	-	-	-	-	-	-	-
Silver (Ag)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Silver (Ag)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Sodium (Na)	-	-	-	-	-	-	-	-	-	-
Sodium (Na)-Total	20	20	20	20	20	20	20	20	20	20
Sodium (Na)-Total	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Strontium (Sr)	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)-Total	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Strontium (Sr)-Total	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Sulfur (S)-Total	-	-	-	-	-	-	-	-	-	-
Tellurium (Te)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Tellurium (Te)-Total	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040
Thallium (Tl)	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)-Total	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Thallium (Tl)-Total	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040
Tin (Sn)	-	-	-	-	-	-	-	-	-	-
Tin (Sn)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Tin (Sn)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Titanium (Ti)	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Titanium (Ti)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Uranium (U)	-	-	-	-	-	-	-	-	-	-
Uranium (U)-Total	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Uranium (U)-Total	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040
Vanadium (V)	-	-	-	-	-	-	-	-	-	-
Vanadium (V)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Vanadium (V)-Total	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Zinc (Zn)	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)-Total	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Zinc (Zn)-Total	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Zirconium (Zr)-Total	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Zirconium (Zr)-Total	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
Speciated Metals										
Methyl Mercury	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Methyl Mercury	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010

Sample ID	SCUITTO LAKE 1 WHOLE FISH	SCUITTO LAKE 2 WHOLE FISH	SCUITTO LAKE 3 WHOLE FISH	SCUITTO LAKE 4 WHOLE FISH	SCUITTO LAKE 5 WHOLE FISH	SCUITTO LAKE 6 WHOLE FISH	SCUITTO LAKE 7 WHOLE FISH	SCUITTO LAKE 8 WHOLE FISH	SCUITTO LAKE 9 WHOLE FISH	JACKO LK 5 WHOLE FISH	JACKO LK 6 WHOLE FISH	JACKO LK 7 WHOLE FISH	JACKO LK 8 WHOLE FISH
Date Sampled	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1522144-17	L1522144-18	L1522144-19	L1522144-20	L1522144-21	L1522144-22	L1522144-23	L1522144-24	L1522144-25	L1522144-26	L1522144-27	L1522144-28	L1522144-29
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests													
% Moisture	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
Particle Size													
% Gravel (>2mm)	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (2.00mm - 1.00mm)	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (1.00mm - 0.50mm)	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.50mm - 0.25mm)	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.25mm - 0.125mm)	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.125mm - 0.063mm)	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.063mm - 0.0312mm)	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.0312mm - 0.004mm)	-	-	-	-	-	-	-	-	-	-	-	-	-
% Clay (<4um)	-	-	-	-	-	-	-	-	-	-	-	-	-
Texture	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon													
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals													
Aluminum (Al)	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum (Al)-Total	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
Aluminum (Al)-Total	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Antimony (Sb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)-Total	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	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
Arsenic (As)	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)-Total	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
Arsenic (As)-Total	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
Barium (Ba)	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)-Total	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
Barium (Ba)-Total	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)	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)-Total	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	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)	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)-Total	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	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)	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)-Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Boron (B)-Total	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
Cadmium (Cd)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Cadmium (Cd)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Calcium (Ca)	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Total	20	20	20	20	20	20	20	20	20	20	20	20	20
Calcium (Ca)-Total	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
Cesium (Cs)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Cesium (Cs)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Chromium (Cr)	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)-Total	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
Chromium (Cr)-Total	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
Cobalt (Co)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)-Total	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
Cobalt (Co)-Total	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
Copper (Cu)	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)-Total	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
Copper (Cu)-Total	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
Iron (Fe)	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Total	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Iron (Fe)-Total	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Lead (Pb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)-Total	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
Lead (Pb)-Total	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
Lithium (Li)	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Total	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	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)	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)-Total	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
Magnesium (Mg)-Total	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Manganese (Mn)	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)-Total	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
Manganese (Mn)-Total	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
Mercury (Hg)-Total	0.025	0.050	0.025	0.0050	0.025	0.020	0.050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Mercury (Hg)-Total	0.0060	0.010	0.0060	0.0010	0.0060	0.0060	0.010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Molybdenum (Mo)	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	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
Molybdenum (Mo)-Total	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
Nickel (Ni)	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)-Total	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
Nickel (Ni)-Total	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
Phosphorus (P)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)-Total	10	10	10	10	10	10	10	10	10	10	10	10	10
Phosphorus (P)-Total	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
Potassium (K)	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)-Total	20	20	20	20	20	20	20	20	20	20	20	20	20
Potassium (K)-Total	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
Rubidium (Rb)-Total	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
Rubidium (Rb)-Total	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
Selenium (Se)	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)-Total	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
Selenium (Se)-Total	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
Silver (Ag)	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Silver (Ag)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Sodium (Na)	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)-Total	20	20	20	20	20	20	20	20	20	20	20	20	20
Sodium (Na)-Total	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)	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)-Total	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
Strontium (Sr)-Total	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
Sulfur (S)-Total	-	-	-	-	-	-	-	-	-	-	-	-	-
Tellurium (Te)-Total	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	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)	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)-Total	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
Thallium (Tl)-Total	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
Tin (Sn)	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)-Total	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	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
Titanium (Ti)	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)-Total	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
Titanium (Ti)-Total	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)	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)-Total	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
Uranium (U)-Total	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
Vanadium (V)	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)-Total	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
Vanadium (V)-Total	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
Zinc (Zn)	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)-Total	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
Zinc (Zn)-Total	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
Zirconium (Zr)-Total	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	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
Speciated Metals													
Methyl Mercury	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Methyl Mercury	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010

Project
Report To
ALS File No.
Date Received
Date

DETECTION LIMITS

	JACKO LK 9	CC-AL-01-1	CC-AL-01-2	CC-AL-01-3	CC-AL-01-4	CC-AL-01-5	CC-AL-01-6	CC-AL-01-7	EDITH LAKE 1	EDITH LAKE 2	EDITH LAKE 3	EDITH LAKE 4	EDITH LAKE 5	EDITH LAKE 6	EDITH LAKE 7	EDITH LAKE 8	JACKO LK 1	JACKO LK 2	JACKO LK 3	JACKO LK 4
Sample ID	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH
Date Sampled	18-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1522144-30	L1522144-31	L1522144-32	L1522144-33	L1522144-34	L1522144-35	L1522144-36	L1522144-37	L1522144-38	L1522144-39	L1522144-40	L1522144-41	L1522144-42	L1522144-43	L1522144-44	L1522144-45	L1522144-46	L1522144-47	L1522144-48	L1522144-49
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests																				
% Moisture	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
Particle Size																				
% Gravel (>2mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (2.00mm - 1.00mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (1.00mm - 0.50mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.50mm - 0.25mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.25mm - 0.125mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.125mm - 0.063mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.063mm - 0.0312mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.0312mm - 0.004mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Clay (<4um)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Texture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																				
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																				
Aluminum (Al)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum (Al)-Total	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
Aluminum (Al)-Total	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Antimony (Sb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)-Total	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	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
Arsenic (As)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)-Total	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
Arsenic (As)-Total	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
Barium (Ba)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)-Total	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	0.050	0.050	0.050	0.050	0.050
Barium (Ba)-Total	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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)-Total	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	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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)-Total	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	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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)-Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Boron (B)-Total	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
Cadmium (Cd)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Cadmium (Cd)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Calcium (Ca)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Total	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Calcium (Ca)-Total	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Cesium (Cs)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Cesium (Cs)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Chromium (Cr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)-Total	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	0.050	0.050	0.050	0.050	0.050
Chromium (Cr)-Total	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
Cobalt (Co)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)-Total	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
Cobalt (Co)-Total	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
Copper (Cu)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)-Total	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
Copper (Cu)-Total	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
Iron (Fe)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Total	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Iron (Fe)-Total	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Lead (Pb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)-Total	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
Lead (Pb)-Total	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
Lithium (Li)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Total	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	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
Magnesium (Mg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)-Total	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
Magnesium (Mg)-Total	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Manganese (Mn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)-Total	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	0.050	0.050	0.050	0.050	0.050
Manganese (Mn)-Total	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
Mercury (Hg)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Mercury (Hg)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Molybdenum (Mo)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	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
Molybdenum (Mo)-Total	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
Nickel (Ni)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)-Total	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
Nickel (Ni)-Total	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
Phosphorus (P)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)-Total	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Phosphorus (P)-Total	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
Potassium (K)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)-Total	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Potassium (K)-Total	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Rubidium (Rb)-Total	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	0.050	0.050	0.050	0.050	0.050
Rubidium (Rb)-Total	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
Selenium (Se)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)-Total	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	0.050	0.050	0.050	0.050	0.050
Selenium (Se)-Total	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
Silver (Ag)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)-Total	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Silver (Ag)-Total	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Sodium (Na)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)-Total	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Sodium (Na)-Total	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Strontium (Sr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)-Total	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	0.050	0.050	0.050	0.050	0.050
Strontium (Sr)-Total	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
Sulfur (S)-Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tellurium (Te)-Total	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	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)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)-Total	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
Thallium (Tl)-Total	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	0.00040	0.00040
Tin (Sn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)-Total	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	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
Titanium (Ti)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)-Total	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
Titanium (Ti)-Total	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
Uranium (U)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)-Total	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
Uranium (U)-Total	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	0.00040	0.00040
Vanadium (V)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)-Total	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
Vanadium (V)-Total	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
Zinc (Zn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)-Total	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
Zinc (Zn)-Total	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
Zirconium (Zr)-Total	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	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
Speciated Metals																				
Methyl Mercury	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Methyl Mercury	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010

Project AJAX 101-246/35
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1522144
Date Received 23-Sep-14 13:00
Date 07-Nov-14

UNITS

Sample ID	SCUITTO LK A	SCUITTO LK B	SCUITTO LK C	SCUITTO LK D	SCUITTO LK E	SCUITTO LK GRAIN SIZE	ANDR-15 32 WHOLE FISH	ANDR-15 33 WHOLE FISH	ANDR-15 34 WHOLE FISH	ANDR-15 35 WHOLE FISH	ANDR-15 36 WHOLE FISH	ANDR-15 37 WHOLE FISH	PC-AL-01 12 WHOLE FISH	PC-AL-01 13 WHOLE FISH	PC-AL-01 14 WHOLE FISH	CC-AL-01-8 WHOLE FISH	SCUITTO LAKE 1 WHOLE FISH	SCUITTO LAKE 2 WHOLE FISH	SCUITTO LAKE 3 WHOLE FISH	SCUITTO LAKE 4 WHOLE FISH	SCUITTO LAKE 5 WHOLE FISH	SCUITTO LAKE 6 WHOLE FISH	SCUITTO LAKE 7 WHOLE FISH	SCUITTO LAKE 8 WHOLE FISH	SCUITTO LAKE 9 WHOLE FISH	JACKO LK 5 WHOLE FISH	JACKO LK 6 WHOLE FISH	JACKO LK 7 WHOLE FISH	JACKO LK 8 WHOLE FISH
Date Sampled	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	17-SEP-14	15-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	19-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1522144-1	L1522144-2	L1522144-3	L1522144-4	L1522144-5	L1522144-6	L1522144-7	L1522144-8	L1522144-9	L1522144-10	L1522144-11	L1522144-12	L1522144-13	L1522144-14	L1522144-15	L1522144-16	L1522144-17	L1522144-18	L1522144-19	L1522144-20	L1522144-21	L1522144-22	L1522144-23	L1522144-24	L1522144-25	L1522144-26	L1522144-27	L1522144-28	L1522144-29
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests																													
% Moisture	-	-	-	-	-	-	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Particle Size																													
% Gravel (>2mm)	-	-	-	-	-	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (2.00mm - 1.00mm)	-	-	-	-	-	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (1.00mm - 0.50mm)	-	-	-	-	-	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.50mm - 0.25mm)	-	-	-	-	-	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.25mm - 0.125mm)	-	-	-	-	-	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.125mm - 0.063mm)	-	-	-	-	-	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.063mm - 0.0312mm)	-	-	-	-	-	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.0312mm - 0.004mm)	-	-	-	-	-	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Clay (<4um)	-	-	-	-	-	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Texture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																													
Total Organic Carbon	%	%	%	%	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																													
Aluminum (Al)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum (Al)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum (Al)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Antimony (Sb)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony (Sb)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Arsenic (As)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic (As)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Barium (Ba)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Barium (Ba)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Beryllium (Be)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Beryllium (Be)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Bismuth (Bi)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Bismuth (Bi)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Boron (B)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Boron (B)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Cadmium (Cd)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cadmium (Cd)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Calcium (Ca)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Calcium (Ca)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Cesium (Cs)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cesium (Cs)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Chromium (Cr)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium (Cr)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Cobalt (Co)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cobalt (Co)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Copper (Cu)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Copper (Cu)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Iron (Fe)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Iron (Fe)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Lead (Pb)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Lead (Pb)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Lithium (Li)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Lithium (Li)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Magnesium (Mg)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Magnesium (Mg)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Manganese (Mn)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Manganese (Mn)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Mercury (Hg)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Mercury (Hg)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Molybdenum (Mo)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Molybdenum (Mo)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Nickel (Ni)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Nickel (Ni)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Phosphorus (P)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Phosphorus (P)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Potassium (K)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Potassium (K)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Rubidium (Rb)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Rubidium (Rb)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Selenium (Se)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Selenium (Se)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Silver (Ag)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Silver (Ag)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Sodium (Na)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sodium (Na)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Strontium (Sr)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Strontium (Sr)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Sulfur (S)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tellurium (Te)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Tellurium (Te)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Thallium (Tl)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Thallium (Tl)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Tin (Sn)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Tin (Sn)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Titanium (Ti)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Titanium (Ti)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Uranium (U)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Uranium (U)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Vanadium (V)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Vanadium (V)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Zinc (Zn)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Zinc (Zn)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Zirconium (Zr)-Total	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Zirconium (Zr)-Total	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Speciated Metals																													
Methyl Mercury	-	-	-	-	-	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Methyl Mercury	-	-	-	-	-	-	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt

Project
Report To
ALS File No.
Date Received
Date

UNITS

	JACKO LK 9	CC-AL-01-1	CC-AL-01-2	CC-AL-01-3	CC-AL-01-4	CC-AL-01-5	CC-AL-01-6	CC-AL-01-7	EDITH LAKE 1	EDITH LAKE 2	EDITH LAKE 3	EDITH LAKE 4	EDITH LAKE 5	EDITH LAKE 6	EDITH LAKE 7	EDITH LAKE 8	JACKO LK 1	JACKO LK 2	JACKO LK 3	JACKO LK 4
Sample ID	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH	WHOLE FISH
Date Sampled	18-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	15-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14	18-SEP-14
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1522144-30	L1522144-31	L1522144-32	L1522144-33	L1522144-34	L1522144-35	L1522144-36	L1522144-37	L1522144-38	L1522144-39	L1522144-40	L1522144-41	L1522144-42	L1522144-43	L1522144-44	L1522144-45	L1522144-46	L1522144-47	L1522144-48	L1522144-49
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests																				
% Moisture	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Particle Size																				
% Gravel (>2mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (2.00mm - 1.00mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (1.00mm - 0.50mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.50mm - 0.25mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.25mm - 0.125mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Sand (0.125mm - 0.063mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.063mm - 0.0312mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Silt (0.0312mm - 0.004mm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Clay (<4um)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Texture	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic / Inorganic Carbon																				
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																				
Aluminum (Al)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum (Al)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum (Al)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Antimony (Sb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony (Sb)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Arsenic (As)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic (As)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Barium (Ba)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Barium (Ba)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Beryllium (Be)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Beryllium (Be)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Bismuth (Bi)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Bismuth (Bi)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Boron (B)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Boron (B)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Cadmium (Cd)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cadmium (Cd)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Calcium (Ca)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Calcium (Ca)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Cesium (Cs)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cesium (Cs)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Chromium (Cr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium (Cr)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Cobalt (Co)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cobalt (Co)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Copper (Cu)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Copper (Cu)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Iron (Fe)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Iron (Fe)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Lead (Pb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Lead (Pb)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Lithium (Li)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Lithium (Li)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Magnesium (Mg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Magnesium (Mg)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Manganese (Mn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Manganese (Mn)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Mercury (Hg)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Mercury (Hg)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Molybdenum (Mo)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Molybdenum (Mo)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Nickel (Ni)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Nickel (Ni)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Phosphorus (P)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Phosphorus (P)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Potassium (K)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Potassium (K)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Rubidium (Rb)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Rubidium (Rb)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Selenium (Se)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Selenium (Se)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Silver (Ag)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Silver (Ag)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Sodium (Na)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sodium (Na)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Strontium (Sr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Strontium (Sr)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Sulfur (S)-Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tellurium (Te)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Tellurium (Te)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Thallium (Tl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Thallium (Tl)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Tin (Sn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Tin (Sn)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Titanium (Ti)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Titanium (Ti)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Uranium (U)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Uranium (U)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Vanadium (V)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Vanadium (V)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Zinc (Zn)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Zinc (Zn)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Zirconium (Zr)-Total	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Zirconium (Zr)-Total	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt
Speciated Metals																				
Methyl Mercury	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Methyl Mercury	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt	mg/kg wwt

Project	AJAX 101-246/35
Report To	Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No.	L1522144
Date Received	23-Sep-14 13:00
Date	07-Nov-14

REPLICATE RESULTS

Sample ID	Matrix	ALS ID	Analyte	Replicate 1	Replicate 2	Units	RPD	RPD Limit	Diff	Diff Limit	Qualifier
Physical Tests											
L1522144-18	Tissue	WG1982052-3	% Moisture	78.4	80.0	%	2.0	20	-	-	-
L1522144-21	Tissue	WG1982052-2	% Moisture	70.5	66.7	%	5.6	20	-	-	-
L1522144-45	Tissue	WG1982052-1	% Moisture	71.6	69.2	%	3.3	20	-	-	-
Particle Size											
L1522144-6	Soil	WG1963281-1	% Gravel (>2mm)	<0.10	<0.10	%	N/A	25	-	-	RPD-NA
L1522144-6	Soil	WG1963281-1	% Sand (2.00mm - 1.00mm)	<0.10	<0.10	%	N/A	5	-	-	RPD-NA
L1522144-6	Soil	WG1963281-1	% Sand (1.00mm - 0.50mm)	<0.10	<0.10	%	N/A	5	-	-	RPD-NA
L1522144-6	Soil	WG1963281-1	% Sand (0.50mm - 0.25mm)	<0.10	<0.10	%	N/A	5	-	-	RPD-NA
L1522144-6	Soil	WG1963281-1	% Sand (0.25mm - 0.125mm)	<0.10	<0.10	%	N/A	5	-	-	RPD-NA
L1522144-6	Soil	WG1963281-1	% Sand (0.125mm - 0.063mm)	<0.10	<0.10	%	N/A	5	-	-	RPD-NA
L1522144-6	Soil	WG1963281-1	% Silt (0.063mm - 0.0312mm)	22.0	22.0	%	-	-	0.00	5	J
L1522144-6	Soil	WG1963281-1	% Silt (0.0312mm - 0.004mm)	50.8	50.8	%	-	-	0.00	5	J
L1522144-6	Soil	WG1963281-1	% Clay (<4um)	27.2	27.2	%	-	-	0.00	5	J
Metals											
L1522144-1	Soil	WG1960901-2	Aluminum (Al)	20900	21700	mg/kg	3.8	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Aluminum (Al)-Total	6.3	14.4	mg/kg	78	40	-	-	DUP-H
L1522144-17	Tissue	WG1980558-4	Aluminum (Al)-Total	1.60	3.66	mg/kg wwt	78	40	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Aluminum (Al)-Total	5.29	7.18	mg/kg wwt	30	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Aluminum (Al)-Total	16.9	22.9	mg/kg	30	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Aluminum (Al)-Total	<0.40	<0.40	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Aluminum (Al)-Total	<2.0	<2.0	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Aluminum (Al)-Total	31.9	25.7	mg/kg	21	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Aluminum (Al)-Total	9.06	7.30	mg/kg wwt	21	40	-	-	-
L1522144-1	Soil	WG1960901-2	Antimony (Sb)	0.55	0.61	mg/kg	9.8	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Antimony (Sb)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Antimony (Sb)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Antimony (Sb)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Antimony (Sb)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Antimony (Sb)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Antimony (Sb)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Antimony (Sb)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Antimony (Sb)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Arsenic (As)	4.38	4.59	mg/kg	4.6	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Arsenic (As)-Total	0.0222	0.0198	mg/kg wwt	11	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Arsenic (As)-Total	0.087	0.078	mg/kg	11	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Arsenic (As)-Total	0.0315	0.0334	mg/kg wwt	5.7	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Arsenic (As)-Total	0.101	0.107	mg/kg	5.7	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Arsenic (As)-Total	0.089	0.087	mg/kg	2.3	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Arsenic (As)-Total	0.0290	0.0284	mg/kg wwt	2.3	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Arsenic (As)-Total	0.136	0.126	mg/kg	7.2	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Arsenic (As)-Total	0.0386	0.0359	mg/kg wwt	7.2	40	-	-	-
L1522144-1	Soil	WG1960901-2	Barium (Ba)	150	153	mg/kg	2.1	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Barium (Ba)-Total	0.344	0.661	mg/kg	63	40	-	-	DUP-H
L1522144-17	Tissue	WG1980558-4	Barium (Ba)-Total	0.088	0.168	mg/kg wwt	63	40	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Barium (Ba)-Total	0.576	0.360	mg/kg wwt	46	40	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Barium (Ba)-Total	1.84	1.15	mg/kg	46	40	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Barium (Ba)-Total	0.069	0.210	mg/kg wwt	101	40	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Barium (Ba)-Total	0.211	0.644	mg/kg	101	40	-	-	DUP-H
L1522144-45	Tissue	WG1980558-3	Barium (Ba)-Total	2.07	1.56	mg/kg	28	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Barium (Ba)-Total	0.587	0.444	mg/kg wwt	28	40	-	-	-
L1522144-1	Soil	WG1960901-2	Beryllium (Be)	0.70	0.72	mg/kg	2.8	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Beryllium (Be)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Beryllium (Be)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Beryllium (Be)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Beryllium (Be)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Beryllium (Be)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Beryllium (Be)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Beryllium (Be)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Beryllium (Be)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Bismuth (Bi)	0.15	0.16	mg/kg	6.5	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Bismuth (Bi)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Bismuth (Bi)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Bismuth (Bi)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Bismuth (Bi)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Bismuth (Bi)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Bismuth (Bi)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Bismuth (Bi)-Total	<0.010	<0.010	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Bismuth (Bi)-Total	<0.0020	<0.0020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Boron (B)	<10	<10	mg/kg	N/A	30	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Boron (B)-Total	<0.20	<0.20	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Boron (B)-Total	<1.0	<1.0	mg/kg	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Boron (B)-Total	<1.0	<1.0	mg/kg	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Boron (B)-Total	<0.20	<0.20	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Boron (B)-Total	<0.20	<0.20	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Boron (B)-Total	<1.0	<1.0	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Boron (B)-Total	<1.0	<1.0	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Boron (B)-Total	<0.20	<0.20	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Cadmium (Cd)	0.199	0.201	mg/kg	1.2	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Cadmium (Cd)-Total	0.0019	0.0015	mg/kg wwt	25	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Cadmium (Cd)-Total	0.0075	0.0059	mg/kg	25	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Cadmium (Cd)-Total	0.0022	0.0028	mg/kg wwt	23	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Cadmium (Cd)-Total	0.0070	0.0088	mg/kg	23	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Cadmium (Cd)-Total	<0.0010	<0.0010	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Cadmium (Cd)-Total	<0.0050	<0.0050	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Cadmium (Cd)-Total	<0.0010	<0.0010	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Cadmium (Cd)-Total	<0.0050	<0.0050	mg/kg	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Calcium (Ca)	8180	8510	mg/kg	4.0	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Calcium (Ca)-Total	1310	3640	mg/kg wwt	94	60	-	-	DUP-H
L1522144-17	Tissue	WG1980558-4	Calcium (Ca)-Total	5150	14300	mg/kg	94	60	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Calcium (Ca)-Total	14600	5110	mg/kg wwt	96	60	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Calcium (Ca)-Total	46700	16300	mg/kg	96	60	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Calcium (Ca)-Total	2130	9060	mg/kg	124	60	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Calcium (Ca)-Total	694	2950	mg/kg wwt	124	60	-	-	DUP-H
L1522144-45	Tissue	WG1980558-3	Calcium (Ca)-Total	1590	1500	mg/kg wwt	5.4	60	-	-	-
L1522144-45	Tissue	WG1980558-3	Calcium (Ca)-Total	5580	5290	mg/kg	5.4	60	-	-	-
L1522144-17	Tissue	WG1980558-4	Cesium (Cs)-Total	0.0030	0.0029	mg/kg wwt	5.4	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Cesium (Cs)-Total	0.0119	0.0113	mg/kg	5.4	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Cesium (Cs)-Total	0.0101	0.0107	mg/kg	5.3	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Cesium (Cs)-Total	0.0032	0.0033	mg/kg wwt	5.3	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Cesium (Cs)-Total	0.0064	0.0072	mg/kg wwt	11	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Cesium (Cs)-Total	0.0196	0.0220	mg/kg	11	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Cesium (Cs)-Total	0.0066	0.0065	mg/kg wwt	0.8	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Cesium (Cs)-Total	0.0232	0.0230	mg/kg	0.8	40	-	-	-
L1522144-1	Soil	WG1960901-2	Chromium (Cr)	46.8	58.5	mg/kg	22	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Chromium (Cr)-Total	0.165	0.420	mg/kg	87	40	-	-	DUP-H
L1522144-17	Tissue	WG1980558-4	Chromium (Cr)-Total	0.042	0.107	mg/kg wwt	87	40	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Chromium (Cr)-Total	<0.010	0.016	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Chromium (Cr)-Total	<0.050	0.051	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Chromium (Cr)-Total	<0.010	0.012	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Chromium (Cr)-Total	<0.050	<0.050	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Chromium (Cr)-Total	0.021	0.022	mg/kg wwt	7.4	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Chromium (Cr)-Total	0.072	0.078	mg/kg	7.4	40	-	-	-
L1522144-1	Soil	WG1960901-2	Cobalt (Co)	10.0	10.2	mg/kg	1.7	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Cobalt (Co)-Total	0.063	0.072	mg/kg	14	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Cobalt (Co)-Total	0.0160	0.0184	mg/kg wwt	14	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Cobalt (Co)-Total	0.067	0.052	mg/kg	24	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Cobalt (Co)-Total	0.0208	0.0164	mg/kg wwt	24	40	-	-	-

Project AJAX 101-246/35
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1522144
Date Received 23-Sep-14 13:00
Date 07-Nov-14

REPLICATE RESULTS

Sample ID	Matrix	ALS ID	Analyte	Replicate 1	Replicate 2	Units	RPD	RPD Limit	Diff	Diff Limit	Qualifier
L1522144-38	Tissue	WG1981557-3	Cobalt (Co)-Total	0.029	0.032	mg/kg	7.0	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Cobalt (Co)-Total	0.0096	0.0103	mg/kg wwt	7.0	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Cobalt (Co)-Total	0.051	0.043	mg/kg	17	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Cobalt (Co)-Total	0.0145	0.0123	mg/kg wwt	17	40	-	-	-
L1522144-1	Soil	WG1960901-2	Copper (Cu)	39.9	45.0	mg/kg	12	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Copper (Cu)-Total	2.78	2.66	mg/kg	4.6	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Copper (Cu)-Total	0.709	0.677	mg/kg wwt	4.6	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Copper (Cu)-Total	1.84	2.25	mg/kg	20	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Copper (Cu)-Total	0.577	0.706	mg/kg wwt	20	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Copper (Cu)-Total	0.967	0.997	mg/kg wwt	3.1	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Copper (Cu)-Total	2.97	3.06	mg/kg	3.1	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Copper (Cu)-Total	3.50	5.19	mg/kg	39	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Copper (Cu)-Total	0.994	1.47	mg/kg wwt	39	40	-	-	-
L1522144-1	Soil	WG1960901-2	Iron (Fe)	25900	26500	mg/kg	2.4	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Iron (Fe)-Total	20.0	21.3	mg/kg wwt	6.2	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Iron (Fe)-Total	78.7	83.7	mg/kg	6.2	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Iron (Fe)-Total	57.3	71.2	mg/kg	22	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Iron (Fe)-Total	17.9	22.3	mg/kg wwt	22	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Iron (Fe)-Total	8.53	9.09	mg/kg wwt	6.4	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Iron (Fe)-Total	26.2	27.9	mg/kg	6.4	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Iron (Fe)-Total	23.9	20.9	mg/kg wwt	13	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Iron (Fe)-Total	84.0	73.5	mg/kg	13	40	-	-	-
L1522144-1	Soil	WG1960901-2	Lead (Pb)	8.34	8.64	mg/kg	3.5	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Lead (Pb)-Total	0.0056	0.0077	mg/kg wwt	32	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Lead (Pb)-Total	0.022	0.030	mg/kg	32	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Lead (Pb)-Total	0.037	0.052	mg/kg	32	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Lead (Pb)-Total	0.0117	0.0162	mg/kg wwt	32	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Lead (Pb)-Total	<0.020	<0.020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Lead (Pb)-Total	<0.0040	<0.0040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Lead (Pb)-Total	<0.0040	<0.0040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Lead (Pb)-Total	<0.020	<0.020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Lithium (Li)	12.1	12.9	mg/kg	6.7	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Lithium (Li)-Total	<0.50	<0.50	mg/kg	N/A	40	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Lithium (Li)-Total	<0.50	<0.50	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Lithium (Li)-Total	<0.50	<0.50	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Lithium (Li)-Total	<0.10	<0.10	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Lithium (Li)-Total	<0.50	<0.50	mg/kg	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Magnesium (Mg)	7930	7990	mg/kg	0.8	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Magnesium (Mg)-Total	1070	1250	mg/kg	16	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Magnesium (Mg)-Total	273	319	mg/kg wwt	16	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Magnesium (Mg)-Total	1680	1140	mg/kg	38	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Magnesium (Mg)-Total	525	358	mg/kg wwt	38	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Magnesium (Mg)-Total	730	984	mg/kg	30	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Magnesium (Mg)-Total	238	321	mg/kg wwt	30	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Magnesium (Mg)-Total	902	1010	mg/kg	12	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Magnesium (Mg)-Total	256	288	mg/kg wwt	12	40	-	-	-
L1522144-1	Soil	WG1960901-2	Manganese (Mn)	340	386	mg/kg	13	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Manganese (Mn)-Total	0.605	1.14	mg/kg wwt	62	40	-	-	DUP-H
L1522144-17	Tissue	WG1980558-4	Manganese (Mn)-Total	2.38	4.50	mg/kg	62	40	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Manganese (Mn)-Total	3.28	1.76	mg/kg wwt	60	40	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Manganese (Mn)-Total	10.5	5.63	mg/kg	60	40	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Manganese (Mn)-Total	0.590	1.32	mg/kg	76	40	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Manganese (Mn)-Total	0.192	0.429	mg/kg wwt	76	40	-	-	DUP-H
L1522144-45	Tissue	WG1980558-3	Manganese (Mn)-Total	3.29	2.74	mg/kg	18	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Manganese (Mn)-Total	0.934	0.780	mg/kg wwt	18	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Mercury (Hg)-Total	0.253	0.235	mg/kg wwt	7.1	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Mercury (Hg)-Total	0.993	0.925	mg/kg	7.1	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Mercury (Hg)-Total	0.518	0.621	mg/kg	18	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Mercury (Hg)-Total	0.0856	0.105	mg/kg wwt	21	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Mercury (Hg)-Total	0.263	0.323	mg/kg	21	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Mercury (Hg)-Total	0.140	0.153	mg/kg	9.1	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Mercury (Hg)-Total	0.0398	0.0436	mg/kg wwt	9.1	40	-	-	-
L1522144-1	Soil	WG1960901-2	Molybdenum (Mo)	2.77	3.30	mg/kg	17	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Molybdenum (Mo)-Total	0.0115	0.0101	mg/kg wwt	13	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Molybdenum (Mo)-Total	0.045	0.040	mg/kg	13	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Molybdenum (Mo)-Total	0.033	0.034	mg/kg	4.6	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Molybdenum (Mo)-Total	0.0103	0.0108	mg/kg wwt	4.6	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Molybdenum (Mo)-Total	0.0045	0.0057	mg/kg wwt	23	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Molybdenum (Mo)-Total	<0.020	<0.020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Molybdenum (Mo)-Total	0.038	0.036	mg/kg	4.3	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Molybdenum (Mo)-Total	0.0107	0.0103	mg/kg wwt	4.3	40	-	-	-
L1522144-1	Soil	WG1960901-2	Nickel (Ni)	48.7	56.6	mg/kg	15	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Nickel (Ni)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Nickel (Ni)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Nickel (Ni)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Nickel (Ni)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Nickel (Ni)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Nickel (Ni)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Nickel (Ni)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Nickel (Ni)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Phosphorus (P)	1040	1090	mg/kg	4.9	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Phosphorus (P)-Total	11700	17300	mg/kg	38	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Phosphorus (P)-Total	2980	4400	mg/kg wwt	38	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Phosphorus (P)-Total	10700	5310	mg/kg wwt	67	40	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Phosphorus (P)-Total	34200	17000	mg/kg	67	40	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Phosphorus (P)-Total	2500	4020	mg/kg wwt	47	40	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Phosphorus (P)-Total	7670	12300	mg/kg	47	40	-	-	DUP-H
L1522144-45	Tissue	WG1980558-3	Phosphorus (P)-Total	10000	10400	mg/kg	4.4	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Phosphorus (P)-Total	2840	2970	mg/kg wwt	4.4	40	-	-	-
L1522144-1	Soil	WG1960901-2	Potassium (K)	2130	2150	mg/kg	0.9	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Potassium (K)-Total	13800	13900	mg/kg	0.9	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Potassium (K)-Total	3510	3540	mg/kg wwt	0.9	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Potassium (K)-Total	3570	3590	mg/kg wwt	0.7	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Potassium (K)-Total	11400	11500	mg/kg	0.7	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Potassium (K)-Total	3290	3690	mg/kg wwt	11	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Potassium (K)-Total	10100	11300	mg/kg	11	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Potassium (K)-Total	13200	13200	mg/kg	0.1	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Potassium (K)-Total	3740	3750	mg/kg wwt	0.1	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Rubidium (Rb)-Total	4.75	4.77	mg/kg	0.4	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Rubidium (Rb)-Total	1.21	1.21	mg/kg wwt	0.4	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Rubidium (Rb)-Total	1.28	1.30	mg/kg wwt	1.6	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Rubidium (Rb)-Total	4.08	4.14	mg/kg	1.6	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Rubidium (Rb)-Total	0.691	0.778	mg/kg wwt	12	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Rubidium (Rb)-Total	2.12	2.39	mg/kg	12	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Rubidium (Rb)-Total	2.78	2.79	mg/kg	0.3	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Rubidium (Rb)-Total	0.791	0.793	mg/kg wwt	0.3	40	-	-	-
L1522144-1	Soil	WG1960901-2	Selenium (Se)	0.85	0.97	mg/kg	13	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Selenium (Se)-Total	0.700	0.697	mg/kg	0.4	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Selenium (Se)-Total	0.178	0.177	mg/kg wwt	0.4	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Selenium (Se)-Total	0.597	0.663	mg/kg	11	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Selenium (Se)-Total	0.187	0.208	mg/kg wwt	11	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Selenium (Se)-Total	0.193	0.231	mg/kg wwt	18	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Selenium (Se)-Total	0.591	0.708	mg/kg	18	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Selenium (Se)-Total	0.632	0.742	mg/kg	16	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Selenium (Se)-Total	0.180	0.211	mg/kg wwt	16	40	-	-	-
L1522144-1	Soil	WG1960901-2	Silver (Ag)	0.210	0.210	mg/kg	0.4	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Silver (Ag)-Total	0.0241	0.0145	mg/kg	-	-	0.0096	0.01	J
L1522144-17	Tissue	WG1980558-4	Silver (Ag)-Total	0.0061	0.0037	mg/kg wwt	0.0024	.002	-	-	DUP-H

Project AJAX 101-246/35
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1522144
Date Received 23-Sep-14 13:00
Date 07-Nov-14

REPLICATE RESULTS

Sample ID	Matrix	ALS ID	Analyte	Replicate 1	Replicate 2	Units	RPD	RPD Limit	Diff	Diff Limit	Qualifier
L1522144-23	Tissue	WG1979847-3	Silver (Ag)-Total	0.0083	0.0143	mg/kg	-	-	0.0060	0.01	J
L1522144-23	Tissue	WG1979847-3	Silver (Ag)-Total	0.0026	0.0045	mg/kg wwt	-	-	0.0019	0.002	J
L1522144-38	Tissue	WG1981557-3	Silver (Ag)-Total	<0.0010	<0.0010	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Silver (Ag)-Total	<0.0050	<0.0050	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Silver (Ag)-Total	<0.0050	<0.0050	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Silver (Ag)-Total	<0.0010	<0.0010	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Sodium (Na)	480	520	mg/kg	8.4	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Sodium (Na)-Total	681	764	mg/kg wwt	12	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Sodium (Na)-Total	2670	3000	mg/kg	12	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Sodium (Na)-Total	2030	1740	mg/kg	15	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Sodium (Na)-Total	635	545	mg/kg wwt	15	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Sodium (Na)-Total	1430	1670	mg/kg	15	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Sodium (Na)-Total	467	545	mg/kg wwt	15	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Sodium (Na)-Total	2150	2120	mg/kg	1.3	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Sodium (Na)-Total	612	604	mg/kg wwt	1.3	40	-	-	-
L1522144-1	Soil	WG1960901-2	Strontium (Sr)	86.7	90.7	mg/kg	4.5	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Strontium (Sr)-Total	10.3	26.6	mg/kg	88	60	-	-	DUP-H
L1522144-17	Tissue	WG1980558-4	Strontium (Sr)-Total	2.62	6.77	mg/kg wwt	88	60	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Strontium (Sr)-Total	91.9	34.2	mg/kg	92	60	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Strontium (Sr)-Total	28.8	10.7	mg/kg wwt	92	60	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Strontium (Sr)-Total	1.28	5.44	mg/kg wwt	124	60	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Strontium (Sr)-Total	3.93	16.7	mg/kg	124	60	-	-	DUP-H
L1522144-45	Tissue	WG1980558-3	Strontium (Sr)-Total	15.6	13.6	mg/kg	14	60	-	-	-
L1522144-45	Tissue	WG1980558-3	Strontium (Sr)-Total	4.43	3.87	mg/kg wwt	14	60	-	-	-
L1522144-1	Soil	WG1962357-4	Sulfur (S)-Total	4200	3700	mg/kg	12	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Tellurium (Te)-Total	<0.020	<0.020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Tellurium (Te)-Total	<0.0040	<0.0040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Tellurium (Te)-Total	<0.0040	<0.0040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Tellurium (Te)-Total	<0.020	<0.020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Tellurium (Te)-Total	<0.020	<0.020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Tellurium (Te)-Total	<0.0040	<0.0040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Tellurium (Te)-Total	<0.0040	<0.0040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Tellurium (Te)-Total	<0.020	<0.020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Thallium (Tl)	0.169	0.166	mg/kg	1.9	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Thallium (Tl)-Total	0.00232	0.00241	mg/kg wwt	4.0	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Thallium (Tl)-Total	0.0091	0.0095	mg/kg	4.0	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Thallium (Tl)-Total	0.00426	0.00410	mg/kg wwt	3.7	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Thallium (Tl)-Total	0.0136	0.0131	mg/kg	3.7	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Thallium (Tl)-Total	<0.0020	<0.0020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Thallium (Tl)-Total	<0.00040	<0.00040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Thallium (Tl)-Total	<0.00040	<0.00040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Thallium (Tl)-Total	<0.0020	<0.0020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Tin (Sn)	1.16	1.41	mg/kg	20	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Tin (Sn)-Total	<0.020	<0.020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Tin (Sn)-Total	<0.10	<0.10	mg/kg	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Tin (Sn)-Total	<0.10	<0.10	mg/kg	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Tin (Sn)-Total	<0.020	<0.020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Tin (Sn)-Total	<0.020	<0.020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Tin (Sn)-Total	<0.10	<0.10	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Tin (Sn)-Total	<0.10	<0.10	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Tin (Sn)-Total	<0.020	<0.020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-1	Soil	WG1960901-2	Titanium (Ti)	1030	1080	mg/kg	4.6	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Titanium (Ti)-Total	1.61	2.69	mg/kg	50	40	-	-	DUP-H
L1522144-17	Tissue	WG1980558-4	Titanium (Ti)-Total	0.411	0.685	mg/kg wwt	50	40	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Titanium (Ti)-Total	0.980	0.775	mg/kg wwt	23	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Titanium (Ti)-Total	3.13	2.48	mg/kg	23	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Titanium (Ti)-Total	0.41	0.65	mg/kg	45	40	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Titanium (Ti)-Total	0.133	0.210	mg/kg wwt	45	40	-	-	DUP-H
L1522144-45	Tissue	WG1980558-3	Titanium (Ti)-Total	1.12	0.955	mg/kg wwt	16	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Titanium (Ti)-Total	3.93	3.36	mg/kg	16	40	-	-	-
L1522144-1	Soil	WG1960901-2	Uranium (U)	4.89	5.22	mg/kg	6.5	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Uranium (U)-Total	0.00080	0.00175	mg/kg wwt	0.00095	.0008	-	-	DUP-H
L1522144-17	Tissue	WG1980558-4	Uranium (U)-Total	0.0031	0.0069	mg/kg	-	-	0.0037	0.004	J
L1522144-23	Tissue	WG1979847-3	Uranium (U)-Total	0.0035	0.0026	mg/kg	30	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Uranium (U)-Total	0.00109	0.00081	mg/kg wwt	30	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Uranium (U)-Total	<0.00040	<0.00040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Uranium (U)-Total	<0.0020	<0.0020	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Uranium (U)-Total	0.00109	0.00105	mg/kg wwt	4.4	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Uranium (U)-Total	0.0039	0.0037	mg/kg	4.4	40	-	-	-
L1522144-1	Soil	WG1960901-2	Vanadium (V)	81.7	84.1	mg/kg	2.9	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Vanadium (V)-Total	0.14	0.30	mg/kg	-	-	0.16	0.2	J
L1522144-17	Tissue	WG1980558-4	Vanadium (V)-Total	0.036	0.076	mg/kg wwt	-	-	0.040	0.04	J
L1522144-23	Tissue	WG1979847-3	Vanadium (V)-Total	0.49	0.24	mg/kg	0.25	.2	-	-	DUP-H
L1522144-23	Tissue	WG1979847-3	Vanadium (V)-Total	0.154	0.076	mg/kg wwt	69	40	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Vanadium (V)-Total	<0.10	<0.10	mg/kg	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Vanadium (V)-Total	<0.020	<0.020	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Vanadium (V)-Total	0.066	0.055	mg/kg wwt	19	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Vanadium (V)-Total	0.23	0.19	mg/kg	19	40	-	-	-
L1522144-1	Soil	WG1960901-2	Zinc (Zn)	63.3	78.1	mg/kg	21	30	-	-	-
L1522144-17	Tissue	WG1980558-4	Zinc (Zn)-Total	12.2	16.9	mg/kg wwt	33	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Zinc (Zn)-Total	47.8	66.4	mg/kg	33	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Zinc (Zn)-Total	25.7	17.3	mg/kg wwt	39	40	-	-	-
L1522144-23	Tissue	WG1979847-3	Zinc (Zn)-Total	82.3	55.2	mg/kg	39	40	-	-	-
L1522144-38	Tissue	WG1981557-3	Zinc (Zn)-Total	9.22	14.4	mg/kg wwt	44	40	-	-	DUP-H
L1522144-38	Tissue	WG1981557-3	Zinc (Zn)-Total	28.3	44.1	mg/kg	44	40	-	-	DUP-H
L1522144-45	Tissue	WG1980558-3	Zinc (Zn)-Total	11.3	10.4	mg/kg wwt	8.1	40	-	-	-
L1522144-45	Tissue	WG1980558-3	Zinc (Zn)-Total	39.8	36.7	mg/kg	8.1	40	-	-	-
L1522144-17	Tissue	WG1980558-4	Zirconium (Zr)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-17	Tissue	WG1980558-4	Zirconium (Zr)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Zirconium (Zr)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
L1522144-23	Tissue	WG1979847-3	Zirconium (Zr)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Zirconium (Zr)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA
L1522144-38	Tissue	WG1981557-3	Zirconium (Zr)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
L1522144-45	Tissue	WG1980558-3	Zirconium (Zr)-Total	<0.20	<0.20	mg/kg	N/A	40	-	-	RPD-NA
Speciated Metals											
L1522144-9	Tissue	WG1982694-10	Methyl Mercury	0.131	0.131	mg/kg	0.1	40	-	-	-
L1522144-9	Tissue	WG1982728-5	Methyl Mercury	0.0315	0.0314	mg/kg wwt	0.1	40	-	-	-
L1522144-20	Tissue	WG1985627-5	Methyl Mercury	0.529	0.509	mg/kg	3.9	40	-	-	-
L1522144-20	Tissue	WG1985642-5	Methyl Mercury	0.152	0.146	mg/kg wwt	3.9	40	-	-	-
L1522144-44	Tissue	WG1985737-5	Methyl Mercury	0.151	0.165	mg/kg	8.3	40	-	-	-
L1522144-44	Tissue	WG1985761-5	Methyl Mercury	0.0471	0.0512	mg/kg wwt	8.3	40	-	-	-
Metals											
L1522144-45	Tissue	WG1980558-3	Zirconium (Zr)-Total	<0.040	<0.040	mg/kg wwt	N/A	40	-	-	RPD-NA

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Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
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QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Particle Size										
Soil	IRM	% Sand (2.00mm - 1.00mm)	WG1963281-2	FARM2010	1.08	1.00	%	1.08	0-6	
Soil	IRM	% Sand (1.00mm - 0.50mm)	WG1963281-2	FARM2010	2.11	5.00	%	2.11	0-10	
Soil	IRM	% Sand (0.50mm - 0.25mm)	WG1963281-2	FARM2010	4.88	5.00	%	4.88	0-10	
Soil	IRM	% Sand (0.25mm - 0.125mm)	WG1963281-2	FARM2010	12.9	14.0	%	12.9	9-19	
Soil	IRM	% Sand (0.125mm - 0.063mm)	WG1963281-2	FARM2010	11.2	11.0	%	11.2	6-16	
Soil	IRM	% Silt (0.063mm - 0.0312mm)	WG1963281-2	FARM2010	12.3	14.0	%	12.3	9-19	
Soil	IRM	% Silt (0.0312mm - 0.004mm)	WG1963281-2	FARM2010	27.9	26.0	%	27.9	21-31	
Soil	IRM	% Clay (<4um)	WG1963281-2	FARM2010	27.6	27.0	%	27.6	22-32	
Organic / Inorganic Carbon										
Soil	IRM	Total Organic Carbon	WG1960866-2	08-109_SOIL	1.04	1.10	%	1.04	.77-1.43	
Soil	MB	Total Organic Carbon	WG1960866-3		<0.10	<0.1	%	-	0.1	
Metals										
Soil	CRM	Aluminum (Al)	WG1960901-4	VA-NRC-STSD1	11400	11100	mg/kg	102.7	70-130	
Soil	CRM	Antimony (Sb)	WG1960901-4	VA-NRC-STSD1	2.07	2.13	mg/kg	97.0	70-130	
Soil	CRM	Arsenic (As)	WG1960901-4	VA-NRC-STSD1	19.0	19.6	mg/kg	97.3	70-130	
Soil	CRM	Barium (Ba)	WG1960901-4	VA-NRC-STSD1	250	273	mg/kg	91.8	70-130	
Soil	CRM	Beryllium (Be)	WG1960901-4	VA-NRC-STSD1	0.41	0.40	mg/kg	102.2	70-130	
Soil	CRM	Bismuth (Bi)	WG1960901-4	VA-NRC-STSD1	0.44	0.43	mg/kg	101.3	70-130	
Soil	CRM	Cadmium (Cd)	WG1960901-4	VA-NRC-STSD1	0.848	0.890	mg/kg	95.3	70-130	
Soil	CRM	Calcium (Ca)	WG1960901-4	VA-NRC-STSD1	15100	15400	mg/kg	98.0	70-130	
Soil	CRM	Chromium (Cr)	WG1960901-4	VA-NRC-STSD1	26.5	26.9	mg/kg	98.6	70-130	
Soil	CRM	Cobalt (Co)	WG1960901-4	VA-NRC-STSD1	13.2	13.5	mg/kg	98.3	70-130	
Soil	CRM	Copper (Cu)	WG1960901-4	VA-NRC-STSD1	32.7	33.1	mg/kg	98.6	70-130	
Soil	CRM	Iron (Fe)	WG1960901-4	VA-NRC-STSD1	32400	32900	mg/kg	98.7	70-130	
Soil	CRM	Lead (Pb)	WG1960901-4	VA-NRC-STSD1	32.2	32.4	mg/kg	99.3	70-130	
Soil	CRM	Lithium (Li)	WG1960901-4	VA-NRC-STSD1	8.5	8.3	mg/kg	101.9	70-130	
Soil	CRM	Magnesium (Mg)	WG1960901-4	VA-NRC-STSD1	7460	7500	mg/kg	99.4	70-130	
Soil	CRM	Manganese (Mn)	WG1960901-4	VA-NRC-STSD1	3340	3440	mg/kg	97.0	70-130	
Soil	CRM	Molybdenum (Mo)	WG1960901-4	VA-NRC-STSD1	0.93	0.98	mg/kg	94.8	70-130	
Soil	CRM	Nickel (Ni)	WG1960901-4	VA-NRC-STSD1	19.2	19.7	mg/kg	97.8	70-130	
Soil	CRM	Phosphorus (P)	WG1960901-4	VA-NRC-STSD1	1430	1410	mg/kg	101.6	70-130	
Soil	CRM	Potassium (K)	WG1960901-4	VA-NRC-STSD1	780	790	mg/kg	99.8	70-130	
Soil	CRM	Selenium (Se)	WG1960901-4	VA-NRC-STSD1	1.44	1.52	mg/kg	95.0	70-130	
Soil	CRM	Silver (Ag)	WG1960901-4	VA-NRC-STSD1	0.346	0.310	mg/kg	111.6	70-130	
Soil	CRM	Sodium (Na)	WG1960901-4	VA-NRC-STSD1	280	280	mg/kg	99.1	70-130	
Soil	CRM	Strontium (Sr)	WG1960901-4	VA-NRC-STSD1	28.8	28.5	mg/kg	100.9	70-130	
Soil	CRM	Thallium (Tl)	WG1960901-4	VA-NRC-STSD1	0.245	0.240	mg/kg	101.9	70-130	
Soil	CRM	Tin (Sn)	WG1960901-4	VA-NRC-STSD1	1.65	1.66	mg/kg	99.5	70-130	
Soil	CRM	Titanium (Ti)	WG1960901-4	VA-NRC-STSD1	303	312	mg/kg	96.9	70-130	
Soil	CRM	Vanadium (V)	WG1960901-4	VA-NRC-STSD1	45.1	45.7	mg/kg	98.7	70-130	
Soil	CRM	Zinc (Zn)	WG1960901-4	VA-NRC-STSD1	150	153	mg/kg	98.0	70-130	
Soil	CRM	Aluminum (Al)	WG1960901-5	VA-CANMET-TILL1	18400	18200	mg/kg	100.9	70-130	
Soil	CRM	Antimony (Sb)	WG1960901-5	VA-CANMET-TILL1	6.71	6.27	mg/kg	107.0	70-130	
Soil	CRM	Arsenic (As)	WG1960901-5	VA-CANMET-TILL1	16.2	15.4	mg/kg	105.2	70-130	
Soil	CRM	Barium (Ba)	WG1960901-5	VA-CANMET-TILL1	80.5	80.6	mg/kg	99.9	70-130	
Soil	CRM	Beryllium (Be)	WG1960901-5	VA-CANMET-TILL1	0.49	0.54	mg/kg	90.4	70-130	
Soil	CRM	Cadmium (Cd)	WG1960901-5	VA-CANMET-TILL1	0.219	0.231	mg/kg	94.8	70-130	
Soil	CRM	Calcium (Ca)	WG1960901-5	VA-CANMET-TILL1	3610	3320	mg/kg	108.8	70-130	
Soil	CRM	Chromium (Cr)	WG1960901-5	VA-CANMET-TILL1	28.9	27.2	mg/kg	106.2	70-130	
Soil	CRM	Cobalt (Co)	WG1960901-5	VA-CANMET-TILL1	12.6	12.5	mg/kg	100.6	70-130	
Soil	CRM	Copper (Cu)	WG1960901-5	VA-CANMET-TILL1	43.9	44.9	mg/kg	97.7	70-130	
Soil	CRM	Iron (Fe)	WG1960901-5	VA-CANMET-TILL1	33200	33300	mg/kg	99.6	70-130	
Soil	CRM	Lead (Pb)	WG1960901-5	VA-CANMET-TILL1	13.7	14.4	mg/kg	95.1	70-130	
Soil	CRM	Lithium (Li)	WG1960901-5	VA-CANMET-TILL1	10.8	10.0	mg/kg	108.4	70-130	
Soil	CRM	Magnesium (Mg)	WG1960901-5	VA-CANMET-TILL1	6020	5830	mg/kg	103.3	70-130	
Soil	CRM	Manganese (Mn)	WG1960901-5	VA-CANMET-TILL1	1070	1100	mg/kg	97.2	70-130	
Soil	CRM	Molybdenum (Mo)	WG1960901-5	VA-CANMET-TILL1	0.71	0.74	mg/kg	95.8	70-130	
Soil	CRM	Nickel (Ni)	WG1960901-5	VA-CANMET-TILL1	17.5	17.4	mg/kg	100.4	70-130	
Soil	CRM	Phosphorus (P)	WG1960901-5	VA-CANMET-TILL1	775	796	mg/kg	97.3	70-130	
Soil	CRM	Potassium (K)	WG1960901-5	VA-CANMET-TILL1	680	620	mg/kg	109.2	70-130	
Soil	CRM	Selenium (Se)	WG1960901-5	VA-CANMET-TILL1	0.35	0.32	mg/kg	0.35	.22-.42	
Soil	CRM	Silver (Ag)	WG1960901-5	VA-CANMET-TILL1	0.277	0.220	mg/kg	125.7	70-130	
Soil	CRM	Sodium (Na)	WG1960901-5	VA-CANMET-TILL1	370	340	mg/kg	108.6	70-130	
Soil	CRM	Strontium (Sr)	WG1960901-5	VA-CANMET-TILL1	12.7	11.6	mg/kg	109.7	70-130	
Soil	CRM	Thallium (Tl)	WG1960901-5	VA-CANMET-TILL1	0.133	0.125	mg/kg	0.133	.075-.175	
Soil	CRM	Titanium (Ti)	WG1960901-5	VA-CANMET-TILL1	915	874	mg/kg	104.7	70-130	
Soil	CRM	Uranium (U)	WG1960901-5	VA-CANMET-TILL1	0.884	0.800	mg/kg	110.5	70-130	
Soil	CRM	Vanadium (V)	WG1960901-5	VA-CANMET-TILL1	58.6	54.9	mg/kg	106.7	70-130	
Soil	CRM	Zinc (Zn)	WG1960901-5	VA-CANMET-TILL1	68.2	67.5	mg/kg	101.0	70-130	
Soil	IRM	Sulfur (S)-Total	WG1962357-2	1646A_SOIL	3300	3500	mg/kg	3300	2500-4600	
Soil	IRM	Sulfur (S)-Total	WG1962357-5	1646A_SOIL	3000	3500	mg/kg	3000	2500-4600	
Soil	LCS	Aluminum (Al)	WG1960901-3		212	200	mg/kg	105.8	70-130	
Soil	LCS	Antimony (Sb)	WG1960901-3		95.9	100	mg/kg	95.9	70-130	
Soil	LCS	Arsenic (As)	WG1960901-3		98.2	100	mg/kg	98.2	70-130	
Soil	LCS	Barium (Ba)	WG1960901-3		25.2	25.0	mg/kg	100.9	70-130	
Soil	LCS	Beryllium (Be)	WG1960901-3		9.84	10.0	mg/kg	98.4	70-130	
Soil	LCS	Bismuth (Bi)	WG1960901-3		97.6	100	mg/kg	97.6	70-130	
Soil	LCS	Boron (B)	WG1960901-3		92.9	100	mg/kg	92.9	70-130	
Soil	LCS	Cadmium (Cd)	WG1960901-3		9.97	10.0	mg/kg	99.7	70-130	
Soil	LCS	Calcium (Ca)	WG1960901-3		4840	5000	mg/kg	96.8	70-130	
Soil	LCS	Chromium (Cr)	WG1960901-3		25.1	25.0	mg/kg	100.4	70-130	
Soil	LCS	Cobalt (Co)	WG1960901-3		24.6	25.0	mg/kg	98.2	70-130	
Soil	LCS	Copper (Cu)	WG1960901-3		24.1	25.0	mg/kg	96.6	70-130	
Soil	LCS	Iron (Fe)	WG1960901-3		105	100	mg/kg	105.5	70-130	
Soil	LCS	Lead (Pb)	WG1960901-3		49.9	50.0	mg/kg	99.9	70-130	
Soil	LCS	Lithium (Li)	WG1960901-3		24.7	25.0	mg/kg	98.9	70-130	
Soil	LCS	Magnesium (Mg)	WG1960901-3		5070	5000	mg/kg	101.5	70-130	
Soil	LCS	Manganese (Mn)	WG1960901-3		24.9	25.0	mg/kg	99.5	70-130	
Soil	LCS	Molybdenum (Mo)	WG1960901-3		24.3	25.0	mg/kg	97.3	70-130	
Soil	LCS	Nickel (Ni)	WG1960901-3		48.6	50.0	mg/kg	97.2	70-130	
Soil	LCS	Phosphorus (P)	WG1960901-3		251	250	mg/kg	100.2	70-130	
Soil	LCS	Potassium (K)	WG1960901-3		5060	5000	mg/kg	101.3	70-130	
Soil	LCS	Selenium (Se)	WG1960901-3		98.0	100	mg/kg	98.0	70-130	
Soil	LCS	Silver (Ag)	WG1960901-3		9.56	10.0	mg/kg	95.6	70-130	
Soil	LCS	Sodium (Na)	WG1960901-3		4960	5000	mg/kg	99.2	70-130	
Soil	LCS	Strontium (Sr)	WG1960901-3		25.2	25.0	mg/kg	100.7	70-130	
Soil	LCS	Thallium (Tl)	WG1960901-3		99.8	100	mg/kg	99.8	70-130	
Soil	LCS	Tin (Sn)	WG1960901-3		49.2	50.0	mg/kg	98.4	70-130	
Soil	LCS	Titanium (Ti)	WG1960901-3		23.2	25.0	mg/kg	92.9	70-130	
Soil	LCS	Uranium (U)	WG1960901-3		0.516	0.500	mg/kg	103.2	70-130	
Soil	LCS	Vanadium (V)	WG1960901-3		49.4	50.0	mg/kg	98.9	70-130	
Soil	LCS	Zinc (Zn)	WG1960901-3		48.5	50.0	mg/kg	97.1	70-130	
Soil	MB	Aluminum (Al)	WG1960901-1		<50	<50	mg/kg	-	50	
Soil	MB	Antimony (Sb)	WG1960901-1		<0.10	<0.1	mg/kg	-	0.1	
Soil	MB	Arsenic (As)	WG1960901-1		<0.050	<0.05	mg/kg	-	0.05	
Soil	MB	Barium (Ba)	WG1960901-1		<0.50	<0.5	mg/kg	-	0.5	
Soil	MB	Beryllium (Be)	WG1960901-1		<0.10	<0.1	mg/kg	-	0.1	
Soil	MB	Bismuth (Bi)	WG1960901-1		<0.10	<0.1	mg/kg	-	0.1	
Soil	MB	Boron (B)	WG1960901-1		<10	<10	mg/kg	-	10	
Soil	MB	Cadmium (Cd)	WG1960901-1		<0.050	<0.05	mg/kg	-	0.05	
Soil	MB	Calcium (Ca)	WG1960901-1		<50	<50	mg/kg	-	50	
Soil	MB	Chromium (Cr)	WG1960901-1		<0.50	<0.5	mg/kg	-	0.5	
Soil	MB	Cobalt (Co)	WG1960901-1		<0.10	<0.1	mg/kg	-	0.1	
Soil	MB	Copper (Cu)	WG1960901-1		<0.50	<0.5	mg/kg	-	0.5	
Soil	MB	Iron (Fe)	WG1960901-1		<50	<50	mg/kg	-	50	
Soil	MB	Lead (Pb)	WG1960901-1		<0.10	<0.1	mg/kg	-	0.1	
Soil	MB	Lithium (Li)	WG1960901-1		<5.0	<5	mg/kg	-	5	
Soil	MB	Magnesium (Mg)	WG1960901-1		<10	<10	mg/kg	-	10	
Soil	MB	Manganese (Mn)	WG1960901-1		<0.20	<0.2	mg/kg	-	0.2	
Soil	MB	Molybdenum (Mo)	WG1960901-1		<0.10	<0.1	mg/kg	-	0.1	
Soil	MB	Nickel (Ni)	WG1960901-1		<0.50	<0.5	mg/kg	-	0.5	
Soil	MB	Phosphorus (P)	WG1960901-1		<50	<50	mg/kg	-	50	
Soil	MB	Potassium (K)	WG1960901-1		<100	<100	mg/kg	-	100	
Soil	MB	Selenium (Se)	WG1960901-1		<0.10	<0.1	mg/kg	-	0.1	
Soil	MB	Silver (Ag)	WG1960901-1		<0.050	<0.05	mg/kg	-	0.05	
Soil	MB	Sodium (Na)	WG1960901-1		<100	<100	mg/kg	-	100	
Soil	MB	Strontium (Sr)	WG1960901-1		<0.10	<0.1	mg/kg	-	0.1	
Soil	MB	Thallium (Tl)	WG1960901-1		<0.050	<0.05	mg/kg	-	0.05	
Soil	MB	Tin (Sn)	WG1960901-1		<0.20	<0.2	mg/kg	-	0.2	
Soil	MB	Titanium (Ti)	WG1960901-1		<1.0	<1	mg/kg	-	1	
Soil	MB	Uranium (U)	WG1960901-1		<0.050	<0.05	mg/kg	-	0.05	
Soil	MB	Vanadium (V)	WG1960901-1		<0.20	<0.2	mg/kg	-	0.2	
Soil	MB	Zinc (Zn)	WG1960901-1		<1.0	<1	mg/kg	-	1	
Soil	MB	Sulfur (S)-Total	WG1962357-3		<500	<500	mg/kg	-	500	
Soil	MB	Sulfur (S)-Total	WG1962357-6		<500	<500	mg/kg	-	500	
Tissue	CRM	Arsenic (As)-Total	WG1979847-4	VA-NRC-TORT3	75.0	59.5	mg/kg wwt	126.0	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1979847-4	VA-NRC-TORT3	75.0	59.5	mg/kg	126.0	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1979847-4	VA-NRC-TORT3	49.1	42.3	mg/kg wwt	116.2	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1979847-4	VA-NRC-TORT3	49.1	42.3	mg/kg	116.2	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1979847-4	VA-NRC-TORT3	2.22	1.95	mg/kg wwt	113.6	70-130	

Project AJAX 101-246/35
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ALS File No. L1522144
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QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	CRM	Chromium (Cr)-Total	WG1979847-4	VA-NRC-TORT3	2.22	1.95	mg/kg	113.6	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1979847-4	VA-NRC-TORT3	1.25	1.06	mg/kg	118.3	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1979847-4	VA-NRC-TORT3	1.25	1.06	mg/kg wwt	118.3	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1979847-4	VA-NRC-TORT3	530	497	mg/kg	106.7	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1979847-4	VA-NRC-TORT3	530	497	mg/kg wwt	106.7	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1979847-4	VA-NRC-TORT3	197	179	mg/kg	110.3	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1979847-4	VA-NRC-TORT3	197	179	mg/kg wwt	110.3	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1979847-4	VA-NRC-TORT3	0.234	0.225	mg/kg wwt	104.0	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1979847-4	VA-NRC-TORT3	0.234	0.225	mg/kg	104.0	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1979847-4	VA-NRC-TORT3	17.1	15.6	mg/kg	109.6	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1979847-4	VA-NRC-TORT3	17.1	15.6	mg/kg wwt	109.6	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1979847-4	VA-NRC-TORT3	0.347	0.292	mg/kg	118.9	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1979847-4	VA-NRC-TORT3	0.347	0.292	mg/kg wwt	118.9	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1979847-4	VA-NRC-TORT3	3.95	3.44	mg/kg	114.9	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1979847-4	VA-NRC-TORT3	3.95	3.44	mg/kg wwt	114.9	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1979847-4	VA-NRC-TORT3	5.89	5.30	mg/kg	111.0	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1979847-4	VA-NRC-TORT3	5.89	5.30	mg/kg wwt	111.0	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1979847-4	VA-NRC-TORT3	12.5	10.9	mg/kg	114.6	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1979847-4	VA-NRC-TORT3	12.5	10.9	mg/kg wwt	114.6	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1979847-4	VA-NRC-TORT3	41.4	36.5	mg/kg	113.5	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1979847-4	VA-NRC-TORT3	41.4	36.5	mg/kg wwt	113.5	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1979847-4	VA-NRC-TORT3	10.5	9.10	mg/kg	115.6	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1979847-4	VA-NRC-TORT3	10.5	9.10	mg/kg wwt	115.6	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1979847-4	VA-NRC-TORT3	143	136	mg/kg wwt	104.8	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1979847-4	VA-NRC-TORT3	143	136	mg/kg	104.8	70-130	
Tissue	CRM	Antimony (Sb)-Total	WG1979847-5	VA-NIST-1566B	0.0078	0.0110	mg/kg wwt	0.0078	.001-.021	
Tissue	CRM	Antimony (Sb)-Total	WG1979847-5	VA-NIST-1566B	<0.010	0.011	mg/kg	0.008	.001-.021	
Tissue	CRM	Arsenic (As)-Total	WG1979847-5	VA-NIST-1566B	7.43	7.65	mg/kg	97.1	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1979847-5	VA-NIST-1566B	7.43	7.65	mg/kg wwt	97.1	70-130	
Tissue	CRM	Barium (Ba)-Total	WG1979847-5	VA-NIST-1566B	7.22	8.60	mg/kg	84.0	70-130	
Tissue	CRM	Barium (Ba)-Total	WG1979847-5	VA-NIST-1566B	7.22	8.60	mg/kg wwt	84.0	70-130	
Tissue	CRM	Boron (B)-Total	WG1979847-5	VA-NIST-1566B	4.6	4.5	mg/kg	101.2	70-130	
Tissue	CRM	Boron (B)-Total	WG1979847-5	VA-NIST-1566B	4.56	4.50	mg/kg wwt	4.56	3.5-5.5	
Tissue	CRM	Cadmium (Cd)-Total	WG1979847-5	VA-NIST-1566B	2.57	2.48	mg/kg	103.6	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1979847-5	VA-NIST-1566B	2.57	2.48	mg/kg wwt	103.6	70-130	
Tissue	CRM	Calcium (Ca)-Total	WG1979847-5	VA-NIST-1566B	804	838	mg/kg	96.0	70-130	
Tissue	CRM	Calcium (Ca)-Total	WG1979847-5	VA-NIST-1566B	804	838	mg/kg wwt	96.0	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1979847-5	VA-NIST-1566B	0.365	0.371	mg/kg	98.4	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1979847-5	VA-NIST-1566B	0.365	0.371	mg/kg wwt	98.4	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1979847-5	VA-NIST-1566B	69.9	71.6	mg/kg wwt	97.6	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1979847-5	VA-NIST-1566B	69.9	71.6	mg/kg	97.6	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1979847-5	VA-NIST-1566B	195	206	mg/kg wwt	94.8	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1979847-5	VA-NIST-1566B	195	206	mg/kg	94.8	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1979847-5	VA-NIST-1566B	0.293	0.308	mg/kg wwt	95.1	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1979847-5	VA-NIST-1566B	0.293	0.308	mg/kg	95.1	70-130	
Tissue	CRM	Magnesium (Mg)-Total	WG1979847-5	VA-NIST-1566B	1060	1090	mg/kg wwt	97.7	70-130	
Tissue	CRM	Magnesium (Mg)-Total	WG1979847-5	VA-NIST-1566B	1060	1090	mg/kg	97.7	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1979847-5	VA-NIST-1566B	17.9	18.5	mg/kg wwt	96.6	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1979847-5	VA-NIST-1566B	17.9	18.5	mg/kg	96.6	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1979847-5	VA-NIST-1566B	0.0353	0.0371	mg/kg	95.1	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1979847-5	VA-NIST-1566B	0.0353	0.0371	mg/kg wwt	95.1	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1979847-5	VA-NIST-1566B	1.01	1.04	mg/kg wwt	97.1	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1979847-5	VA-NIST-1566B	1.01	1.04	mg/kg	97.1	70-130	
Tissue	CRM	Potassium (K)-Total	WG1979847-5	VA-NIST-1566B	6330	6520	mg/kg wwt	97.1	70-130	
Tissue	CRM	Potassium (K)-Total	WG1979847-5	VA-NIST-1566B	6330	6520	mg/kg	97.1	70-130	
Tissue	CRM	Rubidium (Rb)-Total	WG1979847-5	VA-NIST-1566B	3.09	3.26	mg/kg	94.9	70-130	
Tissue	CRM	Rubidium (Rb)-Total	WG1979847-5	VA-NIST-1566B	3.09	3.26	mg/kg wwt	94.9	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1979847-5	VA-NIST-1566B	2.07	2.06	mg/kg wwt	100.6	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1979847-5	VA-NIST-1566B	2.07	2.06	mg/kg	100.6	70-130	
Tissue	CRM	Silver (Ag)-Total	WG1979847-5	VA-NIST-1566B	0.647	0.666	mg/kg wwt	97.1	70-130	
Tissue	CRM	Silver (Ag)-Total	WG1979847-5	VA-NIST-1566B	0.647	0.660	mg/kg	98.0	70-130	
Tissue	CRM	Sodium (Na)-Total	WG1979847-5	VA-NIST-1566B	3120	3300	mg/kg wwt	94.6	70-130	
Tissue	CRM	Sodium (Na)-Total	WG1979847-5	VA-NIST-1566B	3120	3300	mg/kg	94.6	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1979847-5	VA-NIST-1566B	6.41	6.80	mg/kg wwt	94.2	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1979847-5	VA-NIST-1566B	6.41	6.80	mg/kg	94.2	70-130	
Tissue	CRM	Uranium (U)-Total	WG1979847-5	VA-NIST-1566B	0.253	0.255	mg/kg	99.4	70-130	
Tissue	CRM	Uranium (U)-Total	WG1979847-5	VA-NIST-1566B	0.253	0.255	mg/kg wwt	99.4	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1979847-5	VA-NIST-1566B	0.52	0.58	mg/kg	89.7	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1979847-5	VA-NIST-1566B	0.518	0.577	mg/kg wwt	89.7	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1979847-5	VA-NIST-1566B	1320	1420	mg/kg wwt	92.8	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1979847-5	VA-NIST-1566B	1320	1420	mg/kg	92.8	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1980558-5	VA-NRC-TORT3	61.7	59.5	mg/kg	103.6	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1980558-5	VA-NRC-TORT3	61.7	59.5	mg/kg wwt	103.6	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1980558-5	VA-NRC-TORT3	38.4	42.3	mg/kg wwt	90.7	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1980558-5	VA-NRC-TORT3	38.4	42.3	mg/kg	90.7	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1980558-5	VA-NRC-TORT3	1.75	1.95	mg/kg wwt	89.8	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1980558-5	VA-NRC-TORT3	1.75	1.95	mg/kg	89.8	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1980558-5	VA-NRC-TORT3	1.01	1.06	mg/kg	95.2	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1980558-5	VA-NRC-TORT3	1.01	1.06	mg/kg wwt	95.2	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1980558-5	VA-NRC-TORT3	422	497	mg/kg wwt	85.0	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1980558-5	VA-NRC-TORT3	422	497	mg/kg	85.0	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1980558-5	VA-NRC-TORT3	161	179	mg/kg wwt	89.7	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1980558-5	VA-NRC-TORT3	161	179	mg/kg	89.7	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1980558-5	VA-NRC-TORT3	0.184	0.225	mg/kg wwt	81.8	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1980558-5	VA-NRC-TORT3	0.184	0.225	mg/kg	81.8	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1980558-5	VA-NRC-TORT3	14.0	15.6	mg/kg	90.0	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1980558-5	VA-NRC-TORT3	14.0	15.6	mg/kg wwt	90.0	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1980558-5	VA-NRC-TORT3	0.250	0.292	mg/kg	85.8	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1980558-5	VA-NRC-TORT3	0.250	0.292	mg/kg wwt	85.8	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1980558-5	VA-NRC-TORT3	3.19	3.44	mg/kg	92.8	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1980558-5	VA-NRC-TORT3	3.19	3.44	mg/kg wwt	92.8	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1980558-5	VA-NRC-TORT3	4.71	5.30	mg/kg	88.8	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1980558-5	VA-NRC-TORT3	4.71	5.30	mg/kg wwt	88.8	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1980558-5	VA-NRC-TORT3	9.89	10.9	mg/kg	90.8	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1980558-5	VA-NRC-TORT3	9.89	10.9	mg/kg wwt	90.8	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1980558-5	VA-NRC-TORT3	33.1	36.5	mg/kg	90.6	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1980558-5	VA-NRC-TORT3	33.1	36.5	mg/kg wwt	90.6	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1980558-5	VA-NRC-TORT3	8.47	9.10	mg/kg wwt	93.0	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1980558-5	VA-NRC-TORT3	8.47	9.10	mg/kg	93.0	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1980558-5	VA-NRC-TORT3	117	136	mg/kg	86.1	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1980558-5	VA-NRC-TORT3	117	136	mg/kg wwt	86.1	70-130	
Tissue	CRM	Antimony (Sb)-Total	WG1980558-6	VA-NIST-1566B	0.0092	0.0110	mg/kg wwt	0.0092	.001-.021	
Tissue	CRM	Antimony (Sb)-Total	WG1980558-6	VA-NIST-1566B	<0.010	0.011	mg/kg	0.009	.001-.021	
Tissue	CRM	Arsenic (As)-Total	WG1980558-6	VA-NIST-1566B	7.45	7.65	mg/kg wwt	97.3	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1980558-6	VA-NIST-1566B	7.45	7.65	mg/kg	97.3	70-130	
Tissue	CRM	Barium (Ba)-Total	WG1980558-6	VA-NIST-1566B	6.97	8.60	mg/kg wwt	81.1	70-130	
Tissue	CRM	Barium (Ba)-Total	WG1980558-6	VA-NIST-1566B	6.97	8.60	mg/kg	81.1	70-130	
Tissue	CRM	Boron (B)-Total	WG1980558-6	VA-NIST-1566B	4.6	4.5	mg/kg	101.8	70-130	
Tissue	CRM	Boron (B)-Total	WG1980558-6	VA-NIST-1566B	4.58	4.50	mg/kg wwt	4.58	3.5-5.5	
Tissue	CRM	Cadmium (Cd)-Total	WG1980558-6	VA-NIST-1566B	2.48	2.48	mg/kg wwt	100.1	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1980558-6	VA-NIST-1566B	2.48	2.48	mg/kg	100.1	70-130	
Tissue	CRM	Calcium (Ca)-Total	WG1980558-6	VA-NIST-1566B	803	838	mg/kg wwt	95.9	70-130	
Tissue	CRM	Calcium (Ca)-Total	WG1980558-6	VA-NIST-1566B	803	838	mg/kg	95.9	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1980558-6	VA-NIST-1566B	0.354	0.371	mg/kg wwt	95.3	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1980558-6	VA-NIST-1566B	0.354	0.371	mg/kg	95.3	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1980558-6	VA-NIST-1566B	67.3	71.6	mg/kg wwt	93.9	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1980558-6	VA-NIST-1566B	67.3	71.6	mg/kg	93.9	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1980558-6	VA-NIST-1566B	192	206	mg/kg wwt	93.1	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1980558-6	VA-NIST-1566B	192	206	mg/kg	93.1	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1980558-6	VA-NIST-1566B	0.289	0.308	mg/kg	93.9	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1980558-6	VA-NIST-1566B	0.289	0.308	mg/kg wwt	93.9	70-130	
Tissue	CRM	Magnesium (Mg)-Total	WG1980558-6	VA-NIST-1566B	1020	1090	mg/kg wwt	93.7	70-130	
Tissue	CRM	Magnesium (Mg)-Total	WG1980558-6	VA-NIST-1566B	1020	1090	mg/kg	93.7	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1980558-6	VA-NIST-1566B	17.7	18.5	mg/kg	95.8	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1980558-6	VA-NIST-1566B	17.7	18.5	mg/kg wwt	95.8	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1980558-6	VA-NIST-1566B	0.0282	0.0371	mg/kg	75.9	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1980558-6	VA-NIST-1566B	0.0282	0.0371	mg/kg wwt	75.9	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1980558-6	VA-NIST-1566B	0.96	1.04	mg/kg	92.3	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1980558-6	VA-NIST-1566B	0.960	1.04	mg/kg wwt	92.3	70-130	
Tissue	CRM	Potassium (K)-Total	WG1980558-6	VA-NIST-1566B	6180	6520	mg/kg wwt	94.9	70-130	
Tissue	CRM	Potassium (K)-Total	WG1980558-6	VA-NIST-1566B	6180	6520	mg/kg	94.9	70-130	
Tissue	CRM	Rubidium (Rb)-Total	WG1980558-6	VA-NIST-1566B	3.01	3.26	mg/kg wwt	92.2	70-130	
Tissue	CRM	Rubidium (Rb)-Total	WG1980558-6	VA-NIST-1566B	3.01	3.26	mg/kg	92.2	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1980558-6	VA-NIST-1566B	2.11	2.06	mg/kg	102.5	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1980558-6	VA-NIST-1566B	2.11	2.06	mg/kg wwt	102.5	70-130	
Tissue	CRM	Silver (Ag)-Total	WG1980558-6	VA-NIST-1566B	0.641	0.666	mg/kg wwt	96.2	70-130	
Tissue	CRM	Silver (Ag)-Total	WG1980558-6	VA-NIST-1566B	0.641	0.660	mg/kg	97.1	70-130	
Tissue	CRM	Sodium (Na)-Total	WG1980558-6	VA-NIST-1566B	3050	3300	mg/kg wwt	92.7	70-130	
Tissue	CRM	Sodium (Na)-Total	WG1980558-6	VA-NIST-1566B	3050	3300	mg/kg	92.7	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1980558-6	VA-NIST-1566B	6.33	6.80	mg/kg	93.0	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1980558-6	VA-NIST-1566B	6.33	6.80	mg/kg wwt	93.0	70-130	
Tissue	CRM	Uranium (U)-Total	WG1980558-6	VA-NIST-1566B	0.250	0.255	mg/kg wwt	98.1	70-130	
Tissue	CRM	Uranium (U)-Total	WG1980558-6	VA-NIST-1566B	0.250	0.255	mg/kg	98.1	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1980558-6	VA-NIST-1566B	0.509	0.577	mg/kg wwt	88.2	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1980558-6	VA-NIST-1566B	0.51	0.58	mg/kg	88.2	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1980558-6	VA-NIST-1566B	1320	1420	mg/kg wwt	92.8	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1980558-6	VA-NIST-1566B	1320	1420	mg/kg	92.8	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1981557-4	VA-NRC-TORT3	68.5	59.5	mg/kg	115.2	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1981557-4	VA-NRC-TORT3	68.5	59.5	mg/kg wwt	115.2	70-130	

Project AJAX 101-246/35
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1522144
Date Received 23-Sep-14 13:00
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QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	CRM	Cadmium (Cd)-Total	WG1981557-4	VA-NRC-TORT3	42.5	42.3	mg/kg wwt	100.4	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1981557-4	VA-NRC-TORT3	42.5	42.3	mg/kg	100.4	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1981557-4	VA-NRC-TORT3	1.88	1.95	mg/kg	96.4	70-130	
Tissue	CRM	Chromium (Cr)-Total	WG1981557-4	VA-NRC-TORT3	1.88	1.95	mg/kg wwt	96.4	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1981557-4	VA-NRC-TORT3	1.16	1.06	mg/kg wwt	109.0	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1981557-4	VA-NRC-TORT3	1.16	1.06	mg/kg	109.0	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1981557-4	VA-NRC-TORT3	468	497	mg/kg	94.3	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1981557-4	VA-NRC-TORT3	468	497	mg/kg wwt	94.3	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1981557-4	VA-NRC-TORT3	175	179	mg/kg wwt	97.7	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1981557-4	VA-NRC-TORT3	175	179	mg/kg	97.7	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1981557-4	VA-NRC-TORT3	0.200	0.225	mg/kg wwt	89.0	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1981557-4	VA-NRC-TORT3	0.200	0.225	mg/kg	89.0	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1981557-4	VA-NRC-TORT3	15.5	15.6	mg/kg wwt	99.1	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1981557-4	VA-NRC-TORT3	15.5	15.6	mg/kg	99.1	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1981557-4	VA-NRC-TORT3	0.296	0.292	mg/kg	101.3	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1981557-4	VA-NRC-TORT3	0.296	0.292	mg/kg wwt	101.3	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1981557-4	VA-NRC-TORT3	3.47	3.44	mg/kg wwt	100.7	70-130	
Tissue	CRM	Molybdenum (Mo)-Total	WG1981557-4	VA-NRC-TORT3	3.47	3.44	mg/kg	100.7	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1981557-4	VA-NRC-TORT3	5.18	5.30	mg/kg wwt	97.7	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1981557-4	VA-NRC-TORT3	5.18	5.30	mg/kg	97.7	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1981557-4	VA-NRC-TORT3	10.8	10.9	mg/kg	98.9	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1981557-4	VA-NRC-TORT3	10.8	10.9	mg/kg wwt	98.9	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1981557-4	VA-NRC-TORT3	36.3	36.5	mg/kg wwt	99.6	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1981557-4	VA-NRC-TORT3	36.3	36.5	mg/kg	99.6	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1981557-4	VA-NRC-TORT3	9.39	9.10	mg/kg	103.2	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1981557-4	VA-NRC-TORT3	9.39	9.10	mg/kg wwt	103.2	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1981557-4	VA-NRC-TORT3	128	136	mg/kg	94.4	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1981557-4	VA-NRC-TORT3	128	136	mg/kg wwt	94.4	70-130	
Tissue	CRM	Antimony (Sb)-Total	WG1981557-5	VA-NIST-1566B	0.011	0.011	mg/kg	0.011	.001-.021	
Tissue	CRM	Antimony (Sb)-Total	WG1981557-5	VA-NIST-1566B	0.0110	0.0110	mg/kg wwt	0.0110	.001-.021	
Tissue	CRM	Arsenic (As)-Total	WG1981557-5	VA-NIST-1566B	8.06	7.65	mg/kg	105.3	70-130	
Tissue	CRM	Arsenic (As)-Total	WG1981557-5	VA-NIST-1566B	8.06	7.65	mg/kg wwt	105.3	70-130	
Tissue	CRM	Barium (Ba)-Total	WG1981557-5	VA-NIST-1566B	7.30	8.60	mg/kg	84.9	70-130	
Tissue	CRM	Barium (Ba)-Total	WG1981557-5	VA-NIST-1566B	7.30	8.60	mg/kg wwt	84.9	70-130	
Tissue	CRM	Boron (B)-Total	WG1981557-5	VA-NIST-1566B	4.65	4.50	mg/kg wwt	4.65	3.5-5.5	
Tissue	CRM	Boron (B)-Total	WG1981557-5	VA-NIST-1566B	4.7	4.5	mg/kg	103.4	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1981557-5	VA-NIST-1566B	2.67	2.48	mg/kg wwt	107.5	70-130	
Tissue	CRM	Cadmium (Cd)-Total	WG1981557-5	VA-NIST-1566B	2.67	2.48	mg/kg	107.5	70-130	
Tissue	CRM	Calcium (Ca)-Total	WG1981557-5	VA-NIST-1566B	848	838	mg/kg	101.2	70-130	
Tissue	CRM	Calcium (Ca)-Total	WG1981557-5	VA-NIST-1566B	848	838	mg/kg wwt	101.2	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1981557-5	VA-NIST-1566B	0.387	0.371	mg/kg wwt	104.2	70-130	
Tissue	CRM	Cobalt (Co)-Total	WG1981557-5	VA-NIST-1566B	0.387	0.371	mg/kg	104.2	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1981557-5	VA-NIST-1566B	72.2	71.6	mg/kg	100.9	70-130	
Tissue	CRM	Copper (Cu)-Total	WG1981557-5	VA-NIST-1566B	72.2	71.6	mg/kg wwt	100.9	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1981557-5	VA-NIST-1566B	208	206	mg/kg	101.1	70-130	
Tissue	CRM	Iron (Fe)-Total	WG1981557-5	VA-NIST-1566B	208	206	mg/kg wwt	101.1	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1981557-5	VA-NIST-1566B	0.301	0.308	mg/kg	97.9	70-130	
Tissue	CRM	Lead (Pb)-Total	WG1981557-5	VA-NIST-1566B	0.301	0.308	mg/kg wwt	97.9	70-130	
Tissue	CRM	Magnesium (Mg)-Total	WG1981557-5	VA-NIST-1566B	1110	1090	mg/kg	102.4	70-130	
Tissue	CRM	Magnesium (Mg)-Total	WG1981557-5	VA-NIST-1566B	1110	1090	mg/kg wwt	102.4	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1981557-5	VA-NIST-1566B	19.3	18.5	mg/kg wwt	104.6	70-130	
Tissue	CRM	Manganese (Mn)-Total	WG1981557-5	VA-NIST-1566B	19.3	18.5	mg/kg	104.6	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1981557-5	VA-NIST-1566B	0.0317	0.0371	mg/kg	85.5	70-130	
Tissue	CRM	Mercury (Hg)-Total	WG1981557-5	VA-NIST-1566B	0.0317	0.0371	mg/kg wwt	85.5	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1981557-5	VA-NIST-1566B	1.04	1.04	mg/kg	99.6	70-130	
Tissue	CRM	Nickel (Ni)-Total	WG1981557-5	VA-NIST-1566B	1.04	1.04	mg/kg wwt	99.6	70-130	
Tissue	CRM	Potassium (K)-Total	WG1981557-5	VA-NIST-1566B	6780	6520	mg/kg	104.0	70-130	
Tissue	CRM	Potassium (K)-Total	WG1981557-5	VA-NIST-1566B	6780	6520	mg/kg wwt	104.0	70-130	
Tissue	CRM	Rubidium (Rb)-Total	WG1981557-5	VA-NIST-1566B	3.31	3.26	mg/kg wwt	101.5	70-130	
Tissue	CRM	Rubidium (Rb)-Total	WG1981557-5	VA-NIST-1566B	3.31	3.26	mg/kg	101.5	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1981557-5	VA-NIST-1566B	2.19	2.06	mg/kg wwt	106.1	70-130	
Tissue	CRM	Selenium (Se)-Total	WG1981557-5	VA-NIST-1566B	2.19	2.06	mg/kg	106.1	70-130	
Tissue	CRM	Silver (Ag)-Total	WG1981557-5	VA-NIST-1566B	0.677	0.660	mg/kg	102.6	70-130	
Tissue	CRM	Silver (Ag)-Total	WG1981557-5	VA-NIST-1566B	0.677	0.666	mg/kg wwt	101.7	70-130	
Tissue	CRM	Sodium (Na)-Total	WG1981557-5	VA-NIST-1566B	3320	3300	mg/kg	100.7	70-130	
Tissue	CRM	Sodium (Na)-Total	WG1981557-5	VA-NIST-1566B	3320	3300	mg/kg wwt	100.7	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1981557-5	VA-NIST-1566B	6.65	6.80	mg/kg wwt	97.8	70-130	
Tissue	CRM	Strontium (Sr)-Total	WG1981557-5	VA-NIST-1566B	6.65	6.80	mg/kg	97.8	70-130	
Tissue	CRM	Uranium (U)-Total	WG1981557-5	VA-NIST-1566B	0.261	0.255	mg/kg	102.4	70-130	
Tissue	CRM	Uranium (U)-Total	WG1981557-5	VA-NIST-1566B	0.261	0.255	mg/kg wwt	102.4	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1981557-5	VA-NIST-1566B	0.57	0.58	mg/kg	98.9	70-130	
Tissue	CRM	Vanadium (V)-Total	WG1981557-5	VA-NIST-1566B	0.570	0.577	mg/kg wwt	98.9	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1981557-5	VA-NIST-1566B	1390	1420	mg/kg wwt	97.7	70-130	
Tissue	CRM	Zinc (Zn)-Total	WG1981557-5	VA-NIST-1566B	1390	1420	mg/kg	97.7	70-130	
Tissue	MB	Aluminum (Al)-Total	WG1979847-1		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Aluminum (Al)-Total	WG1979847-1		<2.0	<2	mg/kg	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1979847-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Antimony (Sb)-Total	WG1979847-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Arsenic (As)-Total	WG1979847-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Arsenic (As)-Total	WG1979847-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Barium (Ba)-Total	WG1979847-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Barium (Ba)-Total	WG1979847-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1979847-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1979847-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1979847-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1979847-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Boron (B)-Total	WG1979847-1		<1.0	<1	mg/kg	-	1	
Tissue	MB	Boron (B)-Total	WG1979847-1		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Cadmium (Cd)-Total	WG1979847-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Cadmium (Cd)-Total	WG1979847-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Calcium (Ca)-Total	WG1979847-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Calcium (Ca)-Total	WG1979847-1		<20	<20	mg/kg	-	20	
Tissue	MB	Cesium (Cs)-Total	WG1979847-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Cesium (Cs)-Total	WG1979847-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Chromium (Cr)-Total	WG1979847-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Chromium (Cr)-Total	WG1979847-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Cobalt (Co)-Total	WG1979847-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Cobalt (Co)-Total	WG1979847-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Copper (Cu)-Total	WG1979847-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Copper (Cu)-Total	WG1979847-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Iron (Fe)-Total	WG1979847-1		<3.0	<3	mg/kg	-	3	
Tissue	MB	Iron (Fe)-Total	WG1979847-1		<0.60	<0.6	mg/kg wwt	-	0.6	
Tissue	MB	Lead (Pb)-Total	WG1979847-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lead (Pb)-Total	WG1979847-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Lithium (Li)-Total	WG1979847-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Lithium (Li)-Total	WG1979847-1		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Magnesium (Mg)-Total	WG1979847-1		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Magnesium (Mg)-Total	WG1979847-1		<2.0	<2	mg/kg	-	2	
Tissue	MB	Manganese (Mn)-Total	WG1979847-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Manganese (Mn)-Total	WG1979847-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Mercury (Hg)-Total	WG1979847-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1979847-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Molybdenum (Mo)-Total	WG1979847-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Molybdenum (Mo)-Total	WG1979847-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Nickel (Ni)-Total	WG1979847-1		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Nickel (Ni)-Total	WG1979847-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Phosphorus (P)-Total	WG1979847-1		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Phosphorus (P)-Total	WG1979847-1		<10	<10	mg/kg	-	10	
Tissue	MB	Potassium (K)-Total	WG1979847-1		<20	<20	mg/kg	-	20	
Tissue	MB	Potassium (K)-Total	WG1979847-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Rubidium (Rb)-Total	WG1979847-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Rubidium (Rb)-Total	WG1979847-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Selenium (Se)-Total	WG1979847-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Selenium (Se)-Total	WG1979847-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Silver (Ag)-Total	WG1979847-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Silver (Ag)-Total	WG1979847-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Sodium (Na)-Total	WG1979847-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Sodium (Na)-Total	WG1979847-1		<20	<20	mg/kg	-	20	
Tissue	MB	Strontium (Sr)-Total	WG1979847-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Strontium (Sr)-Total	WG1979847-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Tellurium (Te)-Total	WG1979847-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Tellurium (Te)-Total	WG1979847-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Thallium (Tl)-Total	WG1979847-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Thallium (Tl)-Total	WG1979847-1		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Tin (Sn)-Total	WG1979847-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Tin (Sn)-Total	WG1979847-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Titanium (Ti)-Total	WG1979847-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Titanium (Ti)-Total	WG1979847-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Uranium (U)-Total	WG1979847-1		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Uranium (U)-Total	WG1979847-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1979847-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Vanadium (V)-Total	WG1979847-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Zinc (Zn)-Total	WG1979847-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1979847-1		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Zirconium (Zr)-Total	WG1979847-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Zirconium (Zr)-Total	WG1979847-1		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Aluminum (Al)-Total	WG1979847-2		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Aluminum (Al)-Total	WG1979847-2		<2.0	<2	mg/kg	-	2	

Project AJAX 101-246/35
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1522144
Date Received 23-Sep-14 13:00
Date 07-Nov-14

QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	MB	Antimony (Sb)-Total	WG1979847-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Antimony (Sb)-Total	WG1979847-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Arsenic (As)-Total	WG1979847-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Arsenic (As)-Total	WG1979847-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Barium (Ba)-Total	WG1979847-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1979847-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Beryllium (Be)-Total	WG1979847-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Beryllium (Be)-Total	WG1979847-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Bismuth (Bi)-Total	WG1979847-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Bismuth (Bi)-Total	WG1979847-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Boron (B)-Total	WG1979847-2		<1.0	<1	mg/kg	-	1	
Tissue	MB	Boron (B)-Total	WG1979847-2		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Cadmium (Cd)-Total	WG1979847-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Cadmium (Cd)-Total	WG1979847-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1979847-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Calcium (Ca)-Total	WG1979847-2		<20	<20	mg/kg	-	20	
Tissue	MB	Cesium (Cs)-Total	WG1979847-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Cesium (Cs)-Total	WG1979847-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Chromium (Cr)-Total	WG1979847-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Chromium (Cr)-Total	WG1979847-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Cobalt (Co)-Total	WG1979847-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Cobalt (Co)-Total	WG1979847-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1979847-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Copper (Cu)-Total	WG1979847-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Iron (Fe)-Total	WG1979847-2		<3.0	<3	mg/kg	-	3	
Tissue	MB	Iron (Fe)-Total	WG1979847-2		<0.60	<0.6	mg/kg wwt	-	0.6	
Tissue	MB	Lead (Pb)-Total	WG1979847-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Lead (Pb)-Total	WG1979847-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1979847-2		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Lithium (Li)-Total	WG1979847-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1979847-2		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Magnesium (Mg)-Total	WG1979847-2		<2.0	<2	mg/kg	-	2	
Tissue	MB	Manganese (Mn)-Total	WG1979847-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Manganese (Mn)-Total	WG1979847-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Mercury (Hg)-Total	WG1979847-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1979847-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Molybdenum (Mo)-Total	WG1979847-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Molybdenum (Mo)-Total	WG1979847-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Nickel (Ni)-Total	WG1979847-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Nickel (Ni)-Total	WG1979847-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Phosphorus (P)-Total	WG1979847-2		<10	<10	mg/kg	-	10	
Tissue	MB	Phosphorus (P)-Total	WG1979847-2		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Potassium (K)-Total	WG1979847-2		<20	<20	mg/kg	-	20	
Tissue	MB	Potassium (K)-Total	WG1979847-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Rubidium (Rb)-Total	WG1979847-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Rubidium (Rb)-Total	WG1979847-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Selenium (Se)-Total	WG1979847-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Selenium (Se)-Total	WG1979847-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Silver (Ag)-Total	WG1979847-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Silver (Ag)-Total	WG1979847-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Sodium (Na)-Total	WG1979847-2		<20	<20	mg/kg	-	20	
Tissue	MB	Sodium (Na)-Total	WG1979847-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Strontium (Sr)-Total	WG1979847-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Strontium (Sr)-Total	WG1979847-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Tellurium (Te)-Total	WG1979847-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Tellurium (Te)-Total	WG1979847-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Thallium (Tl)-Total	WG1979847-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Thallium (Tl)-Total	WG1979847-2		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Tin (Sn)-Total	WG1979847-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Tin (Sn)-Total	WG1979847-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Titanium (Ti)-Total	WG1979847-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Titanium (Ti)-Total	WG1979847-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Uranium (U)-Total	WG1979847-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Uranium (U)-Total	WG1979847-2		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Vanadium (V)-Total	WG1979847-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Vanadium (V)-Total	WG1979847-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1979847-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1979847-2		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Zirconium (Zr)-Total	WG1979847-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Zirconium (Zr)-Total	WG1979847-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Aluminum (Al)-Total	WG1980558-1		<2.0	<2	mg/kg	-	2	
Tissue	MB	Aluminum (Al)-Total	WG1980558-1		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Antimony (Sb)-Total	WG1980558-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Antimony (Sb)-Total	WG1980558-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Arsenic (As)-Total	WG1980558-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Arsenic (As)-Total	WG1980558-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Barium (Ba)-Total	WG1980558-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1980558-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Beryllium (Be)-Total	WG1980558-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1980558-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1980558-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1980558-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Boron (B)-Total	WG1980558-1		<1.0	<1	mg/kg	-	1	
Tissue	MB	Boron (B)-Total	WG1980558-1		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Cadmium (Cd)-Total	WG1980558-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Cadmium (Cd)-Total	WG1980558-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1980558-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Calcium (Ca)-Total	WG1980558-1		<20	<20	mg/kg	-	20	
Tissue	MB	Cesium (Cs)-Total	WG1980558-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Cesium (Cs)-Total	WG1980558-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Chromium (Cr)-Total	WG1980558-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Chromium (Cr)-Total	WG1980558-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Cobalt (Co)-Total	WG1980558-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Cobalt (Co)-Total	WG1980558-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Copper (Cu)-Total	WG1980558-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1980558-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Iron (Fe)-Total	WG1980558-1		<3.0	<3	mg/kg	-	3	
Tissue	MB	Iron (Fe)-Total	WG1980558-1		<0.60	<0.6	mg/kg wwt	-	0.6	
Tissue	MB	Lead (Pb)-Total	WG1980558-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Lead (Pb)-Total	WG1980558-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1980558-1		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Lithium (Li)-Total	WG1980558-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1980558-1		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Magnesium (Mg)-Total	WG1980558-1		<2.0	<2	mg/kg	-	2	
Tissue	MB	Manganese (Mn)-Total	WG1980558-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Manganese (Mn)-Total	WG1980558-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Mercury (Hg)-Total	WG1980558-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1980558-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Molybdenum (Mo)-Total	WG1980558-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Molybdenum (Mo)-Total	WG1980558-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Nickel (Ni)-Total	WG1980558-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Nickel (Ni)-Total	WG1980558-1		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Phosphorus (P)-Total	WG1980558-1		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Phosphorus (P)-Total	WG1980558-1		<10	<10	mg/kg	-	10	
Tissue	MB	Potassium (K)-Total	WG1980558-1		<20	<20	mg/kg	-	20	
Tissue	MB	Potassium (K)-Total	WG1980558-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Rubidium (Rb)-Total	WG1980558-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Rubidium (Rb)-Total	WG1980558-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Selenium (Se)-Total	WG1980558-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Selenium (Se)-Total	WG1980558-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Silver (Ag)-Total	WG1980558-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Silver (Ag)-Total	WG1980558-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Sodium (Na)-Total	WG1980558-1		<20	<20	mg/kg	-	20	
Tissue	MB	Sodium (Na)-Total	WG1980558-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Strontium (Sr)-Total	WG1980558-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Strontium (Sr)-Total	WG1980558-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Tellurium (Te)-Total	WG1980558-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Tellurium (Te)-Total	WG1980558-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Thallium (Tl)-Total	WG1980558-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Thallium (Tl)-Total	WG1980558-1		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Tin (Sn)-Total	WG1980558-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Tin (Sn)-Total	WG1980558-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Titanium (Ti)-Total	WG1980558-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Titanium (Ti)-Total	WG1980558-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Uranium (U)-Total	WG1980558-1		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Uranium (U)-Total	WG1980558-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1980558-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Vanadium (V)-Total	WG1980558-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Zinc (Zn)-Total	WG1980558-1		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Zinc (Zn)-Total	WG1980558-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zirconium (Zr)-Total	WG1980558-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Zirconium (Zr)-Total	WG1980558-1		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Aluminum (Al)-Total	WG1980558-2		<2.0	<2	mg/kg	-	2	
Tissue	MB	Aluminum (Al)-Total	WG1980558-2		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Antimony (Sb)-Total	WG1980558-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Antimony (Sb)-Total	WG1980558-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1980558-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Arsenic (As)-Total	WG1980558-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Barium (Ba)-Total	WG1980558-2		<0.050	<0.05	mg/kg	-	0.05	

Project AJAX 101-246/35
Report To Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No. L1522144
Date Received 23-Sep-14 13:00
Date 07-Nov-14

QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	MB	Barium (Ba)-Total	WG1980558-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1980558-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Beryllium (Be)-Total	WG1980558-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Bismuth (Bi)-Total	WG1980558-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1980558-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Boron (B)-Total	WG1980558-2		<1.0	<1	mg/kg	-	1	
Tissue	MB	Boron (B)-Total	WG1980558-2		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Cadmium (Cd)-Total	WG1980558-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Cadmium (Cd)-Total	WG1980558-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1980558-2		<20	<20	mg/kg	-	20	
Tissue	MB	Calcium (Ca)-Total	WG1980558-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Cesium (Cs)-Total	WG1980558-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Cesium (Cs)-Total	WG1980558-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Chromium (Cr)-Total	WG1980558-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Chromium (Cr)-Total	WG1980558-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Cobalt (Co)-Total	WG1980558-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Cobalt (Co)-Total	WG1980558-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Copper (Cu)-Total	WG1980558-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1980558-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Iron (Fe)-Total	WG1980558-2		<3.0	<3	mg/kg	-	3	
Tissue	MB	Iron (Fe)-Total	WG1980558-2		<0.60	<0.6	mg/kg wwt	-	0.6	
Tissue	MB	Lead (Pb)-Total	WG1980558-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Lead (Pb)-Total	WG1980558-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1980558-2		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Lithium (Li)-Total	WG1980558-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Magnesium (Mg)-Total	WG1980558-2		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Magnesium (Mg)-Total	WG1980558-2		<2.0	<2	mg/kg	-	2	
Tissue	MB	Manganese (Mn)-Total	WG1980558-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Manganese (Mn)-Total	WG1980558-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Mercury (Hg)-Total	WG1980558-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1980558-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Molybdenum (Mo)-Total	WG1980558-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Molybdenum (Mo)-Total	WG1980558-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Nickel (Ni)-Total	WG1980558-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Nickel (Ni)-Total	WG1980558-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Phosphorus (P)-Total	WG1980558-2		<10	<10	mg/kg	-	10	
Tissue	MB	Phosphorus (P)-Total	WG1980558-2		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Potassium (K)-Total	WG1980558-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Potassium (K)-Total	WG1980558-2		<20	<20	mg/kg	-	20	
Tissue	MB	Rubidium (Rb)-Total	WG1980558-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Rubidium (Rb)-Total	WG1980558-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Selenium (Se)-Total	WG1980558-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Selenium (Se)-Total	WG1980558-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Silver (Ag)-Total	WG1980558-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Silver (Ag)-Total	WG1980558-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Sodium (Na)-Total	WG1980558-2		<20	<20	mg/kg	-	20	
Tissue	MB	Sodium (Na)-Total	WG1980558-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Strontium (Sr)-Total	WG1980558-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Strontium (Sr)-Total	WG1980558-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Tellurium (Te)-Total	WG1980558-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Tellurium (Te)-Total	WG1980558-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Thallium (Tl)-Total	WG1980558-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Thallium (Tl)-Total	WG1980558-2		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Tin (Sn)-Total	WG1980558-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Tin (Sn)-Total	WG1980558-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Titanium (Ti)-Total	WG1980558-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Titanium (Ti)-Total	WG1980558-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Uranium (U)-Total	WG1980558-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Uranium (U)-Total	WG1980558-2		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Vanadium (V)-Total	WG1980558-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Vanadium (V)-Total	WG1980558-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1980558-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zinc (Zn)-Total	WG1980558-2		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Zirconium (Zr)-Total	WG1980558-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Zirconium (Zr)-Total	WG1980558-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Aluminum (Al)-Total	WG1981557-1		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Aluminum (Al)-Total	WG1981557-1		<2.0	<2	mg/kg	-	2	
Tissue	MB	Antimony (Sb)-Total	WG1981557-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Antimony (Sb)-Total	WG1981557-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Arsenic (As)-Total	WG1981557-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Arsenic (As)-Total	WG1981557-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Barium (Ba)-Total	WG1981557-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Barium (Ba)-Total	WG1981557-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1981557-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1981557-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1981557-1		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1981557-1		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Boron (B)-Total	WG1981557-1		<1.0	<1	mg/kg	-	1	
Tissue	MB	Boron (B)-Total	WG1981557-1		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Cadmium (Cd)-Total	WG1981557-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Cadmium (Cd)-Total	WG1981557-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1981557-1		<20	<20	mg/kg	-	20	
Tissue	MB	Calcium (Ca)-Total	WG1981557-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Cesium (Cs)-Total	WG1981557-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Cesium (Cs)-Total	WG1981557-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Chromium (Cr)-Total	WG1981557-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Chromium (Cr)-Total	WG1981557-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Cobalt (Co)-Total	WG1981557-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Cobalt (Co)-Total	WG1981557-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1981557-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1981557-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Iron (Fe)-Total	WG1981557-1		<0.60	<0.6	mg/kg wwt	-	0.6	
Tissue	MB	Iron (Fe)-Total	WG1981557-1		<3.0	<3	mg/kg	-	3	
Tissue	MB	Lead (Pb)-Total	WG1981557-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Lead (Pb)-Total	WG1981557-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1981557-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Lithium (Li)-Total	WG1981557-1		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Magnesium (Mg)-Total	WG1981557-1		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Magnesium (Mg)-Total	WG1981557-1		<2.0	<2	mg/kg	-	2	
Tissue	MB	Manganese (Mn)-Total	WG1981557-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Manganese (Mn)-Total	WG1981557-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Mercury (Hg)-Total	WG1981557-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Mercury (Hg)-Total	WG1981557-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Molybdenum (Mo)-Total	WG1981557-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Molybdenum (Mo)-Total	WG1981557-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Nickel (Ni)-Total	WG1981557-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Nickel (Ni)-Total	WG1981557-1		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Phosphorus (P)-Total	WG1981557-1		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Phosphorus (P)-Total	WG1981557-1		<10	<10	mg/kg	-	10	
Tissue	MB	Potassium (K)-Total	WG1981557-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Potassium (K)-Total	WG1981557-1		<20	<20	mg/kg	-	20	
Tissue	MB	Rubidium (Rb)-Total	WG1981557-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Rubidium (Rb)-Total	WG1981557-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Selenium (Se)-Total	WG1981557-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Selenium (Se)-Total	WG1981557-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Silver (Ag)-Total	WG1981557-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Silver (Ag)-Total	WG1981557-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Sodium (Na)-Total	WG1981557-1		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Sodium (Na)-Total	WG1981557-1		<20	<20	mg/kg	-	20	
Tissue	MB	Strontium (Sr)-Total	WG1981557-1		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Strontium (Sr)-Total	WG1981557-1		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Tellurium (Te)-Total	WG1981557-1		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Tellurium (Te)-Total	WG1981557-1		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Thallium (Tl)-Total	WG1981557-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Thallium (Tl)-Total	WG1981557-1		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Tin (Sn)-Total	WG1981557-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Tin (Sn)-Total	WG1981557-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Titanium (Ti)-Total	WG1981557-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Titanium (Ti)-Total	WG1981557-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Uranium (U)-Total	WG1981557-1		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Uranium (U)-Total	WG1981557-1		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1981557-1		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Vanadium (V)-Total	WG1981557-1		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Zinc (Zn)-Total	WG1981557-1		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Zinc (Zn)-Total	WG1981557-1		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zirconium (Zr)-Total	WG1981557-1		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Zirconium (Zr)-Total	WG1981557-1		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Aluminum (Al)-Total	WG1981557-2		<2.0	<2	mg/kg	-	2	
Tissue	MB	Aluminum (Al)-Total	WG1981557-2		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Antimony (Sb)-Total	WG1981557-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Antimony (Sb)-Total	WG1981557-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Arsenic (As)-Total	WG1981557-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Arsenic (As)-Total	WG1981557-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Barium (Ba)-Total	WG1981557-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Barium (Ba)-Total	WG1981557-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Beryllium (Be)-Total	WG1981557-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Beryllium (Be)-Total	WG1981557-2		<0.0020	<0.002	mg/kg wwt	-	0.002	
Tissue	MB	Bismuth (Bi)-Total	WG1981557-2		<0.010	<0.01	mg/kg	-	0.01	
Tissue	MB	Bismuth (Bi)-Total	WG1981557-2		<0.0020	<0.002	mg/kg wwt	-	0.002	

Project	AJAX 101-246/35
Report To	Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No.	L1522144
Date Received	23-Sep-14 13:00
Date	07-Nov-14

QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Tissue	MB	Boron (B)-Total	WG1981557-2		<0.20	<0.2	mg/kg wwt	-	0.2	
Tissue	MB	Boron (B)-Total	WG1981557-2		<1.0	<1	mg/kg	-	1	
Tissue	MB	Cadmium (Cd)-Total	WG1981557-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Cadmium (Cd)-Total	WG1981557-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Calcium (Ca)-Total	WG1981557-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Calcium (Ca)-Total	WG1981557-2		<20	<20	mg/kg	-	20	
Tissue	MB	Cesium (Cs)-Total	WG1981557-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Cesium (Cs)-Total	WG1981557-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Chromium (Cr)-Total	WG1981557-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Chromium (Cr)-Total	WG1981557-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Cobalt (Co)-Total	WG1981557-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Cobalt (Co)-Total	WG1981557-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Copper (Cu)-Total	WG1981557-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Copper (Cu)-Total	WG1981557-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Iron (Fe)-Total	WG1981557-2		<0.60	<0.6	mg/kg wwt	-	0.6	
Tissue	MB	Iron (Fe)-Total	WG1981557-2		<3.0	<3	mg/kg	-	3	
Tissue	MB	Lead (Pb)-Total	WG1981557-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Lead (Pb)-Total	WG1981557-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Lithium (Li)-Total	WG1981557-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Lithium (Li)-Total	WG1981557-2		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Magnesium (Mg)-Total	WG1981557-2		<0.40	<0.4	mg/kg wwt	-	0.4	
Tissue	MB	Magnesium (Mg)-Total	WG1981557-2		<2.0	<2	mg/kg	-	2	
Tissue	MB	Manganese (Mn)-Total	WG1981557-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Manganese (Mn)-Total	WG1981557-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Mercury (Hg)-Total	WG1981557-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Mercury (Hg)-Total	WG1981557-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Molybdenum (Mo)-Total	WG1981557-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Molybdenum (Mo)-Total	WG1981557-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Nickel (Ni)-Total	WG1981557-2		<0.20	<0.2	mg/kg	-	0.2	
Tissue	MB	Nickel (Ni)-Total	WG1981557-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Phosphorus (P)-Total	WG1981557-2		<2.0	<2	mg/kg wwt	-	2	
Tissue	MB	Phosphorus (P)-Total	WG1981557-2		<10	<10	mg/kg	-	10	
Tissue	MB	Potassium (K)-Total	WG1981557-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Potassium (K)-Total	WG1981557-2		<20	<20	mg/kg	-	20	
Tissue	MB	Rubidium (Rb)-Total	WG1981557-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Rubidium (Rb)-Total	WG1981557-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Selenium (Se)-Total	WG1981557-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Selenium (Se)-Total	WG1981557-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Silver (Ag)-Total	WG1981557-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Silver (Ag)-Total	WG1981557-2		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Sodium (Na)-Total	WG1981557-2		<20	<20	mg/kg	-	20	
Tissue	MB	Sodium (Na)-Total	WG1981557-2		<4.0	<4	mg/kg wwt	-	4	
Tissue	MB	Strontium (Sr)-Total	WG1981557-2		<0.010	<0.01	mg/kg wwt	-	0.01	
Tissue	MB	Strontium (Sr)-Total	WG1981557-2		<0.050	<0.05	mg/kg	-	0.05	
Tissue	MB	Tellurium (Te)-Total	WG1981557-2		<0.0040	<0.004	mg/kg wwt	-	0.004	
Tissue	MB	Tellurium (Te)-Total	WG1981557-2		<0.020	<0.02	mg/kg	-	0.02	
Tissue	MB	Thallium (Tl)-Total	WG1981557-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Thallium (Tl)-Total	WG1981557-2		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Tin (Sn)-Total	WG1981557-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Tin (Sn)-Total	WG1981557-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Titanium (Ti)-Total	WG1981557-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Titanium (Ti)-Total	WG1981557-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Uranium (U)-Total	WG1981557-2		<0.00040	<0.0004	mg/kg wwt	-	0.0004	
Tissue	MB	Uranium (U)-Total	WG1981557-2		<0.0020	<0.002	mg/kg	-	0.002	
Tissue	MB	Vanadium (V)-Total	WG1981557-2		<0.10	<0.1	mg/kg	-	0.1	
Tissue	MB	Vanadium (V)-Total	WG1981557-2		<0.020	<0.02	mg/kg wwt	-	0.02	
Tissue	MB	Zinc (Zn)-Total	WG1981557-2		<0.50	<0.5	mg/kg	-	0.5	
Tissue	MB	Zinc (Zn)-Total	WG1981557-2		<0.10	<0.1	mg/kg wwt	-	0.1	
Tissue	MB	Zirconium (Zr)-Total	WG1981557-2		<0.040	<0.04	mg/kg wwt	-	0.04	
Tissue	MB	Zirconium (Zr)-Total	WG1981557-2		<0.20	<0.2	mg/kg	-	0.2	
Speciated Metals										
Tissue	CRM	Methyl Mercury	WG1982694-8	VA-NRC-TORT3	0.130	0.147	mg/kg	88.6	70-130	
Tissue	CRM	Methyl Mercury	WG1982694-9	VA-NRC-DORM4	0.333	0.380	mg/kg	87.5	70-130	
Tissue	CRM	Methyl Mercury	WG1982728-3	VA-NRC-TORT3	0.126	0.147	mg/kg wwt	86.0	70-130	
Tissue	CRM	Methyl Mercury	WG1982728-4	VA-NRC-DORM4	0.323	0.380	mg/kg wwt	84.9	70-130	
Tissue	CRM	Methyl Mercury	WG1985627-3	VA-NRC-TORT3	0.125	0.147	mg/kg	85.0	70-130	
Tissue	CRM	Methyl Mercury	WG1985627-4	VA-NRC-DORM4	0.332	0.380	mg/kg	87.4	70-130	
Tissue	CRM	Methyl Mercury	WG1985642-3	VA-NRC-TORT3	0.121	0.147	mg/kg wwt	82.4	70-130	
Tissue	CRM	Methyl Mercury	WG1985642-4	VA-NRC-DORM4	0.322	0.380	mg/kg wwt	84.7	70-130	
Tissue	CRM	Methyl Mercury	WG1985737-3	VA-NRC-TORT3	0.130	0.147	mg/kg	88.2	70-130	
Tissue	CRM	Methyl Mercury	WG1985737-4	VA-NRC-DORM4	0.350	0.380	mg/kg	92.0	70-130	
Tissue	CRM	Methyl Mercury	WG1985761-3	VA-NRC-TORT3	0.126	0.147	mg/kg wwt	85.6	70-130	
Tissue	CRM	Methyl Mercury	WG1985761-4	VA-NRC-DORM4	0.339	0.380	mg/kg wwt	89.2	70-130	
Tissue	CRM	Methyl Mercury	WG1990927-4	VA-NRC-DORM4	0.306	0.380	mg/kg	80.4	70-130	
Tissue	CRM	Methyl Mercury	WG1990933-4	VA-NRC-DORM4	0.296	0.380	mg/kg wwt	78.0	70-130	
Tissue	LCS	Methyl Mercury	WG1982694-7		0.102	0.100	mg/kg	102.0	70-130	
Tissue	LCS	Methyl Mercury	WG1982728-2		0.102	0.100	mg/kg wwt	102.0	70-130	
Tissue	LCS	Methyl Mercury	WG1985627-2		0.118	0.100	mg/kg	117.6	70-130	
Tissue	LCS	Methyl Mercury	WG1985642-2		0.118	0.100	mg/kg wwt	117.6	70-130	
Tissue	LCS	Methyl Mercury	WG1985737-2		0.124	0.100	mg/kg	124.2	70-130	
Tissue	LCS	Methyl Mercury	WG1985761-2		0.124	0.100	mg/kg wwt	124.2	70-130	
Tissue	LCS	Methyl Mercury	WG1990927-3		0.0827	0.100	mg/kg	82.7	70-130	
Tissue	LCS	Methyl Mercury	WG1990933-3		0.0827	0.100	mg/kg wwt	82.7	70-130	
Tissue	MB	Methyl Mercury	WG1982694-6		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Methyl Mercury	WG1982728-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Methyl Mercury	WG1985627-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Methyl Mercury	WG1985642-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Methyl Mercury	WG1985737-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Methyl Mercury	WG1985761-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Methyl Mercury	WG1990927-1		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Methyl Mercury	WG1990927-2		<0.0050	<0.005	mg/kg	-	0.005	
Tissue	MB	Methyl Mercury	WG1990933-1		<0.0010	<0.001	mg/kg wwt	-	0.001	
Tissue	MB	Methyl Mercury	WG1990933-2		<0.0010	<0.001	mg/kg wwt	-	0.001	

Project	AJAX 101-246/35
Report To	Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No.	L1522144
Date Received	23-Sep-14 13:00
Date	07-Nov-14

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.

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.
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Qualifier Key for Sample Parameters Listed Below:

Qualifier	Description
RRU	Reported Result is Uncertain due to proximity to the estimated Method Detection Limit.

Samples with Parameter Qualifiers as Listed Above:

Sample Number	Client Sample ID	Parameters	Qualifier
L1522144-8	ANDR-15 33 WHOLE FISH	Antimony (Sb)-Total	RRU

Project	VA101-00246/35
Report To	Stephanie Eagen, KNIGHT PIESOLD LTD.
ALS File No.	L1537826
Date Received	24-Oct-14 11:38
Date	02-Dec-14

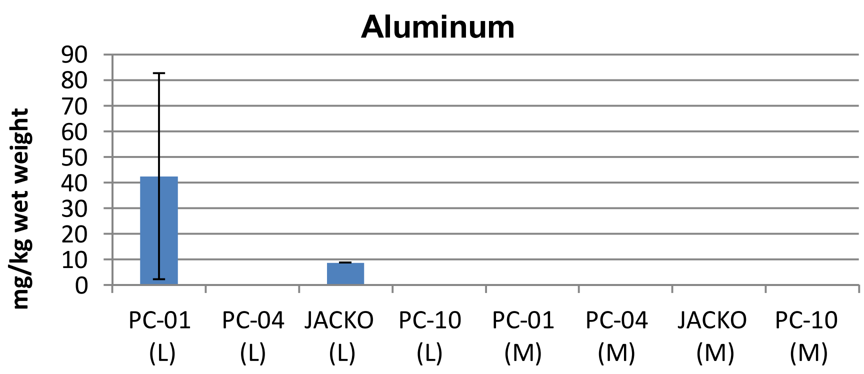
RESULTS OF ANALYSIS

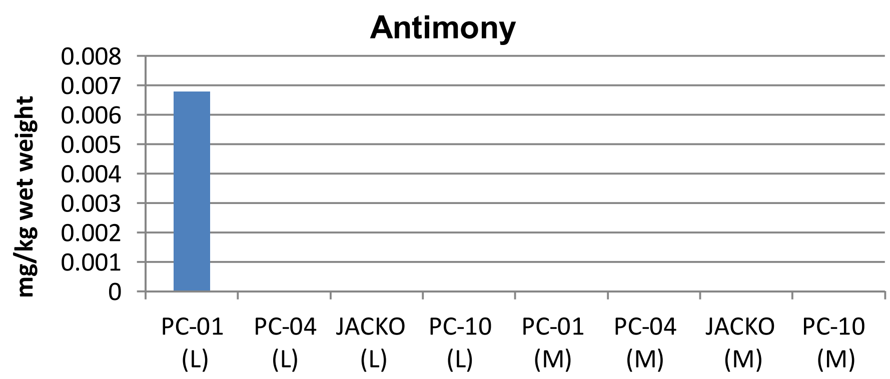
Sample ID	MCCONNELL LAKE FISH 1	MCCONNELL LAKE FISH 2	MCCONNELL LAKE FISH 3	MCCONNELL LAKE FISH 4	MCCONNELL LAKE FISH 5	MCCONNELL LAKE FISH 6
Date Sampled	22-OCT-14	22-OCT-14	22-OCT-14	22-OCT-14	22-OCT-14	22-OCT-14
Time Sampled	16:30	16:30	16:30	16:30	16:35	16:35
ALS Sample ID	L1537826-1	L1537826-2	L1537826-3	L1537826-4	L1537826-5	L1537826-6
Matrix	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Physical Tests						
% Moisture	74.0	68.1	75.2	76.2	77.5	80.5
Metals						
Aluminum (Al)-Total	4.1	5.1	2.0	<2.0	17.8	21.1
Aluminum (Al)-Total	1.07	1.61	0.51	0.44	4.00	4.12
Antimony (Sb)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Antimony (Sb)-Total	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Arsenic (As)-Total	0.085	0.071	0.092	0.050	0.163	0.112
Arsenic (As)-Total	0.0221	0.0226	0.0228	0.0119	0.0366	0.0219
Barium (Ba)-Total	4.08	2.84	0.915	1.40	7.15	2.82
Barium (Ba)-Total	1.06	0.904	0.227	0.334	1.61	0.551
Beryllium (Be)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Beryllium (Be)-Total	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth (Bi)-Total	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	<1.0	12.0	11.0	<1.0	<1.0	<1.0
Boron (B)-Total	<0.20	3.82	2.72	<0.20	<0.20	<0.20
Cadmium (Cd)-Total	<0.0050	0.0058	0.0074	<0.0050	0.0173	0.0079
Cadmium (Cd)-Total	0.0011	0.0018	0.0018	0.0010	0.0039	0.0015
Calcium (Ca)-Total	27400	12500	16400	30700	34300	28600
Calcium (Ca)-Total	7120	3990	4060	7320	7740	5580
Cesium (Cs)-Total	0.0441	0.0316	0.0096	0.0379	0.0405	0.0353
Cesium (Cs)-Total	0.0115	0.0101	0.0024	0.0090	0.0091	0.0069
Chromium (Cr)-Total	<0.050	<0.050	<0.050	<0.050	0.200	0.106
Chromium (Cr)-Total	<0.010	<0.010	<0.010	<0.010	0.045	0.021
Cobalt (Co)-Total	0.030	0.028	0.040	0.037	0.047	0.052
Cobalt (Co)-Total	0.0077	0.0089	0.0100	0.0089	0.0105	0.0102
Copper (Cu)-Total	6.11	5.16	3.46	4.03	7.67	5.10
Copper (Cu)-Total	1.59	1.64	0.857	0.960	1.73	0.994
Iron (Fe)-Total	35.3	34.1	62.6	38.6	53.3	92.9
Iron (Fe)-Total	9.19	10.9	15.5	9.20	12.0	18.1
Lead (Pb)-Total	<0.020	<0.020	<0.020	0.087	0.101	0.142
Lead (Pb)-Total	<0.0040	<0.0040	<0.0040	0.0208	0.0227	0.0278
Lithium (Li)-Total	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium (Li)-Total	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium (Mg)-Total	1380	957	1210	1560	1620	1570
Magnesium (Mg)-Total	359	305	299	371	365	305
Manganese (Mn)-Total	3.52	1.64	3.69	3.42	5.21	6.22
Manganese (Mn)-Total	0.916	0.524	0.914	0.815	1.17	1.21
Mercury (Hg)-Total	0.261	0.187	0.419	0.344	0.195	0.475
Mercury (Hg)-Total	0.0679	0.0595	0.104	0.0820	0.0440	0.0927
Molybdenum (Mo)-Total	0.050	0.045	0.027	0.042	0.065	0.054
Molybdenum (Mo)-Total	0.0129	0.0142	0.0067	0.0100	0.0147	0.0105
Nickel (Ni)-Total	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nickel (Ni)-Total	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Phosphorus (P)-Total	23600	13600	18100	27400	27000	27400
Phosphorus (P)-Total	6130	4340	4480	6530	6090	5340
Potassium (K)-Total	13900	11300	14700	16500	16200	18200
Potassium (K)-Total	3620	3600	3640	3940	3640	3540
Rubidium (Rb)-Total	5.84	4.90	2.74	5.70	5.30	4.99
Rubidium (Rb)-Total	1.52	1.56	0.679	1.36	1.19	0.974
Selenium (Se)-Total	0.553	0.566	0.590	0.646	0.487	0.679
Selenium (Se)-Total	0.144	0.180	0.146	0.154	0.110	0.132
Silver (Ag)-Total	0.0089	0.0074	0.0085	0.0061	0.0208	0.0085
Silver (Ag)-Total	0.0023	0.0023	0.0021	0.0015	0.0047	0.0017
Sodium (Na)-Total	3270	2260	2960	3350	3660	4470
Sodium (Na)-Total	851	719	734	798	823	871
Strontium (Sr)-Total	37.0	20.3	16.0	35.6	48.7	35.9
Strontium (Sr)-Total	9.61	6.45	3.96	8.49	11.0	7.01
Tellurium (Te)-Total	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tellurium (Te)-Total	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	0.0028	0.0025	0.0043	0.0035	0.0076	0.0058
Thallium (Tl)-Total	0.00072	0.00078	0.00107	0.00083	0.00171	0.00113
Tin (Sn)-Total	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (Sn)-Total	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Titanium (Ti)-Total	2.89	1.80	1.18	3.01	3.81	4.00
Titanium (Ti)-Total	0.753	0.573	0.292	0.717	0.859	0.779
Uranium (U)-Total	0.0053	0.0048	0.0040	0.0066	0.0134	0.0169
Uranium (U)-Total	0.00138	0.00152	0.00098	0.00158	0.00302	0.00330
Vanadium (V)-Total	<0.10	<0.10	<0.10	<0.10	<0.10	0.12
Vanadium (V)-Total	<0.020	<0.020	<0.020	<0.020	<0.020	0.023
Zinc (Zn)-Total	79.6	91.0	75.9	326	95.8	125
Zinc (Zn)-Total	20.7	29.0	18.8	77.7	21.6	24.4
Zirconium (Zr)-Total	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zirconium (Zr)-Total	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Speciated Metals						
Methyl Mercury	0.188	0.116	0.300	0.179	0.175	0.226
Methyl Mercury	0.0488	0.0370	0.0745	0.0427	0.0393	0.0442

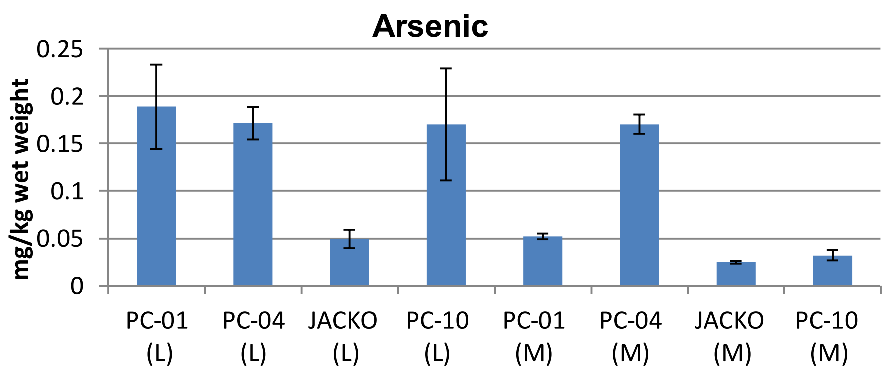
APPENDIX C5

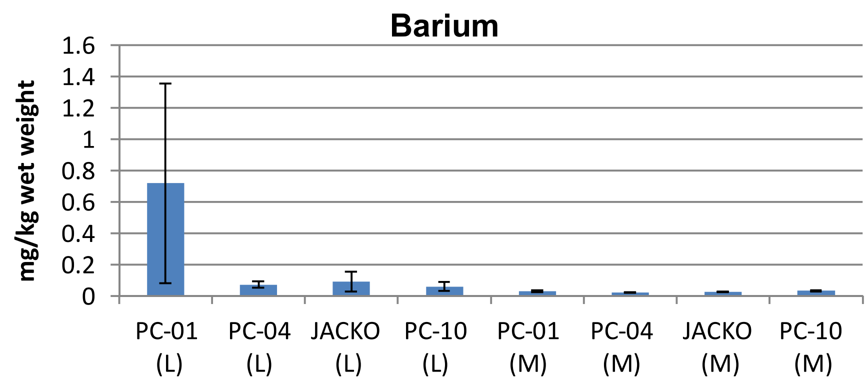
RAINBOW TROUT TISSUE METALS CONCENTRATIONS - SITE COMPARISON

(Pages C5-1 to C5-14)









NOTES:
1. (L) DENOTES LIVER SAMPLE.
2. (M) DENOTES MUSCLE SAMPLE.
3. PC = PETERSON CREEK

KGHM AJAX MINING INC.

AJAX PROJECT

AVERAGE (±SE) MUSCLE AND LIVER TISSUE METAL CONCENTRATION POTENTIAL IMPACT SITES JULY 2014

Knight Piésold CONSULTING

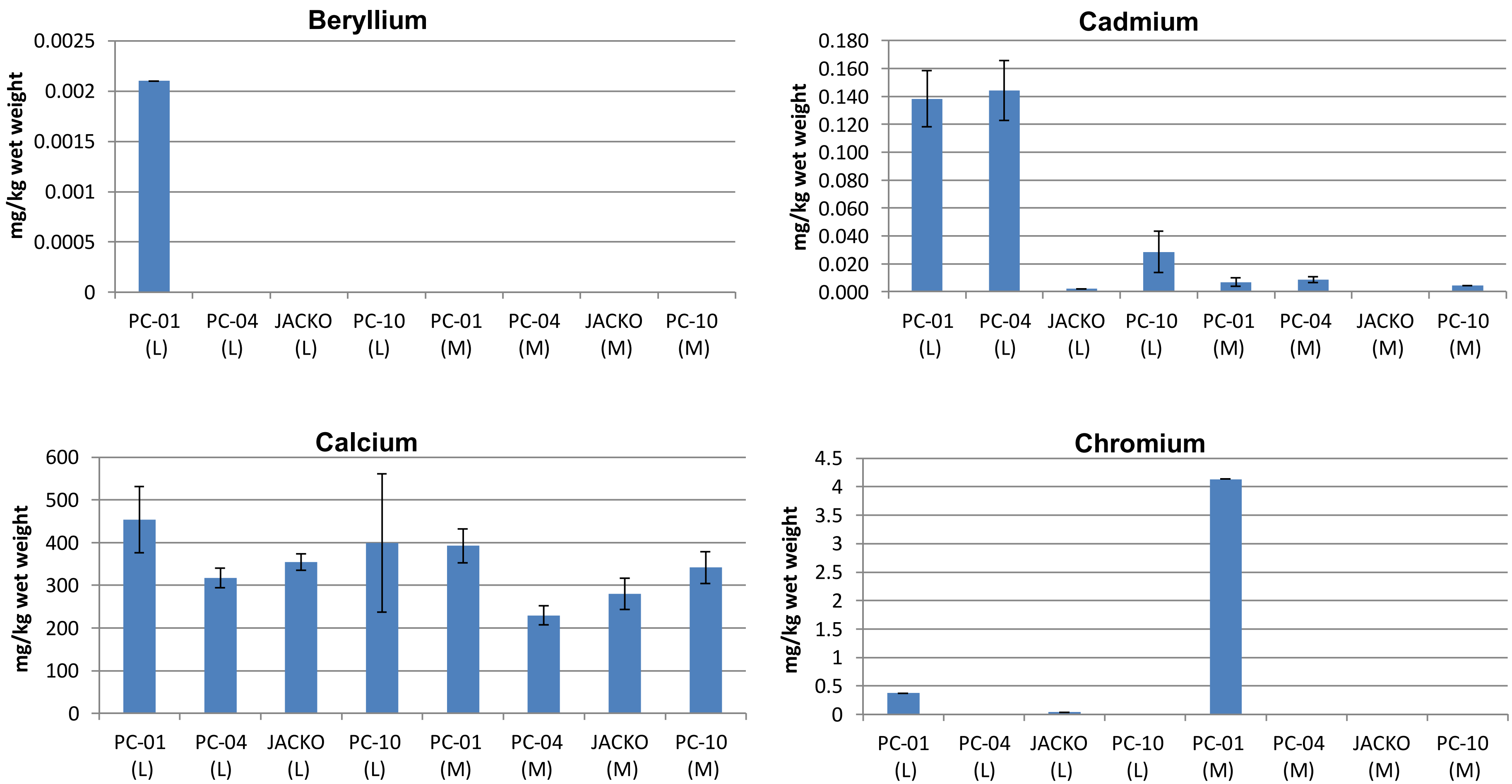
P/A NO. VA101-246/35

REF. NO. 1

FIGURE C5.1

REV 0

0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



NOTES:
1. (L) DENOTES LIVER SAMPLE.
2. (M) DENOTES MUSCLE SAMPLE.
3. PC = PETERSON CREEK

KGHM AJAX MINING INC.

AJAX PROJECT

AVERAGE (±SE) MUSCLE AND LIVER TISSUE METAL CONCENTRATION POTENTIAL IMPACT SITES JULY 2014

Knight Piésold CONSULTING

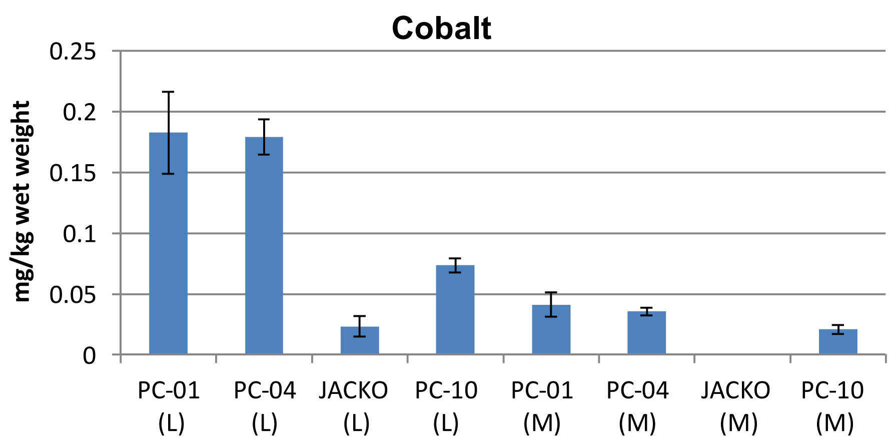
P/A NO. VA101-246/35

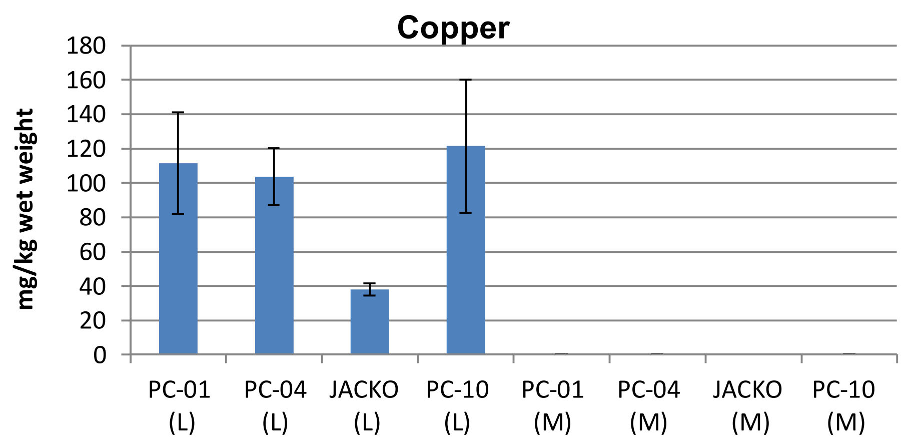
REF. NO. 1

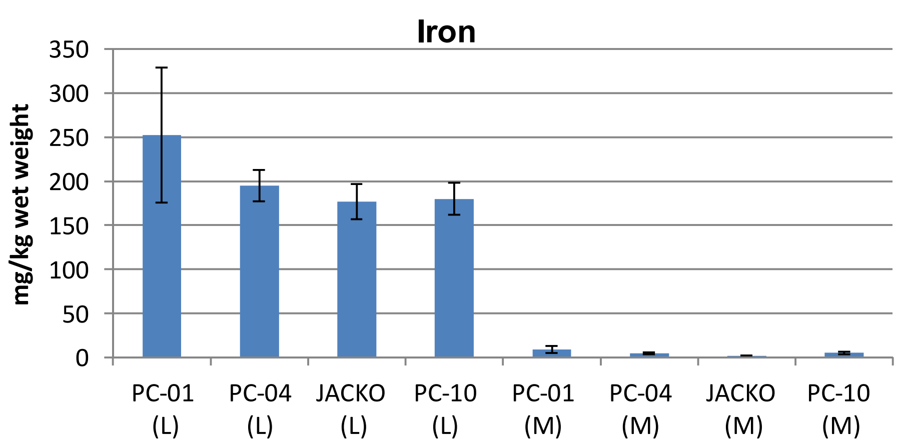
FIGURE C5.2

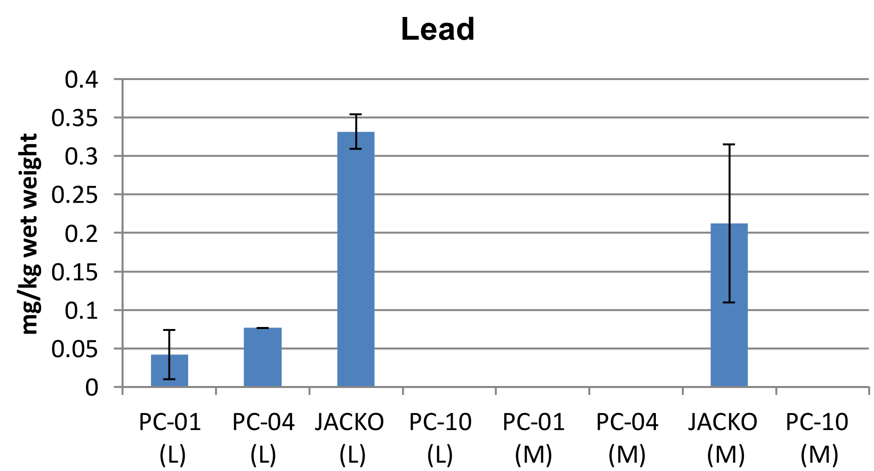
REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB









NOTES:
1. (L) DENOTES LIVER SAMPLE.
2. (M) DENOTES MUSCLE SAMPLE.
3. LEAD PROVINCIAL GUIDELINE FOR HUMAN CONSUMPTION OF 0.8 mg/kg IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL. MINISTRY OF ENVIRONMENT, LANDS AND PARKS 1987.
4. PC = PETERSON CREEK

0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

KGHM AJAX MINING INC.

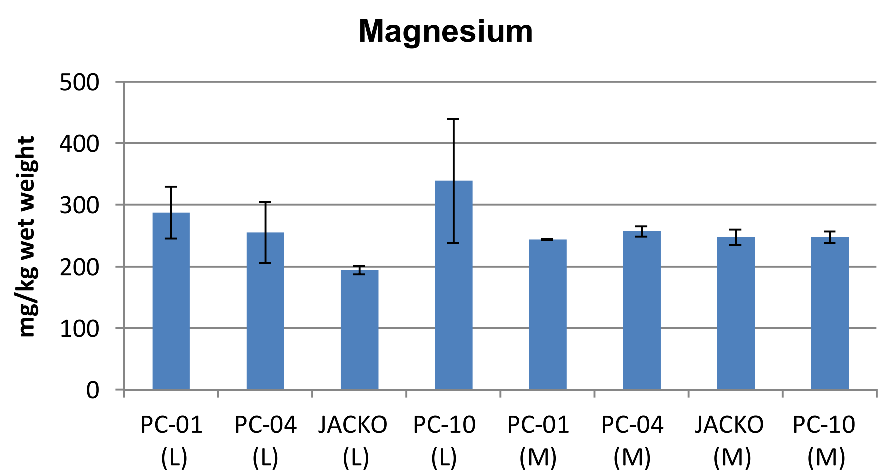
AJAX PROJECT

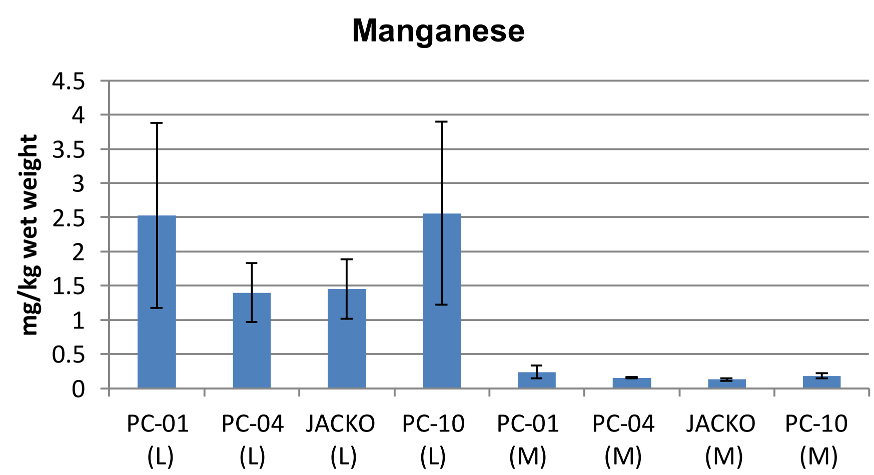
AVERAGE (±SE) MUSCLE AND LIVER TISSUE METAL CONCENTRATION POTENTIAL IMPACT SITES JULY 2014

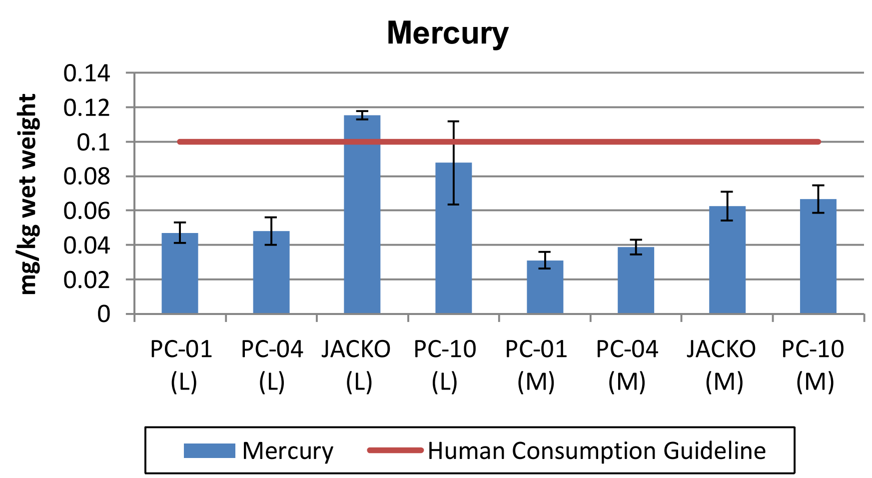
Knight Piésold CONSULTING

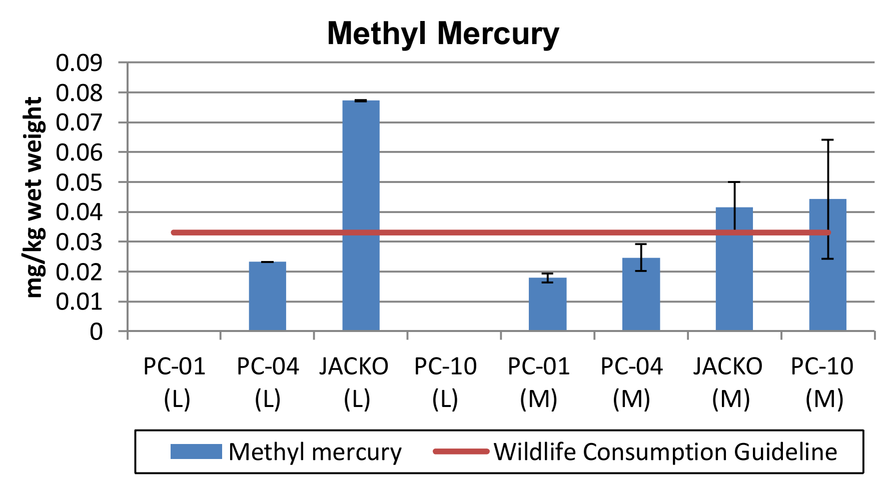
P/A NO. VA101-246/35 | REF. NO. 1

FIGURE C5.3 | REV 0









NOTES:

1. (L) DENOTES LIVER SAMPLE.
2. (M) DENOTES MUSCLE SAMPLE.
3. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH FOR HUMAN CONSUMPTION VARY FROM 0.5 µg/g WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 g WET WEIGHT, TO 0.1 µg/g WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 g WET WEIGHT (MINISTRY OF ENVIRONMENT 2001).
4. METHYL MERCURYGUIDELINE IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µg/g WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
5. PC = PETERSON CREEK

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB

KGHM AJAX MINING INC.

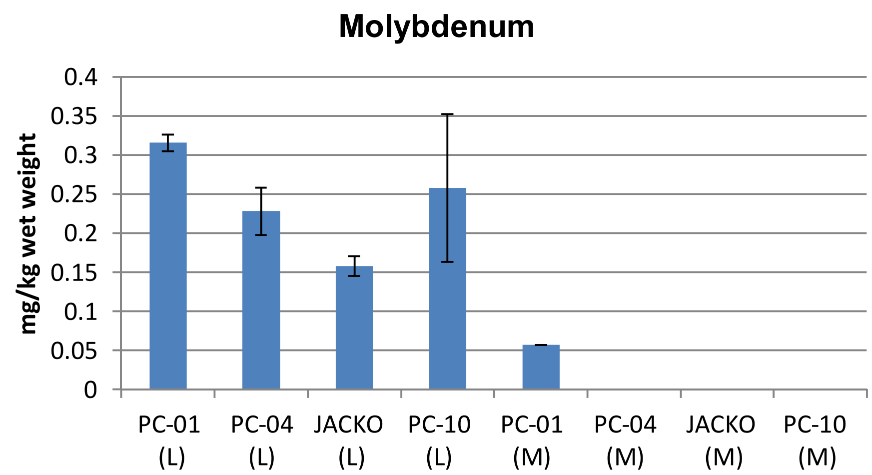
AJAX PROJECT

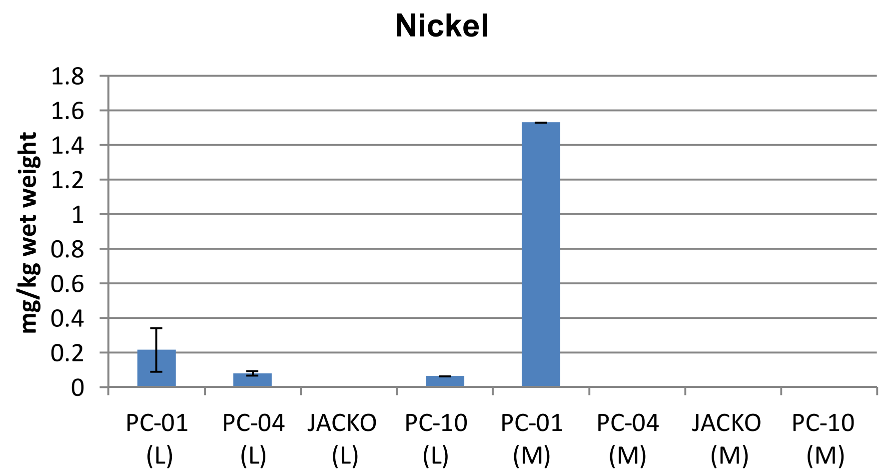
AVERAGE (±SE) MUSCLE AND LIVER TISSUE METAL CONCENTRATION POTENTIAL IMPACT SITES JULY 2014

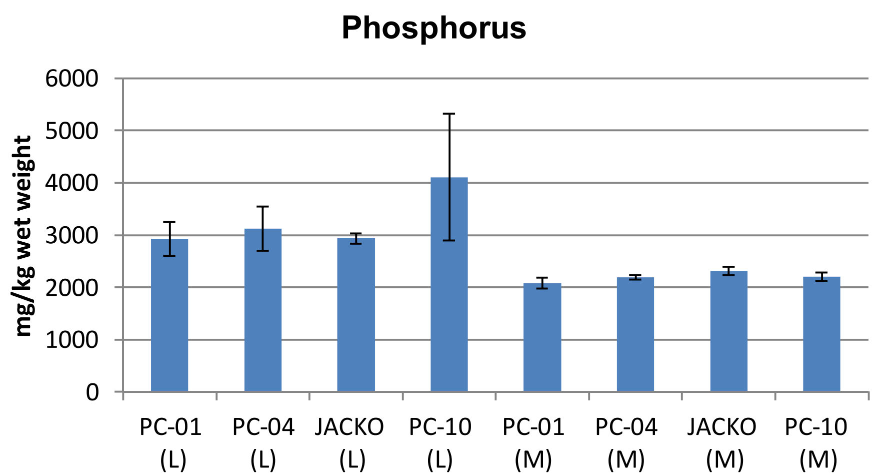
Knight Piésold CONSULTING

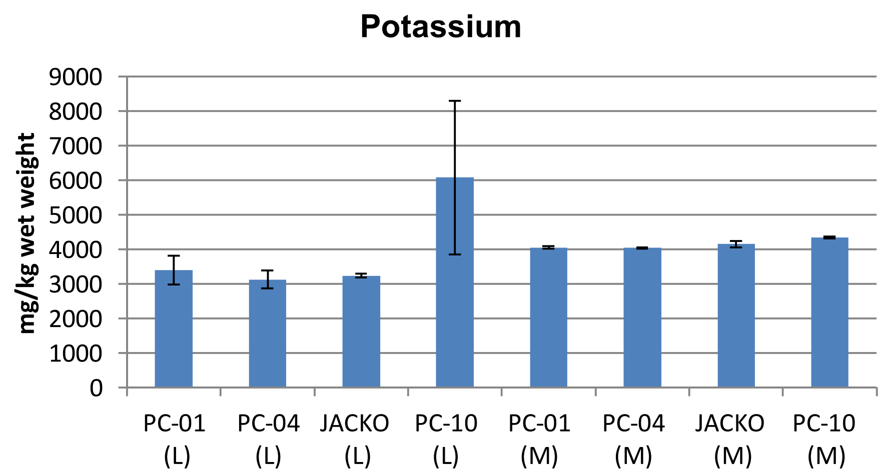
P/A NO.	REF. NO.
VA101-246/35	1

FIGURE C5.4	REV 0









NOTES:
1. (L) DENOTES LIVER SAMPLE.
2. (M) DENOTES MUSCLE SAMPLE.
3. PC = PETERSON CREEK

KGHM AJAX MINING INC.

AJAX PROJECT

**AVERAGE (±SE) MUSCLE AND LIVER TISSUE METAL CONCENTRATION
POTENTIAL IMPACT SITES JULY 2014**

Knight Piésold CONSULTING

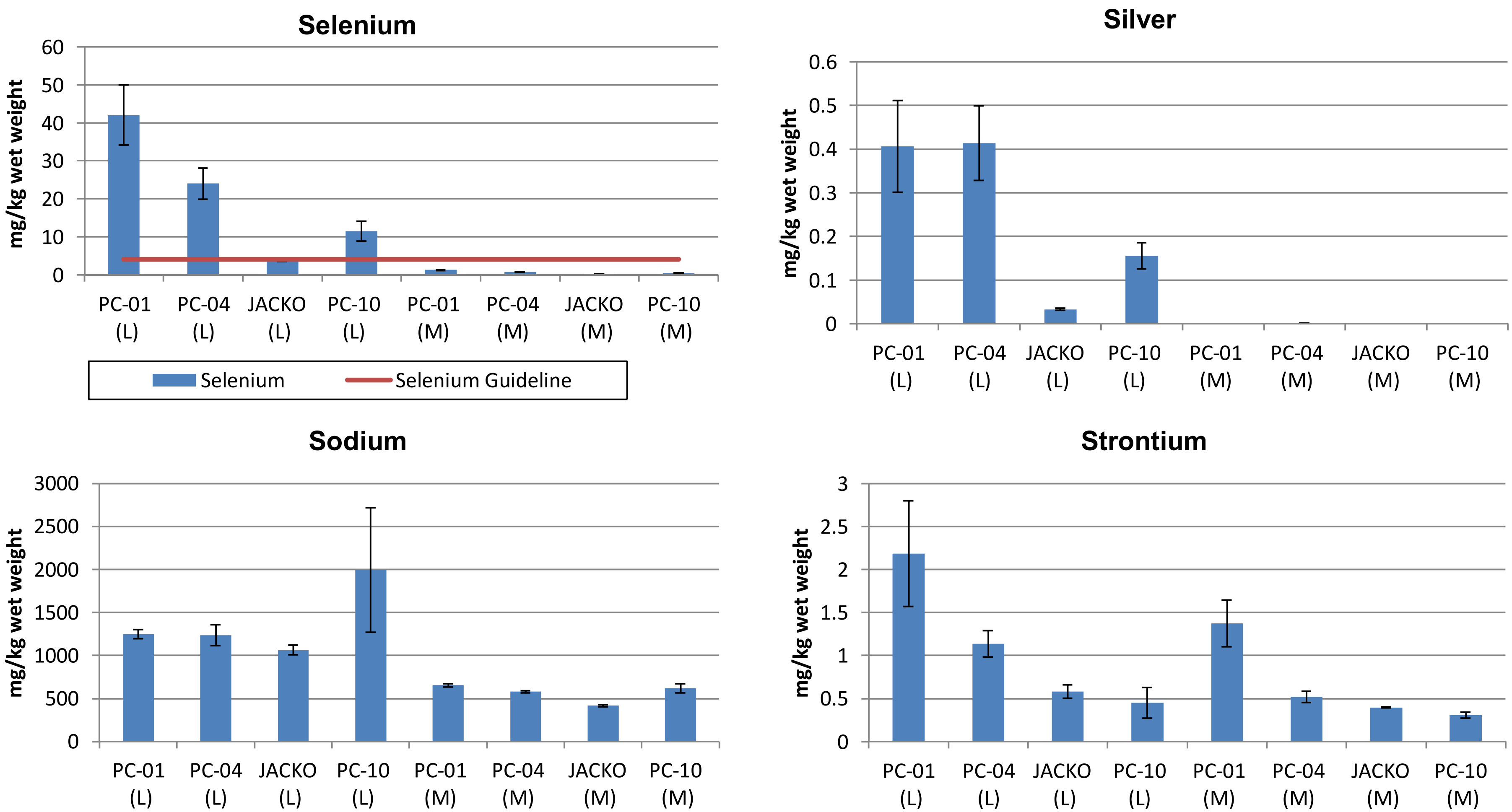
P/A NO. VA101-246/35

REF. NO. 1

FIGURE C5.5

REV 0

0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



NOTES:
1. (L) DENOTES LIVER SAMPLE.
2. (M) DENOTES MUSCLE SAMPLE.
3. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 mg/kg.(BEATTY AND RUSSO 2014).
4. PC = PETERSON CREEK

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB

KGHM AJAX MINING INC.

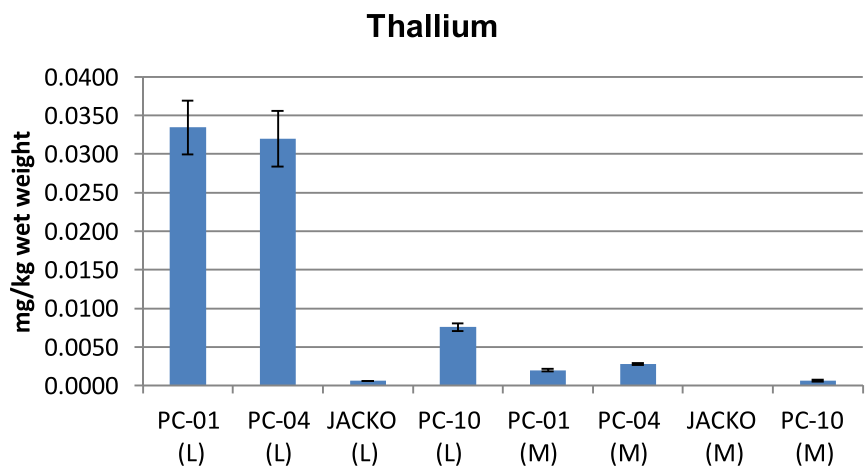
AJAX PROJECT

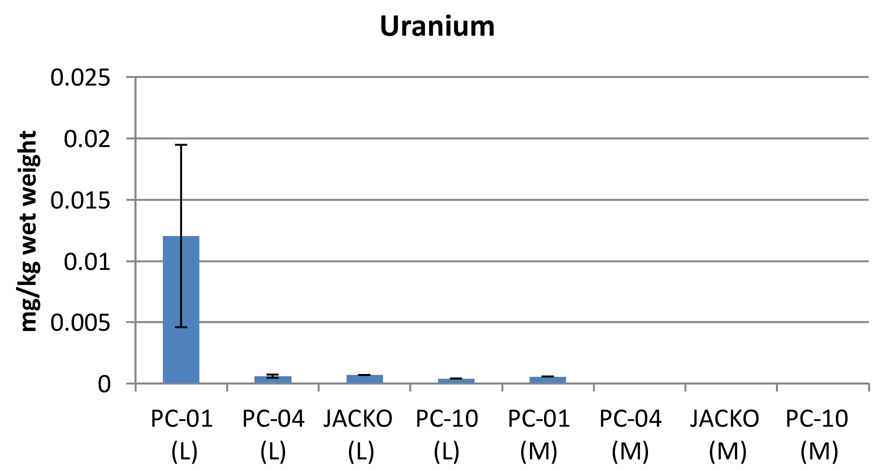
AVERAGE (±SE) MUSCLE AND LIVER TISSUE METAL CONCENTRATION POTENTIAL IMPACT SITES JULY 2014

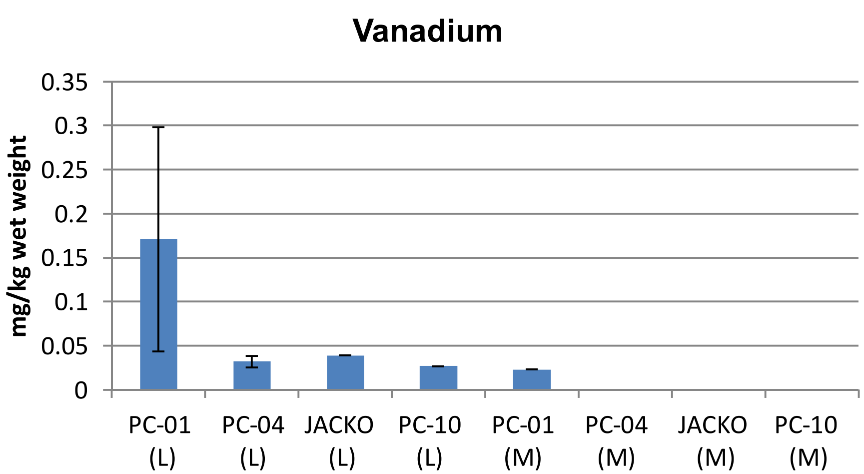
Knight Piésold CONSULTING

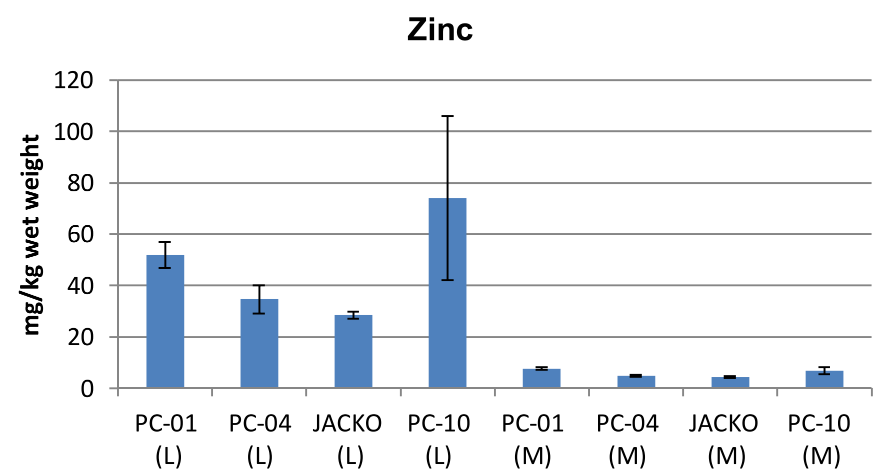
P/A NO. VA101-246/35 | REF. NO. 1

FIGURE C5.6 REV 0









NOTES:
1. (L) DENOTES LIVER SAMPLE.
2. (M) DENOTES MUSCLE SAMPLE.
3. PC = PETERSON CREEK

KGHM AJAX MINING INC.

AJAX PROJECT

AVERAGE (±SE) MUSCLE AND LIVER TISSUE METAL CONCENTRATION POTENTIAL IMPACT SITES JULY 2014

Knight Piésold CONSULTING

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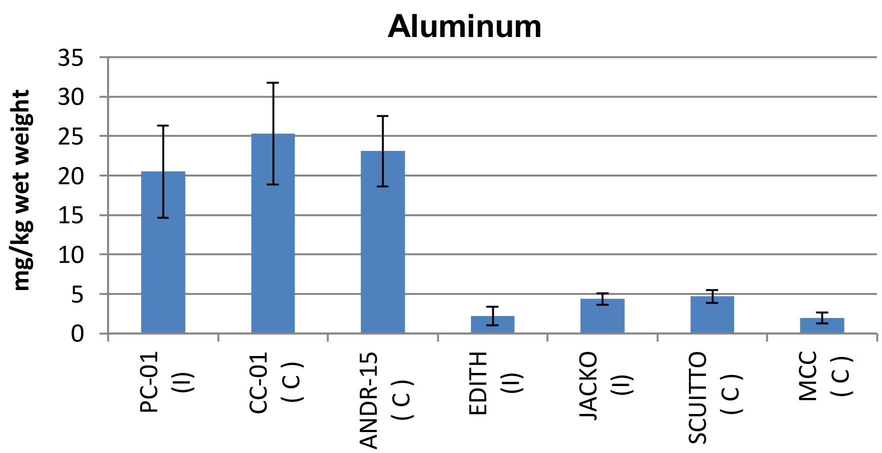
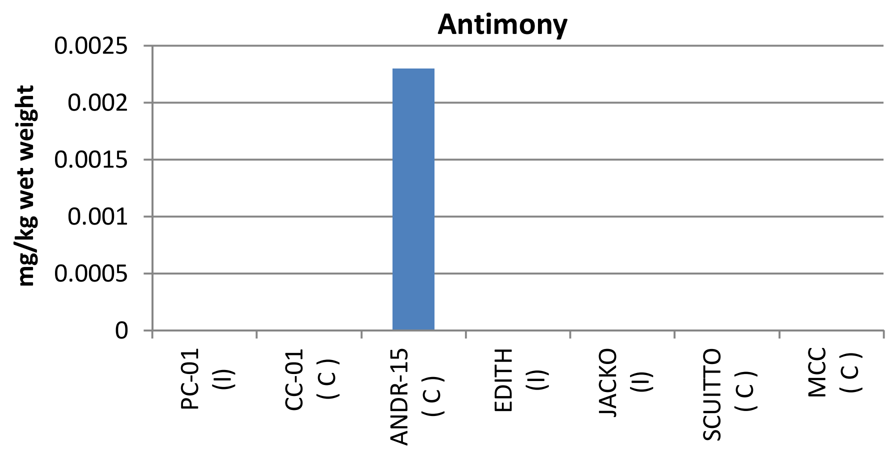
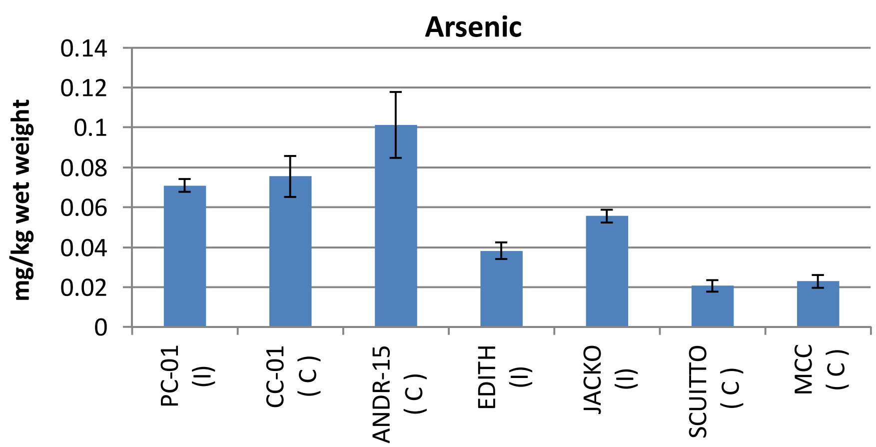
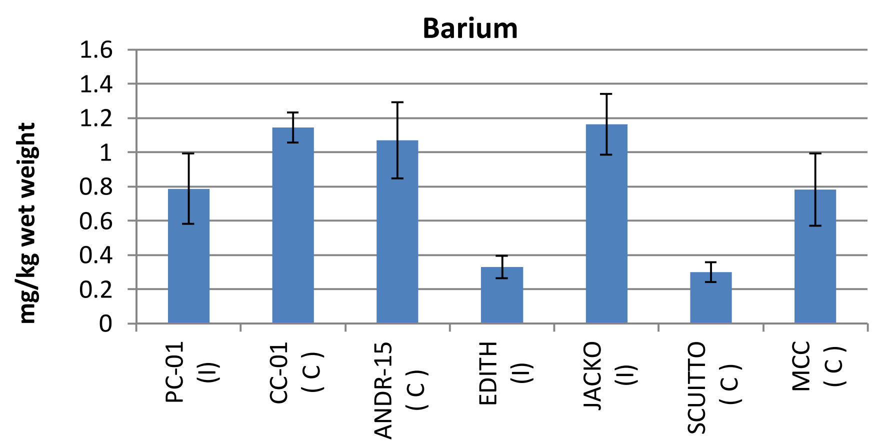
FIGURE C5.7 | REV 0

0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D









NOTES:

1. (I) DENOTES POTENTIAL IMPACT SITE.
2. (C) DENOTES CONTROL SITE.
3. ANTIMONY - ONLY 1 OF 5 REPLICATES WAS ABOVE THE MDL FOR ANDR-15; ALL OTHER REPLICATES FOR ALL SITES WERE LESS THAN THE MDL.
4. PC = PETERSON CREEK; CC = CHERRY CREEK; ANDR = ANDERSON CREEK; MCC = MCCONNELL

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB

KGHM AJAX MINING INC.

AJAX PROJECT

AVERAGE (±SE) WHOLE BODY TISSUE METAL CONCENTRATION SEPTEMBER-OCTOBER 2014

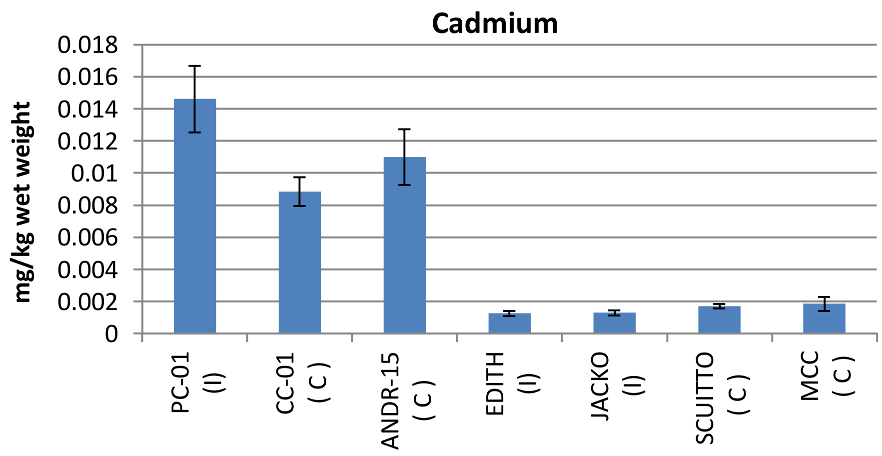
Knight Piésold CONSULTING

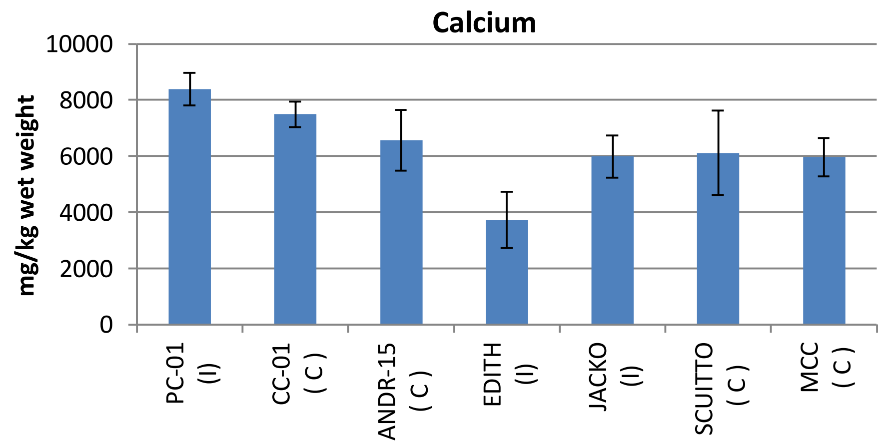
P/A NO. VA101-246/35

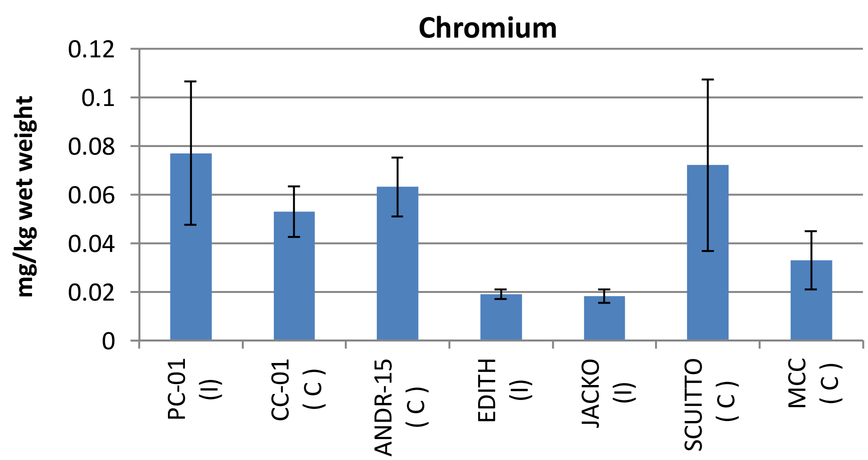
REF. NO. 1

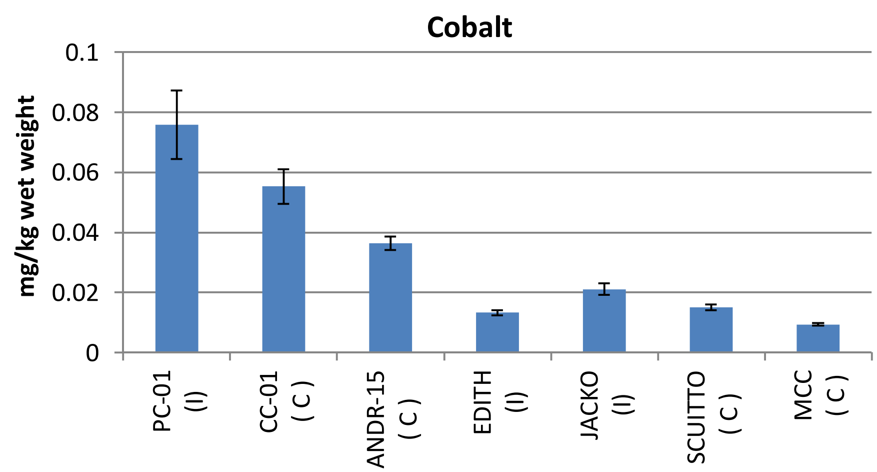
FIGURE C5.8

REV 0









NOTES:
1. (I) DENOTES POTENTIAL IMPACT SITE.
2. (C) DENOTES CONTROL SITE.
3. PC = PETERSON CREEK; CC = CHERRY CREEK; ANDR = ANDERSON CREEK; MCC = MCCONNELL

KGHM AJAX MINING INC.

AJAX PROJECT

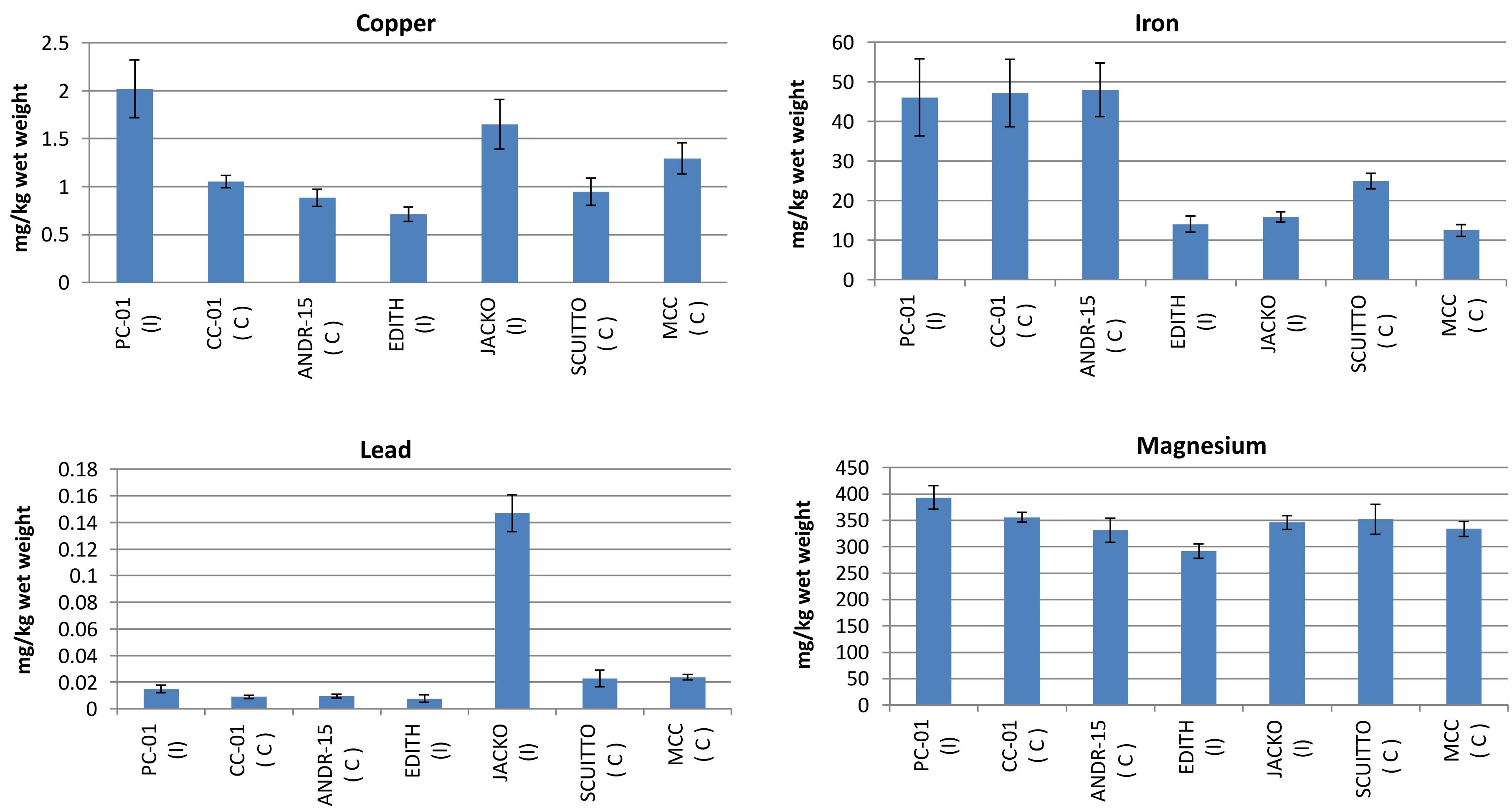
AVERAGE (±SE) WHOLE BODY TISSUE METAL CONCENTRATION SEPTEMBER-OCTOBER 2014

Knight Piésold CONSULTING

P/A NO. VA101-246/35 | REF. NO. 1

FIGURE C5.9 REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB



NOTES:
1. (I) DENOTES POTENTIAL IMPACT SITE.
2. (C) DENOTES CONTROL SITE.
3. LEAD PROVINCIAL GUIDELINE FOR HUMAN CONSUMPTION OF 0.8 mg/kg IN THE EDIBLE PORTION OF FISH IS CONSIDERED AS AN ALERT LEVEL. MINISTRY OF ENVIRONMENT, LANDS AND PARKS 1987.
4. PC = PETERSON CREEK; CC = CHERRY CREEK; ANDR = ANDERSON CREEK; MCC = MCCONNELL

0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

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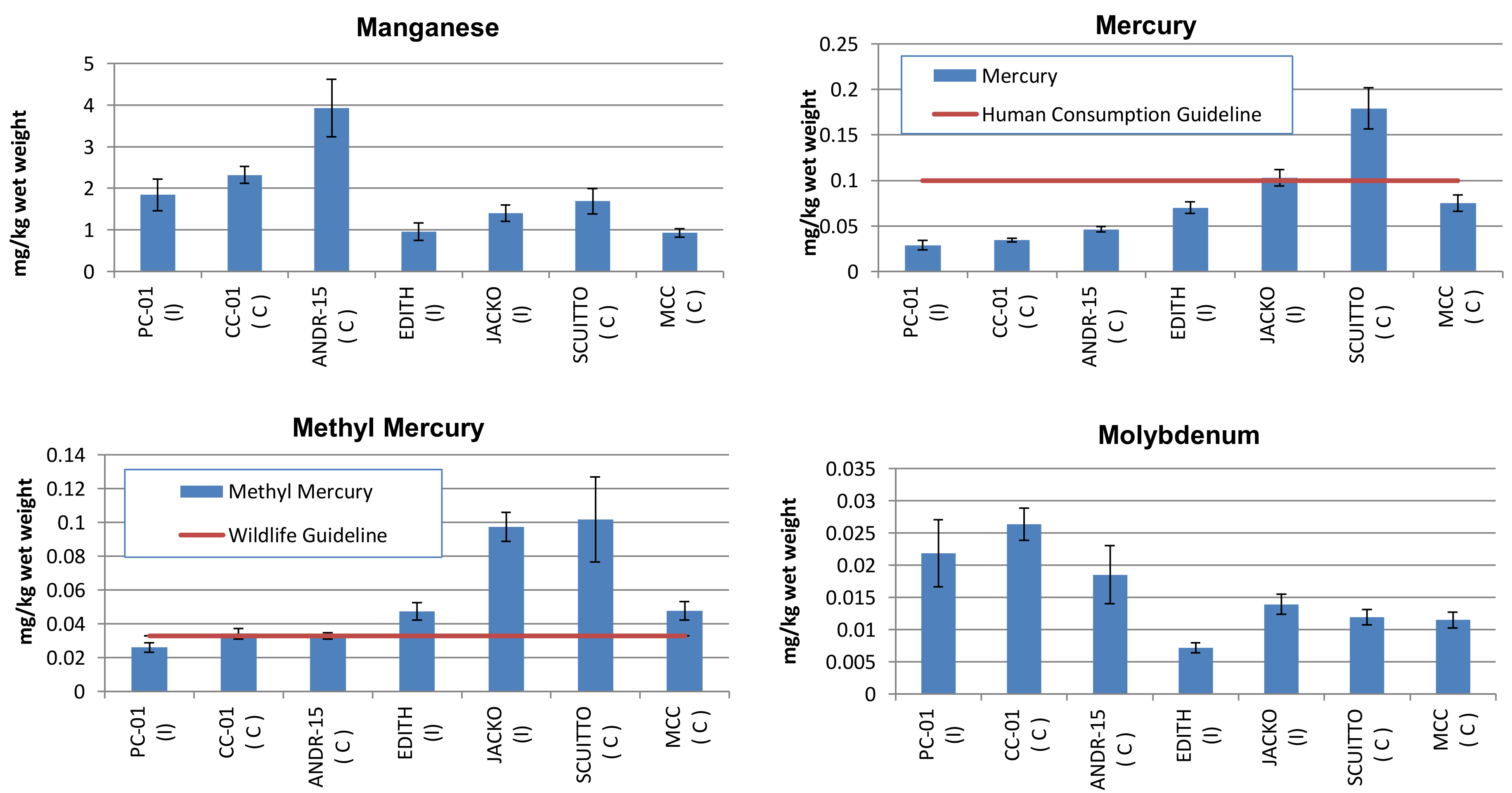
AJAX PROJECT

AVERAGE (±SE) WHOLE BODY TISSUE METAL CONCENTRATION SEPTEMBER-OCTOBER 2014

Knight Piésold CONSULTING

P/A NO. VA101-246/35 | REF. NO. 1

FIGURE C5.10 | REV 0



NOTES:
1. (I) DENOTES POTENTIAL IMPACT SITE.
2. (C) DENOTES CONTROL SITE.
3. TOTAL MERCURY CONCENTRATIONS IN EDIBLE PORTIONS OF FISH FOR HUMAN CONSUMPTION VARY FROM 0.5 µg/g WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 210 GRAMS WET WEIGHT, TO 0.1 µg/g WET WEIGHT WHEN THE WEEKLY CONSUMPTION IS 1050 GRAMS WET WEIGHT (MINISTRY OF ENVIRONMENT 2001).
4. METHYL MERCURYGUIDELINE IN FISH OR SHELLFISH CONSUMED BY WILDLIFE IS 0.033 µg/g WET WEIGHT (MINISTRY OF ENVIRONMENT 2001; CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT 2000).
5. PC = PETERSON CREEK; CC = CHERRY CREEK; ANDR = ANDERSON CREEK; MCC = MCCONNELL

0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

KGHM AJAX MINING INC.

AJAX PROJECT

AVERAGE (±SE) WHOLE BODY TISSUE METAL CONCENTRATION SEPTEMBER-OCTOBER 2014

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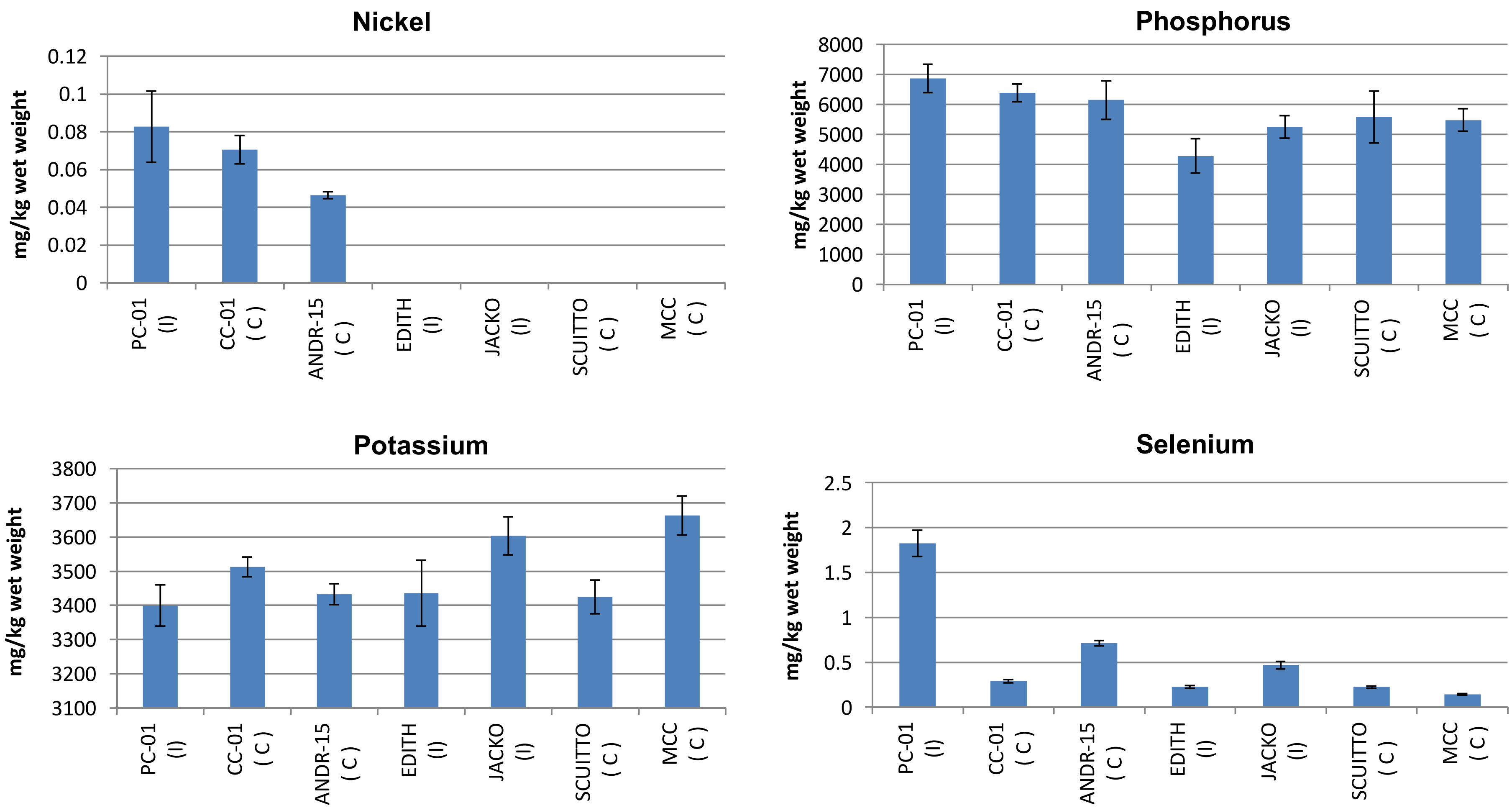
P/A NO. VA101-246/35	REF. NO. 1	
FIGURE C5.11	REV 0	



NOTES:
1. (I) DENOTES POTENTIAL IMPACT SITE.
2. (C) DENOTES CONTROL SITE.
3. THE SELENIUM WHOLE-BODY TISSUE GUIDELINE IS 4 mg/kg.(BEATTY AND RUSSO 2014).
4. PC = PETERSON CREEK; CC = CHERRY CREEK; ANDR = ANDERSON CREEK; MCC = MCCONNELL

0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

KGHM AJAX MINING INC.

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AVERAGE (±SE) WHOLE BODY TISSUE METAL CONCENTRATION SEPTEMBER-OCTOBER 2014

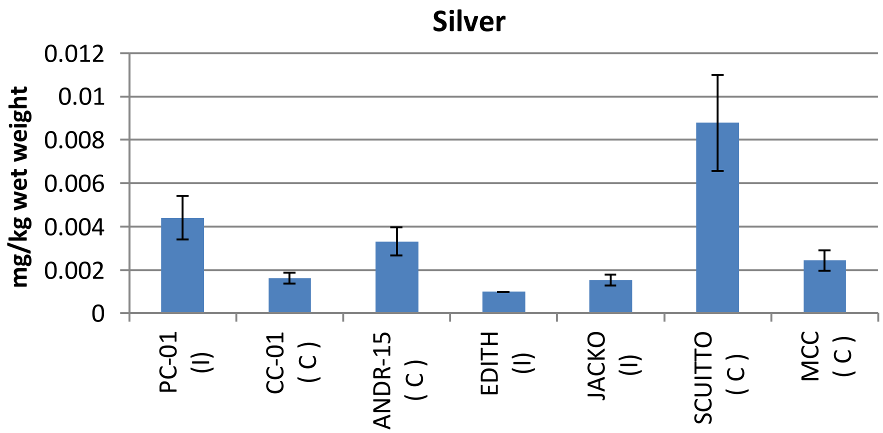
Knight Piésold CONSULTING

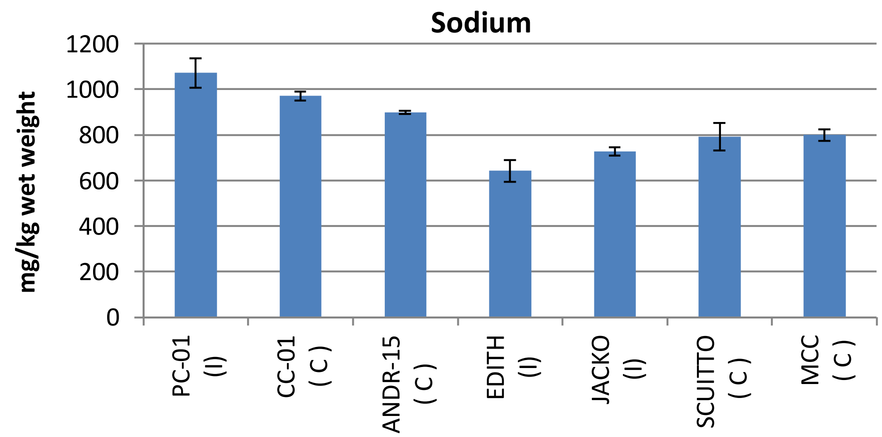
P/A NO. VA101-246/35

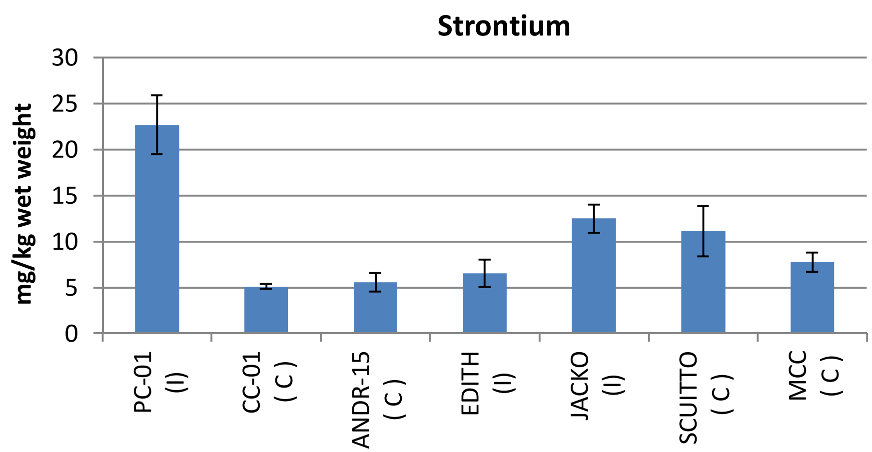
REF. NO. 1

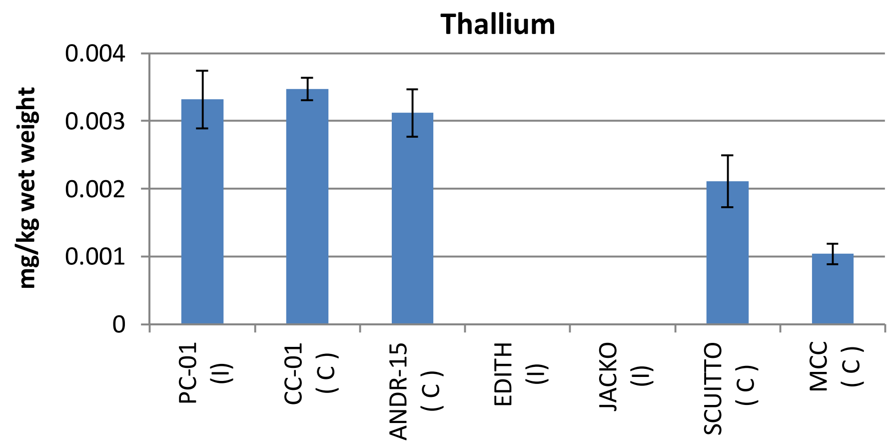
FIGURE C5.12

REV 0









NOTES:
1. (I) DENOTES POTENTIAL IMPACT SITE.
2. (C) DENOTES CONTROL SITE.
3. PC = PETERSON CREEK; CC = CHERRY CREEK; ANDR = ANDERSON CREEK; MCC = MCCONNELL

KGHM AJAX MINING INC.

AJAX PROJECT

AVERAGE (±SE) WHOLE BODY TISSUE METAL CONCENTRATION SEPTEMBER-OCTOBER 2014

Knight Piésold CONSULTING

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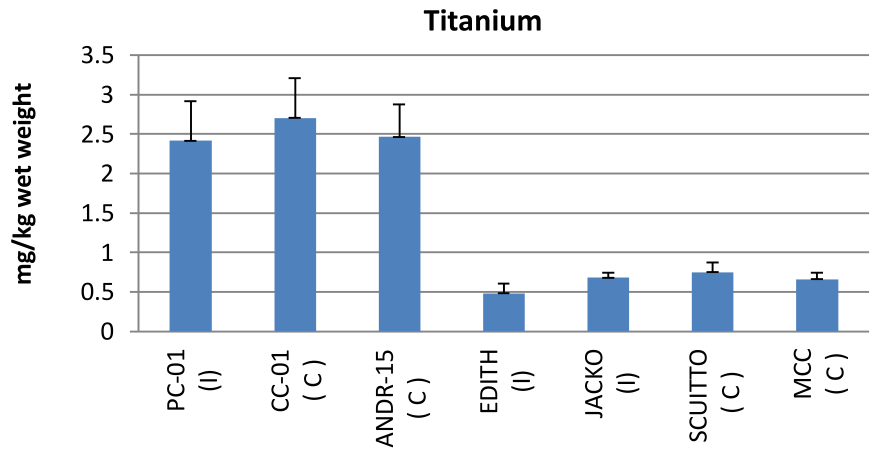
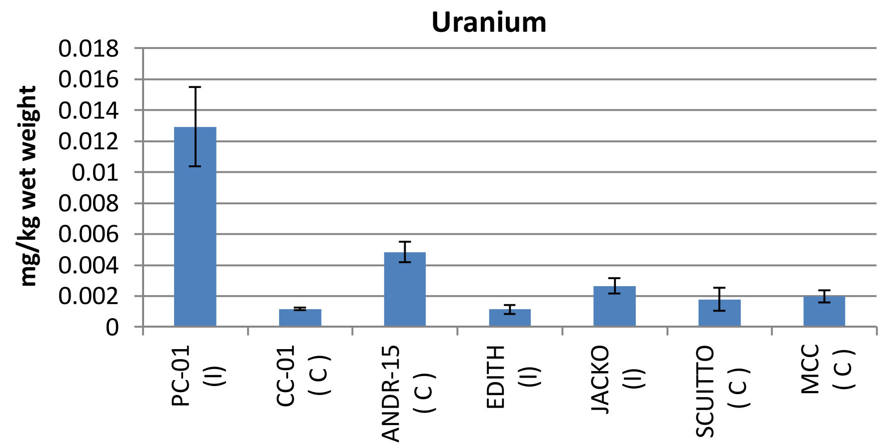
REF. NO. 1

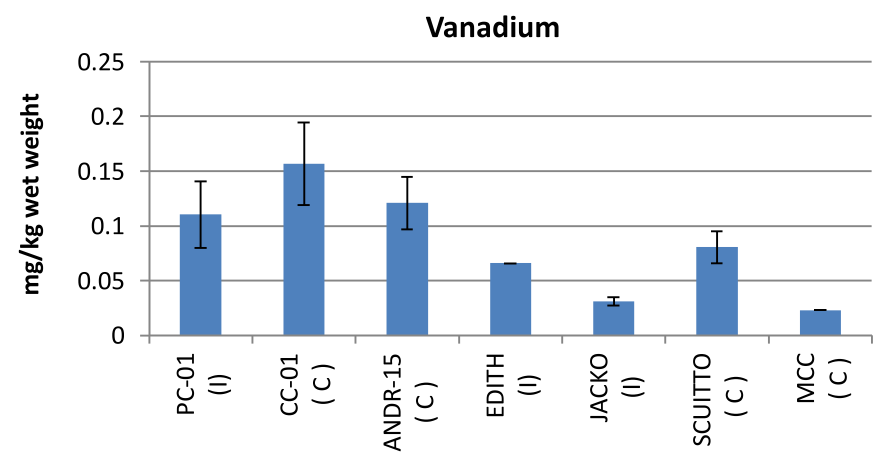
FIGURE C5.13

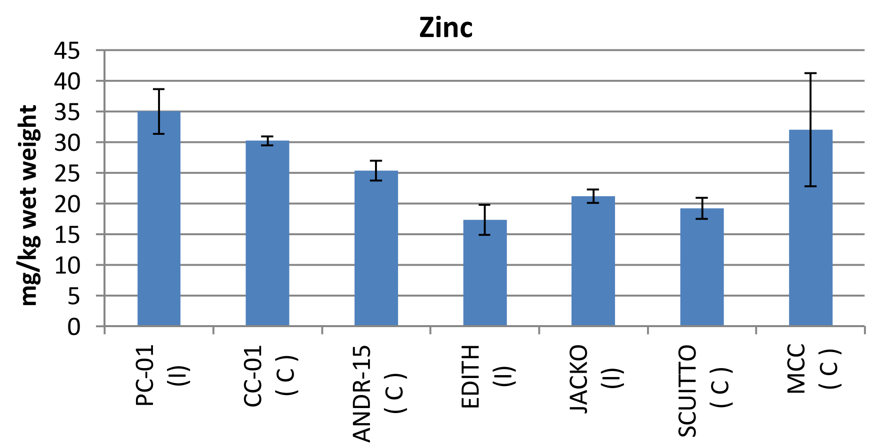
REV 0

0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D









NOTES:
1. (I) DENOTES POTENTIAL IMPACT SITE.
2. (C) DENOTES CONTROL SITE.
3. PC = PETERSON CREEK; CC = CHERRY CREEK; ANDR = ANDERSON CREEK; MCC = MCCONNELL

KGHM AJAX MINING INC.

AJAX PROJECT

AVERAGE (±SE) WHOLE BODY TISSUE METAL CONCENTRATION SEPTEMBER-OCTOBER 2014

Knight Piésold CONSULTING

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FIGURE C5.14	REV 0

0	10APR'15	ISSUED WITH REPORT	SCE	WOG	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D