



2017 SEWAGE TREATMENT PLANT ANNUAL REPORT

Prepared for:

KICKING HORSE MOUNTAIN UTILITIES CORP.

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W2012-003 Kicking Horse Mountain Utilities Corp 2017 Sewage Treatment Plant Annual Report April 2018

1.0 INTRODUCTION

1.1 BACKGROUND

The following annual report for the Wastewater Treatment Plant at Kicking Horse Mountain Resort (KHMR) operated by Kicking Horse Mountain Utility Corporation (KHMUC) is compiled in accordance with the requirements of the Municipal Sewage Regulation (MSR). This report summarizes the calendar year 2017.

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. 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 trough, 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 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 dumping, the sludge from 2017 season is being stored on site until a new disposal location is determined.



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, 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 m³/d

BOD₅ Five day biochemical oxygen demand, measured in mg/l

TSS Total suspended solids or non filterable residue, measured in mg/l

NH₃ Ammonia concentration, expressed as nitrogen in mg/l
 NO₃ Nitrate concentration, expressed as nitrogen in mg/l
 NO₂ 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

Enterococci

E. Coli

Bacterial concentration, measured as colony forming units per 100ml
Bacterial concentration, measured as colony forming units per 100ml
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 | m³/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 was bagged and disposed of at the CSRD landfill located in Golden, BC.

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 and downstream river locations, relative to the outfall diffuser. The sampling locations were identified in Masse & Miller Consulting Ltd. in their 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.



<u>Table 2</u>
Sampling Location/Frequency/Type

| | | | Location | | |
|--------------------|--|---|--|----------------------|---------------------------|
| Parameter | 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 | River side channel | Effluent |
| EMS Number | E256694 | E258898 | E258899 | E258897 | E256696 |
| | Winter/Summer | Winter/Summer | Winter | Summer | Winter/Summer |
| pН | WS/G | WS/G | WS/G | WS/G | W |
| Temp | WS/G | WS/G | WS/G | WS/G | W |
| Flow | / | / | / | / | W |
| BOD₅ | / | / | / | / | 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 |
| NO₃-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



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3.0 SEWAGE FLOW RECORDS

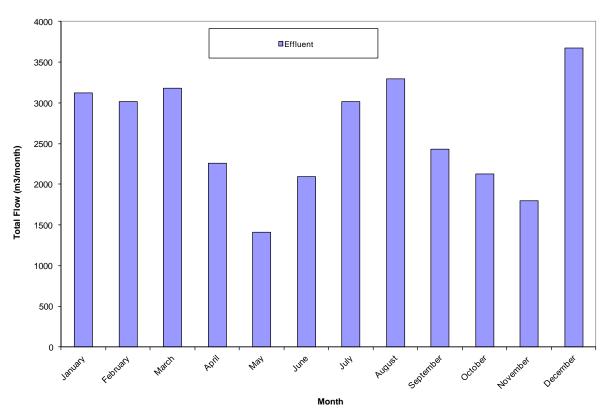
This section provides data and analysis regarding plant effluent flows, and compares 2017 data to the previous years.

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. Please note, the flow meter was not working properly from July 24th until September 7th.

The total effluent flow recorded for 2017 was 31,431.05 m³ with an average of 85.9 m³/day. Available monthly total effluent flow meter records for 2017 are provided in Figure 1.

Figure 1

Effluent Flow Meter Monthly Flow Totals



The ski resort operates with higher winter and late spring sewage flows than during any other period. Larger sewage flows are typically observed during January, February, March, April and December. The average daily plant flow through January to April and December of 2017 was 100.96 m³/day compared to 65.52 m³/day over the same period in 2016, 81.79 m³/day in 2015, 74.10 m³/day in 2014, 47.73 m³/day in 2013, 72.41 m³/day in 2012, 165.2 m³/day in 2011 (note that data for Dec was missing) and 108.5 m³/day in 2010. Peak flow for the year reached 244 m³/day, which is well below the allowable limit of 300 m³/day limit. The peak flow is slightly higher than previous years which were 162.25 m³/day in 2016, 137.32 m³/day in 2015, 145.71 m³/day in 2014,165.03 m³/day in 2013, 159.05 m³/day in 2012, 311.54 m³/day in 2011 (again note that the data for one of the historically highest months, December was missing), 317.6 m³/day in 2010 and 251.3 m³/day in 2009. The peak flow day occurred during the heavy ski season, which is to be expected.



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

A summary of sewage flow for years 2009 through 2017 is provided in Table 3 and Figures 2 and 3:

Table 3

2009 – 2017 Flow Comparisons

| ., | Sewage FI | ay) | Days | |
|------|-------------------------------|---------|----------|---------------|
| Year | Total | Average | Peak | Over Limit |
| 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 |

*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
- 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 - 2016

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 m³/day and on December 31st at 251.3 m³/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 m³/day, February 14th at 206.4 m³/day, and on December 31st at 317.6 m³/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 m³/day and the second highest peak was observed on New Year's Day at 303.04 m³/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 m³/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 m³/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 m³/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 m³/day.

2017

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 m³/day. Please note that the SCADA failed to record correct flow from July 24th until September 7th; therefore flow was based on partial estimates.

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 flow results from non-skiing related recreational activities, generally hiking or mountain biking events. The lowest plant flow is experienced in the shoulder season periods (April to June and September to November).

There are approximately 30 full time year round residents at the resort. In total, there are currently three lodges, three condominiums and 175 family residences. The breakdown is as follows:

Condos

- 3 Properties
- 155 rental units
- 310 rental rooms
- 952 Bed units

Lodge's

- 3 properties
- 30 rental rooms
- 296 Bed units

Family residences (both single and multi-family)

- 175 properties
- 504 rooms
- 1006 Bed units



Figure 2 provides monthly average and peak day sewage flows for January to December 2017.

 $\label{eq:Figure 2}$ Average and Peak Sewage Effluent Flow Comparison Graph

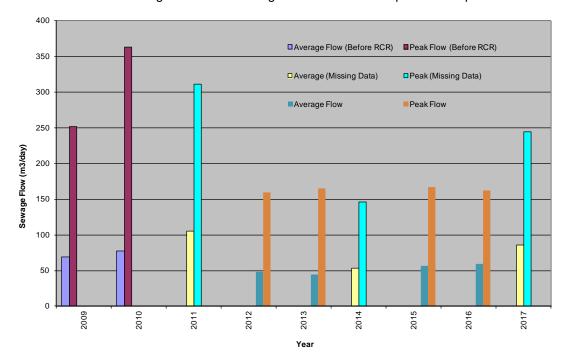


Figure 3

Total Sewage Effluent Flow Graph:

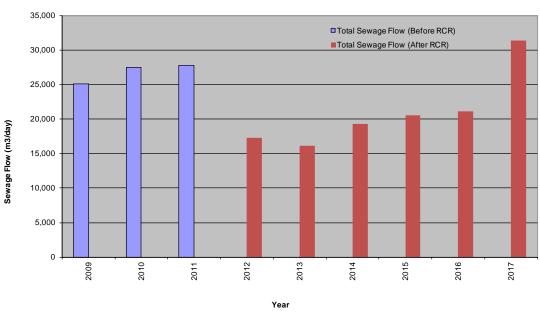
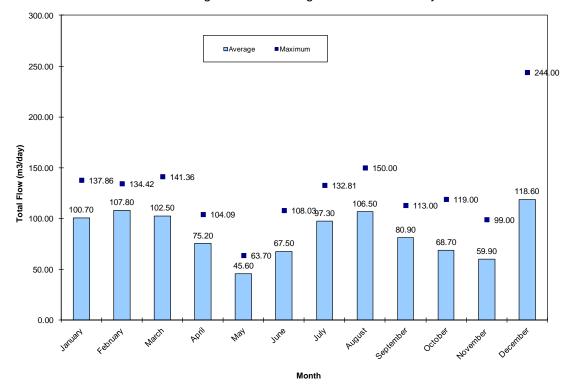




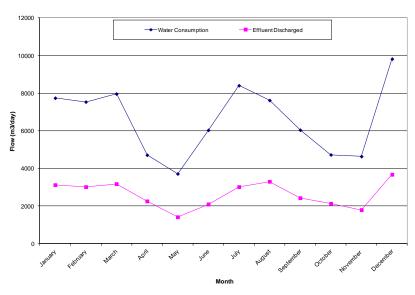
Figure 4
2017 Sewage Effluent Average and Peak Flows by Month



This year, the total effluent discharged was equal to 39.8% of the total water production. Water usage at the hill is compared to the amount of effluent discharged at the WWTP in Figure 5.

Figure 5

2017 Water Consumption and Sewage Effluent Generation



4.0 SEWAGE FLOW PROJECTION

This section shows projected wastewater flow for 2011 through 2017 based on 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 m³/day. Using the actual peak flow of 312 m³/day, a correction factor of 0.44 was calculated. Averaged correction factor for the last five years (2012, 2013, 2014, 2015 and 2016) was also calculated and multiplied by the future estimated flows to more accurately reflect potential resort sewage generation rates. In 2011, 2012, 2013, 2014, 2015 and 2016 the correction factors were 0.44, 0.22, 0.23, 0.21, 0.24 and 0.26 respectively. The correction factor was 0.27 in 2017.

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 and 2018 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 m³/day if the flow restriction measures prove sustainable. Sewage discharge rates will be monitored and an application will be submitted to increase the maximum daily discharge when warranted.

Based on 2017 flow data, the plant has an unused capacity of 56 m³/day (based on an operating limit of 300 m³/day) due to the flow saving measures. This still needs to be closely monitored during 2018 and further considered when adding additional development.

<u>Table 4</u> Projected Peak Flows: 2011-2018

| | 2011 | 2012 | 2013 | 2014 |
|------------------------------------|-----------|---------|---------|---------|
| Estimated Wastewater Flow (m³/day) | 705.5* | 705.5* | 705.5* | 705.5 |
| Actual and Corrected (m³/day) | 312** (a) | 159 (a) | 165 (a) | 146 (a) |

| | 2015 | 2016 | 2017 | 2018 |
|------------------------------------|---------|---------|---------|---------|
| Estimated Wastewater Flow (m³/day) | 705.5 | 705.5 | 705.5 | 705.5 |
| Actual and Corrected (m³/day) | 167 (a) | 162 (a) | 244 (a) | 190 (b) |

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



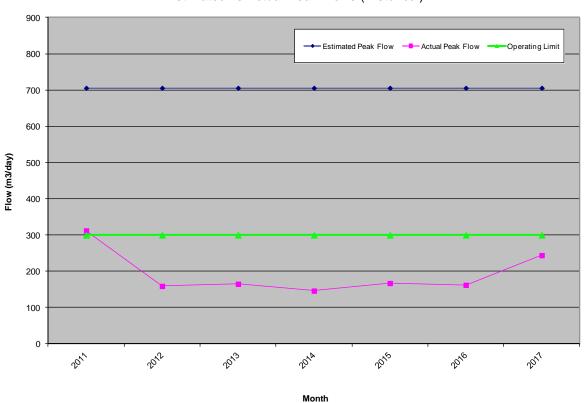
^{**}the number does not reflect a true peak as all the data was not available during the high flow months

- (a) actual peak flow
- (b) corrected daily peak flows by the averaged correction faction for 2011, 2012, 2013, 2014, 2015, 2016 and 2017 correction factor:

| 2011 | correction factor of | 312*/705.5 | = 0.44 |
|------|----------------------|------------|--------|
| 2012 | 66 | 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 |
| | | | |
| | AVERAGE | | = 0.27 |

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

Figure 6
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 2017.

Table 5 provides a summary record of the Columbia River test results for the period April 10th, 2017 to October 18th, 2017.

Elevated fecal coliforms were observed in the upstream samples on April 18th. The results were low in the effluent, side stream and downstream samples on the same day. Elevated coliforms were found above the discharge limits in the effluent on January 31st and March 29th; however, River was not tested on those days. In general, the levels of coliforms in the upstream samples were higher than those found in the effluent, side stream or downstream samples.

Low levels of E.Coli were found throughout the season in the River samples and the effluent samples. There were no days where the effluent levels were above the discharge limits. In general, the levels of coliforms in the upstream samples were higher than those found in the effluent, side stream or downstream samples

Elevated Enterococci was found in the upstream samples on September 27th and October 10th. The levels were also high in the effluent (above discharge limits) on September 27th. The levels in the side stream and downstream were lower on the same day. All other levels in the upstream, downstream and side stream samples were generally low or below laboratory detection limits. In general, the levels of Enterococci in the upstream samples were higher than those found in the effluent, side stream or downstream samples.

Generally, the levels of TSS were low in the river and effluent except for upstream and side stream samples on September 27th. The levels were both at 123 mg/L. The levels of TSS in the effluent and the downstream samples on the same days were 10 mg/L and 81.3 mg/L respectively. The levels in the effluent were significantly lower than in the River samples.

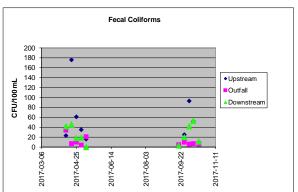
Although several spikes were observed for several parameters, the averages this year are comparable to previous years. There does not seem to be any correlation with the spikes in the river samples with the levels found in the effluent on the same days.

Overall, the analyzed concentrations remain 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.



Figure 7a & 7b

Fecal Coliform Levels in the Columbia River and the Effluent



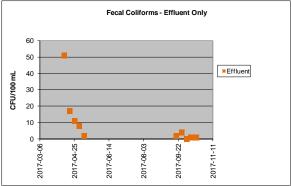
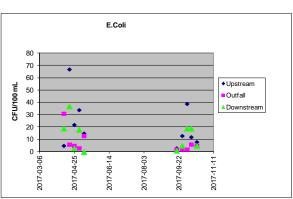


Figure 8a & 8b

E.Coli Levels in the Columbia River and the Effluent



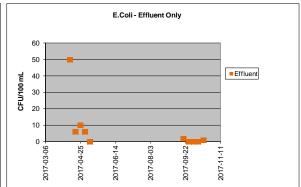
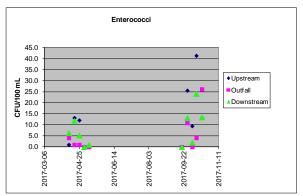


Figure 9a and 9b

Enterococci Levels in the Columbia River and the Effluent



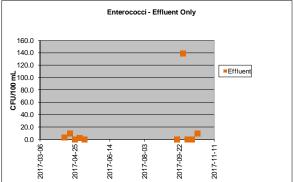




Table 5

2017 Columbia River Sample Results

| Sample Date | | NH ₃ | | | Ortho-P | | Fed | al Colife | orm | | E.Coli | | То | tal P mg | g/L |
|-------------|-------|-----------------|-------|-------|---------|-------|-----|-----------|-----|-----|--------|-----|-------|----------|-------|
| yyyy/mm/dd | UP | SIDE | DN | UP | SIDE | DN | UP | SIDE | DN | UP | SIDE | DN | UP | SIDE | DN |
| 2017-04-10 | 0.204 | 0.082 | 0.105 | 0.005 | 0.005 | 0.005 | 23 | 34 | 42 | 5 | 31 | 19 | 0.013 | 0.014 | 0.006 |
| 2017-04-18 | 0.065 | 0.089 | 0.050 | 0.005 | 0.005 | 0.005 | 176 | 7 | 46 | 67 | 6 | 37 | 0.029 | 0.011 | 0.014 |
| 2017-04-25 | 0.069 | 0.258 | 0.076 | 0.005 | 0.005 | 0.005 | 61 | 10 | 18 | 22 | 5 | 3 | 0.018 | 0.008 | 0.014 |
| 2017-05-02 | 0.050 | 0.050 | 0.050 | 0.005 | 0.005 | 0.005 | 35 | 4 | 19 | 34 | 3 | 18 | 0.009 | 0.017 | 0.008 |
| 2017-05-09 | 0.050 | 0.135 | 0.060 | 0.005 | 0.005 | 0.005 | 16 | 21 | 1 | 15 | 13 | 1 | 0.067 | 0.024 | 0.022 |
| 2017-09-19 | 0.050 | 0.050 | 0.050 | 0.005 | 0.005 | 0.005 | 3 | 5 | 3 | 3 | 2 | 1 | 0.030 | 0.027 | 0.035 |
| 2017-09-27 | 0.050 | 0.050 | 0.050 | 0.005 | 0.005 | 0.005 | 25 | 10 | 20 | 13 | 2 | 5 | 0.093 | 0.115 | 0.076 |
| 2017-10-04 | 0.050 | 0.050 | 0.050 | 0.005 | 0.005 | 0.005 | 93 | 6 | 42 | 39 | 2 | 19 | 0.015 | 0.016 | 0.014 |
| 2017-10-10 | 0.050 | 0.050 | 0.050 | 0.005 | 0.005 | 0.005 | 52 | 7 | 53 | 12 | 6 | 19 | 0.015 | 0.017 | 0.013 |
| 2017-10-18 | 0.050 | 0.050 | 0.050 | 0.005 | 0.005 | 0.005 | 10 | 6 | 11 | 8 | 5 | 5 | 0.020 | 0.020 | 0.027 |
| # Samples | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Average | 0.069 | 0.086 | 0.059 | 0.01 | 0.01 | 0.01 | 49 | 11 | 26 | 22 | 8 | 13 | 0.03 | 0.03 | 0.02 |
| Maximum | 0.204 | 0.258 | 0.105 | 0.01 | 0.01 | 0.01 | 176 | 34 | 53 | 67 | 31 | 37 | 0.09 | 0.12 | 0.08 |
| Minimum | 0.050 | 0.050 | 0.050 | 0.01 | 0.01 | 0.01 | 3.0 | 4.0 | 1.0 | 3.0 | 2.0 | 1.0 | 0.01 | 0.01 | 0.01 |

| Sample Date | | pН | | | TSS | | | N-NO ₃ | | | N-NO ₂ | | Eı | nterococ | ci |
|-------------|------|------|------|-------|-------|------|------|-------------------|------|-------|-------------------|-------|------|----------|------|
| yyyy/mm/dd | UP | SIDE | DN | UP | SIDE | DN | UP | SIDE | DN | UP | SIDE | DN | UP | SIDE | DN |
| 2017-04-10 | 7.8 | 7.8 | 7.8 | 10.0 | 10.0 | 10.0 | 0.13 | 0.10 | 0.14 | 0.010 | 0.010 | 0.010 | 1.0 | 4.1 | 6.3 |
| 2017-04-18 | 7.8 | 7.8 | 7.8 | 18.3 | 13.7 | 17.0 | 0.11 | 0.09 | 0.13 | 0.010 | 0.010 | 0.010 | 13.2 | 1.0 | 11.9 |
| 2017-04-25 | 7.8 | 7.8 | 7.8 | 26.7 | 16.0 | 36.0 | 0.12 | 0.09 | 0.14 | 0.010 | 0.010 | 0.010 | 12.1 | 1.0 | 5.2 |
| 2017-05-02 | 7.8 | 7.8 | 7.8 | 6.7 | 8.0 | 4.0 | 0.13 | 0.11 | 0.15 | 0.010 | 0.010 | 0.010 | 1 | - | - |
| 2017-05-09 | 7.7 | 7.6 | 8.0 | 56.7 | 25.3 | 21.3 | 0.29 | 0.30 | 0.25 | 0.010 | 0.010 | 0.010 | 1.0 | 1.0 | 1.0 |
| 2017-09-19 | 7.6 | 7.6 | 7.6 | 42.7 | 24.7 | 70.0 | 0.08 | 0.07 | 0.08 | 0.010 | 0.010 | 0.010 | ı | - | - |
| 2017-09-27 | 7.6 | 7.2 | 7.6 | 123.0 | 123.0 | 81.3 | 0.08 | 0.09 | 0.07 | 0.010 | 0.010 | 0.010 | 25.6 | 10.9 | 13.2 |
| 2017-10-04 | 7.8 | 8.0 | 8.0 | 7.3 | 5.3 | 9.3 | 0.08 | 0.09 | 0.09 | 0.010 | 0.010 | 0.010 | 9.5 | 1.0 | 2.0 |
| 2017-10-10 | 7.8 | 7.8 | 7.8 | 7.7 | 4.3 | 4.3 | 0.08 | 0.18 | 0.09 | 0.010 | 0.010 | 0.010 | 41.4 | 4.1 | 24.1 |
| 2017-10-18 | 8.2 | 8.2 | 8.2 | 19 | 21 | 34 | 0.09 | 0.11 | 0.10 | 0.010 | 0.010 | 0.010 | 13.2 | 26.2 | 13.5 |
| # Samples | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Average | 7.8 | 7.8 | 7.8 | 31.8 | 25.1 | 28.8 | 0.12 | 0.12 | 0.12 | 0.01 | 0.01 | 0.01 | 15 | 6 | 10 |
| Maximum | 8.20 | 8.20 | 8.20 | 123.0 | 123.0 | 81.3 | 0.29 | 0.30 | 0.25 | 0.01 | 0.01 | 0.01 | 41 | 26 | 24 |
| Minimum | 7.60 | 7.20 | 7.60 | 6.7 | 4.3 | 4.0 | 0.08 | 0.07 | 0.07 | 0.01 | 0.01 | 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



6.0 OVERVIEW OF EFFLUENT RESULTS

This section provides data and analysis for the effluent (treated) samples and plant flows for 2017.

A total of 18 effluent samples were collected and analyzed. Table 6 summarizes effluent test results for 2017.

Table 6
2017 Effluent Results

| Doto | | | | | | 2017 E | ffluent Res | sults Summ | ary | | | | |
|--------------|--------|-------|------|--------------------|------|--------|-------------|------------|---------|------|--------------------|--------------------|-------------|
| Date | Flow | Temp | рН | NH ₃ -N | BOD | P-OP04 | Coliforms | E.Coli | Total P | TSS | NO ₃ -N | NO ₂ -N | Enterococci |
| yyyy/mm/dd | m³/d | С | | mg/L | mg/L | mg/L | cfu/100ml | cfu/100ml | mg/L | mg/L | mg/L | mg/L | cfu/100ml |
| 2017-01-04 | 133.68 | -25.0 | - | - | 5.3 | - | - | - | - | 6.7 | - | - | - |
| 2017-01-31 | 108.03 | -13.0 | - | - | 6.5 | 0.830 | 224 | - | 1.350 | 9.3 | • | - | - |
| 2017-02-27 | 94.71 | -14.0 | 1 | - | 8.3 | 1.090 | 178 | • | 1.790 | 19.7 | 1 | - | - |
| 2017-03-29 | 120.21 | 0.0 | - | - | 11.6 | 1.120 | 600 | - | 1.620 | 12.3 | • | - | - |
| 2017-04-10 | 63.64 | 1.0 | 7.2 | 0.077 | 3.4 | 0.403 | 51 | 50 | 0.732 | 10 | 24.4 | 0.078 | 3.1 |
| 2017-04-18 | 74.01 | 3.0 | - | 0.091 | 4.8 | 0.418 | 17 | 6 | 0.701 | 8.3 | 23.6 | 0.081 | 9.7 |
| 2017-04-25 | 68.34 | 2.0 | 6.8 | 0.084 | 3.4 | 0.311 | 11 | 10 | 0.579 | 12.0 | 16.2 | 0.041 | 1.0 |
| 2017-05-02 | 51.47 | 10.0 | 6.6 | 0.080 | 2.5 | 0.791 | 8 | 6 | 1.060 | 4.7 | 14.5 | 0.043 | 2.0 |
| 2017-05-09 | 56.65 | 9.0 | 6.8 | 0.084 | 2.0 | 1.010 | 2 | 1 | 1.220 | 4.0 | 12.1 | 0.052 | 1.0 |
| 2017-06-28 | 61.70 | 10.0 | - | - | 2.0 | 1.070 | 1 | - | 1.110 | 3.7 | - | - | - |
| 2017-07-26 | 100.00 | 28.0 | - | - | 2.0 | 1.720 | 9 | - | 2.080 | 3.0 | - | - | - |
| 2017-08-29 | 100.00 | 8.0 | - | - | 2.0 | - | 1 | - | - | 3.0 | - | - | - |
| 2017-09-19 | 100.00 | 8.0 | 6.5 | 0.072 | 2.0 | 1.050 | 2 | 2 | 1.110 | 6.0 | 24.6 | 0.034 | - |
| 2017-09-27 | 73.00 | 1.0 | 6.8 | 0.074 | 2.0 | 1.570 | 4 | 1 | 1.820 | 10.0 | 23.7 | 0.028 | 139.1 |
| 2017-10-04 | 58.00 | 0 | 6.6 | 0.074 | 2.0 | 1.140 | 1 | 1 | 1.420 | 8.7 | 19.5 | 0.023 | 1.0 |
| 2017-10-10 | 74.00 | 6.0 | 6.8 | 0.066 | 2.6 | 0.818 | 1 | 1 | 1.100 | 4.3 | 23.7 | 0.041 | 1.0 |
| 2017-10-18 | 46.00 | -2.0 | 6.8 | 0.114 | 2.0 | 0.742 | 1 | 1 | 0.972 | 24.3 | 19.0 | 0.035 | 9.5 |
| 2017-12-14 | 139.00 | -9.0 | - | - | 2.0 | 0.474 | 36 | - | 0.588 | 3.7 | - | - | - |
| # Samples | 18 | 18 | 10 | 10 | 18 | 16 | 16 | 10 | 16 | 18 | 10 | 10 | 9 |
| Average | 85 | 0.0 | 0.00 | 0.082 | 3.7 | 0.91 | 72 | 8 | 1.20 | 8.5 | 20.1 | 0.05 | 19 |
| High | 139 | 28.0 | 6.80 | 0.114 | 11.6 | 1.72 | 600 | 50 | 2.08 | 24.3 | 24.6 | 0.08 | 139.1 |
| Low | 46 | -9.0 | 6.50 | 0.066 | 2 | 0.311 | 1 | 1 | 0.58 | 3.0 | 12.1 | 0.02 | 1 |
| 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 | 12 | 2 | 0 | 11 | 0 | N/A | N/A | 1 |

Notes: 1. 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

6.1 RESULTS ANALYSIS

The average BOD in the effluent was 3.7 mg/L, which is higher when compared to 2016 and lower than in previous years. BOD was below the MSR limits for all the samples. TSS samples averaged 8.5 mg/L with a maximum concentration of 24.3 mg/L, both which were slightly higher than in 2016 but still significantly lower than the 2014. TSS was below the MSR limits for all the samples.

Low levels of bacteria were observed in the effluent this year with only two days (January 31st and March 29th) where high levels of fecal coliforms were observed. The levels on both days were above discharge limits. The results for Enterococci were above the discharge limits on September 27th. Low levels of bacteria were observed in the River on the same day. In general, the levels in the River were low and inconsistent with the levels in the effluent indicating there was no adverse impact to the River from the effluent.

Effluent ammonia concentrations were low throughout the year. The results for ammonia nitrogen were comparable to those in previous years.



^{2.} Geometric mean is used to coliform results

The bioassay toxicity testing was completed this year. The results from 2017 showed that plant effluent was non-toxic. The results of the 2017 tests are shown below in Table 7.

Table 7
Toxicity Test Results

| Sample Date | Result |
|-------------|--------|
| 2017-11-21 | Pass |

Twelve samples out of sixteen for ortho phosphorus and eleven out of sixteen for total phosphorus were above MSR discharge limits, which is higher from last year. The average for total phosphorus for 2017 was 1.20 mg/L compared to 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. The average for ortho phosphorus for 2017 was 0.91 mg/L compared to 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.

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 phosphorus 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.

Nitrate, nitrite, TSS and BOD results were slightly higher from last year; however still comparable to previous years.

Figure 10



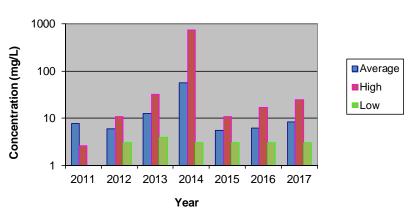




Figure 11 NO3-N

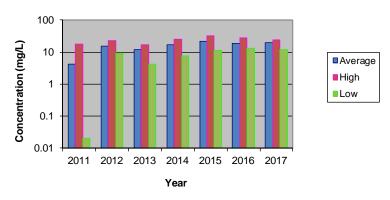
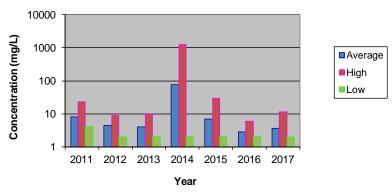


Figure 12 BOD



6.2 COMPLIANCE SUMMARY

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

<u>Table 8</u>
2017 MSR Parameter Compliance

| Parameter | Unit | MSR Limit | No. Of Samples | Average Value | Max. Value | Samples Over Limit |
|---------------------------------|---------------------|-----------|-------------------|------------------|---------------|-----------------------|
| Flow | m ³ /day | 300 | 365 | 85.9 | 244 | 0 |
| BOD ₅ | mg/l | 45 | 18 | 3.7 | 11.6 | 0 |
| TSS | mg/l | 45 | 18 | 8.5 | 24.3 | 0 |
| Total Phosphorus | mg/l | 1 | 16 | 1.20 | 2.08 | 11 |
| Ortho Phosphate | mg/l | 0.5 | 16 | 0.91 | 1.72 | 12 |
| Fecal Coliforms | cfu/100ml | 200 | 16 | 72 | 600 | 2 |
| Enterococci | cfu/100ml | 20 | 9 | 19 | 139.1 | 1 |
| E.Coli | cfu/100ml | 77 | 10 | 8 | 50 | 0 |
| 96 hr LC ₅₀ Bioassay | 1 | Non-toxic | 1 | Pass | Pass | 0 |



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This year the test results indicated that out of the samples collected there were 11 exceedances for total phosphorus, 12 exceedances for ortho-phosphorus, 2 exceedance for fecal coliforms, and 1 exceedance for Enterococci.



7.0 SLUDGE PRODUCTION AND DISPOSAL

This section provides data regarding the disposal of bio-solids (sludge) from the treatment facility in 2017.

Waste activated sludge used to be stored in a thickener and removed by 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 dumping, the sludge from 2017 season is being stored on site until a new disposal location is determined.

Hauling data for pumped solids are in Table 9.

<u>Table 9</u>
2017 Pumped Solids Data

| Month | Vol. Pumped (m³) |
|-----------|------------------------|
| January | 298 |
| February | 250 |
| March | 345 |
| April | 117 |
| Мау | 36 |
| June | 72 |
| July | 173 |
| August | 298 |
| September | 149 |
| October | 48 |
| November | 36 |
| December | 132 |
| Total | 1954 |

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.



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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 will undertake an assessment in the next year to determine the plant's capacity to accommodate additional growth.

There were no bypass events for 2017.



9.0 PHOSPHORUS REMOVAL

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

As seen in the graphs below, the levels of phosphorus were increasing from 2011 until 2015 and there has been a slight decrease since 2015. The average total phosphorus in 2011 was 0.36 mg/L, 0.97 mg/L in 2012, 1.65 mg/L in 2013, 2.43 mg/L in 2014, 2.77 mg/Lin 2015, 1.07 mg/L in 2016 and higher in 2017 at 1.20 mg/L. The same trend was observed with ortho phosphorus. The average ortho phosphorus in 2011 was 0.07 mg/L, 0.67 mg/L in 2012, 1.26 mg/L in 2013, 2.18 mg/L in 2014, 2.37 in 2015 0.88 mg/L in 2016 and slightly higher in 2017 at 0.91 mg/L. The days over limit for 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) and then increasing again in 2017 at 12 days over the limit. The days over limit for total phosphorus increased from 2011 until 2015, decreased in 2016 and then increased to 11 days over the limit in 2017.

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 2018, ClearPac will be 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.

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

Figure 13

Total Phosphorus Levels 2011-2017

Total Phosphorus

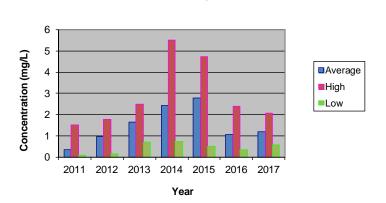




Figure 14
Ortho Phosphorus Levels 2011-2017

Ortho Phosphorus

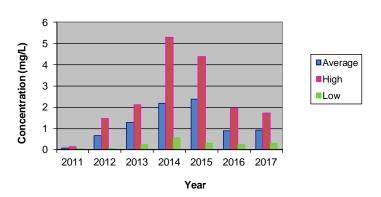
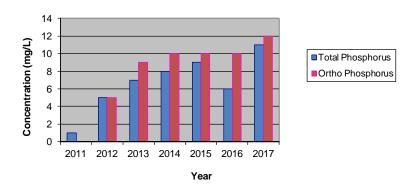


Figure 15

Days over Limit 2011-2017

Days Over Limit



10.0 ASSESSMENT SUMMARY

The total effluent flow recorded for 2017 was 31,431.05 m³ with an average of 85.9 m³/day. There were no days where the flow was over the allowable limit. Please note that the SCADA failed to record correct flow from July 24th until September 7th; therefore the flow was based on partial estimates.

The average BOD in the effluent was 3.7 mg/L, which is higher when compared to 2016 and lower than in previous years. BOD was below the MSR limits for all the samples. TSS samples averaged 8.5 mg/L with a maximum concentration of 24.3 mg/L, both which were slightly higher than in 2016 but still significantly lower than the 2014. TSS was below the MSR limits for all the samples.

Low levels of bacteria were observed in the effluent this year with only two days (January 31st and March 29th) where high levels of fecal coliforms were observed. The levels on both days were above discharge limits. The results for Enterococci were above the discharge limits on September 27th. Low levels of bacteria were observed in the River on the same day. In general, the levels in the River were low and inconsistent with the levels in the effluent indicating there was no adverse impact to the River from the effluent.

Effluent ammonia concentrations were low throughout the year. The results for ammonia nitrogen were comparable to those in previous years.

The bioassay toxicity testing was completed this year. The results from 2017 showed that plant effluent was non-toxic.

Twelve samples out of sixteen for ortho phosphorus and eleven out of sixteen for total phosphorus were above MSR discharge limits, which is higher from last year. Generally, the levels of total and ortho phosphorus are lower but the days over limit have increased. In 2018, ClearPac will be 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.

Nitrate, nitrite, TSS and BOD results were slightly higher from last year; however still comparable to previous years.

A small 26 unit subdivision was proposed and construction started in 2014. Two duplex units were started and construction continued in 2015. Of the 26 approved units, Phase 1 (eight units) have been completed. Phase 2 (eight more units) have now been registered and is 50% sold out. Planning for Phase 3 is set to commence in the Summer of 2018. Currently, with measures implemented the plant runs at approximately 55% capacity. Flows should be monitored closely and additional improvements may be required as growth at the resort continues.



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11.0 AUTHORITIZATION AND CLOSING

This report, titled 2017 Sewage Treatment Plant Annual Report, was prepared for KHMUC by Environmental Diagnostics Inc. The material in this report reflects the best judgement of Environmental Diagnostics 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. Environmental Diagnostics 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.

30366

ENVIRONMENTAL DIAGNOSTICS INC.

Kim Harvey, B. Sc., P.Chem. Environmental Consultant

Jana Zverine, M.Sc., P. Eng. Senior Environmental Engineer

J:comm/water/2018/W2012-003/Kicking Horse/2017 Sewage Treatment Report

Table 10 - Kicking Horse Resort Estimated Sewage Generation (m3/day)

| Single Family Sub Division | Flow* | | | | | | | | | | |
|----------------------------|--------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Single Family Sub-Division | (I/unit/day) | Bed Units | Units | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Purcell Woods | 1363 | 174 | 29 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 |
| Cache Estates | 1363 | 104 | 15 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 |
| Cache Residences | 1363 | 184 | 19 | 25.9 | 25.9 | 25.9 | 25.9 | 25.9 | 25.9 | 25.9 | 25.9 |
| Dogtooth Properties | 1363 | 150 | 16 | 21.8 | 21.8 | 21.8 | 21.8 | 21.8 | 21.8 | 21.8 | 21.8 |
| Cedar Creek Estates | 1363 | 222 | 19 | 25.9 | 25.9 | 25.9 | 25.9 | 25.9 | 25.9 | 25.9 | 25.9 |
| | Subtotal | 834 | 98 | 133.6 | 133.6 | 133.6 | 133.6 | 133.6 | 133.6 | 133.6 | 133.6 |

| Multi-Family Units | Flow* | | | | | | | | | | |
|--|--------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Multi-railing Offits | (I/unit/day) | Bed Units | Units | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Whispering Pines (2 & 3 Bedroom Townhouse) | 1363 | 116 | 22 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 |
| Glacier Lodge (1,2,3 bedroom condo + Health Spa)** | 1628 | 262 | 56 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 |
| Selkirk resort Homes Ph1 (3+4 bedroom Townhouse) | 1700 | 116 | 18 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 |
| Mountaineer Lodge (1,2,3 bedroom condo + Health Spa)** | 1628 | 238 | 53 | 86.3 | 86.3 | 86.3 | 86.3 | 86.3 | 86.3 | 86.3 | 86.3 |
| Palliser Lodge (1,2,3 bedroom condo + Health Spa)** | 1628 | 214 | 46 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 |
| Aspens (1,2 Bedroom Condo) | 1136 | 216 | 60 | 68.2 | 68.2 | 68.2 | 68.2 | 68.2 | 68.2 | 68.2 | 68.2 |
| Selkirk Resort Homes Ph2 (3,4 Bedroom) | 1700 | 62 | 10 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 |
| The Cedars | 1363 | 12 | 2 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 |
| | Subtotal | 1236 | 267 | 400.8 | 400.8 | 400.8 | 400.8 | 400.8 | 400.8 | 400.8 | 400.8 |

| Day Hears | Flow* | Population | | | | | | | | |
|-----------|--------------|------------|------|------|------|------|------|------|------|------|
| Day Users | (l/unit/day) | (each) | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Skiers | 36 | 1000 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 |
| | Subtotal | 1000 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 |

| Commercial Lodges | Flow* (I/unit/day) | Bed Units | Units | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------------------------------------|-----------------------|-----------|-------|------|------|------|------|------|------|------|------|
| Copperhorse Lodge (10 Bedroom B&B) | 366 | 28 | 10 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 |
| Vagabond Lodge (10 Bedroom B&B) | 366 | 28 | 10 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 |
| The Winston Lodge (10 Bedroom B&B) | 366 | 28 | 10 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 |
| | Subtotal | 84 | 30 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |

| Diving Facilities/Bara | Flow* | Area | | | | | | | | |
|--|------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Dining Facilites/Bars | (l/m²/day) | (m2) | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Peaks Bar & Grill | 145 | 256 | 37.1 | 37.1 | 37.1 | 37.1 | 37.1 | 37.1 | 37.1 | 37.1 |
| KHMR Day Lodge | 97 | 300 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 |
| Corks (Vagabond Lodge) | 97 | 120 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 |
| Kicking Horse Saloon (The Winston lodge) | 97 | 287 | 27.8 | 27.8 | 27.8 | 27.8 | 27.8 | 27.8 | 27.8 | 27.8 |
| Double Black Coffee shop | 97 | 190 | 18.4 | 18.4 | 18.4 | 18.4 | 18.4 | 18.4 | 18.4 | 18.4 |
| | Subtotal | 1153 | 124.1 | 124.1 | 124.1 | 124.1 | 124.1 | 124.0 | 124.1 | 124.1 |

| | 705.5 | | | | | | | |
|---------------------------------------|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|
| Daily Wastewater Flow (m3/day)* | 705.5 | 705.5 | 705.5 | 705.5 | 705.5 | 705.5 | 705.5 | 705.5 |
| Corrected Daily Peak Flow Projections | 312*** (actual) | 159 (actual) | 165 (actual) | 146 (actual) | 164 (actual) | 162 (actual) | 244 (actual) | 190 (estimated) |

^{*}Estimated Wastewater flows from BC Health Act, Sewage Disposal Regulation

April 2018 W2012-003

^{**} Number reflects hot tub

^{***} Note that the number does not reflect a true peak as all the data were not available during high flow months





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.

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



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.

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.

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



KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 05-JAN-17

Report Date: 11-JAN-17 11:54 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1876098

Project P.O. #: NOT SUBMITTED

Job Reference: RCR-KICKING HORSE MOUNTAIN RESORT

C of C Numbers: Legal Site Desc:

Lyudmyla Shvets, B.Sc. Account Manager

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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 A Campbell Brothers Limited Company



L1876098 CONTD.... PAGE 2 of 3 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--------|------------|------|-------|-----------|-----------|----------|
| L1876098-1 UV TROUGH | | | | | | | |
| Sampled By: TJ on 04-JAN-17 @ 12:00 | | | | | | | |
| Matrix: WATER Miscellaneous Parameters | | | | | | | |
| Biochemical Oxygen Demand | 5.3 | | 2.0 | mg/L | | 05-JAN-17 | R3630769 |
| Total Suspended Solids | 6.7 | | 3.0 | mg/L | | 06-JAN-17 | R3629242 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1876098 CONTD....

PAGE 3 of 3 Version: FINAL

Reference Information

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 contain the samples are subject to contain the samples are received by the laboratory.

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



Workorder: L1876098

Report Date: 11-JAN-17

Page 1 of 2

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW

CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--------------------------------------|--------|-----------|--------|-----------|-------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3630 | | | | | | | | |
| WG2462283-2 LC Biochemical Oxyger | - | | 98.4 | | % | | 85-115 | 05-JAN-17 |
| WG2462283-1 MI Biochemical Oxyger | | | <2.0 | | mg/L | | 2 | 05-JAN-17 |
| TSS-CL | Water | | | | | | | |
| Batch R3629 | 242 | | | | | | | |
| WG2461255-2 LC Total Suspended So | _ | | 90.7 | | % | | 85-115 | 06-JAN-17 |
| WG2461255-1 MI Total Suspended So | | | <3.0 | | mg/L | | 3 | 06-JAN-17 |

Workorder: L1876098 Report Date: 11-JAN-17 Page 2 of 2

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 predetermined 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 Canada Toll Free: 1 800 668 987www.alsglobal.com

L1876098-COFC

Page <u>1</u> of <u>1</u>

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| Contact: | Travis Jobin | | | ☐ PDF | Excel | ☐ Digital | ☑ Fax | Fax Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT | | | | | | | | ıT | | |
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| | | | | Email | 2: pmajer@skiro | cr.com | | O sa | ame Day | or W | eekend E | mergenc | y - Cont | act ALS | to Confi | irm TAT | | |
| Phone: | 250-344-6003 | Fax: | | Email | Email 3: mskyring@kickinghorseresort.com Analysis Request | | | | | | | | | | | | | |
| Invoice To | Same as Report ? | Yes | . ✓ No | Client | t / Project Informa | ition | | Ple | ase in | dicat | e below | Filtere | d, Pre | serve | or bo |)th (F, | P, F/P) | , |
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| Contact: | Patrick Majer | | | LSD: | | | | | | | | Ì | | | | | | ١ |
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| Sample | | Sample I | dentification | • | Date | Time | SI- T | ا | | Fecal Coliform | Total Coliform | | | | | ĺ | | l de |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 01-FEB-17

Report Date: 07-FEB-17 16:24 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1885862

Project P.O. #: NOT SUBMITTED

Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT

C of C Numbers: Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

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L1885862 CONTD.... PAGE 2 of 3 Version: FINAL

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|--------|------------|-------|-----------|-----------|-----------|-----------|
| LARGERCO A LIV TROUGH | | | | | | | |
| L1885862-1 UV TROUGH Sampled By: TJ on 31-JAN-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Biochemical Oxygen Demand | 6.5 | | 2.0 | mg/L | | 01-FEB-17 | R3647465 |
| Orthophosphate-Dissolved (as P) | 0.830 | DLA | 0.050 | mg/L | | 02-FEB-17 | R3645779 |
| Coliform Bacteria - Fecal | 224 | OCR | 1 | CFU/100mL | | 01-FEB-17 | R3646043 |
| Phosphorus (P)-Total | 1.35 | DLA | 0.050 | mg/L | | 07-FEB-17 | R3647888 |
| Total Suspended Solids | 9.3 | | 3.0 | mg/L | | 05-FEB-17 | R3647494 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1885862 CONTD....

PAGE 3 of 3 Version: FINAL

Reference Information

Qualifiers for Individual Samples Listed:

| Sample Numbe | Client ID | Qualifier | Description |
|--------------|-----------|-----------|--|
| L1885862-1 | UV TROUGH | SPL | TOTAL P - Sample was Preserved at the laboratory |

Sample Parameter Qualifier Key:

| Qualifier | Description |
|-----------|--|
| DLA | Detection Limit adjusted for required dilution |
| 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 IncubO2 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.



Workorder: L1885862

Report Date: 07-FEB-17

Page 1 of 2

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|----------------|------------|---------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3647 | | | | | | | | |
| WG2475427-2 LC Biochemical Oxyger | _ | | 98.0 | | % | | 85-115 | 01-FEB-17 |
| WG2475427-1 MI Biochemical Oxyger | | | <2.0 | | mg/L | | 2 | 01-FEB-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3646 | 043 | | | | | | | |
| WG2474530-2 DL | | L1885862-1 | | | | | | |
| Coliform Bacteria - I | | 224 | 208 | | CFU/100mL | 7.4 | 65 | 01-FEB-17 |
| WG2474530-1 MI Coliform Bacteria - I | | | <1 | | CFU/100mL | | 1 | 01-FEB-17 |
| P-T-COL-CL | Water | | | | | | | |
| Batch R3647 | 888 | | | | | | | |
| WG2475851-2 LC Phosphorus (P)-Tot | - | | 106 | | % | | | 07-FEB-17 |
| WG2475851-1 MI Phosphorus (P)-Tot | | | <0.0050 | | mg/L | | 0.005 | 07-FEB-17 |
| PO4-DO-COL-CL | Water | | | | | | | |
| Batch R3645 | 779 | | | | | | | |
| WG2473938-10 LC | - | | | | | | | |
| Orthophosphate-Dis | ssolved (as P) | | 106.8 | | % | | 80-120 | 02-FEB-17 |
| WG2473938-9 MI Orthophosphate-Dis | | | <0.0050 | | mg/L | | 0.005 | 02-FEB-17 |
| TSS-CL | Water | | | | | | | |
| Batch R3647 | 494 | | | | | | | |
| WG2475555-5 LC | s | | | | | | | |
| Total Suspended So | olids | | 92.9 | | % | | 85-115 | 05-FEB-17 |
| WG2475555-4 MI Total Suspended So | | | <3.0 | | mg/L | | 3 | 05-FEB-17 |
| | | | | | | | | |

Workorder: L1885862 Report Date: 07-FEB-17 Page 2 of 2

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 predetermined 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 Envir



Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsqiobal.com

| COC# | | |
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Page <u>1</u> of <u>1</u>

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| Company: | Kicking Horse Mou | ntain Water Util | ity Co. Ltd. | | ✓ Standard | Other | • | | R₁ | egular (| (Standa | ard Tu | marour | id Time | s - Bus | siness D | ays) | | | | |
| Contact: | Travis Jobin | | | | ☐ PDF | ☐ Excel | ☐ Digital | ✓ Fax | O Pı | iority (| 2-4 Bus | siness | Days) - | 50% : | Surchar | rge - Co | ntact A | LS to Co | onfirm ' | TAT | |
| Address: | 1500 Kicking Horse | e Trail | | | Email 1: | tjobin@kickingt | norseresort.com | | O Er | nergen | icy (1-2 | Bus. | Days) - | 100% | Surcha | rge - Co | ontact / | tact ALS to Confirm TAT | | | |
| | | | | | Email 2: | pmajer@skircr. | com | | O sa | ame Da | y or W | eeken | d Emen | gency - | - Conta | ct ALS t | o Confi | îm TAT | | | |
| Phone: | 250-344-6003 | Fax: | - | | Email 3: | mskyring@kick | inghorseresort.co | <u>om</u> | | - | | | | | | eques | | | | | |
| nvoice To | Same as Report? | Yes | √ No | | Client / P | roject Informati | on | | Ple | ase ir | ndicat | e bel | ow Fil | tered | , Pres | served | or bo | oth (F, | P, F/ | P) | |
| Hardcopy of li | nvoice with Report? | Yes | ✓ No | | Job #: | RCR - Kicking | Horse Mountain I | Resort | | | | | | | | | | | | | |
| Company: | Resorts of the Can | adian Rockies | | | PO / AFE: | | | | | | | | | | | | | | | | |
| Contact: | Patrick Majer | | | | LSD: | | | | | | | | ١٧ | 75 | | | | | | | |
| Address: | 1505 - 17th Ave SV | N Calgary AB | | | | | | |] | | | | I 1- | <u>₹</u> | | | | | | | ers |
| Phone: | | Fax: | | | Quote #: | Q33059 | | | | | | | PERSEA | PHOSE | | | | | | | fair |
| Lab W | ork Order# | · | 1 . 11 . 11 | CIT s | ALS | | <u> </u> | | 1 | | _E | # | 麦 | 3 | | | | | Ì | | ဂ္ဂ် |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 28-FEB-17

Report Date: 07-MAR-17 10:03 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1895421

Project P.O. #: NOT SUBMITTED

Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT

C of C Numbers: Legal Site Desc:

Lyudmyla Shvets, B.Sc.

Account Manager

 $[This\ report\ shall\ not\ be\ reproduced\ except\ in\ full\ without\ the\ written\ authority\ of\ the\ Laboratory.]$



L1895421 CONTD.... PAGE 2 of 3 Version: FINAL

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--------|--|-------|-------------------|-----------|-----------|----------|
| L1895421-1 UV TROUGH | | | | | | | |
| L1895421-1 UV TROUGH Sampled By: TJ on 27-FEB-17 @ 09:00 | | | | | | | |
| | | | | | | | |
| Matrix: WATER Miscellaneous Parameters | | | | | | | |
| Biochemical Oxygen Demand | 8.3 | DLHC | 6.0 | mg/L | | 28-FEB-17 | R3668024 |
| Orthophosphate-Dissolved (as P) | | DLA | | | | 28-FEB-17 | |
| Coliform Bacteria - Fecal | 1.09 | DLM | 0.050 | mg/L CFU/100mL | | 28-FEB-17 | R3664463 |
| Phosphorus (P)-Total | 178 | DLM | 2 | | | | R3664869 |
| | 1.79 | DLA | 0.010 | mg/L | | 06-MAR-17 | R3668806 |
| Total Suspended Solids | 19.7 | | 3.0 | mg/L | | 03-MAR-17 | R3668287 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1895421 CONTD....
PAGE 3 of 3
Version: FINAL

Reference Information

Qualifiers for Sample Submission Listed:

| Qualifier | Description |
|-----------|---|
| SPL | PT - Sample was Preserved at the laboratory |

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). |
| 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 IncubO2 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 9222I

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.



Workorder: L1895421

Report Date: 07-MAR-17

Page 1 of 2

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|-----------|---------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL Water | | | | | | | |
| Batch R3668024 | | | | | | | |
| WG2489166-2 LCS Biochemical Oxygen Demand | | 90.4 | | % | | 85-115 | 28-FEB-17 |
| WG2489166-1 MB Biochemical Oxygen Demand | | <2.0 | | mg/L | | 2 | 28-FEB-17 |
| FCC-MF-CL Water | | | | | | | |
| Batch R3664869 WG2487147-1 MB | | | | | | | |
| Coliform Bacteria - Fecal | | <1 | | CFU/100mL | | 1 | 28-FEB-17 |
| P-T-COL-CL Water | | | | | | | |
| Batch R3668806 | | | | | | | |
| WG2489792-2 LCS Phosphorus (P)-Total | | 103.1 | | % | | 80-120 | 06-MAR-17 |
| WG2489792-1 MB Phosphorus (P)-Total | | <0.0050 | | mg/L | | 0.005 | 06-MAR-17 |
| PO4-DO-COL-CL Water | | | | | | | |
| Batch R3664463 | | | | | | | |
| WG2486394-2 LCS Orthophosphate-Dissolved (as P) | | 95.8 | | % | | 80-120 | 28-FEB-17 |
| WG2486394-1 MB Orthophosphate-Dissolved (as P) | | <0.0050 | | mg/L | | 0.005 | 28-FEB-17 |
| TSS-CL Water | | | | | | | |
| Batch R3668287 | | | | | | | |
| WG2489376-2 LCS Total Suspended Solids | | 94.4 | | % | | 85-115 | 03-MAR-17 |
| WG2489376-1 MB | | | | | | | |
| Total Suspended Solids | | <3.0 | | mg/L | | 3 | 03-MAR-17 |

Workorder: L1895421 Report Date: 07-MAR-17 Page 2 of 2

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 predetermined 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.

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| Company: | Kicking Horse Mou | ıntain Water Utili | ity Co. Ltd. | | Standard | | _ . | | _ | | | | | | s - Busines | | | | | |
| Contact: | Travis Jobin | | | | PDF | Excel | Digital Digital | ₹ Fax | O Pr | lority (2 | 2-4 Bus | siness | Days) - | 50% S | urcharge - | Contact | ALS to (| Confirm 1 | TAT | |
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| Phone: | 250-344-6003 | Fax: | - | Em | ail 3: | mskyring@kicki | <u>inghorseresort.</u> | <u>com</u> | | | | | | | is Requ | | | | | |
| Invoice To | Same as Report ? | Yes | ✓ No | Clie | ent / Pr | oject information | on | | Ple | ase in | dicat | e bel | ow Fil | tered, | Preserv | red or b | oth (F | , P, F/ | P) | |
| Hardcopy of I | nvoice with Report? | Yes | ✓ No | Job | #: | RCR - Kicking H | Horse Mountair | n Resort | | | | | | | | | | | | |
| Company: | Resorts of the Car | adian Rockies | | PO | / AFE: | | | | | | | | 4 | ردا | | | | | | |
| Contact: | Patrick Majer | _ | | LST | D: | | | | | | | | 14 | 7 | l | { | 1 | | | |
| Address: | 1505 - 17th Ave S | W Calgary AB | | | | | | | | | | | 8 | ₹ | | | 1 | | | ers |
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| (lab | use only) | | | Cor | ntact: | LS | Sampler: | TJ | | | Fecal Coliform | PARACETARIA | ORIHO | _4 | | | 1 } | | | rof |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 30-MAR-17

Report Date: 06-APR-17 08:44 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1906927

Project P.O. #: NOT SUBMITTED

Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT

C of C Numbers: Legal Site Desc:

Lundrade Chuete D.Co

Lyudmyla Shvets, B.Sc. Account Manager

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L1906927 CONTD.... PAGE 2 of 3 Version: FINAL

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--------|------------|-------|-----------|-----------|-----------|----------|
| L1906927-1 UV TROUGH | | | | | | | |
| L1906927-1 UV TROUGH Sampled By: CLIENT on 29-MAR-17 @ 13:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Biochemical Oxygen Demand | 11.6 | BODQ | 6.0 | mg/L | | 30-MAR-17 | R3692336 |
| Orthophosphate-Dissolved (as P) | 1.12 | DLA | 0.050 | mg/L | | 30-MAR-17 | R3687764 |
| Coliform Bacteria - Fecal | 600 | DLA | 100 | CFU/100mL | | 30-MAR-17 | R3689406 |
| Phosphorus (P)-Total | 1.62 | DLA | 0.10 | mg/L | | 31-MAR-17 | R3688844 |
| Total Suspended Solids | 12.3 | | 3.0 | mg/L | | 04-APR-17 | R3693423 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1906927 CONTD....

PAGE 3 of 3 Version: FINAL

Reference Information

Qualifiers for Individual Samples Listed:

| Sample Numbe | Client ID | Qualifier | Description |
|---------------|---------------------|-----------|--|
| L1906927-1 | UV TROUGH | SPL | TOTAL P - Sample was Preserved at the laboratory |
| Sample Parame | eter Qualifier Kev: | | |

| Sample Parameter Qualifier Key: | | | | | | | |
|---------------------------------|--|--|--|--|--|--|--|
| Qualifier | Description | | | | | | |
| BODQ | BOD Qualification: Lab Control Sample outside standard 85-115% objective (see QC report). Sample(s) cannot be rerun due to hold time expiry. | | | | | | |
| DLA | Detection Limit adjusted for required dilution | | | | | | |
| LCS-ND | Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected. | | | | | | |

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** | | | | | |
|---------------|--------|---------------------------------|-------------------------------------|--|--|--|--|--|
| BOD-BC-CL | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B-5 day IncubO2 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

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 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 **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.



Workorder: L1906927

Report Date: 06-APR-17

Page 1 of 2

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test M | latrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|--------|---------------------------|---------|-----------|-----------|-----|--------|-------------|
| Batch R3692336 | Vater | | | | | | | |
| WG2505425-2 LCS Biochemical Oxygen Dema | and | | 82.9 | LCS-ND | % | | 85-115 | 30-MAR-17 |
| WG2505425-1 MB Biochemical Oxygen Dema | and | | <2.0 | | mg/L | | 2 | 30-MAR-17 |
| FCC-MF-CL V | Vater | | | | | | | |
| Batch R3689406 WG2503741-2 DUP | | L1906927-1 | | | | | | |
| Coliform Bacteria - Fecal | | 600 | 500 | | CFU/100mL | 18 | 65 | 30-MAR-17 |
| WG2503741-1 MB Coliform Bacteria - Fecal | | | <1 | | CFU/100mL | | 1 | 30-MAR-17 |
| P-T-COL-CL V | Vater | | | | | | | |
| Batch R3688844 WG2503553-2 LCS Phosphorus (P)-Total | | | 87.9 | | % | | 00.400 | 04 144 5 47 |
| WG2503553-1 MB | | | 87.9 | | % | | 80-120 | 31-MAR-17 |
| Phosphorus (P)-Total | | | <0.0050 | | mg/L | | 0.005 | 31-MAR-17 |
| PO4-DO-COL-CL V | Vater | | | | | | | |
| Batch R3687764 | | | | | | | | |
| WG2502957-4 DUP Orthophosphate-Dissolved | (as P) | L1906927-1 1.12 | 1.11 | | mg/L | 0.2 | 20 | 30-MAR-17 |
| WG2502957-2 LCS Orthophosphate-Dissolved | (as P) | | 101.0 | | % | | 80-120 | 30-MAR-17 |
| WG2502957-1 MB Orthophosphate-Dissolved | (as P) | | <0.0050 | | mg/L | | 0.005 | 30-MAR-17 |
| TSS-CL V | Vater | | | | | | | |
| Batch R3693423 | | | | | | | | |
| WG2506309-2 LCS Total Suspended Solids | | | 96.7 | | % | | 85-115 | 04-APR-17 |
| WG2506309-1 MB Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 04-APR-17 |

Workorder: L1906927 Report Date: 06-APR-17 Page 2 of 2

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 |

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

| Qualifier | Description |
|-----------|---|
| LCS-ND | Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected. |

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 predetermined 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 / Ana Canada Toll Free: www.alsqlc



COC#

| Page | 1 of | 1 |
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| Report To | | | Report Fo | ormat / Distribu | tion | | Serv | rice re | eque | sieu | (rcush | for rou | utine ana | lysis sub | ject to | availa! | bility) | |
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| Contact: | Travis Jobin | | □PDF | Excel _ | Digital | ✓ Fax | O PI | riority (2 | 2-4 Bu | siness | Days) - | 50% S | urcharge - | Contact | ALS to C | :onfirm | TAT | |
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| Contact: | Patrick Majer | | LSD: | | | |] | | | | \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | | | | i l | | | |
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| Phone: | | Fax: | Quote #: | Q33059 | | | | | | | PHOSPHATE | 9 | | | | | | ìtair |
| | /ork Order# use only) | L190620 | ALS Contact: | LS | Sampler: | тл | | } | Coliform | | | 7 | ļ | | | | | Number of Containers |
| Sample | <u> </u> | Sample Identification | | Date | Time | T | | İ l | ္မ | | ORTHO | | | 1 1 | | | | þe |
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| | UV trough | | | MAR 29 | IPM | Water | Х | Z | X | | X | X | \neg | | | | _ | 4 |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 11-APR-17

Report Date: 20-APR-17 15:07 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1911339

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK 1 - 2017 SPRING EMS PROGRAM - WW

C of C Numbers: Legal Site Desc:

Lyudmyla Shvets, B.Sc.

Lyudmyla Shvets, B.Sc. Account Manager

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L1911339 CONTD.... PAGE 2 of 5 Version: FINAL

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|----------------|------------|--------|---|-----------|-------------|----------|
| L1911339-1 WWTP EFFLUENT - UV TROUGH TEM | P: 10C PH: 7.2 | | | | | | |
| Sampled By: TJ/MS on 10-APR-17 @ 13:30 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.077 | | 0.050 | mg/L | | 12-APR-17 | R3698941 |
| Biochemical Oxygen Demand | 3.4 | | 2.0 | mg/L | | 11-APR-17 | R3700273 |
| Orthophosphate-Dissolved (as P) | 0.403 | DLA | 0.025 | mg/L | | 11-APR-17 | R3696962 |
| Enterococcus | See Attached | | | | | 11-APR-17 | R3703580 |
| Coliform Bacteria - Fecal | 51 | OCR | 1 | CFU/100mL | | 11-APR-17 | R3701166 |
| MPN - E. coli | 50 | OCR | 1 | MPN/100mL | | 11-APR-17 | R3700903 |
| Phosphorus (P)-Total | 0.732 | DLA | 0.050 | mg/L | | 15-APR-17 | R3701492 |
| Total Suspended Solids | <10 | | 10 | mg/L | | 15-APR-17 | R3701592 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 24.4 | | 0.020 | mg/L | | 11-APR-17 | R3698416 |
| Nitrate+Nitrite | | | 0.020 | | | | |
| Nitrate and Nitrite (as N) | 24.5 | | 0.050 | mg/L | | 12-APR-17 | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | 0.078 | | 0.010 | mg/L | | 11-APR-17 | R3698416 |
| L1911339-2 COLUMBIA RIVER UPSTREAM TEMP: | 6.6C PH: 7.8 | | | | | | |
| Sampled By: TJ/MS on 10-APR-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.204 | | 0.050 | mg/L | | 12-APR-17 | R3698941 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 11-APR-17 | R3696962 |
| Enterococcus | See Attached | | | | | 11-APR-17 | R3703580 |
| Coliform Bacteria - Fecal | 23 | OCR | 1 | CFU/100mL | | 11-APR-17 | R3701166 |
| MPN - E. coli | 5 | OCR | 1 | MPN/100mL | | 11-APR-17 | R3700903 |
| Phosphorus (P)-Total | 0.0133 | | 0.0050 | mg/L | | 15-APR-17 | R3701492 |
| Total Suspended Solids | <10 | | 10 | mg/L | | 15-APR-17 | R3701592 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC | | | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | 44 455 47 | |
| Nitrate (as N) | 0.132 | | 0.020 | mg/L | | 11-APR-17 | R3698416 |
| Nitrate+Nitrite Nitrate and Nitrite (as N) | 0.132 | | 0.050 | mg/L | | 12-APR-17 | |
| Nitrite in Water by IC | 0.132 | | 0.030 | IIIg/L | | 12-7(110-17 | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 11-APR-17 | R3698416 |
| L1911339-3 COLUMBIA RIVER DOWN STREAM TE | - | | | | | | |
| Sampled By: TJ/MS on 10-APR-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.105 | | 0.050 | mg/L | | 12-APR-17 | R3698941 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 11-APR-17 | R3696962 |
| Enterococcus | See Attached | | | | | 11-APR-17 | R3703580 |
| Coliform Bacteria - Fecal | 42 | OCR | 1 | CFU/100mL | | 11-APR-17 | R3701166 |
| MPN - E. coli | 19 | OCR | 1 | MPN/100mL | | 11-APR-17 | R3700903 |
| Phosphorus (P)-Total | 0.0064 | | 0.0050 | mg/L | | 15-APR-17 | R3701492 |
| Total Suspended Solids | <10 | | 10 | mg/L | | 15-APR-17 | R3701592 |
| NO2, NO3 and Sum of NO2/NO3 | | | - | | | | |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.143 | | 0.020 | mg/L | | 11-APR-17 | R3698416 |
| Nitrate+Nitrite | | | _ | | | | |
| Nitrate and Nitrite (as N) | 0.143 | | 0.050 | mg/L | | 12-APR-17 | |

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

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| L1911339-4 COLUMBIA RIVER SIDE CHANNEL TEMP: 7.7C PH: 7.8 Sampled By: TJ/MS on 10-APR-17 @ 14:00 Matrix: WATER Miscellaneous Parameters Ammonia, Total (as N) 0.082 0.050 mg/L 12-APR-17 R3698 R3698 | Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--|------------------|------------|--------|-------|-----------|-----------|-----------|
| Sampled By: TJ/MS on 10-APR-17 @ 14:00 Matrix: WATER Nitrite in Water by IC Nitrite (as N) | L1911339-3 COLUMBIA RIVER DOWN STRFAM TF | MP: 7.0C PH: 7.8 | | | | | | |
| Matrix: WATER Nitrite in Water by IC Nitrate in Water by IC Nitrate and Nitrite (as N) 0.010 mg/L 11-APR-17 R3698 L1911339-4 COLUMBIA RIVER SIDE CHANNEL TEMP: 7.7C PH: 7.8 Sampled By: TJ/MS on 10-APR-17 @ 14:00 12-APR-17 R3698 Matrix: WATER WATER WATER WATER VATER | | | | | | | | |
| Nitrite in Water by IC Nitrite (as N) <0.010 mg/L 11-APR-17 R3698 L1911339-4 Sampled By: Matrix: WATER Miscellaneous Parameters Ammonia, Total (as N) 0.082 0.0050 0.050 mg/L 12-APR-17 R3698 R3698 Orthophosphate-Dissolved (as P) <0.0050 0.0050 0.0050 mg/L 11-APR-17 R3698 R3698 Enterococcus Colliform Bacteria - Fecal MPN - E. coli 31 See Attached 0.0050 1 CFU/100mL 11-APR-17 11-APR-17 R3701 R3701 Phosphorus (P)-Total Total Suspended Solids Nitrate in Water by IC Nitrate (as N) 0.100 0.020 0.050 mg/L 0.020 11-APR-17 R3698 R3698 R3698 Nitrate and Nitrite Nitrite in Water by IC Nitrite in Water by IC 0.100 0.050 0.050 mg/L 0.050 11-APR-17 R3698 R3698 R3698 | | | | | | | | |
| Nitrite (as N) | | | | | | | | |
| Sampled By: TJ/MS on 10-APR-17 @ 14:00 Matrix: WATER Miscellaneous Parameters 0.082 Ammonia, Total (as N) 0.082 Orthophosphate-Dissolved (as P) <0.0050 | | <0.010 | | 0.010 | mg/L | | 11-APR-17 | R3698416 |
| Matrix: WATER Miscellaneous Parameters 0.082 0.050 mg/L 12-APR-17 R3698 Orthophosphate-Dissolved (as P) <0.0050 | | MP: 7.7C PH: 7.8 | | | | | | |
| Miscellaneous Parameters Ammonia, Total (as N) 0.082 0.050 mg/L 12-APR-17 R3698 Orthophosphate-Dissolved (as P) <0.0050 | | | | | | | | |
| Ammonia, Total (as N) 0.082 0.050 mg/L 12-APR-17 R3698 Orthophosphate-Dissolved (as P) <0.0050 | | | | | | | | |
| Orthophosphate-Dissolved (as P) <0.0050 | | | | | | | 10 100 17 | |
| Enterococcus | | | | | _ | | | R3698941 |
| Coliform Bacteria - Fecal 35 OCR 1 CFU/100mL 11-APR-17 R3701 MPN - E. coli 31 OCR 1 MPN/100mL 11-APR-17 R3701 Phosphorus (P)-Total 0.0138 0.0050 mg/L 15-APR-17 R3701 Total Suspended Solids <10 | | | | 0.0050 | mg/L | | | R3696962 |
| MPN - E. coli 31 OCR 1 MPN/100mL mg/L 11-APR-17 R3700 Phosphorus (P)-Total Total Suspended Solids <10 | | | 000 | | | | | R3703580 |
| Phosphorus (P)-Total 0.0138 0.0050 mg/L 15-APR-17 R3701 Total Suspended Solids <10 | | | | | | | | R3701166 |
| Total Suspended Solids | | | OCR | | | | | R3700903 |
| NO2, NO3 and Sum of NO2/NO3 0.100 0.020 mg/L 11-APR-17 R3698 Nitrate (as N) 0.100 0.050 mg/L 12-APR-17 Nitrate and Nitrite (as N) 0.100 0.050 mg/L 12-APR-17 Nitrite in Water by IC 0.050 mg/L 12-APR-17 | | | | | _ | | | R3701492 |
| Nitrate in Water by IC 0.100 0.020 mg/L 11-APR-17 R3698 Nitrate +Nitrite Nitrate and Nitrite (as N) 0.100 0.050 mg/L 12-APR-17 Nitrite in Water by IC | | <10 | | 10 | mg/L | | 15-APR-17 | R3701592 |
| Nitrate (as N) 0.100 0.020 mg/L 11-APR-17 R3698 Nitrate+Nitrite 0.100 0.050 mg/L 12-APR-17 Nitrite in Water by IC 0.050 mg/L 12-APR-17 | | | | | | | | |
| Nitrate+Nitrite Nitrate and Nitrite (as N) Nitrite in Water by IC 0.100 0.050 mg/L 12-APR-17 | | 0.100 | | 0.020 | ma/L | | 11-APR-17 | R3698416 |
| Nitrate and Nitrite (as N) 0.100 0.050 mg/L 12-APR-17 Nitrite in Water by IC | | 3.100 | | 0.020 | g, = | | | .10000410 |
| Nitrite in Water by IC | | 0.100 | | 0.050 | mg/L | | 12-APR-17 | |
| Nitrite (as N) < 0.010 | | | | | | | | |
| | Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 11-APR-17 | R3698416 |
| | | | | | | | | |
| | | | | | | | | |

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

L1911339 CONTD....

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Reference Information

Sample Parameter Qualifier Key:

Qualifier Description DLA Detection Limit adjusted for required dilution 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:

| POD PC CI Water Piechamical Owigen Demand (POD) APHA 5210 P. E. day Insula O2 electrode | ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---------------|--------|---------------------------------|-------------------------------------|
| BOD-BC-CL Water Biochemical Oxygen Demand (BOD) AFITA 5210 B-3 day incub02 electrode | BOD-BC-CL | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B-5 day IncubO2 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-COL-CL APHA 4500 NH3-NITROGEN (AMMONIA) Water Ammonia, Total (as N)

This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the

phenate colourimetric method.

NO2-IC-N-CI 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 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 |
| Objective of Occasion the Normalisms | |

Chain of Custody Numbers:

L1911339 CONTD....

Reference Information

PAGE 5 of 5 Version: FINAL

Test Method References:

ALS Test Code Matrix Method Reference** **Test Description**

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.



Workorder: L1911339

Report Date: 20-APR-17

Page 1 of 3

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--------|---|---|---|--|--|---|---|
| Water | | | | | | | |
| nand | | 90.6 | | % | | 85-115 | 11-APR-17 |
| nand | | <2.0 | | mg/L | | 2 | 11-APR-17 |
| Water | | | | | | | |
| | | <1 | | MPN/100mL | | 1 | 11-APR-17 |
| Water | | | | | | | |
| | | <1 | | CFU/100mL | | 1 | 11-APR-17 |
| Water | | | | | | | |
| | | 100.4 | | % | | 85-115 | 12-APR-17 |
| | | <0.050 | | mg/L | | 0.05 | 12-APR-17 |
| Water | | | | | | | |
| | | 102.7 | | % | | 90-110 | 11-APR-17 |
| | | <0.010 | | mg/L | | 0.01 | 11-APR-17 |
| Water | | | | | | | |
| | | 106.0 | | % | | 90-110 | 11-APR-17 |
| | | <0.020 | | mg/L | | 0.02 | 11-APR-17 |
| Water | | | | | | | |
| | | 85.5 | | % | | 80-120 | 15-APR-17 |
| | Water and and Water Water Water Water | Water and and Water Water Water Water | Water and 90.6 and <2.0 Water <p>41 Water 100.4 <0.050 Water 102.7 <0.010 Water 106.0 <0.020 Water</p> | Water and 90.6 and <2.0 Water <p>**** *** *** *** *** *** *** *** *** *</p> | Water Water % and <2.0 | Water Water and 90.6 % and <2.0 | Water Water 85-115 and <2.0 |



Workorder: L1911339

Report Date: 20-APR-17 Page 2 of 3

| Test M | atrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--------------------------|--------|------------|---------|-----------|-------|-----|--------|-----------|
| P-T-COL-CL W | /ater | | | | | | | |
| Batch R3701492 | | | | | | | | |
| WG2511538-1 MB | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0050 | | mg/L | | 0.005 | 15-APR-17 |
| PO4-DO-COL-CL W | /ater | | | | | | | |
| Batch R3696962 | | | | | | | | |
| WG2509566-3 DUP | | L1911339-1 | | | | | | |
| Orthophosphate-Dissolved | (as P) | 0.403 | 0.412 | | mg/L | 2.4 | 20 | 11-APR-17 |
| WG2509566-2 LCS | | | | | | | | |
| Orthophosphate-Dissolved | (as P) | | 101.0 | | % | | 80-120 | 11-APR-17 |
| WG2509566-1 MB | | | | | | | | |
| Orthophosphate-Dissolved | (as P) | | <0.0050 | | mg/L | | 0.005 | 11-APR-17 |
| WG2509566-4 MS | | L1911339-1 | | | | | | |
| Orthophosphate-Dissolved | (as P) | | N/A | MS-B | % | | - | 11-APR-17 |
| TSS-CL W | /ater | | | | | | | |
| Batch R3701592 | | | | | | | | |
| WG2511447-5 LCS | | | | | | | | |
| Total Suspended Solids | | | 91.1 | | % | | 85-115 | 15-APR-17 |
| WG2511447-4 MB | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 15-APR-17 |

Workorder: L1911339 Report Date: 20-APR-17 Page 3 of 3

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 |

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

| 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 predetermined 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.



ATTN: Lyudmyla Shvets ALS Laboratory Group 2559 29th St. N.E. Calgary, Alberta Canada T1Y 7B5 Received: 2017/04/11, 1055 Report Date: 2017/04/20 Version: FINAL

Test Report

 Client:
 ALS106

 Reference:
 1617-0847

 Billing:
 L1911339



Senior Verifier



Enterococcus Test Report

Result Summary

Client: ALS106

Reference: 1617-0847

Client: ALS Laboratory Group; operation Calgary

Samples: L1911339-1 WWTP EFFLUENT - UV TROUGH TEMP: 10C PH: 7.2

L1911339-2 COLUMBIA RIVER UPSTREAM TEMP: 6.6C PH: 7.8 L1911339-3 COLUMBIA RIVER DOWN STREAM TEMP: 7.0C PH: 7.8 L1911339-4 COLUMBIA RIVER SIDE CHANNEL TEMP: 7.7C PH: 7.8

Collection: collected on 2017/04/10 at 1330

Receipt: received on 2017/04/11 at 1055 by CQ/EJ

Containers: received 4 x 250 mL bottles at 9 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Analysis: started on 2017/04/11 by JN; ended on 2017/04/12 by JN

Result:

| Sampl | e Client Code | Enterococcus (MPN/100mL) |
|-------|---|-----------------------------|
| 01 | L1911339-1 WWTP EFFLUENT - UV TROUGH TEMP: 10C PH: 7.2 | 3.1 |
| 02 | L1911339-2 COLUMBIA RIVER UPSTREAM TEMP: 6.6C PH: 7.8 | 1.0 |
| 03 | L1911339-3 COLUMBIA RIVER DOWN STREAM TEMP: 7.0C PH: 7.8 | 6.3 |
| 04 | L1911339-4 COLUMBIA RIVER SIDE CHANNEL TEMP: 7.7C PH: 7.8 | 4.1 |

Notes: MPN, most probable number

Comments: Test incubation was 24 hours at $41 \pm 1^{\circ}$ C

Reagents performed as expected

Method: *Enterococcus* by Most Probable Number method (WTRQ-ME-009) **Reference:** Multiple-tube Technique, variation of 9230 B. (IDEXX Enterolert media)

Standard Methods for Examination of Water and Wastewater, 22nd ed. 2012. Edited by: E.W. Rice, L.S. Clesceri, A.E. Greenberg, and A.D. Eaton. APHA, AWWA, WEF, Washington.

(ISBN 978-087553-013-0).

The test data and results are authorized and verified correct.

ALS Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 300 668 9878 www.alsglobal.com



GENF 20.00 Front

L1911339-COFC Report Format / Distribution Servir Report To Kicking Horse Mountain Resort Utility Corporation 5tandard Other (a) Regular (accommon a ambiticano anno antico Company [-] Fax 🔘 Prionty (2-4 Business Days) - 50% Suicharge - Contact ALS to Confirm TAT Travis Jobin Excel [| Digital Contact: i PDF 1500 Kicking Horse Trail O Emergency (1-2 Bus. Davs) - 100% Strickarge - Contact ALS to Confirm TAT Address: Email 1: tjobin@kickinghorseresort.com Same Day or Weekend Emergency - Contact ALS to Confirm TAT pmajer@skircr.com Email 2: Analysis Request Phone: 250-344-8442 Fax: Email 3: mskyring@kickinghorseresort.com Please indicate below Filtered, Preserved or both (F, P, F/P) [√] № Ties Invoice To Same as Report ? Client / Project Information Week 1- 2017 Spring EMS program - WW Hardcopy of Invoice with Report? 705 l No Joh#: PO / AFE: Resorts of the Canadian Rockies Company: Contact: Patrick Majer SD: Number of Containers Address 1505 - 17th Ave SW Calgary AB Phone: Fax: Quote #: Lab Work Order # LS T./MS Sampler: (labiuse only) Contact: Sample ... Sample Identification Ortho Date Time Total Sample Type (dd-:nmm-yy) (ramol) (This description will appear on the report) 4 W. I WWTP Effluent - UV trough Х Х Х Х Χ Х Х 5 V√ater Х X 10-Apr-17 1330 Χ Х Х Χ Х Χ 4 Columbia River Upstream Х Х ZEM 10-Apr-17 Wate: X Х Х Х Х X 4 Columbia River Down stream Temp: 7.() 10-Apr-17 2 PM Weter X 7 6~ χ Х Х Х Х Х Χ 4 Columbia River Side Channel 10-Apr-17 Vvater Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc.) / Hazardous Details Faither 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) (at 11 A SHIPMENT RECEPTION (lab use only) Observations: Date: Received by: Temperature. Verified by: Released by: Date (dd-main yy) | Time (hh-nim) Yes / No ? if Yes add S!F



KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 19-APR-17

Report Date: 01-MAY-17 08:52 (MT)

Version: FINAL REV. 2

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1914350

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK 2 - 2017 SPRING EMS PROGRAM

C of C Numbers: Legal Site Desc:

Lyudmyla Shvets, B.Sc.

Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]



L1914350 CONTD.... PAGE 2 of 5 Version: FINAL REV.

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|--------------|------------|--------|-----------|-----------|------------------------|-------------|
| L1914350-1 WWTP EFFLUENT - UV THROUGH | | | | | | | |
| Sampled By: TJ/PAG on 18-APR-17 @ 13:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.091 | | 0.050 | mg/L | | 20-APR-17 | R3703697 |
| Biochemical Oxygen Demand | 4.8 | | 2.0 | mg/L | | 19-APR-17 | R3706404 |
| Orthophosphate-Dissolved (as P) | 0.418 | DLA | 0.025 | mg/L | | 19-APR-17 | R3703561 |
| Enterococcus | See Attached | | 0.020 | 9. | | 19-APR-17 | R3710104 |
| Coliform Bacteria - Fecal | 17 | OCR | 1 | CFU/100mL | | 19-APR-17 | R3703572 |
| MPN - E. coli | 6 | OCR | 1 | MPN/100mL | | 19-APR-17 | R3703569 |
| Phosphorus (P)-Total | 0.701 | DLA | 0.050 | mg/L | | 24-APR-17 | R3707926 |
| Total Suspended Solids | 8.3 | | 3.0 | mg/L | | 19-APR-17 | R3703375 |
| NO2, NO3 and Sum of NO2/NO3 | 0.0 | | 0.0 | | | | 1107 0007 0 |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 23.6 | | 0.020 | mg/L | | 19-APR-17 | R3703459 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 23.7 | | 0.050 | mg/L | | 20-APR-17 | |
| Nitrite in Water by IC Nitrite (as N) | 0.081 | | 0.010 | m~/! | | 19-APR-17 | R3703459 |
| | 0.061 | | 0.010 | mg/L | | 19-APK-17 | K3703459 |
| L1914350-2 COLUMBIA RIVER UPSTREAM | | | | | | | |
| Sampled By: TJ/PAG on 18-APR-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | 0.005 | | 0.050 | | | 00 ADD 47 | D070007 |
| Ammonia, Total (as N) | 0.065 | | 0.050 | mg/L | | 20-APR-17 | R3703697 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 19-APR-17 | R3703561 |
| Enterococcus | See Attached | OCR | 4 | CFU/100mL | | 19-APR-17 | R3710104 |
| Coliform Bacteria - Fecal MPN - E. coli | 176 | OCR | 1 | MPN/100mL | | 19-APR-17 19-APR-17 | R3703572 |
| Phosphorus (P)-Total | 67 | OCK | 1 | | | | R3703569 |
| , | 0.0289 | | 0.0050 | mg/L | | 24-APR-17 | R3707926 |
| Total Suspended Solids NO2, NO3 and Sum of NO2/NO3 | 18.3 | | 3.0 | mg/L | | 19-APR-17 | R3703375 |
| Noz, Nos and Sum of Noz/Nos Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.109 | | 0.020 | mg/L | | 19-APR-17 | R3703459 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 0.109 | | 0.050 | mg/L | | 20-APR-17 | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 19-APR-17 | R3703459 |
| L1914350-3 COLUMBIA RIVER DOWNSTREAM | | | | | | | |
| Sampled By: TJ/PAG on 18-APR-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 20-APR-17 | R3703697 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 19-APR-17 | R3703561 |
| Enterococcus | See Attached | | | | | 19-APR-17 | R3710104 |
| Coliform Bacteria - Fecal | 46 | OCR | 1 | CFU/100mL | | 19-APR-17 | R3703572 |
| MPN - E. coli | 37 | OCR | 1 | MPN/100mL | | 19-APR-17 | R3703569 |
| Phosphorus (P)-Total | 0.0137 | | 0.0050 | mg/L | | 24-APR-17 | R3707926 |
| Total Suspended Solids | 17.0 | | 3.0 | mg/L | | 19-APR-17 | R3703375 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| | | | | | | I . | 1 |
| Nitrate in Water by IC | 0.400 | | 0.000 | m = /1 | | 10 ADD 17 | D2702450 |
| Nitrate in Water by IC Nitrate (as N) Nitrate+Nitrite | 0.128 | | 0.020 | mg/L | | 19-APR-17 | R3703459 |

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

L1914350 CONTD.... PAGE 3 of 5 Version: FINAL REV.

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--------------|------------|--------|-----------|-----------|-------------|----------|
| L1914350-3 COLUMBIA RIVER DOWNSTREAM | | | | | | | |
| Sampled By: TJ/PAG on 18-APR-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 19-APR-17 | R3703459 |
| L1914350-4 COLUMBIA RIVER SIDE CHANNEL | | | | | | | |
| Sampled By: TJ/PAG on 18-APR-17 @ 14:00 Matrix: WATER | | | | | | | |
| Matrix: WATER Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.089 | | 0.050 | mg/L | | 20-APR-17 | R3703697 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 19-APR-17 | R3703561 |
| Enterococcus | See Attached | | | | | 19-APR-17 | R3710104 |
| Coliform Bacteria - Fecal | 7 | OCR | 1 | CFU/100mL | | 19-APR-17 | R3703572 |
| MPN - E. coli | 6 | OCR | 1 | MPN/100mL | | 19-APR-17 | R3703569 |
| Phosphorus (P)-Total | 0.0114 | | 0.0050 | mg/L | | 24-APR-17 | R3707926 |
| Total Suspended Solids | 13.7 | | 3.0 | mg/L | | 19-APR-17 | R3703375 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 0.091 | | 0.020 | mg/L | | 19-APR-17 | R3703459 |
| Nitrate+Nitrite | 0.091 | | 0.020 | iiig/L | | 13-At 13-17 | 13703438 |
| Nitrate and Nitrite (as N) | 0.091 | | 0.050 | mg/L | | 20-APR-17 | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 19-APR-17 | R3703459 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1914350 CONTD....

Reference Information

PAGE 4 of 5 Version: FINAL REV

Sample Parameter Qualifier Key:

| Qualifier | Description |
|-----------|--|
| DLA | Detection Limit adjusted for required dilution |
| 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 IncubO2 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 9223E

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-COL-CL Water Ammonia, Total (as N) APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the phenate colourimetric method.

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: | | |

L1914350 CONTD....

PAGE 5 of 5 Version: FINAL REV

Reference Information

Test Method References:

ALS Test Code Matrix Method Reference** **Test Description**

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.



Workorder: L1914350

Report Date: 01-MAY-17

Page 1 of 3

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|--------|------------|--------|-----------|-----------|-----|--------|---------------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3706404 | | | | | | | | |
| WG2516108-4 DUP | | L1914350-1 | | | | | | |
| Biochemical Oxygen Den | nand | 4.8 | 4.1 | | mg/L | 17 | 20 | 19-APR-17 |
| WG2516108-2 LCS Biochemical Oxygen Den | nand | | 86.4 | | % | | 85-115 | 19-APR-17 |
| WG2516108-1 MB Biochemical Oxygen Der | nand | | <2.0 | | mg/L | | 2 | 19-APR-17 |
| EC-MPN-CL | Water | | | | | | | |
| Batch R3703569 | | | | | | | | |
| WG2514316-1 MB | | | | | | | | |
| MPN - E. coli | | | <1 | | MPN/100mL | | 1 | 19-APR-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3703572 | | | | | | | | |
| WG2514326-1 MB | | | | | | | | |
| Coliform Bacteria - Fecal | | | <1 | | CFU/100mL | | 1 | 19-APR-17 |
| NH3-COL-CL | Water | | | | | | | |
| Batch R3703697 | | | | | | | | |
| WG2514429-3 DUP | | L1914350-2 | | | | | | |
| Ammonia, Total (as N) | | 0.065 | 0.064 | | mg/L | 1.2 | 20 | 20-APR-17 |
| WG2514429-2 LCS | | | 100.0 | | 0/ | | | |
| Ammonia, Total (as N) | | | 108.3 | | % | | 85-115 | 20-APR-17 |
| WG2514429-1 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 20-APR-17 |
| NO2-IC-N-CL | Water | | ٧٥.٥٥٥ | | mg/L | | 0.03 | 20-AFN-17 |
| Batch R3703459 | water | | | | | | | |
| WG2514225-2 LCS | | | | | | | | |
| Nitrite (as N) | | | 104.3 | | % | | 90-110 | 19-APR-17 |
| WG2514225-1 MB | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 19-APR-17 |
| NO3-IC-N-CL | Water | | | | | | | |
| Batch R3703459 | | | | | | | | |
| WG2514225-2 LCS Nitrate (as N) | | | 107.2 | | % | | 90-110 | 19-APR-17 |
| WG2514225-1 MB | | | | | | | 00 110 | 10 / 11 11-17 |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 19-APR-17 |
| P-T-COL-CL | Water | | | | | | | |



Workorder: L1914350

Report Date: 01-MAY-17 Page 2 of 3

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--|--------------|-----------|---------|-----------|-------|-----|--------|-----------|
| P-T-COL-CL | Water | | | | | | | |
| Batch R370792 | 6 | | | | | | | |
| WG2516169-2 LCS Phosphorus (P)-Total | | | 84.1 | | % | | 80-120 | 24-APR-17 |
| WG2516169-1 MB Phosphorus (P)-Total | | | <0.0050 | | mg/L | | 0.005 | 24-APR-17 |
| PO4-DO-COL-CL | Water | | | | | | | |
| Batch R370356 | 1 | | | | | | | |
| WG2513724-2 LCS Orthophosphate-Disso | | | 99.7 | | % | | 80-120 | 19-APR-17 |
| WG2513724-1 MB Orthophosphate-Disso | olved (as P) | | <0.0050 | | mg/L | | 0.005 | 19-APR-17 |
| TSS-CL | Water | | | | | | | |
| Batch R370337 | 5 | | | | | | | |
| WG2514112-2 LCS Total Suspended Solid | ds | | 108.3 | | % | | 85-115 | 19-APR-17 |
| WG2514112-1 MB Total Suspended Solid | ds | | <3.0 | | mg/L | | 3 | 19-APR-17 |

Workorder: L1914350 Report Date: 01-MAY-17 Page 3 of 3

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 predetermined 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.



ATTN: Lyudmyla Shvets ALS Laboratory Group 2559 29th St. N.E. Calgary, Alberta Canada T1Y 7B5 Received: Report Date: Version:

2017/04/19, 1340 2017/04/26 FINAL

Test Report

Client: Reference: ALS106 1617-0882

Billing:

L1914350

Destatavet

Senior Verifier



Enterococcus **Test Report**

Result Summary

Client: ALS106

Reference: 1617-0882

Client: ALS Laboratory Group; operation Calgary

Sample: L1914350-1 WWTP EFFLUENT - UV THROUGH, L1914350-2 COLUMBIA RIVER UPSTREAM,

L1914350-3 COLUMBIA RIVER DOWNSTREAM, L1914350-4 COLUMBIA RIVER SIDE CHANNEL

Collection: collected on 2017/04/18 at 1400

Receipt: received on 2017/04/19 at 1340 by EJ

Containers: received 4 x 250 mL bottles at 7 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Analysis: started on 2017/04/19 by HS; ended on 2017/04/20 by HS

| D | 00 | | It: |
|---|------------|---|-----|
| n | C 3 | u | IL. |

| Sample | Client Code | Enterococcus (MPN/100mL) |
|--------|--|-----------------------------|
| 01 | L1914350-1 WWTP EFFLUENT - UV THROUGH | 9.7 |
| 02 | L1914350-2 COLUMBIA RIVER UPSTREAM | 13.2 |
| 03 | L1914350-3 COLUMBIA RIVER DOWNSTREAM | 11.9 |
| 04 | L1914350-4 COLUMBIA RIVER SIDE CHANNEL | 1.0 |

Notes: MPN, most probable number

Comments:

Test incubation was 24 hours at 41 ± 1°C

Reagents performed as expected

The samples were set outside of the 24 hour hold time as per the client's request.

Method: Enterococcus by Most Probable Number method (WTRQ-ME-009)

Reference: Multiple-tube Technique, variation of 9230 B. (IDEXX Enterolert media)

Standard Methods for Examination of Water and Wastewater, 22nd ed. 2012. Edited by: E.W. Rice, L.S. Clesceri, A.E. Greenberg, and A.D. Eaton. APHA, AWWA, WEF, Washington.

(ISBN 978-087553-013-0).

The test data and results are authorized and verified correct.



Chain of Custody / Analytical Re Canada Tull Free: 1 860 St www.alsglobal.com



COC#

Page <u>1 ef _ 1</u>

| Report To | | Report Fo | rmat / Distribut | ion | | | | | | | | na a: | ne!ysis | subie | ct to avail | sbility) | |
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| Sample 3 | | | Date (dd-mmm-yy) | Time (tht:mm) | Sample Type | 9009 | 155 | N-1.14 | N-N03 | N-N02 | o'al P | Orthe P | Fecal Coilforn | Enterococci | نَّا | | equak |
| X (P. 3 | WWTP Efficient - UV trough Temp: pH: | | 18-Apr-17 | 1pm | Water | X | Х | X | X | X | X | × | x | X. | X | 1-1 | 5 |
| 5X) 32# | Columbia Fiver Upstream Temp (0,7 pH: 7% | | 18-Ap:-17 | 2pm | Water | | X | X | Х | х | Х | χ | X | X | X | +-1 | 4 |
| # . * | Columbia River Down stream Temp:[[,6 pH: 7.8 | | 18-Apr-17 | 2pm | Water | _ | Х | Х | Х | × | X | _X | X | X | X | | 4 |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 26-APR-17

Report Date: 04-MAY-17 10:34 (MT)

Version: FINAL REV. 2

Client Phone: 250-344-8442

Certificate of Analysis

Lab Work Order #: L1917509

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK -2017 SPRING EMS PROGRAM - WW

C of C Numbers: Legal Site Desc:

Lyudmyla Shvets, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]



L1917509 CONTD.... PAGE 2 of 5 Version: FINAL REV.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---------------|------------|--------|-----------|-----------|------------------------|------------|
| L1917509-1 WWTP EFFLUENT -UV TROUGH | | | | | | | |
| Sampled By: TJ/CV on 25-APR-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.084 | | 0.050 | mg/L | | 01-MAY-17 | R3712669 |
| Biochemical Oxygen Demand | 3.4 | | 2.0 | mg/L | | 27-APR-17 | R3713386 |
| Orthophosphate-Dissolved (as P) | 0.311 | DLA | 0.025 | mg/L | | 26-APR-17 | R3709358 |
| Enterococcus | See Attached | | | | | 26-APR-17 | R3714485 |
| Coliform Bacteria - Fecal | 11 | OCR | 1 | CFU/100mL | | 26-APR-17 | R3709336 |
| MPN - E. coli | 10 | OCR | 1 | MPN/100mL | | 26-APR-17 | R3709314 |
| Phosphorus (P)-Total | 0.579 | DLA | 0.050 | mg/L | | 01-MAY-17 | R3711142 |
| Total Suspended Solids | 12.0 | | 3.0 | mg/L | | 02-MAY-17 | R3712524 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 16.2 | | 0.020 | mg/L | | 26-APR-17 | R3709205 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 16.3 | | 0.050 | mg/L | | 27-APR-17 | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | 0.041 | | 0.010 | mg/L | | 26-APR-17 | R3709205 |
| L1917509-2 COLUMBIA RIVER UPSTREAM | | | | | | | |
| Sampled By: TJ/CV on 25-APR-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.069 | | 0.050 | mg/L | | 01-MAY-17 | R3712669 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 26-APR-17 | R3709358 |
| Enterococcus | See Attached | | | | | 26-APR-17 | R3714485 |
| Coliform Bacteria - Fecal | 61 | OCR | 1 | CFU/100mL | | 26-APR-17 | R3709336 |
| MPN - E. coli | 22 | OCR | 1 | MPN/100mL | | 26-APR-17 | R3709314 |
| Phosphorus (P)-Total | 0.0182 | | 0.0050 | mg/L | | 01-MAY-17 | R3711142 |
| Total Suspended Solids | 26.7 | | 3.0 | mg/L | | 02-MAY-17 | R3712524 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.115 | | 0.020 | mg/L | | 26-APR-17 | R3709205 |
| Nitrate+Nitrite Nitrate and Nitrite (as N) | 0.115 | | 0.050 | ma/l | | 27-APR-17 | |
| ` ' | 0.115 | | 0.050 | mg/L | | 21-APK-1/ | |
| Nitrite in Water by IC Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 26-APR-17 | R3709205 |
| L1917509-3 COLUMBIA RIVER DOWN STREAM | 10.010 | | 0.010 | 9, = | | | .107.00200 |
| Sampled By: TJ/CV on 25-APR-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.076 | | 0.050 | mg/L | | 01-MAY-17 | R3712669 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 26-APR-17 | R3709358 |
| Enterococcus | See Attached | | 0.0000 | g/ L | | 26-APR-17 | R3714485 |
| Coliform Bacteria - Fecal | 18 | OCR | 1 | CFU/100mL | | 26-APR-17 | R3709336 |
| MPN - E. coli | 3 | OCR | 1 | MPN/100mL | | 26-APR-17 | R3709336 |
| Phosphorus (P)-Total | 0.0143 | | 0.0050 | mg/L | | 01-MAY-17 | R3711142 |
| . , , | | | 3.0 | mg/L | | 01-WAT-17 02-MAY-17 | R3711142 |
| Total Suspended Solids | 36 0 | | ა.0 | mg/L | | 02-IVIA 1-17 | 137 12024 |
| Total Suspended Solids NO2 NO3 and Sum of NO2/NO3 | 36.0 | | | | | | |
| NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC | | | 0.020 | mg/l | | 26-APD 17 | D2700205 |
| NO2, NO3 and Sum of NO2/NO3 | 36.0 0.141 | | 0.020 | mg/L | | 26-APR-17 | R3709205 |

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

L1917509 CONTD.... PAGE 3 of 5 Version: FINAL REV.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--------------|------------|--------|-----------|-----------|------------------------|----------------------|
| L1917509-3 COLUMBIA RIVER DOWN STREAM | | | | | | | |
| Sampled By: TJ/CV on 25-APR-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 26-APR-17 | R3709205 |
| L1917509-4 COLUMBIA RIVER SIDE CHANNEL | | | | | | | |
| Sampled By: TJ/CV on 25-APR-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | ,, | | 04 1443/ 47 | D |
| Ammonia, Total (as N) | 0.258 | | 0.050 | mg/L | | 01-MAY-17 | R3712669 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 26-APR-17 26-APR-17 | R3709358 |
| Enterococcus Coliform Bacteria - Fecal | See Attached | OCR | 4 | CFU/100mL | | | R3714485 |
| MPN - E. coli | 10 5 | OCR | 1 1 | MPN/100mL | | 26-APR-17 26-APR-17 | R3709336 R3709314 |
| Phosphorus (P)-Total | 0.0077 | JOIN | 0.0050 | mg/L | | 01-MAY-17 | R3711142 |
| Total Suspended Solids | 16.0 | | 3.0 | mg/L | | 01-MAY-17 | R3711142 |
| NO2, NO3 and Sum of NO2/NO3 | 10.0 | | 5.0 | ilig/L | | 02 WIA 1-11 | 1101 12024 |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.093 | | 0.020 | mg/L | | 26-APR-17 | R3709205 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 0.093 | | 0.050 | mg/L | | 27-APR-17 | |
| Nitrite in Water by IC Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 26-APR-17 | R3709205 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1917509 CONTD....

Reference Information

PAGE 4 of 5 Version: FINAL REV

Sample Parameter Qualifier Kev:

| Qualifier | Description |
|-----------|--|
| DLA | Detection Limit adjusted for required dilution |
| 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 IncubO2 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

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-COL-CL Water APHA 4500 NH3-NITROGEN (AMMONIA) Ammonia, Total (as N)

This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the phenate colourimetric method.

NO2-IC-N-CI 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 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 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 | |

Chain of Custody Numbers:

L1917509 CONTD....

Reference Information

PAGE 5 of 5 Version: FINAL REV

Test Method References:

ALS Test Code Matrix Method Reference** **Test Description**

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.



Workorder: L1917509

Report Date: 04-MAY-17

Page 1 of 3

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|--------|------------|--------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3713386 WG2520985-2 LCS Biochemical Oxygen De | emand | | 91.5 | | % | | 85-115 | 27-APR-17 |
| WG2520985-1 MB Biochemical Oxygen De | emand | | <2.0 | | mg/L | | 2 | 27-APR-17 |
| EC-MPN-CL | Water | | | | | | | |
| Batch R3709314 WG2518315-1 MB MPN - E. coli | | | <1 | | MPN/100mL | | 1 | 26-APR-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3709336 WG2518350-1 MB Coliform Bacteria - Feca | al | | <1 | | CFU/100mL | | 1 | 26-APR-17 |
| NH3-COL-CL | Water | | | | | | | |
| Batch R3712669 WG2520742-2 LCS Ammonia, Total (as N) | | | 104.9 | | % | | 85-115 | 01-MAY-17 |
| WG2520742-1 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 01-MAY-17 |
| WG2520742-4 MS Ammonia, Total (as N) | | L1917509-3 | 101.1 | | % | | 75-125 | 01-MAY-17 |
| NO2-IC-N-CL | Water | | | | | | | |
| Batch R3709205 WG2518225-6 LCS Nitrite (as N) | | | 100.4 | | % | | 90-110 | 26-APR-17 |
| WG2518225-5 MB Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 26-APR-17 |
| NO3-IC-N-CL | Water | | | | | | | |
| Batch R3709205 WG2518225-6 LCS Nitrate (as N) | | | 99.0 | | % | | 90-110 | 26-APR-17 |
| WG2518225-5 MB Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 26-APR-17 |
| P-T-COL-CL | Water | | | | | | | |



Workorder: L1917509

Report Date: 04-MAY-17 Page 2 of 3

| Test Matrix | x Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--|--------------------------|---------|-----------|-------|-----|--------|-----------|
| P-T-COL-CL Wate | r | | | | | | |
| Batch R3711142 | | | | | | | |
| WG2520251-3 DUP Phosphorus (P)-Total | L1917509-4 0.0077 | 0.0082 | | mg/L | 7.0 | 20 | 01-MAY-17 |
| WG2520251-2 LCS Phosphorus (P)-Total | | 93.8 | | % | | 80-120 | 01-MAY-17 |
| WG2520251-1 MB Phosphorus (P)-Total | | <0.0050 | | mg/L | | 0.005 | 01-MAY-17 |
| WG2520251-4 MS Phosphorus (P)-Total | L1917509-4 | 94.4 | | % | | 70-130 | 01-MAY-17 |
| PO4-DO-COL-CL Wate | r | | | | | | |
| Batch R3709358 | | | | | | | |
| WG2518367-6 LCS Orthophosphate-Dissolved (as I | P) | 90.9 | | % | | 80-120 | 26-APR-17 |
| WG2518367-5 MB Orthophosphate-Dissolved (as I | P) | <0.0050 | | mg/L | | 0.005 | 26-APR-17 |
| TSS-CL Wate | r | | | | | | |
| Batch R3712524 | | | | | | | |
| WG2520644-2 LCS Total Suspended Solids | | 112.4 | | % | | 85-115 | 01-MAY-17 |
| WG2520644-8 LCS Total Suspended Solids | | 88.0 | | % | | 85-115 | 01-MAY-17 |
| WG2520644-1 MB Total Suspended Solids | | <3.0 | | mg/L | | 3 | 01-MAY-17 |
| WG2520644-7 MB | | | | - | | | |

Workorder: L1917509 Report Date: 04-MAY-17 Page 3 of 3

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 predetermined 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.



ATTN: Lyudmyla Shvets ALS Laboratory Group 2559 29th St. N.E. Calgary, Alberta Canada T1Y 7B5 Received: Report Date: Version:

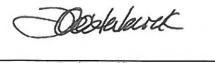
2017/04/26, 1200 2017/05/03 FINAL

Test Report

Client: Reference:

Billing:

ALS106 1617-0911 L1917509



Senior Verifier



Enterococcus **Test Report**

Result Summary

Client: ALS106

Reference: 1617-0911

Client: ALS Laboratory Group; operation Calgary

Sample: L1917509-1 WWTP EFFLUENT -UV THROUGH, L1917509-2 COLUMBIA RIVER UPSTREAM, L1917509-3 COLUMBIA RIVER DOWNSTREAM, L1917509-4 COLUMBIA RIVER SIDE CHANNEL

Collection: collected on 2017/04/25 at 1400-1500 by not given

Receipt: received on 2017/04/26 at 1200 by EJ

Containers: received 4 x 250 mL bottles at 12 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Analysis: started on 2017/04/26 by HS; ended on 2017/04/27 by HS

| Result | t: |
|--------|----|
|--------|----|

| imple | Client Code | Enterococcus (MPN/100mL) |
|-------|--|-----------------------------|
| 01 | L1917509-1 WWTP EFFLUENT -UV THROUGH | <1 |
| 02 | L1917509-2 COLUMBIA RIVER UPSTREAM | 12.1 |
| 03 | L1917509-3 COLUMBIA RIVER DOWNSTREAM | 5.2 |
| 04 | L1917509-4 COLUMBIA RIVER SIDE CHANNEL | 1.0 |

Notes: MPN, most probable number

Comments:

Test incubation was 24 hours at 41 ± 1°C

Reagents performed as expected

Method: Enterococcus by Most Probable Number method (WTRQ-ME-009) Reference: Multiple-tube Technique, variation of 9230 B. (IDEXX Enterolert media)

> Standard Methods for Examination of Water and Wastewater, 22nd ed. 2012. Edited by: E.W. Rice, L.S. Clesceri, A.E. Greenberg, and A.D. Eaton. APHA, AWWA, WEF, Washington.

(ISBN 978-087553-013-0).

The test data and results are authorized and verified correct.

S) Environmental

www.alsglobal.cor



COC#

L1917509-COFC Page 1 of

| Report To | | Report Fc | ormat / Distributi | ion | | tine analysis subject to availability) Regular (Standard Turnaround Times - Business Days) | | | | | | | | | | | | |
|--------------|--|--|--------------------|-----------------|----------------------|---|-------------------|---|------------------------|-----------|----------------|------------------|----------------------|-------------|-----------------|----------------|---------------|----------------------|
| | Kicking Horse Mountain Resort Utility Corporation | Standard | d Other | | | ● Re | gular (f | Standa | rd Turr | narouni | d Time | | | | | | | ヿ |
| | Travis Jobin | PDF | Excel | ☐ Digital | ✓ Fax | O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | | | |
| Address: | 1500 Kicking Horse Trail | Email 1: | tjobin@kickinghe | orseresort.com | | O En | nergeno | y (1-2 | Bus. D | Jays) - | 100% | Surcha | rge - C | ontact | ALS to 0 | Confirm | n TAT | \neg |
| | | Email 2: | pmajer@skircr.c | <u>com</u> | | O Sa | me Day | y or W | eekend | Emerg | jency - | Contac | t ALS t | ιο Conf | firm TAT | Γ | | \Box |
| Phone: | 250-344-8442 Fax: | Email 3: | mskyring@kickir | nghorseresort.c | <u>om</u> | | | | | A | nalys | is Re | ques | it | | | | ヿ |
| | Same as Report? Yes V No | Client / Project Information | | | | | ase in | dicat | e belo | w Filt | tered, | Pres | erved | or b | oth (F, | , P, F/ | /P) | \neg |
| | nvoice with Report? Yes V No | | Week - 2017 S | Spring EMS proc | gram - WW | | | | | | | | | | $\overline{}$ | | | 1 |
| | Resorts of the Canadian Rockies | PO / AFE; | | | | | | | | | | | | | , | | \neg | |
| | Patrick Majer | LSD: | · | | | | | | | | | , [| | | , | | | |
| Address: | 1505 - 17th Ave SW Calgary AB | | | | | | . | ļ | , 1 | | | ı | | | . | | | ers |
| Phone: | | | | | | | | | ı | . | | ı İ | | | | | | tain |
| Lab W | Vork Order# | ALS | | | | 1 | . | | ıİ | | . [| . | اء | . VI | . | - | | Š |
| (lab | use only) | Contact: | LS | Sampler: | T3/CV | 1 | | | . | | | <u> </u> | <u>₽</u> | 8 | , | | 1 | ₹ |
| Sample | Sample Identification | ــــــــــــــــــــــــــــــــــــــ | Date | Time | | ro l | | 4. | اج ا | 8 | ۵ | ٦ | <u> </u> | ğ | . <u>.</u> | | | Бе |
| # | (This description will appear on the report) | | (dd-mmm-yy) | (hh:mm) | Sample Type | BOD5 | TSS | N-NH4 | N-NO3 | N-N02 | Total | Ortho P | Fecal Coliform | Enterocacci | E Coli | | | Number of Containers |
| | WWTP Effiuent - UV trough Temp: 12 pH: 6.8 | | API 25 | 2:00 PM | Water | X | X | X | X | X | X | x | X | Х | X | + | | 5 |
| | Columbia River Upstream Temp: (pH: 7,5 | | APR 25 | 3.00PM | Water | | Х | Х | Х | х | Х | Х | Х | Х | х | | + | 4 |
| | Columbia River Down stream Temp: () pH: 7, 8. | | APR 25 | 3:00 PM | Water | | х | Х | Х | Х | X | х | X | Х | X | \dashv | + | 4 |
| | Columbia River Side Channel Temp: 11 pH: 7,8 | | APR 25 | 3:00PM | Water | | Х | х | х | Х | Х | Х | Х | Х | Х | -+ | + | 4 |
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| | Special Instructions / Regulations with water or land | J use (CCM | IE-Freshwater A | quatic Life/BC | CSR - Commerc | ial/AE | Tier | 1 - N | atura | ıl, etc |) / Ha | ızard | ous [| etail | s | | | |
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| | Failure to complete all | portions of | f this form may | delay analysis | . Please fill in thi | is for | n LE(| GIBL' | Ÿ. | | | | | | | | | |
| | By the use of this form the user acknown Also provided on another Excel tab are the ALS location | wiedges a | and agrees with | the Terms and | Conditions as pr | rovide | ad on | a se | parat | e Exc | cel ta | b. | | | - | | | |
| | Also provided on another Excel tab are the ALS location SHIPMENT RELEASE (client use) | | MENT RECEPTION | | | ervation | on / h | | | | | | | | | | | |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 03-MAY-17

Report Date: 16-MAY-17 15:36 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1920544

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK 4 - 2017 SPRING EMS PROGRAM - WW

C of C Numbers: Legal Site Desc:

Lyudmyla Shvets, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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



L1920544 CONTD.... PAGE 2 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|----------------|------------|--------|-----------|-----------|--------------|----------|
| L1920544-1 WWTP EFFLUENT - UV TROUGH TEMI | P: 12 PH: 6.6 | | | | | | |
| Sampled By: TJ on 02-MAY-17 @ 13:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.080 | | 0.050 | mg/L | | 06-MAY-17 | R3716709 |
| Biochemical Oxygen Demand | 2.5 | | 2.0 | mg/L | | 03-MAY-17 | R3717803 |
| Orthophosphate-Dissolved (as P) | 0.791 | DLA | 0.050 | mg/L | | 03-MAY-17 | R3715219 |
| Enterococcus | See Attached | | | | | 03-MAY-17 | R3725364 |
| Coliform Bacteria - Fecal | 8 | OCR | 1 | CFU/100mL | | 03-MAY-17 | R3715179 |
| MPN - E. coli | 6 | OCR | 1 | MPN/100mL | | 03-MAY-17 | R3715165 |
| Phosphorus (P)-Total | 1.06 | DLA | 0.050 | mg/L | | 09-MAY-17 | R3717247 |
| Total Suspended Solids | 4.7 | | 3.0 | mg/L | | 08-MAY-17 | R3717760 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 14.5 | | 0.020 | mg/L | | 03-MAY-17 | R3715508 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 14.6 | | 0.050 | mg/L | | 05-MAY-17 | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | 0.043 | | 0.010 | mg/L | | 03-MAY-17 | R3715508 |
| L1920544-2 COLUMBIA RIVER UPSTREAM TEMP: | 13 PH: 7.8 | | | | | | |
| Sampled By: TJ on 02-MAY-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 06-MAY-17 | R3716709 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 03-MAY-17 | R3715219 |
| Coliform Bacteria - Fecal | 35 | OCR | 1 | CFU/100mL | | 03-MAY-17 | R3715179 |
| MPN - E. coli | 34 | OCR | 1 | MPN/100mL | | 03-MAY-17 | R3715165 |
| Phosphorus (P)-Total | 0.0094 | | 0.0050 | mg/L | | 09-MAY-17 | R3717247 |
| Total Suspended Solids | 6.7 | | 3.0 | mg/L | | 08-MAY-17 | R3717760 |
| NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.129 | | 0.020 | mg/L | | 03-MAY-17 | R3715508 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 0.129 | | 0.050 | mg/L | | 05-MAY-17 | |
| Nitrite in Water by IC | | | | | | 00 1441/ 47 | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 03-MAY-17 | R3715508 |
| L1920544-3 COLUMBIA RIVER DOWN STREAM TE | MP: 12 PH: 7.8 | | | | | | |
| Sampled By: TJ on 02-MAY-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | 2.25 | | 0.050 | | | 00 84837 47 | D0740700 |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 06-MAY-17 | R3716709 |
| Orthophosphate-Dissolved (as P) | <0.0050 | 000 | 0.0050 | mg/L | | 03-MAY-17 | R3715219 |
| Coliform Bacteria - Fecal | 19 | OCR | 1 | CFU/100mL | | 03-MAY-17 | R3715179 |
| MPN - E. coli | 18 | OCR | 1 | MPN/100mL | | 03-MAY-17 | R3715165 |
| Phosphorus (P)-Total | 0.0083 | | 0.0050 | mg/L | | 09-MAY-17 | R3717247 |
| Total Suspended Solids | 4.0 | | 3.0 | mg/L | | 08-MAY-17 | R3717760 |
| NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC | | | | | | | |
| Nitrate in water by iC Nitrate (as N) | 0.151 | | 0.020 | mg/L | | 03-MAY-17 | R3715508 |
| Nitrate+Nitrite Nitrate and Nitrite (as N) | 0.151 | | 0.050 | mg/L | | 05-MAY-17 | |
| ` ' | 0.101 | | 0.000 | mg/L | | 05-101/21-17 | |
| Nitrite in Water by IC | | | | | | | |

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

L1920544 CONTD.... PAGE 3 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/ | Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|-----------------------------|---------------------------------|----------------|------------|--------|-----------|-----------|------------|----------|
| L1920544-4 | COLUMBIA RIVER SIDE CHANNEL TEI | MP: 13 PH: 7.8 | | | | | | |
| Sampled By: | TJ on 02-MAY-17 @ 14:00 | | | | | | | |
| Matrix: | WATER | | | | | | | |
| Miscellaneo | us Parameters | | | | | | | |
| Ammonia, To | | < 0.050 | | 0.050 | mg/L | | 06-MAY-17 | R3716709 |
| | ate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 03-MAY-17 | R3715219 |
| Coliform Bac | | 4 | OCR | 1 | CFU/100mL | | 03-MAY-17 | R3715179 |
| MPN - E. coli | | 3 | OCR | 1 | MPN/100mL | | 03-MAY-17 | R3715165 |
| Phosphorus (| | 0.0167 | | 0.0050 | mg/L | | 09-MAY-17 | R3717247 |
| Total Suspen | | 8.0 | | 3.0 | mg/L | | 08-MAY-17 | R3717760 |
| | Sum of NO2/NO3 | | | | | | | |
| Nitrate in Wa | | 0.440 | | 0.000 | | | 00 MAY 47 | D0745500 |
| Nitrate (as N) | | 0.110 | | 0.020 | mg/L | | 03-MAY-17 | R3715508 |
| Nitrate+Nitri Nitrate and N | | 0.110 | | 0.050 | mg/L | | 05-MAY-17 | |
| Nitrite in Wa | | 0.110 | | 0.000 | 9/ _ | | OO WILLIAM | |
| Nitrite (as N) | | <0.010 | | 0.010 | mg/L | | 03-MAY-17 | R3715508 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1920544 CONTD....

Reference Information

PAGE 4 of 5 Version: FINAL

Sample Parameter Qualifier Key:

 Qualifier
 Description

 DLA
 Detection Limit adjusted for required dilution

 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 9223I

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-COL-CL Water Ammonia, Total (as N) APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the phenate colourimetric method.

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: | |

L1920544 CONTD....

Reference Information

PAGE 5 of 5 Version: FINAL

Test Method References:

ALS Test Code Matrix Method Reference** **Test Description**

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.



Workorder: L1920544

Report Date: 16-MAY-17

Page 1 of 3

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|--------|----------------------------|--------|-----------|-----------|-----|------------------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3717803 WG2524395-4 MB Biochemical Oxygen De | mand | | <2.0 | | mg/L | | 2 | 03-MAY-17 |
| EC-MPN-CL | Water | | | | | | | |
| Batch R3715165 WG2522538-4 MB MPN - E. coli | | | <1 | | MPN/100mL | | 1 | 03-MAY-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3715179 WG2522546-1 MB Coliform Bacteria - Feca | ıl | | <1 | | CFU/100mL | | 1 | 03-MAY-17 |
| NH3-COL-CL | Water | | | | | | | |
| Batch R3716709 WG2523631-10 LCS Ammonia, Total (as N) | | | 108.5 | | % | | 05.445 | 06-MAY-17 |
| WG2523631-6 LCS Ammonia, Total (as N) | | | 106.0 | | % | | 85-115 85-115 | 06-MAY-17 |
| WG2523631-5 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 06-MAY-17 |
| WG2523631-9 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 06-MAY-17 |
| WG2523631-12 MS Ammonia, Total (as N) | | L1920544-4 | 102.6 | | % | | 75-125 | 06-MAY-17 |
| NO2-IC-N-CL | Water | | | | | | | |
| Batch R3715508 WG2522920-3 DUP Nitrite (as N) | | L1920544-4 <0.010 | <0.010 | RPD-NA | mg/L | N/A | 20 | 03-MAY-17 |
| WG2522920-2 LCS Nitrite (as N) | | | 101.3 | | % | | 90-110 | 03-MAY-17 |
| WG2522920-1 MB Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 03-MAY-17 |
| NO3-IC-N-CL | Water | | | | | | | |
| Batch R3715508 | | | | | | | | |
| WG2522920-3 DUP Nitrate (as N) | | L1920544-4 0.110 | 0.108 | | mg/L | 1.7 | 20 | 03-MAY-17 |
| WG2522920-2 LCS | | | | | | | | |



Workorder: L1920544

Report Date: 16-MAY-17

Page 2 of 3

| Test Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|-----------|---------|-----------|-------|-----|--------|------------|
| NO3-IC-N-CL Water | | | | | | | |
| Batch R3715508 | | | | | | | |
| WG2522920-2 LCS Nitrate (as N) | | 101.3 | | % | | 90-110 | 03-MAY-17 |
| WG2522920-1 MB Nitrate (as N) | | <0.020 | | mg/L | | 0.02 | 03-MAY-17 |
| P-T-COL-CL Water | | | | | | | |
| Batch R3717247 | | | | | | | |
| WG2524850-2 LCS Phosphorus (P)-Total | | 95.2 | | % | | 80-120 | 09-MAY-17 |
| WG2524850-1 MB Phosphorus (P)-Total | | <0.0050 | | mg/L | | 0.005 | 09-MAY-17 |
| PO4-DO-COL-CL Water | | | | | | | |
| Batch R3715219 | | | | | | | |
| WG2521767-2 LCS Orthophosphate-Dissolved (as P) | | 94.2 | | % | | 80-120 | 03-MAY-17 |
| WG2521767-1 MB Orthophosphate-Dissolved (as P) | | <0.0050 | | mg/L | | 0.005 | 03-MAY-17 |
| TSS-CL Water | | | | | | | |
| Batch R3717760 | | | | | | | |
| WG2524415-2 LCS Total Suspended Solids | | 104.0 | | % | | 85-115 | 08-MAY-17 |
| WG2524415-1 MB Total Suspended Solids | | <3.0 | | ma/l | | 2 | 00 MAN/ 47 |
| Total Suspended Solids | | <3.0 | | mg/L | | 3 | 08-MAY-17 |

Workorder: L1920544 Report Date: 16-MAY-17 Page 3 of 3

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 |

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

| 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 predetermined 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.



ATTN: Lyudmyla Shvets ALS Laboratory Group 2559 29th St. N.E. Calgary, Alberta Canada T1Y 7B5 Received: Report Date: Version: 2017/05/03, 1200 2017/05/16 FINAL

Test Report

Client: Reference: Billing:

ALS106 1617-0929 L1920544

Doslataret

Senior Verifier



Enterococcus Test Report

Result Summary

Client: ALS106

Reference: 1617-0929

Client: ALS Laboratory Group; operation Calgary

Sample: L1920544-1 WWTP EFFLUENT -UV TROUGH TEMP: 12 PH: 6.6

Collection: collected on 2017/05/02 at 1300 by not given

Receipt: received on 2017/05/03 at 1200 by EJ

Containers: received 1 x 250 mL bottle at 11 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Analysis: started on by HS; ended on by JN

Result:

| Client Code | Enterococcus (MPN/100mL) |
|-------------------------------------|-----------------------------|
| L1920544-1 WWTP EFFLUENT -UV TROUGH | 2.0 |
| | |

Notes: MPN, most probable number

Comments: Test incubation was 24 hours at 41 ± 1°C

Reagents performed as expected

Method: Enterococcus by Most Probable Number method (WTRQ-ME-009) **Reference:** Multiple-tube Technique, variation of 9230 B. (IDEXX Enterolert media)

Standard Methods for Examination of Water and Wastewater, 22nd ed. 2012. Edited by: E.W. Rice, L.S. Clesceri, A.E. Greenberg, and A.D. Eaton. APHA, AWWA, WEF, Washington.

(ISBN 978-087553-013-0).

The test data and results are authorized and verified correct.

ALS Environmental

Chain of Custody / Analytical Request Form Canada Toli Free: 1 800 668 9878 www.alsglobal.com



L1920544-COFC

<u>1</u> of <u>1</u>

| Report To | | Report Fo | rmat / Distribut | tion | | Īs | | | | | | | | | | /aila | bility) | |
|-------------|---|-------------|--|--------------------|--|---|---|----------------|-----------------|----------------|-----------------|---------------|----------------|-------------|---------|-------------------|---------|----------------------|
| | Kicking Horse Mountain Resort Utility Corporation | ✓ Standard | Other | | | Re | gular (| Standa | rd Turr | around | i Time | s - Bus | iness D | ays) | | | | |
| Contact: | Travis Jobin | PDF | Excel | Digital | ✓ Fax | O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | | | |
| Address: | 1500 Kicking Horse Trail | Email 1: | Email 1: tjobin@kickinghorseresort.com | | | | O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | | |
| | | Email 2: | pmajer@skircr. | com | | O Same Day or Weekend Emergency - Contact ALS to Confirm TAT | | | | | | | | | | | | |
| | 250-344-8442 Fax: | Email 3: | mskyring@kick | inghorseresort.co | om | Analysis Request Please indicate below Filtered, Preserved or both (F, P, F/P) | | | | | | | | | | | | |
| Invoice To | Same as Report ? Yes Vo | Client / Pr | roject Informati | | | Ple | ase ir | dicate | e belo | w Fill | ered | , Pres | ervec | or b | oth (F | , P, F | /P) | |
| | nvoice with Report? Yes Vo | Job #: | | Spring EMS prog | ram - WW | | | | | i | | | | | | | | |
| Company: | Resorts of the Canadian Rockies | PO / AFE: | | | | | | | | | - | | | | | | | |
| Contact: | Patrick Majer | LSD: | LSD: | | | | | | | | | | 1 | | | | ŀ | |
| Address: | 1505 - 17th Ave SW Calgary AB | | | | | | • | | - | | | | | | | | | ers |
| Phone: | Fax: | Quote #: | | | - |] | | | | | | i | | | | | 1 | tain |
| Lab W | Vork Order# | ALS | 1.0 | | ~ 1 (1.44 | 1 | | | | | | | Ε | | | | | ő |
| (lab | use only) | Contact: | LS | Sampler: | TJ/MMS | | | | | | | | إق | . 2 | | | | of (|
| Sample | Sample Identification | | Date | Time | | ري ا | | 4 | ස | 8 | ۵ | 립 | Fecal Coliform | Enteracocci | Soli | | | Number of Containers |
| # | (This description will appear on the report) | | (dd-mmm-yy) | (hh:mm) | Sample Type | BODS | TSS | N-NH4 | N-NO3 | N-N02 | Tota! P | Ortho P | ခြိ | inte | ŭ ui | | | μη |
| | WWTP Effluent - UV trough Temp: 12 pH: 6.4 | _ | MATE | IPM | Water | X | Х | X | Х | х | Х | Х | X | Х | Х | | | 5 |
| | Columbia River Upstream Temp: 13 pH: 7.8 | | 11 | 7 em | Water | | Х | Х | х | Х | Х | х | Х | Х | Х | | | 4 |
| | Columbia River Down stream Temp: 12 pH: 7.8 | | 11 | ZPM | Water | | Х | Х | х | х | Х | Х | Х | х | Х | | | 4 |
| | Columbia River Side Channel Temp: 13 pH: 7.8 | | (1 | 7 PM | Water | | Х | Х | Х | Х | Х | х | Х | Х | Х | \dashv | | 4 |
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| | Special Instructions / Regulations with water or land | d use (CCN | E-Freshwater A | Aquatic Life/BC | CSR - Commerc | ial/AE | Tier | 1 - N | atura | l, etc |) / Ha | zard | ous C | etail | 5 | | | |
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| | Failure to complete all | nortions o | f this form may | dolay analysis | Diana fill in th | in for | 1 P | CIDI | | | | | | | _ | | | |
| | By the use of this form the user acknowledge | | | | | | | | | a Ev- | ol to | h | | | | | | |
| | Also provided on another Excel tab are the ALS location | addresse: | s, phone numbe | ers and sample | container / presi | ervati | on / k | a se Ioldir | yarat 10 tim | e cat e tat | ici id Ne fo | iu. It con | mon | anal | Vees | | | |
| | SHIPMENT RELEASE (client use) | | | ION: (lab use only | | T | | | | | | FIGAT | | | | | | |
| Released by | | | Date: | Time: | Temperature: | Ver | fied b | | | Date | | , , , 1 | Time | <u> </u> | | Obse | rvatio | ns: |
| | | 100 | 2.1. 12 | 7:00 | 7 ℃ | 1 | | | | | | | | | | Yes / | 'Ng? | |
| L | | MM | 12/10/17 | 14-20- | <u> </u> | | | | | | | | | | | If Yes | add | SIF |



KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 10-MAY-17

Report Date: 23-MAY-17 18:10 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1923888

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK - 2017 SPRING EMS PROGRAM - WW

C of C Numbers: Legal Site Desc:

Lyudmyla Shvets, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]



L1923888 CONTD.... PAGE 2 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|--------------|------------|--------|------------|-----------|-----------|----------|
| L1923888-1 WWTP EFFLUENT - UV TROUGH | | | | | | | |
| Sampled By: TJ/MS on 09-MAY-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.084 | | 0.050 | mg/L | | 13-MAY-17 | R3720929 |
| Biochemical Oxygen Demand | <2.0 | | 2.0 | mg/L | | 10-MAY-17 | R3722463 |
| Orthophosphate-Dissolved (as P) | 1.01 | DLA | 0.050 | mg/L | | 10-MAY-17 | R3718748 |
| Enterococcus | See Attached | | | | | 10-MAY-17 | R3730262 |
| Coliform Bacteria - Fecal | 2 | OCR | 1 | CFU/100mL | | 10-MAY-17 | R3719127 |
| MPN - E. coli | <1 | | 1 | MPN/100mL | | 10-MAY-17 | R3719121 |
| Phosphorus (P)-Total | 1.22 | DLA | 0.10 | mg/L | | 13-MAY-17 | R3720983 |
| Total Suspended Solids | 4.0 | | 3.0 | mg/L | | 15-MAY-17 | R3725370 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 12.1 | | 0.020 | mg/L | | 10-MAY-17 | R3719285 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 12.1 | | 0.050 | mg/L | | 12-MAY-17 | |
| Nitrite in Water by IC Nitrite (as N) | 0.052 | | 0.010 | mg/L | | 10-MAY-17 | R3719285 |
| L1923888-2 COLUMBIA RIVER UPSTREAM | | | | | | | |
| Sampled By: TJ/MS on 09-MAY-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 13-MAY-17 | R3720929 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 10-MAY-17 | R3718748 |
| Enterococcus | See Attached | | | 3 | | 10-MAY-17 | R3730262 |
| Coliform Bacteria - Fecal | 16 | OCR | 1 | CFU/100mL | | 10-MAY-17 | R3719127 |
| MPN - E. coli | 15 | OCR | 1 | MPN/100mL | | 10-MAY-17 | R3719121 |
| Phosphorus (P)-Total | 0.0667 | | 0.0050 | mg/L | | 13-MAY-17 | R3720983 |
| Total Suspended Solids | 56.7 | | 3.0 | mg/L | | 15-MAY-17 | R3725370 |
| NO2, NO3 and Sum of NO2/NO3 | | | | 3 | | | |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.288 | | 0.020 | mg/L | | 10-MAY-17 | R3719285 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 0.288 | | 0.050 | mg/L | | 12-MAY-17 | |
| Nitrite in Water by IC | 0.040 | | 0.040 | m a/I | | 10 MAY 17 | D0740005 |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 10-MAY-17 | R3719285 |
| L1923888-3 COLUMBIA RIVER DOWN STREAM | | | | | | | |
| Sampled By: TJ/MS on 09-MAY-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | 0.000 | | 0.050 | , a. a. /1 | | 40 140 47 | D070000 |
| Ammonia, Total (as N) | 0.060 | | 0.050 | mg/L | | 13-MAY-17 | R3720929 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 10-MAY-17 | R3718748 |
| Enterococcus Coliform Ractoria Focal | See Attached | | 4 | CEL1/4001 | | 10-MAY-17 | R3730262 |
| Coliform Bacteria - Fecal | <1 | | 1 | CFU/100mL | | 10-MAY-17 | R3719127 |
| MPN - E. coli | <1 | | 1 | MPN/100mL | | 10-MAY-17 | R3719121 |
| Phosphorus (P)-Total | 0.0217 | | 0.0050 | mg/L | | 13-MAY-17 | R3720983 |
| Total Suspended Solids NO2, NO3 and Sum of NO2/NO3 | 21.3 | | 3.0 | mg/L | | 15-MAY-17 | R3725370 |
| NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC | | | | | | | |
| Nitrate in water by iC Nitrate (as N) | 0.253 | | 0.020 | mg/L | | 10-MAY-17 | R3719285 |
| Nitrate+Nitrite | 5.255 | | | | | | |
| Nitrate and Nitrite (as N) | 0.253 | | 0.050 | mg/L | | 12-MAY-17 | |

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

L1923888 CONTD.... PAGE 3 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|--------------|------------|--------|-----------|-----------|-----------|----------|
| L1923888-3 COLUMBIA RIVER DOWN STREAM | | | | | | | |
| Sampled By: TJ/MS on 09-MAY-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 10-MAY-17 | R3719285 |
| L1923888-4 COLUMBIA RIVER SIDE CHANNEL | | | | | | | |
| Sampled By: TJ/MS on 09-MAY-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | ,, | | | |
| Ammonia, Total (as N) | 0.135 | | 0.050 | mg/L | | 13-MAY-17 | R3720929 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 10-MAY-17 | R3718748 |
| Enterococcus | See Attached | OCR | à | 0511/4001 | | 10-MAY-17 | R3730262 |
| Coliform Bacteria - Fecal | 21 | OCR | 1 | CFU/100mL | | 10-MAY-17 | R3719127 |
| MPN - E. coli | 13 | OCR | 1 | MPN/100mL | | 10-MAY-17 | R3719121 |
| Phosphorus (P)-Total | 0.0243 | | 0.0050 | mg/L | | 13-MAY-17 | R3720983 |
| Total Suspended Solids NO2, NO3 and Sum of NO2/NO3 | 25.3 | | 3.0 | mg/L | | 15-MAY-17 | R3725370 |
| Noz, Nos and Sum of Noz/Nos Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.297 | | 0.020 | mg/L | | 10-MAY-17 | R3719285 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 0.297 | | 0.050 | mg/L | | 12-MAY-17 | |
| Nitrite in Water by IC Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 10-MAY-17 | R3719285 |
| | | | | | | | |
| | | | | | | | |

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

L1923888 CONTD.... PAGE 4 of 5

Version: FINAL

Reference Information

Sample Parameter Qualifier Key:

 Qualifier
 Description

 DLA
 Detection Limit adjusted for required dilution

 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 9223I

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-COL-CL Water Ammonia, Total (as N) APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the phenate colourimetric method.

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 |
| 0 : (0 : 1 ! ! ! | |

Chain of Custody Numbers:

L1923888 CONTD....

PAGE 5 of 5 Version: FINAL

Reference Information

Test Method References:

ALS Test Code Matrix Method Reference** **Test Description**

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.



Workorder: L1923888

Report Date: 23-MAY-17

Page 1 of 3

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|--------|-----------|--------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3722463 WG2528441-2 LCS Biochemical Oxygen Der | mand | | 98.4 | | % | | 85-115 | 10-MAY-17 |
| WG2528441-1 MB Biochemical Oxygen Der | mand | | <2.0 | | mg/L | | 2 | 10-MAY-17 |
| EC-MPN-CL | Water | | | | | | | |
| Batch R3719121 WG2526991-1 MB MPN - E. coli | | | <1 | | MPN/100mL | | 1 | 10-MAY-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3719127 WG2527029-1 MB Coliform Bacteria - Fecal | l | | <1 | | CFU/100mL | | 1 | 10-MAY-17 |
| NH3-COL-CL | Water | | | | | | | |
| Batch R3720929 WG2527932-10 LCS Ammonia, Total (as N) | | | 104.1 | | % | | 85-115 | 13-MAY-17 |
| WG2527932-9 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 13-MAY-17 |
| NO2-IC-N-CL | Water | | | | | | | |
| Batch R3719285 WG2527206-2 LCS Nitrite (as N) | | | 101.7 | | % | | 90-110 | 10-MAY-17 |
| WG2527206-1 MB Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 10-MAY-17 |
| NO3-IC-N-CL | Water | | | | | | | |
| Batch R3719285 WG2527206-2 LCS Nitrate (as N) | | | 98.8 | | % | | 90-110 | 10-MAY-17 |
| WG2527206-1 MB Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 10-MAY-17 |
| P-T-COL-CL | Water | | | | | | | |
| Batch R3720983 WG2527942-10 LCS Phosphorus (P)-Total WG2527942-14 LCS | | | 98.7 | | % | | 80-120 | 13-MAY-17 |



Workorder: L1923888

Report Date: 23-MAY-17 Page 2 of 3

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--|------------|---------------------------|---------|-----------|-------|-----|--------|-----------|
| P-T-COL-CL | Water | | | | | | | |
| Batch R3720983 WG2527942-14 LCS Phosphorus (P)-Total | | | 102.1 | | % | | 80-120 | 13-MAY-17 |
| WG2527942-13 MB Phosphorus (P)-Total | | | <0.0050 | | mg/L | | 0.005 | 13-MAY-17 |
| WG2527942-9 MB Phosphorus (P)-Total | | | <0.0050 | | mg/L | | 0.005 | 13-MAY-17 |
| PO4-DO-COL-CL | Water | | | | | | | |
| Batch R3718748 | | | | | | | | |
| WG2526533-3 DUP Orthophosphate-Dissolv | ed (as P) | L1923888-4 <0.0050 | <0.0050 | RPD-NA | mg/L | N/A | 20 | 10-MAY-17 |
| WG2526533-2 LCS Orthophosphate-Dissolv | red (as P) | | 99.4 | | % | | 80-120 | 10-MAY-17 |
| WG2526533-1 MB Orthophosphate-Dissolv | red (as P) | | <0.0050 | | mg/L | | 0.005 | 10-MAY-17 |
| WG2526533-4 MS Orthophosphate-Dissolv | ed (as P) | L1923888-4 | 96.5 | | % | | 70-130 | 10-MAY-17 |
| TSS-CL | Water | | | | | | | |
| Batch R3725370 | | | | | | | | |
| WG2529046-2 LCS Total Suspended Solids | | | 86.2 | | % | | 85-115 | 15-MAY-17 |
| WG2529046-1 MB Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 15-MAY-17 |

Workorder: L1923888 Report Date: 23-MAY-17 Page 3 of 3

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 |

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

| 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 predetermined 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.



ATTN: Lyudmyla Shvets ALS Laboratory Group 2559 29th St. N.E. Calgary, Alberta Canada T1Y 7B5 Received: Report Date: Version: 2017/05/10, 1115 2017/05/12 FINAL

Test Report

Client: Reference: Billing:

ALS106 1617-0954 L1923888

Opplehavet

Senior Verifier



Enterococcus Test Report

Result Summary

Client: ALS106

Reference: 1617-0954

Client: ALS Laboratory Group; operation Calgary

Samples: L1923888-1 WWTP EFFLUENT-UV TROUGH, L1923888-2 COLUMBIA RIVER UPSTREAM.

L1923888-3 COLUMBIA RIVER DOWN STREAM, L1923888-4 RIVER SIDE CHANNEL

Collection: collected on 2017/05/09 at 1400

Receipt: received on 2017/05/10 at 1115 by JW

Containers: received 4 x 250ml bottles at 9.3 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Analysis: started on 2017/05/10 by JN; ended on 2017/05/11 by JN

| D | es | ••1 | +. |
|--------------|----|-----|----|
| \mathbf{r} | 23 | uı | L. |

| Sample | Client Code | Enterococcus (MPN/100mL) |
|--------|---------------------------------------|-----------------------------|
| 01 | L1923888-1 WWTP EFFLUENT-UV TROUGH | <1.0 |
| 02 | L1923888-2 COLUMBIA RIVER UPSTREAM | <1.0 |
| 03 | L1923888-3 COLUMBIA RIVER DOWN STREAM | 1.0 |
| 04 | L1923888-4 RIVER SIDE CHANNEL | <1.0 |

Notes: MPN, most probable number

Comments: Test incubation was 24 hours at $41 \pm 1^{\circ}$ C

Reagents performed as expected

Method: *Enterococcus* by Most Probable Number method (WTRQ-ME-009) **Reference:** Multiple-tube Technique, variation of 9230 B. (IDEXX Enterolert media)

Standard Methods for Examination of Water and Wastewater, 22nd ed. 2012. Edited by: E.W. Rice, L.S. Clesceri, A.E. Greenberg, and A.D. Eaton. APHA, AWWA, WEF, Washington.

(ISBN 978-087553-013-0).

The test data and results are authorized and verified correct.

ALS) Environmer



L1923888-COFC

of Custody / Analytical Request Form anada Toll Free: 1 800 668 9878 www.alsglobal.com

| COC# | |
|------|------|
| | |

Page 1 of

| | report ro | rmat / Distribut | ion | | Serv | ice Re | eque | sted (| Rush | for ro | utine a | nalysi | s sub | ject to a | availabi | lity) |
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| Company: Kicking Horse Mountain Resort Utility Corporation | ✓ Standard | Other | | | | gular (| | _ | | | | | | | | |
| Contact: Travis Jobin | PDF | Excel | Digital Digital | ✓ Fax | O Pr | iority (2 | -4 Bus | iness C | ays) - | 50% S | urchan | ge - Co | ntact / | to C کلا | onfirm T | AT |
| Address: 1500 Kicking Horse Trail | Email 1: | tjobin@kickingh | orseresort.com | | O En | nergeno | γ (1-2 | Bus. D | ays) - | 100% | Surcha | rge - C | ontact | ALS to 0 | Confirm 7 | ΓΑΤ |
| | Email 2: pmajer@skircr.com | | | | | | | | | | | | | | | |
| Phone: 256*344*8442 Fax: | Email 3: | mskyring@kicki | inghorseresort. | com | L | | | | | - | | ques | | | | |
| Invoice:To Same as Report? ☐ Yes ☑ No | Client / Pr | roject Information | on | | Ple | ase in | dicate | e belo | w Filt | ered, | , Pres | erved | or b | oth (F, | P, F/P | <u>'} </u> |
| Hardcopy of Invoice with Report? ☐ Yes ☑ No | Job #: | Week - 2017 S | Spring EMS pro | gram - WW | | | | | | | | | | | | |
| Company: Resorts of the Canadian Rockies | PO / AFE: | | | | | | | | | } | | | } | | | 1 |
| Contact: Patrick Majer | LSD: | | *E | | | | | | | ĺ | | ŀ | , | | , • | |
| Address 1505 - 17th Ave SW Calgary AB | | | | | <u> </u> | | | | | | | | | | | je |
| Phone: Fax: | Quote #: | | | | 1 | | | | } | | ļ | 1 | | | | taii |
| Lab Work Ofder# L192-3666 | ALS Contact: | LS | Sampler: | TJ/MS | | | | | | | | oliform | occi | | | Number of Containers |
| Sample Sample Identification (This description will appear on the report) | - | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | 8005 | TSS | N-NH4 | N-NO3 | N-NO2 | Total P | Ortho P | Fecal Coliform | Enterococci | E. Cofi | | Numbe |
| WWTP Effluent - UV trough Temp: 13 pH: 6.8 | 00 | MAY9 | ZPM | Water | Х | Х | Х | Х | Х | Х | Х | Х | Х | х | | 5 |
| Columbia River Upstream Temp: 9 pH: 7,7 | *** | MAY9 | 3 em | Water | | Х | х | Х | Х | Х | Х | Х | Х | Х | | 4 |
| Columbia River Down stream Temp: 9 pH: 80 | | MAYG | 31M | Water | | Х | Х | х | Х | Х | Х | Х | Х | Х | | 4 |
| Columbia River Side Channel Temp: 9 pH: 7, 6 | | MAYA | ZDM | Water | | Х | Х | Х | Х | Х | Х | Х | X | Х | _ | 4 |
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| Special Instructions / Regulations with water or land | use (CCN | NE-Freshwa <u>t</u> er A | Aquatic Life/BO | CSR - Commerc | ial/AE | 3 Tier | 1 - N | atura | l, etc |) / Ha | zard | ous D | etail | s | | |
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| Company of the Compan | \rightarrow | 19 <i>1/(/</i> | Tion | °C | <u></u> | | | | <u> </u> | | | | | | on on E | add SIF |



KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 30-JUN-17

Report Date: 08-JUL-17 13:12 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1951617

Project P.O. #: NOT SUBMITTED

Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT

C of C Numbers: Legal Site Desc:

Nancy Sonompil Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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



L1951617 CONTD.... PAGE 2 of 3 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|-------------------------------------|--------|------------|------|-------|-----------|-----------|----------|
| L1951617-1 UV TROUGH | | | | | | | |
| Sampled By: TJ on 28-JUN-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Biochemical Oxygen Demand | <2.0 | | 2.0 | mg/L | | 30-JUN-17 | R3765853 |
| Orthophosphate-Dissolved (as P) | 1.07 | DLA | 0.10 | mg/L | | 01-JUL-17 | R3760144 |
| Phosphorus (P)-Total | 1.11 | DLA | 0.10 | mg/L | | 06-JUL-17 | R3767429 |
| Total Suspended Solids | 3.7 | | 3.0 | mg/L | | 04-JUL-17 | R3765569 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1951617 CONTD.... PAGE 3 of 3

Version: FINAL

Reference Information

Qualifiers for Sample Submission Listed:

 Qualifier
 Description

 EXTEMP
 RECEIVED AT 17C - Samples Received with temperature >15 Degrees C

 SPL
 TOTAL P - Sample was Preserved at the laboratory

Sample Parameter Qualifier Key:

Qualifier Description

DLA Detection Limit adjusted for required dilution

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---------------|--------|---------------------------------|-------------------------------------|
| BOD-BC-CL | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B-5 day IncubO2 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.

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.



Workorder: L1951617

Report Date: 08-JUL-17

Page 1 of 2

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|------------|---------|-----------|-------|-----|--------|-----------|
| BOD-BC-CL Water | | | | | | | |
| Batch R3765853 | | | | | | | |
| WG2563647-3 DUP | L1951617-1 | | | | | | |
| Biochemical Oxygen Demand | <2.0 | <2.0 | RPD-NA | mg/L | N/A | 20 | 30-JUN-17 |
| WG2563647-2 LCS Biochemical Oxygen Demand | | 88.2 | | % | | 85-115 | 30-JUN-17 |
| WG2563647-1 MB | | | | | | | |
| Biochemical Oxygen Demand | | <2.0 | | mg/L | | 2 | 30-JUN-17 |
| P-T-COL-CL Water | | | | | | | |
| Batch R3767429 | | | | | | | |
| WG2565395-2 LCS | | | | | | | |
| Phosphorus (P)-Total | | 106.3 | | % | | 80-120 | 06-JUL-17 |
| WG2565395-1 MB | | 0.0050 | | /1 | | 2 225 | |
| Phosphorus (P)-Total | | <0.0050 | | mg/L | | 0.005 | 06-JUL-17 |
| PO4-DO-COL-CL Water | | | | | | | |
| Batch R3760144 | | | | | | | |
| WG2561340-5 LCS | | | | | | | |
| Orthophosphate-Dissolved (as P) | | 100.2 | | % | | 80-120 | 01-JUL-17 |
| WG2561340-4 MB | | | | | | | |
| Orthophosphate-Dissolved (as P) | | <0.0050 | | mg/L | | 0.005 | 01-JUL-17 |
| TSS-CL Water | | | | | | | |
| Batch R3765569 | | | | | | | |
| WG2562426-2 LCS | | | | | | | |
| Total Suspended Solids | | 106.0 | | % | | 85-115 | 04-JUL-17 |
| WG2562426-1 MB | | | | _ | | | |
| Total Suspended Solids | | <3.0 | | mg/L | | 3 | 04-JUL-17 |
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Workorder: L1951617 Report Date: 08-JUL-17 Page 2 of 2

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 |

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

| 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 predetermined 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) Environmen



L1951617-COFC

f Custody / Analytical Request Form mada Toll Free: 1 800 668 9878 www.alsglobal.com

| COC# | |
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Page <u>1</u> of <u>1</u>

| Report To | | | | | | .at / Distribut | ion | | Serv | ice R | eque | sted | (Rush | for rou | tine ana | lysis su | bject to | availa | bility) | |
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| Contact: | Patrick Majer | | <u>-</u> | | LSD: | | | |] | | | | 16 | ŀ | | | | | 1 | |
| Address: | 1505 - 17th Ave SV | N Calgary AB | | | | | <u> </u> | | | | | | PHA | | | | | | | Ders |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 27-JUL-17

Report Date: 02-AUG-17 14:46 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1965513

Project P.O. #: NOT SUBMITTED

Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT

C of C Numbers: Legal Site Desc:

Nancy Sonompil Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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



L1965513 CONTD.... PAGE 2 of 3 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|--------|------------|------|-----------|-----------|-----------|----------|
| L1965513-1 UV TROUGH | | | | | | | |
| L1965513-1 UV TROUGH Sampled By: TJ on 26-JUL-17 @ 12:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Biochemical Oxygen Demand | <2.0 | | 2.0 | mg/L | | 27-JUL-17 | R3786604 |
| Orthophosphate-Dissolved (as P) | 1.72 | DLA | 0.25 | mg/L | | 28-JUL-17 | R3784603 |
| Coliform Bacteria - Fecal | 9 | OCR | 1 | CFU/100mL | | 27-JUL-17 | R3784763 |
| Phosphorus (P)-Total | 2.08 | DLA | 0.50 | mg/L | | 01-AUG-17 | R3788243 |
| Total Suspended Solids | <3.0 | | 3.0 | mg/L | | 29-JUL-17 | R3785346 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1965513 CONTD....

PAGE 3 of 3 Version: FINAL

Reference Information

Qualifiers for Sample Submission Listed:

| Qualifier | Description |
|-----------|--|
| SPL | Sample was Preserved at the laboratory |
| ISCR:ST | Tot-P - Improper Sample Container Received: Subsamples Taken |

Sample Parameter Qualifier Key:

| Qualifier | Description |
|-----------|--|
| DLA | Detection Limit adjusted for required dilution |
| 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 IncubO2 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 9222I

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.



Workorder: L1965513

Report Date: 02-AUG-17

Page 1 of 2

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|----------|------------------------|---------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3786604 | | | | | | | | |
| WG2582874-2 LCS Biochemical Oxygen Dem | nand | | 89.7 | | % | | 85-115 | 27-JUL-17 |
| WG2582874-1 MB Biochemical Oxygen Dem | nand | | <2.0 | | mg/L | | 2 | 27-JUL-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3784763 WG2580806-2 DUP | | 1.4005540.4 | | | | | | |
| Coliform Bacteria - Fecal | | L1965513-1 9 | 8 | | CFU/100mL | 12 | 65 | 27-JUL-17 |
| WG2580806-1 MB Coliform Bacteria - Fecal | | | <1 | | CFU/100mL | | 1 | 27-JUL-17 |
| P-T-COL-CL | Water | | | | | | | |
| Batch R3788243 | | | | | | | | |
| WG2583170-2 LCS Phosphorus (P)-Total | | | 102.6 | | % | | 80-120 | 01-AUG-17 |
| WG2583170-1 MB Phosphorus (P)-Total | | | <0.0050 | | mg/L | | 0.005 | 01-AUG-17 |
| PO4-DO-COL-CL | Water | | | | | | | |
| Batch R3784603 | | | | | | | | |
| WG2580622-2 LCS Orthophosphate-Dissolve | d (as P) | | 107.1 | | % | | 80-120 | 28-JUL-17 |
| WG2580622-1 MB Orthophosphate-Dissolve | d (as P) | | <0.0050 | | mg/L | | 0.005 | 28-JUL-17 |
| TSS-CL | Water | | | | | | | |
| Batch R3785346 WG2581191-2 LCS | | | | | | | | |
| Total Suspended Solids | | | 111.1 | | % | | 85-115 | 29-JUL-17 |
| WG2581191-1 MB Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 29-JUL-17 |

Workorder: L1965513 Report Date: 02-AUG-17 Page 2 of 2

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 predetermined 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.



Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com



L1965513-COFC

| Report To | | | | F | Report Fo | rmat / Distribut | tion | | Serv | ice R | eque | <u>.</u> | | | | | | | |
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| Company: | Kicking Horse Mou | ntain Water Utili | ity Co. Ltd. | | ✓ Standard | Other | | | ● Re | egular (| Stand | ard Tur | narour | d Times | - Business | Days) | | | |
| Contact: | Travis Jobin | | | | PDF | Excel | Digital | ✓ Fax | O Pr | iority (| 2-4 Bu | siness | Days) - | 50% Su | rcharge - | Contact / | ALS to C | onfirm | TAT |
| Address: | 1500 Kicking Horse | e Trail | | E | mail 1: | tjobin@kickingh | orseresort.com | | O Er | nergen | cy (1-2 | 2 Bus. I | Days) - | 100% Si | urcharge - | Contact | ALS to (| Confirm | TAT |
| | | | | E | mail 2: | pmajer@skircr. | com | | O sa | ime Da | y or W | /eekend | l Emer | gency - C | ontact AL | S to Com | firm TAT | | |
| Phone: | 250-344-6003 | Fax: | _ | E | mail 3: | mskyring@kicki | inghorseresort.c | om - | | | | | A | nalysis | s Reque | st | | | |
| Invoice To | Same as Report? | Yes | ✓ No | C | Client / P | roject Informatio | on | | Ple | ase ir | dicat | te bel | ow Fi | tered, F | reserve | ed or b | oth (F, | P, F/I | ?) |
| Hardcopy of ir | nvoice with Report? | Yes Yes | ✓ No | | ob #: | | Horse Mountain | Resort | | | | | | | | | | | _ |
| Company: | Resorts of the Can | adian Rockies | | F | O / AFE: | | | | | | | <u>u</u> | | | | | | | |
| Contact: | Patrick Majer | | | L | .SD: | | | | | | | E E | | | | | | | ۱, |
| Address: | 1505 - 17th Ave S\ | N Calgary AB | | | | | | | | | | 20 | | | | | | | Jers |
| Phone: | | Fax: | | | Quote #: | Q33059 | | | | | | OKTHOPHOSP HATE | | | | | | | Number of Containers |
| Lab W | ork Order# | . 10 | | Į. | \LS | 1.0 | Commission | TJ | | | ٤ | 臣 | U- | | | | | | 3 |
| (lab | use only) | | | ļ (| Contact: | LS | Sampler: | IJ | | | Fecal Coliform | ₫ | یہ | | | | | | r of |
| Sample | | Sample le | dentification | | | Date | Time | Camaria Tura | ا [| | <u>ت</u> ه | # | TOTAL | | | | | | Jpe |
| # | (Th | is description wi | II appear on the | e report) | | (dd-mmm-yy) | (hh:mm) | Sample Type | BOD | rss | Fec | 5 | 21 | | | | | | Z |
| | UV trough | | | | | JULY 26,17 | 12:00 PM | Water | Х | × | X | × | X | | | | | | 4 |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 30-AUG-17

Report Date: 07-SEP-17 09:19 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1983507

Project P.O. #: NOT SUBMITTED

Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT

C of C Numbers: Legal Site Desc:

Nancy Sonompil Account Manager

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L1983507 CONTD.... PAGE 2 of 3 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|-------------------------------------|--------|------------|------|-----------|-----------|-----------|----------|
| L1983507-1 UV TROUGH - WASTE WATER | | | | | | | |
| Sampled By: TJ on 29-AUG-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Biochemical Oxygen Demand | <2.0 | | 2.0 | mg/L | | 01-SEP-17 | R3821001 |
| Coliform Bacteria - Fecal | 1 | OCR | 1 | CFU/100mL | | 30-AUG-17 | R3816815 |
| Total Suspended Solids | <3.0 | | 3.0 | mg/L | | 05-SEP-17 | R3820891 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1983507 CONTD....

Reference Information

PAGE 3 of 3 Version: FINAL

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.

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.

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.



Workorder: L1983507

Report Date: 07-SEP-17

Page 1 of 2

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|--------|-----------|--------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R38210 | 001 | | | | | | | |
| WG2609580-2 LC Biochemical Oxyger | - | | 94.4 | | % | | 85-115 | 01-SEP-17 |
| WG2609580-1 ME Biochemical Oxyger | | | <2.0 | | mg/L | | 2 | 01-SEP-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R38168 WG2607153-1 MB Coliform Bacteria - F | 3 | | <1 | | CFU/100mL | | 1 | 30-AUG-17 |
| TSS-CL | Water | | | | | | | |
| Batch R38208 | 891 | | | | | | | |
| WG2609818-8 LC Total Suspended Sc | - | | 92.3 | | % | | 85-115 | 05-SEP-17 |
| WG2609818-7 ME Total Suspended So | | | <3.0 | | mg/L | | 3 | 05-SEP-17 |

Workorder: L1983507 Report Date: 07-SEP-17 Page 2 of 2

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 predetermined 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.



Travis Jobin

250-344-6003

Patrick Majer

UV trough 🗻

Hardcopy of Invoice with Report?

Lab Work Order #

(lab use only)

Same as Report ?

1500 Kicking Horse Trail

Resorts of the Canadian Rockies

1505 - 17th Ave SW Calgary AB

Kicking Horse Mountain Water Utility Co. Ltd.

Fax:

Fax:

WASTEWATER

Sample Identification

(This description will appear on the report)

☐ Yes

Yes

IJ No

√ No

Report To

Company:

Contact:

Address:

Phone:

Invoice To

Company:

Contact:

Address:

Phone:

Sample

Released by:

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

tjobin@kickinghorseresort.com

mskyring@kickinghorseresort.com

RCR - Kicking Horse Mountain Resort

Sampler:

Time

(hh:mm)

TJ

Sample Type

Water

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Digital

√ Fax

Report Format / Distribution

Client / Project Information

Q33059

Date

(dd-mmm-yy)

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Other

Excel

pmajer@skircr.com

Standard

PDF

Email 1:

Email 2:

Email 3:

Job #:

LSD:

IALS

PO / AFE:

Quote #

Contact:

L1983507-COFC Servic Regular (Standard Turnaround Times - Business Days) O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT O Emergency (1-2 Bus, Days) - 100% Surcharge - Contact ALS to Confirm TAT O Same Day or Weekend Emergency - Contact ALS to Confirm TAT Analysis Request Please indicate below Filtered, Preserved or both (F, P, F/P) Number of Containers Fecal Coliform Х Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details SHIPMENT VERIFICATION (lab use only) Date: Time: Obsepvations:

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) Time (hh-mm) Received by: Date: Date (dd-mmm-yv) Time: Temperature: Verified by: Yes / No? ÓС MIM If Yes add SIF GENF 20.00 Front



KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 20-SEP-17

Report Date: 28-SEP-17 17:08 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1994075

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK 1 - 2017 FALL EMS PROGRAM - WW

C of C Numbers: Legal Site Desc:

Nancy Sonompil Account Manager

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L1994075 CONTD.... PAGE 2 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|---------|------------|--------|-----------|------------|------------------------|----------------------|
| L1994075-1 WWTP EFFLUENT - UV THROUGH | | | | | | | |
| Sampled By: TJ/MS on 19-SEP-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.072 | | 0.050 | mg/L | | 28-SEP-17 | R3840495 |
| Biochemical Oxygen Demand | <2.0 | | 2.0 | mg/L | | 20-SEP-17 | R3837633 |
| Orthophosphate-Dissolved (as P) | 1.05 | DLHC | 0.10 | mg/L | | 20-SEP-17 | R3833758 |
| Coliform Bacteria - Fecal | 2 | OCR | 1 | CFU/100mL | | 20-SEP-17 | R3837128 |
| MPN - E. coli | 2 | OCR | 1 | MPN/100mL | | 20-SEP-17 | R3835333 |
| Phosphorus (P)-Total | 1.11 | DLHC | 0.10 | mg/L | 25-SEP-17 | 27-SEP-17 | R3839507 |
| Total Suspended Solids | 6.0 | | 3.0 | mg/L | | 22-SEP-17 | R3836571 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 24.6 | | 0.020 | mg/L | | 22-SEP-17 | R3839033 |
| Nitrate+Nitrite Nitrate and Nitrite (as N) | 24.6 | | 0.050 | ma/l | | 27-SEP-17 | |
| Nitrate and Nitrite (as N) Nitrite in Water by IC | 24.6 | | 0.050 | mg/L | | 21-3EP-11 | |
| Nitrite in water by iC Nitrite (as N) | 0.034 | | 0.010 | mg/L | | 22-SEP-17 | R3839033 |
| L1994075-2 COLUMBIA RIVER UPSTREAM | 0.004 | | 0.070 | | | , | |
| Sampled By: TJ/MS on 19-SEP-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 28-SEP-17 | R3840495 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 20-SEP-17 | R3833758 |
| Coliform Bacteria - Fecal | 3 | OCR | 1 | CFU/100mL | | 20-SEP-17 | R3837128 |
| MPN - E. coli | 3 | OCR | 1 | MPN/100mL | | 20-SEP-17 | R3835333 |
| Phosphorus (P)-Total | 0.030 | | 0.020 | mg/L | 25-SEP-17 | 27-SEP-17 | R3839507 |
| Total Suspended Solids | 42.7 | | 3.0 | mg/L | | 22-SEP-17 | R3836571 |
| NO2, NO3 and Sum of NO2/NO3 | | | 0.0 | 1113/- | | | |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.083 | | 0.020 | mg/L | | 22-SEP-17 | R3839033 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 0.083 | | 0.050 | mg/L | | 27-SEP-17 | |
| Nitrite in Water by IC Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 22-SEP-17 | R3839033 |
| | <0.010 | | 0.010 | IIIg/L | | 22-3LF-17 | K3039033 |
| L1994075-3 COLUMBIA RIVER DOWNSTREAM | | | | | | | |
| Sampled By: TJ/MS on 19-SEP-17 @ 15:00 | | | | | | | |
| Matrix: WATER Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 28-SEP-17 | R3840495 |
| Orthophosphate-Dissolved (as P) | <0.050 | | 0.050 | mg/L | | 20-SEP-17 20-SEP-17 | R3840495 R3833758 |
| Coliform Bacteria - Fecal | <0.0050 | OCR | 0.0050 | CFU/100mL | | 20-SEP-17 20-SEP-17 | R3833758 R3837128 |
| MPN - E. coli | 3 1 | OCR | 1 | MPN/100mL | | 20-SEP-17 20-SEP-17 | R3837128 R3835333 |
| Phosphorus (P)-Total | 0.035 | | 0.020 | mg/L | 25-SEP-17 | 27-SEP-17 | R3839507 |
| Total Suspended Solids | 70.0 | | 3.0 | mg/L | 20 OLI -17 | 27-SEP-17 22-SEP-17 | R3836571 |
| NO2, NO3 and Sum of NO2/NO3 | 70.0 | | 5.0 | mg/L | | 22 OLI - 17 | 11303037 1 |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.078 | | 0.020 | mg/L | | 22-SEP-17 | R3839033 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 0.078 | | 0.050 | mg/L | | 27-SEP-17 | |
| Nitrite in Water by IC | <0.010 | | 0.010 | mg/L | | 22-SEP-17 | |
| Nitrite (as N) | | | | | | | R3839033 |

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

L1994075 CONTD.... PAGE 3 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| L1994075-4 COLUMBIA RIVER SIDE CHANNEL Sampled By: TUMS on 19-SEP-17 @ 15-00 Martin: WATER Miscellaneous Parameters Ammonial, Total (as N) | Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--|---------|------------|--------|-------|-----------|-----------|----------|
| Sampled By: TJ/MS on 19-SEP-17 @ 15:00 Matrix: WATER Wiscellaneous Parameters WATER Water Dissolved (as N) 40.050 0.050 mg/L 28-SEP-17 R3840495 Orthophosphate-Dissolved (as P) 40.0050 0.0050 0.0050 mg/L 20-SEP-17 R3833758 Coliform Bacteria - Fecal 5 OCR 1 CFU/100mL 20-SEP-17 R3837128 MPN - E. coli 2 OCR 1 MPN/100mL 20-SEP-17 R3835333 Phosphorus (P)-Total 0.027 0.020 mg/L 25-SEP-17 R3839507 Total Suspended Solids 24.7 3.0 mg/L 22-SEP-17 R38396571 NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC 0.071 0.020 mg/L 22-SEP-17 R3839033 Nitrate+Nitrite Nitrate and Nitrite (as N) 0.071 0.050 mg/L 27-SEP-17 Nitrate in Water by IC 0.050 mg/L 27-SEP-17 | L1994075-4 COLUMBIA RIVER SIDE CHANNEL | | | | | | | |
| Matrix: WATER Miscellaneous Parameters 0.050 mg/L 28-SEP-17 R3840495 Ammonia, Total (as N) <0.0050 | | | | | | | | |
| Miscellaneous Parameters < | | | | | | | | |
| Orthophosphate-Dissolved (as P) <0.0050 mg/L 20-SEP-17 R3833758 Coliform Bacteria - Fecal 5 OCR 1 CFU/100mL 20-SEP-17 R3837128 MPN - E. coli 2 OCR 1 MPN/100mL 20-SEP-17 R3835333 Phosphorus (P)-Total 0.027 0.020 mg/L 25-SEP-17 R3839507 Total Suspended Solids 24.7 3.0 mg/L 22-SEP-17 R3836571 NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC 0.020 mg/L 22-SEP-17 R3839033 Nitrate+Nitrite Nitrate and Nitrite (as N) 0.071 0.050 mg/L 27-SEP-17 R3839033 Nitrite in Water by IC 0.050 mg/L 27-SEP-17 R3839033 | | | | | | | | |
| Coliform Bacteria - Fecal 5 OCR 1 CFU/100mL 20-SEP-17 R3837128 MPN - E. coli 2 OCR 1 MPN/100mL 20-SEP-17 R3835333 Phosphorus (P)-Total 0.027 0.020 mg/L 25-SEP-17 R3839507 Total Suspended Solids 24.7 3.0 mg/L 22-SEP-17 R3836571 NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC 0.020 mg/L 22-SEP-17 R3839033 Nitrate+Nitrite Nitrate and Nitrite (as N) 0.071 0.050 mg/L 27-SEP-17 Nitrite in Water by IC 0.050 mg/L 27-SEP-17 | Ammonia, Total (as N) | < 0.050 | | 0.050 | mg/L | | 28-SEP-17 | R3840495 |
| MPN - E. coli 2 OCR 1 MPN/100mL ng/L 20-SEP-17 R3835333 Phosphorus (P)-Total 0.027 0.020 mg/L 25-SEP-17 27-SEP-17 R3839507 Total Suspended Solids 24.7 3.0 mg/L 22-SEP-17 R3836571 NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC 0.071 0.020 mg/L 22-SEP-17 R3839033 Nitrate +Nitrite Nitrate and Nitrite (as N) 0.071 0.050 mg/L 27-SEP-17 Nitrite in Water by IC Nitrite in Water by IC 0.050 mg/L 27-SEP-17 | Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 20-SEP-17 | R3833758 |
| Phosphorus (P)-Total 0.027 0.020 mg/L 25-SEP-17 27-SEP-17 R3839507 Total Suspended Solids 24.7 3.0 mg/L 22-SEP-17 R3836571 NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC 0.071 0.020 mg/L 22-SEP-17 R3839033 Nitrate+Nitrite Nitrate and Nitrite (as N) 0.071 0.050 mg/L 27-SEP-17 Nitrite in Water by IC 0.050 mg/L 27-SEP-17 | | 5 | | 1 | | | | R3837128 |
| Total Suspended Solids 24.7 3.0 mg/L 22-SEP-17 R3836571 NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC Nitrate (as N) 0.071 0.020 mg/L 22-SEP-17 R3839033 Nitrate+Nitrite Nitrate and Nitrite (as N) 0.071 0.050 mg/L 27-SEP-17 Nitrite in Water by IC | | 2 | OCR | 1 | | | | R3835333 |
| NO2, NO3 and Sum of NO2/NO3 Jitrate in Water by IC Nitrate (as N) 0.071 0.020 mg/L 22-SEP-17 R3839033 Nitrate+Nitrite Nitrate and Nitrite (as N) 0.071 0.050 mg/L 27-SEP-17 Nitrite in Water by IC 0.050 mg/L 27-SEP-17 | | | | 0.020 | | 25-SEP-17 | | |
| Nitrate in Water by IC 0.071 0.020 mg/L 22-SEP-17 R3839033 Nitrate+Nitrite Nitrate and Nitrite (as N) 0.071 0.050 mg/L 27-SEP-17 Nitrite in Water by IC 0.050 mg/L 27-SEP-17 | | 24.7 | | 3.0 | mg/L | | 22-SEP-17 | R3836571 |
| Nitrate (as N) 0.071 0.020 mg/L 22-SEP-17 R3839033 Nitrate+Nitrite 0.071 0.050 mg/L 27-SEP-17 Nitrite in Water by IC 0.050 mg/L 27-SEP-17 | | | | | | | | |
| Nitrate+Nitrite Nitrate and Nitrite (as N) Nitrite in Water by IC O.071 O.050 mg/L 27-SEP-17 | | 0.074 | | 0.000 | ma/l | | 22 SED 17 | D2020022 |
| Nitrate and Nitrite (as N) 0.071 0.050 mg/L 27-SEP-17 Nitrite in Water by IC 0.050 mg/L 27-SEP-17 | | 0.071 | | 0.020 | mg/L | | 22-SEP-17 | R3839033 |
| Nitrite in Water by IC | | 0.071 | | 0.050 | ma/L | | 27-SEP-17 | |
| | | | | 2.300 | J - | | | |
| | | <0.010 | | 0.010 | mg/L | | 22-SEP-17 | R3839033 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L1994075 CONTD....

Reference Information

PAGE 4 of 5 Version: FINAL

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 IncubO2 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 9223I

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-ED 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 $0.45\,\mathrm{micron}$ 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 |
|----------------------------|---|
| ED | ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA |
| CL | ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA |
| | |

Chain of Custody Numbers:

L1994075 CONTD....

Reference Information

PAGE 5 of 5 Version: FINAL

Test Method References:

ALS Test Code Matrix Method Reference** **Test Description**

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.



Workorder: L1994075

Report Date: 28-SEP-17

Page 1 of 3

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--|--------|--------------------------|--------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3837633 WG2624639-2 LCS | | | | | | | | |
| Biochemical Oxygen Der | mand | | 95.9 | | % | | 85-115 | 20-SEP-17 |
| WG2624639-1 MB Biochemical Oxygen Der | mand | | <2.0 | | mg/L | | 2 | 20-SEP-17 |
| EC-MPN-CL | Water | | | | | | | |
| Batch R3835333 WG2622073-1 MB MPN - E. coli | | | <1 | | MPN/100mL | | 1 | 20-SEP-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3837128 WG2624164-1 MB Coliform Bacteria - Feca | I | | <1 | | CFU/100mL | | 1 | 20-SEP-17 |
| NH3-F-CL | Water | | | | | | | |
| Batch R3840495 | | | | | | | | |
| WG2627808-10 DUP Ammonia, Total (as N) | | L1994075-4 <0.050 | <0.050 | RPD-NA | mg/L | N/A | 20 | 28-SEP-17 |
| WG2627808-11 LCS Ammonia, Total (as N) | | | 103.1 | | % | | 85-115 | 28-SEP-17 |
| WG2627808-9 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 28-SEP-17 |
| WG2627808-12 MS Ammonia, Total (as N) | | L1994075-4 | 110.5 | | % | | 75-125 | 28-SEP-17 |
| NO2-IC-N-CL | Water | | | | | | | |
| Batch R3839033 | | | | | | | | |
| WG2626260-2 LCS Nitrite (as N) | | | 106.8 | | % | | 90-110 | 22-SEP-17 |
| WG2626260-1 MB Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 22-SEP-17 |
| NO3-IC-N-CL | Water | | | | | | | |
| Batch R3839033 | | | | | | | | |
| WG2626260-2 LCS Nitrate (as N) | | | 104.3 | | % | | 90-110 | 22-SEP-17 |
| WG2626260-1 MB Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 22-SEP-17 |
| P-T-COL-ED | Water | | | | | | | |



Workorder: L1994075

Report Date: 28-SEP-17 Page 2 of 3

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---------------------|---------------|------------|----------|-----------|-------|-----|--------|-----------|
| P-T-COL-ED | Water | | _ | | | | | |
| Batch R38395 | 07 | | | | | | | |
| WG2624736-2 LCS | 6 | KONELAB_TF | • | | | | | |
| Phosphorus (P)-Tota | I | | 98.3 | | % | | 80-120 | 27-SEP-17 |
| WG2624736-9 LCS | 3 | KONELAB_TF | • | | | | | |
| Phosphorus (P)-Tota | I | | 97.4 | | % | | 80-120 | 27-SEP-17 |
| WG2624736-1 MB | | | | | | | | |
| Phosphorus (P)-Tota | I | | < 0.020 | | mg/L | | 0.02 | 27-SEP-17 |
| WG2624736-10 MB | | | | | | | | |
| Phosphorus (P)-Tota | I | | < 0.020 | | mg/L | | 0.02 | 27-SEP-17 |
| PO4-DO-COL-CL | Water | | | | | | | |
| Batch R38337 | 58 | | | | | | | |
| WG2620669-2 LCS | 6 | | | | | | | |
| Orthophosphate-Diss | solved (as P) | | 96.0 | | % | | 80-120 | 20-SEP-17 |
| WG2620669-1 MB | | | | | | | | |
| Orthophosphate-Diss | solved (as P) | | < 0.0050 | | mg/L | | 0.005 | 20-SEP-17 |
| TSS-CL | Water | | | | | | | |
| Batch R38365 | 71 | | | | | | | |
| WG2623335-14 LCS | | | | | | | | |
| Total Suspended Sol | | | 102.2 | | % | | 85-115 | 22-SEP-17 |
| WG2623335-13 MB | | | | | | | | |
| Total Suspended Sol | | | <3.0 | | mg/L | | 3 | 22-SEP-17 |
| · | | | | | - | | | - |

Workorder: L1994075 Report Date: 28-SEP-17 Page 3 of 3

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 |

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

| 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 predetermined 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.

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Chain of Custody / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 www.alsglobal.com



Page _ 1 of

| Report To | | Report Fo | rmat / Distributi | วท | L1 | 9940 | 75-0 | COF | 2 | | | an | alysis | subje | ct to av | ailabilit | (y ²) |
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| Contact: | Travis Johin | PDF | Excu! | Digital Digital | <u></u> ✓ Fax | O erk | ority (2 | -4 Busi | ness Da | ays) - 50 | 0% Su | rchaige | e - Con | tact .V. | S to Con | firm TA1 | г ————— |
| Address: | 1500 Kicking Horse Trail | Email 1: | tjobin@kickingho | rseresort.com | | | | | | | | | | | l S to Co | ofico TA | vī |
| | | Email 2: | pmajer@skircr.c | <u>om</u> | | ⊖ Sar | ne Day | or We | ekenii I | Emerger | ncy (| ontact | ALS to | Confin | m TA1 | | |
| Phone: | 250-344-8442 Fax: | Email 3: | mskyring@kickir | ghorseresort.co | <u>m</u> | | | | | | | is Re | | | | | 4. |
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| Contact: | Patrick Majer | LSD: | | | | ! | i | | 1 | | j | | | , | | ļ | ا را |
| Address: | 1505 - 17th Ave SW Calgary AB | ļ | | | | | 1 |] | | V | - | , | V= | √ ¦ | | ĺ | ner. |
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| lah W | /ork Order# use only) | ALS Contact: | LS. | Sampler: | T.J/MS | V | | / / | Y | - | | A | Coliform | icsci | | | Number of Containers |
| Sample 🐧 | Sample Identification | | Date | Time | Sample Type | BCL15 | ωl | N-N N-K | 4-103 1-103 | N-NO2 | <u>.</u> | 2 | ia C | Enteroc | :5 | Ì | Tilbe |
| 11. | (This description will appear on the report) | | (dd-mmm-yy) | (hh:nim) | | ္မ | 13S | _ź | _== | ź | iotai | Ortho | Fecai | <u></u> | щ | | 1.3 |
| THE STATE OF | WWTP Effluent - UV troug's Temp: 16 pH: 6,5 | | 9/14 | 2pm | Water | LX | X | X | Х | Х | X | X | X | X | X | | 5 |
| TO LOT | Columbia River Upstream Temp: 12 pH: 7,6 | | | 2/27~ | Water | <u> </u> | Х | Х | Х | X | Х | Х | X | X | X | _ | 4 |
| 学学者 | Columbia River Down stream Temp: 12 pH: 7.6 | | | 3/2 | Water | | Х | Х | Х | Х | X | Х | X | X | Х | | 4 |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 28-SEP-17

Report Date: 05-OCT-17 19:42 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L1998834

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK 2 - 2017 FALL EMS PROGRAM - WW

C of C Numbers: Legal Site Desc:

Nancy Sonompil Account Manager

 $[This\ report\ shall\ not\ be\ reproduced\ except\ in\ full\ without\ the\ written\ authority\ of\ the\ Laboratory.]$

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



L1998834 CONTD.... PAGE 2 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--|------------|--------|------------|-----------|-----------|-----------|
| L1998834-1 WWTP EFFLUENT UV THROUGH | | | | | | | |
| Sampled By: TJ/MS on 27-SEP-17 @ 13:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.074 | | 0.050 | mg/L | | 05-OCT-17 | R3847533 |
| Biochemical Oxygen Demand | <2.0 | | 2.0 | mg/L | | 28-SEP-17 | R3845153 |
| Orthophosphate-Dissolved (as P) | 1.57 | DLHC | 0.25 | mg/L | | 28-SEP-17 | R3840821 |
| Enterococcus | See Attached | | | | | 28-SEP-17 | R3846682 |
| Coliform Bacteria - Fecal | 4 | OCR | 1 | CFU/100mL | | 28-SEP-17 | R3841666 |
| MPN - E. coli | <1 | | 1 | MPN/100mL | | 28-SEP-17 | R3841257 |
| Phosphorus (P)-Total | 1.85 | | 0.20 | mg/L | | 04-OCT-17 | R3846019 |
| Total Suspended Solids | 10.0 | | 3.0 | mg/L | | 03-OCT-17 | R3844633 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 23.7 | | 0.020 | mg/L | | 28-SEP-17 | R3845027 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 23.7 | | 0.050 | mg/L | | 03-OCT-17 | |
| Nitrite in Water by IC Nitrite (as N) | 0.028 | | 0.010 | mg/L | | 28-SEP-17 | R3845027 |
| L1998834-2 COLUMBIA RIVER UPSTREAM | | | | | | | |
| Sampled By: TJ/MS on 27-SEP-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 05-OCT-17 | R3847533 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 28-SEP-17 | R3840821 |
| Enterococcus | See Attached | | | | | 28-SEP-17 | R3846682 |
| Coliform Bacteria - Fecal | 25 | DLM | 5 | CFU/100mL | | 28-SEP-17 | R3841666 |
| MPN - E. coli | 13 | OCR | 1 | MPN/100mL | | 28-SEP-17 | R3841257 |
| Phosphorus (P)-Total | 0.0925 | | 0.0020 | mg/L | | 30-SEP-17 | R3841688 |
| Total Suspended Solids | 123 | | 3.0 | mg/L | | 03-OCT-17 | R3844633 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 0.079 | | 0.020 | mg/L | | 28-SEP-17 | R3845027 |
| Nitrate+Nitrite | 0.070 | | 0.050 | | | 00 OOT 47 | |
| Nitrate and Nitrite (as N) | 0.079 | | 0.050 | mg/L | | 03-OCT-17 | |
| Nitrite in Water by IC Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 28-SEP-17 | R3845027 |
| L1998834-3 COLUMBIA RIVER DOWNSTREAM | \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | | 0.010 | 9, _ | | | 100-10021 |
| Sampled By: TJ/MS on 27-SEP-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 05-OCT-17 | R3847533 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 28-SEP-17 | R3840821 |
| Enterococcus | See Attached | | 2.0000 | | | 28-SEP-17 | R3846682 |
| Coliform Bacteria - Fecal | 20 | DLM | 5 | CFU/100mL | | 28-SEP-17 | R3841666 |
| MPN - E. coli | 5 | OCR | 1 | MPN/100mL | | 28-SEP-17 | R3841257 |
| Phosphorus (P)-Total | 0.0761 | | 0.0020 | mg/L | | 30-SEP-17 | R3841688 |
| Total Suspended Solids | 81.3 | | 3.0 | mg/L | | 03-OCT-17 | R3844633 |
| NO2, NO3 and Sum of NO2/NO3 | | | 0.0 | y – | | | 1.00.1000 |
| Nitrate in Water by IC Nitrate (as N) | 0.072 | | 0.020 | mg/L | | 28-SEP-17 | R3845027 |
| Nitrate+Nitrite | 0.072 | | 0.020 | g/ L | | 20 02. 17 | 1.00-0021 |
| Nitrate and Nitrite (as N) | I | 1 | 0.050 | mg/L | | 03-OCT-17 | |

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

L1998834 CONTD.... PAGE 3 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|-------------------------|------------|--------|-----------|-----------|------------------------|----------------------|
| L1998834-3 COLUMBIA RIVER DOWNSTREAM | | | | | | | |
| Sampled By: TJ/MS on 27-SEP-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 28-SEP-17 | R3845027 |
| L1998834-4 COLUMBIA RIVER SIDE CHANNEL | | | | | | | |
| Sampled By: TJ/MS on 27-SEP-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | ,, | | 05 00T 17 | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 05-OCT-17 | R3847533 |
| Orthophosphate-Dissolved (as P) Enterococcus | <0.0050 See Attached | | 0.0050 | mg/L | | 28-SEP-17 28-SEP-17 | R3840821 |
| Coliform Bacteria - Fecal | 10 | DLM | 5 | CFU/100mL | | 28-SEP-17 | R3846682 R3841666 |
| MPN - E. coli | 2 | OCR | 1 | MPN/100mL | | 28-SEP-17 | R3841257 |
| Phosphorus (P)-Total | 0.115 | | 0.020 | mg/L | | 30-SEP-17 | R3841784 |
| Total Suspended Solids | 123 | | 3.0 | mg/L | | 03-OCT-17 | R3844633 |
| NO2, NO3 and Sum of NO2/NO3 | | | 0 | 3- | | | |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.091 | | 0.020 | mg/L | | 28-SEP-17 | R3845027 |
| Nitrate+Nitrite Nitrate and Nitrite (as N) | 0.091 | | 0.050 | ma/l | | 03-OCT-17 | |
| Nitrite in Water by IC | 0.091 | | 0.050 | mg/L | | 03-001-17 | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 28-SEP-17 | R3845027 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

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

L1998834 CONTD....

Reference Information

PAGE 4 of 5 Version: FINAL

Sample Parameter Qualifier Key:

| Description Description |
|--|
| Detection Limit Raised: Dilution required due to high concentration of test analyte(s). |
| Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| 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 IncubO2 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-PRES-COL-VA 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.

Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.

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

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:

L1998834 CONTD....

PAGE 5 of 5 Version: FINAL

Reference Information

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|------------------------------|--------|-----------------------|-----------------------------------|
| Laboratory Definition | Code L | aboratory Location | |
| VA | Α | LS ENVIRONMENTAL - VA | NCOUVER, BRITISH COLUMBIA, CANADA |
| CL | Α | LS ENVIRONMENTAL - CA | LGARY, 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.



Workorder: L1998834

Report Date: 05-OCT-17

Page 1 of 3

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|--------|------------------------|--------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3845153 | | | | | | | | |
| WG2631175-6 DUP Biochemical Oxygen Der | mand | L1998834-1 <2.0 | <2.0 | RPD-NA | mg/L | N/A | 20 | 28-SEP-17 |
| WG2631175-5 LCS Biochemical Oxygen Der | mand | | 93.4 | | % | | 85-115 | 28-SEP-17 |
| WG2631175-4 MB Biochemical Oxygen Der | mand | | <2.0 | | mg/L | | 2 | 28-SEP-17 |
| EC-MPN-CL | Water | | | | | | | |
| Batch R3841257 WG2628723-1 MB MPN - E. coli | | | <1 | | MPN/100mL | | 1 | 28-SEP-17 |
| ECC ME CI | Motor | | | | | | | |
| FCC-MF-CL Batch R3841666 WG2629172-3 MB Coliform Bacteria - Feca | Water | | <1 | | CFU/100mL | | 1 | 28-SEP-17 |
| NH3-F-CL | Water | | | | | | | |
| Batch R3847533 | | | | | | | | |
| WG2633330-3 LCS Ammonia, Total (as N) | | | 107.2 | | % | | 85-115 | 05-OCT-17 |
| WG2633330-7 LCS Ammonia, Total (as N) | | | 100.9 | | % | | 85-115 | 05-OCT-17 |
| WG2633330-1 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 05-OCT-17 |
| WG2633330-5 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 05-OCT-17 |
| NO2-IC-N-CL | Water | | | | | | | |
| Batch R3845027 | | | | | | | | |
| WG2631170-14 LCS Nitrite (as N) | | | 105.1 | | % | | 90-110 | 28-SEP-17 |
| WG2631170-13 MB Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 28-SEP-17 |
| NO3-IC-N-CL | Water | | | | | | | |
| Batch R3845027 | | | | | | | | |
| WG2631170-14 LCS Nitrate (as N) | | | 104.1 | | % | | 90-110 | 28-SEP-17 |
| WG2631170-13 MB | | | | | | | | |



Workorder: L1998834

Report Date: 05-OCT-17 Page 2 of 3

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--|------------|------------|---------|-----------|-------|-----|--------|-----------|
| NO3-IC-N-CL Batch R3845027 WG2631170-13 MB Nitrate (as N) | Water | | <0.020 | | mg/L | | 0.02 | 28-SEP-17 |
| P-T-PRES-COL-VA | Water | | | | | | | |
| Batch R3841688 WG2629007-6 CRM Phosphorus (P)-Total | | VA-ERA-PO4 | 103.1 | | % | | 80-120 | 30-SEP-17 |
| WG2629007-5 MB Phosphorus (P)-Total | | | <0.0020 | | mg/L | | 0.002 | 30-SEP-17 |
| Batch R3841784 WG2629089-2 CRM Phosphorus (P)-Total | | VA-ERA-PO4 | 98.4 | | % | | 80-120 | 30-SEP-17 |
| WG2629089-1 MB Phosphorus (P)-Total | | | <0.0020 | | mg/L | | 0.002 | 30-SEP-17 |
| Batch R3846019 WG2630867-2 CRM Phosphorus (P)-Total | | VA-ERA-PO4 | 90.6 | | % | | 80-120 | 04-OCT-17 |
| WG2630867-1 MB Phosphorus (P)-Total | | | <0.0020 | | mg/L | | 0.002 | 04-OCT-17 |
| PO4-DO-COL-CL | Water | | | | | | | |
| Batch R3840821 WG2627939-2 LCS Orthophosphate-Dissolv | red (as P) | | 113.9 | | % | | 80-120 | 28-SEP-17 |
| WG2627939-1 MB Orthophosphate-Dissolv | red (as P) | | <0.0050 | | mg/L | | 0.005 | 28-SEP-17 |
| TSS-CL | Water | | | | | | | |
| Batch R3844633 WG2630839-5 LCS Total Suspended Solids | | | 91.6 | | % | | 85-115 | 03-OCT-17 |
| WG2630839-4 MB Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 03-OCT-17 |

Workorder: L1998834 Report Date: 05-OCT-17 Page 3 of 3

Legend:

CVS

| 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 |

Sample Parameter Qualifier Definitions:

Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

| 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 predetermined 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 27, 2017

Final Report

October 4, 2017

Submitted to: ALS Environmental

Calgary, AB



SAMPLE INFORMATION

| Commis ID/ | | Dansint | | |
|--|------------|------------------------|------------------------------|---------------------|
| Sample ID/ — Internal ID | Collected | Received | Enterococcus test initiation | Receipt temperature |
| L1998834-1 WWTP EFFLUENT UV TROUGH/ 1718-0227-01 | 27-Sept-17 | 28-Sept-17 at 1150h | 28-Sept-17 at 1220h | 9°C |
| L19988834-2 COLUMBIA RIVER UPSTREAM/ 1718-0227-02 | 27-Sept-17 | 28-Sept-17 at 1150h | 28-Sept-17 at 1220h | 9°C |
| L1998834-3 COLUMBIA RIVER DOWNSTREAM/ 1718-0227-03 | 27-Sept-17 | 28-Sept-17 at 1150h | 28-Sept-17 at 1220h | 9°C |
| L1998834-4 COLUMBIA RIVER SIDE CHANNEL/ 1718-0227-04 | 27-Sept-17 | 28-Sept-17 at 1150h | 28-Sept-17 at 1220h | 9°C |

TEST TYPES

• Enterococcus enumeration test

RESULTS

Microbial test results

| Cample ID | MPN/100 mL | |
|--|--------------|--|
| Sample ID ——— | Enterococcus | |
| L1998834-1 WWTP EFFLUENT UV TROUGH | 139.1 | |
| L19988834-2 COLUMBIA RIVER UPSTREAM | 25.6 | |
| L1998834-3 COLUMBIA RIVER DOWNSTREAM | 13.2 | |
| L1998834-4 COLUMBIA RIVER SIDE CHANNEL | 10.9 | |

MPN = Most Probable Number

Reference: 1718-0227



QA/QC

| QA/QC summary | Enterococcus |
|---------------------|--------------|
| Protocol deviations | None |
| Control performance | Acceptable |
| Test performance | Valid |

Report By:

Leila Oosterbroek, BSc Environmental Scientist

Oppleheret

Reviewed By:

Tamara McClure, BSc

Quality Assurance Manager

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

Reference: 1718-0227

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

Quanti-Tray Bench Sheet - Enterococcus

| | Client AS 1010 Reference 178-0227 |
|--|---|
| Test Initiation Date: 2014/09/25 Time: 12.20 Techician: TM I LO | Reagent Lot#/Expiry: EN\528 V: IR MAYZAR Comments: |
| Thermometer Serial #: $\frac{10000347}{1000000000000000000000000000000000000$ | Quanti Tray 2000 Lot#/Expiry: チレしい(じん)に2020 8 |
| Results - 24 Hour Incubation Date: 2019109129 Time: | : 1220 Technician: HS |
| Incubator Temp: (must be 41 ± 0.5°C) | Em |
| # Positive Large Wells: # Ambiguous Large Wells: | 45 18 |
| # Positive Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): | |
| Most Probable Number at 24 hours: Results - 28 Hour Incubation | -1 1443:0 25.6 13.2 10.9 139.1 |
| Date: Time: | Technician: |
| Incubator Temp: (must be 41 ± 0.5°C) | Enterococci (Fluorescent) |

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

F

Confirmed Positive Small Wells (Tray 2000 only):

Confirmed Positive Large Wells:

Most Probable Number at 28 hours:



APPENDIX B – Chain-of-custody form

CALGARY



Subcontract Request Form

L1998834

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

Please reference on final report and invoice: PO#

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

| | | | | Combain and a | | | | | | |
|---------------------------------|----------------------------|------------|--------------------|----------------|-----------------|-------------------|------------------|--|--|--|
| Please see enclosed 4 | l sam | iple(s) in | 4 | Container(s) |) | | | | | |
| SAMPLE NUMBER 1718-0227 | ANALYTI | CAL REQU | IRED | | DATE SAM | IPLED DUE DATE | Priority Flag | | | |
| L1998834-1 WWTP EFFLUEI | NT UV | | | | 9/27/201 | 7 | | | | |
| —O (Enterococcus (ENTERO-HQ 1) | | | | | : | 10/10/2017 | 140c | | | |
| L1998834-2 COLUMBIA RIV | 'ER | | | | 9/27/201 | .7 | | | | |
| -02 | Fatarana (FNTFRO HO 1) | | | | | 10/10/2017 | | | | |
| L1998834-3 COLUMBIA RIV | 'ER | | | | 9/27/201 | 7 | | | | |
| -03 | Enterococcus (ENTERO-HQ 1) | | | | 1400 | | | | | |
| L1998834-4 COLUMBIA RIV | ER SIDE | | | | 9/27/201 | .7 | | | | |
| -04 | Enterocoo | cus (ENTER | RO-HQ 1) | | : | 1400 | | | | |
| Subcontract Info Contact: | | John Fo | rbes (40 | 3) 291-9897 | | | | | | |
| Analysis and reporting info o | contact: | 2559 29 | Sonompil STREET | ΓNE | | | | | | |
| | | | RY,AB T1 | | | | 1.1.1 | | | |
| Di | | | | 291-9897 | | .Sonompil@als | sglobal.com | | | |
| Please email confirmation | n or rece | ipt to: | r | vancy.Sonomp | oil@alsglobal.c | | 200 | | | |
| Shipped By: | | | | Date Shipped: | | CON | gic | | | |
| Received By: | | | | Date Received: | | 2017/09 | 1/28 Jane | | | |
| /erified By: | | | | Date Verified: | | 1150 | Ux 25 | | | |
| | | | | Temperature: | | Nos | It souls | | | |
| Sample Integrity Issues: | | | | | | | | | | |



END OF REPORT

S) Environmental

Chain of Custody / Analytical Request 6---- 6



| Page | 1 of | 1 |
|------|------|---|

| Report To | Report Fo | rınat / Distribut | ion | | L19 | 9883 | 4-00 | JFC | | | | rsis | subjec | te availa | ability) | |
|---|---|-----------------------|------------------|-----------------|-------|------------|---------|--------------|-----------|---------------|---------|------------|------------|-------------|--|---|
| Company. Kicking Hors- Mountain Resc:t Utility Corporation | ☑ Standard | [] Other | | | _ | | | | | | | | | | | |
| Contact: Travis Jobin | PDF | Excai | Digitat | ₹ Fox | O Pra | orit ; (2- | ÷ Cusit | ness Da | 1V-1 - 5 | 0% 5ს | rcharge | e - Cont | acı ALS | to Confirm | 1 TAT | |
| Address: 1500 Kicking Horse Trail | Email 1 | tjobin@kickingh | orseresort.com | | O En | ergency | (1-2 6 | Bus. Da | iys) - 19 | 00 % S | urchary | je - Cor | ilact At | S to Confin | nı TÆi | _ |
| | Email 2 | pmajer@skircr.d | com | | O Sar | ne D יy | or Wee | ekend B | me.ge | ncy - (| ontact | AL5 to | Confirm | TAT | | |
| Phone: 250-344-8442 Fax: | Enrail 3: | mskyring@kicki | nghorseresort.co | <u>m</u> | | | | | - — | | is Re | | | | | |
| nvoice To Same as Report? 🔲 Yes 🔃 No | | oject Informatio | | | Ple | ase in | dicate | e bele | w Hilb | ered, | Prese | erved | or bot | h (F, P, I | F/F) | - 1 |
| Hardcopy of Invoice with Report? 🔲 Yes 🔃 No | Job #: | Week Z - 20 | 17 Fall EMS prog | ram - VV\V | | | | | | | | | _ | | <u> </u> | - |
| Company: Resorts of the Canadian Rockies | PO / AFE: | | | | | 1 | ŀ | | ļ | | Ì | | | - | 1 | 1 |
| Contact: Patrick Majer | LGD: | | | |] | | - | | | 1 | | Ì | | | | |
| Address: 1505 - 17th Ave SW Calgary AB | | | | | | | l | | j | | Ī | | J, | | | g l |
| Phone: Fax: | Quots #. | | | | | | | | į | į | l | j | 1 | | | Containers |
| Lab Work Order # | ALS Contact: | LS | Sampler: | TJ/MS | | | | | | 1 | | Coliform | ν | | | er of Co |
| Sample Sample Identification (This description will appear on the repo | rt) | Date (dd-minn, yy) | Time (hhaem) | Sample Type | BODS | TSS | N-NH4 | N-NO3 | N-NO2 | Total P | Ortho F | Feca' (| Enterococc | E. Colf | | Number of |
| WWTP Effluent - UV trough Temp: 16 ph: 6 | .9 | SEP 27 | 180 | V√ater | Х | Х | Х | Х | X | Х | Х | Х | Х | х | | 5 |
| | 6 | | 3 PM | Water | | Х | Х | X | x | X | X | Х | X | х | | 4 |
| Columbia River Down stream (emp. 12 pl.: 7. | .6 | | j | Water | i | Х | Х | X | χ | X | X | Х | x | x | | 4 |
| Columbia River Side Channel Temp: 12 pH. 7 | 1.2 | 1 | V | Wate: | | Х | x | Х | X | Х | Х | X | X | X | T - | 4 |
| 38 23 | | | | | | | | | | | | | | | | |
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| Special Instructions / Regulations with water | or land ∷se (CCM | E-Freshwater A | quatic Life/BC (| CSR - Commercia | al/AB | Tier 1 | - Nat | tural, | et::)/ | Haz | ardou | is De | ails | | | |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN 1505 17th AVE SW

CALGARY AB T2T 0E2

Date Received: 05-OCT-17

Report Date: 22-OCT-17 17:33 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L2002737

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK 3 - 2017 FALL EMS PROGRAM - WW

C of C Numbers: Legal Site Desc:

Nancy Sonompil, B. Sc. Account Manager

 $[This\ report\ shall\ not\ be\ reproduced\ except\ in\ full\ without\ the\ written\ authority\ of\ the\ Laboratory.]$

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



L2002737 CONTD.... PAGE 2 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--------------|------------|--------|-----------|-----------|-----------|-----------|
| L2002737-1 WWTP EFFLUENT - UV TROUGH | | | | | | | |
| Sampled By: TJ/MS on 04-OCT-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.074 | | 0.050 | mg/L | | 22-OCT-17 | R3862719 |
| Biochemical Oxygen Demand | <2.0 | | 2.0 | mg/L | | 07-OCT-17 | R3853344 |
| Orthophosphate-Dissolved (as P) | 1.14 | DLHC | 0.10 | mg/L | | 05-OCT-17 | R3847516 |
| Enterococcus | See Attached | | | | | 05-OCT-17 | R3855476 |
| Coliform Bacteria - Fecal | <1 | | 1 | CFU/100mL | | 05-OCT-17 | R3848759 |
| MPN - E. coli | <1 | | 1 | MPN/100mL | | 05-OCT-17 | R3848747 |
| Phosphorus (P)-Total | 1.42 | | 0.050 | mg/L | | 10-OCT-17 | R3851195 |
| Total Suspended Solids | 8.7 | | 3.0 | mg/L | | 11-OCT-17 | R3854072 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 19.5 | | 0.020 | mg/L | | 07-OCT-17 | R3862642 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 19.5 | | 0.050 | mg/L | | 22-OCT-17 | |
| Nitrite in Water by IC | | | _ | | | | |
| Nitrite (as N) | 0.023 | | 0.010 | mg/L | | 07-OCT-17 | R3862642 |
| L2002737-2 COLUMBIA RIVER UPSTREAM | | | | | | | |
| Sampled By: TJ/MS on 04-OCT-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 22-OCT-17 | R3862719 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 05-OCT-17 | R3847516 |
| Enterococcus | See Attached | | | | | 05-OCT-17 | R3855476 |
| Coliform Bacteria - Fecal | 93 | | 1 | CFU/100mL | | 05-OCT-17 | R3848759 |
| MPN - E. coli | 39 | OCR | 1 | MPN/100mL | | 05-OCT-17 | R3848747 |
| Phosphorus (P)-Total | 0.015 | | 0.010 | mg/L | | 10-OCT-17 | R3851195 |
| Total Suspended Solids | 7.3 | | 3.0 | mg/L | | 11-OCT-17 | R3854072 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 0.078 | | 0.020 | mg/L | | 07-OCT-17 | R3862642 |
| Nitrate+Nitrite Nitrate and Nitrite (as N) | 0.079 | | 0.050 | ma/l | | 22-OCT-17 | |
| ` , | 0.078 | | 0.050 | mg/L | | 22-001-17 | |
| Nitrite in Water by IC Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 07-OCT-17 | R3862642 |
| L2002737-3 COLUMBIA RIVER DOWN STREAM | | | | 3- | | | |
| Sampled By: TJ/MS on 04-OCT-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 22-OCT-17 | R3862719 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 05-OCT-17 | R3847516 |
| Enterococcus | See Attached | | | | | 05-OCT-17 | R3855476 |
| Coliform Bacteria - Fecal | 42 | | 1 | CFU/100mL | | 05-OCT-17 | R3848759 |
| MPN - E. coli | 19 | OCR | 1 | MPN/100mL | | 05-OCT-17 | R3848747 |
| Phosphorus (P)-Total | 0.014 | | 0.010 | mg/L | | 10-OCT-17 | R3851195 |
| Total Suspended Solids | 9.3 | | 3.0 | mg/L | | 11-OCT-17 | R3854072 |
| NO2, NO3 and Sum of NO2/NO3 | | | | 3- | | | |
| Nitrate in Water by IC Nitrate (as N) | 0.088 | | 0.020 | mg/L | | 07-OCT-17 | R3862642 |
| | 0.000 | | 0.020 | 9, _ | | 3. 33. 17 | 1.0002042 |
| Nitrate+Nitrite | | | | | | | |

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

L2002737 CONTD.... PAGE 3 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|--------------|------------|--------|-----------|-----------|-----------|----------|
| L2002737-3 COLUMBIA RIVER DOWN STREAM | | | | | | | |
| Sampled By: TJ/MS on 04-OCT-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 07-OCT-17 | R3862642 |
| L2002737-4 COLUMBIA RIVER SIDE CHANNEL | | | | | | | |
| Sampled By: TJ/MS on 04-OCT-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 22-OCT-17 | R3862719 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 05-OCT-17 | R3847516 |
| Enterococcus | See Attached | | | 0511/400 | | 05-OCT-17 | R3855476 |
| Coliform Bacteria - Fecal | 6 | 000 | 1 | CFU/100mL | | 05-OCT-17 | R3848759 |
| MPN - E. coli | 2 | OCR | 1 | MPN/100mL | | 05-OCT-17 | R3848747 |
| Phosphorus (P)-Total | 0.016 | | 0.010 | mg/L | | 10-OCT-17 | R3851195 |
| Total Suspended Solids NO2, NO3 and Sum of NO2/NO3 | 5.3 | | 3.0 | mg/L | | 11-OCT-17 | R3854072 |
| NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.092 | | 0.020 | mg/L | | 07-OCT-17 | R3862642 |
| Nitrate+Nitrite Nitrate and Nitrite (as N) | 0.092 | | 0.050 | mg/L | | 22-OCT-17 | |
| Nitrite in Water by IC Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 07-OCT-17 | R3862642 |
| | | | | | | | |
| | | | | | | | |

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

L2002737 CONTD....

Reference Information

PAGE 4 of 5 Version: FINAL

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 IncubO2 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 9223I

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

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-WP Water Phosphorus, Total 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 $0.45\,\mathrm{micron}$ 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 |
|----------------------------|--|
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA |
| CL | ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA |
| | |

Chain of Custody Numbers:

L2002737 CONTD....

Reference Information

PAGE 5 of 5 Version: FINAL

Test Method References:

ALS Test Code Matrix Method Reference** **Test Description**

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.



Workorder: L2002737

Report Date: 22-OCT-17

Page 1 of 3

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 17th AVE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--|--------|--------------------------|--------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3853344 | | | | | | | | |
| WG2637613-3 DUP Biochemical Oxygen Del | mand | L2002737-1 <2.0 | <2.0 | RPD-NA | mg/L | N/A | 20 | 07-OCT-17 |
| WG2637613-2 LCS Biochemical Oxygen Der | mand | | 98.8 | | % | | 85-115 | 07-OCT-17 |
| WG2637613-1 MB Biochemical Oxygen Der | mand | | <2.0 | | mg/L | | 2 | 07-OCT-17 |
| EC-MPN-CL | Water | | | | | | | |
| Batch R3848747 WG2634164-1 MB MPN - E. coli | | | <1 | | MPN/100mL | | 1 | 05-OCT-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3848759 WG2634192-1 MB Coliform Bacteria - Feca | I | | <1 | | CFU/100mL | | 1 | 05-OCT-17 |
| NH3-F-CL | Water | | | | | | | |
| Batch R3862719 WG2645726-7 DUP Ammonia, Total (as N) | | L2002737-3 <0.050 | <0.050 | RPD-NA | mg/L | N/A | 20 | 22-OCT-17 |
| WG2645726-6 LCS Ammonia, Total (as N) | | | 92.7 | | % | | 85-115 | 22-OCT-17 |
| WG2645726-5 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 22-OCT-17 |
| WG2645726-8 MS Ammonia, Total (as N) | | L2002737-3 | 94.1 | | % | | 75-125 | 22-OCT-17 |
| NO2-IC-N-CL | Water | | | | | | | |
| Batch R3862642 WG2645672-11 LCS | | | 400.0 | | 0/ | | | |
| Nitrite (as N) WG2645672-10 MB | | | 102.9 | | % | | 90-110 | 07-OCT-17 |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 07-OCT-17 |
| NO3-IC-N-CL | Water | | | | | | | |
| WG2645672-11 LCS Nitrate (as N) | | | 101.8 | | % | | 90-110 | 07-OCT-17 |
| WG2645672-10 MB | | | | | | | | |



Workorder: L2002737

Report Date: 22-OCT-17 Page 2 of 3

| | | | | • | | | 9 |
|---|------------------------------|---------|-----------|-------|-----|--------|-----------|
| Test Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
| NO3-IC-N-CL Water | | | | | | | |
| Batch R3862642 WG2645672-10 MB Nitrate (as N) | | <0.020 | | mg/L | | 0.02 | 07-OCT-17 |
| P-T-COL-WP Water | | | | | | | |
| Batch R3851195 WG2634621-2 LCS | | | | | | | |
| Phosphorus (P)-Total | | 99.8 | | % | | 80-120 | 10-OCT-17 |
| WG2634621-1 MB Phosphorus (P)-Total | | <0.010 | | mg/L | | 0.01 | 10-OCT-17 |
| PO4-DO-COL-CL Water | | | | | | | |
| Batch R3847516 | | | | | | | |
| WG2632900-7 DUP Orthophosphate-Dissolved (as F | L2002737-1 P) 1.14 | 1.12 | | mg/L | 1.8 | 20 | 05-OCT-17 |
| WG2632900-6 LCS Orthophosphate-Dissolved (as F | P) | 101.1 | | % | | 80-120 | 05-OCT-17 |
| WG2632900-5 MB Orthophosphate-Dissolved (as F | P) | <0.0050 | | mg/L | | 0.005 | 05-OCT-17 |
| TSS-CL Water | • | | | | | | |
| Batch R3854072 | | | | | | | |
| WG2637405-5 LCS Total Suspended Solids | | 92.8 | | % | | 85-115 | 11-OCT-17 |
| WG2637405-4 MB Total Suspended Solids | | <3.0 | | mg/L | | 3 | 11-OCT-17 |
| | | | | | | | |

Workorder: L2002737 Report Date: 22-OCT-17 Page 3 of 3

Legend:

| ALS Control Limit (Data Quality Objectives) |
|---|
| Duplicate |
| Relative Percent Difference |
| Not Available |
| Laboratory Control Sample |
| Standard Reference Material |
| Matrix Spike |
| Matrix Spike Duplicate |
| Average Desorption Efficiency |
| Method Blank |
| Internal Reference Material |
| Certified Reference Material |
| Continuing Calibration Verification |
| Calibration Verification Standard |
| |

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

| 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 predetermined 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 04, 2017

Final Report

October 16, 2017

Submitted to: **ALS Environmental**

Calgary, AB



SAMPLE INFORMATION

| Comple ID/ | | Dates | | Dessint |
|---|-----------------------|-----------------------|------------------------------|------------------------|
| Sample ID/ - Internal ID | Collected | Received | Enterococcus test initiation | Receipt temperature |
| L2002737-1 WWTP EFFLUENT - UV TROUGH/ | 04-Oct-17 at 1400h | 05-Oct-17 at 1230h | 05-Oct-17 at 1245h | 13.0°C |
| 1718-0284-01 | | | | |
| L2002737-2 COLUMBIA RIVER UPSTREAM/ 1718-0284-02 | 04-Oct-17 at 1500h | 05-Oct-17 at 1230h | 05-Oct-17 at 1245h | 13.0°C |
| L2002737-3 | | | | |
| COLUMBIA RIVER DOWN STREAM/ | 04-Oct-17 at 1500h | 05-Oct-17 at 1230h | 05-Oct-17 at 1245h | 13.0°C |
| 1718-0284-03 | | | | |
| L2002737-4 COLUMBIA RIVER SIDE CHANNEL/ 1718-0284-04 | 04-Oct-17 at 1500h | 05-Oct-17 at 1230h | 05-Oct-17 at 1245h | 13.0°C |

TEST TYPES

• Enterococcus enumeration test

RESULTS

Microbial test results

| Comple ID | MPN/100 mL | |
|--|--------------|--|
| Sample ID | Enterococcus | |
| L2002737-1 WWTP EFFLUENT - UV TROUGH | <1.0 | |
| L2002737-2 COLUMBIA RIVER UPSTREAM | 9.5 | |
| L2002737-3 COLUMBIA RIVER DOWN STREAM | 2.0 | |
| L2002737-4 COLUMBIA RIVER SIDE CHANNEL | <1.0 | |

MPN = Most Probable Number

Reference: 1718-0284



Opplalaret

QA/QC

| QA/QC summary | Enterococcus | |
|---------------------|--------------|--|
| Protocol deviations | None | |
| Control performance | Acceptable | |
| Test performance | Valid | |

Report By:

Harjot Sandhu, BSc

Harjot Sandhu

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

Reference: 1718-0284

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



Quanti-Tray Bench Sheet - Enterococcus

| | Client AUSIOG Reference | H820-81t1 |
|--|--|-----------|
| Test Initiation Date: $7013/10105$ Time: 1245 Techician: $7w/HS$ | Reagent used: Enterolert™ Reagent Lot#/Expiry: AN 150 2016/16 Comments: | i |
| Thermometer Serial #: はいっつろりまう Incubator #: 子 Incubator Temperature: サ | Quanti Tray 2000 Lot#/Expiry: FL014 7018/06/12 | |
| Results - 24 Hour Incubation Date: 20 3/10/06 Time: | Time: 1245 Technician: HS | |
| Incubator Temp: 나 (must be 41 ± 0.5°C) | | |
| # Positive Large Wells: | CTL -01 -02 -04 | |
| # Positive Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): Most Bookship Nices | 00 0 3 | |
| Results - 28 Hour Incubation | <1.0 <1.0 sed 2.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1 | |
| Date: Time: | Technician: | |
| Incubator Temp: (must be 41 ± 0.5°C) | Enterococci (Fluorescent) | |

Revised by LO on 2015/07/09 Written by KS on 2006/07/11

Nautilus Environmental (Calgary)

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

Confirmed Positive Small Wells (Tray 2000 only):

Confirmed Positive Large Wells:

Most Probable Number at 28 hours:

F

H

File: ENT



APPENDIX B – Chain-of-custody form



Subcontract Request Form

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

| | ol report and invoice: PO# <u>L200</u> 0 be provided with your final results | | |
|---|--|-----------------------|------------------|
| Please see enclosed 4 sa | mple(s) in 4 Container(s) | | |
| SAMPLE NUMBER ANALYT | ICAL REQUIRED | DATE SAMPLED DUE DATE | Priority Flag |
| L2002737-1 WWTP EFFLUENT - UV TROUGH | | 10/4/2017 2pn | |
| | ccus (ENTERO-HQ 1) | 10/17/2017 | , ' |
| L2002737-2 COLUMBIA RIVER UPSTREAM | | 10/4/2017 3Pr | ζ, |
| Enteroco | ccus (ENTERO-HQ 1) | 10/17/2017 | · |
| L2002737-3 COLUMBIA RIVER DOW STREAM | N | 10/4/2017 307 | ~ |
| | ccus (ENTERO-HQ 1) | 10/17/2017 | |
| L2002737-4 COLUMBIA RIVER SIDE CHANNEL | | 10/4/2017 3/ | ~ |
| Enteroco | ccus (ENTERO-HQ 1) | 10/17/2017 | |
| Subcontract Info Contact: | John Forbes (403) 291-9897 | | |
| Analysis and reporting info contact: | Nancy Sonompil 2559 29 STREET NE CALGARY,AB T1Y 7B5 | | |
| | Phone: (403) 291-9897 | Email: Nancy.Sonompil | @alsglobal.com |
| Please email confirmation of rece | eipt to: Nancy.Sonompi | @alsglobal.com | |
| Shipped By: | Date Shipped: | <u>Ca</u> | No SII |
| Received By: | Date Received: | 8017/10/05 | 4 x 250m L |
| Verified By: | Date Verified: | 1230 | Ja200 |
| | Temperature: | | 13°C |
| Sample Integrity Issues: | | | |



END OF REPORT

ALS) Enuire



Chain of Custody / Analytical Reg test Form Canada Toll Free: 1 800 658 9878 www.alsglobal.com

| | COC+ |
|--|------|
| | |

| Page | 1 of | 1 |
|------|------|---|

| Report To | | Report Fo | rmat / Distribut | tion | | Servi | ce R | eque: | sted | Push | for rou | itine a | nalysi | s subje | ot to a | vailabi | lit/) |
|------------------|---|------------------------|----------------------|--|--|---|--------|----------|---------|----------|----------|---------|----------------|------------|----------|-------------------|---------------------------|
| Company: | Kicking Horse Mountain Resort Utility Corporation | ☑ Standard | Other | | | Regular (Standard Turnaround Times - Business Days) | | | | | | | | | | | |
| Contact: | Travis Jobin | rdF | Excel | Digita! | ital Fax Priority (2-4 Business Pays) - 50% Surcharge - Contact ALS to Confirm | | | | | | | ofirm T | 4,5 | | | | |
| Address: | 1500 Kicking Horse Trail | Email 1: | tjobin@kickingh | norseresort.com | | O im | ergene | cy (1-2 | Bi s. D | ays) - i | 100% s | ourchar | ga - Co | antact A | LS to C | onfirm 1 | <u> </u> |
| | | Email 2. | pmajer@skircr | com | | C Sa | me Day | y or Wi | eltend | Emerg | ency - | Corrac | t ALS to | o Confir | m TAT | | |
| Phone: | 250-344-8442 Fax: | Email 3: | mskyring@kick | inghorseresort.c | <u>om</u> | i | | | | | <u> </u> | sis Ru | | | | | |
| invoice To | Same as Report ? [] Yes . [] No | Client / Pr | roject Informati | on | | Ple | ase ii | ndica | e bel | ow Fil | tered | , Pres | ervec | l or bo | th (F. | P, F/I | ' |
| Hardcopy of I | nvoice with Report? 🔲 Yes 💹 No | Job#: | Week - 20 | 17 Fall EMS pro | gram - WW | | | ļ | | | | | | | | | |
| Company: | Resorts of the Canadian Rockies | FO / AFE: | | | | <u> </u> | | | | | | | | i | | | |
| Contact. | Patrick Majer | LSD: | | | | | | | | | | | ļ | | į | | |
| Address: | 1505 - 17th Ave SV/ Calgary AB | | | | | | | | · | | | | | , | | | Je. |
| Phone: | Fax: | Quote #: | | | |] j | | | | | | | l | , | . 1 | | |
| | Vcrk Order# | *_ Al∟S *_ Contact: | LS | Sampler: | TJ/MS | | | ı | | | | | oliform | in 8 | | | Number of Confainers |
| ∵Sample 4 | | | Date (dd-mnim-yy) | Time (hhinan) | Sample Type | BOD5 | TSS | N-NH4 | ECM-N | N-NO2 | Total P | Ortho F | Fecal Coliform | Enteroconi | fi. Coli | | Nembe |
| | WWTP Effluent - UV trough Temp: 14 pH: 66 | | OCT4 | ZPM | Water | X | Х | Х | X | Х | Х | Х | Х | х | X | | 5 |
| 17.77 | | | OCTY | 304 | :Vater | | Х | Х | X | Х | Х | χ | X | х | X | 1 | 4 |
| 157% | | · | OCT4 | 3PM | Water | j — – j | Х | х | X | Х | X | X | Х | х | Х | | 4 |
| | Columbia River Side Channel Temp: (() pH: 80 | | OCTY | 3/1 | Water | - | × | X | | х | х | Х | Х | X | X | \dashv | 4 |
| 200 | | | | <u> </u> | | | | | | | | | | | | $-\dagger$ | |
| 14-5-61 | | | | | <u> </u> | | | | | | | | | | | | |
| 1124 | | | | | | i — | | | | | | | | | | | |
| F 54.33 | | | | | | | | | | [| | | | | | | |
| 1000 | | | <u></u> | | J | | | | | | | | | | | | |
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| 1011 | | | <u> </u> | | | <u> </u> | | <u> </u> | | | | ļ | | | + | | |
| | (<u> </u> | | L | | | <u> </u> | | | | | | L | | L | أ | | |
| | Special Instructions / Regulations with water or la | ind use (CCM | 1E-Freshwater / | Aquatic Life/BC | CSR - Commerci | al/AB | Tier | 1 - Ne | tura: | etc) | / Haz | arde | ıs De | tails | | | |
| | | | | | | | | | | | | | | | | | |
| | Failure to complete a | Il cortions o | fthic form may | dolay analysis | Please fill in this | form | 1.50 | SIGN V | | | | | | | | | |
| l | By the use of this form the user ack | | | | | | | | | Exc | el tab | ١. | | | | | |
| | Also provided on another Excel tab are the ALS location | | | | | | | | | | | | mon a | analy: | ses. | | |
| 15.00 mg | SHIRNENT RELEASE (client use) > 1 | | | | | | | | | | | | | | | y) 75 | 44 |
| Released by | | | Date: | Time: | Temperature: | | fied b | | | Date | | | Time | | | Obser | yations: |
| 1 | i i | Y\\{I\\) | 520+11 | 7 -7-11) | 3` •c | | | | | | | | | | | Yes /((!f Yes | יי עמ <u>ו</u> add SIF |



KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 11-OCT-17

Report Date: 24-OCT-17 16:30 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L2004966

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK 4 - 2017 FALL EMS PROGRAM - WW

C of C Numbers: Legal Site Desc:

Nancy Sonompil, B. Sc. Account Manager

 $[This\ report\ shall\ not\ be\ reproduced\ except\ in\ full\ without\ the\ written\ authority\ of\ the\ Laboratory.]$

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



L2004966 CONTD.... PAGE 2 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--|------------|--------|-----------|-----------|-----------|----------------------|
| L2004966-1 WWTP EFFLUENT - UV TROUGH | | | | | | | |
| Sampled By: TJ/MS on 10-OCT-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.066 | | 0.050 | mg/L | | 23-OCT-17 | R3864236 |
| Biochemical Oxygen Demand | 2.6 | | 2.0 | mg/L | | 11-OCT-17 | R3856969 |
| Orthophosphate-Dissolved (as P) | 0.818 | DLHC | 0.050 | mg/L | | 11-OCT-17 | R3852708 |
| Enterococcus | See Attached | | | | | 12-OCT-17 | R3859988 |
| Coliform Bacteria - Fecal | 1 | | 1 | CFU/100mL | | 11-OCT-17 | R3853236 |
| MPN - E. coli | <1 | | 1 | MPN/100mL | | 11-OCT-17 | R3853209 |
| Phosphorus (P)-Total | 1.10 | | 0.010 | mg/L | | 13-OCT-17 | R3853635 |
| Total Suspended Solids | 4.3 | | 3.0 | mg/L | | 17-OCT-17 | R3860081 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 23.7 | | 0.020 | mg/L | | 11-OCT-17 | R3864287 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 23.8 | | 0.050 | mg/L | | 24-OCT-17 | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | 0.041 | | 0.010 | mg/L | _ | 11-OCT-17 | R3864287 |
| L2004966-2 COLUMBIA RIVER UPSTREAM | | | | | | | |
| Sampled By: TJ/MS on 10-OCT-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 23-OCT-17 | R3864236 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 11-OCT-17 | R3852708 |
| Enterococcus | See Attached | | | | | 12-OCT-17 | R3859988 |
| Coliform Bacteria - Fecal | 52 | | 1 | CFU/100mL | | 11-OCT-17 | R3853236 |
| MPN - E. coli | 12 | OCR | 1 | MPN/100mL | | 11-OCT-17 | R3853209 |
| Phosphorus (P)-Total | 0.015 | | 0.010 | mg/L | | 13-OCT-17 | R3853635 |
| Total Suspended Solids | 7.7 | | 3.0 | mg/L | | 17-OCT-17 | R3860081 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.084 | | 0.020 | mg/L | | 11-OCT-17 | R3864287 |
| Nitrate+Nitrite | 0.004 | | 0.050 | | | 04 007 47 | |
| Nitrate and Nitrite (as N) | 0.084 | | 0.050 | mg/L | | 24-OCT-17 | |
| Nitrite in Water by IC Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 11-OCT-17 | R3864287 |
| | \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | | 0.010 | 1119/ = | | 11 301-17 | 110004201 |
| L2004966-3 COLUMBIA RIVER DOWN STREAM Sampled By: TJ/MS on 10-OCT-17 @ 15:00 | | | | | | | |
| Sampled By: TJ/MS on 10-OCT-17 @ 15:00 Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 23-OCT-17 | R3864236 |
| Orthophosphate-Dissolved (as P) | <0.050 | | 0.050 | mg/L | | 11-OCT-17 | R3852708 |
| Enterococcus | See Attached | | 0.0000 | IIIg/L | | 12-OCT-17 | R3859988 |
| Coliform Bacteria - Fecal | 53 | | 1 | CFU/100mL | | 11-OCT-17 | R3853236 |
| MPN - E. coli | 19 | OCR | 1 | MPN/100mL | | 11-0CT-17 | R3853236 R3853209 |
| Phosphorus (P)-Total | 0.013 | | 0.010 | mg/L | | 13-OCT-17 | R3853635 |
| Total Suspended Solids | 4.3 | | | _ | | 13-0CT-17 | |
| NO2, NO3 and Sum of NO2/NO3 | 4.3 | | 3.0 | mg/L | | 17-001-17 | R3860081 |
| Noz, Nos and Sum of Noz/Nos Nitrate in Water by IC | | | | | | | |
| Nitrate in Water by iC Nitrate (as N) | 0.093 | | 0.020 | mg/L | | 11-OCT-17 | R3864287 |
| Nitrate+Nitrite | 0.000 | | 0.020 | | | | |
| Nitrate and Nitrite (as N) | 0.093 | | 0.050 | mg/L | | 24-OCT-17 | |

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

L2004966 CONTD.... PAGE 3 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| L2004966-4 COLUMBIA RIVER SIDE CHANNEL Sampled By: TJ/MS on 10-OCT-17 @ 15:00 Matrix: WATER | Batch | Analyzed | Extracted | Units | D.L. | Qualifier* | Result | Sample Details/Parameters |
|--|----------|------------|-----------|----------|--------|------------|--------|--|
| Sampled By: TJ/MS on 10-OCT-17 @ 15:00 Matrix: WATER Nitrite in Water by IC Nitrite (as N) <0.010 0.010 mg/L 11-OCT-17 R | | | | | | | | L 2004966-3 COLUMBIA BIVER DOWN STREAM |
| Matrix: WATER Nitrite in Water by IC Nitrite (as N) <0.010 0.010 mg/L 11-OCT-17 R L2004966-4 COLUMBIA RIVER SIDE CHANNEL Sampled By: TJ/MS on 10-OCT-17 @ 15:00 TJ/MS on 10-OCT-17 @ 15:00 Matrix: WATER 23-OCT-17 RATER WATER 11-OCT-17 RATER WATER 12-OCT-17 RATER WATER 11-OCT-17 RATER WATER MATER | | | | | | | | |
| Nitrite in Water by IC Nitrite (as N) < 0.010 0.010 mg/L 11-OCT-17 R L2004966-4 COLUMBIA RIVER SIDE CHANNEL Sampled By: TJ/MS on 10-OCT-17 @ 15:00 Sepanded By: TJ/MS on 10-OCT-17 @ 15:00 0.050 0.050 mg/L 23-OCT-17 R 23-OCT-17 R 0.0050 0.0050 mg/L 11-OCT-17 R 11-OCT | | | | | | | | |
| Nitrite (as N) | | | | | | | | |
| Sampled By: TJ/MS on 10-OCT-17 @ 15:00 Matrix: WATER Miscellaneous Parameters Ammonia, Total (as N) <0.050 0.050 mg/L 23-OCT-17 R O.0050 O.0050 O.0050 mg/L O.0050 O.0050 O.0050 mg/L O.0050 O.0050 O.0050 O.0050 mg/L O.0050 O.0 | R3864287 | 11-OCT-17 | | mg/L | 0.010 | | <0.010 | Nitrite (as N) |
| Matrix: WATER Miscellaneous Parameters Ammonia, Total (as N) <0.050 0.050 mg/L 23-OCT-17 R Orthophosphate-Dissolved (as P) <0.0050 | | | | | | | | |
| Miscellaneous Parameters Ammonia, Total (as N) <0.050 0.050 mg/L 23-OCT-17 R Orthophosphate-Dissolved (as P) <0.0050 | | | | | | | | |
| Ammonia, Total (as N) <0.050 | | | | | | | | |
| Orthophosphate-Dissolved (as P) <0.0050 | | | | | | | | |
| Enterococcus | R3863475 | | | | | | | |
| Coliform Bacteria - Fecal 7 | R3852708 | | | mg/L | 0.0050 | | | |
| MPN - E. coli 6 OCR 1 MPN/100mL mg/L mg/L 11-OCT-17 R R Phosphorus (P)-Total 0.017 0.010 mg/L 13-OCT-17 R 13-OCT-17 R R NO2, NO3 and Sum of NO2/NO3 4.3 3.0 mg/L 17-OCT-17 R R Nitrate in Water by IC Nitrate (as N) 0.178 0.020 mg/L 11-OCT-17 R R Nitrate and Nitrite (as N) 0.178 0.050 mg/L 24-OCT-17 R 24-OCT-17 R Nitrite in Water by IC 0.050 mg/L 24-OCT-17 R 0.050 mg/L 0.050 m | R3859988 | | | 0511/400 | | | | |
| Phosphorus (P)-Total 0.017 0.010 mg/L 13-OCT-17 R Total Suspended Solids 4.3 3.0 mg/L 17-OCT-17 R NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC 0.020 mg/L 11-OCT-17 R Nitrate (as N) 0.178 0.050 mg/L 24-OCT-17 Nitrate and Nitrite (as N) 0.178 0.050 mg/L 24-OCT-17 Nitrite in Water by IC 0.050 mg/L 24-OCT-17 | R3853236 | | | | | 000 | | |
| Total Suspended Solids 4.3 3.0 mg/L 17-OCT-17 R NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC Nitrate (as N) 0.178 0.020 mg/L 11-OCT-17 R Nitrate+Nitrite Nitrate and Nitrite (as N) 0.178 0.050 mg/L 24-OCT-17 Nitrite in Water by IC | R3853209 | | • | | | UCR | | |
| NO2, NO3 and Sum of NO2/NO3 0.020 mg/L 11-OCT-17 R Nitrate (as N) 0.178 0.020 mg/L 11-OCT-17 R Nitrate+Nitrite 0.050 mg/L 24-OCT-17 Nitrite in Water by IC 0.050 mg/L 24-OCT-17 | R3853635 | | | _ | | | | |
| Nitrate in Water by IC 0.020 mg/L 11-OCT-17 R Nitrate (as N) 0.178 0.050 mg/L 24-OCT-17 R Nitrate and Nitrite (as N) 0.178 0.050 mg/L 24-OCT-17 24-OCT-17 Nitrite in Water by IC 0.050 mg/L 0.050 | R3860081 | 17-OC [-17 | | mg/L | 3.0 | | 4.3 | |
| Nitrate (as N) 0.178 0.020 mg/L 11-OCT-17 R Nitrate+Nitrite 0.050 mg/L 24-OCT-17 Nitrate and Nitrite (as N) 0.050 mg/L 24-OCT-17 Nitrite in Water by IC 0.050 mg/L 0.050 | | | | | | | | |
| Nitrate and Nitrite (as N) 0.178 0.050 mg/L 24-OCT-17 Nitrite in Water by IC 24-OCT-17 | R3864287 | 11-OCT-17 | | mg/L | 0.020 | | 0.178 | Nitrate (as N) |
| Nitrite in Water by IC | | 24 OCT 47 | | m c /l | 0.050 | | 0.470 | |
| | | 24-001-17 | | mg/L | 0.050 | | 0.178 | |
| | R3864287 | 11-OCT-17 | | mg/L | 0.010 | | <0.010 | |
| | | | | | | | | |

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

L2004966 CONTD....

Reference Information

PAGE 4 of 5 Version: FINAL

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 IncubO2 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-WP Water Phosphorus, Total 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 |
|-----------------------------------|--|
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA |
| CL | ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA |

L2004966 CONTD....

Reference Information

PAGE 5 of 5 Version: FINAL

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.



Workorder: L2004966

Report Date: 24-OCT-17

Page 1 of 3

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|--------|--------------------------|--------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3856969 WG2640689-5 LCS Biochemical Oxygen De | mand | | 100.7 | | % | | 85-115 | 11-OCT-17 |
| WG2640689-4 MB Biochemical Oxygen De | mand | | <2.0 | | mg/L | | 2 | 11-OCT-17 |
| EC-MPN-CL | Water | | | | | | | |
| Batch R3853209 WG2637990-1 MB MPN - E. coli | | | <1 | | MPN/100mL | | 1 | 11-OCT-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3853236 WG2638056-1 MB Coliform Bacteria - Feca | ıl | | <1 | | CFU/100mL | | 1 | 11-OCT-17 |
| NH3-F-CL | Water | | | | | | | |
| Batch R3863475 | | | | | | | | |
| WG2646559-2 LCS Ammonia, Total (as N) | | | 110.6 | | % | | 85-115 | 23-OCT-17 |
| WG2646559-1 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 23-OCT-17 |
| Batch R3864236 | | | | | | | | |
| WG2647022-3 DUP Ammonia, Total (as N) | | L2004966-1 0.066 | 0.065 | | mg/L | 0.6 | 20 | 23-OCT-17 |
| WG2647022-2 LCS Ammonia, Total (as N) | | | 100.0 | | % | | 85-115 | 23-OCT-17 |
| WG2647022-1 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 23-OCT-17 |
| WG2647022-4 MS Ammonia, Total (as N) | | L2004966-1 | 103.4 | | % | | 75-125 | 23-OCT-17 |
| NO2-IC-N-CL | Water | | | | | | | |
| Batch R3864287 | | | | | | | | |
| WG2647054-11 DUP Nitrite (as N) | | L2004966-2 <0.010 | <0.010 | RPD-NA | mg/L | N/A | 20 | 11-OCT-17 |
| WG2647054-10 LCS Nitrite (as N) | | | 103.0 | | % | | 90-110 | 11-OCT-17 |
| WG2647054-9 MB Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 11-OCT-17 |
| WG2647054-12 MS | | L2004966-2 | | | - | | | |



Workorder: L2004966

Report Date: 24-OCT-17 Page 2 of 3

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--|-----------|-------------------------|---------|-----------|-------|-----|--------|-----------|
| NO2-IC-N-CL Batch R3864287 WG2647054-12 MS Nitrite (as N) | Water | L2004966-2 | 112.5 | | % | | 75-125 | 11-OCT-17 |
| NO3-IC-N-CL | Water | | | | | | | |
| Batch R3864287 WG2647054-11 DUP Nitrate (as N) | | L2004966-2 0.084 | 0.081 | | mg/L | 4.4 | 20 | 11-OCT-17 |
| WG2647054-10 LCS Nitrate (as N) | | | 101.6 | | % | | 90-110 | 11-OCT-17 |
| WG2647054-9 MB Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 11-OCT-17 |
| WG2647054-12 MS Nitrate (as N) | | L2004966-2 | 110.2 | | % | | 75-125 | 11-OCT-17 |
| P-T-COL-WP Batch R3853635 | Water | | | | | | | |
| WG2637897-10 LCS Phosphorus (P)-Total | | | 99.6 | | % | | 80-120 | 13-OCT-17 |
| WG2637897-9 MB Phosphorus (P)-Total | | | <0.010 | | mg/L | | 0.01 | 13-OCT-17 |
| PO4-DO-COL-CL | Water | | | | | | | |
| Batch R3852708 WG2637111-2 LCS Orthophosphate-Dissolve | ed (as P) | | 95.0 | | % | | 80-120 | 11-OCT-17 |
| WG2637111-1 MB Orthophosphate-Dissolve | ed (as P) | | <0.0050 | | mg/L | | 0.005 | 11-OCT-17 |
| TSS-CL | Water | | | | | | | |
| Batch R3860081 WG2641870-6 DUP Total Suspended Solids | | L2004966-1 4.3 | 5.0 | | mg/L | 14 | 20 | 17-OCT-17 |
| WG2641870-5 LCS Total Suspended Solids | | | 97.6 | | % | | 85-115 | 17-OCT-17 |
| WG2641870-4 MB Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 17-OCT-17 |

Workorder: L2004966 Report Date: 24-OCT-17 Page 3 of 3

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 |

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

| 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 predetermined 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 10, 2017

Final Report

October 19, 2017

Submitted to: ALS Environmental

Calgary, AB



SAMPLE INFORMATION

| Carrella ID/ | | Dates | | | | | |
|--|-----------------------|-----------------------|------------------------------|------------------------|--|--|--|
| Sample ID/ Internal ID | Collected | Received | Enterococcus test initiation | Receipt temperature | | | |
| L2004966-1 WWTP EFFLUENT - UV TROUGH/ 1718-0311-01 | 10-Oct-17 at 1400h | 11-Oct-17 at 1100h | 11-Oct-17 at 1300h | 7.9°C | | | |
| L2004966-2 COLUMBIA RIVER UPSTREAM/ 1718-0311-02 | 10-Oct-17 at 1500h | 11-Oct-17 at 1100h | 11-Oct-17 at 1300h | 7.1°C | | | |
| L2004966-3 COLUMBIA RIVER DOWN STREAM/ 1718-0311-03 | 10-Oct-17 at 1500h | 11-Oct-17 at 1100h | 11-Oct-17 at 1300h | 6.9°C | | | |
| L2004966-4 COLUMBIA RIVER SIDE CHANNEL/ 1718-0311-04 | 10-Oct-17 at 1500h | 11-Oct-17 at 1100h | 11-Oct-17 at 1300h | 7.9°C | | | |

TEST TYPES

• Enterococcus enumeration test

RESULTS

Microbial test results

| Sample ID | MPN/100 mL | |
|--|--------------|--|
| Sample ID | Enterococcus | |
| L2004966-1 WWTP EFFLUENT - UV TROUGH | <1.0 | |
| L2004966-2 COLUMBIA RIVER UPSTREAM | 41.4 | |
| L2004966-3 COLUMBIA RIVER DOWN STREAM | 24.1 | |
| L2004966-4 COLUMBIA RIVER SIDE CHANNEL | 4.1 | |

MPN = Most Probable Number

Reference: 1718-0311



QA/QC

Reference: 1718-0311

| QA/QC summary | Enterococcus |
|---------------------|--------------|
| Protocol deviations | None |
| Control performance | Acceptable |
| Test performance | Valid |



Report By:

Harjot Sandhu, BSc

Harjot Saridhu

Biologist

Reviewed By:

Tamara McClure, BSc

Quality Assurance Manager

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

Reference: 1718-0311

Cochrane, W.G. 1950. Estimation of Bacterial Densities by Means of the "Most Probable Number". Biometrics 5: 105-116.

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

Quanti-Tray Bench Sheet - Enterococcus

| Client 415166 Reference 1318-0311 | Date: 2014/10/11 Reagent used: Enterolert** Dilution Factor: Peagent Lot#/Expiry: EN523 2018 05/18 Comments: | 90 ミル子ら (must be 41 ± 0.5°C) | 4 Hour Incubation Date: こい 3/10/12 Time: (3なの Technician: けン | # Positive Large Wells: # Positive Large Wells: # Positive Large Wells: # Positive Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Confirmed Positive Large Wells: # Confirmed Positive Large Wells: # Confirmed Positive Small Wells Gray 2000 only: # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Small Wells (Tray 2000 only): # Confirmed Positive Small Wells (Tray 2000 only): # Confirmed Positive Small Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Confirmed Positive Wells (Tray 2000 only): # Carry |
|-----------------------------------|--|--|--|---|
| Test Initiation | ech | Thermometer Serial #: 10 Incubator #: 10 Incubator #: 10 Incubator Temperature: 10 Incubator Tem | Results - 24 Hour Incubation Date: 26 | # Positive Large Wells: # Ambiguous Large Wells: # Ambiguous Large Wells: # Positive Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): # Confirmed Positive Large Wells: # Confirmed Positive Small Wells (Most Probable Number at 28 hour Confirmed positive wells includes the At 28 hours only score marked ambig |

SH



APPENDIX B – Chain-of-custody form





Subcontract Request Form

Subcontract To:

NOTES:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY, AB T2H 2K1

2017/10/11 AP 1100 drappost N 1/S goodam.

| Please see enclosed 4 sar | mple(s) in 4 Container(s) | . , |
|--------------------------------------|-------------------------------------|-------------------------------------|
| SAMPLE NUMBER ANALYT | ICAL REQUIRED | DATE SAMPLED Prior DUE DATE Flag |
| L2004966-1 WWTP EFFLUENT - UV | | 10/10/2017 |
| | ccus (ENTERO-HQ 1) | 10/23/2017 @ 20 |
| L2004966-2 COLUMBIA RIVER | | 10/10/2017 |
| UPSTREAM Enteroco | ccus (ENTERO-HQ 1) | 10/23/2017 @ 3 |
| 12004066-2 COLUMBIA BIVED DOW | N | 10/10/2017 |
| STREAM Enteroco | ccus (ENTERO-HQ 1) | 10/23/2017 @ 3 |
| L2004966-4 COLUMBIA RIVER SIDE | | 10/10/2017 |
| | ccus (ENTERO-HQ 1) | 10/23/2017 € 3 |
| Subcontract Info Contact: | John Forbes (403) 291-9897 | |
| Analysis and reporting info contact: | Nancy Sonompil 2559 29 STREET NE | |
| | CALGARY,AB T1Y 7B5 | |
| | Phone: (403) 291-9897 | Email: Nancy. Sonompil@alsglobal.co |
| Please email confirmation of rece | ipt to: Nancy.Sonomp | il@alsglobal.com |
| Shipped By: | Date Shipped: | |
| Received By: | Date Received: | |
| Verified By: | Date Verified: | |
| | Temperature: | |



END OF REPORT

ALS Environmental

Chain of Cristedy / Analytical Rec Canada Toll Free: 1 803 668 www.alsglobal.com



Page ___i_of __1

| Report To | Report Format / Distribution | | | | | | | | | | | ; ai | nalysis | rubje | st to ava | allability ^v | |
|--|---|-----------------|--|------------------|----------------|-------|---------------------|--------|----------|---------|----------|---------|---------------|-------------------------|-----------|-------------------------|----------------------|
| Company: | Kicking Horse Mountain Resort Utility Corporation | ☑ Sti-ndard | Stindard []Other | | | | gular (S | Standa | rd Term | are. nd | Times | - Busi. | ess Da | ys) | | | |
| Contact: | Travis Jobin | PDF | PDF | | | | erity (2 | -1 Bus | iness Da | Pys) | 10% SI | urcharg | e - Con | tact A∟ | S to Conf | ire TAT | |
| Acdress: | 1500 Kicking Horse Trail | Emeil 1: | Emeil 1: tjobin@kickinghorseresort.com | | | C) Em | ergeno | y (1-2 | Bus. Da | ıys) 1 | 00% S | Surchar | ga - Co | ntarit A | LS to Cor | film TAT | |
| | | Email 2: | pmajer@skircr.c | <u>om</u> | | Sai | me Day | or We | ekend | imeig: | incy - (| Contact | ALS to | Cunfin | n TAT | |] |
| Phone: | 250-344-8442 Fax; | Email 3: | mskyring@kickir | nghorseresort.co | <u>m</u> | | | | | A | naiys | is Re | ques | } | | | |
| Invoice To | Same as Report ? Yes 7 No | Client / Pr | oject Informatio | n | | Ple | ase in | rdicat | e belo | w Fili | ered, | Pres | erved | or po | th (F, F | , F/P) | |
| Hardcopy of I | nvoice with Report? 🗍 Yes 🔃 No | Job# | Week 4 - 201 | 7 Fall EMS prog | tam - MM | | | | | | | | | | | |] [|
| Сотрану: | Resorts of the Canadian Rockies | FO / AFE: | | | | | ĺ | | | | | | | ļ | / | | |
| Contact: | Patrick Majer | İLSD: | | | | | ł | | | ľ | | | | į/ | / | | |
| Address: | 1505 - 17th Ave SW Calgary AB | <u>L</u> | | | | | i | | | ļ | | ļ | | - 1 | İ | | lers |
| Phone. | Fax ⁻ | Quote #: | | | | | ĺ | | | | | | | Λħ | | | fair |
| Lab V | Vork Order# | ALS Contact: | LS | Sampler: | TJ/MS | | j | | Ì | | | | oliform | V S | | | Number of Containers |
| Sample : | Sample Ide:itification | | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | BODS | TSS | N-JH4 | N-N03 | N-NO2 | Total | Ortho P | Fecal Colifor | Enteroco | COI | | Numbe |
| | WWTP Effluent - UV frough Temp: (3 pH: 68 | | OCT 10 | 291 | Water | Х | $\bar{\mathbf{x}}$ | Х | Х | Х | Х | Х | Х | X | Х | | 5 |
| | Columbia River Upstream Temp: 7 pH: 7,8 | | 11 | 3 PM | Water | | х | X | х | х | × | х | x | X | Х | | 4 |
| | Columbia River Down stream Temp: 7 pH:-1, & | | 11 | 3 PM | Water | | х | Х | Х | Х | Х | Х | Х | Х | Х | | 4 |
| | Columbia River Side Channel Femp: 7 pH: 7,8 | | 11 | 3 PM | Water | | Х | Х | Х | Х | х | Х | X | $\overline{\mathbf{x}}$ | х | | 4 |
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| | Special Instructions / Regulations with water or lan- | d use (CCN | iE-Freshwater A | quatic Life/BC 0 | SR - Commercia | al/AB | Tier 1 | - Na | tural, | etc) | / Haz | ardou | ıs De | tails | | | |
| | | | | | | | | | | | | | | | | | |
| 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 usc) | | | | | | | .1 - | HPME | | | ICAT | | | | | |
| Released by | ! ! | ъу: И/ИЛ | 11-15 Ut 4.7 | 1 Time: | Temperature. | Veri | fied b _i | #: | | ⊬ate | : | | Time | : | Ye | oservates (No. | 2. |
| | | · (00 (| | | <u> </u> | | | | | | | | | | 1'' | | <u> </u> |



KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 19-OCT-17

Report Date: 30-OCT-17 17:52 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L2009703

Project P.O. #: NOT SUBMITTED

Job Reference: WEEK 5 - 2017 FALL EMS PROGRAM - WW

C of C Numbers: Legal Site Desc:

Nancy Sonompil, B. Sc. Account Manager

 $[This\ report\ shall\ not\ be\ reproduced\ except\ in\ full\ without\ the\ written\ authority\ of\ the\ Laboratory.]$

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



L2009703 CONTD.... PAGE 2 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|--|--------------|------------|--------|-----------|-----------|-----------|------------|
| L2009703-1 WWTP EFFLUENT - UV TROUGH | | | | | | | |
| Sampled By: TJ/MS on 18-OCT-17 @ 14:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | 0.114 | | 0.050 | mg/L | | 28-OCT-17 | R3868710 |
| Biochemical Oxygen Demand | <2.0 | | 2.0 | mg/L | | 20-OCT-17 | R3866164 |
| Orthophosphate-Dissolved (as P) | 0.742 | DLHC | 0.050 | mg/L | | 19-OCT-17 | R3860459 |
| Enterococcus | See Attached | | | | | 20-OCT-17 | R3869124 |
| Coliform Bacteria - Fecal | 1 | | 1 | CFU/100mL | | 19-OCT-17 | R3861368 |
| MPN - E. coli | 1 | OCR | 1 | MPN/100mL | | 19-OCT-17 | R3861294 |
| Phosphorus (P)-Total | 0.972 | | 0.020 | mg/L | 23-OCT-17 | 25-OCT-17 | R3865974 |
| Total Suspended Solids | 24.3 | | 3.0 | mg/L | | 24-OCT-17 | R3866054 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | 19.0 | | 0.020 | mg/L | | 19-OCT-17 | R3860489 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 19.1 | | 0.050 | mg/L | | 20-OCT-17 | |
| Nitrite in Water by IC Nitrite (as N) | 0.035 | | 0.010 | mg/L | | 19-OCT-17 | R3860489 |
| L2009703-2 COLUMBIA RIVER UPSTREAM | 3.300 | | 0.010 | 9/ _ | | 10 001 17 | .10000-100 |
| Sampled By: TJ/MS on 18-OCT-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 28-OCT-17 | R3868710 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 19-OCT-17 | R3860459 |
| Enterococcus | See Attached | | 0.0000 | mg/L | | 20-OCT-17 | R3869124 |
| Coliform Bacteria - Fecal | 10 | | 1 | CFU/100mL | | 19-OCT-17 | R3861368 |
| MPN - E. coli | 8 | OCR | 1 | MPN/100mL | | 19-OCT-17 | R3861294 |
| Phosphorus (P)-Total | <0.020 | | 0.020 | mg/L | 23-OCT-17 | 25-OCT-17 | R3865974 |
| Total Suspended Solids | 19.0 | | 3.0 | mg/L | 25-001-17 | 24-OCT-17 | R3866054 |
| NO2, NO3 and Sum of NO2/NO3 | 15.0 | | 5.0 | mg/L | | 2100111 | 113000004 |
| Nitrate in Water by IC | | | | | | | |
| Nitrate (as N) | 0.092 | | 0.020 | mg/L | | 19-OCT-17 | R3860489 |
| Nitrate+Nitrite | | | | | | | |
| Nitrate and Nitrite (as N) | 0.092 | | 0.050 | mg/L | | 20-OCT-17 | |
| Nitrite in Water by IC | | | | - | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 19-OCT-17 | R3860489 |
| L2009703-3 COLUMBIA RIVER DOWN STREAM | | | | | | | |
| Sampled By: TJ/MS on 18-OCT-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 28-OCT-17 | R3868710 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 19-OCT-17 | R3860459 |
| Enterococcus | See Attached | | | | | 20-OCT-17 | R3869124 |
| Coliform Bacteria - Fecal | 11 | _ | 1 | CFU/100mL | | 19-OCT-17 | R3861368 |
| MPN - E. coli | 5 | OCR | 1 | MPN/100mL | | 19-OCT-17 | R3861294 |
| Phosphorus (P)-Total | 0.027 | | 0.020 | mg/L | 23-OCT-17 | 25-OCT-17 | R3865974 |
| Total Suspended Solids | 34.3 | | 3.0 | mg/L | | 24-OCT-17 | R3866054 |
| NO2, NO3 and Sum of NO2/NO3 | | | | | | | |
| Nitrate in Water by IC Nitrate (as N) | | | | | | 10 OCT 17 | R3860489 |
| Niliale (as N) | 0.102 | | 0.020 | mg/L | | 19-OCT-17 | N3000409 |
| Nitrate+Nitrite | 0.102 | | 0.020 | mg/L | | 19-001-17 | K3000409 |

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

L2009703 CONTD.... PAGE 3 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | i e | | | T | | | Batch |
|---|--------------|-----|--------|-----------|-----------|-----------|----------|
| L2009703-3 COLUMBIA RIVER DOWN STREAM | | | | | | | |
| Sampled By: TJ/MS on 18-OCT-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 19-OCT-17 | R3860489 |
| L2009703-4 COLUMBIA RIVER SIDE CHANNEL | | | | | | | |
| Sampled By: TJ/MS on 18-OCT-17 @ 15:00 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | 0.050 | | 0.050 | /1 | | 00 OCT 47 | D0000740 |
| Ammonia, Total (as N) | <0.050 | | 0.050 | mg/L | | 28-OCT-17 | R3868710 |
| Orthophosphate-Dissolved (as P) | <0.0050 | | 0.0050 | mg/L | | 19-OCT-17 | R3860459 |
| Enterococcus | See Attached | | | CEL1/4001 | | 20-OCT-17 | R3869124 |
| Coliform Bacteria - Fecal | 6 | OCR | 1 | CFU/100mL | | 19-OCT-17 | R3861368 |
| MPN - E. coli | 5 | UCK | 1 | MPN/100mL | | 19-OCT-17 | R3861294 |
| Phosphorus (P)-Total | 0.020 | | 0.020 | mg/L | 23-OCT-17 | 25-OCT-17 | R3865974 |
| Total Suspended Solids NO2, NO3 and Sum of NO2/NO3 | 21.0 | | 3.0 | mg/L | | 24-OCT-17 | R3866054 |
| Noz, Nos and Sum of Noz/Nos Nitrate in Water by IC | | | | | | | |
| Nitrate in Water by iC Nitrate (as N) | 0.111 | | 0.020 | mg/L | | 19-OCT-17 | R3860489 |
| Nitrate+Nitrite | | | ***** | 3 | | | |
| Nitrate and Nitrite (as N) | 0.111 | | 0.050 | mg/L | | 20-OCT-17 | |
| Nitrite in Water by IC | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 19-OCT-17 | R3860489 |
| | | | | | | | |
| | | | | | | | |

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

L2009703 CONTD....

Reference Information

PAGE 4 of 5 Version: FINAL

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

| Test Method References: | | | | | | | | |
|-------------------------|--------|---------------------------------|-------------------------------------|--|--|--|--|--|
| ALS Test Code | Matrix | Test Description | Method Reference** | | | | | |
| BOD-BC-CL | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B-5 day IncubO2 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-ED 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 |
|----------------------------|---|
| ED | ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA |
| CL | ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA |

L2009703 CONTD....

Reference Information

PAGE 5 of 5 Version: FINAL

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.



Workorder: L2009703 Report Date: 30-OCT-17 Page 1 of 4

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--|--------|---------------------------|--------|-----------|-----------|--------|--------|-----------|
| BOD-BC-CL | Water | | | | | | | |
| Batch R3866164 WG2648612-2 LCS Biochemical Oxygen De | mand | | 100.8 | | % | | 85-115 | 20-OCT-17 |
| WG2648612-1 MB Biochemical Oxygen De | mand | | <2.0 | | mg/L | | 2 | 20-OCT-17 |
| EC-MPN-CL | Water | | | | | | | |
| Batch R3861294 WG2644919-4 MB MPN - E. coli | | | <1 | | MPN/100mL | | 1 | 19-OCT-17 |
| FCC-MF-CL | Water | | | | | | | |
| Batch R3861368 | | | | | | | | |
| WG2644939-1 MB Coliform Bacteria - Feca | ıl | | <1 | | CFU/100mL | | 1 | 19-OCT-17 |
| WG2644939-3 MB Coliform Bacteria - Feca | ıl | | <1 | | CFU/100mL | | 1 | 19-OCT-17 |
| NH3-F-CL | Water | | | | | | | |
| Batch R3868710 WG2651372-20 DUP Ammonia, Total (as N) | | L2009703-1 0.114 | 0.112 | | mg/L | 1.1 | 20 | 28-OCT-17 |
| WG2651372-14 LCS Ammonia, Total (as N) | | | 109.9 | | % | | 85-115 | 28-OCT-17 |
| WG2651372-18 LCS Ammonia, Total (as N) | | | 101.4 | | % | | 85-115 | 28-OCT-17 |
| WG2651372-13 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 28-OCT-17 |
| WG2651372-17 MB Ammonia, Total (as N) | | | <0.050 | | mg/L | | 0.05 | 28-OCT-17 |
| WG2651372-19 MS Ammonia, Total (as N) | | L2009703-1 | N/A | MS-B | % | | - | 28-OCT-17 |
| NO2-IC-N-CL | Water | | | | | | | |
| Batch R3860489 WG2644650-7 DUP Nitrite (as N) | | L2009703-4 < 0.010 | <0.010 | RPD-NA | mg/L | N/A | 20 | 19-OCT-17 |
| WG2644650-6 LCS Nitrite (as N) | | | 105.2 | <u>2</u> | % | - 4. • | 90-110 | 19-OCT-17 |
| WG2644650-5 MB Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 19-OCT-17 |
| WG2644650-8 MS | | L2009703-4 | | | | | | |



Workorder: L2009703

Report Date: 30-OCT-17

Page 2 of 4

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--|------------|----------------------------|---------|-----------|-------|-----|--------|-----------|
| NO2-IC-N-CL | Water | | | | | | | |
| Batch R3860489 WG2644650-8 MS Nitrite (as N) | | L2009703-4 | 113.8 | | % | | 75-125 | 19-OCT-17 |
| NO3-IC-N-CL | Water | | | | | | | |
| Batch R3860489 WG2644650-7 DUP Nitrate (as N) | | L2009703-4 0.111 | 0.109 | | mg/L | 1.5 | 20 | 19-OCT-17 |
| WG2644650-6 LCS Nitrate (as N) | | | 103.2 | | % | | 90-110 | 19-OCT-17 |
| WG2644650-5 MB Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 19-OCT-17 |
| WG2644650-8 MS Nitrate (as N) | | L2009703-4 | 113.1 | | % | | 75-125 | 19-OCT-17 |
| P-T-COL-ED | Water | | | | | | | |
| Batch R3865974 WG2646642-11 LCS Phosphorus (P)-Total | | KONELAB_TP | 93.5 | | % | | 80-120 | 25-OCT-17 |
| WG2646642-2 LCS Phosphorus (P)-Total | | KONELAB_TP | 95.4 | | % | | 80-120 | 25-OCT-17 |
| WG2646642-9 LCS Phosphorus (P)-Total | | KONELAB_TP | 95.2 | | % | | 80-120 | 25-OCT-17 |
| WG2646642-1 MB Phosphorus (P)-Total | | | <0.020 | | mg/L | | 0.02 | 25-OCT-17 |
| WG2646642-10 MB Phosphorus (P)-Total | | | <0.020 | | mg/L | | 0.02 | 25-OCT-17 |
| WG2646642-12 MB Phosphorus (P)-Total | | | <0.020 | | mg/L | | 0.02 | 25-OCT-17 |
| PO4-DO-COL-CL | Water | | | | | | | |
| Batch R3860459 | | | | | | | | |
| WG2643876-7 LCS Orthophosphate-Dissolv | ved (as P) | | 100.1 | | % | | 80-120 | 19-OCT-17 |
| WG2643876-3 MB Orthophosphate-Dissolv | ved (as P) | | <0.0050 | | mg/L | | 0.005 | 19-OCT-17 |
| TSS-CL | Water | | | | | | | |
| Batch R3866054 | | | | | | | | |
| WG2647682-2 LCS Total Suspended Solids | | | 97.6 | | % | | 85-115 | 24-OCT-17 |
| WG2647682-1 MB | | | | | | | | |



Workorder: L2009703 Report Date: 30-OCT-17 Page 3 of 4

| Test | | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|----------|----------------|--------|-----------|--------|-----------|-------|-----|-------|-----------|
| TSS-CL | | Water | | | | | | | |
| Batch | R3866054 | | | | | | | | |
| WG26476 | 682-1 MB | | | | | | | | |
| Total Su | spended Solids | | | <3.0 | | ma/L | | 3 | 24-OCT-17 |

Workorder: L2009703 Report Date: 30-OCT-17 Page 4 of 4

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 |

Sample Parameter Qualifier Definitions:

LCSD Laboratory Control Sample Duplicate

| 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. |

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 predetermined 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 18, 2017

Final Report

October 29, 2017

Submitted to: ALS Environmental

Calgary, AB



SAMPLE INFORMATION

| Comple ID/ | | Dates | | Danimi |
|---|-----------------------|-----------------------|------------------------------|---------------------|
| Sample ID/ Internal ID | Collected Received te | | Enterococcus test initiation | Receipt temperature |
| L2009703-1 WWTP EFFLUENT – UV TROUGH / 1718-0349-01 | 18-Oct-17 at 1400h | 19-Oct-17 at 1120h | 19-Oct-17 at 1135h | 12°C |
| L2009703-2 COLUMBIA RIVER UPSTREAM / 1718-0349-02 | 18-Oct-17 at 1500h | 19-Oct-17 at 1120h | 19-Oct-17 at 1135h | 12°C |
| L2009703-3 COLUMBIA RIVER DOWN STREAM / 1718-0349-03 | 18-Oct-17 at 1500h | 19-Oct-17 at 1120h | 19-Oct-17 at 1135h | 12°C |
| L2009703-4 COLUMBIA RIVER SIDE CHANNEL / 1718-0349-04 | 18-Oct-17 at 1500h | 19-Oct-17 at 1120h | 19-Oct-17 at 1135h | 12°C |

TEST TYPES

• Enterococcus enumeration test

RESULTS

Microbial test results

| Samula ID | MPN/100 mL | |
|--|--------------|--|
| Sample ID ———— | Enterococcus | |
| L2009703-1 WWTP EFFLUENT – UV TROUGH | 9.5 | |
| L2009703-2 COLUMBIA RIVER UPSTREAM | 13.2 | |
| L2009703-3 COLUMBIA RIVER DOWN STREAM | 13.5 | |
| L2009703-4 COLUMBIA RIVER SIDE CHANNEL | 26.2 | |

MPN = Most Probable Number

Reference: 1718-0349



QA/QC

Reference: 1718-0349

| QA/QC summary | Enterococcus |
|---------------------|--------------|
| Protocol deviations | None |
| Control performance | Acceptable |
| Test performance | Valid |



Blalaret

Report By:

Tamara McClure, BSc

Quality Assurance Manager

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

Reference: 1718-0349

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

Quanti-Tray Bench Sheet - Enterococcus

| | Client <u>PUSIO6</u> Reference <u> 718 - 0349</u> |
|---|---|
| Test Initiation Date: 2013/10/19 Time: 1135 Techician: LO/77 | Sample Information Sample Information Reagent used: Enterolert™ Dilution Factor: Sample Information Dilution Factor: Reagent Lot#/Expiry: Sample Information Dilution Factor: Reagent Lot#/Expiry: Sample Information Dilution Factor: Reagent Lot#/Expiry: Sample Information Dilution Factor: Comments: |
| Thermometer Serial #: $I \neq OOO347S$ Incubator #: $\frac{1}{10000000000000000000000000000000000$ | Quanti Tray 2000 Lot#/Expiry: 62/10/2020 5 Lot: 62047 |
| Results - 24 Hour Incubation Date: _201子/10/2○ Time: | Time: 1/30 Technician: TM |
| Incubator Temp: 4 (must be 41 ± 0.5°C) | Enterococci (Fluorescent) |
| # Positive Large Wells: # Ambiguous Large Wells: # Positive Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): Most Probable Number at 24 hours: | 1 6 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 |
| | |

| | | | | | | 4 | |
|--|----|---|----|----|-----------------------|-----|---|
| Incubator Iemp: 4 (must be 41 ± 0.5°C) | _ | | | | nterococi (Fluorescen | (1) | |
| | T | | | | | | |
| # Confirmed Positive Large Wells: | 0 | و | 01 | 1) | 00 | | |
| # Confirmed Positive Small Wells (Tray 2000 only): | 0 | n | C | 10 | | | |
| Moct Drohable Number of 20 Lanning | | 2 | 1 | | - | | |
| most ribbable Number at 20 nours: | 17 | 5 | 7 | 7 | 24363 | | l |
| Confirmed monitive malla instruction of the | | | | | 10.10 | | |
| The state of the s | | | | | | | |

Technician:

1530

Time:

Date: 2017/10/20

Results - 28 Hour Incubation

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

Written by KS on 2006/07/11 Revised by LO on 2015/07/09



APPENDIX B – Chain-of-custody form

CALGARY



Subcontract Request Form

L2009703

Subcontract To:

NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

NOTES: Please reference on final report and invoice: PO#

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

| Please see enclosed | 4 sam | ıple(s) in | 4 | Container(s) | | |
|--|------------|---|------------------------|---------------------|------------------------|--|
| SAMPLE NUMBER | ANALYTI | CAL REQUIRE |) | | DATE SAMPLED DUE DATE | Priori Flag |
| L2009703-1 WWTP EFFLUE | ENT - UV | | | | 10/18/2017 14: | W |
| | Enterococo | cus (ENTERO-HO | Q 1) | | 10/26/2017 | |
| L2009703-2 COLUMBIA RI | VER | | | | 10/18/2017 153 | N |
| | Enterococo | cus (ENTERO-HO | Q 1) | | 10/26/2017 | |
| L2009703-3 COLUMBIA RI | VER DOWN | | | | 10/18/2017 534 |) . |
| | Enterococo | cus (ENTERO-HO | Q 1) | | 10/26/2017 | |
| L2009703-4 COLUMBIA RI | | | | | 10/18/2017 15: | W |
| | Enterococo | cus (ENTERO-HO | (1) | | 10/26/2017 | |
| Subcontract Info Contact: Analysis and reporting info | contact: | John Forbes Nancy Sonor 2559 29 STR CALGARY,AE | mpil, REET B T1Y | B. Sc. NE 7B5 | Email: Nanay Canavail@ | National de la constitución de l |
| Please email confirmatio | n of recei | Phone: (40 | | ancy.Sonompil@ | Email: Nancy.Sonompil@ | alsglobal.cor |
| Cl.: I D | | pt to. | | Date Shipped: | gaisgiobai.com | |
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| Neceived by. | | | | Pate Received: | | |
| Verified By: | | | | | | |

reid 2017/10/19 1120 BS

Jazoo 4x 250 ml good condin

no S/I 10°C



END OF REPORT

ALS Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com



| (ALS) Environmental | | www.a | isgiobal.com | | | | | L: | 2009 | 9703 | 3-CO | FC | | | ' | '- |
|--|---|-------------------------------|---|--|---|--------|------------|--------------|---------|---------|-------------|----------------------|------------|------------|-------------------|------------|
| Report To | Report Fo | rmat / Distributi | On | | Cervic Jity) | | | ·) | | | | | | | | |
| Company: Kicking Horse Mountain Resort Utility Corpora | tion Standard | Other | Other Regular (Srandard Turnaround Times - Business Days) | | | | | | | | | | | | | |
| Contact: Travis Jobin | □ PDF | ☐ PDF ☐ Fxcel ☐ Digital ☐ Fax | | _ Fax | O Priority (2-4 Jusiness Days) - 50% Surcharge - Contact ALS to Confirm TAT | | | | | | | 1 | | | | |
| Address 1500 Kicking Horse Trail | Email 1: | tjobin@kickingho | orseresort.com | | Olem | ergeno | y (1-2 | งบร. Da | ys) - 1 | .00% 5 | suchar | ge - Co | ntact / | NLS to Loi | if!rm TA1 | Γ |
| | Email 2: | pmajer@skircr.c | om | | Same Day or Weekend Emergency - Contact ALS to Confirm TAT | | | | | | | | | | | |
| Phone: 250-344-6442 Fax: | Email 3: | mskyring@kickir | nghorseresort.co | <u>om</u> | | | | | Α | naiys | sis Re | ques | it | | | |
| Invoice To Same as Report ? Yes 📝 No | Ctient / Pr | oject Informatio | n | | Ple | ase ir | ndica | te belo | w Fil | ered | , Pre- | Grvec | l or bo | oth (F. i | ², F/P) | |
| Hordcopy of Invoice with Report? ☐ Yes ☑ No | Job #: | Week 5 - 201 | 7 Fall EMS prod | grain - WW | | | | | | | | | | | | _ |
| Company: Resorts of the Canadian Rockies | PO / AFE: | | | | | | | | | | | Ì | | İ | | |
| Contact: Patrick Majer | LSD: | | | |] | | | | | | | | j | | | |
| Address: 1505 - 17th Ave SW Calgary AB | | | | | . | Ì | | | | | | | | | ļ | lers |
| Phone: Fax: | Quote #: | | | |] | | | i | | | | | į | | | Containers |
| Lab Work Order # (lab use only) | Contact: | Ls | Sampler: | TJ/MS | | | | | | | , | otiform | | | | |
| Sample Sample Identificati This description will appear o | | Date (dd-mmm-yy) | Time (ծեւտտ) | Sample Type | BOLS | TSS | N-NH4 | N-NO3 | N-NO2 | Total P | Ortho F | Fecal Cotifor | Entero | E Coli | | Number of |
| WWTP Effluent - UV trough Temp: [] | pH: 8.2 6.8 | 18-8117 | 14:00 | Water | Х | Х | Х | Х | Х | Х | Х | Х | Х | Х | | 5 |
| Columbia River Upstream Temp: 6.4 | рН: 🚱 📆 | 18-04-17 | 15:04 | Water | | Х | X | × | Х | X | X | Х | Х | Х | | 4 |
| Columbia River Down stream Temp: 6, 4 | pH: 8, 2 | 15 -0.1 m | 12:10. | Water | Ì | X | Х | X | Х | Х | Х | X | Х | Х | | 4 |
| Columbia River Side Channel Temp: 6 4 | pH: 8, 7 | [8-04-17 | | Water | | Х | Х | X | Х | X | Χ | Х | Х | Х | | 4 |
| | | <u> </u> | Collected f | rom botele | S-W | ΛM | 19. | od | 17 | | | | | | | |
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| Special Instructions / Regulations w | ith water or land use (CCM | E-Freshwater A | quatic Life/BC | CSR - Commerci | al/AB | Tier 1 | 1 - Ne | aturai, | etc) | / Haz | ardo | us Do | tails | | | |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 22-NOV-17

Report Date: 30-NOV-17 14:56 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L2025715

Project P.O. #: NOT SUBMITTED

Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT

C of C Numbers: Legal Site Desc:

Nancy Sonompil, B. Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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



L2025715 CONTD.... PAGE 2 of 3 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---------------|------------|------|-------|-----------|-----------|-----------|
| L2025715-1 UV TROUGH | | | | | | | |
| Sampled By: TJ on 21-NOV-17 @ 13:00 Matrix: WATER | | | | | | | |
| Miscellaneous Parameters Trout Bioassay - Pass/Fail | See attached. | | | | | 23-NOV-17 | R3898867 |
| Trout Bloadsay T assirt all | occ attached. | | | | | 201101 17 | 113030007 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2025715 CONTD....

PAGE 3 of 3 Version: FINAL

Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

TROUT-P/F-WP Water Trout Bioassay Pass/Fail EPS 1/RM/13, EPS 1/RM/9

Certified, disease-free rainbow trout (Oncorhynchus mykiss) are exposed to the full-strength (100%) sample, under static conditions in order to obtain a pass/fail indication of toxicity. A sample is considered to "fail" if >50% mortality is observed within a 96-hour exposure period.

Samples with excessive salinity (reported as conductivity greater than 13700 µmhos/cm) discharging into marine waters will require alternate testing.

** 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 |
|----------------------------|--|
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, 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.



Workorder: L2025715 Report Date: 30-NOV-17 Page 1 of 2

Client: KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW

CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed | |
|------|--------|-----------|--------|-----------|-------|-----|-------|----------|--|
|------|--------|-----------|--------|-----------|-------|-----|-------|----------|--|

Workorder: L2025715 Report Date: 30-NOV-17 Page 2 of 2

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 predetermined 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.



Rainbow Trout Bioassay Test Report - Pass/Fail

| Sample ID: | L2025715-1 |
|------------|------------|
| | |

Summary Results

| 96-hour Pass/Fail: PASS |
|-------------------------|
|-------------------------|

Sample Information

| Sample Origin: | Kicking Horse Mountain Water Utility Co. Ltd |
|---------------------------|--|
| Sample Description: | UV Trough |
| Sampling Date and Time: | 21-Nov-17 13:00 |
| Sampling Method: | Grab |
| Sampled By: | ת |
| Container(s) Description: | 2 x 20L cubic bag |
| Sample Volume: | 40L |
| Date and Time Received: | 23-Nov-17 10:00 |
| Transit Irregularities: | None |
| Storage Temperature (°C): | N/A |

Test Information

| Test Organism: | Oncorhynchus mykiss |
|-----------------------------------|---|
| Test Description: | Acute, 96-hour, Static, Pass/Fail |
| | EPS 1/RM/13, 2nd Ed. Dec. 2000, with 2007 and 2016 amendments, Environment Canada |
| Reference Method(s): | EPS 1/RM/9, May 1996 with May 2007 amendments, Environment Canada |
| Performed By: | AGJ |
| Starting Date and Time: | 23-Nov-17 14:45 |
| Deviations from Reference Method: | None |



Initial Parameters

Observations

| Colour: | Light Yellow | | |
|--------------------------|--------------|------------------------------|---------------------------|
| Odour: | Mild | | |
| Turbidity: | Low | | |
| Solids: | Low | | |
| Hardness (mg/L): | 1.9 mL T | itration Solution/10 m | L of Sample x 1000 = 190 |
| Alkalinity (mg/L): | 1.5 mL T | itration Solution/ 10 m | 1L of Sample x 1000 = 150 |
| | | | |
| Temperature (°C): | 14 | Thermometer | S/N 91154465 |
| Dissolved Oxygen (mg/L): | 9.84 | YSI Dissolved Oxygen Meter | S/N 15M102668 |
| Conductivity (µS/cm): | 602 | VWR Portable Conductivity Me | eter S/N 51071543 |
| pH (5.5-8.5 pH units): | 7.44 | VWR SympHony pH Meter | S/N D01908 |
| pH Adjustment: | Not Adjusted | | |
| pH Adjustment Procedure: | n/a | | |

Pre-Aeration

| Aeration Time (min): | 30 | |
|--|-----------|-----------|
| Sample Test Concentration (v/v): | 100% | 0% |
| Aeration Rate (5.5-7.5 mL/min/L): | 6.3 ± 0.1 | 6.3 ± 0.1 |
| Dissolved Oxygen (D.O.) Before Pre-Aeration (%): | 89.1 | 97.3 |
| Average D.O. After Pre-Aeration (%): | 89.5 | 97.4 |

Test Organism Data

| Lot Number: | 24/10/17 T5 |
|---------------------------------------|-------------|
| Weekly Mortality Preceeding Test (%): | 0.95 |
| Sample Size: | 10 |

Conditions Common to All Concentrations During Test

| Source of Holding/Dilution Water: | Dechlorinated UV Treated City of Winnipeg Tap Water |
|---|--|
| Container Description: | 20 L Polyethylene Pail with Liner |
| Aeration Method: | Compressed air bubbled through silica-glass air diffuser |
| Aeration Rate (5.5-7.5 mL/min/L): | (as set during pre-aeration above) |
| Test Solution Volume (L): | 40 |
| Test Solution Depth (cm): | 46.5 |
| Number of Test Organisms per Container: | 10 |
| Loading Density (g/L): | 0.29 |



Conditions During Test

| Concentration (% v/v) | Temperature (°C) (15 ± 1°C) | | | Dis | Dissolved Oxygen (mg/L) | | | | pH (pH units) | | | | | | |
|-----------------------|--------------------------------|-----|-----|-----|-------------------------|-------|-----|-----|---------------|------|------|-----|-----|-----|------|
| (/6 V/V) | 0h | 24h | 48h | 72h | 96h | 0h | 24h | 48h | 72h | 96h | 0h | 24h | 48h | 72h | 96h |
| 0 | 14 | n/a | n/a | n/a | 14 | 9.82 | n/a | n/a | n/a | 9.76 | 7.27 | n/a | n/a | n/a | 7.59 |
| 100 | 14 | n/a | n/a | n/a | 14 | 10.16 | n/a | n/a | n/a | 9.70 | 7.45 | n/a | n/a | n/a | 7.89 |

| Conc. (% v/v) | Conductivity (µS/cm) Number of Fish Dead Number of | | | | | er of F | ish Str | essed | |
|------------------|--|-----|-----|-----|-----|---------|-------------|-------|---|
| (% V/V) | 0h | 24h | 48h | 72h | 96h | 24h | 24h 48h 72h | 96h | |
| 0 | 303 | n/a | n/a | n/a | 0 | n/a | n/a | n/a | 0 |
| 100 | 598 | n/a | n/a | n/a | 0 | n/a | n/a | n/a | 0 |

Control Fish Information at End of Test

| Mean Fork Length (mm): | 51 |
|-------------------------------|------|
| Lower Range Fork Length (mm): | 47 |
| Upper Range Fork Length (mm): | 55 |
| Mean Wet Weight (g): | 1.16 |

Mortality and Stressed Behaviour Information

| Conc. (% v/v) | | er of Fish at f Test | Mean Rate o of Te | |
|------------------|------|-------------------------|----------------------|----------|
| (% V /V) | Dead | Stressed | Dead | Stressed |
| 0 | 0 | 0 | 0 | 0 |
| 100 | 0 | 0 | 0 | 0 |



Reference Toxicant Test Results

| Reference Toxicant: | Zinc Sulfate |
|--|------------------------------|
| Date Reference Toxicant Initiated: | 8-Nov-17 |
| Recent 96h Reference Toxicant Test LC50 (mg/L Zinc): | 0.60 |
| Lower 95% Confidence Limit (mg/L Zinc): | 0.42 |
| Upper 95% Confidence Limit (mg/L Zinc): | 0.78 |
| Historic Geometric Mean LC50 (mg/L Zinc): | 0.47 |
| Lower 95% Confidence Limit (mg/L Zinc): | 0.15 |
| Upper 95% Confidence Limit (mg/L Zinc): | 1.51 |
| | |
| Method of Calculation: | Stephan LC50 Program, Probit |
| Confirmed by Graph: | Yes |

Sublethal Biological Effects

| | Observations/Comments |
|-----------------------|-----------------------|
| No toxicity observed. | |

No sublethal biological effects observed.

ALS Environmental

Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com



_2025715-COEC

| Report To | | Report Fo | rmat / Distribut | ion | | Servi | ice | | | L2025/ | 15-00 | FC | | 5 | , |
|--|---|-------------|------------------|-----------------|--------------------|---|------------|---------------|--------|----------------|--|----------------|-------------|----------|----------------------|
| Company: | Kicking Horse Mountain Water Utility Co. Ltd. | ✓ Standard | Other | | | Régular (Standard Turnaround Times | | | | | | | | | |
| Contact: | Travis Jobin | PDF | Excel | ☐ Digital | ✓ Fax | O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | |
| Address: | 1500 Kicking Horse Trail | Email 1: | tjobin@kickingh | orseresort.com | | ○ En | nergen | cy (1-2 | Bus. D | ays) - 100% | 6 Surcharge | e - Contact A | LS to Confi | m TAT | |
| | | Email 2: | pmajer@skircr.d | <u>m</u> | | ○ Sa | me Da | y or W | eekend | Emergency | - Contact A | LS to Confir | m TAT | | |
| Phone: | 250-344-6003 Fax: | Email 3: | mskyring@kicki | nghorseresort.c | <u>om</u> | | | | | Analy | sis Requ | uest 🦠 | _ | | |
| Invoice To | Same as Report ? Yes Y No | Client / Pr | oject Informatio | on | | Please indicate below Filtered, Preserved or both (| | | | th (F, P, I | F/P) | | | | |
| Hardcopy of I | nvoice with Report? Yes V No | Job #: | RCR - Kicking H | lorse Mountain | Resort | | | | | | | | | | . 1 |
| Company: | Resorts of the Canadian Rockies | PO / AFE: | | | | | | | | | | | | | . 1 |
| Contact: | Patrick Majer | LSD: | | | |] | | | | | | | | |] |
| Address: | 1505 - 17th Ave SW Calgary AB | | | | |] | | | | | | | ļ | | lers |
| Phone: | Fax: | Quote #: | Q33059 — V | 1ASTEL | JATER | | | | | | | | | | Number of Containers |
| Lab W | Vork Order# | ALS | 1.0 | Communication | T. |] | | <u>ş</u> | 18 | \mathfrak{S} | | | | | ιŌΙ |
| (lab | use only) | Contact: | LS | Sampler: | TJ | | | # | ′∰ | <u>"</u> { | | | | | ō |
| Sample | Sample Identification | • | Date | Time | 6 | ا پر 1 | ابد | ecal Geliform | # | Q | | | | | 훁 |
| # | (This description will appear on the report) | | (dd-mmm-yy) | (hh:mm) | Sample Type | \$ | 2 2 | E | | -1 | | | | | 힐 |
| | UV trough | | NOUZI | 100 | Water | * | _ | | | * | | | | | 2 |
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KICKING HORSE MOUNTAIN UTILITY

CORPORATION

ATTN: TRAVIS JOBIN

1505 - 17th AVENUE SW CALGARY AB T2T 0E2 Date Received: 15-DEC-17

Report Date: 21-DEC-17 13:18 (MT)

Version: FINAL

Client Phone: 250-344-6003

Certificate of Analysis

Lab Work Order #: L2035816

Project P.O. #: NOT SUBMITTED

Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT

C of C Numbers: Legal Site Desc:

Nancy Sonompil, B. Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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



L2035816 CONTD.... PAGE 2 of 3 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|-------------------------------------|--------|------------|-------|-----------|-----------|------------------------|----------|
| L2035816-1 UV TROUGH | | | | | | | |
| Sampled By: TJ on 14-DEC-17 @ 13:30 | | | | | | | |
| Matrix: WATER | | | | | | | |
| Miscellaneous Parameters | | | | | | | |
| Biochemical Oxygen Demand | <2.0 | | 2.0 | mg/L | | 15-DEC-17 | R3917152 |
| Orthophosphate-Dissolved (as P) | 0.474 | | 0.010 | mg/L | | 16-DEC-17 | R3914745 |
| Coliform Bacteria - Fecal | 36 | | 1 | CFU/100mL | | 15-DEC-17 | R3914743 |
| Phosphorus (P)-Total | 0.588 | | 0.020 | mg/L | 18-DEC-17 | 19-DEC-17 | |
| Total Suspended Solids | | | | | 10-DEC-17 | 19-DEC-17 19-DEC-17 | R3915799 |
| Total Suspended Solids | 3.7 | | 3.0 | mg/L | | 19-DEC-17 | R3917197 |
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2035816 CONTD....

PAGE 3 of 3 Version: FINAL

Reference Information

Qualifiers for Individual Samples Listed:

| Sample Number | Client ID | Qualifier | Description |
|---------------|-----------|-----------|--|
| L2035816-1 | UV TROUGH | SPL | Total P - Sample was Preserved at the laboratory |

Test Method References:

| ALS Test Code Matrix | | Test Description | Method Reference** | | | | |
|----------------------|-------|---------------------------------|-------------------------------------|--|--|--|--|
| BOD-BC-CL | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B-5 day IncubO2 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-ED 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-ED 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 |
|----------------------------|---|
| ED | ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA |
| 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: L2035816

Report Date: 21-DEC-17

Page 1 of 2

Client:

KICKING HORSE MOUNTAIN UTILITY CORPORATION

1505 - 17th AVENUE SW CALGARY AB T2T 0E2

Contact: TRAVIS JOBIN

| Test Matri | x Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|-------------------------------|--------|-----------|-----------|-----|--------|-----------|
| BOD-BC-CL Water Batch R3917152 | er | | | | | | |
| WG2688656-2 LCS Biochemical Oxygen Demand | | 104.2 | | % | | 85-115 | 15-DEC-17 |
| WG2688656-1 MB Biochemical Oxygen Demand | | <2.0 | | mg/L | | 2 | 15-DEC-17 |
| FCC-MF-CL Water | er | | | | | | |
| Batch R3914778 WG2685901-2 DUP Coliform Bacteria - Fecal | L2035816-1 36 | 29 | | CFU/100mL | 22 | 65 | 15-DEC-17 |
| WG2685901-1 MB Coliform Bacteria - Fecal | | <1 | | CFU/100mL | | 1 | 15-DEC-17 |
| P-T-COL-ED Wate | er | | | | | | |
| Batch R3915799 WG2686674-2 LCS Phosphorus (P)-Total | KONELAB_TF | 100.3 | | % | | 80-120 | 19-DEC-17 |
| WG2686674-1 MB Phosphorus (P)-Total | | <0.020 | | mg/L | | 0.02 | 19-DEC-17 |
| PO4-DO-COL-ED Water | er | | | | | | |
| Batch R3914745 WG2685836-3 DUP Orthophosphate-Dissolved (as | L2035816-1 P) 0.474 | 0.476 | | mg/L | 0.5 | 20 | 16-DEC-17 |
| WG2685836-2 LCS Orthophosphate-Dissolved (as | P) | 97.0 | | % | | 70-130 | 16-DEC-17 |
| WG2685836-1 MB Orthophosphate-Dissolved (as | P) | <0.010 | | mg/L | | 0.01 | 16-DEC-17 |
| WG2685836-4 MS Orthophosphate-Dissolved (as | L2035816-1 P) | N/A | MS-B | % | | - | 16-DEC-17 |
| TSS-CL Wate | er | | | | | | |
| Batch R3917197 WG2687065-2 LCS Total Suspended Solids | | 98.4 | | % | | 85-115 | 19-DEC-17 |
| WG2687065-1 MB Total Suspended Solids | | <3.0 | | mg/L | | 3 | 19-DEC-17 |

Quality Control Report

Workorder: L2035816 Report Date: 21-DEC-17 Page 2 of 2

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 predetermined 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.





Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

| COC# | | |
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| Page | 1 of | 1 |
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| Report To | Report Fo | rmat / Distribut | ion | | Servi | ce R | eque | sted (| Rush | for rou | itine an | alysis su | bject to | availa | bility) | |
|---|-----------------|--|---------------------------------------|-----------------|--|---|----------|---------|--------|---------|-----------|-----------|----------|-------------------------|----------------|----------------------|
| Company: Kicking Horse Mountain Water Utility Co. Ltd. | ☑ Standard | Other | · · · · · · · · · · · · · · · · · · · | | Regular (Standard Turnaround Times - Business Days) Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | | |
| Contact: Travis Jobin | PDF | Excel | ☐ Digital | ✓ Fax | O Pri | ority (2 | 2-4 Bus | iness D | ays) - | 50% S | urcharge | - Contac | ALS to | Confirm | TAT | |
| Address: 1500 Kicking Horse Trail | Email 1: | Email 1: tjobin@kickinghorseresort.com | | | | O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | |
| | Email 2: | pmajer@skircr.c | <u>com</u> | | O Sa | me Da | y or We | eekend | Emerg | ency - | Contact : | ALS to Co | nfirm TA | AT | | |
| Phone: 250-344-6003 Fax: | Email 3: | mskyring@kickii | nghorseresort.co | <u>om</u> | | | | | A | nalys | is Req | uest | | | | |
| Invoice To Same as Report ? Yes V No | Client / Pr | roject Informatio | on | | Plea | ase in | dicate | e belo | w Filt | ered, | Preser | ved or | both (F | , P, F | /P) | |
| Hardcopy of Invoice with Report? ☐ Yes ☑ No | Job #: | RCR - Kicking H | lorse Mountain I | Resort | | | | | | | | | | | | |
| Company: Resorts of the Canadian Rockies | PO / AFE: | | | | l | | İ | | ļ | | | | | | | |
| Contact: Patrick Majer | LSD: | | | | , | | 1 | | ļ | | | | | | | |
| Address: 1505 - 17th Ave SW Calgary AB | | | | | 1 | | - 1 | | | | | | ļ | | | Jers |
| Phone: Fax: | Quote #: | Q33059 | | | | | | | | | | | : | | | ntair |
| Lab Work Order # (lab use only) | ALS Contact: | LS | Sampler: | TJ | | ļ | Coliform | | ته | OKTHO P | | | | | | Number of Containers |
| Sample Sample Identification | | Date | Time | | ا ا | | ပ္ | 4 | TOTAL | 5 | | 1 | | | ŀ | op. |
| # (This description will appear on the report) | | (dd-mmm-yy) | (hh:mm) | Sample Type | ВОВ | TSS | Fecal | ₹ | 10 | O. | | | | | I | Ž |
| UV trough | | DEC 13, 17 | 1330 | Water | Х | × | Х | | × | × | | | | | | 1 |
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| | (| on both | 1es) | | | | | | | | | | | | | |
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| BROKER Toole Peet & Co. Limited P.O. Box 4650 Station C 1135 - 17 th Avenue SW Calgary, AB T2T 5R5 | CERTIFIC | This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend or alter the coverage afforded by the policies below. | | | | | | | | | | |
| BROKER'S CLIENT ID: | | | | COMPANIES AFF | ORDING COVERAGE | | | | | | | |
| INSURED'S FULL NAME AND MAILIN | G ADI | ORESS | COMPANY A | Aviva Insuran | ce | | | | | | | |
| | | | COMPANY B | _ | - | _ | yd's | | | | | |
| Environmental Diagnostic | s In | c. | | Certain Under | Certain Underwriters as arranged through | | | | | | | |
| #140, 5050 - 106 Ave. SE | | | COMPANY C | Encon Group | Inc. | | _ | | | | | |
| Calgary, AB T2C 5E9 | | | COMPANY D | - | | | | | | | | |
| 3 /: | | | COVERAGES | • | | | | | | | | |
| This is to certify that the policies of insurance condition of any contract or other document | | spect to which this certi to all the terms | ficate may be issued or , exclusions and condit | r may pertain. The insurance | ce afforded by the policies de | | | | | | | |
| TYPE OF INSURANCE | OF INSURANCE CO LTR POLICY NUMBER POLICY EFFECTIVE DATE (MM/DD/YY) DATE (MM/DD/YY) LIMITS OF LIABILITY | | | | | | | | | | | |
| COMMERCIAL GENERAL LIABILITY | Α | 81229768 | 3/30/2018 | 3/30/2019 | EACH OCCURRENCE | \$ | 2,000,000 | | | | | |
| CLAIMS MADE OR 🗸 OCCURRENCE | | | | | GENERAL AGGREGATE | \$ | 5,000,000 | | | | | |
| ✓ PRODUCTS AND / OR COMPLETED OPERATIONS | | | | | PRODUCTS - Comp/Ops Agg. | \$ | 2,000,000 | | | | | |
| EMPLOYERS' LIABILITY | | | | | PERSONAL INJURY | \$ | 2,000,000 | | | | | |

| | | | | | ns of such policies. CED BY PAID CLAIMS | | | |
|--|-----------|---------------|------------------------|--------------------------|--|---|-------------|-------------|
| TYPE OF INSURANCE | CO LTR | POLICY NUMBER | POLICY EF DATE (MM, | FECTIVE | POLICY EXPIRATION DATE (MM/DD/YY) | LIMITS OF L | IABILI | тү |
| COMMERCIAL GENERAL LIABILITY | Α | 81229768 | 3/30/2 | 2018 | 3/30/2019 | EACH OCCURRENCE | \$ | 2,000,000 |
| CLAIMS MADE OR OCCURRENCE | | | | | | GENERAL AGGREGATE | \$ | 5,000,000 |
| PRODUCTS AND / OR COMPLETED OPERATIONS | | | | | | PRODUCTS - Comp/Ops Agg. | \$ | 2,000,000 |
| EMPLOYERS' LIABILITY | | | | | | PERSONAL INJURY | \$ | 2,000,000 |
| ✓ CROSS LIABILITY | | | | | | TENANT'S LEGAL LIABILITY | \$ | 250,000 |
| ✓ TENANT'S LIABILITY | | | | | | MED EXP (any one person) | \$ | 10,000 |
| NON-OWNED AUTOMOBILES | | | | | | NON-OWNED AUTO | \$ | 2,000,000 |
| ✓ HIRED | | | | | | OPTIONAL POLLUTION | | |
| POLLUTION LIABILITY EXTENSION CONTRACTUAL LIABILITY | | | | | | LIABILITY EXTENSION | \$ | |
| AUTOMOBILE LIABILITY | | | | | | (Per Occurrence/Aggregate) BODILY INJURY PROPERTY | > | |
| ✓ DESCRIBED AUTOMOBILES | A | 6141184202 | 9/18/2 | 2017 | 9/18/2018 | DAMAGE COMBINED | 4 | 2,000,000 |
| ALL OWNED AUTOMOBILES | `` | 0111101202 | 3, 10, 2 | | 3,10,2010 | BODILY INJURY (Per Person) | s s | 2,000,000 |
| LEASED AUTOMOBILES | | | | | | BODILY INJURY (Per Accident) | \$ | |
| Γ | | | | | | PROPERTY DAMAGE | \$ | |
| | | | | | | | | |
| **ALL AUTOMOBILES LEASED IN EXCESS OF 30 DAYS WHERE THE INSURED IS REQUIRED TO PROVIDE INSURANCE | | | | | | | | |
| EXCESS LIABILITY | | | | | | | \$ | |
| UMBRELLA FORM | | | | | | | \$ | |
| OTHER THAN UMBRELLA FORM | | | | | | | | |
| (Specify) | | | | | | | | |
| OTHER LIABILITY (ORFOLES) | | | | | | | 1. | |
| OTHER LIABILITY (SPECIFY) | | | | | | | \$ | |
| Z ENVIRONMENTAL CONCULTING | | | | | | | | |
| ENVIRONMENTAL CONSULTING PROFESSIONAL (ERRORS AND OMISSIONS) | | | | | | | | |
| LIABILITY (Claims Made) | l c | SRD485996 | 4/20/2 | 2017 | 4/20/2018 | LIMIT/AGGREGATE | \$ | 2,000,000 |
| , | | | , , | | | , | | , , |
| | | | | | | | | |
| = ENVIRONMENTAL IMPAIRMENT LIABILITY | | | | | | | | |
| (Claims Made) | В | EILT2093 | 4/1/2 | 018 | 4/1/2019 | Each Claim | \$ | 1,000,000 |
| | | | | | | Aggregate for Each | | |
| | | | | | | Policy Period | \$ | 1,000,000 |
| | | | | | | | | |
| ADDITIONAL INSURED | | | | DESCRI ITEMS | PTION OF OPERATIO | NS, LOCATIONS/ AUTOM | 10BIL | ES/ SPECIAL |
| | | | | Enviror | nmental Consultan | ts | | |
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| To Whom It May Concern | | | | | | issuing company will en | | |
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| | | | | | • | I such notice shall impos | | - |
| | | | liability | of any kind upon the | company, its agents or | repre | sentatives | |
| SIGNATURE OF AUTHORIZED REPRESENT | ΓΛΤ1\/C | <u> </u> | | EAV NUM | IDED | EMAIL ADDDESS | | |
| Of CONTROL OF ART HORIZED REPRESENT | WIIVE | - | | FAX NUMBER EMAIL ADDRESS | | | | |
| | | | | | 28-0231 | esiver@toolepeet.co | <u>m</u> | |
| PRINT NAME INCLUDING POSITION HELD | | | | COMPAN | | DATE | | |
| Erica Siver, Account Mana | ger | | | Toole Pe | eet & Co. Limited | April 3, 2018 | | |

COMPANY PROFILE

ENVIRONMENTAL DIAGNOSTICS INC. (EDI) was established in 1993. EDI is a Canadian-based company offering **environmental and engineering services** to commercial, industrial, oil & gas and government clients in Western Canada. The company has the main office located in Calgary and operations offices in Edmonton and Kamloops.

Environmental Diagnostics Inc. brings more than 20 years of experience and knowledge in many areas of the environmental and engineering sectors. EDI employees are dedicated to providing effective solutions to the clients' problems, implementing efficient and cost effective methods as well as an innovative approach.

All of EDI *personnel* are graduates of engineering and/or environmental science programs at recognized universities, colleges and reclamation/environmental programs. Our staff consists of experienced technicians, technologists, scientists and engineers, which are members of *APEGGA*, *APEGBC*, *AIA*, *APEGS*, *ACPA*, *ACPBC*, *CRLA*, *AWWA*, *WEFTEC*, *WCWWA* and others.

The *company* is an active member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta - *APEGGA*, Association of Professional Engineers and Geoscientists of Saskatchewan - *APEGS*, the Environmental Services Association of Alberta - *ESAA*, the Canadian Land Reclamation Association - *CLRA* and the Alberta Petroleum Storage Systems Contractor's Association - *APSSCA*.

The company possesses the *Partnerships in Health & Safety* Small Employer Certificate of Recognition - *SECOR* (currently working on *COR*) and is a member of *ISN*etworld.

EXPERIENCE OVERVIEW

ENVIRONMENTAL & CONTAMINATED LAND SITE ASSESSMENTS

- Pre-purchase Assessments
- Phase I, II and III Environmental Site Assessments for Commercial, Industrial, Residential and Oil & Gas Properties
- Site Specific Guideline Re-calculation
- Statistical Trend Analysis
- Conceptual Site Model Development
- Contact with Regulatory Agencies
- Soils, Surface Water, Groundwater, Snow and Sludge Sampling & Testing

RISK MANAGEMENT AND MITIGATION

- Risk Management Plans
- Risk Management Implementation
- **Environmental Mitigation Strategies**
- **Exposure Control**
- **Natural Attenuation**

REMEDIATION

- Soil & Groundwater Remediation Evaluation & Method Selection
 - ✓ In-situ Remediation (Vapour Extraction, Bioremediation, Oxygen Introduction, Groundwater Pump and Treat)
 - ✓ On-site (Landfarming, Bio-piling, Alluing/Aeration)
 ✓ Source Removal and Off-site Disposal
 ✓ Site Specific and Innovative Techniques
- **Tender Documents Preparation**
- Comprehensive Remediation Management and/or Supervision
- Experience with Numerous Contaminants: Salt, Hydrocarbons, Chlorinated Solvents, PAHs, Fertilizers, Herbicides/Pesticides, Heavy Metals, Disulfides and others
- **Underground Storage Tanks Removals**
- Post Remediation Monitoring & Evaluation

SOIL VAPOUR SURVEYS & EVALUATION

- Soil Vapour Assessments
- Soil Vapour Probe Sampling
- Soil Vapour Criteria Derivation
- Risk Management and Remediation
- Conceptual Site Model
- Experience with Various Parameters: Methane, Hydrocarbons, Solvents, etc.

INDOOR AIR QUALITY ASSESSMENT

- Indoor Air Sampling and Testing
- Sub-slab Air Sampling and Testing
- Pollutant Source Assessment and Problem Identification
- Air Quality Improvements
- Experience with Hydrocarbons, Chlorinated Compounds, Dust, Metals, Mould

HAZARDOUS BUILDING MATERIAL ASSESSMENT

- Indoor Air Sampling and Testing for Hazardous Materials: Asbestos, Lead, Arsenic, Mercury, UFFI, PCBs, Silica, Radioactive Materials, ODS
- Mould Testing
- Radon Testing and Mitigation

EXPERIENCE OVERVIEW - continued

REGULATORY COMPLIANCE FOR FACILITIES (under AER and AEP)

- Site Assessments (Phase I & II ESA, Contamination Delineation)
- Risk Management Plans
- Standard Operating Procedures Development & Process Optimization
- Liability Assessments including Site Specific
- **Decommissioning Plans**
- Site Remediation & Monitoring
- Contact with Regulatory Agencies
- Assistance with Regulatory Approvals

ENGINEERING – WATER, WASTEWATER & CONTAMINATED WATER

- Water & Wastewater Systems Evaluation
- **Annual Compliance Reports**
- Wastewater Irrigation Reports
- Environmental Emergency Plans for WTP
- Water Source Evaluation
- Well Pumping/Flow Tests and Evaluation
- Feasibility Studies
- Chemical and Microbial Sampling and Testing
- Soil Evaluation for Septic Fields
- Full Contaminated Water Remediation System Design and Treatment
- Pilot Water Testing (DAF, Media Filters, Membrane Filtration, Biological Activated Filter, and others)
- Design/Built Potable Water, Process Water and Contaminated Water Packages

COMPLIANCE TESTING & MONITORING

- Long Term Compliance Testing and Monitoring such as:

 - ✓ Water Distribution Systems✓ Water & Wastewater Treatment Plants Compliance Reports
 - ✓ Wastewater Irrigation Reports
 - ✓ Landfill Monitoring
 - ✓ Fuel Tank Sites Monitoring
 - ✓ Lead in Water Sampling

 - ✓ Surface Water Sampling✓ Snow & Snow Storage Sampling
- Various clients
 - ✓ Municipalities
 - ✓ Various Developments
 - ✓ Golf Courses
 - ✓ Resorts
 - √ Facilities

CORE PERSONNEL

Jana Zverina, P.Eng. (M.Sc. in Water Resources Engineering & Management and Diploma in Civil Engineering)

Manager of Environmental Engineering & Operations (Principal)

Jana has been working as a water resources and environmental engineer for more than 30 years. The following is the pertinent experience:

- ✓ Five years of process design, equipment selection, evaluation, pricing of industrial and municipal water & wastewater treatment, industrial water remediation including floatation sediment storage & transportation and mine rehabilitation work, environmental remediation including natural attenuation and containment for deep coal mines as a junior engineer
- ✓ Twenty five years as an environmental engineer including:
 - Engineering and project management
 - Thousands of environmental site assessments for oil & gas facilities, commercial and industrial sites & multi-residential site
 - Hundreds of Remediation and Risk Management Plans for various projects such as oil & gas leases, batteries, gas plants, underground and aboveground storage tanks sites, chemical storage sites, sites on and adjacent to landfills, CPR yards, chemical storage sites, dry-cleaning and other facilities
 - o Specifications, budget proposals, cost estimates for hundreds of site abandonments projects including equipment dismantling, disposal, re-use, recycling
 - Remediation and risk management options for a number of soil and groundwater treatment methods including off-site disposal and treatment, in-situ treatments ie land treatment, bio-piling, enhanced bio-remediation, chemical in-situ treatment, chemical oxidation and reduction, vapour extraction, pump and treat, etc. as well as other site specific treatment methods
 - Numerous soil and groundwater remediation projects employing various remediation methods for salt, hydrocarbons, solvents, fertilizers, herbicides/pesticides, heavy metals and others
 - Completed numerous remediation projects within the proposed budget cost

Irina Sabau, P.Ag. (B.Sc. In Environmental Sciences) Environmental Project Manager (Principal)

Irina has been working as an environmental scientist for over 8 years. The following is the pertinent experience:

- ✓ One year of analytical environmental laboratory experience
- ✓ Seven years as an environmental scientist including:
 - Hundreds of environmental site assessments, indoor air evaluations, soil vapour evaluations, snow assessment, mitigation plans, exposure control plans, hazardous materials assessments, methane gas studies, remediation and risk management plans for various projects
 - Remediation and risk management options for a number of soil and groundwater treatment methods including off-site disposal and treatment, in-situ treatments ie land treatment, bio-piling, enhanced bio-remediation, chemical in-situ treatment, chemical oxidation and reduction, vapour extraction, pump and treat, etc. as well as other site specific treatment methods
 - Numerous soil and groundwater remediation projects employing various remediation methods for salt, hydrocarbons, chlorinated solvents, fertilizers, heavy metals, disulfides, and others
 - Specifications, budget proposals, cost estimates for assessment
 - Completed numerous remediation projects within the proposed budget cost

Lisa Columbus Office Manager

Lisa has over 25 years of experience with office management, work and personnel organization, book-keeping and payroll

Kim Harvey, P.Chem (B.Sc. in Chemical Science) Environmental Consultant

Kim has been working as an environmental consultant for over 10 years. The following is the pertinent experience:

- ✓ Four years of analytical environmental laboratory experience
- ✓ Ten years as an environmental consultant including:
 - Hundreds of environmental site assessments, mitigation plans, risk management plans, soil and groundwater monitoring programs, reclamation and remediation assessments
 - o Specifications, budget proposals, cost estimates for assessment

Paul Sabau, (M.Sc. in Automatic Control & Pollution Prevention and B.Sc. in Environmental Sciences) Environmental Consultant

Paul has over 10 years of environmental and geological experience in Alberta, BC & Saskatchewan. The following is the pertinent experience:

- Numerous environmental site assessments, soil and groundwater monitoring programs, remediation supervision, hazardous materials assessment, indoor air and soil vapour sampling
- Supervise drilling and coring operations
- o Sample soil, groundwater, surface water, subslab vapours and indoor air
- o Design pilot and bench tests for various innovative remediation methods
- o Complete semi-quantitative risk assessment for large waste management facilities

Samantha Thompson, (Diploma in Environmental Technology)

Samantha has been working as an environmental consultant for over 4 years. The following is the pertinent experience:

- Numerous environmental site assessments, soil and groundwater monitoring programs, remediation supervision, hazardous materials assessment, indoor air and soil vapour sampling
- Potable, surface and groundwater sampling

Magdalena Mazur, (B.Sc. in Environmental Science)

Magda has recently graduated from the University of Calgary

Desarae Ahlstrom, (Diploma in Environmental Technology) Environmental Technologist/Water Sampler

o Water sampling and testing, analytical laboratory experience

Contract Employees:

Milan Zverina, P.Eng. (M.Sc. in Water/Wastewater Treatment & Water Resources) Project Manager

over 35 years of experience in feasibility studies, municipal and industrial water & wastewater systems evaluations, water & wastewater treatment, process equipment & package design, manufacture and start up, design and management of the construction of equipment and pipelines for oil & gas industry, the projects he participated in include numerous plants & equipment in Eastern Europe, Asia, Africa, Canada and US

Lukas Fikr, P.Geol. (M.Sc. in Geology) Senior Geologist/Hydrogeologist

 Over 15 years of environmental, geological and hydrogeological experience including exploration, drilling supervision, interpretation of geological, hydrogeological and environmental data, processing of geological parts of risk and hazard assessments and environmental audits

S. Tolga Olcay, M.Sc., P.Eng. (B.Sc. in Environmental Engineering, M.Sc. in Environmental Sciences)

Planned, implemented and reported ambient air quality and meteorological monitoring studies in Alberta, BC and NWT (Set-up monitoring units at site, maintenance and calibration, data collection, data processing, compliance reporting) for mining industry. extensive experience as air dispersion modeler (by using calpuff and aermod) for EIA projects for oil & gas industry, numerous oil sands projects and mining industries, conducted training sessions for new staff about environmental issues, ambient air quality and indoor air quality monitoring and reporting., accomplished indoor air quality studies for residential buildings, office buildings and industrial buildings. (Generic pollutants, mold, toxic gases...), performed periodical maintenance of monitoring analyzers and calibration devices, developed technical calibration procedures for electrochemical sensors for ambient air.

RECENT PROJECTS

The list of projects, clients and references can be provided on request.

Environmental Diagnostics Inc. has undertook thousands of Phase I, II and III Environmental Site Assessments, contamination delineations and contamination remediation projects in Southern and Central Alberta, British Columbia and Saskatchewan as well as numerous hazardous materials surveys, indoor/sub-slab and soil-vapour sampling and evaluations.

EDI also undertook numerous pump/flow tests and chemical tests as well as water well and water supply/treatment system evaluations and compliance report preparations.

Example of some of the EDI long-term clients:

City of Calgary

- Potable water sampling for the City of Calgary
- Storm water pond sampling
- Lead in water distribution system sampling
- Snow and meltwater sampling

City of Airdrie

- Landfill monitoring
- Fleet yard tank nest monitoring

Oil & Gas Midstream and Upstream Clients

Land Developers

- Ronmor Developers Inc.
- Harmin Holdings Ltd.
- MDC Properties Ltd.
- Certus Development Ltd.
- United Communities
- Qualico Development

Resorts and Golf Courses

- The Lake Louise Ski Resort
- Resort of the Canadian Rockies Inc.
- Priddis Greens Services Co-op Limited
- Azuridge Boutique Hotel
- Johnson Canyon Resort

Various

- Alsa Paving
- Freeze Maxwell Roofing Ltd.
- Calgary Metals
- NAI Advent
- Gas Plus
- Numerous commercial and industrial clients transactional assessments & remediation work

EDI is on the list of all major banks and financial institutions such as Business Development Bank, Royal Bank of Canada, CIBC, Bank of Montreal and others.