Phase II Environmental Site Assessment

Mooseland Mine Site

Nova Scotia Lands Inc.

60680169

October 2022

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October 7, 2022

Project #
60680169

Subject: Phase II Environmental Site Assessment – Mooseland Mine Site

Dear Mr. MacPhee:

AECOM Canada Ltd. (AECOM) is pleased to present this Phase II Environmental Site Assessment (ESA) Report associated with the Mooseland Mine Site, located in Mooseland, Nova Scotia to Nova Scotia Lands Inc. (NSLI).

If you have any questions about the information presented within this report, please do not hesitate to contact me directly.

Sincerely,
AECOM Canada Ltd.

Rory McNeil
P.Eng. Project Manager
rory.mcneil@aecom.com

Encl.

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AECOM: 2015-04-13

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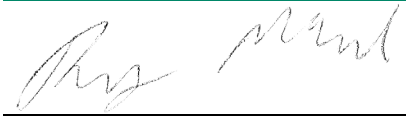

Rory McNeil P.Eng.

Revision History

Rev #	Revision Date	Revised By:	Revision Description
01	2022/10/07	JS	Addressed draft report comments

Distribution List

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Executive Summary

AECOM Canada Ltd. (AECOM) was retained by Nova Scotia Lands Inc. (NSLI) to complete a Phase II Environmental Site Assessment (ESA) for the former Mooseland Mine Site located at 3630 Mooseland Road, Mooseland, Nova Scotia (associated Parcel Identifier Number (PID): 41019332). As requested by NSLI, the area of focus for the Phase II ESA is limited to the historic mining Crown land area within the PID 41019332 (hereafter referred to as the "Site").

The objective of this Phase II ESA program is to gain an understanding of the soil, groundwater, surface water, sediment and tailings conditions at the Site with respect to the areas of potential environmental concerns that were identified during the Phase I ESA completed by AECOM in April 2022 (AECOM, 2022).

The Phase II ESA was conducted in accordance with the Nova Scotia Environment (NSE) Contaminated Sites Guidelines (2013) Phase II Environmental Site Assessment Protocol (PRO-400). This report describes the objectives of the Phase II ESA, the methodology employed to achieve those objectives, and the findings of the investigation.

The Phase II ESA program was conducted between June 13 to June 20, 2022.

The Phase II ESA scope of work included borehole drilling and monitoring well installation, and hand auguring along with soil, tailings, groundwater, surface water and sediment sampling, chemical analysis of selected samples, and evaluation of the analytical data. Groundwater flow direction was also determined for the Site.

This report describes the objectives of the Phase II ESA, the methodology employed to achieve those objectives, and the findings of the investigation. The below conclusions summarize the findings related to soil, tailings, groundwater, surface water and sediment investigations completed as part of this Phase II ESA based on areas of potential environmental concern identified in the Phase I ESA (AECOM, 2022).

1. Waste Rock: The Phase II Environmental Site Assessment has identified that approximately 10,950 m3 of waste rock contains elevated Arsenic and other metal concentrations that may present a unacceptable risk of elevated exposures to As and other toxic metals through leaching and dust released from waste rock piles for human and ecological receptors. Remedial measures may be required to mitigate this risk. Further assessment of the potential risk to human health and ecological health is warranted
2. Impacted Tailings Areas: As identified in the Phase I ESA, previous environmental reports estimated 8,217 tonnes of tailings on the Site. The Phase II Environmental Site Assessment has identified that tailings contain elevated Arsenic and Mercury concentrations that may present a human health risk and adverse ecological effects. Remedial measures are required to mitigate this risk. Due to the limited data collected, AECOM cannot confirm the quantity of tailings and has therefore used the previous volume estimates for the purpose of the ROA and cost estimating. Further assessment of the potential risk to human health and ecological health is warranted Impacted Soil Area: The Phase II Environmental Site Assessment has identified impacted soil in many areas of the Site, as delineation has not been achieved, AECOM is unable to accurately assess the volume of contaminated soil requiring remedial action. Based on the limited data and aerial imagery, AECOM is estimating that 90,000 m3 of soil containing elevated Arsenic and Mercury and other metals concentrations that may present a human health risk exists on the Site. Remedial measures may be required to mitigate this risk. Further assessment of the potential risk to human health and ecological health is warranted
3. Impacted Surface Water and Sediments: The Phase II Environmental Site Assessment has identified surface water and sediment in the Tangier River impacted by metals. Surface water and sediment concentrations of As and Hg in one or more samples were greater than the corresponding environmental quality criteria indicating possible ecological adverse effects in aquatic organisms and possibly a risk to people and wildlife through eating fish and aquatic prey from surface waters in sediment impacted areas. Further environmental study and risk

assessment is warranted for surface water and sediment impacted areas. Remedial measures may be required to mitigate this risk.

4. Hecla Mine Shaft: The Phase I Environmental Site Assessment identified a 120 meter mine shaft known as the Hecla Mine Shaft, the Phase II Environmental Site Assessment potentially identified this flooded shaft. Water inside the flooded shaft was impacted by metals. Remedial measures may be required to mitigate this environmental risk of possible exposures to elevated metals in surface water and potential release and transport to groundwater. In addition, the shaft poses a potential physical risk to human health and the environment.
5. Debris: Remnants of historical mining activities remain at site, including machine parts, wood and metal were identified as part of the Phase II Environmental Site Assessment., An estimated volume of 80 m3 of debris may require management.
6. Impacted Groundwater and Surface Water: The Phase II Environmental Site Assessment (AECOM, 2022) has identified impacted groundwater and surface water (Tangier River) by metals, specifically As, Co, Mn, Al, and Fe based on limited sampling and analyses. Remedial measures may be required to mitigate any adverse effects on potable ground water quality and in aquatic organisms. Further assessment of the potential risk to human health and ecological health is warranted. Human health and ecological risks may also be mitigated by taking remedial actions at the source of the impacts (waste rock, tailings, soils, etc.)

Based on the results of the Phase II investigations, AECOM developed a Remedial Options Analysis for the site. The remedial options were evaluated using a simplified Multiple Accounts Analysis (MAA). This is a scoring method that considers multiple factors when evaluating remedial options, as further described in the report. The summary of the recommended remedial options for the Site are presented below:

Summary of Recommended Remedial Approach:

Environmental Concern	Recommended Remedial Approach
Waste Rock	■ Excavate waste rock and dispose of at approved off-site facility
Impacted Tailings Area	■ Excavate ■ Consolidate Tailings with Impacted Soils ■ Grade to promote positive drainage but to not encourage excessive erosion ■ Cover with synthetic liner and soil ■ Conduct reclamation activities as required.
Impacted Soils	■ Excavate in conjunction with other remedial activities ■ Consolidate Impacted Soils with Tailings ■ Grade to promote positive drainage but to not encourage excessive erosion ■ Cover with synthetic liner and soil ■ Conduct reclamation activities as required.
Mine Shaft	■ Remove existing waste rock at entrance ■ Dewater shaft to attempt to find narrower entrance point. ■ Install Concrete Cap ■ Close opening cover with fill
Surface Debris (Non-Wood Materials)	■ Hazardous Materials: If hazardous materials are identified on site - Remove and dispose of off-site at facility authorized to accept ■ Wood: Incinerate or chip on-Site, dispose ash off-Site ■ Metal and other debris: Haul Off-Site for recycling
Impacted Surface Water and Sediments – Tangier River	■ No action required other than monitoring and risk assessment
Impacted Surface Water – On-Site (Shaft and Pond)	■ Dewater the shaft and dispose of impacted water off site ■ Install a passive treatment system (reactive barrier, engineered wetland, etc.), where water discharges from pond towards tangier river.
Lake Sediments – Tangier River	■ No action required other than monitoring and risk assessment

Based on the scope of work completed as a part of this Phase II ESA and as noted in the findings above, AECOM presents the following recommendations:

The overall regulatory goal for the site is to manage contamination to reduce related risks to acceptable levels in the environment, considering both humans and ecology and that these can be met by a variety of means acceptable to the Minister under the Regulation. To achieve this goal further environmental investigation and assessment is needed for supporting the development of a preferred remediation approach and Remedial Action Plan tailored to the site conditions and land use for the protection of human health and the environment.

To further define the environmental impacts at the Site, the following additional information should be understood:

- Full delineation of the impacted tailings, contaminated soil, and waste rock.
- Further assessment of the environmental availability and estimation of loadings of toxic metals in tailings, waste rock and impacted soils to groundwater and surface water, including wetlands, ponded water, Sluice creek and the Tangier River.
- Test pitting within the waste rock piles and tailings areas to identify the depths.
- The dimensions of the potential Hecla shaft to determine the quantity of contaminated surface water.
- The hydrologic connection between the impacted pond on Site and the Tangier River.
- Further definition of the waste materials on-site including a hazardous materials assessment.
- Further assessment of the background quality of the soil.
- Further monitoring and assessment of metal uptake and bioaccumulation in terrestrial and aquatic organisms for evaluating the level of concern for ecological impacts and implications for exposure from ingestion of food and prey, including top predators and humans.

Several metals were identified as contaminants of concern (COCs) in soil, tailings, groundwater, surface water and sediment. No exemptions to notification of contamination were identified based on the available information for the site (e.g., the estimated area and volume of impacted soil and the association of the COCs with releases with past mining activities, including tailings, groundwater and ponded water at the Site; the notification form of contamination should be completed and submitted within 90 days.

The following metals were identified as COCs, meaning one or more sample of one or more environmental media were in exceedance of the selected risk evaluation criteria (i.e., the applicable NSE Tier 1 EQSs and provincial surface water quality objectives) applied in the Phase Two ESA specifically, aluminum, antimony, arsenic, beryllium, cadmium, cobalt, iron, lead, manganese, mercury, molybdenum, selenium and thallium. Of these metals, all are Substances Potentially Considered as Background Occurrences (listed in Table 5).

As the intended future land use for this Site was not known at the time of this ESA work, as such given the purpose of this ESA, and ROA we have compared all analytical data to the NSE Tier 1 EQS for a residential/ parkland land use. However, in accordance with Nova Scotia's Contaminated Sites Regulation and the PRO-100 guidance (Sept 2021) for contamination evaluation of undeveloped wild and natural land, the environmental data could potentially compared against Tier 1 EQS for agricultural land use since the majority of the Mooseland Site is undeveloped resource forest, wetlands and natural surface waters and the agricultural land use Tier 1 EQSs are the only criteria that include ecological direct contact pathway protection. However, the Site also has the potential to be used as a mining site in the future and thereby the land use could fall under industrial land use given the required engineering controls are established for the Site via provincial approvals. Overall, the intended future land use should be identified prior to finalizing the remedial actions for the Site.

The above COCs should be retained for further study and risk assessment. The proposed next steps involve the following:

1. Determination of appropriate local/regional background levels and screening evaluation to refine the list of COCs and for the development of monitoring/remedial action levels for inclusion in the risk management plan (this will require additional study/data analyses/sampling and analysis),
2. Completing a Tier 2 risk evaluation against the applicable PSS for each location and media to refine the list of COCs.
3. A Human Health and Ecological Risk Assessment for the Site, including a problem formulation report that identifies areas of concern based on level of risk including the evaluation of potential release mechanisms of toxic metals in media such as through leaching and transport in ground water, surface water and dispersion of dust/ airborne particulates, and outlines additional studies to assess the environmental availability of select toxic metals to reduce uncertainties related to exposure risks for human and ecological receptors.
4. The development of acceptable remediation levels (RLs or SSTLs) based on the risk assessment for use in Risk Management and remedial action plan for determining remediation completion and inclusion in the confirmation report for the site as per the Contaminated Sites Regulation and other applicable protocols.
5. The identification of the preferred option(s) of alternate but acceptable long-term exposure management measures (EMMs), including requirements for long-term monitoring of selected exposure pathways, or Controls (such as engineering, physical, and administrative). Some alternate Control options have been presented in this report. Additionally, Administrative Controls restricting access to contamination. Administrative Controls may be applied to select areas at the Site. Administrative restricted access controls (e.g., building restriction for land use bylaws, zoning; contingency plans) should be for further consideration going forward.
6. Development and documentation of the Risk Management Plan to be completed in discussion with NSLI and key stakeholders, as per the PRO-600 Remedial Action Plan Protocol and applicable Regulations. This includes establishing monitoring action target levels for exposure pathways of concern that need to be monitored, developing a monitoring sampling plan and outlining actions to be taken if results exceed monitoring action levels. The requirements for engineering controls should also include details of the design, demonstration of effectiveness, ongoing monitoring and inspection of proper control function, and rationale for selection and requirements for long-term exposure management. The requirements for administrative controls should also include contingency plans, demonstration of effectiveness, and monitoring and inspection to ensure administrative controls remain effective overtime.

The purpose of risk assessment is to inform the selection of the preferred risk management options, including development of HASPs and RMPs as appropriate to the situation, based on the available information on the distribution and environmental availability of contaminants and the magnitude and frequency of environmental exposures due to known impacts and loadings from identified sources and the desired land use protection.

The proposed further risk evaluation through an assessment of applicable local/regional background, screening against the applicable Tier 2 PSS in the HHERA will help determine which COCs are the drivers of risk for each media and source, corresponding to the critical human and ecological receptors and critical exposure pathways for various areas of concern on the Site. Risk-based site-specific target levels for selected COCs could be used to guide and confirm effectiveness of the remedial action plan. By focusing efforts on risk drivers) for specified areas of concern, the benefits of a risk-based approach may decrease the quantity of material requiring remedial action subsequently lowering the liability of the Site but will also underpin the risk management communication among stakeholders, including members of the community, with the goal of improving consensus-building on the remedial action plan going forward.

At the time of writing this report, no information on the future land use was available. Further discussions with NSLI regarding the overall desired endpoint for the future land use of the site in terms of Site Closure (I.e., undeveloped natural forest restoration, residential, commercial, industrial development) will be necessary to work towards a

sustainable closure scenario under the relevant Acts and Regulations and applicable guidance. It is anticipated that future discussions will focus on additional work for understanding the site and implications for risk to human health and adverse environmental effects, as well as working towards the development of a risk management plan/remedial action plan for the Site, considering a Conditional closure following a Limited Remediation pathway, involving a possible combination of Exposure Management Monitoring or Controls (engineering, physical, administrative) and risk-based corrective actions.

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1. Introduction

1.1 Purpose

AECOM Canada Ltd. (AECOM) was retained by Nova Scotia Lands Inc. (NSLI) to complete a Phase II Environmental Site Assessment (ESA) for the former Mooseland Mine Site located at 3630 Mooseland Road, Mooseland, Nova Scotia (associated Parcel Identifier Number (PID): 41019332). The general location of the property is shown on **Figure 1**, **Appendix A**. As requested by NSLI, the area of focus for the Phase II ESA is limited to the historic mining Crown land area within the PID 41019332 (hereafter referred to as the "Site"). The approximate property boundary associated with Property Online for PID 41019332, as well as the Phase II ESA area of focus is presented on **Figure 2**, **Appendix A**. Site features, including waste rock, tailings, and former mining infrastructure, is presented on **Figure 3**, **Appendix A**.

The objective of this Phase II ESA program is to gain an understanding of the soil, groundwater, surface water, sediment and tailings conditions at the Site with respect to the areas of potential environmental concerns that were identified during the Phase I ESA completed by AECOM in April 2022 (AECOM, 2022).

The Phase II ESA was conducted in accordance with the Nova Scotia Environment (NSE) Contaminated Sites Guidelines (2013) Phase II Environmental Site Assessment Protocol (PRO-400). This report describes the objectives of the Phase II ESA, the methodology employed to achieve those objectives, and the findings of the investigation.

2. Background

2.1 Subject Property Description

The former Mooseland Mine Site is a historic mine site located at the civic address of 3630 Mooseland Road in Mooseland, NS (PID: 41019332), which is approximately 24 km north of Tangier, NS. This PID is in a remote location, which spans 349.6 hectares (864.0 acres). This parcel of land is almost entirely undeveloped, except for a roadway (Mooseland Road) running through it (northwest to southeast), and sparse historical mining-related infrastructure (where the Site is situated). Vegetation consists of a mixture of forest and shrubland. The Site is accessible by vehicle along Mooseland Road.

At the time of the site visit, a small plywood structure with piping (possible former pump house), and three Quonset huts (steel dome buildings) with what appears to be former mining infrastructure (steel structure – former headframe located over a mine shaft) was noted. Based on a review of previous environmental reports, it was noted that three (3) stamp mills, one located at the head of the tailings area near Tangier River, and two located on the western and eastern sides of Sluice Brook) were present on the PID. However, during the time of the site visit, these former stamp mills were not identified.

Tailings and waste rock were also present and scattered throughout the Site, and various debris and waste (consisting of garbage, wood, tubing, metal, drill rods, tires etc.) were littered intermittently throughout the Site, as well as stored in one of the Quonset huts. Limited fencing structures surrounding the waste rock were also noted to be present within the area of the Quonset huts.

Former mine shafts are located on-site in various areas and signage was noted throughout the Site to warn the public of “hazardous open holes”. A ponded area was noted southeast of the Quonset huts which might be the former Hecla mining shaft. A large ponded body of water is located approximately 200 m northwest of the Quonset huts, which may be a flooded former mine shaft.

2.2 Historical Land Use

The Site is located in an area of historic mining activity in the Mooseland gold district. Mining and milling activities have been carried out intermittently in the area between 1861 and 1934. During this time period, approximately 120 kg of gold was reportedly recovered from 8217 tonnes of crushed rock (Parsons et al. 2003). Since then, sporadic exploration has continued within this district. The most recent advanced exploration effort was made by Acadia Minerals and Hecla Mining in the late 1980s, with the drilling of 135 boreholes, and the sinking of a 400-foot shaft (Horne et al. 2004). In 2003, Azure Resources Corporation optioned the Mooseland property and in late 2003 and early 2004, the company established a decline and carried out bulk sampling of the Little North and Cummings belts (A “belt” refers to a stratigraphic interval hosting two or more distinct veins; “veins” refer to distinct sheet-like bodies of minerals within a rock). According to a 2003 environmental geochemistry investigation: “Surface and underground exploration in the Mooseland district has continued to the present day including the sinking of a 400-foot shaft in the late 1980s” (Parsons et al. 2003).

2.3 Site Buildings and Structures

Abandoned, historical mining-related infrastructure is present on-site. At the time of the site visits, three (3) Quonset Huts were identified and were located in the cleared area at the end of the road off of 3630 Mooseland Road, adjacent to the waste rock area. One hut is currently attached to a steel structure and contents inside include garbage and waste, the second hut (insulated) has wooden boxes and old core samples stored inside, and the remaining hut is

newer which has wooden boxes and newer core samples inside – this hut may belong to Atlantic Gold. AECOM was told by Atlantic Gold that they are completing minor work at the Site (removing historic core samples).

The steel structure identified on-site that is attached to one of the Quonset Huts could potentially be a former headframe over a mine shaft for two separate compartments. The houses at the top likely protected pulleys of hoists, there were no wire ropes present.

There was also a small plywood structure identified southeast of area where the Quonset huts are located. It was noted that there is piping entering the back of the structure.

The three former stamp mills that were historically known to be located on-site were not identified at the time of the site visit.

2.4 Physical Setting

2.4.1 Regional Topography

On the Site itself, elevation ranges between approximately 90-110 meters above sea level (masl), with a typical elevation of approximately 100 masl. Elevation tends to slope northeast towards the Tangier River where it flattens with a relatively consistent elevation of approximately 90 masl. Topography for the Site and surrounding area is presented in **Figure 1**, **Appendix A**.

2.4.2 Regional Geology

Bedrock in the area is of Cambro-Ordovician age, belonging to the Meguma group which comprises the southern half of Nova Scotia's land mass (Patterson 1993). The Meguma group is subdivided into two primary formations: the Goldenville and Halifax formation (Patterson 1993). The basal part is the Goldenville formation, which is overlain by the Halifax formation (Prime and White 2007), except in some areas where it is exposed at the surface.

In the Mooseland Gold District, an anticline of the Goldenville Formation is exposed at the surface (Malcolm 1929, Horne et al. 2004). Generally, the Goldenville formation is primarily composed of metasandstone, with some interbedded metasiltstone and slate, and in some cases, layering of sheets of rock is clearly visible (Prime and White 2007). The colour of the rock varies from medium grey to green-grey (Prime and White 2007). Low levels of sulphides (typically <1%) are common, usually in the form of isolated pyrite crystals (Prime and White 2007).

Gold-bearing deposits in the Mooseland Gold District have been described as intensely folded and metamorphosed sediments which are impure quartzites and narrow bands of interbedded slates (Mawpley 1938). Quartz that is present varies in color but tends to be glass white to grey (Mawpley 1938). Large and small arsenopyrite crystals are common and occur mostly in impure quartzites or slate (Mawpley 1938). Horne et al. (2004) provides the results of a detailed qualitative geological investigation of the major belts in Mooseland including the Cummings Belt, the Bismark Belt, the Little North Belt, and the Irving Belt.

2.4.3 Regional Hydrogeology / Hydrology

Site-specific hydrogeologic information was not identified during the course of this assessment. Groundwater flow is expected to follow the regional topography, towards the Tangier River (northeast), located adjacent to the Site. However, the current groundwater flow direction and depth in the vicinity of the Site cannot be confirmed without site-specific groundwater monitoring well data.

Site-specific hydrology information includes the following water bodies, tributaries, wetlands, etc. that are either present on-site or in the vicinity of the Site. Hydrologic features are presented on **Figure 1**, **Appendix A**.

- Tangier River is located adjacent (northeast) to the Site and flow direction is towards the southeast.
- A tributary leading into Tangier River is located northwest of the Site.
- Wetland areas are present on-site, as well as north, northwest, and east of the Site.
- Sluice Brook is located on-site and originates from Sluice Lake. Topographic maps indicate that Sluice Brook flows northeast into a wetland area on-site, and eventually into Tangier River.
- A ponded body of water is located on-site southeast of the Quonset huts. This ponded area may be the former Hecla mining shaft.
- A large ponded body of water located approximately 200 m northwest of the Quonset huts which may potentially be a flooded former mine shaft.

A search of water wells present on-site, and within a 250 m radius of the Site, was completed as part of the ERIS database search during the Phase I ESA. The search results found that there are 4 water wells present on-site, and one water well was identified approximately 247.8 m from the Site.

2.5 Adjacent Land Use

The surrounding area on the west, east, and south sides of the Site appeared to be resource forest area and undeveloped, and Tangier River is located north and adjacent to the Site. The closest building to the Site is the Saint Thomas Anglican Church which is located over 1.2 km from the Site. It is also noted that there appears to be a designated fishing area located in Tangier River, downstream and approximately 1.3 km from the Site called “Hawbolts Farm Pool”. No additional details were able to be found related to this fishing area.

Based on a review of topographic maps, it appears there is a mine located approximately 1.75 km northwest of the Site. Based on a review of the results of the ERIS search completed during the Phase I ESA (AECOM, 2022), within 250 m of the Site there appears to be a number of abandoned mine openings, one contaminated site, a number of drill holes, mineral occurrences, and water wells.

2.6 Previous Environmental Reports

Previous environmental reports were provided to AECOM by NSLI and a summary of each report is presented within the AECOM Phase I ESA (AECOM, 2022).

A summary of the findings from the Phase I ESA completed by AECOM is provided below.

2.6.1 Phase I ESA (AECOM, 2022)

Based on the results of the Phase I ESA, AECOM identified the following key information:

1. The Site is located in an area of historic mining activity in the Mooseland gold district. Mining and milling activities have been carried out intermittently in the area between 1861 and 1934, during which 120 kg of gold was reported to be recovered from 8217 tonnes of crushed rock. Since then, sporadic exploration has continued. The most recent advanced exploration made was by Acadia Minerals and Hecla Mining in the late 1980s, with the drilling of 135 boreholes, and the sinking of a 400-foot shaft. In 2003, Azure Resources Corporation optioned the Mooseland property and in late 2003 and early 2004, the company established a decline and carried out bulk sampling of the Little North and Cummings belts.
2. The surrounding area on the west, east, and south sides of the Site appeared to be resource forest area and undeveloped, and Tangier River is located north and adjacent to the Site. The closest building to the Site is the

Saint Thomas Anglican Church which is located over 1.2 km from the Site. It is also noted that there appears to be a local fishing area located in Tangier River, downstream and approximately 1.3 km from the Site called "Hawbolts Farm Pool". No additional details were able to be found related to this fishing area. Based on a review of topographic maps, it appears there is a mine located approximately 1.75 km northwest of the Site. Based on a review of the results of the ERIS search, within 250 m of the Site there appears to be a number of abandoned mine openings, one contaminated site, a number of drill holes, mineral occurrences, and water wells.

3. Current structures located on-site during the time of the site visit include the following:

- Quonset Hut:
  - Building details: concrete slab with metal (steel) walls and roof. No front wall – entrance is open. No back wall - the back of the hut is open and attached to a steel structure.
  - Insulated: no
  - Contents: garbage / waste
  - Location: cleared area at the end of the road off of 3630 Mooseland Road – adjacent to waste rock area.
  - Notes: currently attached to steel structure noted below.
- Quonset Hut (insulated):
  - Building details: concrete slab with metal (steel) walls and roof
  - Insulation: yes - yellow insulation (potential asbestos containing material)
  - Contents: wooden boxes old core samples
  - Location: cleared area at the end of the road off of 3630 Mooseland Road – adjacent to waste rock area.
- Quonset Hut (newer):
  - Building details: concrete slab with metal (steel) walls and roof. No front wall – entrance is open.
  - Insulated: no
  - Contents: wooden boxes - newer core samples
  - Location: cleared area at the end of the road off 3630 Mooseland Road – adjacent to waste rock area. On other side of the road from the other Quonset Huts.
  - Notes: this newer storage area may belong to Atlantic Gold.
- Steel structure:
  - Building details: steel structure
  - Insulated: not applicable
  - Contents: not applicable
  - Location: attached to Quonset Hut that is currently storing garbage / waste
  - Notes: potential that this structure was a headframe over a mine shaft for two separate compartments. The houses at the top likely protected pulleys of hoists, there were no wire ropes present.
- Small plywood structure (possible former pump house):
  - Building details: plywood structure with roof. Piping entering the structure.
  - Insulated: no
  - Contents: empty
  - Location: located near a ponded water area, which is potentially the former Hecla Mine Shaft, that was located to the southeast of area where the Quonset huts are located
  - Notes: piping entering the back of the structure

The three former stamp mills that were known to be located on-site were not identified at the time of the site visit.

4. A sparsely vegetated tailings deposit was noted along the western bank of the Tangier River. Well oxidized sandy tailings were noted near former stamp mill. Waste rock was noted throughout the Site.
5. At the time of the site visit, various debris and waste (consisting of garbage, wood, tubing, metal, drill rods, tires etc.) were littered intermittently throughout the Site, as well as stored in one of the Quonset huts located next to the former stamp mill.
6. Historical soil samples collected at the Site reportedly show elevated concentrations of arsenic and mercury present in the tailings on-site. Based on previous reporting completed for the Site, it was noted that the total area

considered to be potentially impacted consisting of 34,093 square meters (8.5 acres), with an estimated 8,217 tonnes of tailings.

7. Based on previous environmental reports and results from the ERIS database report, it is noted that former mine shafts are located on-site in various areas. There are four (4) former mine shafts located in the area of tailings along the Tangier River, as well as multiple mine shafts in the area along Sluice Brook. Signage was noted throughout the Site to warn the public of "hazardous open holes". The ponded water area located southeast of the Quonset huts is potential to be former Hecla mining shaft.

Based on the results of the Phase I ESA, AECOM recommends the following:

Solid Waste Management:

1. A survey of all debris and solid waste should be conducted prior to disposal. Insulation should be sampled to see if it contains asbestos.
2. All debris and other solid wastes should be removed from the Site and disposed in compliance with Provincial and Municipal legislation. Characterization of the waste should take place prior to or concurrently with removal.

Potential Environmental Contamination:

3. A Phase ll ESA program should be conducted to investigate potential environmental contamination of soil, surface water and groundwater on the Site as a result of historical gold mining operations and the waste generated during that time. The Phase ll ESA should focus on known areas of concern such as known tailings areas, waste storage areas, former stamp mill areas, pond/ former shaft areas and any known waste discharge locations. It is expected that the primary Contaminants of Concern (COC) will be heavy metals (arsenic and mercury).

Additional items to be considered include the following:

Physical Hazards:

4. In addition to debris and solid waste, a survey of manmade structures identified on-site (steel structure (potential headframe)), Quonset huts, former pump house) should be conducted to identify those that require remedial actions. If determined that the manmade structure should be removed, the materials should be disposed of in compliance with Provincial and Municipal legislation.
5. A survey of former mine shafts should be conducted to identify those that require remedial actions to address physical hazards such as excessive drops and/or falls.

2.7 Applicable Regulatory Standards

2.7.1 Nova Scotia Environment Contaminated Sites Regulations

The subject property evaluation was completed in accordance with the NSE Contaminated Sites Regulations (July 2013). NSE Tier I Environmental Quality Standards (EQS) criteria provide the applicable guidelines for the Site. Site characteristics that are used to determine the NSE Tier I EQS (NSE-EQS) are as follows: **residential land use, potable water supply, coarse-grained soils.**

Soil and Tailings Guidelines:

- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Soil – residential, potable water, coarse grained soils (Table 1A)

Groundwater Guidelines:

- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Groundwater – residential, potable water, coarse grained soils (Table 4A)
- Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater Discharging to Surface Water (>10 m from Surface Water Body - Fresh Water) (Table 3)

Surface Water Guidelines:

- Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Table 3)

Sediment Guidelines:

- Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

Further discussion on the land-use associated with the Site is provided in the **Section 9.0** (Recommendation) below.

Background samples were collected for soil, groundwater, surface water and sediment, as described below:

- Soil – five (5) background soil samples (BG1-BG5) were collected from areas, which are considered to not be impacted by historic mining activities. These samples were submitted for metals (including mercury) analysis.
- Groundwater – monitoring well MW4 was installed northeast of the project site on the opposite side of Mooseland Road. This well was installed as a background well and samples were collected and submitted for metals analysis.
- Surface Water – three (3) surface water samples (SW1-SW3) were collected from the Tangier River, upgradient from the tailings plume, and submitted for metals analysis.
- Sediment - three (3) sediment samples (SED1-SED3) were collected from the Tangier River, upgradient from the tailings plume, and submitted for metals (including mercury) analysis.

The location of these samples is shown on the figures presented in **Appendix A**, and the analytical results for these samples, are shown in the tables presented in **Appendix B**.

However, it was decided to not directly compare these above noted background sample concentrations to applicable analytical data as a more in-depth background sample program may need to be completed in the future. As such, the background samples collected were compared to the NSE Environmental Quality Standard (EQS) guidelines for a residential property with potable water and coarse grained soil.

3. Phase II ESA

3.1 Methodology

The Phase II ESA scope of work included borehole drilling and monitoring well installation, and hand auguring along with soil, tailings, groundwater, surface water and sediment sampling, chemical analysis of selected samples, and evaluation of the analytical data. Groundwater flow direction was also determined and is discussed in the sections to follow.

Prior to commencing drilling activities, AECOM obtained public underground utility clearances (i.e. natural gas, sewer, water, telephone/data and electrical services) from service providers including Heritage Gas, Halifax Water, Bell Aliant, Eastlink, and Nova Scotia Power.

AECOM submitted a Phase II Field Program Memo to NSLI in May 2022. An overview of the Phase II ESA sampling program that was completed at the Site is as follows:

Soil - Impact Assessment and Delineation:

- Completion of a hand-auger soil sampling program within and in the vicinity of the historic tailings Area. Advancement of seventeen (17) auger locations, strategically chosen to investigate the areas of environmental concern. The hand-auger soil samples were used to visually delineate the historic tailings plumes.
- In addition to total metals analysis, AECOM submitted two (2) tailings samples for geochemical analyses for potential future risk assessment purposes, including:
  - Modified Acid-Base Accounting with Bulk NP, Paste pH, Fizz Rating
  - Total Sulphur + Total Carbon by Leco
  - Sulphate-Sulphur by HCl Leach
  - Sulphide-Sulphur by 1:7 Nitric Acid Leach
  - Total Inorganic Carbon by Coulometery
  - Metals by Aqua Regia Digestion with ICP-MS Finish
  - (3:1) Shake Flask Extraction Test with General Parameters, ICP-MS
  - Rietveld XRD
- Collection of three (3) tailings samples and submitted for analyses of Invitro Bio-Accessibility Assessment (arsenic and lead) and methylmercury analysis. These samples were used in the determination of the current and future human health and environmental risk associated with the Site.
- Collection of eight (8) soil samples – four for each of the two (2) former stamp mills located near Sluice Brook.
- Collection of nine (9) soil sample from the potential tailings area, shown at the intersection of Sluice Brook and the Tangier River. This soil sample was submitted for available metals concentration analysis.
- Collection of five (5) soil samples from the approximate stamp mill locations south of the waste rock piles to assess any potential impacts relating to the former stamp mills. Samples were submitted for available metals concentration analysis.

Soil – Background Assessment:

- Collection of (5) soil samples from background areas, which are considered to not be impacted by historic mining activities. These samples were used to establish metals background conditions soil.
- Soil samples were analyzed for available metal (including mercury) concentrations.

Waste Rock – Assessment and Delineation:

- Collection of two (2) waste rock samples. Samples were analyzed for total metals analysis and geochemical analysis, as indicated above.
- Oversight of a third party surveyor while delineating the boundaries of the waste rock piles for volume estimates of the waste rock.

Groundwater - Well Installation, Monitoring, Sampling, and Flow Direction:

- Advancement of four (4) drilled boreholes, which were all completed as monitoring wells. Monitoring wells were installed within the groundwater horizon.
- Advancement of two (2) hand augered boreholes which were completed as monitoring wells. Monitoring wells were installed within the groundwater horizon.
- The location of the boreholes and monitoring wells were strategically selected to assess the areas of potential environmental concern.
- For the purpose of determining groundwater flow direction, AECOM installed three (3) of the above noted groundwater monitoring wells via drilling, and two (2) groundwater monitoring wells installed via alternative method (i.e., hand auger) for chemical analysis of groundwater in each tailings plume.
- Additionally, one (1) groundwater well (drilled) was installed at an upgradient location from the Site to establish background groundwater conditions to compare against data collected on site.
- Groundwater samples were collected from the newly installed wells and submitted for dissolved metals analysis.

Surface Water and Sediment – Assessment:

- Collected nine (9) surface water and eight (8) sediment samples and submitted for total metals analysis. One location upgradient of the Site, one near the tailings impacts, and one down gradient of the known tailings impacts area with three evenly spaced samples.
- Collected two (2) surface water and sediment samples down gradient from the tailings plumes and submitted for total metals analysis.
- Collected one (1) surface water sample from the former mine Hecla Mine Shaft and submitted for total metals analysis.
- Collected one (1) surface water samples from a potentially mining impacted ponded water area was noted north of the waste rock piles. Samples were submitted for total metals analysis. The depth of this pond was also measured.

3.1.1 Sampling Program Rationale

Table 1 below provides a summary of the sample locations and the rationale, as applicable.

Table 1: Sampling Locations and Rationale

Phase II ESA Activities		Sampling Rationale	Analyses	Media	Potential Receptor Type
Soil and Tailings - Impact Assessment and Delineation					
1.	Sixteen (16) auger locations	The location of the hand auger samples were in the vicinity of the historic tailings area. Locations were strategically chosen to investigate the areas of environmental concern and to visually delineate the historic tailings plumes.	Available Metals Concentration	Soil	Human Health and Environment

Phase II ESA Activities		Sampling Rationale	Analyses	Media	Potential Receptor Type
2.	Two (2) tailings samples	These samples were used in the determination of the current and future human health and environmental risk associated with the Site.	Geochemical analysis (Analytical Results: PENDING*)	Tailings	
3.	Three (3) tailings samples	These samples were used in the determination of the current and future human health and environmental risk associated with the Site.	Invitro Bio-Accessibility Assessment (arsenic and lead) and methylmercury analysis. (Analytical Results: PENDING*)	Tailings	
4.	Eight (8) soil samples	These soil samples were collected from each of the two former stamp mills located near Sluice Brook.	Available Metals Concentration	Soil	
5.	Nine (9) soil samples	This soil sample was collected from the potential tailings area, shown at the intersection of Sluice Brook and the Tangier River.	Available Metals Concentration	Soil	
6.	Five (5) soil samples	These soil samples were collected from the approximate areas of the former stamp mill locations south of the waste rock piles to assess any potential impacts relating to the former stamp mills.	Available Metals Concentration	Soil	
Soil – Background Assessment					
7.	Five (5) soil samples	These samples were collected from background areas, which are considered to not be impacted by historic mining activities.	Available Metals Concentration	Soil	N/A
Waste Rock – Assessment and Delineation					
8.	Two (2) waste rock samples	These samples will be collected from the waste rock areas which are known to be impacted.	Total Metals and Geochemical Analysis (Analytical Results: PENDING*)	Waste Rock	Human Health and Environment
Groundwater					
9.	Three (3) Monitoring Wells (drilled)	The location of the boreholes and monitoring wells were strategically selected to assess the areas of potential environmental concern.	Dissolved Metals	Groundwater	Human Health and Environment
10.	Two (2) Monitoring Wells (installed via hand auger)	The location of the boreholes and monitoring wells were strategically selected to assess the areas of potential environmental concern.	Dissolved Metals	Groundwater – tailings plumes	Human Health and Environment
11.	One (1) Monitoring Well (drilled)	The location of the boreholes and monitoring wells were strategically selected to assess the areas of potential environmental concern.	Dissolved Metals	Groundwater – background	Human Health and Environment

Phase II ESA Activities		Sampling Rationale	Analyses	Media	Potential Receptor Type
Surface Water and Sediment – Assessment					
12.	Nine (9) SW and sediment samples	One location upgradient of the Site, one near the tailings impacts, and one down gradient of the known tailings impacts area with three evenly spaced samples. This will allow AECOM to determine the extent of the historic tailings plume that extends into the Tangier River.	Total Metals	Surface Water and Sediment	Human Health and Environment
13.	Two (2) SW and sediment samples	Collected down gradient from the tailings plumes.	Total Metals	Surface Water and Sediment	
14.	One (1) SW sample	Collected from former potential mine access filled with water (ponded at surface).	Total Metals	Surface Water	
15.	One (1) SW sample	Collected from former mine Hecla Mine Shaft.	Total Metals	Surface Water	

Notes:
*: Pending analytical results will be addressed as a separate memo to this report.

3.1.2 Sampling Procedures

3.1.2.1 Borehole Drilling and Groundwater Monitoring Installation Procedures

AECOM retained Nova Drilling Inc. (Nova) to complete the borehole drilling and monitoring well installation program at the Site on June 13 – June 15, 2022.

Borehole drilling at the monitoring well locations (MW1 through MW6) was completed using a trailer-mounted drill rig. For select monitoring wells (MW1, MW2, MW4, MW5, MW6), boreholes were advanced by auguring, and monitoring well MW3 was advanced through bedrock using drill coring methods. Monitoring wells MW1 and MW2 were installed in waste rock across from ponded old shaft, MW3 was installed adjacent to the Quonset huts, MW4 was installed as a background well located northeast of the project site on the opposite side of the road, MW5 was installed in a wetland area adjacent to the Tangier River, and MW6 was installed in the tailings area adjacent to the Tangier River.

Each monitoring well was installed using 2-inch diameter schedule 40 PVC solid pipe and slotted screen pipe. Each of the monitoring wells was constructed without the use of solvent welded joints; only threaded or other mechanical pipe connectors were used. The annular space between the PVC screen and the borehole wall was backfilled with washed silica sand. To limit the infiltration of surface water, a bentonite seal was installed from the top of the sand pack/screened section of the well to near surface. The monitoring well was completed with a metal protector casing to protect the well integrity. The groundwater monitoring well locations are presented on **Figure 7**, **Appendix A**.

Select soil samples were collected from monitoring wells MW5 and MW6 and submitted for metals and PAH analyses. Grab soil samples were collected directly from the test pit or from the drill split spoon. Care was taken to ensure that samples were obtained from representative soil. Clean nitrile gloves were used for each sample to eliminate cross-contamination between sampling points. Field soil sampling equipment used was decontaminated with Alconox and distilled water between each use to minimize potential cross contamination between samples. Sample aliquots for laboratory analysis were immediately placed in laboratory supplied containers, labelled and placed in an ice filled cooler.

3.1.2.2 Hand Auger Sampling Procedures

The hand auger sampling program was conducted between June 16-June 20, 2022. Hand auger samples were collected following AECOM's standard operating procedures (SOPs). A total of nineteen (19) soil samples (including field duplicates) (S1-S17) were collected in the vicinity of the historic tailings area and stamp mill areas and were submitted for metals analysis. A total of five (5) background soil samples (BG1-BG5) were also collected from background areas, which are considered to not be impacted by historic mining activities. These samples were submitted for metals analysis.

All hand auger soil samples were collected with laboratory supplied jars for laboratory analysis. Hand auger locations are shown on **Figure 5**, **Appendix A**. Background soil sample locations are shown on **Figure 6**, **Appendix A**.

3.1.2.3 Tailings Sampling Procedures

The tailings sampling program was conducted on June 15, 2022. Tailings samples were collected following AECOM's standard operating procedures (SOPs). A total of five (5) tailings samples (including one (1) field duplicate) (T1-T4) and seven (7) tailings delineation samples (TD1-TD7) were collected and submitted for one or more of the following analyses: metals, geochemical analysis, bio-availability, and/or methylmercury analyses. Tailings sample locations are shown on **Figure 5**, **Appendix A**.

3.1.2.4 Waste Rock Sampling Procedures

The waste rock sampling program was conducted on June 15, 2022. Waste rock sampling was completed by collecting grab samples and placing the samples in laboratory supplied jars. A total of two (2) waste rock samples (WR-1, WR-2) were collected from the waste rock piles on-site and were submitted for metals and geochemical analysis. Waste rock sampling locations are shown on **Figure 4**, **Appendix A**.

3.1.2.5 Groundwater Sampling Procedures

Prior to groundwater sampling at monitoring well locations, static groundwater level measurements were collected. An oil-water interface probe was used to measure the depth to groundwater and assess for the presence of non-aqueous phase liquid (NAPL) inside the well.

Groundwater monitoring wells were developed by removing groundwater from the monitoring well until the water returns sediment free. Before monitoring wells are sampled, the well is purged by removing a minimum of three (3) well volumes of water from the well. The removal of groundwater was completed by hand purging with WaterraTM dedicated tubing.

Samples were collected upon purging three (3) well volumes of groundwater to remove standing water and to draw a representative sample from the formation. If monitoring wells went dry during purging, they were allowed to recharge sufficiently before immediately collecting a groundwater sample. Groundwater removed from the wells during development and purging activities was discharged on land.

All groundwater samples were collected in pre-cleaned laboratory supplied containers and kept at or below a temperature of 10 degrees Celsius once sampled until submission to the laboratory. Metals samples were collected in laboratory preserved vials and filtered in the field using a 0.45 micron filter media.

A total of seven (7) groundwater samples (including one (1) field duplicate) were collected from the newly installed wells (MW1-MW6) and submitted for metals analysis.

3.1.2.6 Surface Water Sampling Procedures

Surface water sampling took place on June 20, 2022. Surface water samples were collected following AECOM's SOPs from a depth of approximately 5 cm below the water surface. During the surface water sample collection process, the personnel located themselves downstream of the sampling point and as close to the middle of the channel as possible (where safe to do so), thereby minimising disturbance to the stream base and mobilisation of any silts / sediments. Samples were collected in pre-cleaned laboratory supplied containers and kept at or below a temperature of 10 degrees Celsius once sampled until submission to the laboratory.

A total of fourteen (14) surface water samples (including one (1) field duplicate) were collected during this field program and submitted for metals analysis. Eleven (11) of the surface water samples (SW1-SW11) were collected from the Tangier River: Surface water samples SW1-SW3 are considered as background samples as they were collected upgradient from the tailings plume. Surface water samples SW4-SW9 were collected in close proximity of the tailings plume, and surface water samples SW10, SW11 were collected further downstream of the tailings plume. Surface water samples (SW12, SW13) were also collected from the two (2) ponded water areas on-site that may be associated with former mine workings.

Surface water sampling locations are shown on **Figure 8, Appendix A**.

3.1.2.7 Sediment Sampling Procedures

Sediment sampling took place at the same time as the surface water sampling program on June 20, 2022. Sediment samples were collected following AECOM's SOPs. An Ekman dredge was used to collect the sediment samples by lowering it into the water until the grab hits the bottom of the waterbody. Samples were collected in pre-cleaned laboratory supplied containers.

A total of twelve (12) surface water samples (including one (1) field duplicate) were collected during this field program and submitted for metals analysis. The sediment samples were collected in the same location as the surface water samples in the Tangier River. SED1-SED3 are considered as background samples as they were collected upgradient from the tailings plume. Sediment samples SED4-SED9 were collected in close proximity of the tailings plume, and sediment samples SED10, SED11 were collected further downstream of the tailings plume.

Sediment sampling locations are shown on **Figure 8, Appendix A**.

3.1.3 Sample Collection and Analysis

All samples collected as part of this program were submitted to Bureau Veritas Laboratories (BV Labs) located in Bedford, Nova Scotia, for chemical analyses. BV Labs is accredited to ISO/IEC 17025 standards by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC). Laboratory methods and analytical results for each chemical analysis are provided with the laboratory Certificate of Analysis (COAs).

The field and laboratory program is summarized in **Table 2** below.

Table 2: Field and Laboratory Program

Media	Analysis	Samples Submitted	Sample IDs	QAQC Samples	
				Field Duplicates	Analysis
Soil and Tailings - Impact Assessment and Delineation					
Soil (hand augers)	Metals incl. mercury	17	SW1-SW17	DUP2, DUP3	Metals incl. mercury

Media	Analysis	Samples Submitted	Sample IDs	QAQC Samples	
				Field Duplicates	Analysis
Soil (boreholes)	Metals incl. mercury, PAHs (select boreholes)	5	MW5 SA1 0-1', MW5 SA2 1'-3', MW6 SA1 0-10", MW6 SA2 1'-2', MW6 SA3 2'-2'11	N/A	Metals incl. mercury and/or PAHs
Tailings	Metals incl. mercury	4	T1-T4	DUP 1	Metals incl. mercury
Tailings (delineation)	Metals incl. mercury	7	TD1-TD7	N/A	N/A
Soil – Background Assessment					
Soil	Metals incl. mercury	5	BG1-BG5	N/A	N/A
Waste Rock – Assessment and Delineation					
Waste Rock	Metals incl. mercury	2	WR-1,WR-2	N/A	N/A
Groundwater					
Groundwater	Dissolved metals	6	MW1-MW6	DUP 1	Dissolved metals
Surface Water and Sediment – Assessment					
Surface Water	Metals	13	SW1-SW13	DUP 4	Total metals
Sediment	Metals incl. mercury	10	SED1-SED3, SED10-SED11	DUP 5	Metals incl. mercury

3.1.4 Quality Assurance and Quality Control

AECOM's site investigation and quality control program for Phase II ESA activities followed standard QA/QC procedures in accordance with AECOM standard operating procedures (SOPs) to minimize any cross-contamination between samples. Clean nitrile gloves were used throughout the investigation program to eliminate cross-contamination between sampling points.

All field personnel were instructed in proper sampling handling, documentation, and chain-of-custody (COC) procedures before beginning field activities. The field sampler was personally responsible for the care and custody of samples until transferred to the laboratory. A COC record was provided to the analytical laboratory at the time of sample submission. When transferring the possession of samples, the individuals relinquishing and receiving the samples completed the appropriate laboratory forms with the required signature, date and note the time on the record.

AECOM field personnel followed strict sample collecting handling practices, including changing disposable gloves for each sample collected and decontamination of field sampling equipment between samples, to ensure the integrity of sample collection. All samples were collected in pre-cleaned laboratory supplied containers with the appropriate preservatives provided within the sample containers and all samples were submitted for individual analysis within the laboratory prescribed hold times. Samples were packaged in coolers with sufficient packing material to ensure safe shipment of glass containers and ice was placed in coolers to maintain sample temperatures. All samples were kept at or below a temperature of 10^{o}C once sampled until submission to the laboratory.

AECOM collected field QA/QC samples to determine the precision of analytical results and to assess for laboratory or sampling inconsistencies. **Table 3** below shows the blind field duplicate samples that were submitted for laboratory analyses.

Table 3: Field Duplicate Sample Submission

Field Duplicate Sample ID	Corresponding Sample ID	Laboratory Analyses
Soil		
DUP 2	S8	Metals incl. mercury
DUP 3	S12	Metals incl. mercury
Tailings		
DUP 1	T4	Metals incl. mercury
Waste Rock		
N/A	N/A	N/A
Groundwater		
DUP 1	MW1	Dissolved metals
Surface Water		
DUP 4	SW4	Total metals
Sediment		
DUP 5	SED4	Metals incl. mercury

BV Labs also undertakes an internal duplicate analyses for QA/QC purposes using laboratory duplicates, process blanks, process recovery and matrix spike analyses.

3.2 Field Investigation Observations

3.2.1 Soil and Bedrock

Free product was not encountered in any of the soil samples collected. No soil staining or odours were noted on-Site while drilling. Overall overburden consisted of brown silty sand with some organics, cobbles and gravel. Tailings and waste rock was also noted to be present in some of the well locations. Bedrock was encountered while installing wells at a depth range of 3.62 mbgs to 3.77 mbgs.

3.2.2 Tailings and Waste Rock

Tailings were noted during the time of the site visit. A sparsely vegetated tailings deposit was noted along the western bank of the Tangier River, and well-oxidized sandy tailings were noted near former stamp mill. Piles of waste rock was noted adjacent to the Quonset huts, next to the Tangier River, and southeast of the Quonset huts. Sparse or stressed vegetation was noted in the areas where the tailings and waste rock were noted. Arsenic staining was noted coming from well oxidized tailings that were located along the edge of Tangier River near the former stamp mill, as well as oxidizing waste rock to the southeast of the area where the Quonset huts are located.

3.2.3 Groundwater

Free product was not encountered in any of the groundwater samples collected. No odours were noted on-Site while completing groundwater sampling. A brown tinge and some silt were noted for each well while purging took place.

Based on the groundwater elevations as measured in the field, the groundwater flow direction is to the Northeast toward the Tangier River as shown on **Figure 7**, **Appendix A**. The hydraulic gradient is estimated to be 0.033 m/m. Hydraulic conductivity testing is required to determine the groundwater velocity.

3.2.4 Surface Water

Surface water samples collected from the Tangier River, as well as the ponded water (potential mine shaft) had a slight yellow tinge, whereas surface water samples collected from the former Hecla Mine Shaft had no tinge. No sheen or odour were noted in the surface water samples.

3.2.5 Sediment

Sediment samples were noted to be dark brown in color with some silt and organics. No staining or odour were noted in the sediment samples.

3.3 Laboratory Analytical Results

Sampling locations are shown on figures presented in **Appendix A**, analytical results are presented in **Appendix B**, Laboratory Certificates of Analysis (COAs) are presented in **Appendix C**, and borehole and monitoring well logs are presented in **Appendix D**. Results are described in the sections to follow.

3.3.1 Soil Summary

Table 4 below shows the exceedances that were found during the soil sampling program.

Table 4: Soil Sample Exceedances

Sample ID	Sample Depth (m)	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
MW5 SA1 0-1'	0-0.3	2022-06-16	▪ Arsenic: 13,000 mg/kg ▪ Cadmium: 2.2 mg/kg ▪ Cobalt: 160 mg/kg ▪ Iron: 80,000 mg/kg ▪ Manganese: 33,000 mg/kg ▪ Selenium: 1.5 mg/kg ▪ Thallium: 2 mg/kg	▪ Arsenic: 10 mg/kg ▪ Cadmium: 1.0 mg/kg ▪ Cobalt: 22 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Selenium: 1.0 mg/kg ▪ Thallium: 1.0 mg/kg
MW5 SA2 1'-3'	0.3-0.9	2022-06-16	▪ Aluminum: 20,000 mg/kg ▪ Arsenic: 1,200 mg/kg ▪ Beryllium: 1.2 mg/kg ▪ Iron: 13,000 mg/kg ▪ Manganese: 600 mg/kg ▪ Mercury: 11 mg/kg ▪ Selenium: 3.8 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Beryllium: 1.0 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Mercury: 6.6 mg/kg ▪ Selenium: 1.0 mg/kg
MW6 SA1 0-10"	0-0.25	2022-06-15	▪ Arsenic: 6,200 mg/kg	▪ Arsenic: 10 mg/kg
MW6 SA2 1'-2'	0.3-0.6	2022-06-15	▪ Antimony: 7.8 mg/kg ▪ Arsenic: 6,900 mg/kg ▪ Iron: 13,000 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
MW6 SA3 2'-2'11	0.6-0.64	2022-06-15	▪ Arsenic: 3,500 mg/kg ▪ Manganese: 380 mg/kg ▪ Selenium: 2.1 mg/kg	▪ Arsenic: 10 mg/kg ▪ Manganese: 360 mg/kg ▪ Selenium: 1.0 mg/kg
S1	0-0.10	2022-06-16	▪ Aluminum: 17,000 mg/kg ▪ Arsenic: 4,700 mg/kg ▪ Beryllium: 1.1 mg/kg ▪ Iron: 45,000 mg/kg ▪ Manganese: 510 mg/kg ▪ Mercury: 22 mg/kg ▪ Selenium: 1.9 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Beryllium: 1.0 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Mercury: 6.6 mg/kg ▪ Selenium: 1.0 mg/kg
S2	0-0.15	2022-06-16	▪ Aluminum: 16,000 mg/kg ▪ Arsenic: 170 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg

Sample ID	Sample Depth (m)	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
			▪ Iron: 12,000 mg/kg ▪ Mercury: 12 mg/kg ▪ Molybdenum: 16 mg/kg ▪ Selenium: 1.7 mg/kg	▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg ▪ Molybdenum: 15 mg/kg ▪ Selenium: 1.0 mg/kg
S3	0-0.13	2022-06-16	▪ Aluminum: 22,000 mg/kg ▪ Arsenic: 26,000 mg/kg ▪ Beryllium: 2.4 mg/kg ▪ Cadmium: 2.1 mg/kg ▪ Cobalt: 450 mg/kg ▪ Iron: 160,000 mg/kg ▪ Manganese: 68,000 mg/kg ▪ Molybdenum: 25 mg/kg ▪ Selenium: 3.7 mg/kg ▪ Thallium: 2.6 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Beryllium: 1.0 mg/kg ▪ Cadmium: 1.0 mg/kg ▪ Cobalt: 22 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Molybdenum: 15 mg/kg ▪ Selenium: 1.0 mg/kg ▪ Thallium: 1.0 mg/kg
S4	0-0.15	2022-06-16	▪ Arsenic: 12,000 mg/kg ▪ Beryllium: 1.3 mg/kg ▪ Cadmium: 3.4 mg/kg ▪ Cobalt: 170 mg/kg ▪ Iron: 90,000 mg/kg ▪ Manganese: 65,000 mg/kg ▪ Selenium: 2.8 mg/kg ▪ Thallium: 2.1 mg/kg	▪ Arsenic: 10 mg/kg ▪ Beryllium: 1.0 mg/kg ▪ Cadmium: 1.0 mg/kg ▪ Cobalt: 22 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Selenium: 1.0 mg/kg ▪ Thallium: 1.0 mg/kg
S5	0-0.15	2022-06-16	▪ Arsenic: 1,800 mg/kg ▪ Iron: 28,000 mg/kg ▪ Selenium: 1.1 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1.0 mg/kg
S6	0-0.25	2022-06-16	▪ Aluminum: 17,000 mg/kg ▪ Arsenic: 450 mg/kg ▪ Iron: 27,000 mg/kg ▪ Selenium: 2.1 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1.0 mg/kg
S7	0-0.30	2022-06-16	▪ Arsenic: 360 mg/kg	▪ Arsenic: 10 mg/kg
S8	0-0.15	2022-06-16	▪ Aluminum: 23,000 mg/kg ▪ Arsenic: 2,300 mg/kg ▪ Iron: 34,000 mg/kg ▪ Selenium: 1.6 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1.0 mg/kg
S8 (FD)	0-0.15	2022-06-16	▪ Aluminum: 25,000 mg/kg ▪ Arsenic: 3,100 mg/kg ▪ Iron: 37,000 mg/kg ▪ Selenium: 1.4 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1.0 mg/kg
S9	0-0.15	2022-06-16	▪ Arsenic: 990 mg/kg ▪ Iron: 26,000 mg/kg ▪ Manganese: 640 mg/k	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg
S10	0.03-0.18	2022-06-16	▪ Aluminum: 20,000 mg/kg ▪ Arsenic: 2,600 mg/kg ▪ Iron: 39,000 mg/kg ▪ Manganese: 1,300 mg/kg ▪ Selenium: 1.3 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Selenium: 1.0 mg/kg
S11	0.02-0.15	2022-06-16	▪ Aluminum: 22,000 mg/kg ▪ Arsenic: 9,300 mg/kg ▪ Beryllium: 1.7 mg/kg ▪ Iron: 45,000 mg/kg ▪ Manganese: 660 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Beryllium: 1.0 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg
S12	0.01-0.19	2022-06-16	▪ Aluminum: 21,000 mg/kg ▪ Arsenic: 470 mg/kg ▪ Beryllium: 1.1 mg/kg ▪ Iron: 25,000 ▪ Lead: 190 mg/kg ▪ Manganese: 410 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10mg/kg ▪ Beryllium: 1.0 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Manganese: 360 mg/kg

Sample ID	Sample Depth (m)	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
S12 (FD)	0.01-0.19	2022-06-16	▪ Aluminum: 21,000 mg/kg ▪ Arsenic: 350 mg/kg ▪ Beryllium: 1.1 mg/kg ▪ Iron: 24,000 ▪ Lead: 170 mg/kg ▪ Manganese: 380 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Beryllium: 1.0 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg ▪ Manganese: 360 mg/kg
S13	0.1-0.22	2022-06-16	▪ Aluminum: 28,000 mg/kg ▪ Arsenic: 2,600 mg/kg ▪ Beryllium: 1.1 mg/kg ▪ Iron: 41,000 mg/kg ▪ Manganese: 1,500 mg/kg ▪ Selenium: 1.4 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Beryllium: 1.0 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Selenium: 1.0 mg/kg
S14	0-0.05	2022-06-16	▪ Arsenic: 700 mg/kg ▪ Iron: 13,000 ▪ Mercury: 10 mg/kg ▪ Molybdenum: 27 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Mercury: 6.6 mg/kg ▪ Molybdenum: 15 mg/kg
S15	0-0.05	2022-06-16	▪ Arsenic: 2,500 mg/kg ▪ Iron: 21,000 mg/kg ▪ Manganese: 1,600 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg
S16	0-0.05	2022-06-16	▪ Aluminum: 16,000 mg/kg ▪ Arsenic: 2,300 mg/kg ▪ Iron: 20,000 mg/kg ▪ Manganese: 660 mg/kg ▪ Mercury: 23 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Mercury: 6.6 mg/kg
S17	0-0.15	2022-06-16	▪ Aluminum: 22,000 mg/kg ▪ Arsenic: 1,500 mg/kg ▪ Iron: 31,000 mg/kg ▪ Selenium: 1.9 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Selenium: 1.0 mg/kg

Notes:
[1]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Soil – residential, potable water, coarse grained soils (Table 1A)

3.3.2 Tailings Summary

Table 5 below shows the exceedances that were found during the tailings sampling program.

Table 5: Tailings Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
T1	2022-06-15	▪ Arsenic: 8,400 mg/kg ▪ Iron: 13,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
T2	2022-06-15	▪ Arsenic: 9,900 mg/kg ▪ Iron: 24,000 mg/kg ▪ Manganese: 560 mg/kg ▪ Mercury: 7.9 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Mercury: 6.6 mg/kg
T3	2022-06-15	▪ Arsenic: 6,200 mg/kg ▪ Iron: 23,000 mg/kg ▪ Manganese: 630 mg/kg ▪ Mercury: 11 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg ▪ Mercury: 6.6 mg/kg
T4	2022-06-15	▪ Arsenic: 8,000 mg/kg	▪ Arsenic: 10 mg/kg
T4 (FD)	2022-06-15	▪ Arsenic: 8,400 mg/kg ▪ Iron: 12,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
TD1	2022-06-15	▪ Arsenic: 1,500 mg/kg ▪ Manganese: 380 mg/kg ▪ Selenium: 2.5 mg/kg	▪ Arsenic: 10 mg/kg ▪ Manganese: 360 mg/kg ▪ Selenium: 1.0 mg/kg

Sample ID	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
TD2	2022-06-15	▪ Arsenic: 540 mg/kg ▪ Selenium: 1.3 mg/kg	▪ Arsenic: 74 mg/kg ▪ Selenium: 1.0 mg/kg
TD3	2022-06-15	▪ Aluminum: 20,000 mg/kg ▪ Arsenic: 1,300 mg/kg ▪ Beryllium: 1.1 mg/kg ▪ Mercury: 10 mg/kg ▪ Selenium: 4.4 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Beryllium: 1.0 mg/kg ▪ Mercury: 6.6 mg/kg ▪ Selenium: 1.0 mg/kg
TD4	2022-06-15	▪ Aluminum: 22,000 mg/kg ▪ Arsenic: 2,900 mg/kg ▪ Iron: 28,000 mg/kg ▪ Manganese: 430 mg/kg	▪ Aluminum: 15,400 mg/kg ▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg
TD5	2022-06-15	▪ Arsenic: 3,300 mg/kg ▪ Iron: 21,000 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg
TD6	2022-06-15	▪ Arsenic: 4,800 mg/kg ▪ Iron: 24,000 mg/kg ▪ Manganese: 690 mg/kg	▪ Arsenic: 10 mg/kg ▪ Iron: 11,000 mg/kg ▪ Manganese: 360 mg/kg
TD7	2022-06-15	▪ Antimony: 10 mg/kg ▪ Arsenic: 22,000 mg/kg ▪ Cadmium: 3.3 mg/kg ▪ Iron: 13,000 mg/kg ▪ Lead: 180 mg/kg	▪ Antimony: 7.5 mg/kg ▪ Arsenic: 10 mg/kg ▪ Cadmium: 1.0 mg/kg ▪ Iron: 11,000 mg/kg ▪ Lead: 120 mg/kg

Notes:
[1]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Soil – residential, potable water, coarse grained soils (Table 1A)

3.3.3 Waste Rock Summary

Elevated concentrations of aluminum, arsenic, iron and manganese are present in the (2) waste rock samples collected at Site.

3.3.4 Groundwater Summary

Table 6 below shows the exceedances that were found during the groundwater sampling program.

Table 6: Groundwater Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration (µg/l)	NSE-EQS [1] Guideline Concentration (ug/l)	NSE-EQS [2] (Freshwater) Guideline Concentration (ug/l)
MW1	6/16/2022	▪ Aluminum: 150 ug/l ▪ Arsenic: 120 mg/L ▪ Manganese: 1,600 ug/l	▪ Arsenic: 10 mg/L ▪ Manganese: 120 mg/L	▪ Aluminum: 50 mg/L ▪ Arsenic: 50 mg/L
MW1 (FD)	6/16/2022	▪ Aluminum: 140 mg/L ▪ Arsenic: 130 mg/L ▪ Manganese: 1,700 mg/L		
MW2	6/16/2022	▪ Arsenic: 15 mg/L ▪ Cobalt: 23 mg/L ▪ Manganese: 1,400 mg/L	▪ Arsenic: 10 mg/L ▪ Cobalt: 3.8 mg/L ▪ Manganese: 120 mg/L	▪ Cobalt: 10 mg/L
MW3	6/16/2022	▪ Aluminum: 63 mg/L	▪ Cobalt: 3.8 mg/L ▪ Manganese: 120 mg/L	▪ Aluminum: 50 mg/L ▪ Cobalt: 10 mg/L

Sample ID	Sample Date	Parameter / Concentration (µg/l)	NSE-EQS [1] Guideline Concentration (ug/l)	NSE-EQS [2] (Freshwater) Guideline Concentration (ug/l)
		▪ Cobalt: 16 mg/L ▪ Manganese: 340 mg/L		
MW4 (Background Well)	6/16/2022	▪ Manganese: 470 mg/L	▪ Manganese: 120 mg/L	▪ No exceedances
MW5	6/16/2022	▪ Aluminum: 180 mg/L ▪ Arsenic: 350 mg/L ▪ Cobalt: 4.3 mg/L ▪ Iron: 5,600 mg/L ▪ Manganese: 1,700 mg/L	▪ Arsenic: 10 mg/L ▪ Cobalt: 3.8 mg/L ▪ Manganese: 120 mg/L	▪ Aluminum: 50 µg/L ▪ Arsenic: 50 mg/L ▪ Iron: 3,000 µg/L
MW6	6/16/2022	▪ Arsenic: 1,400 mg/L ▪ Cobalt: 4.3 µg/L ▪ Manganese: 400 mg/L	▪ Arsenic: 10 µg/L ▪ Cobalt: 3.8 mg/L ▪ Manganese: 120 mg/L	▪ Arsenic: 50 mg/L

Notes:
[1]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater – residential, potable water, coarse grained soils (Table 4A)
[2]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater Discharging to Surface Water (>10 m from Surface Water Body - Fresh Water) (Table 3)

3.3.5 Surface Water Summary

Table 7 below shows the exceedances that were found during the surface water sampling program.

Table 7: Surface Water Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration (µg/l)	NSE-EQS [1] Guideline Concentration (ug/l)
SW1 (Background)	6/20/2022	▪ Aluminum: 230 mg/L ▪ Iron: 530 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW2 (Background)	6/20/2022	▪ Aluminum: 240 mg/L ▪ Iron: 530 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW3 (Background)	6/20/2022	▪ Aluminum: 260 mg/L ▪ Iron: 560 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW4	6/20/2022	▪ Aluminum: 240 mg/L ▪ Iron: 530 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW4 (FD)	6/20/2022	▪ Aluminum: 250 mg/L ▪ Iron: 520 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW5	6/20/2022	▪ Aluminum: 260 mg/L ▪ Iron: 530 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW6	6/20/2022	Aluminum: 280 ▪ Iron: 580 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW7	6/20/2022	▪ Aluminum: 250 mg/L ▪ Arsenic: 7.1 ▪ Iron: 580	▪ Aluminum: 5.0 mg/L ▪ Arsenic: 5.0 mg/L ▪ Iron: 300 mg/L
SW8	6/20/2022	▪ Aluminum: 240 mg/L ▪ Iron: 530 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW9	6/20/2022	▪ Aluminum: 250 mg/L ▪ Iron: 570	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW10	6/20/2022	▪ Aluminum: 250 mg/L ▪ Iron: 590 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L
SW11	6/20/2022	▪ Aluminum: 260 mg/L ▪ Iron: 620 mg/L	▪ Aluminum: 5.0 mg/L ▪ Iron: 300 mg/L

SW12	6/20/2022	▪ Aluminum: 37 mg/L Arsenic: 8.9 ▪ Iron: 690	▪ Aluminum: 5.0 mg/L ▪ Arsenic: 5.0 mg/L ▪ Iron: 300 mg/L
SW13	6/20/2022	▪ Aluminum: 29 mg/L Arsenic: 94	▪ Aluminum: 5.0 mg/L ▪ Arsenic: 5.0 mg/L

Notes:
[1]: Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (Table 3)

3.3.6 Sediment Summary

Table 8 below shows the exceedances that were found during the surface water sampling program.

Table 8: Sediment Sample Exceedances

Sample ID	Sample Date	Parameter / Concentration (mg/kg)	NSE-EQS [1] Guideline Concentration (mg/kg)
SED7	6/20/2022	▪ Arsenic: 660 mg/kg ▪ Mercury: 6.1 mg/kg	▪ Arsenic: 17 mg/kg ▪ Mercury: 0.486 mg/kg
SED8	6/20/2022	▪ Arsenic: 450 mg/kg ▪ Mercury: 5.9 mg/kg	▪ Arsenic: 17 mg/kg ▪ Mercury: 0.486 mg/kg
SED11	6/20/2022	▪ Arsenic: 20 mg/kg ▪ Mercury: 0.68 mg/kg	▪ Arsenic: 17 mg/kg ▪ Mercury: 0.486 mg/kg

Notes:
[1]: Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

4. Summary and Findings

The findings and conclusions presented in this report apply only to the recognized environmental conditions assessed at the Site. **Table 9** below summarizes the findings related to soil, tailings, waste rock, groundwater, surface water, and sediment investigations completed as part of the scope of work for this Phase II ESA.

A remedial options analysis, as well as recommendations, are provided in the sections to follow.

Table 9: Phase II ESA Summary of Findings

Phase II ESA Activities		Phase II ESA Findings
Soil and Tailings - Impact Assessment and Delineation		
1.	Collected twenty-two (22) soil samples	▪ Noteworthy impacts in arsenic and mercury were identified in soil samples, and are suspected to be associated with previous mining activities that took place at Site. ▪ In addition to exceedances in arsenic and mercury, the following impacts were noted in soil: - Aluminum (Max. Concentration: 28,000 mg/kg) Antimony (Max. Concentration: 7.8 mg/kg) - Arsenic (Max. Concentration: 26,000 mg/kg) - Beryllium (Max. Concentration: 2.4 mg/kg) - Cadmium (Max. Concentration: 3.4 mg/kg) - Cobalt (Max. Concentration: 430 mg/kg) - Iron (Max. Concentration: 160,000 mg/kg) - Lead (Max. Concentration: 190 mg/kg) - Manganese (Max. Concentration: 68,000 mg/kg) - Mercury (Max. Concentration: 23 mg/kg) - Molybdenum (Max. Concentration: 27 mg/kg) - Selenium (Max. Concentration: 3.8 mg/kg) - Thallium (Max. Concentration: 2.6 mg/kg)
2.	Collected four (4) tailings samples (T1-T4) and seven tailings delineation samples (TD1-TD7)	Tailings: ▪ Arsenic (Max. Concentration: 9,900 mg/kg) and iron (Max. Concentration: 24,000 mg/kg) impacts were identified in all tailings samples. ▪ Mercury (Max. Concentration: 11 mg/kg) and manganese (Max. Concentration: 630 mg/kg) impacts were identified in two (2) of the tailings samples (T2, T3). Tailings Delineation: ▪ Arsenic (Max. Concentration: 22,000 mg/kg) impacts identified in all tailings delineation samples. ▪ Additional impacts were identified in in select samples.: ▪ Aluminum (Max. Concentration: 22,000 mg/kg), ▪ Antimony (Max. Concentration: 10 mg/kg), ▪ Beryllium (Max. Concentration: 1.1 mg/kg), ▪ Cadmium (Max. Concentration: 3.3 mg/kg), ▪ Iron (Max. Concentration: 28,000 mg/kg), ▪ Lead (Max. Concentration: 180 mg/kg) ▪ Manganese (Max. Concentration: 690 mg/kg) ▪ Mercury (Max. Concentration: 10 mg/kg), and ▪ Selenium (Max. Concentration: 4.4 mg/kg)
Soil – Background Assessment		
3.	Collected five (5) background soil samples: BG1-BG5	▪ Arsenic (Max. Concentration: 74 mg/kg) impacts were identified at each background soil location. ▪ Manganese (Max. Concentration: 1100 mg/kg) impacts were identified at two (2) of the background locations: BG3, BG4. ▪ Selenium (Max. Concentration: 1.7 mg/kg) impacts were identified at two (2) of the background locations: BG2, BG3. ▪ Aluminum (18,000 mg/kg) impacts were identified at one (1) of the background locations: BG3.

Phase II ESA Activities		Phase II ESA Findings
		▪ Iron (Max. Concentration: 30,000 mg/kg) impacts were identified at three (3) of the background soil locations (BG2, BG3, BG4).
Waste Rock – Assessment and Delineation		
4.	Collected two (2) waste rock samples	▪ Elevated levels of aluminum, arsenic, iron and manganese are present in the (2) waste rock samples collected at Site.
Groundwater		
5.	Installed six (6) monitoring wells (MW1 – MW6) and completed sampling at each well	▪ Arsenic impacts were identified at four (f) of the six (6) wells. ▪ In addition to exceedances in arsenic, the following impacts were identified at select wells: - Aluminum (Max. Concentration: 180 ug/L) - Arsenic (Max. Concentration: 1,400 ug/L) - Cadmium (Max. Concentration: 0.26 ug/L) - Cobalt (Max. Concentration: 23 ug/L) - Copper (Max. Concentration: 5.4 ug/L) Iron (Max. Concentration: 5,600 ug/L) ▪ Lead (Max. Concentration: 1.1 ug/L) Manganese (Max. Concentration: 1,700 ug/L)
Surface Water and Sediment – Assessment		
6.	Collected nine (9) SW samples: SW1-SW9 and eight (8) sediment samples SED1-SED8	**Surface Water:** Upgradient of tailings plume: SW1-SW3 ▪ Background samples collected. Exceedances of NS-EQS noted for aluminum (Max. Concentration: 260 ug/L) and iron (Max. Concentration: 560 ug/L) for each location. Adjacent to tailings plume: SW4-SW6 ▪ Exceedances noted in aluminum (Max. Concentration: 280 ug/L) and iron (Max. Concentration: 580 ug/L) for each location. Downgradient of tailings plume: SW7-SW9 ▪ Exceedances noted in aluminum (Max. Concentration: 250 ug/L) and iron (Max. Concentration: 580 ug/L) for each location, and arsenic (7.1 ug/L) impacts for SW7 location. **Sediment:** Upgradient of tailings plume: SED1-SED3 ▪ Background samples collected. No exceedances noted. Adjacent to tailings plume: SED4-SED6 ▪ No exceedances noted Downgradient of tailings plume: SED7-SED8 ▪ Exceedances noted in arsenic (Max. Concentration: 660 mg/kg) and mercury (Max. Concentration: 6.1 mg/kg) in both samples.
7.	Collected two (2) SW samples: SW10, SW11 and two (2) sediment samples: SED10-SED11	**Surface Water:** Further Downgradient of tailings plume: SW10, SW11 ▪ Exceedances noted in aluminum (Max. Concentration: 260 ug/L) and iron (Max. Concentration: 620 ug/L) for each location. **Sediment:** Further Downgradient of tailings plume: SED10, SED11 ▪ Exceedances noted in arsenic (20 mg/kg) and mercury (0.68 mg/kg) for one sample (SED11).
8.	Collected one (1) SW sample: SW13	▪ Aluminum (29 ug/L) and arsenic (94 ug/L) impacts noted in the sample collected from the ponded water.
9.	Collected one (1) SW sample: SW12	▪ Aluminum (37 ug/L), arsenic (8.9 ug/L) and iron (690 ug/L) impacts noted in the sample collected from the ponded water (former Hecla Mine Shaft).

The vertical and horizontal extent of soil and groundwater contamination has not yet been determined. Additional work will need to be completed to determine this information, as described in **Section 9.0**.

5. Conceptual Site Model

The conceptual site model (CSM) for the Site is critical to understanding the sources from which the contaminants of concern (COCs) originate, the pathways through which these PCOCs can travel, and the receptors that are potentially exposed to these COCs.

The objective of the CSM is to is to characterize the surface and subsurface conditions that exist at the Site that can contribute to adverse effects and risks of excess exposures due to the release, fate and transport of contaminants of concern (COCs) from sources and surrounding impacted areas. This information will be used to identify risk management strategies to mitigate the sources and minimize the possibility for harmful exposures of human and ecological receptors to contaminant sources and releases of COCs.

At the Mooseland Mine Site, the tailings and waste rock associated with the historic mining activities are the original sources of the PCOCs. The COCs that are the focus of this investigation include arsenic and mercury as they are associated with wastes released to the environment from the mineral processing and gold extraction, including waste rock and tailings. However, additional COCs identified in environmental samples collected from areas impacted by historic mining activities at the Mooseland Site and surrounding area would also be retained for further human health and ecological risk assessment.

Arsenic is a naturally occurring chemical constituent within the residual rock material that was milled and then released as a non-economic by-product of the gold extraction process. The original arsenic in the tailings solids was likely in the form of arsenopyrite (FeAsS). Arsenic can be released from this primary mineral form during oxidation processes, resulting in the formation of oxidation products that include dissolved iron, arsenic and sulphate as well as the solid phase ferric oxyhydroxide, simplified as Fe(OH)3.

Mercury was used as an amalgam in the gold extraction process. Although the mercury is typically collected to recover the gold, some release of mercury typically occurs during the process. Mercury would have originated in the liquid form of the element which has a very low solubility in water. Dissolved mercury typically has a very limited mobility in water because of its tendency to sorb onto many types of solids, particularly organic material. This has important implications in the potential pathways for mercury in the environment.

From the original tailings and waste rock source areas, the potential exposure pathways for human and ecological receptors at the Site include the following:

- Soil contact / ingestion
- Leaching to potable groundwater
- Inhalation of dusts and respirable particulate material (PM10; PM 2.5) in indoor / outdoor air; and
- Leaching to Groundwater and groundwater discharging to surface water.
- Surface runoff to wetlands and surface water bodies.
- Plant root uptake and foliar uptake

5.1 Soil Contact / Ingestion

Tailings and waste rock are located on-Site and there are currently no barriers (i.e., fencing, asphalt, etc.) to protect human or ecological receptors from coming into contact with the impacted areas. Therefore the soil contact / ingestion pathway is considered to be operable.

5.2 Leaching to Potable Water

Based on the results of the Phase I ESA (AECOM, 2022), it was determined that water wells are present within 250 m of the Site. Therefore, the leaching to potable water pathway is considered to be operable.

5.3 Inhalation of Indoor Air

The Inhalation of indoor air/vapour migration from groundwater to indoor air pathway is not considered to be operable since occupied buildings do not exist within 30 metres of the Site and no buildings exist on the Site.

5.4 Inhalation of Outdoor Air

The tailings solids are relatively fine grained and are subject to dusting that can be carried with ground-level winds and dispersed along the direction of the prevailing winds. Therefore, the inhalation of outdoor air pathway is considered to be operable.

5.5 Leaching and Migrating to Off-Site Surface Water

Tailings deposits and associated surface water runoff have been observed on-Site to be leading into the Tangier River. Impacts are above the groundwater table, and leaching (from precipitation) to groundwater, and then migrating to surface water. Therefore, the leaching and migrating to off-site surface water pathway is considered to be operable.

6. Remedial Options Analysis

6.1 Remediation Components

Environmental investigations completed to-date have identified the following site components to require remedial measures:

1. Waste Rock: The Phase II Environmental Site Assessment has identified that approximately 10,950 m^3 of waste rock contains elevated Arsenic and other metal concentrations that may present a unacceptable risk of elevated exposures to As and other toxic metals through leaching and dust released from waste rock piles for human and ecological receptors. Remedial measures may be required to mitigate this risk. Further assessment of the potential risk to human health and ecological health is warranted
2. Impacted Tailings Areas: As identified in the Phase I ESA, previous environmental reports estimated 8,217 tonnes of tailings on the Site. The Phase II Environmental Site Assessment has identified that tailings contain elevated Arsenic and Mercury concentrations that may present a human health risk and adverse ecological effects. Remedial measures are required to mitigate this risk. Due to the limited data collected, AECOM cannot confirm the quantity of tailings and has therefore used the previous volume estimates for the purpose of the ROA and cost estimating. Further assessment of the potential risk to human health and ecological health is warranted
3. Impacted Soil Area: The Phase II Environmental Site Assessment has identified impacted soil in many areas of the Site, as delineation has not been achieved, AECOM is unable to accurately assess the volume of contaminated soil requiring remedial action. Based on the limited data and aerial imagery, AECOM is estimating that 90,000 m^3 of soil containing elevated Arsenic and Mercury and other metals concentrations that may present a human health risk exists on the Site. Remedial measures may be required to mitigate this risk. Further assessment of the potential risk to human health and ecological health is warranted
4. Impacted Surface Water and Sediments: The Phase II Environmental Site Assessment has identified surface water and sediment in the Tangier River impacted by metals. Surface water and sediment concentrations of As and Hg in one or more samples were greater than the corresponding environmental quality criteria indicating possible ecological adverse effects in aquatic organisms and possibly a risk to people and wildlife through eating fish and aquatic prey from surface waters in sediment impacted areas. Further environmental study and risk assessment is warranted for surface water and sediment impacted areas. Remedial measures may be required to mitigate this risk.
5. Hecla Mine Shaft: The Phase I Environmental Site Assessment identified a 120 meter mine shaft known as the Hecla Mine Shaft, the Phase II Environmental Site Assessment potentially identified this flooded shaft. Water inside the flooded shaft was impacted by metals. Remedial measures may be required to mitigate this environmental risk of possible exposures to elevated metals in surface water and potential release and transport to groundwater. In addition, the shaft poses a potential physical risk to human health and the environment.
6. Debris: Remnants of historical mining activities remain at site, including machine parts, wood and metal were identified as part of the Phase II Environmental Site Assessment., An estimated volume of 80 m^3 of debris may require management.
7. Impacted Groundwater and Surface Water: The Phase II Environmental Site Assessment (AECOM, 2022) has identified impacted groundwater and surface water (Tangier River) by metals, specifically As, Co, Mn, Al, and Fe based on limited sampling and analyses. Remedial measures may be required to mitigate any adverse effects on potable ground water quality and in aquatic organisms. Further assessment of the potential risk to human health and ecological health is warranted. Human health and ecological risks may also be mitigated by taking remedial actions at the source of the impacts (waste rock, tailings, soils, etc.)

The following sections describe each of the above components in more detail, a presentation of remedial options and the recommended option for consideration in remedial action planning.

6.2 Evaluation Criteria

The remedial options were evaluated using a simplified Multiple Accounts Analysis (MAA) (**Appendix E**). This is a scoring method that considers multiple factors when evaluating remedial options. It provides a transparent method for remedial options evaluation that also largely removes personal bias, numerically scoring remedial options relative to one another according to set criteria.

The system is comprised of tiered evaluation, set up as a matrix. The first tier is comprised of categories, with each category then broken out into a second tier of individual criteria selected to be appropriate to the specific area/element being evaluated.

Four (4) categories were considered:

1. **Socio-Economic:** This category evaluates such items as community/stakeholder preferences or perceptions and socio-economic benefits to the local communities.
2. **Technical:** This category considers various technical issues related to remedial design, constructability, effectiveness, and considers health and safety to workers (or the public) during construction.
3. **Environment and Sustainability:** This category is intended to evaluate potential environmental impacts of each proposed remedial option relative to existing and post-remediation conditions. It considers the effect the option has on the greater environment and how protective the technologies applied to the option are when considering climate change, and regulatory considerations.
4. **Costs:** This category evaluates relative costs of the remedial options and considers this across multiple stages of the work, as applicable. It also considers operating maintenance and surveillance (OMS) costs.

Each category is then assigned a weighting to represent its relative importance for the project objectives. For this evaluation, the project team gave each the following:

- 20% Socio-Economic
- 25% Technical
- 30% Environment and Sustainability
- 20% Costs

Under each category, the project team proposed weighting criteria based on our knowledge of the site, its technical issues, the cost components to consider, and expected social/stakeholder concerns. **Table 11** below lists the MAA matrix with selected criteria for each category, and their rationale for evaluation purposes. Each criterion has also been assigned a weighting, based on the teams' experience of project element importance for contaminated sites, and in consideration of the variability of impact remedial options may have on that criterion. For example, using an example of impacted soils remediation under the Environment category, if none of the proposed remedial options will significantly improve the soil, then the soil criterion would be assigned a lower weighting. Similarly, if impacted soils were already generally acceptable and not a main driver in selection of the remedial option, then this would also prompt selection of a low weighting.

Based on the methodology used for MAA at other projects (Giant Mine, Great Bear Lake Sites, Stark Lake, Rayrock) AECOM assigned the following weighting for criteria:

- Low priority – assigned a value of 0.5,
- Required – assigned a value of 1.0, or
- High priority – assigned a value of 2.0.

A category weighting percentage value was then applied to reflect the relative importance of each of the four (4) categories (totalling 100%).

Table 10: Evaluation Criteria

Category Weight	Category	Criterion	Criterion Weight	Definition and/or Rationale
20%	Socio-Economic	Community Acceptance	2	▪ Considers the remediation alternative that aligns with existing community expectations and addresses the local communities' concerns.
		Use of Local Labour Force	1	▪ Considers whether the remedial alternative requires specialized training or experience that would prevent locals from assisting in the work.
25%	Technical	Constructability	2	▪ Considers ability to obtain required equipment and workers and transport to site and difficultly in implementing the remedial action (community ability to support).
		Access/ Transportation to Site and within site	1	▪ Ability/ease to mobilize equipment to site and within site
		Worker Health & Safety	1	▪ Considers the potential health & safety risks to workers to implement the remedial measure.
		Effectiveness	2	▪ Considers the success of implementation and the life expectancy of the remedial measure and if it's acceptable to the regulatory agencies.
30%	Environment & Sustainability	Meets Remedial Objectives	2	▪ Considers the ability of an alternative to meet the intent of the Remedial Objectives
		Climate Change Considerations	1	▪ Includes all climate change considerations, including long-term stability in changing climate. ▪ A high level of hydrocarbon consumption (diesel) has an impact on the carbon footprint (GHG) during hauling to site and during site work combustion, spill risks (transportation, storage, use). Consideration includes the level of effort (LOE) for truck transport mobilization for equipment and materials.
		Regulatory Acceptance	2	▪ Considers how acceptable the proposed remedial alternative will be to regulators, not including community engagement.
25%	Costs	Construction Costs (overall construction costs)	2	▪ Includes the costs for equipment, materials, and workers to be mobilized/demobilized to/from the site for construction season. Includes the costs to implement the remedial alternative, considering the remoteness of the area, length of time to complete the remedial measure and contingency.
		Ongoing Monitoring, Maintenance & Sampling Costs	1	▪ Includes costs related to maintenance & long-term monitoring, assuming all methods will require water, sediment and aquatic effect monitoring of all remaining water bodies.

Table E-1, in **Appendix E**, provides scoring rationale for each of the above criteria along with option scoring as discussed below. MAA scoring for the various options are provided in **Table E-2**, **Appendix E**.

6.3 Remediation Considerations

6.3.1 Site Access (Off-Site)

The former Mooseland Mine Site is located 24 km north of Tangier, NS, and 114 km northeast of Halifax, NS. The Site is easily accessed via vehicle and mobilization for contractor equipment will be via Mooseland Road.

6.3.2 Site Access (On-Site)

As identified in **Section 2.4**, the parcel of land is almost entirely undeveloped, except for a roadway (Mooseland Road) running through it (northwest to southeast), and sparse historical mining-related infrastructure (where the Site is situated). Vegetation consists of a mixture of forest and shrubland.

There is one main road entering the Site, however it does not continue down to the tailings area. The Site may require road maintenance for use during remediation. Borrow soil, if required, may need to be imported to Site or a suitable onsite borrow source may need to be identified.

Photograph 1: View of current roadway leading into former Mooseland Mine Site (Google Earth, 2022)

6.3.3 Borrow Soil

Borrow soil, if required, may need to be imported to Site and sourced locally within Halifax Regional Municipality. Source location would be at contractor discretion, provided the material meets Site requirements. Alternatively, an on site borrow source may be identified.

6.3.4 Landfill Opportunities

There are no suitable locations on-site to store the debris and solid waste that was identified on-site. Debris and solid waste materials will be able to be disposed of at an approved Region 1 Landfill (closest being located in Guysborough County).

6.4 Waste Rock

The Phase II ESA included a third party survey of the waste rock pile located on-site. The survey estimates the amount of waste rock present on-site to be in the order of 11,000 m^3 and to be primarily limited to three (3) main piles, which are located adjacent to the Quonset huts, southeast of the Quonset huts, and adjacent to the Tangier River. The approximate locations of the waste rock piles are shown on **Figure 3**, **Appendix A**. It should be noted that the quantity estimates are based on surrounding grade and the actual depth of waste rock was not measured during this ESA. Further investigation into the depth of the waste rock piles would be required to refine the estimated quantity of waste rock. Further assessment of the potential risk to human health and ecological health from exposure to toxic metals in waste rock released to the environment through leaching and dust generated by waste rock piles is warranted in the development and selection of preferred options for site remediation and site closure. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) should be required, as appropriate to the situation. Waste rock remediation, if it is to occur on-Site, may or may not require full encapsulation of the waste rock. For example, the creation of a barrier between surface receptors (people, flora and fauna) and the material to protect against the soil direct contact pathway and against the potential for contact with leachate surface runoff and dust potentially containing toxic metals (pending additional data on leachability and dustiness of waste rock).

Photograph 2: View of oxidizing waste rock. Some vegetation present. Photo taken to the southeast of the area where the Quonset huts are located.

Photograph 3: View of waste rock pile. Photo taken adjacent to Quonset huts.

Photograph 4: View of waste rock material found along the edge of Tangier River. Rock located next to tailings

6.4.1 Option #1 – Excavation and Off-Site Disposal

The first remedial option presented for managing the waste rock is to remove the material for **off-site disposal**. This option would remove the waste from the Site and would not require any long-term monitoring or management.

Disadvantages associated with off-site disposal would be finding a waste disposal facility within reasonable proximity of the Site willing to accept this quantity of material and the cost of transportation and disposal. There is also more health and safety risks to the labour force associated with moving the large quantity of waste rock.

6.4.2 Option #2 – Soil Cap

The second remedial option presented for managing the waste rock is the consolidation of all site waste rock followed by covering through the placement of a **graded soil cap** atop the waste rock pile. The purpose of the cap would be

to create a physical barrier between persons occupying the site and the waste rock. The design intent would be to have a cap effective for a lifespan in the order of 100 years.

Waste rock could either be capped proximate to where it is currently located or consolidated at a new location. Given that remediation does not require full encapsulation of the waste rock, only the creation of a barrier between surface receptors and the material, provided sufficient sampling and testing of waste rock materials doesn't identify a high risk of leaching of potentially toxic levels of As and other metals. Consolidation and reshaping of the material proximate to its existing location may involve minimal material movement. An excavator and/or loader would be used to consolidate and shape the waste rock. Soil borrow is required to cover the material with this option.

Consolidation of the waste rock proximate to its existing location would require less material movement on site and limit the disturbance of a natural area for placement and remove the need to manage several locations of capped material. Soil capping should consider:

- Material placement must be undertaken in a manner that has long term stability and low risk of geotechnical failure. Steep slopes may present a risk to geotechnical stability.
- Material grading should be completed in a manner that allows for water drainage across the cover yet not be too steep and facilitate cover erosion.
- Engineering analysis should review the locations for material placement in detail paying close attention to grading requirements.
- The soil capping material must be constructed in a manner that fits aesthetically with the surrounding lands and is resilient to weather and erosion. Typical processes used for this included the use of coarse stone (rip rap sized greater than 10 cm) or soil with vegetation.
- Relocation of the waste rock requires significant material disturbance and appropriate measures (including material wetting), and worker protection will need to be undertaken to mitigate contaminant migration and personnel safety risks, including air quality monitoring and personal radiation exposure monitoring.
- The soil cap design would need to consider freeze/ thaw effects, cap longevity, potential climate change impacts, and radiation protection (if deemed necessary), amongst other items.

Additional considerations include:

- Site signage may need to be posted to identify the location of the covered waste rock to ensure that the area is not disturbed in the future.

Based on the above, Remediation Option 2 considers:

- Stripping and salvage of vegetation, surficial organics, and overburden soil.
- Placement and engineered grading of the waste rock within a topographic low.
- Provision of a 1 m thick soil cover. Assuming that 11,000 m^3 of waste rock is placed 3 m thick on average, the area requiring cover is approximately 3,700 m^2. Assuming 1 m thick of cover and some contingency/grading allowance (30%), the amount of borrow soil required is in the order of 4,810 m^3. Borrow soil would comprise stripped, graded, and compacted soil from an on site borrow source or imported fill.
- Borrow material may be sourced from the site, however a borrow study was not completed as part of the ESA, further borrow source investigation would be required to determine if suitable fill material existed on or near the site. Imported materials may be transported to Site from source locations within Halifax Regional Municipality and would be at the contractor discretion provided the material met the engineering specifications.
- Waste rock placement at a location of existing soil will require significant vegetation disturbance.
- There will be long term monitoring requirements related to the soil cap.

6.4.3 Option #3 – Soil/Synthetic Cap

The third remedial option presented for managing the waste rock is the design and placement of an **engineered cap** atop the waste rock piles either in place or as a consolidated and graded stockpile. The soil cap would generally be constructed as per Option 2; however, use a synthetic liner system (e.g., high density polyethylene (HDPE), bituminous geomembrane (BGM), etc.) to reduce the soil cap thickness and therefore reduce the amount of borrow soil required. Additional geosynthetics may need to be incorporated to reduce long term erosion and enhance cap stability. Climate change may increase the extreme weather occurrences and precipitation, which is also mitigated by the additional liner and geosynthetics. The less soil that is required for borrow the less natural disturbance is needed and accordingly the less amount of site reclamation is needed.

Design considerations are similar to Option 2. Synthetic liner design will be required (BGM is being used in several remediation projects in cold climates as of late due to its ease of application and long-life span). Some consideration will be required to identify a soil thickness that will have the longevity to stay atop the liner and not erode, also considering erosional effects due to climate change. General soil thickness will be engineered for the site conditions during detailed design and will require less thickness than a soil cap that does not use synthetics. Coarse blast rock could be effective in this regard. A synthetic liner has the added benefit of reducing the amount of rain and surface water that could come into contact with the waste rock and limit the transport of fine-grained material outside of the main waste rock pile.

The cost to construct an engineered cap may be greater than a graded soil cap; however, the benefits of a reduced borrow soil requirement (less area of borrow disturbance and/or less imported borrow requirements with less reclamation) may outweigh these higher costs.

Long term monitoring of the soil/synthetic cap would be required following remediation.

6.4.4 Option #4 – Backfill Hecla Shaft

The fourth remedial option presented for managing the waste rock is using it as backfill for the former Hecla Mine Shaft. The majority of the known waste rock on Site likely originated from the Hecla Shaft given the size and proximity of the shaft to the main waste rock pile. As such, it is possible that some or all of the waste rock could be disposed of within the Hecla Shaft. The dimensions of the Hecla Shaft were not measured as part of the ESA and as such further study of the volume of the Hecla Shaft would be required prior to commencing backfilling using the waste rock.

6.4.5 Option #5 – Risk Management

The fifth remedial option presented for managing the waste rock is **risk management**. Given the high levels of As and other toxic metals in waste rock, risk management by fencing off locations of waste rock (either as a consolidated stockpile or as individual stockpiles) to prevent human contact with the waste rock, and/or placing signage to identify hazardous areas should be required, as appropriate to the situation. While capital construction costs are lower than containment ongoing monitoring of the fences would be required. AECOM's understanding is that there is typically poor community acceptance of chain link fences as they may present harm to animals (in particular horned animals that may become entangled in the fences).

Risk management would be a cost-effective remedial option in the short term; however, is unlikely to meet with acceptance by the project team or the community. The option does not meet the remedial objectives well.

6.4.6 Option #6 – Leave in Place – No Remedial Action

A "Leave in Place – No Remedial Action" approach is considered to not be acceptable for this component of the project since it does not meet the project objectives.

6.4.7 Remedial Options Analysis/Recommendation

The remedial option scoring for waste rock management is provided in **Table E-2**, **Appendix E** with the summary results as follows:

Table 11: ROA for Waste Rock

Option	Score	Comments
Option 1: Excavation and Off-Site Disposal	15.9	Higher cost with off-Site transportation. Potential challenges with finding a facility to accept material. Environmental and cost risks associated with transport.
Option 2: Soil Cap	14.9	Feasible option
Option 3: Soil/Synthetic Cap	15.0	Feasible option, as Option 2; however, requires less site disturbance for borrow soils. Synthetics may result in greater cap stability.
Option 4: Backfill Hecla Shaft	13.1	Feasible option – further study needed
Option 5: On-Site Risk Management	14.3	Anticipated low community acceptance. Does not address issue over the long term.
Option 6: Leave in Place – No Remedial Action	11.6	Anticipated low community/regulatory acceptance.

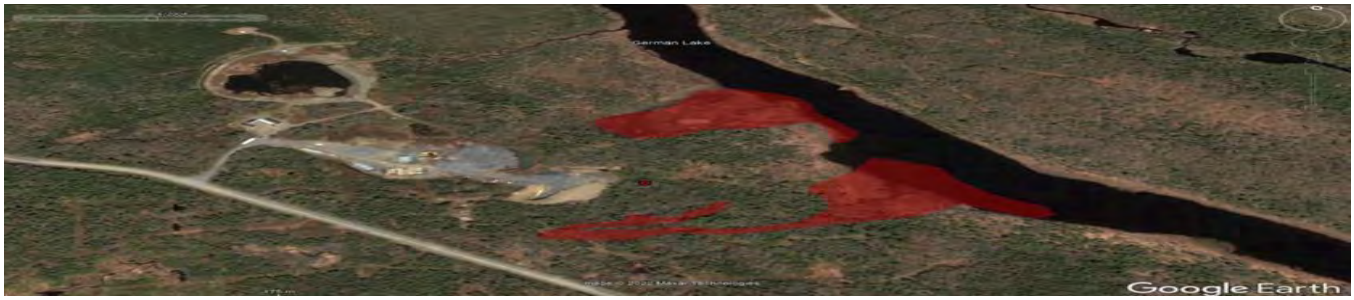
Based on a review of the remedial options, the recommended approach for waste rock management is through **excavation and off-site disposal**. This approach addresses the site issues over the long term and minimizes long-term monitoring requirements, while avoiding potential challenges with managing the waste rock on-site. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) prescribing proper conditions for handling and reuse of waste rock should be developed based on the potential for the release of toxic metals from waste rock through leaching and dissolution of metals from the rock and generation of rock dust, as appropriate to the situation.

Further risk assessment including taking into account the results of leachability testing is warranted to inform the preferred remedial and risk management option based on the level of concern and threat of release of toxic metals to the environment through leaching dissolution and dust and the potential for direct human contact with waste rock materials

6.5 Impacted Tailings Area

The Phase I ESA identified a historic tailings plume located the western bank of the Tangier River, as well as well-oxidized sandy tailings located near the former stamp mill. The approximate locations of the tailings are shown on **Figure 4**, **Appendix A**. Based on preliminary results from the ESA, it is difficult to delineate the full extent of the tailings impacts. However, based on visual observation and historic documentation, it can be estimated that an area of 34,100 square meters of tailings exists on the site with estimated average thickness ranging from 0.5 m to 1.0 m. As such, a preliminary estimate of 17,050 cubic meters to 34,100 cubic meters of tailings exists on the Site. Further efforts could be completed to fully delineate the tailings quantity on site. Further assessment of the potential risk to human health and ecological health from exposure to toxic metals in tailings materials released to the environment through leaching erosion weathering and dust is warranted to inform the development and selection of preferred options for site remediation and site closure. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) should be required, as appropriate to the situation.

Tailings remediation, if it is to occur on-Site, may not require full encapsulation of the tailings depending on the leachability of toxic metals from the tailings and the dispersion and the generation of dust through wind erosion and weathering., If As, Hg and other toxic metals are not leachable from tailings materials the creation of a barrier between surface receptors and the material would be required to protect against the soil and dust direct contact pathway and dustiness.



Photograph 5: View of approximate Tailings Plumes as Provided by NSLI/DNR

Photograph 6: View of well oxidized sandy tailings along the edge of the Tangier River

Photograph 7: View of vegetative tailings located adjacent to waste rock pile

6.5.1 Option #1 – Excavation and Off-Site Disposal

The first remedial option presented for managing the tailings is to remove the material for **off-site disposal**. This option would remove the waste from the Site and would not require any long-term monitoring or management.

Disadvantages associated with off-site disposal would be finding a waste disposal facility within reasonable proximity of the Site willing to accept this quantity of material and the cost of transportation and disposal. There is also more health and safety risks to the labour force associated with moving the large quantity of tailings.

6.5.2 Option #2 – Soil Cap

The second remedial option presented for managing the tailings is the consolidation of all site tailings followed by covering through the placement of a **graded soil cap** atop the tailings pile. The purpose of the cap would be to create a physical barrier between persons occupying the site and the tailings. The design intent would be to have a cap effective for a lifespan in the order of 100 years.

Tailings could either be capped proximate to where it is currently located or consolidated at a new location. Given that remediation may not require full encapsulation of the tailings, only the creation of a barrier between surface receptors and the material may be required depending on the leachability of toxic metals from the tailings materials, to mitigate exposure risk primarily related to the direct soil and dust contact pathway. Consolidation and reshaping of the material proximate to its existing location would require minimal material movement. An excavator and/or loader would be used to consolidate and shape the tailings. Soil borrow is required to cover the material with this option.

Consolidation of the tailings proximate to its existing location would require less material movement on site and limit the disturbance of a natural area for placement and remove the need to manage several locations of capped material. Soil capping should consider:

- Material placement atop tailings areas must be undertaken in a manner that has long term stability and low risk of geotechnical failure. Steep slopes and or wet conditions may present a risk to geotechnical stability.
- Material grading should be completed in a manner that allows for water drainage across the cover yet not be too steep and facilitate cover erosion.
- Engineering analysis should review the locations for material placement in detail paying close attention to grading requirements.

- The soil capping material must be constructed in a manner that fits aesthetically with the surrounding lands and is resilient to weather and erosion. Typical processes used for this included the use of coarse stone (rip rap sized greater than 10 cm) or soil and vegetation.
- Relocation of the tailings requires significant material disturbance and appropriate measures (including potential material wetting), and worker protection will need to be undertaken to mitigate contaminant migration and personnel safety risks, including air quality monitoring and personal exposure monitoring.
- The soil cap design would need to consider freeze/ thaw effects, cap longevity, potential climate change impacts amongst other items.

Additional considerations include:

- Site signage may need to be posted to identify the location of the covered tailings to ensure that the area is not disturbed in the future.

Based on the above, Remediation Option 2 considers:

- Stripping and salvage of vegetation, surficial organics, and overburden soil.
- Placement and engineered grading of the tailings within this topographic low.
- Provision of a 1 m thick soil cover. Assuming that the 34,100 m^2 of tailings areas are mostly left in place with minimal consolidation and grading, the area requiring cover is approximately 34,100 m^2. Assuming 1 m thick of cover and some contingency/grading allowance (30%), the amount of borrow soil required is in the order of 44,330 m^3. Borrow soil would comprise stripped, graded, and compacted soil from an on site borrow source or imported fill.
- Borrow material may be sourced from the Site, however a borrow study was not completed as part of the ESA, further borrow source investigation would be required to determine if suitable fill material existed on or near the site. Imported materials may be transported to Site from source locations within Halifax Regional Municipality and would be at the contractor discretion provided the material met the engineering specifications.
- Tailings placement at a location of existing soil will require significant vegetation disturbance.
- There will be long term monitoring requirements related to the soil cap.

6.5.3 Option #3 – Soil/Synthetic Cap

The third remedial option presented for managing the tailings is the design and placement of an **engineered cap** atop the tailings piles either in place or as a consolidated and graded stockpile. The soil cap would generally be constructed as per Option 2; however, use a synthetic liner system (e.g., high density polyethylene (HDPE), bituminous geomembrane (BGM), etc.) to reduce the soil cap thickness and therefore reduce the amount of borrow soil required. Additional geosynthetics may need to be incorporated to reduce long term erosion and enhance cap stability. Climate change may increase the extreme weather occurrences and precipitation, which is also mitigated by the additional liner and geosynthetics. The less soil that is required for borrow the less natural disturbance is needed and accordingly the less amount of site reclamation is needed.
Design considerations are similar to Option 2. Synthetic liner design will be required (BGM is being used in several remediation projects in cold climates as of late due to its ease of application and long-life span). Some consideration will be required to identify a soil thickness that will have the longevity to stay atop the liner and not erode, also considering erosional effects due to climate change. General soil thickness will be engineered for the site conditions during detailed design and will require less thickness than a soil cap that does not use synthetics. A synthetic liner has the added benefit of reducing the amount of rain and surface water that could come into contact with the tailings and limit the transport of fine-grained material outside of the main tailings pile.

The cost to construct an engineered cap may be greater than a graded soil cap; however, the benefits of a reduced borrow soil requirement (less area of borrow disturbance and/or less imported borrow requirements with less reclamation) may outweigh these higher costs.

Long term monitoring of the soil/synthetic cap would be required following remediation.

6.5.4 Option #4 – Risk Management

The fourth remedial option presented for managing the tailings is **risk management**. Given the high concentrations of As and other toxic metals in the tailings material risk management by fencing off locations of tailings (either as a consolidated stockpile or as individual stockpiles) to prevent human contact with the tailings, and placing signage to identify hazardous areas should be required as appropriate to the situation. While capital construction costs are lower than containment ongoing monitoring of the fences would be required. AECOM's understanding is that there is typically poor community acceptance of chain link fences as they may present harm to animals (in particular horned animals that may become entangled in the fences).

Risk management would be a cost-effective remedial option in the short term; however, is unlikely to meet with acceptance by the project team or the community. The option does not meet the remedial objectives well.

6.5.5 Option #5 – Leave in Place – No Remedial Action

A "Leave in Place – No Remedial Action" approach is would to not be acceptable for this component of the project since it does not meet the remedial objectives.

6.5.6 Remedial Options Analysis/Recommendation

The remedial option scoring for tailings management is provided in **Table E-2**, **Appendix E** with the summary results as follows:

Table 12: ROA for Tailings

Option	Score	Comments
Option 1: Excavation and Off-Site Disposal	13.3	Higher cost with off-Site transportation. Potential challenges with finding a facility to accept material. Environmental and cost risks associated with transport.
Option 2: Soil Cap	15.3	Feasible option
Option 3: Soil/Synthetic Cap	15.4	Feasible option, as Option 2; however, requires less site disturbance for borrow soils. Synthetics may result in greater cap stability.
Option 4: On-Site Risk Management	14.3	Anticipated low community acceptance. Does not address issue over the long term.
Option 5: Leave in Place – No Remedial Action	11.6	Anticipated low community/regulatory acceptance.

Based on a review of the remedial options, the recommended approach for tailings management is through **capping using soil and synthetics**. This approach addresses the site issues over the long term and minimizes site disturbance while doing so, while avoiding potential challenges with facility acceptance and risk associated with transport. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) should be developed based on the potential for exposure to toxic metals in tailings through direct contact with tailings, tailings slurries and water and inhalation of respirable particles, as appropriate to the situation.

Further risk assessment including taking into account the results of leachability testing is warranted to inform the preferred remedial and risk management option based on the level of concern and threat of release of toxic metals to the environment through leaching surface runoff and dust and potential for direct human contact with tailings materials.

6.6 Impacted Soils

Impacted soils exist outside the horizontal and vertical limits of the tailings and waste rock piles on site. During the ESA, no delineation of impacted soils was achieved due to the limited data collected and the large area of impacted materials. All soil samples collected in attempt to delineate the impacted soil exceeded the applicable guidelines. As such, at this time, the impacted soil quantity can only be roughly estimated and the actual impacted soil quantity is unknown.

It is possible that a Human Health and Ecological Risk Assessment of the Site may aid in delineating the impacts requiring remediation with the data already collected. At this time, based on the available data and for the purpose of a preliminary ROA only, a preliminary estimate of approximately 90,000 cubic meters of impacted soil exists on the site. Further soil sampling would be required to refine this estimate. Further assessment of the potential risk to human health and ecological health from exposure to toxic metals in impacted soils and the threat to groundwater and surface water, including water used for drinking water and potential threats to terrestrial and aquatic organisms is warranted. The outcome of the HHERA would better inform the development and selection of preferred options for site remediation and site closure based on the location and potential for complete exposure pathways to human and ecological receptors, as well as the distribution of metal impacts, the magnitude, and the frequency of potential exposures across the site. The HHRA would also inform the development of a Health and Safety Plan (HASP) and Risk Management Plan (RMP) which should be required, as appropriate to the situation.

6.6.1 Option #1 – Excavation and Off-Site Disposal

The first remedial option presented for the Site is **excavation and off-site disposal**. Impacted soils would be excavated using an excavator and shipped to a facility licensed to accept these soils. As the majority of the impacted soil is primarily impacted with metals exceedances, the soils do not need to be separated based on their contaminants. As such all soil should be consolidated for shipment to an approved disposal facility which can accept soil with metals contamination.

The general steps for excavation and off-site disposal include the following:

- Excavate impacted soils from specified areas and packaged for transport according to TDG regulations.
- Impacted soil would then be transported to a licensed disposal facility.
- Backfilling of excavations, then re-contouring and re-vegetation would be completed as required in areas of excavation, once backfilling is complete.

This remedial option has the benefit of removing the impacted soil from the Site, and therefore prohibiting the need for future Site visits and long-term management of this soil.

6.6.2 Option #2 – Soil Cap

The second remedial option presented for managing the contaminated soil is the consolidation of all site contaminated soils followed by covering through the placement of a **graded soil cap** atop the soil pile. The purpose of the cap would be to create a physical barrier between persons occupying the site and the contaminated soil. The design intent would be to have a cap effective for a lifespan in the order of 100 years.

Contaminated soil could either be capped proximate to where it is currently located or consolidated at a new location. Given that remediation may not require full encapsulation of the contaminated soil, depending on the leachability of toxic metals and depth of soil impacts, only the creation of a barrier between surface receptors and the material, may be required to reduce exposure risk primarily related to the direct soil and dust contact pathway. Consolidation and reshaping of the material proximate to its existing location would require minimal material movement. An excavator

and/or loader would be used to consolidate and shape the soil. Soil borrow is required to cover the material with this option.

Consolidation of the contaminated soil proximate to its existing location would require less material movement on site and limit the disturbance of a natural area for placement and remove the need to manage several locations of capped material. Soil capping should consider:

- Material placement atop soil areas must be undertaken in a manner that has long term stability and low risk of geotechnical failure. Steep slopes and or wet conditions may present a risk to geotechnical stability.
- Material grading should be completed in a manner that allows for water drainage across the cover yet not be too steep and facilitate cover erosion.
- Engineering analysis should review the locations for material placement in detail paying close attention to grading requirements.
- The soil capping material must be constructed in a manner that fits aesthetically with the surrounding lands and is resilient to weather and erosion. Typical processes used for this included the use of coarse stone (rip rap sized greater than 10 cm) or vegetation.
- Relocation of the contaminated soil may require significant material disturbance and appropriate measures (including potential material wetting), and worker protection will need to be undertaken to mitigate contaminant migration and personnel safety risks, including air quality monitoring and personal exposure monitoring.
- The soil cap design would need to consider freeze/ thaw effects, cap longevity, potential climate change impacts amongst other items.

Additional considerations include:

- Site signage may need to be posted to identify the location of the covered contaminated soil, to ensure that the area is not disturbed in the future.

Based on the above, Remediation Option 2 considers:

- Stripping and salvage of vegetation, surficial organics, and overburden soil.
- Placement and engineered grading of the tailings within this topographic low.
- Provision of a 0.5 m thick soil cover. Assuming that the 90,000 m^2 of impacted soil areas are left in place, the area requiring cover is approximately 90,000 m^2. Assuming 0.5 m thick of cover and some contingency/grading allowance (30%), the amount of borrow soil required is in the order of 45,000 m^3. Borrow soil would comprise stripped, graded, and compacted soil from an on site borrow source or imported fill.
- Borrow material may be sourced from the site, however a borrow study was not completed as part of the ESA, further borrow source investigation would be required to determine if suitable fill material existed on or near the site. Imported materials may be transported to Site from source locations within Halifax Regional Municipality and would be at the contractor discretion provided the material met the engineering specifications.
- Contaminated soil placement at a location of existing soil will require significant vegetation disturbance.
- There will be long term monitoring requirements related to the soil cap.

6.6.3 Option #3 – Soil/Synthetic Cap

The third remedial option presented for managing the impacted soils is the design and placement of an **engineered cap** atop the impacted soils piles either in place or as a consolidated and graded stockpile. The soil cap would generally be constructed as per Option 2; however, use a synthetic liner system (e.g., high density polyethylene (HDPE), bituminous geomembrane (BGM), etc.) to reduce the soil cap thickness and therefore reduce the amount of borrow soil required. Additional geosynthetics may need to be incorporated to reduce long term erosion and enhance cap stability. Climate change may increase the extreme weather occurrences and precipitation, which is also

mitigated by the additional liner and geosynthetics. The less soil that is required for borrow the less natural disturbance is needed and accordingly the less amount of site reclamation is needed.

Design considerations are similar to Option 2. Synthetic liner design will be required (BGM is being used in several northern remediation projects as of late due to its ease of application and long-life span). Some consideration will be required to identify a soil thickness that will have the longevity to stay atop the liner and not erode, also considering erosional effects due to climate change. General soil thickness will be engineered for the site conditions during detailed design and will require less thickness than a soil cap that does not use synthetics. Coarse blast rock could be effective in this regard. A synthetic liner has the added benefit of reducing the amount of rain and surface water that could come into contact with the waste rock and limit the transport of fine-grained material outside of the main soils pile.

The cost to construct an engineered cap may be greater than a graded soil cap; however, the benefits of a reduced borrow soil requirement (less area of borrow disturbance and/or less imported borrow requirements with less reclamation) may outweigh these higher costs.

Long term monitoring of the soil/synthetic cap would be required following remediation.

6.6.4 Option #4 – Risk Management

The fourth remedial option presented for managing the tailings is **risk management**. Given the high concentrations of As and other toxic metals in impacted soil risk management by fencing off locations of soils (either as a consolidated stockpile or as individual stockpiles) should be required to prevent human contact with the impacted soil, and or placing signage to identify hazardous areas. While capital construction costs are lower than containment ongoing monitoring of the fences would be required. AECOM's understanding is that there is typically poor community acceptance of chain link fences as they may present harm to animals (in particular horned animals that may become entangled in the fences). In addition, fencing is also easily vandalized and breached by tree falls.

6.6.5 Option #5 – Leave in Place – No Remedial Action

A "Leave in Place – No Remedial Action" approach is deemed to not be acceptable for this component of the project since it does not meet the remedial objectives.

6.6.6 Remedial Options Analysis/Recommendation

The remedial option scoring for impacted soil management is provided in **Table E-2**, **Appendix E** with the summary results as follows:

Table 13: ROA for Impacted Soil

Option	Score	Comments
Option 1: Excavation and Off-Site Disposal	12.8	Feasible option
Option 2: Soil Cap	14.8	Feasible option
Option 3: Soil/Synesthetic Cap	14.9	Feasible option
Option 4: Risk Management	14.3	Anticipated low community acceptance and high long-term monitoring requirements
Option 5: Leave in Place – No Remedial Action"	11.6	Anticipated low community/regulatory acceptance

Based on a review of the remedial options, the recommended approach for impacted soil management is through **capping using soil and synthetics**. This approach addresses the site issues over the long term and minimizes site disturbance while doing so, while avoiding potential challenges with facility acceptance and risk associated with transport. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) should be developed based on the potential for exposure to toxic metals in soil through direct contact with soil and soil runoff, and inhalation of respirable particles, as appropriate to the situation.

Further human health and ecological risk assessment (HHERA) taking into account the distribution, depth, magnitude and frequency of exposure of selected human and ecological receptors based on the location and accessibility is warranted to inform the preferred remedial and risk management option based on the level of concern and risk of adverse effects due to toxic metals in the environment through leaching to groundwater, releases to surface and potential for direct human contact with impacted soil and dusts and also possible exposure to toxic and bioaccumulative metals in soils through fishing hunting and wild edibles.

6.7 Mine Shaft

Based on previous environmental reports and results from the ERIS database report, it is noted that former mine shafts are located on-site in various areas. There are four (4) former mine shafts located in the area of tailings along the Tangier River, as well as multiple mine shafts in the area along Sluice Brook. Signage was noted throughout the Site to warn the public of “hazardous open holes”. The ponded water area located southeast of the Quonset huts might be the former Hecla mining shaft. A large ponded body of water is located approximately 200 m northwest of the Quonset huts, which may potentially be a flooded former mine shaft (former Hecla Mine Shaft).

For the purpose of the ROA, in discussion with NSLI, the smaller mine shafts on the Site are not considered to be part of the remediation plan. As such this ROA only focuses on the potential Hecla Mine Shaft which is currently flooded. Further assessment of the potential risk to human health and ecological health from exposure to toxic metals in ponded water and the threat to groundwater and surface water, including water used for drinking water and potential threats to terrestrial and aquatic organisms is warranted. The HHRA would also inform the development of a Health and Safety Plan (HASP) and Risk Management Plan (RMP) which should be required, as appropriate to the situation.

Photograph 8: View of potential headframe over a former mine shaft

Photograph 9: View of potential former Hecla Mining Shaft that was flooded

6.7.1 Option #1 – Earthen Backfill (Rock/Soil)

The first remedial option presented for mine shaft is **backfill**. Backfill involves using on-site waste rock or local borrow material to fill and close any openings Compaction would likely not be possible, and the approach would require mounding of material over the opening to allow for natural consolidation. The mine shaft would require replacement of boulders over the opening area once backfilling has been completed.

Based on the reported depth from historic reports and the dimensions as seen on satellite imagery, it is feasible that the entire quantity of waste rock identified on site could be placed inside the mine shaft to provide structural support for closure; however, due to the identified metals concerns with the waste rock, it cannot be left exposed at the external face.

Earth (soil) backfill placed atop the waste rock would be susceptible to erosion and not be an effective cover. Clean rock could, however, be placed atop the waste rock if done so with sufficient thickness to create a barrier. This option is expected to have a long lifespan (>50 years). Rock suitable for use as cover material would have to be sourced from locations in the vicinity of the site or imported and hauled to the mine shaft for use in closure.

The mine shaft would be filled as much as practical with waste rock, a delineator (e.g., geogrid) would be placed in front of the waste rock to demarcate it from clean rock placed at the front of the mine shaft to achieve formal closure. The clean rock would be placed and mounded with approximate 3 to 1 slope for stability. This would require approximately 450 m^3 of clean rock to be placed in front of the opening.

6.7.2 Option #2 – Engineered Concrete Cap

The second remedial option presented for mine openings is **engineered concrete cap**. Engineered concrete caps are pre-designed and generally pre-cast concrete slabs that cover the mine opening; however, they can also be cast in place.

Cap construction would require construction of level, stable foundation (knee wall) on which to place and anchor the slab (likely cement poured in moulds). Pre-cast slabs would require construction off-site and transport to site and lowered (by crane) into place by riggers standing near the foundation. Cast-in-place slabs would be formed on-Site. This option is expected to have a long lifespan (>50 years). Given the size of the mine opening, concrete caping may be expensive and difficult to install.

6.7.3 Option #3 – Polyurethane Foam Plug

The third remedial option presented for the mine shaft is **polyurethane foam plugs**. Polyurethane foam plugs are installed in mine opening by mixing of a resin and catalyst reagent that produce an exothermic reaction leading to the rapid expansion of the mixture which conforms to the dimensions of the opening.

Construction would require placement of some formwork (likely wooden) to contain the foam. A granular cap of at least 0.5 m would be required over the top of the foam for protection against UV light and/or forest fires. The life span of these plugs is generally 30 years and as such long-term monitoring and maintenance would be required to verify the integrity of the closure.

Polyurethane foam plugs are subject to the consideration and approval of the mines inspector and prior regulatory approval is required for this option. Given the volume of the mine shaft, a Polyurethane foam plug may be expensive and difficult to install.

6.7.4 Option #4 – Physical Barrier

The fourth remedial option presented for mine shaft is **physical barriers**. Physical barriers could be installed in the form of fencing with posts drilled into the rock around the opening. The fencing type would be chain link or similar. Signs would be installed along the fence to indicate that access is not advised. Drilling would be done by hand with small portable method and would be sufficiently away from opening to avoid rock competency concerns near the opening. Monitoring of this type of barrier would be expected to be more frequent than that of a rock or concrete barrier and regular/occasional repairs and replacements could be anticipated. As previously identified, AECOM's understanding is that there is typically poor community acceptance of chain link fences as they may present harm to animals (in particular horned animals that may become entangled in the fences).

6.7.5 Option #5 – Leave in Place – No Remedial Action

A "Leave in Place – No Remedial Action" approach is considered to not be acceptable for this component of the project since it does not meet the remedial objectives.

6.7.6 Remedial Options Analysis/Recommendation

The remedial option scoring for mine shaft closure is provided in **Table E-2**, **Appendix E** with the summary results as follows:

Table 14: ROA for Mine Shaft Closure

Option	Score	Comments
Option 1: Earthen Backfill (Rock/Soil)	13.2	Feasible option, assumes rock is blasted for waste rock cover
Option 2: Engineered Concrete Cap	15.7	Feasible option
Option 3: Polyurethane Plug	14.0	Feasible option, lower lifespan than other alternatives. More difficult to monitor if covered with rock.
Option 4: Physical Barrier (e.g., fence)	14.4	Anticipated low community acceptance.
Option 5: Leave in Place – No Remedial Action	11.8	Anticipated low community/regulatory acceptance.

Based on a review of the remedial options, the recommended approach for mine shaft closure is through **an engineered concrete cap**. This option will require dewatering of the shaft and potentially partial backfill. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) including permits to contain and for proper disposal and or treatment and release of discharge water should be developed based on a risk evaluation of the potential for

exposure to toxic metals in ponded water through direct contact, as appropriate to the situation and in accordance with the relevant Acts and Regulations for mining closure and NSE guidance.

6.8 Surface Debris (Non-Wood Materials)

At the time of the site visit, various debris and waste (consisting of garbage, wood, tubing, metal, drill rods, tires etc.) were littered intermittently throughout the Site, as well as stored in the one of the Quonset huts.

Table 15 below presents the audit results for discovered waste items.

Table 15: Waste Inventory

Location	Approximate Coordinates		Description	Estimated Quantity
Quonset hut + outside of Quonset huts	44°56'09" N	62°46'24" W	Pile of scrap metal, ventilation tubing, wooden slats with core samples, former barrels, rubber tubing	50 m^3
Along the road that leads to the Quonset huts.	44°56'10" N	62°46'27" W	Corrugated metal piping, rock cores and rubber tire left outside exposed to elements.	25 m^3
Wooded Area – southeast of the area where the Quonset huts are located	44°56'02" N	62°46'26" W	Metal bins	5 m^3

Remedial actions for the debris can be managed with the wastes identified in **Table 15** above as Non-Combustible Waste. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) including permits to properly dispose of waste should be developed, as appropriate to the situation and in accordance with the relevant Acts and Regulations for mining closure and NSE guidance.

6.8.1 Wood Waste Management

Wood waste should be managed on-Site due to the unnecessary need to dispose of off-Site. Wood can either be burnt or chipped for use as an organic supplement during reclamation activities. Ash would be containerized and disposed of off-Site with other disposal items. No further options are examined for wood waste management.

6.8.2 Option #1 – Construction of On-Site Landfill (Non-Combustible Waste)

The first remedial option presented for the disposal of non-hazardous waste is the **construction of an on-site landfill** or placement of the material with the waste rock. Typically, the landfill would be constructed using local borrow, lined, and constructed to have containment berms surrounding the footprint. Waste would be placed within the landfill and compacted with intermediate fill. As previously identified, construction of an on-Site landfill is likely not feasible; however, placement of metal waste with the waste rock is an option and is the approach considered as Option 1. Large metal components would need to be cut and made smaller to facilitate more uniform placement within the waste rock.

6.8.3 Option #2 – Off-Site Disposal (Non-Combustible Waste)

The second option for the disposal of non-hazardous waste is **off-site disposal**. Non-combustible waste, including metal, barrels, empty drums, and small debris, can be crushed, containerized, and disposed of in an off-site landfill or recycled. Debris with non-hazardous paint can be sent to an off-site landfill.

No hazardous materials were identified on-site, however any unknown and potentially hazardous materials should be analyzed prior to disposal and if deemed to be hazardous sent to an off-site licensed disposal facility for hazardous waste.

Current practice is to generally recycle metals where possible and this is a preferred option as compared to on-Site disposal.

6.8.4 Option #3 – Leave in Place – No Remedial Action

A "Leave in Place – No Remedial Action" approach is considered to not be acceptable for this component of the project since it does not meet **the remedial objectives.**

6.8.5 Remedial Options Analysis/Recommendation

The ROA identifies that wood waste should be burnt or chipped and disposed of on-Site. No other remedial options are considered for these items. The remedial option scoring for metal debris is provided in **Table E-2**, **Appendix E** with the summary results as follows:

Table 16: ROA for Metal Debris Management

Option	Score	Comments
Option 1: On-Site Disposal	15.8	Feasible option
Option 2: Off-Site Disposal	19.5	Feasible option, better meets project objectives.
Option 3: Leave in Place – No Remedial Action	11.6	Anticipated low community/regulatory acceptance.

Based on a review of the remedial options, the recommended approach for metal debris management is through **off-Site disposal/recycling**. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) including permits to properly dispose of waste should be developed, as appropriate to the situation and in accordance with the relevant Acts and Regulations for mining closure and NSE guidance.

6.9 Impacted Surface Water and Sediments – Tangier River

Impacted surface waste and sediment was identified in the Tangier River as part of the ESA. During the ESA, no delineation of impacted surface water or sediment was achieved in the Tangier River was achieved due to the limited data collected and the large area of impacted materials. All surface water and sediment samples collected in attempt to delineate the impacts exceeded the applicable guidelines. As such, at this time, the impacted surface water and sediment quantity cannot be estimated.

Based on the preliminary data, further study into the impacts in the Tangier River should be completed prior to discussing or contemplating remedial action, as it is possible that remedial work in the river would have a greater environmental effect than doing nothing. It is also possible that by removing the source of the impacts on the subject site (waste rock, tailings, contaminated soil) the environmental quality of the surface water and sediment in the Tangier River would improve.

It is possible that a Human Health and Ecological Risk Assessment of the Site may aid in delineating the impacts requiring remediation with the data already collected.

6.9.1 Option #1 – Environmental Monitoring and Risk Assessment - No Remedial Action

At this time, based on the limited data collected the anticipated remedial option would be to do nothing with the impacted surface water and sediment other than monitor the effect of removing the upgradient source of the impacts on the downgradient environmental quality of the impacted reach of the Tangier River. Additional environmental monitoring studies and a human health and ecological risk assessment of environmentally available and bioaccumulative toxic metals in surface water and sediments in the downstream reach of the Tangier River is proposed. Specifically, additional studies to assess the uptake of metals in benthic and pelagic aquatic organisms, including sportfish and shellfish, in areas known as fishing locations and along the riverbanks receiving tailings runoff and infiltration of tailings impacted groundwater is proposed. The purpose of an HHERA would be to better inform whether any risk management and remedial action planning is warranted based on selected valued ecological components (VECs) for monitoring and the corresponding monitoring data of sediment quality and surface water quality following implementation of remedial actions to limit environmental loadings upgradient associated with releases of metals from impacted soil, groundwater, surface water, tailings and waste rock. The HHERA may involve a knowledge and data gaps assessment for evaluation of the natural recovery of the area of concern within the aquatic environment.

6.9.2 Remedial Options Analysis/Recommendation

The remedial option scoring for impacted surface water – Tangier River is provided in **Table E-2**, **Appendix E** with the summary results as follows:

Table 17: ROA for Impacted Surface Water – Tangier River

Option	Score	Comments
Option 1: Environmental monitoring and risk assessment- no remedial action at this time.	18.4	Based on limited data this is the only feasible option

Based on a review of the remedial options, the recommended approach for impacted surface water – Tangier River is to take no remedial action at this time (i.e., **do nothing**) other than monitoring changes in environmental loadings and the natural recovery and undertaking a human health and ecological risk assessment**.**

6.10 Impacted Surface Water – On-Site (Shaft and Pond)

Impacted surface waste was identified in the potential Hecla Shaft mine water and a nearby pond as part of the ESA. During the ESA, no delineation of impacted surface water was achieved was achieved due to the limited data collected and the large area of impacted materials. All surface water samples collected in attempt to delineate the impacts exceeded the applicable guidelines. As such, at this time, the impacted surface water quantity cannot be estimated. A Health and Safety Plan (HASP) and Risk Management Plan (RMP) including permits to contain and for proper disposal and or treatment and release of discharge water should be developed based on a risk evaluation of the potential for exposure to toxic metals in ponded water through direct contact, as appropriate to the situation and in accordance with the relevant Acts and Regulations for mining closure and NSE guidance.

6.10.1 Option #1 – Pump and Treat

Pumping and treating the impacted surface water from the mine shaft may be a viable option as the volume of water would be relatively small compared to the volume if the impacted pond. An on-site water treatment plant would be set up to treat the impacted water prior to release of the water into the environment. This option or option #2 may be required if backfilling of the shaft is chosen as the remedial option for managing the shaft.

Pumping and treating the impacted surface water in the pond is unlikely to be cost effective or feasible given the large volume of water.

Further study into the quantity of water in the shaft and pond would be required prior advancing this remedial option.

6.10.2 Option #2 – Off-Site Disposal

Off-site disposal of the impacted surface water from the mine shaft may be a viable option as the volume of water would be relatively small compared to the volume in the impacted pond. Off-site disposal would require pumping of the impacted water into tankers to be disposed of at a licensed facility. This option or option #1 may be required if backfilling of the shaft is chosen as the remedial option for managing the shaft.

Off-site disposal of the impacted surface water in the pond is unlikely to be cost effective or feasible given the large volume of water.

Further study into the quantity of water in the shaft and pond would be required prior advancing this remedial option.

6.10.3 Option #3 – Passive Treatment

Passive treatment of the impacted water in the pond could be considered and option. The passive treatment would incorporate engineered wetlands or reactive barriers to treat impacted water as it moves from the impacted pond towards the Tangier River.

Further study into the hydrologic connection of the impacted pond and the Tangier River would be required prior to advancing this option.

6.10.4 Option #4 – Leave in Place – No Remedial Action

At this time, based on the limited data collected, a “Leave in Place – No Remedial Action” approach with the impacted surface water in the shaft and the pond may be a viable option as it is possible that by removing the source of the impacts on the subject site (waste rock, tailings, contaminated soil) the environmental quality of the surface water would improve.

6.10.5 Remedial Options Analysis/Recommendation

The remedial option scoring for impacted surface water – on-Site (shaft and pond) is provided in **Table E-2**, **Appendix E** with the summary results as follows. The remedial options for the impacted surface water in the shaft and pond were scored separately.

Table 18: ROA for Impacted Surface Water – On-Site (Shaft)

Option	Score	Comments
Option 1: Pump and Treat	16.4	Feasible Option
Option 2: Off-Site Disposal	16.4	Feasible Option
Option 3: Passive Treatment	14.3	Possibly Feasible Option – further study required
Option 4: Do Nothing	11.6	Anticipated low community/regulatory acceptance.

Table 19: ROA for Impacted Surface Water – On-Site (Pond)

Option	Score	Comments
Option 1: Pump and Treat	13.9	Feasible Option – cost prohibitive
Option 2: Off-Site Disposal	14.2	Feasible Option– cost prohibitive
Option 3: Passive Treatment	15.8	Feasible Option – further study required
Option 4: Do Nothing	11.6	Anticipated low community/regulatory acceptance.

Based on a review of the remedial options, the recommended approach for impacted surface water – on-Site (pond) is through **Passive Treatment**.

6.11 Impacted Groundwater

Impacted groundwater was identified on Site as part of the ESA. During the ESA, no delineation of impacted groundwater was achieved due to the limited data collected and the large area of impacted materials. All groundwater samples collected in attempt to delineate the impacted groundwater exceeded the applicable guidelines. As such, at this time, the impacted groundwater quantity cannot be estimated.

Based on the preliminary data, further study into the impacts in the groundwater should be completed prior to discussing or contemplating remedial action, as it is possible that remedial work in the groundwater is not necessary. It is also possible that by removing the source of the impacts on the subject site (waste rock, tailings, contaminated soil) the environmental quality of the groundwater would improve. Further monitoirng and assessment of the release and loading of metals from tailings, waste rock and impacted soils and migration to groundwater is warranted to assess the potential risks to human health and ecological health from exposure to toxic metals through the soil to groundwater to human and ecological receptor pathways. This would include the potential for impacts to groundwater quality and surface water quality for use for drinking water and potential threats to terrestrial and aquatic organisms.

It is possible that a Human Health and Ecological Risk Assessment of the Site may aid in delineating the impacts requiring remediation with the data already collected.

6.11.1 Option #1 – Environmental Monitoring and Risk Assessment - No Remedial Action (i.e., Do Nothing)

At this time, based on the limited data collected the anticipated remedial option would be to do nothing to treat or eliminate the impacted groundwater other than monitoring the effect on groundwater quality of removing the source of metal loadings associated with waste rock, tailings, and impacted soils and risk assessment of the implications of reduced loadings for human health and ecological effects.

6.11.2 Remedial Options Analysis/Recommendation

The remedial option scoring for impacted groundwater is provided in **Table E-2**, **Appendix E** with the summary results as follows:

Table 20: ROA for Impacted Groundwater

Option	Score	Comments
Option 1: Environmental monitoring and risk assessment- no remedial action at this time.	13.0	Based on limited data this is the only feasible option

Based on a review of the remedial options, the recommended approach for impacted groundwater is to **do-nothing** other than monitoring the effect on groundwater quality of removing the source of metal loadings associated with waste rock piles, tailings, and impacted soils and risk assessment of the implications of reduced loadings for human health and ecological effects.

7. Recommended Remedial Options

Table 21 below provides a summary of the recommended remedial options for the Site. The detailed MAA scoring is presented in **Table E-2**, **Appendix E** to show how the recommended remedial approach was developed using the MAA process described in **Section 6.2** and as described herein.

Table 21: Summary of Recommended Remedial Approach

Environmental Concern	Recommended Remedial Approach
Waste Rock	■ Excavate waste rock and dispose of at approved off-site facility
Impacted Tailings Area	■ Excavate ■ Consolidate Tailings with Impacted Soils ■ Grade to promote positive drainage but to not encourage excessive erosion ■ Cover with synthetic liner and soil ■ Conduct reclamation activities as required.
Impacted Soils	■ Excavate in conjunction with other remedial activities ■ Consolidate Impacted Soils with Tailings ■ Grade to promote positive drainage but to not encourage excessive erosion ■ Cover with synthetic liner and soil ■ Conduct reclamation activities as required.
Mine Shaft	■ Remove existing waste rock at entrance ■ Dewater shaft to attempt to find narrower entrance point. ■ Install Concrete Cap ■ Close opening cover with fill
Surface Debris (Non-Wood Materials)	■ Hazardous Materials: If hazardous materials are identified on site - Remove and dispose of off-site at facility authorized to accept ■ Wood: Incinerate or chip on-Site, dispose ash off-Site ■ Metal and other debris: Haul Off-Site for recycling
Impacted Surface Water and Sediments – Tangier River	■ No action required other than monitoring and risk assessment
Impacted Surface Water – On-Site (Shaft and Pond)	■ Dewater the shaft and dispose of impacted water off site ■ Install a passive treatment system (reactive barrier, engineered wetland, etc.), where water discharges from pond towards tangier river.
Lake Sediments – Tangier River	■ No action required other than monitoring and risk assessment

8. Recommendations

The overall regulatory goal for the site is to manage contamination to reduce related risks to acceptable levels in the environment, considering both humans and ecology and that these can be met by a variety of means acceptable to the Minister under the Regulation. To achieve this goal further environmental investigation and assessment is needed for supporting the development of a preferred remediation approach and Remedial Action Plan tailored to the site conditions and land use for the protection of human health and the environment.

To further define the environmental impacts at the Site, the following additional information should be understood:

- Full delineation of the impacted tailings, contaminated soil, and waste rock.
- Further assessment of the environmental availability and estimation of loadings of toxic metals in tailings, waste rock and impacted soils to groundwater and surface water, including wetlands, ponded water, Sluice creek and the Tangier River.
- Test pitting within the waste rock piles and tailings areas to identify the depths.
- The dimensions of the potential Hecla shaft to determine the quantity of contaminated surface water.
- The hydrologic connection between the impacted pond on Site and the Tangier River.
- Further definition of the waste materials on-site including a hazardous materials assessment.
- Further assessment of the background quality of the soil.
- Further monitoring and assessment of metal uptake and bioaccumulation in terrestrial and aquatic organisms for evaluating the level of concern for ecological impacts and implications for exposure from ingestion of food and prey, including top predators and humans.

Several metals were identified as contaminants of concern (COCs) in soil, tailings, groundwater, surface water and sediment. No exemptions to notification of contamination were identified based on the available information for the site (e.g., the estimated area and volume of impacted soil and the association of the COCs with releases with past mining activities, including tailings, groundwater and ponded water at the Site; the notification form of contamination should be completed and submitted within 90 days.

The following metals were identified as COCs, meaning one or more sample of one or more environmental media were in exceedance of the selected risk evaluation criteria (i.e., the applicable NSE Tier 1 EQSs and provincial surface water quality objectives) applied in the Phase Two ESA specifically, aluminum, antimony, arsenic, beryllium, cadmium, cobalt, iron, lead, manganese, mercury, molybdenum, selenium and thallium. Of these metals, all are Substances Potentially Considered as Background Occurrences (listed in Table 5).

As the intended future land use for this Site was not known at the time of this ESA work, as such given the purpose of this ESA and ROA we have compared all analytical data to the NSE Tier 1 EQS for a residential/ parkland land use. However, in accordance with Nova Scotia's Contaminated Sites Regulation and the PRO-100 guidance (Sept 2021) for contamination evaluation of undeveloped wild and natural land, the environmental data could potentially compared against Tier 1 EQS for agricultural land use since the majority of the Mooseland Site is undeveloped resource forest, wetlands and natural surface waters and the agricultural land use Tier 1 EQSs are the only criteria that include ecological direct contact pathway protection. However, the Site also has the potential to be used as a mining site in the future and thereby the land use could fall under industrial land use given the required engineering controls are established for the Site via provincial approvals. Overall, the intended future land use should be identified prior to finalizing the remedial actions for the Site.

The above COCs should be retained for further study and risk assessment. The proposed next steps involve the following:

1. Determination of appropriate local/regional background levels and screening evaluation to refine the list of COCs and for the development of monitoring/remedial action levels for inclusion in the risk management plan (this will require additional study/data analyses/sampling and analysis),
2. Completing a Tier 2 risk evaluation against the applicable PSS for each location and media to refine the list of COCs.
3. A Human Health and Ecological Risk Assessment for the Site, including a problem formulation report that identifies areas of concern based on level of risk including the evaluation of potential release mechanisms of toxic metals in media such as through leaching and transport in ground water, surface water and dispersion of dust/ airborne particulates, and outlines additional studies to assess the environmental availability of select toxic metals to reduce uncertainties related to exposure risks for human and ecological receptors.
4. The development of acceptable remediation levels (RLs or SSTLs) based on the risk assessment for use in Risk Management and remedial action plan for determining remediation completion and inclusion in the confirmation report for the site as per the Contaminated Sites Regulation and other applicable protocols.
5. The identification of the preferred option(s) of alternate but acceptable long-term exposure management measures (EMMs), including requirements for long-term monitoring of selected exposure pathways, or Controls (such as engineering, physical, and administrative). Some alternate Control options have been presented in this report. Additionally, Administrative Controls restricting access to contamination. Administrative Controls may be applied to select areas at the Site. Administrative restricted access controls (e.g., building restriction for land use bylaws, zoning; contingency plans) should be for further consideration going forward.
6. Development and documentation of the Risk Management Plan to be completed in discussion with NSLands Inc. and key stakeholders, as per the PRO-600 Remedial Action Plan Protocol and applicable Regulations. This includes establishing monitoring action target levels for exposure pathways of concern that need to be monitored, developing a monitoring sampling plan and outlining actions to be taken if results exceed monitoring action levels. The requirements for engineering controls should also include details of the design, demonstration of effectiveness, ongoing monitoring and inspection of proper control function, and rationale for selection and requirements for long-term exposure management. The requirements for administrative controls should also include contingency plans, demonstration of effectiveness, and monitoring and inspection to ensure administrative controls remain effective overtime.

The purpose of risk assessment is to inform the selection of the preferred risk management options, including development of HASPs and RMPs as appropriate to the situation, based on the available information on the distribution and environmental availability of contaminants and the magnitude and frequency of environmental exposures due to known impacts and loadings from identified sources and the desired land use protection.

The proposed further risk evaluation through an assessment of applicable local/regional background, screening against the applicable Tier 2 PSS in the HHERA will help determine which COCs are the drivers of risk for each media and source, corresponding to the critical human and ecological receptors and critical exposure pathways for various areas of concern on the Site. Risk-based site-specific target levels for selected COCs could be used to guide and confirm effectiveness of the remedial action plan. By focusing efforts on risk drivers) for specified areas of concern, the benefits of a risk-based approach may decrease the quantity of material requiring remedial action subsequently lowering the liability of the Site but will also underpin the risk management communication among stakeholders, including members of the community, with the goal of improving consensus-building on the remedial action plan going forward.

At the time of writing this report, no information on the future land use was available. Further discussions with NSLI regarding the overall desired endpoint for the future land use of the site in terms of Site Closure (I.e., undeveloped natural forest restoration, residential, commercial, industrial development) will be necessary to work towards a sustainable closure scenario under the relevant Acts and Regulations and applicable guidance. It is anticipated that future discussions will focus on additional work for understanding the site and implications for risk to human health and adverse environmental effects, as well as working towards the development of a risk management plan/remedial action plan for the Site, considering a Conditional closure following a Limited Remediation pathway, involving a possible combination of Exposure Management Monitoring or Controls (engineering, physical, administrative) and risk-based corrective actions.

9. References

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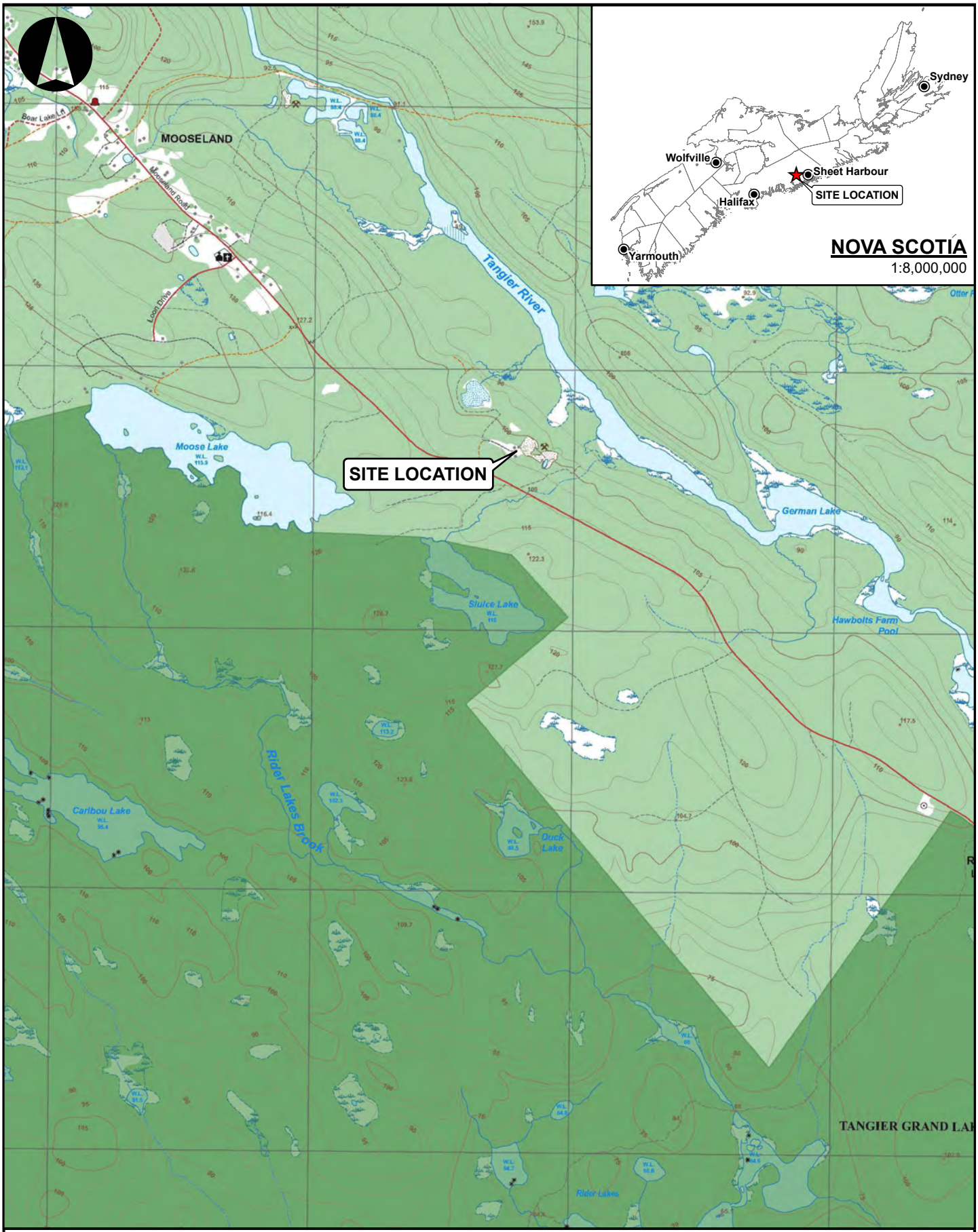
Appendix A. Figures



REFERENCE
LAYER CREDITS: GENOVA, NOVA SCOTIA OPEN DATA

0 200 400 600 800 1,000 m

AECOM

CLIENT NAME:
NOVA SCOTIA LANDS INC.

PROJECT LOCATION:
GOLD BROOK LAKE AND
SEAL HARBOUR MINE SITES

GENERAL SITE LOCATION MAP

DRAWN BY: PC	SCALE: 1:20,000	FIGURE No. 1
CHECKED BY: JS	DATE: 2022-04-04	PROJECT NO: 60680169

Legend

PROPERTY BOUNDARY AS SHOWN ON NOVA SCOTIA PROPERTY ONLINE

PHASE I ESA - AREA OF INTEREST

REFERENCE
NS Property Record Database, Esri World Imagery

0 150 300 450 600 m

AECOM

CLIENT NAME:
NOVA SCOTIA LANDS INC.

PROJECT LOCATION:
GOLD BROOK LAKE AND
SEAL HARBOUR MINE SITES

SITE PLAN – PROPERTY BOUNDARY

DRAWN BY: PC	SCALE: 1:20,000	FIGURE No. **2**
CHECKED BY: JS	DATE: 2022-04-04	PROJECT NO: 60680169

Legend

SITE FEATURES

PROPERTY BOUNDARY AS SHOWN ON NOVA SCOTIA PROPERTY ONLINE

REFERENCE
NS Property Record Database, Esri World Imagery

0 25 50 75 100 m

AECOM

SITE PLAN – DETAILS

CLIENT NAME: NOVA SCOTIA LANDS INC.	PROJECT LOCATION: GOLD BROOK LAKE AND SEAL HARBOUR MINE SITES

DRAWN BY: PC	SCALE: 1:3,500	FIGURE No. **3**
CHECKED BY: JS	DATE: 2022-09-02	PROJECT NO: 60680169

LEGEND

100.25 CONTOURS (0.25m INTERVAL)

DRAWING NOTES

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4. ELEVATIONS ARE IN METRES AND REFERENCED TO MEAN SEA LEVEL.
2. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
3. TOPOGRAPHIC SURVEY FROM SDMM CANADA.
4. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID, IGN AND THE GIS

Issue Status: DRAFT

Last saved by: SARBUR(2022-09-02) Last Plotted: 2022-09-02
Filename: C:\USERS\SARBUR\TASK UR\1\FIGURES 04 TO 08 MOOSELAND\FIGURES 04 TO 08 MOOSELAND\FIGURE 4 - MOOSELAND -WASTE ROCK.DWG

PHASE II ENVIRONMENTAL SITE ASSESSMENT

WASTE ROCK LOCATION PLAN

Nova Scotia Lands Inc, Mooseland
Project No.: 60680169 Date: 2022-08-31

AECOM

Figure: 4

LEGEND

- MONITORING WELL SOIL SAMPLE
- TAILING SAMPLE
- TAILING DELINEATION SAMPLE
- WASTE ROCK SAMPLE
- HAND AUGER SOIL SAMPLE
- STAMP MILL HAND AUGER SOIL SAMPLE
- SAMPLE EXCEEDS GUIDELINE(S) FOR ONE OR MORE OF THE FOLLOWING PARAMETERS: ARSENIC AND/OR MERCURY
- SAMPLE DOES NOT EXCEED APPLICABLE GUIDELINES

DRAWING NOTES

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4. ELEVATIONS ARE IN METRES AND REFERENCED TO MEAN SEA LEVEL.
2. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
3. TOPOGRAPHIC SURVEY FROM SDMM CANADA.
4. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID, IGN AND THE GIS

Issue Status: DRAFT

Last saved by: DOBRER(2022-10-07) Last Plotted: 2022-10-07
Filename: C:\01.AECOM\00.PROJECTE\3.SEAL HARBOUR UPDATED_SOIL_SAMPLES\09-29-2022\10-07-2022\FIGURE 5 - MOOSELAND - SOIL TAILINGS AND WASTE ROCK SAMPLE LOCATION PLAN.DWG

PHASE II ENVIRONMENTAL SITE ASSESSMENT

Nova Scotia Lands Inc, Mooseland
Project No.: 60680169 Date: 2022-10-07

SOIL, TAILINGS AND WASTE ROCK SAMPLE LOCATION PLAN

AECOM

Figure: 5

LEGEND

⊠ BACKGROUND SOIL SAMPLE

DRAWING NOTES

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4. ELEVATIONS ARE IN METRES AND REFERENCED TO MEAN SEA LEVEL.
2. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
3. TOPOGRAPHIC SURVEY FROM SDMM CANADA.
4. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID, IGN AND THE GIS

Issue Status: DRAFT

PHASE II ENVIRONMENTAL SITE ASSESSMENT

Nova Scotia Lands Inc, Mooseland
Project No.: 60680169 Date: 2022-08-31

BACKGROUND SOIL SAMPLE LOCATION PLAN

AECOM

Figure: 6

LEGEND

- (90.11) MONITORING WELL GROUNDWATER ELEVATION
- 92 GROUNDWATER CONTOUR (2.0m INTERVAL)
- GROUNDWATER FLOW DIRECTION
- SAMPLE EXCEEDS GUIDELINES FOR THE FOLLOWING PARAMETER: ARSENIC
- SAMPLE DOES NOT EXCEED APPLICABLE GUIDELINES

DRAWING NOTES

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4. ELEVATIONS ARE IN METRES AND REFERENCED TO MEAN SEA LEVEL.
2. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
3. TOPOGRAPHIC SURVEY FROM SDMM CANADA.
4. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID, IGN AND THE GIS

Issue Status: DRAFT

PHASE II ENVIRONMENTAL SITE ASSESSMENT

Nova Scotia Lands Inc, Mooseland
Project No.: 60680169 Date: 2022-10-07

GROUNDWATER SAMPLE LOCATION AND FLOW DIRECTION PLAN

AECOM

Figure: 7

LEGEND

- SURFACE WATER/ SEDIMENT SAMPLE
- SURFACE WATER SAMPLE
- SAMPLE EXCEEDS GUIDELINES FOR THE FOLLOWING PARAMETERS: ARSENIC AND MERCURY
- SAMPLE EXCEEDS GUIDELINE FOR ARSENIC
- SAMPLE DOES NOT EXCEED APPLICABLE GUIDELINES

DRAWING NOTES

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4. ELEVATIONS ARE IN METRES AND REFERENCED TO MEAN SEA LEVEL.
2. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
3. TOPOGRAPHIC SURVEY FROM SDMM CANADA.
4. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID, IGN AND THE GIS

Issue Status: DRAFT

Last saved by: GEORGIANA.STEGARIU(2022-08-31) Last Plotted: 2022-09-02
Filename: C:\USERS\SARBURI\TASK URI\1\FIGURES 04 TO 08 MOOSELAND\FIGURES 04 TO 08 MOOSELAND\FIGURE 8 - MOOSELAND - SURFACE WATER AND SEDIMENT SAMPLE LOCATION PLAN.DWG

PHASE II ENVIRONMENTAL SITE ASSESSMENT

Nova Scotia Lands Inc, Mooseland
Project No.: 60680169 Date: 2022-08-31

SURFACE WATER AND SEDIMENT SAMPLE LOCATION PLAN

AECOM

Figure: 8

Appendix B. Analytical Results

Mooseland Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Background Samples - Metals

AECOM

		Sample Location	**BG 1**	**BG 2**	**BG 3**	**BG 4**	**BG 5**
		Sample Date	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022
		Sample Depth (m bgs)	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15
		Type [0]	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units					
Aluminum	**15400**	mg/kg	5000	7600	**18000**	14000	3600
Antimony	7.5	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	**10**	mg/kg	**25**	**74**	**26**	**73**	**27**
Barium	350	mg/kg	9.3	35	22	36	7.8
Beryllium	1	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50
Cadmium	1	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium	220	mg/kg	7.7	3.9	22	20	4.2
Cobalt	22	mg/kg	<1.0	1.8	4.9	11	<1.0
Copper	250	mg/kg	<2.0	5.7	9.7	19	<2.0
Iron	**11000**	mg/kg	11000	**13000**	**30000**	**28000**	6200
Lead	120	mg/kg	7	35	15	12	7.5
Lithium	NS	mg/kg	<2.0	<2.0	18	24	<2.0
Manganese	**360**	mg/kg	83	56	**520**	**1100**	85
Mercury	6.6	mg/kg	<0.10	0.24	0.12	<0.10	<0.10
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg	<2.0	4.9	11	20	<2.0
Rubidium	NS	mg/kg	2.2	7.1	11	11	3.6
Selenium	**1**	mg/kg	<0.50	**1.4**	**1.7**	0.55	<0.50
Silver	77	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium	9400	mg/kg	<5.0	13	<5.0	7.4	<5.0
Thallium	1	mg/kg	<0.10	<0.10	0.16	0.11	<0.10
Tin	9400	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	23	mg/kg	0.37	0.31	0.67	0.87	0.31
Vanadium	39	mg/kg	28	8.5	29	20	18
Zinc	300	mg/kg	5.4	13	42	49	<5.0

Notes:

[0] Type: N=normal, FD=field duplicate

[1] *NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.*

yyyy/mm/dd: year/month/day

mbgs: meters below ground surface

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Mooseland Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	**MW5 SA1 0-1'**	**MW5 SA2 1'-3'**	**MW6 SA1 0-10"**	**MW6 SA2 1'-2'**	**MW6 SA3 2'-2'11**	**S1**	**S2**	**S3**
		Sample Date	6/16/2022	6/16/2022	6/15/2022	6/15/2022	6/15/2022	6/16/2022	6/16/2022	6/16/2022
		Sample Depth (m bgs)	0-0.3	0.3-0.9	0-0.25	0.3-0.6	0.6-0.64	0 - 0.10	0 - 0.15	0 - 0.13
		Type [0]	N	N	N	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units								
Aluminum	**15400**	mg/kg	7900	**20000**	1600	3000	6300	**17000**	**16000**	**22000**
Antimony	**7.5**	mg/kg	<2.0	<2.0	3.4	**7.8**	2.6	3	<2.0	2.8
Arsenic	**10**	mg/kg	**13000**	**1200**	**6200**	**6900**	**3500**	**4700**	**170**	**26000**
Barium	350	mg/kg	190	39	9.2	15	41	42	30	180
Beryllium	**1**	mg/kg	<1.0	**1.2**	<1.0	<1.0	1	**1.1**	1	**2.4**
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	**1**	mg/kg	**2.2**	<0.30	<0.30	<0.30	<0.30	0.32	<0.30	**2.1**
Chromium	220	mg/kg	4.3	20	4.2	7.8	6.3	18	19	12
Cobalt	**22**	mg/kg	**160**	5.5	1.8	4.9	2.7	5.8	4.2	**450**
Copper	250	mg/kg	21	13	5.2	7.2	9.4	24	22	36
Iron	**11000**	mg/kg	**80000**	**13000**	11000	**13000**	9300	**45000**	**12000**	**160000**
Lead	**120**	mg/kg	15	27	40	58	31	88	78	58
Lithium	NS	mg/kg	2.1	18	2.7	6.1	4.1	16	16	<2.0
Manganese	**360**	mg/kg	**33000**	**600**	260	270	**380**	**510**	230	**68000**
Mercury	**6.6**	mg/kg	2.3	**11**	3.5	6.2	3.2	**22**	**12**	1.2
Molybdenum	**15**	mg/kg	7.8	<2.0	<2.0	<2.0	<2.0	6.9	**16**	**25**
Nickel	70	mg/kg	27	11	4.2	15	8.1	15	10	34
Rubidium	NS	mg/kg	6.6	12	4.7	11	7.6	9.8	10	2.7
Selenium	**1**	mg/kg	**1.5**	**3.8**	<0.50	<0.50	**2.1**	**1.9**	**1.7**	**3.7**
Silver	77	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50
Strontium	9400	mg/kg	19	9	12	12	22	12	7.5	12
Thallium	**1**	mg/kg	**2**	0.16	0.1	0.21	0.1	0.14	0.18	**2.6**
Tin	9400	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1	1.4	<1.0
Uranium	23	mg/kg	0.84	2.6	0.21	0.34	0.67	1.3	1.4	2.3
Vanadium	39	mg/kg	7.1	21	5.6	9.8	6.7	31	19	26
Zinc	300	mg/kg	69	26	23	46	25	41	38	65

Notes:

[0] Type: N=normal, FD=field duplicate

[1] *NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.*

yyyy/mm/dd: year/month/day

mbgs: meters below ground surface

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Mooseland Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	**S4**	**S5**	**S6**	**S7**	**S8**	**S8**	**S9**	**S10**
		Sample Date	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022
		Sample Depth (m bgs)	0 - 0.15	0 - 0.15	0.0 - 0.25	0.0 - 0.30	0.00 - 0.15	0.00 - 0.15	0.00 - 0.15	0.03 - 0.18
		Type [0]	N	N	N	N	N	FD	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units								
Aluminum	**15400**	mg/kg	13000	13000	**17000**	3300	**23000**	**25000**	15000	**20000**
Antimony	**7.5**	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	**10**	mg/kg	**12000**	**1800**	**450**	**360**	**2300**	**3100**	**990**	**2600**
Barium	350	mg/kg	200	35	20	6	52	66	26	52
Beryllium	**1**	mg/kg	**1.3**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	**1**	mg/kg	**3.4**	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium	220	mg/kg	8.6	15	19	3.8	24	24	21	28
Cobalt	**22**	mg/kg	**170**	1.3	2.3	<1.0	2.6	2.8	11	13
Copper	250	mg/kg	35	8.1	6.5	2.3	22	25	14	16
Iron	**11000**	mg/kg	**90000**	**28000**	**27000**	8400	**34000**	**37000**	**26000**	**39000**
Lead	**120**	mg/kg	34	28	14	3.6	21	17	11	49
Lithium	NS	mg/kg	<2.0	10	12	<2.0	18	20	25	33
Manganese	**360**	mg/kg	**65000**	140	180	50	260	280	**640**	**1300**
Mercury	**6.6**	mg/kg	1.1	0.56	0.19	<0.10	0.17	0.12	<0.10	0.68
Molybdenum	**15**	mg/kg	10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg	55	5.2	6.6	<2.0	8.7	8.5	17	14
Rubidium	NS	mg/kg	8.1	9.4	5.9	2.9	20	22	9.5	21
Selenium	**1**	mg/kg	**2.8**	**1.1**	**2.1**	<0.50	**1.6**	**1.4**	0.77	**1.3**
Silver	77	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium	9400	mg/kg	14	<5.0	<5.0	<5.0	12	14	<5.0	<5.0
Thallium	**1**	mg/kg	**2.1**	0.16	0.1	<0.10	0.21	0.25	0.1	0.26
Tin	9400	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1
Uranium	23	mg/kg	1.4	0.75	0.53	0.27	0.99	1	0.94	0.92
Vanadium	39	mg/kg	16	36	29	16	35	35	21	37
Zinc	300	mg/kg	90	18	22	<5.0	37	41	43	48

Notes:

[0] Type: N=normal, FD=field duplicate

[1] *NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.*

yyyy/mm/dd: year/month/day

mbgs: meters below ground surface

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Mooseland Mine Site - Phase II ESA
Table 1: Soil Analytical Results
Metals

AECOM

		Sample Location	**S11**	**S12**	**S12**	**S13**	**S14**	**S15**	**S16**	**S17**
		Sample Date	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022
		Sample Depth (m bgs)	0.02 - 0.15	0.01 - 0.19	0.01 - 0.19	0.10 - 0.22	0.00 - 0.05	0.00 - 0.05	0.00 - 0.05	0.00 - 0.15
		Type [0]	N	N	FD	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units								
Aluminum	**15400**	mg/kg	**22000**	**21000**	**21000**	**28000**	7000	8200	**16000**	**22000**
Antimony	**7.5**	mg/kg	7.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	**10**	mg/kg	**9300**	**470**	**350**	**2600**	**700**	**2500**	**2300**	**1500**
Barium	350	mg/kg	93	61	54	60	31	28	53	24
Beryllium	**1**	mg/kg	**1.7**	**1.1**	**1.1**	**1.1**	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	**1**	mg/kg	0.5	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium	220	mg/kg	28	29	27	34	12	13	22	24
Cobalt	**22**	mg/kg	8.2	7	6.5	19	6.1	18	7.3	2.7
Copper	250	mg/kg	43	56	50	26	7.2	6.8	31	12
Iron	**11000**	mg/kg	**45000**	**25000**	**24000**	**41000**	**13000**	**21000**	**20000**	**31000**
Lead	**120**	mg/kg	43	**190**	**170**	23	40	44	64	20
Lithium	NS	mg/kg	74	41	38	32	12	14	35	15
Manganese	**360**	mg/kg	**660**	**410**	**380**	**1500**	300	**1600**	**680**	200
Mercury	**6.6**	mg/kg	0.4	5.3	4.8	0.27	**10**	4.5	**23**	0.23
Molybdenum	**15**	mg/kg	<2.0	<2.0	<2.0	<2.0	**27**	4	<2.0	<2.0
Nickel	70	mg/kg	23	20	19	23	6.3	6.2	14	9.8
Rubidium	NS	mg/kg	42	27	25	20	14	15	30	10
Selenium	**1**	mg/kg	<0.50	0.95	0.86	**1.4**	<0.50	<0.50	0.55	**1.9**
Silver	77	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium	9400	mg/kg	7.8	6.6	6.1	<5.0	5.6	5.9	10	<5.0
Thallium	**1**	mg/kg	0.44	0.34	0.3	0.25	0.14	0.18	0.33	0.14
Tin	9400	mg/kg	1.3	1.2	<1.0	<1.0	2.7	<1.0	1.4	<1.0
Uranium	23	mg/kg	1.3	1.3	1	1.4	0.4	0.52	1	0.48
Vanadium	39	mg/kg	30	33	31	37	13	16	24	32
Zinc	300	mg/kg	85	78	71	61	25	24	55	34

Notes:

[0] Type: N=normal, FD=field duplicate

[1] *NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.*

yyyy/mm/dd: year/month/day

mbgs: meters below ground surface

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Mooseland Mine Site - Phase II ESA
Table 1: Soil Analytical Results
PAHs

AECOM

		Sample Location	**MW5 SA2 1'-3'**	**MW6 SA1 0-10"**	**MW6 SA2 1'-2'**
		Sample Date	6/16/2022	6/15/2022	6/15/2022
		Sample Depth (m bgs)	0.3 - 0.5	0.3	0.2 - 0.4
		Type [0]	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units			
Acenaphthene	3900	mg/kg	<0.010	<0.010	<0.010
Acenaphthylene	4.5	mg/kg	<0.010	<0.010	<0.010
Anthracene	24000	mg/kg	<0.010	<0.010	<0.010
Benzo(A)Anthracene	12	mg/kg	<0.010	<0.010	<0.010
Benzo(A)Pyrene	14	mg/kg	<0.010	<0.010	<0.010
Benzo(b)Fluoranthene	NS	mg/kg	<0.010	<0.010	<0.010
Benzo(b+j)fluoranthene	NS	mg/kg	<0.020	<0.020	<0.020
Benzo(e)pyrene	NS	mg/kg	<0.010	<0.010	<0.010
Benzo(G,H,I)Perylene	250	mg/kg	<0.010	<0.010	<0.010
Benzo(k)Fluoranthene	NS	mg/kg	<0.010	<0.010	<0.010
Chrysene	78	mg/kg	<0.010	<0.010	<0.010
Dibenzo(A,H)Anthracene	8.8	mg/kg	<0.010	<0.010	<0.010
Fluoranthene	3500	mg/kg	<0.010	<0.010	0.017
Fluorene	2700	mg/kg	<0.010	<0.010	<0.010
Indeno(1,2,3-cd)pyrene	98	mg/kg	<0.010	<0.010	<0.010
Methylnaphthalene, 1-	30	mg/kg	<0.010	<0.010	<0.010
Methylnaphthalene, 2-	30	mg/kg	<0.010	<0.010	<0.010
Naphthalene	2.2	mg/kg	<0.010	<0.010	<0.010
Perylene	NS	mg/kg	0.25	<0.010	0.021
Phenanthrene	17	mg/kg	<0.010	<0.010	<0.010
Pyrene	2100	mg/kg	<0.010	<0.010	0.013
Benzo[a]pyrene TPE	5.3	mg/kg	<0.03	<0.03	<0.03
Index of Additive Cancer Risk (IACR)	1	mg/kg	ND	ND	ND

Notes:

[0] Type: N=normal, FD=field duplicate

[1] NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.

yyyy/mm/dd: year/month/day

mbgs: meters below ground surface

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

ND: Non-Detect

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Mooseland Mine Site - Phase II ESA
Table 2: Tailings Analytical Results
Metals

AECOM

Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE [1]	Units	Sample Location	T1	T2	T3	T4	T4	TD1	TD2	TD3	TD4	TD5	TD6	TD7
			Sample Date	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022
			Type [0]	N	N	N	N	FD	N	N	N	N	N	N	N
Aluminum	**15400**	mg/kg		3300	10000	6100	1600	1700	12000	8900	**20000**	**22000**	14000	6300	6100
Antimony	**7.5**	mg/kg		5	3.6	4.1	4.3	4.8	<2.0	<2.0	<2.0	<2.0	<2.0	2.2	**10**
Arsenic	**10**	mg/kg		**8400**	**9900**	**6200**	**8000**	**8400**	**1500**	**540**	**1300**	**2900**	**3300**	**4800**	**22000**
Barium	350	mg/kg		15	47	39	6.5	6.9	45	23	34	42	14	55	45
Beryllium	**1**	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0	1	<1.0	**1.1**	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	**1**	mg/kg		<0.30	0.41	0.35	<0.30	<0.30	0.59	<0.30	0.33	<0.30	<0.30	<0.30	**3.3**
Chromium	220	mg/kg		8.7	21	14	4.7	4.8	9.6	10	19	23	17	9.5	4.9
Cobalt	22	mg/kg		<1.0	9.2	9.3	<1.0	<1.0	2.2	<1.0	5.3	6.9	1.6	3.1	13
Copper	250	mg/kg		<2.0	13	11	<2.0	<2.0	26	9.1	22	16	6.1	5.7	27
Iron	**11000**	mg/kg		**13000**	**24000**	**23000**	11000	**12000**	7700	7200	7700	**28000**	**21000**	**24000**	**13000**
Lead	**120**	mg/kg		35	38	81	34	40	39	34	50	26	19	53	**180**
Lithium	NS	mg/kg		4.9	29	13	2.1	2.3	8.5	9.4	12	19	7.5	4.9	5.4
Manganese	**360**	mg/kg		100	**560**	**630**	43	45	**380**	110	240	**430**	140	**690**	210
Mercury	**6.6**	mg/kg		1.7	**7.9**	**11**	3.8	3.9	4.7	3.5	**10**	0.77	0.47	2.8	3.8
Molybdenum	15	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg		<2.0	20	21	<2.0	<2.0	14	5	8.9	18	5.1	5.5	50
Rubidium	NS	mg/kg		9.1	36	14	4.2	4.7	4.1	3.5	6.7	18	4.9	5.4	3.6
Selenium	**1**	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50	**2.5**	**1.3**	**4.4**	1	0.83	<0.50	<0.50
Silver	77	mg/kg		<0.50	<0.50	0.53	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	<0.50	<0.50	<0.50
Strontium	9400	mg/kg		<5.0	15	19	<5.0	<5.0	23	9.2	15	<5.0	<5.0	9.4	15
Thallium	1	mg/kg		0.15	0.33	0.26	<0.10	<0.10	0.11	<0.10	0.19	0.18	<0.10	0.12	0.19
Tin	9400	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	4.4
Uranium	23	mg/kg		0.24	0.46	0.35	<0.10	<0.10	0.86	0.5	1.5	0.49	0.37	0.2	0.24
Vanadium	39	mg/kg		9.8	23	17	5.4	5.9	9.4	10	16	28	27	22	8.4
Zinc	300	mg/kg		9.9	70	65	<5.0	<5.0	23	14	32	45	18	24	260

Notes:

[1] NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.

yyyy/mm/dd: year/month/day

mbgs: meters below ground surface

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

Value exceeds NS crtiera but is below site specific criteria for the site

EXCEEDS CRITERIA

Mooseland Mine Site - Phase II ESA
Table 3: Waste Rock Analytical Results
Metals

AECOM

	Sample Location	**WR-1**	**WR-2**
	Sample Date	6/15/2022	6/15/2022
	Type [0]	N	N
Parameter	Units		
Acid Extractable Aluminum (Al)	mg/kg	*5600*	*5400*
Acid Extractable Antimony (Sb)	mg/kg	<20	<20
Acid Extractable Arsenic (As)	mg/kg	*210*	*2700*
Acid Extractable Barium (Ba)	mg/kg	<50	<50
Acid Extractable Beryllium (Be)	mg/kg	<20	<20
Acid Extractable Boron (B)	mg/kg	<500	<500
Acid Extractable Cadmium (Cd)	mg/kg	<3.0	<3.0
Acid Extractable Chromium (Cr)	mg/kg	<20	<20
Acid Extractable Cobalt (Co)	mg/kg	<10	<10
Acid Extractable Copper (Cu)	mg/kg	<20	<20
Acid Extractable Iron (Fe)	mg/kg	*13000*	*12000*
Acid Extractable Lead (Pb)	mg/kg	<5.0	<5.0
Acid Extractable Manganese (Mn)	mg/kg	*210*	*200*
Acid Extractable Mercury (Hg)	mg/kg	<1.0	<1.0
Acid Extractable Molybdenum (Mo)	mg/kg	<20	<20
Acid Extractable Nickel (Ni)	mg/kg	<20	<20
Acid Extractable Selenium (Se)	mg/kg	<5.0	<5.0
Acid Extractable Silver (Ag)	mg/kg	<5.0	<5.0
Acid Extractable Strontium (Sr)	mg/kg	<50	<50
Acid Extractable Thallium (Tl)	mg/kg	<1.0	<1.0
Acid Extractable Tin (Sn)	mg/kg	<20	<20
Acid Extractable Uranium (U)	mg/kg	<1.0	<1.0
Acid Extractable Vanadium (V)	mg/kg	<20	<20
Acid Extractable Zinc (Zn)	mg/kg	<50	<50

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

Elevated concentrations of aluminum, arsenic, iron and manganese are present in waste rock samples collected from the site.

Mooseland Mine Site - Phase II ESA
Table 4: Groundwater Analytical Results
Metals

				Sample Location	**MW1**	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**	**MW6**
				Sample Date	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022
				Type[0]	N	FD	N	N	N	N	N
Parameter	NS-EQS[1]	NS-EQS[2] (freshwater)	Units						**Background Well**		
Aluminum	NS	***50***	ug/l	***150***	***140***	18	***63***	14	***180***	42
Antimony	6	90	ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.5
Arsenic	**10**	***50***	ug/l	***120***	***130***	**15**	9.2	2.3	***350***	***1400***
Barium	1000	10000	ug/l	11	5.8	6.9	18	20	22	4
Beryllium	4	1.5	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth	NS	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	5000	15000	ug/l	<50	<50	<50	<50	<50	<50	<50
Cadmium	5	0.9	ug/l	0.088	0.089	0.26	0.18	0.022	0.015	0.018
Calcium	NS	NS	ug/l	2200	2300	3600	2100	18000	17000	23000
Chromium	50	89	ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cobalt	**3.8**	***10***	ug/l	3.1	3.1	***23***	***16***	1.1	**4.3**	**4.3**
Copper	2000	20	ug/l	5.4	1.9	2.7	5.3	4.1	3.9	2.4
Iron	NS	***3000***	ug/l	540	510	1600	890	<50	***5600***	230
Lead	5	10	ug/l	<0.50	<0.50	<0.50	<0.50	<0.50	0.79	1.1
Magnesium	NS	NS	ug/l	430	430	810	640	4300	1500	3300
Manganese	**120**	4300	ug/l	**1600**	**1700**	**1400**	**340**	**470**	**1700**	**400**
Molybdenum	70	730	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	100	250	ug/l	8.5	8.3	25	15	2.4	2.2	9.5
Phosphorus	NS	NS	ug/l	<100	<100	<100	<100	<100	<100	<100
Potassium	NS	NS	ug/l	640	640	1000	840	3900	360	750
Selenium	50	10	ug/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	NS	2.5	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	NS	NS	ug/l	13000	13000	13000	4500	6900	4200	7400
Strontium	NS	210000	ug/l	12	12	24	20	48	33	35
Thallium	2	8	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin	2400	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	NS	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	4.4	<2.0
Uranium	20	150	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Vanadium	6.2	1200	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Zinc	NS	70	ug/l	11	8.1	10	16	<5.0	7.9	9.7

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for an residential property with coarse textured soil and potable groundwater; Table 4A

[2] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater Discharging to Surface Water (>10 m from Surface Water Body - Fresh Water); Table 3

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Mooseland Mine Site - Phase II ESA
Table 5: Surface Water Analytical Results
Metals

AECOM

			Sample Location	SW1	SW2	SW3	SW4	SW4	SW5	SW6	SW7	SW8	SW9	SW10	SW11	SW12	SW13
			Sample Date	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022
			Type[0]	N	N	N	N	FD	N	N	N	N	N	N	N	N	N
Parameter	NS-EQS[1]	Unit		**BACKGROUND**	**BACKGROUND**	**BACKGROUND**											
Aluminum	**5**	ug/l		**230**	**240**	**260**	**240**	**250**	**260**	**280**	**250**	**240**	**250**	**250**	**260**	**37**	**29**
Antimony	9	ug/l		<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
Arsenic	**5**	ug/l		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**7.1**	1.3	2.3	2.8	2.7	**8.9**	**94**
Barium	1000	ug/l		3.1	3.4	3.3	3.2	3.3	3.1	3.5	3.3	2.9	3.2	3.5	3.3	5.4	<1.0
Beryllium	0.15	ug/l		<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
Bismuth	NS	ug/l		<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
Boron	1500	ug/l		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	0.09	ug/l		0.019	0.02	0.019	0.016	0.019	0.019	0.02	0.019	0.018	0.016	0.017	0.017	<0.010	<0.010
Calcium	NS	ug/l		640	670	650	650	670	640	700	660	620	640	670	670	1900	8700
Chromium	8.9	ug/l		<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
Cobalt	1	ug/l		<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
Copper	2	ug/l		<0.50	<0.50	0.5	<0.50	0.65	<0.50	0.51	<0.50	0.56	<0.50	<0.50	<0.50	0.71	<0.50
Iron	**300**	ug/l		**530**	**530**	**560**	**530**	**520**	**530**	**580**	**580**	**530**	**570**	**590**	**620**	**690**	69
Lead	1	ug/l		<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
Magnesium	NS	ug/l		290	300	300	300	300	300	320	310	290	300	310	310	560	800
Manganese	430	ug/l		75	77	76	76	76	76	79	79	74	77	78	80	69	18
Molybdenum	73	ug/l		<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
Nickel	25	ug/l		<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
Phosphorus	NS	ug/l		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Potassium	NS	ug/l		100	110	110	100	110	100	110	110	100	110	110	110	790	610
Selenium	1	ug/l		<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
Silver	0.25	ug/l		<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
Sodium	NS	ug/l		2200	2200	2600	2600	2200	2600	3000	2700	2500	2500	2700	2600	5200	8600
Strontium	21000	ug/l		4.3	4.6	4.6	4.5	4.8	4.5	5	4.7	4.4	4.6	4.7	4.6	14	37
Thallium	0.8	ug/l		<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	NS	ug/l		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	NS	ug/l		3.8	3.8	4	3.4	3.4	4	4.5	4.1	3.6	4.1	3.9	3.7	<2.0	<2.0
Uranium	15	ug/l		<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	120	ug/l		<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
Zinc	7	ug/l		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Mooseland Mine Site - Phase II ESA
Table 6: Sediment Analytical Results
Metals

		Sample Location	**SED 1**	**SED 2**	**SED 3**	**SED 4**	**SED 4**	**SED 5**	**SED 6**	**SED 7**	**SED 8**	**SED 10**	**SED 11**
		Sample Date	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022
		Type [0]	N	N	N	N	FD	N	N	N	N	N	N
Parameter	NS-EQS (T2)/SED [1]	Units	**BACKGROUND**	**BACKGROUND**	**BACKGROUND**								
Aluminum	NS	mg/kg	4100	5200	4700	7300	7900	8600	6100	7800	11000	6500	7400
Antimony	25	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	**17**	mg/kg	<2.0	2.9	2.4	8.7	7.3	4.2	5.2	**660**	**450**	5.4	**20**
Barium	NS	mg/kg	14	21	18	28	29	30	21	32	38	19	31
Beryllium	NS	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	NS	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	3.5	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium	90	mg/kg	5.1	7	6	9.2	9.7	10	7.9	14	15	8.6	9
Cobalt	NS	mg/kg	2.3	2.4	2.8	3.4	3.6	3.5	4.6	1.6	3.7	3.5	2.9
Copper	197	mg/kg	2.9	5	3.9	8.9	8.6	9.3	5.1	7.4	10	2.7	7
Iron	43766	mg/kg	5400	7100	6200	8700	9200	9200	8500	13000	14000	10000	7900
Lead	91.3	mg/kg	8.7	14	14	22	22	22	17	13	20	11	21
Lithium	NS	mg/kg	7.7	8.9	8.6	11	12	12	9.9	17	19	16	8.7
Manganese	1100	mg/kg	170	160	200	230	250	230	490	220	300	410	200
Mercury	**0.486**	mg/kg	0.1	0.21	0.16	0.25	0.21	0.25	0.18	**6.1**	**5.9**	0.12	**0.68**
Molybdenum	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	3	<2.0	<2.0	<2.0
Nickel	75	mg/kg	5.9	7.6	6.8	11	11	12	8.7	5.9	12	9.8	8.7
Rubidium	NS	mg/kg	2.7	4.2	3.1	5	5.6	5.9	4.5	19	11	2.4	4.8
Selenium	2	mg/kg	<0.50	0.65	0.57	1.2	1.1	1.3	0.73	<0.50	0.95	<0.50	1.1
Silver	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium	NS	mg/kg	5.7	6.8	5.9	8.6	9	9.3	7.8	10	12	7.8	10
Thallium	NS	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.14	<0.10	<0.10	<0.10
Tin	NS	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	NS	mg/kg	0.27	0.3	0.29	0.48	0.51	0.52	0.4	0.34	0.53	0.45	0.52
Vanadium	NS	mg/kg	4.8	6.8	6.6	11	11	11	8.6	16	16	7.8	9.7
Zinc	315	mg/kg	19	21	21	39	39	36	25	28	45	27	22

Notes:

[0] Type: N=Normal Sample; FD=Field Duplicate

[1] Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

< :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

BOLD *Reportable Detection Limit (RDL) exceeds the regulatory standard*

EXCEEDS CRITERIA

Appendix C. Laboratory Certificates of Analysis

Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/05
Report #: R7197630
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H6756
Received: 2022/06/21, 14:48

Sample Matrix: Soil
Samples Received: 19

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Solids Acid Extr. ICPMS	15	2022/06/29	2022/06/29	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	2	2022/06/29	2022/06/30	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	1	2022/07/04	2022/07/04	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	1	2022/07/04	2022/07/05	ATL SOP 00058	EPA 6020B R2 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/05
Report #: R7197630
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H6756
Received: 2022/06/21, 14:48

Encryption Key

Bureau Veritas
05 Jul 2022 17:01:30

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
==========
This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZU692		SZU693			SZU694	SZU695		
Sampling Date		2022/06/16		2022/06/16			2022/06/16	2022/06/16		
COC Number		N/A		N/A			N/A	N/A		
	UNITS	S1	RDL	S2	RDL	QC Batch	S3	S4	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	17000	10	16000	10	8080983	22000	13000	10	8080987
Acid Extractable Antimony (Sb)	mg/kg	3.0	2.0	<2.0	2.0	8080983	2.8	<2.0	2.0	8080987
Acid Extractable Arsenic (As)	mg/kg	4700	200	170	2.0	8080983	26000	12000	200	8080987
Acid Extractable Barium (Ba)	mg/kg	42	5.0	30	5.0	8080983	180	200	5.0	8080987
Acid Extractable Beryllium (Be)	mg/kg	1.1	1.0	1.0	1.0	8080983	2.4	1.3	1.0	8080987
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	8080983	<2.0	<2.0	2.0	8080987
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	8080983	<50	<50	50	8080987
Acid Extractable Cadmium (Cd)	mg/kg	0.32	0.30	<0.30	0.30	8080983	2.1	3.4	0.30	8080987
Acid Extractable Chromium (Cr)	mg/kg	18	2.0	19	2.0	8080983	12	8.6	2.0	8080987
Acid Extractable Cobalt (Co)	mg/kg	5.8	1.0	4.2	1.0	8080983	450	170	1.0	8080987
Acid Extractable Copper (Cu)	mg/kg	24	2.0	22	2.0	8080983	36	35	2.0	8080987
Acid Extractable Iron (Fe)	mg/kg	45000	50	12000	50	8080983	160000	90000	5000	8080987
Acid Extractable Lead (Pb)	mg/kg	88	0.50	78	0.50	8080983	58	34	0.50	8080987
Acid Extractable Lithium (Li)	mg/kg	16	2.0	16	2.0	8080983	<2.0	<2.0	2.0	8080987
Acid Extractable Manganese (Mn)	mg/kg	510	2.0	230	2.0	8080983	68000	65000	200	8080987
Acid Extractable Mercury (Hg)	mg/kg	22	0.10	12	0.10	8080983	1.2	1.1	0.10	8080987
Acid Extractable Molybdenum (Mo)	mg/kg	6.9	2.0	16	2.0	8080983	25	10	2.0	8080987
Acid Extractable Nickel (Ni)	mg/kg	15	2.0	10	2.0	8080983	34	55	2.0	8080987
Acid Extractable Rubidium (Rb)	mg/kg	9.8	2.0	10	2.0	8080983	2.7	8.1	2.0	8080987
Acid Extractable Selenium (Se)	mg/kg	1.9	0.50	1.7	0.50	8080983	3.7	2.8	0.50	8080987
Acid Extractable Silver (Ag)	mg/kg	0.52	0.50	<0.50	0.50	8080983	<0.50	<0.50	0.50	8080987
Acid Extractable Strontium (Sr)	mg/kg	12	5.0	7.5	5.0	8080983	12	14	5.0	8080987
Acid Extractable Thallium (Tl)	mg/kg	0.14	0.10	0.18	0.10	8080983	2.6	2.1	0.10	8080987
Acid Extractable Tin (Sn)	mg/kg	1.0	1.0	1.4	1.0	8080983	<1.0	<1.0	1.0	8080987
Acid Extractable Uranium (U)	mg/kg	1.3	0.10	1.4	0.10	8080983	2.3	1.4	0.10	8080987
Acid Extractable Vanadium (V)	mg/kg	31	2.0	19	2.0	8080983	26	16	2.0	8080987
Acid Extractable Zinc (Zn)	mg/kg	41	5.0	38	5.0	8080983	65	90	5.0	8080987

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZU696		SZU697	SZU698		SZU699	SZU700	SZU701		
Sampling Date		2022/06/16		2022/06/16	2022/06/16		2022/06/16	2022/06/16	2022/06/16		
COC Number		N/A		N/A	N/A		N/A	N/A	N/A		
	UNITS	S5	RDL	S6	S7	RDL	S8	S9	DUP 2	RDL	QC Batch
Metals											
Acid Extractable Aluminum (Al)	mg/kg	13000	10	17000	3300	10	23000	15000	25000	10	8080987
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	2.0	8080987
Acid Extractable Arsenic (As)	mg/kg	1800	20	450	360	2.0	2300	990	3100	20	8080987
Acid Extractable Barium (Ba)	mg/kg	35	5.0	20	6.0	5.0	52	26	66	5.0	8080987
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	8080987
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	2.0	8080987
Acid Extractable Boron (B)	mg/kg	<50	50	<50	<50	50	<50	<50	<50	50	8080987
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	<0.30	<0.30	0.30	<0.30	<0.30	<0.30	0.30	8080987
Acid Extractable Chromium (Cr)	mg/kg	15	2.0	19	3.8	2.0	24	21	24	2.0	8080987
Acid Extractable Cobalt (Co)	mg/kg	1.3	1.0	2.3	<1.0	1.0	2.6	11	2.8	1.0	8080987
Acid Extractable Copper (Cu)	mg/kg	8.1	2.0	6.5	2.3	2.0	22	14	25	2.0	8080987
Acid Extractable Iron (Fe)	mg/kg	28000	50	27000	8400	50	34000	26000	37000	50	8080987
Acid Extractable Lead (Pb)	mg/kg	28	0.50	14	3.6	0.50	21	11	17	0.50	8080987
Acid Extractable Lithium (Li)	mg/kg	10	2.0	12	<2.0	2.0	18	25	20	2.0	8080987
Acid Extractable Manganese (Mn)	mg/kg	140	2.0	180	50	2.0	260	640	280	2.0	8080987
Acid Extractable Mercury (Hg)	mg/kg	0.56	0.10	0.19	<0.10	0.10	0.17	<0.10	0.12	0.10	8080987
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	2.0	8080987
Acid Extractable Nickel (Ni)	mg/kg	5.2	2.0	6.6	<2.0	2.0	8.7	17	8.5	2.0	8080987
Acid Extractable Rubidium (Rb)	mg/kg	9.4	2.0	5.9	2.9	2.0	20	9.5	22	2.0	8080987
Acid Extractable Selenium (Se)	mg/kg	1.1	0.50	2.1	<0.50	0.50	1.6	0.77	1.4	0.50	8080987
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	8080987
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5.0	<5.0	<5.0	5.0	12	<5.0	14	5.0	8080987
Acid Extractable Thallium (Tl)	mg/kg	0.16	0.10	0.10	<0.10	0.10	0.21	0.10	0.25	0.10	8080987
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	8080987
Acid Extractable Uranium (U)	mg/kg	0.75	0.10	0.53	0.27	0.10	0.99	0.94	1.0	0.10	8080987
Acid Extractable Vanadium (V)	mg/kg	36	2.0	29	16	2.0	35	21	35	2.0	8080987
Acid Extractable Zinc (Zn)	mg/kg	18	5.0	22	<5.0	5.0	37	43	41	5.0	8080987

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZU702		SZU703		SZU704		SZU705	SZU706		
Sampling Date		2022/06/16		2022/06/16		2022/06/16		2022/06/16	2022/06/16		
COC Number		N/A		N/A		N/A		N/A	N/A		
	UNITS	S10	RDL	S11	RDL	S12	RDL	S13	S14	RDL	QC Batch
Metals											
Acid Extractable Aluminum (Al)	mg/kg	20000	10	22000	10	21000	10	28000	7000	10	8080987
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	7.2	2.0	<2.0	2.0	<2.0	<2.0	2.0	8080987
Acid Extractable Arsenic (As)	mg/kg	2600	20	9300	200	470	2.0	2600	700	20	8080987
Acid Extractable Barium (Ba)	mg/kg	52	5.0	93	5.0	61	5.0	60	31	5.0	8080987
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	1.7	1.0	1.1	1.0	1.1	<1.0	1.0	8080987
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	<2.0	2.0	8080987
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	<50	50	<50	<50	50	8080987
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	0.50	0.30	<0.30	0.30	<0.30	<0.30	0.30	8080987
Acid Extractable Chromium (Cr)	mg/kg	28	2.0	28	2.0	29	2.0	34	12	2.0	8080987
Acid Extractable Cobalt (Co)	mg/kg	13	1.0	8.2	1.0	7.0	1.0	19	6.1	1.0	8080987
Acid Extractable Copper (Cu)	mg/kg	16	2.0	43	2.0	56	2.0	26	7.2	2.0	8080987
Acid Extractable Iron (Fe)	mg/kg	39000	50	45000	50	25000	50	41000	13000	50	8080987
Acid Extractable Lead (Pb)	mg/kg	49	0.50	43	0.50	190	0.50	23	40	0.50	8080987
Acid Extractable Lithium (Li)	mg/kg	33	2.0	74	2.0	41	2.0	32	12	2.0	8080987
Acid Extractable Manganese (Mn)	mg/kg	1300	2.0	660	2.0	410	2.0	1500	300	2.0	8080987
Acid Extractable Mercury (Hg)	mg/kg	0.68	0.10	0.40	0.10	5.3	0.10	0.27	10	0.10	8080987
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	27	2.0	8080987
Acid Extractable Nickel (Ni)	mg/kg	14	2.0	23	2.0	20	2.0	23	6.3	2.0	8080987
Acid Extractable Rubidium (Rb)	mg/kg	21	2.0	42	2.0	27	2.0	20	14	2.0	8080987
Acid Extractable Selenium (Se)	mg/kg	1.3	0.50	<0.50	0.50	0.95	0.50	1.4	<0.50	0.50	8080987
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	0.50	<0.50	0.50	<0.50	<0.50	0.50	8080987
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5.0	7.8	5.0	6.6	5.0	<5.0	5.6	5.0	8080987
Acid Extractable Thallium (Tl)	mg/kg	0.26	0.10	0.44	0.10	0.34	0.10	0.25	0.14	0.10	8080987
Acid Extractable Tin (Sn)	mg/kg	1.0	1.0	1.3	1.0	1.2	1.0	<1.0	2.7	1.0	8080987
Acid Extractable Uranium (U)	mg/kg	0.92	0.10	1.3	0.10	1.3	0.10	1.4	0.40	0.10	8080987
Acid Extractable Vanadium (V)	mg/kg	37	2.0	30	2.0	33	2.0	37	13	2.0	8080987
Acid Extractable Zinc (Zn)	mg/kg	48	5.0	85	5.0	78	5.0	61	25	5.0	8080987

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZU707		SZU708		SZU709		SZU710		
Sampling Date		2022/06/16		2022/06/16		2022/06/16		2022/06/16		
COC Number		N/A		N/A		N/A		N/A		
	UNITS	S15	QC Batch	S16	QC Batch	S17	RDL	DUP 3	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	8200	8080987	16000	8081259	22000	10	21000	10	8087473
Acid Extractable Antimony (Sb)	mg/kg	<2.0	8080987	<2.0	8081259	<2.0	2.0	<2.0	2.0	8087473
Acid Extractable Arsenic (As)	mg/kg	2500	8080987	2300	8081259	1500	20	350	2.0	8087473
Acid Extractable Barium (Ba)	mg/kg	28	8080987	53	8081259	24	5.0	54	5.0	8087473
Acid Extractable Beryllium (Be)	mg/kg	<1.0	8080987	<1.0	8081259	<1.0	1.0	1.1	1.0	8087473
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8080987	<2.0	8081259	<2.0	2.0	<2.0	2.0	8087473
Acid Extractable Boron (B)	mg/kg	<50	8080987	<50	8081259	<50	50	<50	50	8087473
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	8080987	<0.30	8081259	<0.30	0.30	<0.30	0.30	8087473
Acid Extractable Chromium (Cr)	mg/kg	13	8080987	22	8081259	24	2.0	27	2.0	8087473
Acid Extractable Cobalt (Co)	mg/kg	18	8080987	7.3	8081259	2.7	1.0	6.5	1.0	8087473
Acid Extractable Copper (Cu)	mg/kg	6.8	8080987	31	8081259	12	2.0	50	2.0	8087473
Acid Extractable Iron (Fe)	mg/kg	21000	8080987	20000	8081259	31000	50	24000	50	8087473
Acid Extractable Lead (Pb)	mg/kg	44	8080987	64	8081259	20	0.50	170	0.50	8087473
Acid Extractable Lithium (Li)	mg/kg	14	8080987	35	8081259	15	2.0	38	2.0	8087473
Acid Extractable Manganese (Mn)	mg/kg	1600	8080987	680	8081259	200	2.0	380	2.0	8087473
Acid Extractable Mercury (Hg)	mg/kg	4.5	8080987	23	8081259	0.23	0.10	4.8	0.10	8087473
Acid Extractable Molybdenum (Mo)	mg/kg	4.0	8080987	<2.0	8081259	<2.0	2.0	<2.0	2.0	8087473
Acid Extractable Nickel (Ni)	mg/kg	6.2	8080987	14	8081259	9.8	2.0	19	2.0	8087473
Acid Extractable Rubidium (Rb)	mg/kg	15	8080987	30	8081259	10	2.0	25	2.0	8087473
Acid Extractable Selenium (Se)	mg/kg	<0.50	8080987	0.55	8081259	1.9	0.50	0.86	0.50	8087473
Acid Extractable Silver (Ag)	mg/kg	<0.50	8080987	<0.50	8081259	<0.50	0.50	<0.50	0.50	8087473
Acid Extractable Strontium (Sr)	mg/kg	5.9	8080987	10	8081259	<5.0	5.0	6.1	5.0	8087473
Acid Extractable Thallium (Tl)	mg/kg	0.18	8080987	0.33	8081259	0.14	0.10	0.30	0.10	8087473
Acid Extractable Tin (Sn)	mg/kg	<1.0	8080987	1.4	8081259	<1.0	1.0	<1.0	1.0	8087473
Acid Extractable Uranium (U)	mg/kg	0.52	8080987	1.0	8081259	0.48	0.10	1.0	0.10	8087473
Acid Extractable Vanadium (V)	mg/kg	16	8080987	24	8081259	32	2.0	31	2.0	8087473
Acid Extractable Zinc (Zn)	mg/kg	24	8080987	55	8081259	34	5.0	71	5.0	8087473

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C
Package 2	5.0°C
Package 3	5.7°C
Package 4	5.0°C
Package 5	4.0°C
Package 6	6.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8080983	BAN	Matrix Spike	Acid Extractable Antimony (Sb)	2022/06/29		104	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		108	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		104	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		103	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		95	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		100	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		101	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		102	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		105	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		104	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		109	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		103	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		104	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		106	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		100	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		100	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		104	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		102	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		100	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		102	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		108	%	75 - 125
8080983	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		103	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		100	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		100	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		101	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		99	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		100	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		100	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		99	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		99	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		103	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		102	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		102	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		102	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		101	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		97	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		100	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		102	%	75 - 125
8080983	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<5.0		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Beryllium (Be)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/29	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<5.0		mg/kg	
8080983	BAN	RPD	Acid Extractable Aluminum (Al)	2022/06/29	8.2		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	NC		%	35
			Acid Extractable Arsenic (As)	2022/06/29	4.4		%	35
			Acid Extractable Barium (Ba)	2022/06/29	15		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	12		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	11		%	35
			Acid Extractable Copper (Cu)	2022/06/29	3.9		%	35
			Acid Extractable Iron (Fe)	2022/06/29	9.9		%	35
			Acid Extractable Lead (Pb)	2022/06/29	5.7		%	35
			Acid Extractable Lithium (Li)	2022/06/29	15		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	13		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	NC		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	14		%	35
			Acid Extractable Rubidium (Rb)	2022/06/29	11		%	35
			Acid Extractable Selenium (Se)	2022/06/29	2.5		%	35
			Acid Extractable Silver (Ag)	2022/06/29	NC		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	22		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	11		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	0.23		%	35
			Acid Extractable Vanadium (V)	2022/06/29	6.7		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	9.1		%	35
8080987	BAN	Matrix Spike	Acid Extractable Antimony (Sb)	2022/06/29		93	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		98	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		99	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Bismuth (Bi)	2022/06/29		99	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		88	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		101	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		98	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		99	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		101	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		96	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		101	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		97	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		98	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		97	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		99	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		93	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		95	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		98	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		101	%	75 - 125
8080987	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		101	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		101	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		98	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		99	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		98	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		100	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		97	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		100	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		98	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		100	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		101	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		99	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		97	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		101	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		100	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		97	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		99	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		103	%	75 - 125
8080987	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/29	<0.30		mg/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Chromium (Cr)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<5.0		mg/kg	
8080987	BAN	RPD	Acid Extractable Aluminum (Al)	2022/06/29	0.17		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	NC		%	35
			Acid Extractable Arsenic (As)	2022/06/29	1.4		%	35
			Acid Extractable Barium (Ba)	2022/06/29	2.4		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	2.7		%	35
			Acid Extractable Bismuth (Bi)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	1.5		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	3.0		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	3.1		%	35
			Acid Extractable Copper (Cu)	2022/06/29	2.8		%	35
			Acid Extractable Iron (Fe)	2022/06/29	1.7		%	35
			Acid Extractable Lead (Pb)	2022/06/29	2.8		%	35
			Acid Extractable Lithium (Li)	2022/06/29	3.6		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	1.1		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	0.71		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	NC		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	3.5		%	35
			Acid Extractable Rubidium (Rb)	2022/06/29	5.2		%	35
			Acid Extractable Selenium (Se)	2022/06/29	3.0		%	35
			Acid Extractable Silver (Ag)	2022/06/29	3.5		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	5.4		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	5.6		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	0.41		%	35
			Acid Extractable Vanadium (V)	2022/06/29	5.1		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	2.4		%	35
8081259	JHY	Matrix Spike	Acid Extractable Antimony (Sb)	2022/06/29		68 (1)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		96	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		97	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		102	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		87	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		96	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		96	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Cobalt (Co)	2022/06/29		95	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		99	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		106	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		94	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		97	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		97	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		85	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		98	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		101	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		97	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		101	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		99	%	75 - 125
8081259	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		109	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		96	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		102	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		97	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		98	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		96	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		97	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		93	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		94	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		97	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		104	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		98	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		102	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		101	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		96	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		97	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		95	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		100	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		101	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		99	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		99	%	75 - 125
8081259	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/29	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<50		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Lead (Pb)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<5.0		mg/kg	
8081259	JHY	RPD	Acid Extractable Aluminum (Al)	2022/06/29	1.1		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	NC		%	35
			Acid Extractable Arsenic (As)	2022/06/29	1.4		%	35
			Acid Extractable Barium (Ba)	2022/06/29	0.54		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	1.8		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	0.82		%	35
			Acid Extractable Copper (Cu)	2022/06/29	2.9		%	35
			Acid Extractable Iron (Fe)	2022/06/29	1.9		%	35
			Acid Extractable Lead (Pb)	2022/06/29	3.6		%	35
			Acid Extractable Lithium (Li)	2022/06/29	4.4		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	6.7		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	NC		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	0.29		%	35
			Acid Extractable Rubidium (Rb)	2022/06/29	2.9		%	35
			Acid Extractable Selenium (Se)	2022/06/29	NC		%	35
			Acid Extractable Silver (Ag)	2022/06/29	NC		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	2.1		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	NC		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	8.9		%	35
			Acid Extractable Vanadium (V)	2022/06/29	7.4		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	2.1		%	35
8087473	JHY	Matrix Spike	Acid Extractable Antimony (Sb)	2022/07/05		65 (2)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/05		92	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/05		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/05		97	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/05		95	%	75 - 125
			Acid Extractable Boron (B)	2022/07/05		93	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/05		94	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/05		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/05		100	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/05		98	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/05		96	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/05		101	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Manganese (Mn)	2022/07/05		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/05		95	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/05		89	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/05		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/05		93	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/05		89	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/05		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/05		95	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/05		98	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/05		94	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/05		95	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/05		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/05		103	%	75 - 125
8087473	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/04		95	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/04		97	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/04		92	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/04		93	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/07/04		93	%	75 - 125
			Acid Extractable Boron (B)	2022/07/04		96	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/04		93	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/04		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/04		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/04		97	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/04		94	%	75 - 125
			Acid Extractable Lithium (Li)	2022/07/04		93	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/04		98	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/04		94	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/04		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/04		99	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/07/04		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/04		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/04		97	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/04		91	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/04		96	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/04		91	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/04		94	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/04		96	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/04		99	%	75 - 125
8087473	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/04	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/04	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/07/04	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/04	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/04	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/04	<0.10		mg/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Molybdenum (Mo)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/04	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/04	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/04	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/07/04	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/04	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/04	<5.0		mg/kg	
8087473	JHY	RPD	Acid Extractable Aluminum (Al)	2022/07/04	12		%	35
			Acid Extractable Antimony (Sb)	2022/07/04	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/04	0.048		%	35
			Acid Extractable Barium (Ba)	2022/07/04	11		%	35
			Acid Extractable Beryllium (Be)	2022/07/04	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/07/04	NC		%	35
			Acid Extractable Boron (B)	2022/07/04	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/04	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/04	4.3		%	35
			Acid Extractable Cobalt (Co)	2022/07/04	24		%	35
			Acid Extractable Copper (Cu)	2022/07/04	7.6		%	35
			Acid Extractable Iron (Fe)	2022/07/04	7.6		%	35
			Acid Extractable Lead (Pb)	2022/07/04	13		%	35
			Acid Extractable Lithium (Li)	2022/07/04	12		%	35
			Acid Extractable Manganese (Mn)	2022/07/04	17		%	35
			Acid Extractable Mercury (Hg)	2022/07/04	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/04	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/04	7.0		%	35
			Acid Extractable Rubidium (Rb)	2022/07/04	15		%	35
			Acid Extractable Selenium (Se)	2022/07/04	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/04	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/04	NC		%	35
			Acid Extractable Thallium (Tl)	2022/07/04	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/04	NC		%	35
			Acid Extractable Uranium (U)	2022/07/04	13		%	35
			Acid Extractable Vanadium (V)	2022/07/04	11		%	35
			Acid Extractable Zinc (Zn)	2022/07/04	14		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery is within QC acceptance limits. < 10 % of compounds in multi-component analysis in violation.

(2) Matrix Spike exceeds acceptance limits, probable matrix interference

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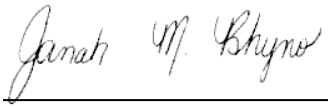
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Janah Rhyno, Metals Supervisor-Bedford

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465 George Street ,Unit G, Sydney, NS B1P 1K5 | Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770

CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

Invoice Information	Invoice to (requires report) ☐	Report Information (if differs from invoice)		Project Information	
Company:	Aecom Canada Ltd	Company:	Aecom	Quotation #:	
Contact Name:	Accounts Payable	Contact Name:	David Burden / Rory McNeil	P.O. #/ AFE#:	
Street Address:	1701 Hollis St SH402	Street Address:		Project #:	60688 0169
City:	Halifax Prov: NS Postal Code: B3J3N6	City:	Prov: Postal Code:	Site #:	
Phone:		Phone:	902-471-6914 / 902 292 2367	Site Location:	Moncton
Email:	CANSCC_E.Billing@Aecom.com	Email:	Rory.McNeil@Aecom.com	Site Location Province:	NS
Copies:		Copies:	David.Burden@Aecom.com	Sampled By:	DB/CE

LAB USE ONLY - PLACE STICKER HERE

Rush Confirmation #:

Regulatory Criteria

**Specify matrix for each regulation: surface water (SW)/groundwater (GW)/tap water/sewage/effluent/seawater/potable water/non-potable water/tissue/soil/sludge/metal

Regulation	**Matrix

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 REAp-MS (total metals) well / surface water	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)-well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (presence/absence)	19 Total coliform/E.coli (count)	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Comments
1	S1	22	06	16	PM												X											1		
2	S2	"	"	"	"	"											X											1		
3	S3																X											1		
4	S4																X											1		
5	S5																X											1		
6	S6																X											1		
7	S7																X											1		
8	S8																X											1		
9	S9																X											1		
10	Dup 2																X											1		
11	S10																X											1		
12	S11																X											1		

Regular Turnaround Time (TAT)

☒ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply

☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY MM DD

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present				AT	TR	

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						

Temperature reading by: 1 2 3

Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special Instructions
1 Craig Everett	22	06	21	14:	35	1 Holly Jessome HOLLY JESSOME						C2H 6P56
2 Craig Everett						2						

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Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770

CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

CONTINUED

[PAGE 1 REFERENCE]

Company:	0
Contact Name:	0
Project #:	0

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well /SW	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)- well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (P/A)	19 Total coliform/E.coli (count)	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Same as above / Comments
13	S12	22	06	16	P	M											X										1		
14	S13	"	"	"	"	"											X										1		
15	S14																X										1		
16	S15																X										1		
17	S16																X										1		
18	S17																X										1		
19	Dup3																X										1		
20																													
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39																													
40																													

Your Project #: 60680169
Site Location: MOOSELEAND, NS
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/06/29
Report #: R7191426
Version: 2 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2H4133
Received: 2022/06/21, 14:48

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Benzo(b/j)fluoranthene Sum (soil)	3	N/A	2022/06/27	N/A	Auto Calc.
B[a]P Total Potency Equivalent	3	N/A	2022/06/27	N/A	CCME CSQG
Metals Solids Acid Extr. ICPMS	1	2022/06/27	2022/06/28	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	4	2022/06/28	2022/06/29	ATL SOP 00058	EPA 6020B R2 m
Moisture	3	N/A	2022/06/27	ATL SOP 00001	OMOE Handbook 1983 m
PAH Compounds by GCMS (SIM) (1)	3	2022/06/24	2022/06/24	ATL SOP 00102	EPA 8270E R6 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Soils are reported on a dry weight basis unless otherwise specified.

Your Project #: 60680169
Site Location: MOOSELEAND, NS
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/06/29
Report #: R7191426
Version: 2 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2H4133
Received: 2022/06/21, 14:48

Encryption Key

Bureau Veritas
29 Jun 2022 17:18:12

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253

==========

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Bureau Veritas Job #: C2H4133
Report Date: 2022/06/29

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELEAND, NS
Sampler Initials: DB

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		SZG318	SZG319	SZG320		
Sampling Date		2022/06/16	2022/06/15	2022/06/15		
COC Number		N/A	N/A	N/A		
	UNITS	MW5 SA2 1'-3'	MW6 SA1 0-10"	MW6 SA2 1'-2'	RDL	QC Batch
Inorganics						
Moisture	%	76	4.6	22	1.0	8072848

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG317		SZG318		SZG319		SZG320		
Sampling Date		2022/06/16		2022/06/16		2022/06/15		2022/06/15		
COC Number		N/A		N/A		N/A		N/A		
	UNITS	MW5 SA1 0-1'	RDL	MW5 SA2 1'-3'	RDL	MW6 SA1 0-10"	QC Batch	MW6 SA2 1'-2'	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	7900	10	20000	10	1600	8078716	3000	10	8076273
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	<2.0	2.0	3.4	8078716	7.8	2.0	8076273
Acid Extractable Arsenic (As)	mg/kg	13000	200	1200	20	6200	8078716	6900	200	8076273
Acid Extractable Barium (Ba)	mg/kg	190	5.0	39	5.0	9.2	8078716	15	5.0	8076273
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	1.2	1.0	<1.0	8078716	<1.0	1.0	8076273
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	8078716	<2.0	2.0	8076273
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	<50	8078716	<50	50	8076273
Acid Extractable Cadmium (Cd)	mg/kg	2.2	0.30	<0.30	0.30	<0.30	8078716	<0.30	0.30	8076273
Acid Extractable Chromium (Cr)	mg/kg	4.3	2.0	20	2.0	4.2	8078716	7.8	2.0	8076273
Acid Extractable Cobalt (Co)	mg/kg	160	1.0	5.5	1.0	1.8	8078716	4.9	1.0	8076273
Acid Extractable Copper (Cu)	mg/kg	21	2.0	13	2.0	5.2	8078716	7.2	2.0	8076273
Acid Extractable Iron (Fe)	mg/kg	80000	50	13000	50	11000	8078716	13000	50	8076273
Acid Extractable Lead (Pb)	mg/kg	15	0.50	27	0.50	40	8078716	58	0.50	8076273
Acid Extractable Lithium (Li)	mg/kg	2.1	2.0	18	2.0	2.7	8078716	6.1	2.0	8076273
Acid Extractable Manganese (Mn)	mg/kg	33000	2.0	600	2.0	260	8078716	270	2.0	8076273
Acid Extractable Mercury (Hg)	mg/kg	2.3	0.10	11	0.10	3.5	8078716	6.2	0.10	8076273
Acid Extractable Molybdenum (Mo)	mg/kg	7.8	2.0	<2.0	2.0	<2.0	8078716	<2.0	2.0	8076273
Acid Extractable Nickel (Ni)	mg/kg	27	2.0	11	2.0	4.2	8078716	15	2.0	8076273
Acid Extractable Rubidium (Rb)	mg/kg	6.6	2.0	12	2.0	4.7	8078716	11	2.0	8076273
Acid Extractable Selenium (Se)	mg/kg	1.5	0.50	3.8	0.50	<0.50	8078716	<0.50	0.50	8076273
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	0.50	<0.50	8078716	<0.50	0.50	8076273
Acid Extractable Strontium (Sr)	mg/kg	19	5.0	9.0	5.0	12	8078716	12	5.0	8076273
Acid Extractable Thallium (Tl)	mg/kg	2.0	0.10	0.16	0.10	0.10	8078716	0.21	0.10	8076273
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	8078716	<1.0	1.0	8076273
Acid Extractable Uranium (U)	mg/kg	0.84	0.10	2.6	0.10	0.21	8078716	0.34	0.10	8076273
Acid Extractable Vanadium (V)	mg/kg	7.1	2.0	21	2.0	5.6	8078716	9.8	2.0	8076273
Acid Extractable Zinc (Zn)	mg/kg	69	5.0	26	5.0	23	8078716	46	5.0	8076273

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZG321		
Sampling Date		2022/06/15		
COC Number		N/A		
	UNITS	MW6 SA3 2'-2'11	RDL	QC Batch
Metals				
Acid Extractable Aluminum (Al)	mg/kg	6300	10	8078716
Acid Extractable Antimony (Sb)	mg/kg	2.6	2.0	8078716
Acid Extractable Arsenic (As)	mg/kg	3500	20	8078716
Acid Extractable Barium (Ba)	mg/kg	41	5.0	8078716
Acid Extractable Beryllium (Be)	mg/kg	1.0	1.0	8078716
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	8078716
Acid Extractable Boron (B)	mg/kg	<50	50	8078716
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	8078716
Acid Extractable Chromium (Cr)	mg/kg	6.3	2.0	8078716
Acid Extractable Cobalt (Co)	mg/kg	2.7	1.0	8078716
Acid Extractable Copper (Cu)	mg/kg	9.4	2.0	8078716
Acid Extractable Iron (Fe)	mg/kg	9300	50	8078716
Acid Extractable Lead (Pb)	mg/kg	31	0.50	8078716
Acid Extractable Lithium (Li)	mg/kg	4.1	2.0	8078716
Acid Extractable Manganese (Mn)	mg/kg	380	2.0	8078716
Acid Extractable Mercury (Hg)	mg/kg	3.2	0.10	8078716
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	8078716
Acid Extractable Nickel (Ni)	mg/kg	8.1	2.0	8078716
Acid Extractable Rubidium (Rb)	mg/kg	7.6	2.0	8078716
Acid Extractable Selenium (Se)	mg/kg	2.1	0.50	8078716
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	8078716
Acid Extractable Strontium (Sr)	mg/kg	22	5.0	8078716
Acid Extractable Thallium (Tl)	mg/kg	0.10	0.10	8078716
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	8078716
Acid Extractable Uranium (U)	mg/kg	0.67	0.10	8078716
Acid Extractable Vanadium (V)	mg/kg	6.7	2.0	8078716
Acid Extractable Zinc (Zn)	mg/kg	25	5.0	8078716

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		SZG318	SZG319	SZG320		
Sampling Date		2022/06/16	2022/06/15	2022/06/15		
COC Number		N/A	N/A	N/A		
	UNITS	MW5 SA2 1'-3'	MW6 SA1 0-10"	MW6 SA2 1'-2'	RDL	QC Batch
Polyaromatic Hydrocarbons						
1-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
2-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Acenaphthene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Acenaphthylene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Anthracene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Benzo(a)anthracene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Benzo(a)pyrene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Benzo(b)fluoranthene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Benzo(b/j)fluoranthene	mg/kg	<0.020	<0.020	<0.020	0.020	8070446
Benzo(g,h,i)perylene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Benzo(j)fluoranthene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Benzo(k)fluoranthene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Chrysene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Dibenzo(a,h)anthracene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Fluoranthene	mg/kg	<0.010	<0.010	0.017	0.010	8073546
Fluorene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Naphthalene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Perylene	mg/kg	0.25	<0.010	0.021	0.010	8073546
Phenanthrene	mg/kg	<0.010	<0.010	<0.010	0.010	8073546
Pyrene	mg/kg	<0.010	<0.010	0.013	0.010	8073546
Benzo(a)pyrene Total Potency Equiv.	mg/kg	<0.03	<0.03	<0.03	0.03	8071043
Surrogate Recovery (%)						
D10-Anthracene	%	90	94	101		8073546
D14-Terphenyl (FS)	%	93	92	102		8073546
D8-Acenaphthylene	%	92	92	101		8073546

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C
Package 2	5.0°C
Package 3	5.7°C
Package 4	5.0°C
Package 5	4.0°C
Package 6	6.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8072848	NLI	RPD	Moisture	2022/06/27	2.3		%	25
8073546	LGE	Matrix Spike	D10-Anthracene	2022/06/24		96	%	50 - 130
			D14-Terphenyl (FS)	2022/06/24		96	%	50 - 130
			D8-Acenaphthylene	2022/06/24		105	%	50 - 130
			1-Methylnaphthalene	2022/06/24		121	%	50 - 130
			2-Methylnaphthalene	2022/06/24		116	%	50 - 130
			Acenaphthene	2022/06/24		128	%	50 - 130
			Acenaphthylene	2022/06/24		115	%	50 - 130
			Anthracene	2022/06/24		193 (1)	%	50 - 130
			Benzo(a)anthracene	2022/06/24		NC	%	50 - 130
			Benzo(a)pyrene	2022/06/24		NC	%	50 - 130
			Benzo(b)fluoranthene	2022/06/24		171 (1)	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/24		136 (1)	%	50 - 130
			Benzo(j)fluoranthene	2022/06/24		138 (1)	%	50 - 130
			Benzo(k)fluoranthene	2022/06/24		143 (1)	%	50 - 130
			Chrysene	2022/06/24		NC	%	50 - 130
			Dibenzo(a,h)anthracene	2022/06/24		96	%	50 - 130
			Fluoranthene	2022/06/24		NC	%	50 - 130
			Fluorene	2022/06/24		140 (1)	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/24		127	%	50 - 130
			Naphthalene	2022/06/24		110	%	50 - 130
			Perylene	2022/06/24		113	%	50 - 130
			Phenanthrene	2022/06/24		NC	%	50 - 130
			Pyrene	2022/06/24		NC	%	50 - 130
8073546	LGE	Spiked Blank	D10-Anthracene	2022/06/24		97	%	50 - 130
			D14-Terphenyl (FS)	2022/06/24		94	%	50 - 130
			D8-Acenaphthylene	2022/06/24		100	%	50 - 130
			1-Methylnaphthalene	2022/06/24		112	%	50 - 130
			2-Methylnaphthalene	2022/06/24		107	%	50 - 130
			Acenaphthene	2022/06/24		107	%	50 - 130
			Acenaphthylene	2022/06/24		108	%	50 - 130
			Anthracene	2022/06/24		111	%	50 - 130
			Benzo(a)anthracene	2022/06/24		110	%	50 - 130
			Benzo(a)pyrene	2022/06/24		94	%	50 - 130
			Benzo(b)fluoranthene	2022/06/24		99	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/24		98	%	50 - 130
			Benzo(j)fluoranthene	2022/06/24		93	%	50 - 130
			Benzo(k)fluoranthene	2022/06/24		97	%	50 - 130
			Chrysene	2022/06/24		101	%	50 - 130
			Dibenzo(a,h)anthracene	2022/06/24		90	%	50 - 130
			Fluoranthene	2022/06/24		109	%	50 - 130
			Fluorene	2022/06/24		108	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/24		92	%	50 - 130
			Naphthalene	2022/06/24		104	%	50 - 130
			Perylene	2022/06/24		97	%	50 - 130
			Phenanthrene	2022/06/24		110	%	50 - 130
			Pyrene	2022/06/24		107	%	50 - 130
8073546	LGE	Method Blank	D10-Anthracene	2022/06/24		103	%	50 - 130
			D14-Terphenyl (FS)	2022/06/24		100	%	50 - 130
			D8-Acenaphthylene	2022/06/24		104	%	50 - 130
			1-Methylnaphthalene	2022/06/24	<0.010		mg/kg	
			2-Methylnaphthalene	2022/06/24	<0.010		mg/kg	
			Acenaphthene	2022/06/24	<0.010		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acenaphthylene	2022/06/24	<0.010		mg/kg	
			Anthracene	2022/06/24	<0.010		mg/kg	
			Benzo(a)anthracene	2022/06/24	<0.010		mg/kg	
			Benzo(a)pyrene	2022/06/24	<0.010		mg/kg	
			Benzo(b)fluoranthene	2022/06/24	<0.010		mg/kg	
			Benzo(g,h,i)perylene	2022/06/24	<0.010		mg/kg	
			Benzo(j)fluoranthene	2022/06/24	<0.010		mg/kg	
			Benzo(k)fluoranthene	2022/06/24	<0.010		mg/kg	
			Chrysene	2022/06/24	<0.010		mg/kg	
			Dibenzo(a,h)anthracene	2022/06/24	<0.010		mg/kg	
			Fluoranthene	2022/06/24	<0.010		mg/kg	
			Fluorene	2022/06/24	<0.010		mg/kg	
			Indeno(1,2,3-cd)pyrene	2022/06/24	<0.010		mg/kg	
			Naphthalene	2022/06/24	<0.010		mg/kg	
			Perylene	2022/06/24	<0.010		mg/kg	
			Phenanthrene	2022/06/24	<0.010		mg/kg	
			Pyrene	2022/06/24	<0.010		mg/kg	
8073546	LGE	RPD	1-Methylnaphthalene	2022/06/24	4.9		%	50
			2-Methylnaphthalene	2022/06/24	11		%	50
			Acenaphthene	2022/06/24	7.8		%	50
			Acenaphthylene	2022/06/24	4.7		%	50
			Anthracene	2022/06/24	0.96		%	50
			Benzo(a)anthracene	2022/06/24	9.8		%	50
			Benzo(a)pyrene	2022/06/24	8.9		%	50
			Benzo(b)fluoranthene	2022/06/24	11		%	50
			Benzo(g,h,i)perylene	2022/06/24	9.9		%	50
			Benzo(j)fluoranthene	2022/06/24	11		%	50
			Benzo(k)fluoranthene	2022/06/24	10		%	50
			Chrysene	2022/06/24	7.9		%	50
			Dibenzo(a,h)anthracene	2022/06/24	9.5		%	50
			Fluoranthene	2022/06/24	13		%	50
			Fluorene	2022/06/24	2.6		%	50
			Indeno(1,2,3-cd)pyrene	2022/06/24	12		%	50
			Naphthalene	2022/06/24	11		%	50
			Perylene	2022/06/24	12		%	50
			Phenanthrene	2022/06/24	0.68		%	50
			Pyrene	2022/06/24	12		%	50
8076273	BAN	Matrix Spike	Acid Extractable Antimony (Sb)	2022/06/27		146 (2)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/27		84	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/27		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/27		100	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/27		104	%	75 - 125
			Acid Extractable Boron (B)	2022/06/27		89	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/27		101	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/27		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/27		99	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/27		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/27		NC	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/27		102	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/27		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/27		102	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/27		NC	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/27		101	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Rubidium (Rb)	2022/06/27		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/27		99	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/27		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/27		105	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/27		102	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/27		NC	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/27		102	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/27		99	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/27		NC	%	75 - 125
8076273	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/27		110	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/27		105	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/27		102	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/27		102	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/27		105	%	75 - 125
			Acid Extractable Boron (B)	2022/06/27		102	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/27		102	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/27		101	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/27		101	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/27		101	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/27		104	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/27		103	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/27		103	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/27		105	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/27		105	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/27		104	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/27		103	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/27		105	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/27		102	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/27		101	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/27		105	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/27		105	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/27		104	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/27		102	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/27		103	%	75 - 125
8076273	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/27	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/27	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/27	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/27	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/27	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/27	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/27	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/27	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/27	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/27	<2.0		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Selenium (Se)	2022/06/27	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/27	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/27	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/27	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/27	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/27	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/27	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/27	<5.0		mg/kg	
8076273	BAN	RPD	Acid Extractable Aluminum (Al)	2022/06/27	0.48		%	35
			Acid Extractable Antimony (Sb)	2022/06/27	7.8		%	35
			Acid Extractable Arsenic (As)	2022/06/27	13		%	35
			Acid Extractable Barium (Ba)	2022/06/27	13		%	35
			Acid Extractable Beryllium (Be)	2022/06/27	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/06/27	NC		%	35
			Acid Extractable Boron (B)	2022/06/27	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/27	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/27	0.79		%	35
			Acid Extractable Cobalt (Co)	2022/06/27	1.2		%	35
			Acid Extractable Copper (Cu)	2022/06/27	6.0		%	35
			Acid Extractable Iron (Fe)	2022/06/27	0.94		%	35
			Acid Extractable Lead (Pb)	2022/06/27	3.3		%	35
			Acid Extractable Lithium (Li)	2022/06/27	0.71		%	35
			Acid Extractable Manganese (Mn)	2022/06/27	5.7		%	35
			Acid Extractable Mercury (Hg)	2022/06/27	2.6		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/27	4.1		%	35
			Acid Extractable Nickel (Ni)	2022/06/27	3.9		%	35
			Acid Extractable Rubidium (Rb)	2022/06/27	0.92		%	35
			Acid Extractable Selenium (Se)	2022/06/27	3.0		%	35
			Acid Extractable Silver (Ag)	2022/06/27	20		%	35
			Acid Extractable Strontium (Sr)	2022/06/27	3.1		%	35
			Acid Extractable Thallium (Tl)	2022/06/27	4.2		%	35
			Acid Extractable Tin (Sn)	2022/06/27	27		%	35
			Acid Extractable Uranium (U)	2022/06/27	5.4		%	35
			Acid Extractable Vanadium (V)	2022/06/27	0.37		%	35
			Acid Extractable Zinc (Zn)	2022/06/27	3.0		%	35
8078716	BAN	Matrix Spike	Acid Extractable Antimony (Sb)	2022/06/29		103	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		89	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		95	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		94	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		88	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		94	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		88	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		86	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		87	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		NC	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		96	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		92	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		89	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		87	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		94	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		95	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Silver (Ag)	2022/06/29		92	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		87	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		92	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		435 (3)	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		93	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		89	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		NC	%	75 - 125
8078716	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		99	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		98	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		98	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		96	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		94	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		94	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		95	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		100	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		95	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		98	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		96	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		97	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		97	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		96	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		96	%	75 - 125
8078716	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/29	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<0.50		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Strontium (Sr)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<5.0		mg/kg	
8078716	BAN	RPD	Acid Extractable Aluminum (Al)	2022/06/29	11		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	12		%	35
			Acid Extractable Arsenic (As)	2022/06/29	13		%	35
			Acid Extractable Barium (Ba)	2022/06/29	5.1		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	11		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	4.0		%	35
			Acid Extractable Copper (Cu)	2022/06/29	32		%	35
			Acid Extractable Iron (Fe)	2022/06/29	12		%	35
			Acid Extractable Lead (Pb)	2022/06/29	14		%	35
			Acid Extractable Lithium (Li)	2022/06/29	8.8		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	50 (4)		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	12		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	7.5		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	23		%	35
			Acid Extractable Rubidium (Rb)	2022/06/29	15		%	35
			Acid Extractable Selenium (Se)	2022/06/29	6.9		%	35
			Acid Extractable Silver (Ag)	2022/06/29	NC		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	29		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	NC		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	5.0		%	35
			Acid Extractable Vanadium (V)	2022/06/29	15		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	9.2		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Matrix Spike: results are outside acceptance limit due to probable matrix interference.

(2) Matrix Spike exceeds acceptance limits, probable matrix interference.

(3) Matrix Spike exceeds acceptance limits, sample inhomogeneity suspected.

(4) Poor RPD due to sample inhomogeneity. Verified by repeat digestion and analysis.

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Colleen Acker, B.Sc, Scientific Service Specialist

Phil Deveau, Scientific Specialist (Organics)

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Your Project #: 60680169
Site Location: MOOSELEAND, NS
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/15
Report #: R7212227
Version: 3 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2H4133
Received: 2022/06/21, 14:48

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Sulfur (1)	3	N/A	2022/07/04	STL SOP-00028	MA. 310-CS 1.0 R3 m
Methyl Mercury Soil (sub from Bedford) (2)	3	2022/06/30	2022/07/11		

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Montreal, 889 Montée De Liesse , Saint Laurent, QC, H4T 1P5
(2) This test was performed by Flett Research Ltd., 440 DeSalaberry Ave. , Winnipeg, MB, R2L0Y7

Your Project #: 60680169
Site Location: MOOSELEAND, NS
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/15
Report #: R7212227
Version: 3 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2H4133
Received: 2022/06/21, 14:48

Encryption Key

Bureau Veritas
15 Jul 2022 16:04:41

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253

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Bureau Veritas Job #: C2H4133
Report Date: 2022/07/15

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELEAND, NS
Sampler Initials: DB

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		SZG318	SZG319	SZG320	
Sampling Date		2022/06/16	2022/06/15	2022/06/15	
COC Number		N/A	N/A	N/A	
	UNITS	MW5 SA2 1'-3'	MW6 SA1 0-10"	MW6 SA2 1'-2'	QC Batch
Subcontracted Analysis					
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	8084816

QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2H4133
Report Date: 2022/07/15

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELEAND, NS
Sampler Initials: DB

CONVENTIONALS (SOIL)

Bureau Veritas ID		SZG318	SZG319	SZG320		
Sampling Date		2022/06/16	2022/06/15	2022/06/15		
COC Number		N/A	N/A	N/A		
	UNITS	MW5 SA2 1'-3'	MW6 SA1 0-10"	MW6 SA2 1'-2'	RDL	QC Batch
Inorganics						
Total Sulphur (S)	% g/g	0.27	0.010	0.29	0.010	8089213

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C
Package 2	5.0°C
Package 3	5.7°C
Package 4	5.0°C
Package 5	4.0°C
Package 6	6.3°C

Results relate only to the items tested.

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Bureau Veritas Job #: C2H4133
Report Date: 2022/07/15

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELEAND, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8089213	BAG	QC Standard	Total Sulphur (S)	2022/07/04		91	%	77 - 128
8089213	BAG	Method Blank	Total Sulphur (S)	2022/07/04	<0.010		% g/g	
8089213	BAG	RPD [SZG318-01]	Total Sulphur (S)	2022/07/04	9.5		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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Bureau Veritas Job #: C2H4133
Report Date: 2022/07/15

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELEAND, NS
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Janah Rhyno, Metals Supervisor-Bedford

CHIMISTE
Shu Yang
2008-014
QUÉBEC

Shu Yang, Analyst 2

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Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

Attention: Rory McNeil

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/04
Report #: R7195917
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H6753
Received: 2022/06/21, 14:47

Sample Matrix: Soil
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Solids Acid Extr. ICPMS	9	2022/06/29	2022/06/29	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	8	2022/06/29	2022/06/30	ATL SOP 00058	EPA 6020B R2 m

Sample Matrix: Sediment
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Solids Acid Extr. ICPMS	6	2022/06/29	2022/06/29	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	5	2022/06/29	2022/06/30	ATL SOP 00058	EPA 6020B R2 m

Remarks:

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Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

Attention: Rory McNeil

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/04
Report #: R7195917
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H6753
Received: 2022/06/21, 14:47

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Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
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Bureau Veritas Job #: C2H6753
Report Date: 2022/07/04

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZU657	SZU658		SZU659	SZU659		SZU660		
Sampling Date		2022/06/15	2022/06/15		2022/06/15	2022/06/15		2022/06/15		
COC Number		N/A	N/A		N/A	N/A		N/A		
	UNITS	TD1	TD2	QC Batch	TD3	TD3 Lab-Dup	QC Batch	TD4	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	12000	8900	8081259	20000	20000	8080987	22000	10	8081259
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	8081259	<2.0	<2.0	8080987	<2.0	2.0	8081259
Acid Extractable Arsenic (As)	mg/kg	1500	540	8081259	1300	1300	8080987	2900	20	8081259
Acid Extractable Barium (Ba)	mg/kg	45	23	8081259	34	33	8080987	42	5.0	8081259
Acid Extractable Beryllium (Be)	mg/kg	1.0	<1.0	8081259	1.1	1.1	8080987	<1.0	1.0	8081259
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	8081259	<2.0	<2.0	8080987	<2.0	2.0	8081259
Acid Extractable Boron (B)	mg/kg	<50	<50	8081259	<50	<50	8080987	<50	50	8081259
Acid Extractable Cadmium (Cd)	mg/kg	0.59	<0.30	8081259	0.33	0.33	8080987	<0.30	0.30	8081259
Acid Extractable Chromium (Cr)	mg/kg	9.6	10	8081259	19	18	8080987	23	2.0	8081259
Acid Extractable Cobalt (Co)	mg/kg	2.2	<1.0	8081259	5.3	5.1	8080987	6.9	1.0	8081259
Acid Extractable Copper (Cu)	mg/kg	26	9.1	8081259	22	21	8080987	16	2.0	8081259
Acid Extractable Iron (Fe)	mg/kg	7700	7200	8081259	7700	7600	8080987	28000	50	8081259
Acid Extractable Lead (Pb)	mg/kg	39	34	8081259	50	48	8080987	26	0.50	8081259
Acid Extractable Lithium (Li)	mg/kg	8.5	9.4	8081259	12	11	8080987	19	2.0	8081259
Acid Extractable Manganese (Mn)	mg/kg	380	110	8081259	240	230	8080987	430	2.0	8081259
Acid Extractable Mercury (Hg)	mg/kg	4.7	3.5	8081259	10	10	8080987	0.77	0.10	8081259
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	8081259	<2.0	<2.0	8080987	<2.0	2.0	8081259
Acid Extractable Nickel (Ni)	mg/kg	14	5.0	8081259	8.9	8.5	8080987	18	2.0	8081259
Acid Extractable Rubidium (Rb)	mg/kg	4.1	3.5	8081259	6.7	6.4	8080987	18	2.0	8081259
Acid Extractable Selenium (Se)	mg/kg	2.5	1.3	8081259	4.4	4.5	8080987	1.0	0.50	8081259
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	8081259	0.87	0.84	8080987	<0.50	0.50	8081259
Acid Extractable Strontium (Sr)	mg/kg	23	9.2	8081259	15	14	8080987	<5.0	5.0	8081259
Acid Extractable Thallium (Tl)	mg/kg	0.11	<0.10	8081259	0.19	0.18	8080987	0.18	0.10	8081259
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	8081259	<1.0	<1.0	8080987	<1.0	1.0	8081259
Acid Extractable Uranium (U)	mg/kg	0.86	0.50	8081259	1.5	1.5	8080987	0.49	0.10	8081259
Acid Extractable Vanadium (V)	mg/kg	9.4	10	8081259	16	15	8080987	28	2.0	8081259
Acid Extractable Zinc (Zn)	mg/kg	23	14	8081259	32	32	8080987	45	5.0	8081259

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZU661		SZU662	SZU663		SZU664		
Sampling Date		2022/06/15		2022/06/15	2022/06/15		2022/06/15		
COC Number		N/A		N/A	N/A		N/A		
	UNITS	TD5	RDL	TD6	TD7	QC Batch	T1	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	mg/kg	14000	10	6300	6100	8081259	3300	10	8080987
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	2.2	10	8081259	5.0	2.0	8080987
Acid Extractable Arsenic (As)	mg/kg	3300	20	4800	22000	8081259	8400	200	8080987
Acid Extractable Barium (Ba)	mg/kg	14	5.0	55	45	8081259	15	5.0	8080987
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	<1.0	8081259	<1.0	1.0	8080987
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	<2.0	8081259	<2.0	2.0	8080987
Acid Extractable Boron (B)	mg/kg	<50	50	<50	<50	8081259	<50	50	8080987
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	<0.30	3.3	8081259	<0.30	0.30	8080987
Acid Extractable Chromium (Cr)	mg/kg	17	2.0	9.5	4.9	8081259	8.7	2.0	8080987
Acid Extractable Cobalt (Co)	mg/kg	1.6	1.0	3.1	13	8081259	<1.0	1.0	8080987
Acid Extractable Copper (Cu)	mg/kg	6.1	2.0	5.7	27	8081259	<2.0	2.0	8080987
Acid Extractable Iron (Fe)	mg/kg	21000	50	24000	13000	8081259	13000	50	8080987
Acid Extractable Lead (Pb)	mg/kg	19	0.50	53	180	8081259	35	0.50	8080987
Acid Extractable Lithium (Li)	mg/kg	7.5	2.0	4.9	5.4	8081259	4.9	2.0	8080987
Acid Extractable Manganese (Mn)	mg/kg	140	2.0	690	210	8081259	100	2.0	8080987
Acid Extractable Mercury (Hg)	mg/kg	0.47	0.10	2.8	3.8	8081259	1.7	0.10	8080987
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	<2.0	8081259	<2.0	2.0	8080987
Acid Extractable Nickel (Ni)	mg/kg	5.1	2.0	5.5	50	8081259	<2.0	2.0	8080987
Acid Extractable Rubidium (Rb)	mg/kg	4.9	2.0	5.4	3.6	8081259	9.1	2.0	8080987
Acid Extractable Selenium (Se)	mg/kg	0.83	0.50	<0.50	<0.50	8081259	<0.50	0.50	8080987
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	<0.50	8081259	<0.50	0.50	8080987
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5.0	9.4	15	8081259	<5.0	5.0	8080987
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.10	0.12	0.19	8081259	0.15	0.10	8080987
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	1.4	4.4	8081259	<1.0	1.0	8080987
Acid Extractable Uranium (U)	mg/kg	0.37	0.10	0.20	0.24	8081259	0.24	0.10	8080987
Acid Extractable Vanadium (V)	mg/kg	27	2.0	22	8.4	8081259	9.8	2.0	8080987
Acid Extractable Zinc (Zn)	mg/kg	18	5.0	24	260	8081259	9.9	5.0	8080987

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZU665	SZU666	SZU667	SZU668			SZU680		
Sampling Date		2022/06/15	2022/06/15	2022/06/15	2022/06/15			2022/06/20		
COC Number		N/A	N/A	N/A	N/A			N/A		
	UNITS	T2	T3	T4	DUP 1	RDL	QC Batch	BG 1	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	10000	6100	1600	1700	10	8081259	5000	10	8080983
Acid Extractable Antimony (Sb)	mg/kg	3.6	4.1	4.3	4.8	2.0	8081259	<2.0	2.0	8080983
Acid Extractable Arsenic (As)	mg/kg	9900	6200	8000	8400	200	8081259	25	2.0	8080983
Acid Extractable Barium (Ba)	mg/kg	47	39	6.5	6.9	5.0	8081259	9.3	5.0	8080983
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	8081259	<1.0	1.0	8080983
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	8081259	<2.0	2.0	8080983
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	50	8081259	<50	50	8080983
Acid Extractable Cadmium (Cd)	mg/kg	0.41	0.35	<0.30	<0.30	0.30	8081259	<0.30	0.30	8080983
Acid Extractable Chromium (Cr)	mg/kg	21	14	4.7	4.8	2.0	8081259	7.7	2.0	8080983
Acid Extractable Cobalt (Co)	mg/kg	9.2	9.3	<1.0	<1.0	1.0	8081259	<1.0	1.0	8080983
Acid Extractable Copper (Cu)	mg/kg	13	11	<2.0	<2.0	2.0	8081259	<2.0	2.0	8080983
Acid Extractable Iron (Fe)	mg/kg	24000	23000	11000	12000	50	8081259	11000	50	8080983
Acid Extractable Lead (Pb)	mg/kg	38	81	34	40	0.50	8081259	7.0	0.50	8080983
Acid Extractable Lithium (Li)	mg/kg	29	13	2.1	2.3	2.0	8081259	<2.0	2.0	8080983
Acid Extractable Manganese (Mn)	mg/kg	560	630	43	45	2.0	8081259	83	2.0	8080983
Acid Extractable Mercury (Hg)	mg/kg	7.9	11	3.8	3.9	0.10	8081259	<0.10	0.10	8080983
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	8081259	<2.0	2.0	8080983
Acid Extractable Nickel (Ni)	mg/kg	20	21	<2.0	<2.0	2.0	8081259	<2.0	2.0	8080983
Acid Extractable Rubidium (Rb)	mg/kg	36	14	4.2	4.7	2.0	8081259	2.2	2.0	8080983
Acid Extractable Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	8081259	<0.50	0.50	8080983
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.53	<0.50	<0.50	0.50	8081259	<0.50	0.50	8080983
Acid Extractable Strontium (Sr)	mg/kg	15	19	<5.0	<5.0	5.0	8081259	<5.0	5.0	8080983
Acid Extractable Thallium (Tl)	mg/kg	0.33	0.26	<0.10	<0.10	0.10	8081259	<0.10	0.10	8080983
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	8081259	<1.0	1.0	8080983
Acid Extractable Uranium (U)	mg/kg	0.46	0.35	<0.10	<0.10	0.10	8081259	0.37	0.10	8080983
Acid Extractable Vanadium (V)	mg/kg	23	17	5.4	5.9	2.0	8081259	28	2.0	8080983
Acid Extractable Zinc (Zn)	mg/kg	70	65	<5.0	<5.0	5.0	8081259	5.4	5.0	8080983

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		SZU681		SZU682	SZU683	SZU683	SZU684		
Sampling Date		2022/06/20		2022/06/20	2022/06/20	2022/06/20	2022/06/20		
COC Number		N/A		N/A	N/A	N/A	N/A		
	UNITS	BG 2	QC Batch	BG 3	BG 4	BG 4 Lab-Dup	BG 5	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	mg/kg	7600	8080987	18000	14000	15000	3600	10	8080983
Acid Extractable Antimony (Sb)	mg/kg	<2.0	8080987	<2.0	<2.0	<2.0	<2.0	2.0	8080983
Acid Extractable Arsenic (As)	mg/kg	74	8080987	26	73	76	27	2.0	8080983
Acid Extractable Barium (Ba)	mg/kg	35	8080987	22	36	42	7.8	5.0	8080983
Acid Extractable Beryllium (Be)	mg/kg	<1.0	8080987	<1.0	<1.0	<1.0	<1.0	1.0	8080983
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8080987	<2.0	<2.0	<2.0	<2.0	2.0	8080983
Acid Extractable Boron (B)	mg/kg	<50	8080987	<50	<50	<50	<50	50	8080983
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	8080987	<0.30	<0.30	<0.30	<0.30	0.30	8080983
Acid Extractable Chromium (Cr)	mg/kg	3.9	8080987	22	20	23	4.2	2.0	8080983
Acid Extractable Cobalt (Co)	mg/kg	1.8	8080987	4.9	11	12	<1.0	1.0	8080983
Acid Extractable Copper (Cu)	mg/kg	5.7	8080987	9.7	19	20	<2.0	2.0	8080983
Acid Extractable Iron (Fe)	mg/kg	13000	8080987	30000	28000	31000	6200	50	8080983
Acid Extractable Lead (Pb)	mg/kg	35	8080987	15	12	13	7.5	0.50	8080983
Acid Extractable Lithium (Li)	mg/kg	<2.0	8080987	18	24	28	<2.0	2.0	8080983
Acid Extractable Manganese (Mn)	mg/kg	56	8080987	520	1100	1200	85	2.0	8080983
Acid Extractable Mercury (Hg)	mg/kg	0.24	8080987	0.12	<0.10	<0.10	<0.10	0.10	8080983
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	8080987	<2.0	<2.0	<2.0	<2.0	2.0	8080983
Acid Extractable Nickel (Ni)	mg/kg	4.9	8080987	11	20	23	<2.0	2.0	8080983
Acid Extractable Rubidium (Rb)	mg/kg	7.1	8080987	11	11	12	3.6	2.0	8080983
Acid Extractable Selenium (Se)	mg/kg	1.4	8080987	1.7	0.55	0.56	<0.50	0.50	8080983
Acid Extractable Silver (Ag)	mg/kg	<0.50	8080987	<0.50	<0.50	<0.50	<0.50	0.50	8080983
Acid Extractable Strontium (Sr)	mg/kg	13	8080987	<5.0	7.4	9.2	<5.0	5.0	8080983
Acid Extractable Thallium (Tl)	mg/kg	<0.10	8080987	0.16	0.11	0.12	<0.10	0.10	8080983
Acid Extractable Tin (Sn)	mg/kg	<1.0	8080987	<1.0	<1.0	<1.0	<1.0	1.0	8080983
Acid Extractable Uranium (U)	mg/kg	0.31	8080987	0.67	0.87	0.87	0.31	0.10	8080983
Acid Extractable Vanadium (V)	mg/kg	8.5	8080987	29	20	22	18	2.0	8080983
Acid Extractable Zinc (Zn)	mg/kg	13	8080987	42	49	54	<5.0	5.0	8080983

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C2H6753
Report Date: 2022/07/04

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		SZU669		SZU670	SZU671		SZU672	SZU673		
Sampling Date		2022/06/20		2022/06/20	2022/06/20		2022/06/20	2022/06/20		
COC Number		N/A		N/A	N/A		N/A	N/A		
	UNITS	SED 1	QC Batch	SED 2	SED 3	QC Batch	SED 4	SED 5	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	4100	8080987	5200	4700	8081259	7300	8600	10	8080983
Acid Extractable Antimony (Sb)	mg/kg	<2.0	8080987	<2.0	<2.0	8081259	<2.0	<2.0	2.0	8080983
Acid Extractable Arsenic (As)	mg/kg	<2.0	8080987	2.9	2.4	8081259	8.7	4.2	2.0	8080983
Acid Extractable Barium (Ba)	mg/kg	14	8080987	21	18	8081259	28	30	5.0	8080983
Acid Extractable Beryllium (Be)	mg/kg	<1.0	8080987	<1.0	<1.0	8081259	<1.0	<1.0	1.0	8080983
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	8080987	<2.0	<2.0	8081259	<2.0	<2.0	2.0	8080983
Acid Extractable Boron (B)	mg/kg	<50	8080987	<50	<50	8081259	<50	<50	50	8080983
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	8080987	<0.30	<0.30	8081259	<0.30	<0.30	0.30	8080983
Acid Extractable Chromium (Cr)	mg/kg	5.1	8080987	7.0	6.0	8081259	9.2	10	2.0	8080983
Acid Extractable Cobalt (Co)	mg/kg	2.3	8080987	2.4	2.8	8081259	3.4	3.5	1.0	8080983
Acid Extractable Copper (Cu)	mg/kg	2.9	8080987	5.0	3.9	8081259	8.9	9.3	2.0	8080983
Acid Extractable Iron (Fe)	mg/kg	5400	8080987	7100	6200	8081259	8700	9200	50	8080983
Acid Extractable Lead (Pb)	mg/kg	8.7	8080987	14	14	8081259	22	22	0.50	8080983
Acid Extractable Lithium (Li)	mg/kg	7.7	8080987	8.9	8.6	8081259	11	12	2.0	8080983
Acid Extractable Manganese (Mn)	mg/kg	170	8080987	160	200	8081259	230	230	2.0	8080983
Acid Extractable Mercury (Hg)	mg/kg	0.10	8080987	0.21	0.16	8081259	0.25	0.25	0.10	8080983
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	8080987	<2.0	<2.0	8081259	<2.0	<2.0	2.0	8080983
Acid Extractable Nickel (Ni)	mg/kg	5.9	8080987	7.6	6.8	8081259	11	12	2.0	8080983
Acid Extractable Rubidium (Rb)	mg/kg	2.7	8080987	4.2	3.1	8081259	5.0	5.9	2.0	8080983
Acid Extractable Selenium (Se)	mg/kg	<0.50	8080987	0.65	0.57	8081259	1.2	1.3	0.50	8080983
Acid Extractable Silver (Ag)	mg/kg	<0.50	8080987	<0.50	<0.50	8081259	<0.50	<0.50	0.50	8080983
Acid Extractable Strontium (Sr)	mg/kg	5.7	8080987	6.8	5.9	8081259	8.6	9.3	5.0	8080983
Acid Extractable Thallium (Tl)	mg/kg	<0.10	8080987	<0.10	<0.10	8081259	<0.10	<0.10	0.10	8080983
Acid Extractable Tin (Sn)	mg/kg	<1.0	8080987	<1.0	<1.0	8081259	<1.0	<1.0	1.0	8080983
Acid Extractable Uranium (U)	mg/kg	0.27	8080987	0.30	0.29	8081259	0.48	0.52	0.10	8080983
Acid Extractable Vanadium (V)	mg/kg	4.8	8080987	6.8	6.6	8081259	11	11	2.0	8080983
Acid Extractable Zinc (Zn)	mg/kg	19	8080987	21	21	8081259	39	36	5.0	8080983

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2H6753
Report Date: 2022/07/04

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		SZU674		SZU675		SZU676		SZU677		
Sampling Date		2022/06/20		2022/06/20		2022/06/20		2022/06/20		
COC Number		N/A		N/A		N/A		N/A		
	UNITS	SED 6	RDL	SED 7	RDL	SED 8	QC Batch	SED 10	RDL	QC Batch
Metals										
Acid Extractable Aluminum (Al)	mg/kg	6100	10	7800	10	11000	8080983	6500	10	8080987
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	8080983	<2.0	2.0	8080987
Acid Extractable Arsenic (As)	mg/kg	5.2	2.0	660	20	450	8080983	5.4	2.0	8080987
Acid Extractable Barium (Ba)	mg/kg	21	5.0	32	5.0	38	8080983	19	5.0	8080987
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	8080983	<1.0	1.0	8080987
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	8080983	<2.0	2.0	8080987
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	<50	8080983	<50	50	8080987
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	<0.30	0.30	<0.30	8080983	<0.30	0.30	8080987
Acid Extractable Chromium (Cr)	mg/kg	7.9	2.0	14	2.0	15	8080983	8.6	2.0	8080987
Acid Extractable Cobalt (Co)	mg/kg	4.6	1.0	1.6	1.0	3.7	8080983	3.5	1.0	8080987
Acid Extractable Copper (Cu)	mg/kg	5.1	2.0	7.4	2.0	10	8080983	2.7	2.0	8080987
Acid Extractable Iron (Fe)	mg/kg	8500	50	13000	50	14000	8080983	10000	50	8080987
Acid Extractable Lead (Pb)	mg/kg	17	0.50	13	0.50	20	8080983	11	0.50	8080987
Acid Extractable Lithium (Li)	mg/kg	9.9	2.0	17	2.0	19	8080983	16	2.0	8080987
Acid Extractable Manganese (Mn)	mg/kg	490	2.0	220	2.0	300	8080983	410	2.0	8080987
Acid Extractable Mercury (Hg)	mg/kg	0.18	0.10	6.1	0.10	5.9	8080983	0.12	0.10	8080987
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	3.0	2.0	<2.0	8080983	<2.0	2.0	8080987
Acid Extractable Nickel (Ni)	mg/kg	8.7	2.0	5.9	2.0	12	8080983	9.8	2.0	8080987
Acid Extractable Rubidium (Rb)	mg/kg	4.5	2.0	19	2.0	11	8080983	2.4	2.0	8080987
Acid Extractable Selenium (Se)	mg/kg	0.73	0.50	<0.50	0.50	0.95	8080983	<0.50	0.50	8080987
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	0.50	<0.50	8080983	<0.50	0.50	8080987
Acid Extractable Strontium (Sr)	mg/kg	7.8	5.0	10	5.0	12	8080983	7.8	5.0	8080987
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.10	0.14	0.10	<0.10	8080983	<0.10	0.10	8080987
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	8080983	<1.0	1.0	8080987
Acid Extractable Uranium (U)	mg/kg	0.40	0.10	0.34	0.10	0.53	8080983	0.45	0.10	8080987
Acid Extractable Vanadium (V)	mg/kg	8.6	2.0	16	2.0	16	8080983	7.8	2.0	8080987
Acid Extractable Zinc (Zn)	mg/kg	25	5.0	28	5.0	45	8080983	27	5.0	8080987

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		SZU678	SZU679		
Sampling Date		2022/06/20	2022/06/20		
COC Number		N/A	N/A		
	UNITS	SED 11	DUP-5	RDL	QC Batch
Metals					
Acid Extractable Aluminum (Al)	mg/kg	7400	7900	10	8080983
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	2.0	8080983
Acid Extractable Arsenic (As)	mg/kg	20	7.3	2.0	8080983
Acid Extractable Barium (Ba)	mg/kg	31	29	5.0	8080983
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	1.0	8080983
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	2.0	8080983
Acid Extractable Boron (B)	mg/kg	<50	<50	50	8080983
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	0.30	8080983
Acid Extractable Chromium (Cr)	mg/kg	9.0	9.7	2.0	8080983
Acid Extractable Cobalt (Co)	mg/kg	2.9	3.6	1.0	8080983
Acid Extractable Copper (Cu)	mg/kg	7.0	8.6	2.0	8080983
Acid Extractable Iron (Fe)	mg/kg	7900	9200	50	8080983
Acid Extractable Lead (Pb)	mg/kg	21	22	0.50	8080983
Acid Extractable Lithium (Li)	mg/kg	8.7	12	2.0	8080983
Acid Extractable Manganese (Mn)	mg/kg	200	250	2.0	8080983
Acid Extractable Mercury (Hg)	mg/kg	0.68	0.21	0.10	8080983
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	2.0	8080983
Acid Extractable Nickel (Ni)	mg/kg	8.7	11	2.0	8080983
Acid Extractable Rubidium (Rb)	mg/kg	4.8	5.6	2.0	8080983
Acid Extractable Selenium (Se)	mg/kg	1.1	1.1	0.50	8080983
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	0.50	8080983
Acid Extractable Strontium (Sr)	mg/kg	10	9.0	5.0	8080983
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	0.10	8080983
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	1.0	8080983
Acid Extractable Uranium (U)	mg/kg	0.52	0.51	0.10	8080983
Acid Extractable Vanadium (V)	mg/kg	9.7	11	2.0	8080983
Acid Extractable Zinc (Zn)	mg/kg	22	39	5.0	8080983

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C
Package 2	5.0°C
Package 3	5.7°C
Package 4	5.0°C
Package 5	4.0°C
Package 6	6.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8080983	BAN	Matrix Spike [SZU683-01]	Acid Extractable Antimony (Sb)	2022/06/29		104	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		108	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		104	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		103	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		95	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		100	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		101	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		102	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		105	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		104	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		109	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		103	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		104	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		106	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		100	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		100	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		104	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		102	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		100	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		102	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		108	%	75 - 125
8080983	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		103	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		100	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		100	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		101	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		99	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		100	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		100	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		99	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		99	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		103	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		102	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		102	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		98	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		102	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		101	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		97	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		100	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		102	%	75 - 125
8080983	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<2.0		mg/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Barium (Ba)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/29	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<5.0		mg/kg	
8080983	BAN	RPD [SZU683-01]	Acid Extractable Aluminum (Al)	2022/06/29	8.2		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	NC		%	35
			Acid Extractable Arsenic (As)	2022/06/29	4.4		%	35
			Acid Extractable Barium (Ba)	2022/06/29	15		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	12		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	11		%	35
			Acid Extractable Copper (Cu)	2022/06/29	3.9		%	35
			Acid Extractable Iron (Fe)	2022/06/29	9.9		%	35
			Acid Extractable Lead (Pb)	2022/06/29	5.7		%	35
			Acid Extractable Lithium (Li)	2022/06/29	15		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	13		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	NC		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	14		%	35
			Acid Extractable Rubidium (Rb)	2022/06/29	11		%	35
			Acid Extractable Selenium (Se)	2022/06/29	2.5		%	35
			Acid Extractable Silver (Ag)	2022/06/29	NC		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	22		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	11		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	0.23		%	35
			Acid Extractable Vanadium (V)	2022/06/29	6.7		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	9.1		%	35
8080987	BAN	Matrix Spike [SZU659-01]	Acid Extractable Antimony (Sb)	2022/06/29		93	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		NC	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Barium (Ba)	2022/06/29		98	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		99	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		99	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		88	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		101	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		98	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		99	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		101	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		96	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		101	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		97	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		98	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		97	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		99	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		93	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		95	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		98	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		101	%	75 - 125
8080987	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		101	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		101	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		98	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		99	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		98	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		100	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		97	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		100	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		98	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		100	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		101	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		101	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		99	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		97	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		101	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		100	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		97	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		99	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		103	%	75 - 125
8080987	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<1.0		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Bismuth (Bi)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/29	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<5.0		mg/kg	
8080987	BAN	RPD [SZU659-01]	Acid Extractable Aluminum (Al)	2022/06/29	0.17		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	NC		%	35
			Acid Extractable Arsenic (As)	2022/06/29	1.4		%	35
			Acid Extractable Barium (Ba)	2022/06/29	2.4		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	2.7		%	35
			Acid Extractable Bismuth (Bi)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	1.5		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	3.0		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	3.1		%	35
			Acid Extractable Copper (Cu)	2022/06/29	2.8		%	35
			Acid Extractable Iron (Fe)	2022/06/29	1.7		%	35
			Acid Extractable Lead (Pb)	2022/06/29	2.8		%	35
			Acid Extractable Lithium (Li)	2022/06/29	3.6		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	1.1		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	0.71		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	NC		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	3.5		%	35
			Acid Extractable Rubidium (Rb)	2022/06/29	5.2		%	35
			Acid Extractable Selenium (Se)	2022/06/29	3.0		%	35
			Acid Extractable Silver (Ag)	2022/06/29	3.5		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	5.4		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	5.6		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	0.41		%	35
			Acid Extractable Vanadium (V)	2022/06/29	5.1		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	2.4		%	35
8081259	JHY	Matrix Spike	Acid Extractable Antimony (Sb)	2022/06/29		68 (1)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		96	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		97	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Bismuth (Bi)	2022/06/29		102	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		87	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		96	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		96	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		95	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		99	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		106	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		94	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		97	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		97	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		85	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		98	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		101	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		97	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		101	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		99	%	75 - 125
8081259	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		109	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		96	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		102	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		97	%	75 - 125
			Acid Extractable Bismuth (Bi)	2022/06/29		98	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		96	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		97	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		95	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		93	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		94	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		97	%	75 - 125
			Acid Extractable Lithium (Li)	2022/06/29		104	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		98	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		102	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		101	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		96	%	75 - 125
			Acid Extractable Rubidium (Rb)	2022/06/29		97	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		95	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		100	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		101	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		99	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		99	%	75 - 125
8081259	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<50		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Cadmium (Cd)	2022/06/29	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<50		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<5.0		mg/kg	
8081259	JHY	RPD	Acid Extractable Aluminum (Al)	2022/06/29	1.1		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	NC		%	35
			Acid Extractable Arsenic (As)	2022/06/29	1.4		%	35
			Acid Extractable Barium (Ba)	2022/06/29	0.54		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	NC		%	35
			Acid Extractable Bismuth (Bi)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	1.8		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	0.82		%	35
			Acid Extractable Copper (Cu)	2022/06/29	2.9		%	35
			Acid Extractable Iron (Fe)	2022/06/29	1.9		%	35
			Acid Extractable Lead (Pb)	2022/06/29	3.6		%	35
			Acid Extractable Lithium (Li)	2022/06/29	4.4		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	6.7		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	NC		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	0.29		%	35
			Acid Extractable Rubidium (Rb)	2022/06/29	2.9		%	35
			Acid Extractable Selenium (Se)	2022/06/29	NC		%	35
			Acid Extractable Silver (Ag)	2022/06/29	NC		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	2.1		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	NC		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	8.9		%	35
			Acid Extractable Vanadium (V)	2022/06/29	7.4		%	35

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Zinc (Zn)	2022/06/29	2.1		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery is within QC acceptance limits. < 10 % of compounds in multi-component analysis in violation.

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Bureau Veritas Job #: C2H6753
Report Date: 2022/07/04

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Janah Rhyno, Metals Supervisor-Bedford

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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49-55 Elizabeth Avenue, St John's, NL A1A 1W9 | Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
465 George Street ,Unit G, Sydney, NS B1P 1K5 | Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770

CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

Invoice Information		Report Information (if differs from invoice)		Project Information	
Invoice to (requires report) ☐					LAB USE ONLY - PLACE STICKER HERE
Company:	Aecom Canada Ltd	Company:	Aecom	Quotation #:	
Contact Name:	Accounts payable	Contact Name:	Rory M. Neil / David Bugden	P.O. #/ AFE#:	
Street Address:	1701 Hollis St 5H 400	Street Address:		Project #:	6068 0169
City: Halifax	Prov: NS Postal Code: B3J3N4	City:	Prov: Postal Code:	Site #:	
Phone:		Phone:	902-242-2367 / 471-6418	Site Location:	Moose Land
Email:	CANSSC_E-Billing@Aecom.com	Email:	Rory.M.Neil@Aecom.com	Site Location Province:	NS
Copies:		Copies:	David.Bugden@Aecom.com	Sampled By:	DB/CE

Regulatory Criteria

**Specify matrix for each regulation: surface water (SW)/groundwater (GW)/tap water/sewage/effluent/seawater/potable water/non-potable water/tissue/soil/sludge/metal	Regulation	**Matrix

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well / surface water	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)-well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (presence/absence)	19 Total coliform/E.coli (count)	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE
1	TD 1	22	06	15	P	M	Soil										X											1	
2	TD 2	"	"	"	"	"	"										X											1	
3	TD 3																X											1	
4	TD 4																X											1	
5	TD 5																X											1	
6	TD 6																X											1	
7	TD 7																X											1	
8	T1																X											1	
9	T2																X											1	
10	T3																X											1	
11	T4																X											1	
12	Dup 1																X											1	

Regular Turnaround Time (TAT): ☒ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply: ☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY MM DD

Comments

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal Intact						
Cooling media present						

ACTR

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						

LAB USE ONLY	Yes	No	°C	1	2	3	Temperature reading by:
Seal present							
Seal Intact							
Cooling media present							

Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special instructions
1 Craig Everett	22	06	21	14	35	1 HOLLY JESSOME						C2H6753
2 Craig Everett						2						

www.BVNA.com

105-200 Bluewater Road, Bedford, NS B4B 1G9
49-55 Elizabeth Avenue, St John's, NL A1A 1W9
465 George Street ,Unit G, Sydney, NS B1P 1K5

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Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770

CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

CONTINUED

[PAGE 1 REFERENCE]

Company:	0
Contact Name:	0
Project #:	0

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well /SW	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)- well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (P/A)	19 Total coliform/E.coli (count)	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Same as above / Comments
13	SED 1	22	06	20			SED										X											1		
14	SED 2	↓	↓	↓			↓										X											1		
15	SED 3																X											1		
16	SED 4																X											1		
17	SED 5																X											1		
18	SED 6																X											1		
19	SED 7																X											1		
20	SED 8																X											1		
21	~~SED 9~~																													
22	SED 10																X											1		
23	SED 11	↓	↓	↓			↓										X											1		
24	~~SED 12~~ DUP-5		↓	↓			↓										X											1		
25	~~SED 13~~ BG 1						Sed										X											1		
26	~~SED 14~~ BG 2																X											1		
27	~~SED 15~~ BG 3																X											1		
28	~~SE~~ BG 4																X											1		
29	BG 5	↓	↓	↓			↓										X											1		
30																														
31																														
32																														
33																														
34																														
35																														
36																														
37																														
38																														
39																														
40																														

Your Project #: 60680068
Site Location: Seal Harbour, NS
Your C.O.C. #: 885378-04-01

Attention: Rory McNeil

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/19
Report #: R7217217
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2J2853
Received: 2022/07/08, 09:26

Sample Matrix: Solid
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Bulk Acid Extr. ICPMS	5	2022/07/14	2022/07/14	ATL SOP 00058	EPA 6020B R2 m
Sulfur (1)	5	N/A	2022/07/19	STL SOP-00028	MA. 310-CS 1.0 R3 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Montreal, 889 Montée De Liesse , Saint Laurent, QC, H4T 1P5

Your Project #: 60680068
Site Location: Seal Harbour, NS
Your C.O.C. #: 885378-04-01

Attention: Rory McNeil

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/19
Report #: R7217217
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2J2853
Received: 2022/07/08, 09:26

Encryption Key

Bureau Veritas
19 Jul 2022 16:09:23

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253

==========

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For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Job #: C2J2853
Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

CONVENTIONALS (SOLID)

Bureau Veritas ID		TDG758	TDG758	TDG759	TDG760	TDG761	TDG762		
Sampling Date		2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05		
COC Number		885378-04-01	885378-04-01	885378-04-01	885378-04-01	885378-04-01	885378-04-01		
	UNITS	**WR-3**	**WR-3 Lab-Dup**	**WR-4**	**WR-5**	**WR-1**	**WR-2**	**RDL**	**QC Batch**
Inorganics									
Total Sulphur (S)	% g/g	0.028	0.033	1.3	1.1	0.19	0.024	0.010	8117629

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C2J2853
Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Bureau Veritas ID		TDG758	TDG759	TDG760	TDG761	TDG762	TDG762		
Sampling Date		2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05	2022/07/05		
COC Number		885378-04-01	885378-04-01	885378-04-01	885378-04-01	885378-04-01	885378-04-01		
	UNITS	WR-3	WR-4	WR-5	WR-1	WR-2	WR-2 Lab-Dup	RDL	QC Batch
Metals									
Acid Extractable Aluminum (Al)	mg/kg	9400	6700	5900	6500	16000	17000	100	8108302
Acid Extractable Antimony (Sb)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Arsenic (As)	mg/kg	20	1300	190	17	130	110	10	8108302
Acid Extractable Barium (Ba)	mg/kg	64	<50	<50	<50	120	130	50	8108302
Acid Extractable Beryllium (Be)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Boron (B)	mg/kg	<500	<500	<500	<500	<500	<500	500	8108302
Acid Extractable Cadmium (Cd)	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	8108302
Acid Extractable Chromium (Cr)	mg/kg	<20	<20	<20	<20	24	25	20	8108302
Acid Extractable Cobalt (Co)	mg/kg	<10	<10	<10	<10	<10	<10	10	8108302
Acid Extractable Copper (Cu)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Iron (Fe)	mg/kg	16000	10000	11000	12000	27000	29000	500	8108302
Acid Extractable Lead (Pb)	mg/kg	<5.0	<5.0	<5.0	<5.0	7.8	8.3	5.0	8108302
Acid Extractable Manganese (Mn)	mg/kg	280	370	210	160	410	440	20	8108302
Acid Extractable Mercury (Hg)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8108302
Acid Extractable Molybdenum (Mo)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Nickel (Ni)	mg/kg	<20	<20	<20	<20	26	29	20	8108302
Acid Extractable Selenium (Se)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8108302
Acid Extractable Silver (Ag)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8108302
Acid Extractable Strontium (Sr)	mg/kg	<50	<50	<50	<50	<50	<50	50	8108302
Acid Extractable Thallium (Tl)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8108302
Acid Extractable Tin (Sn)	mg/kg	<20	<20	<20	<20	<20	<20	20	8108302
Acid Extractable Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8108302
Acid Extractable Vanadium (V)	mg/kg	20	<20	<20	<20	26	30	20	8108302
Acid Extractable Zinc (Zn)	mg/kg	<50	<50	<50	<50	52	57	50	8108302

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.0°C
Package 2	6.0°C
Package 3	11.0°C
Package 4	7.0°C

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8108302	JHY	Matrix Spike [TDG762-01]	Acid Extractable Antimony (Sb)	2022/07/14		60 (1)	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/14		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/14		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/14		102	%	75 - 125
			Acid Extractable Boron (B)	2022/07/14		88	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/14		97	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/14		96	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/14		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/14		101	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/14		98	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/14		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/14		96	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/14		110	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/14		100	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/14		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/14		97	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/14		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/14		95	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/14		94	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/14		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/14		96	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/14		NC	%	75 - 125
8108302	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2022/07/14		99	%	75 - 125
			Acid Extractable Arsenic (As)	2022/07/14		99	%	75 - 125
			Acid Extractable Barium (Ba)	2022/07/14		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/07/14		98	%	75 - 125
			Acid Extractable Boron (B)	2022/07/14		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/07/14		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/07/14		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/07/14		98	%	75 - 125
			Acid Extractable Copper (Cu)	2022/07/14		98	%	75 - 125
			Acid Extractable Lead (Pb)	2022/07/14		97	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/07/14		101	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/07/14		97	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/07/14		99	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/07/14		101	%	75 - 125
			Acid Extractable Selenium (Se)	2022/07/14		100	%	75 - 125
			Acid Extractable Silver (Ag)	2022/07/14		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/07/14		94	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/07/14		98	%	75 - 125
			Acid Extractable Tin (Sn)	2022/07/14		100	%	75 - 125
			Acid Extractable Uranium (U)	2022/07/14		98	%	75 - 125
			Acid Extractable Vanadium (V)	2022/07/14		98	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/07/14		102	%	75 - 125
8108302	JHY	Method Blank	Acid Extractable Aluminum (Al)	2022/07/14	<100		mg/kg	
			Acid Extractable Antimony (Sb)	2022/07/14	<20		mg/kg	
			Acid Extractable Arsenic (As)	2022/07/14	<10		mg/kg	
			Acid Extractable Barium (Ba)	2022/07/14	<50		mg/kg	
			Acid Extractable Beryllium (Be)	2022/07/14	<20		mg/kg	
			Acid Extractable Boron (B)	2022/07/14	<500		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/07/14	<3.0		mg/kg	
			Acid Extractable Chromium (Cr)	2022/07/14	<20		mg/kg	
			Acid Extractable Cobalt (Co)	2022/07/14	<10		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Copper (Cu)	2022/07/14	<20		mg/kg	
			Acid Extractable Iron (Fe)	2022/07/14	<500		mg/kg	
			Acid Extractable Lead (Pb)	2022/07/14	<5.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/07/14	<20		mg/kg	
			Acid Extractable Mercury (Hg)	2022/07/14	<1.0		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/07/14	<20		mg/kg	
			Acid Extractable Nickel (Ni)	2022/07/14	<20		mg/kg	
			Acid Extractable Selenium (Se)	2022/07/14	<5.0		mg/kg	
			Acid Extractable Silver (Ag)	2022/07/14	<5.0		mg/kg	
			Acid Extractable Strontium (Sr)	2022/07/14	<50		mg/kg	
			Acid Extractable Thallium (Tl)	2022/07/14	<1.0		mg/kg	
			Acid Extractable Tin (Sn)	2022/07/14	<20		mg/kg	
			Acid Extractable Uranium (U)	2022/07/14	<1.0		mg/kg	
			Acid Extractable Vanadium (V)	2022/07/14	<20		mg/kg	
			Acid Extractable Zinc (Zn)	2022/07/14	<50		mg/kg	
8108302	JHY	RPD [TDG762-01]	Acid Extractable Aluminum (Al)	2022/07/14	10		%	35
			Acid Extractable Antimony (Sb)	2022/07/14	NC		%	35
			Acid Extractable Arsenic (As)	2022/07/14	10		%	35
			Acid Extractable Barium (Ba)	2022/07/14	7.4		%	35
			Acid Extractable Beryllium (Be)	2022/07/14	NC		%	35
			Acid Extractable Boron (B)	2022/07/14	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/07/14	NC		%	35
			Acid Extractable Chromium (Cr)	2022/07/14	5.3		%	35
			Acid Extractable Cobalt (Co)	2022/07/14	NC		%	35
			Acid Extractable Copper (Cu)	2022/07/14	NC		%	35
			Acid Extractable Iron (Fe)	2022/07/14	6.0		%	35
			Acid Extractable Lead (Pb)	2022/07/14	6.4		%	35
			Acid Extractable Manganese (Mn)	2022/07/14	5.7		%	35
			Acid Extractable Mercury (Hg)	2022/07/14	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/07/14	NC		%	35
			Acid Extractable Nickel (Ni)	2022/07/14	7.7		%	35
			Acid Extractable Selenium (Se)	2022/07/14	NC		%	35
			Acid Extractable Silver (Ag)	2022/07/14	NC		%	35
			Acid Extractable Strontium (Sr)	2022/07/14	NC		%	35
			Acid Extractable Thallium (Tl)	2022/07/14	NC		%	35
			Acid Extractable Tin (Sn)	2022/07/14	NC		%	35
			Acid Extractable Uranium (U)	2022/07/14	NC		%	35
			Acid Extractable Vanadium (V)	2022/07/14	12		%	35
			Acid Extractable Zinc (Zn)	2022/07/14	8.1		%	35
8117629	BAG	QC Standard	Total Sulphur (S)	2022/07/19		102	%	77 - 128
8117629	BAG	Method Blank	Total Sulphur (S)	2022/07/19	<0.010		% g/g	

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Bureau Veritas Job #: C2J2853
Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8117629	BAG	RPD [TDG758-01]	Total Sulphur (S)	2022/07/19	15		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Matrix Spike exceeds acceptance limits, probable matrix interference.

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Bureau Veritas Job #: C2J2853
Report Date: 2022/07/19

AECOM Canada Ltd
Client Project #: 60680068
Site Location: Seal Harbour, NS
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Janah Rhyno, Metals Supervisor-Bedford

CHIMISTE Shu Yang 2008-014 QUÉBEC

Shu Yang, Analyst 2

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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200 Bluewater Road, Bedford, Nova Scotia Canada B4B 1G9 Tel:(902) 420-0203 Toll-free:800-563-6266 Fax:(902) 420-8612 www.bvna.com

Chain Of Custody Record

1 of 1

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#25656 AECOM Canada Ltd	Company Name		Quotation #		Bureau Veritas Job #	Bottle Order #:
Contact Name	Accounts Payable	Contact Name	Rory McNeil	P.O. #		C2J2853	885378
Address	1701 Hollis St SH400 Halifax NS B3J 3M8	Address		Project #	60680068	Chain Of Custody Record	Project Manager
Phone	(902) 428-2021 Fax: (902) 428-2031	Phone	Fax: (902) 428-2021	Project Name		C#885378-04-01	Marie Muise
Email	CANSSC.E-billing@aecom.com	Email	rory.mcneil@aecom.com	Site #			
				Sampled By	DB		

Regulatory Criteria:

** Specify Matrix: Surface/Ground/Tapwater/Sewage/Effluent/Seawater Potable/Nonpotable/Tissue/Soil/Sludge/Metal

Special Instructions

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT:

(will be applied if Rush TAT is not specified): ☒

Standard TAT = 5-7 Working days for most tests..

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: Time Required: ☐

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered & Preserved	Lab Filtration Required	At. RCAp-MS Dissolved (FieldFilt) in W	Metals Water Diss. MS (as rec'd)	Mercury - Dissolved (CVAA,LL)	Metals Water Total MS	Atlantic RCAp-MS Total Metals in Water	Mercury - Total (CVAA,LL)	Metals Water Total ICPMS	Atlantic RCAp-MS Total Metals	Mercury - Total CVAA	Metals Bulk Acid Extr. ICPMS and Geochmical analysis -3 bags required for tests	# of Bottles	Comments / Hazards / Other Required Analysis
1	SID#585894	WR-3	July 5/22	AM	Water Rock												X	3	
2	SID#585895	WR-4															X		
3	SID#585896	WR-5															X		
4	SID#585897	~~SED-1~~ WR-1															X		
5	SID#585898	~~SED-2~~ WR-2															X		
6	SID#585899	~~SED-3~~																	
7	SID#585900	SED-4																	
8	SID#585901	~~SED-5~~																	
9	SID#585902	~~SED-6~~																	
10	SID#585903	~~SED-7~~																	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
	July 5/22	9:06	HOLLY JESSOME				☐	ACTR	☐ Yes ☐ No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Bureau Veritas Yellow: Client

Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/06/29
Report #: R7191242
Version: 1 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2H6758
Received: 2022/06/21, 14:48

Sample Matrix: Solid
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Bulk Acid Extr. ICPMS	2	2022/06/28	2022/06/29	ATL SOP 00058	EPA 6020B R2 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/06/29
Report #: R7191242
Version: 1 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

BUREAU VERITAS JOB #: C2H6758
Received: 2022/06/21, 14:48

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
29 Jun 2022 16:02:41

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
==========
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For Service Group specific validation please refer to the Validation Signature Page.

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Bureau Veritas ID		SZU712	SZU713		
Sampling Date		2022/06/15 10:18	2022/06/15 10:23		
COC Number		N/A	N/A		
	UNITS	WR-1	WR-2	RDL	QC Batch
Metals					
Acid Extractable Aluminum (Al)	mg/kg	5600	5400	100	8078749
Acid Extractable Antimony (Sb)	mg/kg	<20	<20	20	8078749
Acid Extractable Arsenic (As)	mg/kg	210	2700	10	8078749
Acid Extractable Barium (Ba)	mg/kg	<50	<50	50	8078749
Acid Extractable Beryllium (Be)	mg/kg	<20	<20	20	8078749
Acid Extractable Boron (B)	mg/kg	<500	<500	500	8078749
Acid Extractable Cadmium (Cd)	mg/kg	<3.0	<3.0	3.0	8078749
Acid Extractable Chromium (Cr)	mg/kg	<20	<20	20	8078749
Acid Extractable Cobalt (Co)	mg/kg	<10	<10	10	8078749
Acid Extractable Copper (Cu)	mg/kg	<20	<20	20	8078749
Acid Extractable Iron (Fe)	mg/kg	13000	12000	500	8078749
Acid Extractable Lead (Pb)	mg/kg	<5.0	<5.0	5.0	8078749
Acid Extractable Manganese (Mn)	mg/kg	210	200	20	8078749
Acid Extractable Mercury (Hg)	mg/kg	<1.0	<1.0	1.0	8078749
Acid Extractable Molybdenum (Mo)	mg/kg	<20	<20	20	8078749
Acid Extractable Nickel (Ni)	mg/kg	<20	<20	20	8078749
Acid Extractable Selenium (Se)	mg/kg	<5.0	<5.0	5.0	8078749
Acid Extractable Silver (Ag)	mg/kg	<5.0	<5.0	5.0	8078749
Acid Extractable Strontium (Sr)	mg/kg	<50	<50	50	8078749
Acid Extractable Thallium (Tl)	mg/kg	<1.0	<1.0	1.0	8078749
Acid Extractable Tin (Sn)	mg/kg	<20	<20	20	8078749
Acid Extractable Uranium (U)	mg/kg	<1.0	<1.0	1.0	8078749
Acid Extractable Vanadium (V)	mg/kg	<20	<20	20	8078749
Acid Extractable Zinc (Zn)	mg/kg	<50	<50	50	8078749

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C
Package 2	5.0°C
Package 3	5.7°C
Package 4	5.0°C
Package 5	4.0°C
Package 6	6.3°C

Results relate only to the items tested.

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Bureau Veritas Job #: C2H6758
Report Date: 2022/06/29

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8078749	BAN	Matrix Spike [SZU712-01]	Acid Extractable Antimony (Sb)	2022/06/29		94	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		93	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		92	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		93	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		92	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		89	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		100	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		90	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		91	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		90	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		97	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		95	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		91	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		93	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		93	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		95	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		91	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		101	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		87	%	75 - 125
8078749	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		99	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		98	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		98	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		94	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		94	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		95	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		95	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		98	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		97	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		97	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		96	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		96	%	75 - 125
8078749	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<100		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<20		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<10		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<50		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<20		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<500		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/29	<3.0		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<20		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<10		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Copper (Cu)	2022/06/29	<20		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<500		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<20		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<20		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<20		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<50		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<20		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<20		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<50		mg/kg	
8078749	BAN	RPD [SZU712-01]	Acid Extractable Aluminum (Al)	2022/06/29	5.2		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	NC		%	35
			Acid Extractable Arsenic (As)	2022/06/29	171 (1)		%	35
			Acid Extractable Barium (Ba)	2022/06/29	NC		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	NC		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	NC		%	35
			Acid Extractable Copper (Cu)	2022/06/29	NC		%	35
			Acid Extractable Iron (Fe)	2022/06/29	15		%	35
			Acid Extractable Lead (Pb)	2022/06/29	NC		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	2.8		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	NC		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	NC		%	35
			Acid Extractable Selenium (Se)	2022/06/29	NC		%	35
			Acid Extractable Silver (Ag)	2022/06/29	NC		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	NC		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	NC		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	NC		%	35
			Acid Extractable Vanadium (V)	2022/06/29	5.5		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	NC		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Poor RPD due to sample inhomogeneity. Verified by repeat digestion and analysis.

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Bureau Veritas Job #: C2H6758
Report Date: 2022/06/29

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Colleen Acker, B.Sc, Scientific Service Specialist

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Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/07
Report #: R7199674
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H6758
Received: 2022/06/21, 14:48

Sample Matrix: Solid
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Bulk Acid Extr. ICPMS	2	2022/06/28	2022/06/29	ATL SOP 00058	EPA 6020B R2 m
Sulfur (1)	2	N/A	2022/07/04	STL SOP-00028	MA. 310-CS 1.0 R3 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Montreal, 889 Montée De Liesse , Saint Laurent, QC, H4T 1P5

Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/07
Report #: R7199674
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H6758
Received: 2022/06/21, 14:48

Encryption Key

Bureau Veritas
07 Jul 2022 09:54:47

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253

==========

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For Service Group specific validation please refer to the Validation Signature Page.

CONVENTIONALS (SOLID)

Bureau Veritas ID		SZU712	SZU713		
Sampling Date		2022/06/15 10:18	2022/06/15 10:23		
COC Number		N/A	N/A		
	UNITS	WR-1	WR-2	RDL	QC Batch
Inorganics					
Total Sulphur (S)	% g/g	0.097	0.099	0.010	8089212

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Bureau Veritas ID		SZU712	SZU712	SZU713		
Sampling Date		2022/06/15 10:18	2022/06/15 10:18	2022/06/15 10:23		
COC Number		N/A	N/A	N/A		
	UNITS	WR-1	WR-1 Lab-Dup	WR-2	RDL	QC Batch
Metals						
Acid Extractable Aluminum (Al)	mg/kg	5600	5900	5400	100	8078749
Acid Extractable Antimony (Sb)	mg/kg	<20	<20	<20	20	8078749
Acid Extractable Arsenic (As)	mg/kg	210	2600 (1)	2700	10	8078749
Acid Extractable Barium (Ba)	mg/kg	<50	<50	<50	50	8078749
Acid Extractable Beryllium (Be)	mg/kg	<20	<20	<20	20	8078749
Acid Extractable Boron (B)	mg/kg	<500	<500	<500	500	8078749
Acid Extractable Cadmium (Cd)	mg/kg	<3.0	<3.0	<3.0	3.0	8078749
Acid Extractable Chromium (Cr)	mg/kg	<20	<20	<20	20	8078749
Acid Extractable Cobalt (Co)	mg/kg	<10	<10	<10	10	8078749
Acid Extractable Copper (Cu)	mg/kg	<20	<20	<20	20	8078749
Acid Extractable Iron (Fe)	mg/kg	13000	15000	12000	500	8078749
Acid Extractable Lead (Pb)	mg/kg	<5.0	<5.0	<5.0	5.0	8078749
Acid Extractable Manganese (Mn)	mg/kg	210	220	200	20	8078749
Acid Extractable Mercury (Hg)	mg/kg	<1.0	<1.0	<1.0	1.0	8078749
Acid Extractable Molybdenum (Mo)	mg/kg	<20	<20	<20	20	8078749
Acid Extractable Nickel (Ni)	mg/kg	<20	<20	<20	20	8078749
Acid Extractable Selenium (Se)	mg/kg	<5.0	<5.0	<5.0	5.0	8078749
Acid Extractable Silver (Ag)	mg/kg	<5.0	<5.0	<5.0	5.0	8078749
Acid Extractable Strontium (Sr)	mg/kg	<50	<50	<50	50	8078749
Acid Extractable Thallium (Tl)	mg/kg	<1.0	<1.0	<1.0	1.0	8078749
Acid Extractable Tin (Sn)	mg/kg	<20	<20	<20	20	8078749
Acid Extractable Uranium (U)	mg/kg	<1.0	<1.0	<1.0	1.0	8078749
Acid Extractable Vanadium (V)	mg/kg	<20	21	<20	20	8078749
Acid Extractable Zinc (Zn)	mg/kg	<50	<50	<50	50	8078749

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) Poor RPD due to sample inhomogeneity. Verified by repeat digestion and analysis.

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Bureau Veritas Job #: C2H6758
Report Date: 2022/07/07

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C
Package 2	5.0°C
Package 3	5.7°C
Package 4	5.0°C
Package 5	4.0°C
Package 6	6.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8078749	BAN	Matrix Spike [SZU712-01]	Acid Extractable Antimony (Sb)	2022/06/29		94	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		93	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		92	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		93	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		92	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		89	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		100	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		90	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		91	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		90	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		97	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		95	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		91	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		93	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		93	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		95	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		91	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		101	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		87	%	75 - 125
8078749	BAN	Spiked Blank	Acid Extractable Antimony (Sb)	2022/06/29		99	%	75 - 125
			Acid Extractable Arsenic (As)	2022/06/29		98	%	75 - 125
			Acid Extractable Barium (Ba)	2022/06/29		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2022/06/29		98	%	75 - 125
			Acid Extractable Boron (B)	2022/06/29		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2022/06/29		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2022/06/29		94	%	75 - 125
			Acid Extractable Cobalt (Co)	2022/06/29		94	%	75 - 125
			Acid Extractable Copper (Cu)	2022/06/29		95	%	75 - 125
			Acid Extractable Lead (Pb)	2022/06/29		95	%	75 - 125
			Acid Extractable Manganese (Mn)	2022/06/29		95	%	75 - 125
			Acid Extractable Mercury (Hg)	2022/06/29		98	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2022/06/29		98	%	75 - 125
			Acid Extractable Nickel (Ni)	2022/06/29		96	%	75 - 125
			Acid Extractable Selenium (Se)	2022/06/29		101	%	75 - 125
			Acid Extractable Silver (Ag)	2022/06/29		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2022/06/29		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2022/06/29		97	%	75 - 125
			Acid Extractable Tin (Sn)	2022/06/29		97	%	75 - 125
			Acid Extractable Uranium (U)	2022/06/29		96	%	75 - 125
			Acid Extractable Vanadium (V)	2022/06/29		95	%	75 - 125
			Acid Extractable Zinc (Zn)	2022/06/29		96	%	75 - 125
8078749	BAN	Method Blank	Acid Extractable Aluminum (Al)	2022/06/29	<100		mg/kg	
			Acid Extractable Antimony (Sb)	2022/06/29	<20		mg/kg	
			Acid Extractable Arsenic (As)	2022/06/29	<10		mg/kg	
			Acid Extractable Barium (Ba)	2022/06/29	<50		mg/kg	
			Acid Extractable Beryllium (Be)	2022/06/29	<20		mg/kg	
			Acid Extractable Boron (B)	2022/06/29	<500		mg/kg	
			Acid Extractable Cadmium (Cd)	2022/06/29	<3.0		mg/kg	
			Acid Extractable Chromium (Cr)	2022/06/29	<20		mg/kg	
			Acid Extractable Cobalt (Co)	2022/06/29	<10		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Copper (Cu)	2022/06/29	<20		mg/kg	
			Acid Extractable Iron (Fe)	2022/06/29	<500		mg/kg	
			Acid Extractable Lead (Pb)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Manganese (Mn)	2022/06/29	<20		mg/kg	
			Acid Extractable Mercury (Hg)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Molybdenum (Mo)	2022/06/29	<20		mg/kg	
			Acid Extractable Nickel (Ni)	2022/06/29	<20		mg/kg	
			Acid Extractable Selenium (Se)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Silver (Ag)	2022/06/29	<5.0		mg/kg	
			Acid Extractable Strontium (Sr)	2022/06/29	<50		mg/kg	
			Acid Extractable Thallium (Tl)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Tin (Sn)	2022/06/29	<20		mg/kg	
			Acid Extractable Uranium (U)	2022/06/29	<1.0		mg/kg	
			Acid Extractable Vanadium (V)	2022/06/29	<20		mg/kg	
			Acid Extractable Zinc (Zn)	2022/06/29	<50		mg/kg	
8078749	BAN	RPD [SZU712-01]	Acid Extractable Aluminum (Al)	2022/06/29	5.2		%	35
			Acid Extractable Antimony (Sb)	2022/06/29	NC		%	35
			Acid Extractable Arsenic (As)	2022/06/29	171 (1)		%	35
			Acid Extractable Barium (Ba)	2022/06/29	NC		%	35
			Acid Extractable Beryllium (Be)	2022/06/29	NC		%	35
			Acid Extractable Boron (B)	2022/06/29	NC		%	35
			Acid Extractable Cadmium (Cd)	2022/06/29	NC		%	35
			Acid Extractable Chromium (Cr)	2022/06/29	NC		%	35
			Acid Extractable Cobalt (Co)	2022/06/29	NC		%	35
			Acid Extractable Copper (Cu)	2022/06/29	NC		%	35
			Acid Extractable Iron (Fe)	2022/06/29	15		%	35
			Acid Extractable Lead (Pb)	2022/06/29	NC		%	35
			Acid Extractable Manganese (Mn)	2022/06/29	2.8		%	35
			Acid Extractable Mercury (Hg)	2022/06/29	NC		%	35
			Acid Extractable Molybdenum (Mo)	2022/06/29	NC		%	35
			Acid Extractable Nickel (Ni)	2022/06/29	NC		%	35
			Acid Extractable Selenium (Se)	2022/06/29	NC		%	35
			Acid Extractable Silver (Ag)	2022/06/29	NC		%	35
			Acid Extractable Strontium (Sr)	2022/06/29	NC		%	35
			Acid Extractable Thallium (Tl)	2022/06/29	NC		%	35
			Acid Extractable Tin (Sn)	2022/06/29	NC		%	35
			Acid Extractable Uranium (U)	2022/06/29	NC		%	35
			Acid Extractable Vanadium (V)	2022/06/29	5.5		%	35
			Acid Extractable Zinc (Zn)	2022/06/29	NC		%	35
8089212	BAG	QC Standard	Total Sulphur (S)	2022/07/04		91	%	77 - 128

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8089212	BAG	Method Blank	Total Sulphur (S)	2022/07/04	<0.010		% g/g	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Poor RPD due to sample inhomogeneity. Verified by repeat digestion and analysis.

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Bureau Veritas Job #: C2H6758
Report Date: 2022/07/07

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Colleen Acker, B.Sc, Scientific Service Specialist

CHIMISTE Shu Yang 2008-014 QUÉBEC

Shu Yang, Analyst 2

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49-55 Elizabeth Avenue, St John's, NL A1A 1W9 — Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
465 George Street ,Unit G, Sydney, NS B1P 1K5 — Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770

CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

Invoice Information	Invoice to (requires report) ☐	Report Information (if differs from invoice)		Project Information		LAB USE ONLY - PLACE STICKER HERE
Company :	Aecom Canada Ltd.	Company:	Aecom	Quotation #:		
Contact Name:	Accounts Payable	Contact Name:	David Bugler / Rory McNeil	P.O. #/ AFE#:		
Street Address:	1701 Hollis St SH400	Street Address:	1701 Hollis St	Project #:	60680169	
City: Halifax	Prov: NS Postal Code: B3J3M9	City:	Prov: Postal Code:	Site #:		
Phone:		Phone:	902-471-6914 / 902 292 2367	Site Location:	Moosehead	Rush Confirmation #:
Email:	CANSCC_E.B.Iling@Aecom.com	Email:	Rory.McNeil@Aecom.com	Site Location Province:	NS	
Copies:		Copies:	David.Bugler@Aecom.com	Sampled By:	OB/CE	

Regulatory Criteria

**Specify matrix for each regulation: surface water (SW)/groundwater (GW)/tap water/sewage/effluent/seawater/potable water/non-potable water/tissue/soil/sludge/metal	Regulation	**Matrix

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well / surface water	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)-well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 see Geochemical	18 Total coliform/E.coli (presence/absence)	19 Total coliform/E.coli (count)	20 Metals Bulk Acid Ext. ICPMS	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE
1	WR - 1	22	06	15	10	18	Water																				✓	3	
2	WR - 2	"	"	"	10	23	"																				✓	3	
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Regular Turnaround Time (TAT)

☑ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply

☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY MM DD

Comments

1 Geochemical
2 refer to bottle order email

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present				AC	TR	

LAB USE ONLY	Yes	No	°C	1	2	3
Seal present						
Seal intact						
Cooling media present						

LAB USE ONLY	Yes	No	°C	1	2	3	Temperature reading by:
Seal present							
Seal intact							
Cooling media present							

	Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM		Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special instructions
1	Craig Everett	22	06	21	14	35	1	Holly Jessome HOLLY JESSOME						C2H6758
2	Craig Everett						2							

Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

Attention: David Bugden

AECOM Canada Ltd
1701 Hollis St
SH400
Halifax , NS
CANADA B3J 3M8

Report Date: 2022/07/05
Report #: R7197615
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H6761
Received: 2022/06/21, 14:47

Sample Matrix: Water
Samples Received: 21

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Water Diss. MS (as rec'd)	5	N/A	2022/07/04	ATL SOP 00058	EPA 6020B R2 m
Metals Water Diss. MS (as rec'd)	2	N/A	2022/07/05	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	1	2022/06/28	2022/06/30	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	13	2022/06/30	2022/06/30	ATL SOP 00058	EPA 6020B R2 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 60680169
Site Location: MOOSELAND
Your C.O.C. #: N/A

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Report Date: 2022/07/05
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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2H6761
Received: 2022/06/21, 14:47

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marie Muise, Key Account Specialist
Email: Marie.MUISE@bureauveritas.com
Phone# (902)420-0203 Ext:253
==========
This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Job #: C2H6761
Report Date: 2022/07/05

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		SZU718	SZU719	SZU720	SZU721	SZU722		SZU723		
Sampling Date		2022/06/16	2022/06/16	2022/06/16	2022/06/16	2022/06/16		2022/06/16		
COC Number		N/A	N/A	N/A	N/A	N/A		N/A		
	UNITS	MW1	MW2	MW3	MW4	MW5	RDL	MW6	RDL	QC Batch
Metals										
Dissolved Aluminum (Al)	ug/L	150	18	63	14	180	5.0	42	5.0	8087680
Dissolved Antimony (Sb)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4.5	1.0	8087680
Dissolved Arsenic (As)	ug/L	120	15	9.2	2.3	350	1.0	1400	10	8087680
Dissolved Barium (Ba)	ug/L	11	6.9	18	20	22	1.0	4.0	1.0	8087680
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	0.10	8087680
Dissolved Bismuth (Bi)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8087680
Dissolved Boron (B)	ug/L	<50	<50	<50	<50	<50	50	<50	50	8087680
Dissolved Cadmium (Cd)	ug/L	0.088	0.26	0.18	0.022	0.015	0.010	0.018	0.010	8087680
Dissolved Calcium (Ca)	ug/L	2200	3600	2100	18000	17000	100	23000	100	8087680
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	1.0	8087680
Dissolved Cobalt (Co)	ug/L	3.1	23	16	1.1	4.3	0.40	4.3	0.40	8087680
Dissolved Copper (Cu)	ug/L	5.4	2.7	5.3	4.1	3.9	0.50	2.4	0.50	8087680
Dissolved Iron (Fe)	ug/L	540	1600	890	<50	5600	50	230	50	8087680
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.79	0.50	1.1	0.50	8087680
Dissolved Magnesium (Mg)	ug/L	430	810	640	4300	1500	100	3300	100	8087680
Dissolved Manganese (Mn)	ug/L	1600	1400	340	470	1700	2.0	400	2.0	8087680
Dissolved Molybdenum (Mo)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8087680
Dissolved Nickel (Ni)	ug/L	8.5	25	15	2.4	2.2	2.0	9.5	2.0	8087680
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	<100	<100	100	<100	100	8087680
Dissolved Potassium (K)	ug/L	640	1000	840	3900	360	100	750	100	8087680
Dissolved Selenium (Se)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	0.50	8087680
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	0.10	8087680
Dissolved Sodium (Na)	ug/L	13000	13000	4500	6900	4200	100	7400	100	8087680
Dissolved Strontium (Sr)	ug/L	12	24	20	48	33	2.0	35	2.0	8087680
Dissolved Thallium (Tl)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	0.10	8087680
Dissolved Tin (Sn)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8087680
Dissolved Titanium (Ti)	ug/L	<2.0	<2.0	<2.0	<2.0	4.4	2.0	<2.0	2.0	8087680
Dissolved Uranium (U)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	0.10	8087680
Dissolved Vanadium (V)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8087680
Dissolved Zinc (Zn)	ug/L	11	10	16	<5.0	7.9	5.0	9.7	5.0	8087680

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com

ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		SZU724			SZU725	SZU726	SZU727	SZU728	SZU729		
Sampling Date		2022/06/16			2022/06/20	2022/06/20	2022/06/20	2022/06/20	2022/06/20		
COC Number		N/A			N/A	N/A	N/A	N/A	N/A		
	UNITS	DUP 1	RDL	QC Batch	SW1	SW2	SW3	SW4	SW5	RDL	QC Batch
Metals											
Dissolved Aluminum (Al)	ug/L	140	5.0	8087680							
Total Aluminum (Al)	ug/L				230	240	260	240	260	5.0	8083658
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	8087680							
Total Antimony (Sb)	ug/L				<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8083658
Dissolved Arsenic (As)	ug/L	130	1.0	8087680							
Total Arsenic (As)	ug/L				<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8083658
Dissolved Barium (Ba)	ug/L	5.8	1.0	8087680							
Total Barium (Ba)	ug/L				3.1	3.4	3.3	3.2	3.1	1.0	8083658
Dissolved Beryllium (Be)	ug/L	<0.10	0.10	8087680							
Total Beryllium (Be)	ug/L				<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8083658
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	8087680							
Total Bismuth (Bi)	ug/L				<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658
Dissolved Boron (B)	ug/L	<50	50	8087680							
Total Boron (B)	ug/L				<50	<50	<50	<50	<50	50	8083658
Dissolved Cadmium (Cd)	ug/L	0.089	0.010	8087680							
Total Cadmium (Cd)	ug/L				0.019	0.020	0.019	0.016	0.019	0.010	8083658
Dissolved Calcium (Ca)	ug/L	2300	100	8087680							
Total Calcium (Ca)	ug/L				640	670	650	650	640	100	8083658
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	8087680							
Total Chromium (Cr)	ug/L				<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8083658
Dissolved Cobalt (Co)	ug/L	3.1	0.40	8087680							
Total Cobalt (Co)	ug/L				<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8083658
Dissolved Copper (Cu)	ug/L	1.9	0.50	8087680							
Total Copper (Cu)	ug/L				<0.50	<0.50	0.50	<0.50	<0.50	0.50	8083658
Dissolved Iron (Fe)	ug/L	510	50	8087680							
Total Iron (Fe)	ug/L				530	530	560	530	530	50	8083658
Dissolved Lead (Pb)	ug/L	<0.50	0.50	8087680							
Total Lead (Pb)	ug/L				<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8083658
Dissolved Magnesium (Mg)	ug/L	430	100	8087680							
Total Magnesium (Mg)	ug/L				290	300	300	300	300	100	8083658
Dissolved Manganese (Mn)	ug/L	1700	2.0	8087680							
Total Manganese (Mn)	ug/L				75	77	76	76	76	2.0	8083658
Dissolved Molybdenum (Mo)	ug/L	<2.0	2.0	8087680							
Total Molybdenum (Mo)	ug/L				<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2H6761
Report Date: 2022/07/05

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		SZU724			SZU725	SZU726	SZU727	SZU728	SZU729		
Sampling Date		2022/06/16			2022/06/20	2022/06/20	2022/06/20	2022/06/20	2022/06/20		
COC Number		N/A			N/A	N/A	N/A	N/A	N/A		
	UNITS	DUP 1	RDL	QC Batch	SW1	SW2	SW3	SW4	SW5	RDL	QC Batch
Dissolved Nickel (Ni)	ug/L	8.3	2.0	8087680							
Total Nickel (Ni)	ug/L				<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658
Dissolved Phosphorus (P)	ug/L	<100	100	8087680							
Total Phosphorus (P)	ug/L				<100	<100	<100	<100	<100	100	8083658
Dissolved Potassium (K)	ug/L	640	100	8087680							
Total Potassium (K)	ug/L				100	110	110	100	100	100	8083658
Dissolved Selenium (Se)	ug/L	<0.50	0.50	8087680							
Total Selenium (Se)	ug/L				<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8083658
Dissolved Silver (Ag)	ug/L	<0.10	0.10	8087680							
Total Silver (Ag)	ug/L				<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8083658
Dissolved Sodium (Na)	ug/L	13000	100	8087680							
Total Sodium (Na)	ug/L				2200	2200	2600	2600	2600	100	8083658
Dissolved Strontium (Sr)	ug/L	12	2.0	8087680							
Total Strontium (Sr)	ug/L				4.3	4.6	4.6	4.5	4.5	2.0	8083658
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	8087680							
Total Thallium (Tl)	ug/L				<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8083658
Dissolved Tin (Sn)	ug/L	<2.0	2.0	8087680							
Total Tin (Sn)	ug/L				<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	8087680							
Total Titanium (Ti)	ug/L				3.8	3.8	4.0	3.4	4.0	2.0	8083658
Dissolved Uranium (U)	ug/L	<0.10	0.10	8087680							
Total Uranium (U)	ug/L				<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8083658
Dissolved Vanadium (V)	ug/L	<2.0	2.0	8087680							
Total Vanadium (V)	ug/L				<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658
Dissolved Zinc (Zn)	ug/L	8.1	5.0	8087680							
Total Zinc (Zn)	ug/L				<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8083658

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2H6761
Report Date: 2022/07/05

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		SZU730	SZU731	SZU732	SZU733	SZU734	SZU735	SZU736		
Sampling Date		2022/06/20	2022/06/20	2022/06/20	2022/06/20	2022/06/20	2022/06/20	2022/06/20		
COC Number		N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	UNITS	SW6	SW7	SW8	SW9	SW10	SW11	SW12	RDL	QC Batch
Metals										
Total Aluminum (Al)	ug/L	280	250	240	250	250	260	37	5.0	8083658
Total Antimony (Sb)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8083658
Total Arsenic (As)	ug/L	<1.0	7.1	1.3	2.3	2.8	2.7	8.9	1.0	8083658
Total Barium (Ba)	ug/L	3.5	3.3	2.9	3.2	3.5	3.3	5.4	1.0	8083658
Total Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8083658
Total Bismuth (Bi)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658
Total Boron (B)	ug/L	<50	<50	<50	<50	<50	<50	<50	50	8083658
Total Cadmium (Cd)	ug/L	0.020	0.019	0.018	0.016	0.017	0.017	<0.010	0.010	8083658
Total Calcium (Ca)	ug/L	700	660	620	640	670	670	1900	100	8083658
Total Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8083658
Total Cobalt (Co)	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8083658
Total Copper (Cu)	ug/L	0.51	<0.50	0.56	<0.50	<0.50	<0.50	0.71	0.50	8083658
Total Iron (Fe)	ug/L	580	580	530	570	590	620	690	50	8083658
Total Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8083658
Total Magnesium (Mg)	ug/L	320	310	290	300	310	310	560	100	8083658
Total Manganese (Mn)	ug/L	79	79	74	77	78	80	69	2.0	8083658
Total Molybdenum (Mo)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658
Total Nickel (Ni)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658
Total Phosphorus (P)	ug/L	<100	<100	<100	<100	<100	<100	<100	100	8083658
Total Potassium (K)	ug/L	110	110	100	110	110	110	790	100	8083658
Total Selenium (Se)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8083658
Total Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8083658
Total Sodium (Na)	ug/L	3000	2700	2500	2500	2700	2600	5200	100	8083658
Total Strontium (Sr)	ug/L	5.0	4.7	4.4	4.6	4.7	4.6	14	2.0	8083658
Total Thallium (Tl)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8083658
Total Tin (Sn)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658
Total Titanium (Ti)	ug/L	4.5	4.1	3.6	4.1	3.9	3.7	<2.0	2.0	8083658
Total Uranium (U)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8083658
Total Vanadium (V)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8083658
Total Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8083658

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2H6761
Report Date: 2022/07/05

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		SZU737	SZU738		
Sampling Date		2022/06/20	2022/06/20		
COC Number		N/A	N/A		
	UNITS	SW13	DUP 4	RDL	QC Batch
Metals					
Total Aluminum (Al)	ug/L	29	250	5.0	8083658
Total Antimony (Sb)	ug/L	<1.0	<1.0	1.0	8083658
Total Arsenic (As)	ug/L	94	<1.0	1.0	8083658
Total Barium (Ba)	ug/L	<1.0	3.3	1.0	8083658
Total Beryllium (Be)	ug/L	<0.10	<0.10	0.10	8083658
Total Bismuth (Bi)	ug/L	<2.0	<2.0	2.0	8083658
Total Boron (B)	ug/L	<50	<50	50	8083658
Total Cadmium (Cd)	ug/L	<0.010	0.019	0.010	8083658
Total Calcium (Ca)	ug/L	8700	670	100	8083658
Total Chromium (Cr)	ug/L	<1.0	<1.0	1.0	8083658
Total Cobalt (Co)	ug/L	<0.40	<0.40	0.40	8083658
Total Copper (Cu)	ug/L	<0.50	0.65	0.50	8083658
Total Iron (Fe)	ug/L	69	520	50	8083658
Total Lead (Pb)	ug/L	<0.50	<0.50	0.50	8083658
Total Magnesium (Mg)	ug/L	800	300	100	8083658
Total Manganese (Mn)	ug/L	18	76	2.0	8083658
Total Molybdenum (Mo)	ug/L	<2.0	<2.0	2.0	8083658
Total Nickel (Ni)	ug/L	<2.0	<2.0	2.0	8083658
Total Phosphorus (P)	ug/L	<100	<100	100	8083658
Total Potassium (K)	ug/L	610	110	100	8083658
Total Selenium (Se)	ug/L	<0.50	<0.50	0.50	8083658
Total Silver (Ag)	ug/L	<0.10	<0.10	0.10	8083658
Total Sodium (Na)	ug/L	8600	2200	100	8083658
Total Strontium (Sr)	ug/L	37	4.8	2.0	8083658
Total Thallium (Tl)	ug/L	<0.10	<0.10	0.10	8083658
Total Tin (Sn)	ug/L	<2.0	<2.0	2.0	8083658
Total Titanium (Ti)	ug/L	<2.0	3.4	2.0	8083658
Total Uranium (U)	ug/L	<0.10	<0.10	0.10	8083658
Total Vanadium (V)	ug/L	<2.0	<2.0	2.0	8083658
Total Zinc (Zn)	ug/L	<5.0	<5.0	5.0	8083658

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C
Package 2	5.0°C
Package 3	5.7°C
Package 4	5.0°C
Package 5	4.0°C
Package 6	6.3°C

Results relate only to the items tested.

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Bureau Veritas Job #: C2H6761
Report Date: 2022/07/05

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8083658	JHY	Matrix Spike	Total Aluminum (Al)	2022/07/04		NC	%	80 - 120
			Total Antimony (Sb)	2022/07/04		99	%	80 - 120
			Total Arsenic (As)	2022/07/04		90	%	80 - 120
			Total Barium (Ba)	2022/07/04		92	%	80 - 120
			Total Beryllium (Be)	2022/07/04		96	%	80 - 120
			Total Bismuth (Bi)	2022/07/04		96	%	80 - 120
			Total Boron (B)	2022/07/04		96	%	80 - 120
			Total Cadmium (Cd)	2022/07/04		96	%	80 - 120
			Total Calcium (Ca)	2022/07/04		95	%	80 - 120
			Total Chromium (Cr)	2022/07/04		93	%	80 - 120
			Total Cobalt (Co)	2022/07/04		93	%	80 - 120
			Total Copper (Cu)	2022/07/04		93	%	80 - 120
			Total Iron (Fe)	2022/07/04		NC	%	80 - 120
			Total Lead (Pb)	2022/07/04		96	%	80 - 120
			Total Magnesium (Mg)	2022/07/04		96	%	80 - 120
			Total Manganese (Mn)	2022/07/04		NC	%	80 - 120
			Total Molybdenum (Mo)	2022/07/04		98	%	80 - 120
			Total Nickel (Ni)	2022/07/04		93	%	80 - 120
			Total Phosphorus (P)	2022/07/04		100	%	80 - 120
			Total Potassium (K)	2022/07/04		97	%	80 - 120
			Total Selenium (Se)	2022/07/04		95	%	80 - 120
			Total Silver (Ag)	2022/07/04		95	%	80 - 120
			Total Sodium (Na)	2022/07/04		94	%	80 - 120
			Total Strontium (Sr)	2022/07/04		92	%	80 - 120
			Total Thallium (Tl)	2022/07/04		96	%	80 - 120
			Total Tin (Sn)	2022/07/04		96	%	80 - 120
			Total Titanium (Ti)	2022/07/04		91	%	80 - 120
			Total Uranium (U)	2022/07/04		102	%	80 - 120
			Total Vanadium (V)	2022/07/04		93	%	80 - 120
			Total Zinc (Zn)	2022/07/04		93	%	80 - 120
8083658	JHY	Spiked Blank	Total Aluminum (Al)	2022/06/30		96	%	80 - 120
			Total Antimony (Sb)	2022/06/30		100	%	80 - 120
			Total Arsenic (As)	2022/06/30		91	%	80 - 120
			Total Barium (Ba)	2022/06/30		93	%	80 - 120
			Total Beryllium (Be)	2022/06/30		94	%	80 - 120
			Total Bismuth (Bi)	2022/06/30		96	%	80 - 120
			Total Boron (B)	2022/06/30		95	%	80 - 120
			Total Cadmium (Cd)	2022/06/30		94	%	80 - 120
			Total Calcium (Ca)	2022/06/30		98	%	80 - 120
			Total Chromium (Cr)	2022/06/30		94	%	80 - 120
			Total Cobalt (Co)	2022/06/30		94	%	80 - 120
			Total Copper (Cu)	2022/06/30		95	%	80 - 120
			Total Iron (Fe)	2022/06/30		99	%	80 - 120
			Total Lead (Pb)	2022/06/30		96	%	80 - 120
			Total Magnesium (Mg)	2022/06/30		96	%	80 - 120
			Total Manganese (Mn)	2022/06/30		95	%	80 - 120
			Total Molybdenum (Mo)	2022/06/30		97	%	80 - 120
			Total Nickel (Ni)	2022/06/30		95	%	80 - 120
			Total Phosphorus (P)	2022/06/30		99	%	80 - 120
			Total Potassium (K)	2022/06/30		99	%	80 - 120
			Total Selenium (Se)	2022/06/30		94	%	80 - 120
			Total Silver (Ag)	2022/06/30		94	%	80 - 120
			Total Sodium (Na)	2022/06/30		95	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Strontium (Sr)	2022/06/30		94	%	80 - 120
			Total Thallium (Tl)	2022/06/30		96	%	80 - 120
			Total Tin (Sn)	2022/06/30		95	%	80 - 120
			Total Titanium (Ti)	2022/06/30		98	%	80 - 120
			Total Uranium (U)	2022/06/30		101	%	80 - 120
			Total Vanadium (V)	2022/06/30		95	%	80 - 120
			Total Zinc (Zn)	2022/06/30		95	%	80 - 120
8083658	JHY	Method Blank	Total Aluminum (Al)	2022/06/30	<5.0		ug/L	
			Total Antimony (Sb)	2022/06/30	<1.0		ug/L	
			Total Arsenic (As)	2022/06/30	<1.0		ug/L	
			Total Barium (Ba)	2022/06/30	<1.0		ug/L	
			Total Beryllium (Be)	2022/06/30	<0.10		ug/L	
			Total Bismuth (Bi)	2022/06/30	<2.0		ug/L	
			Total Boron (B)	2022/06/30	<50		ug/L	
			Total Cadmium (Cd)	2022/06/30	<0.010		ug/L	
			Total Calcium (Ca)	2022/06/30	<100		ug/L	
			Total Chromium (Cr)	2022/06/30	<1.0		ug/L	
			Total Cobalt (Co)	2022/06/30	<0.40		ug/L	
			Total Copper (Cu)	2022/06/30	<0.50		ug/L	
			Total Iron (Fe)	2022/06/30	<50		ug/L	
			Total Lead (Pb)	2022/06/30	<0.50		ug/L	
			Total Magnesium (Mg)	2022/06/30	<100		ug/L	
			Total Manganese (Mn)	2022/06/30	<2.0		ug/L	
			Total Molybdenum (Mo)	2022/06/30	<2.0		ug/L	
			Total Nickel (Ni)	2022/06/30	<2.0		ug/L	
			Total Phosphorus (P)	2022/06/30	<100		ug/L	
			Total Potassium (K)	2022/06/30	<100		ug/L	
			Total Selenium (Se)	2022/06/30	<0.50		ug/L	
			Total Silver (Ag)	2022/06/30	<0.10		ug/L	
			Total Sodium (Na)	2022/06/30	<100		ug/L	
			Total Strontium (Sr)	2022/06/30	<2.0		ug/L	
			Total Thallium (Tl)	2022/06/30	<0.10		ug/L	
			Total Tin (Sn)	2022/06/30	<2.0		ug/L	
			Total Titanium (Ti)	2022/06/30	<2.0		ug/L	
			Total Uranium (U)	2022/06/30	<0.10		ug/L	
			Total Vanadium (V)	2022/06/30	<2.0		ug/L	
			Total Zinc (Zn)	2022/06/30	<5.0		ug/L	
8083658	JHY	RPD	Total Aluminum (Al)	2022/06/30	1.4		%	20
			Total Boron (B)	2022/06/30	0.58		%	20
			Total Copper (Cu)	2022/06/30	1.1		%	20
			Total Iron (Fe)	2022/06/30	1.0		%	20
			Total Phosphorus (P)	2022/06/30	5.0		%	20
			Total Zinc (Zn)	2022/06/30	0.090		%	20
8087680	JHY	Matrix Spike	Dissolved Aluminum (Al)	2022/07/04		100	%	80 - 120
			Dissolved Antimony (Sb)	2022/07/04		95	%	80 - 120
			Dissolved Arsenic (As)	2022/07/04		94	%	80 - 120
			Dissolved Barium (Ba)	2022/07/04		93	%	80 - 120
			Dissolved Beryllium (Be)	2022/07/04		98	%	80 - 120
			Dissolved Bismuth (Bi)	2022/07/04		92	%	80 - 120
			Dissolved Boron (B)	2022/07/04		94	%	80 - 120
			Dissolved Cadmium (Cd)	2022/07/04		95	%	80 - 120
			Dissolved Calcium (Ca)	2022/07/04		NC	%	80 - 120
			Dissolved Chromium (Cr)	2022/07/04		96	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Cobalt (Co)	2022/07/04		98	%	80 - 120
			Dissolved Copper (Cu)	2022/07/04		97	%	80 - 120
			Dissolved Iron (Fe)	2022/07/04		97	%	80 - 120
			Dissolved Lead (Pb)	2022/07/04		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/07/04		95	%	80 - 120
			Dissolved Manganese (Mn)	2022/07/04		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/07/04		97	%	80 - 120
			Dissolved Nickel (Ni)	2022/07/04		99	%	80 - 120
			Dissolved Phosphorus (P)	2022/07/04		100	%	80 - 120
			Dissolved Potassium (K)	2022/07/04		97	%	80 - 120
			Dissolved Selenium (Se)	2022/07/04		100	%	80 - 120
			Dissolved Silver (Ag)	2022/07/04		92	%	80 - 120
			Dissolved Sodium (Na)	2022/07/04		96	%	80 - 120
			Dissolved Strontium (Sr)	2022/07/04		NC	%	80 - 120
			Dissolved Thallium (Tl)	2022/07/04		95	%	80 - 120
			Dissolved Tin (Sn)	2022/07/04		96	%	80 - 120
			Dissolved Titanium (Ti)	2022/07/04		99	%	80 - 120
			Dissolved Uranium (U)	2022/07/04		101	%	80 - 120
			Dissolved Vanadium (V)	2022/07/04		99	%	80 - 120
			Dissolved Zinc (Zn)	2022/07/04		97	%	80 - 120
8087680	JHY	Spiked Blank	Dissolved Aluminum (Al)	2022/07/04		102	%	80 - 120
			Dissolved Antimony (Sb)	2022/07/04		96	%	80 - 120
			Dissolved Arsenic (As)	2022/07/04		94	%	80 - 120
			Dissolved Barium (Ba)	2022/07/04		95	%	80 - 120
			Dissolved Beryllium (Be)	2022/07/04		100	%	80 - 120
			Dissolved Bismuth (Bi)	2022/07/04		95	%	80 - 120
			Dissolved Boron (B)	2022/07/04		97	%	80 - 120
			Dissolved Cadmium (Cd)	2022/07/04		97	%	80 - 120
			Dissolved Calcium (Ca)	2022/07/04		99	%	80 - 120
			Dissolved Chromium (Cr)	2022/07/04		97	%	80 - 120
			Dissolved Cobalt (Co)	2022/07/04		100	%	80 - 120
			Dissolved Copper (Cu)	2022/07/04		99	%	80 - 120
			Dissolved Iron (Fe)	2022/07/04		99	%	80 - 120
			Dissolved Lead (Pb)	2022/07/04		99	%	80 - 120
			Dissolved Magnesium (Mg)	2022/07/04		100	%	80 - 120
			Dissolved Manganese (Mn)	2022/07/04		100	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/07/04		97	%	80 - 120
			Dissolved Nickel (Ni)	2022/07/04		100	%	80 - 120
			Dissolved Phosphorus (P)	2022/07/04		102	%	80 - 120
			Dissolved Potassium (K)	2022/07/04		100	%	80 - 120
			Dissolved Selenium (Se)	2022/07/04		101	%	80 - 120
			Dissolved Silver (Ag)	2022/07/04		97	%	80 - 120
			Dissolved Sodium (Na)	2022/07/04		99	%	80 - 120
			Dissolved Strontium (Sr)	2022/07/04		95	%	80 - 120
			Dissolved Thallium (Tl)	2022/07/04		97	%	80 - 120
			Dissolved Tin (Sn)	2022/07/04		96	%	80 - 120
			Dissolved Titanium (Ti)	2022/07/04		101	%	80 - 120
			Dissolved Uranium (U)	2022/07/04		101	%	80 - 120
			Dissolved Vanadium (V)	2022/07/04		100	%	80 - 120
			Dissolved Zinc (Zn)	2022/07/04		98	%	80 - 120
8087680	JHY	Method Blank	Dissolved Aluminum (Al)	2022/07/04	<5.0		ug/L	
			Dissolved Antimony (Sb)	2022/07/04	<1.0		ug/L	
			Dissolved Arsenic (As)	2022/07/04	<1.0		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Barium (Ba)	2022/07/04	<1.0		ug/L	
			Dissolved Beryllium (Be)	2022/07/04	<0.10		ug/L	
			Dissolved Bismuth (Bi)	2022/07/04	<2.0		ug/L	
			Dissolved Boron (B)	2022/07/04	<50		ug/L	
			Dissolved Cadmium (Cd)	2022/07/04	<0.010		ug/L	
			Dissolved Calcium (Ca)	2022/07/04	<100		ug/L	
			Dissolved Chromium (Cr)	2022/07/04	<1.0		ug/L	
			Dissolved Cobalt (Co)	2022/07/04	<0.40		ug/L	
			Dissolved Copper (Cu)	2022/07/04	<0.50		ug/L	
			Dissolved Iron (Fe)	2022/07/04	<50		ug/L	
			Dissolved Lead (Pb)	2022/07/04	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2022/07/04	<100		ug/L	
			Dissolved Manganese (Mn)	2022/07/04	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2022/07/04	<2.0		ug/L	
			Dissolved Nickel (Ni)	2022/07/04	<2.0		ug/L	
			Dissolved Phosphorus (P)	2022/07/04	<100		ug/L	
			Dissolved Potassium (K)	2022/07/04	<100		ug/L	
			Dissolved Selenium (Se)	2022/07/04	<0.50		ug/L	
			Dissolved Silver (Ag)	2022/07/04	<0.10		ug/L	
			Dissolved Sodium (Na)	2022/07/04	<100		ug/L	
			Dissolved Strontium (Sr)	2022/07/04	<2.0		ug/L	
			Dissolved Thallium (Tl)	2022/07/04	<0.10		ug/L	
			Dissolved Tin (Sn)	2022/07/04	<2.0		ug/L	
			Dissolved Titanium (Ti)	2022/07/04	<2.0		ug/L	
			Dissolved Uranium (U)	2022/07/04	<0.10		ug/L	
			Dissolved Vanadium (V)	2022/07/04	<2.0		ug/L	
			Dissolved Zinc (Zn)	2022/07/04	<5.0		ug/L	
8087680	JHY	RPD	Dissolved Aluminum (Al)	2022/07/04	4.8		%	20
			Dissolved Antimony (Sb)	2022/07/04	NC		%	20
			Dissolved Arsenic (As)	2022/07/04	0.090		%	20
			Dissolved Barium (Ba)	2022/07/04	2.0		%	20
			Dissolved Beryllium (Be)	2022/07/04	NC		%	20
			Dissolved Bismuth (Bi)	2022/07/04	NC		%	20
			Dissolved Boron (B)	2022/07/04	NC		%	20
			Dissolved Cadmium (Cd)	2022/07/04	NC		%	20
			Dissolved Calcium (Ca)	2022/07/04	1.3		%	20
			Dissolved Chromium (Cr)	2022/07/04	NC		%	20
			Dissolved Cobalt (Co)	2022/07/04	NC		%	20
			Dissolved Copper (Cu)	2022/07/04	0.25		%	20
			Dissolved Iron (Fe)	2022/07/04	NC		%	20
			Dissolved Lead (Pb)	2022/07/04	NC		%	20
			Dissolved Magnesium (Mg)	2022/07/04	0.086		%	20
			Dissolved Manganese (Mn)	2022/07/04	2.2		%	20
			Dissolved Molybdenum (Mo)	2022/07/04	1.4		%	20
			Dissolved Nickel (Ni)	2022/07/04	NC		%	20
			Dissolved Phosphorus (P)	2022/07/04	NC		%	20
			Dissolved Potassium (K)	2022/07/04	0.40		%	20
			Dissolved Selenium (Se)	2022/07/04	NC		%	20
			Dissolved Silver (Ag)	2022/07/04	NC		%	20
			Dissolved Sodium (Na)	2022/07/04	1.0		%	20
			Dissolved Strontium (Sr)	2022/07/04	0.33		%	20
			Dissolved Thallium (Tl)	2022/07/04	NC		%	20
			Dissolved Tin (Sn)	2022/07/04	NC		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Titanium (Ti)	2022/07/04	NC		%	20
			Dissolved Uranium (U)	2022/07/04	0.76		%	20
			Dissolved Vanadium (V)	2022/07/04	NC		%	20
			Dissolved Zinc (Zn)	2022/07/04	NC		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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Bureau Veritas Job #: C2H6761
Report Date: 2022/07/05

AECOM Canada Ltd
Client Project #: 60680169
Site Location: MOOSELAND
Sampler Initials: DB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Colleen Acker, B.Sc, Scientific Service Specialist

Janah Rhyno, Metals Supervisor-Bedford

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770

CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

Invoice Information	Invoice to (requires report) ☐	Report Information (if differs from invoice)		Project Information	
Company:	Aecom Canada Ltd	Company:	Aecom	Quotation #:	
Contact Name:	Accounts Payable	Contact Name:	David Brayden / Romy McNeil	P.O. #/ AFE#:	LAB USE ONLY - PLACE STICKER HERE
Street Address:	1701 Hollis St 5th Floor	Street Address:		Project #:	60688169
City:	Halifax Prov: NS Postal Code: B3J 3N8	City:	Prov: Postal Code:	Site #:	
Phone:		Phone:	902-471-6914 / 902-292-2367	Site Location:	Meaghers	Rush Confirmation #:
Email:	CANSCC-E.Billing@Aecom.com	Email:	Romy.McNeil@Aecom.com	Site Location Province:	NS	
Copies:		Copies:	David.Brayden@Aecom.com	Sampled By:	DB/CE	

Regulatory Criteria

**Specify matrix for each regulation: surface water (SW)/groundwater (GW)/tap water/sewage/effluent/seawater/potable water/non-potable water/tissue/soil/sludge/metal	Regulation	**Matrix

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	MM	DD	Time (24hr) HH	MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well / surface water	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)-well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 RBCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (presence/absence)	19 Total coliform/E.coli (count)	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE
1	MW 1	22	06	16	PM			✓						✓														1	
2	MW 2							✓						✓														1	
3	MW 3							✓						✓														1	
4	MW 4							✓						✓														1	
5	MW 5							✓						✓														1	
6	MW 6							✓						✓														1	
7	Dup 1							✓						✓														1	
8	SW 1	22	06	20									X																
9	SW 2												X																
10	SW 3												X																
11	SW 4												X																
12	SW 5												X																

Regular Turnaround Time (TAT): ☒ 5 to 7 Day ☐ 10 Day

Rush Turnaround Time (TAT) Surcharges apply: ☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 4 Day

Date Required: YY MM DD

Comments

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C				LAB USE ONLY	Yes	No	°C				LAB USE ONLY	Yes	No	°C				Temperature reading by:
Seal present							Seal present							Seal present							
Seal intact							Seal intact							Seal intact							
Cooling media present				AC TR			Cooling media present				1	2	3	Cooling media present				1	2	3	
				1	2	3															

Relinquished by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Received by: (Signature/ Print)	Date YY	MM	DD	Time HH	MM	Special instructions
1 Romy McNeil	22	06	21	14	35	1 Holly Jessome HOLLY JESSOME						C2H6761
2 Craig Everett						2						

www.BVNA.com

105-200 Bluewater Road, Bedford, NS B4B 1G9
49-55 Elizabeth Avenue, St John's, NL A1A 1W9
465 George Street ,Unit G, Sydney, NS B1P 1K5

Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
Tel. 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770

CHAIN OF CUSTODY RECORD

ENV COC - 00016v3

CONTINUED

[PAGE 1 REFERENCE]

Company:	0
Contact Name:	0
Project #:	0

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	Sample Identification	Date Sampled YY	Date Sampled MM	Date Sampled DD	Time (24hr) HH	Time (24hr) MM	Matrix	1 FIELD FILTERED	2 FIELD PRESERVED	3 LAB FILTRATION REQUIRED	4 RCAp-MS (total metals) well /SW	5 RCAp-MS (dissolved metals) - GW	6 Total metals (default)- well/SW	7 Dissolved metals for ground water	8 Total mercury - water	9 Dissolved mercury - water	10 Metals/mercury default (acid ext.)	11 HWS boron (CCME agri/ landfill)	12 ABCA HC (BTEX, C6-C32)	13 CCME HC (F1/BTEX, F2-F4)	14 PAHs (default for water/soil)	15 PCBs - default	16 PCBs - CCME sediment	17 VOCs	18 Total coliform/E.coli (F/A)	19 Total coliform/E coli (count)	20	21 # OF CONTAINERS SUBMITTED	22 HOLD - DO NOT ANALYZE	Same as above / Comments
13	SW 6	22	06	20									X				X													
14	SW 7	"	"	"									X				X													
15	SW 8												X				X													
16	SW 9												X				X													
17	SW 10												X				X													
18	SW 11												X				X													
19	SW 12												X				X													
20	SW 13												X				X													
21	DUP 4	"	"	"									X				X													
22																	n/a													
23																														
24																														
25																														
26																														
27																														
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39																														
40																														

Appendix D. Monitoring Well Logs

PROJECT: Mooseland Mine Sites	CLIENT: Nova Scotia Lands Inc.	TESTHOLE NO.: **MW1**
LOCATION: Mooseland, Nova Scotia	COORDINATES: UTM N 4977939.127 E 24399495.96	PROJECT NO.: 60680169
CONTRACTOR: Nova Drilling Inc.	METHOD: Auger	ELEVATION (m): 96.109

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

BACKFILL TYPE: BENTONITE | GRAVEL | SLOUGH | GROUT | CUTTINGS | SAND

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0			- Waste rock				96
1	FI					Recovery: 13.9%; RQD: 0%	95
2			- Waste rock				94
3	FI					Recovery: 42%; RQD: 0%	93
			- Waste rock				
4	FI					Recovery: 43.8%; RQD: 72%	92
			- End of borehole at 3.76 m - Bedrock encountered				
5							91
6							90
7							

AECOM

LOGGED BY: Dave Bugden	COMPLETION DEPTH: 3.76 m
REVIEWED BY: Ella Maltby	COMPLETION DATE: 6/13/2022
PROJECT MANAGER: Rory McNeil	Page 1 of 1

LOG OF TESTHOLE MOOSELAND_20220801.GPJ UMA_COC.GDT PRINT: 9/2/22 By:

PROJECT: Mooseland Mine Sites	CLIENT: Nova Scotia Lands Inc.	TESTHOLE NO.: **MW2**
LOCATION: Mooseland, Nova Scotia	COORDINATES: UTM N 4977918.143 E 24399465.21	PROJECT NO.: 60680169
CONTRACTOR: Nova Drilling Inc.	METHOD: Auger	ELEVATION (m): 99.456

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

BACKFILL TYPE: BENTONITE | GRAVEL | SLOUGH | GROUT | CUTTINGS | SAND

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0			- Waste rock				99
1	FILL					Recovery: 12%; RQD: 0%	98
2			- Waste rock				
	FILL					Recovery: 43%; RQD: 0%	97
			- Waste rock				
3	FILL					Recovery: 59%; RQD: 0%	
			- Waste rock				
	FILL					Recovery: 57%; RQD: 24%	96
			- End of borehole at 3.62 m - Bedrock encountered				
4							95
5							
6							94
							93
7							

AECOM

LOGGED BY: Dave Bugden	COMPLETION DEPTH: 3.62 m
REVIEWED BY: Ella Maltby	COMPLETION DATE: 6/13/2022
PROJECT MANAGER: Rory McNeil	Page 1 of 1

LOG OF TESTHOLE MOOSELAND_20220801.GPJ UMA_COC.GDT PRINT: 9/2/22 By:

PROJECT: Mooseland Mine Sites	CLIENT: Nova Scotia Lands Inc.	TESTHOLE NO.: **MW3**
LOCATION: Mooseland, Nova Scotia	COORDINATES: UTM N 4977962.233 E 24399371.08	PROJECT NO.: 60680169
CONTRACTOR: Nova Drilling Inc.	METHOD: Auger	ELEVATION (m): 103.036

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

BACKFILL TYPE: BENTONITE | GRAVEL | SLOUGH | GROUT | CUTTINGS | SAND

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0			- Cobble				
1	CB					Recovery: 15%; RQD: 0%	102
			- Cobble				
2	CB					Recovery: 56%; RQD: 0%	101
			- Cobble				
	CB					Recovery: 80%; RQD: 26%	
			- Bedrock				
3	BE					Recovery: 78%; RQD: 28%	100
			- Bedrock				
	BE					Recovery: 96%; RQD: 68%	
			- End of borehole at 3.77 m				
4							99
5							98
6							97
7							

AECOM

LOGGED BY: Dave Bugden	COMPLETION DEPTH: 3.77 m
REVIEWED BY: Ella Maltby	COMPLETION DATE: 6/13/2022
PROJECT MANAGER: Rory McNeil	Page 1 of 1

LOG OF TESTHOLE MOOSELAND_20220801.GPJ UMA_COC.GDT PRINT: 9/2/22 By:

PROJECT: Mooseland Mine Sites	CLIENT: Nova Scotia Lands Inc.	TESTHOLE NO.: **MW4**
LOCATION: Mooseland, Nova Scotia	COORDINATES: UTM N 4978088.24 E 24398839.71	PROJECT NO.: 60680169
CONTRACTOR: Nova Drilling Inc.	METHOD: Auger	ELEVATION (m): 117.509

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

BACKFILL TYPE: BENTONITE | GRAVEL | SLOUGH | GROUT | CUTTINGS | SAND

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0			- Brown silty sand some gravel and cobbles. Did not split spoon exact soil stratigraphy not collected.				117
1							116
2							115
3	SM						114
4							113
5							112
6							111
7							

LOG OF TESTHOLE MOOSELAND_20220801.GPJ UMA_COC.GDT PRINT: 9/2/22 By:

AECOM

LOGGED BY: Dave Bugden	COMPLETION DEPTH: 7.65 m
REVIEWED BY: Ella Maltby	COMPLETION DATE: 6/14/2022
PROJECT MANAGER: Rory McNeil	Page 1 of 2

PROJECT: Mooseland Mine Sites	CLIENT: Nova Scotia Lands Inc.	TESTHOLE NO.: **MW4**
LOCATION: Mooseland, Nova Scotia	COORDINATES: UTM N 4978088.24 E 24398839.71	PROJECT NO.: 60680169
CONTRACTOR: Nova Drilling Inc.	METHOD: Auger	ELEVATION (m): 117.509

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

BACKFILL TYPE: BENTONITE | GRAVEL | SLOUGH | GROUT | CUTTINGS | SAND

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
7	SM		- End of borehole at 7.65 m				110
8							109
9							108
10							107
11							106
12							105
13							104
14							

AECOM

LOGGED BY: Dave Bugden | COMPLETION DEPTH: 7.65 m

REVIEWED BY: Ella Maltby | COMPLETION DATE: 6/14/2022

PROJECT MANAGER: Rory McNeil

LOG OF TESTHOLE MOOSELAND_20220801.GPJ UMA_COC.GDT PRINT: 9/2/22 By:

PROJECT: Mooseland Mine Sites	CLIENT: Nova Scotia Lands Inc.	TESTHOLE NO.: **MW5**
LOCATION: Mooseland, Nova Scotia	COORDINATES: UTM N 4977920.19 E 24399730.85	PROJECT NO.: 60680169
CONTRACTOR: Nova Drilling Inc.	METHOD: Auger	ELEVATION (m): 87.922

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

BACKFILL TYPE: BENTONITE | GRAVEL | SLOUGH | GROUT | CUTTINGS | SAND

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	PEAT		- Moss, rooted, peat			The height of the stick-up has not been measured yet.	
	OR		- Brown organics, some silt		1	MW5 SA1 - Metals	
	SASI		- Gray but sandy silt, trace clay		2	MW5 SA2 - Metals and PAH	
1			- Refusal at 1.07 m, rock cobble				87
2							86
3							85

LOG OF TESTHOLE MOOSELAND_20220801.GPJ UMA_COC.GDT PRINT: 9/2/22 By:

AECOM

LOGGED BY: Dave Bugden
REVIEWED BY: Ella Maltby
PROJECT MANAGER: Rory McNeil

COMPLETION DEPTH: 1.07 m
COMPLETION DATE: 6/15/2022

PROJECT: Mooseland Mine Sites	CLIENT: Nova Scotia Lands Inc.	TESTHOLE NO.: **MW6**
LOCATION: Mooseland, Nova Scotia	COORDINATES: UTM N 4978083.884 E 24399557.47	PROJECT NO.: 60680169
CONTRACTOR: Nova Drilling Inc.	METHOD: Auger	ELEVATION (m): 88.577

SAMPLE TYPE: GRAB | SHELBY TUBE | SPLIT SPOON | BULK | NO RECOVERY | CORE

BACKFILL TYPE: BENTONITE | GRAVEL | SLOUGH | GROUT | CUTTINGS | SAND

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0			- Orange brown tailings			The height of the stick-up has not been measured yet.	
	FI				1	MW6 SA1 - Metals and PAH	
			- Gray tailings with silt				
					2	MW6 SA2 - Metals and PAH	
	FI						88
					3	MW6 SA3 - Metals	
	PEAT		- Black peat				
			- End of borehole - Refusal at 0.9 m				
1							
							87
2							

AECOM

LOGGED BY: Dave Bugden	COMPLETION DEPTH: 0.89 m
REVIEWED BY: Ella Maltby	COMPLETION DATE: 6/15/2022
PROJECT MANAGER: Rory McNeil	Page 1 of 1

LOG OF TESTHOLE MOOSELAND_20220801.GPJ UMA_COC.GDT PRINT: 9/2/22 By:

Appendix E. Multiple Accounts Analysis

Table E-1: Remedial Options Assessment Scoring Rationale

	Factors	Description	Scoring Rationale		
			Low Score (1-2)	Mid Score (3)	High Score (4-5)
Socio-Economic	**Community Acceptance**	Considers the remediation alternative that aligns with existing community expectations and addresses the local communities' concerns.	Community will not accept option	Reasonably likely that community will accept option	Highly likely community will accept option
	Use of Local Labour Force	Considers whether the remedial alternative requires specialized training or experience that would prevent locals from assisting in the work.	Will not use local labour/technical solution too complex and requires specialists	Will use a combination of local labour and technical specialists	Will use local labour and have local personnel assisting in technical tasks with training
Technical	**Constructability**	Considers ability to obtain required equipment and workers and transport to site and difficultly in implementing the remedial action (community ability to support).	Complex constructability concerns	Reasonably little constructability concerns, may include some complex aspects	No constructability concerns, straightforward solution
	Access/ Transportation	Ability/ease to mobilize equipment to site and within site	Difficult to mobilize to site and/or difficult to move equipment on-site	Some mobilization and/or on-site movement challenges, may be mitigations	No difficulty mobilizing to site, and no difficulty moving around site
	Worker Health and Safety	Considers the potential health & safety risks to workers to implement the remedial measure.	High risk activities required to undertake remediation, mitigation is a high relative challenge	Some medium to high risk activities required, mitigations available	No medium to high risk activities that do not have risk mitigations
	Effectiveness	Considers the success of implementation and the life expectancy of the remedial measures and if it's acceptable to the regulatory agencies.	Short life expectancy of remedial design (<25 years)	Mid life expectancy of remedial design (>25,<100 years)	Long term remedial design (>100 years)
Environment & Sustainability	**Meets Remedial Objectives**	Considers the ability of an alternative to meet the intent of the Remedial Objectives	Does not meet current intent of remedial objectives	May meet intent of remedial objective and/or remedial objective may be adjusted	Meets current intent of remedial objective
	Climate Change Considerations	Includes all Climate Change Considerations. A high level of hydrocarbon consumption (diesel) has an impact on the carbon footprint (GHG) during hauling to site and during site work combustion, spill risks (transportation, storage, use). Consideration includes the level of effort (LOE) for truck transport mobilization for equipment and materials.	Remedial approach has high LOE related to fuel usage	Remedial approach may have high fuel needs for limited aspects	Remedial approach has minimized fuel usage
	Regulatory Acceptance	Considers how acceptable the proposed remedial alternative will be to regulators, not including community engagement.	Not likely accepted by the regulator	May be accepted by the regulator, may require further amendments to design	Accepted by the regulator
Costs	**Construction Costs (Overall Construction Costs)**	Construction Cost (incl. Mobilization and Demobilization, exc. Engineering, Owners and Long-Term) Includes the costs for equipment, materials and workers for all construction activities to be mobilized/ demobilized to/from the site for each construction season. Includes the costs to implement the remedial alternative, considering the remoteness of the area, length of time to complete the remedial measures and contingency. Includes Construction Risks to this category.	High Cost >$500,000	Medium Cost >$100,000 <$500,00	Low cost >$100,000
	Ongoing Monitoring, Maintenance & Sampling	Includes costs related to maintenance & long-term monitoring, assuming all methods will require water, sediment and aquatic effect monitoring of all remaining water bodies.	Extensive long term monitoring over 25 years for multiple items	Long term monitoring for limited items, or short monitoring period	Walk away solution with limited long term monitoring required

Table E-2: Remedial Options Assessment Scoring

Project Element	Socio-Economic		Technical				Environment & Sustainability			Costs		Total
	Community Acceptance	Use of Local Labour Force	Constructability	Access/ Transportation	Worker Health and Safety	Effetiveness	Meets Remedial Objectives	Climate Change Considerations	Regulatory Acceptance	Overall Construction Costs	Ongoing Monitoring, Maintenance & Sampling	
Category Weighting	20%		25%				30%			25%		
Criterion Weighting	2.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	
Waste Rock												
Excavation and Off-Site Disposal	4	4	4	2	3	5	4	2	5	1	5	15.9
Soil Cap	3	4	4	3	4	4	4	3	3	3	2	14.9
Soil/Synthetic Cap	3	4	3	3	4	4	4	4	4	2	3	15.0
Backfill Helca Shaft	4	2	4	4	4	2	2	4	2	4	2	13.1
Risk Management	2	1	5	5	5	3	3	5	2	4	1	14.3
Leave in Place - No Remedial Action	1	1	5	5	5	1	1	5	1	5	1	11.6
Impacted Tailings Areas												
Excavation and Off-Site Disposal	3	4	3	2	3	4	4	2	3	1	5	13.3
Soil Cap	4	4	4	3	4	4	4	3	3	3	2	15.3
Soil/Synthetic Cap	4	4	3	3	4	4	4	4	4	2	3	15.4
Risk Management	2	1	5	5	5	3	3	5	2	4	1	14.3
Leave in Place - No Remedial Action	1	1	5	5	5	1	1	5	1	5	1	11.6
Impacted Soils												
Excavation and Off-Site Disposal	3	4	2	2	3	4	4	2	3	1	5	12.8
Soil Cap	4	4	3	3	4	4	4	3	3	3	2	14.8
Soil/Synthetic Cap	4	4	2	3	4	4	4	4	4	2	3	14.9
Risk Management	2	1	5	5	5	3	3	5	2	4	1	14.3
Leave in Place - No Remedial Action	1	1	5	5	5	1	1	5	1	5	1	11.6
Mine Shaft												
Earthen Backfill	3	4	3	1	3	4	4	2	4	1	3	13.2
Concrete Cap	4	3	3	3	4	4	4	3	4	3	4	15.7
Polyurethane Foam Plug	3	2	2	3	4	3	4	4	3	4	3	14.0
Physical Barrier (e.g., fence)	3	3	4	4	4	2	3	4	3	4	3	14.4
Leave in Place - No Remedial Action	1	1	5	5	5	1	1	5	1	5	2	11.8
Surface Debris (Non-Wood Materials)												
On-Site Disposal	3	4	3	5	4	4	4	4	4	3	2	15.8
Off-Site Disposal	5	4	5	3	3	5	5	3	5	4	5	19.5
Leave in Place - No Remedial Action	1	1	5	5	5	1	1	5	1	5	1	11.6
Impacted Surface Water and Sediment - Tangier River												
Leave in Place - No Remedial Action	4	1	5	5	5	4	4	5	4	5	3	18.4
Impacted Surface Water on Site (Shaft)												
Pump and Treat	4	3	3	4	3	4	4	3	4	4	5	16.4
Off-Site Disposal	5	3	4	1	2	5	5	1	5	2	5	16.4
Passive Treatment	2	1	4	4	4	3	3	4	3	5	2	14.3
Leave in Place - No Remedial Action	1	1	5	5	5	1	1	5	1	5	1	11.6
Impacted Surface Water on Site (Pond)												
Pump and Treat	4	3	1	3	3	4	4	3	4	2	4	13.9
Off-Site Disposal	5	3	1	1	2	5	5	1	5	1	4	14.2
Passive Treatment	2	1	4	4	4	3	4	4	4	5	3	15.8
Leave in Place - No Remedial Action	1	1	5	5	5	1	1	5	1	5	1	11.6
Impacted Groundwater												
Leave in Place - No Remedial Action	2	1	5	5	5	2	1	5	1	5	3	13.0

Appendix F. NSE Forms

Print Clear Form

Environmental Site Assessment for Limited Remediation Checklist

This checklist is for all sites undergoing L1, L2 or L3 Limited Remediation

NOVA SCOTIA

☑ New submission ☐ Updated checklist NSE file number (mandatory) **33000-**_____

Instructions for completing this checklist

- All relevant sections of this checklist must be completed and must accompany the Environmental Site Assessment for Limited Remediation Report.
- The signature required on this checklist is from the managing site professional.
- All regulatory protocols must be followed, and all forms/checklists must be completed separately for each property. This means that a source property and an impacted third-party property must have all documents filed separately. Once the source property or impacted third-party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- Each checklist item corresponds to a requirement in the Regulations or Protocols. It is not acceptable to check a field and refer to justification of why a minimum requirement was not completed.
- Forms/checklists must be complete prior to filing with the Minister.

1 - Site Location and Contact Information

Details provided on this form are applicable to ☑ Source Property **or** ☐ Impacted Third-Party Property

Site Location
Mandatory must be completed.

Site Address 3630 Mooseland Road, Mooseland, NS City Mooseland
Parcel Identification Number (PID) 41019332 Postal Code B0J 3H0
GPS (NAD83 UTM coordinates, source central point) Easting 517,820 Northing 4,975,769
Zone (select one) ☐ 19 ☑ 20 ☐ 21
Description (optional) _____

Property Owner
Mandatory must be completed.

Name Karen Gatien, Deputy Minister, Dept. of Natural Resources and Re Phone (902) 424-4450
Email Karen.Gatien@novascotia.ca Fax _____
Recognized Agent (if applicable) Donnie Burke, Executive Director (donnie.burke@novascotia.ca)
Company Name (if applicable) Nova Scotia Lands Inc. City Sydney
Mailing Address 45 Wabana Court, P.O., Box 420, Station A Postal Code B1P 6H2
Preferred method of correspondence (select one) ☐ Letter **or** ☑ Email

Contact for Correspondence
If different than above.

Name Peter Geddes, Executive Director Phone (902) 424-4988
Email peter.geddes@novascotia.ca Fax _____
Recognized Agent (if applicable) _____
Company Name (if applicable) Dept. of Natural Resources and Renewables City Halifax
Mailing Address 1701 Hollis Street, P.O. Box 608 Postal Code B3J 2T9
Preferred method of correspondence (select one) ☐ Letter **or** ☑ Email

Site Professional
Mandatory must be completed.

Name Derek Heath Phone (902) 334-2752
Email derek.heath@aecom.com Fax _____
Company Name AECOM Canada Ltd. City Halifax
Mailing Address 1701 Hollis Street, SH400 Postal Code B3J 3M8
Professional Registration Number 0029
Preferred method of correspondence (select one) ☐ Letter **or** ☑ Email

2 - Environmental Site Assessment (ESA) Requirements for Limited Remediation

Type of Environmental Site Assessment conducted under Limited Remediation

Check type of ESA completed and complete corresponding section below.

❑ L1 ESA ☑ L2 ESA ❑ L3 ESA

2a - L1 Environmental Site Assessment Requirements Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
Restrictions for use of L1				
1 Contamination has not extended below the water table. All potential pathways in the subsurface have been fully investigated to ensure contamination has not come into contact with groundwater	❑			
2 Contaminants listed in Section 4.1 b) of PRO-200, Environmental Site Assessment for Limited Remediation Protocol exceeding Tier 1 EQS are not present at a depth greater than 0.3 m from surface	❑			
3 Contamination has not directly impacted a watercourse, wetland or potable water	❑			
4 Contamination has not come in contact with bedrock on a potable site	❑			
5 Measures greater than short-term emergency action and/or temporary excavation are not required to address vapours within a building	❑			
Intrusive Investigation				
6 All contamination has been delineated to appropriate Tier 1 EQS criteria specified in the PRO-100, Notification of Contamination Protocol	❑			
7 With the exception of the evaluation process for inaccessible soils below building structures outlined in PRO-200, Environmental Site Assessment for Limited Remediation Protocol, including the use of Tier 2 PSS tables where applicable, all contamination has been remediated to appropriate Tier 1 EQS criteria	❑			
8 Air sampling requirements not applicable to the site	❑			
or				
where applicable soil vapour, sub-slab and/or indoor air sampling work followed the latest version of the Atlantic RBCA Guidance for Soil Vapour and Indoor Air Monitoring Assessments available from the Atlantic RBCA website atlanticrbca.com	❑			
9 Confirmatory soil samples have been collected from the side walls and floor of the excavation in accordance with Table 1 (Confirmatory Sampling Requirements) of PRO-700, Confirmation of Remediation Protocol	❑			

2a - L1 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
10 Contamination does not remain below any part of a building footprint;	❑			
or				
where contaminated soil below any part of a building footprint has been left in place, full delineation of contamination and verification through soil vapour, sub-slab or indoor air sampling that the indoor air quality is not affected above an acceptable level has been completed	❑			
11 Contamination has not extended to bedrock;	❑			
or				
where contaminated soil has extended to bedrock on non-potable sites and no evidence of free product is present, the site professional has used their professional judgement to determine whether a groundwater assessment is required. In cases where it is determined that a groundwater assessment is not required, and contaminated soil contained gasoline or volatile organic compounds an evaluation of soil vapour, sub-slab or indoor air has been accomplished through the collection and interpretation of empirical site data and the indoor air quality is not affected above an acceptable level	❑			
12 Composite soil sampling procedures for volatile organic compounds have not been used	❑			
13 Site does not rely on a potable well or spring supply water source;	❑			
or				
on sites where there is a potable well or spring supplied water source, the well or spring has been analyzed for the contaminant being addressed in the soil	❑			
14 All sampling and analysis have conformed to the laboratory requirements identified in Section 4.2.4 of PRO-200, Environmental Site Assessment for Limited Remediation Protocol	❑			
Reporting The environmental site assessment, remedial action plan and confirmation report requirements of the Contaminated Sites Regulations may be compiled and documented in a single report for an L1 limited remediation. The time requirements specified in the Contaminated Sites Regulations must be followed.				
15 A cover page title that identifies the site location, and report title	❑			
16 Project background description	❑			
17 Basic site information, including physical address, PID and/or GPS coordinates	❑			
18 Summary of the results and findings of the L1 ESA	❑			
19 Site plan(s) showing the site location, location of sample points. All spatial information represented on a scaled diagram	❑			
20 Results of all analyses conducted displayed in a table and compared to relevant environmental quality standards, with exceedance values/data highlighted	❑			

2a - L1 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.		**Supporting Information provided**	**Reference Document**		
		Yes	Report	Section	Page Number
21	Interpretation and evaluation of the findings from the site investigation, which identify and describe any contaminants found at the site including concentrations, locations, possible sources, potential pathways and receptors of concern	❑			
22	Clear and concise conclusions of the L1 ESA, including a summary of risks posed by contaminants remaining on site and potential risk to receptor(s) both on and off the property	❑			
23	Recommendations regarding risks posed by any contaminants remaining on site, and recommended action(s)	❑			
24	Excavation practices	❑			
25	Soil sampling procedures used for each contaminant	❑			
26	QA/QC procedures	❑			
27	Copies of laboratory analytical data sheets	❑			
28	Site professional sign-off, with original or electronic signatures, and a stamp/seal confirming the findings and conclusions contained in the report	❑			

2b - L2 Environmental Site Assessment Requirements Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.		**Supporting Information provided**	**Reference Document**		
		Yes	Report	Section	Page Number
Intrusive Investigation					
1	Soil sampling conducted at source area(s)	☑	1	3.0	15
2	Groundwater flow direction, velocity, hydraulic gradient, and elevation has been evaluated by the placement of at least 3 drilled boreholes and the installation of monitoring wells within the boreholes	❑	1	3.2.3	23
3	Determination has been made whether free product in soil or groundwater exist at the site	☑	1	3.2	22
4	The horizontal extent of soil contamination on and off the property, for each contaminant has been determined and described in text and on a graphical site plan	❑	1	4.0	31
5	The vertical extent of soil contamination on and off the property has been determined, including the maximum depth at which contamination was identified, and confirmation that the vertical depth of contamination has been determined, using site profiles as appropriate	❑	1	4.0	31

2b - L2 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.		**Supporting Information provided**	**Reference Document**		
		Yes	Report	Section	Page Number
6	The estimated area of soil contamination exceeding applicable environmental quality standards on and off the property have been calculated for each contaminant	❑	1	4	31
7	The horizontal and vertical extent of groundwater contamination, exceeding applicable environmental quality standards has been determined, on and off the property for each contaminant, and is described in text and on a graphical site plan	❑	1	4	31
8	Sediment and surface water have not been impacted; **or** where Sediment or surface water contamination, exceeding applicable environmental quality standards has been determined, contamination is described on a graphical site plan	❑ ☑	1	App. A	-
9	Laboratories that have performed analysis are accredited to ISO/IEC 17025 standards (and subsequent revisions) by the Standards Council of Canada (SCC) or the Canadian Association of Laboratory Accreditation Inc. (CALA)	☑	1	App. C	1
10	All sampling and analysis has been conducted in accordance with laboratory-approved recommendations concerning sample containers, storage and preservation	☑	1	3.0	15
11	Appropriate laboratory analytical methods have been used to ensure adequate conformance to data quality objectives, assessment endpoints (ecological or human health) and method/reportable detection limits	☑	1	App. C	-
Reporting					
12	A cover page title that identifies the site location and report title	☑	-	Title Pag	-
13	Project background description	☑	1	2.0	8
14	Basic site information, including physical address, PID and/or GPS coordinates if available	☑	1	2.0	8
15	Summary of all preliminary work and field activities conducted at the site as part of the Limited Phase 2 ESA program	☑	1	2.6, 3.0	10, 15
16	Conceptual site model which represent an understanding of the site characteristics, including expected locations of contaminants, likely contaminant transport mechanisms, and the existence of potentially preferential pathways for contaminant transport to receptors	☑	1	5.0	34
17	A description of geological, hydrogeological and hydrological information as required by PRO-200, Environmental Site Assessment for Limited Remediation Protocol	☑	1	2.4	9
18	Site plans showing the site location, location of sample points, groundwater elevation maps, and location(s) of samples exceeding the applicable regulatory criteria. Locations where contaminant concentrations exceed background values should also be identified. All spatial information must be represented on a scaled diagram	☑	1	App. A	-
19	Results of all analyses conducted are displayed in a table and compared to relevant environmental quality standards, with exceedance values/data highlighted	☑	1	App. B	-

2b - L2 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.		**Supporting Information provided**	**Reference Document**		
		Yes	Report	Section	Page Number
20	Interpretation and evaluation of the findings from the site investigation, which identify and describe any contaminants found at the site including concentrations, locations, source, potential pathways and receptors of concern	☑	1	3.3, 4.0	23, 31
21	Clear and concise conclusions of the Limited Phase 2 ESA, including a summary of risks posed by contaminants remaining on site and potential risk to receptor(s) both on and off the property	☑	1	4.0	31
22	Recommendations regarding risks posed by any contaminants remaining on site, and recommended action(s)	☑	1	4.0	31
23	A list of any references and supporting documentation used in the preparation of the Limited Phase 2 ESA report	☑	1	10	69
24	Complete test pit, borehole stratigraphic, and monitoring well installation logs	☑	1	App. D	-
25	Borehole drilling practices	☑	1	3.1.2	18
26	Excavation Practices ☑ Not Applicable	☐			
27	Soil sampling procedures used for each contaminant	☑	1	3.1.2	18
28	Monitoring well installation, development and groundwater sampling procedures	☑	1	3.1.2	18
29	QA/QC procedures	☑	1	3.1.4	21
30	Copies of laboratory analytical data sheets	☑	1	App. C	-
31	Site professional sign-off, with original or electronic signatures, and a stamp/seal confirming the findings and conclusions contained in the report	☑	1	below	-

2c - L3 Environmental Site Assessment Requirements Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.		**Supporting Information provided**	**Reference Document**		
		Yes	Report	Section	Page Number
Investigation					
1	Phase 1 ESA conducted in accordance with PRO-300, Phase 1 ESA Protocol	☐			
2	Phase 2 ESA conducted in accordance with PRO-400, Phase 2 ESA Protocol	☐			
Reporting					
3	Phase 1 ESA reporting requirements completed in accordance with PRO-300, Phase 1 ESA Protocol	☐			

2c - L3 Environmental Site Assessment Requirements continued Confirm **all** the following information has been submitted to the Department. Indicate 3 digit report ID, section and page number where information is documented. It is not acceptable to provide justification for not completing a minimum requirement. The site professional must ensure all work has been completed in accordance with the PRO-200, Environmental Site Assessment for Limited Remediation Protocol.	**Supporting Information provided**	**Reference Document**		
	Yes	Report	Section	Page Number
4 CHK-300, Phase 1 ESA checklist has been completed and appended to this checklist	❑			
5 Phase 2 ESA reporting requirements conducted in accordance with PRO-400, Phase 2 ESA Protocol	❑			
6 CHK-400, Phase 2 ESA checklist has been completed and appended to this checklist	❑			

3 - Declaration

Site Professional Declaration

I acknowledge it is an offence under Section 158 of the Environment Act to provide false or misleading information and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the Environment Act and Contaminated Sites Regulations. By signing below, I confirm my qualifications and liability insurance as a site professional as prescribed within the regulations.

☑ Reports and checklist/s have been provided to affected property owner.

Name (print) Derek Heath

Professional Registration Number/Stamp 0029

Signature _____
Site Professional

Date 2022/10/06
YYYY/MM/DD

Reports Applicable to Checklist

Report Title	3 Digit Report ID
Phase II Environmental Site Assessment - Mooseland Mine Site (AECOM, October 2022)	1

Return completed form and associated documents to your local Nova Scotia Environment office.

Find office locations online novascotia.ca/nse/dept/regional-office-locations.asp or call 1-877-936-8476.

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