2022 Q2 Post-Closure Environmental Monitoring Report

460 Stebbings Road, Shawnigan Lake, BC

Ralmax Ventures Ltd.

SLR Project No: 205.30042.00000

June 2022

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Prepared by
SLR Consulting (Canada) Ltd.
303 – 3960 Quadra Street
Victoria, BC V8X 4A3

for

Ralmax Ventures Ltd.
343A Bay Street
Victoria, BC V8T 1P5

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Prepared by:

Forest Pimm, B.Sc., G.I.T.
Environmental Scientist

Reviewed by:

PROFESSIONAL PROVINCE OF P. E. BRULEIGH # 36810 BRITISH COLUMBIA GEOSCIENTIST 2 Jun 2022

Phyllis Bruleigh, M.S., P.Geo., PMP, L.E.G. (WA)
Technical Discipline Manager, Land Quality and Remediation

Geotechnical Section Reviewed by:

PROFESSIONAL PROVINCE OF C.R. SMITH 24792 BRITISH COLUMBIA ENGINEER June 2/2022

Cory Smith, P.Eng.
Managing Principal, Geotechnical Engineering

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1 electronic copy – SLR Consulting (Canada) Ltd.

CONTENTS

TABLES SECTION

DRAWINGS

PHOTOGRAPHS

APPENDICES

EXECUTIVE SUMMARY

SLR Consulting (Canada) Ltd. (SLR) was retained by Ralmax Ventures Ltd. (Ralmax) to complete post-closure environmental monitoring for the second quarter (Q2) of 2022 at the former South Island Aggregates landfill located at 460 Stebbings Road, Shawnigan Lake, BC (the "site"). The 2022 Q2 environmental monitoring program comprised surface water and groundwater monitoring and sampling in May 2022, and geotechnical assessment of the condition and maintenance of the landfill cover in March, April, and May 2022.

SLR conducted surface water sampling of water within the creek located immediately west of the site and groundwater sampling from seepage blanket wells and groundwater monitoring wells at the base of the permanent encapsulated area (PEA) and along the northwest boundary of the site.

Groundwater samples collected from the landfill seepage blanket and from groundwater wells had concentrations of metals and inorganics that were less than the BC Contaminated Sites Regulation (CSR) drinking water (DW) and freshwater aquatic life (AWF) standards, which were considered applicable to the site.

The single surface water sample collected from the creek downgradient and adjacent to the PEA had a turbidity value of 1.5 nephelometric turbidity units, which was greater than the BC Source Drinking Water Quality Guideline. Concentrations of dissolved and total metals and inorganics were less than the BC Water Quality Guidelines applicable to the site.

Based on geochemical analysis of leachate, surface water, and groundwater data from the site between fall 2021 and present, there does not appear to be a mixing line connecting the leachate signature to the surface water/groundwater signature. Therefore, the leachate does not appear to be impacting the surface water or groundwater within the zones assessed.

The post-closure environmental monitoring program included monthly site visits to support on-going geotechnical review of the PEA. The observations made during the March, April, and May site visits were consistent with what has previously been observed and reported at the site.

This Executive Summary is intended to be read with the remainder of the report and is subject to the same limitation described in Section 7.0.

1.0 INTRODUCTION

SLR Consulting (Canada) Ltd. (SLR) was retained by Ralmax Ventures Ltd. (Ralmax) to complete post-closure environmental monitoring for the second quarter (Q2) of 2022 at the former South Island Aggregates landfill located at 460 Stebbings Road, Shawnigan Lake, BC (the "site"; Drawing 1). The 2022 Q2 environmental monitoring program comprised groundwater and surface water and sampling per the Updated Environmental Monitoring Plan (EMP) (Sperling Hansen Associates (SHA), 2020) and site visits in March, April, and May pertaining to an overall geotechnical assessment of the condition and maintenance of the landfill cover. The methods and findings of this event are summarized in this report.

1.1 Site Description

The site (formerly known as South Island Aggregates) is located approximately 5 kilometres (km) south of Shawnigan Lake and comprises Lot 23 Blocks 156, 201 and 323 Malahat District Plan VIP78459, with a total area of approximately 20 hectares. The site is bound to the east by Stebbings Road, to the north by fee simple property Lot 21, and to the west and south by Crown Land. A creek is located on the west side of the site and drains north into Shawnigan Creek, which flows into the south end of Shawnigan Lake.

As per the Cobble Hill Landfill Closure Design Report (SHA, 2016) and Construction Wrap-up Report (SHA, 2020b), the base of the permanent encapsulated area (PEA) of the landfill consists of a gravel drainage blanket layer directly atop bedrock to promote groundwater drainage to collection infrastructure (i.e., settling pond) on the west portion of the site. Above the drainage blanket is an engineered basal liner system consisting of a geosynthetic clay liner and a 40-mil geomembrane liner. The cover of the PEA consists of a low-permeable soil cap atop the landfill soils, followed by layers of non-woven geotextile and geomembrane liner, a gravel layer to capture and direct surface water, subsoil and topsoil, and vegetation at surface for erosion control.

Leachate collection piping extends the length of the northern (downslope) edge of the PEA and connects to a leachate conveyance pipe, which leads to the leachate storage facility. Seepage blanket monitoring wells were installed around the north and east perimeter of the PEA and collect water from the seepage blanket beneath the encapsulated soil. Two additional groundwater monitoring wells were installed further downgradient of the PEA and seepage blanket wells (SHA, 2020b).

The locations of the PEA, seepage blanket wells, groundwater monitoring wells, surface water sampling location, and leachate storage facility are presented in Drawing 2.

1.2 Background

Per the Ministry of Environment & Climate Change Strategy (ENV) website, the site was authorized under the *Environmental Management Act* (EMA) as a contaminated soil remediation facility and landfill in August 2013. The permit was originally issued to Cobble Hill Holdings Ltd. (CHH), allowing CHH to treat contaminated soil, landfill soil that cannot be treated, and discharge treated effluent to the creek west of the site. Between February 2014 and January 2017, the landfill accepted approximately 97,595 tonnes of contaminated soil classified as less than hazardous waste (Sperling Hanson Associates (SHA), 2020). Since 2017, no additional contaminated soil has been accepted at the site.

On January 27, 2017, the permit was suspended, and a Spill Prevention Order (SPO) was issued specifying actions required to prevent the discharge of leachate and waste to the environment. The SPO was later amended on June 29, 2017, requiring CHH to submit a plan to permanently close the landfill in accordance with provincial standards for landfill closure.

Per the ENV website, the landfill is to follow the guidance outlined in the 2016 BC Landfill Criteria for Municipal Solid Waste (LCMSW) for preparation of the closure plan and monitoring program. On June 24, 2020, SHA completed an Updated EMP for the site that meets the standard monitoring protocols for landfills in BC and specified requirements by the ENV. Specifically, the EMP included the long-term monitoring and sampling of leachate, groundwater and surface water, and the assessment, operation and maintenance of the landfill cover including the leachate collection and storage works. SHA indicated that per Section 7.4 of the 2016 LCMSW, post-closure landfill monitoring and inspections are required for no less than 30 years. Since CHH stopped accepting soil and capped the site with a geomembrane in 2016, the monitoring program will extend to January 2046 (SHA, 2020a).

Following completion of the closure activities, SHA completed an environmental monitoring program on behalf of CHH for the period of October 2020 to December 2020 (fourth quarter (Q4) of 2020). As per the approved Updated EMP (SHA, 2020a), the Named Parties must submit quarterly implementation reports to ENV on or immediately before the last day of March, June, September, and December of each year, for the duration specified in the approved closure plan (SHA, 2016). Implementation reports must include records of inspections, operations and maintenance of the facility, records of the volumes of leachate collected, stored, and transported, including the name and location of the authorized facility(ies) receiving the leachate, and environmental monitoring program records interpreted by a Qualified Environmental Professional (QEP).

In August 2021, Ralmax purchased the mortgage for the site and entered a lease agreement with CHH allowing access to the site for continuing the post-closure monitoring of the PEA. On September 22, 2021, Ralmax informed SLR that the proposed monitoring, sampling, and geotechnical site assessment program is to be completed for five consecutive quarters as required under the Updated EMP (SHA, 2020a) and SPO issued by ENV in 2017. SLR completed an environmental monitoring program for Q4 of 2021 in December 2021 (SLR, 2021 and SLR, 2022a) and for Q1 of 2022 in March 2022 (SLR, 2022b). This program marks the third quarterly sampling event at the site since Ralmax's involvement at the site.

2.0 SCOPE OF WORK

The scope of work for the 2022 Q2 post-closure environmental monitoring is outlined as follows:

- Prepare a site-specific health and safety plan (HASP) covering the anticipated hazards of the work and mitigative measures including those relating to COVID-19;
- Monitor and sample groundwater from three existing groundwater monitoring wells and four existing seepage blanket monitoring wells, and submission of the samples to Bureau Veritas Laboratories (BV Labs) of Burnaby, BC, for analysis of potential contaminants of concern (PCOCs);
- Monitor and sample surface water from the creek (tributary of Shawnigan Creek) located immediately west of the site and submission of the samples to BV Labs for analysis of PCOCs;
- Prepare Piper plots for the cumulative groundwater, surface water, and leachate results to characterize the water onsite;
- Complete monthly site visits to observe and record the conditions of the PEA of the landfill closure area (i.e., cover stability for geotechnical assessment); and
- Prepare a summary report that outlines the field methods, analytical results, and conclusions regarding the presence/absence of groundwater and/or surface water impacts, and the conditions of the landfill closure area.

3.0 REGULATORY FRAMEWORK

The Contaminated Sites Regulation (CSR) and the EMA contain the principal regulatory requirements for contaminated sites management in British Columbia. The CSR came into effect on April 1, 1997 and was amended most recently on July 7, 2021. Under section 63.1 of EMA and protocols under section 64, the director's interim standards are legally binding. The Hazardous Waste Regulation (HWR) may also apply where contaminated media are transported, managed, or disposed of off-site.

The EMA and CSR have provisions for incorporating numerical and risk-based standards approaches to managing site contamination. The legislation outlines site assessment procedures, remediation requirements, and application processes for environmental closure for a property. Numerical standards define whether a site is contaminated or has been satisfactorily remediated when using the numerical standards approach. Risk-based standards and risk-based remediation are recognized by the legislation.

Technical Guidance, Administrative Guidance, Procedure and Policy documents issued by the BC ENV clarify the interpretation of regulatory standards and requirements and provide information regarding their application. Provisions in these documents are not legally binding but indicate the expectations of the ENV.

3.1 Groundwater Standards

The CSR presents numerical standards for substances in water in Schedule 3.2. It references the numerical standards for four classes of water use:

Aquatic Life (AW),
Irrigation (IW),
Drinking Water (DW)
Livestock (LW),

Schedule 3.2 water quality standards for volatile hydrocarbons and light extractable hydrocarbons (VHw_{6-10} and $EPHw_{10-19}$, respectively) apply to all sites in BC, irrespective of water use.

ENV Protocol 21 specifies that AW, DW, IW, and LW standards generally apply for evaluating groundwater quality where receiving waters are used by aquatic life, surface water intakes are present on the site or within 500 metres (m), or where groundwater is used for irrigation or livestock watering.
Essential aspects of applying water use standards are noted below, but other considerations may be relevant, and associated ENV guidance should also be consulted (e.g., for preferential groundwater flow corridors; water management plans; bedrock aquifers).

If water is used on a site or within 500 m for drinking water, DW standards are used to evaluate water quality. If the groundwater flow direction has been reliably determined using approved methods, then nearby current uses may be limited to include drinking water wells or surface water intakes 100 m upgradient and 500 m downgradient of the outer extent of the contamination source. To protect future potable water consumption, DW use also applies if there is an aquifer below the site with a hydraulic conductivity greater than or equal to 1×10^{-6} metres per second (m/s) and a yield greater than or equal to 1.3 litres per minute (L/min). The presence of underlying regional aquifers meeting these conditions must also be assessed unless the presence of a natural confining barrier has been confirmed following the requirements of Protocol 21.

If a surface water body with aquatic life water use is within 500 m of a site, AW standards apply to evaluate water quality. If groundwater substances are present at concentrations exceeding AW standards and may migrate to within 500 m of an aquatic life receptor, AW standards also apply to the site.
Aquatic life water use standards do not apply at a site if approved methods are used to determine that groundwater at the site flows to a more distant surface water body.

Irrigation and livestock watering uses and the IW and LW standards apply at a site where groundwater or surface water within 500 m of the site is used for irrigation or livestock watering unless the groundwater flow direction has been reliably determined to be away from such purposes. Nearby current uses may then be limited to include only irrigation or livestock water wells or surface water intakes within 100 m upgradient and 500 m downgradient of the furthest extent of the contamination source. Although the site-specific soil matrix standards for irrigation and livestock watering uses in Schedule 3.1 apply only to specific land uses, the IW and LW water standards in Schedule 3.2 apply to all land uses where appropriate.

The Generic Numerical Water Standards for iron, manganese, nonylphenol and nonylphenol ethoxylates, perfluorooctane sulfonate, diisopropanolamine, and sulfolane apply only to sites with specific Schedule 2 industrial or commercial activities that could be a source of these substances, as listed in the footnotes to Schedule 3.2. For example, sites that have temporarily elevated iron and manganese levels in groundwater associated only with the presence of petroleum hydrocarbon contamination will typically not be required to meet the CSR standards for iron and manganese if not used for the specified Schedule 2 activities.

Provision exists in the CSR (section 11(3)) for considering background concentrations for groundwater. Protocol 9 specifies procedures for determining local background groundwater quality in a defined geographic area and for a defined groundwater flow system. They are to be followed if these alternative concentrations are to be used in place of numerical standards prescribed in the CSR.

For water to be classified as hazardous waste when transported from a site, it must meet criteria for one or more of TDGR Classes 2, 3, 4, 5, 6, 8 or 9 and HWR definitions for PCB waste; wastes containing dioxin; waste oil; leachable toxic waste (HWR Schedule 4, Table 1); waste containing tetrachloroethylene; and waste containing polycyclic aromatic hydrocarbon.

3.2 Surface Water Guidelines

The British Columbia Approved and Working Water Quality Guidelines (WQGs) are substance concentrations considered protective of aquatic life in receiving environments. The Approved WQGs have been endorsed by ENV for use in BC, whereas the Working WQGs provide references for compounds that have not yet been fully assessed in BC's environmental conditions. They include guidelines for microbiological, chemical, and physical parameters as they apply to freshwater aquatic life, marine and estuarine aquatic life, wildlife, livestock, irrigation, and recreational uses.

As outlined in Technical Guidance 15, WQGs apply to surface water or porewater below the high-water mark of an aquatic receiving environment. Concentration limits for inorganic substances apply to dissolved substance concentrations in groundwater and porewater and total substance concentrations in surface water and porewater in the ecologically active zone (i.e., within 1 m of the sediment surface).

CSR Schedule 3.2 aquatic life water standards continue to apply to surface water within a maintained watercourse. Wherever possible, WQGs should be met where a watercourse is abandoned, ceases to be maintained, or its surface water enters an aquatic receiving environment.

The BC source drinking water quality guidelines (SDWQGs) were developed as part of the ambient WQG and apply to future and current drinking water sources. The SDWQGs include Aesthetic Objectives (AO) and Maximum Acceptable Concentrations (MAC). Health-based MAC guidelines are established for substances with known or suspected adverse health effects, while AO guidelines are considered when determining whether consumers will consider the water drinkable. Parameters with AO guidelines may impair the taste, smell, or colour of water but do not cause adverse health effects.

3.3 Applicable Standards at the Site

The following sections outline the standards or guidelines that apply to groundwater and surface water analytical data collected at the site.

3.3.1 Groundwater

Three aspects of the site relating to surface water and groundwater are essential for determining potentially applicable standards.

- Firstly, the site is situated in between two freshwater bodies: Shawnigan Creek and a tributary (creek) of Shawnigan Creek, located approximately 50 m to the east and immediately west, respectively. The nearest marine water body is Saanich Inlet, which is approximately 3.5 km from the site. In this case, the freshwater aquatic life (AWF) standards apply because groundwater exceeding aquatic life standards may migrate to freshwater bodies within 500 m of the site.
- Secondly, the ENV groundwater database well search indicates approximately 10 water supply wells are within 500 m of the subject site, including one registered to South Island Aggregates (i.e., on-site). Therefore, DW standards apply.
- Thirdly, irrigation water use does not occur on or near the site. Livestock watering use similarly does not occur. Since no irrigation or livestock water wells or surface water intakes are within 100 m upgradient and 500 m downgradient of the edge of a stable contaminant plume, standards based on irrigation and livestock watering uses do not apply.

Therefore, for this report, groundwater and leachate analytical results have been compared to the CSR Schedule 3.2 AWF and DW standards.

Additionally, the site does not fall within the regions specified in Protocol 9, Table 1. Protocol 9; however, provides an interim value for cobalt (20 micrograms per litre (µg/L)) that may be applied to all regions of BC not included in the Table 1 regions. The Protocol 9 values have been used to dismiss exceedances of the CSR Schedule 3.2 standards for cobalt.

3.3.2 Surface Water

Based on surface water uses at the site, analytical results have been compared to the Approved and Working WQGs for AWF and the BC SDWQGs for AO and MAC.

4.0 METHODS

The groundwater and surface water monitoring and sampling activities were completed following SLR's standard field procedures and technical guidance documents to maintain consistency in data collection and prevent cross-contamination. The procedures were developed based on accepted environmental practices and guidelines for site characterization established by BC ENV. Details of the methods used in this assessment are discussed below.

4.1 Health and Safety

The project was conducted in a manner consistent with SLR's Occupational Health, Safety, and Environmental Policy. A site-specific HASP was prepared prior to commencing field activities. The HASP outlined project tasks, potential hazards, and mitigative measures including those related to COVID-19.

SLR personnel were required to review and sign the HASP at the start of each field workday during the daily tailgate meetings. During tailgate meetings, new potential hazards were identified and added to the HASP.

4.2 Surface Water Monitoring and Sampling

The creek located immediately west of the site boundary was monitored and sampled as part of the post-closure monitoring event. Surface water samples were collected using a Spectra Field Pro III peristaltic pump set to a constant pumping rate and dedicated ¼-inch diameter high density polyethylene (HDPE) tubing. Temperature, pH, and electrical conductivity (EC) readings were taken of the surface water using a PCTestr 35 multi-parameter meter, and turbidity readings were recorded using a LaMotte turbidity meter. Observed physical characteristics of the water including clarity, sheen, and odour were also recorded.

Surface water samples to be analyzed for total parameters were pumped directly in laboratory-supplied bottles, while those to be analyzed for dissolved parameters were field filtered by pumping the water through a 0.45 µm in-line filter prior to being pumped into laboratory-supplied bottles. Sample containers were labelled with the sample identification, project number, and date of collection.

Surface water samples were stored in an ice-filled cooler in the field and when being transported to BV Labs. A completed chain-of-custody report form accompanied the sample submission to the laboratory. The surface water sample, was submitted for analysis of analysis of total and dissolved metals, dissolved organic carbon (DOC), TDS, alkalinity, and inorganic parameters including chloride, fluoride, nitrate, and sulfate.

4.3 Groundwater Monitoring and Sampling

Select groundwater wells and seepage blanket monitoring wells were monitored and sampled as part of the post-closure monitoring event. During well monitoring, groundwater depths were measured using a Solinst oil-water interface meter. Between measurements, the interface meter probe was cleaned using an Alconox and water solution to avoid cross-contamination.

Prior to sampling, the monitoring wells were purged using a low-flow method to remove stagnant water from the well and encourage fresh formation water flow into the well. Low-flow purging was conducted using ¼” outside diameter HDPE tubing and a Spectra Field Pro III peristaltic pump set to a constant pumping rate. The purged water was monitored for physiochemical parameters including pH, temperature, and EC using a PCTestr multiparameter probe, and for turbidity using a LaMotte turbidity meter.

Water samples were collected from the monitoring wells when the measured parameters in the purged water stabilized indicating that representative formation water was being extracted. New tubing was used at each location to purge and collect the groundwater samples to minimize the potential for cross-contamination between monitoring wells.

Groundwater samples to be analyzed for total parameters were pumped directly in laboratory-supplied bottles, while those to be analyzed for dissolved parameters were field filtered by pumping the water through a 0.45 µm in-line filter prior to being pumped into laboratory-supplied bottles. A blind field duplicate (BFD) sample was collected in separate bottles simultaneously with the original sample from the same location. Sample containers were labelled with the sample identification, project number, and date of collection.

Groundwater samples were stored in an ice-filled cooler in the field and when being transported to BV Labs. A completed chain-of-custody report form accompanied the sample submission to the laboratory. The groundwater and seepage water samples were submitted for analysis of analysis of dissolved metals, TDS, alkalinity, and inorganic parameters including chloride, fluoride, nitrate, and sulfate.

4.4 Geotechnical Site Assessment

As part of the requirements set out by the EMP, the post-closure environmental monitoring program completed by SLR included monthly site visits to support on-going geotechnical assessment. The purpose of the site visits was to observe and record conditions of the capping for comparative review to the initial assessment completed in 2021 Q4 (SLR, 2021). The site visits included recorded observations and photographic documentation of site conditions, including: the PEA landfill cover, surface water management, leachate collection and conveyance, and environmental monitoring infrastructure (monitoring wells).

4.5 Waste Disposal

Groundwater removed from the monitoring wells during purging and sampling was collected in a 205 L steel drum for temporary storage on site prior to receiving laboratory results. SLR plans to dispose of the wastewater drums in November 2022, following the 2022 Q4 monitoring and sampling activities.

4.6 Quality Assurance and Quality Control

A quality assurance and quality control (QA/QC) program was followed to ensure that the sampling and analytical data were interpretable, meaningful, and reproducible. Two stages of QA/QC were completed, with one stage completed by the laboratory and the other as part of field procedures performed by SLR.

4.6.1 Laboratory QA/QC Program

BV Labs is accredited by the Canadian Association for Laboratory Accreditation that uses ENV recognized methods to conduct laboratory analyses. BV Labs is known for appropriate quality assurance services and participation in programs of inter-lab comparisons and on-site assessments based on international standards. As conveyed by the laboratory, method blanks, control standards, certified reference materials, method spikes, duplicates, surrogates, and blanks and routinely analyzed as part of their QA/QC programs.

4.6.2 Field QA/QC Program

SLR implemented a standardized QA/QC program in accordance with BC ENV guidance and general industry-established guidelines. The following QA/QC procedures were conducted during groundwater and surface water collection, handling, identification, and shipping:

- Water sampling bottles were supplied by the laboratory to minimize sample container contamination;
- Equipment and materials that came into contact with water were decontaminated by washing with Alconox soap and rinsing with distilled water between sampling locations;
- New nitrile gloves were used for each sample to minimize the potential for cross-contamination;
- The PCTestr multiparameter probe was calibrated prior to sampling;

- New HDPE tubing was used for each well during groundwater/seepage water sampling and at each surface water sampling location;
- Water samples were stored in ice-chilled coolers in the field or in a refrigerator until delivery to the laboratory;
- Completed chain-of-custody forms accompanied samples shipped to the laboratory;
- Samples were submitted to and analyzed by the laboratory within hold times specified by the laboratory to assure reliable results; and
- One BFD sample was/will be collected for every 10 samples collected over the course of the monitoring program (i.e., collectively over the five events).

BFD samples were collected to assess consistencies during the field sampling procedure and to perform an independent check on laboratory QA/QC. The relative percent difference (RPD) values between results for the parent sample and the duplicate sample are calculated to determine the precision of the results. RPD is defined as the absolute value of the difference of the duplicate results divided by the average of the duplicate results, expressed as a percentage. Analytical error increases near the reported detection limit (RDL); therefore, the RPD calculation was not performed unless the concentrations of both samples were greater than five times the RDL.

The calculated RPD values were compared to alert limits to evaluate the sample result variability. The alert limits for specific analytes are based on SLR's Technical Guidance, and industry accepted standards and are consistent with guidance provided by BC ENV.

5.0 RESULTS

The monitoring data and analytical results for the surface water, groundwater, and leachate samples are summarized in the following sections along with the geotechnical site investigation observations. The monitoring and analytical data is summarized in Tables 1 through 7 following the text and in Drawings 3 and 4. The findings of the geotechnical site visits are documented in photos 1 through 10 following the text.

5.1 Surface Water Field Observations

Surface water field measurements were collected from the creek on May 12, 2022, prior to collecting samples. Turbidity of the water was 1.50 nephelometric turbidity units (NTUs), which was greater than the SDWQG of 1 NTU.

The temperature of the stream was 7.1 degrees Celsius (°C), which was less than the mean weekly maximum temperature WQG of 18 °C. The pH was 8.1, which was within the acceptable range according to the WQGs. EC was 401 microsiemens per centimetre (µS/cm). The stream water appeared clear and colorless. Field measurements, alkalinity, TDS, and DOC results are presented in Table 1 following the text.

5.2 Surface Water Analytical Results

One surface water sample was collected from the creek directly west of the site on May 12, 2022. Analytical results are discussed in the following sections and are presented in Tables 2 through 4 following the text and summarized on Drawing 3. Laboratory CoA reports are included in Appendix A.

5.2.1 Total Metals

The surface water sample was analyzed for total metals. Analytical results indicate that concentrations were less than the applicable WQGs. Results for total metals in surface water are presented in Table 2 following the text.

5.2.2 Dissolved Metals

The surface water sample was analyzed for dissolved metals. Analytical results indicate that concentrations were less than the applicable WQGs. Results for dissolved metals in surface water are presented in Table 3 following the text.

Dissolved copper guidelines included in Table 3 were calculated using the Biotic Ligand Model (BLM) as per the WQG. Copies of the BLM results are provided in Appendix B.

5.2.3 Inorganics

The surface water sample was analyzed for inorganic parameters. Analytical results indicate that concentrations were less than the applicable WQGs. Results for inorganics in surface water are presented in Table 4 following the text.

5.3 Groundwater Field Observations

Three groundwater wells (MW19-01, MW19-02, and MW-3S) and four seepage blanket monitoring wells (SB-1, SB-2, SB-3, and SB-4) were monitored on May 12, 2022. The locations of these wells are presented in Drawing 2.

Groundwater levels at MW19-01, MW19-02, and MW-3S were 8.296 m below top of casing (TOC), 4.023 m below TOC, and 2.970 m below TOC, respectively. Seepage blanket wells SB-1, SB-2, and SB-3 had water levels at 8.870 m below TOC, 9.135 m below TOC, and 9.579 m below TOC, respectively. Seepage blanket well SB-4 was dry.

Field measurements (including temperature, pH, EC, and turbidity), alkalinity, and TDS results are presented in Table 5 following the text.

5.4 Groundwater Analytical Results

Three groundwater wells (MW19-01, MW19-02 and MW-3S) and three of the four seepage blanket monitoring wells (SB-1, SB-2, and SB-3) were sampled on May 12, 2022. Analytical results are discussed in the following sections and are presented in Tables 6 and 7 following the text and summarized on Drawing 4. Laboratory CoA reports are included in Appendix A.

5.4.1 Dissolved Metals

Six groundwater samples and one BFD were analyzed for dissolved metals. Analytical results indicate that concentrations were less than the applicable CSR standards. Results for dissolved metals in groundwater are presented in Table 6 following the text.

5.4.2 Inorganics

Six groundwater samples and one BFD were analyzed for inorganics. Analytical results indicate that concentrations were less than the applicable CSR standards. Results for inorganics in groundwater are presented in Table 7 following the text.

5.5 Geochemical Analysis

The major dissolved cations constituents (sodium, magnesium, calcium, and potassium) and anion constituents (bicarbonate, carbonate, sulphate, and chloride) of the groundwater, surface water, and leachate samples were plotted on a Piper plot. The purpose of the Piper plot is to show the composition of a water sample relative to its cation and anion constituents. This data can be used to determine the source of these constituents and effectively "fingerprint" each water type. The cation and anion data of the respective sample is expressed in milliequivalents/litre and normalized so that the concentrations are expressed as a relative percentage.

The groundwater and surface water samples (SB-1, SB-2, SB-3, MW19-01, MW19-02, MW-3S, and SW-1) collected on May 12, 2022, were drawn on a Piper plot along with the leachate, surface water, and groundwater data collected during the 2021 Q4 and 2022 Q1 monitoring events.

The Piper plot indicated the following characteristics:

- The data from the 2022 Q2 sampling program is generally consistent with that collected during the 2021 Q4 and 2022 Q1 sampling programs.
- With regards to cation composition, the leachate samples are more sodium and potassium-rich when compared to the groundwater and surface water samples, which are more calcium-rich.
- With regards to the anion composition, the leachate sample is chloride-rich compared to the groundwater and surface water samples, are more sulphate- and/or carbonate-rich.
- The surface water and groundwater samples plot in generally the same areas of the Piper plot indicating that the groundwater is likely sourced primarily from surface water infiltration.

Based on the Piper plot, there does not appear to be a mixing line connecting the leachate signature to the surface water/groundwater signature. The leachate does not appear to be impacting the surface water or groundwater within the zones assessed.

5.6 QA/QC Results

SLR assessed the laboratory QA data along with the RPD values calculated for the duplicate pair collected during this monitoring and sampling program. The results of both are discussed below.

5.6.1 Laboratory Quality Assurance Results

SLR completed a review of the QA data that accompanied the laboratory CoA reports. The QA section of each report concludes that laboratory duplicate RPDs, reference material measurements, method blank spike recoveries, and matrix spike recoveries met the laboratory acceptability criteria. The laboratory QA data is included with the CoA reports in Appendix A.

5.6.2 Relative Percent Difference

One groundwater BFD was analyzed by BV Labs and compared to the parent sample by SLR.
The calculated RPD values are presented alongside the surface water analytical data in Tables 5 through 7. RPD values for groundwater were below the alert limits. Based on this, the analytical data is considered reliable and representative of site conditions.

5.7 Geotechnical Site Assessment

As part of the ongoing geotechnical assessment, three monthly site visits were conducted on March 18, April 18, and May 12, 2022. Observations made during these visits were documented with field notes and photographs. Select photographs, Photos 1 through 10 are provided following the text and are referenced below. The referenced photographs are a collection of select observations, and form part of a larger photograph collection that was taken during the site visits, which are kept on file for future reference. A summary of observations from the field notes collected during the site visits is discussed below.

5.7.1 Encapsulated Landfill Area

The surface of the PEA of the landfill (i.e., landfill cover) was generally consistent with the annual geotechnical assessment summarized in the 2021 Q4 report (SLR, 2021) and the 2022 Q1 report (SLR, 2022b). The cover surface generally has relatively low-density vegetation, primarily comprising Scotch broom and grass and weeds (Photos 1 through 5).

Shallow erosional features in the surface cover were consistent with previous site visits and typically occur over steeper graded areas with minimal vegetation. The area of soil subsidence first observed in February 2022 (SLR, 2022b) in the northeast corner of the PEA is still present and appears to be of similar dimensions previously observed (Photo 6). The area was approximately 2 m by 2 m and had subsided approximately 0.3 m vertically from existing surrounding grade. Except for the areas noted, the surface of the landfill appeared to be intact, with no signs of instability, cracking, burrowing, or exposed geosynthetics.

5.7.2 Surface Water Management

Standing water was observed in March and April at localized areas of the cover in the southern (upper elevations) portion of the landfill that was graded with relatively flat slopes (Photo 7). Larger shallow pools of standing water were also observed near the perimeter of the landfill at the south boundary of the landfill (i.e., within the access road located at the south/southeast boundary of the landfill) during the three site visits (Photos 8). This is consistent with observations made in previous site visits.

No flowing water was observed within the perimeter drainage diversion, mid-slope drainage diversion, and toe ditches at the time of the site visits. Minor sediment accumulation and vegetation growth (Photo 9) was observed in sections of the drainage ditches but does not appear to be impeding flow within the ditches.

5.7.3 Leachate and Leak Collection and Conveyance

The conditions of the leachate collection cleanout polyvinyl chloride (PVC) pipe stick-ups and seepage blanket monitoring well PVC pipe stick-ups with caps (SB-1 to SB-4) were consistent with the annual geotechnical assessment (SLR, 2021).

5.7.4 Storage Tank Facility

The storage tank facility was observed for changes in the lock-block wall structure, surrounding backfill, and inlet pipes. The structure appeared to be in the same condition as the annual geotechnical assessment (SLR, 2021) (Photo 10).

5.7.5 Monitoring Wells

The conditions of the monitoring wells (MW19-01 and 02, MW-1S-1D, MW-2, MW-3S/3D, MW-5S/5D, MW-6) were consistent with the annual geotechnical assessment (SLR, 2021).

6.0 CONCLUSION

Groundwater samples collected from the landfill seepage blanket and from groundwater wells at the base of the landfill had concentrations of metals and inorganics that were less than the CSR standards applicable to the site.

The single surface water sample collected from the creek downgradient and adjacent to the capped landfill had turbidity values that were greater than the SDWQG. Concentrations of dissolved and total metals and inorganics were less than the WQGs applicable to the site.

A Piper plot analysis of the leachate, surface, and groundwater indicated the following trends:

- The data from the 2022 Q2 sampling program is generally consistent with that collected during the 2021 Q4 and 2022 Q1 sampling programs.
- With regards to cation composition, the leachate samples are more sodium and potassium-rich when compared to the groundwater and surface water samples, which are more calcium-rich.
- With regards to the anion composition, the leachate sample is chloride-rich compared to the groundwater and surface water samples, which have nearly equal parts sulphate to carbonates or are more carbonate-rich.
- The surface water and groundwater samples plot in generally the same areas of the Piper plot indicating that the groundwater is likely sourced primarily from surface water infiltration.

Based on the Piper plot, there does not appear to be a mixing line connecting the leachate signature to the surface water/groundwater signature; therefore, leachate does not appear to be impacting the surface water or groundwater within the zones assessed.

The geotechnical site visits were limited to observational review and did not include any intrusive assessment or internal review of piping systems or confined space inspection of the leachate facility, piping, and tanks. The observations made during the site visits were consistent with the annual geotechnical assessment (SLR, 2021) and the observations reported in the 2022 Q1 Post-Closure Environmental Monitoring Report (SLR, 2022b).

7.0 STATEMENT OF LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for Ralmax Ventures Ltd., hereafter referred to as the “Client”. It is intended for the sole and exclusive use of Ralmax Ventures Ltd. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted unless payment for the work has been made in full and express written permission has been obtained from SLR.

This report has been prepared for specific application to this site and site conditions existing at the time work for the report was completed. Any conclusions or recommendations made in this report reflect SLR’s professional opinion based on limited investigations including: visual observation of the site, surface and subsurface investigation at discrete locations and depths, and laboratory analysis of specific chemical parameters. The results cannot be extended to previous or future site conditions, portions of the site that were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters and materials that were not addressed. Substances other than those addressed by the investigation may exist within the site; and substances addressed by the investigation may exist in areas of the site not investigated in concentrations that differ from those reported. SLR does not

warranty information from third party sources used in the development of investigations and subsequent reporting.

Nothing in this report is intended to constitute or provide a legal opinion. SLR expresses no warranty to the accuracy of laboratory methodologies and analytical results. SLR makes no representation as to the requirements of compliance with environmental laws, rules, regulations or policies established by federal, provincial or local government bodies. Revisions to the regulatory standards referred to in this report may be expected over time. As a result, modifications to the findings, conclusions and recommendations in this report may be necessary.

The Client may submit this report to the BC ENV and/or related BC environmental regulatory authorities or persons for review and comment purposes.

8.0 REFERENCES

British Columbia Ministry of Environment and Climate Change Strategy. 2020. BC Source Drinking Water Quality Guidelines: Guideline Summary. Water Quality Guideline Series, WQG-01. Prov. BC, Victoria, BC.

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TABLES

2022 Q2 Post-Closure Environmental Monitoring Report

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000

TABLE 1: SURFACE WATER ANALYTICAL RESULTS - FIELD MEASUREMENTS, ALKALINITY, TOTAL DISSOLVED SOLIDS, AND DISSOLVED ORGANIC CARBON

					Field				Alkalinity				TDS	DOC
					pH	temperature	EC	turbidity	alkalinity (bicarbonate)	alkalinity (carbonate)	alkalinity (P)	alkalinity (total) as CaCO3	total dissolved solids	dissolved organic carbon
					pH Units	°C	µS/cm	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Reported Detection Limit					-	-	-	-	1	1	1	1	10	0.5
BC SDWQG - MAC								**1**[#1]						
BC WQG (Approved) AWF, Long-term					**6.5-9**	**10**[#2]		**2**[#3]						
BC WQG (Approved) AWF, Short-term					**6.5-9**	**10**[#2]		**5**[#4]						
Site Area	**Sample Location**	**Sample Date**	**Sample ID**											
Creek	SW-1	2022-May-12	SW-1		8.1	7.1	401	**1.5**	190	<1	<1	150	270	2.5

Standard/Guideline Descriptions

- BC SDWQG - MAC:BC Source Drinking Water Quality Guidelines, maximum allowable concentration
- BC WQG (Approved) AWF, Long-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Long-term
- BC WQG (Approved) AWF, Short-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Short-term

Standard/Guideline Comments

#1:Raw drinking water without treatment for particulates
#2:Maximum incubation temperature (spring/fall); otherwise mean weekly maximum temperature is 18 degrees Celsius
#3:Background +2 NTU at any one time over 30 days in clear water
#4:Background +8 NTU at any one time for a duration of 24 hours in clear waters (<8 NTU)

Notes:

- formatting of cells indicates exceedances of like-formatted standards

< - less than reported detection limit
°C - degrees Celsius
EC - electrical conductivity
µS/cm - microsiemens per centimetre
NTU - nephelometric turbidity units
mg/L - milligrams per litre
TDS - total dissolved solids
DOC - dissolved organic carbon

TABLE 2: SURFACE WATER ANALYTICAL RESULTS - TOTAL METALS

Site Area	Sample Location	Sample Date	Sample ID	pH (field)	pH (lab)	hardness as CaCO3	aluminum	antimony	arsenic	barium	beryllium	bismuth	boron	cadmium	calcium	chromium (III+VI)	cobalt	copper	iron	lead	lithium	magnesium	manganese	mercury	molybdenum	nickel	phosphorus	potassium	selenium	silver	sodium	strontium	thallium	tin	titanium	uranium	vanadium	zinc	zirconium
				Total Metals																																			
				pH Units	pH Units	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Reported Detection Limit						0.5	3	0.5	0.1	1	0.1	1	50	0.01	0.05	1	0.2	0.50	10	0.2	2	0.05	1	0.0019	1	1	10	50	0.10	0.02	0.05	1	0.01	5	5	0.10	5	5	0.1
BC SDWQG - AO																		**1000**	**300**					**20**			**10**										**5000**	
BC SDWQG - MAC							**9500**	**6**	**10**				**5000**	**5**		**50**	**1**	**2000**[#4]		**5**				**120**	**1**	**88**	**80**			**10**		**7000**				**20**	**3000**	
BC WQG (Approved) AWF, Long-term				**6.5-9**					**5**[#2]				**1200**				**4**			**3.4**[#5] **- 19**[#5] *****				**770**[#5] **- 2500**[#5] *****	**0.00125**[#6]	**1000**				**2**	**0.05**[#7] **- 1.5**[#7] *****						**7.5**[#5] **- 315**[#5] *****	
BC WQG (Approved) AWF, Short-term				**6.5-9**					**5**[#2]								**110**		**1000**	**3**[#5] **- 402**[#5] *****				**810**[#5] **- 3300**[#5] *****		**2000**					**0.1**[#7] **- 3**[#7] *****						**33**[#5] **- 340.5**[#5] *****	
BC WQG (Working) AWF, Long-term								**9**[#1]		**1000**[#1]	**0.13**[#1]					**1**[#3]										**25**[#5] **- 150**[#5] *****						**0.8**[#1]			**8.5**[#1]			
Creek	SW-1	2022-May-12	SW-1	8.1	7.94	197	13.8	<0.5	<0.1	11	<0.1	<1	<50	<0.01	63	<1	<0.2	1.92	<10	<0.2	<2	9.55	5.2	<0.0019	<1	<1	<10	715	0.22	<0.02	8.02	173	<0.01	<5	<5	1.14	<5	<5	<0.1

Standard/Guideline Descriptions

- BC SDWQG - AO:BC Source Drinking Water Quality Guidelines, aesthetic objective
- BC SDWQG - MAC:BC Source Drinking Water Quality Guidelines, maximum allowable concentration
- BC WQG (Approved) AWF, Long-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Long-term
- BC WQG (Approved) AWF, Short-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Short-term
- BC WQG (Working) AWF, Long-term:BC Working Water Quality Guidelines, Freshwater Aquatic Life, Long-term

Standard/Guideline Comments

#1:30 day
#2:Interim WQG
#3:30 day; guideline is for Cr(VI), speciated results supersede total chromium results
#4:Includes shortterm and long-term exposure
#5:Guideline is dependent on water hardness. Conservative hardness ranges used for comparison purposes. Exceedances to be confirmed against the formula in the regulatory guidance document.
#6:30 day average. 0.00125 when MeHg=8.0% of THg, 0.01 when MeHg = 1.0% of THg, 0.02 when MeHg = 0.5% of THg
#7:Guideline is dependent on water hardness in mg/L CaCO3

Notes:

- formatting of cells indicates exceedances of like-formatted standards
< - less than reported detection limit
µg/L - micrograms per litre
mg/L - milligrams per litre
* - range of paramater-dependent standards; value is compared to standard derived from parameter of individual sample
H - hardness in mg/L of calcium carbonate ($CaCO_3$)
- metals with hardness-dependent standards:
Cd - cadmium, Pb - lead

*** BC Water Quality Parameter-Dependent Standards/Guidelines**

Pb - AWF (30 d)
$\{3.31+e^{[1.273*ln(*H)-4.704]}\}$
3.4 @ H < 10
3.4 @ H=10<50
4.6 @ H=50<100
6.4 @ H=100<150
8.6 @ H=150<200
11 @ H=200<250
13 @ H=250<300
16 @ H=300<350
19 @ H ≥ 350

Pb - AWF (max)
$\{e^{[1.273*ln(H)-1.460]}\}$
3 @ H < 10
4 @ H=10<50
33 @ H=50<100
81 @ H=100<150
136 @ H=150<200
197 @ H=200<250
262 @ H=250<300
330 @ H=300<350
402 @ H ≥ 350

Mn - AWF (30 d)
{0.0044*H+0.605}
700 @ H < 25
770 @ H=25<50
800 @ H=50<100
1,000 @ H=100<150
1,300 @ H=150<300
1,900 @ H=300<450
2,500 @ H ≥ 450

Mn - AWF (max)
{0.01102*H+0.54}
800 @ H < 25
810 @ H=25<50
1,100 @ H=50<100
1,600 @ H=100<150
2,200 @ H=150<250
3,300 @ H=250<300
3,800 @ H ≥ 300

Ni - AWF (30 d)
25 @ H < 60
65 @ H=60<120
110 @ H=120<180
150 @ H ≥ 180

Ag - AWF (max)
0.05 @ H ≤ 100
1.5 @ H > 100

Ag - AWF (max)
0.1 @ H ≤ 100
3 @ H > 100

Zn - AWF (max)
{7.5+0.75*(H-90)}
7.5 @ H < 90
15 @ H=100<200
90 @ H=200<300
165 @ H=300<400
240 @ H=400<500
315 @ H ≥ 500

Zn - AWF (max)
{33+0.75*(H-90)}
33 @ H < 90
40 @ H=100<200
115 @ H=200<300
190 @ H=300<400
265 @ H=400<500
340.5 @ H ≥ 500

TABLE 3: SURFACE WATER ANALYTICAL RESULTS - DISSOLVED METALS

					Dissolved Metals																																		
					pH (field)	pH (lab)	hardness as CaCO3	aluminum	antimony	arsenic	barium	beryllium	bismuth	boron	cadmium	calcium	chromium (III+VI)	cobalt	copper	iron	lead	lithium	magnesium	manganese	mercury	molybdenum	nickel	phosphorus	potassium	selenium	silver	sodium	strontium	thallium	tin	titanium	uranium	vanadium	zinc	zirconium
					pH Units	pH Units	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Reported Detection Limit							0.5	3	0.5	0.1	1	0.1	1	50	0.01	0.05	1	0.2	0.20	5	0.2	2	0.05	1	0.0019	1	1	10	50	0.10	0.02	0.05	1	0.01	5	5	0.10	5	5	0.1
BC WQG (Approved) AWF, Long-term					**6.5-9**			**5[#1] - 50[#1] ***							**0.018[#2] - 0.44[#2] ***				**1.4[#3]**										**2**										
BC WQG (Approved) AWF, Short-term					**6.5-9**			**20[#1] - 100[#1] ***							**0.04[#2] - 2.8[#2] ***				**8.5[#3]**	**350**																			
Site Area	**Sample Location**	**Sample Date**	**Sample ID**																																				
Creek	SW-1	2022-May-12	SW-1		8.1	7.94	195	4.7	<0.5	<0.1	10.3	<0.1	<1	<50	<0.01	62.3	<1	<0.2	1.44	<5	<0.2	<2	9.48	2	<0.0019	<1	<1	<10	714	0.21	<0.02	7.96	170	<0.01	<5	<5	1.11	<5	<5	<0.1

Standard/Guideline Descriptions

- BC WQG (Approved) AWF, Long-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Long-term
- BC WQG (Approved) AWF, Short-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Short-term

Standard/Guideline Comments

#1:Guideline is dependent on field pH; applies to dissolved concentrations
#2:Guideline is dependent on water hardness. Conservative hardness ranges used for comparison purposes. Exceedances to be confirmed against the formula in the regulatory guidance document.
#3:Calculated using the Biotic Ligand Model

Notes:

- formatting of cells indicates exceedances of like-formatted standards
< - less than reported detection limit
µg/L - micrograms per litre
mg/L - milligrams per litre
* - range of paramater-dependent standards; value is compared to standard derived from parameter of individual sample
H - hardness in mg/L of calcium carbonate ($CaCO_3$)
- metals with hardness-dependent standards:
  Cd - cadmium
- metals with pH-dependent standards:
  Al - aluminum

*** BC Water Quality Parameter-Dependent Standards/Guidelines**

Al - AWF (30 d)
$\{e^{[1.6-3.327(-pH)+0.402(-pH)^2]}\}$
5 @ pH < 5.0
7 @ pH=5.0<5.5
10 @ pH=5.5<6.0
20 @ pH=6.0<6.5
50 @ pH ≥ 6.5

Al - AWF (max)
$\{e^{[1.209-2.426(pH)+0.286(pH)^2]}\}$
20 @ pH < 5.0
23 @ pH=5.0<5.5
30 @ pH=5.5<6.0
50 @ pH=6.0<6.5
100 @ pH ≥ 6.5

Cd - AWF (30 d)
$\{e^{[0.736*ln(H)-4.943]}\}$
0.0176 @ H=3.4<50
0.127 @ H=50<180
0.326 @ H=180<285
0.457 @ H ≥ 285

Cd - AWF (max)
$\{e^{[1.03*ln(H)-5.274]}\}$
0.038 @ H=7<50
0.288 @ H=50<180
1.08 @ H=180<320
1.95 @ H=320<455
2.8 @ H ≥ 455

TABLE 4: SURFACE WATER ANALYTICAL RESULTS - INORGANICS

				Inorganics									
				chloride ion	fluoride	hydroxide	nitrate (as N)	nitrate and nitrite (as N)	nitrite (as N)	silicon	silicon (dissolved)	sulphate	sulphur as S	sulphur as S (dissolved)
				mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L
Reported Detection Limit				1	50	1	0.020	0.020	0.005	100	100	1	3	3
BC SDWQG - AO				**250**								**500**		
BC SDWQG - MAC					**1500**		**10**	**45**	**1**					
BC WQG (Approved) AWF, Long-term				**150**			**3**	**3**	**0.02 - 0.2 ***			**128[#1] - 429[#1] ***		
BC WQG (Approved) AWF, Short-term				**600**	**400[#2] - 1840[#2] ***		**32.8**	**32.8**	**0.06 - 0.6 ***					
Site Area	**Sample Location**	**Sample Date**	**Sample ID**											
Creek	SW-1	2022-May-12	SW-1	8	<50	<1	0.138	0.138	<0.005	5390	5460	51	17.6	17.4

Standard/Guideline Descriptions

- BC SDWQG - AO:BC Source Drinking Water Quality Guidelines, aesthetic objective
- BC SDWQG - MAC:BC Source Drinking Water Quality Guidelines, maximum allowable concentration
- BC WQG (Approved) AWF, Long-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Long-term
- BC WQG (Approved) AWF, Short-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Short-term

Standard/Guideline Comments

#1:Guideline is dependent on water hardness in mg/L CaCO3

#2:Guideline is dependent on water hardness. Conservative hardness ranges used for comparison purposes. Exceedances to be confirmed against the formula in the regulatory guidance document.

Notes:

- formatting of cells indicates exceedances of like-formatted standards
- < - less than reported detection limit
- µg/L - micrograms per litre
- mg/L - milligrams per litre
- nitrate and nitrite measured in mg/L of N
- fluoride (F^-) and sulphate (SO_4) guidelines dependent on hardness (as $CaCO_3$)
- nitrite (NO_2) guidelines dependent on chloride (Cl)

*** BC Water Quality Parameter-Dependent Standards/Guidelines**

F^- - AWF (max)
{H>10 WQG (mg/L) = 92.57*log(H)-51.73}
400 @ H < 25
780 @ H=25<50
1,100 @ H=50<100
1,300 @ H=100<150
1,500 @ H=150<200
1,600 @ H=200<250
1,700 @ H=250<300
1,780 @ H=300<350
1,840 @ H ≥ 350

NO_2 - AWF (30 d)
0.02 @ Cl < 2
0.04 @ Cl=2<4
0.06 @ Cl=4<6
0.08 @ Cl=6<8
0.1 @ Cl=8<10
0.2 @ Cl ≥ 10

NO_2 - AWF (max)
0.06 @ Cl < 2
0.12 @ Cl=2<4
0.18 @ Cl=4<6
0.24 @ Cl=6<8
0.3 @ Cl=8<10
0.6 @ Cl ≥ 10

SO_4 - AWF (30 d)
0.128 @ H ≤ 30
0.218 @ H=30≤75
0.309 @ H=75≤180
0.429 @ H=180≤240

TABLE 5: GROUNDWATER ANALYTICAL RESULTS - FIELD MEASUREMENTS, ALKALINITY, AND TOTAL DISSOLVED SOLIDS

					Field					Alkalinity				TDS
					depth to water	pH (field)	temp (field)	EC (field)	turbidity (field)	alkalinity (bicarbonate)	alkalinity (carbonate)	alkalinity (P)	alkalinity (total) as CaCO3	total dissolved solids
					mbTOC	pH Units	°C	µS/cm	NTU	mg/L	mg/L	mg/L	mg/L	mg/L
Reported Detection Limit					-	-	-	-	-	1	1	1	1	10
Site Area	**Sample Location**	**Well Screen Depth (mbg)**	**Sample Date**	**Sample ID**										
Groundwater Monitoring Wells	MW19-01	-	2022-May-12	MW19-01	8.296	6.5	8.2	860	96.1	190	<1	<1	150	260
				DUP-A	8.296	6.5	8.2	860	96.1	190	<1	<1	160	280
			RPD (MW19-01 & DUP-A)		**NC**	**NC**	**NC**	**NC**	**NC**	**0%**	**NC**	**NC**	**6%**	**7%**
	MW19-02	-	2022-May-12	MW19-02	4.023	7	8.5	571	9.36	260	<1	<1	210	340
	MW-3S	15.20 - 21.30	2022-May-12	MW-3S	2.970	7.1	8.4	410	30.1	170	<1	<1	140	230
Seepage Blanket	SB-1	1.80 - 3.30	2022-May-12	SB-1	8.870	6.2	7.9	290	6.35	150	<1	<1	130	210
	SB-2	1.10 - 2.60	2022-May-12	SB-2	9.135	6.8	9.2	490	8.76	250	<1	<1	200	310
	SB-3	1.50 - 3.00	2022-May-12	SB-3	9.579	6.6	9.8	768	14.5	610	<1	<1	500	570

Notes:

• samples collected at the same location and date are blind field duplicate/parent pairs

< - less than reported detection limit

mbg - metres below grade

mbTOC - metres below top of casing

°C - degrees Celsius

EC - electrical conductivity

µS/cm - microsiemens per centimetre

NTU - nephelometric turbidity units

TDS - total dissolved solids

mg/L - milligrams per litre

RPD - relative percent difference

RPD calculation is equal to the absolute value of the difference divided by the average of the results x 100%.

RPD calculations not performed where results are less than five times the analytical detection limit.

NC - relative percent difference not calculated

TABLE 6: GROUNDWATER ANALYTICAL RESULTS - DISSOLVED METALS

Site Area	Sample Location	Well Screen Depth (mbg)	Sample Date	Sample ID	pH (field)	pH (lab)	hardness as CaCO3	aluminum	antimony	arsenic	barium	beryllium	bismuth	boron	cadmium	calcium	chromium (III+VI)	cobalt	copper	iron	lead	lithium	magnesium	manganese	mercury	molybdenum	nickel	potassium	selenium	silver	sodium	strontium	thallium	tin	titanium	uranium	vanadium	zinc	zirconium
					Dissolved Metals																																			
					pH Units	pH Units	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Reported Detection Limit							0.5	3	0.5	0.10	1	0.1	1	50	0.010	0.05	1	0.20	0.20	5	0.2	2	0.05	1	0.0019	1	1	50	0.10	0.02	0.05	1	0.01	5	5	0.10	5	5	0.10
BC P9 Background Groundwater - Southern Vancouver Island Region							1700[#1]	110	2	9	250	2[#2]		640	1		3	14[#3]	8	270	3	33[#4]		3000[#4]	0.29[#2]	17	52		6	0.27	1700[#4]	760	0.5		78	12[#5]	5[#5]	17[#5]	
BC CSR DW								**9500**	**6**	**10**	**1000**	**8**		**5000**	**5**		**50**	**1**	**1500**	**6500**	**10**	**8**		**1500**	**1**	**250**	**80**		**10**	**20**	**200**	**2500**		**2500**		**20**	**20**	**3000**	
BC CSR AWF									**90**	**50**	**10000**	**1.5**		**12000**	**0.5 - 4 ***		**10**	**40**	**20 - 90 ***		**40 - 160 ***				**0.25**	**10000**	**250 - 1500 ***		**20**	**0.5 - 15 ***			**3**		**1000**	**85**	**75[#6] - 3150[#6] ***	
Groundwater Monitoring Wells	MW19-01	-	2022-May-12	MW19-01	6.5	7.79	185	<3	<0.5	<0.10	9.6	<0.1	<1	<50	0.014	59.0	<1	<0.20	0.88	7	<0.2	<2	9.24	7.7	<0.0019	<1	4.9	777	0.18	<0.02	9.83	175	<0.01	<5	<5	1.08	<5	<5	<0.10
				DUP-A	6.5	7.82	183	<3	<0.5	<0.10	9.5	<0.1	<1	<50	0.016	57.9	<1	<0.20	0.90	6.1	<0.2	<2	9.43	7.7	<0.0019	<1	5	792	0.17	<0.02	10.1	171	<0.01	<5	<5	1.10	<5	<5	<0.10
			RPD (MW19-01 & DUP-A)		**0%**	**0%**	**1%**	**NC**	**NC**	**NC**	**1%**	**NC**	**NC**	**NC**	**NC**	**2%**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**2%**	**0%**	**NC**	**NC**	**NC**	**2%**	**NC**	**NC**	**3%**	**2%**	**NC**	**NC**	**NC**	**2%**	**NC**	**NC**	**NC**
	MW19-02	-	2022-May-12	MW19-02	7	7.9	271	3.1	<0.5	0.13	16.7	<0.1	<1	<50	0.019	88.2	<1	<0.20	1.67	<5	<0.2	<2	12.4	<1	<0.0019	<1	<1	940	0.23	<0.02	11.2	225	<0.01	<5	<5	1.11	<5	<5	<0.10
	MW-3S	15.20 - 21.30	2022-May-12	MW-3S	7.1	8.12	182	<3	<0.5	1.55	31.7	<0.1	<1	<50	<0.010	57.5	<1	0.33	<0.20	208	<0.2	<2	9.22	456	<0.0019	3.3	<1	584	<0.10	<0.02	9.33	322	<0.01	<5	<5	0.70	<5	<5	<0.10
Seepage Blanket	SB-1	1.80 - 3.30	2022-May-12	SB-1	6.2	7.65	152	<3	<0.5	<0.10	10.7	<0.1	<1	<50	0.015	49.7	<1	<0.20	0.98	<5	<0.2	<2	6.85	<1	<0.0019	<1	6	459	0.16	<0.02	5.38	132	<0.01	<5	<5	0.49	<5	<5	<0.10
	SB-2	1.10 - 2.60	2022-May-12	SB-2	6.8	7.81	233	<3	<0.5	<0.10	8.4	<0.1	<1	<50	0.017	75.4	<1	<0.20	1.04	<5	<0.2	<2	10.8	1.8	<0.0019	<1	3	916	0.10	<0.02	15.0	220	<0.01	<5	<5	1.04	<5	<5	<0.10
	SB-3	1.50 - 3.00	2022-May-12	SB-3	6.6	7.86	481	38.4	<0.5	0.38	12.3	<0.1	<1	<50	0.036	125	<1	0.67	6.22	41.8	<0.2	<2	41.3	1200	<0.0019	<1	2.9	1290	0.26	<0.02	23.6	412	<0.01	<5	<5	1.31	<5	11.8	0.11

Standard/Guideline Descriptions

- BC P9 Background Groundwater - Southern Vancouver Island Region:BC CSR Protocol 9 Table 1: Regional estimates for local background concentrations in groundwater for inorganic substances (Southern Vancouver Island Region)
- BC CSR DW:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Drinking Water
- BC CSR AWF:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Freshwater Aquatic Life

Standard/Guideline Comments

#1:Hardness is reported in mg/l
#2:Concentrations greater than the most stringent CSR Sch. 3.2 Aquatic Life Freshwater (FW) or Marine and Estuarian Water Standard.
#3:The cobalt value of 20 ug/L for the remaining regions of the province remains in effect. Concentrations greater than the CSR Sch. 3.2 Drinking Water Standard.
#4:Concentrations greater than the CSR Sch. 3.2 Drinking Water Standard.
#5:95th percentile calculated according to a normal distribution where a lognormal distribution cannot be applied.
#6:results with hardness >500 mg/L should be evaluated on a site by site basis; refer to BC Protocol 10

Notes:

- formatting of cells indicates exceedances of like-formatted standards
- samples collected at the same location and date are blind field duplicate/parent pairs

< - less than reported detection limit
mbg - metres below grade
µg/L - micrograms per litre
mg/L - milligrams per litre

- BC CSR iron and manganese standards do not apply for lack of specific Schedule 2 industrial or commercial activities at the site. See BC CSR Schedule 3.2, Footnotes 43, 44 and 46, 47
- most stringent of chromium (III) and (VI) standards applied to chromium (total)

* - range of paramater-dependent standards; value is compared to standard derived from parameter of individual sample

H - hardness in mg/L of calcium carbonate ($CaCO_3$)

- metals with hardness-dependent standards:
  Cd - cadmium, Cu - copper, Pb - lead, Ni - nickel, Ag - silver, Zn - zinc

RPD calculation is equal to the absolute value of the difference divided by the average of the results x 100%.
RPD calculations not performed where results are less than five times the analytical detection limit.
NC - relative percent difference not calculated
UNDERLINED RPD values exceed the alert limit. The alert limit for metals and inorganics in water is 30%.

*** BC CSR Parameter-Dependent Standards/Guidelines**

Cd - AWF	Cu - AWF	Pb - AWF	Ni - AWF	Ag - AWF	Zn - AWF
0.5 @ H < 30	20 @ H < 50	40 @ H < 50	250 @ H < 60	0.5 @ H ≤ 100	75 @ H < 90
1.5 @ H 30<90	30 @ H 50<75	50 @ H 50<100	650 @ H 60<120	15 @ H > 100	150 @ H 90<100
2.5 @ H 90<150	40 @ H 75<100	60 @ H 100<200	1,100 @ H 120<180		900 @ H 100<200
3.5 @ H 150<210	50 @ H 100<125	110 @ H 200<300	1,500 @ H ≥ 180		1,650 @ H 200<300
4 @ H ≥ 210	60 @ H 125<150	160 @ H ≥ 300			2,400 @ H 300<400
	70 @ H 150<175				
	80 @ H 175<200				
	90 @ H ≥ 200				

TABLE 7: GROUNDWATER ANALYTICAL RESULTS - INORGANICS

					Inorganics								
					chloride ion	fluoride	hydroxide	nitrate (as N)	nitrate and nitrite (as N)	nitrite (as N)	silicon	sulphate	sulphur as S
					mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L
Reported Detection Limit					1	50	1	0.020	0.020	0.005	100	1	3
BC CSR DW					**250**	**1500**		**10**	**10**	**1**		**500**	
BC CSR AWF					**1500**	**2000 - 3000 ***		**400**	**400**	**0.2[#1] - 2[#1] ***		**1280 - 4290 ***	
Site Area	**Sample Location**	**Well Screen Depth (mbg)**	**Sample Date**	**Sample ID**									
Groundwater Monitoring Wells	MW19-01	-	2022-May-12	MW19-01	13	<50	<1	0.193	0.193	<0.005	5570	46	14.9
				DUP-A	13	<50	<1	0.195	0.195	<0.005	5560	50	15.5
			RPD (MW19-01 & DUP-A)		**0%**	**NC**	**NC**	**1%**	**1%**	**NC**	**0%**	**8%**	**NC**
	MW19-02	-	2022-May-12	MW19-02	7.7	50	<1	0.488	0.488	<0.005	5940	89	27.2
	MW-3S	15.20 - 21.30	2022-May-12	MW-3S	21	54	<1	<0.020	<0.020	<0.005	7720	41	12.4
Seepage Blanket	SB-1	1.80 - 3.30	2022-May-12	SB-1	4.6	<50	<1	0.169	0.169	<0.005	4900	42	12.3
	SB-2	1.10 - 2.60	2022-May-12	SB-2	21	<50	<1	0.092	0.092	<0.005	6480	43	13.2
	SB-3	1.50 - 3.00	2022-May-12	SB-3	13	50	<1	0.113	0.113	<0.005	8500	37	12.8

Standard/Guideline Descriptions

- BC CSR DW:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Drinking Water
- BC CSR AWF:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Freshwater Aquatic Life

Standard/Guideline Comments

#1:Allowable concentrations of nitrite increase with ambient concentrations of chloride. The standard varies with chloride concentration to reflect the influence of chloride on nitrite toxicity and to provide adequate protection to the salmonids.

Notes:

- formatting of cells indicates exceedances of like-formatted standards
- samples collected at the same location and date are blind field duplicate/parent pairs

< - less than reported detection limit
mbg - metres below grade
µg/L - micrograms per litre
mg/L - milligrams per litre

- nitrate and nitrite measured in mg/L of N
- fluoride (Fl) and sulphate(SO_4) guidelines dependent on hardness (as $CaCO_3$)
- nitrite (NO_2) guidelines dependent on chloride (Cl)

*** BC CSR Parameter-Dependent Standards**

Fl - AWF	NO_2 - AWF	SO_4 - AWF
2,000 @ H < 50	0.2 @ Cl < 2	1,280 @ H ≤ 30
3,000 @ H ≥ 50	0.4 @ Cl=2<4	2,180 @ H=31≤75
	0.6 @ Cl=4<6	3,090 @ H=76≤180
	0.8 @ Cl=6<8	4,290 @ H > 180
	1 @ Cl=8<10	
	2 @ Cl ≥ 10	

RPD calculation is equal to the absolute value of the difference divided by the average of the results x 100%.
RPD calculations not performed where results are less than five times the analytical detection limit.
NC - relative percent difference not calculated
UNDERLINED RPD values exceed the alert limit. The alert limit for metals and inorganics in water is 30%.

DRAWINGS

2022 Q2 Post-Closure Environmental Monitoring Report

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000

NOTES:
NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.

IMAGERY: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community (IMAGE DATE: JUNE 11, 2019)

BASEDATA:
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

LEGEND:
PROPERTY BOUNDARY
SITE LOCATION

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

RALMAX VENTURES LTD.
460 STEBBINGS ROAD
SHAWNIGAN LAKE, BC

2022 Q2 POST-CLOSURE ENVIRONMENTAL MONITORING REPORT

SITE LOCATION

Date: May 24, 2022
Project No. 205.30042.00000
Drawing No. 1

SLR

Cadfile name: N:\Vancouver\CAD\Project Drawings\205\205.30042\205.30042.00000\S_205-30042-00000-A4.dwg

NOTES:
NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.

REFERENCED FROM: SPERLING HANSEN ASSOCIATES, PROJECT No. PRJ19074 FIGURE 1, DATE 2019/12/19

IMAGERY: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community (IMAGE DATE: JUNE 11, 2019)

LEGEND:

- PROPERTY BOUNDARY
- SITE BOUNDARY
- PERMANENT ENCAPSULATION AREA
- FORMER FACILITY/FEATURE
- BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS)
- BOREHOLE COMPLETED AS A MONITORING WELL (DESTROYED)
- SURFACE WATER SAMPLE (OTHERS)
- SEEPAGE BLANKET MONITORING WELL (OTHERS)
- LEACHATE SAMPLE (OTHERS)

0 25 50 100 150 m

SCALE 1:2,500
WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT
NAD 1983 UTM Zone 10 U

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

RALMAX VENTURES LTD.
460 STEBBINGS ROAD
SHAWNIGAN LAKE, BC

2022 Q2 POST-CLOSURE ENVIRONMENTAL MONITORING REPORT

SITE PLAN

Date: May 24, 2022
Project No. 205.30042.00000
Drawing No. 2

SLR

Cadfile name: N:\Vancouver\CAD\Project Drawings\205\205.30042\205.30042.00000\S_205-30042-00000-A4.dwg

NOTES:
NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.

REFERENCED FROM: SPERLING HANSEN ASSOCIATES, PROJECT No. PRJ19074 FIGURE 1, DATE 2019/12/19

IMAGERY: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community (IMAGE DATE: JUNE 11, 2019)

LEGEND:

- PROPERTY BOUNDARY
- SITE BOUNDARY
- PERMANENT ENCAPSULATION AREA
- FORMER FACILITY/FEATURE
- BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS)
- BOREHOLE COMPLETED AS A MONITORING WELL (DESTROYED)
- SURFACE WATER SAMPLE (OTHERS)
- SEEPAGE BLANKET MONITORING WELL (OTHERS)
- LEACHATE SAMPLE (OTHERS)
- **WATER LABORATORY ANALYSIS RESULTS** CONCENTRATIONS LESS THAN OR EQUAL TO THE APPLICABLE GUIDELINES
- CONCENTRATION(S) GREATER THAN THE APPLICABLE GUIDELINES

0 25 50 100 150 m

SCALE 1:2,500
WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT
NAD 1983 UTM Zone 10 U

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

RALMAX VENTURES LTD.
460 STEBBINGS ROAD
SHAWNIGAN LAKE, BC

2022 Q2 POST-CLOSURE ENVIRONMENTAL MONITORING REPORT

SURFACE WATER ANALYTICAL RESULTS

Date: May 24, 2022

Project No. 205.30042.00000

Drawing No. 3

SLR

Cadfile name: N:\Vancouver\CAD\Project Drawings\205\205.30042\205.30042.00000\S_205-30042-00000-A4.dwg

NOTES:
NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.

REFERENCED FROM: SPERLING HANSEN ASSOCIATES, PROJECT No. PRJ19074 FIGURE 1, DATE 2019/12/19

IMAGERY: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community (IMAGE DATE: JUNE 11, 2019)

LEGEND:

- PROPERTY BOUNDARY
- SITE BOUNDARY
- PERMANENT ENCAPSULATION AREA
- FORMER FACILITY/FEATURE
- BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS)
- BOREHOLE COMPLETED AS A MONITORING WELL (DESTROYED)
- SURFACE WATER SAMPLE (OTHERS)
- SEEPAGE BLANKET MONITORING WELL (OTHERS)
- LEACHATE SAMPLE (OTHERS)
- **GROUNDWATER LABORATORY ANALYSIS RESULTS** CONCENTRATIONS LESS THAN OR EQUAL TO THE APPLICABLE STANDARDS

0 25 50 100 150 m

SCALE 1:2,500
WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT
NAD 1983 UTM Zone 10 U

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

RALMAX VENTURES LTD.
460 STEBBINGS ROAD
SHAWNIGAN LAKE, BC

2022 Q2 POST-CLOSURE ENVIRONMENTAL MONITORING REPORT

GROUNDWATER ANALYTICAL RESULTS

Date: May 24, 2022	Drawing No. 4
Project No. 205.30042.00000	

SLR

Cadfile name: N:\Vancouver\CAD\Project Drawings\205\205.30042\205.30042.00000\S_205-30042-00000-A4.dwg

PHOTOGRAPHS

2022 Q2 Post-Closure Environmental Monitoring Report

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000

Photo 1: View of the southern portion of the permanent encapsulated area (PEA) cover from the southern drainage channel looking northeast (May 2022).

Photo 2: View of the middle portion of the PEA cover from the peak of the cap looking north (May 2022).

Photo 3: View of the central and northern portion of the PEA cover from the east perimeter looking northwest (May 2022).

Photo 4: View of the mid-slope drainage ditch looking west (May 2022).

Photo 5: View of the PEA surface from the northeast corner looking southwest (May 2022).

Photo 6: View of area of subsidence in northeast corner of PEA looking northwest (May, 2022).

Photo 7: View of shallow standing water on the southern portion of the landfill cover looking southeast (March 2022).

Photo 8: View of standing water at the south perimeter of the landfill looking northwest (May 2022).

Photo 9: View of vegetation growing in the mid-channel drainage ditch (May 2022).

Photo 10: View of the north side of the storage tank facility looking southeast (May 2022).

APPENDIX A LABORATORY CERTIFICATES OF ANALYSIS

2022 Q2 Post-Closure Environmental Monitoring Report

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000

Your P.O. #: VIC3817
Your Project #: 205.30042.00000
Your C.O.C. #: 663320-01-01

Attention: Forest Pimm

SLR CONSULTING (CANADA) LTD
#303-3960 Quadra Street
VICTORIA, BC
CANADA V8X 4A3

Report Date: 2022/05/20
Report #: R3175665
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C232109
Received: 2022/05/13, 08:15

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH	8	N/A	2022/05/14	BBY6SOP-00026	SM 23 2320 B m
Chloride/Sulphate by Auto Colourimetry	8	N/A	2022/05/20	BBY6SOP-00011 / BBY6SOP-00017	SM23-4500-Cl/SO4-E m
Carbon (DOC) (1, 2)	1	N/A	2022/05/19	AB SOP-00087	MMCW 119 1996 m
Fluoride	8	N/A	2022/05/17	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO3) (3)	1	N/A	2022/05/16	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	8	N/A	2022/05/16	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CV (4)	8	2022/05/16	2022/05/16	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV	1	2022/05/16	2022/05/16	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	8	N/A	2022/05/16	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (dissolved) (4)	8	N/A	2022/05/14	BBY7SOP-00002	EPA 6020b R2 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	2022/05/13	2022/05/16	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	1	2022/05/14	2022/05/15	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrate + Nitrite (N)	8	N/A	2022/05/14	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) by CFA	8	N/A	2022/05/14	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N)	1	N/A	2022/05/16	BBY WI-00033	Auto Calc
Nitrogen - Nitrate (as N)	7	N/A	2022/05/17	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	8	N/A	2022/05/13	BBY7 WI-00004	SM 23 3030B m
pH @25°C (5)	8	N/A	2022/05/14	BBY6SOP-00026	SM 23 4500-H+ B m
Total Dissolved Solids (Filt. Residue)	4	2022/05/16	2022/05/17	BBY6SOP-00033	SM 23 2540 C m
Total Dissolved Solids (Filt. Residue)	4	2022/05/17	2022/05/18	BBY6SOP-00033	SM 23 2540 C 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.

Your P.O. #: VIC3817
Your Project #: 205.30042.00000
Your C.O.C. #: 663320-01-01

Attention: Forest Pimm

SLR CONSULTING (CANADA) LTD
#303-3960 Quadra Street
VICTORIA, BC
CANADA V8X 4A3

Report Date: 2022/05/20
Report #: R3175665
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C232109
Received: 2022/05/13, 08:15

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 Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(5) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.

Encryption Key

Bureau Veritas
20 May 2022 17:30:52

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Veronica Laporte, B.Sc., Supervisor, Project Submissions and Support
Email: Veronica.Laporte@bureauveritas.com
Phone# (604) 734 7276
==========
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 Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C232109
Report Date: 2022/05/20

SLR CONSULTING (CANADA) LTD
Client Project #: 205.30042.00000
Your P.O. #: VIC3817
Sampler Initials: FP

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		ASZ302			ASZ303	ASZ304	ASZ305		
Sampling Date		2022/05/12 13:20			2022/05/12 10:30	2022/05/12 12:40	2022/05/12 13:25		
COC Number		663320-01-01			663320-01-01	663320-01-01	663320-01-01		
	UNITS	**SW-1**	**RDL**	**QC Batch**	**MW19-01**	**MW19-02**	**MW-3S**	**RDL**	**QC Batch**
ANIONS									
Nitrite (N)	mg/L	<0.0050	0.0050	A577631	<0.0050	<0.0050	<0.0050	0.0050	A577631
Calculated Parameters									
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD	FIELD	FIELD		ONSITE
Nitrate (N)	mg/L	0.138	0.020	A576921	0.193	0.488	<0.020	0.020	A576921
Misc. Inorganics									
Dissolved Organic Carbon (C)	mg/L	2.5	0.50	A581343					
pH	pH	7.94	N/A	A577737	7.79	7.90	8.12	N/A	A577737
Total Dissolved Solids	mg/L	270	10	A578516	260	340	230	10	A578516
Anions									
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A577739	<1.0	<1.0	<1.0	1.0	A577739
Alkalinity (Total as CaCO3)	mg/L	150	1.0	A577739	150	210	140	1.0	A577739
Bicarbonate (HCO3)	mg/L	190	1.0	A577739	190	260	170	1.0	A577739
Carbonate (CO3)	mg/L	<1.0	1.0	A577739	<1.0	<1.0	<1.0	1.0	A577739
Dissolved Fluoride (F)	mg/L	<0.050	0.050	A579752	<0.050	0.050	0.054	0.050	A579752
Hydroxide (OH)	mg/L	<1.0	1.0	A577739	<1.0	<1.0	<1.0	1.0	A577739
Chloride (Cl)	mg/L	8.0	1.0	A584153	13	7.7	21	1.0	A584153
Sulphate (SO4)	mg/L	51	1.0	A584153	46	89	41	1.0	A584153
Nutrients									
Nitrate plus Nitrite (N)	mg/L	0.138	0.020	A577630	0.193	0.488	<0.020	0.020	A577630

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C232109
Report Date: 2022/05/20

SLR CONSULTING (CANADA) LTD
Client Project #: 205.30042.00000
Your P.O. #: VIC3817
Sampler Initials: FP

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		ASZ306	ASZ307			ASZ308		ASZ309		
Sampling Date		2022/05/12 09:30	2022/05/12 11:15			2022/05/12 11:45		2022/05/12 10:30		
COC Number		663320-01-01	663320-01-01			663320-01-01		663320-01-01		
	UNITS	**SB-1**	**SB-2**	**RDL**	**QC Batch**	**SB-3**	**RDL**	**DUP-A**	**RDL**	**QC Batch**
ANIONS										
Nitrite (N)	mg/L	<0.0050	<0.0050	0.0050	A577631	<0.0050	0.0050	<0.0050	0.0050	A577631
Calculated Parameters										
Filter and HNO3 Preservation	N/A	FIELD	FIELD		ONSITE	FIELD		FIELD		ONSITE
Nitrate (N)	mg/L	0.169	0.092	0.020	A576921	0.113	0.020	0.195	0.020	A576921
Misc. Inorganics										
pH	pH	7.65	7.81	N/A	A577737	7.86	N/A	7.82	N/A	A577737
Total Dissolved Solids	mg/L	210	310	10	A579664	570 (1)	11	280	10	A579664
Anions										
Alkalinity (PP as CaCO3)	mg/L	<1.0	<1.0	1.0	A577739	<1.0	1.0	<1.0	1.0	A577739
Alkalinity (Total as CaCO3)	mg/L	130	200	1.0	A577739	500	1.0	160	1.0	A577739
Bicarbonate (HCO3)	mg/L	150	250	1.0	A577739	610	1.0	190	1.0	A577739
Carbonate (CO3)	mg/L	<1.0	<1.0	1.0	A577739	<1.0	1.0	<1.0	1.0	A577739
Dissolved Fluoride (F)	mg/L	<0.050	<0.050	0.050	A579752	0.050	0.050	<0.050	0.050	A579752
Hydroxide (OH)	mg/L	<1.0	<1.0	1.0	A577739	<1.0	1.0	<1.0	1.0	A577739
Chloride (Cl)	mg/L	4.6	21	1.0	A584153	13	1.0	13	1.0	A584154
Sulphate (SO4)	mg/L	42	43	1.0	A584153	37	1.0	50	1.0	A584154
Nutrients										
Nitrate plus Nitrite (N)	mg/L	0.169	0.092	0.020	A577630	0.113	0.020	0.195	0.020	A577630

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) RDL raised due to limited initial sample amount.

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Bureau Veritas ID		ASZ302	ASZ303	ASZ304	ASZ305	ASZ306	ASZ307		
Sampling Date		2022/05/12 13:20	2022/05/12 10:30	2022/05/12 12:40	2022/05/12 13:25	2022/05/12 09:30	2022/05/12 11:15		
COC Number		663320-01-01	663320-01-01	663320-01-01	663320-01-01	663320-01-01	663320-01-01		
	UNITS	**SW-1**	**MW19-01**	**MW19-02**	**MW-3S**	**SB-1**	**SB-2**	**RDL**	**QC Batch**
Calculated Parameters									
Dissolved Hardness (CaCO3)	mg/L	195	185	271	182	152	233	0.50	A576874
Elements									
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	0.0019	A578161
Dissolved Metals by ICPMS									
Dissolved Aluminum (Al)	ug/L	4.7	<3.0	3.1	<3.0	<3.0	<3.0	3.0	A577361
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	A577361
Dissolved Arsenic (As)	ug/L	<0.10	<0.10	0.13	1.55	<0.10	<0.10	0.10	A577361
Dissolved Barium (Ba)	ug/L	10.3	9.6	16.7	31.7	10.7	8.4	1.0	A577361
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A577361
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	A577361
Dissolved Boron (B)	ug/L	<50	<50	<50	<50	<50	<50	50	A577361
Dissolved Cadmium (Cd)	ug/L	<0.010	0.014	0.019	<0.010	0.015	0.017	0.010	A577361
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	A577361
Dissolved Cobalt (Co)	ug/L	<0.20	<0.20	<0.20	0.33	<0.20	<0.20	0.20	A577361
Dissolved Copper (Cu)	ug/L	1.44	0.88	1.67	<0.20	0.98	1.04	0.20	A577361
Dissolved Iron (Fe)	ug/L	<5.0	7.0	<5.0	208	<5.0	<5.0	5.0	A577361
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	A577361
Dissolved Lithium (Li)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	A577361
Dissolved Manganese (Mn)	ug/L	2.0	7.7	<1.0	456	<1.0	1.8	1.0	A577361
Dissolved Molybdenum (Mo)	ug/L	<1.0	<1.0	<1.0	3.3	<1.0	<1.0	1.0	A577361
Dissolved Nickel (Ni)	ug/L	<1.0	4.9	<1.0	<1.0	6.0	3.0	1.0	A577361
Dissolved Selenium (Se)	ug/L	0.21	0.18	0.23	<0.10	0.16	0.10	0.10	A577361
Dissolved Silicon (Si)	ug/L	5460	5570	5940	7720	4900	6480	100	A577361
Dissolved Silver (Ag)	ug/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	A577361
Dissolved Strontium (Sr)	ug/L	170	175	225	322	132	220	1.0	A577361
Dissolved Thallium (Tl)	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	A577361
Dissolved Tin (Sn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A577361
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A577361
Dissolved Uranium (U)	ug/L	1.11	1.08	1.11	0.70	0.49	1.04	0.10	A577361
Dissolved Vanadium (V)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A577361
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A577361
Dissolved Zirconium (Zr)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A577361

RDL = Reportable Detection Limit

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas Job #: C232109
Report Date: 2022/05/20

SLR CONSULTING (CANADA) LTD
Client Project #: 205.30042.00000
Your P.O. #: VIC3817
Sampler Initials: FP

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Bureau Veritas ID		ASZ302	ASZ303	ASZ304	ASZ305	ASZ306	ASZ307		
Sampling Date		2022/05/12 13:20	2022/05/12 10:30	2022/05/12 12:40	2022/05/12 13:25	2022/05/12 09:30	2022/05/12 11:15		
COC Number		663320-01-01	663320-01-01	663320-01-01	663320-01-01	663320-01-01	663320-01-01		
	UNITS	**SW-1**	**MW19-01**	**MW19-02**	**MW-3S**	**SB-1**	**SB-2**	**RDL**	**QC Batch**
Dissolved Calcium (Ca)	mg/L	62.3	59.0	88.2	57.5	49.7	75.4	0.050	A576875
Dissolved Magnesium (Mg)	mg/L	9.48	9.24	12.4	9.22	6.85	10.8	0.050	A576875
Dissolved Potassium (K)	mg/L	0.714	0.777	0.940	0.584	0.459	0.916	0.050	A576875
Dissolved Sodium (Na)	mg/L	7.96	9.83	11.2	9.33	5.38	15.0	0.050	A576875
Dissolved Sulphur (S)	mg/L	17.4	14.9	27.2	12.4	12.3	13.2	3.0	A576875
RDL = Reportable Detection Limit									

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Bureau Veritas ID		ASZ308	ASZ309		
Sampling Date		2022/05/12 11:45	2022/05/12 10:30		
COC Number		663320-01-01	663320-01-01		
	UNITS	**SB-3**	**DUP-A**	**RDL**	**QC Batch**
Calculated Parameters					
Dissolved Hardness (CaCO3)	mg/L	481	183	0.50	A576874
Elements					
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	A578161
Dissolved Metals by ICPMS					
Dissolved Aluminum (Al)	ug/L	38.4	<3.0	3.0	A577361
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	0.50	A577361
Dissolved Arsenic (As)	ug/L	0.38	<0.10	0.10	A577361
Dissolved Barium (Ba)	ug/L	12.3	9.5	1.0	A577361
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	0.10	A577361
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	1.0	A577361
Dissolved Boron (B)	ug/L	<50	<50	50	A577361
Dissolved Cadmium (Cd)	ug/L	0.036	0.016	0.010	A577361
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	1.0	A577361
Dissolved Cobalt (Co)	ug/L	0.67	<0.20	0.20	A577361
Dissolved Copper (Cu)	ug/L	6.22	0.90	0.20	A577361
Dissolved Iron (Fe)	ug/L	41.8	6.1	5.0	A577361
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	0.20	A577361
Dissolved Lithium (Li)	ug/L	<2.0	<2.0	2.0	A577361
Dissolved Manganese (Mn)	ug/L	1200	7.7	1.0	A577361
Dissolved Molybdenum (Mo)	ug/L	<1.0	<1.0	1.0	A577361
Dissolved Nickel (Ni)	ug/L	2.9	5.0	1.0	A577361
Dissolved Selenium (Se)	ug/L	0.26	0.17	0.10	A577361
Dissolved Silicon (Si)	ug/L	8500	5560	100	A577361
Dissolved Silver (Ag)	ug/L	<0.020	<0.020	0.020	A577361
Dissolved Strontium (Sr)	ug/L	412	171	1.0	A577361
Dissolved Thallium (Tl)	ug/L	<0.010	<0.010	0.010	A577361
Dissolved Tin (Sn)	ug/L	<5.0	<5.0	5.0	A577361
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	5.0	A577361
Dissolved Uranium (U)	ug/L	1.31	1.10	0.10	A577361
Dissolved Vanadium (V)	ug/L	<5.0	<5.0	5.0	A577361
Dissolved Zinc (Zn)	ug/L	11.8	<5.0	5.0	A577361
Dissolved Zirconium (Zr)	ug/L	0.11	<0.10	0.10	A577361
RDL = Reportable Detection Limit					

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SLR CONSULTING (CANADA) LTD
Client Project #: 205.30042.00000
Your P.O. #: VIC3817
Sampler Initials: FP

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Bureau Veritas ID		ASZ308	ASZ309		
Sampling Date		2022/05/12 11:45	2022/05/12 10:30		
COC Number		663320-01-01	663320-01-01		
	UNITS	**SB-3**	**DUP-A**	**RDL**	**QC Batch**
Dissolved Calcium (Ca)	mg/L	125	57.9	0.050	A576875
Dissolved Magnesium (Mg)	mg/L	41.3	9.43	0.050	A576875
Dissolved Potassium (K)	mg/L	1.29	0.792	0.050	A576875
Dissolved Sodium (Na)	mg/L	23.6	10.1	0.050	A576875
Dissolved Sulphur (S)	mg/L	12.8	15.5	3.0	A576875
RDL = Reportable Detection Limit					

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Bureau Veritas ID		ASZ302		
Sampling Date		2022/05/12 13:20		
COC Number		663320-01-01		
	UNITS	**SW-1**	**RDL**	**QC Batch**
Calculated Parameters				
Total Hardness (CaCO3)	mg/L	197	0.50	A576943
Elements				
Total Mercury (Hg)	ug/L	<0.0019	0.0019	A578157
Total Metals by ICPMS				
Total Aluminum (Al)	ug/L	13.8	3.0	A577452
Total Antimony (Sb)	ug/L	<0.50	0.50	A577452
Total Arsenic (As)	ug/L	<0.10	0.10	A577452
Total Barium (Ba)	ug/L	11.0	1.0	A577452
Total Beryllium (Be)	ug/L	<0.10	0.10	A577452
Total Bismuth (Bi)	ug/L	<1.0	1.0	A577452
Total Boron (B)	ug/L	<50	50	A577452
Total Cadmium (Cd)	ug/L	<0.010	0.010	A577452
Total Chromium (Cr)	ug/L	<1.0	1.0	A577452
Total Cobalt (Co)	ug/L	<0.20	0.20	A577452
Total Copper (Cu)	ug/L	1.92	0.50	A577452
Total Iron (Fe)	ug/L	<10	10	A577452
Total Lead (Pb)	ug/L	<0.20	0.20	A577452
Total Lithium (Li)	ug/L	<2.0	2.0	A577452
Total Manganese (Mn)	ug/L	5.2	1.0	A577452
Total Molybdenum (Mo)	ug/L	<1.0	1.0	A577452
Total Nickel (Ni)	ug/L	<1.0	1.0	A577452
Total Phosphorus (P)	ug/L	<10	10	A577452
Total Selenium (Se)	ug/L	0.22	0.10	A577452
Total Silicon (Si)	ug/L	5390	100	A577452
Total Silver (Ag)	ug/L	<0.020	0.020	A577452
Total Strontium (Sr)	ug/L	173	1.0	A577452
Total Thallium (Tl)	ug/L	<0.010	0.010	A577452
Total Tin (Sn)	ug/L	<5.0	5.0	A577452
Total Titanium (Ti)	ug/L	<5.0	5.0	A577452
Total Uranium (U)	ug/L	1.14	0.10	A577452
Total Vanadium (V)	ug/L	<5.0	5.0	A577452
Total Zinc (Zn)	ug/L	<5.0	5.0	A577452
RDL = Reportable Detection Limit				

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SLR CONSULTING (CANADA) LTD
Client Project #: 205.30042.00000
Your P.O. #: VIC3817
Sampler Initials: FP

CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Bureau Veritas ID		ASZ302		
Sampling Date		2022/05/12 13:20		
COC Number		663320-01-01		
	UNITS	**SW-1**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	<0.10	0.10	A577452
Total Calcium (Ca)	mg/L	63.0	0.050	A576926
Total Magnesium (Mg)	mg/L	9.55	0.050	A576926
Total Potassium (K)	mg/L	0.715	0.050	A576926
Total Sodium (Na)	mg/L	8.02	0.050	A576926
Total Sulphur (S)	mg/L	17.6	3.0	A576926
RDL = Reportable Detection Limit				

GENERAL COMMENTS

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

Package 1	4.3°C

Results relate only to the items tested.

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
A577361	Dissolved Aluminum (Al)	2022/05/14	102	80 - 120	101	80 - 120	<3.0	ug/L	1.4	20
A577361	Dissolved Antimony (Sb)	2022/05/14	105	80 - 120	104	80 - 120	<0.50	ug/L	NC	20
A577361	Dissolved Arsenic (As)	2022/05/14	107	80 - 120	103	80 - 120	<0.10	ug/L	1.7	20
A577361	Dissolved Barium (Ba)	2022/05/14	NC	80 - 120	101	80 - 120	<1.0	ug/L	0.69	20
A577361	Dissolved Beryllium (Be)	2022/05/14	105	80 - 120	102	80 - 120	<0.10	ug/L	NC	20
A577361	Dissolved Bismuth (Bi)	2022/05/14	95	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
A577361	Dissolved Boron (B)	2022/05/14	102	80 - 120	101	80 - 120	<50	ug/L	0.042	20
A577361	Dissolved Cadmium (Cd)	2022/05/14	102	80 - 120	101	80 - 120	<0.010	ug/L	15	20
A577361	Dissolved Chromium (Cr)	2022/05/14	99	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
A577361	Dissolved Cobalt (Co)	2022/05/14	96	80 - 120	95	80 - 120	<0.20	ug/L	1.9	20
A577361	Dissolved Copper (Cu)	2022/05/14	NC	80 - 120	96	80 - 120	<0.20	ug/L	1.2	20
A577361	Dissolved Iron (Fe)	2022/05/14	98	80 - 120	99	80 - 120	<5.0	ug/L	0.18	20
A577361	Dissolved Lead (Pb)	2022/05/14	100	80 - 120	102	80 - 120	<0.20	ug/L	NC	20
A577361	Dissolved Lithium (Li)	2022/05/14	102	80 - 120	100	80 - 120	<2.0	ug/L	2.3	20
A577361	Dissolved Manganese (Mn)	2022/05/14	NC	80 - 120	100	80 - 120	<1.0	ug/L	0.37	20
A577361	Dissolved Molybdenum (Mo)	2022/05/14	110	80 - 120	104	80 - 120	<1.0	ug/L	1.5	20
A577361	Dissolved Nickel (Ni)	2022/05/14	95	80 - 120	98	80 - 120	<1.0	ug/L	2.9	20
A577361	Dissolved Selenium (Se)	2022/05/14	101	80 - 120	99	80 - 120	<0.10	ug/L	NC	20
A577361	Dissolved Silicon (Si)	2022/05/14	NC	80 - 120	112	80 - 120	<100	ug/L	0.11	20
A577361	Dissolved Silver (Ag)	2022/05/14	102	80 - 120	99	80 - 120	<0.020	ug/L	NC	20
A577361	Dissolved Strontium (Sr)	2022/05/14	NC	80 - 120	100	80 - 120	<1.0	ug/L	0.078	20
A577361	Dissolved Thallium (Tl)	2022/05/14	100	80 - 120	98	80 - 120	<0.010	ug/L	NC	20
A577361	Dissolved Tin (Sn)	2022/05/14	103	80 - 120	101	80 - 120	<5.0	ug/L	NC	20
A577361	Dissolved Titanium (Ti)	2022/05/14	102	80 - 120	103	80 - 120	<5.0	ug/L	NC	20
A577361	Dissolved Uranium (U)	2022/05/14	104	80 - 120	100	80 - 120	<0.10	ug/L	0.74	20
A577361	Dissolved Vanadium (V)	2022/05/14	104	80 - 120	100	80 - 120	<5.0	ug/L	NC	20
A577361	Dissolved Zinc (Zn)	2022/05/14	111	80 - 120	115	80 - 120	<5.0	ug/L	2.6	20
A577361	Dissolved Zirconium (Zr)	2022/05/14	105	80 - 120	99	80 - 120	<0.10	ug/L	2.6	20
A577452	Total Aluminum (Al)	2022/05/15	102	80 - 120	103	80 - 120	<3.0	ug/L	6.2	20
A577452	Total Antimony (Sb)	2022/05/15	105	80 - 120	106	80 - 120	<0.50	ug/L	NC	20
A577452	Total Arsenic (As)	2022/05/15	105	80 - 120	106	80 - 120	<0.10	ug/L	3.1	20

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
A577452	Total Barium (Ba)	2022/05/15	103	80 - 120	105	80 - 120	<1.0	ug/L	2.3	20
A577452	Total Beryllium (Be)	2022/05/15	105	80 - 120	105	80 - 120	<0.10	ug/L	NC	20
A577452	Total Bismuth (Bi)	2022/05/15	100	80 - 120	103	80 - 120	<1.0	ug/L	NC	20
A577452	Total Boron (B)	2022/05/15	103	80 - 120	103	80 - 120	<50	ug/L	NC	20
A577452	Total Cadmium (Cd)	2022/05/15	103	80 - 120	105	80 - 120	<0.010	ug/L	NC	20
A577452	Total Chromium (Cr)	2022/05/15	100	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
A577452	Total Cobalt (Co)	2022/05/15	100	80 - 120	101	80 - 120	<0.20	ug/L	4.6	20
A577452	Total Copper (Cu)	2022/05/15	97	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
A577452	Total Iron (Fe)	2022/05/15	NC	80 - 120	104	80 - 120	<10	ug/L	0.41	20
A577452	Total Lead (Pb)	2022/05/15	106	80 - 120	107	80 - 120	<0.20	ug/L	5.8	20
A577452	Total Lithium (Li)	2022/05/15	103	80 - 120	101	80 - 120	<2.0	ug/L	NC	20
A577452	Total Manganese (Mn)	2022/05/15	NC	80 - 120	102	80 - 120	<1.0	ug/L	2.7	20
A577452	Total Molybdenum (Mo)	2022/05/15	108	80 - 120	107	80 - 120	<1.0	ug/L	NC	20
A577452	Total Nickel (Ni)	2022/05/15	99	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
A577452	Total Phosphorus (P)	2022/05/15	105	80 - 120	103	80 - 120	<10	ug/L		
A577452	Total Selenium (Se)	2022/05/15	103	80 - 120	103	80 - 120	<0.10	ug/L	NC	20
A577452	Total Silicon (Si)	2022/05/15	105	80 - 120	120	80 - 120	<100	ug/L	1.8	20
A577452	Total Silver (Ag)	2022/05/15	101	80 - 120	102	80 - 120	<0.020	ug/L	NC	20
A577452	Total Strontium (Sr)	2022/05/15	NC	80 - 120	105	80 - 120	<1.0	ug/L	0.14	20
A577452	Total Thallium (Tl)	2022/05/15	102	80 - 120	101	80 - 120	<0.010	ug/L	NC	20
A577452	Total Tin (Sn)	2022/05/15	103	80 - 120	103	80 - 120	<5.0	ug/L	NC	20
A577452	Total Titanium (Ti)	2022/05/15	104	80 - 120	105	80 - 120	<5.0	ug/L	NC	20
A577452	Total Uranium (U)	2022/05/15	107	80 - 120	105	80 - 120	<0.10	ug/L	NC	20
A577452	Total Vanadium (V)	2022/05/15	104	80 - 120	102	80 - 120	<5.0	ug/L	NC	20
A577452	Total Zinc (Zn)	2022/05/15	101	80 - 120	103	80 - 120	<5.0	ug/L	2.8	20
A577452	Total Zirconium (Zr)	2022/05/15	102	80 - 120	103	80 - 120	<0.10	ug/L	NC	20
A577630	Nitrate plus Nitrite (N)	2022/05/14	106	80 - 120	104	80 - 120	<0.020	mg/L	2.5	25
A577631	Nitrite (N)	2022/05/14	107	80 - 120	104	80 - 120	<0.0050	mg/L	NC	20
A577737	pH	2022/05/14			102	97 - 103			0.51	N/A
A577739	Alkalinity (PP as CaCO3)	2022/05/14					<1.0	mg/L	NC	20
A577739	Alkalinity (Total as CaCO3)	2022/05/14	NC	80 - 120	96	80 - 120	<1.0	mg/L	0.12	20

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
A577739	Bicarbonate (HCO3)	2022/05/14					<1.0	mg/L	0.12	20
A577739	Carbonate (CO3)	2022/05/14					<1.0	mg/L	NC	20
A577739	Hydroxide (OH)	2022/05/14					<1.0	mg/L	NC	20
A578157	Total Mercury (Hg)	2022/05/16	102	80 - 120	102	80 - 120	<0.0019	ug/L	NC	20
A578161	Dissolved Mercury (Hg)	2022/05/16	96	80 - 120	99	80 - 120	<0.0019	ug/L	NC	20
A578516	Total Dissolved Solids	2022/05/17	NC	80 - 120	96	80 - 120	<10	mg/L	3.0	20
A579664	Total Dissolved Solids	2022/05/18	103	80 - 120	108	80 - 120	<10	mg/L	11	20
A579752	Dissolved Fluoride (F)	2022/05/17	108	80 - 120	108	80 - 120	<0.050	mg/L	NC	20
A581343	Dissolved Organic Carbon (C)	2022/05/19	NC	80 - 120	112	80 - 120	<0.50	mg/L	4.1	20
A584153	Chloride (Cl)	2022/05/20	NC	80 - 120	103	80 - 120	<1.0	mg/L	6.0	20
A584153	Sulphate (SO4)	2022/05/20	NC	80 - 120	100	80 - 120	<1.0	mg/L	9.5	20
A584154	Chloride (Cl)	2022/05/20	99	80 - 120	103	80 - 120	<1.0	mg/L	NC	20
A584154	Sulphate (SO4)	2022/05/20	119	80 - 120	101	80 - 120	<1.0	mg/L	NC	20

N/A = Not Applicable

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.

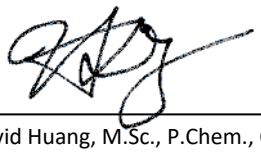
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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).

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

VALIDATION SIGNATURE PAGE

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



David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Bureau Veritas Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Bureau Veritas
Unit 1-851 Viewfield Rd, Victoria, British Columbia Canada V9A 4V2 Tel:(250) 385 6112 Toll-free:800-563-6266 Fax:(250) 382 6364 www.bvna.com

C232109_COC

INVOICE TO:		Report Information		Project Information	
Company Name	#11223 SLR CONSULTING (CANADA) LTD	Company Name		Quotation #	C20637
Contact Name	Forest Pimm	Contact Name	Forest Pimm	P.O. #	VIC3817
Address	#303-3960 Quadra Street	Address	#303-3960 Quadra Street	Project #	205.30042.00000
	VICTORIA BC V8X 4A3		VICTORIA BC V8X 4A3	Project Name	
Phone	(250) 475-9595 Fax: (250) 475-9596	Phone	(250) 475-9595 Fax:	Site #	
Email	fpimm@slrconsulting.com	Email	fpimm@slrconsulting.com	Sampled By	EP

Bottle Order #: 663320

Chain Of Custody Record: C#663320-01-01

Project Manager: Veronica Laporte

Regulatory Criteria: BC CSR

Special Instructions: Report only anions chloride, fluoride, nitrate, Sulfate
Report CSR metals + calcium, magnesium, manganese, potassium, & sodium

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to Bureau Veritas

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:
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	Anion Package - Water	CSR Dissolved Metals in Water with CV Hg	CSR Total Metals in Water with CV Hg	LEPH & HEPH with CSR/CCME PAH in Water	Alkalinity @25C (pp, total), CO3,HCO3,OH	Carbon (DOC)	Total Dissolved Solids (Filt. Residue)	Turbidity			# of Bottles	Comments
1		SW-1	2022/05/12	13:20	Surface water			X	X	X		X	X	X				8	
2		MW19-01	2022/05/12	10:30	GW			X	X			X		X				5	
3		MW19-02	2022/05/12	12:40	GW			X	X			X		X				5	
4		MW-3S	2022/05/12	13:25	GW			X	X			X		X				5	
5		SB-1	2022/05/12	09:30	water			X	X			X		X				5	
6		SB-2	2022/05/12	11:15	water			X	X			X		X				5	
7		SB-3	2022/05/12	11:45	water			X	X			X		X				5	
~~8~~		~~SB-4~~						~~X~~	~~X~~			~~X~~		~~X~~					~~to~~
9		DUP-A	2022/05/12	10:30	GW			X	X			X		X				5	
10																			

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Forest Pimm	22/05/12	17:00	JANITA TAYLOR WHITEHORSE	22/05/13	09:13	

Lab Use Only: Time Sensitive ☐ | Temperature (°C) on Receipt: 7, 3, 3 | Custody Seal Intact on Cooler? ☐ 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

ICE: YES

APPENDIX B BIOTIC LIGAND MODEL RESULTS

2022 Q2 Post-Closure Environmental Monitoring Report

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000

Acute Copper Biotic Ligand Model (BLM) for Aquatic Life

British Columbia Copper BLM Software Version 1.11
(Based on Windward BLM Version 3.40.2.45)

For the following calculation, the BLM is used in conjunction with acceptable
acute toxicity data for copper.

BLM Cu toxicity values normalized to chemistry found in the file:
N:\Victoria\Projects\General Clients\205.30042.00000 460 Stebbings Rd. Env. Services\Technical Files\BLM\2022 Q2\BLM_2022-Q2.blm

Site Characteristics:

Site Name	Sample Name	Temp. C	pH	DOC mg C/L	HA %	Alkalinity mg/L CaCO3
SW-1	C232109_ASZ302	7.1	8.1	2.5	10	150

Site Name	Sample Name	Ca mg/L	Mg mg/L	Na mg/L	K mg/L	SO4 mg/L	Cl mg/L
SW-1	C232109_ASZ302	62.3	9.48	7.96	0.714	51	8

*The lower limit of this parameter was used in the model because input value was too low.
**The upper limit of this parameter was used in the model because input value was too high.

Aquatic Life Guideline:

#	Site Name	Sample Name	Copper Concentration (ug/L)	Acute Guideline (ug/L)
1	SW-1	C232109_ASZ302	1.44	9.9

Parameter Limits:

Parameter	Units	Lower Limit	Upper Limit
Temp.	C	4.4	27
pH		5	9
DOC	mg C/L	0.05	20
HA	%	0.01	99
Ca	mg/L	2.2	72.94
Mg	mg/L	0.58	18.4
Na	mg/L	0.86	70.97
K	mg/L	0.59	156
SO4	mg/L	0.5	1320
Cl	mg/L	0.2	119.8
Alkalinity	mg/L CaCO3	3	160

Chronic Copper Biotic Ligand Model (BLM) for Aquatic Life

British Columbia Copper BLM Software Version 1.11
(Based on Windward BLM Version 3.40.2.45)

For the following calculation, the BLM is used in conjunction with acceptable
chronic toxicity data for copper.

BLM Cu toxicity values normalized to chemistry found in the file:
N:\Victoria\Projects\General Clients\205.30042.00000 460 Stebbings Rd. Env. Services\Technical Files\BLM\2022 Q2\BLM_2022-Q2.blm

Site Characteristics:

Site Name	Sample Name	Temp. C	pH	DOC mg C/L	HA %	Alkalinity mg/L CaCO3
SW-1	C232109_ASZ302	7.1	8.1	2.5	10	150

Site Name	Sample Name	Ca mg/L	Mg mg/L	Na mg/L	K mg/L	SO4 mg/L	Cl mg/L
SW-1	C232109_ASZ302	62.3	9.48	7.96	0.714	51	8

*The lower limit of this parameter was used in the model because input value was too low.
**The upper limit of this parameter was used in the model because input value was too high.

Aquatic Life Guideline:

#	Site Name	Sample Name	Copper Concentration (ug/L)	Chronic Guideline (ug/L)
1	SW-1	C232109_ASZ302	1.44	1.7

Parameter Limits:

Parameter	Units	Lower Limit	Upper Limit
Temp.	C	4.4	27
pH		5	9
DOC	mg C/L	0.05	20
HA	%	0.01	99
Ca	mg/L	2.2	72.94
Mg	mg/L	0.58	18.4
Na	mg/L	0.86	70.97
K	mg/L	0.59	156
SO4	mg/L	0.5	1320
Cl	mg/L	0.2	119.8
Alkalinity	mg/L CaCO3	3	160

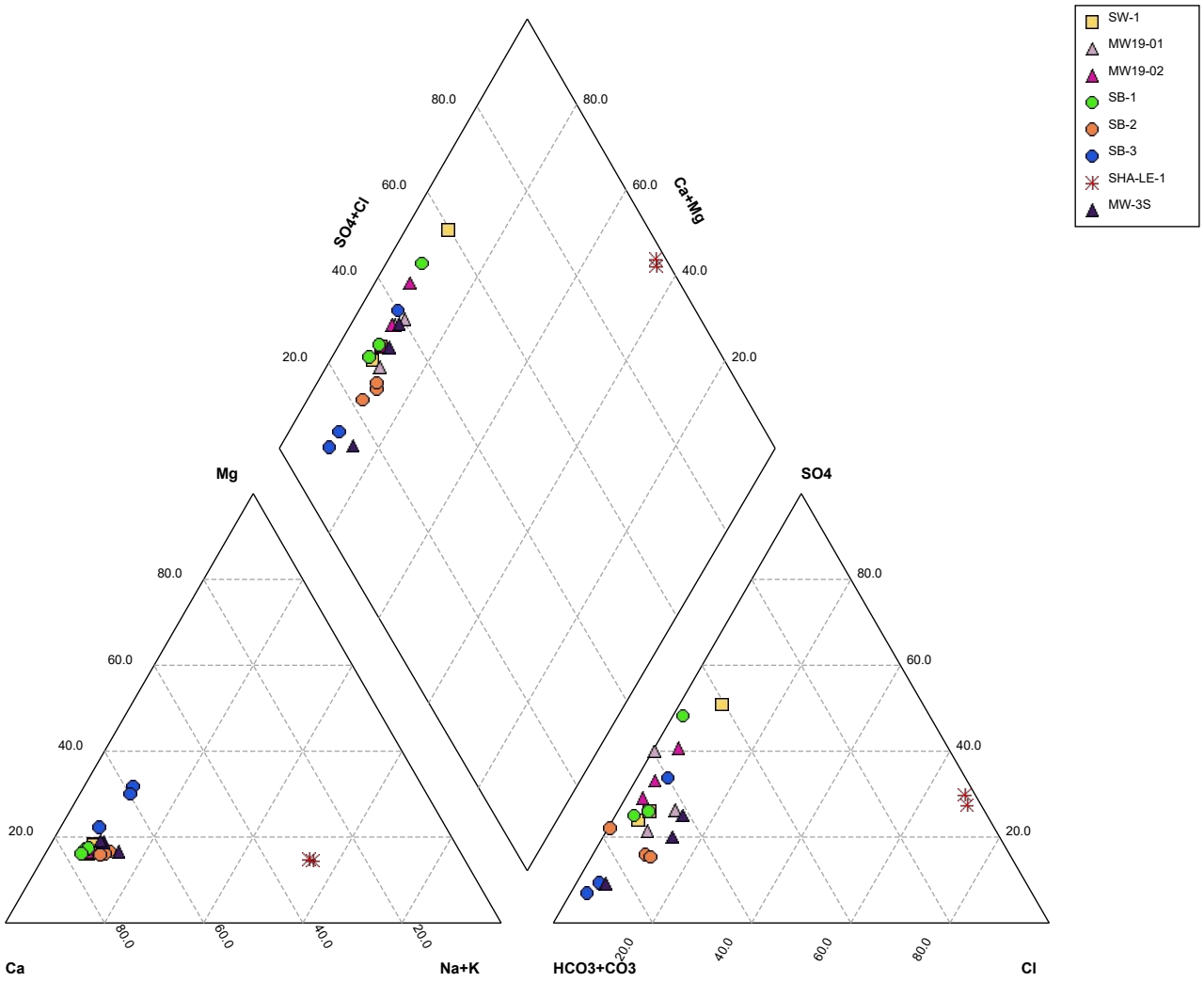
APPENDIX C PIPER PLOT

2022 Q2 Post-Closure Environmental Monitoring Report

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000



SLR	**Ralmax Ventures Ltd.** Post-Closure Environmental Monitoring Piper Trilinear Plot	**205.30042** Figure xx June 1, 2022