



Environmental Division

Certificate of Analysis

CARIBOO ENVIROTECH LTD.

ATTN: RICHARD HOLMES

6267 PRIOR ROAD
BOX 174
LIKELY BC V0L 1N0

Report Date: 19-MAR-08 16:29 (MT)

Version: FINAL

Lab Work Order #: **L609142**

Date Received: **11-MAR-08**

Project P.O. #: NOT SUBMITTED
Job Reference: HORSEFLY WFSP
Legal Site Desc: U/S OF SPAWNING CHANNEL
CofC Numbers: A005466

Other Information:

Comments:

Andre Langlais
Account Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU
REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L609142-1			
Grouping	Analyte				
WATER					
Physical Tests	Colour, True (CU)	8.4			
	Conductivity (uS/cm)	127			
	Hardness (as CaCO3) (mg/L)	64.1			
	pH (pH)	7.90			
	Total Dissolved Solids (mg/L)	74			
	Turbidity (NTU)	1.54			
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	63.7			
	Ammonia as N (mg/L)	0.0118			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	0.040			
	Nitrate (as N) (mg/L)	0.0862			
	Nitrite (as N) (mg/L)	<0.0010			
	Ortho Phosphate as P (mg/L)	0.0033			
	Total Dissolved Phosphate As P (mg/L)	0.0053			
	Total Phosphate as P (mg/L)	0.0112			
	Sulfate (SO4) (mg/L)	6.58			
Total Metals	Aluminum (Al)-Total (mg/L)	0.023			
	Antimony (Sb)-Total (mg/L)	<0.00050			
	Arsenic (As)-Total (mg/L)	0.00026			
	Barium (Ba)-Total (mg/L)	<0.020			
	Boron (B)-Total (mg/L)	<0.10			
	Cadmium (Cd)-Total (mg/L)	<0.00020			
	Calcium (Ca)-Total (mg/L)	19.1			
	Chromium (Cr)-Total (mg/L)	<0.0020			
	Copper (Cu)-Total (mg/L)	<0.0010			
	Iron (Fe)-Total (mg/L)	0.171			
	Lead (Pb)-Total (mg/L)	<0.0010			
	Magnesium (Mg)-Total (mg/L)	3.97			
	Manganese (Mn)-Total (mg/L)	0.0151			
	Mercury (Hg)-Total (mg/L)	<0.00020			
	Potassium (K)-Total (mg/L)	0.92			
	Selenium (Se)-Total (mg/L)	<0.0010			
	Sodium (Na)-Total (mg/L)	<2.0			
	Uranium (U)-Total (mg/L)	0.00014			
	Zinc (Zn)-Total (mg/L)	<0.050			

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

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory - sample #1 -Dissolved Metals
SPL	Sample was Preserved at the laboratory - sample #1 - Total Metals

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2
		This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.	
ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.
		This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".	
ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.
		This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".	
ANIONS-NO2-IC-VA	Water	Nitrite by Ion Chromatography	APHA 4110 B.
		This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Specifically, the nitrite detection is by UV absorbance and not conductivity.	
ANIONS-NO3-IC-VA	Water	Nitrate by Ion Chromatography	APHA 4110 B.
		This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Specifically, the nitrate detection is by UV absorbance and not conductivity.	
ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.
		This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".	
COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	APHA 2120 "Color"
		This analysis is carried out using procedures adapted from APHA Method 2120 "Color". Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Apparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.	
COLOUR-TRUE-VA	Water	Colour (True) by Spectrometer	APHA 2120 Color
		This analysis is carried out using procedures adapted from APHA Method 2120 "Color". Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Apparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.	
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
		This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.	
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
		Hardness is calculated from Calcium and Magnesium concentrations, and is expressed as calcium carbonate equivalents.	
HG-TOT-DW-CVAFS-VA	Water	Total Mercury in Water by CVAFS	EPA 245.7
		This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).	
MET-TOT-DW-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B
		This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).	
MET-TOT-DW-MS-VA	Water	Total Metals in Water by ICPMS	EPA SW-846 3005A/6020A
		This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).	
NH3-COL-VA	Water	Ammonia by Colour	APHA 4500-NH3 "Nitrogen (Ammonia)"

Reference Information

This analysis is carried out, on unpreserved samples, using procedures adapted from APHA Method 4500-NH3 "Nitrogen (Ammonia)". Ammonia is determined using the phenate colourimetric method.

NH3-COL-VA Water Ammonia by Colour APHA 4500-NH3 Nitrogen (Ammonia)

This analysis is carried out, on unpreserved samples, using procedures adapted from APHA Method 4500-NH3 "Nitrogen (Ammonia)". Ammonia is determined using the phenate colourimetric method.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

PO4-DO-COL-VA Water Dissolved ortho Phosphate by Colour APHA 4500-P "Phosphorous"

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". All forms of phosphate are determined by the ascorbic acid colourimetric method. Dissolved ortho-phosphate (dissolved reactive phosphorous) is determined by direct measurement. Total phosphate (total phosphorous) is determined after persulphate digestion of a sample. Total dissolved phosphate (total dissolved phosphorous) is determined by filtering a sample through a 0.45 micron membrane filter followed by persulfate digestion of the filtrate.

PO4-DO-COL-VA Water Dissolved ortho Phosphate by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". All forms of phosphate are determined by the ascorbic acid colourimetric method. Dissolved ortho-phosphate (dissolved reactive phosphorous) is determined by direct measurement. Total phosphate (total phosphorous) is determined after persulphate digestion of a sample. Total dissolved phosphate (total dissolved phosphorous) is determined by filtering a sample through a 0.45 micron membrane filter followed by persulfate digestion of the filtrate.

PO4-T-COL-VA Water Total Phosphate P by Color APHA 4500-P "Phosphorous"

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". All forms of phosphate are determined by the ascorbic acid colourimetric method. Dissolved ortho-phosphate (dissolved reactive phosphorous) is determined by direct measurement. Total phosphate (total phosphorous) is determined after persulphate digestion of a sample. Total dissolved phosphate (total dissolved phosphorous) is determined by filtering a sample through a 0.45 micron membrane filter followed by persulfate digestion of the filtrate.

PO4-T-COL-VA Water Total Phosphate P by Color APHA 4500-P Phosphorous

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PO4-TD-COL-VA Water Total Dissolved Phosphate by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". All forms of phosphate are determined by the ascorbic acid colourimetric method. Dissolved ortho-phosphate (dissolved reactive phosphorous) is determined by direct measurement. Total phosphate (total phosphorous) is determined after persulphate digestion of a sample. Total dissolved phosphate (total dissolved phosphorous) is determined by filtering a sample through a 0.45 micron membrane filter followed by persulfate digestion of the filtrate.

PO4-TD-COL-VA Water Total Dissolved Phosphate by Colour APHA 4500-P " Phosphorous"

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". All forms of phosphate are determined by the ascorbic acid colourimetric method. Dissolved ortho-phosphate (dissolved reactive phosphorous) is determined by direct measurement. Total phosphate (total phosphorous) is determined after persulphate digestion of a sample. Total dissolved phosphate (total dissolved phosphorous) is determined by filtering a sample through a 0.45 micron membrane filter followed by persulfate digestion of the filtrate.

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

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

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

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

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

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

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

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

Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

Reference Information

A005466

GLOSSARY OF REPORT TERMS

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

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

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

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

mg/L milligrams per litre.

< - Less than.

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

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

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

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

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



Environmental Division

REPORT TO: Richard Holmes

REPORT FORMAT / DISTRIBUTION
STANDARD OTHER

SERVICE REQUESTED
REGULAR SERVICE (DEFAULT)

COMPANY: Carex 800 EnviroTECH LTD.

PDF EXCEL CUSTOM FAX

RUSH SERVICE (2-3 DAYS)

CONTACT: Richard Holmes

EMAIL 1: carenviro@wlake.com

PRIORITY SERVICE (1 DAY or ASAP)

ADDRESS: 6267 Prior Road

EMAIL 2:

EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS

Box 174 Likely B.C. Vol 1 NO

INDICATE BOTTLES: FILTERED / PRESERVED (FP)

ANALYSIS REQUEST

PHONE: 250-790-2486 FAX: 790-2486

INVOICE TO: SAME AS REPORT ? YES NO

COMPANY:

CLIENT / PROJECT INFORMATION:

CONTACT:

JOB #: HOARSEFLY WFSR

ADDRESS:

PO / AFE: 4/5 of SPawning Channel

PHONE:

QUOTE #:

Lab Work Order # (lab use only)

FAX:

Legal Site Description: 4/5 of Spawning Channel

SAMPLER (Initials): R.H.

SAMPLE IDENTIFICATION
(This description will appear on the report)

DATE

TIME

SAMPLE TYPE

HAZARDOUS ?
HIGHLY CONTAMINATED ?

1. HOARSEFLY RIVER

MARCH 9 / 08

14:00

ROUTINE

SEE ATTACHMENT

GUIDELINES / REGULATIONS

SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the reverse page of the write report copy.

RELINQUISHED BY: Kick

DATE & TIME: MARCH 10 / 08

RECEIVED BY: NP

DATE & TIME: APRIL 9 / 08

TEMPERATURE: 2

SAMPLE CONDITION (lab use only)

SAMPLES RECEIVED IN GOOD CONDITION? YES / NO

RELINQUISHED BY:

DATE & TIME:

RECEIVED BY:

DATE & TIME:

TEMPERATURE:

SAMPLE CONDITION (lab use only)

SAMPLES RECEIVED IN GOOD CONDITION? YES / NO

variability through time. Therefore, as much as possible, the program should remain consistent in terms of frequency, location, time of day samples are collected, and the collection and analytical techniques that are used.

Lakes are less likely to exhibit the same degree of short term temporal variation as rivers. Consequently, lakes are in some ways more suited for long-term trend assessments. Lakes act as natural collectors of atmospheric deposition and are also integrators of all the inputs within the watershed. Therefore, they are also ideally suited for assessments of whole watershed activities (upstream from the lake). Lakes also act as sinks for suspended materials and therefore, analyses of sediments can be ideal for determining both historical (core samples) and ongoing (repeated grab samples over the duration of a monitoring program) long-term trends. It must be noted however, that lakes do exhibit spatial variation over the year as they stratify and de-stratify. Typically, spring and fall overturn periods produce relatively homogeneous conditions throughout the water column and therefore, these are good periods to sample for long-term trends (Province of British Columbia⁵).

9.2 Sampling Description

The following water sampling analysis has been undertaken by ALS Environmental of Vancouver, BC.

- Ammonia by Color
- Total Phosphate P by Color
- Dissolved ortho Phosphate by color
- Total Dissolved Phosphate by color
- Drinking Water Full Package – Metals Total
 - Alkalinity by Colourimetric (Automated)
 - Chloride by Ion Chromatography
 - Fluoride by Ion Chromatography
 - Nitrite by Ion Chromatography
 - Nitrate by Ion Chromatography
 - Sulfate by Ion Chromatography
 - Color (True) by Spectrometer
 - Conductivity (Automated)
 - Hardness
 - Total Mercury in Water by CVAFS
 - Total Metals in Water by ICPOES
 - Total Metals in Water by ICPMS
 - pH by Meter (Automated)
 - Total Dissolved Solids by Gravimetric
 - Turbidity by Meter

HELLO
ANDRE)
PLEASE SAMPLE
FOR THE LIST
ON THE LEFT...
SAME AS
NEMIALT CREEK