

July 29, 2020

Mr. Christopher Bittner Standards Coordinator Utah Dept. of Environmental Quality 195 N 1950 W Salt Lake City, UT 84116

Dr. Gary Belovsky Environ. Res. Center & Dept. Biol Sci. University of Notre Dame Notre Dame, IN 46556

## Subject: Results of Analytical Data for Experiment #18

Mr. Bittner/ Dr. Belovsky:

Below is a summary of the copper analytical data for the short-term chronic brine shrimp experiment initiated on May 28, 2020. Total copper samples were collected in new solutions at test initiation or on Day 1.

#### **Characterization of Recon Water**

Sample No.	рН	Hard. (mg/L) <sup>a</sup>	Alk. (mg/L) <sup>a</sup>	Spec. Cond. (μS/cm)	TRC (mg/L) <sup>b</sup>	NH₃-N (mg/L)	Salinity (ppt)
RW#13943	7.9	NM	NM	136,000	NM	NM	120

ုံAs CaCO3

<sup>b</sup>Total residual chlorine

## **Results of Copper Analysis**

oper (µg/L)		
Day 0/1 New Solution	Percent of Nominal	
<42 U		
113	90	
254	102	
459	92	
1,020	102	
2,080	104	
	Day 0/1 New Solution <42 U 113 254 459 1,020	

U= below method detection limit (42  $\mu$ g/L)

Mr. Bittner / Dr. Belovsky July 29, 2020 Page 2

Measured copper concentrations were then used to recalculate test survival and growth endpoints on a measured basis.

Test Endpoints										
Basis	Survival NOEC	Survival IC20	Growth NOEC	Growth IC20						
Nominal	1,000	1,196 (768-1,501)	500	752 (602–888)						
Measured	1,020	1,223 (752-1,574)	459	`741 (570- 879)						

We greatly appreciate the opportunity to complete this study for you. Please do not hesitate to call if you have any questions or concerns.

Sincerely,

Der ľ lud

Amanda Bidlack Project Specialist / QA Officer <u>bidlackac.tre@gmail.com</u>

17001-474-073

Attachment

cc: David Pillard, TRE

Rami B. Naddy, Ph.D. Manager / Environmental Toxicologist naddyrb.tre@gmail.com

# CETIS Analytical Report Brine Shrimp

Report Date:23Test Code:4

<u> </u>	<u> </u>	<u>nrimp</u>						1631	coue.		11-1010 2	0-3002-023
Fathead	Minna	<del>w-</del> 7-d Larval S	urvival a	nd Growt	h Test					TRE Envi	ronmenta	I Strategies
Analysi	s ID:	19-2331-3875	E	ndpoint:	7d Survival Ra	te		CET	IS Versio	on: CETISv1	.8.7	
Analyze	ed:	23 Jul-20 10:31	<b>A</b>	nalysis:	Linear Interpol	ation (ICPIN)	)	Offic	cial Resu	lts: Yes		
Batch I	D:	12-4587-5991	T	est Type:	Growth-Surviv	al (7d)		Ana	i <b>yst:</b> L	ab Tech		
Start Da	ate:	28 May-20 14:1	0 P	rotocol:	EPA/821/R-02	-013 (2002)		Dilu	ent: r	GSL		
Ending	Date:	04 Jun-20 13:50	0 <b>s</b>	pecies:	Artemia francis	scana		Brin	e: (	Crystal Sea		
Duratio	n:	7d	S	ource:	In-House Cultu	ıre		Age	: 4	8h		
Sample	D:	13-8865-2988	С	ode:	52C529BC			Clie	nt: N	lotre Dame		
Sample	Date:	28 May-20 10:3	5 M	laterial:	Copper chlorid	е		Proj	ect: S	Special Studies		
Receive	Date:	28 May-20 10:3	5 <b>S</b>	ource:	Discharge Mor	nitoring Repo	ort	-				
Sample	Age:	4h	S	tation:	Effluent							
Linear	nterpo	lation Options										
X Trans	form	Y Transform	n S	eed	Resamples	Exp 95%	CL Met	thod				
Linear		Linear	1:	373496	200	Yes	Two	-Point Interp	olation			
Point E	stimate	s										
Level	µg/L	95% LCL	95% U(	CL								
LC5	688.1	321.6	1318									
LC10	963.9	455.3	1340									
LC15	1110	617.2	1430									
LC20	1223	751.7	1574									
LC25	1337	872.4	1703									
LC40	1676	1276	2184									
LC50	1903	1418	N/A									
7d Surv	vival Ra	ite Summary			·	Calcu	lated Vari	ate(A/B)				
C-µg/L	С	ontrol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	А	в
42	D	ilution Water	4	0.975	0.9	1	0.025	0.05	5.13%	0.0%	39	40
113			4	0.975	0.9	1	0.025	0.05	5.13%	0.0%	39	40
254			4	1	1	1	0	0	0.0%	-2.56%	40	40
459			4	0.975	0.9	1	0.025	0.05	5.13%	0.0%	39	40
					a <b>7</b>			0 4050	4 4 40/	10.00/		
1020 2080			4	0.875	0.7	1	0.06292	0.1258	14.4%	10.3%	35	40

7d Survival Rate Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
42	Dilution Water	0.9	1	1	1
113		1	1	0.9	1
254		1	1	1	1
459		0.9	1	1	1
1020		1	0.7	0.9	0.9
2080		0.4	0.6	0.1	0.5455

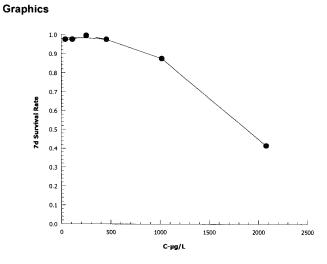
#### 7d Survival Rate Binomials

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
42	Dilution Water	9/10	10/10	10/10	10/10
113		10/10	10/10	9/10	10/10
254		10/10	10/10	10/10	10/10
459		9/10	10/10	10/10	10/10
1020		10/10	7/10	9/10	9/10
2080		4/10	6/10	1/10	6/11

0 DAP 7/24/20 E

Page 3 of 6

D Bri	<u>ne 5</u>	lytical Report			Report Date: Test Code:	23 Jul-20 10:31 (p 2 of 2) 474-073   20-3062-8299	
() Father	-Fathead Minnow-7-d Larval Survival and Growth Test					TRE Environmental Strategies	
Analys	sis ID:	19-2331-3875	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7	
Analyz	zed:	23 Jul-20 10:31	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes	



1 Dop 7/24/20 E

		l <b>ytical Repc</b> hกเพอ	ort						Repo Test (	rt Date: Code:		Jul-20 10:32 (p 1 of 74-073   20-3062-82
Fathead	Minne	w-7-d Larval S	urvival	and Growt	n Test						TRE Envi	onmental Strategie
Analysi		16-7793-9613		Endpoint:		y Biomass-mo			+ - · · ·	S Version:	CETISv1	8.7
Analyze	d:	23 Jul-20 10:31		Analysis:	Linear Ir	terpolation (IC	PIN)		Offici	al Results:	Yes	
Batch II	<b>D</b> :	12-4587-5991		Test Type:	Growth-	Survival (7d)			Analy	<b>st:</b> Lab	Tech	
Start Da	nte:	28 May-20 14:1	0	Protocol:	EPA/82	I/R-02-013 (20	02)		Dilue	nt: rGSI	L	
Ending	Date:	04 Jun-20 13:50	)	Species:	Artemia	franciscana			Brine	: Crys	tal Sea	
Duratio	n:	7d		Source:	In-Hous	e Culture			Age:	48h		
Sample	ID:	13-8865-2988		Code:	52C529	3C			Clien	t: Notr	e Dame	
Sample	Date:	28 May-20 10:3	5	Material:	Copper	chloride			Proje	ct: Spe	cial Studies	
Receive	Date:	28 May-20 10:3	5	Source:	Dischar	ge Monitoring I	Report		-			
Sample	Age:	4h		Station:	Effluent							
Linear I	nterpo	lation Options										
X Trans	form	Y Transform	I	Seed	Resamp	oles Exp	95% CL	Metho	bd			
Linear		Linear		1687133	200	Yes		Two-P	oint Interpo	lation		
Point E	stimate	)S										
Level	μg/L	95% LCL	95% I	JCL								
IC5	509.7	11.63	571									
IC10	586.9	416.3	673.1									
IC15	664.1	479.3	776									
IC20	741.3	570.1	878.7									
IC25	818.4	647	988.9									
IC40	1061	833.7	1294									
IC50	1269	959.5	1461									
Mean D	ry Bior	nass-mg Summ	ary				Calcula	ted Vari	ate			
C-µg/L	С	ontrol Type	Coun	t Mean	Mi	n Max	Sto	l Err	Std Dev	CV%	%Effect	
42	D	ilution Water	4	0.104	2 0.0	96 0.112	. 0.0	03326	0.006652	6.38%	0.0%	
			4	0.114	5 0.0	91 0.131	0.0	08568	0.01714	15.0%	-9.83%	
113			4	0.108	5 0.0	98 0.124	0.0	05867	0.01173	10.8%	-4.08%	
113 254			4	0.107	5 0.1	04 0.11	0.0	01258	0.002517	2.34%	-3.12%	
				0.007	75 0.0			0517	0.01034	15.3%	35.0%	
254			4	0.067	75 0.0	54 0.079	0.0	0017	0.01034	10.070	33.070	

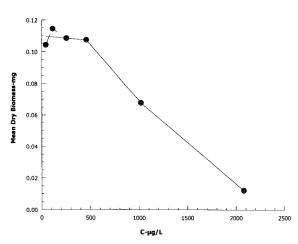
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
42	Dilution Water	0.096	0.103	0.106	0.112
113		0.131	0.122	0.091	0.114
254		0.111	0.098	0.124	0.101
459		0.11	0.108	0.104	0.108
1020		0.07	0.054	0.079	0.068
2080		0.009	0.021	0.005	0.01364

ODAP 7/24/20 E

Page 5 of 6 QA: DAT 73 4

CETIS Ana Brine	shrimp			Report Date: Test Code:	23 Jul-20 10:32 (p 2 of 2) 474-073   20-3062-8299
Fathead Minr	lew 7-d Larval Surv	ival and Growt		TRE Environmental Strategies	
Analysis ID: Analyzed:	16-7793-9613 23 Jul-20 10:31	Endpoint: Analysis:	Mean Dry Biomass-mg Linear Interpolation (ICPIN)	CETIS Version: Official Results:	CETISv1.8.7 Yes

Graphics



ONAP 7/24/205

Page 6 of 6



June 12, 2020

Mr. Christopher Bittner Standards Coordinator Utah Dept. of Environmental Quality 195 N 1950 W Salt Lake City, UT 84116 Dr. Gary Belovsky Environ. Res. Center & Dept. Biol Sci. University of Notre Dame Notre Dame, IN 46556

## Subject: Results of Short-term Chronic Brine Shrimp Experiment #18

Mr. Bittner/ Dr. Belovsky:

Below is a summary of the short-term chronic brine shrimp experiment initiated on May 28, 2020. The purpose of this experiment was to investigate the effect of copper on *Artemia franciscana* toxicity in a short-term chronic test.

Along with a control, five different copper concentrations (introduced at CuCl<sub>2</sub>) were tested, based off of the previously conducted acute test:

• 125, 250, 500, 1,000, and 2,000 μg/L

The results of these studies will help determine the chronic toxicity of metals to brine shrimp in reconstituted Great Salt Lake water. The test volume was consistent at 50 ml.

#### Species: Artemia franciscana

Test type:

- Test duration: 7 days
- Test type: static-renewal (solutions and food renewed daily)
- Algae: Dunaliella viridis
- Food concentration: 72.5 μg/L Chla and 0.3 ml YTC<sup>1</sup>
- Temperature: 20°C
- Test volume(s): 50 ml
- Replicates: 4
- Organisms/Rep: 10
- Test media: 120 ppt rGSL media (per Notre Dame recipe)

**Pretest conditions**: <24-h old *A. franciscana* were hatched out in ~29 ppt artificial seawater (Crystal Sea Marine Mix) and ~200 organisms were placed in 120 ppt rGSL water and fed *Dunaliella viridis* at a density of 72.5 μg/L Chl*a* and 0.3 ml YTC. Solutions were gently aerated.

## Characterization of Recon Water

Sample No.	рН	Hard. (mg/L) <sup>ª</sup>	Alk. (mg/L) <sup>a</sup>	Spec. Cond. (μS/cm)	TRC (mg/L) <sup>b</sup>	NH₃-N (mg/L)	Salinity (ppt)
RW#13943	7.9	NM	NM	136,000	NM	NM	120

<sup>a</sup>As CaCO3

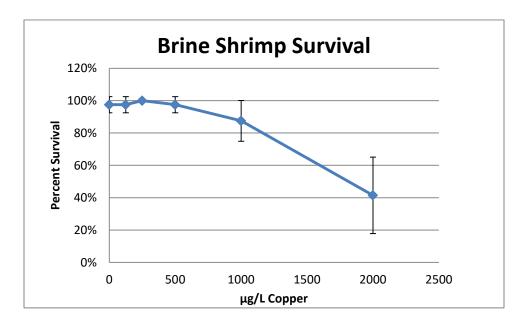
<sup>b</sup>Total residual chlorine

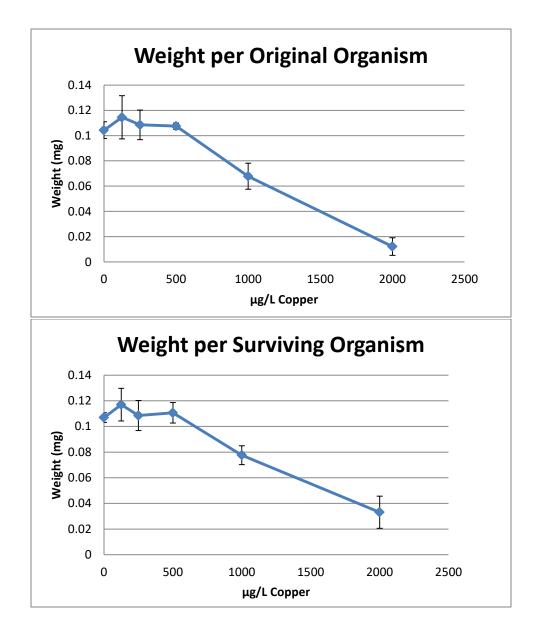
### **Test activities:**

- Biological observations (primarily survival) taken daily.
- Chemistries taken on renewal days (i.e., pH, dissolved oxygen, and temperature).
- Conductivity was measured at test termination or when there was 0% survival in that treatment.
- Dry weights were determined at test termination.
- Copper was added to 120 rGSL media containing food and allowed to equilibrate for 3 hours prior to use in the toxicity tests.
- Copper analytical samples were collected on day 0, 1, and 6.

## Results:

The survival and average dry weights for the brine shrimp in the copper (nominal) treatments are illustrated in the following figures.





## **Test Endpoints**

	Test Endpoints (μg Cu/L, nominal)						
Study	Survival NOEC	Survival LOEC	Survival IC20	Growth NOEC	Growth LOEC	Growth IC20	
7-Day	1,000	2,000	1,196 (768-1,501)	500	1,000	752 (602–888)	

Mr. Bittner / Dr. Belovsky June 12, 2020 Page 4

#### Summary and findings:

- Organism survival was ≥ 90% for the control.
- A survival effect was observed in the highest concentration.
- There was a growth effect for the highest two concentrations tested.

Analytical samples from each treatment have been collected and sent in for copper measurement. We will provide a summary of those results separately.

We greatly appreciate the opportunity to complete this study for you. Please do not hesitate to call if you have any questions or concerns.

Sincerely,

Amanda Bidlack Project Specialist / QA Officer <u>bidlackac.tre@gmail.com</u>

17001-474-073 Attachment

cc: David Pillard, TRE

Rami B. Naddy, Ph.D. Manager / Environmental Toxicologist naddyrb.tre@gmail.com

Page 1 of 7 QA Form No. 051 Revision 5 Effective 02/14

## TOXICITY DATA PACKAGE COVER SHEET

	тох		ATA F	PACKAGE COVER SHEET	QA: Drup 6/9/20
Test Type:	Chronic			Project Number:	17001-474-073
Test Substance:	Copper (CuCl2	)		Species: Artemia fra	nciscana
Dilution Water:	rGSL			Organism Lot or Batch Nu	mber: 052620
Concurrent Control Water:	NA			Age: <u>내 (48 hr)</u>	
Date and Time Test Began:	5)28/20 @	1410		Date and Time Test Endeo	d 1350
Protocol Number:				Investigator(s):	HR ES PAFIE
Background Information					No
Type of Test:	Static-Renewa	l (Daily)		pH control?: Yes If yes, give % CO <sub>2</sub> :	<u>No</u>
Test Temperature:	20 ± 1 °C		E	nv. Chmbr/Bath #: <u>25</u>	Test Chmbrs: 147-ml cups
Photoperiod:	<u> 16 h light : 8 h</u>	dark		Light intensity:	<u>50-100 ft-c.</u>
Test Solution Vol.:	50 r	nl		Replicates per Treatment:	4
Length of Test:	7 days			Organisms per Replicate:	10
Type of Food and Quantity pe	er Chamber: 72	2.5 ug/L Cl	<u>nla/</u> 0.3	3 ml YT: Feeding Frequency:	Initiation and Renwals
Test Substance Characteriz	ation Paramete	rs and Fr	equer	ncy:	
Hardness: <u>Test Initiation</u>	Alkalinity: <u>Te</u>	est Initiatio	<u>n</u> Ni	H <sub>3</sub> : <u>Test Initiation</u> TRC: <u>Tes</u>	t Initiation
pH: <u>Daily</u>	Conductivity: _	Daily			
Test Concentrations (Volume	:Volume): _r	GSL, 125,	250, 5	500, 1,000, and 2,000 μg/L as Cu	
Agency Summary Sheet(s)?:	N	one			
Reference Toxicant Data:	Test Dates:		to		IC <sub>25</sub> :
Hist. 95% Control Limits:	to		M	lethod for Determining Ref. Tox. Va	alue: Linear Interpolation
Special Procedures and Co		nd held in	rGSI	with 72.5 ug/L Chla/ 0.3 ml YTC	
organisms natched 2 days p	nor to mitiation a		1001		
Appropriate accreation forther	have been er-	light to all t		raturas reported in this data nacks	
Study Director Initials:		at a l		ratures recorded in this data packa	9e
AG	D	ate: 5	רג	20	

Page 2 of 7 QA Form No. 014 Revision 1 Effective 02/14

#### TEST SUBSTANCE USAGE LOG

# QA: ADA 6/9/20

Project	Number:
---------	---------

17001-474-073

	Sample 1	Sample 2	Sample 3	Sample 4
Test Substance Number	ENSR #19122			
	From:	From:	From:	From:
Test Substance Collection	@	@	@	@
Date and Time	То:	То:	To:	То:
	@	@	@	@
Sample Type (Grab or Comp)				
Date Test Substance Received				
Dilution Water Number RW# or TRE#, circle one	1 3943			
Concurrent Control Water RW#	WA			
Date(s) Used	5/28/20 6/1 20 5/29/20 6/2120 5/30/20 0/3/20 5/31/20			

#### Preparation of Test Solutions

Test Substance Conc.	Test Substance Volume	Dilution Water Volume	Total Volume (ml)	Test Substance Volume	Dilution Water Volume	Total Volume (ml)	Test Substance Volume	Dilution Water Volume	Total Volume (ml)
(μg/L)	(ml)	(ml)	()	(ml)	(ml)	(,	(ml)	(mi)	()
0	0	350	350						
125	22	328	350						
250	44	306	350						
500	88	263	350						
1000	175	175	350						
2000	350	0	350						
	678	1422	2100						
Initials / Date	A3 5 3	26 20							
Initials / Date		1/20							
Initials / Date	ES S	130/20							
Initials / Date	HP 5	/31/20	)						
Initials / Date	8 10	1/20							
Initials / Date	W 6								
Initials / Date	HR 4	3/20							
Initials / Date									

Page <u>3</u> of <u>7</u> QA Form No. 060 Revision 3 Effective 02/14

#### Artemia franciscana CHRONIC BIOLOGICAL DATA

QA: 100 6/9/20

Project Number: 17

17001-474-073

mg/L 0	Test Replicate	Day								
	Replicate		Day	Day	Day	Day	Day	ing Organ Day	Day	
0	Replicate	O	1	2	3	4	5	6	7	Remarks
	А	10	10	10	ìO	10	10	10	9	97.5%
	В	10	10	U)	10	10	10	10	10	
	С	10	10	(0	10	100	10 .	10 "	10 0	Diweakorg
	D	10	10	(0	io	102	10 "	10=	10 <sup>11</sup>	ci weak org
125	А	10	10	10	iU	10	10	ÌD	10	97.5%
	В	10	10	<b>`(</b> 0	to	10	10	10	10	
	С	10	10	0]	10	9	9	9	q	
	D	Ю	10	0	[6	10	10	10	10	
250	А	10	10	10	(0)	10	10	10	10	100 40
	В	10	10	2	[0	10	10	10	10	
	С	10	10	0	10	10	10	10	10	
	D	10	10	10	[0	10	10	10	10	
500	А	10	10"	10	10	10	10	10	9	"Iweak org 97.5%
	В	10	10	10	10	10	10	10	D	
	С	10	10	10	10	10	10	10	10	
	D	10	10	10	61	10	10	10	10	
1000	Α	10	10	10	10	10	10	10	iÕ	87.5%
	В	10	10	10	10	10	10	8	7	
	С	10	10	10	10	9	9	9	9	
	D	10	10	10	10	10	10	9	9	
2000	А	10	(0	4	ų	4	4	4	4	42.5%
	В	10	Ũ	6	6	υ	6	6	6	
	С	10	5	à	1	1	1	1	1	
	D	Ŵ	9.	6	6	U	6	6	Ŵ.	· lextra org - dead
	A									
	В									
	с									
	D									
	Date:	5/25/20	5/20/20	5/30170	5/31/20	101120	6/2/20	6/3/20	6410	
	Time:	1410	1145	1520		1340	1345	1450	1350	
	Initials:	BEN	HR	FSCP		AF	CP	CP	EN	

Page 4 of <u>7</u> QA Form No. 058 Revision 4 Effective 02/14

#### **CHRONIC CHEMICAL DATA (INITIAL)**

QA: Dep 6/9/20

Project Number:

17001-474-073

#### Test Species: Artemia franciscana

mg/L	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Meter #	Remarks
Conc.:									All	
0									Conc.	
pН	7.9	8.2	7.9	0.8	8.0	<b>8</b> .D	7.9		1=1127	
D.O. (mg/L)	6.6	8.2	6.6	others	05.3	5.1	4.9		17	
Temp. (°C)	20	20	20	W	20	20	20		L13	
Cond. (µS/cm)	136060	131600	128300	126400	130400	132300	132000		15	
Hard. (mg/L)									T.tr	
Alk. (mg/L)									7.41	
TRC (mg/L)									22	
$NH_3 (mg/L)$									HAS	
Conc.: 125										
pH	8.0	8.1	7.9	7.9	8.0	8.0	7.9			
D.O. (mg/L)	6.0	8.2	5.5	5,0	5.3	5.0	4.9			
Temp. (°C)	20	20	w	20	20	20	20			
Cond. (µS/cm)	136306	132000	131100	127900		132200	132500			
Hard. (mg/L)										
Alk. (mg/L)										
TRC (mg/L)								ni <u>1. n</u> 1		
NH <sub>3</sub> (mg/L)										
Conc.: 250										
pН	8.0	8.1	7.9	7.9	8.0	8.0	7.9			
D.O. (mg/L)	5.5	8.0	6.1	51	5.3	4.8	4.9			
Temp. (°C)	20	20	W	20	20	20	20			
Cond. (µS/cm)	13510			129000		132600	132900			
Conc.: 500										
рН	8.0	8.1	7.9	7.9	8.0	8.0	7,9			
D.O. (mg/L)	6.2	79	5.4		5.3	4.9	4.9			
Temp. (°C)	20	20	20	20	20	20	20			
Cond. (µS/cm)	13510	132700					132600			
	5/10/20	5/29/20					6/3/20			
	1350	1125	1455		1315	1330	1435			
Initials:	AS	HP	<del>[[]</del>	ES.	AF	CP	CP			

Note: Hardness, alkalinity, TRC, and NH3 data appearing on this page have been transcribed from the wet chemistry log QA Form No. 084.

\*Dilution/control water and effluent were brought to 25C prior to making the dilution series. The temperature of resulting effluent dilution is assumed to also be 25C.

Page 5 of <u>7</u> QA Form No. 058 Revision 4 Effective 02/14

#### CHRONIC CHEMICAL DATA (INITIAL)

QA: Dup 6/9/20

Project Number: 17001-474-073

Test Species: Artemia franciscana

%		Day	Day	Day	Day	Day	Day	Day	Day	Meter #	Remarks
70		0	1	2	3	4	5	6	7		Remains
Conc.:	1000									All Conc.	
pН		8.0	8.1	7.9	7.9	8.0	8.0	7,9			
D.O. (mg/L)		6.4	79	61	5.1	5.3	4.9	4.9			
Temp. (°C)		20	20	P	20	20	20	20			
Cond. (µS/cm)		134900	132400	125400	129700	132700	132500	132600			
Conc.:											
рН											
D.O. (mg/L)											
Temp. (°C)											
Cond. (µS/cm)											
Conc.:											
pН											
D.O. (mg/L)											
Temp. (°C)											
Cond. (µS/cm)											
Conc.:											
рН											
D.O. (mg/L)									1. 11 N		
Temp. (°C)											
Cond. (µS/cm)	)										
Conc.:	2000										
рН		8.0	8.1	7.9	7.9	8.0	G.8	7.9			
D.O. (mg/L)		5.9	7.7	5.8	4.9	5.3	4.9	4.9			
Temp. (°C)		20	20	20	20	20	20	20			
Cond. (µS/cm)		13500	132300	130800	129300	132900	132100	132400			
Hard. (mg/L)											
Alk. (mg/L)											
TRC (mg/L)											
$NH_3 (mg/L)$											
	Date:	5/28/20	5/20/20	5/30/20	Noil20	01120	6/2/20	6/3/20			
	Time:	1350	1125	1455	1225	1315	1330	1435			
	Initials:	<u>An</u>	HR	ちょ	ES .	AF	CP	CP			

Note: Hardness, alkalinity, TRC, and NH3 data appearing on this page have been transcribed from the wet chemistry log QA Form No. 084.

\*Dilution/control water and effluent were brought to 25C prior to making the dilution series. The temperature of resulting effluent dilution is assumed to also be 25C.

Page <u>6</u> of <u>7</u> QA Form No. 059 Revision 3 Effective 02/14

## CHRONIC CHEMICAL DATA (FINAL)

QA: 040 6/E/20

Project Number: Test Species:

17001-474-073 Artemia franciscana

mg/L	Day	Day	Day	Day	Day	Day	Day 7	Day 8	Meter #	Remarks
Conc.: 0		2	3	4	5	6	123000	0	All Conc.	* conductivity 6
	7.8	7,9	8.0	8.0	8.0	7.8	7.8		FM27	
	9.3			5.3	4.8		50		17	
D.O. (mg/L) Temp (°C)	21	21	220	21	20	21	21		1-37	
Conc.: 125							122600			* conductivity
pH	7.9	79	8.0	8.0	8.0	7.7	7.8			oonadonniy
D.O. (mg/L)	85	4.9	5.2	5.0	4.8	4.5	46			
Temp (°C)	21	21	220	21	21	21	21			
Conc.: 250							122000			* conductivity
рН	79	7.9	8,0	8.0	8.0	7.7	7.8			
D.O. (mg/L)	8.2	5.4	4.7	5.0	4.7	4.4	4.5			
Temp (°C)	21	21	174	21	21	21	21			
Conc.: 500		7.8				<u> </u>	121200			* conductivity
pH	8.0	5,0	8.0	8.0	8.0	7.7	7.8			
D.O. (mg/L)	8.4	5.8	5.2	5.0	4.7	4.4	4.5			
Temp (°C)	21	21	214	21	21	21	21			
Conc.: 1000			,				120800			* conductivity
pH	8.0	7.9	8,0	8.0	8.0	7.8	7.8			
D.O. (mg/L)	8.4	5.5	5.3	5.0	4.7	4.4	4.4			
Temp (°C)	21	21	224	21	21	21	21			
Conc.: 2000							120.000			* conductivity
pH	8.0	7.9	0,8	8.1	8.1	7.9	7.9			
D.O. (mg/L)	8.0	5.7	5.3	5.1	4.8	4.5	4.5			
Temp (°C)	2	21	224	21	21	21	21			
Conc.:										
рН										
D.O. (mg/L)										
Temp (°C)										
Date	5/29/20	5/30/20	odicts	01120	6/2/20	6/3/20	6/4/20			
Time		1525	12.50		1400	1510	1345			
Initials	HP	5	ES	AF	CO	CP	EY			

A church all repo

() 55 5130125 Jul 25 5130125 30

Page 7 of <u>7</u> QA Form No. 055 Revision 3 Effective 02/14

# DAILY TOXICITY TEST LOG

QA: DAP 6/8/10

Proj	ect	Number:	
Test	Sr	ecies.	

17001-474-073 Artemia franciscana

General		Feeding	Initials/Date
Comments		72.5 ug/l Chla	
	Random Chart: D Min/Max Thermometer # M-15	0.3 ml YTC	
Test Day 0	Test Solution Mixed at: 1035	Fed @ 1035	
	Test Organisms Added at: ١٩١ u		103
	Spiked @ 1035		5/28/20
Test Day 1	Real Time: 22 °C Min-Max Range: 21-22 °C	Fed @ <sub>© %25</sub>	HR
			110
	Spiked @ 0%2		5/29/20
Test Day 2	Real Time: 22 °C Min-Max Range: 21-22 °C	Fed @ 1200 CP	
100100,2		100 CP	ES/01 5130120
	Spiked @ 1200c1p		5/30/20
Test Day 3	Real Time: 22 °C Min-Max Range: 21-22 °C	Fed @ 0915	ES 5/31/20
		HK-	5/31/W
	Spiked @ 0915 HP		
Test Day 4	Real Time: 22 °C Min-Max Range: 21-22 °C	Fed @ 0020	
1000 Duy 4		Fed @ 0930	AF
	Spiked @ OQ 30 Ce		1.1.100
			6/1/20
Test Day 5	Real Time: 22 °C Min-Max Range: 21 - 22 °C	Fed @ 0750	
			CP
	Spiked @ 0750 * No significant growth in 2000 mg/L		6220
Test Day 6	Real Time: 22 °C Min-Max Range: 21 - 22 °C	Fed @1125	
root Duy o		HR	CP .
	Spiked @ 1125 *		6/3/20
			\$1510
Test Day 7	Real Time: 22 °C Min-Max Range: 21 - 22 °C	Fed @	T.N
		None	EN
			6/4/20

.

	nce ID: S <b>\Art#1</b> # <u>3</u> from Date: <u>\$ 205</u>	to Date: <u>د المرکع</u> Time: <u>ممح</u>	Lot or Batch Number: 052020		84	0	10	01	0	0	0	0	0-	10	10	10					120E
Comments:	Analytical Bala Dried in Oven #		(>500°C)	Mean Wt. per Treatment (Original)																	04F 413120E
				Mean Wt. per Original Organism (mg)																	
uC12)	ross: AF	1030 1	C) Dry (>1	No. of Orig. Organisms																	
er Or (C	Analyst G	in 1/2000	06-09) AU (60-90	Adjusted Net Weight (g) <sup>1</sup>																Loading Rate:	
	В	of Gross Wt.:		Net Weight (g)	0.00090	20100.0	0.00100	21100-0	0.00131	0.00122	10000.0	0.00114	0.00111	0.00098	0.00124	0.00101	H0.00002				مال <sup>ي</sup> س
Test Subst	Analyst Tar	Date/Time			1.13198		1.15691	1.1297W	1.ilo412	1.13782	1,15929	1.12614	1-iiv3000	1.140WB	1.13820	1-13148	1.15363				ינואו) של CIUIS
510	74	\$	Weight Typ		1-13 102	ودلب 1. ا	1-15585	498 61-1	18091-1	113660	1-15838	1.12500	1-16249	04681.1	1-13696	1-13047	1.15361				ppropriate.
)-HLH-	anciscar	act selhi	Length	Contra													et				ık boat, if a
r: 11001-	mia fr	are Wt.: 6	ment Rep	۲	A	8	J	0	A	B	ပ	0	50 A	ß	J	0				'olume:	loss of blar
oject Numbe	pecies: Art	ate/Time of T	3oat Treat						124				25				lank	ange	lean	st Solution ∨	Add in weight loss of blank boat, if appropriate
	Test Substance: CODDEr ON (CUC12)	3 Test Substance: Copper ON (CUCI2) Comments: Analytical Balance ID: Sort#1 Analyst Tare: Comments Analyst Gross: AF Dried in Oven # 3 from Date:	Test Substance:   Comments:     Analyst Tare:   Comments:     Analyst Tare:   Analyst Gross:     Analyst Tare:   Analyst Gross:     Analyst Tare:   Dried in Oven # 3 from Date:     Date/Time of Gross Mt.:   U/U/2001 L0 30	Test Substance:     Copplex CM (CUCl2)     Comments:       Analyst Tare:     Analyst Gross: AF     Analytical Balance ID: SArt#1, pried in Oven # 3 from Date: 6       Date/Time of Gross Wt::     W/W/2001030     Dried in Oven # 3 from Date: 6       Ight Type (Circle):     Wet Blot Dry Dry (60-90°C)     Dry (>100°C)     AFDW (>500°C)     Lot or Batch Numt	Test Substance:Copplet Copplet Copplet ConditionComments:Analyst Tare:Analyst Gross:Analytical Balance ID:Analyst Tare:Analyst Gross:Analytical Balance ID:Date/Time of Gross Wt: $u/u/20021\omega30$ Date/Time of Gross Wt: $u/u/20021\omega30$ Interfere:Mean Wt:TareGrossGrossNet Weight(g)(g)(g)(g)(g)(mg)(fmg)(Criginal)(fmg)(fmg)(fmg)(fmg)(fmg)(fmg)(fmg	Test Substance:     Copper ON     Cu Cl 2     Comments:       Analyst Tare:     Analyst Gross: AF     Analyst Gross: AF     Comments:       Analyst Tare:     Analyst Gross: AF     Analyst Gross: AF     Dried in Oven # 3 from Date:       Ight Type (circle):     Wet Blot Dry     Dried 00°C)     Dry (>100°C)     AFDW (>500°C)     Lot or Batch Number: 05       Tare     Gross     Net Weight (g)     No. of     Mean Wt. per (mg)     No. of     Mean Wt. per (mg)       ight (g)     Weight (g)     (g) <sup>1</sup> Organisms     Organism (mg)     Organism     Organism (mg)     Organism       3 lo3     1.13198     0.000940     1.13198     0.000940     Organism     Organism     Organism	Test Substance:     Copper ON     Cu Cl2     comments:       Analyst Tare:     Analytical Balance ID: Sort#1     Analytical Balance ID: Sort#1       Analyst Tare:     Analytical Balance ID: Sort#1     Pried in Oven # 3 from Date: Sort#1       Date/Time of Gross Wr:     u/u/j2xxx1u/j2xxx1u/3xxx1u/j2xxx1u/3xxx1u/j2xxx1u/3xxxx1u/3xxx1u/3xxx1u/3xxx1u/3xxxx1u/3xxx1u/3x	Test Substance:   Copper CN   Cu Cl2   Comments:     Analyst Tare:   Analyst Gross: AF   Analyst Gross: AF   Date/Time allance ID: SArt#1     Analyst Tare:   Analyst Tare:   Analyst Gross: AF   Date/Time allance ID: SArt#1     Ight Type (Circle):   Weight (g)   Weight (g)   No. of   Mean Wt. per   Inter No. of     Ight Type (Circle):   Wet Weight   No. of   Mean Wt. per   Mean Wt. per   No. of   Mean Wt. per     Ight (g)   Weight (g)   (g)   Net Weight   Organisms   Organism   Organism   Organism     3 lo3   1.13198   0.000940   Io   Organism   Original)   Original)   Original)   Original)   Original)     5585   1.15641   0.001004   10   10   10   10	Test Substance:     Copper Os (CuCl2)     Comments:       Analyst Tare:     Analyst Gross: AF     Analyst Gross: AF     Dried in Oven # 3 from Date:       Analyst Tare:     Analyst Tare:     Analyst Gross: AF     Dried in Oven # 3 from Date:       Ight Type (Circle):     Wet Blot Dry     Dry (>100°C)     AFDW (>500°C)     Lot or Bate/Number: 05       Ight (g)     Weight (g)     Net Weight     No. of     Mean Wt. Per     No. of     Mean Wt. Per       Ight (g)     Weight (g)     Net Weight     Organisms     Organisms     Surving       3lo3     1.13199     0000Qu     Organisms     Organism     Organism     Organism       3lo3     1.15572     0.0010Qu     No1000     10     10     0       3suving     0.0010U     0.0010U     10     10     10	Test Substance:     Copper Val     Cu (L12)     comments:       Analyst Tare:     Analyst Tare:     Analyst Gross: AF     Analyst Gross: AF     Date Analyst Gross: AF       Ight Type     Date/Time of Gross Wt:     U/U/J2CO LU3O     Dry (>100°C)     AFDW (>500°C)     Lot or Balance ID: SArt#1       Ight Type     Circle):     Wet Weight     No. of     Mean Wt. per     No. of     Mean Wt. per       Ight Type     Circle):     Wet Weight     Organisms     Organisms     Organisms     Surv.       Ight (g)     Weight (g)     0(g)     Net Weight     Organisms     Organisms     Surv.       Slo3     1.13(198     0.0000Qu     0     Organisms     Organisms     Organisms       Slo3     1.15(575     0.0010Qu     0     010     010     010     010       SS&40     1.15(575     0.0010Qu     10     10     10     010       SS&41     1.12071w0.00112     0.001012     10     10     10     10	Test Substance:     Copper Vol (Lu Cl 2)     comments:       Analyst Tare:     Analyst Gross: AF     Analytical Balance ID: Sort#1 (vol analytical Balance))       Ight Type (Circle):     Wet Weight (g)     Net Net Weight (g)     Net	Test Substance:   Copplet Ox   Cu Cl 2   comments:     Analyst Tare:   Analyst Tare:   Analyst Tare:   Analyst Gross: AF   Ined in Oven # 3, from Date:   Verified in Oven # 3, from Oven # 0,	Test Substance:   Comments:     Analyst Tare:   Analyst Gross:     Analyst Tare:   Analyst Gross:     Analyst Tare:   Analyst Gross:     Date/Time of Gross:   N:     Neight (g)   Neight (g)     No   Neight (g)     No   Ni     Ni   Ni     Ni   Ni	Test Substance:     Comments:     Comments:       Analyst Tare:     Analyst Gross:     Analyst Gross:	Test Substance:     Coppert Ox (Cu(L12))     Comments:       Analyst Tare:     Analyst Tare:     Analyst Gross: AF     Analyst Tare:     Analyst Tare:       Analyst Tare:     Analyst Tare:     Analyst Gross: AF     Analyst Gross: AF     Analyst Gross: AF       Interfine     of Gross     Wt:     U/l/2CC 1U G G     Date/Time of Gross: Mt:     U/l/2CC 1U G G       Int Type     Gross     Wt:     U/l/12CC 1U G G     Date/Time of Gross: Mt:     U/l/12CC 1U G G       Int Type     Gross     Wt:     U/l/12CC 1U G G     Date/Time of Gross: Mt:     U/l/12CC 1U G G       Int Type     Gross     Net Weight     No. of     Mean Wt. Per     Nee W     Nee W       Int Go     Gross     Net Weight     Organisms     Organisms     Surving       Gross     1.1519G     0.0010U     Organisms     Organisms     Organisms       Gross     1.1519G     0.0010U     Net Weight     Organisms     Organisms       Gross     1.1519G     0.0010U     Organisms     Organisms     Organisms       Gross     1.1519G     0.0010U     Net Weight     Organisms     Organisms       Gross	Test Substance       Copper       Cut (L12)       comments:         Analyst Tare:       Analyst Gross: AF       Analyst Gross: AF       Dried in Oven # 3 from Date: 54/26 Tr         Interfine of Gross wr. u/u/12c0 Lu 3.0       Date/Time of Gross wr. u/u/12c0 Lu 3.0       Dried in Oven # 3 from Date: 54/26 Tr         Ight Type (Circle):       Wet Blot Dry Der 60-30°C)       Dry (>100°C)       AFDW (>500°C)       Lot or Bate: 54/26 Tr         Interfine of Gross wr. u/u/12c0 Lu 3.0       New off       Original       Treatment       No. of         Interfine (Circle):       Wet Weight       Original       Treatment       No. of       Mean Wt.         State       U(13)       Net Weight       Origanism       Origanism       Origanism         State       Li 13197B       0000340       Net Weight       Origanism       Origanism         State       Li 13197B       0000340       Net Weight	Test Substance:       Copper CM       CLL(L12)       Comments:         Analyst Tare:       Analyst Tare       Analyst Tare       An	Test Substance: Copper CM (CU(L)       Test Substance:     Copper CM (CU(L)     Comments:       Analyst Tare:     Analyst Tare:     Analyst Gross: AF     Dried in Oven # 3 from Date: 62/26 Tr       Ight Type     DaterTime of Gross W1: U/U/20C 1L0 3O     Dried in Oven # 3 from Date: 62/26 Tr     Date: 62/26 Tr       Ight Type     Circle1:     Weight     No. of     Mean WL per from the Surving Congination (Origination)     Date: 62/26 Tr       Ight Type     Circle1:     Weight(0)     Oignation (Origination)     Organism (Origination)     Date: 62/26 Tr       310.3     Li 517GB     DoolQU     Net Weight     No. of Mean WL per freement     No. of Mean WL per freement       5585     Li 15/041     DoolQU     Net Weight     Origination (Origination)     Organism Surving Origination (Origination)       310.3     Li 12/9710     Dool31     Dool31     Dool31     Dool31     Dool31       5585     Li 12/9710     Dool31     Dool31     Dool31     Dool31     Dool31     Dool31       5585     Li 12/9710     Dool31     Dool31     Dool31     Dool31     Dool31     Dool31       5585     Li 12/9710     Dool31     Dool31     Dool3	Test Substance:       Copp. CM       Cull 1       Comments:         Analyst Tere:       Analyst Gross. AF       Analyst Gross. AF       Analyst Gross. AF         Date:       Analyst Tere:       Analyst Gross. AF       Analyst Gross. AF       Analyst Gross. AF         Date:       Analyst Gross. AF       Analyst Gross. AF       Analyst Gross. AF       Analyst Gross. AF         Ight Type       Date:       Analyst Gross. W:       VIU/0702 (L0:30)       Date:       E22.20         Ight Type       Ciccle):       Wet Gross W:       VIU/0702 (L0:30)       Date:       E22.20         Ight (g)       Weight (g)       (g)       No. of       Mean Wr. per       Mean Wr. per       Mean Wr. per         S153       Li5725       0.00101       Organisms       Organism       Organism       Surv.         S153       Li5727       0.00101       Organism       Organism       Organism       Diganism         S153       Li5727       0.00101       Organism       Organism       Organism       Diganism         S154       Li5940       0.00112       0.00101       Distribution       Distribution       Dio         S1.1150142 <td< td=""><td>Test Substance:       Copper Copper Survival Balance ID: Sart#1         Analyst Tare:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Analyst Tare:       Analyst Gross: AF       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Gross:       Net Weight       No. of       Mean WL per Mean WL p</td><td>Test Substance:       Copper Copper Survival Balance ID: Sart#1         Analyst Tare:       Analyst Tare:       Analyst Gross:       Analyst Gross:</td></td<>	Test Substance:       Copper Copper Survival Balance ID: Sart#1         Analyst Tare:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Analyst Tare:       Analyst Gross: AF       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Tare:       Analyst Gross: AF       Date: Substance ID: Sart#1         Date:       Analyst Gross:       Net Weight       No. of       Mean WL per Mean WL p	Test Substance:       Copper Copper Survival Balance ID: Sart#1         Analyst Tare:       Analyst Tare:       Analyst Gross:       Analyst Gross:

				TEST C	DRGANISA	A LENGTHS	, WEIGHT	TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING	DING		Page Z of QA Form No.010 Revision 7 Effective 01/20 &A ( and 6/8/10	с of <u>4</u> No.010 31/20 6/8120
Project	Vumber: 11(	Project Number: 11001 - 414 - 013	073	Test Substance:		Copper (CuClz)	2)		Comments:	Ċ	-	
Species	Artemio	Species: Artemia franciscana	ana	Analyst Tare: 6	e: E	Analyst Gross: AF	ross: AF		Analytical Balance ID: )0r+#1 Dried in Oven # 3 from Date:	rce ID: )017	2	20 Time: 1505
Date/Tir	Date/Time of Tare Wt.:	elline ::	200	Date/Time c	of Gross Wt.:	Date/Time of Gross Wt.: 10/10/20@10/30	0101200	1630		to Da	3	me: 1005
Boat	Treatment	Rep. Length	Weight Type (Circle):	e (Circle):	Wet Blot Dry	1y py (60-90)C)	C) Dry (>100°C)	0°C) AFDW	AFDW (>500°C)	Lot or Batch	Lot or Batch Number: 052020	2620
o Z	Jlbw	Cutts:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Z	No. of Orig. Organisms	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Organisms	Mean Wt. per Surviving Organism	Mean Wt. per Treatment (mg) (Surviving)
	500	A	SERFI.1	1.17373 0.00110	01100.0					0	611	
		8	1.16557	1.16557 1. 16005 0.0010B	20100.0					01		
		c	t Ptq7	HO100.0 106111 7.54411	P0100.0					10		
		٥	1.13783	113783 1.13991 0.00100	0.00100					0		
	1000	A	1.15098	1.15098 1.15168 0.00070	0.000.0					0		
		60	114570	H5000.0 h2014 0.00054	H5000-0					Г		
		J	1.14390	Pro00.0 Pathy 1.1	PT000.0					σ		
		٥	1-16460	116460 1.16528 0.00000	0.000 പ്ര					б		
	2000	A	1-15496	115496 1,5505 0.00009	0.0000.0					Ъ		
		æ	51961.1	12000 henzi 1 219E1.1	0.00021					ġ		
		J	9/19/1-1	200000 121211 0.00005	0.00005					~		
		٥	1.14985	114985 1-15000 0.00015	0.00015		=			9		
Blank			1.15361	1-15363 +0.00002	20000-0+							
Range												
Mean												
Test Sol	Test Solution Volume:					Loading Rate:						
Add in v	veight loss o	Add in weight loss of blank boat, if appropriate.	appropriate.									

Page 13 of 23

Page of \_\_\_\_\_ QA Form No. 010a Revision 1 Effective 02/14

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

QA: DDP 6/1420

DAS DDP 6/14	Mean Wt./ Treatment (mg) (Surviving)	0.1069				0.1170				0.1085				0.1106				0.0776				0.0331				
DA.	Mean Wt./ Surviving Organism (mg)	0.107	0.103	0.106	0.112	0.131	0.122	0.101	0.114	0.111	0.098	0.124	0.101	0.122	0.108	0.104	0.108	0.070	0.077	0.088	0.076	0.022	0.035	0.050	0.025	
	Number of Surv. Organisms	6	10	10	10	10	10	6	10	10	10	10	10	6	10	10	10	10	7	6	6	4	9	1	6	
	Mean Wt./ Treatment (mg) (Original)	I				0.1145				0.1085				0.1075				0.0678				0.0122				
anciscana	Mean Wt./ Original Organism (mg)	0.096	0.103	0.106	0.112	0.131	0.122	0.091	0.114	0.111	0.098	0.124	0.101	0.110	0.108	0.104	0.108	0.070	0.054	0.079	0.068	0.009	0.021	0.005	0.014	
Artemia franciscana	No of Orig. Organisms	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	11	
Species:	Net Weight Net Weight No of Orig. (g) Organisms	0.00096	0.00103	0.00106	0.00112	0.00131	0.00122	0.00091	0.00114	0.00111	0.00098	0.00124	0.00101	0.00110	0.00108	0.00104	0.00108	0.00070	0.00054	0.00079	0.00068	0.00009	0.00021	0.00005	0.00015	
	Net Weight (g)	0.00096	0.00103	0.00106	0.00112	0.00131	0.00122	0.00091	0.00114	0.00111	0.00098	0.00124	0.00101	0.00110	0.00108	0.00104	0.00108	0.00070	0.00054	0.00079	0.00068	0.00009	0.00021	0.00005	0.00015	0.00002
	Gross Weight (g)	1.13198	1.15525	1.15691	1.12976	1.16412	1.13782	1.15929	1.12614	1.16360	1.14068	1.13820	1.13148	1.17383	1.16665	1.17901	1.13891	1.15168	1.14624	1.14469	1.16528	1.15505	1.12634	1.12651	1.15000	1.15363
14001-474	Tare Weight (g)	1.13102	1.15422	1.15585	1.12864	1.16281	1.13660	1.15838	1.12500	1.16249	1.13970	1.13696	1.13047	1.17273	1.16557	1.17797	1.13783	1.15098	1.14570	1.14390	1.16460	1.15496	1.12613	1.12646	1.14985	1.15361
	Length Units:																									
mber	Rep	▲	в	υ	D	A	в	ပ	۵	A	в	υ	٥	A	ш	ပ		∢	В	ပ	۵	A	в	ပ	۵	
Project Number:	Treatment			נפאר			105	1/6H C71			750 110/1	zon hg/r				non have			1,000	ng/L			2,000	hg/L		Blank

Page of \_\_\_\_\_\_ QA Form No. 010a Revision 1 Effective 02/14

242 DAP 6/13/20

4 0.091
500 μg/L       4       0.104       0.110       0.1075       0.0025         1,000 μg/L       4       0.054       0.079       0.0678       0.0103         2,000 μg/L       4       0.055       0.079       0.0678       0.0103         2,000 μg/L       4       0.005       0.021       0.0122       0.0069         Image: Solution of the surviving organism         Treatment       M       Min       Max       Mean       SD         125 μg/L       4       0.103       0.112       0.1069       0.0037         250 μg/L       4       0.103       0.1124       0.1076       0.0080         1,000 μg/L       4       0.104       0.122       0.0081       0.0081         1,000 μg/L       4       0.022       0.050       0.0331       0.0125

Page 15 of 23

CETIS Analytical Report								•	ort Date: Code:	12 Jun-20 08:59 (p 1 of 2) 474-073   20-3062-8299			
Fathead Minne	ow 7-d Larval S	urvival an	d Growth Te	st						TRE Envir	onmental	Strategies	
Analysis ID: Analyzed:	16-2412-6765 12 Jun-20 8:59			Survival Rate		vs T	reatments		S Version: ial Results	CETISv1. Yes	8.7		
Batch ID:	12-4587-5991	Te	st Type: Gro	wth-Survival	(7d)			Anal	yst: Lab	Tech			
Start Date:	28 May-20 14:1	0 <b>Pr</b>	otocol: EP/	V821/R-02-0	013 (20	02)		Dilue	ent: rGS	L			
Ending Date:	04 Jun-20 13:50	) <b>Sp</b>	ecies: Arte	emia franciso	cana			Brine	-	stal Sea			
Duration:	7d	So	ource: In-H	louse Cultur	e			Age:	48h				
Sample ID:	13-8865-2988	Co	ode: 520	529BC				Clier	nt: Noti	re Dame			
Sample Date:	28 May-20 10:3	5 <b>M</b> a	aterial: Cop	per chloride	•			Proje	ect: Spe	cial Studies			
Receive Date:	28 May-20 10:3	5 <b>So</b>	ource: Dis	charge Moni	toring F	Repo	rt						
Sample Age:	4h	Sta	ation: Effl	uent									
Data Transfor	m	Zeta	Ait Hyp	Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU	
Angular (Corre	cted)	NA	C > T	NA	NA			15.6%	1000	2000	1414		
Steel Many-Or	ne Rank Sum Te	est											
Control	vs C-µg/L		Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision	(a:5%)			
Dilution Water	125		18	10	2	6	0.8333	Asymp	Non-Signi	ficant Effect			
	250		20	10	1	6	0.9516	Asymp	Non-Signi	ificant Effect			
	500		18	10	2	6	0.8333	Asymp	•	ificant Effect			
	1000		13.5	10	2	6	0.2853	Asymp	-	ficant Effect			
	2000*		10	10	0	6	0.0417	Asymp	Significan	t Effect			
ANOVA Table													
Source	Sum Squ	ares	Mean Squ	iare	DF		F Stat	P-Value					
Between	1.576496		0.3152992	-	5		16.49	<0.0001	Significan	t Effect			
Error	0.3441775	5	0.0191209	97	18								
Total	1.920674				23								
Distributional	Tests												
Attribute	Test			Test Stat		ai	P-Value	Decision					
Variances		-	ty of Variance		4.25		0.2510	Equal Var					
Variances		quality of		2.337	4.25		0.0841	Equal Va					
Distribution	Snapiro-V	Wilk W No		0.8447	0.884		0.0017	Non-norm	al Distributi	on			
7d Survival R	ate Summary												
C-µg/L	Control Type	Count	Mean	95% LCL	95%	JCL	Median	Min	Max	Std Err	CV%	%Effect	
0	Dilution Water	4	0.975	0.8954	1		1	0.9	1	0.025	5.13%	0.0%	
125		4	0.975	0.8954	1		1	0.9	1	0.025	5.13%	0.0%	
250		4	1	1	1		1	1	1	0	0.0%	-2.56%	
500		4	0.975	0.8954	1		1	0.9	1	0.025	5.13%	0.0%	
1000 2000		4	0.875	0.6748	1	~	0.9 0.4727	0.7	1	0.06292 0.112	14.4% 54.5%	10.3%	
		4	0.4114	0.0548	0.767	9	0.4727	0.1	0.6	0.112		57.8%	
	rected) Transfor												
C-µg/L	Control Type	Count	Mean	95% LCL	95%			Min	Max	Std Err	CV%	%Effect	
0	Dilution Water	4	1.371	1.242	1.501		1.412	1.249	1.412	0.04074	5.94%	0.0%	
125		4	1.371	1.242	1.501		1.412	1.249	1.412	0.04074	5.94%	0.0%	
250		4	1.412	1.412	1.412		1.412	1.412	1.412	0	0.0%	-2.97%	
500			1 271	1.242	1 501		1.412	1.249	1.412	0.04074	5.94%	0.0%	
500		4	1.371		1.501								
500 1000 2000		4 4 4	1.225 0.6809	0.9485	1.502		1.249 0.7578	0.9912	1.412 0.8861	0.08699	14.2% 37.3%	10.6% 50.3%	

Analyst: <u>M</u> QA: <u>D40 6/13720</u> Page 16 of 23

CETIS Ana	alytical Repo	ort					Report Date: Test Code:	12 Jun-20 08:59 (p 2 of 2) 474-073   20-3062-8299
Fathead Mini	now 7-d Larval S	urvival an	d Growth T	est				TRE Environmental Strategies
Analysis ID: Analyzed:	16-2412-6765 12 Jun-20 8:59		•	I Survival Rat		Treatments	CETIS Version: Official Results:	CETISv1.8.7 Yes
7d Survival F	Rate Detail							
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4			
0	Dilution Water	0.9	1	1	1			
125		1	1	0.9	1			
250		1	1	1	1			
500		0.9	1	1	1			
1000		1	0.7	0.9	0.9			
2000		0.4	0.6	0.1	0.5455			
Angular (Cor	rected) Transfor	med Detai	1					
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4			
0	Dilution Water	1.249	1.412	1.412	1.412			
125		1.412	1.412	1.249	1.412			
250		1.412	1.412	1.412	1.412			
500		1.249	1.412	1.412	1.412			
1000		1.412	0.9912	1.249	1.249			
2000		0.6847	0.8861	0.3218	0.8309			
7d Survival I	Rate Binomials							
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4			
0	Dilution Water	9/10	10/10	10/10	10/10			
125		10/10	10/10	9/10	10/10			
250		10/10	10/10	10/10	10/10			
500		9/10	10/10	10/10	10/10			
1000		10/10	7/10	9/10	9/10			
2000		4/10	6/10	1/10	6/11			
Graphics								
1.0 0.9 0.7 0.7 0.6 0.5 0.5 0.4 0.3 0.4 0.3 0.2 0.4		•		•Z		Contracting Contr	•••••	••••••

0.0

0 D

125

250

C-µg/L

CETIS™ v1.8.7.16

1000

2000

500

-0.35

-0.40 -2.0

-1.5

-1.0

-0.5

0.0

Rankits

0.5

1.0

2.0

1.5

CETIS Analytical Report								•	ort Date: Code:	: 12 Jun-20 08:59 (p 1 of 2) 474-073   20-3062-8299			
Fathead	d Minno	ow 7-d Larval Su	urvival a	nd Growt	h Test					TRE Envi	ronmenta	I Strategies	
Analysi Analyze		14-5321-3602 12 Jun-20 8:59		ndpoint: nalysis:	7d Survival	Rate	1)		IS Version: cial Results:	CETISv1 Yes	.8.7		
Batch II		12-4587-5991			Growth-Surv					Tech			
Start Da		28 May-20 14:1		otocol:		02-013 (2002)		Dilu					
Ending		04 Jun-20 13:50		pecies:	Artemia fran			Brin		- stal Sea			
Duratio		7d		ource:	In-House Cu			Age					
Sample	ID:	13-8865-2988	C	ode:	52C529BC			Clie	nt: Notr	e Dame			
Sample	Date:	28 May-20 10:3	5 M	aterial:	Copper chlo	ride		Proj	ect: Spe	cial Studies			
		28 May-20 10:3		ource:	-	Ionitoring Rep	ort						
Sample	Age:	4h	S	tation:	Effluent								
Linear I	Interpo	lation Options											
X Trans	sform	Y Transform		eed	Resamples			thod					
Linear		Linear	1	1516	200	Yes	Two	o-Point Inter	olation				
Point E	stimate	es											
Level	µg/L	95% LCL	95% UC	L									
LC5	704.2	364.2	1254										
LC10	950	492.9	1272										
LC15	1085	638.5	1380										
LC20	1192	792.6	1474										
LC25	1299	914.9	1599										
LC40 LC50	1619 1833	1243 1359	2148 N/A										
			N/A										
		ate Summary	_				ulated Vari					_	
C-µg/L		ontrol Type	Count	Mear		Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	D	ilution Water	4	0.975		1	0.025	0.05 0.05	5.13%	0.0% 0.0%	39 39	40 40	
125 250			4 4	0.975 1	5 0.9 1	1 1	0.025 0	0.05	5.13% 0.0%	-2.56%	39 40	40 40	
500			4	0.975		1	0.025	0.05	5.13%	-2.30 % 0.0%	39	40	
1000			4	0.875		1	0.06292		14.4%	10.3%	35	40	
2000			4	0.411		0.6	0.112	0.2241	54.5%	57.8%	17	41	
7d Surv	vival Ra	ate Detail											
C-µg/L	с	ontrol Type	Rep 1	Rep	2 Rep 3	Rep 4							
0	D	ilution Water	0.9	1	1	1							
125			1	1	0.9	1							
250			1	1	1	1							
500			0.9	1	1	1							
1000			1	0.7	0.9	0.9							
2000			0.4	0.6	0.1	0.5455							
7d Sur	vival Ra	ate Binomials				<u> </u>			·				
C-µg/L		Control Type	Rep 1	Rep	2 Rep 3	Rep 4							
		Dilution Water	9/10	10/10		10/10							
0			10/10	10/10	9/10	10/10							
0 125													
•			10/10	10/10	0 10/10	10/10							
125				10/10 10/10		10/10 10/10							
125 250			10/10										

Page 18 of 23

Test Code: 474-073   20-3062-8295       Fathead Minnow 7-d Larval Survival and Growth Test     TRE Environmental Strategies       Analysis ID:     14-5321-3602     Endpoint:     7d Survival Rate     CETIS Version:     CETISv1.8.7       Analyzed:     12 Jun-20 8:59     Analysis:     Linear Interpolation (ICPIN)     Official Results:     Yes       Graphics     Ves     Ves     Ves     Ves     Ves	CETIS Ana	alytical Report			Report Date:	12 Jun-20 08:59 (p 2 of 2
Analyzed:     12 Jun-20 8:59     Analysis:     Linear Interpolation (ICPIN)     Official Results:     Yes	Fathead Minr	now 7-d Larval Surv	vival and Grow	th Test	Test Code:	
Graphics	•					
	Graphics					
	0.8					
0.8	0.7					

1 0.0 1 0.0

500

1000

C-µg/L

1500

2000

DAP 6/13/20

# **CETIS Analytical Report**

							lest				J-3062-829
Fathead Minnow 7-d Larval Survival and Growth Test TRE E							TRE Envir	onmental	Strategies		
Analysis ID:	16-4769-0510	End	point: M	ean Dry Bioma	ass-mg		CETI	S Versio	on: CETISv1.	8.7	
Analyzed:	12 Jun-20 9:05	Ana	lysis: Pa	arametric-Con	trol vs Treat	tments	Offic	ial Resu	ilts: Yes	_	
Batch ID:	12-4587-5991	Tes	t Type: G	rowth-Survival	(7d)		Anal	yst: L	ab Tech		
Start Date:	28 May-20 14:1			PA/821/R-02-0			Dilue	-	GSL		
Ending Date:	04 Jun-20 13:50		cies: Ar	temia franciso	ana		Brine	ə: (	Crystal Sea		
Duration:	7d	Sou	rce: In	-House Cultur	e		Age:	4	18h		
Sample ID:	13-8865-2988	Cod	<b>e</b> : 52	2C529BC			Clier	nt: N	Notre Dame		
Sample Date:	28 May-20 10:3	5 Mat	erial: Co	opper chloride			Proje	ect: S	Special Studies		
Receive Date:	28 May-20 10:3	5 <b>Sou</b>	rce: Di	scharge Moni	toring Repo	rt					
Sample Age:	4h	Stat	ion: Ef	fluent							
Data Transfor	m	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Untransformed		NA	C > T	NA	NA		17.3%	500	1000	707.1	
Dunnett Multi	ple Comparison	Test									
Control	vs C-µg/L		Test Sta			P-Value	P-Type		on(a:5%)		
Dilution Water	125		-1.336	2.36	0.018 6	0.9895	CDF		ignificant Effect		
	250		-0.5539	2.36	0.018 6	0.9298	CDF		ignificant Effect		
	500		-0.4235	2.36	0.018 6	0.9078	CDF		ignificant Effect		
	1000*	· · · · · · · · · · · · · · · · · · ·	4.757	2.36	0.018 6	0.0005	CDF	Signifi	cant Effect		
ANOVA Table											
Source	Sum Squ	ares	Mean So	quare	DF	F Stat	P-Value	Decisi	ion( <i>a</i> :5%)		
Between	0.0055824	199	0.00139	5625	4	11.85	0.0002	Signifi	cant Effect		
Error	0.0017665	5	0.00011	77666	15						
Total	0.0073489	999			19						
Distributional	Tests										
Attribute	Test			Test Stat		P-Value	Decision				
Variances		quality of V		7.752	13.3	0.1011	Equal Var				
Distribution	Shapiro-\	Wilk W Norr	nality	0.9614	0.866	0.5719	Normal D	istributio	n		·
Mean Dry Bio	mass-mg Sumn	nary									
Mean Dry Bio C-µg/L	mass-mg Sumn Control Type	nary Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
<b>С-µg/L</b> 0		Count 4	0.1042	0.09367	0.1148	0.1045	0.096	0.112	0.003326	6.38%	0.0%
<b>С-µg/L</b> 0 125	Control Type	Count 4 4	0.1042 0.1145	0.09367 0.08723	0.1148 0.1418	0.1045 0.118	0.096 0.091	0.112 0.131	0.003326 0.008568	6.38% 15.0%	0.0% -9.83%
<b>С-µg/L</b> 0 125 250	Control Type	Count 4 4 4	0.1042 0.1145 0.1085	0.09367 0.08723 0.08983	0.1148 0.1418 0.1272	0.1045 0.118 0.106	0.096 0.091 0.098	0.112 0.131 0.124	0.003326 0.008568 0.005867	6.38% 15.0% 10.8%	0.0% -9.83% -4.08%
С-µg/L 0 125 250 500	Control Type	Count 4 4 4 4	0.1042 0.1145 0.1085 0.1075	0.09367 0.08723 0.08983 0.1035	0.1148 0.1418 0.1272 0.1115	0.1045 0.118 0.106 0.108	0.096 0.091 0.098 0.104	0.112 0.131 0.124 0.11	0.003326 0.008568 0.005867 0.001258	6.38% 15.0% 10.8% 2.34%	0.0% -9.83% -4.08% -3.12%
<b>С-µg/L</b> 0 125 250	Control Type	Count 4 4 4	0.1042 0.1145 0.1085	0.09367 0.08723 0.08983 0.1035	0.1148 0.1418 0.1272	0.1045 0.118 0.106	0.096 0.091 0.098	0.112 0.131 0.124	0.003326 0.008568 0.005867	6.38% 15.0% 10.8%	0.0% -9.83% -4.08%
С-µg/L 0 125 250 500 1000 Mean Dry Bio	Control Type Dilution Water mass-mg Detail	Count 4 4 4 4 4	0.1042 0.1145 0.1085 0.1075 0.06775	0.09367 0.08723 0.08983 0.1035 0.0513	0.1148 0.1418 0.1272 0.1115 0.0842	0.1045 0.118 0.106 0.108	0.096 0.091 0.098 0.104	0.112 0.131 0.124 0.11	0.003326 0.008568 0.005867 0.001258	6.38% 15.0% 10.8% 2.34%	0.0% -9.83% -4.08% -3.12%
С-µg/L 0 125 250 500 1000 Меал Dry Bio C-µg/L	Control Type Dilution Water mass-mg Detail Control Type	Count 4 4 4 4 4 4 8 8 8 9	0.1042 0.1145 0.1085 0.1075 0.06775 <b>Rep 2</b>	0.09367 0.08723 0.08983 0.1035 0.0513 Rep 3	0.1148 0.1418 0.1272 0.1115 0.0842 Rep 4	0.1045 0.118 0.106 0.108	0.096 0.091 0.098 0.104	0.112 0.131 0.124 0.11	0.003326 0.008568 0.005867 0.001258	6.38% 15.0% 10.8% 2.34%	0.0% -9.83% -4.08% -3.12%
С-µg/L 0 125 250 500 1000 Меап Dry Bio С-µg/L 0	Control Type Dilution Water mass-mg Detail	Count 4 4 4 4 4 4 8 <b>Rep 1</b> 0.096	0.1042 0.1145 0.1085 0.1075 0.06775 <b>Rep 2</b> 0.103	0.09367 0.08723 0.08983 0.1035 0.0513 <b>Rep 3</b> 0.106	0.1148 0.1418 0.1272 0.1115 0.0842 <b>Rep 4</b> 0.112	0.1045 0.118 0.106 0.108	0.096 0.091 0.098 0.104	0.112 0.131 0.124 0.11	0.003326 0.008568 0.005867 0.001258	6.38% 15.0% 10.8% 2.34%	0.0% -9.83% -4.08% -3.12%
С-µg/L 0 125 250 500 1000 Меап Dry Bio С-µg/L 0 125	Control Type Dilution Water mass-mg Detail Control Type	Count 4 4 4 4 4 4 4 8 <b>Rep 1</b> 0.096 0.131	0.1042 0.1145 0.1085 0.1075 0.06775 <b>Rep 2</b> 0.103 0.122	0.09367 0.08723 0.08983 0.1035 0.0513 <b>Rep 3</b> 0.106 0.091	0.1148 0.1418 0.1272 0.1115 0.0842 <b>Rep 4</b> 0.112 0.114	0.1045 0.118 0.106 0.108	0.096 0.091 0.098 0.104	0.112 0.131 0.124 0.11	0.003326 0.008568 0.005867 0.001258	6.38% 15.0% 10.8% 2.34%	0.0% -9.83% -4.08% -3.12%
С-µg/L 0 125 250 500 1000 Меал Dry Bio С-µg/L 0	Control Type Dilution Water mass-mg Detail Control Type	Count 4 4 4 4 4 4 8 <b>Rep 1</b> 0.096	0.1042 0.1145 0.1085 0.1075 0.06775 <b>Rep 2</b> 0.103	0.09367 0.08723 0.08983 0.1035 0.0513 <b>Rep 3</b> 0.106	0.1148 0.1418 0.1272 0.1115 0.0842 <b>Rep 4</b> 0.112	0.1045 0.118 0.106 0.108	0.096 0.091 0.098 0.104	0.112 0.131 0.124 0.11	0.003326 0.008568 0.005867 0.001258	6.38% 15.0% 10.8% 2.34%	0.0% -9.83% -4.08% -3.12%
С-µg/L 0 125 250 500 1000 Меап Dry Bio С-µg/L 0 125	Control Type Dilution Water mass-mg Detail Control Type	Count 4 4 4 4 4 4 4 8 <b>Rep 1</b> 0.096 0.131	0.1042 0.1145 0.1085 0.1075 0.06775 <b>Rep 2</b> 0.103 0.122	0.09367 0.08723 0.08983 0.1035 0.0513 <b>Rep 3</b> 0.106 0.091	0.1148 0.1418 0.1272 0.1115 0.0842 <b>Rep 4</b> 0.112 0.114	0.1045 0.118 0.106 0.108	0.096 0.091 0.098 0.104	0.112 0.131 0.124 0.11	0.003326 0.008568 0.005867 0.001258	6.38% 15.0% 10.8% 2.34%	0.0% -9.83% -4.08% -3.12%

000-470-187-3

CETIS™ v1.8.7.16

Analyst: M3 QA: <u>14</u> 6/1330 Page 20 of 23

CETIS Ana	lytical Report	t				Report Date: Test Code:	12 Jun-20 09:05 (p 2 of 2) 474-073   20-3062-8299
Fathead Minn	ow 7-d Larval Sur	vival and Growt	h Test				TRE Environmental Strategies
Analysis ID: Analyzed:	16-4769-0510 12 Jun-20 9:05	Endpoint: Analysis:	Mean Dry Biomass-n Parametric-Control v	•	nts	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics	0.0 125	250	• Reject Null	Centered Untransformed	0.025 0.020 0.015 0.010 0.005 -0.015 -0.020 -0.025 -0.020 -0.025		
	0 D 125	250 C-µg/L	500 1000		-2.0 -:	1.5 -1.0 -0.5 0.0 Rankits	0.5 1.0 1.5 2.0

Analyst: M QA: 040 6/320 Page 21 of 23

CETIS	6 Ana	lytical Repo	ort						Repor Test C	rt Date: Code:	12 Jun-20 09:05 (p 1 of 2) 474-073   20-3062-8299
Fathea	d Minn	ow 7-d Larval S	urvival	and Growt	h Test						TRE Environmental Strategies
Analys	is ID:	05-5041-3935	E	Indpoint:	Mean Dry Bi	•			CETIS	Version:	CETISv1.8.7
Analyz	ed:	12 Jun-20 9:05		Analysis:	Linear Interp	olation (ICPII	N)		Officia	al Results:	Yes
Batch I	D:	12-4587-5991		fest Type:	Growth-Surv	rival (7d)			Analy	st: Lab	Tech
Start D	ate:	28 May-20 14:1	<b>F</b> 0	Protocol:	EPA/821/R-0	02-013 (2002)	)		Diluer	nt: rGSI	L
Ending	Date:	04 Jun-20 13:50	) :	Species:	Artemia fran	ciscana			Brine	: Crys	tal Sea
Duratio	on:	7d	5	Source:	In-House Cu	llture			Age:	48h	
Sample	D:	13-8865-2988	(	Code:	52C529BC				Client	: Notr	e Dame
Sample	Date:	28 May-20 10:3	5 1	Aaterial:	Copper chlor	ride			Projec	ct: Spe	cial Studies
Receiv	e Date:	28 May-20 10:3	5 \$	Source:	Discharge M	Ionitoring Rep	oort				
Sample	e Age:	4h	5	Station:	Effluent						
Linear	Interpo	lation Options									
X Trans	sform	Y Transform	\$	Seed	Resamples	Exp 95	% CL Me	ethod			
Linear		Linear	8	320758	200	Yes	Tw	vo-Point	Interpo	lation	
Point E	stimate	es									
Level	μg/L	95% LCL	95% U	CL							
IC5	545.2	N/A	595.6								
IC10	614	469.2	679.8								
IC15	682.8	542.5	776								
IC20	751.6	613.8	864.7								
IC25	820.4	679.8	959.8								
IC40	1038	863	1230								
IC50	1235	1008	1392								
Mean [	Dry Bio	nass-mg Summ	ary			C	alculated	Variate			
C-µg/L	c	ontrol Type	Count	Mean	Min	Max	Std Err	Std	Dev	CV%	%Effect
0	D	ilution Water	4	0.104	2 0.096	0.112	0.00332	26 0.00	06652	6.38%	0.0%
125			4	0.114	5 0.091	0.131	0.00856	68 0.01	1714	15.0%	-9.83%
250			4	0.108	5 0.098	0.124	0.00586	67 0.01	1173	10.8%	-4.08%
500			4	0.107	5 0.104	0.11	0.0012	58 0.00	02517	2.34%	-3.12%
1000			4	0.067	75 0.054	0.079	0.00517	7 0.01	1034	15.3%	35.0%

#### Mean Dry Biomass-mg Detail

4

0.01216 0.005

2000

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Dilution Water	0.096	0.103	0.106	0.112	
125		0.131	0.122	0.091	0.114	
250		0.111	0.098	0.124	0.101	
500		0.11	0.108	0.104	0.108	
1000		0.07	0.054	0.079	0.068	
2000		0.009	0.021	0.005	0.01364	

0.021

0.003435 0.00687

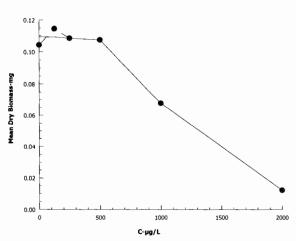
56.5%

88.3%

Page 22 of 23

CETIS Ana	alytical Report			Report Date: Test Code:	12 Jun-20 09:05 (p 2 of 2) 474-073   20-3062-8299
Fathead Minn	now 7-d Larval Surv	ival and Growt	th Test		TRE Environmental Strategies
Analysis ID: Analyzed:	05-5041-3935 12 Jun-20 9:05	Endpoint: Analysis:	Mean Dry Biomass-mg Linear Interpolation (ICPIN)	CETIS Version: Official Results	

## Graphics



Analyst: Ma QA: MA 91333