



FIRST NATION HEALTH AUTHORITY

ATTN: [REDACTED]

[REDACTED]
Vancouver BC V6E 4S5

Date Received: 14-AUG-14

Report Date: 02-SEP-14 14:16 (MT)

Version: DRAFT

Client Phone: [REDACTED]

Certificate of Analysis

Lab Work Order #: L1502423
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 10-385317
Legal Site Desc:

DRAFT

[REDACTED]
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1502423-1	L1502423-2	L1502423-3
		Description	fish	fish	fish
		Sampled Date	09-AUG-14	09-AUG-14	09-AUG-14
		Sampled Time			
		Client ID	SAMPLE 6-CHINOOK (FC) (TOOSEY)(FOUND DEAD) (MUSCLE+SKIN)	SAMPLE 6-CHINOOK (FC) (TOOSEY)(FOUND DEAD) (LIVER)	SAMPLE 6-CHINOOK(FC) (TOOSEY)(FOUND DEAD) (GONAD)
Grouping	Analyte				
TISSUE					
Metals	Aluminum (Al)-Total (mg/kg wwt)		<0.40	<0.40	<0.40
	Antimony (Sb)-Total (mg/kg wwt)		<0.0020	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)		0.675	0.595	0.287
	Barium (Ba)-Total (mg/kg wwt)		0.012	<0.010	0.034
	Beryllium (Be)-Total (mg/kg wwt)		<0.0020	<0.0020	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)		<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)		<0.20	<0.20	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)		0.0026	0.474	0.0152
	Calcium (Ca)-Total (mg/kg wwt)		646	115	425
	Cesium (Cs)-Total (mg/kg wwt)		0.0502	0.0189	0.0163
	Chromium (Cr)-Total (mg/kg wwt)		0.019	<0.010	<0.010
	Cobalt (Co)-Total (mg/kg wwt)		<0.0040	<0.0040	0.0062
	Copper (Cu)-Total (mg/kg wwt)		0.605	10.6	4.96
	Iron (Fe)-Total (mg/kg wwt)		5.33	55.6	40.0
	Lead (Pb)-Total (mg/kg wwt)		<0.0040	<0.0040	<0.0040
	Lithium (Li)-Total (mg/kg wwt)		<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)		268	217	566
	Manganese (Mn)-Total (mg/kg wwt)		0.084	0.878	0.750
	Mercury (Hg)-Total (mg/kg wwt)		0.0550	0.0660	0.0116
	Molybdenum (Mo)-Total (mg/kg wwt)		0.0055	0.0994	0.0073
	Nickel (Ni)-Total (mg/kg wwt)		<0.040	<0.040	<0.040
	Phosphorus (P)-Total (mg/kg wwt)		2680	3610	3630
	Potassium (K)-Total (mg/kg wwt)		3650	3630	1630
	Rubidium (Rb)-Total (mg/kg wwt)		0.884	1.13	0.403
	Selenium (Se)-Total (mg/kg wwt)		0.246	0.961	2.11
	Sodium (Na)-Total (mg/kg wwt)		315	699	530
	Strontium (Sr)-Total (mg/kg wwt)		1.90	0.142	1.94
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)		0.00055	0.00644	0.00053
	Tin (Sn)-Total (mg/kg wwt)		0.024	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)		<0.00040	0.00063	0.00057
	Vanadium (V)-Total (mg/kg wwt)		<0.020	0.091	0.070
	Zinc (Zn)-Total (mg/kg wwt)		4.50	33.3	37.8
	Zirconium (Zr)-Total (mg/kg wwt)		<0.040	<0.040	<0.040

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Calcium (Ca)-Total	DUP-H	L1502423-1, -2, -3
Duplicate	Strontium (Sr)-Total	DUP-H	L1502423-1, -2, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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HG-WET-CVAFS-VA Tissue Mercury in Tissue by CVAFS (WET) EPA 200.3, EPA 245.7

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7. This digestion procedure was implemented on October 5, 2009.

MET-WET-CCMS-VA Tissue Metals in Tissue by CRC ICPMS (WET) EPA 200.3/6020A

This method is adapted from US EPA Method 200.3 "Sample Procedures for Spectrochemical Determination of Total Recoverable Elements in Biological Tissues" (1996). Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with repeated additions of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

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

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

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

Chain of Custody Numbers:

10-385317

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.