



BC MINISTRY OF ENVIRONMENT -
Compliance - Surrey
ATTN: Ross Blake
200-10470 152 Street
Surrey BC V3R 0Y3

Date Received: 23-AUG-19
Report Date: 05-SEP-19 14:36 (MT)
Version: FINAL

Client Phone: 604-582-5216

Certificate of Analysis

Lab Work Order #: L2334605
Project P.O. #: 50244853
Job Reference:
C of C Numbers:
Legal Site Desc:

Other Client: CL
Information: EMS ID: E317730
Project: Quarry Gold

Dean Watt, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2334605-1 water 22-AUG-19 09:46 E317730_REG	L2334605-2 water 22-AUG-19 09:48 E317730_REG	L2334605-3 water 22-AUG-19 09:50 E317730_REG	L2334605-4 water 22-AUG-19 09:52 E317730_REG	L2334605-5 water 22-AUG-19 09:54 E317730_REG
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (uS/cm)	153			
	Hardness (as CaCO3) (mg/L)		67.2 ^{HTC}	69.6 ^{HTC}	
	pH (pH)	8.12			
	Total Suspended Solids (mg/L)				12.0
	Total Dissolved Solids (mg/L)		103		
	Turbidity (NTU)	39.6			
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	67.5			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	0.224			
	Nitrate and Nitrite (as N) (mg/L)	<0.0032			
	Nitrate (as N) (mg/L)	<0.0030			
	Nitrite (as N) (mg/L)	<0.0010			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Sulfate (SO4) (mg/L)	10.0			
Total Metals	Aluminum (Al)-Total (mg/L)		0.434	0.536	
	Antimony (Sb)-Total (mg/L)		0.00012	0.00013	
	Arsenic (As)-Total (mg/L)		0.00188	0.00226	
	Barium (Ba)-Total (mg/L)		0.0416	0.0438	
	Beryllium (Be)-Total (mg/L)		<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)		0.000108	0.000146	
	Boron (B)-Total (mg/L)		<0.010	<0.010	
	Cadmium (Cd)-Total (mg/L)		0.0000783	0.0000840	
	Calcium (Ca)-Total (mg/L)		23.4	24.3	
	Chromium (Cr)-Total (mg/L)		0.00263	0.00328	
	Cobalt (Co)-Total (mg/L)		0.00065	0.00073	
	Copper (Cu)-Total (mg/L)		0.00333	0.00389	
	Iron (Fe)-Total (mg/L)		1.29	1.71	
	Lead (Pb)-Total (mg/L)		0.00187	0.00224	
	Magnesium (Mg)-Total (mg/L)		2.14	2.19	
	Manganese (Mn)-Total (mg/L)		0.0210	0.0223	
	Molybdenum (Mo)-Total (mg/L)		0.000672	0.000807	
	Nickel (Ni)-Total (mg/L)		0.00111	0.00124	
	Phosphorus (P)-Total (mg/L)		0.039	0.043	
	Potassium (K)-Total (mg/L)		2.40	2.45	
	Selenium (Se)-Total (mg/L)		0.000155	0.000158	
	Silicon (Si)-Total (mg/L)		6.52	6.68	
	Silver (Ag)-Total (mg/L)		0.000044	0.000059	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2334605-1	L2334605-2	L2334605-3	L2334605-4	L2334605-5
		Description	water	water	water	water	water
		Sampled Date	22-AUG-19	22-AUG-19	22-AUG-19	22-AUG-19	22-AUG-19
		Sampled Time	09:46	09:48	09:50	09:52	09:54
		Client ID	E317730_REG	E317730_REG	E317730_REG	E317730_REG	E317730_REG
Grouping	Analyte						
WATER							
Total Metals	Sodium (Na)-Total (mg/L)				1.94	1.94	
	Strontium (Sr)-Total (mg/L)				0.169	0.175	
	Sulfur (S)-Total (mg/L)				3.60	3.61	
	Thallium (Tl)-Total (mg/L)				0.000010	0.000012	
	Tin (Sn)-Total (mg/L)				<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)				0.0263	0.0350	
	Uranium (U)-Total (mg/L)				0.000801	0.000809	
	Vanadium (V)-Total (mg/L)				0.00393	0.00473	
	Zinc (Zn)-Total (mg/L)				0.0047	0.0050	
Aggregate Organics	BOD (mg/L)		<2.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Qualifiers for Individual Parameters Listed:			
Qualifier	Description		
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).		

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0
Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).			
BOD5-VA	Water	Biochemical Oxygen Demand- 5 day	APHA 5210 B- BIOCHEMICAL OXYGEN DEMAND
This analysis is carried out using procedures adapted from APHA Method 5210 B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
F-IC-N-VA	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-TOT-ULTRA-MS-VA	Water	Total Metals in Water by ICPMS (Ultra)	EPA SW-846 3005A/6020A
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
NO2-L-IC-N-VA	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-U-IC-N-VA	Water	Nitrate in Water by IC (Ultra Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode			
It is recommended that this analysis be conducted in the field.			
PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorus
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.			

Reference Information

Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-WB-VA Water Suspended Solids (whole sample) - Grav. APHA 2540D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Additional Information:

Sampling Agency Code: 41

Project: Quarry Gold

Average Cooler Temperature (Deg Celsius): 13

GLOSSARY OF REPORT TERMS

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

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

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

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2334605

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Client: BC MINISTRY OF ENVIRONMENT - Compliance - Surrey
 200-10470 152 Street
 Surrey BC V3R 0Y3

Contact: Ross Blake

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA		Water						
Batch	R4770057							
WG3142284-3	LCS							
Alkalinity, Total (as CaCO3)			104.1		%		85-115	26-AUG-19
WG3142284-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-AUG-19
BOD5-VA		Water						
Batch	R4771269							
WG3141469-2	LCS							
BOD			95.2		%		85-115	23-AUG-19
WG3141469-1	MB							
BOD			<2.0		mg/L		2	23-AUG-19
CL-IC-N-VA		Water						
Batch	R4769057							
WG3142282-2	LCS							
Chloride (Cl)			101.7		%		90-110	24-AUG-19
WG3142282-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	24-AUG-19
EC-PCT-VA		Water						
Batch	R4770057							
WG3142284-3	LCS							
Conductivity			100.5		%		90-110	26-AUG-19
WG3142284-1	MB							
Conductivity			<2.0		uS/cm		2	26-AUG-19
F-IC-N-VA		Water						
Batch	R4769057							
WG3142282-2	LCS							
Fluoride (F)			102.9		%		90-110	24-AUG-19
WG3142282-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	24-AUG-19
MET-T-CCMS-VA		Water						
Batch	R4770053							
WG3143294-2	LCS							
Aluminum (Al)-Total			97.1		%		80-120	26-AUG-19
Antimony (Sb)-Total			97.8		%		80-120	26-AUG-19
Arsenic (As)-Total			95.3		%		80-120	26-AUG-19
Barium (Ba)-Total			99.9		%		80-120	26-AUG-19
Beryllium (Be)-Total			96.0		%		80-120	26-AUG-19
Bismuth (Bi)-Total			96.1		%		80-120	26-AUG-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA								
	Water							
Batch	R4770053							
WG3143294-2	LCS							
Boron (B)-Total			93.7		%		80-120	26-AUG-19
Cadmium (Cd)-Total			97.1		%		80-120	26-AUG-19
Calcium (Ca)-Total			95.0		%		80-120	26-AUG-19
Chromium (Cr)-Total			96.8		%		80-120	26-AUG-19
Cobalt (Co)-Total			96.9		%		80-120	26-AUG-19
Copper (Cu)-Total			96.0		%		80-120	26-AUG-19
Lead (Pb)-Total			98.8		%		80-120	26-AUG-19
Magnesium (Mg)-Total			95.1		%		80-120	26-AUG-19
Manganese (Mn)-Total			96.5		%		80-120	26-AUG-19
Molybdenum (Mo)-Total			98.1		%		80-120	26-AUG-19
Nickel (Ni)-Total			98.2		%		80-120	26-AUG-19
Potassium (K)-Total			96.2		%		80-120	26-AUG-19
Selenium (Se)-Total			98.4		%		80-120	26-AUG-19
Silicon (Si)-Total			100.6		%		80-120	26-AUG-19
Silver (Ag)-Total			92.8		%		80-120	26-AUG-19
Sodium (Na)-Total			97.0		%		80-120	26-AUG-19
Strontium (Sr)-Total			100.1		%		80-120	26-AUG-19
Sulfur (S)-Total			98.5		%		80-120	26-AUG-19
Thallium (Tl)-Total			96.9		%		80-120	26-AUG-19
Tin (Sn)-Total			95.5		%		80-120	26-AUG-19
Titanium (Ti)-Total			91.2		%		80-120	26-AUG-19
Uranium (U)-Total			103.7		%		80-120	26-AUG-19
Vanadium (V)-Total			97.0		%		80-120	26-AUG-19
Zinc (Zn)-Total			95.5		%		80-120	26-AUG-19
WG3143294-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	26-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	26-AUG-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	26-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	26-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	26-AUG-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	26-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	26-AUG-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R4770053							
WG3143294-1	MB							
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	26-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	26-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	26-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	26-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	26-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	26-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	26-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	26-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	26-AUG-19
Sulfur (S)-Total			<0.50		mg/L		0.5	26-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	26-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	26-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	26-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	26-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	26-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-AUG-19
MET-TOT-ULTRA-MS-VA		Water						
Batch	R4770053							
WG3143294-2	LCS							
Iron (Fe)-Total			99.3		%		80-120	26-AUG-19
Phosphorus (P)-Total			105.8		%		80-120	26-AUG-19
WG3143294-1	MB							
Iron (Fe)-Total			<0.0050		mg/L		0.005	26-AUG-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	26-AUG-19
NO2-L-IC-N-VA		Water						
Batch	R4769057							
WG3142282-2	LCS							
Nitrite (as N)			101.7		%		90-110	24-AUG-19
WG3142282-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	24-AUG-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-U-IC-N-VA	Water							
Batch	R4769057							
WG3142282-2	LCS							
Nitrate (as N)			104.8		%		90-110	24-AUG-19
WG3142282-1	MB							
Nitrate (as N)			<0.0030		mg/L		0.003	24-AUG-19
PH-PCT-VA	Water							
Batch	R4770057							
WG3142284-2	CRM	VA-PH7-BUF						
pH			7.01		pH		6.9-7.1	26-AUG-19
PO4-DO-COL-VA	Water							
Batch	R4767798							
WG3142249-2	CRM	VA-OPO4-CONTROL						
Orthophosphate-Dissolved (as P)			100.8		%		80-120	24-AUG-19
WG3142249-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-AUG-19
SO4-IC-N-VA	Water							
Batch	R4769057							
WG3142282-2	LCS							
Sulfate (SO4)			102.8		%		90-110	24-AUG-19
WG3142282-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	24-AUG-19
TDS-VA	Water							
Batch	R4779491							
WG3146708-2	LCS							
Total Dissolved Solids			103.4		%		85-115	29-AUG-19
WG3146708-1	MB							
Total Dissolved Solids			<10		mg/L		10	29-AUG-19
TSS-WB-VA	Water							
Batch	R4778299							
WG3146706-2	LCS							
Total Suspended Solids			96.3		%		85-115	29-AUG-19
WG3146706-1	MB							
Total Suspended Solids			<1.0		mg/L		1	29-AUG-19
TURBIDITY-VA	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-VA	Water							
Batch	R4782906							
WG3151711-2	CRM	VA-FORM-40						
Turbidity			106.1		%		85-115	04-SEP-19
WG3151711-1	MB							
Turbidity			<0.10		NTU		0.1	04-SEP-19

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Turbidity by Meter	1	22-AUG-19 09:46	04-SEP-19 12:00	3	13	days	EHT
pH by Meter (Automated)	1	22-AUG-19 09:46	26-AUG-19 15:26	0.25	102	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2334605 were received on 23-AUG-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Province Of British Columbia
Ministry of Environment

Req # 50244853

Urgent? Csr No. _____ Office41 _____ Client CL _____
 Study _____ Project NEW Quarry Gold
 Lab ALS Global
 Ministry Contact RBLAKE Ross Blake
 Sampler Ross Blake
 Signature *[Signature]*
 EMS Id _____ Well Plate # _____
 Location _____

Sampling Agency
 Code 41 Name Kootenay, Cranbrook
 Address 205 Industrial Road G
 City Cranbrook
 Postal Code V1C7G5 Phone (250)489-8517
 Number of Containers 5

Instructions To Lab

No.	Class	Collection Start YYYY-MM-DD HH:MI	Collection End YYYY-MM-DD HH:MI	Depth Upper Lower Tide	Comment
1	REG	2019-08-22 0945	2019-08-22 0946		General 250ml
2	REG	2019-08-22 0947	2019-08-22 0948		TSS/TDS 500ml
3	REG	2019-08-22 0949	2019-08-22 0950		Total Metals
4	REP	2019-08-22 0951	2019-08-22 0952		Total Metals
5	REG	2019-08-22 0953	2019-08-22 0954		Specific TSS 250ml
6					

GENERAL (250 mL PLASTIC)

Acidity pH 8.3
 Alkalinity Titration Curve
 Alkalinity: Total: pH 4.5
 Alkalinity: Phenolphthalein
 (500 mL Plastic) Biochemical Oxygen Demand (BOD)
 Bromide
 (500 mL Plastic) Carb. Biochem. Oxygen Demand (CBOD)
 Carbon: TIC
 Chloride
 Colour: True
 Fluoride
 Nitrogen: Nitrate and Nitrite
 Nitrogen: Nitrate
 Nitrogen: Nitrite
 pH
 Phosphorus: Diss. ortho-phosphate
 (500 mL Plastic) Residue: Filterable (TDS)
 (500 mL Plastic) Residue: Nonfilterable (TSS) - Subsample (3 mg/L LOR)
 (500 mL Plastic) Residue: Nonfilterable, Fixed
 (500 mL Plastic) Residue: Total (TS)
 Specific Conductance
 Turbidity
 Sulphate

SPECIFIC Tests

Obs Well Package
 Cyanide: SAD (60 mL Plastic + NaOH)
 Cyanide: WAD (60 mL Plastic + NaOH)
 Sulphide: Total (125 mL Plastic, ZnAc & NaOH)
 Residue: Nonfilterable (TSS) - Whole Bottle - 1 mg/L LOR (150 mL Plastic)
 Chlorophyll a (250 mL Brown Plastic Bottle or Filter) Vol:
 Phaeophytin (250 mL Brown Plastic Bottle or Filter) Vol:

ORGANICS

BTEX (2 X 40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
 VOC Full List (2 X 40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
 Volatile Hydrocarbons (VH) (2X40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
 Trihalomethanes (THM) (2 X 40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
 VPH (2 X 40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
 EPH (2 X 100 mL Amber Glass, NaHSO4)
 PAH (2 X 100 mL Amber Glass, NaHSO4)
 LEPH/HEPH (Calc) (2 X 100 mL Amber Glass, NaHSO4)
 Oil & Grease (2 X 250 mL Amber Glass, 2 mL 1:1 HCl or 1:1 H2SO4)
 Mineral Oil & Grease (2 X 250 mL Amber Glass, 2 mL 1:1 HCl or 1:1 H2SO4)
 Organochlorine Pesticides (OCP) (2 X 500 mL Amber Glass)
 Organophosphorus Pesticides (OPP) (2 X 500 mL Amber Glass)
 Polychlorinated Biphenyls (PCBs) (2 X 500 mL Amber Glass)
 Chlorophenols (Tri, Tetra & Penta) (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)
 Phenolics, Chlorinated (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)
 Phenolics, Non-Chlorinated (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)
 Phenols, Colorimetric (125 mL Amber Glass, H2SO4)
 Acid Extractable Herbicides (2 X 1 L Amber Glass, NaHSO4)
 Resin Acids (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)
 Fatty Acids (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)

GENERAL NUTRIENTS (125 mL AMBER GLASS) - H2SO4

Carbon: TOC
 Chemical Oxygen Demand (COD)
 Nitrogen: Ammonia
 Nitrogen: Total
 Nitrogen: Total Kjeldahl (Calc)
 Nitrogen: Total Organic
 Phosphorus: Total

BACTERIOLOGY

E. coli - MF
 Enterococci - MF
 Fecal coliform - MF
 Fecal coliform - MPN
 Fecal streptoc - MF
 Total coliform - MF
 Total coliform - MPN

GENERAL (125 mL AMBER GLASS) - FIELD FILTER, H2SO4

Carbon: DIC (Field Filter)
 Carbon: DOC (FF, H2SO4)
 Nitrogen: Dissolved Kjeldahl (Calc) (FF, H2SO4)
 Nitrogen: Total Dissolved (FF, H2SO4)
 Phosphorus: Total Dissolved (FF, H2SO4)

OTHER Tests

Smpl No.	FIELD TEST Details	Method Results	Units

METALS: TOTAL

High Low
 Metal Pkg. (ICPMS) - HIGH (60 mL Plastic) - HNO3
 Metal Pkg. (ICPMS) - LOW (60 mL Plastic) - HNO3
 Mercury - 40mL Glass, HCl
 Hardness (60 mL Plastic) - HNO3

METALS: DISSOLVED

High Low
 Metal Pkg. (ICPMS) - HIGH (60 mL Plastic)-Field Filter, HNO3
 Metal Pkg. (ICPMS) - LOW (60 mL Plastic)-Field Filter, HNO3
 Mercury - 40mL Glass, Field Filter, HCl
 Hardness (60 mL Plastic) - Field Filter, HNO3

Report ID: EMSR0900

A1

JG 23 Aug 19 8:50 AM
 13°C
 Date: 2019-08-20 08:06

