IQWATER INC.
140, 5050 – 106th Avenue SE
Calgary, Alberta
T2C 5E9
Tel: 1-403-238-9510
E-mail: jana@iqwater.ca

April 27th, 2022
File No. W2020-20.2021

KICKING HORSE MOUNTAIN UTILITIES CORP.
1505 17th Avenue SW
Calgary, Alberta
T2T 0E2

Attention: Mr. Patrick Majer

Tel: 403.861.8730
e-mail: pmajer@skircr.com

Dear Mr. Majer:

Re: KICKING HORSE MOUNTAIN RESORT
WASTEWATER TREATMENT PLANT
2021 ANNUAL REPORT

Forwarded is a pdf copy of the 2021 Annual Wastewater Report for the above property.

Should you have any questions, please call us at 403-238-9510or email to jana@iqwater.ca.

Sincerely,

IQWATER INC.

Jana Zverina, M.Sc., P.Eng.

2021 WASTEWATER TREATMENT PLANT ANNUAL REPORT

KICKING HORSE MOUNTAIN RESORT
1339 KICKING HORSE TRAIL
GOLDEN, B.C.

Prepared for:

KICKING HORSE MOUNTAIN UTILITIES CORP.
1505-17th Avenue SW
Calgary, Alberta
T2T 0E2

Prepared by:

IQWATER INC.
140, 5050 – 106th Avenue SE
Calgary, Alberta
T2C 5E9
Tel: 1-403-238-9510
E-mail: jana@iqwater.ca

April 27th, 2022
Report # W2020-020.2021

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 BACKGROUND

The following annual report for the Wastewater Treatment Plant at Kicking Horse Mountain Resort (further KHMR) operated by Kicking Horse Mountain Utility Corporation (further KHMUC) is compiled in accordance with the requirements of the Municipal Sewage Regulation (further MSR). This report summarizes the calendar year 2021.

In January 2012 Resorts of the Canadian Rockies (RCR) took over the resort and the plant operations and formed KHMUC. KHMUC has made changes to the way the plant operates, mainly by using a spare tank as an equalization tank. There has been a noticeable difference in plant operations since RCR took over and KHMUC was formed.

The resort is an ongoing development currently consisting of a combination of a single family, multi-family, and rental pool/hotel style facilities. These contribute to the total loading of the site in addition to ski hill use and ancillary services.

1.2 RESORT CONSTRUCTION AND OCCUPANCY

Kicking Horse Mountain Resort is located approximately 13 km from Golden, B.C. The sewage treatment plant, which was constructed in 2000, is located adjacent to the resort. The treatment USBF (Upflow Sludge Blanket Filtration) technology employed is a modified conventional activated sludge process applying an up-flow sludge blanket filtration clarifier. There are two independent treatment trains that are operated in parallel during the peak season (December to April) and as a single train during the rest of the calendar year.

The system incorporates two treatment zones and one clarification zone that are interconnected with the flow been driven by the hydraulic pressure from the influent storage tank pumps.

The two treatment zones consist of an Anoxic Zone and Aeration Zone discharging into an effluent clarifier.

Each zone is triangular in shape. Two 10” underflow pipes on either side of the clarification zone join in the anoxic and aeration zones together. The aeration zone is connected to the clarifier by a slotted flow through, approximately 18” above the clarifier bottom and the width of the clarifier wall. Each zone is approximately 15’ deep. Effluent clarification is enhanced by an up-flow sludge blanket in the clarifier that serves to filter the solids.

Clarified effluent flows over the clarifier weir into a dual micro filtration well, equipped with dual drum screens. Leaving the drum screens, the final effluent enters an open channel Trojan U.V. disinfection system to be discharged through a 4 km long gravity main to the outfall in the Columbia River.

Waste activated sludge used to be stored in a thickener and removed by a vacuum tanker. In the fall of 2014, a 12 unit Teknofanghi (Model Number 12BCAVPK) supplied by Drycake was installed and was commissioned in mid-December. Historically, the sludge was bagged and disposed of at the CSRD Landfill located in Golden, BC; however, due to increased costs for disposal at this facility, the sludge is now disposed of at the Crowsnest/Pincher Creek Landfill site.

2.0 REGISTRATION REQUIREMENTS

This section describes operating requirements as specified in the Kicking Horse Mountain Resort (KHMR) Registration Letter RE 15474. The registration describes parameters that must be tested for as well as the operating conditions, sampling frequency and sampling locations.

2.1 PARAMETERS

The following parameters are to be monitored:

pH	Field Sample
Temperature	Field Sample, measured in Celsius
Flow	Field Samples, measured as m^3 /d
BOD_5	Five day biochemical oxygen demand, measured in mg/l
TSS	Total suspended solids or non-filterable residue, measured in mg/l
NH_3	Ammonia concentration, expressed as nitrogen in mg/l
NO_3	Nitrate concentration, expressed as nitrogen in mg/l
NO_2	Nitrite concentration, expressed as nitrogen in mg/l
Total-P	Total phosphorous concentration, measured in mg/l
Ortho-P	Orthophosphate concentration, measured in mg/l
Fecal coliform	Bacterial concentration, measured as colony forming units per 100ml
Enterococci	Bacterial concentration, measured as colony forming units per 100ml
E. Coli	Bacterial concentration, measured as colony forming units per 100ml
Toxicity Bioassay	96 hour toxicity test, recorded as pass or fail

2.2 REGISTRATION LETTER OPERATING CONDITIONS

The treatment plant is required to meet the effluent discharge conditions outlined in Table 1.

Table 1
Effluent Limits

Parameter	Limit	Unit
Flow	300	m^3/d
BOD_5	45	mg/l
TSS	45	mg/l
Total-P	1.0	mg/l
Ortho-P	0.5	mg/l
Fecal Coliforms*	200	CFU/100ml
E. Coli*	77	CFU/100ml
Enterococci*	20	CFU/100ml
Toxicity Bioassay	pass	n/a

*Limit for recreational waters only, not included in RCRI registration letter

Waste activated sludge used to be stored in a thickener and removed by a vacuum tanker. In the fall of 2014, a 12 unit Teknofanghi (Model Number 12BCAVPK) supplied by Drycake was installed and was commissioned in mid-December. The sludge is bagged and disposed of at the Crowsnest/Pincher Creek Landfill site.

Operators at the plant are required to be certified in Accordance with Section 22 of the MSR.

2.3 REPORTING REQUIREMENTS

An annual report demonstrating the performance of the facility is to be publicly posted on the Internet within 120 days of the end of the calendar year.

In addition the report must also include the following:

- Tabulated results of the Effluent and Environmental Monitoring Data with standards and criteria
- Interpretation of the monitoring data
- The total volume discharged over the year
- Total sludge wasted over the year and its final destination
- The state of compliance of the treatment facility/process
- Indicated the percentage of residential development, as defined in the regulation, that contributes to the effluent discharge
- Any additional relevant information the discharger wishes to provide

2.4 SAMPLING FREQUENCY

The MSR Registration requires KHMR and, as such, the contract operator KHMUC, to undertake the environmental testing program outlined in Table 2 below.

Columbia River testing requires that a minimum of 10 samples annually are taken from each of the upstream, the side channel (further also referred to as a side stream) and downstream river locations, relative to the outfall diffuser. The sampling locations were identified in Masse & Miller Consulting Ltd. letter dated February 17th, 2005. Flow data is to be collected continuously.

The intent of the environmental testing procedure outlined in Table 2 is to collect weekly samples of effluent during the summer and winter seasons. Commencement of the winter weekly seasonal sampling (weekly samples for a period of 5 weeks) is when the river sampling sites open up and the summer monitoring usually commences during low water flow in the river, usually in September or October.

In addition to the program and tests listed above, other in-plant testing is needed to permit operational control of the process.

Table 2
Sampling Location/Frequency/Type

Parameter	**Location**				
	Columbia River Upstream at Bridge	**Columbia River ~200 d/s of outfall from east shore**	**Columbia River d/s of island from west shore ~1km d/s of outfall**	**Columbia River side channel ~350m d/s of outfall**	**Effluent**
EMS Number	E256694	E258898	E258899	E258897	E256696
	Winter/Summer	Winter/Summer	Winter	Summer	Winter/Summer
pH	WS/G	WS/G	WS/G	WS/G	W
Temp	WS/G	WS/G	WS/G	WS/G	W
Flow	/	/	/	/	W
BOD_5	/	/	/	/	W
TSS	WS/G	WS/G	WS/G	WS/G	WS/G+Q/G
NH_3-N	WS/G	WS/G	WS/G	WS/G	WS/G
NO_3-N	WS/G	WS/G	WS/G	WS/G	WS/G
NO_2-N	WS/G	WS/G	WS/G	WS/G	WS/G
Total-P	WS/G	WS/G	WS/G	WS/G	WS/G
Ortho-P	WS/G	WS/G	WS/G	WS/G	WS/G
Fecal Coliform	WS/G	WS/G	WS/G	WS/G	WS/G+Q/G
Enterococci	WS/G	WS/G	WS/G	WS/G	WS/G
E. Coli	WS/G	WS/G	WS/G	WS/G	WS/G
Toxicity Bioassay	/	/	/	/	1/3Y/G
Coordinates	11.500456 5684421	11.500288 5684880	N51 19.364 W 11700.218	11.500126 5684835	At sewage treatment plant

Where:

WS	Weekly seasonal (weekly samples for a period of 5 weeks)
Q	Quarterly
W	Weekly
G	Grab
1/3Y	Once every 3 years

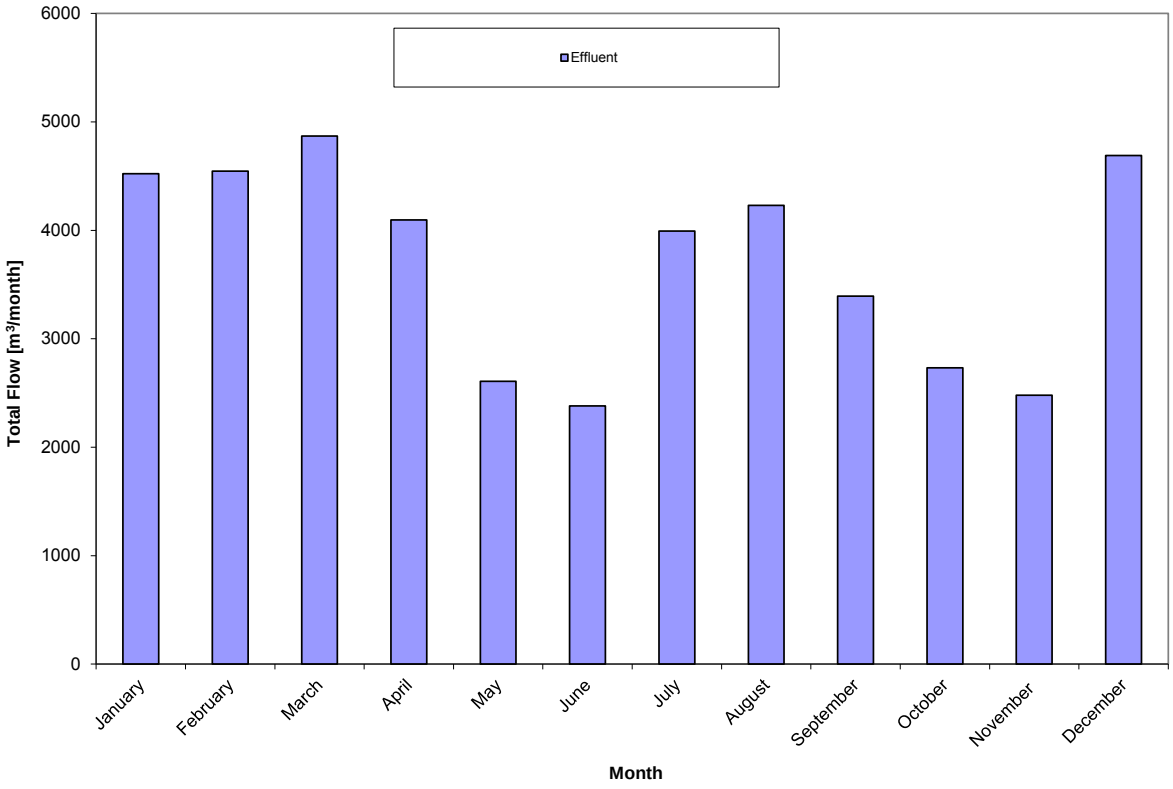
3.0 SEWAGE FLOW RECORDS

This section provides data and analysis regarding plant effluent flows, and compares 2021 data to the previous years.

Flow data is continuously monitored at the discharge to the outfall using a flow meter to be recorded in the SCADA system. Operators then transcribe the daily flows into a logbook.

The total effluent flow recorded for 2021 was 44,546 m^3 with an average of 122 m^3/day. Available monthly total effluent flow meter records for 2021 are provided in Figure 1a.

Figure 1a
2021 Effluent Flow Meter Monthly Flow Totals



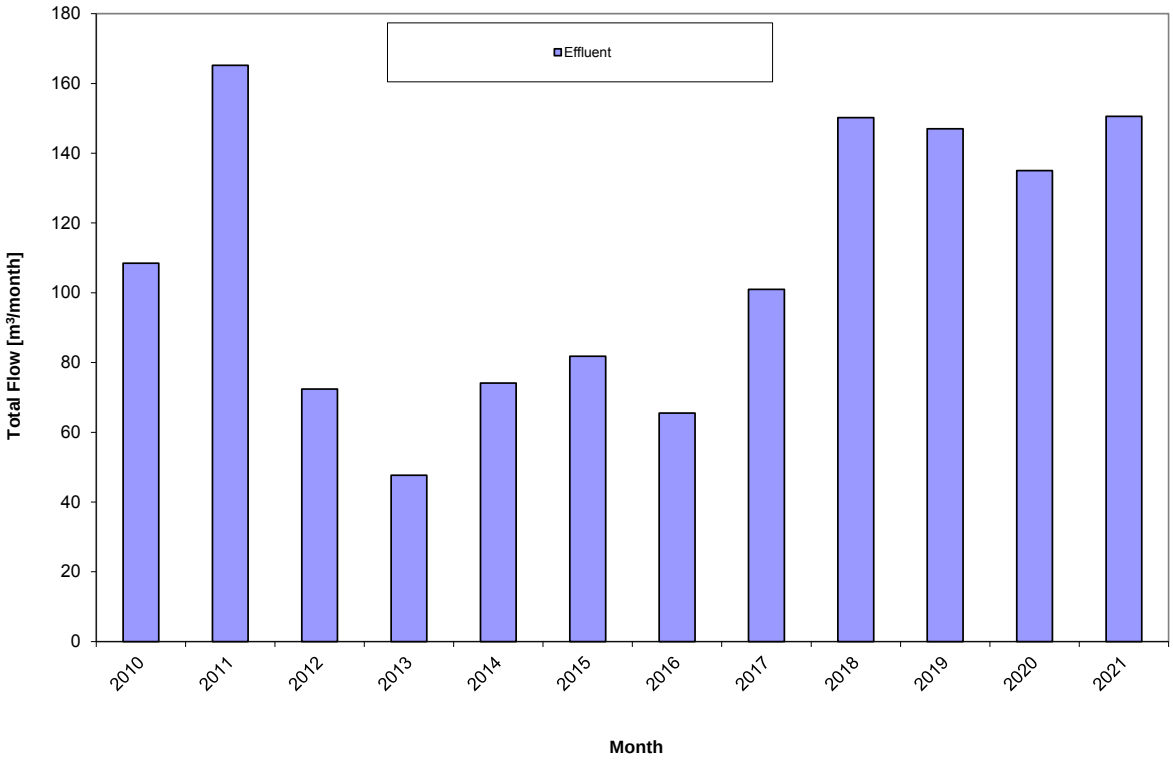
The ski resort operates with higher winter and early spring sewage flows than during any other period. Larger sewage flows were typically observed during January, February, March and December. The highest monthly flow was observed in March at 4,870 m^3/month. However, summer month flows i.e. July and August are becoming similar to those in winter.

The average daily plant flow through January to March and December of 2021 was 154 m^3/day compared to the last year average at 150 m^3/day.

Please note that in the previous reports the highest plant flow was compared to four months ie January, February, March, April and December. In 2021 the flow for these five months was higher at 151 m^3/day than that of 2020 at 135 m^3/day, 2019 at 147 m^3/day and similar to 2018 at 150.2 m^3/day.

These averages are higher compared to 100.96 m^3/day over the same period in 2017, 65.52 m^3/day in 2016, 81.79 m^3/day in 2015, 74.10 m^3/day in 2014, 47.73 m^3/day in 2013, 72.41 m^3/day in 2012 and 108.5 m^3/day in 2010. The only exception was 2011 at 165.2 m^3/day (note that data for Dec was missing).

Figure 1b
Average Effluent Flow in Peak Period – Jan to April and Dec (Historical)



Peak flow for the year reached was 263 m^3/day on April 1, 2021, which is below the allowable limit of 300 m^3/day.

The peak flow is higher than that at 247 m^3/day in 2020 and comparable to pre-Covid levels of the previous two years at 265 m^3/day in 2019 and 262 m^3/day in 2018. It is higher to 2017 with peak flow at 244 m^3/day. The peak flow day occurred during the ski season.

Historical peak flows were 162.25 m^3/day in 2016, 137.32 m^3/day in 2015, 145.71 m^3/day in 2014, 165.03 m^3/day in 2013, 159.05 m^3/day in 2012, 311.54 m^3/day in 2011 (again note that the data for one of the historically highest months, December was missing), 317.6 m^3/day in 2010 and 251.3 m^3/day in 2009.

There is currently no method of measuring influent to the treatment plant.

A summary of sewage flow for years 2009 through 2021 is provided in Table 3 and Figures 2 and 3:

Table 3
2009 – 2021 Flow Comparisons

Year	Sewage Flow (m^3/day)			Days Over Limit
	Total	Average	Peak	
2009	25,093.9	69.4	251.3	0
2010	27,467.5	77.6	317.6	2
2011	27,771* (42,340)[1]	116	311.54**	2
2012	17,323.4	47.85	159.05	0
2013	16,089	44.73	165.03	0
2014	19,279[2]	52.88	145.71	0
2015	20,594	56.4	167.32	0
2016	21,125	58.9	162.25	0
2017	31,431[3]	85.9	240	0
2018	45,147	123.8	262	0
2019	41,785	114.0	265	0
2020	41,218	113.0	247	0
2021	44,546	122.0	263	0

*not including all of September, October, November or December
**the number does not reflect a true peak as all the data was not available during the high flow months
[1] (data) in bracket – estimate based on daily average
[2] The SCADA failed to record flow for the entire day on several occasions; therefore flow was estimated on partial data
[3] The SCADA failed to record correct flow from July 24th until September 7th; therefore flow was based on partial estimates

2009 - 2020

Peak flows in **2009** coincided with the weekends, holidays, ski season and summer recreational activities. The highest daily flow was recorded on Feb 15th at 215.1 m^3/day and on December 31st at 251.3 m^3/day. At no time was the maximum allowed daily flow exceeded.

Peak flows in **2010** coincided with weekends, holidays, ski season and summer recreational activities. The highest daily flow was recorded on New Year's Day at 242.7 m^3/day, February 14th at 206.4 m^3/day, and on December 31st at 317.6 m^3/day. During the third week of July 2010 a lightning strike damaged the level sensors in the wastewater treatment plant resulting in inaccurate measurement of flows. The Ministry of Environment was notified. The operators indicated that during daily monitoring of the system, there was no time when the flows came close to exceeding the permit based on visual observation and process control monitoring.

Peak flows in **2011** also coincided with weekends, holidays, ski season and summer recreational activities. The highest daily flow was recorded on a weekend (March 26th) at 311.54 m^3/day and the second highest peak was observed on New Year's Day at 303.04 m^3/day. The daily flow limit was exceeded on both occasions. Please note the data was incomplete for September, October, November and December 2011.

Peak flows in **2012** also coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2012. The reduction in daily flows and reduction in peak flow is due to flow equalization which has now been implemented in the facility using

the vacant tank that will one day be used for additional process trains. Flow equalization began in January 2012.
Peak flows in **2013** also coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2013. The highest daily flow was recorded on December 29th at 165.03 m^3/day.

Peak flows in **2014** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2014. The highest daily flow was recorded on January 2nd at 145.71 m^3/day. The SCADA failed to record flow for the entire day on several occasions and partial data was used to estimate total flow. The failure was due to computer issues.

On January 9, 24, 25; February 4; March 3, 28, 29; May 23 to June 2, June 9, 14, 15, 23, 27; July 4, 6-10, 12, 13, 28; August 12, 13, 16, 17; September 5, 6; October 1, 3; November 21, 22, 25, 26; and December 7, 8, and 9 the flow was estimated.

Peak flows in **2015** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2015. The highest daily flow was recorded on January 2nd at 167.32 m^3/day.

Peak flows in **2016** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2016. The highest daily flow was recorded on December 29th at 162.25 m^3/day.

Peak flows in **2017** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2017. The highest daily flow was recorded on December 29th at 244 m^3/day. Please note that the SCADA failed to record correct flow from July 24th until September 7th; therefore flow was based on partial estimates.

Peak flows in **2018** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2018. The highest daily flow was recorded on December 31st at 262 m^3/day.

Peak flows in **2019** generally coincided with the peak season in January, February, March and December. The highest daily flow, however, was recorded on November 3rd at 265 m^3/day.

Peak flows in **2020** generally coincided with the peak season in January, February, March and December. The highest daily flow was recorded on December 31st at 247 m^3/day.

2021
Peak flows in 2021 generally coincided with the peak season in January, February, March and December. It should be noted that the highest daily flow was recorded on April 1st at 263 m^3/day. There were no daily flow limit exceedances observed in 2021.

Daily wastewater flows are strongly correlated to weather and the number of day-users at the resort with the peak ski season having the highest flows. Summer flows result from non-skiing related recreational activities, generally hiking or mountain biking events. The lowest plant flow was experienced in the shoulder season periods (April to June and September to November).

There are approximately 100 full time year round residents at the resort. In total, there are currently:

- ✓ 98 single family homes (Purcell Woods, Cache Estates, Cache Residences, Dogtooth and Cedar Creek Estates)
- ✓ 116 multi-family units i.e. duplexes and triplexes (Whispering Pines, The Cedars[1] – 2 phases, Selkirk Resort Homes, Aspen – Phase 1 and 2)

- ✓ 155 multi-storey condos (Mountaineer Lodge, Palliser Lodge, Glacier Lodge)
- ✓ 3 commercial lodges (Cache Lodges)
- ✓ Five seasonal restaurants
- ✓ Administration office, day-care facilities, general store and rental shop

[1] The Cedars Phase 3 (10 units

OCCUPANCY*	Family Residences	Hotel Units	Allocation	EQ Bed Units
Seasonal				
Multi-story condos (3 units)	-	155	2	310
Commercial Lodges (3)	-	-	As per tarrif	122
Single Family Residences	98	-	varies	718
Multi-Family Units (Duplex & Triplex)	116	-	varies	448
Non-residential				
5 Restaurants	-	-	As per tarrif	241
Office	-	-	As per tarrif	4
Daylodge	-	-	As per tarrif	144

**Note that the occupancy significantly varies throughout the year with near full occupancy only during the ski season and during the long weekends.*

Current Total Bed Unit Count – Updated April 22, 2021 = 2448 BU

Figure 2 provides historical average and peak flow and Figure 3 shows historical total flows for 2009 to 2021 for comparison.

Figure 2
Historical (2009 – 2021) Average and Peak Sewage Effluent Flow Comparison Graph

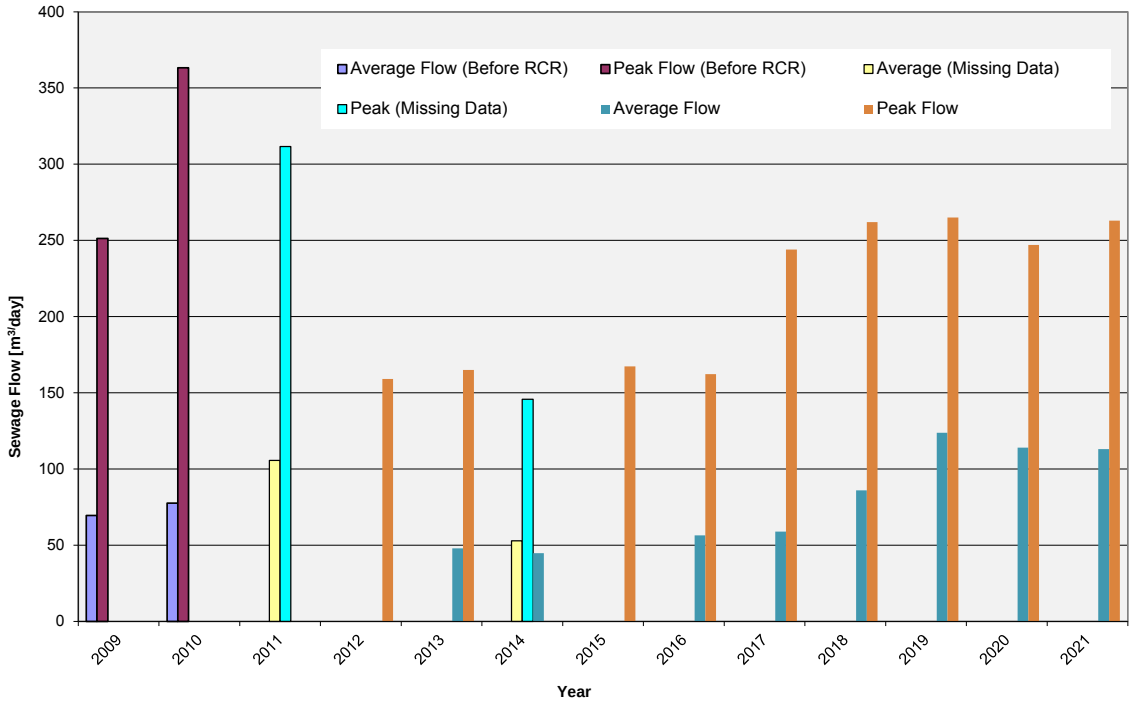


Figure 3
Historical (2009 – 2021) Total Sewage Effluent Flow Graph

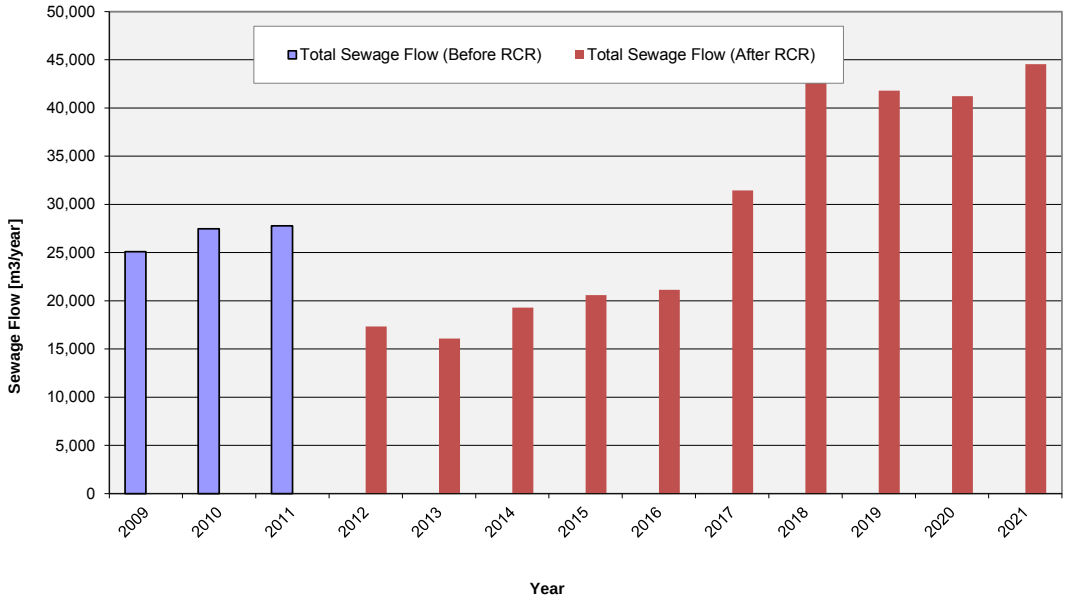
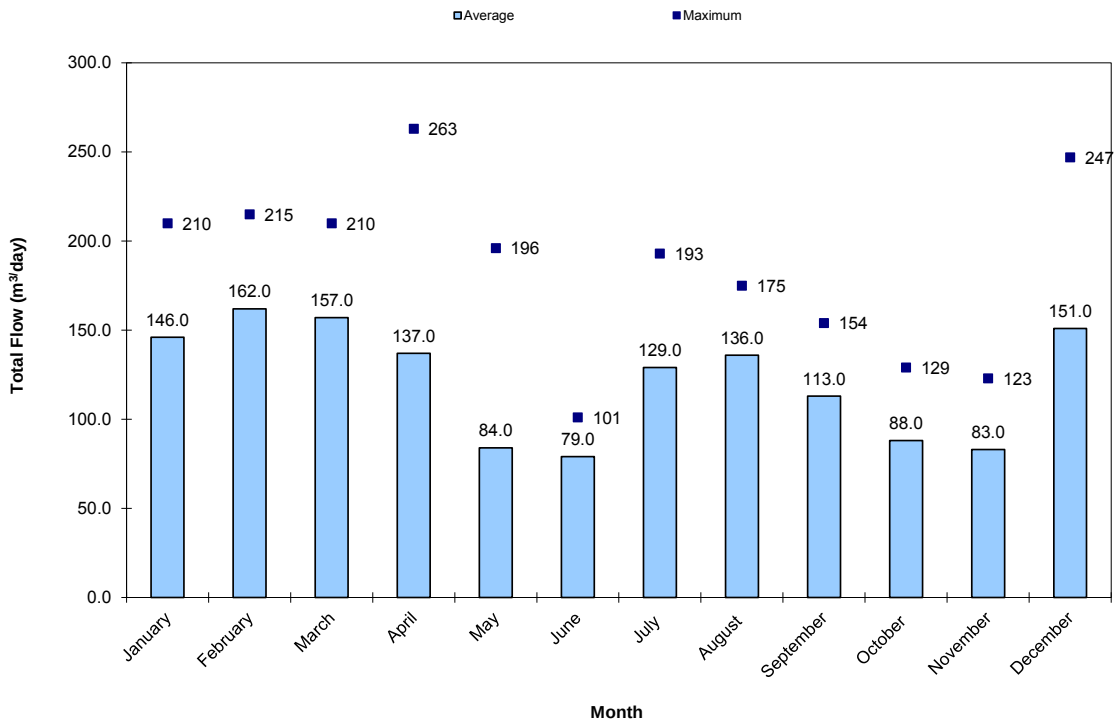


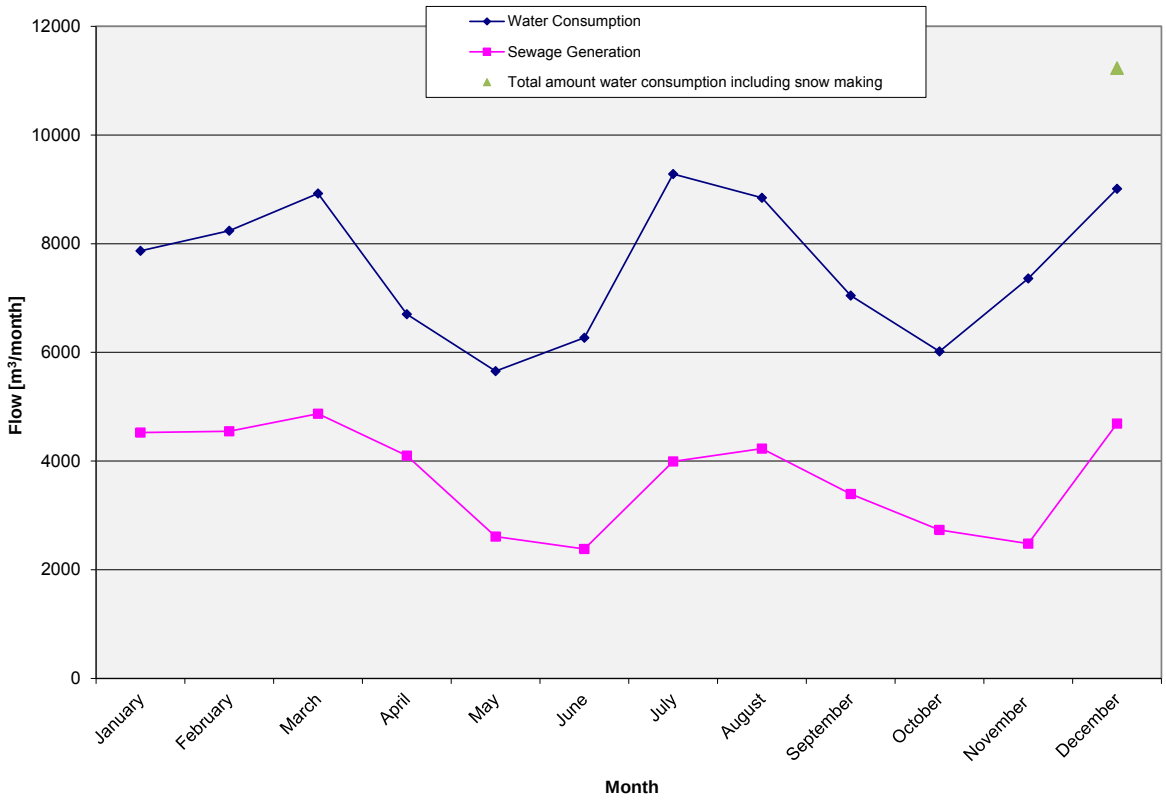
Figure 4 below shows average and peak flows for 2021.

Figure 4
2021 Sewage Effluent Average and Peak Flows by Month



This year, the total effluent discharged was equal to 49.0 % of the total water production, which is similar or lower than during the previous years. Monthly water usage at the hill is compared to the amount of effluent discharged at the WWTP in Figure 5. Please note that the total water production included in the calculation and graph below does not include 2225 m^3 from snow making in December 2021.

Figure 5
2021 Water Consumption and Sewage Effluent Generation



4.0 SEWAGE FLOW PROJECTION

This section shows projected wastewater flow for 2011 through 2021 based on the current development plans and provides an estimate of remaining plant capacity.

Based on unit generation rates provided in the BC Health Act for various lodging types as well as the assumption that wastewater generation would have been similar in 2011 to that calculated in 2015, the estimated highest day wastewater generation for 2011 would have been 705.5 m^3/day. Using the actual peak flow of 312 m^3/day, a correction factor of 0.44 was calculated. Averaged correction factor for the last eight years (2012 to 2020) was also calculated and multiplied by the future estimated flows to more accurately reflect potential resort sewage generation rates. In 2019 the correction factor was 0.38 and in 2020 it was calculated at 0.35. The correction factor for 2021 was calculated at 0.37 and the average correction factor for 2011 to 2019 was 0.30.

Projected daily peak wastewater flows from 2011 by year were provided in Table 4 for the Resort's planned expansions. The highest water generation for 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, and 2021 was calculated based on the BC Health Act (refer to Table 10 enclosed at the end of this report). The future flows will be re-evaluated as further expansion occurs. The resort is committed to continuing the initiative on introducing a stormwater infiltration program, flow restrictive devices, and other water consumption measures.

Flow restrictive devices are intended to be utilized in all new construction and the infiltration/ rehabilitation program is expected to be ongoing. The intent is to reduce the amount of per unit sewage generation and to reduce the amount of ground and surface water infiltration into the sewer system. KHMUC will monitor sewage flows to determine the efficiency of the program.

Even with additional expansion, KHMUC may not require an increase to permit discharge above the current limit of 300 m^3/day if the flow restriction measures prove to be sustainable. Sewage discharge rates will be monitored and an application will be submitted to increase the maximum daily discharge when warranted.

Based on 2021 flow data, the plant has an unused capacity of 37 m^3/day (based on an operating limit of 300 m^3/day) due to the flow saving measures. This still needs to be closely monitored during 2022 and further considered when adding additional development.

Table 4
Projected Peak Flows: 2011-2022

	2011	**2012**	**2013**	**2014**
Estimated Wastewater Flow (m^3/day)	705.5*	705.5*	705.5*	705.5
Actual and Corrected (m^3/day)	312** (a)	159 (a)	165 (a)	146 (a)

	2015	**2016**	**2017**	**2018**
Estimated Wastewater Flow (m^3/day)	705.5	705.5	705.5	705.5
Actual and Corrected (m^3/day)	167 (a)	162 (a)	244 (a)	262 (a)

*the number was calculated based on 2014 occupancy, which is likely overestimated
**the number does not reflect a true peak as all the data was not available during the high flow months

	2019	2020	2021	2022
Estimated Wastewater Flow (m^3/day)	705.5	707.2	711.2*	711.2*
Actual and Corrected (m^3/day)	265 (a)	247 (a)	263 (a)	213 (b)

*the number was calculated based on 2014 occupancy, which is likely overestimated

(a) actual peak flow
(b) corrected daily peak flows by the averaged correction faction for 2011 - 2021 correction factor:

2011	*correction factor of*	312*/705.5.	*0.44*
2012	"	159/705.5	*0.22*
2013	"	165/705.5	*0.23*
2014	"	146/705.5	*0.21*
2015	"	167/705.5	*0.24*
2016	"	162/705.5	*0.23*
2017	"	244/705.5	*0.34*
2018	"	262/705.5	*0.37*
2019	"	265/705.5	*0.38*
2020	"	247/707.2	*0.35*
2021	"	263/711.2	*0.37*
AVERAGE			***0.31***

A graph showing estimated vs actual historical peak flows is shown below.

Figure 6a

Historical Correction Factors

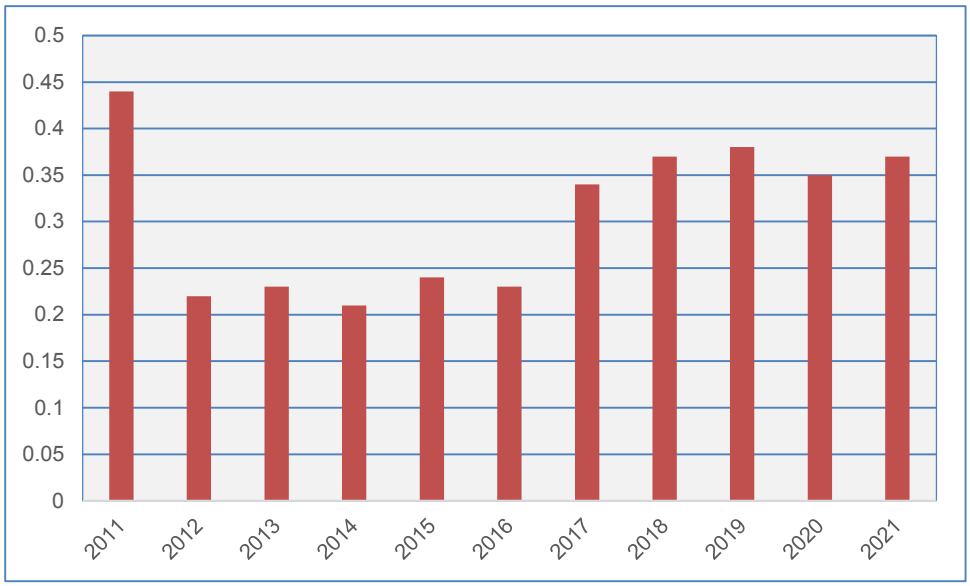
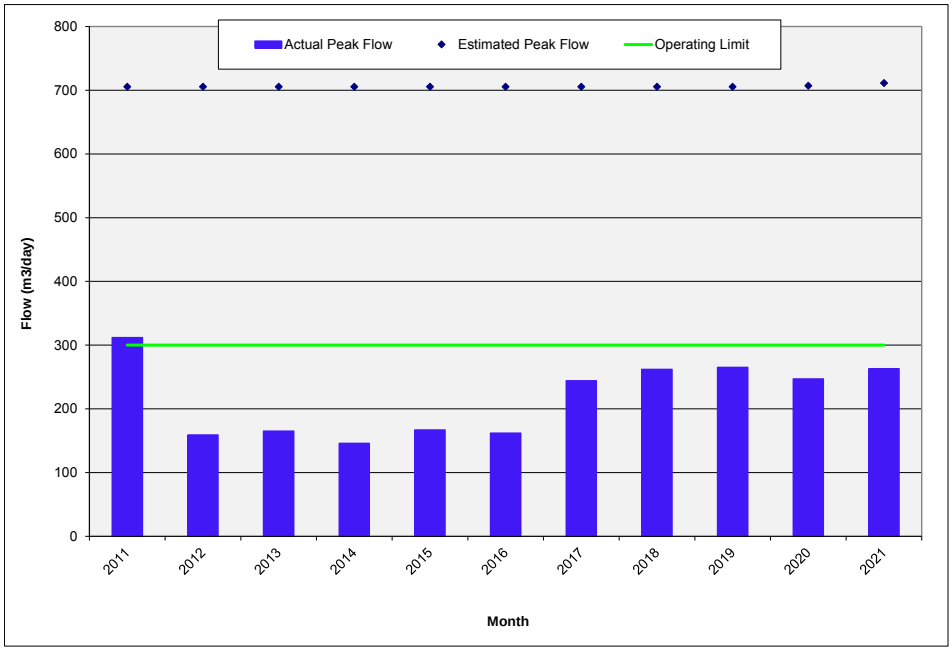


Figure 6b
Estimated vs Actual Peak Flows (Historical)



5.0 OVERVIEW OF COLUMBIA RIVER SAMPLE RESULTS

This section provides data and analysis for the Columbia River samples taken during 2021.

Table 5 provides a summary record of the Columbia River test results for the period of April 14th to May 11th, 2020 and September 28th to October 26th, 2021. Please note that the outfall was not sampled during the spring monitoring events due to difficulties accessing the site.

Table 5
2021 Columbia River Sample Results

Sample Date	NH_4-N			Ortho-P			Fecal Coliform			E.Coli			Total P mg/L		
yyyy/mm/dd	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN
2021-04-14	0.050	-	0.050	0.005	-	0.005	79	-	8	19	-	6	0.032	-	0.008
2021-04-21	0.050	-	0.050	0.005	-	0.005	2	-	2	1	-	2	0.013	-	0.061
2021-04-27	0.050	-	0.050	0.005	-	0.005	2	-	2	1	-	2	0.006	-	0.005
2021-05-05	0.050	-	0.050	0.005	-	0.005	2	-	2	2	-	1	0.012	-	0.006
2021-05-11	0.166	-	0.050	0.005	-	0.005	7	-	3	1	-	2	0.005	-	0.010
2021-09-28	0.050	0.050	0.050	0.005	0.005	0.005	21	34	26	14	16	24	0.047	0.029	0.047
2021-10-05	0.005	0.007	0.005	0.001	0.001	0.001	6	4	2	5	4	2	0.009	0.015	0.010
2021-10-12	0.050	0.050	0.050	0.005	0.005	0.005	1	2	2	2	2	2	0.006	0.005	0.011
2021-10-20	0.050	0.051	0.050	0.005	0.005	0.005	3	1	2	3	1	1	0.006	0.096	0.006
2021-10-26	0.050	0.050	0.050	0.005	0.005	0.005	1	1	1	1	1	1	0.005	0.005	0.005
# Samples	10	5	10	10	5	10	10	5	10	8	5	8	10	5	10
Average	0.057	0.042	0.046	0.005	0.004	0.005	12	8	5	6	6	5	0.014	0.030	0.017
Maximum	0.166	0.051	0.050	0.005	0.005	0.005	79	34	26	19	16	24	0.047	0.096	0.061
Minimum	0.005	0.007	0.005	0.001	0.001	0.001	1.0	1.0	1.0	1.0	1.0	1.0	0.005	0.005	0.005

Sample Date	Field pH			TSS			NO_3-N			NO_2-N			Enterococcus		
yyyy/mm/dd	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN
2021-04-14	6.8	-	7.8	20.9	-	6.7	0.107	-	0.221	0.010	-	0.010	1.0	-	36.4
2021-04-21	8.0	-	7.8	37.9	-	23.7	0.125	-	0.109	0.010	-	0.010	5.1	-	1.0
2021-04-27	7.8	-	7.9	11.5	-	11.3	0.123	-	0.130	0.010	-	0.010	3.0	-	1.0
2021-05-05	7.8	-	7.6	17.0	-	16.4	0.182	-	0.183	0.010	-	0.010	1.0	-	1.0
2021-05-11	8.0	-	7.8	15.2	-	21.8	0.191	-	0.191	0.010	-	0.010	1.0	-	1.0
2021-09-28	7.8	7.8	7.8	95.9	39.3	66.0	0.091	0.075	0.089	0.010	0.010	0.010	4.1	4.1	4.1
2021-10-05	7.7	7.7	7.7	15.4	10.0	11.2	0.093	0.086	0.082	0.010	0.001	0.010	1.0	1.0	1.0
2021-10-12	7.7	7.7	7.7	6.1	5.5	7.5	0.088	0.070	0.390	0.010	0.010	0.010	1.0	1.0	1.0
2021-10-20	7.8	7.8	7.8	4.7	3.5	6.7	0.101	0.096	0.105	0.010	0.010	0.010	1.0	1.0	1.0
2021-10-26	7.8	7.6	7.8	6.3	3.3	8.9	0.089	0.093	0.085	0.010	0.010	0.010	1.0	3.0	1.0
# Samples	10	5	10	10	5	10	10	5	10	10	5	10	10	5	10
Average	7.7	7.9	7.8	23.1	12.3	18.0	0.119	0.084	0.159	0.01	0.01	0.01	1.9	2.0	4.9
Maximum	8.0	8.0	7.9	95.9	39.3	66.0	0.191	0.096	0.390	0.01	0.01	0.01	5.1	4.1	36.4
Minimum	6.8	7.8	7.6	4.7	3.3	6.7	0.088	0.070	0.082	0.01	0.00	0.01	1.0	1.0	1.0

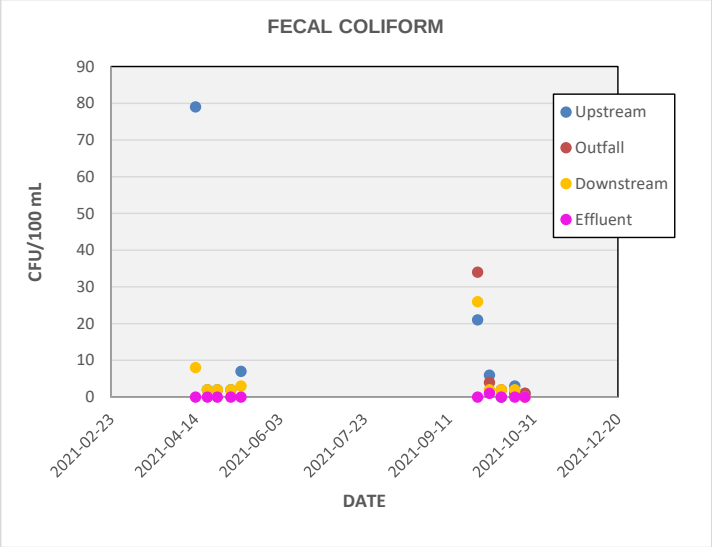
Green shaded squares show tests reported at less than the stated value, for calculations these are listed as equal to the value stated, ie; <0.05 is assumed to be 0.05
UP – Upstream
SIDE – 1 km downstream of outfall from west shore (winter) and river side channel 350 m downstream of outfall (summer)
DN – Downstream

Fecal coliforms, E-coli and Enterococci

Elevated Fecal coliforms and E.Coli were observed in the upstream on April 14th and in the upstream, side-stream, and down-steam samples on September 28th, 2021. Elevated Enterococcus results were also recorded in the downstream on April 14th and in all three locations on September 18th. The results were below the detection limits tested in the effluent on the same dates.

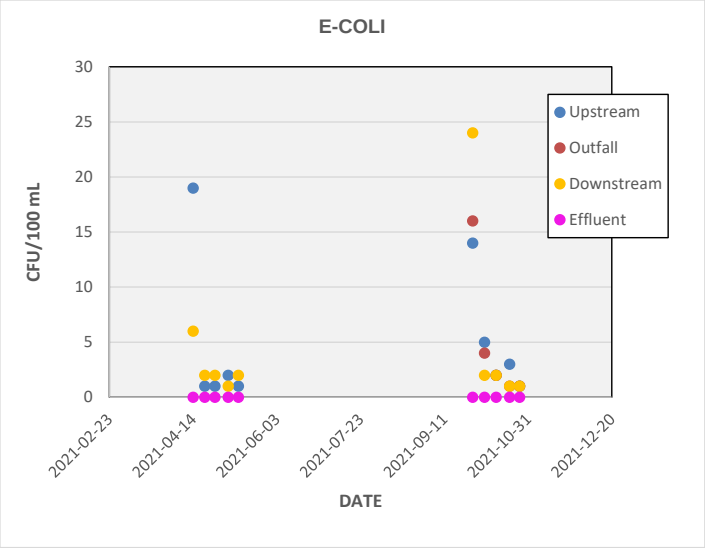
As shown on the graph below the highest Fecal coliform results at the outfall did not significantly impact the results in the downstream, which are very close to the upstream.

Figure 7a
Fecal Coliform Levels in the Columbia River and the Effluent



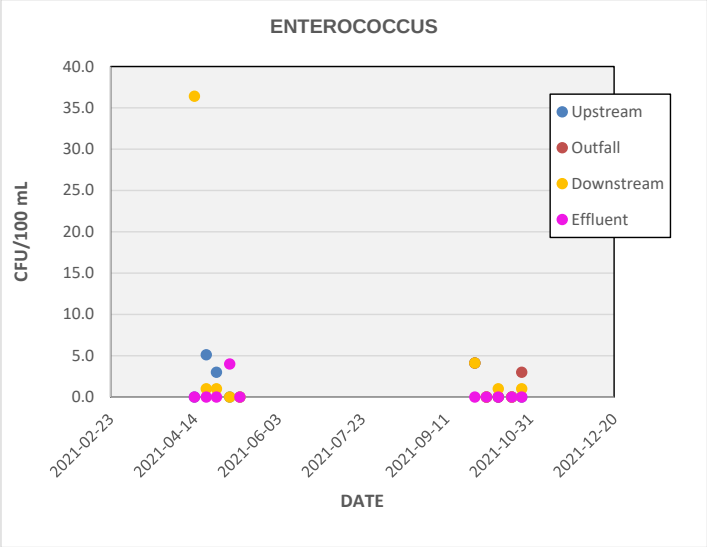
A graph below shows the highest E-coli results downstream likely due to the elevated results upstream.

Figure 7b
E.Coli Levels in the Columbia River and the Effluent



A graph below shows high levels of Enterococci downstream at the beginning of the season. There are no results available for the outfall, however, the effluent results are below the detection limit. The result downstream is not likely due to the effluent impact. The remaining results at the outfall and downstream are low.

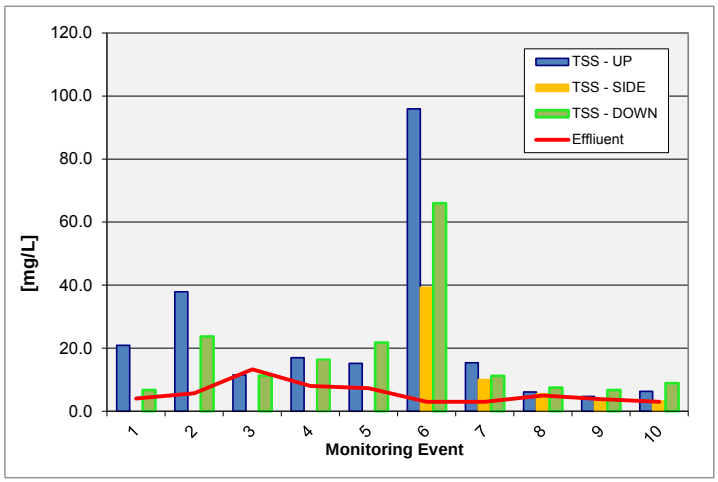
Figure 7c
Enterococci Levels in the Columbia River and the Effluent



TSS

The highest TSS levels were recorded on September 28th in the river upstream at 95.9 mg/L. TSS concentration at the side-stream was 39.3 mg/L and at the down-stream was 66.0 mg/L, while the effluent significantly lower at only 3.7 mg/L, indicating that the effluent was not likely the source of high TSS results in the river.

Figure 8
TSS Levels in the Columbia River and the Effluent

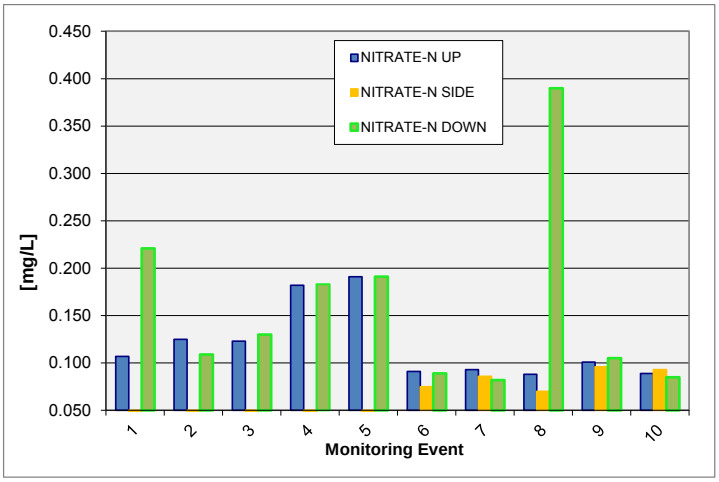


There was four instances where the down-stream results were above the up-stream results. Only once on May 11th the changes were more than 5 mg/L (B.C. Approved Water Quality Guidelines; Aquatic Life, Wildlife and Agriculture, August 2019; further BC AWQG) between the upstream and downstream values. The level of TSS in the effluent was low on May 11th and the side-stream was not tested on that day.

Ammonia-N, Nitrate-N and Nitrite-N

The ammonia-n and nitrite-n levels at the outfall were below their respective detection limits. The nitrate-n outfall levels were low with a maximum of 0.096 mg/L on October 20th. The corresponding levels in the river upstream and downstream were 0.101 and 0.105 mg/L. Note that all the downstream results were within the BC AWQG Long Term Chronic threshold at 3.0 mg/L.

Figure 9
Nitrate-N Levels in the Columbia River



No significant changes were observed in ***pH*** or ***phosphorus*** concentrations during any of the river sample periods. pH results in the downstream samples followed closely those in the upstream with no guideline (6.5 – 9.0) exceedance.

All the ortho-phosphorus values at the up-stream, outfall and downstream were below the respective detection limits. Total phosphorus was the highest downstream on April 21st at 0.0.061 mg/L with the upstream values at 0.013 and effluent at 0.212 mg/L. The outfall was not sampled on that day.

Overall, the analysed concentrations remained constant between the upstream (UP) sampling zone and the downstream (DN) sampling zone. The data indicates that the plant's effluent does not appear to have any adverse effect on background nutrient concentrations in the Columbia River.

6.0 OVERVIEW OF EFFLUENT RESULTS

This section provides data and analysis for the effluent (treated) samples and plant flows for 2021.

A total of 18 effluent samples were collected and analysed. Table 6 summarizes effluent test results for 2021.

Table 6
2021 Effluent Results

Date Sampled	2021 Effluent Results Summary												
	Flow	Temp	Field pH	NH4-N	BOD	P-OP04	Coliforms Fecal	E.Coli	Total P	TSS	NO_3-N	NO_2-N	Enterococci
yyyy/mm/dd	m^3/d	C		mg/L	mg/L	mg/L	cfu/100ml	cfu/100ml	mg/L	mg/L	mg/L	mg/L	cfu/100ml
2021-01-12	150	-3.0	-	-	3.0	0.171	1.0	-	0.336	5.4	-	-	-
2021-02-16	175	-15.0	-	-	7.6	0.813	54	-	1.120	9.2	-	-	-
2021-04-06	176	-6.0	-	-	2.0	0.169	1	-	0.284	5.4	-	-	-
2021-04-14	110	-1.0	6.8	0.060	2.2	0.061	1.0	1.0	0.202	3.5	13	0.050	1
2021-04-21	108	-2.0	6.8	0.082	2.0	0.137	1.0	1.0	0.212	3.0	9.0	0.016	1
2021-04-27	107	5.0	6.7	0.050	2.6	0.157	1.0	1.0	0.290	5.9	6.3	0.018	1
2021-05-05	97	2.0	7.2	0.420	2.0	0.112	1.0	1.0	0.337	8.4	4.3	0.033	4
2021-05-11	78	13.0	6.8	0.190	2.0	0.120	1.0	1.0	0.257	4.8	8.2	0.018	1
2021-06-29	97	28.0	-	0.059	2.0	0.492	1.0	1.0	0.540	3.0	5.7	0.013	-
2021-08-05	139	12.0	-	-	2.0	0.039	24	-	0.467	3.0	-	-	-
2021-08-25	159	6.0	-	0.052	2.0	0.464	1.0	1.0	0.550	3.0	-	-	-
2021-09-28	110	4.0	6.8	0.171	2.0	0.426	1.0	1.0	0.519	3.7	10.3	0.018	1
2021-10-05	101	3.0	6.8	0.630	2.0	0.411	1	1.0	0.495	3.0	17.4	0.090	1
2021-10-12	86	-5.0	6.8	4.300	2.0	0.564	1.0	1.0	0.643	3.0	11.4	0.033	1
2021-10-20	71	4.0	6.8	0.136	2.0	0.251	1.0	1.0	0.328	3.0	15.2	0.047	1
2021-10-26	85	4.0	6.8	0.050	2.0	0.226	1.0	1.0	0.323	3.3	13.8	0.010	1
2021-11-23	80	-1.0	-	0.050	2.0	0.091	400	1.0	0.207	4.5	-	-	-
2021-12-14	114	-7.0	-	-	2.9	0.191	1.0	1.0	0.300	4.3	-	-	-
# Samples	18	18	10	13	18	18	18	14	18	18	10	10	10
Average	114	2.3	6.8	0.597	2.5	0.263	29	1.0	0.405	4.4	10.1	0.031	1.3
High	176	28.0	7.20	4.300	7.6	0.813	400	1.0	1.12	9.2	17.4	0.09	4.1
Low	71	-15.0	6.70	0.050	2	0.039	1	1.0	0.20	3.0	4.3	0.01	1.0
Limit	300	N/A	N/A	N/A	45	0.5	200	77	1	45	N/A	N/A	20
# Over Limit	0	N/A	N/A	N/A	0	2	1	0	1	0	N/A	N/A	0

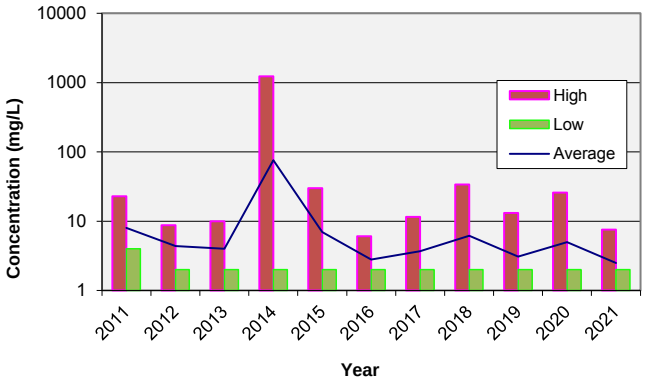
1. Shaded squares show tests reported at less that the stated value, for calculations these are listed as equal to the value stated, ie; <0.05 is assumed to be 0.05
2. Geometric mean is used for coliform results

6.1 RESULTS ANALYSIS

Effluent ***ammonia-n*** concentrations were generally low throughout the year with the highest level at 4.3 mg/L on October 12th, 2021. The results for ammonia-nitrogen were comparable or lower than to those in previous years. The levels at all three locations at the river were below laboratory detection limits.

The average ***BOD*** in the effluent was low at 2.5 mg/L, which is similar to the previous years. The highest BOD results were recorded in the effluent on February 16th, 2021 at 7.6 mg/L, however, BOD was below the MSR limits for all the samples.

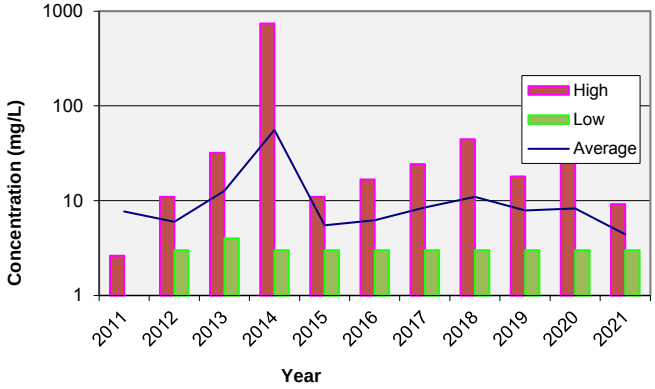
Figure 10
2021 BOD Results in Effluent



.

TSS results averaged at 4.4 mg/L with a maximum concentration of 9.2 mg/L, both which were similar to the results during the previous years. TSS was below the MSR limits for all the samples.

Figure 11
2021 TSS Results in Effluent

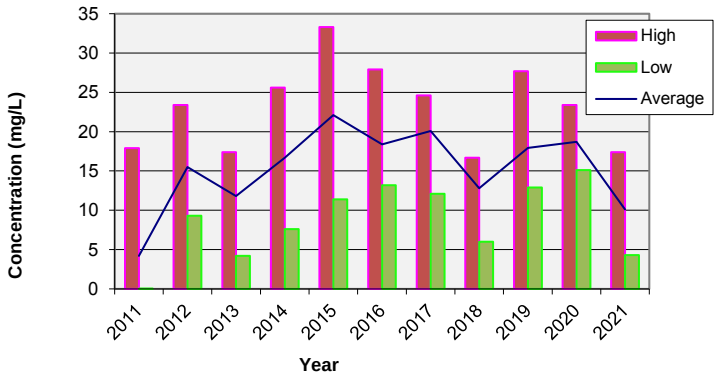


Nitrate-N averaged in the effluent at 10.1 mg/L with a maximum concentration at 17.4 mg/L on October 5th, 2021. As shown on the graph below the average and maximum values were lower than most years and similar to 2013 and 2018 levels.

Nitrite-N averaged in the effluent at 0.031 mg/L with a maximum concentration at 0.09 mg/L. The 2021 results were similar to the previous years.

Note that nitrate-n levels in the river downstream were similar to the upstream or the side stream values. All nitrite-n values in the river downstream were below the detection limit.

Figure 12
2021 NO_3-N Results in Effluent



Fecal Coliforms and E-coli
Majority of the results for fecal coliforms were below the detection limits with the exception of elevated results on February 16th, August 5th, and November 23rd, 2021. The November result exceeded the MSR limits.

All E-coli test results were below the detection limits on the day of the testing and, therefore, below the MSR limits.

Enterococci
All but one of the results were at or below their respective detection limits and, all the results were below the MSR limit.

Phosphorus and Ortho-phosphorus
Two out of 18 samples for ortho-phosphorus and one for total phosphorus exceeded the MSR discharge limits.

The 2021 average for total phosphorus was 0.405 mg/L which was lower than previous years. The 2020 average for total phosphorus was 0.483 mg/L, 0.506 mg/L in 2019, 7.55 mg/L in 2018, 1.20 mg/L in 2017, 1.07 mg/L in 2016, 2.77 mg/L in 2015, 2.43 mg/L in 2014, 1.65 mg/L in 2013 and 0.97 mg/L in 2012. (However, note that 2018 average phosphorus value would be 0.61 mg/L if the December 27th result was not considered; this high results could have been due to a sampling error).

The 2020 average for ortho-phosphorus was 0.263 mg/L which is similar to 2020 at 0.26 mg/L and 2019 at 0.277 mg/L and significantly lower than in 2018 at 0.485 mg/L or 0.91 mg/L in 2017, 0.88 mg/L in 2016, 2.37 mg/L in 2015, 2.18 mg/L in 2014, 1.26 mg/L in 2013 and 0.67 mg/L in 2012.

One result for ortho-phosphorus and one for phosphorus exceeded the MSR limit in 2020. Two results for ortho-phosphorus and one for phosphorus exceeded the MSR limit in 2019. Six results for ortho-phosphorus and four results for phosphorus exceeded the MSR limits in 2018. Twelve samples out of sixteen for ortho phosphorus and eleven out of sixteen for total phosphorus were above MSR discharge limits in 2017. Ten samples out of fourteen for ortho phosphorus and six out of fourteen for total phosphorus were over the limits in 2016. Ten samples out of ten for ortho phosphorus and nine out of ten samples for total phosphorus were over the limits in 2015. Ten samples for ortho phosphorus and eight samples for total phosphours were over the limits in 2014. Nine samples for ortho phosphorus and seven samples for total phosphorus were over the limits in 2013 and five samples for total and ortho phosphorus were over the limits in 2012. Only one sample for total

phosphorus was over the limit in 2011. In 2009 and 2010, there were no exceedances for total phosphorus or ortho phosphorus. Phosphorus is further discussed in Section 11. Phosphorus levels are under review and KHMUC will continue to modify and adjust dosing of ClearPac until all the test results show levels within the allowable limits.

The bioassay toxicity testing was completed in 2020 as it is to be done every 3 years. The most recent testing showed that plant effluent was non-toxic. The results of the 2020 tests are shown below in Table 7.

Table 7
Toxicity Test Results

Sample Date	Result
2020-10-15	Pass

6.2 COMPLIANCE SUMMARY

Table 8 summarizes the number of days that samples exceeded MSR effluent requirements.

Table 8

2020 MSR Parameter Compliance

Parameter	Unit	MSR Limit	No. Of Samples	Average Value	Max. Value	Samples Over Limit
Flow	m^3/day	300	365	122	263	0
BOD_5	mg/l	45	18	2.5	7.6	0
TSS	mg/l	45	18	4.4	9.2	0
Total Phosphorus	mg/l	1	18	0.405	1.12	1*
Ortho Phosphate	mg/l	0.5	18	0.263	0.813	2*
Fecal Coliforms	CFU/100ml	200	18	29	400	1*
Enterococci	CFU/100ml	20	10	<1	4	0
E.Coli	CFU/100ml	77	14	<1	<1	0
96 hr LC_{50} Bioassay**	/	Non-toxic	1	Pass	Pass	0

**This year the test results indicated that out of all the samples collected there were 2 exceedances for ortho-phosphorus and 1 exceedance for total phosphorus; 1 fecal coliform results exceed the limits.*

***The most recent test was done in 2020.*

7.0 SLUDGE PRODUCTION AND DISPOSAL

This section provides data regarding the disposal of bio-solids (sludge) from the treatment facility in 2021.

Waste activated sludge used to be stored in a thickener and removed by a vacuum tanker. In the fall of 2014, a 12 unit Teknofanghi (Model Number 12BCAVPK) supplied by Drycake was installed and was commissioned in mid-December. All solids were transported to the Crowsnest/Pincher Creek Landfill site.

Hauling data for pumped solids are in Table 9.

Table 9

2021 Pumped Solids Data

Month	Vol. Pumped (m^3)
January	212
February	192
March	186
April	150
May	45
June	57
July	60
August	125
September	116
October	32
November	162
December	104
Total	**1441**

Volumes of sludge are currently being estimated by counting the quantity of bags produced. Long range plans call for the installation of a flow meter to better measure the quantity of sludge bagged.

Please note, the calculations for bagged solids are being reviewed to ensure consistency.

8.0 PLANT IMPROVEMENTS & BYPASS EVENTS

The resort is committed to improvements to the phosphorus monitoring program and to implement further monitoring and increase dosage of clearpac. The resort will continue to address the phosphorus concern and bring phosphorus levels down.

KHMUC has engaged an engineer and is currently undertaking an assessment to determine the plant's capacity to accommodate additional growth and recommend plant improvements.

KHMUC will be looking into purchasing a new flow meter for the sludge and they will calibrate their flow meter for the effluent.

There were no bypass events for 2021.

9.0 PHOSPHORUS REMOVAL

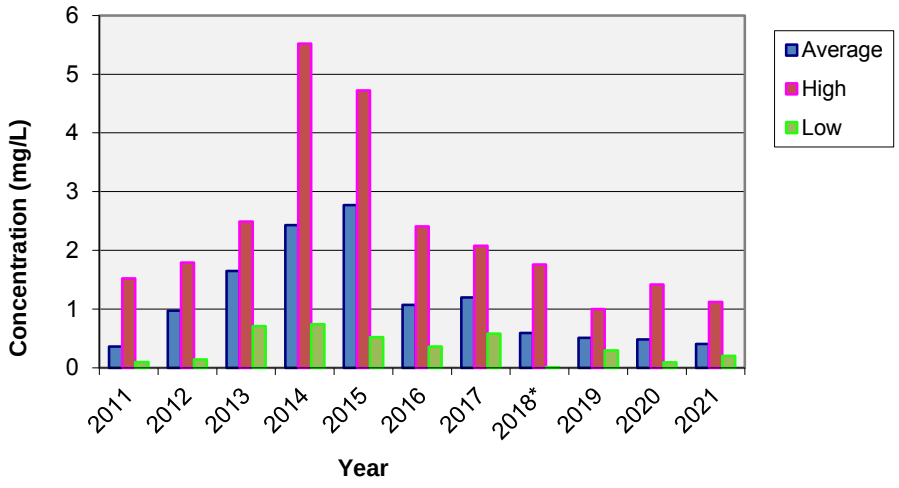
This section describes the phosphorus monitoring and removal strategy being implemented to bring the plant into compliance with effluent limits.

During 2021 total ***phosphorus*** varied between 0.20 and 1.12 mg/L with an average value at 0.405 mg/L.

As seen in the graphs below, the levels of phosphorus were increasing from 2011 until 2015 (average at 2.77 mg/L) but there has been a continuous decrease since 2015. The values in 2021 were low and similar to the previous year at an average value of 0.405 mg/L.

Note that on December 27th, 2018 high phosphorus value was tested resulting in very high yearly average at 7.55 mg/L. This value was likely a sampling error; without the high result being included, the 2018 yearly average would be 0.61 mg/L which is consistent with historical levels as shown on the following graph.

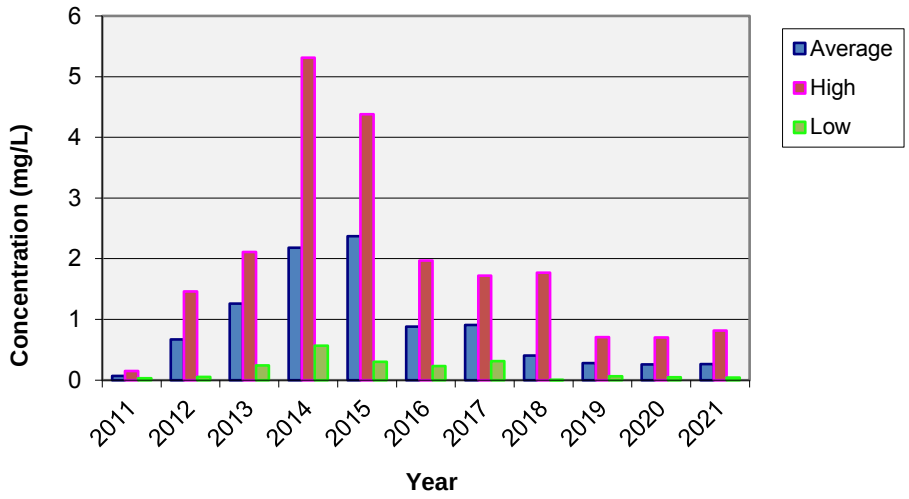
Figure 13
Total Phosphorus Levels 2011-2021



During 2021 ***ortho-phosphorus*** varied between 0.039 and 0.813 mg/L with an average value at 0.263 mg/L, which was very similar to 2020 at average value of 0.26 mg/L.

The historical levels of ortho-phosphorus were increasing until they peaked in 2014/2015 (average concentration at 2.18 and 2.37 mg/L), there has been a decreasing trend since.

Figure 14
Ortho-Phosphorus Levels 2011-2021



The days over limit for both phophorus and othro-phosphorus were increasing from 2011 to 2014 and then were fairly consistent for several years (10 days over limit for 2014, 2015 and 2016), increased again in 2017 at 12 days over the limit and then decreased to 6 days over the limit in 2018. The days over limit for total phosphorus increased from 2011 until 2015, decreased in 2016, increased to 11 days over the limit in 2017 and decreased again to four days over the limit in 2018. There was a significant decrease in exceedances in 2019, 2020 and 2021 with only two days over limit for ortho-phosphorus and one day over limit for total phosphorus in 2021.

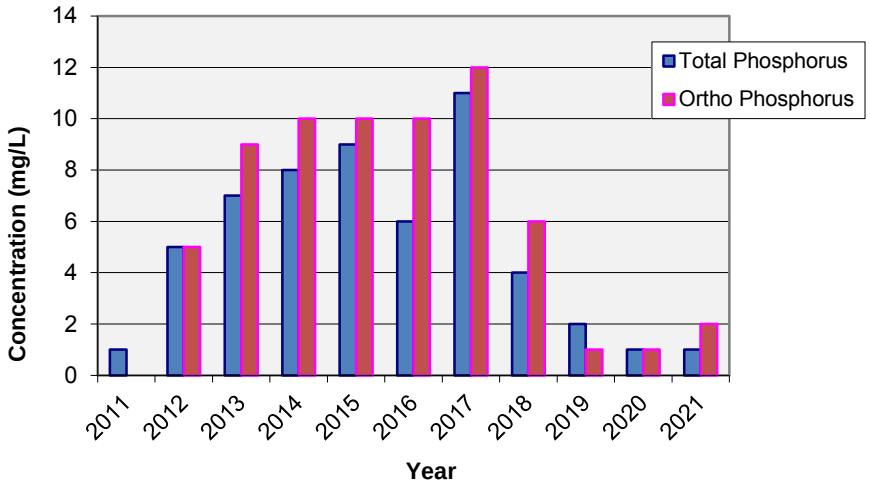
In the fall of 2015 KHMUC began injecting alum into the effluent to reduce the phosphorus levels in the plant effluent. There was a noticeable drop in the levels in the final EMS test run in 2015.

Beginning in December 2016, KHMUC switched to ClearPac addition in the winter months to control phosphorus. In 2020 ClearPac was used year round. Phosphorus levels were easier to control and with the lower summer flows, we found that ClearPac was a superior product and will likely continue with its year round use. Note that the levels in 2019, 2020, and 2021 levels have been the lowest since 2011.

Additionally, KHMUC will continue to test total phosphorus and ortho phosphorus with the monthly effluent sampling. This will help to monitor the levels on an ongoing basis and help to determine dosage levels. KHMUC has also agreed to collect a laboratory sample in first week of January going forward in order to better characterize/monitoring the effluent during the peak capacity. It is also recommended that as soon as very high results are found, samples be collected immediately and submitted for testing to ensure the levels drop below the allowable limits.

Historical limits exceedance is shown on the graph below, the 2021 exceedances for both total phosphorus and ortho-phosphorus are the lowest since 2011 indicating the current phosphorus reduction strategy has been successful.

Figure 15
Days over Limit 2011-2021



10.0 ASSESSMENT SUMMARY

The total effluent flow recorded for 2021 was 44,546 m^3 with an average of 122 m^3/day and a maximum peak flow at 263 m^3/day. There were no days where the flow was over the allowable limit.

Effluent ***ammonia-n*** concentrations were generally low throughout the year with the highest level at 4.3 mg/L on October 12th, 2021. The results for ammonia-nitrogen were comparable or lower than to those in previous years. The levels at all three locations at the river were below laboratory detection limits.

The average ***BOD*** in the effluent was low at 2.5 mg/L, which is similar to the previous years. The highest BOD results were recorded in the effluent on February 16th, 2021 at 7.6 mg/L, however, BOD was below the MSR limits for all the samples.

TSS results averaged at 4.4 mg/L with a maximum concentration of 9.2 mg/L, both which were similar to the results during the previous years. TSS was below the MSR limits for all the samples.

Nitrate-N averaged in the effluent at 10.1 mg/L with a maximum concentration at 17.4 mg/L on October 5th, 2021. As shown on the graph below the average and maximum values were lower than most years and similar to 2013 and 2018 levels.

Nitrite-N averaged in the effluent at 0.031 mg/L with a maximum concentration at 0.09 mg/L. The 2021 results were similar to previous years.

Note that nitrate-n levels in the river downstream were similar to the upstream or the side stream values. All nitrite-n values in the river downstream were below the detection limit.

Fecal Coliforms and E-coli
Majority of the results for fecal coliforms were below the detection limits with the exception of elevated results on February 16th, August 5th, and November 23rd. The November result exceeded the MSR limits.

All E-coli test results were below the detection limits on the day of the testing and, therefore, below the MSR limits.

Enterococci
All but one of the results were at or below their respective detection limits and, all the results were below the MSR limit.

Phosphorus and Ortho-phosphorus
During 2021 total ***phosphorus*** varied between 0.20 and 1.12 mg/L with an average value at 0.405 mg/L. The levels of phosphorus were increasing from 2011 until 2015 (average at 2.77 mg/L) and there had been a continuous decrease since 2015.

During 2021 ***ortho-phosphorus*** varied between 0.039 and 0.813 mg/L with an average value at 0.263 mg/L, which was very similar to 2020 at average value of 0.26 mg/L. The historical levels of ortho-phosphorus were increasing until they peaked in 2014/2015 (average concentration at 2.18 and 2.37 mg/L), there has been a decreasing trend since.

The days over limit for total phosphorus increased from 2011 until 2015, decreased in 2016, increased to 11 days over the limit in 2017 and decreased again to four days over the limit in 2018. There was a significant decrease in exceedances in 2019, 2020, and 2021 with only two days over limit for ortho-phosphorus and one day over limit for total phosphorus in 2021.

In the fall of 2015 KHMUC began injecting alum into the effluent to reduce the phosphorus levels in the plant effluent. There was a noticeable drop in the levels in the final EMS test run in 2015. Beginning in December 2016, KHMUC switched to ClearPac addition in the winter months to control phosphorus. In 2020 ClearPac was used year round. Phosphorus levels are under review and KHMUC will continue to modify and adjust dosing of ClearPac until all the test results show levels within the allowable limits. Note that the levels in 2020 have been the lowest since 2011.

KHMUC will continue to test total phosphorus and ortho-phosphorus with the monthly effluent sampling. This will help to monitor the levels on an ongoing basis and help to determine dosage levels.

A small 26 unit subdivision was proposed and construction started in 2014. Out of the 26 units approved, Phase 1 (8 units) and Phase 2 (8 units) are now completed. Phase 3 (10 units) is currently constructed and waiting for subdivision approval. Flows will be monitored closely and additional improvements may be required as growth at the resort continues.

11.0 AUTHORITIZATION AND CLOSING

This report, titled *2021 Sewage Treatment Plant Annual Report,* was prepared for KHMUC by IQWater Inc. The material in this report reflects the best judgement of IQWater Inc. based on the information available at the time of preparation. Any use that a third party makes of this report, or reliance on or decisions based on it, is the responsibility of the third party. IQWater Inc. accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions taken based on this report.

IQWATER INC.

PROFESSIONAL
PROVINCE OF
J. ZVERINA
30366
BRITISH COLUMBIA
ENGINEER

Jana Zverina, M.Sc., P. Eng. 27/04/2022

IQWater Inc.
Permit #1003055

27/04/2022

iqw/jobs/W2020-020.2021

12.0 REFERENCES

American Public Health Association, American Water Works Association and the Water Environment Federation: Standard Methods for Examination of Water and Wastewater

American Public Health Association, American Water Works Association and Water Environment Federation. Standard Methods for the Examination of Water and Wastewater. 23rd Edition

BC Environmental Management Act, Municipal Wastewater Regulation B.C. Reg. 87/2012, lasts Amended April 1st, 2018 by B.C. Reg. 46/2018

BC Ministry of Health, Health Protection Branch, Sewerage System Standard Practice Manual, Version 3, September 2014

BC Ministry of Environment & Climate Change Strategy, British Columbia Approved Water Quality Guidelines; Aquatic Life, Wildlife and Agriculture, August 2019

Canadian Council of Ministers of the Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life

Canadian Council of Ministers of the Environment. Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses

Canadian Council of Ministers of the Environment. Protocols Manual for Water Quality Sampling in Canada. 2011

Health Canada.Guidelines for Canadian Drinking Water Quality. June 2019

13. TERMS AND CONDITIONS

1. Our reports are prepared to specifically fulfil our Clients' requirements. The conclusions are based on the time limitations and scope of the services provided and information obtained from those services. The Inspector certifies that he/she has no present or contemplated future interest in the inspected property.

2. IQWATER INC. will provide skill, care and diligence in accordance with generally accepted engineering practices and procedures at the time and location in which the services are performed. With time, conditions may change and the interpretation of the findings may be altered.

3. IQWATER INC. cannot assume responsibility for any deficiency, misstatement or inaccuracy in the report resulting from the omissions or misrepresentations of persons providing information to use in the report. Any sketch appearing in or attached to the inspection report, or any statement of dimensions, capacities, quantities, or distances, are approximate and are included to assist the reader in visualizing the property.

4. The contents of the report are for the sole use of the Client. The report is the property of the Client and copies shall only be made by the Client or with the approval of the Client. IQWATER INC. is not responsible for any use of information contained in the report, or any reliance or decisions made based on it by an unauthorized third party.

5. This report represents the conditions investigated and sampled at the time of study. Some of the services performed were based on visual observations of the site and the areas surrounding the site, and our opinion cannot be extended to areas that were unavailable for direct observation.

6. The Client is responsible for all permits, authorization, or consents and giving any required notices that enable EDI to perform the services required.

IQWATER INC. may use any contractor with appropriate recognized professional status or with special skills or knowledge to assist in performing the services, at the expense of the client.

7. Any documents provided to IQWATER INC. from the Client will remain the property of the Client, and upon written request IQWATER INC. will return such documents as soon as possible. Any information or documents obtained by IQWATER INC. while performing the services requested will remain the property of IQWATER INC.

8. IQWATER INC. and the client will take reasonable care to prevent any disclosure of the reports or documents, or any information obtained or contained in the reports prepared by IQWATER INC., unless it is to the persons who require such access to the information in order to discharge their responsibilities to IQWATER INC. or as required by law.

9. This report is not intended to have any direct effect on the value of the property, but rather to provide information on apparent site conditions. The Client acknowledges that IQWATER INC. is not making any recommendations with respect to the purchase, sale, investment, or development of the property; and that all decisions associated therewith are the sole responsibility and liability of the Client. Further, IQWATER INC. assumes no responsibility for matters of legal nature affection the property or title thereto.

10. Limits of Liability – To the fullest extent permitted by law, and notwithstanding any other provision of the Service Agreement between the Client and IQWATER INC., total liability, in the aggregate, of IQWATER INC. and the IQWATER INC. officers, directors, partners, employees and sub-consultants, and any of them, to the Client and anyone claiming by or through the Client, for any and all claims, losses, costs or damages, including attorneys' fees and costs and expert-witness fees and costs of nay nature whatsoever or claims expenses resulting from or in any way related to the Project shall not exceed the limit of IQWATER's insurance in effect at the time of this report.

11. In accepting and using this report the Client agrees to indemnify and hold harmless IQWATER INC., its officers, partners, employees and consultant (collectively IQWATER INC.) from and against any and all claims, suits, demands, liabilities, losses, damages or costs, including reasonable attorney's fees and defence costs arising out of or in any way connected to the findings and results of the proposed work, whether liability arises under breach of contract or warranty, tort, including negligence, strict liability or statutory liability or any other cause of action.

12. IQWATER INC. will exercise due diligence, however, IQWATER INC. will not assume any liability for any damage to any facilities, utilities, ground or above-ground surface infrastructure within or outside the subject property boundary since any sampling if needed is intrusive in nature and damage may have to be done to obtain samples.

13. IQWATER INC. will not assume any responsibility for any actual or perceived loss of business to owner's operations as a result of the work proposed herein.

14. The governing law for this contract will be the Alberta law.

15. All claims of costs, losses, damages, etc. have to be immediately forward to IQWATER INC. insurance

APPENDIX

Table 10 - Kicking Horse Mountain Resort Estimated Sewage Generation (m^3/day)

Current Development	Flow* (l/unit/day)	Units	2011 Generation (m3/day)	2018 Generation (m3/day)	Flow* (l/unit/day)	Units	2019 Generation (m3/day)	2020 Generation (m3/day)	Units	2021 Generation (m3/day)	2022 Generation (m3/day)
Single Family	318	972	309.1	309.1	1300	98	127.4	127.4	98	127.4	127.4
Duplexes & Triplexes	318	see single family	see single family	see single family	1000	112	112.0	112.0	116	116.0	116.0
Lodges (EBU)	318	296	94.1	94.1	700	296	207.2	207.2	296	207.2	207.2
Condominiums	318	952	302.7	302.7	1000	155	155.0	155.0	155	155.0	155.0
	Subtotal	**2220**	**706.0**	**706.0**	**Subtotal**	**661**	**601.6**	**601.6**	**665**	**605.6**	**605.6**

Commercial	Flow* (l/unit/day)	Unit	2011 Generation (m3/day)	2018 Generation (m3/day)	Flow* (l/unit/day)	Units	2019 Generation (m3/day)	2020 Generation (m3/day)	Units	2021 Generation (m3/day)	2022 Generation (m3/day)
Administration	75	20	0	0.0	57	20	0.0	1.1	20	1.1	1.1
Other (day care, shops etc.)	20	5	0	0.0	20	5	0	0.1	5	0.1	0.1
	Subtotal	**5**	**0**	**0.0**	**Subtotal**	**5**	**0.0**	**1.2**	**5**	**1.2**	**1.2**

Dining Facilites/Bars	Flow* (l/m^2/day)	Area (m2)	2011 Generation (m3/day)	2018 Generation (m3/day)	Flow* (l/m^2/day)	Area (m2)	2019 Generation (m3/day)	2020 Generation (m3/day)	Area (m2)	2021 Generation (m3/day)	2022 Generation (m3/day)
Peaks Grill	97	256	0	0.0	97	256	0.0	24.8	256	24.8	24.8
Double Black	97	190	0	0.0	97	190	0.0	18.4	190	18.4	18.4
Whitetooth Grill	97	300	0	0.0	97	300	0.0	29.1	300	29.1	29.1
Copperhorse Steak House	97	110	0	0.0	97	110	0.0	10.7	110	10.7	10.7
Winston	97	220	0	0.0	97	220	0.0	21.3	220	21.3	21.3
	Subtotal	**1076**	**0**	**0.0**	**Subtotal**	**1076**	**0.0**	**104.4**	**1076**	**104.4**	**104.4**

Daily Wastewater Flow (m3/day)*	705.5	705.5	705.5	707.2	711.2	711.2
Corrected Daily Peak Flow Projections**	167 (actual)	262 (actual)	265 (actual)	247 (actual)	263	213 (projected)

*Estimated Wastewater Flows - Residential and Non-residential Daily Flows

Note that the occupancy significantly varies throughout the year with near full occupancy only during the ski season and during the long weekends.

Scale: N.T.S.

Kicking Horse - Resort North

April 2022

Resorts of the Canadian Rockies Inc.

Scale: N.T.S.

Kicking Horse - Resort South

Apr 2022

Resorts of the Canadian Rockies Inc.

BRITISH COLUMBIA

2010 VANCOUVER

April 28, 2005

File: RE-15474

REGISTERED MAIL

Kicking Horse Mountain Sanitary Sewer Services Ltd.
2100- 1075 W. Georgia Street
Vancouver, BC V6E 3G2

Attn: Arijan van Vuure

Dear Mr. van Vuure:

Re: Letter of Transmittal for Registration under the *Municipal Sewage Regulation* of the discharge to Columbia River from the Kicking Horse Mountain Resort located at Unsurveyed Crown land in the vicinity of Section 9, together with those parts of the Northwest ¼ of Section 14 and 15, all of Township 27, R22 West of 5th Meridian, and Unsurveyed Crown Foreshore, being part of the Columbia River, Kootenay District

Enclosed herewith is a copy of the registration letter RE-15474 in the name of the Kicking Horse Mountain Sanitary Sewer Services Ltd. Your attention is respectfully directed to the conditions outlined in the registration letter.

In addition to the registration letter and the terms and conditions of the Environmental Impact Study, dated November 20, 2000, you are directed to comply with the following requirements:

A. Outfall

The outfall shall consist of a permanent outfall with diffusers.

The permittee shall have the outfall inspected once each five years by independent qualified personnel to ensure it is in good working condition. An inspection report shall be submitted to the Regional Manager, Environmental Protection within 30 days after the inspection date. The first report shall be submitted by January 2006.

. . . 2

Ministry of Water, Land and Air Protection

Environmental Protection
Kootenay Region

Mailing/Location Address:
205 Industrial Rd. G
Cranbrook, BC V1C 7G5

Telephone: (250) 489-8540
Facsimile: (250) 489-8506
http://www.gov.bc.ca/
http://www.gov.bc.ca/wlap/

B. Environmental Monitoring

In accordance with Part 7, Section 26 and 27 and applicable conditions of Schedule 6 of the *Regulation*, the discharger shall undertake the discharge and receiving environment monitoring programs established by Masse & Miller Consulting Ltd., in their letter dated February 17, 2005.

The person collecting samples shall be properly trained in sample collection and handling.

C. Reporting non-compliances

The discharger is required to report instances of non-compliance within 15 days of the date of discovery. The discharger is required to provide a report of actions taken to remediate non-compliance within 30 days from the start of non-compliance.

D. Financial Security requirements

The discharger is required to notify the Ministry and to set up either a capital replacement fund or financial security or assurance plan when the residential development content, as defined by the *regulation*, exceeds 10%.

The administration of this registration, including periodic inspections and audits shall be carried out by staff from our sub-regional office located at 205 Industrial Road G, Cranbrook, BC, V1C 7G5. Any required information may be submitted to the Regional Manager, Environmental Protection at this address in lieu of the Director.

Yours truly,

Kathy Eichenberger, P.Eng.
for Director, *Environmental Management Act*
Kootenay and Okanagan Regions

AMT/KE:lkm

cc: Environment Canada
Kicking Horse Mountain Sanitary Sewer Services Ltd., 1500 Kicking Horse Trail, PO Box 839, Golden, BC V0A 1H0, Attn: John Urie
Ecofluid, #101-334 E. Kent Ave. South, Vancouver, BC V5X 4N5 Attn: Rolf Loker, VP & Manager of Operations
Ana C. May Tsui, MWLAP-Environment Protection, Cranbrook

BRITISH COLUMBIA

April 28, 2005

File: RE-15474

REGISTERED MAIL

Kicking Horse Mountain Sanitary Sewer Services Ltd.
2100-1075 W. Georgia Street
Vancouver, BC V6E 3G2

Attn: Arijan van Vuure

Dear Mr. van Vuure:

Re: Registration under the Municipal Sewage Regulation of the discharge to Columbia River from the Kicking Horse Mountain Resort located at Unsurveyed Crown land in the vicinity of Section 9, together with those parts of the Northwest ¼ of Section 14 and 15, all of Township 27, R22 West of 5th Meridian, and Unsurveyed Crown Foreshore, being part of the Columbia River, Kootenay District

Receipt of the completed Municipal Sewage Regulation registration form for the subject discharge is acknowledged. Pursuant to Part 2, section 3 of the Municipal Sewage Regulation, the effective date of registration of this discharge is November 24, 2000. The ministry file number for this discharge is RE-15474. Please indicate this number on all future correspondence regarding this discharge.

An annual registration fee will be determined according to the Waste Management Permit Fees Regulation and you will be receiving an annual invoice from the ministry for payment of this fee. Payment of all fees due is necessary to comply with the Municipal Sewage Regulation. Fees will be calculated using a maximum daily effluent discharge of 300 m^3/day, a maximum BOD_5 of 45 mg/L and a maximum TSS of 45 mg/L.

Acceptance of this registration under the Regulation is based on the following documents:

1. Kicking Horse Mountain Resort Ltd. Partnership, Registration Form dated November 24, 2000 and submitted by McElhanney Consulting Services Ltd.
2. Environmental Impact Study entitled Kicking Horse Mountain Resort – Environmental Impact Study for Sewage Treatment and Disposal, dated November 20, 2000, prepared by Western BioResources Consulting Ltd. and signed by Christopher Bullock, P.Eng.

. . . 2

Ministry of Water, Land and Air Protection

Environmental Protection
Kootenay and Okanagan Regions

Mailing/Location Address:
401 - 333 Victoria Street
Nelson BC V1L 4K3

Telephone: 250 354-6355
Facsimile: 250 354-6332

Pursuant to Part 2, Section 3 (2) (k) of the Municipal Sewage Regulation, more stringent standards or requirements may be specified by the Director. Accordingly, in addition to the terms and conditions of the regulation, for this discharge the following standards and requirements apply. The following information related to RE-15474 must be submitted within 30 days:

1. Tables that summarize the Discharge Monitoring Program and the Environment Monitoring Sampling Programs. Tables should indicate sampling sites/locations and short description of the locations, parameters, sampling frequency, reporting frequency and standards and criteria to be met.
2. GPS coordinates for all sampling sites. Specify in decimal degrees to 4 decimal places using NAD83 Datum.

The discharger shall **report monitoring data** in accordance with Part 7, Section 28 of the *Regulation* and in accordance with the following requirements. Monitoring data shall be submitted to the Ministry (EMS) database quarterly within 30 days of the end of each quarter. Instances of non-compliances are to be notified and reported to the Manager in writing, with an explanation and action taken to remediate non-compliance.

In accordance with Part 7, Section 28 (3) of the *Regulation*, the discharger shall submit an annual report and do so in accordance with the annual report requirements of Section 28 of the *Regulation*. The annual report shall be prepared by a suitably qualified professional and shall include the following:

- Tabulated results of the Effluent and Environmental Monitoring Data with standards and criteria
- Interpretation of the monitoring data
- The total volume discharged over the year
- Total sludge wasted over the year and its final destination
- The state of compliance of the treatment facility/process
- Indicate the percentage of residential development, as defined in the *Regulation*, that contributes to the effluent discharge
- Any additional relevant information the discharger wishes to provide

The annual report shall contain recommendations of a qualified professional regarding changes (additions, deletions, modifications) to the monitoring program. Electronic and hard copies of the annual report submission is due within 120 days of the end of each calendar year.

This decision to specify more stringent standards or requirements under the Municipal Sewage Regulation may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given, in accordance with the practices, procedures and forms prescribed by regulation under the *Environment Management Act*. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

. . .3

The ministry uses a reference number to track monitoring data associated with discharges. The following are the EMS site numbers assigned to the monitoring sites listed above. These numbers are to be used when entering data directly into the Ministry EMS database in accordance with Part 7, Section 28 (2) of the *Regulation*.

SAMPLING SITE/LOCATION	EMS NUMBER	DESCRIPTION
Columbia River UP IDZ	E256694	Upstream at the bridge
Columbia River 100m DN, main stem	E256695	~ 100 m downstream of outfall, at main stem from island
Columbia River 100m DN, side channel	E258897	~ 100 m downstream of outfall, at side channel
Columbia River 200m DN, east shore	E258898	~ 200 m downstream of outfall, from east shore
Columbia River 1km DN, west shore	E258899	~ 1 km downstream of outfall, downstream of island from west shore
Plant Effluent	E256696	Sample prior to the discharge outfall

For information on the use of EMS and the electronic data transfer utility, please refer to the following website: http://wlapwww.gov.bc.ca/epd/ems_edt.html

Your attention is respectfully directed to the terms and conditions outlined in the Municipal Sewage Regulation. Compliance with all the terms and conditions of the regulation is required. Contravention of any of the conditions of the regulation is a violation of the *Environmental Management Act* and may result in prosecution.

Registration under the Municipal Sewage Regulation should not be construed as a representation that the works are adequately designed or will satisfy all the requirements of the regulation. It is the responsibility of the discharger to ensure that the works are adequately designed, constructed and operated and that the discharge quality complies with the regulation. Registration under the regulation is without prejudice to any additional works that may be required or any additional requirements that may be specified by the Director. The Director may also issue Orders under the *Environmental Management Act*.

. . . 4

Registration under the Municipal Sewage Regulation does not authorise entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorised by the owner of such lands or works. The responsibility for obtaining such authority shall rest with the discharger. It is also the responsibility of the discharger to ensure that all activities conducted under this registration are carried out with regard to the rights of third parties and comply with other applicable legislation that may be in force. The discharger must also obtain any necessary approvals from other agencies.

Administration of the Municipal Sewage Regulation will be carried out by staff from our Sub-regional office located at 205 Industrial Road G, Cranbrook, British Columbia, V1C 7G5 (Telephone 250-489-8540). Plans, data and reports pertinent to the regulation are to be submitted to the Regional Manager, Environmental Protection, at this address. If you have any questions concerning this registration, please contact our Cranbrook Sub-Regional Office at 250-489-8540

Yours truly,

Kathy Eichenberger, P.Eng.
for Director, *Environmental Management Act*
Kootenay and Okanagan Regions

cc:	Environment Canada
	Kicking Horse Mountain Sanitary Sewer Services Ltd., 1500 Kicking Horse Trail, PO Box 839, Golden, BC V0A 1H0, Attn: John Urie
	Ecofluid, #101-334 E. Kent Ave. South, Vancouver, BC V5X 4N5 Attn: Rolf Loker, VP & Manager of Operations
	Ana C. May Tsui, MWLAP- Environmental Protection, Cranbrook

AMT/KE:lkm

JANUARY

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (mg/l)	BR2 MLSS (mg/l)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Jan	clear	-10		138054	201		5800	6100	8.4	11	1.2			439340	586154
2-Jan	snow	-6		138264	210		5900	6300	5.6	5.6	2.3			439499	586322
3-Jan	snow	-2		138447	183		5800	6400	5.6	5.6	18			439586	
4-Jan	cloud	-5		138608	161		5600	6300	5.6	5.6	1.6			439734	
5-Jan	cloud	-5		138761	153		5500	6300	5.6	5.6	1.4			439856	586873
6-Jan	snow	-5		138915	154		5500	6000	5.6	5.6	13			439980	
7-Jan	clear	-5		139063	148		5500	5900	5.6	5.6	1			440012	
8-Jan	cloud	-4		139215	152				5.6	5.6	0.9			440149	587326
9-Jan	clear	-6		139359	144		5800	5800	5.6	5.6	1			440282	
10-Jan	clear	-7		139504	145		5700	5600	5.6	5.6	0.9			440414	587734
11-Jan	cloud	-8		139688	184		5900	5600	5.6	5.6	1.3			440537	587925
12-Jan	snow	-3		139838	150				5.6	5.6	1.2			440607	588029
13-Jan	snow	-1		139980	142		5900	5600	5.6	5.6	0.9			440675	
14-Jan	clear	-6		140105	125		6000	5300	2.8	2.8	0.4			440804	
15-Jan	clear	-6		140221	116				2.8	2.8	0			440923	588524
16-Jan	clear	-8		140339	118				2.8	2.8	0			441000	588644
17-Jan	snow	-5		140460	121		5800	4800	2.8	2.8	2			441076	588761
18-Jan	clear	-4		140584	124				2.8	2.8				441237	589008
19-Jan	cloud	-5		140730	146		5500	4800	2.8	2.8	1.1			441350	
20-Jan	sun	-10		140870	140				2.8	2.8	1.8			441436	
21-Jan	sun	-10		141014	144		5300	4900	2.8	2.8	2.3			441485	
22-Jan	clear	-14		141122	108				2.8	2.8	1.4			441618	
23-Jan	clear	-13		141252	130				5.6	3.6	2.1				
24-Jan	clear	-12		141360	108		5000	5000	5.6	3.6	1.4			441847	589956
25-Jan	clear	-12		141475	115				5.6	3.6	1.4			441886	590023
26-Jan	clear	-9		141619	144		4900	4900	5.6	3.6	1.1			442077	590234
27-Jan	clear	-10		141770	151		4900	4900	5.6	3.6	1.1			442145	590419
28-Jan	clear	-4		141835	65		4700	4700	5.6	3.6	1.6			442260	
29-Jan	cloud	-7		142003	168		4900	4800	5.6	3.6	0.5			442281	
30-Jan	cloud	-6		142202	199				5.6	3.6	3.3			442447	590888
31-Jan	cloud	-3		142376	174	212	4900	5000	5.6	3.6	3.3			442258	591103
Summary	**Average**	**-7**		**Average**	**146**				**5**	**4**	**2**				
	Median	**-6**		**Max**	**210**				**5.6**	**3.6**	**1.35**				
				Total	**4523**	**212**			**151.2**	**135.8**	**69.5**			**Monthly total**	**7867**

FEBRUARY

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (mg/l)	BR2 MLSS (mg/l)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Feb	snow	-2		142454	78		4800	5400	5.6	5.6	3.3			442465	591385
2-Feb	snow	-1		142637	183				5.6	5.6	3.3				
3-Feb	sun	-5		142792	155		5200	5300	5.6	5.6	0.7			442835	591495
4-Feb	snow	-3		142961	169		5200	5300	5.6	5.6	0.9			442981	
5-Feb	snow	-6		143133	172				5.6	5.6	0.7			443105	591912
6-Feb	snow	-9		143303	170		5400	5200	5.6	5.6	1.1			443243	592126
7-Feb	cloud	-15		143461	158		5500	5200	5.6	5.6	1.5			443380	592341
8-Feb	clear	-18		143597	136		5400	5000	5.6	5.6	0.7			443431	
9-Feb	clear	-12		143772	175		5400	5000	2.8	2.8	0.8			443531	592576
10-Feb	sclear	-21		143890	118		5500	5000	2.8	2.8	0.9			443661	
11-Feb	clear	-29		144030	140				2.8	2.8	1.1			443777	
12-Feb	clear	-24		144162	132		5300	4700	2.8	2.8	1.5				
13-Feb	clear	-22		144331	169		5400	4800	2.8	2.8	3			443970	
14-Feb	clear	-16		144496	165		5300	4700	8.4	8.4	3.3			444120	
15-Feb	clear	-18		144688	192				8.4	8.4	3.3			444262	593714
16-Feb	clear	-15		144863	175		5400	5000	8.4	8.4	2.6			444391	
17-Feb	cloud	-12		145058	195		5500	5100	8.4	8.4	1.3			444521	594122
18-Feb	clear	-17		145234	176		5300	4700	8.4	8.4	2.3			444662	
19-Feb	snow	-5		145442	208				5.6	5.6	0.8			444697	
20-Feb	cloud	-8		145598	156		4900	5100	5.6	5.6	3			444853	594640
21-Feb	cloud	-7		145780	182		5200	5100	8.4	8.4	2.4			445000	
22-Feb	snow	-2		145965	185				8.4	8.4				445136	
23-Feb	snow	-3		146180	215		5300	4800	5.6	5.6	0.2			445275	
24-Feb	clear	-12		146323	143		5400	5100	5.6	5.6	0.3			445342	595413
25-Feb	cnow	-8		146491	168		5300	5000	5.6	5.6	0.6			445431	595552
26-Feb	cloud	-7		146641	150				5.6	5.6	0.3			445574	
27-Feb	clear	-6		146783	142		5200	5000	5.6	5.6	1			445710	595995
28-Feb	clear	-6		146923	140		5200	4900	5.6	5.6	0.5			445859	596230
						192									
Summary	**Average**	**-11**		**Average**	**162**	**192**			**6**	**6**	**2**				
	Median	**-8.5**		**Median**	**168.5**	**192**			**5.6**	**5.6**	**1.1**				
				Total	**4547**	**192**			**162.4**	**162.4**	**41.4**			**Monthly total**	**8239**

March

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (mg/l)	BR2 MLSS (mg/l)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Mar	clear	-3		147051	128		5100	4600	5.6	5.6	1			445952	596388
2-Mar	clear	-2		147176	125		5300	4700	5.6	5.6	0.6			446003	
3-Mar	sun	-1		147350	174		5300	4600	5.6	5.6	1.4			446188	596708
4-Mar	sun	-4		147494	144		5300	4500	5.6	5.6	1.4			446274	
5-Mar	clear	-4		147633	139				5.6	5.6	1.5			446343	
6-Mar	snow	-3		147757	124		6100	4800	5.6	5.6	2			446479	597205
7-Mar	cloud	-4		147887	130		5600	4200	5.6	5.6	1			446618	
8-Mar	clear	-6		148097	210		5500	4500	5.6	5.6	1.6			446746	597638
9-Mar	sun	-10		148269	172		5200	4300	5.6	5.6	2.1			446875	597843
10-Mar	snow	-1		148424	155		5200	4300	5.6	5.6	2.1			446904	
11-Mar	sun	-9		148579	155		5100	4200	5.6	5.6	1			447031	598099
12-Mar	cloud	-6		148721	142				5.6	5.6	0.8			447162	598310
13-Mar	cleear	-3		148877	156		5200	4600	5.6	5.6	1.2			447294	598522
14-Mar	clear	-6		149037	160		5300	4500	5.6	5.6	1.5			447314	598686
15-Mar	clear	-2		149201	164		5100	4600	5.6	5.6	0.7			447481	598840
16-Mar	clear	-2		149375	174		5100	4600	5.6	5.6	1.4			447619	
17-Mar	clear	-5		149517	142		500	4600	5.6	5.6	1.2			447745	599273
18-Mar	snun	-1		149690	173		4900	4400	5.6	5.6	0.8			447806	599311
19-Mar	clear	1		149862	172				5.6	5.6	1			447897	599521
20-Mar	snow	-1		150016	154		5100	5100	5.6	5.6	1.3				
21-Mar	snow	-3		150174	158		5000	5000	5.6	5.6	1.7			448209	600043
22-Mar	clear	-3		150298	124		5200	5000	5.6	5.6	1.3			448310	600208
23-Mar	clear	-3		150473	175		5200	5100	5.6	5.6	1.1			448398	600360
24-Mar	snow	-1		150640	167		5300	5300	5.6	5.6	1			448500	
25-Mar	cloud	-1		150779	139		4800	4800	5.6	5.6	1.1			448618	
26-Mar	clear	-3		150938	159				5.6	5.6	1.3			448730	
27-Mar	clear	-3		151132	194		5100	5200	5.6	5.6	1.7			448791	601014
28-Mar	rain	1		151302	170		5200	5500	5.6	5.6	1.9			448951	601289
29-Mar	clear	1		151478	176		5100	5300	11.2	11.2				449100	601546
30-Mar	sun	1		151653	175				11.2	11.2	0.8			449115	601571
31-Mar	sun	1		151793	140	186	5200	5200	5.6	5.6	1.8			449334	601929
Summary	**Average**	**-3**		**Average**	**157**	**186**			**6**	**6**	**1**				
	Median	**-3**		**Max**	**210**	**186**			**5.6**	**5.6**	**1.3**				
				Total	**4870**	**186**			**184.8**	**184.8**	**39.3**			**Monthly total**	**8923**

APRIL

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4	TSS	BOD	**Well 3 Cum. Flow (m3)**	**Well 4 Cum. Flow (m3)**
1-Apr	cloud	0		152056	263				5.6	5.6	1.8			449464	602155
2-Apr	clear	0		152287	231		5200	5500	5.6	5.6	1.7			449552	602300
3-Apr	clear	1		152451	164				5.6	5.6	2			449642	602476
4-Apr	clear	0		152621	170		5600	6000	5.6	5.6	2.6			449803	602761
5-Apr	clear	-7		152774	153		5900	6200	5.6	5.6	1.8			450090	
6-Apr	clear	-6		152950	176		5400	5600	5.6	5.6					
7-Apr	clear	1		153108	158		5400	5800	5.6	5.6	0.8			450090	603259
8-Apr	snow	-2		153316	208		5600	5700	5.6	5.6	2.8			450192	
9-Apr	clear	-2		153483	167				5.6	5.6	2.1			450315	603259
10-Apr	clear	-2		153610	127		5500	6000	5.6	5.6	1.2			450397	603684
11-Apr	clear	-5		153738	128		5600	6000	5.6	5.6	1.9			450521	603913
12-Apr	clear	-7		153858	120		5700	6000	5.6	5.6	1.2			450636	604104
13-Apr	clear	-6		153973	115		5700	6000	5.6	5.6	1.7				
14-Apr	clear	-1		154083	110		5800	6000	2.8	2.8	0.5			450764	604311
15-Apr	sun	-3		154182	99		5800	5900	2.8	2.8	0.3				
16-Apr	sun	3		154302	120				2.8	2.8	1.7				
17-Apr	sun	18		154420	118		5700	5800	2.8	2.8	0.7				
18-Apr	clear	5		154538	118				2.8	2.8				451115	
19-Apr	sun	-4		154697	159		5500	5600	2.8	2.8	0.3				
20-Apr	sun	-2		154797	100		6000	5500	2.8	2.8	0.9			451261	
21-Apr	sun	-2		154905	108		6000	5500	2.8	2.8	0.4				
22-Apr	cloud	2		155024	119			5500	2.8	2.8	0.5				
23-Apr	snow	-1		155145	121		5200	5300	2.8	2.8	0.7				
24-Apr	clear	-1		155284	139		5000	5200	2.8	2.8	1				
25-Apr	snow	1		155393	109		4800	5100	2.8	2.8	0.7			451623	
26-Apr	sun	14		155502	109		4800	5200	2.8	2.8	0.9			451739	
27-Apr	sun	5		155609	107		4400	5000	0	0	0.5			451810	605959
28-Apr	sun	7		155697	88		4300	5000	0	0	0.9				
29-Apr	cloud	10		155793	96		4200	4800	0	0	1.4			451975	
30-Apr	cloud	8		155890	97				0	0	1.3			451990	606333
						150									
Summary	**Average**	**1**		**Average**	**137**	**150**			**4**	**4**	**1**				
	Median	**-0.5**		**Max**	**263**	**150**			**2.8**	**2.8**	**1.1**				
				Total	**4097**	**150**			**109.2**	**109.2**	**34.3**			**Monthly total**	**6704**

MAY

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4	TSS	BOD	**Well 3 Cum. Flow (m3)**	**Well 4 Cum. Flow (m3)**
1-May	cloud	7		156003	113				0	0	0.7			452098	606450
2-May	sun	0		156107	104		4300	5100	2.8	2.8	1.3			452211	
3-May	sun	1		156207	100		4300	4600	2.8	2.8	1			452300	606703
4-May	rain	2		156303	96			4300	2.8	2.8	1.3			452338	606760
5-May	sun	2		156400	97		4000	4200	2.8	2.8	0.6			452450	606924
6-May	cloud	3		156484	84		3800	4200	2.8	2.8	0.6			452450	606924
7-May	cloud	8		156560	76				0	0	0.5			452453	606934
8-May	cloud	7		156661	101				0	0	0.4			452686	607259
9-May	cloud	4		156759	98		3800	4100	2.8	2.8	0.6			452735	607442
10-May	sun	6		156839	80				2.8	2.8	0.7				
11-May	sun	13		156917	78		3700	4000	2.8	2.8	1			452929	
12-May	sun	3		156994	77		3600	3900	2.8	2.8	0.8			452964	607659
13-May	sun	6		157074	80		3800	4200	2.8	2.8	0.5			453049	607772
14-May	sun	11		157147	73				0	0	0.5			453161	607933
15-May	sun	9		157215	68				0	0	0.6			453162	
16-May	sun	7		157297	82				2.8	2.8	1.1			453288	608114
17-May	cloud	10		157368	71		3800	3900	2.8	2.8	1.1			453400	608283
18-May	rain	8		157450	82				2.8	2.8	0.9				
19-May	sun	0		157646	196				2.8	2.8					
20-May	sun	0		157666	20				0	2.8				453597	608565
21-May	sun	6		157696	30		3900	4000	2.8	2.8	0.5			453597	608626
22-May	sun	8		157772	76				2.8	2.8	0.6			453703	608771
23-May	cloud	6		157850	78				2.8	2.8	1.8			453817	608938
24-May	rain	7		157939	89				2.8	2.8	1.6			453897	609058
25-May	rain	7		158027	88				2.8	0	2.2			453938	609115
26-May	cloud	8		158106	79		3600	3800	2.8	0				454051	609281
27-May	sun	14		158175	69				0	0	2.2			454107	609367
28-May	cloud	5		158256	81				0	0				454170	609456
29-May	cloud	7		158334	78				2.8	2.8	2.1			454278	609617
30-May	sun	10		158414	80				2.8	2.8	1.8			454301	
31-May	sun	8		158498	84	45			2.8	2.8	1.5			454408	609796
Summary	**Average**	**8**		**Average**	**84**				**2**		**1**				
	Median	**7**		**max**	**196**				**2.8**		**0.9**				
				Total	**2608**	**45**			**64.4**		**28.5**			**Monthly total**	**5656**

JUNE

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4	TSS	BOD	**Well 3 Cum. Flow (m3)**	**Well 4 Cum. Flow (m3)**
1-Jun	cloud	8		158567	69				2.8	2.8	1.4			454512	610052
2-Jun	sun	8		158640	73				2.8	2.8	1.1			454622	610102
3-Jun	sun	8		158707	67				2.8	2.8				454630	610164
4-Jun	sun	14		158770	63				2.8	0	1.1			454767	610332
5-Jun	cloud	12		158837	67		3800	3800	2.8	0	1.5			454852	610467
6-Jun	sun	10		158915	78		3900	3800	2.8	5.6	1.6			454878	610505
7-Jun	cloud	5		159001	86				2.8	2.8	1.1			454998	610681
8-Jun	cloud	6		159080	79		3900	3800	2.8	2.8	0.7			455098	610795
9-Jun	cloud	7		159150	70				2.8	2.8	0.7			455115	610853
10-Jun	sun	16		159226	76		3700	3800	2.8	2.8	0.8			455230	610024
11-Jun	sn	5		159293	67		3700	3800	2.8	2.8	1.3			455334	611177
12-Jun	sun	8		159380	87				2.8	2.8	0.8			455351	611204
13-Jun	cloud	7		159460	80		3800	3800	2.8	2.8	1.1			455465	611373
14-Jun	thunder	8		159561	101				2.8	2.8	1.2			455582	611547
15-Jun	rain	11		159638	77		3800	3900	2.8	2.8	0.9			455702	
16-Jun	sun	9		159730	92				2.8	2.8	1.1			455819	611898
17-Jun	sun	8		159813	83				2.8	2.8					
18-Jun	sun	12		159882	69				2.8	2.8	1.2			455819	611898
19-Jun	cloud	9		159964	82				2.8	2.8	0.2			455956	612098
20-Jun	cloud	10		160056	92				0	2.8	0.8			456071	612269
21-Jun	sun	15		160147	91				0	2.8	0.9			456110	612323
22-Jun	sun	10		160225	78				0	2.8					
23-Jun	sun	26		160295	70		3700	3800	0	2.8	1.4			456349	612675
24-Jun	cloud	20		160373	78		3700	3700	2.8	2.8	1.5			456440	612812
25-Jun	sun	17		160451	78		3600	3700	2.8	2.8	1.4			456488	612881
26-Jun	sun	15		160537	86				2.8	2.8	1.6			456612	613063
27-Jun	sun	15		160623	86		3600	4000	2.8	2.8	1.5			456741	613253
28-Jun	sun	28		160708	85		3700	3800	2.8	2.8	1.5			456863	613433
29-Jun	sun	28		160805	97				2.8	2.8				456983	613613
30-Jun	sun	20		160879	74		3700	3800	0	0	2.6			457078	613754
						57									
Summary	**Average**	**13**		**Average**	**79**	**57**			**2**	**3**	**1**				
	Median	**10**		**Max**	**101**	**57**			**2.8**	**2.8**	**1.15**				
				Total	**2381**	**57**			**70**	**78.4**	**31**			**Monthly tota**	**6268**

JULY

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4	TSS	BOD	**Well 3 Cum. Flow (m3)**	**Well 4 Cum. Flow (m3)**
1-Jul	sun	24		160961	82				0	0	3.2			457139	613848
2-Jul	sun	15		161044	83				2.8	2.8	2.1			457268	614032
3-Jul	sun	13		161144	100		4100	4100	2.8	2.8	1.1			457421	614257
4-Jul	cloud	16		161282	138				5.6	5.6	1.3			457569	614475
5-Jul	rain	25		161435	153				5.6	5.6				457695	614660
6-Jul	sun	18		161595	160		4800	4800	5.6	5.6	2.2			457816	614840
7-Jul	sun	23		161782	187		5000	4800	5.6	5.6	2.2			457816	614840
8-Jul	sun	12		161864	82		5100	4800	5.6	5.6	1.3			457958	615051
9-Jul	sun	16		161976	112				5.6	5.6	2.2			458082	615236
10-Jul	mon	17		162125	149		5000	4700	5.6	5.6	2.1			458214	615432
11-Jul	tue	14		162259	134				5.6	5.6	1.9			458345	615627
12-Jul	wed	12		162380	121		5500	4800	5.6	5.6	2.2			458462	615802
13-Jul	thu	13		162491	111				5.6	5.6				458582	615980
14-Jul	sun	13		162596	105		5400	4700	5.6	5.6				458697	616153
15-Jul	sun	13		162697	101				5.6	5.6	1.1			458803	616311
16-Jul	sun	12		162796	99		4400	3700	5.6	5.6	1			458924	616493
17-Jul	sun	14		162914	118				5.6	5.6	1.1			459049	616680
18-Jul	sun	16		163043	129				5.6	5.6	1.7			459175	616869
19-Jul	sun	13		163157	114		4700	4000	5.6	5.6	1.6			459302	617057
20-Jul	sun	15		163300	143		4700	4100	5.6	5.6	1.3			459441	617265
21-Jul	sun	13		163394	94		4700	4200	5.6	5.6	1.4			459570	617458
22-Jul	sun	9		163512	118				5.6	5.6	1.3			459693	617643
23-Jul	sun	9		163648	136		4800	4300	5.6	5.6	1.3			459807	617815
24-Jul	smoke	12		163731	83				5.6	5.6	1.7			459960	617815
25-Jul	sun	16		163924	193		5000	4600	8.4	8.4	1.9			460186	618096
26-Jul	sun	12		164074	150				7.2	7.2				460356	618346
27-Jul	sun	10		164247	173		5500	5100	7.2	7.2	1.7			460477	618532
28-Jul	sun	9		164400	153		5300	5000	7.2	7.2	1.3			460599	618714
29-Jul	sun	11		164556	156		5400	5000	7.2	7.2	1.4			460718	618895
30-Jul	sun	12		164727	171		5400	5000	5.6	7.2	1.4			460836	619075
31-Jul	sun	12		164873	146	60	5400	5000	5.6	7.2	1.5			460980	619289
Summary	**Average**	**14**		**Average**	**129**				**6**	**6**	**2**				
	Median	**13**		**Max**	**193**				**5.6**	**5.6**	**1.5**				
				Total	**3994**	**60**			**171.6**	**174.8**	**44.5**			**Monthly total**	**9282**

AUGUST

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4	TSS	BOD	**Well 3 Cum. Flow (m3)**	**Well 4 Cum. Flow (m3)**
1-Aug	sun	13		164997	124		5800	5200	5.6	7.2	1.4			461120	619500
2-Aug	cloud	17		165100	103		5500	5200	5.6	7.2	1.4			461243	619684
3-Aug	cloud	17		165224	124		5300	5200	5.6	7.2	1.6			461375	619884
4-Aug	cloud	13		165368	144		5600	5200	5.6	7.2	1.2			461487	620050
5-Aug	cloud	12		165507	139		5600	5200	5.6	7.2	1.5			461543	620140
6-Aug	cloud	14		165657	150		5400	5200	5.6	7.2	1.3			461692	620356
7-Aug	cloud	10		165825	168		5600	5500	5.6	7.2	1.5			461831	620564
8-Aug	cloud	11		165995	170		5700	5800	5.6	7.2	1.6			461970	620772
9-Aug	cloud	9		166153	158		5900	6000	5.6	7.2	1.4			462107	620976
10-Aug	cloud	14		166282	129		5900	6100	5.6	7.2				462154	621052
11-Aug	sun	13		166408	126		5800	5900	5.6	7.2	1.2			462274	621227
12-Aug	sun	21		166533	125		5400	5500	5.6	7.2	1			462422	621448
13-Aug	sun	18		166649	116				5.6	5.6	1.2			462554	621647
14-Aug	smoke	14		166750	101		5200	5400	5.6	5.6	1.2			462684	621842
15-Aug	smoke	11		166861	111		5200	5300	5.6	5.6	1.2			462814	622037
16-Aug	smoke	13		166992	131		5200	5300	5.6	5.6	1.2			462935	622219
17-Aug	rain	9		167167	175		5300	5200	5.6	5.6	1.4			463065	622394
18-Aug	sun	5		167318	151		5200	5400	5.6	5.6	1.6			463154	622547
19-Aug	cloud	11		167451	133		5200	5400	5.6	5.6	1.2			463273	622583
20-Aug	cloud	12		167593	142			5500	5.6	5.6	2.9			463409	622783
21-Aug	cloud	10		167733	140				5.6	5.6				463539	623008
22-Aug	cloud	10		167886	153		5000	5300	5.6	5.6	2.6			463708	623233
23-Aug	cloud	4		168035	149		4900	5500	5.6	5.6	1.7			463769	623366
24-Aug	sun	5		168165	130		4900	5400	5.6	5.6	1.3			463896	623513
25-Aug	sun	6		168324	159		6000	6500	8.4		8.4			464041	623730
26-Aug	sun	6		168473	149		5900	6400	5.6		8.4			464163	623916
27-Aug	cloud	8		168600	127				5.6		5.6			464286	624100
28-Aug	sun	11		168744	144		6000	6600	5.6		5.6			464338	624183
29-Aug	sun	12		168870	126		6300	6600	5.6		5.6			464466	
30-Aug	sun	9		168975	105				5.6		5.6			464593	624562
31-Aug	cloud	8		169103	128	125	6000	6500	0		5.6			464717	624749
Summary	**Average**	**11**		**Average**	**136**				**6**	**6**	**3**				
	Median	**11**		**Max**	**175**				**5.6**	**6.4**	**1.5**				
				Total	**4230**	**125**			**170.8**	**153.6**	**77.4**			**Monthly tota**	**8846**

SEPTEMBER

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4	TSS	BOD	**Well 3 Cum. Flow (m3)**	**Well 4 Cum. Flow (m3)**
1-Sep	cloud	5		169230	127		6000	6500	0	5.6	2.5			464769	624831
2-Sep	cloud	4		169362	132		6300	6400	0	7.2	2.3			464853	624954
3-Sep	sun	8		169506	144		6300	6400	7.2	7.2	2.9			464990	625161
4-Sep	sun	9		169660	154				5.6	5.6	1.8				
5-Sep	sun	10		169782	122		6200	6100	5.6	5.6				465256	625563
6-Sep	sun	10		169919	137		6000	6000	5.6	5.6	1.7			465362	625563
7-Sep	sun	9		170030	111		5800	5800	5.6	5.6	1.6			465649	625592
8-Sep	sun	9		170122	92		5700	5500	5.6	5.6	1.1			465740	625731
9-Sep	sun	5		170219	97				5.6	5.6	1.1			465903	
10-Sep	sun	11		170326	107		5500	5400	5.6	5.6	1			466104	625891
11-Sep	cloud	7		170421	95				5.6	5.6				466233	626091
12-Sep	rain	7		170538	117				5.6	5.6	1			466289	626182
13-Sep	cloud	8		170653	115				2.8	2.8				466385	
14-Sep	sun	2		170755	102		5500	5500	2.8	2.8	0.9			466509	626511
15-Sep	cloud	2		170864	109				2.8	2.8				466509	626682
16-Sep	cloud	3		170963	99		5400	5500	2.8	2.8				466576	
17-Sep	cloud	4		171072	109				2.8	2.8	0.9			466706	
18-Sep	rain	7		171201	129				2.8	2.8	1.3			466832	627217
19-Sep	cloud	6		171333	132		6000	5400	2.8	2.8	1			466920	627350
20-Sep	cloud	5		171454	121		5800	5400	2.8	2.8	1.2			466973	627428
21-Sep	cloud	6		171555	101				2.8	2.8				467103	627625
22-Sep	cloud	6		171654	99		5500	5100	2.8	2.8	1.2			467221	627801
23-Sep	sun	6		171747	93		5400	5000	0	2.8	1			467301	
24-Sep	sun	7		171849	102		5400	5000	2.8	2.8					
25-Sep	clear	7		171951	102				2.8	2.8	1.4			367475	628188
26-Sep	clear	11		172075	124		5700	5000	2.8	2.8	1.8			467587	628356
27-Sep	rain	8		172196	121				2.8	2.8				467607	628394
28-Sep	cloud	4		172306	110		5800	5300	2.8	2.8	1.4				
29-Sep	cloud	3		172407	101		5600	5100	2.8	2.8				467852	628758
30-Sep	cloud	6		172496	89	116	5400	5000	2.8	2.8	1.3			467856	628790
Summary	**Average**	**7**		**Average**	**113**				**4**	**4**	**1**				
	Median	**6.5**		**Max**	**154**				**2.8**	**2.8**	**1.3**				
				Total	**3393**	**116**			**105.2**	**120.8**	**30.4**			**Monthly tota**	**7046**

OCTOBER

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4	TSS	BOD	**Well 3 Cum. Flow (m3)**	**Well 4 Cum. Flow (m3)**
1-Oct		8		172595	92		5260	4900	2.8	2.8	1.38			467890	628953
2-Oct		7		172687	105				2.8	2.8	1.2			468096	629131
3-Oct		7		172792	99				2.8	2.8	1.3			468159	629229
4-Oct		2		172891	84		5100	4700	2.8	2.8	1.2			165237	629345
5-Oct		3		172975	101		5100		2.8	2.8				468350	629517
6-Oct	cloud	6		173076	85		5100	4700	2.8	2.8	1.2			468472	629705
7-Oct		1		173161	95				2.8	2.8	1			468472	629705
8-Oct	cloud	-2		173256	92				2.8	2.8	1.1			468592	629887
9-Oct	cloud	-1		173348	128				2.8	2.8	1.1			468660	629992
10-Oct	cloud	3		173476	129		5100	4800	2.8	2.8	2.1			468748	
11-Oct		-4		173605	107		5200	5100	2.8	5.6				468888	630333
12-Oct		-5		173712	86		5200	5100	2.8	5.6	1.5			469001	630504
13-Oct		-2		173798	78		5200	5100	2.8	5.6	1.5			469011	630524
14-Oct	cloud	-5		173876	82				2.8	5.6	0.5			469122	630684
15-Oct	cloud	-6		173958	78				2.8	2.8	0.8			469207	630703
16-Oct	rain	5		174036	87				2.8	2.8	0.9			469314	630860
17-Oct	clear	8		174123	78		5200	5200	2.8	2.8	0.8			569426	631031
18-Oct	clear	1		174201	69		5200	5100	2.8	2.8	0.9			469426	631039
19-Oct	sun	5		174270	72		5200	5100	2.8	2.8	0.8			469546	631213
20-Oct	clear	4		174342	71		5300	5100	2.8	2.8	0.9			469623	631337
21-Oct	sun	2		174413	75		5200	5100	2.8	2.8	0.9			469659	631385
22-Oct				174488	122		5500	5200	2.8	2.8	0.5			469774	
23-Oct	cloud	4		174610	82				2.8	2.8	0.9			469807	631630
24-Oct	cloud	5		174692	84				2.8	2.8	1.3			469897	631747
25-Oct	cloud	5		174776	75		5300	5200	2.8	2.8	0.98			470012	631922
26-Oct	clear	4		174851	85		5400	5200	2.8	2.8	0.99			470012	631924
27-Oct	clear	2		174936	75		5400		2.8	2.8	0.87			470136	632109
28-Oct		0		175011	87		5400	5200	2.8	2.8	0.6			470249	632228
29-Oct	cloud	1		175098	75				2.8	2.8	0.3			470249	632282
30-Oct	cloud	-5		175173	99				2.8	2.8	0.7			470365	
31-Oct	clear	-6		175272	56	32			2.8	2.8	0.9			470376	632483
Summary	**Average**	**2**			**88**	**32**			**3**	**3**	**1**				
	Median	**2**		**Median**	**85**	**32**			**2.8**	**2.8**	**0.9**				
				Total	**2733**	**32**			**86.8**	**98**	**29.12**			**Monthly tota**	**6016**

NOVEMBER

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4	TSS	BOD	**Well 3 Cum. Flow (m3)**	**Well 4 Cum. Flow (m3)**
1-Nov	clear	-9		175355	80				2.8	2.8				470485	632640
2-Nov	sun	-5		175435	73				2.8	2.8				470594	632807
3-Nov	cloud	0		175508	67		5500	5200	2.8	2.8	0.8			470595	632807
4-Nov	rain	1		175575	76		5400	5300	2.8	2.8	0.3			470709	632981
5-Nov	cloud	2		175651	78		5400	5300	2.8	2.8	0.5			470805	633126
6-Nov	clear	-3		175729	108		5300	5000	2.8	2.8	0.3			470824	633155
7-Nov	cloud	-2		175837	59				2.8	2.8				470995	633337
8-Nov	snow	-1		175896	75		5300	5200	2.8	2.8	0.5				
9-Nov	snow	-3		175971	72		5400	5200	2.8	2.8	0.5				
10-Nov	snow	-1		176043	77		5400	5200	2.8	2.8	0.6				
11-Nov	cloud	-4		176120	80		5500	5300	2.8	2.8	0.5				
12-Nov	snow	-3		176200	110		5400	5200	2.8	2.8	1.5			471469	
13-Nov	clear	-2		176310	99				2.8	2.8	0.6			471469	634128
14-Nov	snow	-2		176409	80		5900	5600	2.8	2.8	0.9				
15-Nov	rain	0		176489	109		5900	5600	2.8	2.8					
16-Nov	clear	-2		176598	86		5900	5500	2.8	2.8	0.3				
17-Nov	clear	-10		176684	71		5900	5500	2.8	2.8	0.5			471969	
18-Nov	clear	-10		176755	123				2.8	2.8	0.3				
19-Nov	clear	-7		176878	75				2.8	2.8				472266	635320
20-Nov	clear	-7		176953	78		6000	5600	2.8	2.8	0.5			472522	
21-Nov	clear	-8		177031	79				2.8	2.8	0.5			472566	635782
22-Nov	clear	-4		177110	63				2.8	2.8	0.5				
23-Nov	cloud	-1		177173	80		5600	5400	2.8	2.8	0.3			472790	636112
24-Nov	clear	-5		177253	85				2.8	2.8					
25-Nov	snow	-1		177338	86				2.8	2.8					
26-Nov	snow	-1		177424	70		5900	5600	2.8	2.8				473093	636571
27-Nov	clear	-3		177494	82				2.8	2.8	0.4			473112	636609
28-Nov	snow	-1		177576	83		6000	5600	2.8	2.8	0.4				
29-Nov	cloud	0		177659	82		5900	5600	2.8	2.8	0.3				
30-Nov	rain	2		177741	93	162	5900	5600	2.8	2.8	0.3			473435	637050
Summary	**Average**	**-3**			**83**	**162**			**3**	**3**	**1**				
	Median	**-2**		**Median**	**80**	**162**			**2.8**	**2.8**	**0.5**				
				Total	**2479**	**162**			**84**	**84**	**11.3**			**Monthly total**	**7360**

December

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4	TSS	BOD	**Well 3 Cum. Flow (m3)**	**Well 4 Cum. Flow (m3)**	**Snow making Daily totals (m3)**
1-Dec	rain	5		177879	141		5500	5400	2.8	2.8				473540	637250	
2-Dec	rain	2		178020	220		5400	5100	2.8	2.8	0.1			473540	637250	19
3-Dec	rain	-6		178240	102		5600	5300	2.8	2.8	0.5					199
4-Dec	clear	-10		178342	121		5700		2.8	2.8	0.7			473857		218
5-Dec	clear	-12		178463	115		5600	5600	2.8	2.8	0.8			474071	638025	218
6-Dec	snow	-10		178578	106		5600	5800	2.8	2.8	0.5					218
7-Dec	clear	-13		178684	111		5600	5800	2.8	2.8	0.5			474524	638672	209
8-Dec	snow	-7		178795	90		5700	5800	2.8	2.8	0.3			474701	638930	162
9-Dec	snow	-8		178885	81		5700	5800	2.8	2.8	0.1			474826	639115	75
10-Dec	powerout	-10		178966	103				off	off						
11-Dec	snow	-7		179069	103				2.8	2.8	1.8			475015	639257	
12-Dec	snow	-5		179172	131		5600	5800	5.6	5.6	1.4			475206	639531	
13-Dec	clear	-6		179303	115		560	5800	5.6	5.6	1.1			475322	639706	
14-Dec	snow	-7		179418	114		5900	6000	5.6	5.6	1.1			475417		90
15-Dec	clear	-10		179532	88		5500	5800	5.6	5.6	0.3			475563	640063	170
16-Dec	snow	-9		179620	108		5600	5800	5.6	5.6	0.5			475761	640352	145
17-Dec	clear	-15		179728	121		5300	5800	5.6	5.6	0.5			475961		116
18-Dec	snow	-12		179849	164				5.6	5.6	0.3			476138	640906	201
19-Dec	snow	-12		180013	127		5600	5800	5.6	5.6	0.9			476332	641188	129
20-Dec	snow	-12		180140	233		5800	5800	5.6	5.6	0.7			476604	641584	55
21-Dec	clear	-14		180373	223		5900	5800	5.6	5.6	2.1			476691	641719	
22-Dec	snow	-11		180596	166		6000	6200	5.6	5.6	2.4			476864		
23-Dec	snow	-11		180762	182		5700	6300	5.6	5.6	2.8			477009	642197	
24-Dec	snow	-11		180944	177		5700	6200	5.6	5.6	2.3			477140	642387	
25-Dec	clear	-17		181121	189		5800	6100	5.6	5.6	1.8					
26-Dec	snow	-23		181310	187		5700	6100	5.6	5.6	2			477405	642787	
27-Dec	clear	-24		181497	206		5700	6000	5.6	5.6	2.1			477547	643001	
28-Dec	clear	-22		181703	205		5700	5800	5.6	5.6	2			477689		
29-Dec	clear	19		181908	203		5800	6000	5.6	5.6	0			477838		
30-Dec	clear	-20		182111	212		5900	5900	5.6	5.6	3.1			477982	643659	
31-Dec	clear	-22		182323	247		6000	6000	5.6	5.6	3.2			478135	643890	
Summary	**Average**	**-10**		**46851**	**151**	**104**			**5**	**5**	**3**					
	Median	**-11**		**97074**	**131**				**5.6**	**5.6**	**2.8**					
				Total	**4691**	**0**			**140**	**140**	**35.9**			**Monthly total**	**11235**	**2225**

	Sludge Bags removed
January	212
February	192
March	186
April	150
May	45
June	57
July	60
August	125
September	116
October	32
November	162
December	104
Total	1441

	Water consumption (m3)
January	7867
February	8239
March	8923
April	6704
May	5656
June	6268
July	9282
August	8846
September	7046
October	6016
November	7360
December	11235
Total	93442

2225 was used by snowmaking

Date	Effluent Flow (m3/dy)
1-Jul	
2-Jul	
3-Jul	
4-Jul	
5-Jul	
6-Jul	
7-Jul	
8-Jul	
9-Jul	
10-Jul	
11-Jul	
12-Jul	
13-Jul	
14-Jul	
15-Jul	
16-Jul	
17-Jul	
18-Jul	
19-Jul	
20-Jul	
21-Jul	
22-Jul	
23-Jul	
24-Jul	
25-Jul	
26-Jul	
27-Jul	
28-Jul	
29-Jul	
30-Jul	
31-Jul	
Avg	
Max	
Total	

Date	Effluent Flow (m3/dy)
1-Aug	
2-Aug	
3-Aug	
4-Aug	
5-Aug	
6-Aug	
7-Aug	
8-Aug	
9-Aug	
10-Aug	
11-Aug	
12-Aug	
13-Aug	
14-Aug	
15-Aug	
16-Aug	
17-Aug	
18-Aug	
19-Aug	
20-Aug	
21-Aug	
22-Aug	
23-Aug	
24-Aug	
25-Aug	
26-Aug	
27-Aug	
28-Aug	
29-Aug	
30-Aug	
31-Aug	
Avg	
Max	
Total	

Date	Effluent Flow (m3/dy)
1-Sep	
2-Sep	
3-Sep	
4-Sep	
5-Sep	
6-Sep	
7-Sep	
8-Sep	
9-Sep	
10-Sep	
11-Sep	
12-Sep	
13-Sep	
14-Sep	
15-Sep	
16-Sep	
17-Sep	
18-Sep	
19-Sep	
20-Sep	
21-Sep	
22-Sep	
23-Sep	
24-Sep	
25-Sep	
26-Sep	
27-Sep	
28-Sep	
29-Sep	
30-Sep	
Avg	
Max	
Total	

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 13-JAN-21
Report Date: 19-JAN-21 08:09 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2547716

Project P.O. #: NOT SUBMITTED
Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2547716-1 UV TROUGH							
Sampled By: TJ on 12-JAN-21 @ 09:00							
Matrix: Water							
Miscellaneous Parameters							
Biochemical Oxygen Demand	3.0		2.0	mg/L		13-JAN-21	R5352405
Orthophosphate-Dissolved (as P)	0.171	DLHC	0.020	mg/L		13-JAN-21	R5345886
Coliform Bacteria - Fecal	<1		1	CFU/100mL		13-JAN-21	R5346945
Phosphorus (P)-Total	0.336		0.0050	mg/L		15-JAN-21	R5348336
Total Suspended Solids	5.4		3.0	mg/L		17-JAN-21	R5350981

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2547716 Report Date: 19-JAN-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5352405								
WG3475088-5 LCS								
Biochemical Oxygen Demand			97.4		%		85-115	13-JAN-21
WG3475088-4 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	13-JAN-21
FCC-MF-CL	**Water**							
Batch R5346945								
WG3473636-6 DUP		**L2547716-1**						
Coliform Bacteria - Fecal		<1	<1	RPD-NA	CFU/100mL	N/A	65	13-JAN-21
WG3473636-5 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	13-JAN-21
P-T-COL-CL	**Water**							
Batch R5348336								
WG3474025-2 LCS								
Phosphorus (P)-Total			93.4		%		80-120	15-JAN-21
WG3474025-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	15-JAN-21
PO4-DO-COL-CL	**Water**							
Batch R5345886								
WG3473074-2 LCS								
Orthophosphate-Dissolved (as P)			99.9		%		80-120	13-JAN-21
WG3473074-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	13-JAN-21
TSS-CL	**Water**							
Batch R5350981								
WG3474536-5 LCS								
Total Suspended Solids			92.4		%		85-115	17-JAN-21
WG3474536-4 MB								
Total Suspended Solids			<3.0		mg/L		3	17-JAN-21

Quality Control Report

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To	
Company:	Kicking Horse Mountain Water Utility Co. Ltd.
Contact:	Travis Jobin
Address:	1500 Kicking Horse Trail
Phone:	250-344-6003 Fax:
Invoice To	Same as Report ? ☐ Yes ☑ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	Resorts of the Canadian Rockies
Contact:	Patrick Majer
Address:	1505 - 17th Ave SW Calgary AB
Phone:	Fax:

Report Format / Distribution	
☑ Standard	☐ Other
☐ PDF	☐ Excel ☐ Digital ☑ Fax
Email 1:	tjobin@kickinghorseresort.com
Email 2:	pmajer@skircr.com
Email 3:	mskyring@kickinghorseresort.com
Client / Project Information	
Job #:	RCR - Kicking Horse Mountain Resort
PO / AFE:	
LSD:	
Quote #:	Q33059
ALS Contact:	PW
Sampler:	TJ

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Lab Work Order # (lab use only)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P								Number of Containers
	UV trough	12-Jan-21	9:00	Water	X	X	X	X	X								4

L2547716-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
T Jobin	12-Jan-21	930	[illegible]	1/13	805	8 °C				

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 17-FEB-21
Report Date: 24-FEB-21 15:38 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2557949

Project P.O. #: NOT SUBMITTED
Job Reference: RCR-KICKING HORSE MOUNTAIN RESORT
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2557949-1 UV TROUGH							
Sampled By: TJ on 16-FEB-21 @ 09:15							
Matrix: WATER							
Miscellaneous Parameters							
Biochemical Oxygen Demand	7.6		2.0	mg/L		18-FEB-21	R5388878
Orthophosphate-Dissolved (as P)	0.813	DLHC	0.050	mg/L		17-FEB-21	R5378868
Coliform Bacteria - Fecal	54		1	CFU/100mL		17-FEB-21	R5380122
Phosphorus (P)-Total	1.12	DLHC	0.050	mg/L		19-FEB-21	R5381338
Total Suspended Solids	9.2		3.0	mg/L		21-FEB-21	R5384053

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2557949 Report Date: 24-FEB-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5388878								
WG3492749-2 LCS								
Biochemical Oxygen Demand			91.6		%		85-115	18-FEB-21
WG3492749-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	18-FEB-21
FCC-MF-CL	**Water**							
Batch R5380122								
WG3489893-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	17-FEB-21
P-T-COL-CL	**Water**							
Batch R5381338								
WG3490192-14 LCS								
Phosphorus (P)-Total			89.7		%		80-120	19-FEB-21
WG3490192-13 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	19-FEB-21
PO4-DO-COL-CL	**Water**							
Batch R5378868								
WG3489196-2 LCS								
Orthophosphate-Dissolved (as P)			96.0		%		80-120	17-FEB-21
WG3489196-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	17-FEB-21
TSS-CL	**Water**							
Batch R5384053								
WG3490834-2 LCS								
Total Suspended Solids			86.5		%		85-115	21-FEB-21
WG3490834-1 MB								
Total Suspended Solids			<3.0		mg/L		3	21-FEB-21

Quality Control Report

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Water Utility Co. Ltd.	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-6003 Fax:	Email 3:	mskyring@kickinghorseresort.com	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	RCR - Kicking Horse Mountain Resort	
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:	Q33059	
Lab Work Order # (lab use only)		ALS Contact:	PW	Sampler: TJ

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P								Number of Containers
	UV trough	16-Feb-21	9:15	Water	X	X	X	X	X								4

L2557949-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Mark Skyring	Date (dd-mmm-yy) 30-Sep-19	Time (hh-mm)	Received by:	Date: 2/17	Time: 820	Temperature: 7 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 19-FEB-21
Report Date: 25-FEB-21 14:46 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2559180

Project P.O. #: NOT SUBMITTED
Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2559180-1 INFLUENT							
Sampled By: TJ on 17-FEB-21 @ 05:30							
Matrix: WATER							
Miscellaneous Parameters							
Biochemical Oxygen Demand	204	DLHC	75	mg/L		19-FEB-21	R5389016
Total Suspended Solids	310		3.0	mg/L		21-FEB-21	R5384053

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2559180 Report Date: 25-FEB-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5389016								
WG3492788-2 LCS								
Biochemical Oxygen Demand			91.9		%		85-115	19-FEB-21
WG3492788-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	19-FEB-21
TSS-CL	**Water**							
Batch R5384053								
WG3490834-2 LCS								
Total Suspended Solids			86.5		%		85-115	21-FEB-21
WG3490834-1 MB								
Total Suspended Solids			<3.0		mg/L		3	21-FEB-21

Quality Control Report

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Water Utility Co. Ltd.	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-6003 Fax:	Email 3:	mskyring@kickinghorseresort.com	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	RCR - Kicking Horse Mountain Resort	
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:	Q33059	
Lab Work Order # (lab use only)		ALS Contact:	PW	Sampler: TJ

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P								Number of Containers
	Influent	17-Feb-21	5:30	Water	X	X											2

L2559180-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Mark Skyring	Date (dd-mmm-yy) 30-Sep-19	Time (hh-mm)	Received by: PW	Date: 19-Feb-21	Time: 8:30am	Temperature: 6 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 15-APR-21
Report Date: 28-APR-21 16:25 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2576829
Project P.O. #: NOT SUBMITTED
Job Reference: WEEK 1 - 2021 SPRING EMS PROGRAM
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2576829-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JD on 14-APR-21 @ 08:15							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.060		0.050	mg/L		22-APR-21	R5438156
Biochemical Oxygen Demand	2.2		2.0	mg/L		16-APR-21	R5436756
Orthophosphate-Dissolved (as P)	0.0609		0.0050	mg/L		17-APR-21	R5430260
Enterococcus	See Attached					15-APR-21	R5442695
Coliform Bacteria - Fecal	<1		1	CFU/100mL		15-APR-21	R5429205
MPN - E. coli	<1		1	MPN/100mL		15-APR-21	R5429156
Phosphorus (P)-Total	0.202		0.050	mg/L		23-APR-21	R5440552
Total Suspended Solids	3.5		3.0	mg/L		20-APR-21	R5435600
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	13.0	DLHC	0.10	mg/L		17-APR-21	R5436532
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	13.0		0.11	mg/L		27-APR-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.050	DLHC	0.050	mg/L		17-APR-21	R5436532
L2576829-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JD on 14-APR-21 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		22-APR-21	R5438156
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		17-APR-21	R5430260
Enterococcus	See Attached					15-APR-21	R5442695
Coliform Bacteria - Fecal	79		1	CFU/100mL		15-APR-21	R5429205
MPN - E. coli	19	OCR	1	MPN/100mL		15-APR-21	R5429156
Phosphorus (P)-Total	0.0323		0.0050	mg/L		26-APR-21	R5441212
Total Suspended Solids	20.9		3.0	mg/L		20-APR-21	R5435600
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.107		0.020	mg/L		17-APR-21	R5436532
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.107		0.022	mg/L		27-APR-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-APR-21	R5436532
L2576829-3 COLUMBIA RIVER DOWN STREAM (ISLAND)							
Sampled By: TJ/JD on 14-APR-21 @ 09:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		22-APR-21	R5438156
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		17-APR-21	R5430260
Enterococcus	See Attached					15-APR-21	R5442695
Coliform Bacteria - Fecal	8		1	CFU/100mL		15-APR-21	R5429205
MPN - E. coli	6	OCR	1	MPN/100mL		15-APR-21	R5429156
Phosphorus (P)-Total	0.0077		0.0050	mg/L		26-APR-21	R5441212
Total Suspended Solids	6.7		3.0	mg/L		20-APR-21	R5435600
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.221		0.020	mg/L		17-APR-21	R5436532
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.221		0.022	mg/L		27-APR-21	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2576829-3 COLUMBIA RIVER DOWN STREAM (ISLAND)							
Sampled By: TJ/JD on 14-APR-21 @ 09:00							
Matrix: WATER							
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-APR-21	R5436532

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
OCR	Parameter is out of client specific range.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2576829 Report Date: 28-APR-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5436756								
WG3521905-3 DUP		**L2576829-1**						
Biochemical Oxygen Demand		2.2	2.1		mg/L	4.7	30	16-APR-21
WG3521905-2 LCS								
Biochemical Oxygen Demand			94.3		%		85-115	16-APR-21
WG3521905-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	16-APR-21
EC-MPN-CL	**Water**							
Batch R5429156								
WG3519392-1 MB								
MPN - E. coli			<1		MPN/100mL		1	15-APR-21
FCC-MF-CL	**Water**							
Batch R5429205								
WG3519408-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	15-APR-21
NH3-F-CL	**Water**							
Batch R5438156								
WG3522146-2 LCS								
Ammonia, Total (as N)			95.4		%		85-115	22-APR-21
WG3522146-1 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	22-APR-21
NO2-IC-N-CL	**Water**							
Batch R5436532								
WG3521848-2 LCS								
Nitrite (as N)			108.2		%		90-110	17-APR-21
WG3521848-5 LCS								
Nitrite (as N)			107.2		%		90-110	17-APR-21
WG3521848-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	17-APR-21
WG3521848-4 MB								
Nitrite (as N)			<0.010		mg/L		0.01	17-APR-21
NO3-IC-N-CL	**Water**							
Batch R5436532								
WG3521848-2 LCS								
Nitrate (as N)			100.7		%		90-110	17-APR-21
WG3521848-5 LCS								

Quality Control Report

Workorder: L2576829 Report Date: 28-APR-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-CL	**Water**							
Batch R5436532								
WG3521848-5 LCS								
Nitrate (as N)			99.0		%		90-110	17-APR-21
WG3521848-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	17-APR-21
WG3521848-4 MB								
Nitrate (as N)			<0.020		mg/L		0.02	17-APR-21
P-T-COL-CL	**Water**							
Batch R5440552								
WG3523330-2 LCS								
Phosphorus (P)-Total			95.0		%		80-120	23-APR-21
WG3523330-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	23-APR-21
Batch R5441212								
WG3524115-11 LCS								
Phosphorus (P)-Total			98.9		%		80-120	26-APR-21
WG3524115-10 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	26-APR-21
PO4-DO-COL-CL	**Water**							
Batch R5430260								
WG3519710-2 LCS								
Orthophosphate-Dissolved (as P)			99.1		%		80-120	17-APR-21
WG3519710-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	17-APR-21
TSS-CL	**Water**							
Batch R5435600								
WG3520820-2 LCS								
Total Suspended Solids			86.7		%		85-115	20-APR-21
WG3520820-1 MB								
Total Suspended Solids			<3.0		mg/L		3	20-APR-21

Quality Control Report

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

Microbial Test Results

Samples collected April 14, 2021

Final Report

April 28, 2021

Submitted to: **ALS Environmental**
Calgary, AB

#4, 6125 12 Street SE, Calgary, AB T2H 2K1

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	*Enterococcus* test initiation	
L2576829-1 WWTP EFFLUENT – UV TROUGH / 2021-1260-01	14-Apr-21 at 0815h	15-Apr-21 at 1020h	15-Apr-21 at 1530h	11.8°C
L2576829-2 COLUMBIA RIVER UPSTREAM / 2021-1260-02	14-Apr-21 at 0930h	15-Apr-21 at 1020h	15-Apr-21 at 1530h	12.3°C
L2576829-3 COLUMBIA RIVER DOWN STREAM (ISLAND) / 2021-1260-03	14-Apr-21 at 0900h	15-Apr-21 at 1020h	15-Apr-21 at 1530h	13.6°C

TEST TYPES

- *Enterococcus* enumeration test

RESULTS

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2576829-1 WWTP EFFLUENT – UV TROUGH	<1
L2576829-2 COLUMBIA RIVER UPSTREAM	<1
L2576829-3 COLUMBIA RIVER DOWN STREAM (ISLAND)	36.4

MPN = Most Probable Number

QA/QC

QA/QC summary	*Enterococcus*
Protocol deviations	See Below
Control performance	Acceptable
Test performance	Valid

The samples were received and analyzed outside of the required 24 hour hold time as per the client request.

Report By:
Shae Cole, BSc
Biologist

Reviewed By:
Leila Oosterbroek, BSc
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092 USA

MPN Tables for IDEXX Quanti-Tray 2000 (http://www.idexx.com/water)

APPENDIX A – Test data

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client ALS106 Reference 2021-1260

Test Initiation

Date: 20211041 15
Time: 1530
Techician: MF

Reagent used: Enterolert™
Reagent Lot#/Expiry: MS1008 04 JAN 2022

Sample Information

Dilution Factor: –

Comments:

Thermometer Serial #: 192702205
Incubator #: 7
Incubator Temperature: 41 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: GS021 07/29/2023

Results - 24 Hour Incubation

Date: 2021/04/16 Time: 1530 Technician: SC

Incubator Temp: 41 (must be 41 ± 0.5°C)	***Enterococci*** (Fluorescent)									
	CTL	-01	-02	-03						
# Positive Large Wells:	0	0	0	25						
# Ambiguous Large Wells:		49		0						
# Positive Small Wells (Tray 2000 only)**:**		0		2						
# Ambiguous Small Wells (Tray 2000 only)**:**		48		0						
Most Probable Number at 24 hours:	<1	0	<1	36.4						

Results - 28 Hour Incubation

Date: 2021/04/17 Time: 0730 Technician: SC

Incubator Temp: 41 (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL	-01								
# Confirmed Positive Large Wells:	0	0								
# Confirmed Positive Small Wells (Tray 2000 only)**:**	0	0								
Most Probable Number at 28 hours:	<1	<1								

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: ST Date Reviewed: 2021/04/20

Ambiguous wells scored at ~~48~~ 48h hours remained ambiguous (negative result). Therefore at 28hours wells would reasonably be assumed to be ambiguous (~~neg~~ negative result.) - CB.

APPENDIX B – Chain-of-custody form

L2576829

CALGARY

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

NOTES: Please reference on final report and invoice: PO# *L2576829*
ALS requires QC data to be provided with your final results.

Please proceed if past holding

Please see enclosed **3** **sample(s) in** **3** **Container(s)**

SAMPLE NUMBER	ANALYTICAL REQUIRED 2021-1260	DATE SAMPLED / DUE DATE	Priority Flag
L2576829-1 WWTP EFFLUENT - UV TROUGH -01	Enterococcus (ENTERO-HQ 1)	**4/14/2021** 8:15 / 4/27/2021	11.8°C
L2576829-2 COLUMBIA RIVER UPSTREAM -02	Enterococcus (ENTERO-HQ 1)	**4/14/2021** 9:30 / 4/27/2021	12.3°C
L2576829-3 COLUMBIA RIVER DOWN STREAM (ISLAND) -03	Enterococcus (ENTERO-HQ 1)	**4/14/2021** 9:00 / 4/27/2021	13.6°C

2021/04/15 10:20 Drop off Good Condition
3C
3x400 mL bottles
NoS/NoL

Subcontract Info Contact: John Forbes (403) 291-9897

Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897 Email: patryk.wojciak@alsglobal.com

Please email confirmation of receipt to: **patryk.wojciak@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT

ALS Enviro

L2576829-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Resort Utility Corporation	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kickinghorseresort.com	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	WEEK 1 - 2021 Spring EMS program	
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:	WW - Q33059	
Lab Work Order # (lab use only)		ALS Contact:	LS	Sampler: TJ/JD

Analysis Request — Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 8.2 pH: 6.8	14-Apr-21	8:15	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 3.5 pH: 7.8	14-Apr-21	9:30	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Down stream (Island) Temp: 2.2 pH: 7.8	14-Apr-21	9:00	Water		X	X	X	X	X	X	X	X	X			4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Please return fresh bottles for next weeks sampling- Thanks

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	14-Apr-21	9:30				0 °C		15/04	8:35	

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 22-APR-21
Report Date: 05-MAY-21 12:38 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2579184

Project P.O. #: NOT SUBMITTED
Job Reference: WEEK 2 - 2021 SPRING EMS PROGRAM - WW
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2579184-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JLD on 21-APR-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.082		0.050	mg/L		04-MAY-21	R5448846
Biochemical Oxygen Demand	<2.0		2.0	mg/L		23-APR-21	R5442714
Orthophosphate-Dissolved (as P)	0.137	DLHC	0.010	mg/L		23-APR-21	R5440700
Enterococcus	See Attached					22-APR-21	R5449856
Coliform Bacteria - Fecal	<1		1	CFU/100mL		22-APR-21	R5440527
MPN - E. coli	<2	DLIS	2	MPN/100mL		22-APR-21	R5440489
Phosphorus (P)-Total	0.212	DLHC	0.025	mg/L		26-APR-21	R5441212
Total Suspended Solids	<3.0		3.0	mg/L		28-APR-21	R5442337
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	9.00		0.020	mg/L		24-APR-21	R5441370
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	9.02		0.022	mg/L		26-APR-21	
Nitrite in Water by IC							
Nitrite (as N)	0.016		0.010	mg/L		24-APR-21	R5441370
L2579184-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JLD on 21-APR-21 @ 08:40							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		04-MAY-21	R5448846
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		23-APR-21	R5440700
Enterococcus	See Attached					22-APR-21	R5449856
Coliform Bacteria - Fecal	2		1	CFU/100mL		22-APR-21	R5440527
MPN - E. coli	1	OCR	1	MPN/100mL		22-APR-21	R5440489
Phosphorus (P)-Total	0.0130		0.0050	mg/L		26-APR-21	R5441212
Total Suspended Solids	37.9		3.0	mg/L		28-APR-21	R5442337
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.125		0.020	mg/L		24-APR-21	R5441370
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.125		0.022	mg/L		26-APR-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		24-APR-21	R5441370
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTREAM							
Sampled By: TJ/JLD on 21-APR-21 @ 08:20							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		04-MAY-21	R5448846
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		23-APR-21	R5440700
Enterococcus	See Attached					22-APR-21	R5449856
Coliform Bacteria - Fecal	2		1	CFU/100mL		22-APR-21	R5440527
MPN - E. coli	2	OCR	1	MPN/100mL		22-APR-21	R5440489
Phosphorus (P)-Total	0.0605		0.0050	mg/L		26-APR-21	R5441212
Total Suspended Solids	23.7		3.0	mg/L		28-APR-21	R5442337
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.109		0.020	mg/L		24-APR-21	R5441370
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.109		0.022	mg/L		26-APR-21	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTREAM							
Sampled By: TJ/JLD on 21-APR-21 @ 08:20							
Matrix: WATER							
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		24-APR-21	R5441370

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLIS	Detection Limit Adjusted: Insufficient Sample
OCR	Parameter is out of client specific range.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2579184 Report Date: 05-MAY-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5442714								
WG3525707-3 DUP		**L2579184-1**						
Biochemical Oxygen Demand		<2.0	<2.0	RPD-NA	mg/L	N/A	30	23-APR-21
WG3525707-2 LCS								
Biochemical Oxygen Demand			88.6		%		85-115	23-APR-21
WG3525707-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	23-APR-21
EC-MPN-CL	**Water**							
Batch R5440489								
WG3523287-1 MB								
MPN - E. coli			<1		MPN/100mL		1	22-APR-21
FCC-MF-CL	**Water**							
Batch R5440527								
WG3523325-2 DUP		**L2579184-1**						
Coliform Bacteria - Fecal		<1	<1	RPD-NA	CFU/100mL	N/A	65	22-APR-21
WG3523325-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	22-APR-21
NH3-F-CL	**Water**							
Batch R5448846								
WG3528942-2 LCS								
Ammonia, Total (as N)			104.1		%		85-115	04-MAY-21
WG3528942-1 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	04-MAY-21
NO2-IC-N-CL	**Water**							
Batch R5441370								
WG3524270-13 LCS								
Nitrite (as N)			100.7		%		90-110	24-APR-21
WG3524270-2 LCS								
Nitrite (as N)			98.8		%		90-110	24-APR-21
WG3524270-6 LCS								
Nitrite (as N)			99.0		%		90-110	24-APR-21
WG3524270-9 LCS								
Nitrite (as N)			101.4		%		90-110	24-APR-21
WG3524270-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	24-APR-21
WG3524270-12 MB								
Nitrite (as N)			<0.010		mg/L		0.01	24-APR-21
WG3524270-5 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-N-CL	**Water**							
Batch R5441370								
WG3524270-5 MB								
Nitrite (as N)			<0.010		mg/L		0.01	24-APR-21
WG3524270-8 MB								
Nitrite (as N)			<0.010		mg/L		0.01	24-APR-21
NO3-IC-N-CL	**Water**							
Batch R5441370								
WG3524270-13 LCS								
Nitrate (as N)			100.1		%		90-110	24-APR-21
WG3524270-2 LCS								
Nitrate (as N)			98.3		%		90-110	24-APR-21
WG3524270-6 LCS								
Nitrate (as N)			98.1		%		90-110	24-APR-21
WG3524270-9 LCS								
Nitrate (as N)			99.9		%		90-110	24-APR-21
WG3524270-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	24-APR-21
WG3524270-12 MB								
Nitrate (as N)			<0.020		mg/L		0.02	24-APR-21
WG3524270-5 MB								
Nitrate (as N)			<0.020		mg/L		0.02	24-APR-21
WG3524270-8 MB								
Nitrate (as N)			<0.020		mg/L		0.02	24-APR-21
P-T-COL-CL	**Water**							
Batch R5441212								
WG3524115-2 LCS								
Phosphorus (P)-Total			101.3		%		80-120	26-APR-21
WG3524115-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	26-APR-21
PO4-DO-COL-CL	**Water**							
Batch R5440700								
WG3523418-2 LCS								
Orthophosphate-Dissolved (as P)			97.0		%		80-120	23-APR-21
WG3523418-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	23-APR-21
TSS-CL	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-CL	**Water**							
Batch R5442337								
WG3525002-2 LCS								
Total Suspended Solids			92.6		%		85-115	28-APR-21
WG3525002-1 MB								
Total Suspended Solids			<3.0		mg/L		3	28-APR-21

Quality Control Report

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

Microbial Test Results

Sample collected April 21, 2021

Final Report

May 5, 2021

Submitted to: **ALS Environmental**
Calgary, AB

#4, 6125 12 Street SE, Calgary, AB T2H 2K1

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	*Enterococcus* test initiation	
L2579184-1 WWTP EFFLUENT – UV TROUGH/ 2021-1290-01	21-Apr-21 at 0800h	22-Apr-21 at 1015h	22-Apr-21 at 1120h	6.8°C
L2579184-2 COLUMBIA RIVER UPSTREAM/ 2021-1290-02	21-Apr-21 at 0840h	22-Apr-21 at 1015h	22-Apr-21 at 1120h	7.4°C
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTREAM/ 2021-1290-03	21-Apr-21 at 0820h	22-Apr-21 at 1015h	22-Apr-21 at 1120h	8.3°C

TEST TYPES

- *Enterococcus* enumeration test

RESULTS

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2579184-1 WWTP EFFLUENT – UV TROUGH	<1
L2579184-2 COLUMBIA RIVER UPSTREAM	5.1
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTREAM	1.0

MPN = Most Probable Number

QA/QC

QA/QC summary	***Enterococcus***
Protocol deviations	See Below
Control performance	Acceptable
Test performance	Valid

Samples were received and testing initiated outside of the required 24-hour hold time at the client's request.

Report By:
Michael Wrubleski, BSc
Biologist

Reviewed By:
Leila Oosterbroek, BSc
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092 USA

MPN Tables for IDEXX Quanti-Tray 2000 (http://www.idexx.com/water)

APPENDIX A – Test data

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client: ALS 106 Reference: 24-1290

Test Initiation

Date: 2021/04/22
Time: 1120
Techician: MW

Thermometer Serial #: 192702205
Incubator #: 7
Incubator Temperature: (must be 41 ± 0.5°C)

Sample Information

Reagent used: Enterolert™
Reagent Lot#/Expiry: G5690 / 2021 OCT 2 CTL +-01
M5608 / 2022 JAN 4 ~~-02+03~~ 3 02+03
Quanti Tray 2000 Lot#/Expiry: G5025 / 07/29/2023

Dilution Factor: —

Comments:

Results - 24 Hour Incubation

Date: 2021/04/23 Time: 1120 Technician: MW

Incubator Temp: 41 (must be 41 ± 0.5°C)	*Enterococci* (Fluorescent)									
	CTL	-01	-02	-03						
# Positive Large Wells:	0	0	2	0						
# Ambiguous Large Wells:			3							
# Positive Small Wells (Tray 2000 only):			0							
# Ambiguous Small Wells (Tray 2000 only):			3	1						
Most Probable Number at 24 hours:	~~0~~ W <1	~~0~~ W <1	2.0	~~0~~ W 1.0						

Results - 28 Hour Incubation

Date: 2021/04/23 Time: 1520 Technician: MW

Incubator Temp: 41 (must be 41 ± 0.5°C)	*Enterococci* (Fluorescent)									
	CTL W		-02	-03						
# Confirmed Positive Large Wells:	~~0~~		3	0						
# Confirmed Positive Small Wells (Tray 2000 only):			2	1						
Most Probable Number at 28 hours:	~~0~~		5.1	1.0						

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: W Date Reviewed: 2021/04/29

APPENDIX B – Chain-of-custody form

L2579184

CALGARY

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

NOTES: Please reference on final report and invoice: PO# *L2579184*
ALS requires QC data to be provided with your final results.

Past hold time - Please proceed

Please see enclosed **3** **sample(s) in** **3** **Container(s)**

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED	DUE DATE	Priority Flag
L2579184-1 WWTP EFFLUENT - UV TROUGH	Enterococcus (ENTERO-HQ 1)	**4/21/2021**	5/4/2021	800
L2579184-2 COLUMBIA RIVER UPSTREAM	Enterococcus (ENTERO-HQ 1)	**4/21/2021**	5/4/2021	840
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTREAM	Enterococcus (ENTERO-HQ 1)	**4/21/2021**	5/4/2021	820

2021-1290
-01 6.8°C
-02 7.4°C
-03 8.3°C

2021/04/22 10:15 Good Condition
SUnless
SC
3x400mL bottle
NaS/NaI

Subcontract Info Contact: John Forbes (403) 291-9897

Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897 Email: patryk.wojciak@alsglobal.com

Please email confirmation of receipt to: **patryk.wojciak@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT

L2579184-COFC

ALS Environ

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To	
Company:	Kicking Horse Mountain Resort Utility Corporation
Contact:	Travis Jobin
Address:	1500 Kicking Horse Trail
Phone:	250-344-8442 Fax:
Invoice To	Same as Report ? ☐ Yes ☑ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	Resorts of the Canadian Rockies
Contact:	Patrick Majer
Address:	1505 - 17th Ave SW Calgary AB
Phone:	Fax:

Report Format / Distribution

☑ Standard ☐ Other

☐ PDF ☐ Excel ☐ Digital ☑ Fax

Email 1: tjobin@kickinghorseresort.com

Email 2: pmajer@skircr.com

Email 3: mskyring@kickinghorseresort.com

Client / Project Information

Job #: Week 2 - 2021 Spring EMS program - WW

PO / AFE:

LSD:

Quote #: Q33059

Service Requested (Rush for routine analysis subject to availability)

◉ Regular (Standard Turnaround Times - Business Days)

○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT

○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT

○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Lab Work Order # (lab use only)

ALS Contact: PW

Sampler: TJ/JD

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 9.8 pH: 6.8	21-Apr-21	800	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 6.7 pH: 8.0	21-Apr-21	940	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Island Down stream Temp: ~~7.8~~ 7.6 pH: 7.8	21-Apr-21	820	Water		X	X	X	X	X	X	X	X	X			4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	26-May-20	900				10 °C		22/04	8:00	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **KS2101010**	Page	: 1 of 3
Client	: **Resorts of the Canadian Rockies Inc.**	Laboratory	: Kamloops - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1505 17th Avenue SW Calgary AB Canada T2T 0E2	Address	: 1445 McGill Road, Unit 2B Kamloops BC Canada V2C 6K7
Telephone	: 250 344 6003	Telephone	: +1 250 372 3588
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 07-Apr-2021 14:00
PO	: ----	Date Analysis Commenced	: 07-Apr-2021
C-O-C number	: ----	Issue Date	: 17-Apr-2021 15:56
Sampler	: TJ		
Site	: ----		
Quote number	: CG21-RESC100-0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Amanda Lampreau	Laboratory _ Supervisor	Microbiology, Kamloops, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	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*
CFU/100mL	colony forming units per 100 mL
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**)				Client sample ID	**UV Trough**	----	----	----	----
				Client sampling date / time	06-Apr-2021 10:30	----	----	----	----
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	**KS2101010-001**	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
solids, total suspended [TSS]	----	E160-H	3.0	mg/L	5.4	----	----	----	----
Anions and Nutrients									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.169	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.284	----	----	----	----
Bacteriological Tests									
coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	1	----	----	----	----
Aggregate Organics									
biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	----	----	----	----

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

CERTIFICATE OF ANALYSIS

Work Order	: **KS2101010**	Page	: 1 of 2
Client	: **Resorts of the Canadian Rockies Inc.**	Laboratory	: Kamloops - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1505 17th Avenue SW Calgary AB Canada T2T 0E2	Address	: 1445 McGill Road, Unit 2B Kamloops BC Canada V2C 6K7
Telephone	: 250 344 6003	Telephone	: +1 250 372 3588
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 07-Apr-2021 14:00
PO	: ----	Date Analysis Commenced	: 07-Apr-2021
C-O-C number	: ----	Issue Date	: 17-Apr-2021 15:56
Sampler	: TJ		
Site	: ----		
Quote number	: CG21-RESC100-0001		
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 FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amanda Lampreau	Laboratory _ Supervisor	Microbiology, Kamloops, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	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*
CFU/100mL	colony forming units per 100 mL
mg/L	milligrams per litre

>: greater than.
<: less 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

KS2101010-001

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

Client sample ID: UV Trough
Client sampling date / time: 06-Apr-2021 10:30

Analyte	*CAS Number*	*Result*	*LOR*	*Unit*	*Method*	*Prep Date*	*Analysis Date*	*QCLot*
Physical Tests								
solids, total suspended [TSS]	----	5.4	3.0	mg/L	E160-H	-	13-Apr-2021	177650
Anions and Nutrients								
phosphate, ortho-, dissolved (as P)	14265-44-2	0.169	0.0100	mg/L	E378-U	10-Apr-2021	10-Apr-2021	176728
phosphorus, total	7723-14-0	0.284	0.0200	mg/L	E372-U	09-Apr-2021	10-Apr-2021	175918
Bacteriological Tests								
coliforms, thermotolerant [fecal]	----	1	1	CFU/100mL	E012.FC	-	07-Apr-2021	175612
Aggregate Organics								
biochemical oxygen demand [BOD]	----	<2.0	2.0	mg/L	E550	-	08-Apr-2021	175411

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **KS2101010**	Page	: 1 of 5
Client	: **Resorts of the Canadian Rockies Inc.**	Laboratory	: Kamloops - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1505 17th Avenue SW Calgary AB Canada T2T 0E2	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: 250 344 6003	Telephone	: +1 250 372 3588
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 07-Apr-2021 14:00
PO	: ----	Issue Date	: 17-Apr-2021 15:56
C-O-C number	: ----		
Sampler	: TJ		
Site	: ----		
Quote number	: CG21-RESC100-0001		
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 Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT 3d] UV Trough	E550	06-Apr-2021	----	----	----		08-Apr-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE UV Trough	E378-U	06-Apr-2021	----	----	----		10-Apr-2021	3 days	4 days	✗ EHT
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) UV Trough	E372-U	06-Apr-2021	09-Apr-2021	28 days	2 days	✓	10-Apr-2021	25 days	0 days	✓
Bacteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)										
Sterile HDPE (Sodium thiosulphate) UV Trough	E012.FC	06-Apr-2021	----	----	----		07-Apr-2021	30 hrs	28 hrs	✓
Physical Tests : TSS by Gravimetry										
HDPE UV Trough	E160-H	06-Apr-2021	----	----	----		13-Apr-2021	7 days	6 days	✓

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Biochemical Oxygen Demand - 5 day	E550	175411	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	176728	1	9	11.1	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	175612	0	1	0.0	5.0	✗
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	175918	1	8	12.5	5.0	✓
TSS by Gravimetry	E160-H	177650	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand - 5 day	E550	175411	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	176728	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	175918	1	8	12.5	5.0	✓
TSS by Gravimetry	E160-H	177650	1	20	5.0	5.0	✓
Method Blanks (MB)							
Biochemical Oxygen Demand - 5 day	E550	175411	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	176728	1	9	11.1	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	175612	1	1	100.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	175918	1	8	12.5	5.0	✓
TSS by Gravimetry	E160-H	177650	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	176728	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	175918	1	8	12.5	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
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC Kamloops - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 45.5 ±0.2°C for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160-H Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. 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.
Total Phosphorus by Colourimetry (Ultra Trace)	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)	E378-U Vancouver - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water 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.
Biochemical Oxygen Demand - 5 day	E550 Vancouver - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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	: **KS2101010**	Page	: 1 of 4
Client	: Resorts of the Canadian Rockies Inc.	Laboratory	: Kamloops - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1505 17th Avenue SW Calgary AB Canada T2T 0E2	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: 250 344 6003	Telephone	: +1 250 372 3588
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 07-Apr-2021 14:00
PO	: ----	Date Analysis Commenced	: 07-Apr-2021
C-O-C number	: ----	Issue Date	: 17-Apr-2021 15:56
Sampler	: TJ		
Site	: ----		
Quote number	: CG21-RESC100-0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

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*
Amanda Lampreau	Laboratory _ Supervisor	Microbiology, Kamloops, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	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 Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

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: 177650)											
KS2100999-001	Anonymous	solids, total suspended [TSS]	----	E160-H	3.0	mg/L	12.4	13.2	0.8	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 175918)											
KS2100995-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	2.43	2.66	9.09%	20%	----
Anions and Nutrients (QC Lot: 176728)											
KS2101010-001	UV Trough	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0100	mg/L	0.169	0.175	3.19%	20%	----
Aggregate Organics (QC Lot: 175411)											
KS2100999-001	Anonymous	biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	7.8	7.0	10.8%	30%	----

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: 177650)						
solids, total suspended [TSS]	----	E160-H	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 175918)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 176728)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Bacteriological Tests (QCLot: 175612)						
coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	<1	----
Aggregate Organics (QCLot: 175411)						
biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----

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: 177650)									
solids, total suspended [TSS]	----	E160-H	3	mg/L	150 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 175918)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	86.2	80.0	120	----
Anions and Nutrients (QCLot: 176728)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120	----
Aggregate Organics (QCLot: 175411)									
biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	96.7	85.0	115	----

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: 175918)										
KS2101010-001	UV Trough	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 176728)										
KS2101013-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	ND mg/L	3 mg/L	ND	70.0	130	----

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Water Utility Co. Ltd.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1: tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2: pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-6003 Fax:	Email 3: mskyring@kickinghorseresort.com	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #: RCR - Kicking Horse Mountain Resort	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:	Resorts of the Canadian Rockies	PO / AFE:	
Contact:	Patrick Majer	LSD:	
Address:	1505 - 17th Ave SW Calgary AB		
Phone:	Fax:	Quote #: Q33059	
Lab Work Order # (lab use only)	KS2101010	ALS Contact: PW	Sampler: TJ

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	Number of Containers
	UV trough	06-Apr-21	10:30	Water	X	X	X	X	X	4

Environmental Division
Kamloops
Work Order Reference
KS2101010

Telephone : +1 250 372 3588

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Mark Skyring	6-Apr-21		CT	APR 07 2021	2pm	9 °C				

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 28-APR-21
Report Date: 13-MAY-21 18:04 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2581059

Project P.O. #:	NOT SUBMITTED
Job Reference:	WEEK 2 - 2021 SPRING 2021 EMS PROGRAM - WW
C of C Numbers:	
Legal Site Desc:	

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2581059-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JD on 27-APR-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		05-MAY-21	R5450818
Biochemical Oxygen Demand	2.6		2.0	mg/L		28-APR-21	R5446436
Orthophosphate-Dissolved (as P)	0.157	DLHC	0.010	mg/L		29-APR-21	R5443919
Enterococcus	See Attached					28-APR-21	R5456815
Coliform Bacteria - Fecal	<1		1	CFU/100mL		28-APR-21	R5443323
MPN - E. coli	<1		1	MPN/100mL		28-APR-21	R5443303
Phosphorus (P)-Total	0.29		0.10	mg/L		06-MAY-21	R5453038
Total Suspended Solids	5.9		3.0	mg/L		04-MAY-21	R5450538
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	6.25		0.020	mg/L		28-APR-21	R5443116
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	6.27		0.022	mg/L		29-APR-21	
Nitrite in Water by IC							
Nitrite (as N)	0.018		0.010	mg/L		28-APR-21	R5443116
L2581059-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JD on 27-APR-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		05-MAY-21	R5450818
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		29-APR-21	R5443919
Enterococcus	See Attached					28-APR-21	R5456815
Coliform Bacteria - Fecal	2		1	CFU/100mL		28-APR-21	R5443323
MPN - E. coli	1	OCR	1	MPN/100mL		28-APR-21	R5443303
Phosphorus (P)-Total	0.0059		0.0050	mg/L		06-MAY-21	R5453038
Total Suspended Solids	11.5		3.0	mg/L		04-MAY-21	R5450538
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.123		0.020	mg/L		28-APR-21	R5443116
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.123		0.022	mg/L		29-APR-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		28-APR-21	R5443116
L2581059-3 COLUMBIA RIVER ISLAND DOWN STREAM							
Sampled By: TJ/JD on 27-APR-21 @ 08:45							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		05-MAY-21	R5450818
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		29-APR-21	R5443919
Enterococcus	See Attached					28-APR-21	R5456815
Coliform Bacteria - Fecal	2		1	CFU/100mL		28-APR-21	R5443323
MPN - E. coli	2	OCR	1	MPN/100mL		28-APR-21	R5443303
Phosphorus (P)-Total	0.0054		0.0050	mg/L		06-MAY-21	R5453038
Total Suspended Solids	11.3		3.0	mg/L		04-MAY-21	R5450538
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.130		0.020	mg/L		28-APR-21	R5443116
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.130		0.022	mg/L		29-APR-21	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2581059-3 COLUMBIA RIVER ISLAND DOWN STREAM							
Sampled By: TJ/JD on 27-APR-21 @ 08:45							
Matrix: WATER							
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		28-APR-21	R5443116

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
OCR	Parameter is out of client specific range.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2581059 Report Date: 13-MAY-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5446436								
WG3528259-5 LCS								
Biochemical Oxygen Demand			95.9		%		85-115	28-APR-21
WG3528259-4 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	28-APR-21
EC-MPN-CL	**Water**							
Batch R5443303								
WG3526560-1 MB								
MPN - E. coli			<1		MPN/100mL		1	28-APR-21
FCC-MF-CL	**Water**							
Batch R5443323								
WG3526579-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	28-APR-21
NH3-F-CL	**Water**							
Batch R5450818								
WG3529618-6 LCS								
Ammonia, Total (as N)			96.3		%		85-115	05-MAY-21
WG3529618-5 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	05-MAY-21
NO2-IC-N-CL	**Water**							
Batch R5443116								
WG3526367-2 LCS								
Nitrite (as N)			100.7		%		90-110	28-APR-21
WG3526367-6 LCS								
Nitrite (as N)			100.4		%		90-110	28-APR-21
WG3526367-9 LCS								
Nitrite (as N)			101.1		%		90-110	28-APR-21
WG3526367-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	28-APR-21
WG3526367-5 MB								
Nitrite (as N)			<0.010		mg/L		0.01	28-APR-21
WG3526367-8 MB								
Nitrite (as N)			<0.010		mg/L		0.01	28-APR-21
NO3-IC-N-CL	**Water**							

Quality Control Report

Workorder: L2581059 Report Date: 13-MAY-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-CL	**Water**							
Batch R5443116								
WG3526367-2 LCS								
Nitrate (as N)			98.9		%		90-110	28-APR-21
WG3526367-6 LCS								
Nitrate (as N)			98.7		%		90-110	28-APR-21
WG3526367-9 LCS								
Nitrate (as N)			99.1		%		90-110	28-APR-21
WG3526367-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	28-APR-21
WG3526367-5 MB								
Nitrate (as N)			<0.020		mg/L		0.02	28-APR-21
WG3526367-8 MB								
Nitrate (as N)			<0.020		mg/L		0.02	28-APR-21
P-T-COL-CL	**Water**							
Batch R5453038								
WG3530243-2 LCS								
Phosphorus (P)-Total			99.95		%		80-120	06-MAY-21
WG3530243-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	06-MAY-21
WG3530243-4 MS		**L2581059-1**						
Phosphorus (P)-Total			N/A	MS-B	%		-	06-MAY-21
PO4-DO-COL-CL	**Water**							
Batch R5443919								
WG3526348-6 LCS								
Orthophosphate-Dissolved (as P)			93.0		%		80-120	29-APR-21
WG3526348-5 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	29-APR-21
TSS-CL	**Water**							
Batch R5450538								
WG3528894-6 DUP		**L2581059-3**						
Total Suspended Solids		11.3	9.5		mg/L	17	20	04-MAY-21
WG3528894-5 LCS								
Total Suspended Solids			93.0		%		85-115	04-MAY-21
WG3528894-4 MB								
Total Suspended Solids			<3.0		mg/L		3	04-MAY-21

Quality Control Report

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

Microbial Test Results

Sample collected April 27, 2021

Final Report

May 13, 2021

Submitted to: **ALS Environmental**
Calgary, AB

#4, 6125 12 Street SE, Calgary, AB T2H 2K1

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	*Enterococcus* test initiation	
L2581059-1 WWTP EFFLUENT – UV TROUGH / 2021-1320-01	27-Apr-21 at 0800h	28-Apr-21 at 1000h	28-Apr-21 at 1115h	8.2°C
L2581059-2 COLUMBIA RIVER UPSTREAM / 2021-1320-02	27-Apr-21 at 0830h	28-Apr-21 at 1000h	28-Apr-21 at 1115h	8.3°C
L2581059-3 COLUMBIA RIVER ISLAND DOWN STREAM / 2021-1320-03	27-Apr-21 at 0845h	28-Apr-21 at 1000h	28-Apr-21 at 1115h	8.6°C

TEST TYPES

- *Enterococcus* enumeration test

RESULTS

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2581059-1 WWTP EFFLUENT – UV TROUGH	<1
L2581059-2 COLUMBIA RIVER UPSTREAM	3.0
L2581059-3 COLUMBIA RIVER ISLAND DOWN STREAM	1.0

MPN = Most Probable Number

QA/QC

QA/QC summary	*Enterococcus*
Protocol deviations	See Below
Control performance	Acceptable
Test performance	Valid

The sample was received and set outside of the required 24 hour hold time as per the client's request.

Report By:
Shae Cole, BSc
Biologist

Reviewed By:
Leila Oosterbroek, BSc
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092 USA

MPN Tables for IDEXX Quanti-Tray 2000 (http://www.idexx.com/water)

APPENDIX A – Test data

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client: ALS106 Reference: 2021-1320

Test Initiation

Date: 2021 104 128
Time: 1115
Techician: MF

Reagent used: Enterolert™
Reagent Lot#/Expiry: MS6008 04 JAN 2022

Sample Information

Dilution Factor: -

Comments:

Thermometer Serial #: 192702205
Incubator #: 7
Incubator Temperature: 41 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: GS021 07/29/2022

Results - 24 Hour Incubation

Date: 2021/04/29 Time: 1115 Technician: SC

Incubator Temp: 41 (must be 41 ± 0.5°C)	*Enterococci* (Fluorescent)									
	CTL	-01	-02	-03						
# Positive Large Wells:	0	0	2	1						
# Ambiguous Large Wells:	↓	49	0	0						
# Positive Small Wells (Tray 2000 only):		0	1	0						
# Ambiguous Small Wells (Tray 2000 only):		48	0	0						
Most Probable Number at 24 hours:	<1	0	3.0	1.0						

Results - 28 Hour Incubation

Date: 2021/04/29 Time: 1515 MF 20 Technician: MF

Incubator Temp: 41 (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL	-01								
# Confirmed Positive Large Wells:	0	0								
# Confirmed Positive Small Wells (Tray 2000 only):	0	0								
Most Probable Number at 28 hours:	<1	<1								

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: SJ Date Reviewed: 2021/04/29

APPENDIX B – Chain-of-custody form

L2581059

CALGARY

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

NOTES: Please reference on final report and invoice: PO# *L2581059*
ALS requires QC data to be provided with your final results.
Past Hold time - please proceed

Please see enclosed 3 sample(s) in 3 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED 2021-1320	DATE SAMPLED / DUE DATE	Priority Flag
L2581059-1 WWTP EFFLUENT - UV TROUGH -01	Enterococcus (ENTERO-HQ 1)	**4/27/2021** 8.2°C 5/10/2021	800
L2581059-2 COLUMBIA RIVER UPSTREAM -02	Enterococcus (ENTERO-HQ 1)	**4/27/2021** 8.3°C 5/10/2021	830
L2581059-3 COLUMBIA RIVER ISLAND DOWN STREAM -03	Enterococcus (ENTERO-HQ 1)	**4/27/2021** 8.6°C 5/10/2021	845

Subcontract Info Contact: John Forbes (403) 291-9897 2021/04/28 10:00 Sa200 SC 3x400mL bottle NoS/NoL

Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897 Email: patryk.wojciak@alsglobal.com

Please email confirmation of receipt to: **patryk.wojciak@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT

ALS Environmental

L2581059-COFC

n of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Resort Utility Corporation	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kickinghorseresort.com	**Analysis Request**
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Week 2 - 2021 Spring EMS program - WW	
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)		ALS Contact: PW	Sampler: TJ/JD	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 9.3 pH: 6.7	27-Apr-21	8:00	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 7.7 pH: 7.8	27-Apr-21	8:30	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Island Down stream Temp: 6.4 pH: 7.9	27-Apr-21	8:45	Water		X	X	X	X	X	X	X	X	X			4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Travis Jobin	Date (dd-mmm-yy) 27-Apr-21	Time (hh-mm)	Received by:	Date: 4/28	Time: 8:13	Temperature: 8 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 06-MAY-21
Report Date: 19-MAY-21 17:41 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2584387
Project P.O. #: NOT SUBMITTED
Job Reference: WEEK 4 - 2021 SPRING EMS PROGRAM
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2584387-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JD on 05-MAY-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.420		0.050	mg/L		19-MAY-21	R5460204
Biochemical Oxygen Demand	<2.0		2.0	mg/L		06-MAY-21	R5455974
Orthophosphate-Dissolved (as P)	0.112	DLHC	0.010	mg/L		07-MAY-21	R5454600
Enterococcus	See Attached					06-MAY-21	R5458819
Coliform Bacteria - Fecal	<1		1	CFU/100mL		06-MAY-21	R5454524
MPN - E. coli	<1		1	MPN/100mL		06-MAY-21	R5454515
Phosphorus (P)-Total	0.337		0.025	mg/L		17-MAY-21	R5458681
Total Suspended Solids	8.4		3.0	mg/L		12-MAY-21	R5456918
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	4.28		0.020	mg/L		06-MAY-21	R5456188
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	4.31		0.022	mg/L		12-MAY-21	
Nitrite in Water by IC							
Nitrite (as N)	0.033		0.010	mg/L		06-MAY-21	R5456188
L2584387-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JD on 05-MAY-21 @ 08:20							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		19-MAY-21	R5460204
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		07-MAY-21	R5454600
Enterococcus	See Attached					06-MAY-21	R5458819
Coliform Bacteria - Fecal	2		1	CFU/100mL		06-MAY-21	R5454524
MPN - E. coli	2	OCR	1	MPN/100mL		06-MAY-21	R5454515
Phosphorus (P)-Total	0.0121		0.0050	mg/L		17-MAY-21	R5458681
Total Suspended Solids	17.0		3.0	mg/L		12-MAY-21	R5456918
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.182		0.020	mg/L		06-MAY-21	R5456188
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.182		0.022	mg/L		12-MAY-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		06-MAY-21	R5456188
L2584387-3 COLUMBIA RIVER DOWN STREAM (ISLAND)							
Sampled By: TJ/JD on 05-MAY-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		19-MAY-21	R5460204
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		07-MAY-21	R5454600
Enterococcus	See Attached					06-MAY-21	R5458819
Coliform Bacteria - Fecal	2		1	CFU/100mL		06-MAY-21	R5454524
MPN - E. coli	1	OCR	1	MPN/100mL		06-MAY-21	R5454515
Phosphorus (P)-Total	0.0058		0.0050	mg/L		17-MAY-21	R5458681
Total Suspended Solids	16.4		3.0	mg/L		12-MAY-21	R5456918
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.183		0.020	mg/L		06-MAY-21	R5456188
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.183		0.022	mg/L		12-MAY-21	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2584387-3 COLUMBIA RIVER DOWN STREAM (ISLAND)							
Sampled By: TJ/JD on 05-MAY-21 @ 08:30							
Matrix: WATER							
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		06-MAY-21	R5456188

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
OCR	Parameter is out of client specific range.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2584387 Report Date: 19-MAY-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5455974								
WG3532878-2 LCS								
Biochemical Oxygen Demand			101.9		%		85-115	06-MAY-21
WG3532878-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	06-MAY-21
EC-MPN-CL	**Water**							
Batch R5454515								
WG3531130-1 MB								
MPN - E. coli			<1		MPN/100mL		1	06-MAY-21
FCC-MF-CL	**Water**							
Batch R5454524								
WG3531148-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	06-MAY-21
NH3-F-CL	**Water**							
Batch R5460204								
WG3537924-14 LCS								
Ammonia, Total (as N)			104.5		%		85-115	19-MAY-21
Ammonia, Total (as N)			104.5		mg/L		85-115	19-MAY-21
WG3537924-13 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	19-MAY-21
NO2-IC-N-CL	**Water**							
Batch R5456188								
WG3533232-2 LCS								
Nitrite (as N)			102.3		%		90-110	06-MAY-21
WG3533232-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	06-MAY-21
NO3-IC-N-CL	**Water**							
Batch R5456188								
WG3533232-2 LCS								
Nitrate (as N)			100.2		%		90-110	06-MAY-21
WG3533232-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	06-MAY-21
P-T-COL-CL	**Water**							

Quality Control Report

Workorder: L2584387 Report Date: 19-MAY-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-CL	**Water**							
Batch R5458681								
WG3536022-2 LCS								
Phosphorus (P)-Total			106.9		%		80-120	17-MAY-21
WG3536022-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	17-MAY-21
PO4-DO-COL-CL	**Water**							
Batch R5454600								
WG3531122-2 LCS								
Orthophosphate-Dissolved (as P)			102.2		%		80-120	07-MAY-21
WG3531122-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	07-MAY-21
TSS-CL	**Water**							
Batch R5456918								
WG3533139-2 LCS								
Total Suspended Solids			88.5		%		85-115	12-MAY-21
WG3533139-1 MB								
Total Suspended Solids			<3.0		mg/L		3	12-MAY-21

Quality Control Report

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

Microbial Test Results

Samples collected May 5, 2021

Final Report

May 17, 2021

Submitted to: **ALS Environmental**
Calgary, AB

#4, 6125 12 Street SE, Calgary, AB T2H 2K1

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	*Enterococcus* test initiation	
L2584387-1 WWTP EFFLUENT – UV TROUGH / 2021-1371-01	5-May-21 at 0800h	6-May-21 at 1100h	6-May-21 at 1230h	10.8°C
L2584387-2 COLUMBIA RIVER UPSTREAM / 2021-1371-02	5-May-21 at 0820h	6-May-21 at 1100h	6-May-21 at 1230h	9.8°C
L2584387-3 COLUMBIA RIVER DOWN STREAM (ISLAND) / 2021-1371-03	5-May-21 at 0830h	6-May-21 at 1100h	6-May-21 at 1230h	10.9°C

TEST TYPES

- *Enterococcus* enumeration test

RESULTS

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2584387-1 WWTP EFFLUENT – UV TROUGH	4.1
L2584387-2 COLUMBIA RIVER UPSTREAM	<1
L2584387-3 COLUMBIA RIVER DOWN STREAM (ISLAND)	<1

MPN = Most Probable Number

QA/QC

QA/QC summary	***Enterococcus***
Protocol deviations	See Below
Control performance	Acceptable
Test performance	Valid

Samples received and set outside of the 24-hour hold time as per the client's request.

Report By:
Shae Cole, BSc
Biologist

Reviewed By:
Leila Oosterbroek, BSc
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092 USA

MPN Tables for IDEXX Quanti-Tray 2000 (http://www.idexx.com/water)

APPENDIX A – Test data

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client ALS106 Reference 2021-1371

Test Initiation

Date: 2021/05/06
Time: 1230
Techician: DW

Reagent used: Enterolert™
Reagent Lot#/Expiry: M5608 / 04 Jan 2022

Sample Information
Dilution Factor: N/A

Comments:

Thermometer Serial #: 192702205
Incubator #: 7
Incubator Temperature: 41 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: G5021 / 09/29/2023

Results - 24 Hour Incubation

Date: 2021/05/07 Time: 1230 Technician: SC

Incubator Temp: 41 (must be 41 ± 0.5°C)	***Enterococci*** (Fluorescent)									
	CTL	1371-01	1371-02	1371-03						
# Positive Large Wells:	0	3	0	0						
# Ambiguous Large Wells:	↓	0	↓	↓						
# Positive Small Wells (Tray 2000 only):		1								
# Ambiguous Small Wells (Tray 2000 only):	↓	0	↓	↓						
Most Probable Number at 24 hours:	<1	4.1	<1	<1						

Results - 28 Hour Incubation

Date: _____ Time: _____ Technician: _____

Incubator Temp: _____ (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL									
# Confirmed Positive Large Wells:										
# Confirmed Positive Small Wells (Tray 2000 only):										
Most Probable Number at 28 hours:										

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: SC Date Reviewed: 2021/05/07

APPENDIX B – Chain-of-custody form

L2584387

CALGARY

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

NOTES: Please reference on final report and invoice: PO# *L2584387*
ALS requires QC data to be provided with your final results.
Hold time exceeded - Please Proceed

Please see enclosed **3** **sample(s) in** **3** **Container(s)**

SAMPLE NUMBER	ANALYTICAL REQUIRED		DATE SAMPLED / DUE DATE	Priority Flag
L2584387-1 WWTP EFFLUENT - UV TROUGH			**5/5/2021**	800
01 -	Enterococcus (ENTERO-HQ 1)	10.8°C	5/18/2021	
L2584387-2 COLUMBIA RIVER UPSTREAM			**5/5/2021**	820
02 -	Enterococcus (ENTERO-HQ 1)	9.8°C	5/18/2021	
L2584387-3 COLUMBIA RIVER DOWN STREAM (ISLAND)			**5/5/2021**	830
03 -	Enterococcus (ENTERO-HQ 1)	10.9°C	5/18/2021	

Subcontract Info Contact: John Forbes (403) 291-9897
Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897 Email: patryk.wojciak@alsglobal.com

2021-1371 3x400mL
2021/05/06 good cond
1100 no s/no 1
CAD
AE

Please email confirmation of receipt to: **patryk.wojciak@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT

ALS Environmental

L2584387-COFC

Custody / Analytical Request Form

ada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To		/ Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Resort Utility Corporation	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kickinghorseresort.com	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	WEEK 4 - 2021 Spring EMS program	
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:	WW - Q33059	
Lab Work Order # (lab use only)		ALS Contact:	LS	Sampler: TJ/JD

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 9.2 pH: 7.2	05-May-21	8:00	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 8.0 pH: 7.9	05-May-21	8:20	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Down stream (island) Temp: 9.5 pH: 7.6	05-May-21	8:30	Water		X	X	X	X	X	X	X	X	X			4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Please return fresh bottles for next weeks sampling- Thanks

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy) 5-May-21	Time (hh-mm) 7	Received by:	Date: 5/6	Time: 925	Temperature: 6 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 13-MAY-21
Report Date: 02-JUN-21 15:02 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2587289
Project P.O. #: NOT SUBMITTED
Job Reference: WEEK 5 - 2021 SPRING EMS PROGRAM - WW
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 01-JUN-21 08:21

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2587289-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JD on 11-MAY-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.185		0.050	mg/L		01-JUN-21	R5476464
Biochemical Oxygen Demand	<2.0		2.0	mg/L		13-MAY-21	R5459472
Orthophosphate-Dissolved (as P)	0.120		0.010	mg/L		13-MAY-21	R5457268
Enterococcus	See Attached					13-MAY-21	R5475877
Coliform Bacteria - Fecal	<1		1	CFU/100mL		13-MAY-21	R5457957
MPN - E. coli	<1		1	MPN/100mL		13-MAY-21	R5457949
Phosphorus (P)-Total	0.257		0.025	mg/L		24-MAY-21	R5464896
Total Suspended Solids	4.8		3.0	mg/L		21-MAY-21	R5462829
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	8.19		0.020	mg/L		13-MAY-21	R5457710
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	8.21		0.022	mg/L		14-MAY-21	
Nitrite in Water by IC							
Nitrite (as N)	0.018		0.010	mg/L		13-MAY-21	R5457710
L2587289-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JD on 11-MAY-21 @ 09:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.166		0.050	mg/L		01-JUN-21	R5476464
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		13-MAY-21	R5457268
Enterococcus	See Attached					13-MAY-21	R5475877
Coliform Bacteria - Fecal	7		1	CFU/100mL		13-MAY-21	R5457957
MPN - E. coli	1	OCR	1	MPN/100mL		13-MAY-21	R5457949
Phosphorus (P)-Total	<0.0050		0.0050	mg/L		24-MAY-21	R5464896
Total Suspended Solids	15.2		3.0	mg/L		21-MAY-21	R5462829
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.191		0.020	mg/L		13-MAY-21	R5457710
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.191		0.022	mg/L		14-MAY-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		13-MAY-21	R5457710
L2587289-3 COLUMBIA RIVER DOWN STREAM ISLAND							
Sampled By: TJ/JD on 11-MAY-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		01-JUN-21	R5476464
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		13-MAY-21	R5457268
Enterococcus	See Attached					13-MAY-21	R5475877
Coliform Bacteria - Fecal	3		1	CFU/100mL		13-MAY-21	R5457957
MPN - E. coli	2	OCR	1	MPN/100mL		13-MAY-21	R5457949
Phosphorus (P)-Total	0.0104		0.0050	mg/L		24-MAY-21	R5464896
Total Suspended Solids	21.8		3.0	mg/L		21-MAY-21	R5462829
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.191		0.020	mg/L		13-MAY-21	R5457710
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.191		0.022	mg/L		14-MAY-21	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2587289-3 COLUMBIA RIVER DOWN STREAM ISLAND							
Sampled By: TJ/JD on 11-MAY-21 @ 08:30							
Matrix: WATER							
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		13-MAY-21	R5457710

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
EHR	Bacteria hold time exceeded on receipt - Exceeded Recommended Holding Time prior to receipt at the lab.

Sample Parameter Qualifier Key:

Qualifier	Description
OCR	Parameter is out of client specific range.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2587289 Report Date: 02-JUN-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5459472								
WG3537133-2 LCS								
Biochemical Oxygen Demand			102.4		%		85-115	13-MAY-21
WG3537133-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	13-MAY-21
EC-MPN-CL	**Water**							
Batch R5457949								
WG3535228-5 MB								
MPN - E. coli			<1		MPN/100mL		1	13-MAY-21
FCC-MF-CL	**Water**							
Batch R5457957								
WG3535242-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	13-MAY-21
NH3-F-CL	**Water**							
Batch R5476464								
WG3545463-30 LCS								
Ammonia, Total (as N)			101.9		%		85-115	01-JUN-21
WG3545463-29 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	01-JUN-21
NO2-IC-N-CL	**Water**							
Batch R5457710								
WG3534921-10 LCS								
Nitrite (as N)			106.4		%		90-110	13-MAY-21
WG3534921-9 MB								
Nitrite (as N)			<0.010		mg/L		0.01	13-MAY-21
NO3-IC-N-CL	**Water**							
Batch R5457710								
WG3534921-10 LCS								
Nitrate (as N)			104.2		%		90-110	13-MAY-21
WG3534921-9 MB								
Nitrate (as N)			<0.020		mg/L		0.02	13-MAY-21
P-T-COL-CL	**Water**							
Batch R5464896								
WG3540266-2 LCS								
Phosphorus (P)-Total			94.2		%		80-120	24-MAY-21
WG3540266-1 MB								

Quality Control Report

Workorder: L2587289 Report Date: 02-JUN-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-CL	**Water**							
Batch R5464896								
WG3540266-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	24-MAY-21
PO4-DO-COL-CL	**Water**							
Batch R5457268								
WG3534235-6 LCS								
Orthophosphate-Dissolved (as P)			107.9		%		80-120	13-MAY-21
WG3534235-5 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	13-MAY-21
TSS-CL	**Water**							
Batch R5462829								
WG3539144-2 LCS								
Total Suspended Solids			106.1		%		85-115	21-MAY-21
WG3539144-1 MB								
Total Suspended Solids			<3.0		mg/L		3	21-MAY-21

Quality Control Report

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

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Total Suspended Solids							
	1	11-MAY-21 08:00	21-MAY-21 10:45	7	10	days	EHT
	2	11-MAY-21 09:00	21-MAY-21 10:45	7	10	days	EHT
	3	11-MAY-21 08:30	21-MAY-21 10:45	7	10	days	EHT
Bacteriological Tests							
Fecal Coliform Count-MF							
	1	11-MAY-21 08:00	13-MAY-21 11:00	30	51	hours	EHTR
	2	11-MAY-21 09:00	13-MAY-21 11:00	30	50	hours	EHTR
	3	11-MAY-21 08:30	13-MAY-21 11:00	30	50	hours	EHTR
MPN - E. coli							
	1	11-MAY-21 08:00	13-MAY-21 11:00	30	51	hours	EHTR
	2	11-MAY-21 09:00	13-MAY-21 11:00	30	50	hours	EHTR
	3	11-MAY-21 08:30	13-MAY-21 11:00	30	50	hours	EHTR

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 L2587289 were received on 13-MAY-21 08:40.

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.

Microbial Test Results

Sample collected May 11, 2021

Final Report

May 31, 2021

Submitted to: **ALS Environmental**
Calgary, AB

#4, 6125 12 Street SE, Calgary, AB T2H 2K1

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	*Enterococcus* test initiation	
L2587289-1 WWTP EFLUENT – UV TROUGH / 2021-1401-01	11-May-21 at 0800h	13-May-21 at 1000h	13-May-21 at 1200h	12.0°C
L2587289-2 COLUMBIA RIVER UPSTREAM / 2021-1401-02	11-May-21 at 0900h	13-May-21 at 1000h	13-May-21 at 1200h	12.0°C
L2587289-3 COLUMBIA RIVER DOWN STREAM ISLAND / 2021-1401-03	11-May-21 at 0830h	13-May-21 at 1000h	13-May-21 at 1200h	12.7°C

TEST TYPES

- *Enterococcus* enumeration test

RESULTS

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2587289-1 WWTP EFLUENT – UV TROUGH	<1
L2587289-2 COLUMBIA RIVER UPSTREAM	<1
L2587289-3 COLUMBIA RIVER DOWN STREAM ISLAND	<1

MPN = Most Probable Number

QA/QC

QA/QC summary	***Enterococcus***
Protocol deviations	See below
Control performance	Acceptable
Test performance	Valid

The samples were received and testing initiated outside of the required 24-hour hold time at the client's request.

Report By:
Dana Wong, BSc
Biologist

Reviewed By:
Leila Oosterbroek, BSc
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092 USA

MPN Tables for IDEXX Quanti-Tray 2000 (http://www.idexx.com/water)

APPENDIX A – Test data

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client ALS106 Reference 2021-1401

Test Initiation

Date: 2021/05/13
Time: 1200
Techician: SY

Reagent used: Enterolert™
Reagent Lot#/Expiry: M5608 04 JAN 2022

Sample Information
Dilution Factor: NA

Comments:

Thermometer Serial #: 192702705
Incubator #: 7
Incubator Temperature: 41 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: GS021 07/29/2023

Results - 24 Hour Incubation

Date: 2021/05/14 Time: 1200 Technician: SC

Incubator Temp: 41 (must be 41 ± 0.5°C)	***Enterococci*** (Fluorescent)									
	CTL	1401-01	1401-02	1401-03						
# Positive Large Wells:	0	0	4	1						
# Ambiguous Large Wells:	↓	↓	0	0						
# Positive Small Wells (Tray 2000 only)**:**			0	1						
# Ambiguous Small Wells (Tray 2000 only)**:**			0	0						
Most Probable Number at 24 hours:	<1	<1	4.1	2.0						

Results - 28 Hour Incubation

Date: Time: Technician:

Incubator Temp: _____ (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL									
# Confirmed Positive Large Wells:										
# Confirmed Positive Small Wells (Tray 2000 only)**:**										
Most Probable Number at 28 hours:										

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: LO Date Reviewed: 2021/05/17

APPENDIX B – Chain-of-custody form

L2587289

CALGARY

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

NOTES: Please reference on final report and invoice: PO# *L2587289*
ALS requires QC data to be provided with your final results.
Past Hold time - Please Proceed

Please see enclosed **3** **sample(s) in** **3** **Container(s)**

SAMPLE NUMBER	ANALYTICAL REQUIRED 2021-1401	DATE SAMPLED / DUE DATE	Priority Flag
L2587289-1 WWTP EFFLUENT - UV TROUGH -01	Enterococcus (ENTERO-HQ 1)	~~6/3/2020~~ May 11, 2021 as per client 12.0°C 5/25/2021	600
L2587289-2 COLUMBIA RIVER UPSTREAM -02	Enterococcus (ENTERO-HQ 1)	~~6/3/2020~~ May 11, 2021 as per client 12.0°C 5/25/2021	900
L2587289-3 COLUMBIA RIVER DOWN STREAM ISLAND -03	Enterococcus (ENTERO-HQ 1)	~~6/3/2020~~ May 11, 2021 as per client 12.7°C 5/25/2021	830

Subcontract Info Contact: John Forbes (403) 291-9897
Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897 Email: patryk.wojciak@alsglobal.com

2021/05/13 10:00 Good Condition
Drop off
DC
3 x 400mL bottles
NaS/NaI

Please email confirmation of receipt to: **patryk.wojciak@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT

ALS Environmental

L2587289-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Report To	
Company:	Kicking Horse Mountain Resort Utility Corporation
Contact:	Travis Jobin
Address:	1500 Kicking Horse Trail
Phone:	250-344-8442 Fax:
Invoice To	Same as Report ? ☐ Yes ☑ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	Resorts of the Canadian Rockies
Contact:	Patrick Majer
Address:	1505 - 17th Ave SW Calgary AB
Phone:	Fax:

Report Format / Distribution	
☑ Standard	☐ Other
☐ PDF	☐ Excel ☐ Digital ☑ Fax
Email 1:	tjobin@kickinghorseresort.com
Email 2:	pmajer@skircr.com
Email 3:	mskyring@kickinghorseresort.com
Client / Project Information	
Job #:	Week 5 - 2021 Spring EMS program - WW
PO / AFE:	
LSD:	
Quote #:	0

Service Requested (Rush for routine analysis subject to availability)
◉ Regular (Standard Turnaround Times - Business Days)
○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Lab Work Order # (lab use only)

ALS Contact: PW

Sampler: TJ/JD

Analysis Request — Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 11.1 pH: 6.8	03-Jun-20	800	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 7.6 pH: 8.0	03-Jun-20	900	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Down stream Island Temp: 7.8 pH: 7.8	03-Jun-20	830	Water		X	X	X	X	X	X	X	X	X			4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Travis Jobin	Date (dd-mmm-yy) MAY 12 2021 ~~26-May-20~~	Time (hh-mm)	Received by:	Date:	Time:	Temperature: 10 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 30-JUN-21
Report Date: 14-JUL-21 16:49 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2608319

Project P.O. #: NOT SUBMITTED
Job Reference: RCR-KICKING HORSE MOUNTAIN RESORT
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2608319-1 WWTP EFFLUENT UV TROUGH							
Sampled By: TJ on 29-JUN-21 @ 07:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.059		0.050	mg/L		10-JUL-21	R5517164
Biochemical Oxygen Demand	<2.0		2.0	mg/L		30-JUN-21	R5512763
Orthophosphate-Dissolved (as P)	0.492	DLHC	0.050	mg/L		30-JUN-21	R5507014
Coliform Bacteria - Fecal	<1		1	CFU/100mL		30-JUN-21	R5507172
MPN - E. coli	<1		1	MPN/100mL		30-JUN-21	R5507193
Phosphorus (P)-Total	0.54		0.10	mg/L		14-JUL-21	R5521591
Total Suspended Solids	<3.0		3.0	mg/L		06-JUL-21	R5512948
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	5.70		0.020	mg/L		30-JUN-21	R5507209
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	5.71		0.022	mg/L		01-JUL-21	
Nitrite in Water by IC							
Nitrite (as N)	0.013		0.010	mg/L		30-JUN-21	R5507209

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2608319 Report Date: 14-JUL-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5512763								
WG3569446-3 DUP		**L2608319-1**						
Biochemical Oxygen Demand		<2.0	<2.0	RPD-NA	mg/L	N/A	30	30-JUN-21
WG3569446-2 LCS								
Biochemical Oxygen Demand			101.6		%		85-115	30-JUN-21
WG3569446-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	30-JUN-21
EC-MPN-CL	**Water**							
Batch R5507193								
WG3567535-4 MB								
MPN - E. coli			<1		MPN/100mL		1	30-JUN-21
FCC-MF-CL	**Water**							
Batch R5507172								
WG3567517-3 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	30-JUN-21
NH3-F-CL	**Water**							
Batch R5517164								
WG3573261-2 LCS								
Ammonia, Total (as N)			100.9		%		85-115	10-JUL-21
WG3573261-1 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	10-JUL-21
NO2-IC-N-CL	**Water**							
Batch R5507209								
WG3567542-6 LCS								
Nitrite (as N)			100.1		%		90-110	30-JUN-21
WG3567542-5 MB								
Nitrite (as N)			<0.010		mg/L		0.01	30-JUN-21
NO3-IC-N-CL	**Water**							
Batch R5507209								
WG3567542-6 LCS								
Nitrate (as N)			99.0		%		90-110	30-JUN-21
WG3567542-5 MB								
Nitrate (as N)			<0.020		mg/L		0.02	30-JUN-21
P-T-COL-CL	**Water**							

Quality Control Report

Workorder: L2608319 Report Date: 14-JUL-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-CL	**Water**							
Batch R5521591								
WG3576011-8 LCS								
Phosphorus (P)-Total			101.6		%		80-120	14-JUL-21
WG3576011-7 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	14-JUL-21
PO4-DO-COL-CL	**Water**							
Batch R5507014								
WG3567330-5 DUP		**L2608319-1**						
Orthophosphate-Dissolved (as P)		0.492	0.504		mg/L	2.4	20	30-JUN-21
WG3567330-2 LCS								
Orthophosphate-Dissolved (as P)			98.8		%		80-120	30-JUN-21
WG3567330-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	30-JUN-21
TSS-CL	**Water**							
Batch R5512948								
WG3569615-2 LCS								
Total Suspended Solids			92.1		%		85-115	06-JUL-21
WG3569615-1 MB								
Total Suspended Solids			<3.0		mg/L		3	06-JUL-21

Quality Control Report

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Resort Utility Corporation	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kickinghorseresort.com	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:		
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:	WW - Q33059	
Lab Work Order # (lab use only)		ALS Contact:	PW	Sampler: TJ

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	[illegible]	E. Coli			Number of Containers
	WWTP Effluent - UV trough	29-Jun-21	7:00	Water	X	X	X	X	X	X	X	X	X	X			5

L2608319-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Please return fresh bottles for next weeks sampling- Thanks

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
TJ	29-Jun-21	8:30		6/30	8:25	19 °C				

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 06-AUG-21
Report Date: 12-AUG-21 15:46 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2623538

Project P.O. #: NOT SUBMITTED
Job Reference: RCR-KICKING HORSE MOUNTAIN RESORT
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2623538-1 UV TROUGH							
Sampled By: CLIENT on 05-AUG-21 @ 08:15							
Matrix: WATER							
Miscellaneous Parameters							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		06-AUG-21	R5548396
Orthophosphate-Dissolved (as P)	0.390	DLHC	0.025	mg/L		07-AUG-21	R5546171
Coliform Bacteria - Fecal	24		1	CFU/100mL		06-AUG-21	R5546465
Phosphorus (P)-Total	0.467	DLHC	0.025	mg/L		12-AUG-21	R5549027
Total Suspended Solids	<3.0		3.0	mg/L		11-AUG-21	R5548823

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2623538 Report Date: 12-AUG-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5548396								
WG3594358-2 LCS								
Biochemical Oxygen Demand			101.2		%		85-115	06-AUG-21
WG3594358-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	06-AUG-21
FCC-MF-CL	**Water**							
Batch R5546465								
WG3592938-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	06-AUG-21
P-T-COL-CL	**Water**							
Batch R5549027								
WG3595909-6 LCS								
Phosphorus (P)-Total			107.9		%		80-120	12-AUG-21
WG3595909-5 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	12-AUG-21
PO4-DO-COL-CL	**Water**							
Batch R5546171								
WG3592560-3 DUP		**L2623538-1**						
Orthophosphate-Dissolved (as P)		0.390	0.443		mg/L	13	20	07-AUG-21
WG3592560-2 LCS								
Orthophosphate-Dissolved (as P)			101.8		%		80-120	07-AUG-21
WG3592560-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	07-AUG-21
WG3592560-4 MS		**L2623538-1**						
Orthophosphate-Dissolved (as P)			N/A	MS-B	%		-	07-AUG-21
TSS-CL	**Water**							
Batch R5548823								
WG3594593-2 LCS								
Total Suspended Solids			92.5		%		85-115	11-AUG-21
WG3594593-1 MB								
Total Suspended Solids			<3.0		mg/L		3	11-AUG-21

Quality Control Report

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Water Utility Co. Ltd.	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-6003 Fax:	Email 3:	mskyring@kickinghorseresort.com	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	RCR - Kicking Horse Mountain Resort	
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:	Q33059	
Lab Work Order # (lab use only)		ALS Contact:	LS	Sampler:

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P								Number of Containers
	UV trough	05-Aug-21	0815	Water	X	X	X	X	X								4

L2623538-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Mark Skyring	Date (dd-mmm-yy) 5-Aug-21	Time (hh-mm) 0830	Received by: NK	Date: 8/6	Time: 1110	Temperature: 1.1 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 26-AUG-21
Report Date: 02-SEP-21 15:08 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2631980

Project P.O. #: NOT SUBMITTED
Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2631980-1 UV TROUGH							
Sampled By: CLIENT on 25-AUG-21 @ 10:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.052		0.050	mg/L		01-SEP-21	R5575676
Biochemical Oxygen Demand	<2.0		2.0	mg/L		26-AUG-21	R5572625
Orthophosphate-Dissolved (as P)	0.464	DLHC	0.050	mg/L		26-AUG-21	R5571002
Coliform Bacteria - Fecal	<2	DLM	2	CFU/100mL		26-AUG-21	R5571989
MPN - E. coli	<1		1	MPN/100mL		26-AUG-21	R5571965
Phosphorus (P)-Total	0.550		0.0050	mg/L		31-AUG-21	R5572938
Total Suspended Solids	<3.0		3.0	mg/L		30-AUG-21	R5572768

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2631980 Report Date: 02-SEP-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5572625								
WG3608015-2 LCS								
Biochemical Oxygen Demand			93.2		%		85-115	26-AUG-21
WG3608015-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	26-AUG-21
EC-MPN-CL	**Water**							
Batch R5571965								
WG3607377-1 MB								
MPN - E. coli			<1		MPN/100mL		1	26-AUG-21
FCC-MF-CL	**Water**							
Batch R5571989								
WG3607404-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	26-AUG-21
NH3-F-CL	**Water**							
Batch R5575676								
WG3609256-6 LCS								
Ammonia, Total (as N)			89.9		%		85-115	01-SEP-21
WG3609256-5 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	01-SEP-21
P-T-COL-CL	**Water**							
Batch R5572938								
WG3606973-8 LCS								
Phosphorus (P)-Total			104.6		%		80-120	31-AUG-21
WG3606973-7 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	31-AUG-21
PO4-DO-COL-CL	**Water**							
Batch R5571002								
WG3605705-7 LCS								
Orthophosphate-Dissolved (as P)			102.4		%		80-120	26-AUG-21
WG3605705-2 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	26-AUG-21
TSS-CL	**Water**							
Batch R5572768								
WG3607219-2 LCS								
Total Suspended Solids			103.8		%		85-115	30-AUG-21
WG3607219-1 MB								

Quality Control Report

Workorder: L2631980 Report Date: 02-SEP-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-CL	**Water**							
Batch R5572768								
WG3607219-1 MB								
Total Suspended Solids			<3.0		mg/L		3	30-AUG-21

Quality Control Report

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

L2631980-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Water Utility Co. Ltd.	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-6003 Fax:	Email 3:	mskyring@kickinghorseresort.com	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	RCR - Kicking Horse Mountain Resort	
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:	Q33059	
Lab Work Order # (lab use only)		ALS Contact:	LS	Sampler:

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli						Number of Containers
	UV trough	Aug 25 21	10:00	Water	X	X	X	X	X	X	X						5

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Mark Skyring	Date (dd-mmm-yy) 30-Sep-19	Time (hh-mm)	Received by:	Date: 8/26	Time: 1:00	Temperature: 10 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 29-SEP-21
Report Date: 22-OCT-21 09:29 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2645017

Project P.O. #:	NOT SUBMITTED
Job Reference:	WEEK 1-2021 FALL EMS PROGRAM-WW
C of C Numbers:	17-834403
Legal Site Desc:	

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2645017-1 WWTP EFFLUENT-UV TROUGH							
Sampled By: TJ on 28-SEP-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.171		0.050	mg/L		11-OCT-21	R5616127
Biochemical Oxygen Demand	<2.0		2.0	mg/L		30-SEP-21	R5609157
Orthophosphate-Dissolved (as P)	0.426	DLHC	0.050	mg/L		30-SEP-21	R5606094
Enterococcus	See Attached					29-SEP-21	R5626628
Coliform Bacteria - Fecal	<1		1	CFU/100mL		29-SEP-21	R5605637
MPN - E. coli	<1		1	MPN/100mL		29-SEP-21	R5605608
Phosphorus (P)-Total	0.519	DLHC	0.050	mg/L		05-OCT-21	R5609367
Total Suspended Solids	3.7		3.0	mg/L		01-OCT-21	R5607398
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	10.3		0.020	mg/L		01-OCT-21	R5607260
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	10.3		0.022	mg/L		04-OCT-21	
Nitrite in Water by IC							
Nitrite (as N)	0.018		0.010	mg/L		01-OCT-21	R5607260
L2645017-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ on 28-SEP-21 @ 07:15							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		11-OCT-21	R5616127
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		30-SEP-21	R5606094
Enterococcus	See Attached					29-SEP-21	R5626628
Coliform Bacteria - Fecal	21		1	CFU/100mL		29-SEP-21	R5605637
MPN - E. coli	14	OCR	1	MPN/100mL		29-SEP-21	R5605608
Phosphorus (P)-Total	0.0473		0.0050	mg/L		05-OCT-21	R5609367
Total Suspended Solids	95.9		3.0	mg/L		01-OCT-21	R5607398
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.091		0.020	mg/L		01-OCT-21	R5607260
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.091		0.022	mg/L		04-OCT-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		01-OCT-21	R5607260
L2645017-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 28-SEP-21 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		11-OCT-21	R5616127
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		30-SEP-21	R5606094
Enterococcus	See Attached					29-SEP-21	R5626628
Coliform Bacteria - Fecal	26		1	CFU/100mL		29-SEP-21	R5605637
MPN - E. coli	24	OCR	1	MPN/100mL		29-SEP-21	R5605608
Phosphorus (P)-Total	0.0469		0.0050	mg/L		05-OCT-21	R5609367
Total Suspended Solids	66.0		3.0	mg/L		30-SEP-21	R5606351
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.089		0.020	mg/L		01-OCT-21	R5607260
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.089		0.022	mg/L		04-OCT-21	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2645017-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 28-SEP-21 @ 09:30							
Matrix: WATER							
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		01-OCT-21	R5607260
L2645017-4 COLUMBIA RIVER SIDECHANNEL							
Sampled By: TJ on 28-SEP-21 @ 09:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		11-OCT-21	R5616127
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		30-SEP-21	R5606094
Enterococcus	See Attached					29-SEP-21	R5626628
Coliform Bacteria - Fecal	34		1	CFU/100mL		29-SEP-21	R5605637
MPN - E. coli	16	OCR	1	MPN/100mL		29-SEP-21	R5605608
Phosphorus (P)-Total	0.0292		0.0050	mg/L		05-OCT-21	R5609367
Total Suspended Solids	39.3		3.0	mg/L		01-OCT-21	R5607398
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.075		0.020	mg/L		01-OCT-21	R5607260
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.075		0.022	mg/L		04-OCT-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		01-OCT-21	R5607260

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
OCR	Parameter is out of client specific range.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
17-834403			

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2645017 Report Date: 22-OCT-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5609157								
WG3631016-3 DUP		**L2645017-1**						
Biochemical Oxygen Demand		<2.0	<2.0	RPD-NA	mg/L	N/A	30	30-SEP-21
WG3631016-2 LCS								
Biochemical Oxygen Demand			96.4		%		85-115	30-SEP-21
WG3631016-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	30-SEP-21
EC-MPN-CL	**Water**							
Batch R5605608								
WG3628864-1 MB								
MPN - E. coli			<1		MPN/100mL		1	29-SEP-21
WG3628864-4 MB								
MPN - E. coli			<1		MPN/100mL		1	29-SEP-21
FCC-MF-CL	**Water**							
Batch R5605637								
WG3628910-3 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	29-SEP-21
NH3-F-CL	**Water**							
Batch R5616127								
WG3636061-19 DUP		**L2645017-2**						
Ammonia, Total (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-OCT-21
WG3636061-18 LCS								
Ammonia, Total (as N)			106.5		%		85-115	11-OCT-21
WG3636061-2 LCS								
Ammonia, Total (as N)			111.8		%		85-115	11-OCT-21
WG3636061-1 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	11-OCT-21
WG3636061-17 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	11-OCT-21
WG3636061-20 MS		**L2645017-3**						
Ammonia, Total (as N)			105.4		%		75-125	11-OCT-21
NO2-IC-N-CL	**Water**							
Batch R5607260								
WG3630765-7 DUP		**L2645017-1**						
Nitrite (as N)		0.018	0.019		mg/L	3.8	20	01-OCT-21
WG3630765-2 LCS								
Nitrite (as N)			103.3		%		90-110	01-OCT-21
WG3630765-6 LCS								

Quality Control Report

Workorder: L2645017 Report Date: 22-OCT-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-N-CL	**Water**							
Batch R5607260								
WG3630765-6 LCS								
Nitrite (as N)			103.2		%		90-110	01-OCT-21
WG3630765-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	01-OCT-21
WG3630765-5 MB								
Nitrite (as N)			<0.010		mg/L		0.01	01-OCT-21
WG3630765-8 MS		**L2645017-2**						
Nitrite (as N)			99.2		%		75-125	01-OCT-21
NO3-IC-N-CL	**Water**							
Batch R5607260								
WG3630765-7 DUP		**L2645017-1**						
Nitrate (as N)		10.3	10.3		mg/L	0.1	20	01-OCT-21
WG3630765-2 LCS								
Nitrate (as N)			103.6		%		90-110	01-OCT-21
WG3630765-6 LCS								
Nitrate (as N)			103.6		%		90-110	01-OCT-21
WG3630765-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	01-OCT-21
WG3630765-5 MB								
Nitrate (as N)			<0.020		mg/L		0.02	01-OCT-21
WG3630765-8 MS		**L2645017-2**						
Nitrate (as N)			97.7		%		75-125	01-OCT-21
P-T-COL-CL	**Water**							
Batch R5609367								
WG3631783-3 DUP		**L2645017-1**						
Phosphorus (P)-Total		0.519	0.570		mg/L	9.4	20	05-OCT-21
WG3631783-2 LCS								
Phosphorus (P)-Total			107.9		%		80-120	05-OCT-21
WG3631783-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	05-OCT-21
WG3631783-4 MS		**L2645017-1**						
Phosphorus (P)-Total			N/A	MS-B	%		-	05-OCT-21
PO4-DO-COL-CL	**Water**							
Batch R5606094								
WG3628913-2 LCS								
Orthophosphate-Dissolved (as P)			98.0		%		80-120	30-SEP-21
WG3628913-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	30-SEP-21

Quality Control Report

Workorder: L2645017 Report Date: 22-OCT-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-COL-CL	**Water**							
Batch R5606094								
WG3628913-4 MS		**L2645017-4**						
Orthophosphate-Dissolved (as P)			108.6		%		70-130	30-SEP-21
TSS-CL	**Water**							
Batch R5606351								
WG3628285-2 LCS								
Total Suspended Solids			89.2		%		85-115	30-SEP-21
WG3628285-1 MB								
Total Suspended Solids			<3.0		mg/L		3	30-SEP-21
Batch R5607398								
WG3629382-2 LCS								
Total Suspended Solids			101.1		%		85-115	01-OCT-21
WG3629382-1 MB								
Total Suspended Solids			<3.0		mg/L		3	01-OCT-21

Quality Control Report

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Bacteriological Tests							
Fecal Coliform Count-MF							
	2	28-SEP-21 07:15	29-SEP-21 14:00	30	31	hours	EHTL
MPN - E. coli							
	2	28-SEP-21 07:15	29-SEP-21 14:00	30	31	hours	EHTL

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 L2645017 were received on 29-SEP-21 11:30.

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.

Microbial Test Results

Samples collected September 28, 2021

Final Report

October 22, 2021

Submitted to: **ALS Environmental**
Calgary, AB

10823 27 Street SE, Calgary, AB, Canada T2Z 3V9

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	*Enterococcus* test initiation	
L2645017-1 WWTP EFFLUENT-UV TROUGH/ 2122-0200-01	28-Sep-21 at 0830h	29-Sep-21 at 1400h	29-Sep-21 at 1530h	12.8°C
L2645017-2 COLUMBIA RIVER UPSTREAM/ 2122-0200-02	28-Sep-21 at 0915h	29-Sep-21 at 1400h	29-Sep-21 at 1530h	13.1°C
L2645017-3 COLUMBIA RIVER DOWNSTREAM/ 2122-0200-03	28-Sep-21 at 0930h	29-Sep-21 at 1400h	29-Sep-21 at 1530h	12.4°C
L2645017-4 COLUMBIA RIVER SIDECHANNEL/ 2122-0200-04	28-Sep-21 at 0900h	29-Sep-21 at 1400h	29-Sep-21 at 1530h	12.7°C

TEST TYPES

- *Enterococcus* enumeration test

RESULTS

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2645017-1 WWTP EFFLUENT-UV TROUGH	<1
L2645017-2 COLUMBIA RIVER UPSTREAM	4.1
L2645017-3 COLUMBIA RIVER DOWNSTREAM	4.1
L2645017-4 COLUMBIA RIVER SIDECHANNEL	4.1

MPN = Most Probable Number

QA/QC

QA/QC summary	*Enterococcus*
Protocol deviations	See Below
Control performance	Acceptable
Test performance	Valid

The samples were received and testing initiated outside of the 24-hour hold time at client's request. Additionally, the test temperature was less than the required test temperature by 0.5°C.

Report By:
Courtney Bogstie, BSc
Senior Biologist

Reviewed By:
Leila Oosterbroek, P Biol
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092 USA

MPN Tables for IDEXX Quanti-Tray 2000 (http://www.idexx.com/water)

APPENDIX A – Test data

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client ALS106 Reference 2122-0200-01

Test Initiation

Date: 2021/09/29
Time: 1530
Techician: EV

Reagent used: Enterolert™
Reagent Lot#/Expiry: CT214 2022/07/09

Sample Information

Dilution Factor: NA

Comments:

Thermometer Serial #: 192702207
Incubator #: 4
Incubator Temperature: 40 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: CT028 2024/03/18

Results - 24 Hour Incubation

Date: 2021/09/30 Time: 1555 Technician: EV

Incubator Temp: 41 (must be 41 ± 0.5°C)	***Enterococci*** (Fluorescent)									
	CTL	0200-01 ~~100x~~								
# Positive Large Wells:	0	0								
# Ambiguous Large Wells:										
# Positive Small Wells (Tray 2000 only):										
# Ambiguous Small Wells (Tray 2000 only):										
Most Probable Number at 24 hours:	<1	<1								

Results - 28 Hour Incubation

Date: Time: Technician:

Incubator Temp: _____ (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL									
# Confirmed Positive Large Wells:										
# Confirmed Positive Small Wells (Tray 2000 only):										
Most Probable Number at 28 hours:										

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: ST Date Reviewed: 2021/10/07

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client ALS106 Reference 2122-0200-02

Test Initiation

Date: 2021/09/29
Time: 1530
Techician: EV

Reagent used: Enterolert™
Reagent Lot#/Expiry: CT214 2022/07/09

Sample Information

Dilution Factor: NA

Comments:

Thermometer Serial #: 192702207
Incubator #: 4
Incubator Temperature: 40 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: CT028 2024/03/10

Results - 24 Hour Incubation

Date: 2021/09/30 Time: 1555 ~~EV~~ Technician: ~~1555~~ EV

Incubator Temp: 41 (must be 41 ± 0.5°C)	***Enterococci*** (Fluorescent)									
	CTL	0200-02 ~~100~~								
# Positive Large Wells:	0	4								
# Ambiguous Large Wells:	↓	0								
# Positive Small Wells (Tray 2000 only):		↓								
# Ambiguous Small Wells (Tray 2000 only):										
Most Probable Number at 24 hours:	<1	4.1								

Results - 28 Hour Incubation

Date: Time: Technician:

Incubator Temp: _____ (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL									
# Confirmed Positive Large Wells:										
# Confirmed Positive Small Wells (Tray 2000 only):										
Most Probable Number at 28 hours:										

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: ST Date Reviewed: 2021/10/07

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client ALS106 Reference 2122-0200-03

Test Initiation

Date: 2021/09/29
Time: 1530
Techician: EV

Reagent used: Enterolert™
Reagent Lot#/Expiry: CT214 2022/07/09

Sample Information

Dilution Factor: NA

Comments:

Thermometer Serial #: 192702207
Incubator #: 4
Incubator Temperature: 40 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: CT028 2024/03/10

Results - 24 Hour Incubation

Date: 2021/09/30 Time: 1555 Technician: EV

Incubator Temp: 41 (must be 41 ± 0.5°C)	***Enterococci*** (Fluorescent)									
	CTL	0200-03 ~~100~~ SY								
# Positive Large Wells:	0	4								
# Ambiguous Large Wells:		0								
# Positive Small Wells (Tray 2000 only)**:**										
# Ambiguous Small Wells (Tray 2000 only)**:**										
Most Probable Number at 24 hours:	<1	4.1								

Results - 28 Hour Incubation

Date: Time: Technician:

Incubator Temp: _____ (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL									
# Confirmed Positive Large Wells:										
# Confirmed Positive Small Wells (Tray 2000 only)**:**										
Most Probable Number at 28 hours:										

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: SY Date Reviewed: 2021/10/07

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client ALS 106 Reference 2122-0200-04

Test Initiation

Date: 2021/09/29
Time: 1530
Techician: EV

Reagent used: Enterolert™
Reagent Lot#/Expiry: CT214 2022/07/09

Sample Information

Dilution Factor: NA

Comments:

Thermometer Serial #: 192702207
Incubator #: 4
Incubator Temperature: 40 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: CT028 2029/03/10

Results - 24 Hour Incubation

Date: 2021/09/30 Time: 1555 Technician: EV

Incubator Temp: 41 (must be 41 ± 0.5°C)	***Enterococci*** (Fluorescent)									
	CTL	0200-04 ~~100~~								
# Positive Large Wells:	0	3								
# Ambiguous Large Wells:	↓	0								
# Positive Small Wells (Tray 2000 only)**:**		1								
# Ambiguous Small Wells (Tray 2000 only)**:**		0								
Most Probable Number at 24 hours:	<1	4.1								

Results - 28 Hour Incubation

Date: Time: Technician:

Incubator Temp: _____ (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL									
# Confirmed Positive Large Wells:										
# Confirmed Positive Small Wells (Tray 2000 only)**:**										
Most Probable Number at 28 hours:										

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: ST Date Reviewed: 20211101 07

APPENDIX B – Chain-of-custody form

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

NOTES: Please reference on final report and invoice: PO# *L2645017*
ALS requires QC data to be provided with your final results.

Please see enclosed 4 sample(s) in 4 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED 2122-0200	DATE SAMPLED / DUE DATE	Priority Flag
L2645017-1 WWTP EFFLUENT-UV TROUGH -01	Enterococcus (ENTERO-HQ 1)	**9/28/2021** 06:30 10/6/2021	12.8°C
L2645017-2 COLUMBIA RIVER UPSTREAM -02	Enterococcus (ENTERO-HQ 1)	**9/28/2021** 09:15 10/6/2021	13.1°C
L2645017-3 COLUMBIA RIVER DOWNSTREAM -03	Enterococcus (ENTERO-HQ 1)	**9/28/2021** 09:30 10/6/2021	12.4°C
L2645017-4 COLUMBIA RIVER SIDECHANNEL -04	Enterococcus (ENTERO-HQ 1)	**9/28/2021** 09:00 10/6/2021	12.7°C

Subcontract Info Contact: John Forbes (403) 291-9897
Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897 Email: patryk.wojciak@alsglobal.com

2021/09/29 Good Condition
14:00
Drop off
JC/AV
4x 400mL bottles
NoS/NoZ

Please email confirmation of receipt to: **patryk.wojciak@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT

ALS Environmental

L2645017-COFC

Form

COC # _____

Report To

Company:	Kicking Horse Mountain Resort Utility Corporation
Contact:	Travis Jobin
Address:	1500 Kicking Horse Trail
Phone:	250-344-8442 Fax:
Invoice To:	Same as Report ? ☐ Yes ☑ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	Resorts of the Canadian Rockies
Contact:	Patrick Majer
Address:	1505 - 17th Ave SW Calgary AB
Phone:	Fax:

☑ Standard ☐ Other

☐ PDF ☐ Excel ☐ Digital ☑ Fax

Email 1: tjobin@kickinghorseresort.com

Email 2: pmajer@skircr.com

Email 3: mskyring@kickinghorseresort.com

Client / Project Information

Job #: Week 1 - 2021 Fall EMS program - WW

PO / AFE:

LSD:

Quote #:

Lab Work Order # (lab use only)

ALS Contact: PW

Sampler: TJ

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 16 pH: 6.8	28-Sep-21	830	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 10.5 pH: 7.8	28-Sep-21	715	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Down stream Temp: 10.5 pH: 7.8	28-Sep-21	930	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Side Channel Temp: 10.5 pH: 7.8	28-Sep-21	90	Water		X	X	X	X	X	X	X	X	X			4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Travis Jobin	Date (dd-mmm-yy) SEP 28 ~~28-May-20~~	Time (hh-mm) 1030	Received by:	Date: 9/29	Time: 1130	Temperature: 8 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

CERTIFICATE OF ANALYSIS

Work Order	: **CG2104652**	Page	: 1 of 4
Client	: **Kicking Horse Mountain Resort LP**	Laboratory	: Calgary - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	: +1 403 407 1800
Project	: WEEK 3-2021 FALL EMS PROGRAM-WW	Date Samples Received	: 06-Oct-2021 10:50
PO	: ----	Date Analysis Commenced	: 06-Oct-2021
C-O-C number	: ----	Issue Date	: 01-Nov-2021 16:19
Sampler	: Travis Jobin		
Site	: ----		
Quote number	: CG21-RESC100-0001		
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 FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Patryk Wojciak	Account Manager	External Subcontracting, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

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*
CFU/100mL	colony forming units per 100 mL
mg/L	milligrams per litre
MPN/100mL	most probable number per 100 mL

>: greater than.
<: less 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

CG2104652-001

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

Client sample ID: WWTP EFFLUENT-UV TROUGH
Client sampling date / time: 05-Oct-2021 08:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
solids, total suspended [TSS]	----	<3.0	3.0	mg/L	E160-H	-	10-Oct-2021	316189
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	0.0629	0.0050	mg/L	E298	29-Oct-2021	29-Oct-2021	332876
nitrate (as N)	14797-55-8	17.4	0.0050	mg/L	E235.NO3-L	07-Oct-2021	07-Oct-2021	313471
nitrite (as N)	14797-65-0	0.0907	0.0010	mg/L	E235.NO2-L	07-Oct-2021	07-Oct-2021	313470
phosphate, ortho-, dissolved (as P)	14265-44-2	0.411	0.0100	mg/L	E378-U	06-Oct-2021	06-Oct-2021	313049
phosphorus, total	7723-14-0	0.495	0.0100	mg/L	E372-U	20-Oct-2021	20-Oct-2021	322245
nitrate + nitrite (as N)	----	17.5	0.0051	mg/L	EC235.N+N	-	18-Oct-2021	-
Bacteriological Tests								
coliforms, thermotolerant [fecal]	----	<1	1	CFU/100mL	E012.FC	-	06-Oct-2021	314132
Enterococcus	----	<1	1	MPN/100mL	ENTERO.MF	-	22-Oct-2021	-
coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100mL	E010	-	06-Oct-2021	314050
Aggregate Organics								
biochemical oxygen demand [BOD]	----	<2.0	2.0	mg/L	E550	-	06-Oct-2021	312856

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

Analytical Results

CG2104652-002

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

Client sample ID: COLUMBIA RIVER UPSTREAM -
Client sampling date / time: 05-Oct-2021 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
solids, total suspended [TSS]	----	15.4	3.0	mg/L	E160-H	-	10-Oct-2021	316189
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298	29-Oct-2021	29-Oct-2021	332876
nitrate (as N)	14797-55-8	0.0932	0.0050	mg/L	E235.NO3-L	07-Oct-2021	07-Oct-2021	313471
nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L	07-Oct-2021	07-Oct-2021	313470
phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U	06-Oct-2021	06-Oct-2021	313049
phosphorus, total	7723-14-0	0.0090	0.0020	mg/L	E372-U	20-Oct-2021	20-Oct-2021	322245
nitrate + nitrite (as N)	----	0.0932	0.0051	mg/L	EC235.N+N	-	18-Oct-2021	-
Bacteriological Tests								
coliforms, thermotolerant [fecal]	----	6	1	CFU/100mL	E012.FC	-	06-Oct-2021	314132
Enterococcus	----	<1	1	MPN/100mL	ENTERO.MF	-	22-Oct-2021	-
coliforms, Escherichia coli [E. coli]	----	5	1	MPN/100mL	E010	-	06-Oct-2021	314050

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

Analytical Results

CG2104652-003

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

Client sample ID: COLUMBIA RIVER DOWNSTREAM -

Client sampling date / time: 05-Oct-2021 09:20

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
solids, total suspended [TSS]	----	11.2	3.0	mg/L	E160-H	-	10-Oct-2021	316189
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298	29-Oct-2021	29-Oct-2021	332876
nitrate (as N)	14797-55-8	0.0820	0.0050	mg/L	E235.NO3-L	07-Oct-2021	07-Oct-2021	313471
nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L	07-Oct-2021	07-Oct-2021	313470
phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U	06-Oct-2021	06-Oct-2021	313049
phosphorus, total	7723-14-0	0.0104	0.0020	mg/L	E372-U	20-Oct-2021	20-Oct-2021	322245
nitrate + nitrite (as N)	----	0.0820	0.0051	mg/L	EC235.N+N	-	18-Oct-2021	-
Bacteriological Tests								
coliforms, thermotolerant [fecal]	----	2	1	CFU/100mL	E012.FC	-	06-Oct-2021	314132
Enterococcus	----	<1	1	MPN/100mL	ENTERO.MF	-	22-Oct-2021	-
coliforms, Escherichia coli [E. coli]	----	2	1	MPN/100mL	E010	-	06-Oct-2021	314050

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

Analytical Results

CG2104652-004

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

Client sample ID: COLUMBIA RIVER SIDE CHANNEL -

Client sampling date / time: 05-Oct-2021 09:45

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
solids, total suspended [TSS]	----	10.0	3.0	mg/L	E160-H	-	10-Oct-2021	316189
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	0.0069	0.0050	mg/L	E298	29-Oct-2021	29-Oct-2021	332876
nitrate (as N)	14797-55-8	0.0863	0.0050	mg/L	E235.NO3-L	07-Oct-2021	07-Oct-2021	313471
nitrite (as N)	14797-65-0	0.0010	0.0010	mg/L	E235.NO2-L	07-Oct-2021	07-Oct-2021	313470
phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U	06-Oct-2021	06-Oct-2021	313049
phosphorus, total	7723-14-0	0.0150	0.0020	mg/L	E372-U	20-Oct-2021	20-Oct-2021	322245
nitrate + nitrite (as N)	----	0.0873	0.0051	mg/L	EC235.N+N	-	18-Oct-2021	-
Bacteriological Tests								
coliforms, thermotolerant [fecal]	----	4	1	CFU/100mL	E012.FC	-	06-Oct-2021	314132
Enterococcus	----	<1	1	MPN/100mL	ENTERO.MF	-	22-Oct-2021	-
coliforms, Escherichia coli [E. coli]	----	4	1	MPN/100mL	E010	-	06-Oct-2021	314050

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2104652**	Page	: 1 of 9
Client	: **Kicking Horse Mountain Resort LP**	Laboratory	: Calgary - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	: +1 403 407 1800
Project	: WEEK 3-2021 FALL EMS PROGRAM-WW	Date Samples Received	: 06-Oct-2021 10:50
PO	: ----	Issue Date	: 01-Nov-2021 16:19
C-O-C number	: ----		
Sampler	: Travis Jobin		
Site	: ----		
Quote number	: CG21-RESC100-0001		
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 Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

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
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT 3d]										
WWTP EFFLUENT-UV TROUGH	E550	05-Oct-2021	----	----	----		06-Oct-2021	3 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
COLUMBIA RIVER DOWNSTREAM	E298	05-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	24 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
COLUMBIA RIVER SIDE CHANNEL	E298	05-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	24 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
COLUMBIA RIVER UPSTREAM	E298	05-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	24 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
WWTP EFFLUENT-UV TROUGH	E298	05-Oct-2021	29-Oct-2021	----	----		29-Oct-2021	28 days	24 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE										
COLUMBIA RIVER DOWNSTREAM	E378-U	05-Oct-2021	----	----	----		06-Oct-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE										
COLUMBIA RIVER SIDE CHANNEL	E378-U	05-Oct-2021	----	----	----		06-Oct-2021	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE COLUMBIA RIVER UPSTREAM	E378-U	05-Oct-2021	----	----	----		06-Oct-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE WWTP EFFLUENT-UV TROUGH	E378-U	05-Oct-2021	----	----	----		06-Oct-2021	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE COLUMBIA RIVER DOWNSTREAM	E235.NO3-L	05-Oct-2021	----	----	----		07-Oct-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE COLUMBIA RIVER SIDE CHANNEL	E235.NO3-L	05-Oct-2021	----	----	----		07-Oct-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE COLUMBIA RIVER UPSTREAM	E235.NO3-L	05-Oct-2021	----	----	----		07-Oct-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE WWTP EFFLUENT-UV TROUGH	E235.NO3-L	05-Oct-2021	----	----	----		07-Oct-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE COLUMBIA RIVER DOWNSTREAM	E235.NO2-L	05-Oct-2021	----	----	----		07-Oct-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE COLUMBIA RIVER SIDE CHANNEL	E235.NO2-L	05-Oct-2021	----	----	----		07-Oct-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE COLUMBIA RIVER UPSTREAM	E235.NO2-L	05-Oct-2021	----	----	----		07-Oct-2021	3 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE WWTP EFFLUENT-UV TROUGH	E235.NO2-L	05-Oct-2021	----	----	----		07-Oct-2021	3 days	2 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) COLUMBIA RIVER DOWNSTREAM	E372-U	05-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	15 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) COLUMBIA RIVER SIDE CHANNEL	E372-U	05-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	15 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) COLUMBIA RIVER UPSTREAM	E372-U	05-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	15 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) WWTP EFFLUENT-UV TROUGH	E372-U	05-Oct-2021	20-Oct-2021	----	----		20-Oct-2021	28 days	15 days	✓
Bacteriological Tests : Enterococcus by (MF - mE)										
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAM	ENTERO.MF	05-Oct-2021	----	----	----		22-Oct-2021	48 hrs	408 hrs	✗ EHT
Bacteriological Tests : Enterococcus by (MF - mE)										
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNEL	ENTERO.MF	05-Oct-2021	----	----	----		22-Oct-2021	48 hrs	408 hrs	✗ EHT
Bacteriological Tests : Enterococcus by (MF - mE)										
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAM	ENTERO.MF	05-Oct-2021	----	----	----		22-Oct-2021	48 hrs	409 hrs	✗ EHT
Bacteriological Tests : Enterococcus by (MF - mE)										
Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGH	ENTERO.MF	05-Oct-2021	----	----	----		22-Oct-2021	48 hrs	409 hrs	✗ EHT

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Bacteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)										
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNEL	E012.FC	05-Oct-2021	----	----	----		06-Oct-2021	30 hrs	24 hrs	✓
Bacteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)										
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAM	E012.FC	05-Oct-2021	----	----	----		06-Oct-2021	30 hrs	25 hrs	✓
Bacteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)										
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAM	E012.FC	05-Oct-2021	----	----	----		06-Oct-2021	30 hrs	25 hrs	✓
Bacteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)										
Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGH	E012.FC	05-Oct-2021	----	----	----		06-Oct-2021	30 hrs	26 hrs	✓
Bacteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNEL	E010	05-Oct-2021	----	----	----		06-Oct-2021	30 hrs	25 hrs	✓
Bacteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAM	E010	05-Oct-2021	----	----	----		06-Oct-2021	30 hrs	26 hrs	✓
Bacteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAM	E010	05-Oct-2021	----	----	----		06-Oct-2021	30 hrs	26 hrs	✓
Bacteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGH	E010	05-Oct-2021	----	----	----		06-Oct-2021	30 hrs	27 hrs	✓
Physical Tests : TSS by Gravimetry										
HDPE COLUMBIA RIVER DOWNSTREAM	E160-H	05-Oct-2021	----	----	----		10-Oct-2021	7 days	5 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE										
COLUMBIA RIVER SIDE CHANNEL	E160-H	05-Oct-2021	----	----	----		10-Oct-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
COLUMBIA RIVER UPSTREAM	E160-H	05-Oct-2021	----	----	----		10-Oct-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
WWTP EFFLUENT-UV TROUGH	E160-H	05-Oct-2021	----	----	----		10-Oct-2021	7 days	5 days	✓

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Ammonia by Fluorescence	E298	332876	1	4	25.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	312856	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	313049	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	313471	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	313470	1	4	25.0	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	314132	0	8	0.0	5.0	✗
Total Coliforms and E. coli (Enzyme Substrate)	E010	314050	2	20	10.0	10.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322245	1	20	5.0	5.0	✓
TSS by Gravimetry	E160-H	316189	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	332876	1	4	25.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	312856	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	313049	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	313471	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	313470	1	4	25.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322245	1	20	5.0	5.0	✓
TSS by Gravimetry	E160-H	316189	1	20	5.0	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	332876	1	4	25.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	312856	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	313049	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	313471	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	313470	1	4	25.0	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	314132	1	8	12.5	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	314050	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322245	1	20	5.0	5.0	✓
TSS by Gravimetry	E160-H	316189	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	332876	1	4	25.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	313049	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	313471	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	313470	1	4	25.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322245	1	20	5.0	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 Calgary - 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 (MF-mFC)	E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 45.5 ±0.2°C for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160-H Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. 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.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - 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 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - 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)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water 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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Calgary - 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).
Enterococcus by (MF - mE)	ENTERO.MF Nautilus Environmental (Calgary) - #4 6125 - 12 Street SE Calgary Alberta Canada T2H 2K1	Water	APHA 9230C (mod)	Following filtration (0.45 µm), and incubation at 35.0 ±0.5°C for 48 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

QUALITY CONTROL REPORT

Work Order	: **CG2104652**	Page	: 1 of 6
Client	: Kicking Horse Mountain Resort LP	Laboratory	: Calgary - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	: +1 403 407 1800
Project	: WEEK 3-2021 FALL EMS PROGRAM-WW	Date Samples Received	: 06-Oct-2021 10:50
PO	: ----	Date Analysis Commenced	: 06-Oct-2021
C-O-C number	: ----	Issue Date	: 01-Nov-2021 16:19
Sampler	: Travis Jobin		
Site	: ----		
Quote number	: CG21-RESC100-0001		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

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*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Patryk Wojciak	Account Manager	External Subcontracting, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

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 Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

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: 316189)											
CG2104641-001	Anonymous	solids, total suspended [TSS]	----	E160-H	3.0	mg/L	45.0	44.2	1.79%	20%	----
Anions and Nutrients (QC Lot: 313049)											
CG2104651-021	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 313470)											
CG2104652-001	WWTP EFFLUENT-UV TROUGH	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0907	0.0878	3.25%	20%	----
Anions and Nutrients (QC Lot: 313471)											
CG2104652-001	WWTP EFFLUENT-UV TROUGH	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	17.4	17.4	0.0224%	20%	----
Anions and Nutrients (QC Lot: 322245)											
CG2104652-001	WWTP EFFLUENT-UV TROUGH	phosphorus, total	7723-14-0	E372-U	0.0100	mg/L	0.495	0.492	0.598%	20%	----
Anions and Nutrients (QC Lot: 332876)											
CG2104652-001	WWTP EFFLUENT-UV TROUGH	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0629	0.0625	0.638%	20%	----
Bacteriological Tests (QC Lot: 314050)											
CG2104655-002	Anonymous	coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2104657-001	Anonymous	coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 312856)											
CG2104634-011	Anonymous	biochemical oxygen demand [BOD]	----	E550	6.0	mg/L	9.2	10.2	10.3%	30%	----

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: 316189)						
solids, total suspended [TSS]	----	E160-H	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 313049)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 313470)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 313471)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 322245)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 332876)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Bacteriological Tests (QCLot: 314050)						
coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
Bacteriological Tests (QCLot: 314132)						
coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	<1	----
Aggregate Organics (QCLot: 312856)						
biochemical oxygen demand [BOD]	----	E550	2	mg/L	<20.0	----

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: 316189)									
solids, total suspended [TSS]	----	E160-H	3	mg/L	150 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 313049)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	102	80.0	120	----
Anions and Nutrients (QCLot: 313470)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 313471)									
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: 322245)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	96.4	80.0	120	----
Anions and Nutrients (QCLot: 332876)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
Aggregate Organics (QCLot: 312856)									
biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	87.0	85.0	115	----

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: 313049)										
CG2104651-022	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0475 mg/L	0.05 mg/L	95.0	70.0	130	----
Anions and Nutrients (QCLot: 313470)										
CG2104652-002	COLUMBIA RIVER UPSTREAM	nitrite (as N)	14797-65-0	E235.NO2-L	0.529 mg/L	0.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 313471)										
CG2104652-002	COLUMBIA RIVER UPSTREAM	nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 322245)										
CG2104652-002	COLUMBIA RIVER UPSTREAM	phosphorus, total	7723-14-0	E372-U	0.0770 mg/L	0.0676 mg/L	114	70.0	130	----
Anions and Nutrients (QCLot: 332876)										
CG2104652-002	COLUMBIA RIVER UPSTREAM	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Resort Utility Corporation	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kickinghorseresort.com	
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Week 2 - 2021 Fall EMS program - WW	
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)		ALS Contact: PW	Sampler: TJ	

Analysis Request — Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 17 pH: 6.8	05-Oct-21	8:30	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 7.4 pH: 7.7	05-Oct-21	9:00	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Down stream Temp: 7.4 pH: 7.7	05-Oct-21	9:20	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Side Channel Temp: 7.4 pH: 7.7	05-Oct-21	9:45	Water		X	X	X	X	X	X	X	X	X			4

Environmental Division Calgary
Work Order Reference
CG2104652

Telephone : +1 403 407 1800

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AE ... ails

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Travis Jobin	Date (dd-mmm-yy): OCT 5 26-May-20	Time (hh-mm)	Received by: DK	Date: 10/6	Time: 1050	Temperature: 10 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 14-OCT-21
Report Date: 01-NOV-21 14:43 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2651451
Project P.O. #: NOT SUBMITTED
Job Reference: WEEK 3-2021 FALL EMS PROGRAM-WW
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2651451-1 WWTP EFFLUENT-UV TROUGH							
Sampled By: TJ on 12-OCT-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	4.3		1.3	mg/L		01-NOV-21	R5633806
Biochemical Oxygen Demand	<2.0		2.0	mg/L		15-OCT-21	R5625007
Orthophosphate-Dissolved (as P)	0.564	DLHC	0.050	mg/L		15-OCT-21	R5620438
Enterococcus	See Attached					15-OCT-21	R5630358
Coliform Bacteria - Fecal	<1		1	CFU/100mL		15-OCT-21	R5622337
MPN - E. coli	<1		1	MPN/100mL		15-OCT-21	R5622260
Nitrate (as N)	11.4		0.020	mg/L		15-OCT-21	R5624458
Nitrite (as N)	0.033		0.010	mg/L		15-OCT-21	R5624458
Phosphorus (P)-Total	0.643	DLHC	0.050	mg/L		28-OCT-21	R5631914
Total Suspended Solids	<3.0		3.0	mg/L		17-OCT-21	R5623401
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	11.5		0.022	mg/L		19-OCT-21	
L2651451-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ on 12-OCT-21 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		01-NOV-21	R5633806
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		15-OCT-21	R5620438
Enterococcus	See Attached					15-OCT-21	R5630358
Coliform Bacteria - Fecal	<1		1	CFU/100mL		15-OCT-21	R5622337
MPN - E. coli	2	OCR	1	MPN/100mL		15-OCT-21	R5622260
Nitrate (as N)	0.088		0.020	mg/L		15-OCT-21	R5624458
Nitrite (as N)	<0.010		0.010	mg/L		15-OCT-21	R5624458
Phosphorus (P)-Total	0.0057		0.0050	mg/L		28-OCT-21	R5631914
Total Suspended Solids	6.1		3.0	mg/L		17-OCT-21	R5623401
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.088		0.022	mg/L		19-OCT-21	
L2651451-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 12-OCT-21 @ 09:45							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		01-NOV-21	R5633806
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		15-OCT-21	R5620438
Enterococcus	See Attached					15-OCT-21	R5630358
Coliform Bacteria - Fecal	2		1	CFU/100mL		15-OCT-21	R5622337
MPN - E. coli	2	OCR	1	MPN/100mL		15-OCT-21	R5622260
Nitrate (as N)	0.39		0.10	mg/L		15-OCT-21	R5624458
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		15-OCT-21	R5624458
Phosphorus (P)-Total	0.0105		0.0050	mg/L		28-OCT-21	R5631914
Total Suspended Solids	7.5		3.0	mg/L		17-OCT-21	R5623401
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.39		0.11	mg/L		19-OCT-21	
L2651451-4 COLUMBIA RIVER SIDE CHANNEL							
Sampled By: TJ on 12-OCT-21 @ 09:15							
Matrix: WATER							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2651451-4 COLUMBIA RIVER SIDE CHANNEL							
Sampled By: TJ on 12-OCT-21 @ 09:15							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		01-NOV-21	R5633806
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		15-OCT-21	R5620438
Enterococcus	See Attached					15-OCT-21	R5630358
Coliform Bacteria - Fecal	2		1	CFU/100mL		15-OCT-21	R5622337
MPN - E. coli	2	OCR	1	MPN/100mL		15-OCT-21	R5622260
Nitrate (as N)	0.070		0.020	mg/L		15-OCT-21	R5624458
Nitrite (as N)	<0.010		0.010	mg/L		15-OCT-21	R5624458
Phosphorus (P)-Total	0.0052		0.0050	mg/L		28-OCT-21	R5631914
Total Suspended Solids	5.5		3.0	mg/L		17-OCT-21	R5623401
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.070		0.022	mg/L		19-OCT-21	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
OCR	Parameter is out of client specific range.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2651451 Report Date: 01-NOV-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5625007								
WG3640907-2 LCS								
Biochemical Oxygen Demand			95.7		%		85-115	15-OCT-21
WG3640907-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	15-OCT-21
EC-MPN-CL	**Water**							
Batch R5622260								
WG3639679-1 MB								
MPN - E. coli			<1		MPN/100mL		1	15-OCT-21
FCC-MF-CL	**Water**							
Batch R5622337								
WG3639711-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	15-OCT-21
NH3-F-CL	**Water**							
Batch R5633806								
WG3649633-26 LCS								
Ammonia, Total (as N)			100.6		%		85-115	01-NOV-21
WG3649633-25 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	01-NOV-21
NO2-IC-N-CL	**Water**							
Batch R5624458								
WG3640756-3 DUP		**L2651451-2**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-OCT-21
WG3640756-2 LCS								
Nitrite (as N)			100.4		%		90-110	15-OCT-21
WG3640756-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	15-OCT-21
WG3640756-4 MS		**L2651451-1**						
Nitrite (as N)			101.4		%		75-125	15-OCT-21
NO3-IC-N-CL	**Water**							
Batch R5624458								
WG3640756-3 DUP		**L2651451-2**						
Nitrate (as N)		0.088	0.072		mg/L	19	20	15-OCT-21
WG3640756-2 LCS								
Nitrate (as N)			100.9		%		90-110	15-OCT-21
WG3640756-1 MB								

Quality Control Report

Workorder: L2651451 Report Date: 01-NOV-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-CL	**Water**							
Batch R5624458								
WG3640756-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	15-OCT-21
WG3640756-4 MS		**L2651451-1**						
Nitrate (as N)			N/A	MS-B	%		-	15-OCT-21
P-T-COL-CL	**Water**							
Batch R5631914								
WG3647975-3 DUP		**L2651451-3**						
Phosphorus (P)-Total		0.0105	0.0090		mg/L	16	20	28-OCT-21
WG3647975-2 LCS								
Phosphorus (P)-Total			101.1		%		80-120	28-OCT-21
WG3647975-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	28-OCT-21
WG3647975-4 MS		**L2651451-3**						
Phosphorus (P)-Total			79.4		%		70-130	28-OCT-21
PO4-DO-COL-CL	**Water**							
Batch R5620438								
WG3638858-2 LCS								
Orthophosphate-Dissolved (as P)			92.0		%		80-120	15-OCT-21
WG3638858-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	15-OCT-21
TSS-CL	**Water**							
Batch R5623401								
WG3639364-2 LCS								
Total Suspended Solids			101.1		%		85-115	17-OCT-21
WG3639364-1 MB								
Total Suspended Solids			<3.0		mg/L		3	17-OCT-21

Quality Control Report

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Bacteriological Tests							
Fecal Coliform Count-MF							
	1	12-OCT-21 08:00	15-OCT-21 08:30	30	72	hours	EHTR
	2	12-OCT-21 09:30	15-OCT-21 08:30	30	71	hours	EHTR
	3	12-OCT-21 09:45	15-OCT-21 08:30	30	71	hours	EHTR
	4	12-OCT-21 09:15	15-OCT-21 08:30	30	71	hours	EHTR
MPN - E. coli							
	1	12-OCT-21 08:00	15-OCT-21 09:30	30	73	hours	EHTR
	2	12-OCT-21 09:30	15-OCT-21 09:30	30	72	hours	EHTR
	3	12-OCT-21 09:45	15-OCT-21 09:30	30	72	hours	EHTR
	4	12-OCT-21 09:15	15-OCT-21 09:30	30	72	hours	EHTR

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 L2651451 were received on 14-OCT-21 14:45.

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.

Microbial Test Results

Samples collected October 12, 2021

Final Report

October 27, 2021

Submitted to: **ALS Environmental**
Calgary, AB

10823 27 Street SE, Calgary, AB, Canada T2Z 3V9

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	*Enterococcus* test initiation	
L2651451-1 WWTP EFFLUENT-UV TROUGH/ 2122-0354-01	12-Oct-21	15-Oct-21 at 1030h	15-Oct-21 at 1605h	10.0°C
L2651451-2 COLUMBIA RIVER UPSTREAM/ 2122-0354-02	12-Oct-21	15-Oct-21 at 1030h	15-Oct-21 at 1605h	8.8°C
L2651451-3 COLUMBIA RIVER DOWNSTREAM/ 2122-0354-03	12-Oct-21	15-Oct-21 at 1030h	15-Oct-21 at 1605h	8.9°C
L2651451-4 COLUMBIA RIVER SIDE CHANNEL/ 2122-0354-04	12-Oct-21	15-Oct-21 at 1030h	15-Oct-21 at 1605h	10.1°C

TEST TYPES

- *Enterococcus* enumeration test

RESULTS

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2651451-1 WWTP EFFLUENT-UV TROUGH	<1
L2651451-2 COLUMBIA RIVER UPSTREAM	<1
L2651451-3 COLUMBIA RIVER DOWNSTREAM	1.0
L2651451-4 COLUMBIA RIVER SIDE CHANNEL	<1

MPN = Most Probable Number

QA/QC

QA/QC summary	*Enterococcus*
Protocol deviations	See Below
Control performance	Acceptable
Test performance	Valid

The samples were received and testing initiated outside of the 24-hour hold time at the client's request. Additionally, the temperature was greater than the required test temperature by 0.5°C at test completion.

Report By:
Courtney Bogstie, BSc
Senior Biologist

Reviewed By:
Leila Oosterbroek, P Biol
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092 USA

MPN Tables for IDEXX Quanti-Tray 2000 (http://www.idexx.com/water)

APPENDIX A – Test data

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client ALS106 Reference 2122- 0354

Test Initiation

Date: 2021/10/15
Time: 1605
Techician: ST/MAF

Reagent used: Enterolert™
Reagent Lot#/Expiry: ET214/09 JUL 2022

Sample Information
Dilution Factor: NA

Comments:

Thermometer Serial #: 192702207
Incubator #: 4
Incubator Temperature: 41 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: CT028/03/10/2024

Results - 24 Hour Incubation

Date: 2021/10/16 Time: 1610 Technician: ST/MAF

Incubator Temp: 42 (must be 41 ± 0.5°C)	***Enterococci*** (Fluorescent)									
	CTL	0354-01	-02	-03	-04					
# Positive Large Wells:	0	0	0	1	0					
# Ambiguous Large Wells:	0	0	0	0	0					
# Positive Small Wells (Tray 2000 only):	0	0	0	0	0					
# Ambiguous Small Wells (Tray 2000 only):	0	0	0	0	0					
Most Probable Number at 24 hours:	<1	<1	<1	1.0	<1					

Results - 28 Hour Incubation

Date: Time: Technician:

Incubator Temp: _____ (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL									
# Confirmed Positive Large Wells:										
# Confirmed Positive Small Wells (Tray 2000 only):										
Most Probable Number at 28 hours:										

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: LO Date Reviewed: 2021/10/27

APPENDIX B – Chain-of-custody form

L2651451

CALGARY

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

EXPIRED

NOTES: Please reference on final report and invoice: PO# *L2651451*
ALS requires QC data to be provided with your final results.

Please see enclosed 4 sample(s) in 4 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED		DATE SAMPLED / DUE DATE	Priority Flag
L2651451-1 WWTP EFFLUENT-UV TROUGH	Enterococcus (ENTERO-HQ 1)	-01	**10/12/2021** / 10/26/2021	10.0°C
L2651451-2 COLUMBIA RIVER UPSTREAM	Enterococcus (ENTERO-HQ 1)	-02	**10/12/2021** / 10/26/2021	8.8°C
L2651451-3 COLUMBIA RIVER DOWNSTREAM	Enterococcus (ENTERO-HQ 1)	-03	**10/12/2021** / 10/26/2021	8.9°C
L2651451-4 COLUMBIA RIVER SIDE CHANNEL	Enterococcus (ENTERO-HQ 1)	-04	**10/12/2021** / 10/26/2021	10.1°C

Subcontract Info Contact: John Forbes (403) 291-9897

Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897 Email: patryk.wojciak@alsglobal.com

2122-0364
2021/10/15
10:30
Cab
5C
4x400mL bottles
NO3/NO2
Good Cond.

Please email confirmation of receipt to: **patryk.wojciak@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT

ALS Environmental

L2651451-COFC

COC # _____

Page 1 of 1

Report To	
Company:	Kicking Horse Mountain Resort Utility Corporation
Contact:	Travis Jobin
Address:	1500 Kicking Horse Trail
Phone:	250-344-8442 Fax:
Invoice To	Same as Report ? ☐ Yes ☑ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	Resorts of the Canadian Rockies
Contact:	Patrick Majer
Address:	1505 - 17th Ave SW Calgary AB
Phone:	Fax:

Report Format / Distribution	
☑ Standard	☐ Other
☐ PDF	☐ Excel ☐ Digital ☑ Fax
Email 1:	tjobin@kickinghorseresort.com
Email 2:	pmajer@skircr.com
Email 3:	mskyring@kickinghorseresort.com
Client / Project Information	
Job #:	Week 3 - 2021 Fall EMS program - WW
PO / AFE:	
LSD:	
Quote #:	

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Lab Work Order # (lab use only): _____

ALS Contact: PW

Sampler: TJ

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 11.5 pH: 6.8	12-Oct-21	800 AM	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 2.8 pH: 7.7	12-Oct-21	930	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Down stream Temp: 3.4 pH: 7.7	12-Oct-21	945	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Side Channel Temp: 3.4 pH: 7.7	12-Oct-21	915	Water		X	X	X	X	X	X	X	X	X			4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Travis Jobin	Date (dd-mmm-yy) 26-May-20	Time (hh-mm)	Received by:	Date: 10/14	Time: 245	Temperature: 6 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

GENF 20.00 Front

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 21-OCT-21
Report Date: 17-NOV-21 14:11 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2653960
Project P.O. #: NOT SUBMITTED
Job Reference: WEEK 4 - 2021 FALL EMS PROGRAM - WW
C of C Numbers:
Legal Site Desc:

Comments:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2653960-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ on 20-OCT-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.136		0.050	mg/L		16-NOV-21	R5652157
Biochemical Oxygen Demand	<2.0		2.0	mg/L		22-OCT-21	R5629318
Orthophosphate-Dissolved (as P)	0.251	DLHC	0.050	mg/L		21-OCT-21	R5626445
Enterococcus	See Attached					21-OCT-21	R5634278
Coliform Bacteria - Fecal	<1		1	CFU/100mL		21-OCT-21	R5626886
MPN - E. coli	<1		1	MPN/100mL		21-OCT-21	R5626833
Nitrate (as N)	15.2		0.020	mg/L		22-OCT-21	R5633792
Nitrite (as N)	0.047		0.010	mg/L		22-OCT-21	R5633792
Phosphorus (P)-Total	0.328	DLHC	0.025	mg/L		03-NOV-21	R5635329
Total Suspended Solids	<3.0		3.0	mg/L		24-OCT-21	R5627906
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	15.3		0.022	mg/L		17-NOV-21	
L2653960-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ on 20-OCT-21 @ 09:45							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		21-OCT-21	R5626445
Enterococcus	See Attached					21-OCT-21	R5634278
Coliform Bacteria - Fecal	3		1	CFU/100mL		21-OCT-21	R5626886
MPN - E. coli	3	OCR	1	MPN/100mL		21-OCT-21	R5626833
Nitrate (as N)	0.101		0.020	mg/L		22-OCT-21	R5633792
Nitrite (as N)	<0.010		0.010	mg/L		22-OCT-21	R5633792
Phosphorus (P)-Total	0.0056		0.0050	mg/L		03-NOV-21	R5635329
Total Suspended Solids	4.7		3.0	mg/L		24-OCT-21	R5627906
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.101		0.022	mg/L		17-NOV-21	
L2653960-3 COLUMBIA RIVER DOWN STREAM							
Sampled By: TJ on 20-OCT-21 @ 10:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		21-OCT-21	R5626445
Enterococcus	See Attached					21-OCT-21	R5634278
Coliform Bacteria - Fecal	2		1	CFU/100mL		21-OCT-21	R5626886
MPN - E. coli	1	OCR	1	MPN/100mL		21-OCT-21	R5626833
Nitrate (as N)	0.105		0.020	mg/L		22-OCT-21	R5633792
Nitrite (as N)	<0.010		0.010	mg/L		22-OCT-21	R5633792
Phosphorus (P)-Total	0.0055		0.0050	mg/L		03-NOV-21	R5635329
Total Suspended Solids	6.7		3.0	mg/L		24-OCT-21	R5627906
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.105		0.022	mg/L		17-NOV-21	
L2653960-4 COLUMBIA RIVER SIDE CHANNEL							
Sampled By: TJ on 20-OCT-21 @ 09:30							
Matrix: WATER							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2653960-4 COLUMBIA RIVER SIDE CHANNEL							
Sampled By: TJ on 20-OCT-21 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.051		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		21-OCT-21	R5626445
Enterococcus	See Attached					21-OCT-21	R5634278
Coliform Bacteria - Fecal	1		1	CFU/100mL		21-OCT-21	R5626886
MPN - E. coli	1	OCR	1	MPN/100mL		21-OCT-21	R5626833
Nitrate (as N)	0.096		0.020	mg/L		22-OCT-21	R5633792
Nitrite (as N)	<0.010		0.010	mg/L		22-OCT-21	R5633792
Phosphorus (P)-Total	<0.0050		0.0050	mg/L		03-NOV-21	R5635329
Total Suspended Solids	3.5		3.0	mg/L		24-OCT-21	R5627906
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.096		0.022	mg/L		17-NOV-21	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
OCR	Parameter is out of client specific range.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2653960 Report Date: 17-NOV-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5629318								
WG3646039-3 DUP		**L2653960-1**						
Biochemical Oxygen Demand		<2.0	<2.0	RPD-NA	mg/L	N/A	30	22-OCT-21
WG3646039-2 LCS								
Biochemical Oxygen Demand			92.5		%		85-115	22-OCT-21
WG3646039-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	22-OCT-21
EC-MPN-CL	**Water**							
Batch R5626833								
WG3643581-1 MB								
MPN - E. coli			<1		MPN/100mL		1	21-OCT-21
FCC-MF-CL	**Water**							
Batch R5626886								
WG3643645-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	21-OCT-21
NH3-F-CL	**Water**							
Batch R5652157								
WG3659985-13 LCS								
Ammonia, Total (as N)			96.5		%		85-115	16-NOV-21
WG3659985-9 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	16-NOV-21
NO2-IC-N-CL	**Water**							
Batch R5633792								
WG3649836-2 LCS								
Nitrite (as N)			109.3		%		90-110	22-OCT-21
WG3649836-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	22-OCT-21
NO3-IC-N-CL	**Water**							
Batch R5633792								
WG3649836-2 LCS								
Nitrate (as N)			107.7		%		90-110	22-OCT-21
WG3649836-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	22-OCT-21
P-T-COL-CL	**Water**							

Quality Control Report

Workorder: L2653960 Report Date: 17-NOV-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-CL	**Water**							
Batch R5635329								
WG3651684-2 LCS								
Phosphorus (P)-Total			99.4		%		80-120	03-NOV-21
WG3651684-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	03-NOV-21
PO4-DO-COL-CL	**Water**							
Batch R5626445								
WG3643001-2 LCS								
Orthophosphate-Dissolved (as P)			89.5		%		80-120	21-OCT-21
WG3643001-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	21-OCT-21
TSS-CL	**Water**							
Batch R5627906								
WG3644358-2 LCS								
Total Suspended Solids			98.6		%		85-115	24-OCT-21
WG3644358-1 MB								
Total Suspended Solids			<3.0		mg/L		3	24-OCT-21

Quality Control Report

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

Microbial Test Results

Samples collected October 20, 2021

Final Report

November 2, 2021

Submitted to: **ALS Environmental**
Calgary, AB

10823 27 Street SE, Calgary, AB, Canada T2Z 3V9

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	*Enterococcus* test initiation	
L2653960-1 WWTP EFFLUENT-UV TROUGH/ 2122-0405-01	20-Oct-21 at 0830h	21-Oct-21 at 1430h	21-Oct-21 at 1445h	6.6°C
L2653960-2 COLUMBIA RIVER UPSTREAM/ 2122-0405-02	20-Oct-21 at 0945h	21-Oct-21 at 1430h	21-Oct-21 at 1445h	3.8°C
L2653960-3 COLUMBIA RIVER DOWNSTREAM/ 2122-0405-03	20-Oct-21 at 1000h	21-Oct-21 at 1430h	21-Oct-21 at 1445h	3.0°C
L2653960-4 COLUMBIA RIVER SIDE CHANNEL/ 2122-0405-04	20-Oct-21 at 0930h	21-Oct-21 at 1430h	21-Oct-21 at 1445h	3.8°C

TEST TYPES

- *Enterococcus* enumeration test

RESULTS

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2653960-1 WWTP EFFLUENT-UV TROUGH	<1
L2653960-2 COLUMBIA RIVER UPSTREAM	<1
L2653960-3 COLUMBIA RIVER DOWNSTREAM	<1
L2653960-4 COLUMBIA RIVER SIDE CHANNEL	<1

MPN = Most Probable Number

QA/QC

QA/QC summary	*Enterococcus*
Protocol deviations	See Below
Control performance	Acceptable
Test performance	Valid

The samples were received and testing initiated outside of the 24-hour hold time at the client's request.

Report By:
Courtney Bogstie, BSc
Senior Biologist

Reviewed By:
Leila Oosterbroek, P Biol
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092 USA

MPN Tables for IDEXX Quanti-Tray 2000 (http://www.idexx.com/water)

APPENDIX A – Test data

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client AS104 Reference 2122-0405-01, 02, 03, 04

Test Initiation

Date: 2021/10/21
Time: 1445
Techician: SC

Reagent used: Enterolert™
Reagent Lot#/Expiry: ET214, 09 JUN 2022

Sample Information
Dilution Factor: —

Comments:

Thermometer Serial #: 192702207
Incubator #: 4
Incubator Temperature: 41 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: CT028, 03/10/2024

Results - 24 Hour Incubation

Date: 2021/10/22 Time: 1435 Technician: ST/MAF

Incubator Temp: 41 (must be 41 ± 0.5°C)	***Enterococci*** (Fluorescent)									
	CTL	-01	-02	-03	-04					
# Positive Large Wells:	0	0	0	0	0					
# Ambiguous Large Wells:	0	0	0	0	0					
# Positive Small Wells (Tray 2000 only)**:**	0	0	0	0	0					
# Ambiguous Small Wells (Tray 2000 only)**:**	0	0	0	0	0					
Most Probable Number at 24 hours:	<1	<1	<1	<1	<1					

Results - 28 Hour Incubation

Date: _____ Time: _____ Technician: _____

Incubator Temp: _____ (must be 41 ± 0.5°C)	**Enterococci** (Fluorescent)									
	CTL									
# Confirmed Positive Large Wells:										
# Confirmed Positive Small Wells (Tray 2000 only)**:**										
Most Probable Number at 28 hours:										

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: LO Date Reviewed: 2021/10/25

APPENDIX B – Chain-of-custody form

L2653960

CALGARY

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

NOTES: Please reference on final report and invoice: PO# *L2653960*
ALS requires QC data to be provided with your final results.

Proceed if hold time passed

Please see enclosed **4** **sample(s) in** **4** **Container(s)**

SAMPLE NUMBER	ANALYTICAL REQUIRED		DATE SAMPLED / DUE DATE	Priority Flag
L2653960-1 WWTP EFFLUENT - UV TROUGH	Enterococcus (ENTERO-HQ 1)	-01	**10/20/2021** / 11/2/2021	830 / 6.6°C
L2653960-2 COLUMBIA RIVER UPSTREAM	Enterococcus (ENTERO-HQ 1)	-02	**10/20/2021** / 11/2/2021	945 / 3.8°C
L2653960-3 COLUMBIA RIVER DOWN STREAM	Enterococcus (ENTERO-HQ 1)	-03	**10/20/2021** / 11/2/2021	1000 / 3.0°C
L2653960-4 COLUMBIA RIVER SIDE CHANNEL	Enterococcus (ENTERO-HQ 1)	-04	**10/20/2021** / 11/2/2021	930 / 3.8°C

2122-0405
2021/10/21 Good Condition
14:30
Cab
JC
4x400mL bottles
NoS/NoT

Subcontract Info Contact: John Forbes (403) 291-9897

Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897
Email: patryk.wojciak@alsglobal.com

Please email confirmation of receipt to: **patryk.wojciak@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

Thursday, October 21, 2021 12:53 PM

END OF REPORT

ALS Environ

L2653960-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

Report To	
Company:	Kicking Horse Mountain Resort Utility Corporation
Contact:	Travis Jobin
Address:	1500 Kicking Horse Trail
Phone:	250-344-8442 Fax:
Invoice To	Same as Report ? ☐ Yes ☑ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	Resorts of the Canadian Rockies
Contact:	Patrick Majer
Address:	1505 - 17th Ave SW Calgary AB
Phone:	Fax:

Report Format / Distribution

☑ Standard ☐ Other

☐ PDF ☐ Excel ☐ Digital ☑ Fax

Email 1: tjobin@kickinghorseresort.com

Email 2: pmajer@skircr.com

Email 3: mskyring@kickinghorseresort.com

Client / Project Information

Job #: Week 4 - 2021 Fall EMS program - WW

PO / AFE:

LSD:

Quote #:

Service Requested (Rush for routine analysis subject to availability)

◉ Regular (Standard Turnaround Times - Business Days)

○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT

○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT

○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Lab Work Order # (lab use only)

ALS Contact: PW

Sampler: TJ

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 12 pH: 6.8	20-Oct-21	830	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 2.7 pH: 7.8	20-Oct-21	945	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Down stream Temp: 4.6 pH: 7.8	20-Oct-21	100	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Side Channel Temp: 3.0 pH: 7.8	20-Oct-21	930	Water		X	X	X	X	X	X	X	X	X			4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Travis Jobin	Date (dd-mmm-yy): OCT 20 ~~26-May-20~~	Time (hh-mm): 10:30	Received by: Amber M	Date: Oct-21	Time: 10:30	Temperature: 5 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 27-OCT-21
Report Date: 17-NOV-21 14:05 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2656086

Project P.O. #: NOT SUBMITTED
Job Reference: WEEK 5 - 2021 FALL EMS PROGRAM - WW
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2656086-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ on 26-OCT-21 @ 09:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Biochemical Oxygen Demand	<2.0		2.0	mg/L		28-OCT-21	R5634437
Orthophosphate-Dissolved (as P)	0.226	DLHC	0.050	mg/L		27-OCT-21	R5631717
Enterococcus	See Attached					27-OCT-21	R5636398
Coliform Bacteria - Fecal	<1		1	CFU/100mL		27-OCT-21	R5631980
MPN - E. coli	<1		1	MPN/100mL		27-OCT-21	R5631890
Phosphorus (P)-Total	0.323	DLHC	0.025	mg/L		16-NOV-21	R5650376
Total Suspended Solids	3.3		3.0	mg/L		02-NOV-21	R5634652
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	13.8		0.020	mg/L		27-OCT-21	R5634870
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	13.8		0.022	mg/L		03-NOV-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		27-OCT-21	R5634870
L2656086-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ on 26-OCT-21 @ 09:45							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		27-OCT-21	R5631717
Enterococcus	See Attached					27-OCT-21	R5636398
Coliform Bacteria - Fecal	1		1	CFU/100mL		27-OCT-21	R5631980
MPN - E. coli	<1		1	MPN/100mL		27-OCT-21	R5631890
Phosphorus (P)-Total	0.0050		0.0050	mg/L		16-NOV-21	R5650376
Total Suspended Solids	6.3		3.0	mg/L		30-OCT-21	R5633743
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.089		0.020	mg/L		27-OCT-21	R5634870
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.089		0.022	mg/L		03-NOV-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		27-OCT-21	R5634870
L2656086-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 26-OCT-21 @ 10:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		27-OCT-21	R5631717
Enterococcus	See Attached					27-OCT-21	R5636398
Coliform Bacteria - Fecal	<1		1	CFU/100mL		27-OCT-21	R5631980
MPN - E. coli	<1		1	MPN/100mL		27-OCT-21	R5631890
Phosphorus (P)-Total	<0.0050		0.0050	mg/L		16-NOV-21	R5650376
Total Suspended Solids	8.9		3.0	mg/L		30-OCT-21	R5633743
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.085		0.020	mg/L		27-OCT-21	R5634870
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.085		0.022	mg/L		03-NOV-21	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2656086-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 26-OCT-21 @ 10:00							
Matrix: WATER							
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		27-OCT-21	R5634870
L2656086-4 COLUMBIA SIDE CHANNEL							
Sampled By: TJ on 26-OCT-21 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		27-OCT-21	R5631717
Enterococcus	See Attached					27-OCT-21	R5636398
Coliform Bacteria - Fecal	1		1	CFU/100mL		27-OCT-21	R5631980
MPN - E. coli	<1		1	MPN/100mL		27-OCT-21	R5631890
Phosphorus (P)-Total	0.0051		0.0050	mg/L		16-NOV-21	R5650376
Total Suspended Solids	3.3		3.0	mg/L		30-OCT-21	R5633743
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.093		0.020	mg/L		27-OCT-21	R5634870
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.093		0.022	mg/L		03-NOV-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		27-OCT-21	R5634870

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)

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

NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)

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

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2656086 Report Date: 17-NOV-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5634437								
WG3650400-3 DUP		**L2656086-1**						
Biochemical Oxygen Demand		<2.0	<2.0	RPD-NA	mg/L	N/A	30	28-OCT-21
WG3650400-2 LCS								
Biochemical Oxygen Demand			92.1		%		85-115	28-OCT-21
WG3650400-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	28-OCT-21
EC-MPN-CL	**Water**							
Batch R5631890								
WG3647978-1 MB								
MPN - E. coli			<1		MPN/100mL		1	27-OCT-21
FCC-MF-CL	**Water**							
Batch R5631980								
WG3648018-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	27-OCT-21
NH3-F-CL	**Water**							
Batch R5652157								
WG3659985-16 DUP		**L2656086-1**						
Ammonia, Total (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-NOV-21
WG3659985-15 LCS								
Ammonia, Total (as N)			101.8		%		85-115	16-NOV-21
WG3659985-14 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	16-NOV-21
WG3659985-17 MS		**L2656086-1**						
Ammonia, Total (as N)			123.3		%		75-125	16-NOV-21
NO2-IC-N-CL	**Water**							
Batch R5634870								
WG3651179-6 LCS								
Nitrite (as N)			97.2		%		90-110	27-OCT-21
WG3651179-5 MB								
Nitrite (as N)			<0.010		mg/L		0.01	27-OCT-21
NO3-IC-N-CL	**Water**							
Batch R5634870								
WG3651179-6 LCS								
Nitrate (as N)			98.9		%		90-110	27-OCT-21
WG3651179-5 MB								

Quality Control Report

Workorder: L2656086 Report Date: 17-NOV-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-CL	**Water**							
Batch R5634870								
WG3651179-5 MB								
Nitrate (as N)			<0.020		mg/L		0.02	27-OCT-21
P-T-COL-CL	**Water**							
Batch R5650376								
WG3659402-3 DUP		**L2656086-1**						
Phosphorus (P)-Total		0.323	0.322		mg/L	0.1	20	16-NOV-21
WG3659402-2 LCS								
Phosphorus (P)-Total			91.2		%		80-120	16-NOV-21
WG3659402-1 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	16-NOV-21
WG3659402-4 MS		**L2656086-2**						
Phosphorus (P)-Total			76.8		%		70-130	16-NOV-21
PO4-DO-COL-CL	**Water**							
Batch R5631717								
WG3646934-6 LCS								
Orthophosphate-Dissolved (as P)			108.0		%		80-120	27-OCT-21
WG3646934-5 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	27-OCT-21
WG3646934-8 MS		**L2656086-4**						
Orthophosphate-Dissolved (as P)			100.2		%		70-130	27-OCT-21
TSS-CL	**Water**							
Batch R5633743								
WG3648528-2 LCS								
Total Suspended Solids			100.3		%		85-115	30-OCT-21
WG3648528-1 MB								
Total Suspended Solids			<3.0		mg/L		3	30-OCT-21
Batch R5634652								
WG3650105-2 LCS								
Total Suspended Solids			105.1		%		85-115	02-NOV-21
WG3650105-1 MB								
Total Suspended Solids			<3.0		mg/L		3	02-NOV-21

Quality Control Report

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

Microbial Test Results

Samples collected October 26, 2021

Final Report

November 5, 2021

Submitted to: **ALS Environmental**
Calgary, AB

10823 27 Street SE, Calgary, AB, Canada T2Z 3V9

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	*Enterococcus* test initiation	
L2656086-1 WWTP EFFLUENT-UV TROUGH/ 2122-0450-01	26-Oct-21 at 0900h	27-Oct-21 at 1300h	27-Oct-21 at 1500h	8.1°C
L2656086-2 COLUMBIA RIVER UPSTREAM/ 2122-0450-02	26-Oct-21 at 0945h	27-Oct-21 at 1300h	27-Oct-21 at 1500h	8.1°C
L2656086-3 COLUMBIA RIVER DOWNSTREAM/ 2122-0450-03	26-Oct-21 at 1000h	27-Oct-21 at 1300h	27-Oct-21 at 1500h	7.0°C
L2656086-4 COLUMBIA RIVER SIDE CHANNEL/ 2122-0450-04	26-Oct-21 at 0930h	27-Oct-21 at 1300h	27-Oct-21 at 1500h	5.4°C

TEST TYPES

- *Enterococcus* enumeration test

RESULTS

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2656086-1 WWTP EFFLUENT-UV TROUGH	<1
L2656086-2 COLUMBIA RIVER UPSTREAM	<1
L2656086-3 COLUMBIA RIVER DOWNSTREAM	1.0
L2656086-4 COLUMBIA RIVER SIDE CHANNEL	3.0

MPN = Most Probable Number

QA/QC

QA/QC summary	*Enterococcus*
Protocol deviations	See Below
Control performance	Acceptable
Test performance	Valid

The samples were received and testing initiated outside of the 24-hour hold time at the client's request.

Report By:
Courtney Bogstie, BSc
Senior Biologist

Reviewed By:
Leila Oosterbroek, P Biol
Environmental Scientist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092 USA

MPN Tables for IDEXX Quanti-Tray 2000 (http://www.idexx.com/water)

APPENDIX A – Test data

NAUTILUS ENVIRONMENTAL

Quanti-Tray Bench Sheet - *Enterococcus*

Client: ALS106 Reference: 2122-0450

Test Initiation

Date: 2021/10/27
Time: 1500
Techician: MAF

Reagent used: Enterolert™
Reagent Lot#/Expiry: ET214, 09 JUL 2022

Sample Information
Dilution Factor: —

Comments:

Thermometer Serial #: 192702207
Incubator #: 4
Incubator Temperature: 41 (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: CT028, 03/10/2024

Results - 24 Hour Incubation

Date: 2021/10/28 Time: 1510 Technician: DW

Incubator Temp: 41 (must be 41 ± 0.5°C)	*Enterococci* (Fluorescent)									
	CTL	-01	-02	-03	-04					
# Positive Large Wells:	0	0	0	1	3					
# Ambiguous Large Wells:				0	~~0~~ 0					
# Positive Small Wells (Tray 2000 only):										
# Ambiguous Small Wells (Tray 2000 only):										
Most Probable Number at 24 hours:	<4	<4	<4	1.0	3.1					

Results - 28 Hour Incubation

Date: Time: Technician:

Incubator Temp: _____ (must be 41 ± 0.5°C)	Enterococci (Fluorescent)									
	CTL									
# Confirmed Positive Large Wells:										
# Confirmed Positive Small Wells (Tray 2000 only):										
Most Probable Number at 28 hours:										

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours
At 28 hours only score marked ambiguos from 24 hours

Reviewed By: St Date Reviewed: 2021/10/29

APPENDIX B – Chain-of-custody form

ALS Environmental

L2656086

CALGARY

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

NOTES: Please reference on final report and invoice: PO# *L2656086*
ALS requires QC data to be provided with your final results.
Proceed if past hold time

Please see enclosed 4 **sample(s) in** 4 **Container(s)**

SAMPLE NUMBER	ANALYTICAL REQUIRED		DATE SAMPLED / DUE DATE	Priority Flag
L2656086-1 WWTP EFFLUENT - UV TROUGH	Enterococcus (ENTERO-HQ 1)	2122-0450-01	**10/26/2021** 8.1°C 11/8/2021	900
L2656086-2 COLUMBIA RIVER UPSTREAM	Enterococcus (ENTERO-HQ 1)	-02	**10/26/2021** 8.1°C 11/8/2021	945
L2656086-3 COLUMBIA RIVER DOWNSTREAM	Enterococcus (ENTERO-HQ 1)	-03	**10/26/2021** 7.0°C 11/8/2021	1000
L2656086-4 COLUMBIA SIDE CHANNEL	Enterococcus (ENTERO-HQ 1)	-04	**10/26/2021** 5.4°C 11/8/2021	930

Subcontract Info Contact: John Forbes (403) 291-9897
Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897 Email: patryk.wojciak@alsglobal.com

2021/10/27 13:00 Good Condition
Cab
JC
4x400mL bottle
No6/No3

Please email confirmation of receipt to: **patryk.wojciak@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT

L2656086-COFC

ALS Environm

ain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Resort Utility Corporation	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kickinghorseresort.com	
Invoice To Same as Report ?	☐ Yes ☑ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Week 5 - 2021 Fall EMS program - WW	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)		ALS Contact: PW	Sampler: TJ	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli			Number of Containers
	WWTP Effluent - UV trough Temp: 12.0 pH: 6.8	26-Oct-21	900	Water	X	X	X	X	X	X	X	X	X	X			5
	Columbia River Upstream Temp: 6.6 pH: 7.8	26-Oct-21	945	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Down stream Temp: 6.6 pH: 7.8	26-Oct-21	1000	Water		X	X	X	X	X	X	X	X	X			4
	Columbia River Side Channel Temp: 6.8 pH: 7.6	26-Oct-21	930	Water		X	X	X	X	X	X	X	X	X			4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Travis Jobin	Date (dd-mmm-yy) 26-Oct-21	Time (hh-mm) 12:00	Received by:	Date:	Time:	Temperature: °C	Verified by:	Date: 27/10	Time: 11:50	Observations: Yes / No ? If Yes add SIF

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 24-NOV-21
Report Date: 02-DEC-21 16:16 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2665839

Project P.O. #: NOT SUBMITTED
Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2665839-1 UV TROUGH							
Sampled By: TJ on 23-NOV-21 @ 10:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		29-NOV-21	R5659425
Biochemical Oxygen Demand	<2.0		2.0	mg/L		24-NOV-21	R5659271
Orthophosphate-Dissolved (as P)	0.0910		0.0050	mg/L		24-NOV-21	R5657033
Coliform Bacteria - Fecal	400	DLA	100	CFU/100mL		24-NOV-21	R5657338
MPN - E. coli	<1		1	MPN/100mL		24-NOV-21	R5657426
Phosphorus (P)-Total	0.207	DLHC	0.025	mg/L		02-DEC-21	R5661811
Total Suspended Solids	4.5		3.0	mg/L		29-NOV-21	R5658882

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode

This analysis is carried out using procedures adapted from APHA Method 5210B - "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.

EC-MPN-CL	Water	MPN - E. coli	APHA 9223B

This analysis is carried out using procedures adapted from APHA Method 9223 "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet. The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table.
Recommended Holding Time:
Sample: 1 day
Reference: APHA

FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D

This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level.

NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PO4-DO-COL-CL	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.

TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

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, and by drying the filter at 104 deg. C.

** 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
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2665839 Report Date: 02-DEC-21

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	**Water**							
Batch R5659271								
WG3666317-2 LCS								
Biochemical Oxygen Demand			100.9		%		85-115	24-NOV-21
WG3666317-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	24-NOV-21
EC-MPN-CL	**Water**							
Batch R5657426								
WG3665253-1 MB								
MPN - E. coli			<1		MPN/100mL		1	24-NOV-21
FCC-MF-CL	**Water**							
Batch R5657338								
WG3665177-1 MB								
Coliform Bacteria - Fecal			<1		CFU/100mL		1	24-NOV-21
NH3-F-CL	**Water**							
Batch R5659425								
WG3667337-2 LCS								
Ammonia, Total (as N)			102.9		%		85-115	29-NOV-21
WG3667337-1 MB								
Ammonia, Total (as N)			<0.050		mg/L		0.05	29-NOV-21
P-T-COL-CL	**Water**							
Batch R5661811								
WG3669076-6 LCS								
Phosphorus (P)-Total			92.9		%		80-120	02-DEC-21
WG3669076-5 MB								
Phosphorus (P)-Total			<0.0050		mg/L		0.005	02-DEC-21
PO4-DO-COL-CL	**Water**							
Batch R5657033								
WG3664816-2 LCS								
Orthophosphate-Dissolved (as P)			96.0		%		80-120	24-NOV-21
WG3664816-1 MB								
Orthophosphate-Dissolved (as P)			<0.0050		mg/L		0.005	24-NOV-21
TSS-CL	**Water**							
Batch R5658882								
WG3666293-2 LCS								
Total Suspended Solids			97.1		%		85-115	29-NOV-21
WG3666293-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-CL	**Water**							
Batch R5658882								
WG3666293-1 MB								
Total Suspended Solids			<3.0		mg/L		3	29-NOV-21

Quality Control Report

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

ALS Environmental

Chain of Custody

L2665839-COFC

COC # _____

Page 1 of 1

Report To	
Company:	Kicking Horse Mountain Water Utility Co. Ltd.
Contact:	Travis Jobin
Address:	1500 Kicking Horse Trail
Phone:	250-344-6003 Fax:
Invoice To	Same as Report ? ☐ Yes ☑ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	Resorts of the Canadian Rockies
Contact:	Patrick Majer
Address:	1505 - 17th Ave SW Calgary AB
Phone:	Fax:

Report Format / Distribution

☑ Standard ☐ Other

☐ PDF ☐ Excel ☐ Digital ☑ Fax

Email 1: tjobin@kickinghorseresort.com

Email 2: pmajer@skircr.com

Email 3: mskyring@kickinghorseresort.com

Client / Project Information

Job #: RCR - Kicking Horse Mountain Resort

PO / AFE:

LSD:

Quote #: Q33059

Service Requested (Rush for routine analysis subject to availability)

◉ Regular (Standard Turnaround Times - Business Days)

○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT

○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT

○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Lab Work Order # (lab use only):

ALS Contact: LS

Sampler: TJ

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli	Number of Containers
	UV trough	Nov 23 21	10:00	Water	X	X	X	X	X	X	X	4

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Travis Jobin	Date (dd-mmm-yy): 23-Nov-21	Time (hh-mm):	Received by: AMAN	Date: 11-24-21	Time: 10:45 AM	Temperature: 0 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

GENF 20.00 Front

CERTIFICATE OF ANALYSIS

Work Order	: **CG2106773**	Page	: 1 of 2
Client	: **Kicking Horse Mountain Resort LP**	Laboratory	: Calgary - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	: +1 403 407 1800
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 15-Dec-2021 23:05
PO	: ----	Date Analysis Commenced	: 15-Dec-2021
C-O-C number	: ----	Issue Date	: 21-Dec-2021 16:46
Sampler	: TJ		
Site	: ----		
Quote number	: CG21-RESC100-0001		
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 FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Erin Sanchez		Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

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*
CFU/100mL	colony forming units per 100 mL
mg/L	milligrams per litre
MPN/100mL	most probable number per 100 mL

>: greater than.
<: less 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*
DLHC	*Detection Limit Raised: Dilution required due to high concentration of test analyte(s).*

Analytical Results

CG2106773-001

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

Client sample ID: UV trough
Client sampling date / time: 14-Dec-2021 15:30

Analyte	*CAS Number*	*Result*	*LOR*	*Unit*	*Method*	*Prep Date*	*Analysis Date*	*QCLot*
Physical Tests								
solids, total suspended [TSS]	----	4.3	3.0	mg/L	E160-H	-	19-Dec-2021	371904
Anions and Nutrients								
phosphate, ortho-, dissolved (as P)	14265-44-2	0.191 DLHC,	0.0100	mg/L	E378-U	15-Dec-2021	15-Dec-2021	368689
phosphorus, total	7723-14-0	0.300	0.0200	mg/L	E372-U	21-Dec-2021	21-Dec-2021	369764
Bacteriological Tests								
coliforms, thermotolerant [fecal]	----	<1	1	CFU/100mL	E012.FC	-	15-Dec-2021	369910
coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100mL	E010	-	15-Dec-2021	369881
Aggregate Organics								
biochemical oxygen demand [BOD]	----	2.9	2.0	mg/L	E550	-	15-Dec-2021	368778

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2106773**	Page	: 1 of 4
Client	: **Kicking Horse Mountain Resort LP**	Laboratory	: Calgary - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	: +1 403 407 1800
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 15-Dec-2021 23:05
PO	: ----	Issue Date	: 21-Dec-2021 16:46
C-O-C number	: ----		
Sampler	: TJ		
Site	: ----		
Quote number	: CG21-RESC100-0001		
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 Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

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)

- No Analysis Holding Time Outliers exist.

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
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT 3d] UV trough	E550	14-Dec-2021	----	----	----		15-Dec-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE UV trough	E378-U	14-Dec-2021	----	----	----		15-Dec-2021	3 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) UV trough	E372-U	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Bacteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)										
Sterile HDPE (Sodium thiosulphate) UV trough	E012.FC	14-Dec-2021	----	----	----		15-Dec-2021	30 hrs	21 hrs	✗
Bacteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) UV trough	E010	14-Dec-2021	----	----	----		15-Dec-2021	30 hrs	22 hrs	✗
Physical Tests : TSS by Gravimetry										
HDPE UV trough	E160-H	14-Dec-2021	----	----	----		19-Dec-2021	7 days	5 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)							
Biochemical Oxygen Demand - 5 day	E550	368778	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368689	1	20	5.0	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	369910	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	369881	2	19	10.5	10.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	369764	1	20	5.0	5.0	✓
TSS by Gravimetry	E160-H	371904	1	12	8.3	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand - 5 day	E550	368778	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368689	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	369764	1	20	5.0	5.0	✓
TSS by Gravimetry	E160-H	371904	1	12	8.3	5.0	✓
Method Blanks (MB)							
Biochemical Oxygen Demand - 5 day	E550	368778	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368689	1	20	5.0	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	369910	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	369881	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	369764	1	20	5.0	5.0	✓
TSS by Gravimetry	E160-H	371904	1	12	8.3	5.0	✓
Matrix Spikes (MS)							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368689	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	369764	1	20	5.0	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 Calgary - 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 (MF-mFC)	E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 45.5 ±0.2°C for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160-H Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. 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.
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - 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)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer 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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

QUALITY CONTROL REPORT

Work Order	: **CG2106773**	Page	: 1 of 4
Client	: Kicking Horse Mountain Resort LP	Laboratory	: Calgary - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	: +1 403 407 1800
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 15-Dec-2021 23:05
PO	: ----	Date Analysis Commenced	: 15-Dec-2021
C-O-C number	: ----	Issue Date	: 21-Dec-2021 16:46
Sampler	: TJ		
Site	: ----		
Quote number	: CG21-RESC100-0001		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

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*
Erin Sanchez		Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

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 Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

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: 371904)											
CG2106761-002	Anonymous	solids, total suspended [TSS]	----	E160-H	3.0	mg/L	80.3	78.3	2.52%	20%	----
Anions and Nutrients (QC Lot: 368689)											
CG2106767-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0233	0.0231	0.655%	20%	----
Anions and Nutrients (QC Lot: 369764)											
CG2106773-001	UV trough	phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.300	0.291	3.24%	20%	----
Bacteriological Tests (QC Lot: 369881)											
CG2106753-003	Anonymous	coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2106755-005	Anonymous	coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
Bacteriological Tests (QC Lot: 369910)											
CG2106749-002	Anonymous	coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	<1	<1	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 368778)											
CG2106762-001	Anonymous	biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----

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: 371904)						
solids, total suspended [TSS]	----	E160-H	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 368689)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 369764)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Bacteriological Tests (QCLot: 369881)						
coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
Bacteriological Tests (QCLot: 369910)						
coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	<1	----
Aggregate Organics (QCLot: 368778)						
biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----

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: 371904)									
solids, total suspended [TSS]	----	E160-H	3	mg/L	150 mg/L	98.7	85.0	115	----
Anions and Nutrients (QCLot: 368689)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	104	80.0	120	----
Anions and Nutrients (QCLot: 369764)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	96.1	80.0	120	----
Aggregate Organics (QCLot: 368778)									
biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	102	85.0	115	----

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: 368689)										
CG2106767-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0513 mg/L	0.05 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 369764)										
CG2106829-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #:

Report To	
Company:	Kicking Horse Mountain Water Utility Co. Ltd.
Contact:	Travis Jobin
Address:	1500 Kicking Horse Trail
Phone:	250-344-6003 Fax:
Invoice To	Same as Report ? ☐ Yes ☑ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	Resorts of the Canadian Rockies
Contact:	Patrick Majer
Address:	1505 - 17th Ave SW Calgary AB
Phone:	Fax:

Report Format / Distribution	
☑ Standard	☐ Other
☐ PDF	☐ Excel ☐ Digital ☑ Fax
Email 1:	tjobin@kickinghorseresort.com
Email 2:	pmajer@skircr.com
Email 3:	mskyring@kickinghorseresort.com
Client / Project Information	
Job #:	RCR - Kicking Horse Mountain Resort
PO / AFE:	
LSD:	
Quote #:	Q33059
ALS Contact:	LS
Sampler:	TJ

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Lab Work Order # (lab use only):

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P		E.Coli						Number of Containers
	UV trough	14-Dec-21	3:30	Water	X	X	X	X	X		X						4

Environmental Division Calgary
Work Order Reference
CG2106773

Telephone : +1 403 407 1800

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	23-Nov-21			12/15	1105	6 °C				

KICKING HORSE MOUNTAIN UTILITY CORPORATION
ATTN: TRAVIS JOBIN
1500 Kicking Horse Trail
Golden BC V0A 1H0

Date Received: 15-OCT-20
Report Date: 04-NOV-20 14:21 (MT)
Version: FINAL

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L2517179

Project P.O. #: NOT SUBMITTED
Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT
C of C Numbers:
Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517179-1 UV TROUGH							
Sampled By: TJ on 15-OCT-20 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							
Trout Bioassay LC50	See Attached					19-OCT-20	R5278541

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

** 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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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: L2517179 Report Date: 04-NOV-20

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION
1500 Kicking Horse Trail
Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed

Quality Control Report

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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.

Acute Toxicity Test Results

Sample collected October 15, 2020

Final Report

November 3, 2020

Submitted to: **ALS Environmental**
Calgary, AB

#4, 6125 12 Street SE, Calgary, AB T2H 2K1

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates			Receipt temperature
	Collected	Received	Rainbow trout test initiation	
L2517179-1 UV TROUGH / 2021-0324	15-Oct-20 at 0930h	15-Oct-20 at 1520h	19-Oct-20 at 1405h	6.9°C

TEST TYPES

- Rainbow trout 96-h LC50 test

RESULTS

Toxicity test results

Sample ID	Rainbow trout LC50 (% v/v)
L2517179-1 UV TROUGH	>100

LC = Lethal Concentration

QA/QC

QA/QC summary	Rainbow trout
Reference toxicant LC50 (95% CL)	3.2 (3.0-3.5) g/L KCl[1]
Reference toxicant historical mean (2 SD Range)	3.5 (2.6-4.6) g/L KCl
Reference toxicant CV	9.6%
Organism health history	Acceptable
Protocol deviations	None
Water quality range deviations	None
Control performance	Acceptable
Test performance	Valid

[1] Test date, October 5, 2020

LC = Lethal Concentration; CL = Confidence Limit

Report By:
Michael Wrubleski, BSc
Biologist

Reviewed By:
Sara Thiessen, BSc
Senior Biologist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) survival test.

Test species	*Oncorhynchus mykiss*
Organism source	Fish hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	5 gallon glass aquariums
Test volume	10 - 20 L, depending on size of fish
Test solution depth	Minimum 15 cm
Test concentrations	Five concentrations, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	De-chlorinated City of Calgary tap water
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light/8 hours dark
Aeration	6.5 ±1 mL/min/L
Test Measurements	pH, conductivity, dissolved oxygen and temperature were measured at test initiation and test completion; salinity measured at test initiation; evaluated for survival daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Statistical software	None
Test endpoints	96-hour LC50
Test acceptability criteria for controls	Survival ≥ 90%
Reference toxicant	Potassium chloride (KCl)

APPENDIX B – Toxicity test data

NAUTILUS

Trout Bench Sheet

Method TRD Client ALS106 Reference 2021-0324 Chamber 5

Test Log

Day	Date	Time	Initial	Chem. Cart	Daily Data Review
0	2020/10/19	1405 *	AW / KK	1	MF
1	2020/10/20	0900	AW	-	LP
2	2020/10/21	0815	LF	-	SC
3	2020/10/22	0830	AE	-	MW
4	2020/10/23	0915	ST	1	MW

Note: * ; time when the test was loaded with fish

Sample Information

Initial pH:	7.0
Initial EC (µS/cm):	572
Initial DO (mg/L):	7.6
Initial Temp (°C):	17
Salinity (ppt):	0

Sample Pre-Aeration

Aeration rate adjusted to 6.5 +/- 1 mL/min/L **yes/no**

Preaeration time	0.5 hours	1 hour	1.5 hours	2 hours
DO(mg/L) of 100%	8.0			

DO in mg/L (70% - 100% saturation)**
6.2 mg/L - 8.9 mg/L at 14°C
6.1 mg/L - 8.8 mg/L at 15°C
6.0 mg/L - 8.6 mg/L at 16°C
**corrected for altitude

Test Chemistry and Biology

Conc.	CTL	6	12	25	50	100		
pH (units) (range: 5.5-8.5)								
Day 0	8.3	8.2	8.1	8.1	8.0	7.5		
Day 4	7.9	7.9	8.0	8.0	8.0	8.0		
EC (uS/cm)								
Day 0	436	447	458	475	515	589		
Day 4	440	450	463	480	514	590		
DO (mg/L) (70-100% saturation at test temp.)								
Day 0	8.8	8.8	8.8	8.8	8.6	8.0		
Day 4	8.5	8.5	8.5	8.5	8.7	8.5		
Temperature (°C) (range: 14-16°C)								
Day 0	15	15	15	15	15	15		
Day 4	15	15	15	15	15	15		
Number Alive (In brackets number stressed)								
Day 0	10	10	10	10	10	10		
Day 1	10	10	10	10	10	10		
Day 2	10	10	10	10	10	10		
Day 3	10	10	10	10	10	10		
Day 4	10	10	10	9 (10 st)	9	10		

Validity Criteria: must be ≤ 10% mortality and/or stressed behavior in the control
Unless otherwise noted, behavior is considered to be normal

Control Organism Data

Control Fish	Length (cm)	Weight (g)
1	3.2	0.3
2	3.2	0.4
3	2.7	0.2
4	3.1	0.3
5	3.0	0.2
6	2.9	0.3
7	3.5	0.5
8	3.0	0.3
9	3.0	0.3
10	3.1	0.3

Loading Density (g/L): 0.2
(must be ≤0.5 g/L)

Mean Length (cm): 3.1

Length Range (cm): 2.7-3.5

Mean Weight (g): 0.3
(Must be ≥0.3g)

Weight Range: (g): 0.2-0.5

Test Organism Information

Batch	20200820TR
Source	Troutlodge
Tank #	4
Days Held at 15± 2°C (must be ≥14 days)	38
Percent stock mortality (7 days prior to test, must be ≤2%)	0
Test Volume (L)	16L ~~18~~ AW

Comments :

Reviewed By: TP Date Reviewed: 2020/10/23

APPENDIX C – Chain-of-custody form

L2517179

CALGARY

ALS Environmental

Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA
#4, 6125-12 STREET SE
CALGARY,AB T2H 2K1

NOTES: Please reference on final report and invoice: PO# *L2517179*
ALS requires QC data to be provided with your final results.

Please see enclosed 1 sample(s) in 2 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED / DUE DATE	Priority Flag
L2517179-1 UV TROUGH		**10/15/2020** 9:31	
	Trout LC50 (96h) Bioassay (TROUT-LC50-HQ 14)	11/5/2020	

2021-0324
2020/10/15
15:20
Sa200
JC
2x20L carboys
NaS/NaG
Good Condition
6.9°C

Subcontract Info Contact: John Forbes (403) 291-9897
Analysis and reporting info contact: Patryk Wojciak, B.Sc., P.Chem.
2559 29 STREET NE
CALGARY,AB T1Y 7B5
Phone: (403) 291-9897 Email: patryk.wojciak@alsglobal.com

Please email confirmation of receipt to: patryk.wojciak@alsglobal.com

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT

L2517179-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Page 1 of 1

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Kicking Horse Mountain Water Utility Co. Ltd.	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Travis Jobin	☐ PDF ☐ Excel ☐ Digital ☑ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickinghorseresort.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
		Email 2:	pmajer@skircr.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	250-344-6003 Fax:	Email 3:	mskyring@kickinghorseresort.com	**Analysis Request**
Invoice To	Same as Report ? ☐ Yes ☑ No	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	RCR - Kicking Horse Mountain Resort	
Company:	Resorts of the Canadian Rockies	PO / AFE:		
Contact:	Patrick Majer	LSD:		
Address:	1505 - 17th Ave SW Calgary AB			
Phone:	Fax:	Quote #:	Q33059	
Lab Work Order # (lab use only)		ALS Contact:	LS	Sampler: TJ

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LC50	Number of Containers
	UV trough	15-Oct-20	9:30	Water	X	2

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: TJ Mark Skyring	Date (dd-mmm-yy): OCT 15 ~~30-Sep-19~~	Time (hh-mm)	Received by:	Date: 10/15	Time: 1410	Temperature: 10 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

GENF 20.00 Front

L2517179-COFC

ALS Environ

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Report To	
Company:	Kicking Horse Mountain Water Utility Co. Ltd.
Contact:	Travis Jobin
Address:	1500 Kicking Horse Trail
Phone:	250-344-6003 Fax:
Invoice To	Same as Report ? ☐ Yes ☑ No
Hardcopy of Invoice with Report?	☐ Yes ☑ No
Company:	Resorts of the Canadian Rockies
Contact:	Patrick Majer
Address:	1505 - 17th Ave SW Calgary AB
Phone:	Fax:

Report Format / Distribution	
☑ Standard	☐ Other
☐ PDF ☐ Excel ☐ Digital	☑ Fax
Email 1:	tjobin@kickinghorseresort.com
Email 2:	pmajer@skircr.com
Email 3:	mskyring@kickinghorseresort.com
Client / Project Information	
Job #:	RCR - Kicking Horse Mountain Resort
PO / AFE:	
LSD:	
Quote #:	Q33059

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Lab Work Order # (lab use only)

ALS Contact: LS

Sampler: TJ

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LC50	Number of Containers
	UV trough	15-Oct-20	9:30	Water	X	2

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: TJ ~~Mark Skyring~~	Date (dd-mmm-yy) OCT 15 ~~30-Sep-19~~	Time (hh-mm)	Received by:	Date:	Time:	Temperature: °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF