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BASELINE (SUMMER AND WINTER) TESTING (PHASE 3)

AE PROJECT NUMBER: 3000-31

December 19, 2023

BC MINISTRY OF TRANSPORTATION & INFRASTRUCTURE
5A 940 Blanshard Street
Victoria, BC V8W 9T5

ATTENTION: Paul Savinkoff, P.Geo.
Senior Geoscientist

REFERENCE: Highway 1 Widening from Lefeuvre to Ross Road (Mainline West), Abbotsford, BC

INTRODUCTION

Active Earth Engineering Ltd. (Active Earth) has been retained by the BC Ministry of Transportation & Infrastructure (MOTI, the 'client') to conduct Baseline Testing of wells and sewerage systems that were previously identified to be at medium to high risk of impacts from the proposed Highway 1 improvements between Lefeuvre and Ross Roads. This portion of the overall Highway 1 Improvements Project (the 'Project') is referred to as 'Mainline West' package.

The Project will involve construction of an additional highway lane in both directions, which will primarily encroach on the center median but will also include substantial traffic and drainage pattern changes at existing interchanges, overpasses and underpasses. The combined footprint of these areas is henceforth referred to as the 'Project Area.'

This report provides a summary of Baseline Testing results conducted during the wet and dry seasons, when groundwater levels were anticipated to be at their highest and lowest, respectively, and flows in receiving drainage courses (ditches, streams) were also expected to be at their highest and lowest.

This work was conducted in accordance with Contract 860-CS-5296 between MOTI and Active Earth.

BACKGROUND

Past assessment work within the Mainland West package has included desktop-based Initial Screening Level Assessment (Phase 1)[1] and subsequent on-site Ground Truthing (Phase 2)[2].

As part of the Initial Screening step completed in May of 2021, two (2) land parcels were flagged as warranting further consideration of potential impacts to domestic water supply wells and twenty-seven (27) land parcels were flagged as warranting further analysis of potential impacts to sewerage systems.

The Ground Truthing work completed in October 2021 re-reviewed the Initial Screening results with reference to the 50% Preliminary Design drawings. After completing this step, the number of wells requiring further assessment was reduced to zero, and the number of sewerage systems was reduced to five (5).

OBJECTIVES AND SCOPE OF WORK

The objectives of the Baseline Testing (Phase 3) work have been to further assess and document the pre-construction status of the 'moderate to high' risk sewerage systems identified in previous work and to make recommendations on how potential Project-related impacts can be mitigated.

For sewerage systems, potential impacts include impacts that could render them out of compliance with recommended minimum horizontal setbacks between dispersal fields and drainage ditches (particularly those connected to downstream fish habitat). For ephemeral streams, this setback distance is 15m, as recommended in the *Sewerage System Standard Practice Manual*.[3] Encroaching on this setback could result in contamination of surface water by septic-sourced constituents (e.g. nutrients, bacteria). Potential impacts to sewerage systems also include impacts to their proper functioning. For example, changes to surface drainage patterns that cause a rise in the water table

[1] Active Earth Engineering, DRAFT Groundwater Assessment - Initial Screening (Phase 1) Highway 1 Widening from 264 St to Whatcom Rd, May, 30pp.
[2] Active Earth Engineering, 2021. DRAFT Baseline Groundwater Assessment (Phase 2) Highway 1 Widening from 264 St to Whatcom Rd, October, 38pp.
[3] The Sewerage System Standard Practice Manual, version 3 (2014), published by the Health Protection Branch of the BC Ministry of Health, sets out a 30 m set back between a dispersal system and a permanent freshwater waterbody, and 15 m for an intermittent freshwater waterbody.

would reduce the vertical separation between the point of release of effluent and the groundwater table, potentially lessening the effectiveness of in-ground treatment.

As part of this Phase 3 assessment, our scope of work included:

- Reviewing the 100% Detailed Design drawings (dated December 1, 2023). Special attention was given to properties that may be encroached upon by means of land acquisition or licensure, or that may be affected by changes in surface drainage patterns.
- Identifying at-risk sewerage systems not previously identified during our Initial Screening (Phase 1) and Ground-truthing (Phase 2) steps.
- Installing a drive point to measure groundwater elevations near existing 'at risk' sewerage systems (April 4, 2023).
- Collecting samples of groundwater and nearby surface water and analyzing for parameters indicative of sewerage system impacts (April 21, 25, and May 18, 2023).

The locations of the sewerage system that underwent (Phase 3) Baseline Testing and that warrant further attention moving forward is shown on Figures 1 and 2.

SEWERAGE SYSTEMS FINDINGS AND RECOMMENDATIONS

Updated Screening and Ground Truthing

Five (5) 'moderate risk' sewerage systems were identified in our Phase 2 Assessment within the Mainland West package. Review of the 50% Detailed Design plans and additional site visits downgraded all of these systems to 'low risk' owing to the adequate horizontal separation between the septic field and the nearby surface drainage course and/or the unlikelihood that the surface drainage course will be altered in such a way as to encroach on the septic field or cause the water table to rise in the vicinity of the septic field.

The design review and site visits also identified an additional sewerage system at 28709 Downes Road (Figure 2) that warranted Baseline Testing.

Winter and Summer Baseline Testing Findings

Baseline Testing was undertaken at 28709 Downes Road (Figure 2) because the sewerage system is located less than 15m from the existing surface drainage course and some

earthworks, drainage modifications or site usage modifications are likely. The field is located within a temporary license for construction activities (TLCA) area and property acquisition area. This sewerage system assigned a 'moderate risk' ranking owing to the potential for physical damage by heavy equipment moving or parking above it and/or the release of contaminants into the nearby drainage course.

A drive point was installed between the location of the septic field (identified in consultation with the landowner) and the existing surface drainage course to the northeast. Its location is shown in Figure 2. The borehole logs for the drive point are attached as Appendix A. Photos showing the drive point location are attached to this report.

Baseline water quality samples were collected from the drive point and from the adjacent surface drainage course and analyzed for:

- Physical parameters (pH, conductivity, hardness),
- Anions and nutrients (chloride, sulphate, phosphate, nitrate, nitrite, etc.),
- Bacteria (fecal and total coliforms), and
- Dissolved metals.

Depths to groundwater relative to ground surface and the presence of flow in the nearest drainage course were also noted during sample collection.

The water table depth and flow observations for the winter (April) and summer (August) Baseline Testing events are summarized in Table D, below:

TABLE B – DRIVE POINT WATER TABLE DEPTH MEASUREMENTS

Street Address	Drive point / Monitoring well Total Depth (m-bg)	WINTER EVENT (April 19 & 21, 2023) Depth to water (m-bg)	FLOW PRESENT IN DITCH? (Y/N)	SUMMER EVENT (August 24, 2023) Depth to water (m-bg)	FLOW PRESENT IN DITCH? (Y/N)
28709 Downes Road, Abbotsford	1.24	0.35	Y	> 1.24 (dry)	N

The winter water table was less than 1.0m below ground surface, which can compromise the proper functioning of the sewerage dispersal field owing to an inadequate vertical thickness of unsaturated material between the point of effluent release and the water

table. Therefore, the potential for septic contaminants to reach the drainage courses is higher.

The summer water table was almost a metre lower than that measured in winter. There was also no flow observed in the drainage course, owing to the lack of surface runoff and groundwater discharge. No ground or surface water quality samples could be collected during the summer sampling event.

Table 2 summarizes the laboratory analytical results for the ground and surface water samples collected during the winter sampling event. Multiple trips to sampling stations were necessary to test for all parameters, owing to the limited volume of sample that could be obtained from the drive point at one time. Laboratory reports have been included with Appendix B. Water quality results for ground and surface water were compared to BC Approved and Working Water Quality Guidelines.

Concentrations of septic-system related parameters, including nitrate, total and fecal coliforms were elevated in surface water relative to groundwater. Assuming that the drive point is positioned on the groundwater flow path between the septic field and the surface drainage course, it can be interpreted that the septic field is not the primary source of nitrate and coliforms in the surface water. Still, caution should be exercised when working in and around this drainage course owing to the presence of fecal coliforms. As the nutrient and bacteria results were less than the AWQG the risk to the receiving environment was considered to be low.

The following table summarizes our interpretation of the sewerage system Baseline Testing results:

TABLE C – SEWERAGE SYSTEM BASELINE TESTING RESULTS

STREET ADDRESS	FINDINGS	UPDATED RISK LEVEL	RECOMMENDATIONS
28709 Downes Road, Abbotsford	Existing and planned surface drainage is <15m from existing septic field in high water table area (<1 mbg in winter). Surface water quality (elevated nitrate, fecal coliforms) unlikely to be sourced from septic field.	Moderate	Be aware of **high fecal coliform counts** if working in and around this surface drainage in winter. Prohibit the parking/movement of heavy equipment on the septic field. Replacement of the field may be necessary.

To protect the physical integrity of the septic field, we recommend that its exact location be surveyed and marked and that movement / stationing of heavy equipment on top of the field be prohibited. If this is not practical, then replacement with a better designed (e.g. sand mound) field may be necessary.

LIMITATIONS

The use of this report by anyone is subject to the following conditions and limitations:

1. This report has been prepared at the request of the client (MOTI) and for the specific use referred to herein. The client may rely on this report, as may any Authorized Users as defined by Contract 860 CS 5296. It is not reasonable for any other party to rely on the contents of this report without first obtaining written authorization from the client and Active Earth Engineering Ltd.
2. Liability is expressly denied to any person other than the parties indicated above and those who obtain written consent. Accordingly, Active Earth Engineering Ltd. does not accept responsibility for any damage suffered by any such person as a result of decisions made or actions based on this report. Diligence by all intended users is assumed.
3. This report is believed to provide a reasonable representation of the general environmental conditions within the Project area as of the date of this report. The conclusions made in this report reflect Active Earth's best judgment in light of the information available at the time of reporting. Should additional information become available or site conditions change, the conclusions and recommendations of this report may be subject to change.
4. Active Earth Engineering Ltd. has agreed to conduct an assessment and prepare this report as requested by the client named in the report for the use specified by the client, which is stated in the report. The client has agreed that the performance of this work and the report format are appropriate for the intended use. For any party to rely on this report in the future, supplemental investigation may be necessary to verify the site conditions at that time.
5. Written consent from Active Earth Engineering Ltd. must be obtained before any part of the report can be used for any purpose by anyone other than the client and other intended users identified in the report. Liability to any other party or for any other use is expressly denied regardless of who pays Active Earth Engineering Ltd.'s

fee. Written consent and approval of Active Earth Engineering Ltd. must also be obtained before the report (or any part of it) can be altered or conveyed to other parties (excluding Authorized Users) or the public through prospectus, offering memoranda, advertising, public relations, news, sales or other media.

CLOSURE

We trust this provides the information required at this time. If you have any questions, or require additional clarification, please contact the undersigned.

Yours truly,

ACTIVE EARTH ENGINEERING LTD.

Prepared By,

Kathy Tixier, P.Eng.
Senior Hydrogeologist

Reviewed By,

Steve Boyce, B.A. (Env)
Principal, Senior Scientist

Marc Zubel, P.Eng.
Senior Hydrogeologist

ATTACHMENTS

FIGURES

TABLES

PHOTOGRAPHS

APPENDICES

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FIGURES

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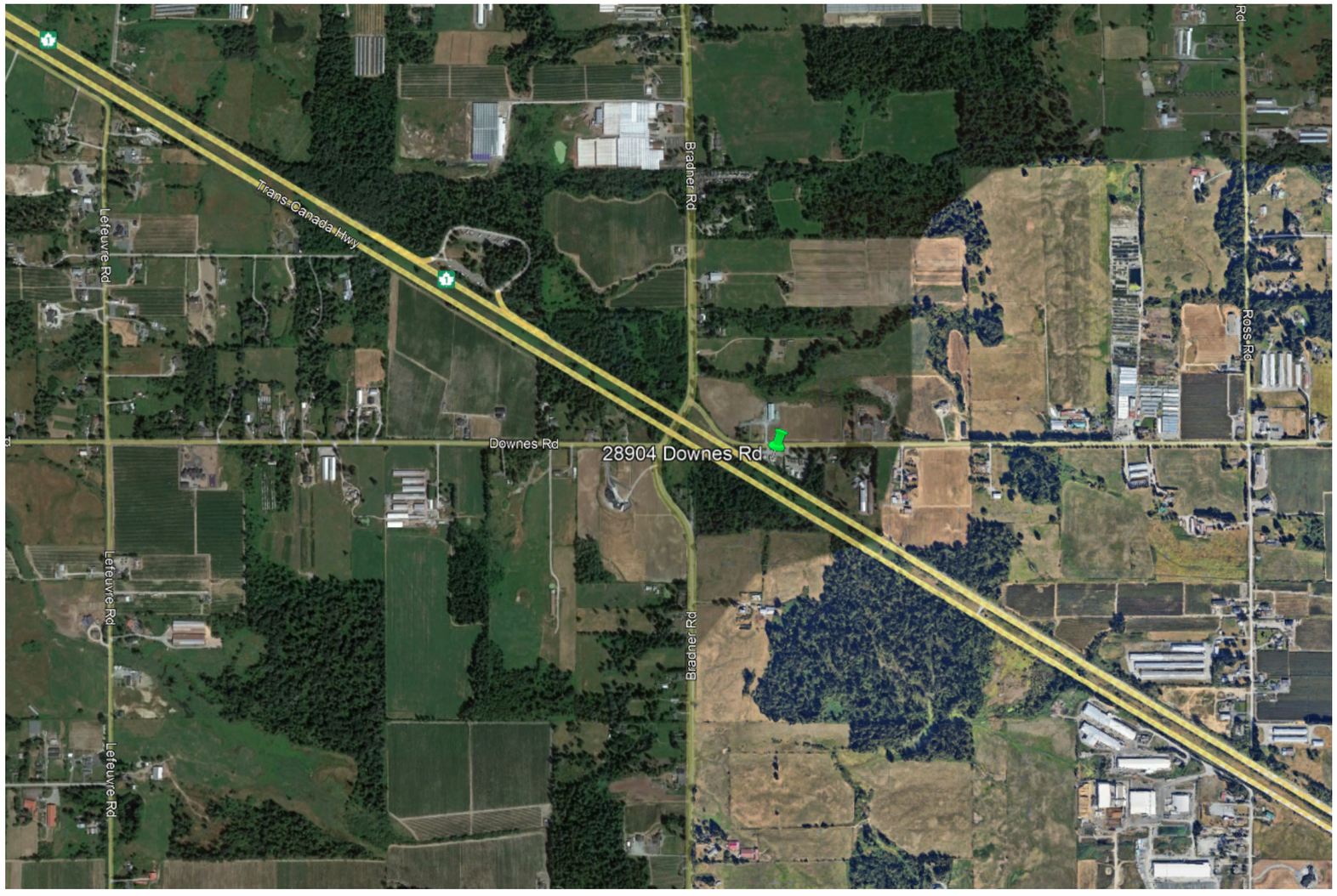

SEWERAGE SYSTEM

WATER WELL

REFERENCE: GOOGLE MAPS

PATH:

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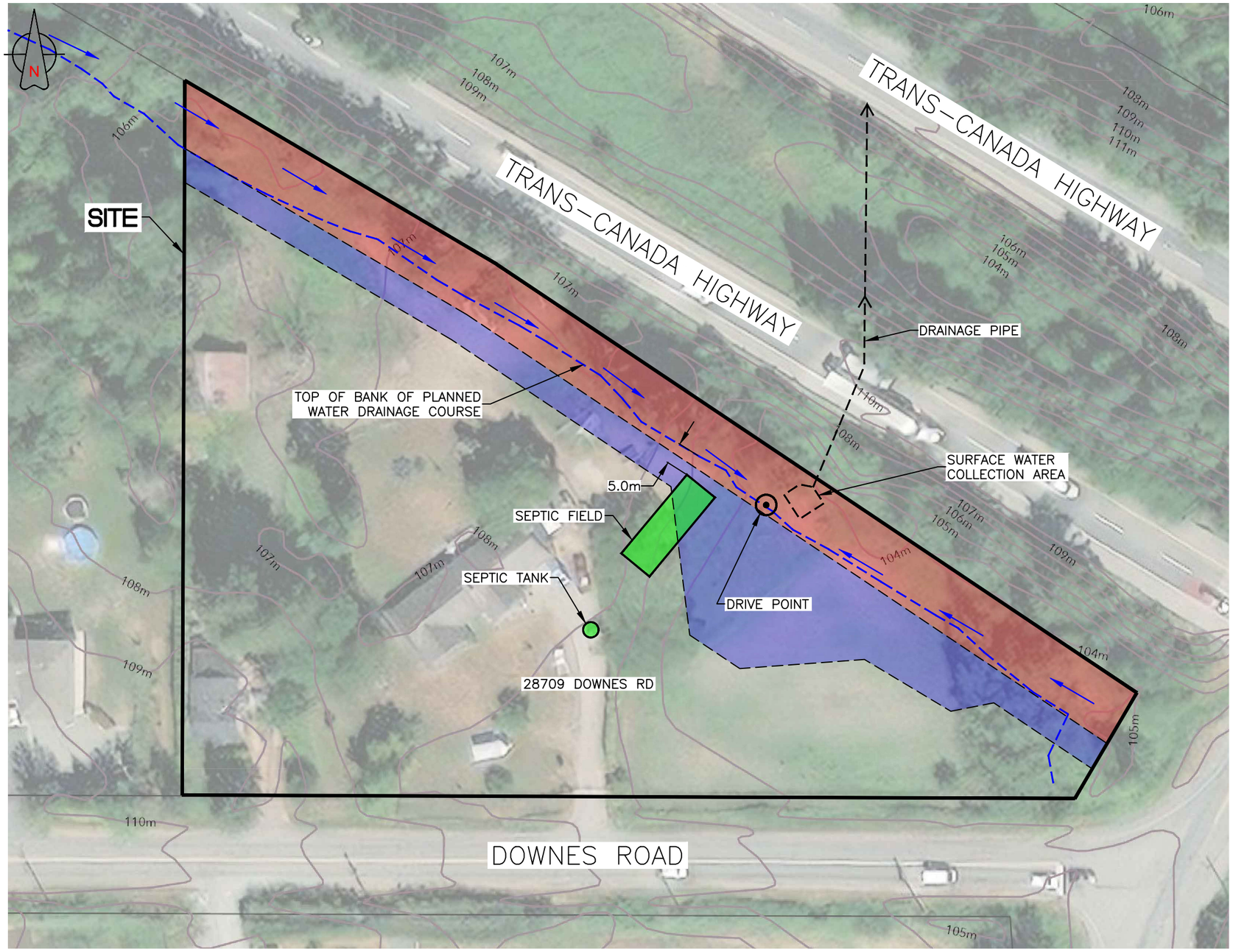
CLIENT NAME: MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE	PROJECT LOCATION: ABBOTSFORD, BC

WELL AND SEWERAGE SYSTEM LOCATIONS

DWN BY: KT	DWG NAME: -1	DATE: 2023-12-08	FIGURE 1
CHK'D: KT	PLOT:	CADFILE: 3000-31	



1:750 0 15 45m

LEGEND

- APPROXIMATE SITE BOUNDARY
- PROPERTY AQUISITION
- TEMPORARY LICENSE FOR CONSTRUCTION ACTIVITIES (TLCA)
- STATUTORY RoW (SRW)
- EXISTING SURFACE DRAINAGE

NOTE:
SEPTIC FIELD AND TANK, DOMESTIC WELL, DRIVE POINT, MONITORING WELL & DITCH SAMPLING LOCATIONS APPROXIMATE

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CLIENT NAME: MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE	PROJECT LOCATION: ABBOTSFORD, BC

SITE PLAN
28709 DOWNES ROAD

DWN BY: WS/GM	DWG NAME: -2D23	DATE: 2023-12-08	FIGURE 2
CHK'D: KT/JT	PLOT:	CADFILE: 3000-31	

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TABLES

Table 1: Sewerage Systems Summary

STREET ADDRESS	PID	SEWERAGE SYSTEM PLANS RECEIVED?	SITE VISIT	WATER QUALITY TESTING?	INITIAL RISK LEVEL	RATIONALE	SUBSEQUENT ACTION	DEPTH TO GW (APR 19, 21 2023)	FINDINGS	UPDATED RISK LEVEL	RECOMMENDATIONS	FIGURE NO.
28709 Downes Road, Abbotsford	009-287-841	N	7-Feb-23	Y	-	Not identified in Phase 1 or 2	Site visit, installation of drive point, sampling of ground and surface water	0.35 m-bg	Existing and planned surface drainage is <15m from septic field in high water table area (<1 m-bg in winter). Surface water quality (elevated nitrate, fecal coliforms) unlikely to be sourced from septic field.	Low	Be aware of high fecal coliform counts if working in and around this surface drainage.	7
28944 Downes Road, Abbotsford	009-220-348	N	7-Feb-23	N	Moderate	Sewerage system likely within 30m, changes to adjacent drainage features and downgradient watercourse within 500m.	Site visit	-	Existing septic field >15m from existing surface drainage; no modifications of the drainage course are planned.	Low	None	-
28904 Downes Road, Abbotsford	009-220-291	N	7-Feb-23	N	Moderate	Sewerage system likely within 30m, changes to adjacent drainage features and downgradient watercourse within 500m.	Site visit	-	Existing septic field <15m from existing surface drainage and no modifications of the drainage course are planned.	Low	None	-
3545 Ross Road, Abbotsford	029-218-934	N	7-Feb-23	N	Moderate	Sewerage system likely within 30m, changes to adjacent drainage features and downgradient watercourse within 500m.	Site visit	-	The residence is serviced by the septic field at 3555 Ross Road, which is > 15m from the surface drainage.	Low	None.	-
3555 Ross Road, Abbotsford	006-957-889	N	7-Feb-23	N	Moderate	Confirmed approximately 12m from Highway 1, minimal changes to drainage, however, watercourse runs through the property.	Site visit	-	There are two septic fields on the property. One that services the agricultural/commercial building (< 15m from the surface drainage) and another that services two residences (> 15m from the surface drainage). No modifications of the drainage course are planned.	Low	None	-
3535 Ross Road, Abbotsford	004-629-850	N	7-Feb-23	N	Moderate	Sewerage system likely within 30m, changes to adjacent drainage features and downgradient watercourse within 500m.	Site visit	-	The septic field servicing the residence is >15m from the surface drainage. No modifications to the drainage course are planned.	Low	None	-

Table 2: Analytical Results for Sewerage System Parameters

	Sample Location		**28709 Downes Road**			
	Sample ID		W			D
	Date Sampled		21-Apr-23	25-Apr-23	18-May-23	21-Apr-23
Completed by: TB	**BC Water Quality Guidelines**					
Review by: KT	**Freshwater Long-Term (Chronic)**	**Freshwater Short-Term (Acute)**				
Physical Tests						
Hardness (as CaCO3)-mg/L	**-**	**-**	-	-	98.6	42.6
Conductivity -µS/cm	**-**	**-**	-	-	252	199
pH	**pH<6.5**	**-**	-	-	7.08	7.49
Anions and Nutrients (mg/L)						
Chloride	**150**	**600**	-	-	17.2	29.8
Kjeldahl nitrogen, total [TKN]	**-**	**-**	-	1.15	-	0.306
Nitrate (as N)	**3**	**32.8**	-	-	0.013	0.856
Nitrate + Nitrite (as N)	**-**	**-**	-	-	0.0147	-
Nitrite (as N)	**0.02 @ Cl <2 0.04 @ Cl 2-<4 0.06 @ Cl 4-<6 0.08 @ Cl 6-<8 0.10 @ Cl 8-<10 0.20 @ Cl >10**	**0.06 @ Cl <2 0.12 @ Cl 2-<4 0.18 @ Cl 4-<6 0.24 @ Cl Cl 6-<8 0.30 @ Cl 8-<10 0.60 @ Cl >10**	-	-	0.0017	0.0022
Ortho-Phosphate, dissolved (as P)	**-**	**-**	-	-	-	<0.0010
Phosphorus, total	**-**	**-**	-	0.104	-	0.0167
Sulfate (as SO4)	**128 @ H<30 218 @ H 31-75 309 @ H 76-180 429 @ 181-250 Site Specific @ H>250**	**-**	-	-	2.36	7.91
Microbiological Tests (MPN/100ml)						
Coliforms, thermotolerant (fecal)	**-**	**-**	<2	-	-	249
Coliforms, total	**-**	**-**	97	-	-	727
Dissolved Metals (ug/L)						
aluminum (Al)-dissolved	**could not be caculated due to insufficient data**		-	-	-	29.9
antimony (Sb)-dissolved	**-**	**-**	-	-	-	0.16
arsenic (As)-dissolved	**5**	**-**	-	-	-	0.31
barium (Ba)-dissolved	**1,000**	**-**	-	-	-	25.6
beryllium (Be)-dissolved	**0.13**	**-**	-	-	-	<0.02
bismuth (Bi)-dissolved	**-**	**-**	-	-	-	<0.050
boron (B)-dissolved	**1,200**	**-**	-	-	-	<10
cadmium (Cd)-dissolved	***Hardness Dependent***		-	-	-	0.0122
	Long-Term (Chronic) Guideline		-	-	-	*0.11*
	Short-Term (Acute) Guideline		-	-	-	*0.24*
calcium (Ca)-dissolved	**-**	**-**	-	-	-	11,100
cesium (Cs)-dissolved	**-**	**-**	-	-	-	<0.010
chromium (Cr)-dissolved (Total) (4)	**1**	**-**	-	-	-	<0.50
cobalt (Co)-dissolved	**4**	**110**	-	-	-	0.2
copper (Cu)-dissolved	**could not be caculated due to insufficient data**		-	-	-	2.71
iron (Fe)-dissolved (3)	**-**	**350**	-	-	-	140
lead (Pb)-dissolved	***Hardness Dependent***		-	-	-	0.05
	Long-Term (Chronic) Guideline		-	-	-	*4*
	Short-Term (Acute) Guideline		-	-	-	*28*
lithium (Li)-dissolved	**-**	**-**	-	-	-	<1.0
magnesium (Mg)-dissolved	**-**	**-**	-	-	-	3,610
manganese (Mn)-dissolved (3)	***Hardness Dependent***		-	-	-	91.6
	Long-Term (Chronic) Guideline		-	-	-	*792*
	Short-Term (Acute) Guideline		-	-	-	*1,009*
mercury (Hg)-dissolved	**could not be caculated due to insufficient data**		-	-	-	-
molybdenum (Mo)-dissolved	**7,600**	**46,000**	-	-	-	0.235
nickel (Ni)-dissolved	***Hardness Dependent***	-	-	-	-	0.73
	Long-Term (Chronic) Guideline		-	-	-	*25.0*
phosphorus (P)-dissolved	**15***	**-**	-	-	-	<50
potassium (K)-dissolved	**-**	**-**	-	-	-	1590
rubidium (Rb)-dissolved	**-**	**-**	-	-	-	1.19
selenium (Se)-dissolved	**2**	**-**	-	-	-	<0.050
silicon (Si)-dissolved	**-**	**-**	-	-	-	3,080
silver (Ag)-dissolved	**0.05 @ H < 100 1.5 @ H > 100**	**0.1 @ H < 100 3.0 @ H > 100**	-	-	-	<0.010
sodium (Na)-dissolved	**-**	**-**	-	-	-	19,600
strontium (Sr)-dissolved	**-**	**-**	-	-	-	78.1
sulphur (S)-dissolved	**-**	**-**	-	-	-	2830
tellurium (Te)-dissolved	**-**	**-**	-	-	-	<0.20
thallium (Tl)-dissolved	**0.8**	**-**	-	-	-	<0.010
thorium (Th)-dissolved	**-**	**-**	-	-	-	<0.10
tin (Sn)-dissolved	**-**	**-**	-	-	-	<0.10
titanium (Ti)-dissolved	**-**	**-**	-	-	-	0.6
tungsten (W)-dissolved	**-**	**-**	-	-	-	<0.10
uranium (U)-dissolved	**8.5**	**-**	-	-	-	<0.010
vanadium (V)-dissolved	**-**	**-**	-	-	-	<0.50
zinc (Zn)-dissolved	***Hardness Dependent***		-	-	-	15.1
	Long-Term (Chronic) Guideline		-	-	-	*8*
	Short-Term (Acute) Guideline		-	-	-	*33*
zirconium (Zr)-dissolved	**-**	**-**	-	-	-	<0.30

*guideline for lakes where salmonids are predominant fish species

BLUE TEXT	Concentration less than Laboratory Method Detection Limit
BOLD, UNDERLINE	Laboratory Method Detection Limit exceeds one or more standard
BLUE SHADING	Concentration greater than BC WQG - Freshwater Long-Term Guideline
BOLD, BLUE SHADING	Concentration greater than BC WQG - Freshwater Short-Term Guideline

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PHOTOGRAPHS

PHOTOGRAPHS – 28709 DOWNES ROAD, ABBOTSFORD

Photo 1: Septic field, looking northeast. February 7, 2023.

Client Name	Site Location	Project No.
Ministry of Transportation and Infrastructure	Highway 1, 264th Street to Whatcom Road	3000-31

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APPENDIX A

Driller Well Construction Records and Active Earth Borehole Logs

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SUMMARY LOG

Drive Point Well#: **DP2**

Project: **28709 Downes Road**

Location: Abbotsford, BC

Client: Ministry of Transportation & Infrastructure

Datum:

Northing/Easting: ,

Elevation:

Address: 28709 Downes Rd, Langley

AE Project No. 3000-31

Logged by: Reviewed by:

Date(s) Drilled:
Company:
Driller:
Drill Make/Model:

Drilling Method:
Hole Diameter:
Sample Type:
* indicates sent for lab analysis

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USCS	SOIL SYMBOL	SOIL DESCRIPTION	Water Level (m)	Monitoring Well
						0.35m Apr 21, 23	Flush Mount
1							
2							
3							
4							

Legend Well Installation: Sand, Grout, Cement, 50mm Solid PVC, Drill Cuttings, Slough, Bentonite, 10 Slot PVC Screen

Screen Intervals Well: 1.0m to 1.2m

ACTIVE_EARTH_LOG 3000-31.GPJ ACTIVEEARTH.GDT 23-5-17

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APPENDIX B

Laboratory Analytical Reports

CERTIFICATE OF ANALYSIS

Work Order	: **VA23A8665**	Page	: 1 of 6
Amendment	: **1**		
Client	: **Active Earth Engineering Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Kathy Tixier	Account Manager	: Sneha Sansare
Address	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 3000-31	Date Samples Received	: 21-Apr-2023 17:30
PO	: 3000-31	Date Analysis Commenced	: 21-Apr-2023
C-O-C number	: 20-1014122	Issue Date	: 17-May-2023 17:27
Sampler	: ----		
Site	: ----		
Quote number	: VA22-ACTI100-001 (Default Pricing 2022+)		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Delson Resende	Lab Assistant	Metals, Burnaby, British Columbia
Kate Dimitrova	Analsyt	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Microbiology, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLA	*Detection Limit adjusted for required dilution.*
DLIS	*Detection Limit Adjusted due to insufficient sample.*
HTDC	*Hold time exceeded for dilution or re-analysis. Reported results are consistent with initial results (tested within hold time), and are valid and defensible.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	26257 56 Ave - W	28709 Downes Rd -W	28709 Downes Rd -D	26431 52 Ave - Dom. Well.	----
					Client sampling date / time	21-Apr-2023 01:10	21-Apr-2023 12:00	21-Apr-2023 12:15	21-Apr-2023 14:30	----
						VA23A8665-001	VA23A8665-002	VA23A8665-003	VA23A8665-004	--------
						Result	Result	Result	Result	----
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		----	----	199	121	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.50	mg/L		----	----	42.6	----	----
pH	----	E108/VA	0.10	pH units		----	----	7.49	7.28	----
Turbidity	----	E121/VA	0.10	NTU		----	----	----	0.64	----
Anions and Nutrients										
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L		----	----	29.8	3.27	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L		----	----	0.306	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L		----	----	0.856 HTDC	0.693 HTDC	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		----	----	0.0022 HTDC	<0.0010 HTDC	----
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U/VA	0.0010	mg/L		----	----	<0.0010	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L		----	----	0.0167	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L		----	----	7.91	4.00	----
Microbiological Tests										
Coliforms, thermotolerant [fecal]	----	E010.FC/VA	1	MPN/100mL		<5 DLIS	<2 DLIS	249	<1	----
Coliforms, total	----	E010/VA	1	MPN/100mL		<5 DLIS	97	727	<10 DLA	----
Coliforms, Escherichia coli [E. coli]	----	E010/VA	1	MPN/100mL		<5 DLIS	<2 DLIS	411	<10 DLA	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		----	----	----	<0.0030	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		----	----	----	<0.00010	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		----	----	----	<0.00010	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		----	----	----	0.00514	----
Beryllium, total	7440-41-7	E420/VA	0.000020	mg/L		----	----	----	<0.000020	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		----	----	----	<0.000050	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		----	----	----	<0.010	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		----	----	----	0.0000173	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		----	----	----	5.65	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		----	----	----	<0.000010	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		----	----	----	<0.00050	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	26257 56 Ave - W	28709 Downes Rd -W	28709 Downes Rd -D	26431 52 Ave - Dom. Well.	----
					Client sampling date / time	21-Apr-2023 01:10	21-Apr-2023 12:00	21-Apr-2023 12:15	21-Apr-2023 14:30	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA23A8665-001	VA23A8665-002	VA23A8665-003	VA23A8665-004	--------
						Result	Result	Result	Result	----
Total Metals										
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		----	----	----	<0.00010	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		----	----	----	0.0192	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		----	----	----	0.054	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		----	----	----	0.000409	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		----	----	----	<0.0010	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		----	----	----	3.22	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		----	----	----	0.0157	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		----	----	----	0.000220	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		----	----	----	0.00069	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		----	----	----	<0.050	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		----	----	----	0.633	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		----	----	----	0.00068	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		----	----	----	0.000304	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		----	----	----	11.8	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		----	----	----	<0.000010	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		----	----	----	14.3	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		----	----	----	0.0518	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		----	----	----	1.70	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		----	----	----	<0.00020	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		----	----	----	<0.000010	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		----	----	----	<0.00010	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		----	----	----	<0.00010	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		----	----	----	<0.00030	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		----	----	----	<0.00010	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		----	----	----	<0.000010	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		----	----	----	<0.00050	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		----	----	----	0.0499	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		----	----	----	<0.00020	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		----	----	0.0299	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	26257 56 Ave - W	28709 Downes Rd -W	28709 Downes Rd -D	26431 52 Ave - Dom. Well.	----
					Client sampling date / time	21-Apr-2023 01:10	21-Apr-2023 12:00	21-Apr-2023 12:15	21-Apr-2023 14:30	----
						VA23A8665-001	VA23A8665-002	VA23A8665-003	VA23A8665-004	--------
						Result	Result	Result	Result	----
Dissolved Metals										
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		----	----	0.00016	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		----	----	0.00031	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		----	----	0.0256	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000020	mg/L		----	----	<0.000020	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		----	----	<0.000050	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		----	----	<0.010	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		----	----	0.0000122	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		----	----	11.1	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		----	----	<0.000010	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		----	----	<0.00050	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		----	----	0.00020	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		----	----	0.00271	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		----	----	0.140	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		----	----	0.000050	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		----	----	<0.0010	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		----	----	3.61	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		----	----	0.0916	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		----	----	0.000235	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		----	----	0.00073	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		----	----	<0.050	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		----	----	1.59	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		----	----	0.00119	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		----	----	<0.000050	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		----	----	3.08	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		----	----	<0.000010	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		----	----	19.6	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		----	----	0.0781	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		----	----	2.83	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		----	----	<0.00020	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		----	----	<0.000010	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	26257 56 Ave - W	28709 Downes Rd -W	28709 Downes Rd -D	26431 52 Ave - Dom. Well.	----
					Client sampling date / time	21-Apr-2023 01:10	21-Apr-2023 12:00	21-Apr-2023 12:15	21-Apr-2023 14:30	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA23A8665-001	VA23A8665-002	VA23A8665-003	VA23A8665-004	--------
						Result	Result	Result	Result	----
Dissolved Metals										
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		----	----	<0.00010	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		----	----	<0.00010	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		----	----	0.00060	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		----	----	<0.00010	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		----	----	<0.000010	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		----	----	<0.00050	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		----	----	0.0151	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00030	mg/L		----	----	<0.00030	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		----	----	Laboratory	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA23A8665**	Page	: 1 of 10
Amendment	: 1		
Client	: **Active Earth Engineering Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Kathy Tixier	Account Manager	: Sneha Sansare
Address	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 3000-31	Date Samples Received	: 21-Apr-2023 17:30
PO	: 3000-31	Issue Date	: 17-May-2023 17:27
C-O-C number	: 20-1014122		
Sampler	: ----		
Site	: ----		
Quote number	: VA22-ACTI100-001 (Default Pricing 2022+)		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
26431 52 Ave - Dom. Well.	E235.Cl	21-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
28709 Downes Rd -D	E235.Cl	21-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE										
28709 Downes Rd -D	E378-U	21-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
26431 52 Ave - Dom. Well.	E235.NO3-L	21-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
28709 Downes Rd -D	E235.NO3-L	21-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
26431 52 Ave - Dom. Well.	E235.NO2-L	21-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE 28709 Downes Rd -D	E235.NO2-L	21-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 26431 52 Ave - Dom. Well.	E235.SO4	21-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 28709 Downes Rd -D	E235.SO4	21-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) 28709 Downes Rd -D	E318	21-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) 28709 Downes Rd -D	E372-U	21-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) 28709 Downes Rd -D	E421	21-Apr-2023	22-Apr-2023	----	----		23-Apr-2023	180 days	2 days	✓
Microbiological Tests : Thermotolerant (Fecal) Coliform (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) 26257 56 Ave - W	E010.FC	21-Apr-2023	----	----	----		21-Apr-2023	30 hrs	17 hrs	✓
Microbiological Tests : Thermotolerant (Fecal) Coliform (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) 26431 52 Ave - Dom. Well.	E010.FC	21-Apr-2023	----	----	----		21-Apr-2023	30 hrs	4 hrs	✓
Microbiological Tests : Thermotolerant (Fecal) Coliform (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) 28709 Downes Rd -D	E010.FC	21-Apr-2023	----	----	----		21-Apr-2023	30 hrs	6 hrs	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Microbiological Tests : Thermotolerant (Fecal) Coliform (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) 28709 Downes Rd -W	E010.FC	21-Apr-2023	----	----	----		21-Apr-2023	30 hrs	6 hrs	✓
Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) 26257 56 Ave - W	E010	21-Apr-2023	----	----	----		21-Apr-2023	30 hrs	17 hrs	✓
Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) 26431 52 Ave - Dom. Well.	E010	21-Apr-2023	----	----	----		21-Apr-2023	30 hrs	4 hrs	✓
Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) 28709 Downes Rd -D	E010	21-Apr-2023	----	----	----		21-Apr-2023	30 hrs	6 hrs	✓
Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) 28709 Downes Rd -W	E010	21-Apr-2023	----	----	----		21-Apr-2023	30 hrs	6 hrs	✓
Physical Tests : Conductivity in Water										
HDPE 26431 52 Ave - Dom. Well.	E100	21-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE 28709 Downes Rd -D	E100	21-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	4 days	✓
Physical Tests : pH by Meter										
HDPE 26431 52 Ave - Dom. Well.	E108	21-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	0.25 hrs	24.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 28709 Downes Rd -D	E108	21-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	0.25 hrs	24.25 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE										
26431 52 Ave - Dom. Well.	E121	21-Apr-2023	----	----	----		24-Apr-2023	3 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
26431 52 Ave - Dom. Well.	E420	21-Apr-2023	23-Apr-2023	----	----		24-Apr-2023	180 days	3 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: ✗ = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Chloride in Water by IC	E235.Cl	908137	1	17	5.8	5.0	✓
Conductivity in Water	E100	908134	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	906935	1	1	100.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	908141	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	908139	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	908138	1	20	5.0	5.0	✓
pH by Meter	E108	908133	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	908136	1	17	5.8	5.0	✓
Thermotolerant (Fecal) Coliform (Enzyme Substrate)	E010.FC	906662	0	6	0.0	10.0	✗
Total Coliforms and E. coli (Enzyme Substrate)	E010	906661	1	9	11.1	10.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	909327	1	1	100.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	907003	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	909322	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	909089	1	13	7.6	5.0	✓
Laboratory Control Samples (LCS)							
Chloride in Water by IC	E235.Cl	908137	1	17	5.8	5.0	✓
Conductivity in Water	E100	908134	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	906935	1	1	100.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	908141	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	908139	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	908138	1	20	5.0	5.0	✓
pH by Meter	E108	908133	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	908136	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	909327	1	1	100.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	907003	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	909322	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	909089	1	13	7.6	5.0	✓
Method Blanks (MB)							
Chloride in Water by IC	E235.Cl	908137	1	17	5.8	5.0	✓
Conductivity in Water	E100	908134	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	906935	1	1	100.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	908141	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	908139	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	908138	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	908136	1	17	5.8	5.0	✓

Matrix: **Water**

Evaluation: ✗ = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Thermotolerant (Fecal) Coliform (Enzyme Substrate)	E010.FC	906662	1	6	16.6	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	906661	1	9	11.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	909327	1	1	100.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	907003	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	909322	1	19	5.2	5.0	✓
Turbidity by Nephelometry	E121	909089	1	13	7.6	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	908137	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	906935	0	1	0.0	5.0	✗
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	908141	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	908139	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	908138	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	908136	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	909327	0	1	0.0	5.0	✗
Total metals in Water by CRC ICPMS	E420	907003	1	2	50.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	909322	1	19	5.2	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 Vancouver - Environmental	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ±0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (Enzyme Substrate)	E010.FC Vancouver - Environmental	Water	APHA 9223 (mod)	The enzyme substrate test detects Thermotolerant Coliforms in a 100 mL sample after an 18 hour incubation at 44.5 ±0.2°C.
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Vancouver - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

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QUALITY CONTROL REPORT

Work Order	: **VA23A8665**	Page	: 1 of 15
Amendment	: **1**		
Client	: Active Earth Engineering Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Kathy Tixier	Account Manager	: Sneha Sansare
Address	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 3000-31	Date Samples Received	: 21-Apr-2023 17:30
PO	: 3000-31	Date Analysis Commenced	: 21-Apr-2023
C-O-C number	: 20-1014122	Issue Date	: 17-May-2023 17:27
Sampler	: ---- ----		
Site	: ----		
Quote number	: VA22-ACTI100-001 (Default Pricing 2022+)		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Delson Resende	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Kate Dimitrova	Analsyt	Vancouver Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Microbiology, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 908133)											
VA23A8665-003	28709 Downes Rd -D	pH	----	E108	0.10	pH units	7.49	7.49	0.00%	4%	----
Physical Tests (QC Lot: 908134)											
VA23A8665-003	28709 Downes Rd -D	Conductivity	----	E100	2.0	µS/cm	199	196	1.67%	10%	----
Physical Tests (QC Lot: 909089)											
VA23A8665-004	26431 52 Ave - Dom. Well.	Turbidity	----	E121	0.10	NTU	0.64	0.57	0.07	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 908136)											
VA23A8665-003	28709 Downes Rd -D	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	7.91	7.93	0.227%	20%	----
Anions and Nutrients (QC Lot: 908137)											
VA23A8665-003	28709 Downes Rd -D	Chloride	16887-00-6	E235.Cl	0.50	mg/L	29.8	29.8	0.163%	20%	----
Anions and Nutrients (QC Lot: 908138)											
VA23A8665-003	28709 Downes Rd -D	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0022	0.0023	0.00006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 908139)											
VA23A8665-003	28709 Downes Rd -D	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.856	0.860	0.465%	20%	----
Anions and Nutrients (QC Lot: 908141)											
VA23A8665-003	28709 Downes Rd -D	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0014	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 909322)											
FJ2300872-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 909327)											
VA23A8665-003	28709 Downes Rd -D	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.306	0.305	0.0002	Diff <2x LOR	----
Microbiological Tests (QC Lot: 906661)											
VA23A8593-006	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	10	MPN/100mL	20	31	11	Diff <2x LOR	----
		Coliforms, total	----	E010	10	MPN/100mL	435	488	11.5%	65%	----
Total Metals (QC Lot: 907003)											
VA23A8584-005	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.838	0.773	8.04%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00055	0.00053	0.00002	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00947	0.00942	0.568%	20%	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.118	0.115	2.25%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 907003) - continued											
VA23A8584-005	Anonymous	Boron, total	7440-42-8	E420	0.010	mg/L	0.314	0.316	0.746%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000350	mg/L	<0.0000350	<0.0000350	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	73.3	73.2	0.198%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000054	0.000057	0.000003	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	0.00774	0.00742	4.31%	20%	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00131	0.00131	0.194%	20%	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00697	0.00682	2.15%	20%	----
		Iron, total	7439-89-6	E420	0.010	mg/L	1.29	1.23	5.03%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000282	0.000278	0.000004	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0095	0.0094	0.00008	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	162	160	1.45%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0327	0.0314	4.07%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0304	0.0302	0.859%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.0128	0.0122	5.04%	20%	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.296	0.297	0.001	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	24.0	24.0	0.304%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00605	0.00596	1.50%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.00956	0.00919	4.03%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	12.0	11.6	3.28%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	87.1	86.9	0.237%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.838	0.827	1.30%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	164	162	1.30%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	0.000024	0.000023	0.0000006	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	0.00015	<0.00010	0.00005	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.0772	0.0734	5.02%	20%	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.0151	0.0142	6.28%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0230	0.0226	1.74%	20%	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0127	0.0131	0.0004	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00121	0.00113	0.00007	Diff <2x LOR	----
Dissolved Metals (QC Lot: 906935)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 906935) - continued											
VA23A8665-003	28709 Downes Rd -D	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0299	0.0292	2.42%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00015	0.000002	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00031	0.00032	0.00002	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0256	0.0261	1.83%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000122	0.0000114	0.0000008	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	11.1	10.9	1.68%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00020	0.00020	0.000001	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00271	0.00274	1.21%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.140	0.140	0.176%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000050	<0.000050	0.0000005	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	3.61	3.73	3.44%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0916	0.0922	0.750%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000235	0.000264	0.000028	Diff <2x LOR	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00073	0.00066	0.00006	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.59	1.63	2.09%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00119	0.00120	0.000006	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.08	3.11	1.02%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	19.6	19.8	0.824%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0781	0.0794	1.65%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	2.83	3.16	0.34	Diff <2x LOR	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00060	0.00051	0.00009	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 906935) - continued											
VA23A8665-003	28709 Downes Rd -D	Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0151	0.0151	0.133%	20%	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 908134)						
Conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 909089)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Anions and Nutrients (QCLot: 908136)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 908137)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 908138)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 908139)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 908141)						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 909322)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 909327)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Microbiological Tests (QCLot: 906661)						
Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
Coliforms, total	----	E010	1	MPN/100mL	<1	----
Microbiological Tests (QCLot: 906662)						
Coliforms, thermotolerant [fecal]	----	E010.FC	1	MPN/100mL	<1	----
Total Metals (QCLot: 907003)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 907003) - continued						
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 906935)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 906935) - continued						
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 908133)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 908134)									
Conductivity	----	E100	1	µS/cm	146.9 µS/cm	98.7	90.0	110	----
Physical Tests (QCLot: 909089)									
Turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
Anions and Nutrients (QCLot: 908136)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.2	90.0	110	----
Anions and Nutrients (QCLot: 908137)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.2	90.0	110	----
Anions and Nutrients (QCLot: 908138)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.4	90.0	110	----
Anions and Nutrients (QCLot: 908139)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.0	90.0	110	----
Anions and Nutrients (QCLot: 908141)									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	101	80.0	120	----
Anions and Nutrients (QCLot: 909322)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	88.9	80.0	120	----
Anions and Nutrients (QCLot: 909327)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
Total Metals (QCLot: 907003)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.5	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.9	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	99.8	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 907003) - continued									
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.1	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	107	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.4	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.8	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	91.4	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	109	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	92.2	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.8	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	95.9	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	88.1	80.0	120	----
Dissolved Metals (QCLot: 906935)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	113	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 906935) - continued									
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.7	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	108	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.5	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	109	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	109	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.1	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	88.6	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	109	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.1	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	108	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 908136)										
VA23A8665-004	26431 52 Ave - Dom. Well.	Sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 908137)										
VA23A8665-004	26431 52 Ave - Dom. Well.	Chloride	16887-00-6	E235.Cl	105 mg/L	100 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 908138)										
VA23A8665-004	26431 52 Ave - Dom. Well.	Nitrite (as N)	14797-65-0	E235.NO2-L	0.526 mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 908139)										
VA23A8665-004	26431 52 Ave - Dom. Well.	Nitrate (as N)	14797-55-8	E235.NO3-L	2.64 mg/L	2.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 908141)										
VA23A8668-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0308 mg/L	0.03 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 909322)										
FJ2300872-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0467 mg/L	0.05 mg/L	93.3	70.0	130	----
Total Metals (QCLot: 907003)										
VA23A8665-004	26431 52 Ave - Dom. Well.	Aluminum, total	7429-90-5	E420	0.213 mg/L	0.2 mg/L	107	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0185 mg/L	0.02 mg/L	92.7	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		Barium, total	7440-39-3	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00936 mg/L	0.01 mg/L	93.6	70.0	130	----
		Boron, total	7440-42-8	E420	0.088 mg/L	0.1 mg/L	88.3	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00931 mg/L	0.01 mg/L	93.1	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		Copper, total	7440-50-8	E420	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		Iron, total	7439-89-6	E420	1.82 mg/L	2 mg/L	91.0	70.0	130	----
		Lead, total	7439-92-1	E420	0.0181 mg/L	0.02 mg/L	90.5	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0896 mg/L	0.1 mg/L	89.6	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 907003) - continued										
VA23A8665-004	26431 52 Ave - Dom. Well.	Manganese, total	7439-96-5	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		Phosphorus, total	7723-14-0	E420	9.62 mg/L	10 mg/L	96.2	70.0	130	----
		Potassium, total	7440-09-7	E420	3.93 mg/L	4 mg/L	98.2	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00368 mg/L	0.004 mg/L	92.1	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	19.3 mg/L	20 mg/L	96.6	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00357 mg/L	0.004 mg/L	89.2	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		Tin, total	7440-31-5	E420	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0173 mg/L	0.02 mg/L	86.6	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00426 mg/L	0.004 mg/L	106	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0957 mg/L	0.1 mg/L	95.7	70.0	130	----
		Zinc, total	7440-66-6	E420	0.378 mg/L	0.4 mg/L	94.5	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0353 mg/L	0.04 mg/L	88.2	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1014122

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Active Earth
Contact:	Kathy Tixier
Phone:	778 984 1223
	Company address below will appear on the final report
Street:	
City/Province:	
Postal Code:	
Invoice To	Same as Report To ☒ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☒ NO
Company:	
Contact:	ap@activeearth.ca

Reports / Recipients

Select Report Format: ☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☒ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Kathy.Tixier@activeearth.ca

Email 2:

Email 3:

Invoice Recipients

Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Turnaround Time (TAT) Requested

☒ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	
Job #:	3000 - 31
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Sp. Cond.	pH	Chloride	Nitrate - N	Nitrite - N	TKN - N	Sulfate	Total P (routine)	Diss. ortho-P	Diss. metals	Total metals	Total Coliforms	Fecal Coliforms	Turbidity	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	26257 56 Ave - W	Apr 21	11:00	H2O	1												X	X				
	28709 Downes Rd - W	21	12:00		1												X	X				
	28709 Downes Rd - D		12:15		4	X	X	X	X	X	X	X	X	X	X	[redacted]	X	X				
	26431 52 Ave - Dom - Well	↓	2:30		3	X	X	X	X	X		X				[redacted]	X	X	X			
						9																

Environmental Division Vancouver

Work Order Reference VA23A8665

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☒ NO

Are samples for human consumption/ use? ☐ YES ☒ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

26431 52 Ave Dom Well for total metals only

SAMPLE RECEIPT DETAILS

Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐

Submission Comments identified on Sample Receipt Notificati

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample

INITIAL COOLER TEMPERATURES °C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date: Apr 21 2023	Time: 5:15 pm	Received by:	Date:	Time:	Received by:	Date: Apr 21	Time: 17:38

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

CERTIFICATE OF ANALYSIS

Work Order	: **VA23A8872**	Page	: 1 of 3
Client	: **Active Earth Engineering Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Kathy Tixier	Account Manager	: Sneha Sansare
Address	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 3000-31	Date Samples Received	: 25-Apr-2023 15:35
PO	: ----	Date Analysis Commenced	: 26-Apr-2023
C-O-C number	: 20-1014342	Issue Date	: 29-Apr-2023 15:31
Sampler	: ----		
Site	: ----		
Quote number	: VA22-ACTI100-001 (Default Pricing 2022+)		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Courtney Cox	Analsyt	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
mg/L	milligrams per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	*Client sample ID*	**26257 56 Ave-W**	**28709 Downes Rd-W**	**----**	**----**	**----**
					Client sampling date / time	25-Apr-2023 11:30	25-Apr-2023 12:00	----	----	----
						VA23A8872-001	**VA23A8872-002**	**--------**	**--------**	**--------**
						Result	Result	----	----	----
Anions and Nutrients										
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.924	1.15	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0325	----	----	----	----
Nitrate + Nitrite (as N)	----	EC235.N+N	0.0050	mg/L		0.0325	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	----	----	----	----
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0219	0.104	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA23A8872**	Page	: 1 of 7
Client	: **Active Earth Engineering Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Kathy Tixier	Account Manager	: Sneha Sansare
Address	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 3000-31	Date Samples Received	: 25-Apr-2023 15:35
PO	: ----	Issue Date	: 29-Apr-2023 15:31
C-O-C number	: 20-1014342		
Sampler	: ----		
Site	: ----		
Quote number	: VA22-ACTI100-001 (Default Pricing 2022+)		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Anions and Nutrients	QC-912592-001	----	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0042 B mg/L	0.001 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE										
26257 56 Ave-W	E378-U	25-Apr-2023	27-Apr-2023	----	----		27-Apr-2023	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
26257 56 Ave-W	E235.NO3-L	25-Apr-2023	27-Apr-2023	----	----		27-Apr-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
26257 56 Ave-W	E235.NO2-L	25-Apr-2023	27-Apr-2023	----	----		27-Apr-2023	3 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
26257 56 Ave-W	E318	25-Apr-2023	26-Apr-2023	----	----		27-Apr-2023	28 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
28709 Downes Rd-W	E318	25-Apr-2023	26-Apr-2023	----	----		27-Apr-2023	28 days	2 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
26257 56 Ave-W	E372-U	25-Apr-2023	26-Apr-2023	----	----		28-Apr-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
28709 Downes Rd-W	E372-U	25-Apr-2023	26-Apr-2023	----	----		28-Apr-2023	28 days	3 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	912592	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	912584	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	912585	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	911390	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	911388	1	15	6.6	5.0	✓
Laboratory Control Samples (LCS)							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	912592	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	912584	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	912585	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	911390	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	911388	1	15	6.6	5.0	✓
Method Blanks (MB)							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	912592	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	912584	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	912585	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	911390	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	911388	1	15	6.6	5.0	✓
Matrix Spikes (MS)							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	912592	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	912584	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	912585	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	911390	1	7	14.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	911388	1	15	6.6	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Vancouver - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

QUALITY CONTROL REPORT

Work Order	: **VA23A8872**	Page	: 1 of 4
Client	: Active Earth Engineering Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Kathy Tixier	Account Manager	: Sneha Sansare
Address	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 3000-31	Date Samples Received	: 25-Apr-2023 15:35
PO	: ----	Date Analysis Commenced	: 26-Apr-2023
C-O-C number	: 20-1014342	Issue Date	: 29-Apr-2023 15:31
Sampler	: ---- ----		
Site	: ----		
Quote number	: VA22-ACTI100-001 (Default Pricing 2022+)		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Courtney Cox	Analsyt	Vancouver Inorganics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 911388)											
VA23A8671-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0022	0.0021	0.00009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 911390)											
VA23A8671-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 912584)											
VA23A8983-008	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 912585)											
VA23A8983-008	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 912592)											
VA23A8983-009	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 911388)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 911390)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 912584)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 912585)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 912592)						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	# 0.0042	B

Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 911388)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.7	80.0	120	----
Anions and Nutrients (QCLot: 911390)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 912584)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.2	90.0	110	----
Anions and Nutrients (QCLot: 912585)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.5	90.0	110	----
Anions and Nutrients (QCLot: 912592)									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.5	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 911388)										
VA23A8671-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0470 mg/L	0.05 mg/L	94.1	70.0	130	----
Anions and Nutrients (QCLot: 911390)										
VA23A8671-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.56 mg/L	2.5 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 912584)										
VA23A8983-009	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 912585)										
VA23A8983-009	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.510 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 912592)										
VA23A8983-008	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0332 mg/L	0.03 mg/L	111	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1014342

Page 1 of 1

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Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	Active Earth
Contact:	Kathy Tixier
Phone:	7789847223
	Company address below will appear on the final report
Street:	
City/Province:	
Postal Code:	

Invoice To	
	Same as Report To ☒ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☒ NO
Company:	
Contact:	

Project Information	
ALS Account # / Quote #:	
Job #:	3000-31
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	8872

Reports / Recipients	
Select Report Format:	☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☒ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Kathy.tixier@activeearth.ca
Email 2	
Email 3	

Invoice Recipients	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	ap@activeearth.ca
Email 2	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
ALS Contact:	Sampler:

Turnaround Time (TAT) Requested

- ☒ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
- ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Phosphorus (reactive)	Dissolved ortho-P	TKN - N	Nitrate N	Nitrite-N	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	26257 56 Ave - W	25-Apr	11:30	H2O		X	X	X	X	X			
	28709 Downes Rd - W	25-Apr	12:00	H2O		X	X	X					

Environmental Division
Vancouver
Work Order Reference
VA23A8872

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☒ NO	Analyze Nitrate + Nitrite if sufficient sample, Thanks!
Are samples for human consumption/ use? ☐ YES ☒ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C			
			5			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Kathy Tixier	Date: 25-Apr-2023	Time: 4:00	Received by:	Date:	Time:	Received by: RJ	Date: 26-Apr-23	Time: 15:35

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

CERTIFICATE OF ANALYSIS

Work Order	: **VA23B1031**	Page	: 1 of 3
Client	: **Active Earth Engineering Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Kathy Tixier	Account Manager	: Sneha Sansare
Address	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 3000-31	Date Samples Received	: 18-May-2023 15:30
PO	: ----	Date Analysis Commenced	: 19-May-2023
C-O-C number	: 20-1014123	Issue Date	: 24-May-2023 11:28
Sampler	: ----		
Site	: ----		
Quote number	: VA22-ACTI100-001 (Default Pricing 2022+)		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Arshdeep Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	28709 Downes Rd-W	----	----	----	----
					Client sampling date / time	18-May-2023 15:00	----	----	----	----
					VA23B1031-001	--------	--------	--------	--------	--------
					Result	----	----	----	----	----
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		252	----	----	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		98.6	----	----	----	----
pH	----	E108/VA	0.10	pH units		7.08	----	----	----	----
Anions and Nutrients										
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L		17.2	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L		0.0130	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		0.0017	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L		2.36	----	----	----	----
Dissolved Metals										
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		22.0	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		10.6	----	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Laboratory	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA23B1031**	Page	: 1 of 7
Client	: **Active Earth Engineering Ltd.**	Laboratory	: Vancouver - Environmental
Contact	: Kathy Tixier	Account Manager	: Sneha Sansare
Address	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 3000-31	Date Samples Received	: 18-May-2023 15:30
PO	: ----	Issue Date	: 24-May-2023 11:28
C-O-C number	: 20-1014123		
Sampler	: ----		
Site	: ----		
Quote number	: VA22-ACTI100-001 (Default Pricing 2022+)		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
28709 Downes Rd-W	E235.Cl	18-May-2023	19-May-2023	----	----		19-May-2023	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
28709 Downes Rd-W	E235.NO3-L	18-May-2023	19-May-2023	----	----		19-May-2023	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
28709 Downes Rd-W	E235.NO2-L	18-May-2023	19-May-2023	----	----		19-May-2023	3 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
28709 Downes Rd-W	E235.SO4	18-May-2023	19-May-2023	----	----		19-May-2023	28 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
28709 Downes Rd-W	E421	18-May-2023	22-May-2023	----	----		23-May-2023	180 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
28709 Downes Rd-W	E100	18-May-2023	19-May-2023	----	----		19-May-2023	28 days	1 days	✓
Physical Tests : pH by Meter										
HDPE										
28709 Downes Rd-W	E108	18-May-2023	19-May-2023	----	----		19-May-2023	0.25 hrs	1.32 hrs	× EHTR-FM

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Chloride in Water by IC	E235.Cl	945885	1	7	14.2	5.0	✓
Conductivity in Water	E100	945881	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	946015	1	1	100.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	945887	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	945888	1	14	7.1	5.0	✓
pH by Meter	E108	945879	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	945889	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Chloride in Water by IC	E235.Cl	945885	1	7	14.2	5.0	✓
Conductivity in Water	E100	945881	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	946015	1	1	100.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	945887	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	945888	1	14	7.1	5.0	✓
pH by Meter	E108	945879	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	945889	1	7	14.2	5.0	✓
Method Blanks (MB)							
Chloride in Water by IC	E235.Cl	945885	1	7	14.2	5.0	✓
Conductivity in Water	E100	945881	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	946015	1	1	100.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	945887	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	945888	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	945889	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	945885	1	7	14.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	946015	1	1	100.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	945887	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	945888	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	945889	1	7	14.2	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

QUALITY CONTROL REPORT

Work Order	: **VA23B1031**	Page	: 1 of 6
Client	: Active Earth Engineering Ltd.	Laboratory	: Vancouver - Environmental
Contact	: Kathy Tixier	Account Manager	: Sneha Sansare
Address	: 304-2600 Gladys Avenue Abbotsford BC Canada V2S 0E9	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: 3000-31	Date Samples Received	: 18-May-2023 15:30
PO	: ----	Date Analysis Commenced	: 19-May-2023
C-O-C number	: 20-1014123	Issue Date	: 24-May-2023 11:28
Sampler	: ---- ----		
Site	: ----		
Quote number	: VA22-ACTI100-001 (Default Pricing 2022+)		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Arshdeep Kaur	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Inorganics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 945879)											
VA23B0947-003	Anonymous	pH	----	E108	0.10	pH units	5.42	5.45	0.552%	4%	----
Physical Tests (QC Lot: 945881)											
VA23B0947-003	Anonymous	Conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 945885)											
VA23B0947-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 945887)											
VA23B0947-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.497	0.495	0.420%	20%	----
Anions and Nutrients (QC Lot: 945888)											
VA23B0947-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 945889)											
VA23B0947-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.59	0.59	0.004	Diff <2x LOR	----
Dissolved Metals (QC Lot: 946015)											
VA23B0893-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.050	mg/L	18.7	19.3	3.57%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	7.39	7.37	0.288%	20%	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 945881)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Anions and Nutrients (QCLot: 945885)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 945887)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 945888)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 945889)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Dissolved Metals (QCLot: 946015)						
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 945879)									
pH	----	E108	----	pH units	7 pH units	99.7	98.0	102	----
Physical Tests (QCLot: 945881)									
Conductivity	----	E100	1	µS/cm	146.9 µS/cm	95.6	90.0	110	----
Anions and Nutrients (QCLot: 945885)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 945887)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 945888)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 945889)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Dissolved Metals (QCLot: 946015)									
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.8	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 945885)										
VA23B0947-002	Anonymous	Chloride	16887-00-6	E235.Cl	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 945887)										
VA23B0947-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.69 mg/L	2.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 945888)										
VA23B0947-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.509 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 945889)										
VA23B0947-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	108 mg/L	100 mg/L	108	75.0	125	----
Dissolved Metals (QCLot: 946015)										
VA23B0893-002	Anonymous	Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1014123

Page 1 of 1

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

White Paper Co. 604 951-3900

Report To	Contact and company name below will appear on the final report
Company:	Active Earth
Contact:	Kathy Tixier
Phone:	7789841223
Company address below will appear on the final report	
Street:	
City/Province:	
Postal Code:	
Invoice To	Same as Report To ☒ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☒ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☒ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Kathy.tixier@activeearth.ca

Email 2:

Email 3:

Invoice Recipients

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ap@activeearth.ca

Email 2:

Turnaround Time (TAT) Requested

☒ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #:	
Job #:	3000-31
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	VA23B1031

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Cl	NO_3-N	NO_2-N	SO_4	Hardness	pH	Conductivity	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	28709 Downes Rd - W	18-May	3:00 pm	H2O		X	X	X	X	X	X	X			

Environmental Division
Vancouver
Work Order Reference
VA23B1031

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☒ NO

Are samples for human consumption/ use? ☐ YES ☒ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

If insufficient sample, priority parameters, in order of importance: NO_3-N, NO_2-N, SO_4, Cl, pH, conductivity

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Kathy Tixier	Date: 18-May-2023	Time: 4:20	Received by:	Date:	Time:	Received by:	Date: 18/May/23	Time: 3:30 pm

18°C

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**