



EDI ENVIRONMENTAL DYNAMICS INC.
ATTN: Lyndsay Doetzel
2195 2nd Avenue
Whitehorse YT Y1A 3T8

Date Received: 03-AUG-16
Report Date: 16-AUG-16 18:49 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1808095
Project P.O. #: NOT SUBMITTED
Job Reference: MOUNT NANSEN 16-Y-0089
C of C Numbers: 1
Legal Site Desc:

Can Dang
Senior Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID					
Grouping	Analyte				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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** 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
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Chain of Custody Numbers:

1

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.



ALS Environmental
ATTN: Can Dang
Suite 100-8081 Lougheed Hwy.
Burnaby, BC
V5A 1W9

Report Date: August 12, 2016
Work Order: 16824

Data Report

Species: Rainbow trout (*Oncorhynchus mykiss*)
Protocol: EPS 1/RM/13 (Second Ed. 2000 with 2007 & 2016 amendments)

Table 1. Results for the 96-h rainbow trout acute LC50 toxicity test.

Sample ID	Collection Date and Time	96-h LC50 (%v/v)
L1808095-1 WQ-SEEP	August 2, 2016 @ N/A	>100

N/A = Not Available.

The test met performance criterion and there were no deviations from the test method. The results relate only to the sample tested.

Yvonne Lam, B.Sc.
Laboratory Biologist

Reviewed By:
Julianna Kalocai, M.Sc., R.P.Bio
QA Officer

Rainbow Trout Summary Sheet

Client: ALS

Start Date/Time: Aug 05 /16 @ 1615h

Work Order No.: 16824

Test Species: Oncorhynchus mykiss

Sample Information:

Sample ID: 4808095-1-WQ-SEEP
Sample Date: Aug 02 /16
Date Received: Aug 05 /16
Sample Volume: 2 X 20 L
Other: /

Test Validity Criteria:

≥ 90% control survival

WQ Ranges:

T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L CaCO₃): 11
Alkalinity (mg/L CaCO₃): 11

Test Organism Information:

Batch No.: 071816a
Source: Aqua Farms
No. Fish/Volume (L): 10/10L
Loading Density (g/L): 0.38
Mean Length ± SD (mm): 30 ± 1
Mean Weight ± SD (g): 0.38 ± 0.06

Range: 29 - 31
Range: 0.31 - 0.48

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZn 45
Stock Solution ID: 15 Zn05
Date Initiated: Aug 1 /16
96-h LC50 (95% CL): 30.9 (23.3 - 40.9) µg/L Zn

Reference Toxicant Mean and Historical Range: 58.0 (29.4 - 114.4) µg/L Zn
Reference Toxicant CV (%): 40%

Test Results: The 96h LC50 is estimated to be >100% (v/v).

Reviewed by: JGK

Date reviewed: Aug-10/16

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS
 Sample I.D. L1808095-1-WQ-SEED
 W.O. # 16824
 RBT Batch #: 071816 A
 Date Collected/Time: Aug 02/16 @ not available
 Date Setup/Time: Aug 05/16 @ 16:15h
 Sample Setup By: EC

Number Fish/Volume: 10/10 L
 7-d % Mortality: 0.1
 Total Pre-aeration Time (mins): 30
 Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Thermometer: CER# 2 D.O. meter: 2
 Cond./Salinity: 2 pH meter: 1

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	15.0	/	15.0
pH	6.7	/	6.8
D.O. (mg/L)	8.4	/	9.0
Cond. (µS/cm)	1443	/	1443
Salinity (ppt)	0.7	/	0.7

Concentration (% v/v)	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)		
	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96	
Control				10	10	10	10	15.0	15.0	15.0	15.0	15.0	9.8	9.9	9.8	9.7	9.7	6.8	6.9	7.0	6.9	6.9	28	41	
6.25				10	10	10	10	15.0	15.0	15.0	15.0	15.0	9.9	9.6	9.8	9.7	9.7	6.8	7.1	7.2	7.3	7.2	177	189	
12.5				10	10	10	10	15.0	15.0	15.0	15.0	15.0	9.9	9.7	9.8	9.7	9.8	6.8	7.4	7.5	7.6	7.6	326	377	
25				10	10	10	10	15.0	15.0	15.0	15.0	15.0	9.9	9.7	9.9	9.8	9.9	6.9	7.6	7.6	7.8	7.8	509	515	
50				10	10	10	10	15.0	15.0	15.0	15.0	15.0	9.9	9.6	9.8	9.8	9.8	6.8	7.7	7.7	8.1	8.0	843	845	
100				10	10	10	10	15.0	15.0	15.0	15.0	15.0	9.0	9.7	9.8	9.8	9.8	6.8	7.9	7.8	8.3	8.2	1443	1437	
Initials				AS	AS	EL	EL	EC	AS	AS	EL	EL	EC	AS	AS	EL	EL	EC	AS	AS	EL	EL	EC	EC	EC

Sample Description/Comments: Orange, turbid, colorless, ~~to~~ Some particulates.

Fish Description at 96 h All fish appear healthy Number of Stressed Fish at 96 h 0

Other Observations: _____

Reviewed by: JGU

Date Reviewed: Aug. 10/16

Subcontract Request Form
Subcontract To:
NAUTILUS ENVIRONMENTAL

 8664 COMMERCE COURT
 BURNABY, BC V5A 4N7

NOTES: Please reference on final report and invoice: PO# L1808095
 ALS requires QC data to be provided with your final results.

WO # 16824

 Please see enclosed 1 sample(s) in 2 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED	Priority Flag
		DUE DATE	
L1808095-1 WQ-SEEP	Trout Bioassay LC50 (96 Hour) - Nautilus (TROUT-LC50-96HR-NL 1)	8/ 2/ 2016	
		8/15/2016	

Subcontract Info Contact: Walter Lin (604) 253-4188
 Analysis and reporting info contact: Can Dang
 8081 LOUGHEED HWY
 SUITE 100
 BURNABY, BC V5A 1W9
 Phone: (604) 253-4188 Email: can.dang@alsglobal.com

 Please email confirmation of receipt to: can.dang@alsglobal.com

Shipped By: [Signature] Date Shipped: Aug 05, 2016
 Received By: HMC Date Received: Aug 5
 Verified By: _____ Date Verified: _____
 Temperature: ~~10~~ 10°C

Sample Integrity Issues: _____

Received by Nautilus
 2x20L
 Temp - 6.5°C
 Aug 05/16 @ 15:45
 NY - Nari Yamamoto

