Appendix 6.3-B

Testing in Support of Development of a Science Based Environmental Benchmark for Sulphate for the Ajax Mine

AJAX PROJECT

Environmental Assessment Certificate Application / Environmental Impact Statement for a Comprehensive Study



Testing in support of development of a science based environmental benchmark for sulphate for the Ajax Mine

Final Report

Report date:

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Submitted to:

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Vancouver, BC

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Nautilus Environmental Work Order #14841, 14891-14892

SIGNATURE PAGE

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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.

1.0 INTRODUCTION

The BC water quality guideline for sulphate has been established for water with hardnesses of up to 250 mg/L (as CaCO₃). At higher hardness values, the guideline indicates that site-specific testing is necessary using several species, since higher concentrations of water hardness in combination with sulphate may result in osmotic stress (BCMoE, 2013).

Nautilus Environmental conducted testing for the AJAX Mine (KGHM International Ltd.), to evaluate the effects of sulphate and water hardness on the survival and reproduction of *Ceriodaphnia dubia*, growth of the alga *Pseudokirchneriella subcapitata* and development of rainbow trout (*Oncorhynchus mykiss*) through the embryo-alevin stages. The purpose of the tests was to evaluate the sensitivity of these species to sulphate under the relatively high water hardness conditions that occur naturally at the Ajax Mine. This report describes the results of these toxicity tests.

2.0 METHODS

Water samples were collected from Jacko Lake on October 30, 2014, for using in the *C. dubia* and *P. subcapitata* tests and arrived at the Nautilus Environmental laboratory on October 31, 2014. Additional samples were sampled on January 20 and 28 and February 4, 2015, for the *O. mykiss* embryo-alevin development test and arrived at the Nautilus Environmental laboratory on January 21, 29 and February 5, 2015. Samples were collected in 20-L plastic buckets and were transported by overnight courier.

Upon arrival, a portion of the water was amended with sulphate to ~1500 mg/L SO₄ by addition of Ca₂SO₄*2H₂O, MgSO₄*7H₂O, Na₂SO₄ and K₂SO₄ in proportions that produced waters with ionic concentrations that are expected for the site; this amended samples was considered to be the 100% treatment. *C. dubia*, *P.subcapitata* and *O. mykiss* were each exposed to a range of concentrations of sulphate by diluting this sulphate amended sample with untreated Jacko Lake water. Six nominal concentrations of sulphate were tested using *C. dubia* and *P. subcapitata* tests using a 0.67 times dilution series (i.e., 100, 67, 44, 30, 20, and 13%) and three concentrations were tested using *O. mykiss* (i.e., 100, 50 and 20%).

Toxicity tests were performed following procedures described in Environment Canada (2007a; 2007b; 1998) which are summarized in Tables 1, 2 and 3.

The *O. mykiss* embryo development test was performed on three concentrations and involved the 100% sulphate treated sample, a 50% dilution and a 20% dilution with unaltered Jacko site water.

The unaltered Jacko Lake water was used as the negative control in all three tests (identified as the site control); however, a laboratory control was also tested in each test using the water that is usually used for culturing the test organisms.

The *C. dubia* and *P. subcapitata* tests were conducted at $25 \pm 1^{\circ}$ C under 16:8 h light:dark photoperiod. The *O. mykiss* embryo-alevin test was conducted at $15 \pm 1^{\circ}$ C. Solutions were renewed daily, at which time temperature, pH, dissolved oxygen and conductivity were measured, with the exception of the *P. subcapitata* test, which had no solution renewal.

Test concentrations were analyzed for sulphate, calcium and magnesium at test initiation by ALS Environmental. These same constituents were analyzed weekly in the *O. mykiss* test, and at test termination in both the *O. mykiss* and the *C. dubia* tests. Statistical analyses were conducted on the basis of averaged measured sulphate concentrations using CETIS (Tidepool Scientific Software, 2007).

Table 1. Summary of test conditions: *Ceriodaphnia dubia* survival and reproduction test.

Test organism *Ceriodaphnia dubia*Test organism source In-house culture

Test organism age <24 hr old neonates produced within 12 hr

Test type Static-renewal (daily)

Test duration 7 ± 1 day

Test chamber 20 mL glass test tube

Test solution volume 15 mL

Number of replicates 10

Number of organisms/chamber 1

Control/dilution water Jacko Lake water used for control and dilution; 20% Perrier

water used as a second laboratory control

Test solution renewal Daily

Feeding Daily, with 0.1 ml Pseudokirchneriella subcapitata and 0.05 mL

digested yeast, cerophyll and trout chow (YCT)

Light intensity 100 to 500 lux at water surface

Test temperature 25 ± 1 °C

Light intensity 100 to 600 lux

Photoperiod 16 hours light/8 hours dark

Aeration None

Test protocol Environment Canada (2007), EPS 1/RM/21

Test endpoints Survival and reproduction

Test acceptability criterion for controls ≥80% survival; ≥15 young per surviving control; ≥60% of

controls producing three or more broods

Reference Toxicant Sodium chloride

Table 2. Summary of test conditions: *Pseudokirchneriella subcapitata* growth inhibition test.

Test organism Pseudokirchneriella subcapitata

In-house culture, obtained from Canadian Phycological

Test organism source Culture Centre, and originally isolated from Nitelva River,

Norway.

Test organism age 4 to 7 day old culture in logarithmic growth phase

Test type Static Test duration 72 hours Test vessel Microplate Test volume 220 μ L

Test replicates 4 replicates per treatment; 8 replicates for control

No. of organisms 10,000 cells/mL

Control water Deionized water with nutrients added

Test solution renewal None
Test temperature $24 \pm 2^{\circ}$ C
Feeding None

Light intensity 3600 to 4400 lux Photoperiod 24 hours light

Aeration None

Test protocol Environment Canada (2007b), EPS 1/RM/25

Test endpoint Algal cell growth inhibition

Test acceptability criteria for controls ≥ 16-fold increase in number of algal cells; CV ≤20%; no trend

when analyzed using Mann-Kendall test

Reference toxicant Zinc

Table 3. Summary of test conditions: rainbow trout embryo viability test.

Test organism Oncorhynchus mykiss

Test organism source Vancouver Island Trout Hatchery, Duncan, BC
Test organism age <30 min post fertilization, <24 h old gametes

Test type Static renewal

Test duration 7 days

Test vessel 2 L plastic containers

Test volume 2 L

Test replicates 4 test replicates per treatment

No. of organisms 30 eggs per container

Control water Dechlorinated water (hardness 12 mg/L CaCO₃)

Test solution renewal Daily
Test temperature $14 \pm 1^{\circ}$ C
Feeding None
Light intensity Dark
Photoperiod 24 h dark

Aeration $6.5 \pm 1 \text{ mL/min/L}$

Test protocol Environment Canada (1998), EPS 1/RM/28; Canaria et al.

(1999)

Test endpoint Embryo viability

Test acceptability criteria for controls Embryo viability ≥70%

Reference toxicant Sodium dodecyl sulphate

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3.0 RESULTS

There were no adverse effects on *C. dubia* survival or reproduction or *P. subcapitata* growth across the range of sulphate concentrations tested, resulting in IC20 values that were greater than the highest test concentration (i.e., >1460 and >1470 mg/L SO₄ respectively).

Adverse effects were observed on survival and the percentage of normally-developed surviving alevins in the rainbow trout embryo-alevin test in all test solutions relative to the laboratory control. However, there was an adverse effect in the unamended Jacko Lake water, regardless of addition of sulphate; Jacko Lake water produced 62.1% normal surviving alevins, compared with 89.9% in the laboratory control. Thus, the performance of the test solutions was compared with the Jacko Lake water, and not with the laboratory control, in order to control for the underlying adverse effect associated with the Jacko Lake water. Fungal growth associated with the site water appears to have been a likely cause of impairment of egg development in the Jacko Lake water.

In the sulphate amended solutions, the 714 and 1428 mg/L sulphate solutions produced 45.5 and 41.1% normal surviving alevins, compared with 62.1% in the Jacko Lake water and 62.9% in the 323 mg/L sulphate solution. Thus, the EC20 appears to have fallen in between the 323 and 714 mg/L sulphate test concentrations. A dose-response could not be effectively modelled with the dataset using preferred statistical models such as probit, and linear interpolation was the only statistical test that would produce an EC20, which resulted in estimates of 548 mg/L for survival and 563 mg/L for normal surviving alevins. It is likely that these reported EC20s overestimate the potential for adverse effects on development of rainbow trout eggs, since they were under stress from another stressor in the Jacko lake water.

The current water quality guideline for water with hardness of between 181 and 250 mg/L is 429 mg/L sulphate. The results of the tests presented here demonstrate that no adverse effects would be expected to *C. dubia* and *P. subcapitata* at concentrations of sulphate that are significantly higher than this value under the water quality conditions associated with the site. However, results for rainbow trout indicate that adverse effects might occur at a concentration of 548 mg/L, which corresponds to a water hardness of approximately 800 mg/L. Thus, a site specific water quality benchmark for sulphate that extends the water quality guideline of 429 mg/L sulphate across a range of water hardnesses of up to 800 mg/L would appear to provide an appropriate level of protection to this species under the water quality conditions of the site.

In areas where early life stages of trout do not occur, or during times of year that developing eggs would not be expected, a higher limit for sulphate may be appropriate without risk of adverse effects. Since no adverse effects were observed using either *C. dubia* or *P. subcapitata* at concentrations of up to 1460 mg/L sulphate (corresponding to a water hardness of 1377 mg/L as CaCO₃), a site-specific benchmark of 730 mg/L would provide greater than a two-fold safety margin for these species. It should be noted that an occasional exceedence of this benchmark would not be expected to result in adverse effects, since there is a safety margin incorporated into this value.

Thus, a site-specific science based environmental benchmark of 429 mg/L sulphate (for up to 800 mg/L hardness) in areas and time periods during which spawning and developing rainbow trout might occur (e.g., May and June), and 730 mg/L sulphate (for up to 1377 mg/L hardness) for the remainder of the year and in areas with no fish populations would be expected to provide a suitable degree of protection.

Table 4. Test results: Ceriodaphnia dubia survival and reproduction test.

Treatment	Measured SO ₄ (mg/L)	Hardness (mg/L CaCO ₃)	Survival (%)	Reproduction (young/organism) (mean ± SD)
Lab control	8	93	100	24.5 ± 5.4
Site Control	50	253	100	22.8 ± 3.4
13%	241	411	90	25.3 ± 3.6
20%	337	482	100	24.8 ± 3.3
30%	474	605	100	22.9 ± 5.3
44%	678	765	100	21.6 ± 3.6
67%	1015	1059	80	19.4 ± 7.8
100%	1460	1377	100	22.9 ± 4.7
Test endpoints (mg	g/L SO ₄)			
LC50			>1460	
IC20				>1460
IC50				>1460

Standard Deviation. SD

LC50 Lethal concentratrion associated with an effect on 20% of organisms IC20 Inhibitory concentration associated with a 20% reduction in reproduction

Table 5. Test results: *Pseudokirchneriella subcapitata* algal growth inhibition test.

Treatment	Measured SO ₄ (mg/L)	Hardness (mg/L CaCO ₃)	Cell yield (cell/mL x 10 ⁴) (mean ± SD)	Percent effect (%)
Lab Control	8	NT	39.0 ± 3.8	
Site Control	51	256	76.7 ± 6.1	0.00
13%	242	416	87.0 ± 6.3	-13.54
20%	336	493	94.5 ± 15.8	-23.33
30%	475	600	108.8 ± 11.4	-41.92
44%	684	749	97.3 ± 9.4	-26.92
67%	1000	1000	103.3 ± 11.0	-34.75
100%	1470	1392	102.0 ± 11.9	-33.12
Test endpoints (mg	z/L SO ₄)			
IC20 (relative to site	e control)		>1470	
IC50 (relative to site	e control)		>1470	

SD Standard Deviation.

Table 6. Test results: Rainbow trout embryo-alevin development test.

Treatment	Measured SO_4 (mg/L)	Hardness (mg/L CaCO ₃)	Survival (%)	Normal surviving alevins (%)					
Lab Control	1	9	91.6 ± 4.2	89.9 ± 4.2					
Site Control	52	303	63.8 ± 11.4	62.1 ± 13.1					
20% spiked	323	573	64.7 ± 15.8	63.8 ± 15.0					
50% spiked	714	978	45.0 ± 15.5	45.5 ± 15.5					
100% spiked	1428	1688	43.6 ± 12.6	41.1 ± 12.7					
Test endpoints (mg/L SO ₄)									
EC50 (relative to site control) >1428 >1428									
EC20 (relative to sit	e control)		548.2 (201.6 - NC)	562.6 (135.9 - 1744)					
CD C(11D11									

SD Standard Deviation.

NT Not tested

IC50 $\,$ Inhibitory concentration associated with a 50% reduction in reproduction

IC20 Inhibitory concentration associated with a 20% reduction in reproduction

LC20 Lethal concentration associated with a lethal effect on 50% of organisms

EC20 Inhibitory concentration associated with a 20% reduction in normally developed alevins

NC Not calculable

4.0 QA/QC

The health history of the test organisms used in the exposures was acceptable and met the requirements of the Environment Canada protocols. The tests met all control acceptability criteria. Water quality parameters remained within ranges specified in the protocols throughout the tests. Sulphate, calcium and magnesium concentrations were not measured for the *P. subcapitata* laboratory control water. All statistical analyzes were based on the site control results and therefore the missing data did not affect interpretations of test results.

Results of the reference toxicant tests conducted during the testing program are summarized in Table 7. Results for these tests fell within the range for acceptable organism performance of mean ± two standard deviations, based on historical results obtained by the laboratory with these tests. Thus, the sensitivity of the organisms used in these tests was considered to be appropriate.

Table 7. Reference toxicant test results.

Test Species	Endpoint	Historical Mean	CV	Test Date
		(2 SD Range)	(%)	
C. dubia	Survival LC50: 2.1 g/L NaCl	1.9 (1.4 - 2.5)	15.6	October 22, 2014
С. ииош	Reproduction IC50: 1.8 g/L NaCl	1.4 (1.0 - 1.9)	17.8	October 22, 2014
P. subcapitata	Cell growth IC50: 19.8 mg/L Zn	25.0 (14.8 - 42.3)	30.0	November 4, 2014
O. mykiss	Normal development IC50: 4.1 mg/L SDS	3.9 (2.1 – 7.1)	35.0	January 22, 2015

SD = Standard Deviation, CV = Coefficient of Variation, LC = Lethal Concentration, IC = Inhibitory Concentration.

5.0 REFERENCES

Environment Canada. 1998. Biological test method: toxicity tests using early life stages of salmonid fish (rainbow trout). Environmental Protection Series EPS 1/RM/28. Second Edition, July 1998. Environment Canada, Method Development and Application Section, Environmental Technology Centre, Ottawa, ON. 102 pp.

Environment Canada. 2007a. Biological test method: test of reproduction and survival using the cladoceran *Ceriodaphnia dubia*. Environmental Protection Series. Report EPS 1/RM/21, Second Edition, February 2007. Environment Canada, Method Development and Application Section, Environmental Science and Technology Centre, Science and Technology Branch, Ottawa, ON. 74 pp.

Environment Canada. 2007b. Biological test method: growth inhibition test using the freshwater alga. Environmental Protection Series, Report EPS 1/RM/25. Second Edition, March 2007. Environment Canada, Method Development and Application Section, Environmental Science and Technology Centre, Science and Technology Branch, Ottawa, ON. 53 pp.

Tidepool Scientific Software. 2013. CETIS comprehensive environmental toxicity information system. Tidepool Scientific Software, McKinleyville, CA.

APPENDIX A - Toxicity test results

Ceriodaphnia dubia Summary Sheet

Client: Work Order No.:	Ajax Mine 14891	Start Date/Time: <u>Nov</u> Set up by: <u>E</u> M	6/14@17:00
Sample Information Sample ID: Sample Date: Date Received: Sample Volume: Test Organism Info	Jacko BTC Ajax lab prepared spike Oct. 30/14 Oct. 31/14 206 x 17	Test Validity Criteria: 1) Mean survival of first generation controls 2) At least 60% of controls have produces 3) An average of ≥15 live young produces control solutions during the first three broad in any coronic department of the produced in any coronic way represent the pro	ed three broods within 8 days and per surviving female in the boods. Introl solution at any time.
Mortality (%) in prev	est 3 broods of previous 7 d: vious 7 d: used ≥8 young on test day	102914 (*23~ <24-h (within 12-h) 7.7.9 0.1 *23-30	30)
Reference Toxicant Stock Solution ID: Date Initiated:	1100		
7-d LC50 (95% CL) 7-d IC50 (95% CL):		g/L NaCL	
	e Toxicant Mean and Historical R Toxicant Mean and Historical R		cv (%): <u>17</u> _cv (%): <u>19</u>
Test Results:	My/L 364 LC50 % (V/V) (95% CL) IC25 % (V/V) (95% CL) IC50 % (V/V) (95% CL) My/L 504 BT (Survival > 1460 >	Reproduction -1460
Reviewed by:	<u>Jou</u>	Date reviewed:	Felo. 25/15

Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Sample ID:	DIE ID: ALABPREPARED SPEKE Jacko Stop Date & Time: NOV1211400 1200													
Work Order #:	14	891				•		Test Sp	ecies:	Cerioa	apnnia d	dubia		EC.
Cantinal							D	ays	-					
Control Concentration	0		1		2	Ι .	3	r -	4		7			
(LAB)	init.	old	new	old	new	old	new	old	new	old	new	Final Old	6 new/	final
Temperature (°C)	24.0	24.0	24.0	245	240	rus	યુન	24.0	24.0	24.1	240	240	17	
DO (mg/L)	8.1	7.8	7.9	76	5,2	3/3	22	7.4	38	7.9	F-2-80	37.5	 / 	
pH	8.0	15	8.2	22	8,1	37	R2	19	14	79	1	7 8		
Cond. (µS/cm)	215	7.31	G . 2		w		218	7-0	7h	BiO.	20 217	214	<u>-</u>	- -
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Initials GC GC A A A GC GC GC												<u> </u>		
Site Control Days										20				
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Tomporeture (°C)	24.0	24.0	24.0	24/5				240	24.0	24.0	24.0	24.0	11eW	- illiai
Temperature (°C)	8.1	7.9	8.2	75	SI	76	SZ	14	7.7	7.9	8.2	7.1	/	
DO (mg/L)	8.1	8.0	8.2	79	8-1	80	81	0 1	188		9.9	79	/	
pH		-				70		8.U 70				 - - - - - - - - - -	(2	
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DO (mg/L)	8.1	30	0,4	17,5	22	7,5	<u>\$,2</u>	7.3	4.4	7.9	8.3	7.2	/	
pH	8.0	8,2	8.2	\mathcal{L}_{i}^{1}	KA	2,	FJ	8-1	200	079	7.9	8.1	<u>r</u>	
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Temperature (°C)	24.0		24.0	lyń	21/2	US	24.0	240	240	341	24.0	240	/	
DO (mg/L)	8.0		8.3	γ_{r}	82	7-6	F-3	7.8	7.6	7.9	8.2	7.7		
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~ mg/L as CaCO3 WQ Ranges: T (°C) =	25 + 1.	DO /m	a/I \ = 2	3 to 9 4	(mali)	· nH -	6 to 9 5		L	Jale rev	iewea:	-	- 14	14
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Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client:	AJAX Start Date & Time: Nov 6/14@ 1200)			
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•			-			•								EC
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Temperature (°C)	24.0	24.0	24.0	24,5	24,2	245	248	24.0	24.0	24,0	24.0	240		
DO (mg/L)	8.1	8.0	8.3	7,5	22	7/2	Fl	7.3	7.6	7.9	8.2	7.2		-
pH	8.0						81	8.1	8:0	8.0	7.9	8.1	<i>[</i>	
	1339		60	·`	<u> </u>	52			51	134			-17.59	
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Temperature (°C)	24.6	24.0	24.0	245	14,0	24.6	W.0	240	240	24.0	240	240		
DO (mg/L)	8.1	7.9	8.3	7,6	62	7.6	£2	7.3	7.7	7.9	8.3	7.2	/	
pH	8.00	8.2	8.1	M	8,1	ナス	8.1	8.1	8.0	8.0	7.9	8.1		
Cond. (µS/cm)	20800 1644 1-27					. 1	₽3 ⇔		17	162	7	162	9	
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Temperature (°C)	24.0	24,0	24.0	245	240	246	240	24.0	24.0	2400	24.0	74.0		
DO (mg/L)	8.1	8.0	8.3	7.6	22	75	51	7.4	7.7	7.9	8.3	7.3		
pН	8.0	8.2	8.1	82	81	ध्य	8.1	8.1	6.0	8.0	7.9	8.1	1	
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	init	old	new	old	new	old	new	old	new	old	new	old	new	final
Temperature (°C)			24.0	246	24/2	24.5	240	240	240		24.0			
DO (mg/L)	8.0	8.0	8,3	7.6	A.2	25	Lz	1.3	7.6	7.9	8.2	7.5		
pH	7.9	8.2	8.0	f-3	٦٥	8,4	81	91	7.9	8.0	7.8	8.1	1	
Cond. (µS/cm)	2660		60	26			00	26		26	<u> </u>	258	20	
Initials	(7		1		~		_	4		(-)		Gi		—
midais	()			-		<u> </u>		<u> </u>						
•	Con	itrol	100%	(v/v)] .	Analys	ts:	E	CAW	D
Hardness*	10)	40											
Alkalinity*	1,8,5	1	70							Reviev	ved by:	JOH		
* mg/L as CaCO3										Date rev	•	Ta	n 15	15
WQ Ranges: T (°C) =	= 25 ± 1;	DO (m	g/L) = 3	.3 to 8.4	(mg/L)	; pH =	6 to 8.5							
Sample Description:	;													
Comments:	Broodb	oard U	sed:											

Chronic Freshwater Toxicity Test C. dubia Reproduction Data

Client	ient: AJAX							· L	1×L	-							St	art Da	te & 1	Time:	NO	2 V	6/1	4		120							
Samp			_A	AX	LA	B 91	26P	ARC	\$ C	PIK	J	acko	Stop Date & Time: NO V 12/ (4 (2) 1207																				
Work	Orde	г:		48	91															7			Set u	p by:	+11	IV)			<u> </u>			
		···	41		- 14+	1	TLA	0)			_	Cana	entrat	lan.	_	ite			- 1				Conc		ioni		13%	r K	/v)				
Days	Conc	entra B	C	D	PM	F	G	H	ı	J	Init	A	В	C	D .	E	F	intro G	9 / H		j	Init	A	В	C	D	<i>i > /</i> c	F	G	н		J	Init
1		7	7	-	_	<u> </u>	7	"		-	CC			/		-			-	-		G					_	<u> </u>	7	<u>'</u>	7		a
2	$-\!$	-	/	-	-	-	/	7	/	7	1	_	-		. /	-	-		' /		_	m		-			/		/	-			M
	•		1	1	/	/	/	1	7	1	<i>/-</i>				-	1	-/	$\overline{}$	$\overline{}$	-/-	1		7	1	/	7	1	_				7	$\overline{\lambda}$
3	7	-	15	5	1	2	7	li.	7	3	62	6	1	7	16.	9	4	-		12	7	G	3	1	á	9	8	6	Ĺ	16-	11	٦	Ge
4		13	5	1.	0	2		E-1-7	-	10	a	g	14	-1	12	-1	0	表	4	3	-	ور زر	12	16	12		1 4	8	q	10	14/		Er
5	14	12		12	8	8	42	12	14		-	14		14	10	14	Íb	1	13	13		بالح	12	16	1	13	14		13	14	- / - /		(-2
6	14	14	12	114	1	1	1	10	14	(0	હ્ય	14	<u> </u>	14	10	14	U	<u> </u>	15	7.	17	C	10	/	×		/	LL.	1)	14	14 1	- 	<u> </u>
7			ļ- <i>'</i>		-		,					_																1			\rightarrow	-+	\dashv
8		7.		_	- 7-	1		_		- 2		. /	19	,	-		- 11				- 7			>))		. 2			28/	20	29	a
Total	30	21	27	31	21	14	18	23	2-1	23	ec	26	17	ય	26	23	24	21	17	29	22	CL	27	ひ	30x	24	v	23	26	20	32	211	a
	Cond	ontro	tion		20	0/. 1	VIV	`				Conc	entra	tion		30	2/-	(V/V	,				Conc	ontra	ion:		W	% /	<u>~</u> v/v	7			\neg
Days	A	В	C	D	E	F	G	Н	ī	J	Init	A	В	C	D	E	F	G	Н	ī	J	Init	A	В	C	D	E	F	G	н	ı	j	Init
1		7	7	/	<i>-</i>	/	/	/	/	/	11		/	/	/	/		-/	/	/	/	Le	/	/	/	/	/	/	/	/	/	/	Ce
2	/	\vdash	17	/	/	/	/	/	11	7	40	/	/	/	/	/	/	/	/	/	/	m		_	/		/	/			/		A
3	/	/	*>	17	/	1/	17	17	7	7			/	/	7	/	/					2						1		7	1	7	
4	a	W	10	4	7	4	5	78	8	7	GL	¥	7	7	7	4 4	5	1	7	4	4	5	4	5	ष्ठ	ġ	4	6	3	7	8	7	60
5	ro	9	12	8.	10	10		100	/	1	CC	12	\rightarrow	10	10	1	11	5	8	10	10	Ge	10	/	14		à	7	11		/	\supset	Er
6	15		n		1.50	14	iv	13	14	_	Œ		15	/ ×	/	11/1/	14	12	9		12	EC		ILL		(i	14	11	n	13	13		62
7		 ' ' 	1	 	10	1	-	-	 	,		114	,		_	1-7	1-3		/		(6			4	/								
8			1	\vdash	<u> </u>			 		 				_	-			<u>-</u>										-		\Box	$\overline{}$		
Total	29	27	28	25	27	28	19	21	22	22	CC	30	22	19	17	19	36	29	15	22	26	U	24	10	22	19	26	17	76	20	u	18	Gi
IOLA	<u> </u>	121	100	100	10.3	10	111	1-1	, v -							1.1	170	~	14				- 0		00								
Davs	Cond	centra	ation:		6	7%	, (v	(v)				Cond	entra	tion:		10	0%	(v/	r)				Conc	entra	tion:								
Days	Α	В	С	D	Е	F	G	Н		J	Init	Ą	В	C	D	E	F	G	Н		J	Init	Α	В	С	D	E	F	G	Н	\sqcup	J	Init
1	/	/	/	/	/	/	/	/	/		ar	_	/	/	/	/	/	/	/	/	/	Gi									\sqcup		
2	-	/	/	/		1/	1	/	1		m				_				. /			M											
3	/	1		/	/		11	/	/	/				\angle	/	/	/		/	/	/	~									\sqcup		
4	5	6	7	6	4	4		4	6	4	6	3	2	3	ス	3	4	8	6	4	4	60											
5	[]	12	/	1	8	11		12	1	10	(e	10	11	10	9	7	8	10	/	9	10	Ec		·									
6	12	/	13	111	10	12		X	12	14	GL	n	14	11	11	13	/	11	11	11	12	60											
7				T				1																									
8		Π					Π	П													,												
Tota	28	18	20	17	22	27	η×	16	18	28	er	25	2}	24	22	23	12	29	17	24	26	CL											
				-		·					-																						
Note	s: X =	morta	ality.																														
Sam	ple De	escrio	tion:																														
	ment			Young	only ba	sed on t	he first :	3 Broods	s. Fourt	n and su	bseque	nt brood	s not in	cluded i	n total c	ount.																	
Day:					·	POL																Det			7	Ja	lu	8/1	-				
Kevi	ewed	by:	-			/00	_				-											Dat	e revie	:wed:		() '	1 €	' '	•				

Nautilus Environmental

Report Date: Test Code: 24 Nov-14 16:13 (p 1 of 2) 14891 | 07-1528-8788

		•						Test	Code:		14891 0	07-1528-87
erioda	phnia 7-d	Survival an	d Reprodu	ction Te	st					Na	utilus En	vironment
nalysis	ID: 20	-5116-7380		point:	6d Survival Rat		i		IS Version		1.8.7	
nalyze	d: 20	Nov-14 17:3	31 An a	lysis:	Linear Regress	sion (MLE)		Offic	ial Result	s: Yes		
atch IE): 01	-9145-7353	Tes	t Type:	Reproduction-S	Survival (7d)	6d BTC	Anal	lyst:		f.	
Start Date: 06 Nov-14 12:00			0 Pro	tocol:	EC/EPS 1/RM/	/21		Dilu	ent: Site	e Water		
nding	Date: 12	Nov-14 12:0	0 Sp e	cies:	Ceriodaphnia d	lubia		Brin	e:			
uration	n: 6d	Oh	Soi	ırce:	In-House Cultu	ire		Age:	:			
ample		-4939-4417	Co	de:	506E1FF1			Clie	nt: AJ	AX		
ample	Date: 30	Oct-14	Ma	erial:	Sulphate			Proj	ect: Aja	ıx sulphate t	esting	
	Date: 31		So	ırce:	AJAX sulphate	testing						
ample	Ag e: 7d	12h	Sta	tion:	Jacko							
inear R	egressio	n Options										
	unction			Thres	hold Option	Threshold	Optimized	Pooled	Het Corr	<u></u>	i	
og-Norr	nal [NED=	=A+B*log(X)]		Contro	ol Threshold	1E-07	Yes	Yes	No	Yes		
egress	ion Sum	mary										
ers	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision	·	
	-12.19	38.38	30.22	10.3	4.572					Lack of F	it Not Test	ed
oint Es	timates								,		•	
evel '	mg/L	95% LCL	95% UCL									
C5	599.4	N/A	N/A		*		¢	_			•	
C10	27470	N/A	N/A									
C15	362800	N/A	N/A									
C20	2821000	N/A	N/A									
C25	16390000		N/A			t						
C40	13810000		N/A		•							
C50	19890000		N/A			·						
•	ion Parar											
aramet		Estimate	Std Error				P-Value	Decision				
hreshol	d	1.01E-07	0.000101	-0.000		0.001005	0.9992	_	ficant Para			
lope		0.2187	1.016	-1.773		0.2152	0.8401		ficant Para			
tercept		-2.252	2.844	-7.827	3.322	-0.7919	0.4727	Non-Signi	ficant Para	meter		
NOVA .	Table			_								
ource		Sum Squa		n Squa		F Stat	P-Value	Decision(
odel esidual		1.756666 7.29806		66666 24515	1 4	0.9628	0.3820	Non-Signi	ncant			
esidua	i Analysis			·····								
tribute	-	Method		4	Test Stat	Critical	P-Value	Decision((a:5%)			
oodnes	s-of-Fit	Pearson C	hi-Sq GOF		7.298	9.488	0.1210		ficant Heter	rogenity		
			Ratio GOF		7.873	9.488	0.0963	_	ficant Hete			
istributi	on	Shapiro-W	ilk W Norm	ality	0.7069	0.6146	0.0044	_	al Distributi			·
Survi	val Rate	Summary				Calcul	lated Variate	e(A/B)				
-mg/L		rol Type	Count	Mean	Min	Max	Std Err	Std Dev.	CV%	%Effect	Α	В
)	Nega	tive Control	10	1	1	1	0	0	0.0%	0.0%	10	10
11			10	0.9	0	1	0.1	0.3162	35.14%	10.0%	9	10
37			10	1	1	1	0	0	0.0%	0.0%	10	10
74			10	1	1	1	0	0	0.0%	0.0%	10	10
			10	1	1 .	1	0	0	0.0%	0.0%	10	10
79								0.4040	ED 70/	20 00/		40
			10 10	0.8 1	0 1	1 1	0.1333 0	0.4216 0	52.7% 0.0%	20.0% 0.0%	8 10	10 10

Analyst: QA: Joh

Report Date: **Test Code:**

24 Nov-14 16:13 (p 2 of 2) 14891 | 07-1528-8788

Ceriodaphnia	7-d Survival	and Reprod	luction Test
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Nautilus Environmental

Analysis ID:	20-5116-7380
Analyzed:	20 Nov-14 17:31

Endpoint: 6d Survival Rate Analysis: Linear Regression (MLE)

CETISv1.8.7 **CETIS Version:** Official Results: Yes

6d Survival Rate Detail

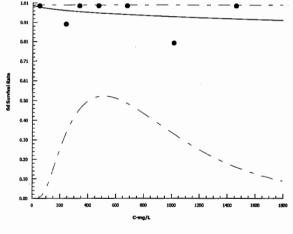
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
50	Negative Control	1	1	1	1	1	1	1	1	1	1
241		1	1	0	1	1	1	1 .	1	1	1
337		1	1	1	· 1	1	1	1	1	1	1 .
474		1	1 .	1	1	1	1	1	1	1	1
679		1	1	1	1	1	1	1	1	1	1
1015		1	1	1	1	1	1	0	. 0	1	1
1460		1	1	1	1	1	1	1	1	1	1

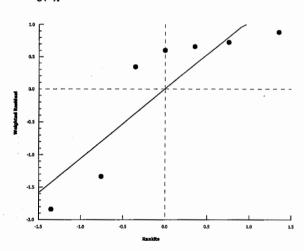
6d Survival Rate Binomials

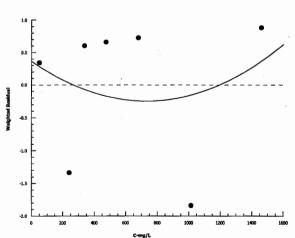
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
50	Negative Control	1/1	1/1	1/1	1/1 `	1/1	1/1	1/1	1/1	1/1	1/1
241		1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
337		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1 .
474		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
679		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1015		1/1	1/1	1/1	1/1	1/1	1/1	0/1	0/1	1/1	1/1
1460	•	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

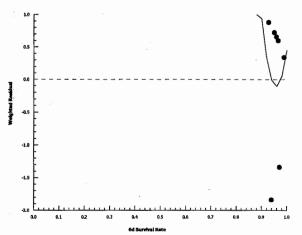
Graphics

Log-Normal [NED=A+B*log(X)]









Report Date:

24 Nov-14 16:13 (p 1 of 2)

Test Code: 14891 | 07-1528-8788

	7-d Survival and	· vebi	- Cudollon I								autilus En	Oranielli
Analysis ID:	09-4883-9011		Endpoint:		urvival Rat				ΓIS Versi		1.8.7	
Inalyzed:	20 Nov-14 17:3	1	Analysis:			ngency Tabl			cial Resu	ılts: Yes		
Batch ID:	01-9145-7353		Test Type:	-		Survival (7d)	6d BTC		ılyst:			
Start Date:	06 Nov-14 12:00	0	Protocol:	EC/E	EPS 1/RM/	21		Dilu	ient:	Site Water		
Ending Date:	12 Nov-14 12:00	0	Species:	Cerio	odaphnia d	lubia		Brii	ne:			
Duration:	6d 0h		Source:	In-Ho	ouse Cultu	ге		Age): 			
Sample ID:	13-4939-4417		Code:	506E	1FF1			Clie	ent:	XALA		
Sample Date:	30 Oct-14		Material:	Sulp	hate			Pro	ject: /	Ajax sulphate i	testing	
Receive Date:	: 31 Oct-14		Source:	A JA	X sulphate	testing						
Sample Age:	7d 12h		Station:	Jack	.0							
Data Transfor	m	Zeta	Alt H	ур	Trials	Seed			NOEL	LOEL	TOEL	TU
Intransformed	d		C>T		NA	NA			1460	>1460	NA	
isher Exact/l	Bonferroni-Holm	Test										
Sample	vs Sample		Test	Stat	P-Value	P-Type	Decision				*****	
50	241		0.5		1.0000	Exact	-	ificant Effec				
60	337		1		1.0000	Exact	-	ificant Effec				
50	474		1		1.0000	Exact	•	ificant Effec				
50	679		1		1.0000	Exact	•	ificant Effec				
50	1015		0.236		1.0000	Exact	-	ificant Effec				
50	1460		1		1.0000	Exact	Non-Signi	ificant Effec	t			
Data Summar	У											
-mg/L	Control Type	NR	R		NR + R	Prop NR	Prop R	%Effect				
0	Negative Contr	10	0		10	1	0	0.0%				
241		9	1		10	0.9	0.1	10.0%				
337		10	0		10	1	0	0.0%				
174		10	0		10	1	0	0.0%				
679 		10	0		10	1	0	0.0%				
015		8	2		10	0.8	0.2	20.0%				
460		10	0		10	1	0	0.0%				
d Survival Ra		_										
C-mg/L 0	Control Type Negative Control	Rep '	1 Rep 2		Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 81	Rep 9	Rep 1
41	Negative Control	1	1		0	1	1	1	1	1	1	1
37		1	1		1	1	1	1	1	1	1	1
		1	1		1	1	1	1	1	1	1	1
74		1	1			•	•		1	·	,	1
79		1	1		1 .	1	1	1	1	1	1	1
015		1	1		1	1	1	·1	0	0	1	1
460		1	1		1	1 .	1	1 	1	1	1	1
	ate Binomials						:	_				
	Control Type	Rep 1			Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 1
	Negative Control		1/1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
41		1/1	1/1		0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
37		1/1	1/1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
		1/1	1/1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
74					1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
74 79		1/1	1/1									
.74 .79 015 460		1/1 1/1 1/1	1/1 1/1 1/1		1/1 1/1 1/1	1/1	1/1	1/1 1/1	0/1 1/1	0/1 1/1	1/1 1/1	1/1 1/1

Analyst: OA: JOH Jan: 8/15

Report Date:

24 Nov-14 16:13 (p 2 of 2)

Test Code:

14891 | 07-1528-8788

Ceriodaphnia 7-d Survival and Reproduction Test

Nautilus Environmental

Analysis ID: Analyzed: 09-4883-9011

20 Nov-14 17:31

Endpoint: 6d Survival Rate

Analysis:

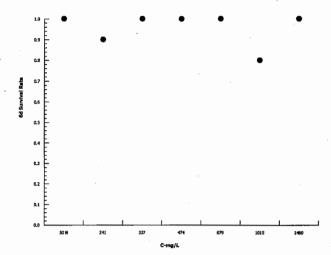
STP 2x2 Contingency Tables

CETIS Version:

CETISv1.8.7

Official Results: Yes

Graphics



Report Date: Test Code: 09 Jan-15 11:58 (p 1 of 1) 14891 | 07-1528-8788

									1631 00	Jue.	1403	1 07-1020-0700
Ceriodaphnia	7-d Survival and	Rep	roduc	tion Te	st						Nautilus	Environmental
Analysis ID:	00-2501-6743		Endp	oint:	6d 8	Survival Rat	e		CETIS \	Version:	CETISv1.8.7	
Analyzed:	09 Jan-15 11:57	7	Analy	ysis:	Sing	gle 2x2 Con	tingency Tal	ole	Official	Results:	Yes	
Batch ID:	01-9145-7353		Test	Type:	Rep	roduction-S	Survival (7d)	6d B5C	Analyst	t:	-	
Start Date:	06 Nov-14 12:00)	Proto			EPS 1/RM/			Diluent	: Site	Water	
Ending Date:	12 Nov-14 12:00)	Spec	ies:	Ceri	iodaphnia d	ubi a		Brine:			
Duration:	6d 0h		Sour	ce:	In-H	louse Cultu	re		Age:			
Sample ID:	13-4939-4417		Code):	506	E1FF1			Client:	AJA	x	_
Sample Date:	30 Oct-14		Mate	rial:	Sulp	hate			Project	: Ajax	sulphate testing	
Receive Date:	31 Oct-14		Sour	ce:	AJA	X sulphate	testing					
Sample Age:	7d 12h		Statio	on:	Jac	ko						
Data Transfor	m	Zeta		Alt Hy	p	Trials	Seed		Т	est Resu	ılt	
Untransformed			•	C > T		NA	NA ·		F	Passes 60	survival rate	
Fisher Exact 1	Test											
Sample	vs Sample			Test S	tat	P-Value	P-Type	Decision(a:5%))			
50	8			1		1.0000	Exact	Non-Significant	Effect			
Data Summar	у .			_	-							

6d Survival Rate Detail

Control Type

Negative Contr

Lab Water

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
8	Lab Water	1	1	1	1	1	1	1	1	1	1
50	Negative Contro	l 1	1	1	1	1	1	1	1	1	1

Prop NR

1

Prop R

0

0

%Effect

0.0%

0.0%

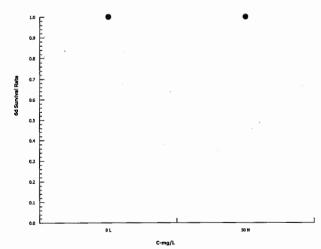
6d Survival Rate Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
8	Lab Water	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50	Negative Contro	i 1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics

C-mg/L

50



NR

10

10

R

0

0

NR+R

10

10

Analyst: QA: Feb. US/15

CETIS™ v1.8.7.16

Report Date:

24 Nov-14 16:13 (p 1 of 2) 14891 | 07-1528-8788

Test Code:

									lest	Code:	14	891 07-1528-8788
Ceriod	laphnia i	7-d Survival an	d Reprod	luction Te	est						Nautili	us Environmental
Analys Analyz		07-2279-0637 20 Nov-14 17:3		ndpoint:	Reproduction					IS Versior		
Batch		01-9145-7353		est Type:	Reproduction		(74)(6d)	BTL	Ana	lyst:		
Start D)ate:	06 Nov-14 12:0	0 P	rotocol:	EC/EPS 1/F		•		Dilu	ent: Sit	te Water	
	g Date:	12 Nov-14 12:0	00 S	pecies:	Ceriodaphn	ia dubia			Brin	ie:		
Duratio	-	6d Oh		ource:	In-House Co				Age			
											IAV	
Sample		13-4939-4417		ode:	506E1FF1				Clie		IAX	_
-		30 Oct-14		laterial:	Sulphate				Proj	ject: Aja	ax sulphate testin	g
		31 Oct-14		ource:	AJAX sulph	ate testing					-	
Sample	e Age:	7d 12h	S	tation:	Jacko							
Non-Li	inear Re	gression Optic	ns									
Model	Functio	n				T X	ansform	Y Tra	nsform V	Veighting	Function	PTBS Function
3P Log	-Logistic	EV [Y=A/(1+(X	/D)^C)]			Non	e :	None		Normal [W=	=1]	Off [Y*=Y]
Regres	ssion Su	ımmary										
Iters	Log L	-	BIC	Adj F	2 Optim	ize F Stat	Cri	tical	P-Value	Decisio	n(α:5%)	
38	-148	302.4	308.8	0.004		1.703	2.5	18	0.1606	Non-Sig	nificant Lack of F	it
Point E	Estimate	s										
Level	mg/L	95% LCL	95% UC	CL								
IC5	449.7	N/A	1301							-		
IC10	1049	233.4	2122									
IC15	1773	N/A	5448									
IC20	2632	N/A	15700									•
IC25	3647	N/A	62670									
IC40	8004	N/A	N/A			:						
IC50	12680		N/A									
Regres	ssion Pa	rameters										
Param	eter	Estimate	Std Err	or 95% L	.CL 95% U	CL t Stat	P-\	/alue	Decision	(a:5%)		
Α		24.29	2.431	19.53	29.06	9.992	<0.	0001	Significar	nt Paramete	er	
С		0.8819	1.57	-2.195	3.959	0.561	3 0.5	761	Non-Sign	ificant Para	ameter	
D		12680	44400	-7435	0 99700	0.285	5 0.7	762	Non-Sign	ificant Para	ameter	
ANOVA	A Table											
Source	€	Sum Squ	ares M	ean Squa	re DF	F Stat	P-\	/alue	Decision	(α:5%)		
Model		60.17566	60	0.17566	1	2.28	0.1	358	Non-Sign	ificant		
Lack of	f Fit	172.5101	43	3.12751	4	1.703	0.1	606	Non-Sign	ificant		
Pure E	rror	1595.9	2	5.33175	63							
Residu	al	1768.41	26	5.39418	67	·						
Residu	ıal Analy	/sis					-					
Attribu	ite	Method			Test S			/alue	Decision	(α:5%)		
Variand	ces	Mod Leve	ne Equali	ty of Varia		2.246	0.4	173	Equal Va	riances	,	
Distribu	ution	Shapiro-W	/ilk W No	rmality	0.9219	0.965	4 0.0	003	Non-norm	nal Distribu	tion	
		Anderson-	Darling A	2 Normali	ty 0.8038	2.492	0.0	372	Non-nom	nal Distribu	tion	
Repro	duction	Summary					Calcula	ted Var	iate			
C-mg/L	L_C	ontrol Type	Count	Mean	Min	Max		l Err	Std Dev	CV%	%Effect	
50	Ne	egative Control	10	22.8	17	29	1.1		3.584	15.72%	0.0%	
241			10	25.3	. 20	32	1.1		3.743	14.8%	-10.96%	
337			10 /	24.8	19	29	1.1		3.521	14.2%	-8.77%	
474			10	22.9	15	30	1.7	54	5.547	24.22%	-0.44%	
679			10	21.6	17	28	1.2	04	3.806	17.62%	5.26%	
1015			10	10.4	Λ	28	26	n4	8 235	42 45%	14 91%	

* negative control = site water control (vacko)

12

19.4

22.9

14.91%

-0.44%

42.45%

21.83%

2.604

1.581

8.235

4.999

28

1015

1460

Report Date: Test Code: 24 Nov-14 16:13 (p 2 of 2) 14891 | 07-1528-8788

Nautilus Environmental

Ceriodaphnia 7-d Survival and Reproduction Test

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Nauthus Environment

Analysis ID: Analyzed: 07-2279-0637 20 Nov-14 17:31 Endpoint: F Analysis: N

Reproduction
Nonlinear Regression

CETIS Version: Official Results:

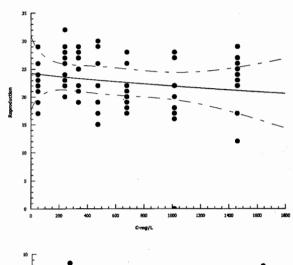
ion: CETISv1.8.7

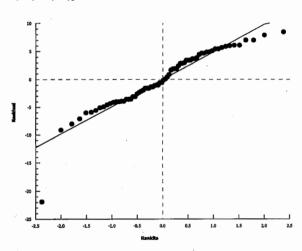
Reproduction Detail

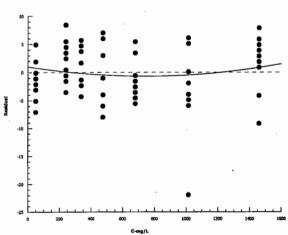
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
50	Negative Control	26	19	21	26	23	24	21	17	29	22
241	,	27	22	20	24	22	23	26	28	32	29
337		29	27	28	25	27	28	19	21	22	22
474		30	22	19	17	19	30	29	15	22	26
679		28	19	22	19	26	17 ·	26	20	21	18
1015		28	18	20	17	22	27	0	16	18	28
1460		25	27	24	22	23	12	29	17	24	26

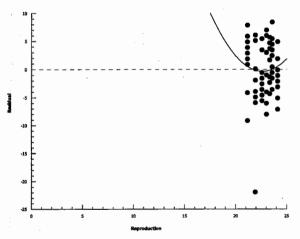
Graphics

3P Log-Logistic EV [Y=A/(1+(X/D)^C)]









Report Date:

24 Nov-14 16:13 (p 1 of 2) 14891 | 07-1528-8788

Test Code: 14891 | 07

-	7-d Survival and											
Analysis ID:	16-8607-8903 20 Nov-14 17:3	1 A	Reproduction Nonparametric	-Control	l ve T	reatmente		IS Version ial Result		1.8.7		
Analyzed:			nalysis:	•								
Batch ID:	01-9145-7353			Reproduction-	ourvival [.]	(1 0)(00	Anal	-	to Motor		
Start Date:	06 Nov-14 12:00		rotocol:					Dilu		te Water		
	12 Nov-14 12:00		pecies:	Ceriodaphnia				Brin				
Duration:	6d 0h	S	ource:	In-House Cultu	ire			Age:				
Sample ID:	13-4939-4417		ode:	506E1FF1				Clie		IAX		
Sample Date:	30 Oct-14	ĺV.	laterial:	Sulphate				Proj	ect: Aja	ax sulphate t	esting	
Receive Date:	31 Oct-14	S	ource:	AJAX sulphate	testing							
Sample Age:	7d 12h	S	tation:	Jacko								
Data Transfor	m	Zeta	Alt H	yp Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU
Untransformed	I	NA	C > T	NA	NA			23.1%	1460	>1460	NA	
Steel Many-O	ne Rank Sum Te	st					.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
Control	vs C-mg/L		Test S	Stat Critical	Ties	DF	P-Value	P-Type	Decisio	n(α:5%)		
50	241		123.5	74	5	18	0.9973	Asymp	Non-Sig	nificant Effec	et	
50	337		121	74	4	18	0.9945	Asymp	Non-Sig	nificant Effec	t	
50	474		105	74	5	18	0.8571	Asymp	Non-Sig	nificant Effec	t	
50	679		94	74	5		0.5272	Asymp	_	nificant Effec		
50	1015		91	74	2		0.4201	Asymp	_	nificant Effec		
50	1460		112	74	6	18	0.9564	Asymp	Non-Sig	nificant Effec	:	
ANOVA Table												
Source	Sum Squa	res	Mean	Square	DF		F Stat	P-Value	Decisio	` '		
Between	232.6857		38.78		6		1.531	0.1827	Non-Sig	nificant Effec	t	
Error	1595.9		25.33	175	63		_					
Total	1828.586				69 ———							
Distributional								_				
Attribute	Test			Test Stat			P-Value	Decision				
Variances	Bartlett Ed			11.91	16.81		0.0641	Equal Var				
Distribution	Shapiro-W	/ilk W No	ormality	0.9481	0.952	6	0.0058	Non-norm	al Distribu	tion		
Reproduction	Summary											
C-mg/L	Control Type	Count	Mean	95% LCL				Min	Max	Std Err	CV%	%Effec
50	Negative Control		22.8	20.24	25.36		22.5	17	29	1.133	15.72%	0.0%
241		10	25.3	22.62	27.98		25	20	32	1.184	14.8%	-10.96
337		10	24.8	22.28	27.32		26	19	29	1.114	14.2%	-8.77%
474		10	22.9	18.93	26.87		22	15	30	1.754	24.22%	-0.44%
679		10	21.6	18.88	24.32		20.5	17	28	1.204	17.62%	5.26%
1015 1460		10 10	19.4 22.9	13.51 19.32	25.29 26.48		19 24	0 12	28 29	2.604 1.581	42.45% 21.83%	14.91% -0.44%
	Datail		22.9	18.32	20.40			- 12	23	1.001	Z 1.0370	-0.44 %
Reproduction		Don 4	Den 1	Dor 2	Por 4		Don 5	Por 6	Don 7	Don 9	Pon 0	· Ban 4
C-mg/L 50	Control Type Negative Control	Rep 1	Rep 2	Rep 3	Rep 4		Rep 5 23	Rep 6 24	Rep 7 21	Rep 8	Rep 9 29	22
	regative Control										2 9 32	
241		27	22	20	24		22	23	26 10	28		29
337		29	27	28	25		27	28	19	21	22	22
474		30	22	19	17		19	30	29	15	22	26
679		28	19	22	19		26	17	26	20	21	18
1015	•	28	18 27	20 24	17 22		22 23	27 12	0	16 17	18 24	28
1460		25			~~			40	29			26

Analyst: QA: Joh

Report Date:

24 Nov-14 16:13 (p 2 of 2)

Test Code:

14891 | 07-1528-8788

Ceriodaphnia 7	∕-d Survival and R	eproduction Test
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Nautilus Environmental

Analysis ID: Analyzed:

16-8607-8903 20 Nov-14 17:31

Endpoint: Reproduction Analysis:

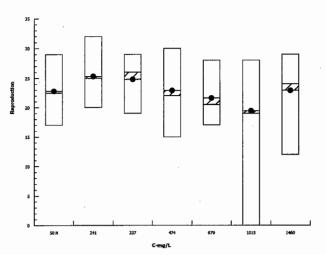
Nonparametric-Control vs Treatments

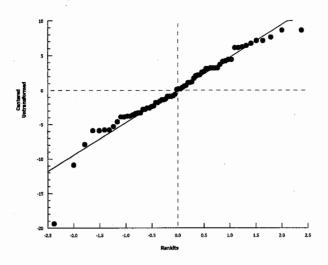
CETIS Version: Official Results:

CETISv1.8.7

Yes

Graphics





Ceriodaphnia 7-d Survival and Reproduction Test

Report Date: Test Code:

09 Jan-15 11:58 (p 1 of 1)

Nautilus Environmental

14891 | 07-1528-8788

oonoaapiiina			a											
Analysis ID: Analyzed:		82-2543 n-15 11:5	6	Endpoi Analysi		production rametric-Two	Sample			IS Ver	rsion: esults:	CETISv1 Yes	.8.7	
Batch ID:	01-91	45-7353		Test Ty	pe: Re	production-S	urvival- (7d)	6d BTC	Ana	lyst:				
Start Date:	06 No	v-14 12:0	0	Protoco		/EPS 1/RM/2			Dilu	ent:	Site 1	Water		
Ending Date:	12 No	v-14 12:0	0	Species	: Ce	riodaphnia d	ubi a		Brin	e:				
Duration:	6d 0h	1		Source	: In-l	House Cultui	re		Age	:				
Sample ID:	13-49	39-4417		Code:	506	6E1FF1			Clie	nt:	AJAX	ĸ		
Sample Date:	30 Oc	t-14		Materia	l: Su	lphate			Proj	ect:	Ajax	sulphate te	esting	
Receive Date:	31 Oc	t-14		Source	: AJ	AX sulphate	testing .							
Sample Age:	7d 12	?h		Station	Jac	cko								
Data Transfor	m		Zeta	Al	t Hyp	Trials	Seed		PMSD	Tes	t Resu	lt		
Untransformed	1		NA	С	> T	NA	NA		16.3%	Pas	ses rep	oroduction		
Equal Variance	e t Two	o-Sample	Test											
Control	vs	Control		Te	st Stat	Critical	MSD DF	P-Value	P-Type	Dec	ision(d	a:5%)		
50		8		-0	.7945	1.734	3.711 18	0.7814	CDF	Non	-Signif	icant Effec	t	
ANOVA Table														
Source	5	um Squ	ares	M	ean Sqı	uare	DF	F Stat	P-Value	Dec	ision(d	x:5%)		
Between	1	4.45		14	.45		1	0.6312	0.4373	Non	-Signifi	icant Effect	t	
Error	4	12.1		22	.89444		18	_						
Total	. 4	26.55					19							
Distributional	Tests													
Attribute		Test				Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances		Variance	Ratio I	F		2.565	6.541	0.1768	Equal Va	riances	S			
Distribution		Shapiro-V	Vilk W	Normalit	у	0.9593	0.866	0.5296	Normal D	istribu	tion			
Reproduction	Summ	ary												
C-mg/L	Contro	I Type	Cour	nt Me	ean	95% LCL	95% UCL	Median	Min	Max	ζ.	Std Err	CV%	%Effect

	Reproduction Detail														
	C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10			
-	8	Lab Water	30	31	27	31	27	14	18	23	21	23			
	50	Negative Control	26	19	21	26	23	24	21	17	20	22			

28.61

25.36

25

22.5

14

17

31

29

1.815

1.133

23.43%

15.72%

0.0%

6.94%

Graphics

8

50

Lab Water

Negative Control 10

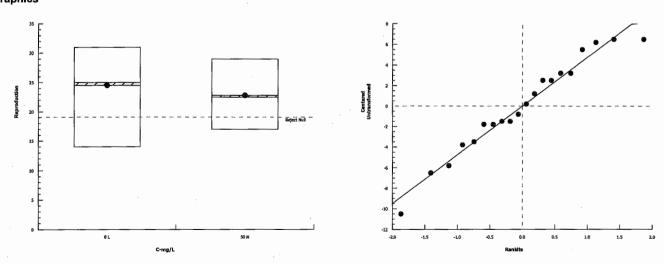
10

24.5

22.8

20.39

20.24



Analyst:

CETIS™ v1.8.7.16

Pseudokirchneriella subcapitata Summary Sheet

Client: Work Order No.:	Ajax Mine 14892	Start Date: Nov Set up by: EM/	7/14
Sample Information	:		
Sample ID: Sample Date: Date Received: Sample Volume:	Jacko Oct. 30/14 Oct. 31/14 206 x 17		
Test Organism Info	rmation:		
Culture Date: Age of culture (Day 0		/14	
Zinc Reference Tox	icant Results:		
Reference Toxicant I Stock Solution ID: Date Initiated:	14 Zn 01	7:30	
72-h IC50 (95% CL):	7 19.8 (17.2-24	4.6)	
72-h IC50 Reference	Toxicant Mean and Range: 25.0) (14.8 - 42.3) cv (%):	30.0
Test Results:	IC25 %(v/v) (95% CL) BTK g/L 50c	5 1 1 / A 5	0wth 1470 BTC 1470 BTC
Reviewed by:	Jon	Date reviewed:	Apr- 10/15

72-h Algal Growth Inhibition Toxicity Test Water Quality Measurements

	Client :	A	JAX				Setup by:		_EMI	n		
	Sample ID:	ATA	X 50	Ked +	40	Jucko	TC Test Date	Time:	NOV-	7114	W 70	0
	Work Order No.:	14	+89	2			Test Spec	ies:	Pseudokirc	hneriella sub	capitata	
	Culture Date: Culture Count:	oct 3 1 465	1 10 0		Age of Cu		Culture Co	Culture He	,	<u>6000</u>	d.	llcimi
	Juliuro Journe	1.3	220,000 ce			1	_ ountare of			1 70 1	· · · · · · · ·	XUIIIC
		v1 =		152 XI			cells/ml	- = 5	mL			
	Time Zero Counts	:	1 19		223	_	Average:					
	No. of Cells/mL:		210	000)	Initial Der	sity:	# cells/mL	÷ 220 µL x 1	ош= 99	545.4	STER
	Concentration	Water	Quality		ncubator 1	emperatur	'e .	Mic	ronlates rot	ated 2X per	day?	
	%(v/v)	pН	Temp (°C)			C)				·		
	Control	0 h	14.0	0 h	24 h	48 h	72 h	0 h	24 h	48 h	72 h	
	Siteral	210	74.0	24.6	145	かっ	25.0				-	
	13%	16	24.0									
	20%	7.6	240									
30	(4)	13	240				H				1	
سارا	9 (76 en	11	14.0	-				1				
44	170/	11	24.0					1/		/		
	100%	16	24.8	6							1	
	100%	7.0	1130									

	Initials	mm	I mm	t mm	n	A:	EMM	EMM	4-0		Fnn	
		EVII')	17(1)(1)	Tirir			(17/17)	CITIVI	As	\sim	(1/1/r)	
	Initial control pH:	Well 1:	6	8	***		Well 2:	6. X	<u> </u>			
	Final control pH:	Well 1:	_6.t	5			Well 2:	6.5	·			
Light intensity (lux): 4000 Date measured: Na 7/19												
	Instruments:	Thermom	eter)	•		pH meter		· · · · · · · · · · · · · · · · · · ·	Light meter	. /		
	Sample Descriptio	n:	sampl	e pre	icl iv	1-has	se					Ţ
	Comments:		•									
	Reviewed:		JG	h			Date	e reviewed:	Jan	. 8/15		

Pseudokirchneriella subcapitata Toxicity Test Data Sheet 72-h Algal Cell Counts

Client:	A	JAX		Start D	ate/Time:	NOV 7/	14 as 0700)
Work Order #:	14	892		Terminat	tion Date:	NOV 10	14 000700	2
Sample ID:	ATT	TX Spile	ed th O	" Test	set up by:	Emm		
%(v/v)		acko BT		PED	Shiral	emm		
Concentration	Rep	Count 1	Count 2	-Gount 3	Count #	count 2	Comments	Initials
Control	A	36		A	69			Emm
lab	В	1 1		B	14			
	С	35		C	88			
	D	143		b	15			
	E	44		F	79			
,	F	42	. ,	F	84			
	G	40		6	78			
	Н	36		H	74			
	Α	96		,				
13	В	90						
	С	82		,				
	D	84						
	. А	108						
2.6	В	85						
20	С	IIO						
	D	79						
	Α	116						
30	В	112/	_					
	С	92						
	D	ПХ						
	A	111						
44	В	04		-				
'	C	89						
	· D	Ga					- 	
	A	116						
17	В	111						`
01	C	05						
	D	43						
		173						<u> </u>
1.60	A B	102					**;***	
100	С	95						
	D	37						
	Α							
	В							
	С						···	
	D							
Comments:								
		10.					for 0/1	
Reviewed by:		JGu	<u>-</u>	Date R	Reviewed:		Jan. 8/15	

Pseudokirchneriella subcapitata Algal Counts

Initial Cell Density: 9545 cell/ml. 210000 0.20	Client: WO#:	Ajax 14892			Start Date/ Termination		07-Nov-14 10-Nov-14			
Concentration New York Count C	Sample ID:	Jacko			Initial Cell I	Density:	9545	cell/mL		0.22
Control site A 69 69 68.0 mean 76.7 site B 74 73.0 SD 6.089538 C 88 88 87.0 CV 7.916397 E 79 75 74.0 79.0 79.0 79.0 F 84 84 83.0 83.0 70.0		Rep						(x 10⁴)		
site B 74 74 73.0 SD 6.069538 C 88 88 87.0 CV 7.916397 E 79 75 74.0 7.916397 F 84 83 87.0 CV 7.916397 F 84 84 83.0 83.0 83.0 86 95.0 mean 87.0	Control	Α	69				69		mean	76.7
C 88 8 87.0 CV 7.916397 E 79 75 75. 74.0 F 84 84 84 83.0 H 74 74 73.0 H 74 73.0 13 A 96 96 96 95.0 mean 87.0 C 82 82 82 81.0 D 84 84 83.0 C 108 108 107 79 78.0 30 A 116 116 115.0 mean 108.8 B 112 111 110.0 C 93 93 93.0 C 89 89 88.0 C 89 89 88.0 C 89 89 88.0 C 89 89 88.0 C 89 99 98.0 67 A 116 116 115.0 mean 97.3 B 94 94 93.0 SD 9.429563 C 89 89 88.0 C 97 97 97 96.0 C 99 99 98.0 67 A 116 116 115.0 mean 103.3 C 93 93 92.0 C 89 89 88.0 C 99 99 98.0 C 97 97 97 60.0 C 97 97 98.0 C 98 99 98.0 C 99 99 98.0 C 99 99 98.0 C 99 99 99 98.0 C 99 99 98.0 C 99 99 99 99 99 99 99 99 99 99 99 99 99										6.069538
D 75							88	87.0	CV	7.916397
F							75	74.0		
F			79				79	78.0		
13			84				84	83.0		
13			78		•		78	77.0		
B 90			74				74	73.0		
C 82 82 81.0 D 84 84 83.0 20 A 108 107.0 mean 94.5 B 85 85 84.0 SD 15.80084 C 110 110 109.0 109.0 109.0 109.0 108.8 108.8 115.0 mean 108.8 108.8 109.0 108.8 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 109.0 11.44188 109.0 109.0 11.44188 109.0 109.0 11.44188 109.0 <td>13</td> <td>Α</td> <td>96</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	13	Α	96							
D	,	В	90						SD	6.324555
20 A 108 108 107.0 mean 94.5 B 85 85 84.0 SD 15.80084 C 110 110 109.0 15.80084 D 79 78.0 78.0 78.0 B 116 116 115.0 mean 108.8 B 112 112 111.0 SD 11.44188 C 93 93 92.0 92 11.44188 B 94 94 93.0 SD 9.429563 C 89 89 88.0 SD 9.429563 B 94 94 93.0 SD 9.429563 C 89 89 88.0 SD 9.429563 B 111 111 111.0 mean 103.3 B 111 111 111.0 SD 10.99621 C 97 97 96.0 SD 11.91638 B 107 107 106.0 SD 11.91638 C		С					,			
B 85 85 84.0 SD 15.80084 C 1110 110 109.0 D 79 79 78.0 30 A 116 116 115.0 mean 108.8 B 112 112 111.0 SD 11.44188 C 93 93 92.0 D 118 118 117.0 44 A 111 111 110.0 mean 97.3 B 94 94 93.0 SD 9.429563 C 89 89 88.0 D 99 98.0 67 A 116 116 115.0 mean 103.3 B 111 111 111.0 SD 10.99621 C 97 97 96.0 D 93 93 92.0 100 A 118 118 117.0 mean 103.3 C 95 95 94.0 D 99 92 91.0 Control A 36 36 35.0 mean 39.0 Control A 36 36 35.0 mean 39.0 C 35 35 34.0 CV 9.776436 D 43 44 44.0 E 44 44.0 F 42 42 41.0 G 40 40 39.0		D								
C 110 110 109.0 79 78.0 30 79 78.0 30 A 116 116 115.0 mean 108.8 B 112 1112 111.0 SD 11.44188 C 93 93 92.0 D 118 118 117.0 mean 97.3 B 94 94 93.0 SD 9.429563 C 89 89 88.0 D 99 99 98.0 C 89 99 98.0 D 99 99 98.0 C 97 97 96.0 D 93 93 92.0 T 100 A 118 118 117.0 mean 103.3 B 107 C 97 97 96.0 D 93 93 92.0 T 100 A 118 118 117.0 mean 102.0 B 107 107 106.0 SD 11.91638 C 95 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 94.0 D 92 92 91.0 C 95 0 95 95 94.0 D 92 92 91.0 C 95 0 95 95 94.0 D 92 92 91.0 C 95 0 95 0 95 0 95 0 95 0 95 0 95 0 9	20									
30 A 116 116 115.0 mean 108.8 B 112 112 111.0 SD 11.44188 C 93 93 92.0 D 118 118 117.0 nean 97.3 B 94 94 93.0 SD 9.429563 C 89 89 88.0 september 10.0 p.429563 C 89 89 88.0 september 10.0 p.429563 A 116 116 115.0 mean 103.3 B 111 111 110.0 SD 10.99621 C 97 97 96.0 99 10.99621 D 93 93 92.0 92 10.99621 D 93 93 92.0 92 10.99621 D 93 93 92.0 92 10.0 B 107 107 106.0 SD 11.91638 C 95 95 94.0 99 99 D									SD	15.80084
30 A 116 115.0 mean 108.8 B 112 112 111.0 SD 11.44188 C 93 93 92.0 11.44188 D 118 117.0 mean 97.3 B 94 94 93.0 SD 9.429563 C 89 89 88.0 SD 9.429563 C 89 89 88.0 SD 9.429563 B 111 116 115.0 mean 103.3 B 111 111 110.0 SD 10.99621 C 97 97 96.0 SD 10.99621 D 93 93 92.0 10.99621 D 93 93 92.0 10.99621 D 93 93 92.0 10.99621 D 95 94.0 99.0 99.0 10.99621 C 95 95 94.0 99.0 99.0 10.99621 10.99621 10.99621 10.99621 10.9962										
B 112 112 111.0 SD 11.44188 C 93 93 92.0 D 118 118 117.0 44 A 111 111 110.0 mean 97.3 B 94 94 93.0 SD 9.429563 C 89 88.0 D 99 99 98.0 67 A 116 116 115.0 mean 103.3 B 111 111 1110.0 SD 10.99621 C 97 97 97 96.0 D 93 93 92.0 100 A 118 118 117.0 mean 102.0 B 107 107 106.0 SD 11.91638 C 95 95 94.0 D 92 92 91.0 Control A 36 36 35.0 mean 39.0 lab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 43 42.0 E 44 44 43.0 F 42 42 41.0 G 40 40 39.0										400.0
C 93 93 92.0 D 118 118 117.0 44 A 111 111 110.0 mean 97.3 B 94 94 93.0 SD 9.429563 C 89 89 88.0 D 99 99 98.0 67 A 116 116 115.0 mean 103.3 B 111 111 110.0 SD 10.99621 C 97 97 96.0 D 93 93 92.0 100 A 118 118 117.0 mean 102.0 B 107 107 106.0 SD 11.91638 C 95 95 94.0 D 92 92 91.0 Control A 36 36 35.0 mean 39.0 lab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 43 42.0 E 44 44 43.0 F 42 42 41.0 G 40 40 39.0	30									
D									SD	11.44188
44 A 111 110.0 mean 97.3 B 94 93.0 SD 9.429563 C 89 89 88.0 98.0 D 99 99 98.0 99 B 116 116 115.0 mean 103.3 B 111 111 110.0 SD 10.99621 C 97 97 96.0 96.0 99 D 93 92.0 92 90.0 10.99621 D 93 92.0 92 91.0 102.0 B 107 107 106.0 SD 11.91638 C 95 95 94.0 99.0 99.0 Control A 36 35.0 mean 39.0 Iab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 42 41.0 44 43.0 43 42.0 44 44.0										
B 94 93.0 SD 9.429563 C 89 89 88.0 D 99 99 98.0 67 A 116 116 115.0 mean 103.3 B 111 111 110.0 SD 10.99621 C 97 97 96.0 D 93 93 92.0 100 A 118 118 117.0 mean 102.0 B 107 107 106.0 SD 11.91638 C 95 95 94.0 D 92 92 91.0 Control A 36 36 35.0 mean 39.0 lab B 44 4 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 43 42.0 E 44 44 43.0 F 42 42 41.0 G 40 40 39.0										07.3
C 89 99 98.0 67 A 116 116 115.0 mean 103.3 B 111 111 110.0 SD 10.99621 C 97 97 96.0 D 93 93 92.0 100 A 118 118 117.0 mean 102.0 B 107 107 106.0 SD 11.91638 C 95 95 94.0 D 92 92 91.0 Control A 36 35.0 mean 39.0 lab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 43 42.0 E 44 44 43.0 F 42 42 41.0 G 40 40 39.0	44									
67 A 116 116 115.0 mean 103.3 B 111 111 110.0 SD 10.99621 C 97 97 96.0 99.0 10.99621 D 93 92.0 92.0 10.0									SD	9.429303
67										
B 111 110.0 SD 10.99621 C 97 96.0 D 93 92.0 100 A 118 117.0 mean 102.0 B 107 106.0 SD 11.91638 C 95 95 94.0 D 92 92 91.0 Control A 36 36 35.0 mean 39.0 lab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 43 42.0 E 44 44 43.0 F 42 42 41.0 G 40 40 39.0	67								mean	103.3
C 97 D 93 P3 92.0 100 A 118 B 107 C 95 D 92 P 92 P 92 P 92 P 91.0 Control A 36 B 44 A 44 A 43.0 B 44 A 43.0 C 35 D 43 A 43 A 42.0 B 44 A 43.0 C 45 A 44 A 43.0 C 45 A 45 A 46 A 47 A 48	67				•					
D 93 92.0 A 118 117.0 mean 102.0 B 107 106.0 SD 11.91638 C 95 95 94.0 D 92 92 91.0 Control A 36 36 35.0 mean 39.0 lab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 43 42.0 E 44 44 43.0 F 42 42 41.0 G 40 40 39.0		6							OD	10.00021
100 A 118 117.0 mean 102.0 B 107 106.0 SD 11.91638 C 95 94.0 D 92 92 91.0 Control A 36 36 35.0 mean 39.0 lab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 42.0 E 44 44 43.0 E 44 44 43.0 E 44 44 43.0 F 42 41.0 G 40 39.0										
B 107 106.0 SD 11.91638 C 95 94.0 D 92 91.0 Control A 36 36 35.0 mean 39.0 lab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 43 42.0 E 44 44 43.0 F 42 42 41.0 G 40 39.0	100								mean	102.0
Control A 36 35.0 mean 39.0 lab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 42.0 E 44 44 43.0 G 40 39.0	100									
Control A 36 36 35.0 mean 39.0 lab B 44 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 42.0 E 44 44 43.0 F 42 42 41.0 G 40 40 39.0					•				-	
Control A 36 35.0 mean 39.0 lab B 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 42.0 44 43.0 43.0 44.0 44.0 44.0 44.0 44.0 44.0 45.0 46.0										
lab B 44 43.0 SD 3.817254 C 35 35 34.0 CV 9.776436 D 43 43 42.0 E 44 43.0 F 42 42 41.0 G 40 39.0	Control								mean	39.0
C 35 35 34.0 CV 9.776436 D 43 43 42.0 E 44 44 43.0 F 42 42 41.0 G 40 40 39.0										
D 43 42.0 E 44 43.0 F 42 42 41.0 G 40 40 39.0										
E 44 43.0 F 42 41.0 G 40 40 39.0										
F 42 41.0 G 40 40 39.0										
G 40 40 39.0										
		G		. •						
							36	35.0		

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Report Date:

13 Jan-15 17:05 (p 1 of 2)

Test Code:

14892 | 15-4811-8393

				1								
Analysis ID:	11-6466-7188		point:	Cell Yield					TIS Versi		CETISv1.8.7	
Analyzed:	13 Jan-15 17:0)4 Ana	ilysis:	Linear Interpola	ation (ICPIN	1)		Off	icial Res	ults:	Yes	
Batch ID:	01-6684-2921	Tes	t Type:	Cell Growth				Ana	alyst:	Brett	Lucas	
Start Date:	07 Nov-14 07:0	00 Pro	tocol:	EC/EPS 1/RM/	25			Dile	uent:	Site V	Vater	
Ending Date:	10 Nov-14 07:0	00 Sp e	ecies:	Pseudokirchne	riella subca	pitata		Bri	ne:			
Ouration:	72h	Sou	ırce:					Age	e:			
Sample ID:	14-2332-7656	Cod	de:	54D641A8						AJAX		
Sample Date:		Mat	erial:	Sulphate				Pro	ject:	Ajax s	sulphate testing	
Receive Date:			ırce:	AJAX sulphate	testing							
Sample Age:	8d 7h	Sta	tion:	Jacko								
inear Interpo	lation Options											
Transform	Y Transforn			Resamples	Exp 95%	6 CL	Method					
.og(X+1)	Linear	906	846	200	Yes		Two-Po	int Inter	polation			
Residual Anal	ysis											
Attribute	Method			Test Stat	Critical				η(α:5%)			
Control Trend	Mann-Ker	idall Trend				0.7	195 N	Non-sigr	nificant Tr	end ir	Controls	
oint Estimate	es											
evel mg/L	95% LCL											
C5 >1470		N/A										
C10 >1470		N/A										
C15 >1470		N/A										
C20 >1470		N/A										
C25 >1470		N/A										
C40 >1470 C50 >1470		N/A N/A										
ell Yield Sum					Ca	lculat	ed Varia	te				
	ontrol Type	Count	Mean	Min	Max			td Dev	CV%		%Effect	
	egative Control	8	76.63	68	87	2.14		.07	7.92%		0.0%	
42	3	4	87	81	95	3.16		.325	7.27%		-13.54%	
36		4	94.5	78	109	7.9		5.8	16.729		-23.33%	
75		4	108.8	92	117	5.72	21 1	1.44	10.529		-41.92%	
84		4	97.25	88	110	4.71	15 9	.43	9.7%		-26.92%	
000		4	103.3	92	115	5.49	98 1	1	10.659	6	-34.75%	
470		4	102	91	117	5.95	58 1	1.92	11.689	6	-33.12%	
Cell Yield Deta	il											
	ontrol Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep	5 F	ep 6	Rep 7		Rep 8	
	egative Control	68	73	87	74	78	8	3	77	-	73	
42		95	89	81	83							
36		107	84	109	78							
75		115	111	92	117							
84		110	93	88	98							
000		115	110	96	92							
000				94	91							

CETIS™ v1.8.7.16

Report Date:

13 Jan-15 17:05 (p 2 of 2)

Test Code:

14892 | 15-4811-8393

EC Alga Growth Inhibition Test

Nautilus Environmental

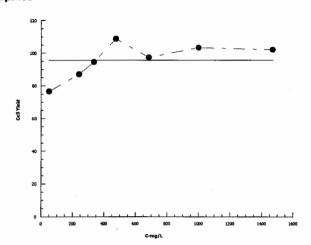
Analysis ID: Analyzed:

11-6466-7188 13 Jan-15 17:04 Endpoint: Cell Yield

Analysis: Linear Interpolation (ICPIN) **CETIS Version:** Official Results: Yes

CETISv1.8.7

Graphics



Report Date:

13 Jan-15 17:05 (p 1 of 4)

Test Code: 14892 | 15-4811-8393 **Nautilus Environmental EC Alga Growth Inhibition Test** Cell Yield **CETIS Version: CETISv1.8.7** 15-2135-2771 **Endpoint:** Analysis ID: Official Results: Yes Parametric-Control vs Treatments Analyzed: 13 Jan-15 17:04 Analysis: Batch ID: 01-6684-2921 Test Type: Cell Growth Analyst: **Brett Lucas** EC/EPS 1/RM/25 Diluent: Site Water 07 Nov-14 07:00 Protocol: Start Date: **Ending Date:** 10 Nov-14 07:00 Species: Pseudokirchneriella subcapitata Brine: 72h Age: **Duration:** Source: AJAX 14-2332-7656 54D641A8 Code: Client: Sample ID: Sample Date: 30 Oct-14 Project: Sulphate Ajax sulphate testing Material: Receive Date: 31 Oct-14 Source: AJAX sulphate testing Sample Age: 8d 7h Station: Jacko TU **Data Transform** Zeta Alt Hyp **Trials** Seed **PMSD** NOEL LOEL TOEL 336 NA C < T NA NA 20.1% 242 285.2 Untransformed Dunnett Multiple Comparison Test C-mg/L Critical MSD P-Type Control vs **Test Stat** DF P-Value Decision(a:5%) 2.483 CDF Non-Significant Effect 51 242 1.669 15.43 10 0.2218 336* 2.483 **CDF** 51 2.876 15.43 10 0.0213 Significant Effect 51 475* 5.169 2.483 15.43 10 < 0.0001 CDF Significant Effect 51 684* 3.319 2.483 15.43 10 0.0076 CDF Significant Effect 2.483 0.0007 **CDF** 51 1000* 4.284 15.43 10 Significant Effect CDF 51 1470* 4.083 2.483 15.43 10 0.0011 Significant Effect **Auxiliary Tests Test Stat Critical** P-Value Decision(a:5%) **Attribute** Test Control Trend Mann-Kendall Trend 0.7195 Non-significant Trend in Controls **ANOVA Table** Source **Sum Squares** Mean Square DF F Stat P-Value Decision(a:5%) 4104.875 684.1458 6 6.642 0.0003 Significant Effect Between 103.005 Error 2575.125 25 6680 31 Total **Distributional Tests** Decision(a:1%) **Attribute** Test **Test Stat** Critical P-Value Bartlett Equality of Variance 5.065 16.81 0.5355 Equal Variances Variances Distribution Shapiro-Wilk W Normality 0.9641 0.9081 0.3535 Normal Distribution Cell Yield Summary 95% LCL 95% UCL Median Min Std Err CV% %Effect C-mg/L **Control Type** Count Mean Max Negative Control 8 76.63 71.55 81.7 75.5 68 87 2.146 7.92% 0.0% 51 87 76.94 97.06 86 81 95 3.162 7.27% -13.54% 242 69.36 95.5 78 109 336 4 94.5 119.6 7.9 16.72% -23.33% 108.8 90.54 127 113 92 10.52% -41.92% 475 4 117 5.721 97.25 82.25 112.3 95.5 88 4.715 9.7% -26.92% 684 4 110 1000 4 103.3 85.75 120.7 103 92 115 5.498 10.65% -34.75% 1470 102 83.04 100 91 117 5.958 11.68% -33.12% 121 Cell Yield Detail **Control Type** Rep 1 Rep 2 Rep 3 Rep 4 Rep 5 Rep 6 Rep 7 Rep 8 C-mg/L 73 87 74 78 83 77 73 51 🏑 Negative Control 68 89 83 242 V 95 81 78 336 🗸 107 84 109 115 111 92 117 475 🏑 110 93 88 98 684 √ 1000 √ 110 96 92 106 1470 ✓ 117 94

* regetive control = site water control (Jacko QA: JOU Analyst:___

000-469-187-1

CETIS™ v1.8.7.16

Report Date: **Test Code:**

13 Jan-15 17:05 (p 2 of 4) 14892 | 15-4811-8393

Nautilus Environmental

EC Alga Growth Inhibition Test

15-2135-2771

13 Jan-15 17:04

Endpoint: Cell Yield

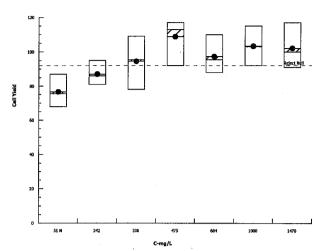
Analysis: Parametric-Control vs Treatments **CETIS Version:**

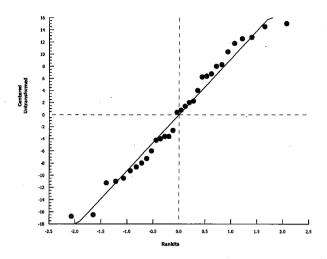
CETISv1.8.7

Official Results: Yes

Analyzed: Graphics

Analysis ID:





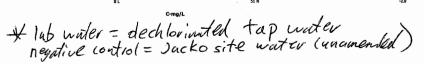
Report Date:

10 Apr-15 10:04 (p 1 of 1)

Test Code:

14892 | 15-4811-8393

EC Alga Grov	th Inhibition Te	st							Na	autilus Env	/ironmental
Analysis ID:	02-6358-5699	En	dpoint:	Cell Yield			CET	IS Version	: CETISv	1.8.7	
Analyzed:	10 Apr-15 10:03	3 An	alysis:	Parametric-Two	Sample		Offi	cial Result	s: Yes		
Batch ID:	01-6684-2921	Tes	st Type:	Cell Growth			Ana	lyst: Br	ett Lucas		
Start Date:	07 Nov-14 07:0	0 Pro	otocol:	EC/EPS 1/RM/	25		Dilu	ent: Si	te Water		
Ending Date:	10 Nov-14 07:0	0 Sp	ecies:	Pseudokirchne	riella subca	pitata	Brin	ie:			
Duration:	72h	So	urce:			•	Age	:			
Sample ID:	14-2332-7656	Co	de:	54D641A8			Clie	nt: AJ	AX		
Sample Date:	30 Oct-14	Ma	terial:	Sulphate			Pro	ject: Aj	ax sulphate to	esting	
Receive Date:	31 Oct-14	So	urce:	AJAX sulphate	testing	: '					
Sample Age:	8d 7h	Sta	ation:	Jacko							
Data Transfor	m	Zeta	Alt Hy	p Trials	Seed		PMSD	Test Re	sult		
Untransformed	ı	NA	C < T	NA	NA		11.4%	Fails cel	l yield		
Equal Variand	e t Two-Sample	Test									
Control	vs Control		Test S	tat Critical	MSD DE	P-Value	P-Type	Decisio	n(α:5%)		
8	51*		14.84	1.761	4.465 14	<0.0001	CDF	Significa	int Effect		
ANOVA Table	•										
Source	Sum Squa	ires	Mean	Square	DF	F Stat	P-Value	Decisio	n(α:5%)		
Between	5662.563		5662.5	63	1	220.3	<0.0001	Significa	nt Effect		
Error	359.875		25.705	36	14	_					
Total	6022.438				15						
Distributional	Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Variance	Ratio F		2.528	8.885	0.2442	Equal Va	riances			
Distribution	Shapiro-V	Vilk W Nor	mality	0.9704	0.8408	0.8445	Normal D	istribution			
Cell Yield Sur	nmary							,			
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
8	Lab Water	8	39	35.81	42.19	40	34	43	1.35	9.79%	0.0%
51	Negative Control	1 8	76.63	71.55	81.7	75.5	68	87	2.146	7.92%	-96.47%
Cell Yield Det	ail				•						
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
8	Lab Water	35	43	34	42	43	4 1	39	35		
51	Negative Control	68	73	87	74	78	83	77	73		
Graphics											
% –						12 [
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CETIS™ v1.8.7.16

Analyst: QA: JOL

Rainbow Trout Embryo Summary Sheet

Client:	ASAX	Start Date/Time: January 22, 2015@	t
Work Order No.:	14841	Test Species: Oncorhynchus mykiss	
Sample Informat	ion:		
Sample ID: Sample Date: Date Received: Sample Volume:	Jacko Sanon 20 January 20, 7 January 21 January 29 10 × 20 L per refreg	1, February 5, February 13,2015	
Dilution Water:			
Type: Hardness (mg/L C Alkalinity (mg/L C	$CaCO_3$): 312	Tap Water Jacko site water 87C	
Test Organism Ir	nformation:		
Batch No.: Source: Loading Density:	O12215 Trout Lodge, Sumple 0.89 311	wk	
SDS Reference 7	oxicant Results:		
Reference Toxica Stock Solution ID: Date Initiated: 7-d EC50 (95% C	14504 January 22, 201	S MIL SDS	
Reference Toxica Reference Toxica	nt Mean and Range: 3-9 (nt CV (%): 35	(2.1-7.1) mg/L SDS	
Test Results:	EC50 % (v/v) (95% CL)	Sample ID SURVIVUE Proportion normal 626 (272-N/A) 646 (238-N/A) >1428 >1428	
Reviewed by:		Date reviewed: Apr. 10/15	

Client: Sample ID: Work Order #:	AJ1 300					- -		rt Date & p Date & Test Sp	& Time:	Fe	buen myl	4 21	2015	@15 15 @	00 130
								PR/							l
(9. v/u)		Т		·				ays		Γ					
Concentration	0		1	44	2	200000000000000000000000000000000000000	3		4		5		6	7	
Contro	init.	new		new	old	new		new	old	new	old	new	old	new	
Temperature (°C)	14,0	14.0	14.5	14,0	14,0	14,0	14,3	145	14.0	14,5		145	99	120	
DO (mg/L)	101	(0.0)	lao	9.9	7.0	9.9	9.9	98	120	9.9	9.9	100	1	98	
pH	6.9	6.8	7.0	6.8		6.9	7.0	6.7	(b,)	67	6.8		6.9	6.8	
Cond. (µS/cm)	21	20		2	8	28		2			3	2		29	
Initials	MMC	y.	u		<u> </u>	130	·		w	59	<i>v</i>		W	The	
		-	4					ays				T -		T _	
Concentration	0		1		2	AND THE PERSON OF THE	3		4	1000	5		6	7	
100-Site water		new	old	new	old		old	new	old	new	old	new	old	new	
Temperature (°C)	14.0	14:0	14.5	14.2	142	99	14/2	145	140	14.5	14.5	140	14, Z	14.5	
DO (mg/L)	9.6	9.4	1	9.9	7.9	-	9	98	iao	10	9,4	9,8		9.7	
pH	7.8	1.1	80	75	79	29	8,1	7.8	19	7.9	1.0	7.8		7.B	
Cond. (µS/cm)	759	114	00 W	7	55	7	8	4/4-5	8 76b		61		64	760	
Initials	1146		<u> </u>	L	<u> </u>	^			w	55	<u> </u>	<u> </u>	u_	The	
	T														
0	-	1		1				ays		·		Γ			
Concentration	0		1	100000	2		3		4		5		6	7	
20-spiked	init.	new	old	new	old	new	old	new 14 \$	old	new	old "	new	old	new	
Temperature (°C)	9.8	14.0	145	9,9	9.8	9,9	9,9		140	10,0		140	9.8	9,8	
DO (mg/L)	79	7.8	8.	79	Lo	79	81	9.8	8.0	7.9		7.8	8,0		
pH	1, 1	12	L.,		/			7.9					03	8.0	
Cond. (µS/cm)	446		W	12	15		17		ne	123			m	1212	
initials	que		VU-		٨	A	-		we _	_ 55	<i>V</i>			0000	
	T						Da	ıys		· · · · · · · · · · · · · · · · · · ·	· · ·				
Concentration	0		1	2	2		3		1		5		6	7	
50 -spiked	init.	new	old	new	old	new	old	new	blo	new	old	new	old :	new	
Temperature (°C)	14,0	14.0	14.5	14,0	140	14,0	140	1-4.5	140		14.5	140	145	14.5	
DO (mg/L)	9.8	100	9.9	9.9	9.6	95	29	10.0		10.0		9.9	98	99	
pH	80	7.9	8.1	79	S!	79	81	8,5	80		8.2	79	8-0	1.6	
Cond. (µS/cm)	1751		763		72		770		10 4	178		17.		CEM	
Initials	July	W			5	^			W.	55		W		une	
		_													
DO meter:		<u> </u>			meter:		3		Cond	uctivity	meter:	3			
	site St			e control	/										
		trol Co	acko)							Analys	ts:	FMD.	S80,	MC_	
Hardness*	31	-	, 									,			
Alkalinity*	26	12							_	Review	ved by:	761	V /- 1		
* mg/L as CaCO3	1								C	ate rev	rewed:	Apr	· 10/	15	
Sample Description:	: .	char	7 40	low	cilou	معم	ne	parti	ulate	>					
Comments:															

Client:	ATT.	XA				_	Star	t Date	& Time:	Je	en ver	y 22	201	<u> 7@15</u>
Sample ID:	Jack	ζ ο			·	_	Sto	Date 8	& Time:		Grace	~ 2	ادر ع	501
Work Order #:	140	क्ता				-		Test Sp	oecies:	0	Myk	~ !		
(2 V/V)							Da	ays						
Concentration	0		1	1007000	2	Comments Consorted	3		4		5		6	7
100-spiled	init.	new	old	new.	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	14.0	14.0	14.5	140	14,0	140	14,0	14.5	140		14.5	140	145	14.5
DO (mg/L)	9.0	10,0	929	9.9	9.8	9,5	9,9	100	9.9		10.0	la1	4.48	9,9
pH	8.2	3.1	8.1	8.0	8.1	8,3	8-12	8-2			8.1	ಹಿಂ	8,0	8.1
Cond. (µS/cm)	2700		150	2	690	24	,90		100	27	00	27		2690
Initials	MML		N	<u> </u>		M	<u> </u>	M	w	SS	Q	9	M	me.
							Da	ays				_		
Concentration	0		1		2		3		4	a section and a section and a section as	5	** 000000000000000000000000000000000000	6	1
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)														
DO (mg/L)										· ·				
pH														
Cond. (µS/cm)										/				
Initials									/	<u> </u>				
							Da	ys/						
Concentration	0		1		2		3		4		5		6	7
	init	new	old	new	old	new	∕⁄óld_	new	old	new	old	new	old	new
Temperature (°C)														
DO (mg/L)					/									
pH			<u> </u>						<u> </u>		<u> </u>			
Cond. (µS/cm)														
Initials													-	
	r		_/_											
								lys						
Concentration	0		1	1985	2		3		4	0.000	5	18076	6 	7
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)											ļ			<u> </u>
DO (mg/L)	/											ļ <u>.</u>		<u> </u>
pH					-									
Cond. (µS/cm)	<u> </u>		·											
Initials	<u> </u>											<u> </u>		
DO		ح					2		01			3		
DO meter:	Si			рн	meter:		./		Cond	uctivity	meter:			
		itrol ()	4.60						1	Analys	to:	GW A	CSD.	74V
Hardness*	31	2								Analys	, w.	, , , , ,	1	
Alkalinity*		;7								Review	ved by:	-JÛ	t	
* mg/L as CaCO3		<u> </u>							,	Date rev	/iewed:	- 10 - Ap	r-10	115
g						,					2	'\V		
Sample Description	:	cl	Port 1	&((oc	~ c.	-(our	1 50	سلا	port	where	25			
Comments:														

Version 1.0 Issued June 26, 2006

Client: Sample ID: Work Order #:	149 149	5AX 2Ke 041				, ci	Sto	t Date & Date & Test Sp	& Time:	<u>F</u> e	word 5 me	M 7		@15 013 C	
												· .			1
(% vh)								ays		T				T	
Concentration	7	100	8	4.95	9		0		1	100	2		13	14	
Control	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	145	14.0	1415	140	148	140	146	150	1415	15.0	15.0	150	Vt.5	150	
DO (mg/L)	100	102	9.7	98	9,9	9,9	10,0	100	9.9	9.8	10.0	10-0	10-(100	
pH	6.9	4.7	67	70	6.9	70	7!	6-9	6.9	6.9	6.9	6.8	7,0	68	
Cond. (µS/cm)		1		2	8	2	8		-1	3	7	2		27	
Initials	ime		m		\$>	<u></u> ♠		W	we	<u> </u>	W_	W	<u> </u>	une	
	1					-	D.								ì
0	-					-		ays	4		12		12	14	
Concentration	7		8		9	46700	0	361	1	F2000000000000000000000000000000000000		700	13	14	
100-516	old	new	6ld 14/5	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	14/5	14,0		14,2	14/5	9,9	9.9	14.5	143	145	15,0	14/5	175	150	
DO (mg/L)	1000	9.6	9,8	98	98		-		7.7	9.8	100	79	101	9.7	
pH	7.8	1.7	BA.	78	7.3	78	9.1	7.8	8,2	3.8	8.3	-	83	77	
Cond. (µS/cm)	1		63	1	39	74		7'		1	45	12		736 4mc	
Initials	m		w_	P	·	^		₩	W_	<u>, , , , , , , , , , , , , , , , , , , </u>	ul _	~	Wi_	- vu	
														-	i
		-						ays							
Concentration		0.00000	8	01100000	9		0		1	750	2		13	14	
20-5, led	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	145	140	145	140	4.6	14/2	176	14.5	145	14.5	15.0	1475	145	150	
DO (mg/L)	9.9	9,8	98	28		9,9	98	99	8.2		8.3	7.9	10/	9.9	
pH	7.9	7.8	8.2	73	6 √2	PV>	22			7.8		12	82	1202	,
Cond. (µS/cm)	ine	121	1	12	25		22	1/2	109 W		12			-	
Initials	0000	1 00		<u> </u>	<u></u>	<u>^</u>		- 00			<i>M</i>	MM		4mc	ĺ
															ļ
	<u> </u>	T		1				iys					10	44	
Concentration	7		8		9	***************************************	0		1		2	100	3	14	
So-spiked	old	new	old 14/5	new	old	new	old	new	old	14.5	old 15:0	145	0ld 143	new 14-7	
Temperature (°C)	145	140	980	98	9.8	9,9	9.9	145	99		10,0	9	_	99	
DO (mg/L)	9.9	8.0	9.2		II	81	sz	8.1	8.3	8.1	-	3.5	8.3	8.0	
pH	1.8	100	77		745		155	· ·					64	1761	
Cond. (µS/cm)	m	1	vie .				77		<u>گھا</u>	18	510		NV.	m	Į
Initials	Nuc.		vw		<u></u>			MM	<i>~</i>	<u> </u>	<i>N</i>	-70		000	
DO meter:		3		рН	meter:		3		Cond	uctivity	meter:				
	3740	ntrol ()	Lula						I	Analya	.	BWE	> KI	P, 441	ı
Hardness*			(1)							Analys	uo.		1	1 1 11	^
Alkalinity*	31 26	5								Reviev	ved hv	16	L		
* mg/L as CaCO3						-				Date rev	iewed:	4	V. (10	TIN	
												— -/ 	. , , ,	11:	
Sample Description	:	cle	م' ،	tr(lor	ادی ر	ront	Some	por	there	les					
Comments:								,							

Chronic Freshwater Toxicity Test Water Quality Measurements

Client: Sample ID:	AS	SAX oko			-		t Date & T Date & T			nery	22	2015	@150 @113
Work Order #:	145	341			-	-	Test Spec	_		myk		1 2015	
Work Order #.		341			-		rest oper			myr	(33		
22/ 1						Da	ays						
Concentration	7	8		9 .	10		11		1	2	Γ.	13	14
100-spiked	old	contribution Graph and San Albania and San	new	Principal Control Control	new	42		old	new	old	100	and Meaning	new
	14.5	new old	14,2						145	15.0	14.5		143
Temperature (°C)		0	98	9,8	9,8	93		36			9.9		
DO (mg/L)	9.9	16	8,2			82	1000	17-1		10.0		82	82
pH	8.1	8.18.2		82	-				83	83	1675		
Cond. (µS/cm)	-		2	750	210-	3				_			
Initials	Im	- will		7-	^		~W	~	\underline{u}	<u> </u>		<u> </u>	my
		-				,							
	Days Centration 7 8 9 10 11 12 13 14 Old new												
Concentration	1. (µS/cm)												
	old	new old	new	old .	new	old -	new	old	new	old	new	old	new
Temperature (°C)	ocentration 7 8 9 10 11 12 13 14 old new old n												
DO (mg/L)													
Cond. (µS/cm)													:
									/				
IIIICIAIO				**********					/		<u> </u>		
						Da	ays	-/-					
Concentration	7	8		9	10		11	$\overline{}$	1	2	T .	13	14
Concentiation	old	A	new	old	new	old	new	Ala	new		new	old	new
T	Old	new old	HEM	Cita	IIEW	OIO.	ием	ord -	HEW	· OIG	HEAR	UI CIU	Hew
Temperature (°C)	 					/					 		
DO (mg/L)	-					_							
pH							<u> </u>					L	
Cond. (µS/cm)						total and the second			-,		 -		
Initials			1	_/_						· ·			
													
		T	/	**********	1	- rra 40i	iys	— т					
Concentration	7	8		9	10		11			2		3	14
	old	new old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)													
DO (mg/L)													
pH													
Cond. (µS/cm)													
Initials	<u>[</u>												
		~				•					>		
DO meter:		3	рН	meter:		3		Condu	ctivity	meter:	3		
	site												
		ntrol (Jacko)							Analys	ts:	2WA	, KLP	144
Hardness*	31												
Alkalinity*	26	7								ved by:		u	
* mg/L as CaCO3								D	ate rev	iewed:	A	1.10	15
		d	ŧ,				1.~6==					1	
Sample Description	:	dev,	yellon	1 80	2ml po	artic	Mates						· · · · · ·
		•			•								
Comments:													

Client: Sample ID: Work Order #:	Jac	(AX 841				- -		p Date	& Time:	<u> </u>	brown	22, 7 1 20, mykiss	2015	. IZoc
(v/v 0)							D;	ays			<u> </u>			
Concentration	14	1	15	1	16	1	17		18		9	2	20	21
Control	old	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	145	15,0	14.0	60	14.0	(5)2	14.0	145	14.5	14.5	14.5	15.0	14.5	15.0
DO (mg/L)	99	10.1	10,1	95	28	9.8	9/6	9.9	lào	9.9	9.8	10-0	9.8	99
рН	20	7.0	70	6,9	20	68	7.0	6,8	1.0	6.8	6.9	(P)	20	677
Cond. (µS/cm)	-	2		1 2	**	· · · · · ·	23		7	27		21		78
Initials	m	N		9		•	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		W	SS		4		wi
	,				No.									
100-site	Τ						D	ays	,		······································			
Concentration	14	1	15	1	16		7	T	18	1	9		20	21
20-0	old	new	old	and the second	old	new	old	new		new	old	new		new
Temperature (°C)	14.3	14.5	14,0	150	[4,5	15%	140	14.5	143	14.5	14.5	150	14:5	145
DO (mg/L)	98	9,8	100	9,9	9/9	9,9	98	9.7	100	9.6	9.8	9.5	99	9.7
pH	811	7.8	8.2	30	31	73	EI	79	8.1	7.9	8.1	878	82	Q. 7.8
Cond. (µS/cm)	_		43	74	5		10	7	33	744		74		742
Initials	ww		ni		A		makan sa	A CONTRACT OF STREET	Ŵ	SS		W		me
	1			· · · · ·	R 		THE RESERVE OF		72		<u> </u>			
					and the second of the second	18 16 J. 18 Marie	Da	ays						
Concentration	14	1	5	1	16	1	7	\$1000 C T 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	18	1	9	2	20	21
20-Selkad	old	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	145	14/5	14,0	(െ	14,0	15/2	140	143		14.5	14.5	14/5	14/5	145
DO (mg/L)	-		100000000000000000000000000000000000000		THE PARTY NAMED IN COLUMN	1.00	17/-			1. 1. —			1 6 2	116/
	19.02	Real	1 (0.1)	9.9	4.5	Personan & St. V. William J. V. P. V.	9,6		99	9 2			99	a 7
	93	19	90.3	42	4.9	9,9	9,6 P2	9.8	9.7/	9.8	9,9	9.8	9.7	9.7
рН	8.3	7.9	9.3	4,2	23	9,9 &r	P,Z	9.8 8.1	8.2	8.2	<u> </u>	9.8 8.0	8.1	વે-8
pH Cond. (μS/cm)	43	1.9	9.3 13	4,2	23 VIV	9,9 &r	North Control of the Control	9.8 8.1	8.2	8.2	ሳ . ዓ 8.3 ያ	9.8 8.0 12	24	7.8
рН		1.9	9.3	4,2	23	9,9 &r	P,Z	9.8 8.1	8.2	8.2	ሳ . ዓ 8.3 ያ	9.8 8.0	24	વે-8
pH Cond. (μS/cm)	43	1.9	9.3 13	4,2	23 VIV	9,9 &r	P.Z	9.8 8.1 12 W	8.2	8.2	ሳ . ዓ 8.3 ያ	9.8 8.0 12	24	7.8
pH Cond. (μS/cm) Initials	4.3 um	7.9 12 4,	9.3 13	#,2 12	23 210 20	9,5	P.L JIS De	9.8 8.1 12 Vu	8.2 02 W	8.2 119 55	4.9 8.3 8 D	9.8 8.0 12 yw	8.V .04	1.8 1217 MM
pH Cond. (μS/cm) Initials Concentration	14	1.9 (2) (4)	83 13 W	#,2 17	\$3 >>>> A	9,5	P.L JS Da	9.8 8.1 12 W	8.V .02 W	8.2 119 55	4.9 8.3 8.D	9.8 8.0 12 yw	04	1.8 12/7 4m
pH Cond. (µS/cm) Initials Concentration So Spiked	14 old	1.9 (2) U ₃	\$ 3 M	よシ リカ 1 new	\$3 >>> A- 6 old	9,9 &2 17	P, L Da 7 Old	9.8 8.1 12 W	8.V W	8.2 119 55	9 9 8 3 8 5 8 5 8 5 8 6 8 6 8 6 8 6 8 6 8 6 8 6	9.8 8.0 12 vw	0 old	1.8 127 4M 21 new
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C)	14 old	1.9 (2.4) 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	5 old	#;\(\nu\)	\$3 2/10 A- 6 old	17,9 620 17 18 18 1800 150	P, L Da 7 old	9.8 8.1 12 W	8.2 W 8 old	8.2 119 55 1 new	4, 9 8.3 d D D old 14.5	9.8 8.0 12 14.5	00 old	1.8 12/7 12/1 14/5
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L)	14 old 14.3 9.8	1.9 (2) U/A 1 new U/A (0.70	9.3 13 14 14.0 9.9	1 new 152 9/9	6 old (42 9,9	17 62 17 18 18 18 18 18 18 18 18 18 18	P, L // Da 7 old 140 91)	9.8 8.1 12 14 14 9.1	8.2 W 8 old 145 98	8.2 119 55 1 new 14.5 9.8	4, 9 8.3 8 8.5 9 6 old 14.5 9, 9	9.8 8.0 12 N/W 2 new 14,5	0.14 00 01 01 01 01 01 01 01 01 01 01 01 01	21 new 145 9.6
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L) pH	14 old	1.9 (2 4) 1 new 45 600	93 13 14 140 99	10 new 1512 G.9	6 0ld 142 9.9 8.2	19,9 10 10 10 10 10 10 10 10 10 10	Pil VS Da 7 Old HA 917	9.8 8.1 12 W	8.2 02 W 8 old 145 98 8.2	8.2 119 55 1 new 14.5 9.8 8.2	9 6id 14.5 9, 9	9.8 8.0 12 NM 145 9.7 8.0	0.10 00 01d 145 98 82	21 new 145 9.6
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L) pH Cond. (µS/cm)	14 old 14.5 9.8	1.9 (2) (1) new (4) (3) (4)	5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1) new 1519 49 NV	66 old 142 99 52 79	11 new 1510 G/9 FLU 17	Pil NS 7 old 142 917 PN	9.8 8.1 12 W	8.2 8 6ld 145 98 8.2 69	8.2 1191 55 1 new 14.5 9.8 8.2 179	4, 9 8.3 0 D 9 old 14.5 9, 9 8.3 2	9.8 8.0 12 N/W 2 new 14,5	000 old 145 98 82	21 new 145 9.6 9.0
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L) pH	14 old 14.5 9.8	1.9 (2) (1) new (4) (3) (0,0) (1) (1) (1)	5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	10 new 1512 G.9	66 old 142 99 52 79	19,9 10 10 10 10 10 10 10 10 10 10	Pil NS 7 old 142 917 PN	9.8 8.1 12 W	8.2 02 W 8 old 145 98 8.2	8.2 119 55 1 new 14.5 9.8 8.2	4, 9 8.3 0 D 9 old 14.5 9, 9 8.3 2	9.8 8.0 12 4w 14.5 9.7 8.0	000 old 145 98 82	21 new 145 9.6
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L) pH Cond. (µS/cm) Initials	14 old 14.5 9.8	1.9 (2) (1) new (4) (3) (0,0) (1) (1) (1)	5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	11 new 1532 G/9	66 old 14.2 9.9 \$20 77	19,5 622 17 18 1809 1500 9,8 6,2 17 A	Pil NS 7 old 142 917 PN	9.8 8.1 12 W	8.2 8 old 145 98 8.2 69 M	8.2 119 55 1 10 14.5 9.8 8.2 179 53	9 0 0 0 1 14.5 9.9 8.3 2	9.8 8.0 12 NMM 14.5 9.7 8.0	0 0 0 0 145 9 8 2	21 new 145 9.6 9.0
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L) pH Cond. (µS/cm)	14 old 14.5 9.8 8.~	1.9 (2) (1) new (4) (0.0) (1) (1) (1)	5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	11 new 1532 G/9	66 old 142 99 52 79	19,5 622 17 18 1809 1500 9,8 6,2 17 A	Pil No Tolid HP 917 PN	9.8 8.1 12 W	8.2 8 old 145 98 8.2 69 M	8.2 1191 55 1 new 14.5 9.8 8.2 179	9 0 0 0 1 14.5 9.9 8.3 2	9.8 8.0 12 4w 14.5 9.7 8.0	0 0 0 0 145 9 8 2	21 new 145 9.6 9.0
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L) pH Cond. (µS/cm) Initials	14 old 14.5 9.8 8.~	1.9 (2) (1) new (4) (0.0 (1) (1) (1) (1)	935 13 14 14 14 19 19 19 19 19	11 new 1532 G/9	66 old 14.2 9.9 \$20 77	19,5 622 17 18 1809 1500 9,8 6,2 17 A	Pil No Tolid HP 917 PN	9.8 8.1 12 W	8.2 8 old 145 98 8.2 69 M	8.2 119 55 1 10 14.5 9.8 8.2 179 53	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9.8 8.0 12 4,0 14,5 9.7 8.0	00 old 145 98 82	21 new 14.5 9.6 0.0 1760
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L) pH Cond. (µS/cm) Initials	14 old 14.5 9.8 8.~	19 (2) (1) (1) (1) (1) (1) (1) (1) (1) (2) (3) (4)	935 13 14 14 14 19 19 19 19 19	11 new 1532 G/9	66 old 14.2 9.9 \$20 77	19,5 622 17 18 1809 1500 9,8 6,2 17 A	Pil No Tolid HP 917 PN	9.8 8.1 12 W	8.2 8 old 145 98 8.2 69 M	8.2 19.55 19.8 9.8 8.2 179 53	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9.8 8.0 12 yww 14.5 9.7 8.0	00 00 00 145 98 82 05	21 new 145 9.6 9.0
pH Cond. (µS/cm) Initials Concentration So Spiled Temperature (°C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter:	14 old 14.5 9.8	1.9 (2) (1) new (4) (3) (1) (1) (1) (2) (2)	935 13 14 14 14 19 19 19 19 19	11 new 1532 G/9	66 old 14.2 9.9 \$20 77	19,5 622 17 18 1809 1500 9,8 6,2 17 A	Pil No Tolid HP 917 PN	9.8 8.1 12 W	8.2 8 old 145 98 8.2 69 M	8.2 IP SS IP SS P.8 8.2 IP SS uctivity	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9.8 8.0 12 NW 14.5 9.7 8.0	000 010 145 98 82 055 V	21 new 14.5 9.6 0.0 1760
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter: Hardness*	14 old 14.5 9.8 %. ~ Con 31.	1.9 (2) (1) new (4) (3) (1) (1) (1) (2) (2)	935 13 14 14 14 19 19 19 19 19	11 new 1532 G/9	66 old 14.2 9.9 \$20 77	19,5 622 17 18 1809 1500 9,8 6,2 17 A	Pil No Tolid HP 917 PN	9.8 8.1 12 W	8.2 W old 145 8.2 69 W Cond	8.2 IP SS IP SS P.8 8.2 IP SS uctivity	9 8.3 0 D 9 old 14.5 9.9 8.3 2) meter:	9.8 8.0 12 NW 14.5 9.7 8.0	00 00 00 145 98 82 05	21 new 14.5 9.6 0.0 1760
pH Cond. (µS/cm) Initials Concentration So Spiled Temperature (°C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter: Hardness* Alkalinity* * mg/L as CaCO3	14 old 14.5 9.8 & ~	1.9 (2) (1) new (1) (1) (1) (1) (1) (2) (2) (2) (3)	5 old (420 99)	1 new 1579 4 N PH	66 old (42) 9.9 \$20 }40 meter:	17 1000 150 4,9 F.L 17	Pil IS 7 old IND 917 Pil	9.8 8.1 12 W	8.2 W old 145 8.2 69 W Cond	1 19 55 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9 8.3 0 D 9 old 14.5 9.9 8.3 2) meter:	9.8 8.0 12 NW 14.5 9.7 8.0	000 010 145 98 82 055 V	21 new 14.5 9.6 0.0 1760
pH Cond. (µS/cm) Initials Concentration So Spiked Temperature (°C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter: Hardness* Alkalinity*	14 old 14.5 9.8 & ~	1.9 (2) (1) new (1) (1) (1) (1) (1) (2) (2) (2) (3)	5 old (420 99)	1 new 1579 4 N PH	66 old 14.2 9.9 \$20 77	17 1000 150 4,9 F.L 17	Pil IS 7 old IND 917 Pil	9.8 8.1 12 W	8.2 W old 145 8.2 69 W Cond	1 19 55 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9 8.3 0 D 9 old 14.5 9.9 8.3 2) meter:	9.8 8.0 12 NW 14.5 9.7 8.0	000 010 145 98 82 055 V	21 new 14.5 9.6 0.0 1760

Client: Sample ID: Work Order #:	790 790	ko 641				•	Stop	Date 8	& Time:	Jan Tel	mer	4 26	201	C 1500 501130
							Da	ıys						
Concentration	14	1	5	1	6	1	7	-	18	1	9	2	20	21
100-solked	old	new	old	new	eld :	new	old	new	old	new	old:	new	old	new
Temperature (°C)	145	145	140	 	14,0	1070	IYP	14:5	143	14.5	14.5		145	145
DO (mg/L)	99	100	1.01	9,9	4.8	9,9	9,6	9.9	98	10.0	9.9	99	9.8	9.8
pH	8.7/	83	83	F-3	2,L	5-3	8-13	8,3	8.2	30,3	8.2	8.2	82	81
Cond. (µS/cm)	-	21		1	610		415		90	30 2	220	27		2130
Initials	we		w	a		A			N	SS		4/		m
inidais	0.0							<u></u> ,			117	1		
							Da	ays						
Concentration	14	1	5	1	6	1	7		18	1	9	2	20	21
	old	new	old	new	old	CONTRACTOR CONTRACTOR AND ADDRESS.	old	607542000000000	old	Compression and the Compression of the Compression	old	A DESCRIPTION OF THE PARTY OF T	old	M. ANDREAS PROPERTY AND ADDRESS.
Temperature (°C)					- Certificenii	STATE SECTION AND A SECTION ASSESSMENT								
DO (mg/L)														
pH	<u> </u>											-		
Cond. (µS/cm)	 								L.,					
Initials	 		,	 	THE PROPERTY.	11W1, 221 14 12K	T. W. Salling Address of	Herita ma						
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	T -		:-		,	· · · · · · · · · · · · · · · · · · ·	Ds	ys/					· · · · · · · · ·	
Concentration	14	1	5	4	6	4	7 /		18	1	9	2	20	21
Concentiation	old	new	1	VALUE TO SERVICE AND ADDRESS OF THE PARTY OF	I SOCIONI MANAGEMENTO MONTO POR	Assessment Control of the Assessment Control	old	NECTS AND DESCRIPTIONS	old	new	old	new	old	new
Temperature (°C)		110,13	0.0		9/15			2000000						
DO (mg/L)	-			************										
pH						<u> </u>		A 100 11 11 11 11 11						
Cond. (µS/cm)							<u> </u>	· · · · · · · · · · · · · · · · · · ·			AND THE PERSON NAMED IN			
Initials					orac accommon process	3.20.20.20.20	Care a Marchetteria	ACT - CATHORNAY	181111,71177777777		property and the distribution		17 10.2 - 20.7 and	
IIIdais	<u> </u>	L			سىنىشىرىچىرىڭ بىلان.		Address of the State of the Sta	The second second	and the second			<u></u>	100 1 100	
	T			and the same of the	er Charles States	A THE PROPERTY OF THE PARTY OF	Da	ıyş		The second second second	******			
Concentration	14	1	5	1	6	4	7	127, O'LILLE	18	1	9	2	20	21
Concentiation	old	new	old	patric upper concentration	old	new	old	new	old :	574	old	new	old	
Temperature (°C)		74,044			College Charles	Alighet an eligibilities	\$50,000,000,000,000		1	1 000 10 mm / Can	***************************************		08355-0.00026	
DO (mg/L)	/													
pH /	1													
Cond. (µS/cm)			 				 						<u> </u>	
Initials					11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1									
meas	<u> </u>					71.022.4112.41								
DO meter:		3		На	meter:	3			Cond	uctivity	meter:	۶		
	Sit	P				······			-					
•	Cor	itrol (1)	acto)							Analys	ts:	AWD	,580	1446
Hardness*	31]					•
Alkalinity*	26	7]	Reviev Date rev	ved by:	70	u_	· · · · · · · · · · · · · · · · · · ·
* mg/L as CaCO3		,							1	Date rev	iewed:	_An	4:10	115
		ماه		11.			٥		G. 1. 1	Va n		•	1	
Sample Description	:	<u> </u>	M. 1	KILOM	COLO	m,	Sone	per	(60/27	<u>e</u>				
Comments:														

Client:	AJ	AX				, .	Star	t Date 8	k Time:	30	wary	22,	2015	G (200
Sample ID:		eko				•								<u>e113</u>
Work Order #:	14	841				•		Test Sp	ecies:	Oncort	ynchus	mykiss		
									·					
(0(, vh)							Da					T		·
Concentration	21	2		CONTRACTOR DESIGNATION OF THE PARTY OF THE P	3	- 2	4	A STANDARD COLONO CONTRACTOR CONT	504000500000000000000000000	diameter commence	S MANAGEMENT AND THE STATE OF T	a Section and designation of	a programme constitution	28
Control	old	new	old	new	old	new	old	74.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 1			new			
Temperature (°C)	14.5	14.0	14.5	1415	145	145	1746			14.5		143		185
DO (mg/L)	9.7	9.3	las	4,9	9,8	9,9	93	9.8	9.9	9.9	9.8	49	9,0	9.9
	2370	6.7	6,9	6.5	70	69	20	68	69	6.7	6.8	6.7	7.0	6.7
Cond. (µS/cm)	-	7	3	1	23	2	.3	13	>	23	,	7	+	23
Initials	The	1	W		Á			4	M			y	il	you
							Da	avs						
Concentration	21	2	2	2	:3	2	4		.5	2	26		27	28
100-Site	old	new	old	new	old	new.	- old	CONTRACTOR OF THE PARTY OF THE	Secretaria de la composición dela composición de la composición dela composición dela composición dela composición de la composición dela composición del composición del composición del composición del composición dela composición del composición del composición del composición del composición del composición del composición dela composición dela composición del composición dela composic		The second second	1 10 10 10	1 000 March 1990	new
Temperature (°C)	14,3		14:5	125	14/5	14					-	a think the same of the same o		145
DO (mg/L)	2.6	7	10.0	99	9.8	9,7		+			-	91		9.6
pH	81	77	79	75	60	29		1.	- 1.	1,0		7.7	 	7.7
Cond. (µS/cm)	~	· ¬	40	7 7			12							128
Initials	we	un			1)							W	W.	ane
Illuais	1000	000			<u></u>	^	<u> </u>	<u> </u>		30	<u> </u>			· mc
							D	240			-			-
spiked	21	2		1 -	23		4					T	7	20
Concentration		Manager Services		ALCOHOLD ST	old≖	SER ST		4364			diam to the said	745 Shift		28
	<u>이d</u> 1년/도	new 1代ス	old 14.5	new.										Πew IU σ
Temperature (°C)	9.7	9.9		A 7	93	9,9								14/5
DO (mg/L)	1-1-	7.8	101	91 P.D							127		_ n	
pH	8-1		8.1	30,0	4/	80		- U		1.9		11		7.8
Cond. (µS/cm)			<i>U\</i> /?		179		F5	1 11	<u> </u>	1 11 9	< *		~ ~	1197
	14.46	12												144
Initials	me	12 VM			/-	<u> </u>								mi
	we							M						mi
Initials		ЙM			^-	An	Da	ays .	ui _	55	D	4	w	
Initials Concentration	21	Ý/M.	2	2	A	2	Da 4	ays 2	5	55	26	2	27	28
Concentration	21 old	2:	2 old	new 2	۸ 3 old	2 new	Da 4	ays 2	5 old	SS 2	old	Y new	27	28
Concentration Social (Rd) Temperature (°C)	21 old	2 new	2 old 14-5	2 new / 45	3 old	2 new	Da 4 old	ays 2	5 old	55 2 new 14-5	0 6 0 14.5	new 140	27 old 145	28 new
Concentration Socy (Ro) Temperature (°C) DO (mg/L)	21 old (4/5	2: new 14.5	2 old 14.3	2 new / 14 5 9, 9	3 old 14/5 9.8	2 new 1.4/	Da 4 old 14 / 14 / 14 / 14 / 14 / 14 / 14 / 14	ays 2 new 14,0	5 old 145 9,9	55 new 14-5	01d 14.5 9.8	new 140 9-8	27 -old 1455 9:8	28 new 145
Concentration Society (Rd Temperature (°C) DO (mg/L) pH	21 old	2: new 14.5 4.4 9.0	2 old 14.5 (0.1	145 9,9	3 6 old 14/5 9.8 52	2 new 145 9.9 8.1	01d 9-9 P.V	new 14,0	5 old 145 9.9	55 new 14-5 9-8	01d 14.5 9.8 8.2	14.0 9.8 8.0	27 old 145 9:8	28 new 145 9.9
Concentration Social (Roll Temperature (°C) DO (mg/L) pH Cond. (µS/cm)	21 old (475 9.8 8.1	2: new 14.5 9.0	2 old 14.5 10.1	145 9,9	3 old 14/5 9.8	2 new 145 9.9 8.1	Da 4 old 14 / 14 / 14 / 14 / 14 / 14 / 14 / 14	ays 2 inew 14.0 9.6	5 old 1975 9.9 8.2	14.5 9.8 8.1	06 old 14.5 9.8 8.2	140 9.8 8.0	27 old 145 9:8	28 new 145 9.9 8.0
Concentration Society (Rd Temperature (°C) DO (mg/L) pH	21 old (475 9-8	2: new 14.5 9.0	2 old 14.5 (0.1	2 new 114 9, 1	3 6 old 14/5 9.8 52	2 new 145 9.9 8.1	01d 9-9 P.V	ays 2 inew 14.0 9.6	5 old 1975 9.9 8.2	14.5 9.8 8.1	06 old 14.5 9.8 8.2	140 9.8 8.0	27 old 145 9:8	28 new 145 9.9
Concentration Social (Roll Temperature (°C) DO (mg/L) pH Cond. (µS/cm)	21 old (475 9.8 8.1	2: new 14.5 9.0	2 old 14.5 10.1	2 new / 145 9, 4	3 old 145 9.8 12 +70	2 new 145 9.9 \$,1	01d 9-9 P.V	ays 2 inew 14.0 9.6	5 old 1975 9.9 8.2	20 new 14-5 9.8 8.1	06 14.5 9.8 8.2	140 9-8 3.0	27 -old 145 9.8 8.1	28 new 145 9.9 8.0
Concentration Social (Roll Temperature (°C) DO (mg/L) pH Cond. (µS/cm)	21 old (4.5 9.8 B.1	2: new 14.5 9.3	2 old 14.5 10.1	2 new / 145 9, 4	3 old (4/5 9.8 12	2 new 145 9.9 \$,1	01d 9-9 P.V	ays 2 inew 14.0 9.6	5 old 1975 9.9 8.2	20 new 14-5 9.8 8.1	06 14.5 9.8 8.2	140 9-8 3.0	27 -old 145 9.8 8.1	28 new 145 9.9 8.0
Concentration Concen	21 old (4.5 9.8 B.1	2: new 14.5 9.3 17.4	2 old 14.5 (0.1 %13	2 new / 145 9, 4	3 old 145 9.8 12 +70	2 new 145 9.9 \$,1	01d 9-9 P.V	ays 2 inew 14.0 9.6	5 old 1975 9.9 8.2	2 new 14-5 9.8 8.1	06 old 14.5 9.8 8.2 8.0	140 98 8.0	27 old 145 9.8 8.1	28 new 145 9.9 8.0 1165
Concentration Concentration Concentration Concentration Concentration Concentration Concentration Concentration Initials Concentration Concentration Initials	21 old (475 9-8 8-1 	2: new 14.5 4.4 8.0 17.6	2 old 14.5 (0.1 %13	2 new / 145 9, 4	3 old 145 9.8 12 +70	2 new 145 9.9 \$,1	01d 9-9 P.V	ays 2 inew 14.0 9.6	5 old 1975 9.9 8.2	2 new 14-5 9.8 8.1	06 old 14.5 9.8 8.2 8.0	140 98 8.0	27 old 145 9.8 8.1	28 new 145 9.9 8.0 1165
Concentration Concentration Concentration Concentration Concentration Concentration Indicate (*C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter: Hardness*	21 old (4.75 9.8 8.1 Cor 3 (2: new 14.5 4.4 8.0 17.6	2 old 14.5 (0.1 %13	2 new / 145 9, 4	3 old 145 9.8 12 +70	2 new 145 9.9 \$,1	01d 9-9 P.V	ays 2 inew 14.0 9.6	5 old 1975 9.9 8.2	14-5 9.8 8.1 179 85 uctivity	06 14.5 9.8 8.2 8.0	140 9.8 8.0	27 old 145 9.8 8.1 53	28 new 145 9.9 8.0 1165
Concentration Concentration Concentration Concentration Concentration Concentration Indicate (°C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter: Hardness* Alkalinity*	21 old (475 9-8 8-1 	2: new 14.5 4.4 8.0 17.6	2 old 14.5 (0.1 %13	2 new / 145 9, 4	3 old 145 9.8 12 +70	2 new 145 9.9 \$,1	01d 9-9 P.V	ays 2 inew 14.0 9.6	5 old 1975 9.9 8.2 165	14.5 9.8 8.1 179 SS	old 14.5 9.8 8.2 8.5 meter:	140 9.8 8.0 17'	27 old 145 9:80 8.1 53 M	28 new 145 9.9 8.0 1165
Concentration Concentration Concentration Concentration Concentration Concentration Indicate (*C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter: Hardness*	21 old (4.75 9.8 8.1 Cor 3 (2: new 14.5 4.4 8.0 17.6	2 old 14.5 (0.1 %13	2 new / 145 9, 4	3 old 145 9.8 12 +70	2 new 145 9.9 \$,1	01d 9-9 P.V	ays 2 inew 14.0 9.6	5 old 1975 9.9 8.2 165	14.5 9.8 8.1 179 SS	old 14.5 9.8 8.2 8.5 meter:	140 9.8 8.0 17'	27 old 145 9:80 8.1 53 M	28 new 145 9.9 8.0 1165
Concentration Concentration Temperature (°C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter: Hardness* Alkalinity* * mg/L as CaCO3	21 old (475 9-8 B.1 	2: new 14.5 9.0 119 0.0	2 old 14.5 10.1 8.3 85	2 new / 145 9, 9	3 old 14K 9.8 12 120 14 14 14 14 14 14 14 14 14 14 14 14 14	2 new 145 9,9 8,1 10 ~	Da 4 old 14 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4	Augs 2 new 14,0 9.2 9.1	5 old 195 9.9 8.2 165 Cond	14.5 9.8 8.1 179 SS uctivity Analys	old 14.5 9.8 8.2 8.5 meter:	140 9.8 8.0 17'	27 old 145 9:80 8.1 53 M	28 new 145 9.9 8.0 1165
Concentration Concentration Concentration Concentration Concentration Concentration Indicate (°C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter: Hardness* Alkalinity*	21 old (475 9-8 B.1 	2: new 14.5 9.0 119 0.0	2 old 14.5 10.1 8.3 85	2 new / 145 9, 9	3 old 14K 9.8 12 120 14 14 14 14 14 14 14 14 14 14 14 14 14	2 new 145 9,9 8,1 10 ~	Da 4 old 14 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4	Augs 2 new 14,0 9.2 9.1	5 old 195 9.9 8.2 165 Cond	14.5 9.8 8.1 179 SS uctivity Analys	old 14.5 9.8 8.2 8.5 meter:	140 9.8 8.0 17'	27 old 145 9:80 8.1 53 M	28 new 145 9.9 8.0 1165
Concentration Concentration Temperature (°C) DO (mg/L) pH Cond. (µS/cm) Initials DO meter: Hardness* Alkalinity* * mg/L as CaCO3	21 old (475 9-8 B.1 	2: new 14.5 9.0 119 0.0	2 old 14.5 10.1 8.3 85	2 new / 145 9, 9	3 old 14K 9.8 12 120 14 14 14 14 14 14 14 14 14 14 14 14 14	2 new 145 9,9 8,1 10 ~	Da 4 old 14 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4	Augs 2 new 14,0 9.2 9.1	5 old 195 9.9 8.2 165 Cond	14.5 9.8 8.1 179 SS uctivity Analys	old 14.5 9.8 8.2 8.5 meter:	140 9.8 8.0 17'	27 old 145 9:80 8.1 53 M	28 new 145 9.9 8.0 1165

Client:	A	XAZ					Star	t Date 8	Time:	Jan	very			
Sample ID:	Jac	KO	Stop Date & Time:		ous en									
Work Order #:	14	841				-		Test Sp	ecies:	Oncort	ynchus	mykiss		
							Da	ays						
Concentration	21	2	22	2	3	2	24	2	5	2	26		27	28
100-Spiled	old	new	old	new	old	new	old			new	old	new	old	new
Temperature (°C)	145	14.5	14.5		146	145	145	140	14-5		14.5	140	143	14.5
DO (mg/L)	9.8	10.0	99			98	9,7			9.9	9.4			100
рН	81	のン	802	8.2	5,3	52	£.3	82	8-1	8.2	8.1	8.2	8)	8,2
Cond. (µS/cm)				2	690	$ $ ι	300	27	30	27	20			2730
Initials	un,	~	me .		2	1		w	u	55	Q	W	N	you
						-								
							Da	ays						
Concentration	21	2	22	2	23	2	24	2	5	2	26	/	27	28
	old	new	old	new	old	new	- old	new	old	new	old	new	old	new
Temperature (°C)														
DO (mg/L)														
pH														
Cond. (µS/cm)														
Initials									/					
												-		
	Γ .						Da	ws						
Concentration	21	2	22	2	3	2	24 /	2	5	2	26		27	28
	old	new	old	new	000000000000000000000000000000000000000	new	and Access	new	200 NO. 10 N	new	old	S 222 32777777777711111111111111111111111	old	new
Temperature (°C)											. Continuo y con a conti			
DO (mg/L)		-												
pH													T :	
Cond. (µS/cm)				/										
Initials														
111111111111111111111111111111111111111														
			/				Da	ıys						
Concentration	21	/2	2	2	3	2	4	2	5	2	26		27	28
	old	new	old.	new		new		63000 000000000000000000000000000	old	new	old	new	old	new
Temperature (°C)							SUBJECT STREET			202400000000000000000000000000000000000			7.0	
DO (mg/L)														
pH /													<u> </u>	
Cond. (µS/cm)			· · ·					_ :						
Initials														\vdash
Initiajo		L		<u> </u>		L		L		L				
DO meter:		3		nН	meter:	_ 3			Cond	uctivity	meter:	3		
DO INCLOIT	sit									aot. Tity				
		ntrol ()	acto							Analys	ts:	AWD	1550	446
Hardness*	31	2								-			• ,	
Alkalinity*	24	67								Review	ved by:	J	yli	
* mg/L as CaCO3										Reviev Date rev	riewed:	A	hr. 1	0/15
		1											V	1,4
Sample Description	:	_cu	w, ,	رو(لەس	_ col	aw,	Som	e pe	stier	ates				
			,	•		,		•						
Comments:														

Client:	AJA	*			- :	Star	t Date 8	k Time:	Sar	wery	22,	2015	0150
Sample ID:	<u> </u>	841			-	Stop	Date o	k ilme:	Oncorh	mary	20	2015	@ 1134
Work Order #:		170			-		rest op	ecies.	Oncom	iyrichus	HIYKISS	-	
(06NN)						Da	ays					······································	
Concentration	28	29 😭	4	30] 3	81		2	3	3		34	35
Control	old	new / øt	BROKENS TO SOME PROPERTY OF STREET	aus professionant 76650	new	old	new	old	new	old	new	old	new
Temperature (°C)	143	141		2.2 2.2 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2				raus, asiainneada					
DO (mg/L)	100	10.1	/		 								
pH	69	6.0	2										
Cond. (µS/cm)	-	29		J				I			1	<u></u>	
Initials	um	uni											
- Title	I			~~~ <u>-</u> ~~~~	- 								
, , , , , , , , , , , , , , , , , , , ,						Da	ays		***************************************				
Concentration	28	29 %	el/	30	3	31		2	3	3		34	35
100-site	old	new _oh	NAMES AND PROPERTY OF THE PROP	old	new	pld	new	old	new	old	new	old	new
Temperature (°C)	14.5	/14.7											
DO (mg/L)	120	10,										-	
рН	80	8.6											
Cond. (µS/cm)	-	125		-1							,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	· · · · · · · · · · · · · · · · · · ·	
Initials	une	un				Contract to the second				,			
	1. V	· · · · · · · · · · · · · · · · · · ·	ما و ت اریب او جب			2014 - 11 2014 - 11 11					· h· · · · · · · · · · · · · · · · · ·		
			·····	**************************************	A CONTRACTOR OF THE PARTY OF TH	Da	ays	,					
Concentration	28	29 \$	1	30	3	31	Annual Control	2	3	3		34	35
20-solled	old	new ol	SAVONESAS RESENSADARAMENTALISMO	old	new	old	new	old	new	old	new	old"	new
Temperature (°C)	145	/ 14	The state of the s										3
DO (mg/L)	100	10'	,										
рН	8.0	8.3											
Cond. (µS/cm)	-	1194						\					
Initials	nne	yul											
					***************************************				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
				0,000,000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Da	ıys	7,000 ;					
Concentration	28	29 Pir	ما	30	3	11	3	32	3	3		34	35
30-spilled	28 old	new -et	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	145	14/	5										
DO (mg/L)	10.0	/10	\									T	
pH	8.1	1 8.											
Cond. (µS/cm)	_	1767	_										
Initials	une	YW	<u> </u>						Ĺ		<u></u>		
		2				C						2	
DO meter:		<i>/</i>	pl	I meter:		<u> </u>	· · · · · · · · · · · · · · · · · · ·	Cond	uctivity	meter:			
		te	/ 			г		ì			NAA 1	/ .	
		ntrol (Dac	(Ko)						Analys	ts:	AMI		
Hardness*	31	4 3443							Doules	uad b	10	Mi.	
Alkalinity*	26					L.,,			Reviev Date rev	veu by: viewed:		nd: 16	die
* mg/L as CaCO3									Jaie 161	ieweu;	<u> </u>	IV. C	111
Sample Description	:	elear,	Mehrl	yell	ەب ر	olow) <u>s</u> on	ų p	ert) e	ulate	\$		
Comments:													

Client:	AJ	AX					Star	t Date &	& Time:	Ten	ray	22,2	015	61200
Sample ID:		Ko				-			& Time:					@113
Work Order #:		484	1			-			ecies:					
					.,,,									
							Da	iys						
Concentration	28		29 And	3	30	3	31	3	32	3	33		34	35
100-sp/kad	old	new	जाव	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	14,5	/	- 14.5											
DO (mg/L)	99	7	10.			,								
pH	8,2	1	8.1											
Cond. (µS/cm)	-	7	730											
Initials	um		W			-								
HIIGIAIS	1 0000	L	V V	1					 	1	,	L		- 1/:
			,		······································		D:	ays					_/	
Concentration	28	1	29	T -	30	1 .	31	A	32	Ι .	33		34	35
Concentration	ShiZabasanapanin	SULMINISTRATION PROMISE	Star Starsen at Manager Starten	1	s promotestationers/auditors	D PONDONE SAN PRODUCT	22000200070000	2020/06/05/05	old	new	old	new	old	100
	old	new	old	new	old	new	old	new	Old	new	Old	HEW	OIG	new
Temperature (°C)	<u> </u>				ļ	ļ.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				 		ļ <u>.</u>	-	
DO (mg/L)						-				/		-	-	+
pH							L	ļ	L	<u> </u>	1			_
Cond. (µS/cm)		-	········		and the second of the second								ria wana a a	year and the same
Initials													t.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
														
			**************************************				D	iys						
Concentration	28		29	3	30	3	И	3	32		33		34	35
	old	new	old	new.	old	new	old	new	old	new	old	new	old	new
Temperature (°C)														
DO (mg/L)														
Hq												1		
Cond. (µS/cm)	-),							
Initials													<i></i>	
		<u> </u>		J				L	***************************************					
							Da	iys					A STATE OF THE PERSON NAMED IN COLUMN	
Concentration	28/		29	3	80	3	1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	32	3	33		34	35
	old	new	old	new	old •	new	old	new	old	new	old	new	old	new
Temperature (°C)/														
DO (mg/L)														
pH							, ,							
Cond (µS/cm)														
Initials							aya — Januarya da aya (A)	,					-1000 11-22-	
miliais	l	L	······································	L	· · · · · · · · · · · · · · · · · · ·			L						
DO		3		LJ			3		Cand	uctivity	motor		3	
DO meter:	4.5	- ^		. рп	meter:	· · · · · · · · · · · · · · · · · · ·		a commentation	Cona	uctivity	meter.			A.a
			n ka	1					1	Analys	te.	v	M	
Hardness*	3/		MICED,							Allalys	w,		-	
Alkalinity*	26			***************************************					1	Review	ved hv		7(91 z	
* mg/L as CaCO3	<u></u>								, ,	Date rev	iewed.		A-0-	10/15
mg/L as CaCC3														10/10
Sample Description		rle	eer,	Solm	1 4	llain	(So	W . S	one	pert	Sellan	les.		
Campio Bogoripuon	•			. 50		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1 3			3000			W
Comments:														

Chronic Toxicity Test Daily Mortality

Client:	XAZA	Start Date & Time:	January	22,2015	01500
Sample ID:	Jacko	Stop Date:	Februar	v 20.26	ous euso
Work Order #	14841	Test Species:			

		1							Total Dood	Total		
Concentration			ay of	Test	- No.	of Mo	rtalitie	es	Total Dead	Total	Total No.	Total
						T.,			Eggs/	Undeveloped/	1	l
(% UW)	Rep	1	2	3	4	5	6	7	Embryos	Unhatched	Alevins	Exposed
0 00	1	0	0	0	0	0	0	0	Alevins	Embryos	-	/
Control	2	1	(1	10	1	1	5	0			
	3		1	Н-	1-	-	 \	\vdash	,			
	4	+	\vdash	1	-	\vdash		-	0			/
1 - 0				 		 	-/	000				/
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site		Η.		 -	\vdash	\vdash	\vdash	0	D			
	3			\vdash		 	-	1	(
	4			\vdash		 -	 -	0	<u> 0</u>		/	
20	1				 	$\vdash \vdash$		1	0		/	
Spilled	2	\vdash		_			\vdash	$\vdash \vdash$	0			
•	3	<u> </u>		<u> </u>	\vdash				0		/	
	4				 	Ц_	<u> </u>	 	0	/		
So- Spilled	1					-		V	0			·
Spilled	2					 	 - - - - - - - - - 	<u> </u>	1	/		
	3					Ц	Ш_	0	0			
	4					Ц_			0			
100-	1	\sqcup				Ц_	<u> </u>	<u> </u>	0			
100- spilled	2	\sqcup					<u> </u>	\sqcup	0	/-	,	
•	3		_//				Ц.	<u> </u>				
	4	V	U	<u> </u>	1	1	7	V	<u> </u>			
	1								-			
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	3											
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Tech Initials		M	<u>~</u>	~	Thm)	SSD	w	MM	/ ww			

	16	le	Date	e reviewed: _	Apr. 10/15	
Comments: _ _						
Tech Initials	MM &	~ Fmin/ISSD	m m	VW		

Entropie Toxicity Test Daily Mortality

Client:	YAX	Start Date & Time:	Jonvery	24	2045	01500
Sample ID:	Sacks			•		6/130
Work Order #:	14841	Test Species:	Oncorhynchus	mykiss	3	

Concentration		D	ay of	Test	- No.	of Mo	rtalitie	es	Total Dead Eggs/	Total Undeveloped/	Total No.	Total
(90~10)	Rep	8	9	10	11	12	13	14	Embryos Alevins	Unhatched Embryos	Alevins	Exposed
Control	1	0	, O	Ó	0	0	0	0	0		3	
	2	0				0	0		mØ1			
	3				0	0	0		W Ø I			
	4	ò				O	0		0	,		
100-	1	0				0		4	i			
Site	2	0		1		0	5		\			
	3	0	y	U		0		0	Q		/	
	4	\	2	2		1			(0 ·			
20-	1	S	C	0	V	а			ン			
spiked	2		1	1.	YV	0		i	7			
, , , , , , , , , , , , , , , , , , , ,	3				ò	0		V	0			
	4				0	a	V		3			
50.	1				3	0	2	1.	و	/		
spiked	2					0	1	0	2			
, ,	3			1	0,	0	0	w/n	D		,	
	4				0	0			3			
100- siked	1				3	0	V	0	5			
siked	2					0	0	0	1			
`	3 ′		\mathcal{A}		3	0	0	0	D ₀			,
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Tech Initials		Sur	A	~	m	rul	M	how	VMV.			

Reviewed by:	(16h	Date reviewed:	Aw. 10/15	
Comments:		***************************************		
Tech Initials	my a ~ my ly	sharmo our		

Embryo-Alevin Freshwater Toxicity Test Daily Mortality

ient: imple ID: ork Order #:	AS	AX						Star	t Date & Time:	2015 C	1700			
mple ID:	<u> Se</u>	allo				-			Stop Date:	January 22, 2015 @ 1500 February 20, 2015 @ 1130				
ork Order #:		404	1	-		•			Test Species:	Oncorhynchus m	IYKISS			
			Nov of	Toot	No.	of Mortalities			Total Dead	Total		T		
reatments	Rep	15	16	1est	- NO. (19	20	21	Eggs/ Embryos	Undeveloped/ Unhatched	Total No. Alevins	Total Exposed		
(0 0 / 1)			0	5				-	Alevins	Embryos				
Pontro 1	2	ರಿ	00	7	0	0	0	1	0		· · · · · · · · · · · · · · · · · · ·			
	3	-	0		 			0	0			 		
	4	+	0		1-1	1		0	Ö					
100-site	1		0		1		8	D	9	A Company of the Comp		/		
00-3116	2		2		0	227-1	n	+	J.J., I.J	and the second second of the s	734-4-2-24-4-2-4	/		
	3	-	20		0		17	0	3	and the second s	/	/		
	4		0	1	0	1	3	0	<i>?</i>			· · · · · · · · · · · · · · · · · · ·		
20-Spilled	1	V	1		V			0	5	Company of the Compan				
	2	1	0		0	0	3	0	4	and the second s				
	3	Ò	S		0	ı	3		and the second s	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
	4	0	20	y	0	0	ν	0	4	/				
50-spiled	1	4	0		2	1	3		12	The second secon				
	2	٥	0	0	0	100		v	8 🖊		1987 17 200 Expans 400 - 1974 11	The same and the same of the s		
	3		<u>9</u>	3の のレ	10	40	30		(1		T T T T T T T T T T T T T T T T T T T			
70.5	1			10		0	60	-	<u> </u>	/				
100- Silved	2		0	0	0	1	3	17	5					
Spireci	3		۵	Ð	1	0	3	1	ar marin nyaétan ng katalong katalong di 1954 na pandan		Andread and the consequence of t	11 (10) y log (10) 10 mm (1) 10 mm (2) 10 mm		
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ch Initials	-	V W V	Δ.		NIN	85D	MINI	um	www					
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omments:	<u></u>	<i>}</i>	ungal	gri	outh	proso	$\frac{1}{n}$	enove	<u>X</u>	,				
-	a Lungal growth grand, removed													

Embryo-Alevin Freshwater Toxicity Test Daily Mortality

Client: AJAX	Start Date & Time: January 22, 2015@(50)
Sample ID: Sacko	Stop Date: February 20, 2018 @ 1130
Work Order #: 1484\	Test Species: Oncorhynchus mykiss

Concentration			ay of	Test ·	No. o	of Mo	rtalitie	es	Total Dead	Total Undeveloped/	Total No.	Total
	_	22						-	Eggs/ Embryos	Unhatched	Alevins	Exposed/
(%)	Rep	22	23	24	25	26	27	28	Alevins	Embryos	Alevilla	
Control	1	0	0	Ö	0	0	D	0	2			
	2	1	1	2	0	0	1		2			
	3	Ø		1	٥	0	1		2			
	4	0		1	1	O			um 83			
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20-	1	V	2/	<u>ာ</u>	0				4			
soiked	2	0	0	٥		V			1		<u>/</u>	
	3			90	3	1			12			
	4	D	0	0	D	0		V	<u>ි</u>			
50-	1	٦	D	2	0	0		WYO	3			
Spiled	2	0	ر ا	2	0	0		1	2			
	3		(_	Q		0			3			
	4	, <u>O</u>		O		1		V	3			7
100-	1	2	Š	O		0	1	1	4			
spiked	4	MOL	3	V	_3_	0		0	10			
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	3											
	4											
Took Initials	4	222.4	/ ^	~	14,47	CCD	1221	/	Mart 1	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
Tech Initials		m	[42]	-	W	シン	MM	ww	W/W/	L		

Reviewed by:	:	Bi		Date reviewe	ed:	Apr. 10/1x	
Comments:	0>501 0	purhols art	alevin stage		fing of	groot pour	t, remod
lech initials	MALL A	P / C W	MAN MAN MAN	1 °W			

Embryo-Alevin Freshwater Toxicity Test Daily Mortality

Client: _	XAZA	Start Date & Time:	January	22,2015	@15xx
Sample ID:	Jacks	Stop Date:	Februar	7 20,2015	@ 1130
Work Order #:	14841	Test Species:	Oncorhynch	us mykiss	

Concentration			Day of	Test	- No.	of Mo	rtalitie	s	Total Dead	Total Abnormal	Total	Total
(govlu)	Rep	29	30	31	32	33	34	35	Eggs/Alevins	Alevins	Normal Alevins	Exposed
Contro	1	0	1					/	6	10	28	30
	2	0							0	0	27	30
	3	0							0	10	US	30
_	4	0					. /		0	ට	VI	30
100-site	1	۵							ð	ರ್ತಿ	16	29
	2	0							0	20	15	30
	3	0		\					V	0.	24	30
	4								1	0	19	30
20-spiked	1	0		•					O	\mathcal{O}	18	29
	2	0							9	0	V3	30
	3	0			\rangle					0	13	30
	4	0							0	13	22	30
50-spired	1	0							<i>O</i>	· 0	9	30
``	2	0			/				0	0	17	30
	3	5				`			0	0	10	30
	4	0							D	0	18	30
100-spilled	1	٥		/					۵	0_	13	31
`	2	0							00	10	13	30
	3	0							J	13	7	29
	4	0	,						0	10	17	31
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	2	-										-, -, -,
	3											
	4											
Tech Initials		W							w	me	YM	MM

Tech Initials	w			m	me	w	MM
Comments: [©]	Scallosis @	scottogis-a	siled body 3	swimming slowly s	adlucys-		
			Ih say joine	1 6 6 3 11			
	head sligh		to side.				
Reviewed by:		Jou		Date reviewed:	Apr. 1	0/15	

Rainbow Trout Embryo-Alevin Toxicity Test

Client: AJAX

WO#: 14841

Sample ID: Jacko

Test Initiation Date: January 22, 2015

Test Termination Date: February 20, 2015

				٠				Total	Abnormal	Normal		
Test Conc.			Wee	kly Mortalit	y Counts			Dead	Alevins	Alevins	Total No.	Total No.
(% v/v)	Rep		1	2	3	4	-5				Alevins	Exposed
Control	1		0	0	1	0	0	1	1	28	29	30
	2	111	0	1	0	2	0	3	0	27	27	30
	3	٠,	1	1	0	2	0	4	1	25	26	30
	4		0	0	0	3	0	3	0	27	27	30
100 - site =			0	1 1	9	3	0	13	0	16	16	29
	2		0	1	1	11	0	13	2	15	17	30
	3		1	0	3	2	0	6	0	24	24	30
440.3	4	A Charles Market Property of	. 0	6	3	1	1	11	0	19	19	30
20 - spiked	1	42MARTHA TARRES	0	2	5	4	0	11	0	18	18	29
	2		0	2	4	1	0	7	0	23	23	30
	3	··	0	0	5	12	0	17	. 0	13	13	30
	4	10 F.Z	0	3	4	0	0	7	1	22	23	30
50 - spiked	1		0	₹. 6	12	3	o .	21	0	9.9	9	30
	2	4, 5	1	2	8	2	0	13	0	17	17	30
	3		0	0	17	3	0	20	0	10	10	30
	4			3	6	3	0	12	0	18	18	30
100 - spiked	1.1		0	5	9 -	4	0	18	0	13	13	31
	2		0	1	5	10	0	16	1	13	14	30
	3		0	0 ·	7	14	0	21	1	7	. 8	29
6.550	4		0	4	2	7	0	13	1	17	18	31
TP AND	di.							1982	1000	10	100	riër .
							-					
			177									
								L				

Survival			Normal Al	evins	
96.7			93.3		
90.0			90.0		
86.7	Mean	SD	83.3	Mean	SD
90.0	90.8	4.2	90.0	89.2	4.2
55.2			55.2		
56.7			50.0		
80.0	Mean	SD	80.0	Mean	SD
63.3	63.8	11.4	63.3	62.1	13.1
62.1			62.1		
76.7			76.7		
43.3	Mean	SD	43.3	Mean	SD
76.7	64.7	15.8	73.3	63.9	15.0
30.0			30.0		
56.7			56.7		
33.3	Mean	SD	33.3	Mean	SD
60.0	45.0	15.5	60.0	45.0	15.5
41.9			41.9		
46.7			43.3		
27.6	Mean	SD	24.1	Mean	SD
58.1	43.6	12.6	54.8	41.1	12.7

Job 10/15

Report Date: Test Code: 12 Mar-15 16:33 (p 3 of 4) 14841 | 07-2270-8971

							ies	t Code:		14041	07-2270-6971
Salmonid	Embryo-Alevin Surv	vival and D	evelop	ment Test					Na	utilus En	vironmental
Analysis II	D: 15-8042-7949	Enc	point:	Survival Rate			CET	TIS Versio	n: CETISv1	.8.7	
Analyzed:	12 Mar-15 16:3	1 Ana	ilysis:	Linear Interpo	olation (ICPII	N)	Offi	cial Resu	its: Yes	\	
Batch ID:	12-9392-5771	Tes	t Type:	Survival-Deve	elopment		Ana	lyst: E	Brett Lucas		
Start Date:	22 Jan-15 15:00		tocol:	EC/EPS 1/RN			Dilu	ient: £	echlorinated 3	a p Wate r	Ducko S.
Inding Da	te: 20 Feb-15 11:30	O Spe	ecies:	Oncorhynchu	s mykiss		Brit				BTC
Ouration:	28d 20h	Sou	ırce:	Oncorhynchus Vaneouver Isl	land Frout H	atchery	Age	:			
ample ID	: 04-6307-7987	Cod	de:	1B9A0263			Clie	nt: A	JAX		
Sample Da	ite: 20 Jan-15	Mat	erial:	-Fotal Dissolve	ed Solids So	alphate D	7C Pro	ject: A	ijax sulphate te	esting	
Receive Da	ate: 21 Jan-15	Sou	ırce:	AJAX sulphat	e testing						
Sample Ag	je: <u>_63h</u>	Sta	tion:	Jacko							
inear Inte	rpolation Options										
(Transfor				Resamples	Exp 95%				· 		
.og(X+1)	Linear	113	3617	200	Yes	Two	-Point Inter	polation			
Point Estir	nates										
	g/L 95% LCL										
	88.7 N/A	488.4									
	20.8 N/A	907.9									
	30.3 57.12	1034									
	18.2 201.6	N/A									
	25.6 271.9	N/A									
	1428 N/A 1428 N/A	N/A N/A									
			· .		Oala		4-(A/D)			<u> </u>	
	ate Summary	Count	Woon	Min	Max	ulated Varia	Std Dev	CV%	%Effect	Α Α	В
2-mg/L 2	Control Type Negative Control	Count 4	Mean 0.637		0.8	0.05686	0.1137	17.83%		76	119
323	Negative Control	4	0.646		0.7667	0.07905	0.1581	24.44%		77	119
714		4	0.45	0.3	0.6	0.07758	0.1552	34.48%		54	120
428		4	0.435		0.5806	0.0631	0.1352	28.97%		53	121
Survival R	ate Detail	<u> </u>									
:-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4						
2	Negative Control	0.5517	0.566		0.6333	 					
323	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.6207	0.766		0.7667						
714		0.3	0.566		0.6						
1428	•	0.4194	0.466		0.5806						
Survival Ra	ate Binomials										
-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4						
2 0	Negative Control		15/30		19/30						
323 🗸		18/29	23/30		22/30						
14		9/30	17/30		18/30						
428		13/31	13/30		17/31						
720		10/01	13/30	1123	17701						
										///	

I regative control = Jacko site with (unamounted)

Analyst: QA: JOL

Report Date: **Test Code:**

12 Mar-15 16:33 (p 4 of 4)

Salmonid Embryo-Alevin Survival and Development Test

14841 | 07-2270-8971 **Nautilus Environmental**

Analysis ID: Analyzed:

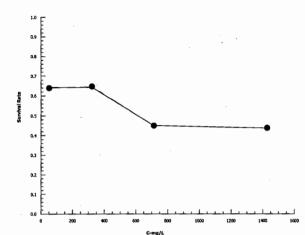
15-8042-7949 12 Mar-15 16:31

Endpoint: Survival Rate

Analysis: Linear Interpolation (ICPIN) **CETIS Version:**

CETISv1.8.7 Official Results: Yes

Graphics



Report Date:

10 Apr-15 09:12 (p 5 of 8)

Test Code: 14841 | 07-2270-8971

								103	t Code.			170711	77-2270-037
Salmonid Embr	yo-Alevin Surv	vival an	d Develop	ment	Test						N	lautilus En	vironmental
Analysis ID: (01-1716-1924	Ε	Endpoint:		vival Rate				IS Versi		CETIS	1.8.7	
Analyzed:	09 Apr-15 18:05	5 4	Analysis:	STF	2x2 Conti	ngency Tabl	es	Offi	cial Resu	ults:	Yes		
Batch ID:	12-9392-5771	1	est Type:	Sur	vival-Devel	opment		Ana	lyst:	Brett I	ucas		, ,
Start Date: 2	22 Jan-15 15:00) F	Protocol:		EPS 1/RM/			Dilu	ent: 🍃 🚽	Dechl	orinated	Tap Wate r	Jacko sit
Ending Date: 2	20 Feb-15 11:30) \$	Species:	Onc	corhynchus	mykiss lodge ਰਾਮ nd Trout Ha		Brir	ie:				
Duration: 2	28d 20h	\$	Source:	Va n	couver Isla	nd Trout Ha	tehery	Age	:				
Sample ID:	04-6307-7987	(Code:		A0263			Clie	nt:	AJAX			
Sample Date: 2	20 Jan-15	N	/laterial:	Tota	al Dissolved	Solids 54	(lphuté et	L Pro	ject:	Ajax s	ulphate	testing	
Receive Date: 2	21 Jan-15	5	Source:	AJA	X sulphate	testing							
Sample Age: 6	63h	\$	Station:	Jac	ko								
Data Transform		Zeta	Alt H	yp	Trials	Seed			NOEL		LOEL	TOEL	TU
Untransformed			C > T		NA	NA			323		714	480.2	
Fisher Exact/Bo	nferroni-Holm	Test											
Sample v	s Sample		Test S	Stat	P-Value	P-Type	Decision	(a:5%)					
52	323		1		1.0000	Exact	Non-Sign	ificant Effec	t		-		
52	714		0.002	516	0.0050	Exact	Significar	nt Effect					
52	1428		0.001	367	0.0041	Exact	Significar	nt Effect					
Data Summary													
C-mg/L C	ontrol Type	NR	R		NR + R	Prop NR	Prop R	%Effect					
	legative Contr	76	43		119	0.6387	0.3613	0.0%					
323		77	42		119	0.6471	0.3529	-1.32%					
714		54	66		120	0.45	0.55	29.54%					
1428		53	68		121	0.438	0.562	31.42%					
Survival Rate D	etail												
C-mg/L C	ontrol Type	Rep 1	Rep 2		Rep 3	Rep 4							
52 N	egative Control	0.5517	0.566	7	0.8	0.6333							
323		0.6207	0.766	7	0.4333	0.7667							
714		0.3	0.566	7	0.3333	0.6							
1428		0.4194	0.466	7	0.2759	0.5806							
Survival Rate B	inomials									_			,,,
C-mg/L C	ontrol Type	Rep 1	Rep 2		Rep 3	Rep 4							
52 N	egative Control	16/29	17/30		24/30	19/30							
323	. '	18/29	23/30		13/30	23/30							
714		9/30	17/30		10/30	18/30							
1428		13/31	14/30		8/29	18/31							

* regative control = Dacko site water (unumended)

Analyst:____QA:_J6k

Report Date:

10 Apr-15 09:12 (p 6 of 8)

Test Code:

14841 | 07-2270-8971

Salmonid Embryo-Alevin Survival and Development Test

Nautilus Environmental

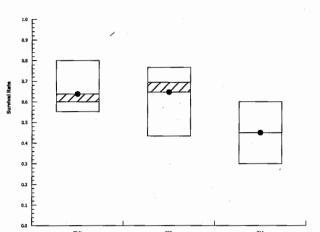
Analysis ID: Analyzed: 01-1716-1924 09 Apr-15 18:05 Endpoint: Survival Rate

Analysis: STP 2x2 Contingency Tables

CETIS Version: Official Results:

CETISv1.8.7 Yes

Graphics



Report Date: Test Code:

12 Mar-15 16:33 (p 1 of 4) 14841 | 07-2270-8971

								rest	Code:		14041	07-2270-097
Salmoni	id Emb	oryo-Alevin Sur	vival and D	evelop	ment Test					Na	autilus Er	vironmenta
Analysis	s ID:	16-1574-1480	Enc	point:	Proportion No	rmal		CET	IS Version:	: CETISv1	1.8.7	
Analyze	d:	12 Mar-15 16:3	31 Ana	lysis:	Linear Interpo		N)	Offic	ial Results	: Yes		
Batch ID):	12-9392-5771	Tes	t Type:	Survival-Deve	lopment		Ana	yst: Bre	tt Lucas		
Start Da	te:	22 Jan-15 15:0	0 Pro	tocol:	EC/EPS 1/RM	/28		Dilu	ent: De	chlorinated 7	Fap Water	•
Ending I	Date:	20 Feb-15 11:3	0 Spe	cies:	Oncorhynchus	myķiss	2	Brin	e: 🕠	cko sit	enute	8-8TC
Duration		28d 20h	-	rce:	Oncorhynchus Vancouver Isla	and Trout H	atchery!	Age				
Sample	ID:	04-6307-7987	Cod	le:	1B9A0263			Clie	nt: AJA	ΑX		
Sample	Date:	20 Jan-15	Mat	erial:	Total Dissolve	d Solids Su	alphate 87	C Proj	ect: Aja	x sulphate te	esting	
-		21 Jan-15	Sou	rce:	AJAX sulphate			_		-		
Sample	Age:	831 DTZ	Stat	ion:	Jacko							
Linear Ir	nterpol	ation Options										
X Transf	form	Y Transform	n See	d	Resamples	Exp 95%	% CL Meti	nod				
_og(X+1)		Linear	716		200	Yes		Point Interp	olation			
Point Es	stimate	es										
Level	mg/L	95% LCL	95% UCL									
EC5	371.1	N/A	729.3									
EC10	426.3	N/A	999.6				•					
EC15	489.7	13.34	1182									
EC20	562.6	135.9	1744									
EC25	646.2	237.9	N/A									
EC40	>1428	N/A	N/A									
EC50	>1428	N/A	N/A									
Proporti	ion No	rmal Summary				Calc	ulated Varia	te(A/B)				
C-mg/L	C	ontrol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	В
52	. Ne	egative Control	4	0.621	3 0.5	0.8	0.0656	0.1312	21.12%	0.0%	74	119
323			4	0.638	5 0.4333	0.7667	0.07518	0.1504	23.55%	-2.78%	76	119
714			4	0.45	0.3	0.6	0.07758	0.1552	34.48%	27.57%	54	120
1428			4	0.410	6 0.2414	0.5484	0.06339	0.1268	30.87%	33.91%	50	121
Proporti	on No	rmal Detail										
C-mg/L	Co	ontrol Type	Rep 1	Rep 2	Rep 3	Rep 4						
52	Ne	egative Control	0.5517	0.5	0.8	0.6333						
323			0.6207	0.766	7 0.4333	0.7333						
				0.500	- 0.0000	0.0						

Propo	rtion	Normal	Rinom	iale

714

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
52	Negative Control	16/29	15/30	24/30	19/30
323		18/29	23/30	13/30	22/30
714		9/30	17/30	10/30	18/30
1428		13/31	13/30	7/29	17/31

0.3

0.4194

0.5667

0.4333

0.3333

0.2414

0.6 0.5484

* regative control = Jacko site unter (unmented)

Analyst: QA: JOL

Report Date: **Test Code:**

12 Mar-15 16:33 (p 2 of 4)

14841 | 07-2270-8971

Salmonid Embryo-Alevin Survival and Development Test

Nautilus Environmental

Analysis ID: Analyzed:

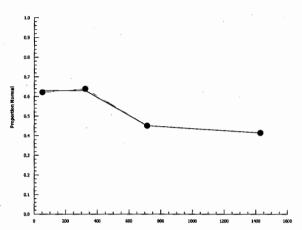
16-1574-1480 12 Mar-15 16:31 Endpoint: Analysis:

Proportion Normal

Linear Interpolation (ICPIN)

CETIS Version: Official Results: CETISv1.8.7 Yes

Graphics



Report Date: Test Code: 10 Apr-15 09:12 (p 1 of 8) 14841 | 07-2270-8971

								lest	Sode:		14041 0	7-2270-897
Salmonid Emb	ryo-Alevin Surv	ival an	d Develop	ment	Test					N	autilus En	ironmenta
Analysis ID:	19-3373-4299		Endpoint:	Pro	portion Nor	mal		CETIS	S Versio	n: CETISv	1.8.7	
Analyzed:	09 Apr-15 18:05	5	Analysis:	STF	2x2 Conti	ngency Tabl	es	Offici	al Resu	lts: Yes		
Batch ID:	12-9392-5771		Test Type:	Sun	vival-Devel	opment		Analy	st: E	Brett Lucas	•	
Start Date:	22 Jan-15 15:00)	Protocol:	EC/	EPS 1/RM/	/28		Dilue		echlorinated-		
Ending Date:	20 Feb-15 11:30) :	Species:	Onc	orhynchus	myki <u>s</u> s		Brine	: L	lacko sit	e wate	BT
Duration:	28d 20h	;	Source:	Van	couver Isla	mykiss dye BTC and Trout Ha	tchery	Age:				
Sample ID:	04-6307-7987	. (Code:	1B9	A0263			Clien	t: A	JAX		
Sample Date:	20 Jan-15	1	Material:	Tota	al Dissolve	d Solids ≲u	phinte BIC	Proje	ct: A	ijax sulphate t	esting	
Receive Date:	21 Jan-15	;	Source:	AJA	X sulphate	testing						•
Sample Age:	63h	:	Station:	Jac	ko							
Data Transform	n	Zeta	Alt H	ур	Trials	Seed			NOEL	LOEL	TOEL	TU
Untransformed			C > T		NA	NA			323	714	480.2	
Fisher Exact/B	onferroni-Holm	Test										
Sample v	vs Sample		Test S	Stat	P-Value	P-Type	Decision	(α:5%)				
52	323		1		1.0000	Exact	Non-Signi	ficant Effect	-		•	
52	714		0.005	563	0.0111	Exact	Significan	t Effect				
52	1428		0.000	923	0.0028	Exact	Significan	t Effect				
Data Summary												
C-mg/L (Control Type	NR	R		NR + R	Prop NR	Prop R	%Effect				
52 N	Negative Contr	74	45		119	0.6218	0.3782	0.0%				
323		76	43		119	0.6387	0.3613	-2.7%				
714		54	66		120	0.45	0.55	27.64%				
1428		50	71		121	0.4132	0.5868	33.55%				
Proportion Nor	rmal Detail											
C-mg/L C	Control Type	Rep 1	Rep 2	2	Rep 3	Rep 4	<u> </u>					
52 N	Negative Control	0.5517	0.5		8.0	0.6333						
323		0.6207	0.766	7	0.4333	0.7333						
714		0.3	0.566	7	0.3333	0.6						
1428		0.4194	0.433	3	0.2414	0.5484						
Proportion Nor	rmal Binomials					, '						
C-mg/L C	Control Type	Rep 1	Rep 2	:	Rep 3	Rep 4		·				
52 N	Negative Control	16/29	15/30		24/30	19/30						
323		18/29	23/30		13/30	22/30						
714		9/30	17/30		10/30	18/30						
1428		13/31	13/30		7/29	17/31						

* negative control = Jacko site water (unumended)

Analyst:____ QA:_JUL

Report Date:

10 Apr-15 09:12 (p 2 of 8)

Test Code:

14841 | 07-2270-8971

Salmonid Embryo-Alevin Survival and Development Test

Nautilus Environmental

Analysis ID: Analyzed:

19-3373-4299 09 Apr-15 18:05

Proportion Normal Endpoint:

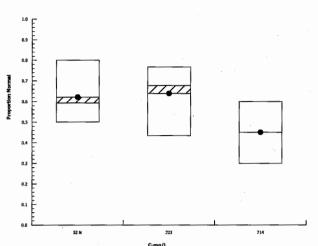
Analysis:

STP 2x2 Contingency Tables

CETIS Version: Official Results:

CETISv1.8.7 Yes

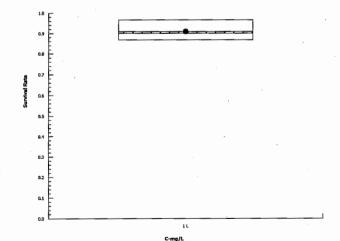
Graphics



Report Date: Test Code: 10 Apr-15 09:18 (p 1 of 1) 14841 | 07-2270-8971

										0.				
Salmonid Emi	bryo-Alevin Surv	ival ar	nd Develop	ment	t Test							Nautilus	Enviro	nmenta
Analysis ID:	07-4907-3079		Endpoint:						CETIS V			Sv1.8.7	-	
Analyzed:	10 Apr-15 9:18		Analysis:	Sing	gle 2x2 Con	tingency Ta	ble		Official F	lesults:	Yes			
Batch ID:	12-9392-5771		Test Type:	Sur	vival-Develo	pment			Analyst:	Brett	Lucas			
Start Date:	22 Jan-15 15:00)	Protocol:		EPS 1/RM/				Diluent:	'Decl	jorina te	d Tap W	ater- fer by	~
Ending Date:	20 Feb-15 11:30)	Species:	Onc	corhynchus	mykiss Tra	t lodge -		Brine:	Juc	Ko sit	e cu	TE BI	C
Duration:	28d 20h		Source:	Van	icouver I slai	nd Trout Ha	tchery	3T C	Age:					
Sample ID:	04-6307-7987		Code:	1B9	A0263				Client:	AJAX	(
Sample Date:	20 Jan-15		Material:	-T ot e	al Dissolved	 Solids -≤વ	phote ot	2	Project:	Ajax	sulphat	e testing		
Receive Date:	21 Jan-15		Source:		X sulphate									
Sample Age:	63h		Station:	Jac	ko	•								
Data Transfori	m	Zeta	Alt H	lyp .	Trials	Seed			Te	st Resu	it			
Untransformed			C > T		NA	NA			Fa	ils surviv	al rate			
Fisher Exact T	Test													
Sample	vs Sample		Test	Stat	P-Value	P-Type	Decision((α:5%)						
1	52		3.84E	-07	<0.0001	Exact	Significan	t Effect						
Data Summan	у .											`		
C-mg/L	Control Type	NR	R		NR + R	Prop NR	Prop R	%Eff	ect					
1	Lab Water	109	11		120	0.908	0.0917	0.0%						
52	Negative Contr	76	43		119	0.639	0.361	29.79	%					
Survival Rate	Detail													
C-mg/L	Control Type	Rep 1	Rep 2	2	Rep 3	Rep 4								
1	Lab Water	0.966			0.8667	0.9								
52	Negative Control	0.551	7 0.566	7	8.0	0.6333								
Survival Rate	Binomials													
C-mg/L	Control Type	Rep 1	Rep 2	2	Rep 3	Rep 4								
1	Lab Water	29/30	27/30		26/30	27/30								
52	Negative Control	16/29	17/30)	24/30	19/30								

Graphics



* Lub water = dechlorinated tap water negative control = Dacko site water (unamaded)

Analyst:_____QA:_____

Report Date:

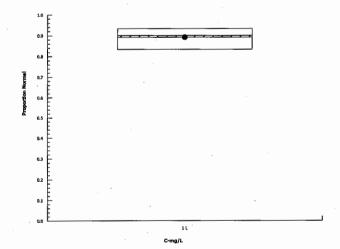
10 Apr-15 09:18 (p 1 of 1)

Test Code:

14841 | 07-2270-8971

										·			.	
Salmonid Eml	oryo-Alevin Surv	ival a	nd Develop	ment	Test						-	Nautilus	Enviro	nmenta
Analysis ID:	20-5614-6195		Endpoint:	Prop	ortion Nor	mal			CETIS Ve	rsion:	CETIS	Sv1.8.7		
Analyzed:	10 Apr-15 9:18		Analysis:	Sing	jle 2x2 Con	tingency Ta	ble		Official R	esults:	Yes			
Batch ID:	12-9392-5771		Test Type:	Surv	/ival-Develo	pment			Analyst:	Brett	Lucas			
Start Date:	22 Jan-15 15:00)	Protocol:		EPS 1/RM/				Diluent:	-Dech	lorinate	d ,Tap Wa	ater-	
Ending Date:	20 Feb-15 11:30)	Species:	Onc	orhynchus	mykiss	et Indus		Brine:	Ouc	KO 51	te un	1081	7
Duration:	28d 20h		Source:	-Van	couver-Isla	nd Trout Ha	tchery	TC	Age:					
Sample ID:	04-6307-7987		Code:	1B9	A0263				Client:	AJAX	ζ			
Sample Date:	20 Jan-15		Material:	Fot a	H-Dissolved	Solids 54	Sphite 8	7 C.	Project:	Ajax :	sulphate	etesting		
Receive Date:			Source:		X sulphate				_					
Sample Age:	63h		Station:	Jack	(0									
Data Transfor	m	Zeta	Alt H	lyp	Trials	Seed			Tes	t Resul	t			
Untransformed		-	C > T		NA	NA			Fail	s propo	rtion no	rmal		
Fisher Exact 1	Test	-												
Sample	vs Sample		Test	Stat	P-Value	P-Type	Decision(α:5%)						
1	52		7.67E	-07	<0.0001	Exact	Significan	t Effec	t					1 10
Data Summar	<i>y</i>													
C-mg/L	Control Type	NR	R		NR + R	Prop NR	Prop R	%Ef	fect					
1	Lab Water	107	13		120	0.892	0.108	0.0%	ó					
52	Negative Contr	74	45		119	0.622	0.378	30.3	%					
Proportion No	rmal Detail													
C-mg/L	Control Type	Rep	1 Rep	2	Rep 3	Rep 4								
1	Lab Water	0.933	3 0.9		0.8333	0.9			•.			<u> </u>		
52	Negative Control	0.551	7 0.5		0.8	0.6333								
Proportion No	rmal Binomials									_				
C-mg/L	Control Type	Rep '	1 Rep	2	Rep 3	Rep 4								
	Lab Water	28/30	27/30)	25/30	27/30								
1	Lab Trates	_0,00	21,700		,									

Graphics



* Lab water = dechlorinated tap ante negative control = Dacko site wite (unamended)

Analyst:_

APPENDIX B - Analytical chemistry results



NAUTILUS ENVIRONMENTAL

ATTN: Brett Lucas 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 06-NOV-14

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

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1544091

Project P.O. #: NOT SUBMITTED

Job Reference:

C of C Numbers: 1

Legal Site Desc:



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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



L1544091 CONTD.... PAGE 2 of 4 14-NOV-14 17:56 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	L1544091-1 Water 06-NOV-14 11:00 AJAX SPIKED	L1544091-2 Water 06-NOV-14 11:00 AJAX SITE		
Grouping	Analyte				
WATER					
Anions and Nutrients	Bromide (Br) (mg/L)	<1.0 DLM	<0.050		
	Chloride (CI) (mg/L)	60	55.2		
	Fluoride (F) (mg/L)	<0.40	0.220		
	Nitrate (as N) (mg/L)	<0.10	0.0276		
	Nitrite (as N) (mg/L)	<0.020	0.0033		
	Sulfate (SO4) (mg/L)	1500	48.9		
Total Metals	Aluminum (Al)-Total (mg/L)	0.23	<0.20		
	Antimony (Sb)-Total (mg/L)	<0.20	<0.20		
	Arsenic (As)-Total (mg/L)	<0.20	<0.20		
	Barium (Ba)-Total (mg/L)	0.063	0.063		
	Beryllium (Be)-Total (mg/L)	<0.0050	<0.0050		
	Bismuth (Bi)-Total (mg/L)	<0.20	<0.20		
	Boron (B)-Total (mg/L)	<0.10	<0.10		
	Cadmium (Cd)-Total (mg/L)	<0.010	<0.010		
	Calcium (Ca)-Total (mg/L)	239	55.6		
	Chromium (Cr)-Total (mg/L)	<0.010	<0.010		
	Cobalt (Co)-Total (mg/L)	<0.010	<0.010		
	Copper (Cu)-Total (mg/L)	<0.010	<0.010		
	Iron (Fe)-Total (mg/L)	<0.030	<0.030		
	Lead (Pb)-Total (mg/L)	<0.050	<0.050		
	Lithium (Li)-Total (mg/L)	<0.010	<0.010		
	Magnesium (Mg)-Total (mg/L)	256	37.5		
	Manganese (Mn)-Total (mg/L)	<0.0050	<0.0050		
	Molybdenum (Mo)-Total (mg/L)	<0.030	<0.030		
	Nickel (Ni)-Total (mg/L)	<0.050	<0.050		
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30		
	Potassium (K)-Total (mg/L)	14.5	11.0		
	Selenium (Se)-Total (mg/L)	<0.20	<0.20		
	Silicon (Si)-Total (mg/L)	5.97	6.00		
	Silver (Ag)-Total (mg/L)	<0.010	<0.010		
	Sodium (Na)-Total (mg/L)	70.6	38.1		
	Strontium (Sr)-Total (mg/L)	0.466	0.387		
	Thallium (TI)-Total (mg/L)	<0.20	<0.20		
	Tin (Sn)-Total (mg/L)	<0.030	<0.030		
	Titanium (Ti)-Total (mg/L)	0.023	<0.010		
	Vanadium (V)-Total (mg/L)	<0.030	<0.030		
	Zinc (Zn)-Total (mg/L)	<0.0050	<0.0050		

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

L1544091 CONTD....

FINΔI

PAGE 3 of 4 14-NOV-14 17:56 (MT)

Version:

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)	
Duplicate	Bromide (Br)	DLM	L1544091-1, -2	
Duplicate	Chloride (CI)	DLM	L1544091-1, -2	
Duplicate	Nitrite (as N)	DLM	L1544091-1, -2	
Duplicate	Nitrate (as N)	DLM	L1544091-1, -2	
Duplicate	Fluoride (F)	DLM	L1544091-1, -2	
Duplicate	Nitrite (as N)	DLM	L1544091-1, -2	

Qualifiers for Individual Parameters Listed:

Qualifier Description

DLM Detection Limit Adjusted due to sample matrix effects.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ANIONS-BR-IC-VA	Water	Bromide 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-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 in Water by Ion Chromatography EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA Water Nitrate in Water by Ion Chromatography EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

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".

MET-TOT-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 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 - optical emission spectrophotometry (EPA Method 6010B).

** 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:	

1

Reference Information

L1544091 CONTD....

PAGE 4 of 4

14-NOV-14 17:56 (MT)

Version: FINAL

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.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1544091-COFC

COC Number: 14 -

Page 1 of 1

	www.alsglobal.com			Report Format / Distribution									<u> </u>							
Report To					Report Forma	t / Distribution			Sele	ect Serv	ice Lev	el Belov	(Rush	Tumarou	und Time (TAT) is	not av	ailable f	or all te	sts)
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NAUTILUS ENVIRONMENTAL

ATTN: BRETT LUCAS 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 14-NOV-14

Report Date: 20-NOV-14 16:40 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1547104

Project P.O. #: NOT SUBMITTED

Job Reference:

C of C Numbers: 1205

Legal Site Desc:



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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



L1547104 CONTD.... PAGE 2 of 4 20-NOV-14 16:40 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	06-NOV-14	L1547104-2 WATER 06-NOV-14 SITE CONTROL	L1547104-3 WATER 06-NOV-14	L1547104-4 WATER 06-NOV-14	L1547104-5 WATER 06-NOV-14
Grouping	Analyte					
WATER						
Anions and Su Nutrients	Ifate (SO4) (mg/L)	8.16	50.6	242	336	475
Total Metals Ca	alcium (Ca)-Total (mg/L)	35.7	47.9	70.0	80.2	93.9
Ma	agnesium (Mg)-Total (mg/L)	0.91	33.1	58.6	71.2	88.9

L1547104 CONTD.... PAGE 3 of 4 20-NOV-14 16:40 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

						vers	 FINAL
	Desc	nple ID cription	L1547104-6 WATER	L1547104-7 WATER	L1547104-8 WATER		
	Sample Sample	d Time	06-NOV-14 44%	06-NOV-14 67%	06-NOV-14 100%		
		lient ID	,	0.70	10070		
Grouping	Analyte						
WATER							
Anions and Nutrients	Sulfate (SO4) (mg/L)		684	1000	1470		
Total Metals	Calcium (Ca)-Total (mg/L)		114	147	200		
	Magnesium (Mg)-Total (mg/L)		113	154	217		

EPA SW-846 3005A/6010B

PAGE 4 of 4 20-NOV-14 16:40 (MT)

L1547104 CONTD....

Version: FINΔI

Reference Information

Test Method References:

ALS Test Code Method Reference** Matrix **Test Description** 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". MET-TOT-ICP-VA

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 - optical emission spectrophotometry (EPA Method 6010B).

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

Total Metals in Water by ICPOES

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:

1205

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.

Water

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.



dditional costs may be required

BRITISH COLUMBIA

. Net 30 unless otherwise contracted.

L1547104-COFC

Chain of Custody

DISTRIBUTION: WHITE - Nautilus Environmental, COLOR - Originator

8664 Commerce Court Burnaby British Columbia Ca Phone 604.420.8773

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P. subcapitata chemistry

concentration	sulphate	calcium	magnesium	hardness
site	50.6	47.9	33.1	255.7029
13%	242	70	58.6	415.7621
20%	336	80.2	71.2	493.0536
30%	475	93.9	88.9	600.0615
44%	684	114	113	749.3702
67%	1000	147	154	1000.399
100%	1470	200	217	1391.847



NAUTILUS ENVIRONMENTAL

ATTN: BRETT LUCAS 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 14-NOV-14

Report Date: 20-NOV-14 16:38 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1547101

Project P.O. #: NOT SUBMITTED

Job Reference:

C of C Numbers: 1212

Legal Site Desc:



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L1547101 CONTD.... PAGE 2 of 4 20-NOV-14 16:38 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

	[Sar	Sample ID Description mpled Date npled Time Client ID	L1547101-1 WATER 12-NOV-14 SITE CONTROL	L1547101-2 WATER 12-NOV-14	L1547101-3 WATER 12-NOV-14	L1547101-4 WATER 12-NOV-14	L1547101-5 WATER 12-NOV-14 44%
Grouping	Analyte						
WATER							
Anions and Nutrients	Sulfate (SO4) (mg/L)		50.1	240	338	473	673
Total Metals	Calcium (Ca)-Total (mg/L)		47.1	68.3	76.4	96.2	120
	Magnesium (Mg)-Total (mg/L)		32.2	57.4	68.1	89.9	117

L1547101 CONTD.... PAGE 3 of 4 20-NOV-14 16:38 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

				vers	1011.	FINAL
	Sample II	L1547101-6	L1547101-7			
	Description		WATER			
	Sampled Da Sampled Tin	12-NOV-14	12-NOV-14			
	Client I	D 67%	100%			
Grouping	Analyte					
WATER						
Anions and Nutrients	Sulfate (SO4) (mg/L)	1030	1450			
Total Metals	Calcium (Ca)-Total (mg/L)	164	195			
	Magnesium (Mg)-Total (mg/L)	172	213			

PAGE 20-NOV-14 16:38 (MT)

Version: FINAI

L1547101 CONTD....

4 of 4

Test Method References:

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

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".

MET-TOT-ICP-VA EPA SW-846 3005A/6010B Water Total Metals in Water by ICPOES

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 - optical emission spectrophotometry (EPA Method 6010B).

Reference Information

** 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:

1212

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.



BRITISH COLUMBIA

8664 Commerce Court Burnaby British Columbia Canada VSA 4 Phone 604.420.8773 Fax 604.357.1361



L1547101-COFC

Chain of Custody

Date NOV 12/14 Page /

Sample Collection by:								(134)		NALYS	SIS REQ	JIRED		
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	C. dubia i	nitiation				C. dubia	termination		C. dubia avg			
concentration	sulphate	calcium	magnesium	hardness	sulphate	calcium	magnesium	hardness	sulphate	calcium	magnesium	hardness
lab	8.16	35.7	0.91	92.82039					8.16	35.7	0.91	92.82039
site	50.6	47.9	33.1	255.7029		50.1 47	'.1 32.2	2 250.0039	50.35	47.5	32.65	252.8534
13%	242	. 70	58.6	415.7621		240 68	3.3 57.4	406.5831	241	69.15	58	411.1726
20%	336	80.2	71.2	493.0536		338 76	5.4 68.1	470.8175	337	78.3	69.65	481.9356
30%	475	93.9	88.9	600.0615		473 96	5.2 89.9	609.9147	474	95.05	89.4	604.9881
44%	684	114	113	749.3702		673 1	20 117	780.7986	678.5	117	115	765.0844
67%	1000	147	154	1000.399		1030 1	64 172	1116.875	1015	155.5	163	1058.637
100%	1470	200	217	1391.847		1450 1	95 21 3	1362.914	1460	197.5	215	1377.381



NAUTILUS ENVIRONMENTAL

ATTN: BRETT LUCAS 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 24-JAN-15

Report Date: 30-JAN-15 11:26 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1570667

Project P.O. #: NOT SUBMITTED

Job Reference: C of C Numbers: Legal Site Desc:

Jame Lo, B.Sc. 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



L1570667 CONTD....
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ALS ENVIRONMENTAL ANALYTICAL REPORT

					 _
	Sample ID Description Sampled Date Sampled Time Client ID	L1570667-1 Water 22-JAN-15 16:00 AJAX SPIKED	L1570667-2 Water 22-JAN-15 16:00 AJAX SITE		
Grouping	Analyte				
WATER	. • •				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	267	266		
	Bromide (Br) (mg/L)	<1.0	<0.10		
	Chloride (CI) (mg/L)	76	60.8		
	Fluoride (F) (mg/L)	<0.40	0.208		
	Nitrate (as N) (mg/L)	0.12	0.078		
	Nitrite (as N) (mg/L)	OLM <0.020	0.0113		
	Sulfate (SO4) (mg/L)	1500	53.6		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	15.4	15.7		
Total Metals	Aluminum (AI)-Total (mg/L)	0.30	<0.20		
	Antimony (Sb)-Total (mg/L)	<0.20	<0.20		
	Arsenic (As)-Total (mg/L)	<0.20	<0.20		
	Barium (Ba)-Total (mg/L)	0.069	0.069		
	Beryllium (Be)-Total (mg/L)	<0.0050	<0.0050		
	Bismuth (Bi)-Total (mg/L)	<0.20	<0.20		
	Boron (B)-Total (mg/L)	<0.10	<0.10		
	Cadmium (Cd)-Total (mg/L)	<0.010	<0.010		
	Calcium (Ca)-Total (mg/L)	252	58.0		
	Chromium (Cr)-Total (mg/L)	<0.010	<0.010		
	Cobalt (Co)-Total (mg/L)	<0.010	<0.010		
	Copper (Cu)-Total (mg/L)	<0.010	<0.010		
	Iron (Fe)-Total (mg/L)	0.041	<0.030		
	Lead (Pb)-Total (mg/L)	<0.050	<0.050		
	Lithium (Li)-Total (mg/L)	<0.010	<0.010		
	Magnesium (Mg)-Total (mg/L)	247	40.4		
	Manganese (Mn)-Total (mg/L)	0.0143	0.0132		
	Molybdenum (Mo)-Total (mg/L)	<0.030	<0.030		
	Nickel (Ni)-Total (mg/L)	<0.050	<0.050		
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30		
	Potassium (K)-Total (mg/L)	14.5	11.5		
	Selenium (Se)-Total (mg/L)	<0.20	<0.20		
	Silicon (Si)-Total (mg/L)	6.32	6.36		
	Silver (Ag)-Total (mg/L)	<0.010	<0.010		
	Sodium (Na)-Total (mg/L)	69.1	38.7		
	Strontium (Sr)-Total (mg/L)	0.484	0.405		
	Thallium (TI)-Total (mg/L)	<0.20	<0.20		
	Tin (Sn)-Total (mg/L)	<0.030	<0.030		

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

L1570667 CONTD.... PAGE 3 of 5 30-JAN-15 11:26 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L1570667-1 Water 22-JAN-15 16:00 AJAX SPIKED	L1570667-2 Water 22-JAN-15 16:00 AJAX SITE		
Grouping	Analyte					
WATER						
Total Metals	Titanium (Ti)-Total (mg/L)		0.021	<0.010		
	Vanadium (V)-Total (mg/L)		<0.030	<0.030		
	Zinc (Zn)-Total (mg/L)		<0.0050	<0.0050		

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

Reference Information

L1570667 CONTD....

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Version: FINAL

ALK-COL-VA Water Alkalinity by Colourimetric (Automated) EPA 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. BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 procedures may involve preliminary sample treatment by acid digestion, using either hotblock o microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	Sample Number	Client Sample ID	Qualifier	Description	
Qualifiers for Individual Parameters Listed: Qualifier posseription DLM Detection Limit Adjusted due to sample matrix effects. Set Method References: List Stest Code Matrix Test Description Method Reference** List Stest Code Matrix Test Description Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method. List Stest Code Matrix Test Description EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method. List Stest Code Matrix Promise in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by lon Chromatography with conductivity and/or UV detection. ARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 3310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. Li-LC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. Li-CN-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotbiock of 1008. List Code Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. List Code Water Nitrate	L1570667-1	AJAX SPIKED	LPMB		
DLM Detection Limit Adjusted due to sample matrix effects. State Method References	L1570667-2	AJAX SITE	LPMB		
DLM Detection Limit Adjusted due to sample matrix effects. sest Method References: ALS Test Code Matrix Test Description Method Reference** ALK-COL-VA Water Alkalinity by Colourimetric (Automated) EPA 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. Berk-I-CN-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)", Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-I-CN-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-ICP-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 Waster' SW-846 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waster' SW-846 published by the Othode on incrowave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-1-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-1-IC-N-VA Water Nitrate in Water by IC (Low Level) E	Qualifiers for In-	dividual Parameters I	Listed:		
Sest Method References: ALS Test Code Matrix Test Description Method Reference** ALK-COL-VA Water Alkalinity by Colourimetric (Automated) EPA 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. BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-ICP-VA Water Total Metals in Water by IC EPA 300.1 (mod) 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 Waster SW-946 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock on microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrie in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrie in Water by IC (Low Level) EPA 300.1 (mod)	Qualifier	Description			
ALK-COL-VA Water Alkalinity by Colourimetric (Automated) EPA 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. BRR-I-ICN-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 procedures may involve preliminary sample treatment by acid digestion, using either hotblock o microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)	DLM	Detection Limit Adjuste	ed due to sample matr	rix effects.	
ALK-COL-VA Water Alkalinity by Colourimetric (Automated) EPA 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. BR-L-IC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 procedures may involve preliminary sample treatment by acid digestion, using either hotblock on microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	est Method Ref	ferences:			
This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method. BBR-LIC-N-VA Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. CCARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 Waster" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock on microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	ALS Test Code	Matrix	Test Description		Method Reference**
COLUMN Water Bromide in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 procedures may involve preliminary sample treatment by acid digestion, using either hotblock on microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	ALK-COL-VA	Water	Alkalinity by Colouring	metric (Automated)	EPA 310.2
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 procedures may involve preliminary sample treatment by acid digestion, using either hotblock of microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			dures adapted from El	PA Method 310.2 "Alkalinity". Tota	al Alkalinity is determined using the methyl orange
CARBONS-DOC-VA Water Dissolved organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 Waster" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock of microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	BR-L-IC-N-VA	Water	Bromide in Water by	y IC (Low Level)	EPA 300.1 (mod)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 Waster "SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock of microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	Inorganic anions	are analyzed by Ion C	hromatography with co	onductivity and/or UV detection.	
determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. CL-IC-N-VA Water Chloride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 procedures may involve preliminary sample treatment by acid digestion, using either hotblock of microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	CARBONS-DOC-	VA Water	Dissolved organic ca	arbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 procedures may involve preliminary sample treatment by acid digestion, using either hotblock of microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. SO4-IC-N-VA Water Sulfate in Water by IC (EPA 300.1 (mod)					Carbon (TOC)". Dissolved carbon (DOC) fractions are
F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. MET-TOT-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 procedures may involve preliminary sample treatment by acid digestion, using either hotblock of microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. SO4-IC-N-VA Water Sulfate in Water by IC (EPA 300.1 (mod) EPA 300.1 (mod)	CL-IC-N-VA	Water	Chloride in Water by	y IC	EPA 300.1 (mod)
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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 of microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)	Inorganic anions	are analyzed by Ion C	hromatography with co	onductivity and/or UV detection.	
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 of microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)	MET-TOT-ICP-VA	Water	Total Metals in Wate	er by ICPOES	EPA SW-846 3005A/6010B
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)	American Public States Environment microwave oven	Health Association, ar ental Protection Agence	nd with procedures ada by (EPA). The procedu	apted from "Test Methods for Eva ures may involve preliminary sam	luating Solid Waste" SW-846 published by the United ple treatment by acid digestion, using either hotblock o
NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)	IO2-L-IC-N-VA	Water	Nitrite in Water by IC	C (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)	Inorganic anions	are analyzed by Ion C	hromatography with co	onductivity and/or UV detection.	
SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)	IO3-L-IC-N-VA	Water	Nitrate in Water by I	IC (Low Level)	EPA 300.1 (mod)
	Inorganic anions	are analyzed by Ion C	hromatography with co	onductivity and/or UV detection.	
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	O4-IC-N-VA	Water	Sulfate in Water by	IC	EPA 300.1 (mod)
	Inorganic anions	are analyzed by Ion C	hromatography with co	onductivity and/or UV detection.	

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:

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Laboratory Definition Code Laboratory Location

VA

Chain of Custody Numbers:

Reference Information

L1570667 CONTD....

PAGE 5 of 5

30-JAN-15 11:26 (MT)

Version: FINAL

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.

Chain of Custody (COC) / Analytical Request Form

L1570667-COFC

COC Number: 14 -

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

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NAUTILUS ENVIRONMENTAL

ATTN: Brett Lucas 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 04-FEB-15

Report Date: 12-FEB-15 13:02 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1574833

Project P.O. #: NOT SUBMITTED

Job Reference: C of C Numbers: Legal Site Desc:

Jame Lo, B.Sc. Account Manager

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

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



L1574833 CONTD.... PAGE 2 of 5 12-FEB-15 13:02 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

				V CI 3	 IIIAL
	Sample ID Description Sampled Date Sampled Time Client ID	L1574833-1 water 30-JAN-15 10:00 AJAX SPIKED	L1574833-2 water 30-JAN-15 10:00 AJAX SITE		
Grouping	Analyte				
WATER	Allalyte				
Anions and	Alkalinity, Total (as CaCO3) (mg/L)				
Nutrients	Alkalility, Total (as GaGGG) (IIIg/L)	267	270		
	Bromide (Br) (mg/L)	<1.0 DLM	<0.050		
	Chloride (CI) (mg/L)	61	57.8		
	Fluoride (F) (mg/L)	0.40	0.221		
	Nitrate (as N) (mg/L)	0.27	0.0857		
	Nitrite (as N) (mg/L)	0.022	0.0145		
	Sulfate (SO4) (mg/L)	1520	51.7		
Total Metals	Aluminum (AI)-Total (mg/L)	<0.20	<0.20		
	Antimony (Sb)-Total (mg/L)	<0.20	<0.20		
	Arsenic (As)-Total (mg/L)	<0.20	<0.20		
	Barium (Ba)-Total (mg/L)	0.069	0.072		
	Beryllium (Be)-Total (mg/L)	<0.0050	<0.0050		
	Bismuth (Bi)-Total (mg/L)	<0.20	<0.20		
	Boron (B)-Total (mg/L)	<0.10	<0.10		
	Cadmium (Cd)-Total (mg/L)	<0.010	<0.010		
	Calcium (Ca)-Total (mg/L)	260	60.1		
	Chromium (Cr)-Total (mg/L)	<0.010	<0.010		
	Cobalt (Co)-Total (mg/L)	<0.010	<0.010		
	Copper (Cu)-Total (mg/L)	<0.010	<0.010		
	Iron (Fe)-Total (mg/L)	<0.030	<0.030		
	Lead (Pb)-Total (mg/L)	<0.050	<0.050		
	Lithium (Li)-Total (mg/L)	0.020	<0.010		
	Magnesium (Mg)-Total (mg/L)	254	41.1		
	Manganese (Mn)-Total (mg/L)	0.0132	0.0126		
	Molybdenum (Mo)-Total (mg/L)	<0.030	<0.030		
	Nickel (Ni)-Total (mg/L)	<0.050	<0.050		
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30		
	Potassium (K)-Total (mg/L)	15.6	12.4		
	Selenium (Se)-Total (mg/L)	<0.20	<0.20		
	Silicon (Si)-Total (mg/L)	6.29	6.46		
	Silver (Ag)-Total (mg/L)	<0.010	<0.010		
	Sodium (Na)-Total (mg/L)	69.8	40.1		
	Strontium (Sr)-Total (mg/L)	0.543	0.416		
	Thallium (TI)-Total (mg/L)	<0.20	<0.20		
	Tin (Sn)-Total (mg/L)	<0.030	<0.030		
	Titanium (Ti)-Total (mg/L)	0.013	<0.010		
	Vanadium (V)-Total (mg/L)	<0.030	<0.030		

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

L1574833 CONTD.... PAGE 3 of 5 12-FEB-15 13:02 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L1574833-1 water 30-JAN-15 10:00 AJAX SPIKED	L1574833-2 water 30-JAN-15 10:00 AJAX SITE		
Grouping	Analyte					
WATER						
Total Metals	Zinc (Zn)-Total (mg/L)		<0.0050	<0.0050		

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

L1574833 CONTD....

PAGE 4 of 5

12-FEB-15 13:02 (MT)

Version: FINAL

Reference Information

Qualifiers for In	dividual Samples Lis	tod:	version: Final
	Client Sample ID	Qualifier	Description
L1574833-1	AJAX SPIKED	LPMB	ab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab.
L1574833-2	AJAX SITE	LPMB	letals results may be biased low. ab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. letals results may be biased low.
QC Samples with	Qualifiers & Comme	ents:	
QC Type Descrip	tion	Parameter	Qualifier Applies to Sample Number(s)
Matrix Spike		Calcium (Ca)-Total	MS-B L1574833-1, -2
Matrix Spike		Silicon (Si)-Total	MS-B L1574833-1, -2
Qualifiers for In-	dividual Parameters	Listed:	
Qualifier	Description		
DLM	Detection Limit Adjust	ed due to sample matrix	rects.
MS-B	Matrix Spike recovery	could not be accurately	culated due to high analyte background in sample.
est Method Ref	forences:		
ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourime	ic (Automated) EPA 310.2
	carried out using proce	, ,	lethod 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange
BR-L-IC-N-VA	Water	Bromide in Water by I	(Low Level) EPA 300.1 (mod)
Inorganic anions	are analyzed by Ion C	hromatography with con-	ctivity and/or UV detection.
CL-IC-N-VA	Water	Chloride in Water by I	EPA 300.1 (mod)
Inorganic anions	are analyzed by Ion C	hromatography with con-	ctivity and/or UV detection.
F-IC-N-VA	Water	Fluoride in Water by I	EPA 300.1 (mod)
_		•	ctivity and/or UV detection.
MET-TOT-ICP-VA	Water	Total Metals in Water	ICPOES EPA SW-846 3005A/6010B
This analysis is of American Public States Environment	carried out using proce Health Association, ar ental Protection Agenc	dures adapted from "Stand with procedures adapted (EPA). The procedure	ard Methods for the Examination of Water and Wastewater" published by the I from "Test Methods for Evaluating Solid Waste" SW-846 published by the United may involve preliminary sample treatment by acid digestion, using either hotblock by inductively coupled plasma - optical emission spectrophotometry (EPA Method
NO2-L-IC-N-VA	Water	Nitrite in Water by IC (w Level) EPA 300.1 (mod)
Inorganic anions	are analyzed by Ion C	hromatography with con-	ctivity and/or UV detection.
NO3-L-IC-N-VA	Water	Nitrate in Water by IC	ow Level) EPA 300.1 (mod)
Inorganic anions	are analyzed by Ion C		ctivity and/or UV detection.
SO4-IC-N-VA	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		· · · · · · · · · · · · · · · · · · ·	ctivity and/or UV detection.
Inorganic anions	are analyzed by for C	3 1 7	
			ference methods to improve performance.

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Laboratory Definition Code

Chain of Custody Numbers:

VA

Laboratory Location

Reference Information

L1574833 CONTD....

PAGE 5 of 5

12-FEB-15 13:02 (MT)

Version: FINAL

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

Chain of Custody (COC) / Analytical Request Form

COC Number:	14	-

Canada Toll Free: 1 800 668 9878

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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 back page of the white - report copy. 1, if any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



NAUTILUS ENVIRONMENTAL ATTN: BRETT LUCAS 8664 Commerce Court

Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 06-FEB-15

Report Date: 16-FEB-15 15:41 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1575608

Project P.O. #: NOT SUBMITTED

Job Reference: C of C Numbers: Legal Site Desc:

Jame Lo, B.Sc. Account Manager

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

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



L1575608 CONTD.... PAGE 2 of 5 16-FEB-15 15:41 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

		1		1	1	
	Sample ID Description Sampled Date Sampled Time Client ID	L1575608-1 WATER 06-FEB-15 10:00 JACKO SPIKED 100%	L1575608-2 WATER 06-FEB-15 10:00 JACKO SITE WATER			
Grouping	Analyte	100%	WATER			
WATER	, analyte					
Anions and	Alkalinity, Total (as CaCO3) (mg/L)	260	264			
Nutrients	Bromide (Br) (mg/L)	DLM	DLM			
	, , , , , ,	<1.0	<0.10			
	Chloride (CI) (mg/L) Fluoride (F) (mg/L)	60 DLM	59.5			
	Nitrate (as N) (mg/L)	<0.40	0.216			
	Nitrite (as N) (mg/L)	0.16 DLM	0.114			
		<0.020	0.0110			
Total Motols	Sulfate (SO4) (mg/L) Aluminum (Al)-Total (mg/L)	1510	53.3			
Total Metals	Aluminum (Al)-Total (mg/L) Antimony (Sb)-Total (mg/L)	<0.20	<0.20			
		<0.20	<0.20			
	Arsenic (As)-Total (mg/L)	<0.20	<0.20			
	Barium (Ba)-Total (mg/L)	0.069	0.069			
	Beryllium (Be)-Total (mg/L)	<0.0050	<0.0050			
	Bismuth (Bi)-Total (mg/L)	<0.20	<0.20			
	Boron (B)-Total (mg/L)	<0.10	<0.10			
	Cadmium (Cd)-Total (mg/L)	<0.010	<0.010			
	Calcium (Ca)-Total (mg/L)	255	58.4			
	Chromium (Cr)-Total (mg/L)	<0.010	<0.010			
	Cobalt (Co)-Total (mg/L)	<0.010	<0.010			
	Copper (Cu)-Total (mg/L)	<0.010	<0.010			
	Iron (Fe)-Total (mg/L)	0.041	0.037			
	Lead (Pb)-Total (mg/L)	<0.050	<0.050			
	Lithium (Li)-Total (mg/L)	0.018	<0.010			
	Magnesium (Mg)-Total (mg/L)	248	38.9			
	Manganese (Mn)-Total (mg/L)	0.0179	0.0172			
	Molybdenum (Mo)-Total (mg/L)	<0.030	<0.030			
	Nickel (Ni)-Total (mg/L)	<0.050	<0.050			
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30			
	Potassium (K)-Total (mg/L)	14.9	11.5			
	Selenium (Se)-Total (mg/L)	<0.20	<0.20			
	Silicon (Si)-Total (mg/L)	6.45	6.44			
	Silver (Ag)-Total (mg/L)	<0.010	<0.010			
	Sodium (Na)-Total (mg/L)	72.8	40.7			
	Strontium (Sr)-Total (mg/L)	0.572	0.419			
	Thallium (TI)-Total (mg/L)	<0.20	<0.20			
	Tin (Sn)-Total (mg/L)	<0.030	<0.030			
	Titanium (Ti)-Total (mg/L)	0.017	<0.010			
	Vanadium (V)-Total (mg/L)	<0.030	<0.030			

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

L1575608 CONTD.... PAGE 3 of 5 16-FEB-15 15:41 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

					 VCI 3	IOII. I IIIAL
		Sample ID Description Sampled Date Sampled Time Client ID	L1575608-1 WATER 06-FEB-15 10:00 JACKO SPIKED 100%	L1575608-2 WATER 06-FEB-15 10:00 JACKO SITE WATER		
Grouping	Analyte					
WATER						
Total Metals	Zinc (Zn)-Total (mg/L)		<0.0050	<0.0050		

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

L1575608 CONTD....
PAGE 4 of 5
16-FEB-15 15:41 (MT)

Version:

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1575608-1	JACKO SPIKED 100%	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1575608-2	JACKO SITE WATER	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)	
Matrix Spike	Calcium (Ca)-Total	MS-B	L1575608-1, -2	
Matrix Spike	Silicon (Si)-Total	MS-B	L1575608-1, -2	
Matrix Spike	Sodium (Na)-Total	MS-B	L1575608-1, -2	
Matrix Spike	Strontium (Sr)-Total	MS-B	L1575608-1, -2	

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**						
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated) EPA 310.2							
This analysis is carrie colourimetric method.	0 1	edures adapted from EPA Method 310.2 "Alkalinity	". Total Alkalinity is determined using the methyl orange						
BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)						
Inorganic anions are a	analyzed by Ion (Chromatography with conductivity and/or UV detec	tion.						
CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)						

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

F-IC-N-VA Water Fluoride in Water by IC EPA 300.1 (mod)

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

MET-TOT-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 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 - optical emission spectrophotometry (EPA Method 6010B).

NO2-L-IC-N-VA Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

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

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

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

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

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

** 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:

Reference Information

L1575608 CONTD....

PAGE 5 of 5

16-FEB-15 15:41 (MT)

Version: FINAL

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

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here

(lab use only)

COC Number: 14 -

Page	1 of	1

www.alsglobal.com Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests) Report Format / Distribution Report To Regular (Standard TAT If received by 3 pm - business days) [TEDD (DIGITAL) Select Report Format: √PDF **▼EXCEL** Nautilus Environmental Company Inc. Company: Priority (2-4 bus, days if received by 3pm) 50% surcharge - contact ALS to confirm TAT F No Quality Control (QC) Report with Report Contact: Emergency (1-2 bus, days if received by 3pm) 100% surcharge - contact ALS to confirm TAT Criteria on Report - provide details below if box checked 8664 Commerce Court, Burnaby, BC, Canada, V5A 4N7 Address: E2 Same day or weekend emergency - contact ALS to confirm TAT and surcharge FAX Select Distribution: [√EMAIL Email 1 or Fax brett@nautilusenvironmental.com Specify Date Required for E2,E or P Phone: 604-420-8773 **Analysis Request** Email 2 Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Invoice Distribution Same as Report To ▼ Yes F No. Invoice To □FAX **TEMAIL** | TMAIL Select Invoice Distribution: ▼ Yes 「No Copy of Invoice with Report Email 1 or Fax brett@nautilusenvironmental.com Company: Email 2 Containers Contact: Oll and Gas Required Fields (client use) **Project Information** Cost Center: Approver ID: ALS Qu Routing Code: GL Account: ₽ Job#: Activity Code: PO / AF A CHARGE LAND Sanitt Sali Location: ations (ICP-OES) SD: 1 1575608-COFC Sampler: ALS Contact: ALS I Sample Identification and/or Coordinates Date Time ALS Sample # Sample Type (hh:mm) (lab use only) (This description will appear on the report) (dd-mmm-yy) 1 06/02/2015 10:00 R R R water Jacko spiked 100% R R 1 R 06/02/2015 10:00 water Jacko site water **Short Holding Time** Rush Processing SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report (client Use) Drinking Water (DW) Samples¹ (client use) Frozen SIF Observations Yes ice packs Yes Custody seal intact Yes Nσ Are samples taken from a Regulated DW System? Cooling Initiated ☐ Yes FINAL COOLER TEMPERATURES *C INIITIAL COOLER TEMPERATURES °C Are samples for human drinking water use? 60% ₩ No FINAL SHIPMENT RECEPTION (lab use only) INITIAL SHIPMENT RECEPTION (lab use only) SHIPMENT RELEASE (client use) Date: Time: Received by: Time: Received by: Date: Released by: NA-FM-0026e v09 Front/04 January 2014 REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY



NAUTILUS ENVIRONMENTAL

ATTN: Brett Lucas 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 24-JAN-15

Report Date: 02-FEB-15 14:28 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1570665

Project P.O. #: NOT SUBMITTED

Job Reference: C of C Numbers: Legal Site Desc:

Jame Lo, B.Sc. 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



L1570665 CONTD.... PAGE 2 of 3

Version:

02-FEB-15 14:28 (MT)

FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

L1570665-1 L1570665-2 L1570665-3 L1570665-4 L1570665-5 Sample ID Description Water Water Water Water Water Sampled Date 22-JAN-15 22-JAN-15 22-JAN-15 22-JAN-15 22-JAN-15 16:00 16:00 Sampled Time 16:00 16:00 16:00 AJ-100 SPIKED AJ-50 SPIKED AJ-20 SPIKED AJ-SITE CONTROL AJ-CONTROL Client ID Grouping Analyte **WATER** Sulfate (SO4) (mg/L) Anions and 1500 339 1.34 734 54.0 **Nutrients** Calcium (Ca)-Total (mg/L) **Total Metals** 262 157 99.2 57.6 3.58 Magnesium (Mg)-Total (mg/L) 261 142 84.1 39.9 0.23

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

L1570665 CONTD....

PAGE 3 of 3

02-FEB-15 14:28 (MT)

Version: FINAL

Reference Information

Qualifiers for Individual Samples Listed:

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Sample Number	Client Sample ID	Qualifier	Description
L1570665-1	AJ-100 SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1570665-2	AJ-50 SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1570665-3	AJ-20 SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1570665-4	AJ-SITE CONTROL	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1570665-5	AJ-CONTROL	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-TOT-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 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 - optical emission spectrophotometry (EPA Method 6010B).

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

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

** 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:

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

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1570665-COFC

COC Number: 14 -

Page 1 of 1

	www.alsglobal.com												<u> </u>			_				
Report To		Report Format / Distribution				Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)														
Company:	Nautilus Environmental Comp	pany Inc.		Select Report Format: PDF PEXCEL DEDD (DIGITAL)					R ☐Regular (Standard TAT if received by 3 pm - business days)											
Contact:	Brett Lucas			Quality Control	p Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT															
Address:	8664 Commerce Court, Burns	aby, BC, Cana	ida, V5A 4N7	☐Criteria on Repo	rt - provide details below			E Emergency (1-2 bus, days if received by 3pm) 100% surcharge - contact ALS to confirm TAT											m TAT	
				Select Distribut			□FAX	E2 Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
Phone;	604-420-8773			Email 1 or Fax	brett@nautilusenvi	ronmental.com		Specify Date Required for E2,E or P:												
				Email 2				Analysis Request												
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	AJ-site control		· · · · · · · · · · · · · · · · · · ·		22/01/201 4 5	16:00	water	R	R											1
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REFER TO BACK	K PAGE FOR ALS LOCATIONS	AND SAMPLIN	G INFORMATION		WHI	TE - LABORATOF	RY COPY YE	LOW-	CLIEN	TCOPY					NAFMO	326e v00 Fra	4/04 January	7014		



NAUTILUS ENVIRONMENTAL

ATTN: Brett Lucas 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 28-JAN-15

Report Date: 04-FEB-15 11:33 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1572470

Project P.O. #: NOT SUBMITTED

Job Reference: C of C Numbers: Legal Site Desc:

Jame Lo, B.Sc. Account Manager

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

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



L1572470 CONTD.... PAGE 2 of 3 04-FEB-15 11:33 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL

Grouping Analyte	
Grouping Analyte	
WATER	
Anions and Nutrients Sulfate (SO4) (mg/L) 1460 634 308 54.9	1.24
Total Metals Calcium (Ca)-Total (mg/L) 257 158 100 57.8	3.34
Magnesium (Mg)-Total (mg/L) 249 141 80.9 39.3	0.18

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

L1572470 CONTD....
PAGE 3 of 3
04-FEB-15 11:33 (MT)

FINΔI

Version:

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1572470-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

Qualifier Description

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

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-TOT-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 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 - optical emission spectrophotometry (EPA Method 6010B).

SO4-TUR-VA Water Sulfate(SO4) by Turbidity APHA 4500-SO4 E. SULFATE

This analysis is carried out using procedures adapted from APHA Method 4500-SO4 "Sulfate". Sulfate is determined using the turbidimetric 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 ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

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.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 14 -

Page	1 of	1

	www.alsglobal.com																				
Report To					Report Format / Distribution					.w (Rush Turnaround Time (TAT) is not available for all tests)											
Company:	Nautilus Environmental (Company Inc.		Select Report	Format: PDF	ØEXCEL □	DD (DIGITAL)	R Regular (Standard TAT if received by 3 pm - business days)													
Contact:	Brett Lucas			Quality Control	ruality Control (QC) Report with Report 📝 Yes 🗀 No P 📑 riority (2-4 bus, days if received by 3pm) 50% surcharge - contact ALS							L5 to co	onfirm Ta	NT .							
Address:	8664 Commerce Court,	Burnaby, BC, Car	nada, V5A 4N7	☐Criteria on Rep	ort - provide detalls belo			E Emergency (1-2 bus. days If received by 3pm) 100% surcharge - contact ALS to confirm TAT													
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Phone: 604-420-8773					brett@nautilusenv	ironmental.com		Specify Date Required for E2,E or P:													
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Are samples taken from a Regulated DW System? No preservation.				· _		_	ice p	acks	Yes		No		ustod	ly seal i	ntact	Yes	\equiv	No	<u> </u>		
Γ Yes ▼ No							Cooli	ng Initia	ated												
Are samples for human drinking water use?							INI	TIAL CO	OLER 1	EMPER	ATURE	s°C	ili ingge	∘∝ FINAI	COOL	ER TEN	IPERA	TURES	C est sens		
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NAUTILUS ENVIRONMENTAL

ATTN: Brett Lucas 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 04-FEB-15

Report Date: 12-FEB-15 15:58 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1574844

Project P.O. #: NOT SUBMITTED

Job Reference: C of C Numbers: Legal Site Desc:

Jame Lo, B.Sc. Account Manager

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ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1574844 CONTD.... PAGE 2 of 3 12-FEB-15 15:58 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	Water 04-FEB-15 12:00	L1574844-2 Water 04-FEB-15 12:00 AJ-50 SPIKED	L1574844-3 Water 04-FEB-15 12:00 AJ-20 SPIKED	L1574844-4 Water 04-FEB-15 12:00 AJ-SITE CONTROL	L1574844-5 Water 04-FEB-15 12:00 AJ-LAB-CONTROL
Grouping	Analyte					
WATER						
Anions and Nutrients	Sulfate (SO4) (mg/L)	1330	685	319	50.1	1.29
Total Metals	Calcium (Ca)-Total (mg/L)	278	164	95.9	59.4	3.57
	Magnesium (Mg)-Total (mg/L)	258	143	80.4	39.1	0.21

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

L1574844 CONTD....

PAGE 3 of 3

12-FEB-15 15:58 (MT)

Version: FINAL

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1574844-1	AJ-100 SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1574844-2	AJ-50 SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1574844-3	AJ-20 SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1574844-4	AJ-SITE CONTROL	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1574844-5	AJ-LAB-CONTROL	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1574844-1, -2, -3, -4, -5
Matrix Spike	Sulfate (SO4)	MS-B	L1574844-1, -2, -3, -4, -5
Matrix Spike	Sulfate (SO4)	MS-B	L1574844-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Total	MS-B	L1574844-1, -2, -3, -4, -5

Qualifiers for Individual Parameters Listed:

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

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MET-TOT-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 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 - optical emission spectrophotometry (EPA Method 6010B).

SO4-TUR-VA Water Sulfate(SO4) by Turbidity APHA 4500-SO4 E. SULFATE

This analysis is carried out using procedures adapted from APHA Method 4500-SO4 "Sulfate". Sulfate is determined using the turbidimetric 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 ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

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 STATÉD, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1574844-COFC

COC Number: 14 -

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NAUTILUS ENVIRONMENTAL

ATTN: Brett Lucas 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 11-FEB-15

Report Date: 18-FEB-15 16:25 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1576995

Project P.O. #: NOT SUBMITTED

Job Reference: C of C Numbers: Legal Site Desc:

Jame Lo, B.Sc. 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

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L1576995 CONTD.... PAGE 2 of 3

ALS ENVIRONMENTAL ANALYTICAL REPORT

18-FEB-15 16:25 (MT) Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	11-FEB-15	L1576995-2 Water 11-FEB-15 14:00 AJ-50% SPIKED	L1576995-3 Water 11-FEB-15 14:00 AJ-20% SPIKED	L1576995-4 Water 11-FEB-15 14:00 AJ-SITE CONTROL	L1576995-5 Water 11-FEB-15 14:00 AJ- LAB CONTROL
Grouping	Analyte					
WATER						
Anions and Nutrients	Sulfate (SO4) (mg/L)	1300	724	300	55.4	1.14
Total Metals	Calcium (Ca)-Total (mg/L)	260	158	94.7	59.2	3.59
	Magnesium (Mg)-Total (mg/L)	255	144	78.0	40.4	0.19

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

L1576995 CONTD.... PAGE 3 of 3 18-FEB-15 16:25 (MT) Version: FINΔI

Reference Information

Qualifiers for Individual Samples Listed:

ALS Test Code	Matrix	Test Description	Method Reference**
est Method Re	eferences:		
MS-B	Matrix Spike recovery	could not be accuratel	ly calculated due to high analyte background in sample.
Qualifier	Description		
Qualifiers for Ir	ndividual Parameters L	_isted:	
Matrix Spike		Sulfate (SO4)	MS-B L1576995-1, -3, -4, -5
QC Type Descrip	otion	Parameter	Qualifier Applies to Sample Number(s)
QC Samples with	h Qualifiers & Comme	nts:	
L1576995-5	AJ- LAB CONTROL	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
			Metals results may be biased low.
L1576995-4	AJ-SITE CONTROL	LPMB	Metals results may be biased low. Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab.
L1576995-3	AJ-20% SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab.
L1576995-2	AJ-50% SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1576995-1	AJ-100% SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
Sample Numbe	Client Sample ID	Qualifier	Description
Sample Numbe	Client Sample ID	Qualifier	Description

ALS Test Code Mat		Test Description	Method Reference**
MET-TOT-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 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 - optical emission spectrophotometry (EPA Method 6010B).

SO4-TUR-VA Water Sulfate(SO4) by Turbidity APHA 4500-SO4 E. SULFATE

This analysis is carried out using procedures adapted from APHA Method 4500-SO4 "Sulfate". Sulfate is determined using the turbidimetric 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 ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

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.

s) Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1576995-COFC

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			Select Distribution:						E2 Same day or weekend emergency - contact ALS to confirm TAT and surcharge										
Phone:	604-420-8773		Email 1 or Fax	brett@nautilusenvi	ronmental.com		Speci	fy Date	Requi	red fo	: E2,E								
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	AJ-20% spiked	·		11/02/2014	14:00:00 PM	water	R	R									$oldsymbol{\perp}$		1
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NAUTILUS ENVIRONMENTAL

ATTN: Brett Lucas 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 18-FEB-15

Report Date: 24-FEB-15 13:52 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1579293

Project P.O. #: NOT SUBMITTED

Job Reference:

C of C Numbers: 1

Legal Site Desc:

Jame Lo, B.Sc. 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

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L1579293 CONTD.... PAGE 2 of 3

24-FEB-15 13:52 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL Sample ID L1579293-1 L1579293-2 L1579293-3 L1579293-4 L1579293-5

	Sample Sample	cription ed Date ed Time lient ID	Water 18-FEB-15 14:00 AJ-100% SPIKED	Water 18-FEB-15 14:00 AJ-50% SPIKED	Water 18-FEB-15 14:00 AJ-20% SPIKED	Water 18-FEB-15 14:00 AJ-SITE CONTROL	Water 18-FEB-15 14:00 AJ-LAB CONTROL
Grouping	Analyte						
WATER							
Anions and Nutrients	Sulfate (SO4) (mg/L)		1470	748	333	48.8	0.81
Total Metals			261	160	96.9	55.1	2.76
Total Metals	Calcium (Ca)-Total (mg/L) Magnesium (Mg)-Total (mg/L)		261 251	160	96.9	55.1 37.2	2.76

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

L1579293 CONTD.... PAGE 3 of 3

24-FEB-15 13:52 (MT) Version: FINΔI

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description					
L1579293-1	AJ-100% SPIKED	LPMB	Lab-Preserved for Metals. Sa Metals results may be biased	ample received with pH > 2 and preserved at the lab.				
L1579293-2	AJ-50% SPIKED	LPMB	Lab-Preserved for Metals. Sa Metals results may be biased	ample received with pH > 2 and preserved at the lab. I low.				
L1579293-3	AJ-20% SPIKED	LPMB	Lab-Preserved for Metals. Sa Metals results may be biased	ample received with pH > 2 and preserved at the lab. I low.				
L1579293-4	AJ-SITE CONTROL	LPMB	Lab-Preserved for Metals. Sa Metals results may be biased	ample received with pH > 2 and preserved at the lab. I low.				
L1579293-5	AJ-LAB CONTROL	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.					
QC Samples with	Qualifiers & Commen	ts:						
QC Type Descrip	otion	Parameter	Qualifier	Applies to Sample Number(s)				
Matrix Spike		Calcium (Ca)-Total	MS-B	L1579293-1, -2, -3, -4, -5				
Qualifiers for In	dividual Parameters Li	sted:						
Qualifier	Description							
MS-B	Matrix Spike recovery c	ould not be accurately	calculated due to high analyte	background in sample.				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-TOT-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 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 - optical emission spectrophotometry (EPA Method 6010B).

SO4-IC-N-VA

Water

Sulfate in Water by IC

EPA 300.1 (mod)

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

** 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:

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.

ALS Environmental

Chain of Custody (COC) / Analytical Request Form

L1579293-COFC

COC Number: 14 -

Page 1 of 1

(ALS)	www.alsglobal.com	ental	Canada To	ili Free: 1 800 66	58 9878 	<u> </u>														
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Contact:	Brett Lucas			Quality Control (QC) Report with R	eport 🔛 Yes	i No	P Priority (2-4 bus, days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address:	8664 Commerce Court, Burn	aby, BC, Car	nada, V5A 4N7	Criteria on Report - provide details below if box checked						E Emergency (1-2 bus, days if received by 3pm) 100% surcharge - contact ALS to confirm TAT										
		WA		Select Distribution:					□Sam	e day o	wecker	nd emer	gency - c	ontact A	ALS to	confirm T	AT and	surcharg	e	
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LSD:				Location:					8]	- 1		- 1				Number of Containers
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	AJ-20% spiked		1		18/02/2015	14:00:00 PM	water	R	R			;					\perp			1
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NAUTILUS ENVIRONMENTAL

ATTN: Brett Lucas 8664 Commerce Court Imperial Square Lake City Burnaby BC V5A 4N7 Date Received: 20-FEB-15

Report Date: 02-MAR-15 12:52 (MT)

Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1580104

Project P.O. #: NOT SUBMITTED

Job Reference:

C of C Numbers: 1

Legal Site Desc:

Jame Lo, B.Sc. Account Manager

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ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1580104 CONTD.... PAGE 2 of 3 02-MAR-15 12:52 (MT)

ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL

	Sample ID Description Sampled Date Sampled Time Client ID	20-FEB-15	L1580104-2 Water 20-FEB-15 15:00 AJ-50% SPIKED	L1580104-3 Water 20-FEB-15 15:00 AJ-20% SPIKED	L1580104-4 Water 20-FEB-15 15:00 AJ-SITE CONTROL	L1580104-5 Water 20-FEB-15 15:00 AJ-LAB CONTROL
Grouping	Analyte	1				
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	1600	950	560	292	8.00
Anions and Nutrients	Sulfate (SO4) (mg/L)	1510	758	341	49.4	1.41
Total Metals	Calcium (Ca)-Total (mg/L)	252	154	95.7	55.6	2.79
Total Metals	Calcium (Ca)-Total (mg/L) Magnesium (Mg)-Total (mg/L)	252 236	154	95.7 77.9	55.6 37.2	2.79

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

Reference Information

L1580104 CONTD.... PAGE 3 of 3 02-MAR-15 12:52 (MT) Version:

Qualifiers for In	dividual Samples Lis	sted:	
Sample Number	Client Sample ID	Qualifier	Description
L1580104-1	AJ-100% SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1580104-2	AJ-50% SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1580104-3	AJ-20% SPIKED	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1580104-4	AJ-SITE CONTROL	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
L1580104-5	AJ-LAB CONTROL	LPMB	Lab-Preserved for Metals. Sample received with pH > 2 and preserved at the lab. Metals results may be biased low.
QC Samples with	Qualifiers & Comme	ents:	
QC Type Descrip	tion	Parameter	Qualifier Applies to Sample Number(s)
Matrix Spike		Calcium (Ca)-Total	MS-B L1580104-1, -2, -3, -4, -5
Qualifiers for In	dividual Parameters	Listed:	
Qualifier	Description		
MS-B	Matrix Spike recovery	could not be accurately	calculated due to high analyte background in sample.
Test Method Re	ferences:		
ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CAL	C-VA Water	Hardness	APHA 2340B
			e sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. ntially used for the hardness calculation.
MET-TOT-ICP-VA	Water	Total Metals in Water	by ICPOES EPA SW-846 3005A/6010B
American Public States Environm	Health Association, a ental Protection Agen	nd with procedures adap cy (EPA). The procedure	andard Methods for the Examination of Water and Wastewater" published by the sted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United es may involve preliminary sample treatment by acid digestion, using either hotblock or s by inductively coupled plasma - optical emission spectrophotometry (EPA Method

SO4-IC-N-VA

Water

Sulfate in Water by IC

EPA 300.1 (mod)

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

** 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:

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.

ALS Environmental

Chain of Custody (COC) / Analytical Request Form

L1580104-COFC

COC Number: 14 -

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

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Contact:	Brett Lucas			· ·	(QC) Report with R		F No	P	TAT											
Address:	8664 Commerce Court, Bur	naby, BC, Canada	s, V5A 4N7	Criteria on Repor	t • provide details belov			-	Emergency (1-2 bus, days ir received by 3pm) 190% surcharge - contact ALS to confirm TAT and surcharge											
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	AJ-20% spiked				20/02/2015	15:00:00 PM	water	R	R											. 1
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Drinking	g Water (DW) Samples ¹ (cli	ent use)	Spe	cial Instructions / Spec	ify Criteria to add o	n report (client U	se)	Froz	en					SIF C)bserva	tions	Yes		No	
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17 1	<u>-</u>		- -						ling Init	iated										
Are samples for	human drinking water use?							INI	ITIAL C	OOLER		RATURI	ES °C		FIN	AL COO	LER T	MPER/	TURES	°C
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	21	1.14	55.4	300	724	1300	21
	28	0.81	48.8	333	748	1470	28
	30	1.41	49.4	341	758	1510	30
average		1.205	52.1	323.3333	713.8333	1428.333	average

calcium						embryo	magnesium	
control	site co	ontrol	20%	50%	100%	day	control	
	3.58	57.6	99.2	157	262	0	0.23	
	3.34	57.8	100	158	257	7	0.18	
	3.57	59.4	95.9	164	278	14	0.21	
	3.59	59.2	94.7	158	260	21	0.19	
	2.76	55.1	96.9	160	261	28	0.15	
	2.79	55.6	95.7	154	252	30	0.25	
3.27166	66667	57.45	97.06667	158.5	261.6667	average	0.20166667	

				embryo		hardness		
site control	20%	50%	100%	day		control	site contro	20%
39.9	84.1	142	261		0	9.878889	307.8835	593.5367
39.3	80.9	141	249		7	9.074338	305.9139	582.3668
39.1	80.4	143	258	1	14	9.77165	309.0832	570.0795
40.4	78	144	255	2	21	9.739265	313.9329	557.2109
37.2	80.9	143	251	2	28	7.503728	290.5368	574.6319
37.2	77.9	137	236	3	30	7.99002	291.7844	559.2946
38.85	80.36667	141.6667	251.6667	average		8.992982	303.1891	572.8534

50%	100%
975.978	1727.578
974.3588	1665.73
997.5584	1755.157
986.7019	1697.902
987.5778	1683.939
947.9207	1599.768
978.3493	1688.346

APPENDIX C - Chain of custody form



BRITISH COLUMBIA

8664 Commerce Court Burnaby British Columbia Canada V5A 4N7 Phone 604.420.8773 Fax 604.357.1361

Chain	of	Custody
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Page

Sample Collection by:								841	3	7 4-:	ANALY	SIS RE	QUIRE	 D		
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P.O. NO.		REC'I	D GOOD CO	NOITION		<u>' '</u>	(Printed Name)		(Date)	(Printed	<u> </u>					(Date)
SHIPPED VIA:							(Company)			(Compar	- ,					
SPECIAL INSTRUCTIONS/	COMMENTS:						RECEIVED BY (COURIER)			RECEIV	ED BY (L	ABORA'	rory)	a superior		
							(Signature)	1	(Time)	(Signatu	e A	$\overline{\overline{}}$			09	Ø (Time)
							(Printed Name)		(Date)	(Printed	Vame) \	mne	عا -	~	೨೮	(Time) (Date)
							(Company)									1

Mautilus Environmental

BRITISH COLUMBIA

8664 Commerce Court Burnaby British Columbia Canada V5A 4N7 Phone 604.420.8773

Chain of Custody

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P.O. NO.		REC'D	GOOD CO	NDITION		Y	(Printed Name)		(Date)	(Printed Nam	ne)				(Date)
SHIPPED VIA:							(Company)			(Company)					
SPECIAL INSTRUCTIONS/C	OMMENTS:				I		RECEIVED BY (COURIER)			Name	colly	./~			
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TESTING LOCATION (Please Circle)

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.

Chain of Custody

Nautilus Environmental

British Columbia 8664 Commerce Court Burnaby, British Columbia, Canada V5A 4N3 Phone 604.420.8773

			•			ne 604.420.8773 604.357.1361					Date	Pa	geof_	_
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Chain of Custody

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Nautilus Environmental

British Columbia 8664 Commerce Court Burnaby, British Columbia, Canada V5A 4N3 Phone 604.420.8773 Fax 604.357.1361

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