

Ms. Amy Storm
 Larry Walker Associates
 2151 Alessandro Dr., Suite 100
 Ventura, CA 93001

February 11, 2019

Dear Amy:

I have enclosed our report “A Toxicity Characterization Study of Ambient Waters Collected from the Calleguas Creek Watershed: Event 71” for samples collected January 15, 2019. The results of our evaluation are summarized below.

Effects of Calleguas Creek Ambient Waters on *Ceriodaphnia dubia*

There were no significant reductions in survival in the Calleguas Creek ambient waters. There was a significant reduction in reproduction in the 71-UPLAND-154 Calleguas Creek ambient water sample.

There were no significant reductions in reproduction in the remaining Calleguas Creek ambient waters.

Toxicity Summary for Calleguas Creek: Event 71 Ambient Waters.		
Sample Station ID	Toxicity relative to the Lab Control treatment?	
	<i>Ceriodaphnia dubia</i>	
	Survival	Reproduction
71-UNIV-029	no	no
71-ADOLF-072	no	no
71-WOOD-124	no	no
71-UPLAND-154	no	YES
71-HITCH-160	no	no
71-GATE-207	no	no
71-BELT-210	no	no

If you have any questions regarding the performance and interpretation of these tests, feel free to contact my colleague Jeffrey Cotsifas or myself at (707) 207-7763.

Sincerely,

Michael McElroy
 Senior Project Manager



Pacific EcoRisk is accredited in accordance with NELAP (ORELAP ID 4043). Pacific EcoRisk certifies that the test results reported herein conform to the most current NELAP requirements for parameters for which accreditation is required and available. Any exceptions to NELAP requirements are noted, where applicable, in the body of the report. This report shall not be reproduced, except in full, without the written consent of Pacific EcoRisk. This testing was performed under Lab Order 29677.

A Toxicity Characterization Study of Ambient Waters Collected from the Calleguas Creek Watershed

(Water Samples Collected on January 15, 2019)

Event 71

Prepared For

Larry Walker Associates
720 Wilshire Blvd., Suite 207
Santa Monica, CA 90401

Prepared By

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

February 2019



Table of Contents

	Page
1. INTRODUCTION	1
2. COLLECTION AND DELIVERY OF AMBIENT WATER SAMPLES	1
3. TOXICITY TEST PROCEDURES FOR AMBIENT WATERS	2
3.1 Survival and Reproduction Chronic Toxicity Testing with <i>Ceriodaphnia dubia</i>	2
3.1.1 Reference Toxicant Testing of the <i>Ceriodaphnia dubia</i>	3
4. RESULTS OF THE AMBIENT WATER TOXICITY EVALUATIONS.....	4
4.1. Effects of Calleguas Creek Ambient Waters on <i>Ceriodaphnia dubia</i>	4
4.1.2 Reference Toxicant Toxicity to <i>Ceriodaphnia dubia</i>	8
5. SUMMARY AND CONCLUSIONS.....	9
5.1 QA/QC Summary.....	9

Appendices

Appendix A	Chain-of-Custody Record for the Collection and Delivery of the Calleguas Creek Ambient Water Samples
Appendix B	Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to <i>Ceriodaphnia dubia</i> : Data Analyses Excluding Statistical Outliers
Appendix C	Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to <i>Ceriodaphnia dubia</i> : Data Analyses Including Statistical Outliers
Appendix D	Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the <i>Ceriodaphnia dubia</i>

1. INTRODUCTION

In support of the Calleguas Creek Watershed Monitoring Program, Larry Walker Associates (LWA) has contracted Pacific EcoRisk (PER) to evaluate the potential toxicity of surface waters and sediments collected from within the Calleguas Creek Watershed. The current evaluation, which comprises Event 71 of the overall study, consisted of performing the following U.S. EPA toxicity test:

- 3-brood (6-8 day) survival and reproduction chronic toxicity test with the crustacean *Ceriodaphnia dubia*.

In order to evaluate the magnitude of any observed toxicity, all water samples were tested using a series of sample dilutions (100%, 50%, 25%, 12.5%, and 6.25%). In order to document that the test organisms were responding to toxic stress in a typical fashion, reference toxicant tests were also performed. This report describes and summarizes the performance and results of the Event 71 surface water toxicity testing performed in support of the Calleguas Creek Watershed Monitoring Program.

2. COLLECTION AND DELIVERY OF AMBIENT WATER SAMPLES

On January 15, 2019, Kinnetic Laboratories, Inc. (KLI) collected ambient water samples from seven locations within the Calleguas Creek watershed (Table 1). Each water sample was collected into two pre-cleaned 5-gallon fluorocarbon-lined polyethylene jerricans. The samples were transported on ice and under chain-of-custody to the PER laboratory facility in Fairfield, CA, arriving approximately 24 hrs after collection. Upon receipt at the testing laboratory, aliquots of each water sample were collected for analysis of initial water quality characteristics (Table 2). The remainder of the water samples were stored at 0-6°C. All initial surface water tests were initiated within 36 hrs of sample collection. The chain-of-custody record for the collection and delivery of these samples is presented in Appendix A.

Station Code	Sample Collection Date (Time)	Test Initiation Date (Time)
UNIV	1/15/19 (1810)	1/16/19 (1411)
ADOLF	1/15/19 (1750)	1/16/19 (1424)
WOOD	1/15/19 (1515)	1/16/19 (1550)
UPLAND	1/15/19 (1910)	1/16/19 (1401)
HITCH	1/15/19 (1710)	1/16/19 (1514)
GATE	1/15/19 (1540)	1/16/19 (1515)
BELT	1/15/19 (1625)	1/16/19 (1306)

Sample ID	Temp (°C)	pH	D.O. (mg/L)	Alkalinity (mg/L as CaCO ₃)	Hardness (mg/L as CaCO ₃)	Conductivity (µS/cm)	Salinity (ppt)	Total Ammonia (mg/L)
71-UNIV-029	2.8	7.84	10.1	94	165	636	0.4	<1.0
71-ADOLF-072	2.4	7.88	11.7	85	126	489	0.3	<1.0
71-WOOD-124	1.3	7.83	10.3	56	191	594	0.3	<1.0
71-UPLAND-154	2.8	7.84	11.4	72	148	440	0.3	1.0
71-HITCH-160	2.7	7.84	11.3	94	193	703	0.4	<1.0
71-GATE-207	2.0	8.00	11.6	146	245	876	0.5	<1.0
71-BELT-210	3.0	8.14	11.3	87	166	553	0.3	<1.0

3. TOXICITY TEST PROCEDURES FOR AMBIENT WATERS

The Calleguas Creek ambient waters were tested for toxicity using the following chronic toxicity test:

- Water samples with a conductivity <3000 µS/cm were tested using the 3-brood (6-8 day) survival and reproduction test with the freshwater crustacean *C. dubia*.

The methods used in conducting the chronic toxicity tests (and any follow-up TIEs) followed the guidance established by the following EPA manual:

- Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition" (EPA-821-R-02-013).

3.1 Survival and Reproduction Chronic Toxicity Testing with *Ceriodaphnia dubia*

The chronic toxicity test with *C. dubia* consists of exposing individual females to the ambient water samples for the length of time it takes for the Lab Control treatment females to produce three broods (typically 6-8 days), after which effects on survival and reproduction are evaluated. The specific procedures used in these tests are described below.

The Lab Water Control medium for this test consisted of a modified EPA moderately-hard water. For each water sample, the Lab Control water and 100% water sample were used to prepare test solutions at additional interim test treatment concentrations of 6.25%, 12.5%, 25%, and 50% ambient water. For each treatment, 200 mL aliquots of test solution were amended with the alga *Selenastrum capricornutum* and Yeast-Cerophyll®-Trout Food (YCT) to provide food for the test organisms. "New" water quality characteristics (pH, D.O., and conductivity) were measured on these food-amended test solutions prior to use in these tests.

There were 10 replicates each for each test treatment, each replicate consisting of 15 mL of test solution in a 30-mL plastic cup. These "3-brood" tests were initiated by allocating one neonate

(<24 hrs old, and within 8 hours of age) *C. dubia*, obtained from in-house laboratory cultures, into each replicate cup. The replicate cups were placed into a temperature-controlled room at 25°C, under cool-white fluorescent lighting on a 16L:8D photoperiod.

Each test replicate cup was examined daily, with surviving organisms being transferred to the corresponding new cup containing fresh test solution. The contents of each remaining “old” replicate cup were carefully examined, and the number of neonate offspring produced by each original organism was determined, after which “old” water quality characteristics (pH, D.O., and conductivity) were measured for the “old” test solution from one randomly-selected replicate at each treatment.

After it was determined that $\geq 60\%$ of the *C. dubia* in a Lab Water Control treatment had produced their third brood of offspring, the corresponding ambient water test was terminated. The resulting survival and reproduction (number of offspring) data were analyzed to evaluate any impairment(s) caused by the effluent sample; all statistical analyses were made using CETIS® (TidePool Scientific Software, McKinleyville, CA).

3.1.1 Reference Toxicant Testing of the *Ceriodaphnia dubia*

In order to assess the sensitivity of the *C. dubia* test organisms to toxic stress, a concurrent reference toxicant test was performed. This reference toxicant test was performed similarly to the ambient water test except that test solutions consisted of Lab Water Control medium spiked with NaCl at test concentrations of 500, 1000, 1500, 2000, and 2500 mg/L. The resulting test response data were statistically analyzed to determine key concentration-response point estimates (e.g., EC50); all statistical analyses were made using CETIS®. These response endpoints were then compared to the typical response range established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

4. RESULTS OF THE AMBIENT WATER TOXICITY EVALUATIONS

4.1 Effects of Calleguas Creek Ambient Water on *Ceriodaphnia dubia*

The results of the ambient water tests with *C. dubia* are summarized below in Tables 3 through 9. There were no significant reductions in survival in the Calleguas Creek ambient waters. There was a significant reduction in reproduction in the 71-UPLAND-154 Calleguas Creek ambient water sample.

There were no significant reductions in reproduction in the remaining Calleguas Creek ambient waters.

The test data and summary of statistical analyses for these tests, excluding statistical outliers where appropriate, are presented in Appendix B; the summary of statistical analyses for these tests, including statistical outliers, is presented in Appendix C.

Table 3. Effects of Ambient Water 71-UNIV-029 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	38.3 ^b
6.25%	100	39.7
12.5%	100	42.4 ^b
25%	100	43.5
50%	100	42.5 ^b
100%	100	40.9
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 4. Effects of Ambient Water 71-ADOLF-072 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	34.4
6.25%	100	34.4
12.5%	100	40.4
25%	100	41.2 ^b
50%	100	34.0
100%	100	32.1
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 5. Effects of Ambient Water 71-WOOD-124 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	30.9
6.25%	100	33.3
12.5%	100	28.6
25%	100	29.6
50%	100	36.9 ^b
100%	100	28.7
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 6. Effects of Ambient Water 71-UPLAND-154 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	30.3
6.25%	90	32.7 ^b
12.5%	100	32.4
25%	100	26.0
50%	90	26.1
100%	90	16.3*
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	50% ambient water
TUc (where TUc = 100/NOEC) =	1	2
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	61.3% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

* - The test response at this treatment was significantly less than the Control treatment response ($p < 0.05$).

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 7. Effects of Ambient Water 71-HITCH-160 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	Mean % Survival	Mean Reproduction (# neonates/female)
Lab Water Control	100	31.9 ^b
6.25%	100	34.1
12.5%	100	38.2
25%	100	34.9
50%	100	34.6
100%	90	30.9
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 8. Effects of Ambient Water 71-GATE-207 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	Mean % Survival	Mean Reproduction (# neonates/female)
Lab Water Control	100	34.1
6.25%	90	33.6
12.5%	100	38.6 ^b
25%	100	41.6 ^b
50%	100	33.9
100%	100	33.7
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 9. Effects of Ambient Water 71-BELT-210 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	Mean % Survival	Mean Reproduction (# neonates/female)
Lab Water Control	100	31.9
6.25%	100	34.1
12.5%	100	41.8 ^b
25%	100	39.5
50%	100	42.6
100%	100	43.6
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

4.1.2 Reference Toxicant Toxicity to *Ceriodaphnia dubia*

The results of this test are summarized below in Table 10. The EC50 and IC50 for these tests were both consistent with the typical response ranges established by the reference toxicant test database for this species, thus providing further evidence that the organisms used for ambient water testing were responding to toxic stress in a typical and consistent fashion. The test data and summary of statistical analyses for this test are presented in Appendix D.

Table 10. Reference toxicant testing: effects of NaCl on <i>Ceriodaphnia dubia</i> .		
NaCl Treatment (mg/L)	Mean % Survival	Mean Reproduction (# neonates/female)
Lab Water Control	100	33.4
500	100	31.3
1000	100	24.4*
1500	100	24.2*
2000	40*	2.1
2500	0*	-
Summary of Statistics		
Survival EC50 or Reproduction IC50 =	1920 mg/L NaCl	1670 mg/L NaCl
Typical Response Range (mean ± 2 SD)	1800 - 2222 mg/L NaCl	1345 - 1860 mg/L NaCl

* The response at this test treatment was significantly less than the Lab Control treatment response at p<0.05

5. SUMMARY AND CONCLUSIONS

Effects of Calleguas Creek Ambient Waters on *Ceriodaphnia dubia*

There were no significant reductions in survival in the Calleguas Creek ambient waters. There was a significant reduction in reproduction in the 71-UPLAND-154 Calleguas Creek ambient water sample.

There were no significant reductions in reproduction in the remaining Calleguas Creek ambient waters.

Toxicity Summary for Calleguas Creek: Event 71 Ambient Waters.		
Sample Station ID	Toxicity relative to the Lab Control treatment?	
	<i>Ceriodaphnia dubia</i>	
	Survival	Reproduction
71-UNIV-029	no	no
71-ADOLF-072	no	no
71-WOOD-124	no	no
71-UPLAND-154	no	YES
71-HITCH-160	no	no
71-GATE-207	no	no
71-BELT-210	no	no

5.1 QA/QC Summary

Test Conditions – All test conditions (pH, D.O., temperature, etc.) were all within acceptable limits during testing. All test analyses were performed according to laboratory Standard Operating Procedures.

Negative Control – The biological responses for the test organisms in the Lab Control treatments were within acceptable limits.

Positive Control – All reference toxicant test results were consistent with the “typical response” ranges established by the reference toxicant test database, indicating that these test organisms were responding to toxic stress in a typical fashion.

Concentration Response Relationships – The concentration-response relationships for these tests were evaluated as per EPA guidelines (EPA-821-B-00-004), and were determined to be acceptable.

Appendix A

Chain-of-Custody Record for the Collection and Delivery of the Calleguas Creek Ambient Water Samples

Appendix B

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to *Ceriodaphnia dubia*: Data Analyses Excluding Statistical Outliers

CETIS Summary Report

Report Date: 05 Feb-19 08:20 (p 1 of 2)
 Test Code: 81005 | 20-7653-1358

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 10-4134-9882	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 16 Jan-19 14:11	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 16:06	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 2h	Source: In-House Culture	Age: 1

Sample ID: 13-8356-9860	Code: 71-UNIV-029	Client: Larry Walker Associates
Sample Date: 15 Jan-19 18:10	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 20h (2.8 °C)	Station: UNIV	

Comments:
 Stats exclude reproductive outliers LWC-I, 12.5J, 50 D

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
00-7338-1063	Reproduction	Bonferroni Adj t Test	100	> 100	n/a	1	11.0%
21-4103-3387	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
04-8002-9060	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	38.3	36.7	40	35	41	0.707	2.12	5.53%	0.00%
6.25		10	39.7	37.6	41.8	34	44	0.943	2.98	7.51%	-3.57%
12.5		8	42.4	40.2	44.5	39	46	0.905	2.56	6.04%	-10.54%
25		10	43.5	40.1	46.9	33	51	1.52	4.81	11.06%	-13.48%
50		8	42.5	39	46	34	46	1.48	4.17	9.82%	-10.87%
100		9	40.9	37.4	44.4	33	47	1.53	4.59	11.24%	-6.67%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date:

05 Feb-19 08:20 (p 2 of 2)

Test Code:

81005 | 20-7653-1358

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	40	41	35	36	39	38	41	37		38
6.25		37	39	37	40	42	44	41	34	41	42
12.5		39	46	43	42	40	40	45	44		
25		47	45	43	44	45	41	51	40	46	33
50		39	43	46		34	46	43	46	43	
100		42	47	41	33	42	34	42	42	45	
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	

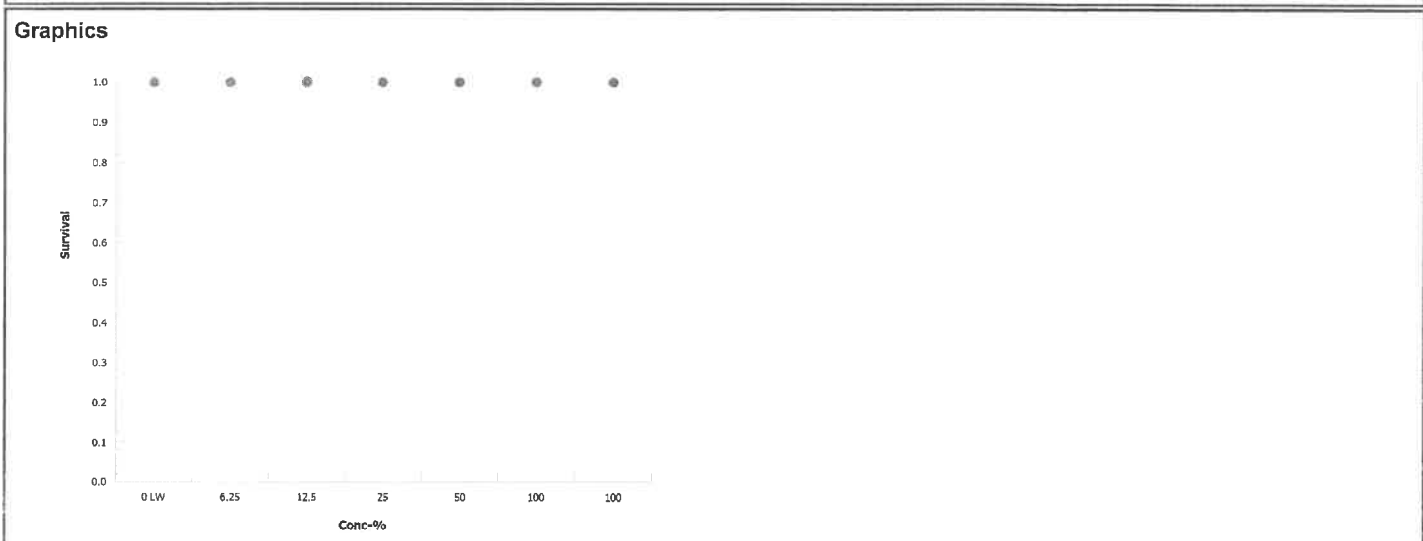
CETIS Analytical Report

Report Date: 05 Feb-19 08:20 (p 1 of 1)
 Test Code: 81005 | 20-7653-1358

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk			
Analysis ID: 21-4103-3387	Endpoint: Survival			CETIS Version: CETISv1.9.2		
Analyzed: 30 Jan-19 10:00	Analysis: STP 2xK Contingency Tables			Official Results: Yes		
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	
Untransformed	C > T	100	> 100	n/a	1	

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		9	0	9	1	0	0.0%
25		10	0	10	1	0	0.0%
50		9	0	9	1	0	0.0%
100		9	0	9	1	0	0.0%



Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 00-7338-1063 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 05 Feb-19 8:19 Analysis: Parametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	10.99%

Bonferroni Adj t Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	-0.801	2.41	4.1	17	CDF	1.0000	Non-Significant Effect
		12.5	-2.24	2.41	4.34	15	CDF	1.0000	Non-Significant Effect
		25	-3.03	2.41	4.1	17	CDF	1.0000	Non-Significant Effect
		50	-2.31	2.41	4.34	15	CDF	1.0000	Non-Significant Effect
		100	-1.46	2.41	4.21	16	CDF	1.0000	Non-Significant Effect

ANOVA Table

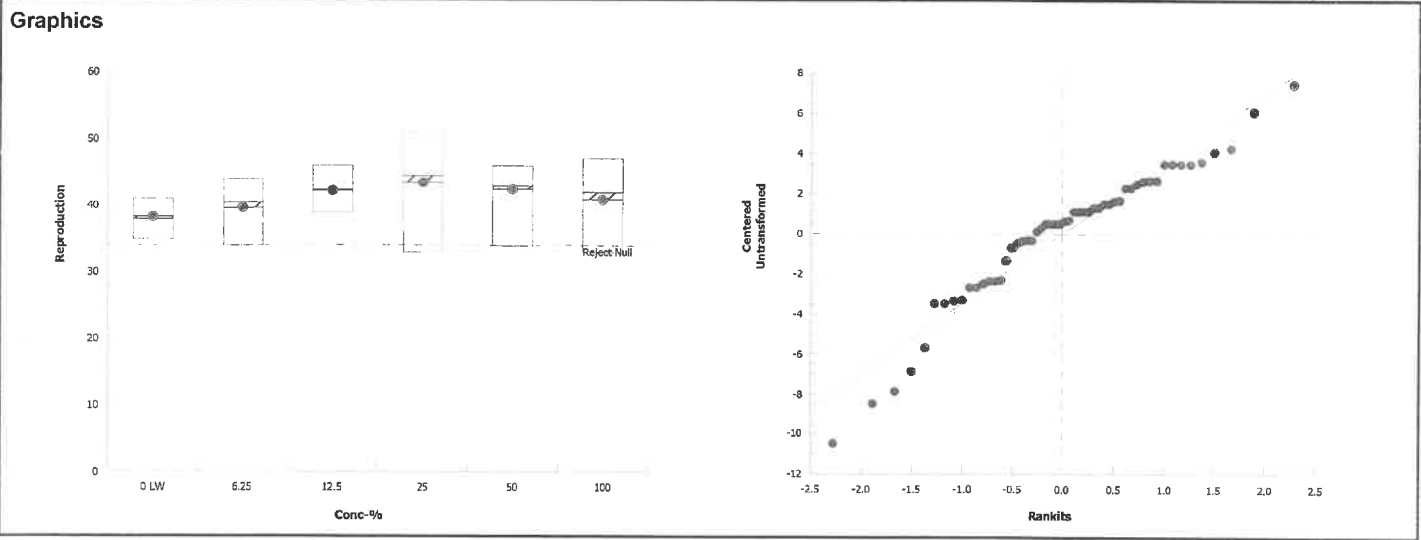
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	174.784	34.9569	5	2.54	0.0408	Significant Effect
Error	661.364	13.7784	48			
Total	836.148		53			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	7.96	15.1	0.1584	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.946	0.941	0.0159	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	9	38.3	36.7	40	38	35	41	0.707	5.53%	0.00%
6.25		10	39.7	37.6	41.8	40.5	34	44	0.943	7.51%	-3.57%
12.5		8	42.4	40.2	44.5	42.5	39	46	0.905	6.04%	-10.54%
25		10	43.5	40.1	46.9	44.5	33	51	1.52	11.06%	-13.48%
50		8	42.5	39	46	43	34	46	1.48	9.82%	-10.87%
100		9	40.9	37.4	44.4	42	33	47	1.53	11.24%	-6.67%



CETIS Analytical Report

Report Date: 05 Feb-19 08:20 (p 1 of 1)
 Test Code: 81005 | 20-7653-1358

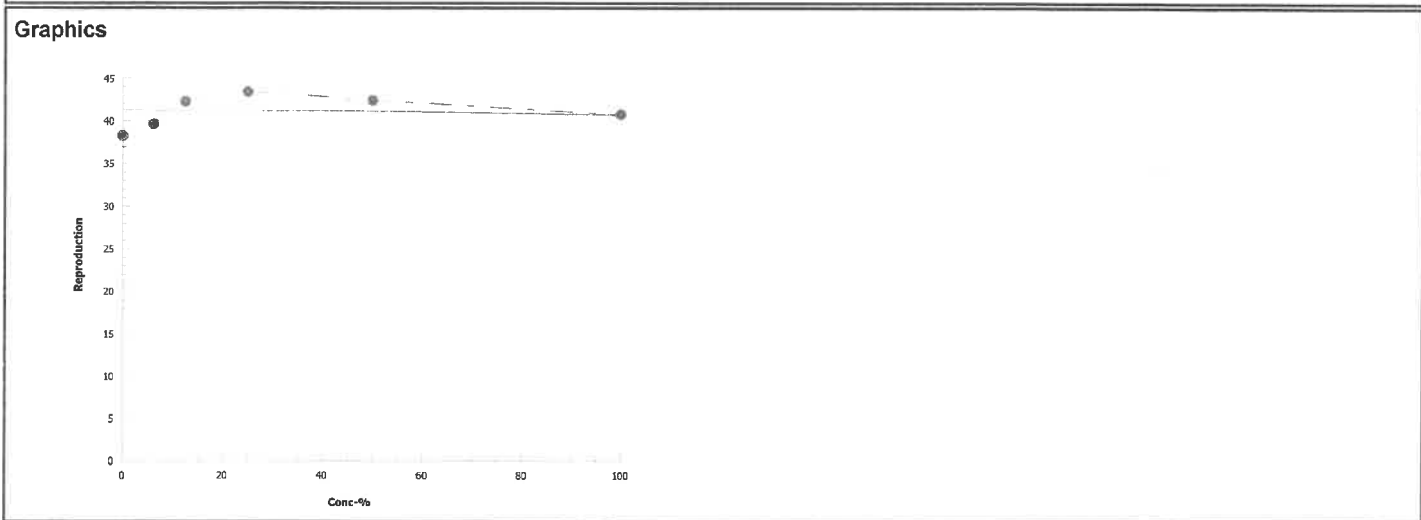
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 04-8002-9060 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 05 Feb-19 8:19 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	759969	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	38.3	35	41	0.707	2.12	5.53%	0.0%
6.25		10	39.7	34	44	0.943	2.98	7.51%	-3.57%
12.5		8	42.4	39	46	0.905	2.56	6.04%	-10.5%
25		10	43.5	33	51	1.52	4.81	11.10%	-13.5%
50		8	42.5	34	46	1.48	4.17	9.82%	-10.9%
100		9	40.9	33	47	1.53	4.59	11.20%	-6.67%



Analyst:  QA: 

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-UNIV Test Date: 1/16/19
 Project #: 29677 Test ID: 81005 Randomization: 10-75 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF								
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	Date	New WQ	Test Init.	Counts	Time				
0	7.81		10.0		360	24.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/16/19	New WQ: J0	Test Init.: KB	Counts: 41	Time: 1411
1	7.90	7.73	10.2	8.1	358	25.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/17/19	New WQ: JM	Test Init.: JZ	Counts: 154	Time: 1534
2	7.92	7.77	9.7	7.9	355	25.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/18/19	New WQ: TA	Test Init.: TR	Counts: 100	Time: 1500
3	7.81	7.67	10.0	7.9	360	25.2	0	0	0	7	7	0	6	0	0	0	0	0	0	0	Date: 1/19/19	New WQ: TA	Test Init.: JB	Counts: 200	Time: 1520
4	7.76	7.72	10.2	7.8	360	25.1	6	7	6	5	0	0	8	1	7	7	0	0	0	0	Date: 1/20/19	New WQ: SF	Test Init.: KL	Counts: 1448	Time: 1548
5	7.86	7.70	9.5	7.1	334	24.9	14	15	11	12	13	12	15	13	12	13	0	0	0	0	Date: 1/21/19	New WQ: ER	Test Init.: R	Counts: 1534	Time: 1534
6	-	7.54	-	7.0	355	24.2	20	19	18	19	19	19	18	17	0	18	0	0	0	0	Date: 1/22/19	New WQ: -	Test Init.: ER	Counts: 1000	Time: 1600
7																					Date:	New WQ:	Test Init.:	Counts:	Time:
8																					Date:	New WQ:	Test Init.:	Counts:	Time:
Total=							40	41	35	36	39	38	41	37	19	38	Mean Neonates/Female = 36.4								

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID								
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	Date	New WQ	Test Init.	Counts	Time				
0	7.87		10.0		371	25.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
1	7.93	7.72	10.6	7.9	378	25.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
2	7.96	7.86	9.7	7.9	379	25.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
3	7.85	7.73	9.7	7.9	377	25.2	0	4	0	0	0	0	0	0	0	0	0	0	0	0					
4	7.79	7.69	10.4	6.8	371	24.7	5	0	6	8	6	6	6	0	7	6	0	0	0	0					
5	7.86	7.69	9.6	7.3	351	24.3	11	13	12	12	15	15	13	13	14	13	0	0	0	0					
6	-	NM	-	NM	NM	24.2	21	22	19	20	21	23	22	21	20	23	0	0	0	0					
7																									
8																									
Total=							37	39	36	40	42	42	41	34	41	42	Mean Neonates/Female = 39.7								

37
APC
1/30/19

44
APC
1/30/19

APF
1/30/19

39.7

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-UNIV Test Date: 11/10/19
 Project #: 29677 Test ID: 81005 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
12.5%	0	7.87		10.0		399	24.5	0	0	0	0	0	0	0	0	0	0	0	
	1	7.93	7.71	10.5	7.7	397	25.7	0	0	0	0	0	0	0	0	0	0	0	
	2	7.93	7.83	9.8	8.0	397	25.4	0	0	0	0	0	0	0	0	0	0	0	
	3	7.85	7.78	9.6	8.1	395	25.2	0	0	0	0	0	0	0	0	0	0	0	
	4	7.80	7.82	10.6	7.2	393	24.9	6	5	6	7	6	5	5	5	8	6		
	5	7.85	7.74	9.7	7.0	370	23.6	14	15	14	14	12	13	-	15	13	15		
	6	-	7.54	-	7.3	418	24.3	19	26	23	21	22	22	-	25	23	0		
	7													-					
	8													-					
Total=							39	46	43	42	40	40	-	45	42	21		Mean Neonates/Female = <u>39.8400</u>	
25%	0	7.86		10.4		433	24.5	0	0	0	0	0	0	0	0	0	0		
	1	7.93	7.6	10.4	7.6	435	25.9	0	0	0	0	0	0	0	0	0	0		
	2	7.91	7.87	9.8	7.8	433	25.5	0	0	0	0	0	0	0	0	0	0		
	3	7.85	7.82	9.6	8.3	435	25.3	0	0	0	0	0	0	0	0	0	0		
	4	7.80	7.89	10.6	7.8	427	25.3	5	7	7	6	8	6	7	6	6	6		
	5	7.82	7.72	9.7	7.2	406	24.9	16	14	15	14	16	14	17	12	15	11		
	6	-	7.55	-	7.2	447	24.2	26	24	21	24	21	21	27	22	25	10		
	7																		
	8																		
Total=							47	45	43	44	45	41	51	40	46	33		Mean Neonates/Female = <u>43.5</u>	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-UNIV Test Date: 1/16/19
 Project #: 29677 Test ID: 81005 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction								SIGN-OFF		
		New	Old	New	Old			A	B	C	D	E	F	G	H		I	J
50%	0	7.85		10.4		505	24.4	0	0	0	0	0	0	0	0	0	0	
	1	7.90	7.73	9.9	7.8	493	25.9	0	0	0	0	0	0	0	0	0	0	
	2	7.87	7.93	9.7	8.1	499	25.6	0	0	0	0	-	0	0	0	0	0	
	3	7.81	7.85	9.7	8.4	503	25.7	0	0	0	0	-	4	0	0	0	0	
	4	7.75	7.93	10.1	8.1	497	25.3	5	6	6	5	-	0	6	6	6	6	
	5	7.77	7.75	9.6	7.5	484	25.1	12	13	16	15	-	12	14	13	15	15	
	6	-	7.66	-	7.3	535	24.6	22	24	24	0	-	18	20	24	25	22	
	7											-						
	8											-						
Total=							39	43	46	20	-	34	46	43	46	43	Mean Neonates/Female = 36.0 40.9	
100%	0	7.83		10.0		643	24.6	0	0	0	0	0	0	0	0	0	0	
	1	7.86	7.79	9.7	7.8	634	25.9	0	0	0	0	0	0	0	0	0	0	
	2	7.85	7.97	9.1	8.2	633	25.6	0	0	0	0	0	0	0	0	0	0	
	3	7.75	7.91	9.2	8.4	648	25.8	0	0	0	0	0	0	0	0	0	0	
	4	7.66	7.97	9.6	8.3	638	25.0	5	7	5	0	0	6	5	5	6	6	
	5	7.68	7.77	8.9	7.5	636	25.1	14	14	13	-	13	13	10	13	13	14	
	6	-	7.72	-	6.9	707	24.6	23	26	23	-	20	23	19	24	23	25	
	7											-						
	8											-						
Total=							42	47	41	-	33	42	34	42	42	45	Mean Neonates/Female = 40.9	

CETIS Summary Report

Report Date: 23 Jan-19 11:48 (p 1 of 2)
 Test Code: 81006 | 13-7894-5167

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 10-9499-7107	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford
Start Date: 16 Jan-19 14:24	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 16:20	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 2h	Source: In-House Culture	Age: 1

Sample ID: 18-6568-3025	Code: 71-ADOLF-072	Client: Larry Walker Associates
Sample Date: 15 Jan-19 17:50	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 21h (2.4 °C)	Station: ADOLF	

Comments:
 Excludes Reproductive Outlier 25-l.

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
07-3936-2796	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	23.2%
16-3594-1576	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
08-7515-6188	Reproduction	Linear Interpolation (ICPIN)	IC5	38	30.5	n/a	2.629	
			IC10	54.1	35.9	n/a	1.849	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	34.4	32.3	36.5	31	41	0.945	2.99	8.69%	0.00%
6.25		10	34.4	27.4	41.4	20	45	3.1	9.8	28.49%	0.00%
12.5		10	40.4	38.2	42.6	34	45	0.98	3.1	7.67%	-17.44%
25		9	41.2	37.4	45	30	45	1.66	4.97	12.06%	-19.83%
50		10	34	26.1	41.9	9	44	3.49	11	32.46%	1.16%
100		10	32.1	26.2	38	17	40	2.6	8.23	25.62%	6.69%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date:

23 Jan-19 11:48 (p 2 of 2)

Test Code:

81006 | 13-7894-5167

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	34	38	34	41	32	33	31	33	33	35
6.25		43	21	33	45	38	39	42	20	41	22
12.5		41	45	34	43	37	42	41	41	39	41
25		37	43	30	40	45	45	45	43		43
50		36	39	37	39	39	19	44	9	41	37
100		37	30	36	30	39	40	39	19	34	17
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

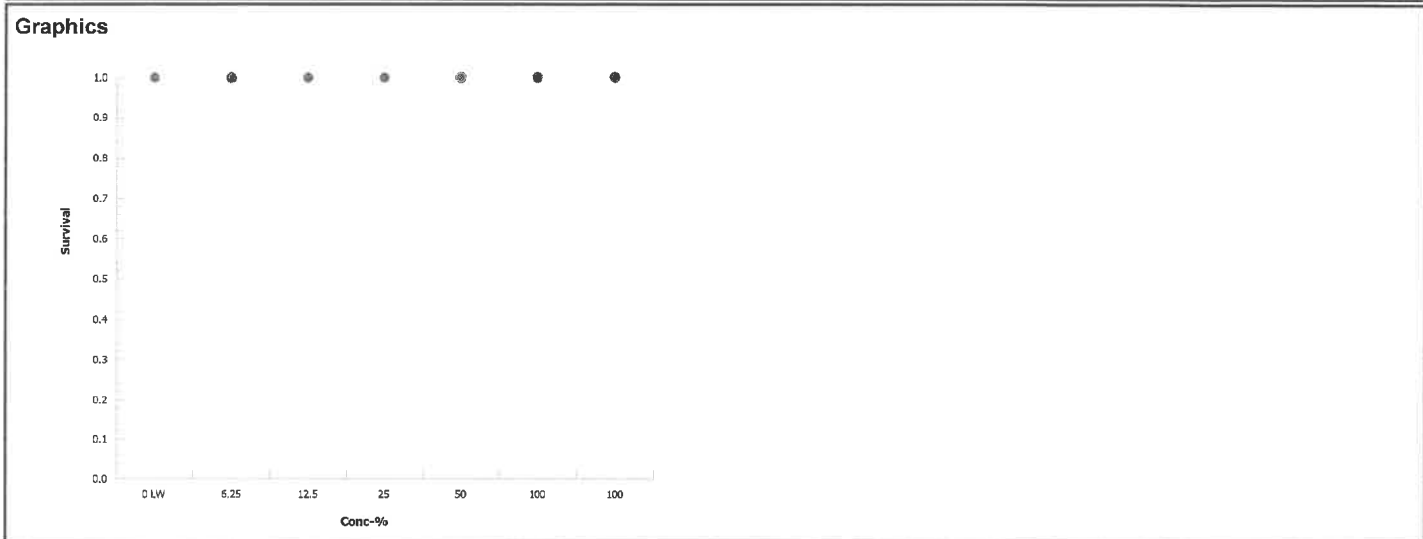
CETIS Analytical Report

Report Date: 23 Jan-19 11:48 (p 1 of 1)
 Test Code: 81006 | 13-7894-5167

Ceriodaphnia Survival and Reproduction Test					Pacific EcoRisk	
Analysis ID: 16-3594-1576	Endpoint: Survival	CETIS Version: CETISv1.9.2				
Analyzed: 23 Jan-19 10:28	Analysis: STP 2xK Contingency Tables	Official Results: Yes				
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	
Untransformed	C > T	100	> 100	n/a	1	

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



CETIS Analytical Report

Report Date: 23 Jan-19 11:48 (p 1 of 1)
 Test Code: 81006 | 13-7894-5167

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 07-3936-2796 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 10:30 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	23.20%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	116	n/a	3	18	Exact	1.0000	Non-Significant Effect
		12.5	146	n/a	2	18	Exact	1.0000	Non-Significant Effect
		25	122	n/a	0	17	Exact	1.0000	Non-Significant Effect
		50	126	n/a	1	18	Exact	1.0000	Non-Significant Effect
		100	104	n/a	1	18	Exact	1.0000	Non-Significant Effect

ANOVA Table

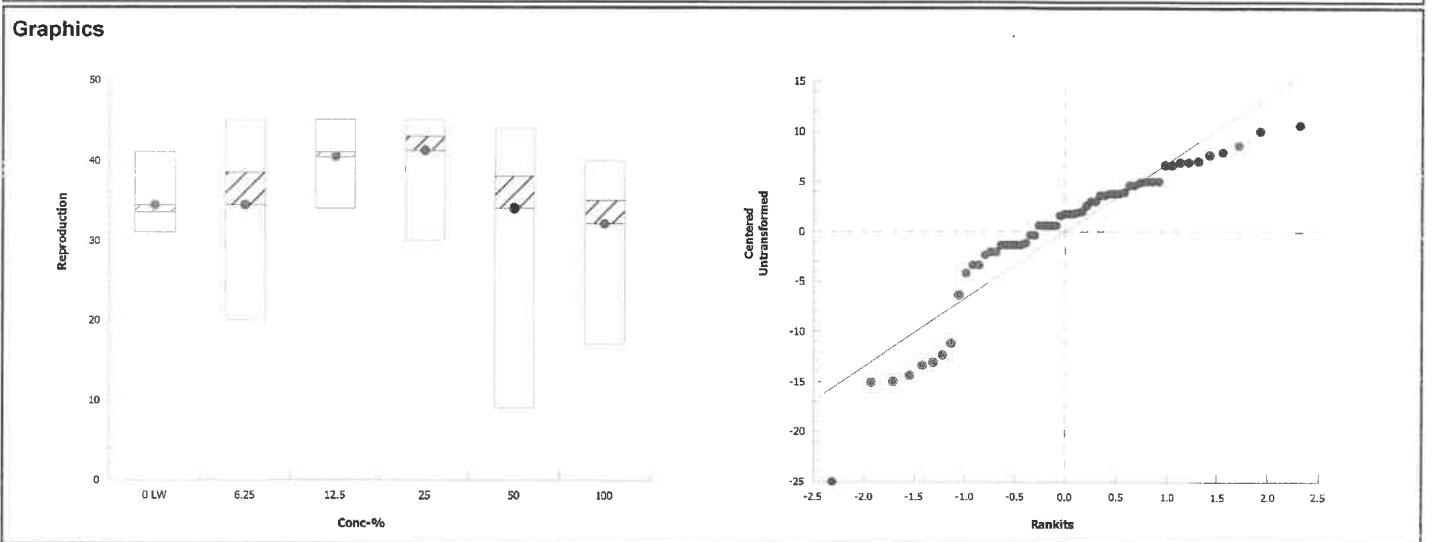
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	682.344	136.469	5	2.47	0.0442	Significant Effect
Error	2933.66	55.352	53			
Total	3616		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	23.7	15.1	2.4E-04	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.881	0.945	3.3E-05	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	34.4	32.3	36.5	33.5	31	41	0.945	8.69%	0.00%
6.25		10	34.4	27.4	41.4	38.5	20	45	3.1	28.49%	0.00%
12.5		10	40.4	38.2	42.6	41	34	45	0.98	7.67%	-17.44%
25		9	41.2	37.4	45	43	30	45	1.66	12.06%	-19.83%
50		10	34	26.1	41.9	38	9	44	3.49	32.46%	1.16%
100		10	32.1	26.2	38	35	17	40	2.6	25.62%	6.69%



CETIS Analytical Report

Report Date: 23 Jan-19 11:48 (p 1 of 1)
 Test Code: 81006 | 13-7894-5167

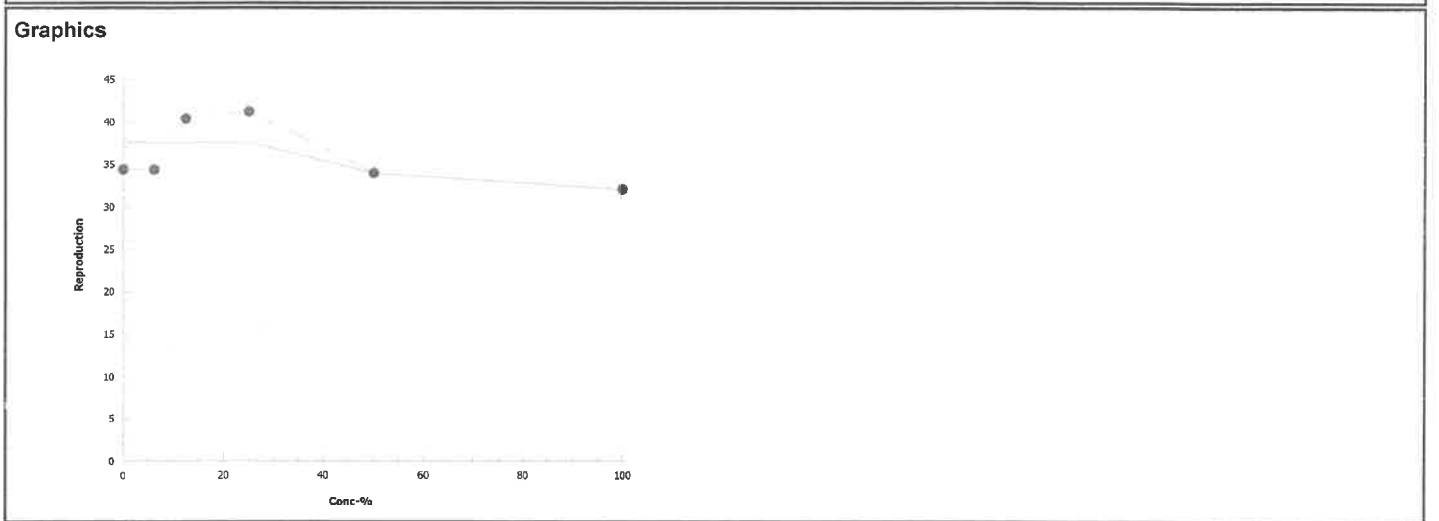
Ceriodaphnia Survival and Reproduction Test	Pacific EcoRisk
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Analysis ID: 08-7515-6188	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 23 Jan-19 10:30	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1405854	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	38	30.5	n/a	2.629	n/a	3.282
IC10	54.1	35.9	n/a	1.849	n/a	2.783
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a > <td <1	n/a	n/a	
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	34.4	31	41	0.945	2.99	8.69%	0.0%
6.25		10	34.4	20	45	3.1	9.8	28.50%	0.0%
12.5		10	40.4	34	45	0.98	3.1	7.67%	-17.4%
25		9	41.2	30	45	1.66	4.97	12.10%	-19.8%
50		10	34	9	44	3.49	11	32.50%	1.16%
100		10	32.1	17	40	2.6	8.23	25.60%	6.69%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-ADOLF Test Date: 1/16/19
 Project #: 29677 Test ID: 81006 Randomization: 107.7 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.65		10.1		360	24.2	0	0	0	0	0	0	0	0	0	0	0	Date: 1/16/19 New WQ: <u>K6</u> Test Init.: <u>R6</u> Sol'n Prep: <u>K6</u> <u>LZ</u> Time: <u>1422</u>
1	7.83	7.96	10.1	7.9	357	25.4	0	0	0	0	0	0	0	0	0	0	0	Date: 1/17/19 New WQ: <u>DM</u> Counts: <u>26</u> Sol'n Prep: <u>LZ</u> Old WQ: <u>TA</u> Time: <u>1328</u>
2	7.91	7.79	9.6	7.8	352	25.3	0	0	0	0	0	0	0	0	0	0	0	Date: 1/18/19 New WQ: <u>TA</u> Counts: <u>TC</u> Sol'n Prep: <u>SD</u> Old WQ: <u>TA</u> Time: <u>1430</u>
3	7.87	7.67	9.3	8.0	361	25.2	5	0	0	0	7	6	0	0	5	0	0	Date: 1/19/19 New WQ: <u>TA</u> Counts: <u>TC</u> Sol'n Prep: <u>SMC</u> Old WQ: <u>TP</u> Time: <u>1430</u>
4	7.81	7.81	7.6	7.0	355	24.3	0	8	6	8	0	0	7	8	0	8	0	Date: 1/20/19 New WQ: <u>TP</u> Counts: <u>K6</u> Sol'n Prep: <u>TC</u> Old WQ: <u>TP</u> Time: <u>1444</u>
5	7.83	7.65	9.5	7.8	322	24.7	14	14	12	15	13	12	12	11	15	14	0	Date: 1/21/19 New WQ: <u>CR</u> Counts: <u>CR</u> Sol'n Prep: <u>UC</u> Old WQ: <u>EV</u> Time: <u>1712</u>
6	—	7.47	—	7.0	350	24.0	15	16	16	18	15	12	14	13	13	0	0	Date: 1/22/19 New WQ: <u>—</u> Counts: <u>R6</u> Sol'n Prep: <u>—</u> Old WQ: <u>SR</u> Time: <u>1500</u> as 1/22/19
7											12							Date: <u>—</u> New WQ: <u>—</u> Counts: <u>—</u> Sol'n Prep: <u>—</u> Old WQ: <u>—</u> Time: <u>—</u>
8																		Date: <u>—</u> Old WQ: <u>—</u> Counts: <u>—</u> Time: <u>—</u>
Total=							34	38	34	41	32	33	31	33	33	35	0	Mean Neonates/Female = <u>34.4</u>

Day	pH		D.O.		Cond. (µS/cm)	Survival / Reproduction										Sample ID		
	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J			
0	7.65		10.1		376	24.2	0	0	0	0	0	0	0	0	0	0	0	51811
1	7.87	7.96	10.1	8.0	367	25.0	0	0	0	0	0	0	0	0	0	0	0	51811
2	7.93	7.82	9.7	7.7	367	25.1	0	0	0	0	0	0	0	0	0	0	0	51811
3	7.85	7.69	9.4	8.0	373	25.3	6	0	0	6	6	0	0	0	0	0	0	51811
4	7.83	7.87	10.1	7.3	367	25.1	0	8	5	0	0	7	6	6	7	8	0	51811
5	7.84	7.81	9.8	7.8	341	25.5	14	13	14	17	15	14	16	14	14	14	0	51811
6	—	7.49	—	6.7	384	24.4	23	14	14	22	17	18	20	0	20	0	0	—
7																		
8																		
Total=							43	21	33	45	38	39	42	20	41	22	0	Mean Neonates/Female = <u>34.4</u>

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-ADOLF Test Date: 1/16/19
 Project #: 29677 Test ID: 81006 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
12.5%	0	7.71		10.2		378	24.1	0	0	0	0	0	0	0	0	0	0	
	1	7.84	7.93	10.2	7.7	376	24.7	0	0	0	0	0	0	0	0	0	0	
	2	7.93	7.80	9.8	7.5	377	25.0	0	0	0	0	0	0	0	0	0	0	
	3	7.83	7.70	9.4	8.0	381	25.1	6	0	4	0	5	0	0	0	7	0	
	4	7.84	7.87	10.0	7.2	375	24.8	0	8	0	6	0	8	7	7	0	8	
	5	7.85	7.84	9.8	7.7	350	25.6	14	16	13	15	14	14	16	13	14		
	6	—	7.48	—	6.8	379	24.4	21	21	17	22	18	20	20	18	19	19	
	7																	
	8																	
Total=							41	45	34	43	37	42	41	41	39	41	Mean Neonates/Female = 40.4	
25%	0	7.67		10.5		397	24.3	0	0	0	0	0	0	0	0	0	0	
	1	7.88	7.90	10.4	7.7	390	25.2	0	0	0	0	0	0	0	0	0	0	
	2	7.93	7.80	9.8	7.4	391	25.1	0	0	0	0	0	0	0	0	0	0	
	3	7.82	7.74	9.4	8.3	402	25.0	5	0	0	0	7	0	0	0	0	0	
	4	7.82	7.87	9.9	7.3	390	24.7	0	6	5	5	0	6	7	6	5	7	
	5	7.85	7.85	9.8	7.7	367	25.1	13	15	11	14	15	15	14	15	10	15	
	6	—	7.47	—	6.7	396	25.1	19	22	14	21	23	24	24	22	0	21	
	7																	
	8																	
Total=							37	43	30	40	45	45	45	43	15	43	Mean Neonates/Female = 38.6	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-ADOLF Test Date: 1/16/19
 Project #: 29677 Test ID: 81006 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
50%	0	7.70		10.5		430	25.4	0	0	0	0	0	0	0	0	0	0	
	1	7.89	7.88	10.1	7.5	423	26.0	0	0	0	0	0	0	0	0	0	0	
	2	7.96	7.90	9.8	8.1	426	25.4	0	0	0	0	0	0	0	0	0	0	
	3	7.79	7.73	9.4	8.4	433	25.3	6	0	0	5	6	0	0	0	4	0	
	4	7.81	7.91	10.0	7.7	423	24.2	0	5	6	0	0	5	7	2	0	3	
	5	7.81	7.91	9.8	7.8	409	25.2	12	16	12	15	13	14	16	0	14	15	
	6	—	7.84	—	7.2	433	24.9	18	18	19	19	20	0	21	7	23	19	
	7																	
	8																	
Total=							36	39	37	39	39	19	44	9	41	37	Mean Neonates/Female = 34.0	
100%	0	7.67		10.7		495	24.9	0	0	0	0	0	0	0	0	0	0	
	1	7.85	7.92	10.3	7.8	488	25.0	0	0	0	0	0	0	0	0	0	0	
	2	7.87	7.89	9.8	8.2	488	25.0	0	0	0	0	0	0	0	0	0	0	
	3	7.76	7.76	9.5	8.3	501	25.2	0	0	0	6	5	0	0	0	0	0	
	4	7.76	7.99	10.2	8.0	489	24.9	3	4	3	0	0	5	6	4	5	5	
	5	7.77	7.91	9.9	8.1	490	24.2	13	5	13	3	14	15	14	15	14	12	
	6	—	7.86	—	7.2	503	25.1	21	21	20	21	20	20	19	0	15	0	
	7																	
	8																	
Total=							37	30	36	30	39	40	39	19	34	17	Mean Neonates/Female = 32.1	

CETIS Summary Report

Report Date: 05 Feb-19 08:13 (p 1 of 2)
 Test Code: 81011 | 03-3182-1165

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 06-2337-2341	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford
Start Date: 16 Jan-19 15:50	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 15:45	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d	Source: In-House Culture	Age: 1

Sample ID: 15-3985-5258	Code: 71-WOOD-124	Client: Larry Walker Associates
Sample Date: 15 Jan-19 15:15	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 25h (1.3 °C)	Station: WOOD	

Comments:
 Excludes Reproductive Outlier 50-C.

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
14-7997-3613	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	27.4%
02-8840-9861	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
00-9439-3323	Reproduction	Linear Interpolation (ICPIN)	IC5	69.8	4.61	n/a	1.432	
			IC10	96.3	10	n/a	1.038	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.9	24.8	37	17	41	2.71	8.57	27.73%	0.00%
6.25		10	33.3	27.5	39.1	19	42	2.55	8.06	24.19%	-7.77%
12.5		10	28.6	23.1	34.1	16	37	2.43	7.68	26.84%	7.44%
25		10	29.6	23.8	35.4	12	38	2.57	8.11	27.41%	4.21%
50		9	36.9	35.6	38.1	34	39	0.539	1.62	4.38%	-19.38%
100		9	28.7	21.6	35.8	14	40	3.08	9.23	32.21%	7.23%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 05 Feb-19 08:13 (p 2 of 2)
 Test Code: 81011 | 03-3182-1165

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	38	17	32	32	19	37	33	38	41	22
6.25		35	29	22	36	41	40	19	42	30	39
12.5		19	35	35	34	37	16	27	20	33	30
25		30	12	36	32	38	34	19	28	33	34
50		39	39		36	37	34	38	36	37	36
100		33	34	40	30	19	18	36	14	34	
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 23 Jan-19 12:37 (p 1 of 1)
 Test Code: 81011 | 03-3182-1165

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 02-8840-9861 Endpoint: Survival CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 12:35 Analysis: STP 2xK Contingency Tables Official Results: Yes

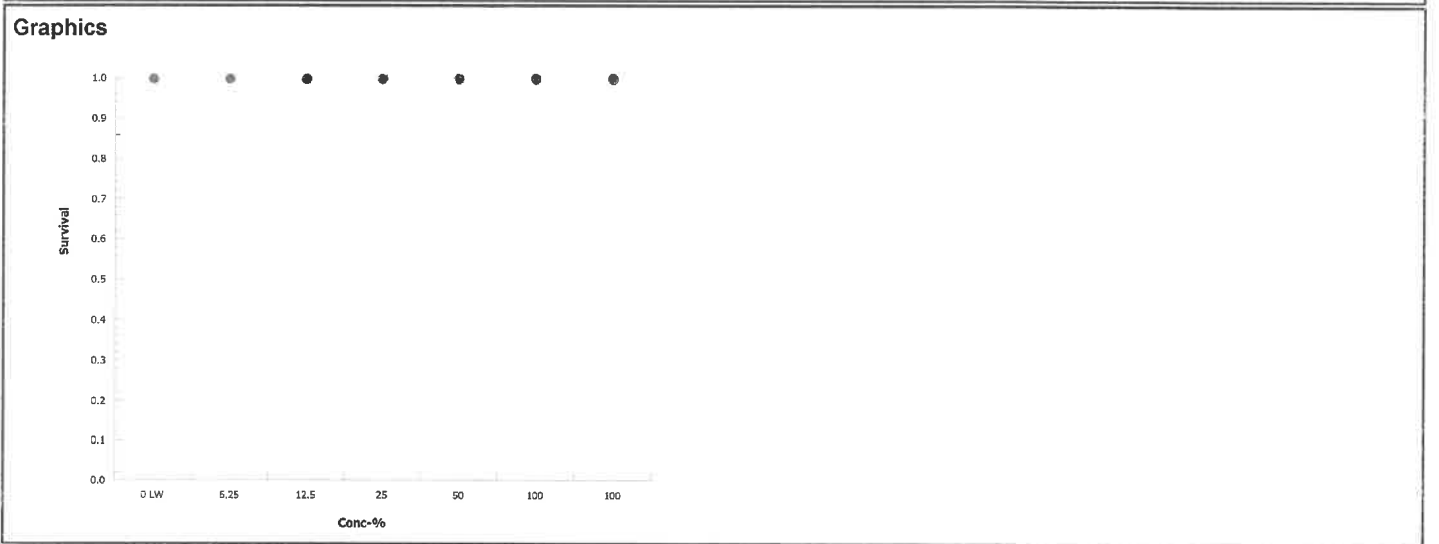
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		9	0	9	1	0	0.0%



CETIS Analytical Report

Report Date: 23 Jan-19 12:37 (p 1 of 1)
 Test Code: 81011 | 03-3182-1165

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 14-7997-3613 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 12:37 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	27.43%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	114	n/a	3	18	Exact	1.0000	Non-Significant Effect
		12.5	94.5	n/a	3	18	Exact	1.0000	Non-Significant Effect
		25	98	n/a	4	18	Exact	1.0000	Non-Significant Effect
		50	108	n/a	2	17	Exact	1.0000	Non-Significant Effect
		100	83	n/a	2	17	Exact	1.0000	Non-Significant Effect

ANOVA Table

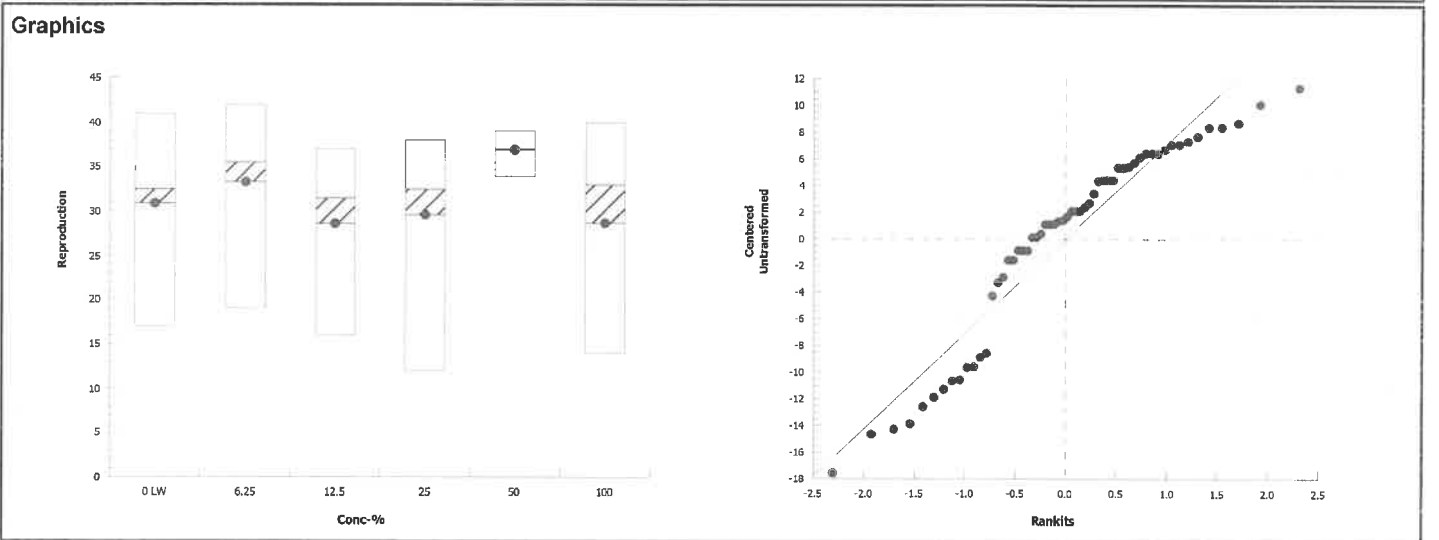
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	486.897	97.3795	5	1.65	0.1636	Non-Significant Effect
Error	3070.69	59.0517	52			
Total	3557.59		57			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	17.5	15.1	0.0037	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.914	0.944	5.6E-04	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30.9	24.8	37	32.5	17	41	2.71	27.73%	0.00%
6.25		10	33.3	27.5	39.1	35.5	19	42	2.55	24.19%	-7.77%
12.5		10	28.6	23.1	34.1	31.5	16	37	2.43	26.84%	7.44%
25		10	29.6	23.8	35.4	32.5	12	38	2.57	27.41%	4.21%
50		9	36.9	35.6	38.1	37	34	39	0.539	4.38%	-19.38%
100		9	28.7	21.6	35.8	33	14	40	3.08	32.21%	7.23%



CETIS Analytical Report

Report Date: 23 Jan-19 12:37 (p 1 of 1)
 Test Code: 81011 | 03-3182-1165

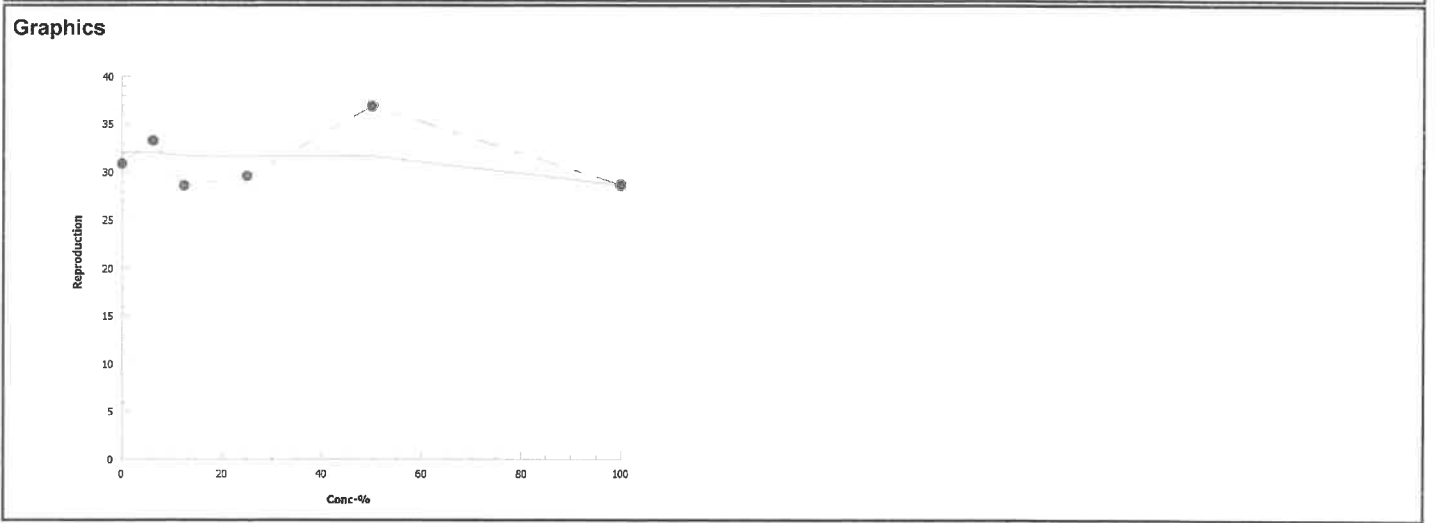
Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 00-9439-3323	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 23 Jan-19 12:37	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	687223	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	69.8	4.61	n/a	1.432	n/a	21.69
IC10	96.3	10	n/a	1.038	n/a	9.962
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.9	17	41	2.71	8.57	27.70%	0.0%
6.25		10	33.3	19	42	2.55	8.06	24.20%	-7.77%
12.5		10	28.6	16	37	2.43	7.68	26.80%	7.44%
25		10	29.6	12	38	2.57	8.11	27.40%	4.21%
50		9	36.9	34	39	0.539	1.62	4.38%	-19.4%
100		9	28.7	14	40	3.08	9.23	32.20%	7.23%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-WOOD Test Date: 1/16/19
 Project #: 29677 Test ID: 81011 Randomization: 10.7.2 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.68		10.4		359	24.5	0	0	0	0	0	0	0	0	0	0	0	Date: 1/16/19 New WQ: [initials] Test Init.: WC Sol'n Prep: [initials] Time: 1550
1	7.94	7.78	10.3	7.7	357	24.6	0	0	0	0	0	0	0	0	0	0	0	Date: 1/17/19 New WQ: DM Counts: TF Sol'n Prep: [initials] Old WQ: DM Time: 1155
2	7.95	7.70	9.6	7.5	349	24.8	0	0	0	0	0	0	0	0	0	0	0	Date: 1/18/19 New WQ: TA Counts: R6 Sol'n Prep: SD Old WQ: TA Time: 1309
3	7.81	7.86	9.0	8.4	363	24.0	0	0	5	0	0	0	0	0	6	0	0	Date: 1/19/19 New WQ: JR Counts: R6 Sol'n Prep: SMC Old WQ: MB Time: 1337
4	7.62	7.81	10.1	7.3	363	24.5	8	6	0	6	6	8	9	7	0	0	0	Date: 1/20/19 New WQ: BM Counts: K6 Sol'n Prep: TK Old WQ: TF Time: 1353
5	7.92	7.52	10.3	6.5	328	24.2	12	11	12	11	13	11	10	14	13	10	0	Date: 1/21/19 New WQ: JF Counts: 22 Sol'n Prep: WC Old WQ: WC Time: 1739
6	—	7.68	—	7.2	347	24.6	18	0	15	15	0	18	16	17	22	12	0	Date: 1/22/19 New WQ: — Counts: K6 Sol'n Prep: — Old WQ: JF Time: 1545
7																		Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
8																		Date: Old WQ: Counts: Time:
Total=							38	17	32	32	19	37	33	36	41	22	0	Mean Neonates/Female = 30.9
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.68		10.6		378	24.9	0	0	0	0	0	0	0	0	0	0	0	51815
1	7.93	7.91	10.3	7.5	375	25.1	0	0	0	0	0	0	0	0	0	0	0	51815
2	7.93	7.79	9.6	7.7	374	25.1	0	0	0	0	0	0	0	0	0	0	0	51815
3	7.77	7.84	9.1	7.2	377	24.1	0	0	0	0	0	0	0	0	0	0	0	51815
4	7.66	7.85	10.1	7.4	372	24.7	7	5	8	6	7	7	6	8	4	8	0	51815
5	7.94	7.58	10.9	7.0	349	24.9	13	11	14	14	15	15	13	13	10	12	0	51815
6	—	7.71	—	7.7	389	25.1	15	13	10	16	19	18	0	21	16	19	0	—
7																		
8																		
Total=							35	29	22	30	41	40	19	42	30	39	0	Mean Neonates/Female = 33.3

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-WOOD Test Date: 1/16/19
 Project #: 29677 Test ID: 81011 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
12.5%	0	7.65		10.5		392	24.9	0	0	0	0	0	0	0	0	0	0	
	1	7.92	7.95	10.1	7.5	390	25.3	0	0	0	0	0	0	0	0	0	0	
	2	7.91	7.78	9.6	7.7	393	24.2	0	0	0	0	0	0	0	0	0	0	
	3	7.79	7.83	9.1	7.4	394	24.2	0	0	0	0	0	0	0	0	0	0	
	4	7.59	7.83	10.5	7.3	370	24.6	6	5	5	6	7	5	0	5	5	0	
	5	7.92	7.58	10.8	7.4	366	24.1	13	14	13	13	12	11	12	15	12	13	
	6	—	7.69	—	7.7	398	25.0	0	16	17	15	18	0	15	0	16	17	
	7																	
	8																	
Total=							19	35	35	34	37	16	27	20	33	30	Mean Neonates/Female = 28.6	
25%	0	7.63		10.6		420	24.7	0	0	0	0	0	0	0	0	0	0	
	1	7.84	7.87	10.1	7.4	420	25.5	0	0	0	0	0	0	0	0	0	0	
	2	7.88	7.82	9.6	7.7	417	25.0	0	0	0	0	0	0	0	0	0	0	
	3	7.77	7.79	9.2	7.6	423	24.2	0	0	0	0	0	0	0	0	3	0	
	4	7.63	7.80	10.6	7.4	398	24.4	4	5	6	5	7	6	4	0	0	4	
	5	7.81 7.94	7.56	10.8	6.8	397 365	24.3	13	7	11	12	13	14	15	13	13	13	
	6	—	7.68	—	7.7	419	25.0	13	16	19	16	18	14	15	15	17	17	
	7																	
	8																	
Total=							30	12	36	32	38	34	19	28	33	34	Mean Neonates/Female = 29.6	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-WOOD Test Date: 1/16/19
 Project #: 29677 Test ID: 81011 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
50%	0	7.62		10.5		477	24.9	0	0	0	0	0	0	0	0	0	0	
	1	7.83	7.75	9.8	7.5	476	25.0	0	0	0	0	0	0	0	0	0	0	
	2	7.82	7.77	9.8	7.8	478	25.0	0	0	0	0	0	0	0	0	0	0	
	3	7.71	7.77	9.2	7.7	475	24.2	0	0	0	0	0	0	0	0	0	0	
	4	7.59	7.77	10.3	7.5	456	24.7	5	6	6	5	5	4	4	5	5	6	
	5	7.85	7.45	10.7	7.0	460	24.7	15	16	15	14	14	15	14	13	14	13	
	6	-	7.64	-	7.8	496	25.2	19	17	0	17	10	15	20	10	10	17	
	7																	
	8																	
Total=							39	39	21	30	37	34	30	36	37	30	Mean Neonates/Female = 35.3	
100%	0	7.52		10.2		588	24.9	0	0	0	0	0	0	0	0	0	0	
	1	7.71	7.73	9.5	7.6	591	24.2	0	0	0	0	0	0	0	0	0	0	
	2	7.67	7.72	9.4	7.9	588	24.9	0	0	0	0	0	0	0	0	0	10	
	3	7.53	7.70	9.1	7.8	585	24.2	0	0	0	0	0	0	0	0	0	-	
	4	7.44	7.72	9.5	7.8	584	24.0	4	5	5	3	4	4	4	4	5	7	
	5	7.71	7.41	10.3	7.1	587	24.5	13	12	15	11	15	12	13	10	13	-	
	6	-	7.60	-	7.6	619	25.2	16	17	20	16	0	0	17	0	16	-	
	7																	
	8																	
Total=							33	34	40	30	19	10	36	14	34	10	Mean Neonates/Female = 28.7	

CETIS Summary Report

Report Date: 23 Jan-19 12:13 (p 1 of 2)
Test Code: 81010 | 01-4115-7670

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk		
Batch ID: 18-0529-2883	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford			
Start Date: 16 Jan-19 14:01	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 22 Jan-19 13:54	Species: Ceriodaphnia dubia	Brine: Not Applicable			
Duration: 6d	Source: In-House Culture	Age: 1			
Sample ID: 01-3970-1167	Code: 71-UPLAND-154	Client: Larry Walker Associates			
Sample Date: 15 Jan-19 19:10	Material: Ambient Water	Project: 29677			
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek				
Sample Age: 19h (2.8 °C)	Station: UPLAND				

Comments:
 Excludes Reproductive Outlier 6.25-B.

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
01-0565-8791	Reproduction	Wilcoxon/Bonferroni Adj Test	50	100	70.71	2	35.6%
11-0817-6591	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
01-4867-2919	Reproduction	Linear Interpolation (ICPIN)	IC5	16	2.48	52.4	6.268
			IC10	19.4	4.97	56.8	5.152
			IC15	22.9	10.8	64.3	4.374
			IC20	53.1	12.4	72.4	1.883
			IC25	61.3	19.9	82.4	1.632
			IC40	85.7	56.5	n/a	1.166
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.3	22.8	37.8	16	42	3.32	10.5	34.69%	0.00%
6.25		9	32.7	26.5	38.9	19	40	2.68	8.05	24.63%	-7.81%
12.5		9	32.4	25.8	39.1	17	43	2.9	8.69	26.79%	-7.08%
25		10	26	18.3	33.7	14	40	3.4	10.8	41.38%	14.19%
50		10	26.1	18.3	33.9	0	35	3.46	10.9	41.91%	13.86%
100		10	16.3	8.66	23.9	0	29	3.38	10.7	65.51%	46.20%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
12.5		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 23 Jan-19 12:13 (p 2 of 2)
 Test Code: 81010 | 01-4115-7670

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	35	16	36	37	28	40	42	37	16	16
6.25		36		34	40	37	37	33	19	19	39
12.5		32	17	43	36	36	19	37	37	35	
25		16	35	16	14	16	40	34	38	18	33
50		30	29	33	25	32	30	35	33	0	14
100		29	16	8	26	28	11	28	11	0	6
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1

CETIS Analytical Report

Report Date: 23 Jan-19 12:13 (p 1 of 1)
 Test Code: 81010 | 01-4115-7670

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 11-0817-6591 Endpoint: Survival CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 12:08 Analysis: STP 2xK Contingency Tables Official Results: Yes

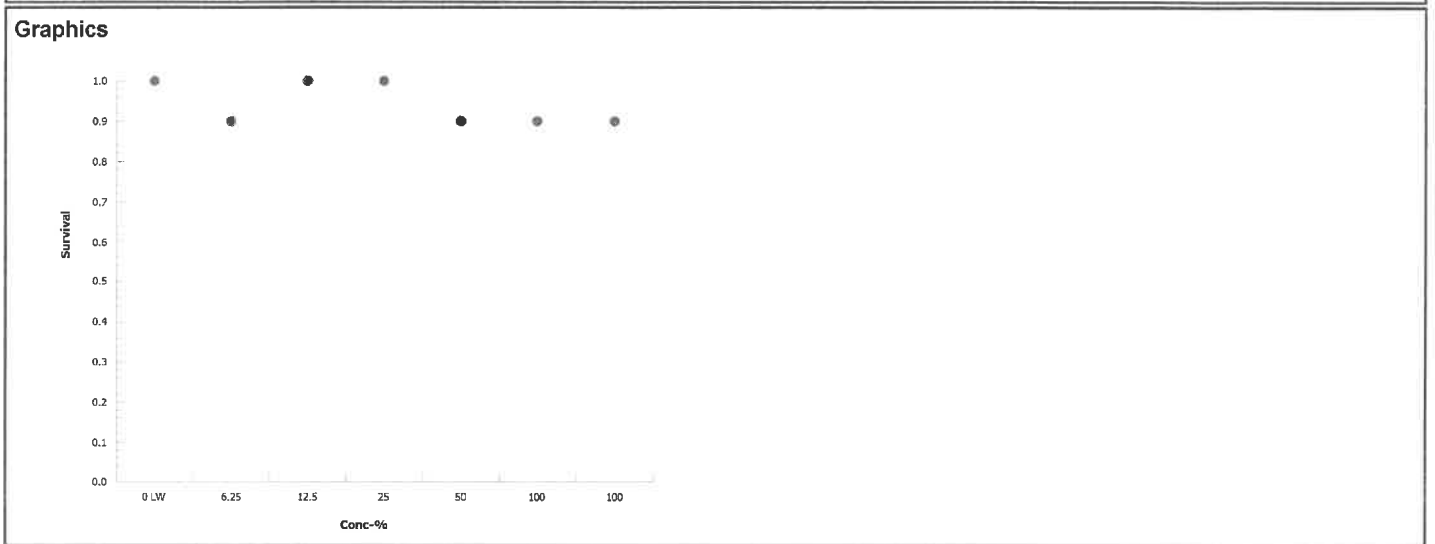
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	0.500	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	0.500	Exact	1.0000	Non-Significant Effect
		100	0.500	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		9	1	10	0.9	0.1	10.0%
12.5		9	0	9	1	0	0.0%
25		10	0	10	1	0	0.0%
50		9	1	10	0.9	0.1	10.0%
100		9	1	10	0.9	0.1	10.0%



Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 01-0565-8791 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 12:12 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	50	100	70.71	2	35.63%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	95	n/a	3	17	Exact	1.0000	Non-Significant Effect
		12.5	94.5	n/a	3	17	Exact	1.0000	Non-Significant Effect
		25	91.5	n/a	3	18	Exact	0.7912	Non-Significant Effect
		50	86.5	n/a	1	18	Exact	0.4250	Non-Significant Effect
		100*	70.5	n/a	2	18	Exact	0.0168	Significant Effect

ANOVA Table

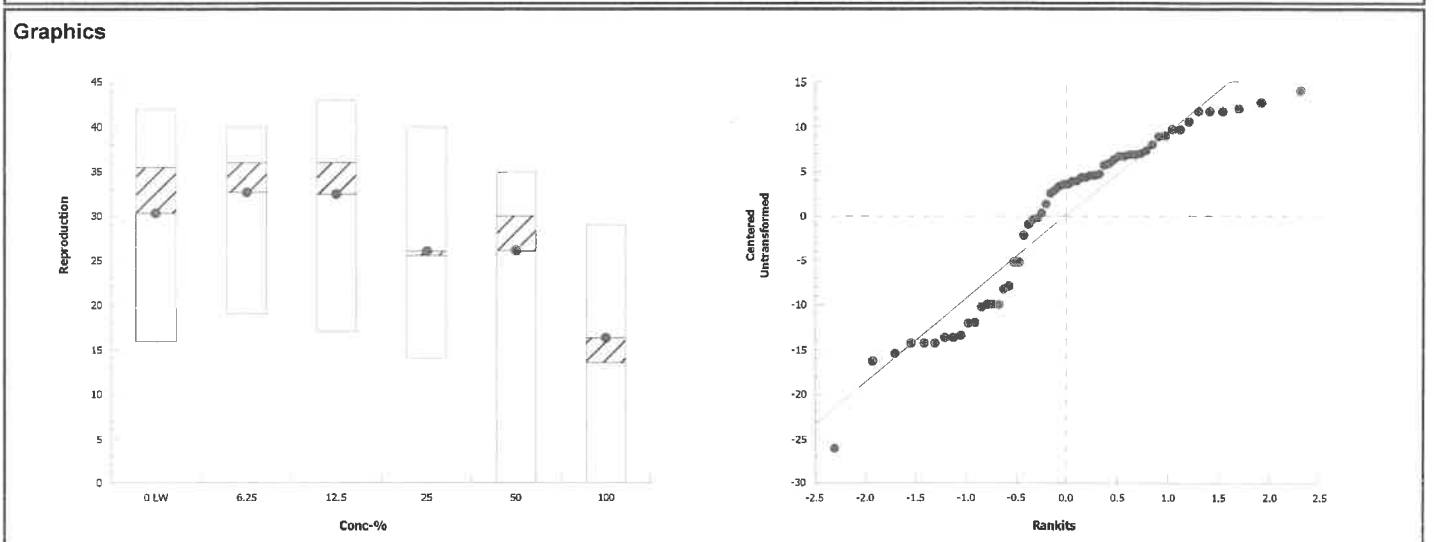
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1826.83	365.367	5	3.61	0.0070	Significant Effect
Error	5261.32	101.179	52			
Total	7088.16		57			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	1.27	15.1	0.9383	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.917	0.944	7.1E-04	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30.3	22.8	37.8	35.5	16	42	3.32	34.69%	0.00%
6.25		9	32.7	26.5	38.9	36	19	40	2.68	24.63%	-7.81%
12.5		9	32.4	25.8	39.1	36	17	43	2.9	26.79%	-7.08%
25		10	26	18.3	33.7	25.5	14	40	3.4	41.38%	14.19%
50		10	26.1	18.3	33.9	30	0	35	3.46	41.91%	13.86%
100		10	16.3	8.66	23.9	13.5	0	29	3.38	65.51%	46.20%



CETIS Analytical Report

Report Date: 23 Jan-19 12:13 (p 1 of 1)
 Test Code: 81010 | 01-4115-7670

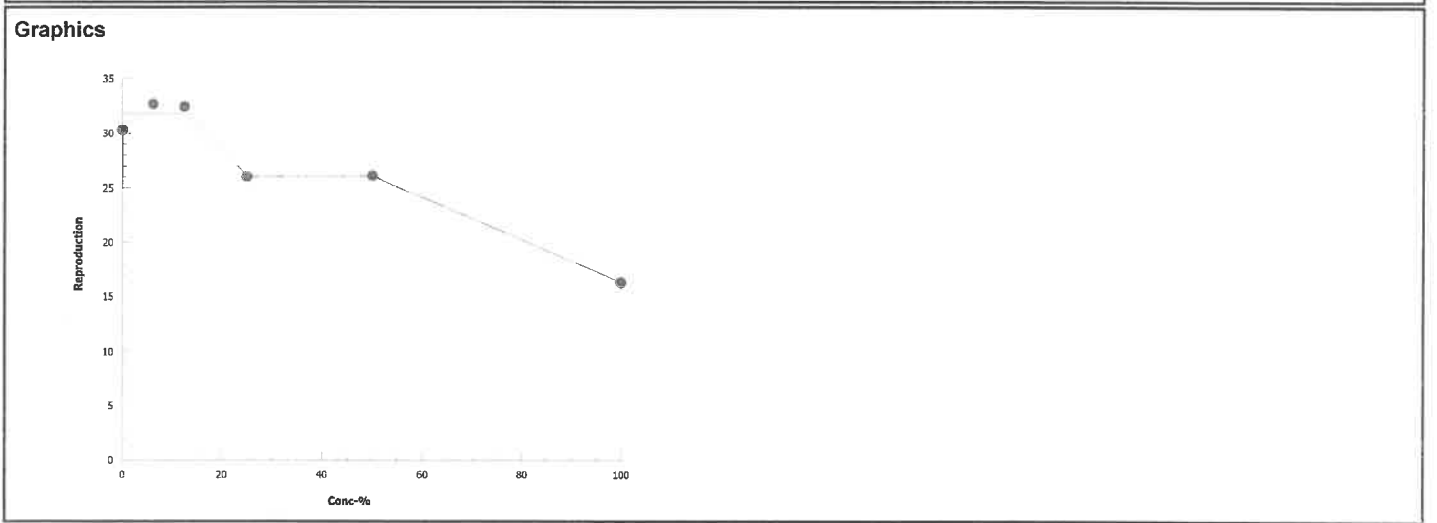
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 01-4867-2919 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 12:12 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	924900	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	16	2.48	52.4	6.268	1.908	40.27
IC10	19.4	4.97	56.8	5.152	1.761	20.13
IC15	22.9	10.8	64.3	4.374	1.554	9.229
IC20	53.1	12.4	72.4	1.883	1.382	8.088
IC25	61.3	19.9	82.4	1.632	1.214	5.019
IC40	85.7	56.5	n/a	1.166	n/a	1.771
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.3	16	42	3.32	10.5	34.70%	0.0%
6.25		9	32.7	19	40	2.68	8.05	24.60%	-7.81%
12.5		9	32.4	17	43	2.9	8.69	26.80%	-7.08%
25		10	26	14	40	3.4	10.8	41.40%	14.2%
50		10	26.1	0	35	3.46	10.9	41.90%	13.9%
100		10	16.3	0	29	3.38	10.7	65.50%	46.2%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA-Calleguas Creek

Material: 71-UPLAND

Test Date: 1/16/19

Project #: 29677

Test ID: 81010

Randomization: 10.7.6

Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction								SIGN-OFF								
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	Date:	New WQ:	Test Init.:	Time:			
Lab Water Control	0	7.69		10.0		360	24.8	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/16/19	New WQ: K6	Test Init.: TF	Time: 1401
	1	7.43	7.61	10.3	7.9	354	24.9	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/17/19	New WQ: DM	Counts: TK	Time: 1630
	2	7.93	7.82	9.8	8.3	356	24.7	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/18/19	New WQ: TA	Counts: TF	Time: 1314
	3	7.86	7.68	10.1	7.6	360	24.3	0	0	0	0	0	8	0	0	0	0	0	0	0	Date: 1/19/19	New WQ: SR	Counts: TB	Time: 1321
	4	7.62	7.70	10.0	7.5	332	24.1	6	5	5	5	4	5	1	6	6	6	6	6	6	Date: 1/20/19	New WQ: BM	Counts: 162	Time: 1623
	5	7.84	7.52	9.4	7.7	325	24.0	14	11	13	14	11	14	12	15	10	10	10	10	10	Date: 1/21/19	New WQ: CR	Counts: K6	Time: 1525
	6	—	7.47	—	7.5	362	24.1	15	0	18	18	13	21	21	16	0	0	0	0	0	Date: 1/22/19	New WQ: —	Counts: JB	Time: 1354
	7																				Date:	New WQ:	Counts:	Time:
	8																				Date:	Old WQ:	Counts:	Time:
Total=							35	16	36	37	28	40	42	37	16	16	Mean Neonates/Female = 30.3							
	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction								Sample ID								
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	Date:	New WQ:					
6.25%	0	7.22		9.9		370	24.8	0	0	0	0	0	0	0	0	0	0	0	0	0	51810			
	1	7.45	7.60	10.5	7.3	364	24.8	0	0	0	0	0	0	0	0	0	0	0	0	0	51810			
	2	7.93	7.90	9.8	8.3	356	24.7	0	0	0	0	0	0	0	0	0	0	0	0	0	51810			
	3	7.88	7.74	10.3	7.6	368	24.9	0	0	0	0	0	0	0	0	0	0	0	0	0	51810			
	4	7.65	7.71	10.4	7.6	340	24.9	6	10	6	6	6	6	4	7	6	6	6	6	6	51810			
	5	7.87	7.54	9.8	7.6	339	24.1	12	—	12	16	13	13	13	12	13	13	13	13	13	51810			
	6	—	7.48	—	7.5	363	24.0	18	—	16	18	18	18	16	0	0	20	20	20	20				
	7																							
8																								
Total=							36	10	34	40	37	37	33	19	19	39	Mean Neonates/Female = 29.4							

cc cc 1/20/19
1/22/19

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA-Calleguas Creek Material: 71-UPLAND Test Date: 1/16/19
 Project #: 29677 Test ID: 81010 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
12.5%	0	7.68		10.1		373	24.7	0	0	0	0	0	0	0	0	0		
	1	7.96	7.56	10.2	7.1	368	25.0	0	0	0	0	0	0	0	0	0		
	2	7.94	7.87	9.8	8.2	364	24.9	0	0	0	0	7	0	0	0	0		
	3	7.90	7.74	10.1	7.4	373	24.9	0	0	0	0	-	0	0	0	0		
	4	7.87	7.75	10.5	7.6	341	24.7	5	6	5	6	-	5	6	6	5		
	5	7.86	7.56	10.0	7.1	346	24.0	13	11	15	14	-	15	13	15	13	14	
	6	-	7.47	-	7.4	363	24.3	14	0	23	16	-	16	0	16	18	16	
	7																	
	8																	
Total=							32	17	43	34	70	36	19	87	37	35	Mean Neonates/Female = $\frac{292}{123/14} = 29.2$ 32.4	
25%	0	7.69		10.4		382	24.6	0	0	0	0	0	0	0	0	0		
	1	7.96	7.54	10.3	6.6	363	24.9	0	0	0	0	0	0	0	0	0		
	2	7.94	7.83	9.9	8.0	371	25.1	0	0	0	0	0	0	0	0	0		
	3	7.88	7.81	10.3	7.9	383	24.5	0	0	0	0	0	0	0	0	0		
	4	7.66	7.77	9.9	7.8	357	24.3	5	5	6	4	5	6	6	7	5	6	
	5	7.85	7.53	10.0	7.4	359	23.0	11	14	10	10	11	13	12	14	13	13	
	6	-	7.46	-	7.3	389	24.6	0	16	0	0	2	7	16	17	14	14	
	7																	
	8																	
Total=							16	35	16	14	14	40	37	38	18	33	Mean Neonates/Female = 26.0	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA-Calleguas Creek Material: 71-UPLAND Test Date: 1/16/19
 Project #: 29677 Test ID: 81010 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
50%	0	7.66		10.6		400	24.7	0	0	0	0	0	0	0	0	0	0	
	1	7.94	7.53	10.4	6.9	396	24.7	0	0	0	0	0	0	0	0	0	0	x/0
	2	7.91	7.92	10.1	8.5	387 ⁴⁵⁰	24.5	0	0	0	0	0	0	0	0	0	-	0
	3	7.86	7.81	10.3	8.0	403	24.9	0	0	0	0	0	0	0	0	0	-	0
	4	7.64	7.79	10.0	8.0	380	25.3	4	4	4	0	4	4	4	5	-	4	
	5	7.79	7.56	9.7	7.2	379	23.5	10	10	11	7	10	10	11	9	-	10	
	6	-	7.44	-	6.9	410	25.0	16	15	18	18	18	16	20	19	-	0	
	7																-	
	8																-	
Total=							30	29	33	25	32	30	35	33	x/0	14	Mean Neonates/Female = 26.1	
100%	0	7.67		10.6		435	24.9	0	0	0	0	0	0	0	0	0	0	
	1	7.90	7.61	10.4	7.7	431	24.8	0	0	0	0	0	0	0	0	0	0	x/0
	2	7.85	7.86	10.0	8.4	437	25.0	0	0	0	0	0	0	0	0	0	-	0
	3	7.78	7.77	10.5	8.1	442	24.8	0	0	0	0	0	0	0	0	0	-	0
	4	7.58	7.77	9.9	8.1	437	25.2	4	4	3	4	4	4	5	4	-	2	
	5	7.73	7.40	9.7	8.0	440	23.6	7	6	5	8	8	7	7	7	-	4	
	6	-	7.43	-	6.9	473	25.3	18	6	0	14	16	0	16	0	-	0	
	7																-	
	8																-	
Total=							29	16	8	26	28	11	28	11	x/0	6	Mean Neonates/Female = 16.3	

CETIS Summary Report

Report Date: 30 Jan-19 10:59 (p 1 of 2)
 Test Code: 81007 | 07-7301-8391

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 10-3555-0651	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 16 Jan-19 15:14	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 15:45	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 1h	Source: In-House Culture	Age: 1

Sample ID: 17-3258-3584	Code: 71-HITCH-160	Client: Larry Walker Associates
Sample Date: 15 Jan-19 17:10	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 22h (2.7 °C)	Station: HITCH	

Comments:
 Stats exclude reproductive outlier LWC-H

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
07-4586-5066	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	30.0%
04-5160-1992	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
13-1691-6432	Reproduction	Linear Interpolation (ICPIN)	IC5	71.2	18.3	n/a	1.405
			IC10	94.7	28.6	n/a	1.056
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	31.9	29.5	34.3	27	38	1.05	3.14	9.85%	0.00%
6.25		10	34.1	27.6	40.6	17	42	2.87	9.07	26.61%	-6.93%
12.5		10	38.2	32.6	43.8	23	46	2.49	7.87	20.61%	-19.79%
25		10	34.9	28.1	41.7	18	44	3.01	9.52	27.26%	-9.44%
50		10	34.6	28.4	40.8	19	45	2.73	8.64	24.98%	-8.50%
100		10	30.9	22.9	38.9	5	41	3.54	11.2	36.24%	3.10%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 30 Jan-19 10:59 (p 2 of 2)
 Test Code: 81007 | 07-7301-8391

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	30	27	38	32	35	32	32		31	30
6.25		41	39	28	42	22	42	40	31	39	17
12.5		37	25	42	43	40	44	46	41	23	41
25		38	37	42	40	25	40	43	22	44	18
50		41	45	25	39	35	25	36	42	19	39
100		18	34	36	28	37	39	35	5	41	36
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1

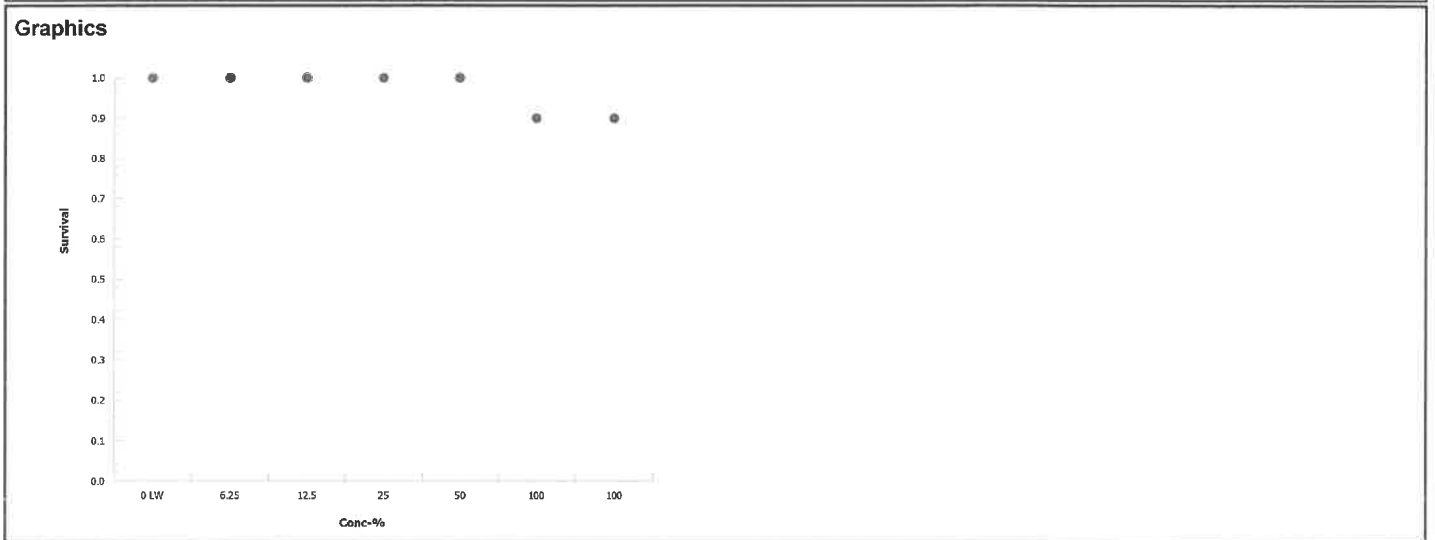
CETIS Analytical Report

Report Date: 30 Jan-19 10:59 (p 1 of 1)
 Test Code: 81007 | 07-7301-8391

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk			
Analysis ID:	04-5160-1992	Endpoint:	Survival	CETIS Version:	CETISv1.9.2		
Analyzed:	30 Jan-19 10:55	Analysis:	STP 2xK Contingency Tables	Official Results:	Yes		
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU		
Untransformed	C > T	100	> 100	n/a	1		

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	0.500	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		9	1	10	0.9	0.1	10.0%



CETIS Analytical Report

Report Date: 30 Jan-19 10:59 (p 1 of 1)
 Test Code: 81007 | 07-7301-8391

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 07-4586-5066 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 30 Jan-19 10:58 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	30.00%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	114	n/a	1	17	Exact	1.0000	Non-Significant Effect
		12.5	126	n/a	0	17	Exact	1.0000	Non-Significant Effect
		25	116	n/a	1	17	Exact	1.0000	Non-Significant Effect
		50	116	n/a	1	17	Exact	1.0000	Non-Significant Effect
		100	112	n/a	1	17	Exact	1.0000	Non-Significant Effect

ANOVA Table

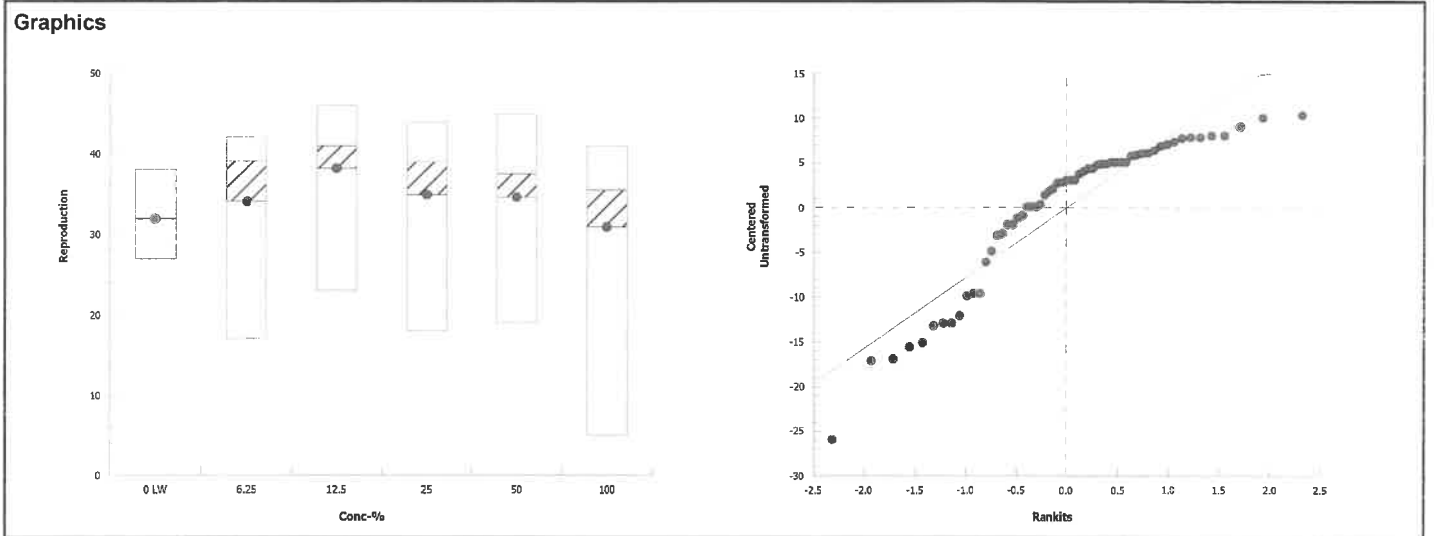
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	323.326	64.6653	5	0.858	0.5153	Non-Significant Effect
Error	3993.59	75.3507	53			
Total	4316.92		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	10.6	15.1	0.0598	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.873	0.945	1.7E-05	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	9	31.9	29.5	34.3	32	27	38	1.05	9.85%	0.00%
6.25		10	34.1	27.6	40.6	39	17	42	2.87	26.61%	-6.93%
12.5		10	38.2	32.6	43.8	41	23	46	2.49	20.61%	-19.79%
25		10	34.9	28.1	41.7	39	18	44	3.01	27.26%	-9.44%
50		10	34.6	28.4	40.8	37.5	19	45	2.73	24.98%	-8.50%
100		10	30.9	22.9	38.9	35.5	5	41	3.54	36.24%	3.10%



CETIS Analytical Report

Report Date: 30 Jan-19 10:59 (p 1 of 1)
 Test Code: 81007 | 07-7301-8391

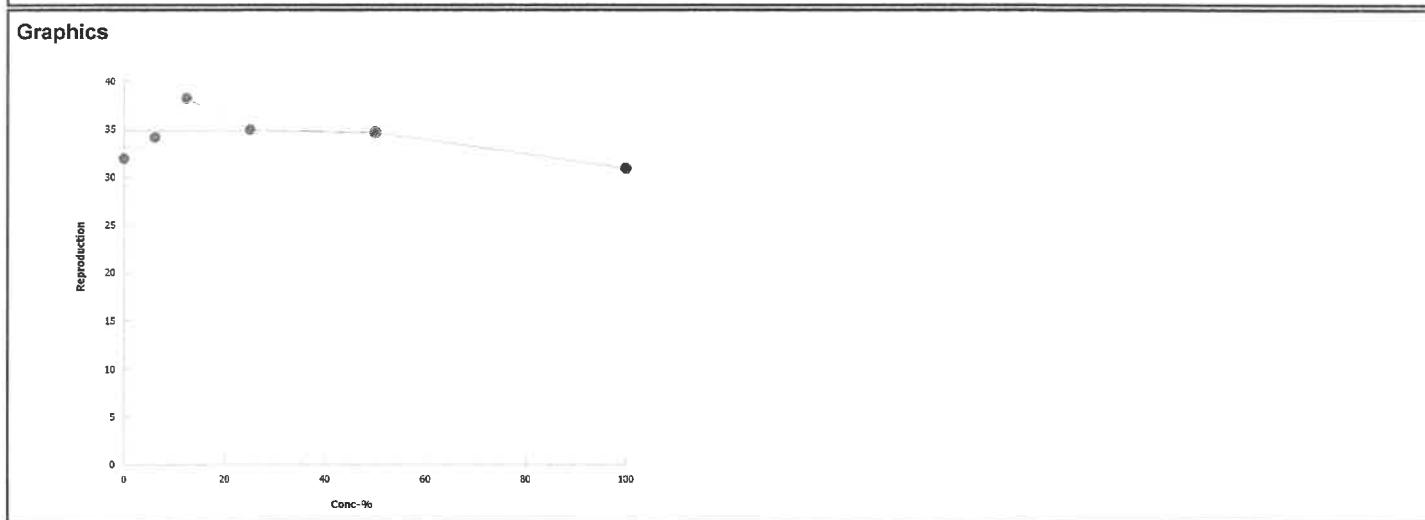
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 13-1691-6432 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 30 Jan-19 10:58 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1833659	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	71.2	18.3	n/a	1.405	n/a	5.466
IC10	94.7	28.6	n/a	1.056	n/a	3.498
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	31.9	27	38	1.05	3.14	9.85%	0.0%
6.25		10	34.1	17	42	2.87	9.07	26.60%	-6.93%
12.5		10	38.2	23	46	2.49	7.87	20.60%	-19.8%
25		10	34.9	18	44	3.01	9.52	27.30%	-9.44%
50		10	34.6	19	45	2.73	8.64	25.00%	-8.5%
100		10	30.9	5	41	3.54	11.2	36.20%	3.1%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-HITCH Test Date: 1/16/19
 Project #: 29677 Test ID: 81007 Randomization: (0.7.1) Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF							
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	Date:	New WQ:	Test Init.:					
0	7.85		10.1		439 366	24.0	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/16/19	New WQ: ±0	Test Init.: 1544 EE	Time: 1514	← 1/16/19
1	7.91	7.86	10.0	7.6	349	24.8	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/17/19	New WQ: TA	Counts: TF	Time: 1559	
2	7.96	7.84	9.9	7.9	354	24.5	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/18/19	New WQ: TA	Counts: JO	Time: 1228	
3	7.72	7.77	8.8	7.2	362	24.0	0	0	0	0	0	4	4	0	0	0	0	0	0	Date: 1/19/19	New WQ: JR	Counts: RP	Time: 125	
4	7.64	7.77	9.3	7.3	364	25.1	6	1	7	0	6	0	0	6	6	4				Date: 1/20/19	New WQ: BM	Counts: 16	Time: 1300	
5	7.87	7.73	9.8	7.7	325	24.8	9	9	12	10	12	12	10	8	10	10				Date: 1/21/19	New WQ: CR	Counts: W	Time: 144	
6	—	7.45	—	6.8	350	24.5	15	17	19	16	17	16	18	0	15	16				Date: 1/22/19	New WQ: —	Counts: KL	Time: 1545	
7																				Date:	New WQ:	Counts:	Time:	
8																				Date:	Old WQ:	Counts:	Time:	
Total=							30	27	38	32	35	32	32	14	31	30	Mean Neonates/Female = 30.1							

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID						
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	Date:	New WQ:	Test Init.:				
0	7.87		10.0		376	24.0	0	0	0	0	0	0	0	0	0	0	0	0	0				51812
1	7.91	7.91	10.2	7.8	397	24.6	0	0	0	0	0	0	0	0	0	0	0	0	0				51812
2	7.97	7.85	10.0	7.7	383	25.3	0	0	0	0	0	0	0	0	0	0	0	0	0				51812
3	7.74	7.81	8.8	7.5	386	24.0	0	5	8	8	0	5	4	0	0	0	0	0	0				51812
4	7.64	7.87	10.4	7.4	385	24.2	7	0	6	0	8	0	1	6	6	5							51812
5	7.89	7.81	10.0	7.7	356	25.1	15	14	14	13	14	15	14	9	15	12							51812
6	—	7.48	—	6.8	374	24.8	19	20	22	21	0	22	21	16	18	0							—
7																							
8																							
Total=							41	39	28	42	22	42	40	31	39	17	Mean Neonates/Female = 34.1						

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-HITCH Test Date: 1/16/19
 Project #: 29677 Test ID: 81007 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
12.5%	0	7.88		10.3		406	24.3	0	0	0	0	0	0	0	0	0	0	0	
	1	7.92	7.92	10.5	7.7	403	24.7	0	0	0	0	0	0	0	0	0	0	0	
	2	7.96	7.85	9.9	7.8	407	25.3	0	0	0	0	0	0	0	0	0	0	0	
	3	7.74	7.81	8.9	7.5	407	24.0	0	0	5	5	7	6	7	0	0	0	0	
	4	7.64	7.85	10.7	7.3	408	24.9	7	7	0	1	0	0	0	7	7	6		
	5	7.89	7.84	10.0	7.7	378	25.1	12	18	16	14	14	16	16	15	16	16		
	6	—	7.47	—	6.6	378 403	24.8	18	18 17	21	23	19	22	23	19	18 17	19		
	7																		
	8																		
Total=								35	25	42	43	40	44	46	41	23	41	Mean Neonates/Female = 39.0	
25%	0	7.88		10.4		467	24.5	0	0	0	0	0	0	0	0	0	0	0	
	1	7.93	7.89	10.7	7.7	443	25.6	0	0	0	0	0	0	0	0	0	0	0	
	2	7.95	7.85	9.9	7.8	450	25.4	0	0	0	0	0	0	0	0	0	0	0	
	3	7.78	7.80	8.9	7.9	448	24.0	0	0	0	5	5	5	6	0	0	0		
	4	7.64	7.88	10.6	7.5	442	24.9	6	6	7	0	5	0	0	7	7	5		
	5	7.88	7.88	10.1	7.8	424	25.2	14	14	15	14	15	17	16	15	16	13		
	6	—	7.00	—	6.8	447	24.7	19	17	20	21	19	19	21	0	21	0		
	7																		
	8																		
Total=								38	37	42	46	25	40	43	22	44	18	Mean Neonates/Female = 34.9	

Acc 1/30/19
38.2

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-HITCH Test Date: 1/6/19
 Project #: 29677 Test ID: 81007 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
50%	0	7.90		10.6		533	24.5	0	0	0	0	0	0	0	0	0	0	
	1	7.93	7.86	10.8	7.7	529	25.1	0	0	0	0	0	0	0	0	0	0	
	2	8.00	7.81	10.0	7.5	531	25.6	0	0	0	0	0	0	0	0	0	0	
	3	7.77	7.86	9.1	7.9	533	24.0	0	0	0	0	0	0	0	0	0	0	
	4	7.65	7.89	10.4	7.5	528	24.0	6	7	8	6	6	5	6	6	5		
	5	7.87	7.91	10.2	7.7	518	25.3	15	16	17	14	12	19	14	16	13	14	
	6	—	7.50	—	6.4	581	24.7	20	22	0	19	17	0	17	20	0	20	
	7																	
8																		
Total=							41	45	25	39	35	25	36	42	19	39	Mean Neonates/Female = 34.6	
100%	0	7.88		10.8		688	24.6	0	0	0	0	0	0	0	0	0	0	
	1	7.92	7.92	10.8	7.8	697	25.4	0	0	0	0	0	0	0	0	0	0	
	2	7.92	7.88	10.0	7.8	697	25.4	0	0	0	0	0	0	0	0	0	0	
	3	7.77	7.87	9.3	7.9	690	24.0	0	0	0	0	0	0	0	0	0	0	
	4	7.65	7.98	10.4	7.9	681	24.2	4	0	4	0	4	4	0	5	7	5	
	5	7.83	7.91	10.2	7.8	700	25.1	12	16	11	12	13	14	16	16	16	14	
	6	—	7.65	—	6.7	735	24.5	0	18	21	16	20	21	19	—	18	17	
	7																	
8																		
Total=							18	34	36	28	37	39	35	40	41	36	Mean Neonates/Female = 30.9	

CETIS Summary Report

Report Date: 23 Jan-19 13:48 (p 1 of 2)
 Test Code: 81008 | 05-3448-0352

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Batch ID: 12-5313-3263	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford
Start Date: 16 Jan-19 15:15	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 16:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 1h	Source: In-House Culture	Age: 1

Sample ID: 05-0581-9958	Code: 71-GATE-207	Client: Larry Walker Associates
Sample Date: 15 Jan-19 15:40	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 24h (2 °C)	Station: GATE	

Comments:
 Excludes Reproductive Outliers 12.5-B and 25-H.

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
10-6245-7556	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	24.0%
02-4507-3225	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
16-8265-3587	Reproduction	Linear Interpolation (ICPIN)	IC5	40.1	31.4	n/a	2.492	
			IC10	>100	n/a	n/a	<1	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	34.1	30.2	38	24	43	1.74	5.51	16.15%	0.00%
6.25		10	33.6	27.2	40	13	40	2.83	8.96	26.66%	1.47%
12.5		9	38.6	35.2	41.9	32	44	1.43	4.3	11.16%	-13.07%
25		9	41.6	38.9	44.2	37	48	1.14	3.43	8.26%	-21.86%
50		10	33.9	26.1	41.7	17	44	3.47	11	32.36%	0.59%
100		10	33.7	27.3	40.1	18	44	2.82	8.91	26.43%	1.17%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 23 Jan-19 13:48 (p 2 of 2)

Test Code: 81008 | 05-3448-0352

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	33	24	33	37	42	43	34	32	32	31
6.25		40	39	39	38	22	13	38	33	38	36
12.5		32		36	41	44	35	36	37	44	42
25		37	38	43	41	42	45	40		48	40
50		37	17	21	39	44	17	43	40	40	41
100		34	34	35	42	44	18	19	42	36	33
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

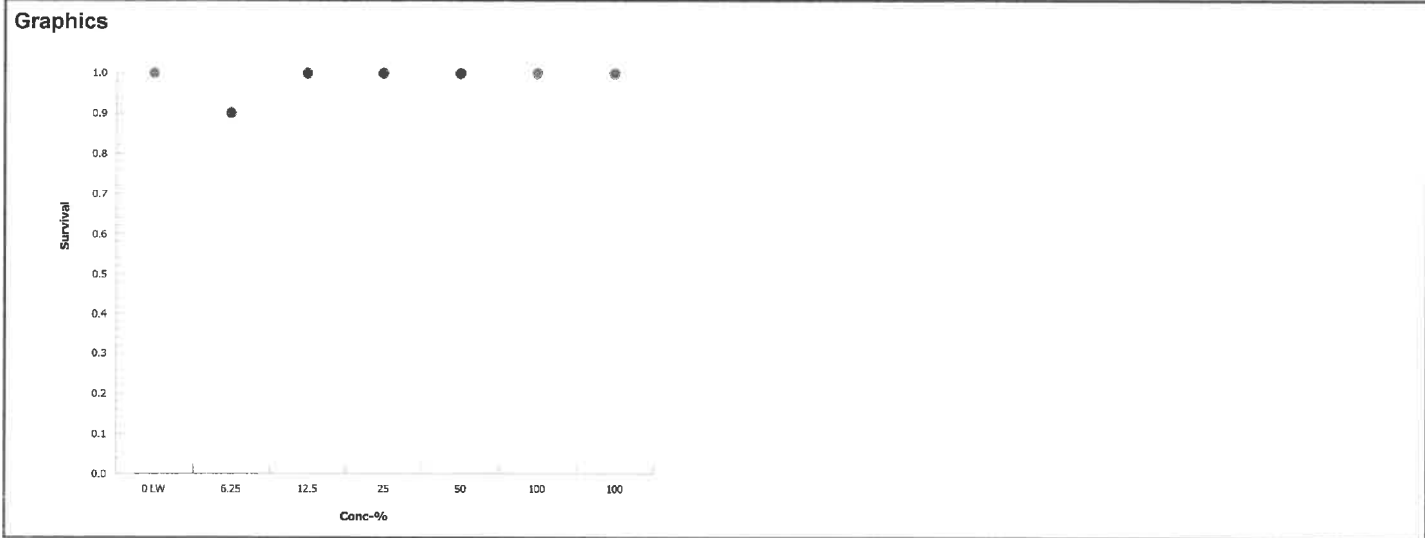
CETIS Analytical Report

Report Date: 23 Jan-19 13:45 (p 1 of 1)
 Test Code: 81008 | 05-3448-0352

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk			
Analysis ID: 02-4507-3225		Endpoint: Survival		CETIS Version: CETISv1.9.2			
Analyzed: 23 Jan-19 13:43		Analysis: STP 2xK Contingency Tables		Official Results: Yes			
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU		
Untransformed	C > T	100	> 100	n/a	1		

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	0.500	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		9	1	10	0.9	0.1	10.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



CETIS Analytical Report

Report Date: 23 Jan-19 13:45 (p 1 of 1)
 Test Code: 81008 | 05-3448-0352

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 10-6245-7556 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 13:45 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	24.05%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	115	n/a	1	18	Exact	1.0000	Non-Significant Effect
		12.5	113	n/a	3	17	Exact	1.0000	Non-Significant Effect
		25	122	n/a	3	17	Exact	1.0000	Non-Significant Effect
		50	114	n/a	2	18	Exact	1.0000	Non-Significant Effect
		100	114	n/a	3	18	Exact	1.0000	Non-Significant Effect

ANOVA Table

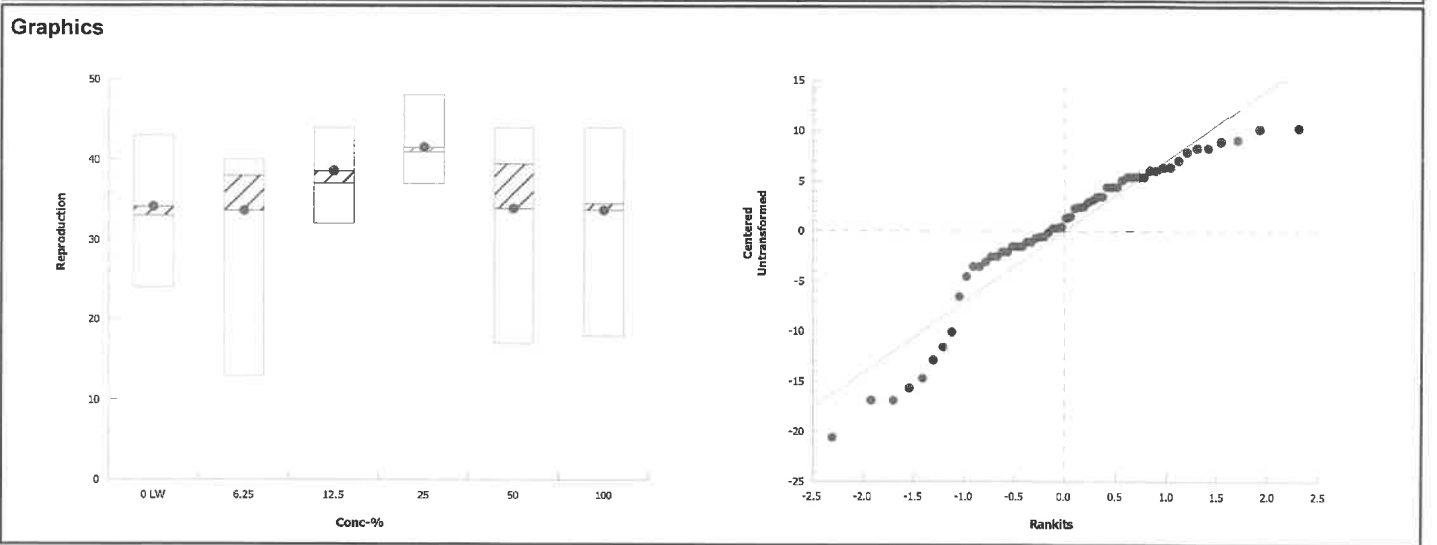
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	523.876	104.775	5	1.8	0.1301	Non-Significant Effect
Error	3034.74	58.3605	52			
Total	3558.62		57			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	15.1	15.1	0.0101	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.905	0.944	2.7E-04	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	34.1	30.2	38	33	24	43	1.74	16.15%	0.00%
6.25		10	33.6	27.2	40	38	13	40	2.83	26.66%	1.47%
12.5		9	38.6	35.2	41.9	37	32	44	1.43	11.16%	-13.07%
25		9	41.6	38.9	44.2	41	37	48	1.14	8.26%	-21.86%
50		10	33.9	26.1	41.7	39.5	17	44	3.47	32.36%	0.59%
100		10	33.7	27.3	40.1	34.5	18	44	2.82	26.43%	1.17%



CETIS Analytical Report

Report Date: 23 Jan-19 13:45 (p 1 of 1)
 Test Code: 81008 | 05-3448-0352

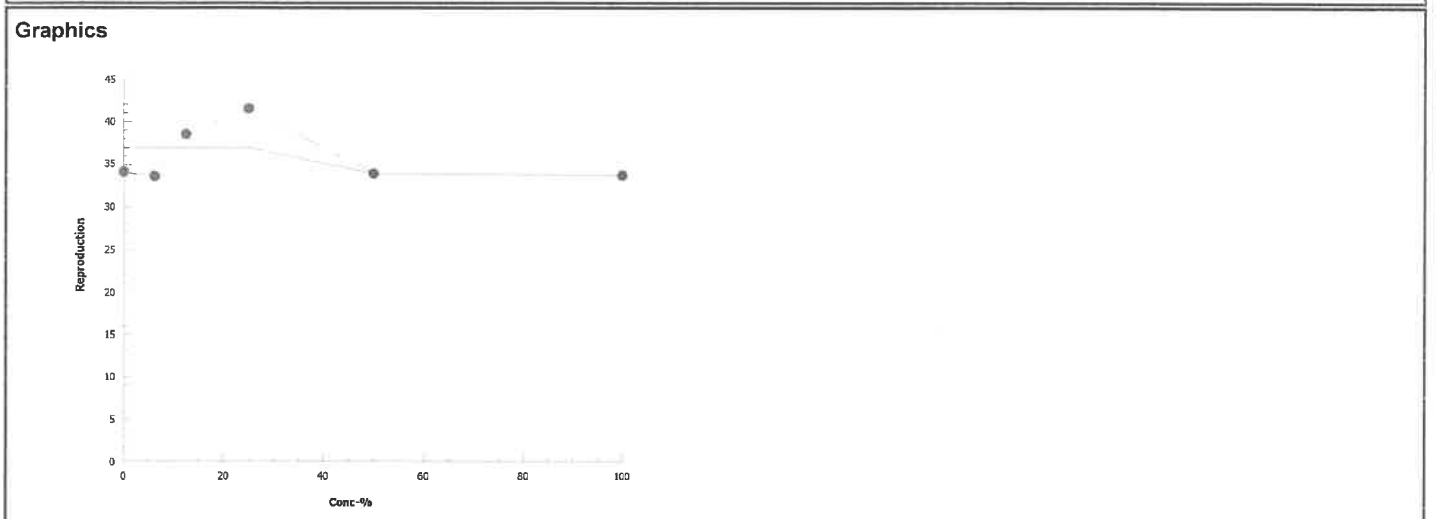
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 16-8265-3587 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 13:45 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2109394	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	40.1	31.4	n/a	2.492	n/a	3.181
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	34.1	24	43	1.74	5.51	16.10%	0.0%
6.25		10	33.6	13	40	2.83	8.96	26.70%	1.47%
12.5		9	38.6	32	44	1.43	4.3	11.20%	-13.1%
25		9	41.6	37	48	1.14	3.43	8.26%	-21.9%
50		10	33.9	17	44	3.47	11	32.40%	0.59%
100		10	33.7	18	44	2.82	8.91	26.40%	1.17%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-GATE Test Date: 1/16/19
 Project #: 29677 Test ID: 81008 Randomization: 10, 7, 1 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.69		10.1		358	24.9	0	0	0	0	0	0	0	0	0	0	0	Date: 1/16/19 New WQ: <u>LC</u> Test Init.: <u>WC</u> Sol'n Prep: <u>LC</u> <u>LC</u> Time: <u>1515</u>	
1	7.92	7.53	9.8	7.8	350	24.7	0	0	0	0	0	0	0	0	0	0	0	Date: 1/17/19 New WQ: <u>DM</u> Counts: <u>7</u> Sol'n Prep: <u>LC</u> Old WQ: <u>DM</u> Time: <u>1343</u>	
2	7.93	7.71	9.7	7.9	356	24.0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/18/19 New WQ: <u>TA</u> Counts: <u>50</u> Sol'n Prep: <u>SD</u> Old WQ: <u>TA</u> Time: <u>1340</u>	
3	7.77	7.66	8.9	7.7	362	24.0	0	0	0	0	0	0	0	6	0	0	0	Date: 1/19/19 New WQ: <u>TP</u> Counts: <u>23</u> Sol'n Prep: <u>SMC</u> Old WQ: <u>TP</u> Time: <u>1622</u>	
4	7.78	7.73	9.8	7.4	356	24.5	8	6	7	5	8	8	7	6	0	0	0	Date: 1/20/19 New WQ: <u>TP</u> Counts: <u>KL</u> Sol'n Prep: <u>TV</u> Old WQ: <u>TP</u> Time: <u>1645</u>	
5	7.91	7.81	10.3	7.4	334	24.5	15	10	13	12	14	13	12	11	12	13	0	Date: 1/21/19 New WQ: <u>KP</u> Counts: <u>KL</u> Sol'n Prep: <u>WC</u> Old WQ: <u>TP</u> Time: <u>1610</u>	
6	-	7.52	-	6.9	391	24.2	10	8	13	20	20	22	15	15	14	18	0	Date: 1/22/19 New WQ: <u>-</u> Counts: <u>113</u> Sol'n Prep: <u>-</u> Old WQ: <u>SR</u> Time: <u>1600</u>	
7																		Date: <u>-</u> New WQ: <u>-</u> Counts: <u>-</u> Sol'n Prep: <u>-</u> Old WQ: <u>-</u> Time: <u>-</u>	
8																		Date: <u>-</u> Old WQ: <u>-</u> Counts: <u>-</u> Time: <u>-</u>	
Total=							33	24	33	37	42	43	34	32	32	31	0	Mean Neonates/Female = <u>34.1</u>	
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.74		10.2		398	25.0	0	0	0	0	0	0	0	0	0	0	0	51813	
1	7.95	7.67	10.2	7.6	392	24.5	0	0	0	0	0	0	0	0	0	0	0	51813	
2	7.96	7.71	9.8	7.7	400	24.1	0	0	0	0	0	0	0	0	0	0	0	51813	
3	7.79	7.68	9.0	7.6	397	24.0	0	0	6	6	0	0	0	0	0	0	0	51813	
4	7.84	7.80	10.4	7.6	388	24.2	6	6	0	0	8	7	8	0	0	7	0	51813	
5	7.95	7.88	10.2	7.6	369	24.3	14	13	14	12	14	X/6	12	13	15	13	0	51813	
6	-	7.54	-	6.9	407	25.0	20	20	19	20	0	-	18	20	23	16	0	-	
7																			
8																			
Total=							40	39	39	38	22	X/13	38	33	38	36	0	0	Mean Neonates/Female = <u>33.4</u>

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-GATE Test Date: 1/16/19
 Project #: 29677 Test ID: 81008 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
12.5%	0	7.74		10.5		430	24.7	0	0	0	0	0	0	0	0	0	0	
	1	7.96	7.73	10.7	7.6	427	25.0	0	0	0	0	0	0	0	0	0	0	
	2	7.97	7.73	9.8	7.2	427	24.1	0	0	0	0	0	0	0	0	0	0	
	3	7.83	7.72	9.0	7.7	427	25.1	0	0	3	6	0	0	0	4	0	6	
	4	7.87	7.81	10.4	7.8	419	24.3	3	6	0	0	8	5	7	0	8	0	
	5	7.97	7.94	10.3	7.8	402	24.6	11	14	11	13	14	12	11	13	13	15	
	6	-	7.55	-	6.9	454	25.0	18	0	22	22	22	18	18	20	23	21	
	7																	
	8																	
Total=							32	20	36	41	44	35	36	37	44	42	Mean Neonates/Female = 36.7	
25%	0	7.77		10.3		491	24.4	0	0	0	0	0	0	0	0	0	0	
	1	7.99	7.69	10.1	7.4	485	24.7	0	0	0	0	0	0	0	0	0	0	
	2	7.98	7.84	9.9	7.5	487	24.3	0	0	0	0	0	0	0	0	0	0	
	3	7.85	7.80	9.1	8.0	497	25.7	4	0	0	6	0	0	0	0	6	0	
	4	7.88	7.77	10.2	7.6	478	24.2	0	6	7	1	7	8	8	6	1	6	
	5	7.97	7.95	10.4	7.9	469	24.3	14	14	14	13	15	15	13	15	15	13	
	6	-	7.68	-	6.8	511	24.4	19	18	22	21	20	22	19	0	26	21	
	7																	
	8																	
Total=							37	38	43	41	42	45	40	21	48	40	Mean Neonates/Female = 39.5	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-GATE Test Date: 4/16/19
 Project #: 29677 Test ID: 81008 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
0	7.81		10.6		621	24.4	0	0	0	0	0	0	0	0	0	0	
1	8.01	7.81	10.3	7.6	619	24.9	0	0	0	0	0	0	0	0	0	0	
2	8.00	7.99	10.0	7.9	614	24.0	0	0	0	0	0	0	0	0	0	0	
3	7.87	7.99	9.2	8.1	621	25.0	0	0	0	0	0	0	4	0	4		
4	7.90	7.96	10.5	7.8	603	24.1	6	5	7	8	7	5	7	0	7	0	
5	8.01	8.04	10.5	7.9	603	24.3	13	12	14	13	14	12	14	12	13	13	
6	-	7.63	-	6.3	707	24.8	18	0	0	18	23	0	22	24	20	22	
7																	
8																	
Total=							37	17	21	39	44	17	43	40	40	41	Mean Neonates/Female = 33.9
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
0	7.84		11.1		875	24.3	0	0	0	0	0	0	0	0	0	0	
1	8.02	7.98	10.8	7.6	866	25.1	0	0	0	0	0	0	0	0	0	0	
2	8.04	8.13	10.0	8.1	867	24.3	0	0	0	0	0	0	0	0	0	0	
3	7.90	8.04	9.4	8.1	863	24.4	0	0	4	0	0	0	0	0	0	5	
4	7.89	8.12	11.1	8.2	856	24.3	6	6	0	0	5	7	6	8	0	0	
5	8.03	8.17	10.5	8.0	862	24.7	14	12	12	14	13	11	13	12	11	11	
6	-	7.87	-	6.2	1020	24.8	14	16	19	22	26	0	0	22	19	17	
7																	
8																	
Total=							34	34	35	42	44	18	19	42	36	33	Mean Neonates/Female = 33.7

CETIS Summary Report

Report Date: 24 Jan-19 15:23 (p 1 of 2)
 Test Code: 81009 | 11-1566-6183

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 09-7841-8727	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford
Start Date: 16 Jan-19 13:06	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 16:50	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 4h	Source: In-House Culture	Age: 1

Sample ID: 01-6470-8578	Code: 71-BELT-210	Client: Larry Walker Associates
Sample Date: 15 Jan-19 16:25	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 21h (3 °C)	Station: BELT	

Comments:
 Excludes Reproductive Outlier 12.5-C.

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
01-7144-7717	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	19.2%
17-8874-5733	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
15-9441-4924	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1	
			IC10	>100	n/a	n/a	<1	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	31.9	27.8	36	20	40	1.83	5.78	18.13%	0.00%
6.25		10	34.1	28.7	39.5	18	42	2.38	7.52	22.05%	-6.90%
12.5		9	41.8	39.1	44.5	36	47	1.18	3.53	8.44%	-30.96%
25		10	39.5	34.3	44.7	23	47	2.28	7.21	18.27%	-23.82%
50		10	42.6	39.9	45.3	35	48	1.19	3.78	8.87%	-33.54%
100		10	43.6	40.1	47.1	34	53	1.54	4.86	11.14%	-36.68%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 24 Jan-19 15:23 (p 2 of 2)

Test Code: 81009 | 11-1566-6183

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	33	32	20	35	27	35	29	30	38	40
6.25		42	33	18	27	33	40	34	41	32	41
12.5		40	36		42	38	45	47	42	45	41
25		37	33	43	23	39	45	46	40	42	47
50		39	40	46	44	48	35	43	45	44	42
100		53	47	41	42	45	44	41	45	34	44
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 24 Jan-19 15:22 (p 1 of 1)
 Test Code: 81009 | 11-1566-6183

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 17-8874-5733 Endpoint: Survival CETIS Version: CETISv1.9.2
 Analyzed: 24 Jan-19 15:15 Analysis: STP 2xK Contingency Tables Official Results: Yes

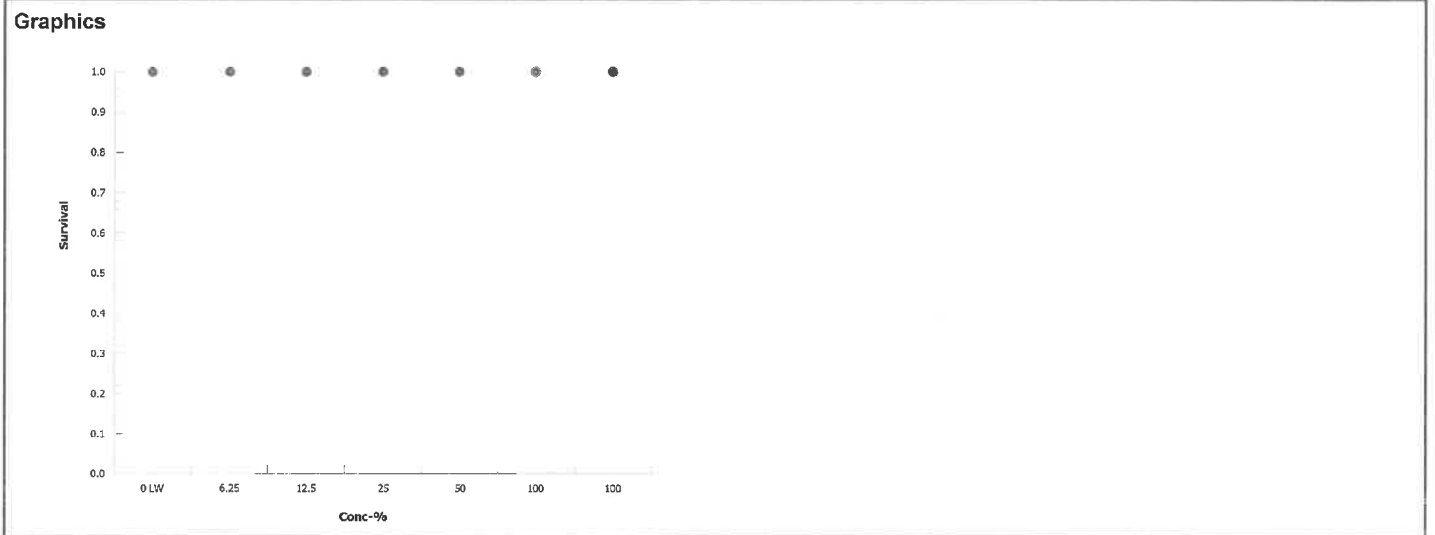
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 01-7144-7717 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 24 Jan-19 15:21 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	19.15%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	118	n/a	4	18	Exact	1.0000	Non-Significant Effect
		12.5	131	n/a	2	17	Exact	1.0000	Non-Significant Effect
		25	138	n/a	2	18	Exact	1.0000	Non-Significant Effect
		50	150	n/a	2	18	Exact	1.0000	Non-Significant Effect
		100	151	n/a	0	18	Exact	1.0000	Non-Significant Effect

ANOVA Table

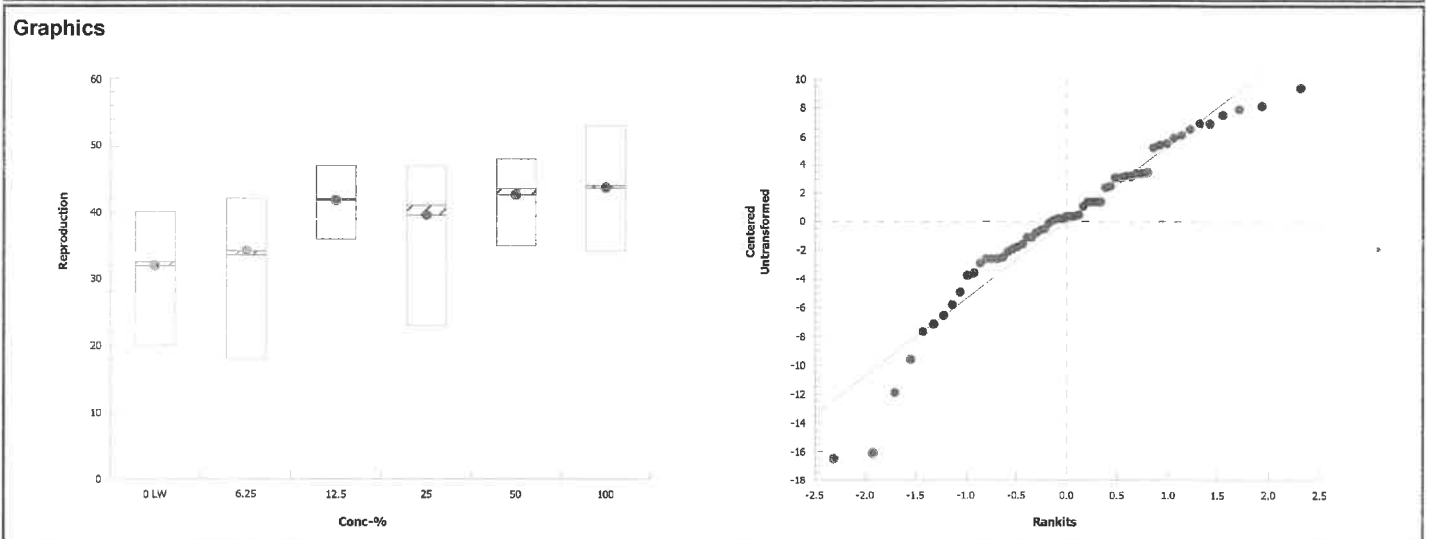
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1156.26	231.252	5	7.13	3.6E-05	Significant Effect
Error	1718.66	32.4275	53			
Total	2874.92		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	8.02	15.1	0.1552	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.942	0.945	0.0071	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	31.9	27.8	36	32.5	20	40	1.83	18.13%	0.00%
6.25		10	34.1	28.7	39.5	33.5	18	42	2.38	22.05%	-6.90%
12.5		9	41.8	39.1	44.5	42	36	47	1.18	8.44%	-30.96%
25		10	39.5	34.3	44.7	41	23	47	2.28	18.27%	-23.82%
50		10	42.6	39.9	45.3	43.5	35	48	1.19	8.87%	-33.54%
100		10	43.6	40.1	47.1	44	34	53	1.54	11.14%	-36.68%



CETIS Analytical Report

Report Date: 24 Jan-19 15:22 (p 1 of 1)
 Test Code: 81009 | 11-1566-6183

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 15-9441-4924 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 24 Jan-19 15:22 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	275365	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	31.9	20	40	1.83	5.78	18.10%	0.0%
6.25		10	34.1	18	42	2.38	7.52	22.10%	-6.9%
12.5		9	41.8	36	47	1.18	3.53	8.44%	-31.0%
25		10	39.5	23	47	2.28	7.21	18.30%	-23.8%
50		10	42.6	35	48	1.19	3.78	8.87%	-33.5%
100		10	43.6	34	53	1.54	4.86	11.10%	-36.7%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-BELT Test Date: 1/16/19
 Project #: 29677 Test ID: 81009 Randomization: 10.7.3 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.83		10.3		368	24.7	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/16/19 New WQ: Test Init.: TF Sol'n Prep: LB ID Time: 1306
1	7.84	7.67	9.8	8.0	364	25.1	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/17/19 New WQ: Counts: 46 Sol'n Prep: LB Old WQ: KK Time: 1157
2	7.91	7.81	9.6	7.7	353	25.1	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/18/19 New WQ: TA Counts: 50 Sol'n Prep: SD Old WQ: JA Time: 1408
3	7.73	7.69	8.8	6.8	361	24.9	0	0	0	0	4	3	4	6	4				Date: 1/19/19 New WQ: SC Counts: 103 Sol'n Prep: SMC Old WQ: JA Time: 1432
4	7.74	7.74	10.3	6.5	350	24.7	5	0	0	6	0	0	0	0	0	0	0	0	Date: 1/20/19 New WQ: TP Counts: KL Sol'n Prep: TL Old WQ: TP Time: 1555
5	7.84	7.69	9.4	6.2	328	24.7	13	13	4	12	13	13	11	10	13	16			Date: 1/21/19 New WQ: EP Counts: UU Sol'n Prep: UU Old WQ: TP Time: 1600
6	—	7.66	—	7.0	347	24.8	15	19	13 ¹⁶	13 ¹⁷	14	18	15	16	19	20			Date: 1/22/19 New WQ: — Counts: UU Sol'n Prep: — Old WQ: # Time: 1651
7																			Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
8																			Date: Old WQ: Counts: Time:
Total=							33	32	20	35	27	35	29	30	38	40	Mean Neonates/Female = 31.9		
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.86		10.2		363	25.0	0	0	0	0	0	0	0	0	0	0	0	0	51814
1	7.89	7.73	9.9	7.9	374	25.1	0	0	0	0	0	0	0	0	0	0	0	0	51814
2	7.94	7.83	9.8	7.4	372	25.0	0	0	0	0	0	0	0	0	0	0	0	0	51814
3	7.77	7.76	8.8	7.1	375	24.4	5	0	0	3	0	4	0	0	0	0	0	0	51814
4	7.81	7.74	10.6	6.4	369	24.3	0	0	6	3	6	0	7	7	0	6			51814
5	7.86	7.70	9.5	6.4	346	24.6	15	13	12	9	13	15	12	13	12	16			51814
6	—	7.68	—	7.0	369	24.5	22	20	0	12	14	21	15	21	20	19			—
7																			
8																			
Total=							42	33	19	27	33	40	34	41	32	41	Mean Neonates/Female = 34.1		

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-BELT Test Date: 1/16/19
 Project #: 29677 Test ID: 81009 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF			
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J				
12.5%	0	7.90		10.3		387	24.5	0	0	0	0	0	0	0	0	0	0	0		
	1	7.92	7.77	10.0	8.0	387	25.0	0	0	0	0	0	0	0	0	0	0	0	0	
	2	8.50	7.82	9.9	7.3	386	25.1	0	0	0	0	0	0	0	0	0	0	0	0	
	3	7.79	7.79	8.7	7.4	388	24.1	3	0	0	0	0	5	6	7	7	0			
	4	7.85	7.80	10.7	6.5	383	24.0	0	0	7	7	8	0	0	0	0	7			
	5	7.87	7.69	9.6	6.9	360	24.8	15	15	12	14	11	16	17	13	15	13			
	6	—	7.72	—	6.7	387	24.4	22	21	0	21	19	24	24	22	23	21			
	7																			
	8																			
Total=							40	36	19	42	38	45	47	42	45	41	Mean Neonates/Female = 39.5			
25%	0	7.92		10.7		411	24.5	0	0	0	0	0	0	0	0	0	0	0		
	1	7.92	7.79	10.2	7.9	410	24.6	0	0	0	0	0	0	0	0	0	0	0	0	
	2	7.98	7.86	9.9	7.5	410	25.2	0	0	0	0	0	0	0	0	0	0	0	0	
	3	7.79	7.79	8.9	7.4	413	24.9	0	0	0	0	0	5	0	0	4				
	4	7.85	7.85	10.4	6.9	402	24.6	0	0	6	6	6	7	0	5	7	0			
	5	7.87	7.70	9.6	6.8	387	24.2	15	14	14	17	12	15	17	15	15	17			
	6	—	7.72	—	7.1	421	24.5	22	19	23	0	21	23	24	20	20	26			
	7																			
	8																			
Total=							37	33	43	23	39	45	46	40	42	47	Mean Neonates/Female = 39.5			

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA - Calleguas Creek Material: 71-BELT Test Date: 1/16/19
 Project #: 29677 Test ID: 81009 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
50%	0	7.95		10.8		460	25.0	0	0	0	0	0	0	0	0	0	0	0	
	1	7.92	7.72	10.1	7.6	453	25.5	0	0	0	0	0	0	0	0	0	0	0	
	2	7.98	7.90	9.9	7.8	456	25.9	0	0	0	0	0	0	0	0	0	0	0	
	3	7.79	7.82	9.1	7.5	461	24.7	4	6	8	7	7	5	0	5	6	0		
	4	7.88	7.85	10.6	7.0	450	24.8	0	0	0	0	0	0	7	0	0	0		
	5	7.88	7.75	9.5	7.1	440	24.3	12	11	14	16	15	13	14	17	16	15		
	6	—	7.76	—	7.5	474	24.4	23	23	24	21	26	17	22	23	22	21		
	7																		
	8																		
Total=							39	40	46	44	42	35	43	45	44	42	Mean Neonates/Female = 42.6		
100%	0	7.94		10.8		555	24.8	0	0	0	0	0	0	0	0	0	0	0	
	1	7.93	7.78	10.2	7.5	552	25.3	0	0	0	0	0	0	0	0	0	0	0	
	2	7.98	7.99	9.9	7.9	554	25.1	0	0	0	0	0	0	0	0	0	0	0	
	3	7.81	7.86	9.4	7.6	557	24.8	5	7	3	5	6	0	5	6	3	3		
	4	7.90	7.88	10.7	7.0	547	24.5	1	0	0	0	0	6	0	0	0	0		
	5	7.88	7.81	9.6	6.9	556	24.3	19	15	14	16	15	16	14	16	14	14		
	6	—	7.82	—	7.5	584	24.5	28	25	24	21	24	22	22	23	17	27		
	7																		
	8																		
Total=							53	47	41	42	45	44	41	45	34	44	Mean Neonates/Female = 43.6		

Appendix C

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to *Ceriodaphnia dubia*: Data Analyses Including Statistical Outliers

CETIS Summary Report

Report Date: 30 Jan-19 10:01 (p 1 of 2)
 Test Code: 81005 | 20-7653-1358

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk
Batch ID: 10-4134-9882	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley		
Start Date: 16 Jan-19 14:11	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water		
Ending Date: 22 Jan-19 16:06	Species: Ceriodaphnia dubia	Brine: Not Applicable		
Duration: 6d 2h	Source: In-House Culture	Age: 1		
Sample ID: 13-8356-9860	Code: 71-UNIV-029	Client: Larry Walker Associates		
Sample Date: 15 Jan-19 18:10	Material: Ambient Water	Project: 29677		
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek			
Sample Age: 20h (2.8 °C)	Station: UNIV			

Comments:
 Stats include reproductive outliers LWC-D, 12.5J, 50 D

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
15-4319-3292	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	18.3%
21-4103-3387	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
13-8174-4791	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	36.4	31.8	41	19	41	2.03	6.43	17.67%	0.00%
6.25		10	39.7	37.6	41.8	34	44	0.943	2.98	7.51%	-9.07%
12.5		9	40	34.2	45.8	21	46	2.51	7.52	18.79%	-9.89%
25		10	43.5	40.1	46.9	33	51	1.52	4.81	11.06%	-19.51%
50		9	40	33.5	46.5	20	46	2.82	8.46	21.14%	-9.89%
100		9	40.9	37.4	44.4	33	47	1.53	4.59	11.24%	-12.33%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 30 Jan-19 10:01 (p 2 of 2)
 Test Code: 81005 | 20-7653-1358

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	40	41	35	36	39	38	41	37	19	38
6.25		37	39	37	40	42	44	41	34	41	42
12.5		39	46	43	42	40	40	45	44	21	
25		47	45	43	44	45	41	51	40	46	33
50		39	43	46	20	34	46	43	46	43	
100		42	47	41	33	42	34	42	42	45	
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	

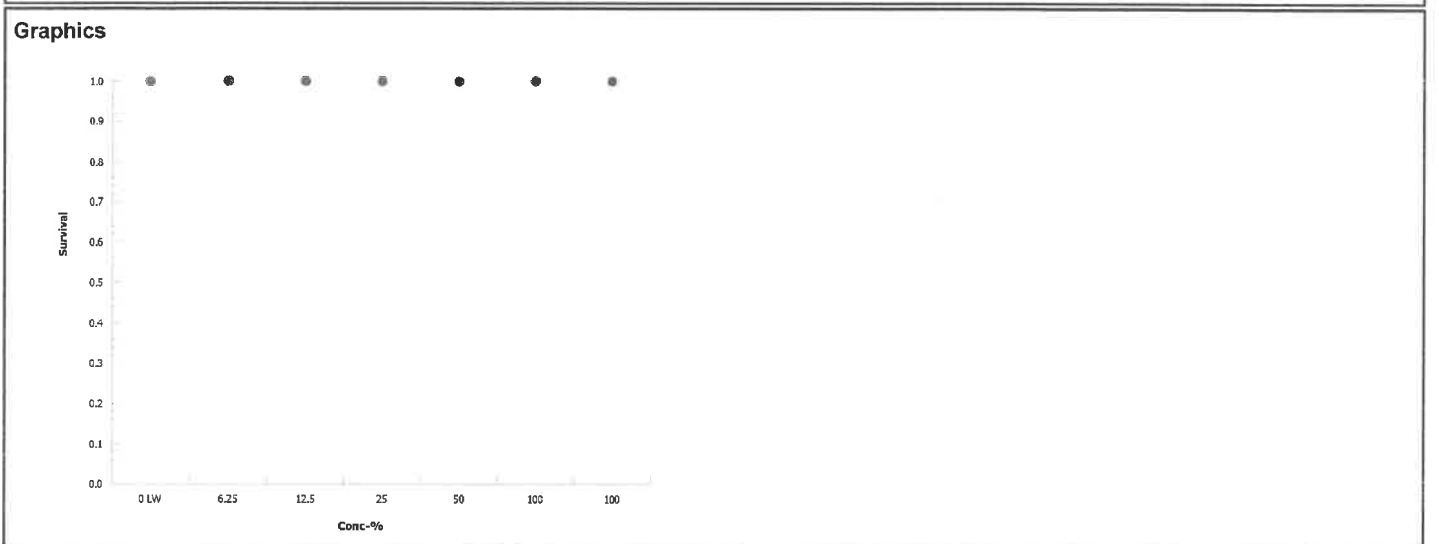
CETIS Analytical Report

Report Date: 30 Jan-19 10:01 (p 1 of 1)
 Test Code: 81005 | 20-7653-1358

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk	
Analysis ID: 21-4103-3387	Endpoint: Survival	CETIS Version: CETISv1.9.2		Official Results: Yes	
Analyzed: 30 Jan-19 10:00	Analysis: STP 2xK Contingency Tables				
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		9	0	9	1	0	0.0%
25		10	0	10	1	0	0.0%
50		9	0	9	1	0	0.0%
100		9	0	9	1	0	0.0%



Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 15-4319-3292 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 30 Jan-19 10:00 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	18.28%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	125	n/a	5	18	Exact	1.0000	Non-Significant Effect
		12.5	118	n/a	2	17	Exact	1.0000	Non-Significant Effect
		25	142	n/a	3	18	Exact	1.0000	Non-Significant Effect
		50	114	n/a	1	17	Exact	1.0000	Non-Significant Effect
		100	116	n/a	2	17	Exact	1.0000	Non-Significant Effect

ANOVA Table

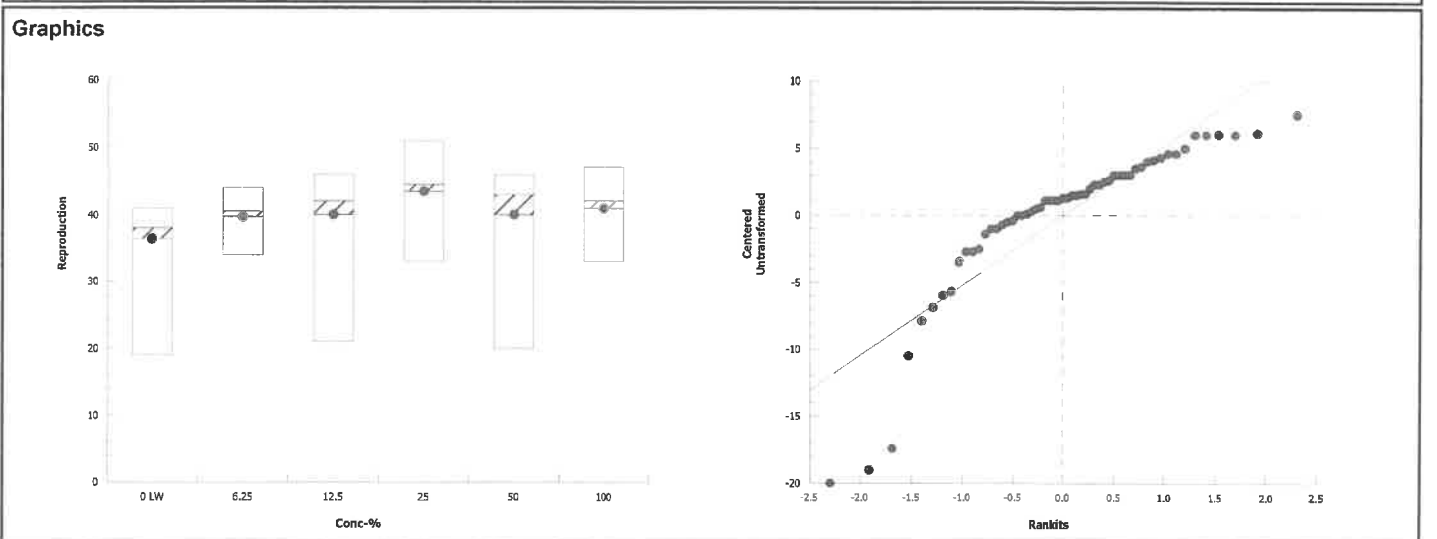
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	259.83	51.9661	5	1.43	0.2296	Non-Significant Effect
Error	1853.89	36.3508	51			
Total	2113.72		56			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	10.5	15.1	0.0627	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.801	0.943	2.5E-07	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	36.4	31.8	41	38	19	41	2.03	17.67%	0.00%
6.25		10	39.7	37.6	41.8	40.5	34	44	0.943	7.51%	-9.07%
12.5		9	40	34.2	45.8	42	21	46	2.51	18.79%	-9.89%
25		10	43.5	40.1	46.9	44.5	33	51	1.52	11.06%	-19.51%
50		9	40	33.5	46.5	43	20	46	2.82	21.14%	-9.89%
100		9	40.9	37.4	44.4	42	33	47	1.53	11.24%	-12.33%



CETIS Analytical Report

Report Date: 30 Jan-19 10:01 (p 1 of 1)
 Test Code: 81005 | 20-7653-1358

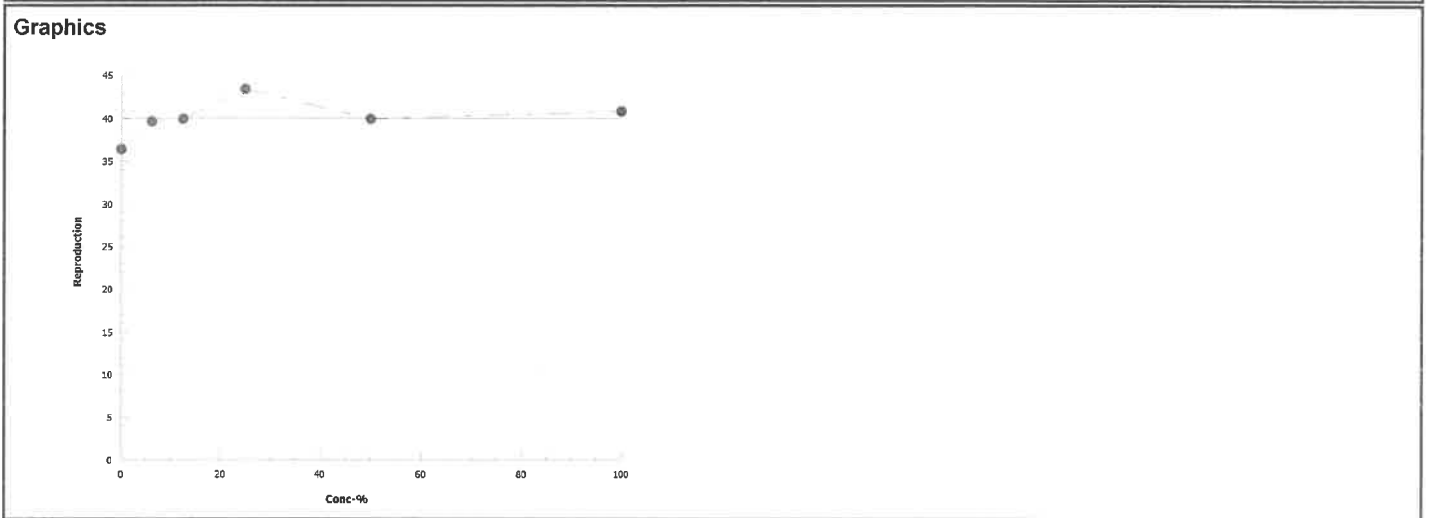
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 13-8174-4791	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 30 Jan-19 10:00	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	458915	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	36.4	19	41	2.03	6.43	17.70%	0.0%
6.25		10	39.7	34	44	0.943	2.98	7.51%	-9.07%
12.5		9	40	21	46	2.51	7.52	18.80%	-9.89%
25		10	43.5	33	51	1.52	4.81	11.10%	-19.5%
50		9	40	20	46	2.82	8.46	21.10%	-9.89%
100		9	40.9	33	47	1.53	4.59	11.20%	-12.3%



CETIS Summary Report

Report Date: 23 Jan-19 10:28 (p 1 of 2)
 Test Code: 81006 | 13-7894-5167

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 10-9499-7107	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford
Start Date: 16 Jan-19 14:24	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 16:20	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 2h	Source: In-House Culture	Age: 1

Sample ID: 18-6568-3025	Code: 71-ADOLF-072	Client: Larry Walker Associates
Sample Date: 15 Jan-19 17:50	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 21h (2.4 °C)	Station: ADOLF	

Comments:
 Includes Reproductive Outlier 25-I.

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
17-2811-2919	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	24.1%
16-3594-1576	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
09-0857-7949	Reproduction	Linear Interpolation (ICPIN)	IC5	40.7	19.2	n/a	2.46	
			IC10	69.6	28	n/a	1.437	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	34.4	32.3	36.5	31	41	0.945	2.99	8.69%	0.00%
6.25		10	34.4	27.4	41.4	20	45	3.1	9.8	28.49%	0.00%
12.5		10	40.4	38.2	42.6	34	45	0.98	3.1	7.67%	-17.44%
25		10	38.6	31.8	45.4	15	45	3.01	9.52	24.67%	-12.21%
50		10	34	26.1	41.9	9	44	3.49	11	32.46%	1.16%
100		10	32.1	26.2	38	17	40	2.6	8.23	25.62%	6.69%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date:

23 Jan-19 10:28 (p 2 of 2)

Test Code:

81006 | 13-7894-5167

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	34	38	34	41	32	33	31	33	33	35
6.25		43	21	33	45	38	39	42	20	41	22
12.5		41	45	34	43	37	42	41	41	39	41
25		37	43	30	40	45	45	45	43	15	43
50		36	39	37	39	39	19	44	9	41	37
100		37	30	36	30	39	40	39	19	34	17
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

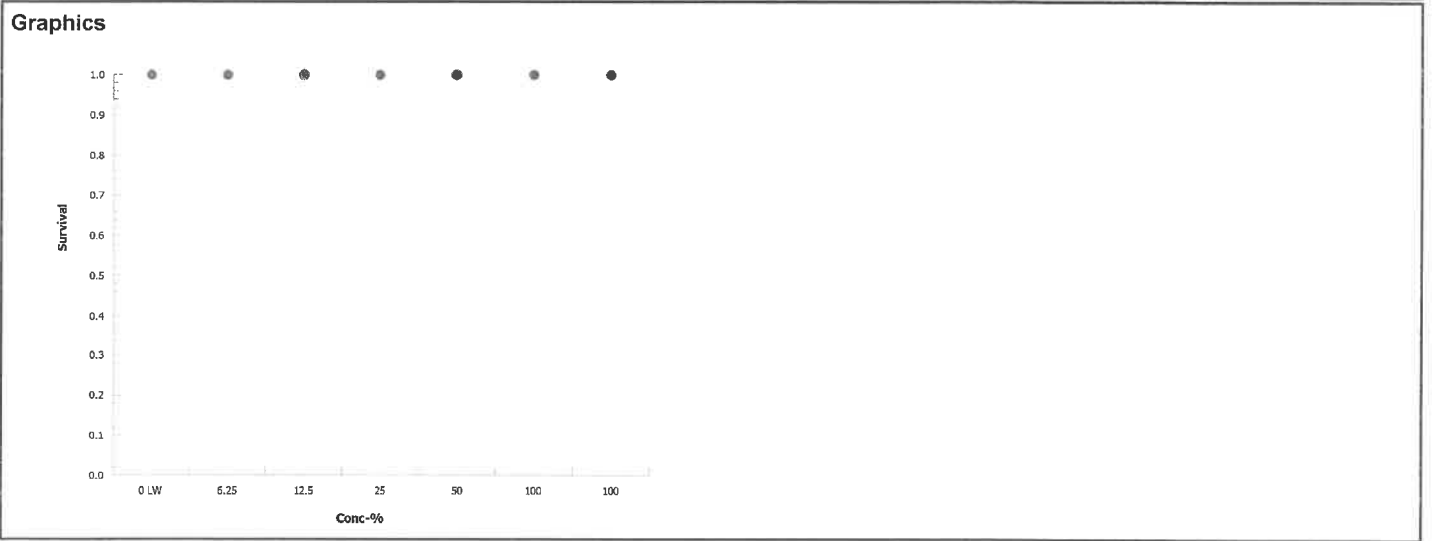
CETIS Analytical Report

Report Date: 23 Jan-19 10:28 (p 1 of 1)
 Test Code: 81006 | 13-7894-5167

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk	
Analysis ID: 16-3594-1576	Endpoint: Survival	CETIS Version: CETISv1.9.2		Official Results: Yes	
Analyzed: 23 Jan-19 10:28	Analysis: STP 2xK Contingency Tables				
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



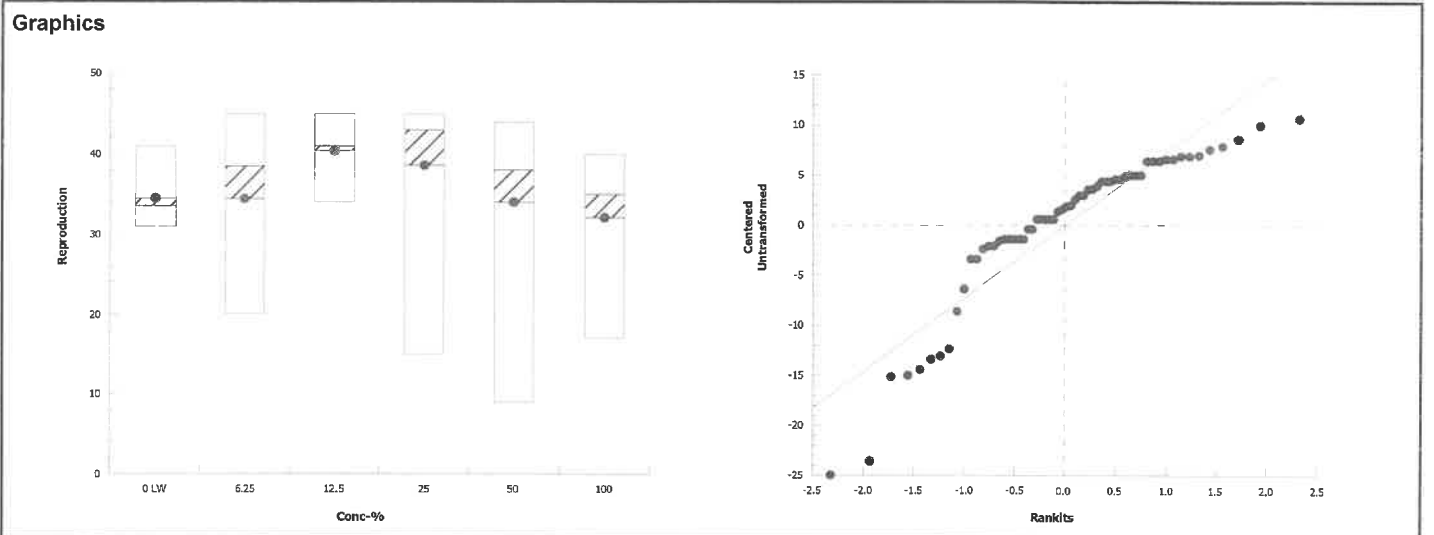
Ceriodaphnia Survival and Reproduction Test					Pacific EcoRisk	
Analysis ID: 17-2811-2919	Endpoint: Reproduction	CETIS Version: CETISv1.9.2		Official Results: Yes		
Analyzed: 23 Jan-19 10:28	Analysis: Nonparametric-Control vs Treatments					
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	24.14%

Steel Many-One Rank Sum Test									
Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	116	75	3	18	Asymp	0.9727	Non-Significant Effect
		12.5	146	75	2	18	Asymp	1.0000	Non-Significant Effect
		25	132	75	0	18	Asymp	0.9997	Non-Significant Effect
		50	126	75	1	18	Asymp	0.9977	Non-Significant Effect
		100	104	75	1	18	Asymp	0.8098	Non-Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	497.15	99.43	5	1.51	0.2017	Non-Significant Effect
Error	3552.5	65.787	54			
Total	4049.65		59			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	22.2	15.1	4.7E-04	Unequal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.859	0.946	5.6E-06	Non-Normal Distribution	

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	34.4	32.3	36.5	33.5	31	41	0.945	8.69%	0.00%
6.25		10	34.4	27.4	41.4	38.5	20	45	3.1	28.49%	0.00%
12.5		10	40.4	38.2	42.6	41	34	45	0.98	7.67%	-17.44%
25		10	38.6	31.8	45.4	43	15	45	3.01	24.67%	-12.21%
50		10	34	26.1	41.9	38	9	44	3.49	32.46%	1.16%
100		10	32.1	26.2	38	35	17	40	2.6	25.62%	6.69%



CETIS Analytical Report

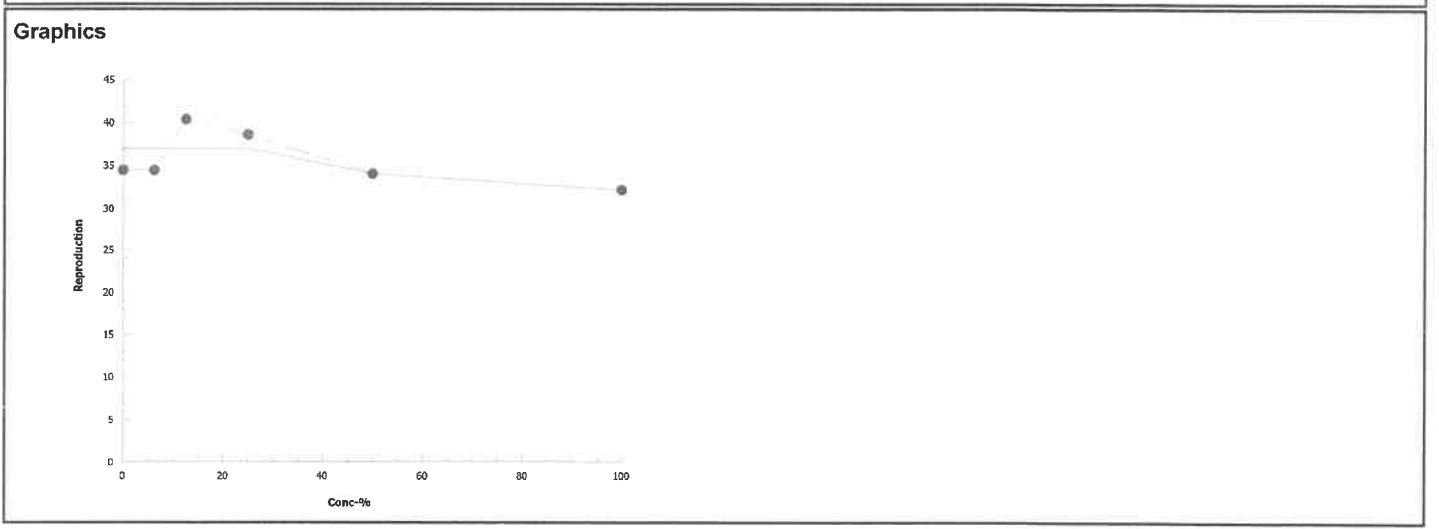
Report Date: 23 Jan-19 10:28 (p 1 of 1)
 Test Code: 81006 | 13-7894-5167

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk		
Analysis ID: 09-0857-7949	Endpoint: Reproduction	CETIS Version: CETISv1.9.2			
Analyzed: 23 Jan-19 10:28	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes			

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1766600	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	40.7	19.2	n/a	2.46	n/a	5.214
IC10	69.6	28	n/a	1.437	n/a	3.565
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	34.4	31	41	0.945	2.99	8.69%	0.0%
6.25		10	34.4	20	45	3.1	9.8	28.50%	0.0%
12.5		10	40.4	34	45	0.98	3.1	7.67%	-17.4%
25		10	38.6	15	45	3.01	9.52	24.70%	-12.2%
50		10	34	9	44	3.49	11	32.50%	1.16%
100		10	32.1	17	40	2.6	8.23	25.60%	6.69%



CETIS Summary Report

Report Date: 23 Jan-19 12:35 (p 1 of 2)
 Test Code: 81011 | 03-3182-1165

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 06-2337-2341	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford
Start Date: 16 Jan-19 15:50	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 15:45	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d	Source: In-House Culture	Age: 1

Sample ID: 15-3985-5258	Code: 71-WOOD-124	Client: Larry Walker Associates
Sample Date: 15 Jan-19 15:15	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 25h (1.3 °C)	Station: WOOD	

Comments:
 Includes Reproductive Outlier 50-C.

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
09-7527-4420	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	28.1%
02-8840-9861	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
09-7231-5060	Reproduction	Linear Interpolation (ICPIN)	IC5	63.4	3.24	n/a	1.576
			IC10	95.5	6.64	n/a	1.047
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.9	24.8	37	17	41	2.71	8.57	27.73%	0.00%
6.25		10	33.3	27.5	39.1	19	42	2.55	8.06	24.19%	-7.77%
12.5		10	28.6	23.1	34.1	16	37	2.43	7.68	26.84%	7.44%
25		10	29.6	23.8	35.4	12	38	2.57	8.11	27.41%	4.21%
50		10	35.3	31.5	39.1	21	39	1.66	5.25	14.87%	-14.24%
100		9	28.7	21.6	35.8	14	40	3.08	9.23	32.21%	7.23%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 23 Jan-19 12:35 (p 2 of 2)
 Test Code: 81011 | 03-3182-1165

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	38	17	32	32	19	37	33	38	41	22
6.25		35	29	22	36	41	40	19	42	30	39
12.5		19	35	35	34	37	16	27	20	33	30
25		30	12	36	32	38	34	19	28	33	34
50		39	39	21	36	37	34	38	36	37	36
100		33	34	40	30	19	18	36	14	34	
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

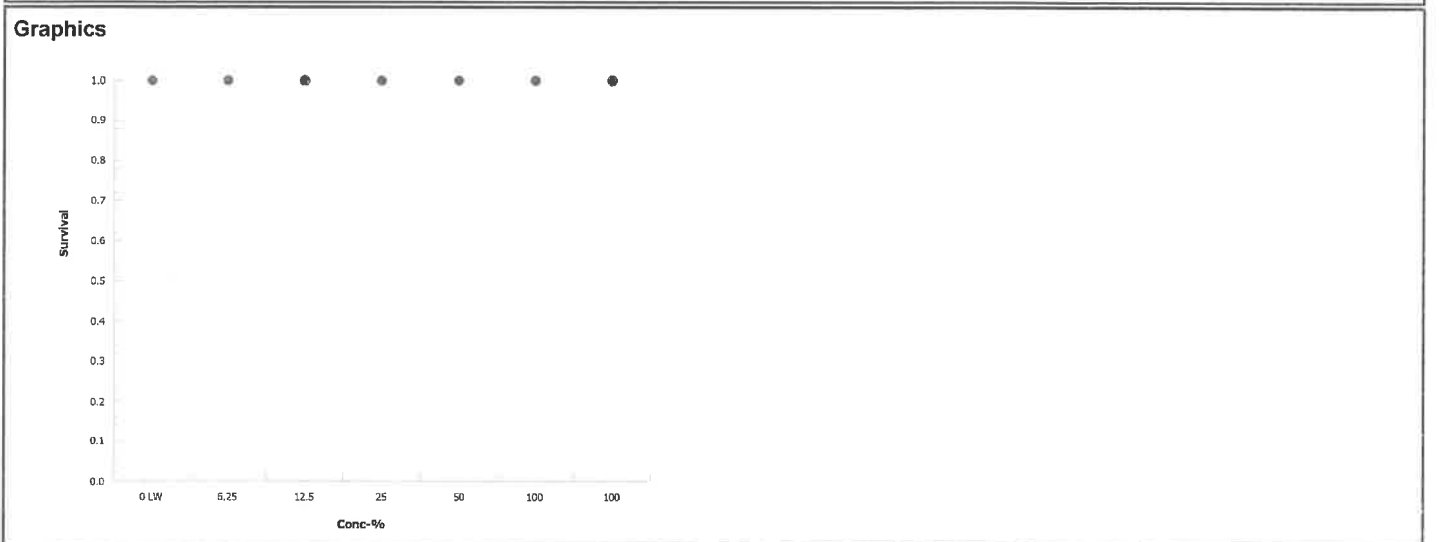
CETIS Analytical Report

Report Date: 23 Jan-19 12:35 (p 1 of 1)
 Test Code: 81011 | 03-3182-1165

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk			
Analysis ID: 02-8840-9861	Endpoint: Survival		CETIS Version: CETISv1.9.2			
Analyzed: 23 Jan-19 12:35	Analysis: STP 2xK Contingency Tables		Official Results: Yes			
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	
Untransformed	C > T	100	> 100	n/a	1	

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		9	0	9	1	0	0.0%



CETIS Analytical Report

Report Date: 23 Jan-19 12:35 (p 1 of 1)
 Test Code: 81011 | 03-3182-1165

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 09-7527-4420 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 12:35 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	28.14%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	114	n/a	3	18	Exact	1.0000	Non-Significant Effect
		12.5	94.5	n/a	3	18	Exact	1.0000	Non-Significant Effect
		25	98	n/a	4	18	Exact	1.0000	Non-Significant Effect
		50	120	n/a	2	18	Exact	1.0000	Non-Significant Effect
		100	83	n/a	2	17	Exact	1.0000	Non-Significant Effect

ANOVA Table

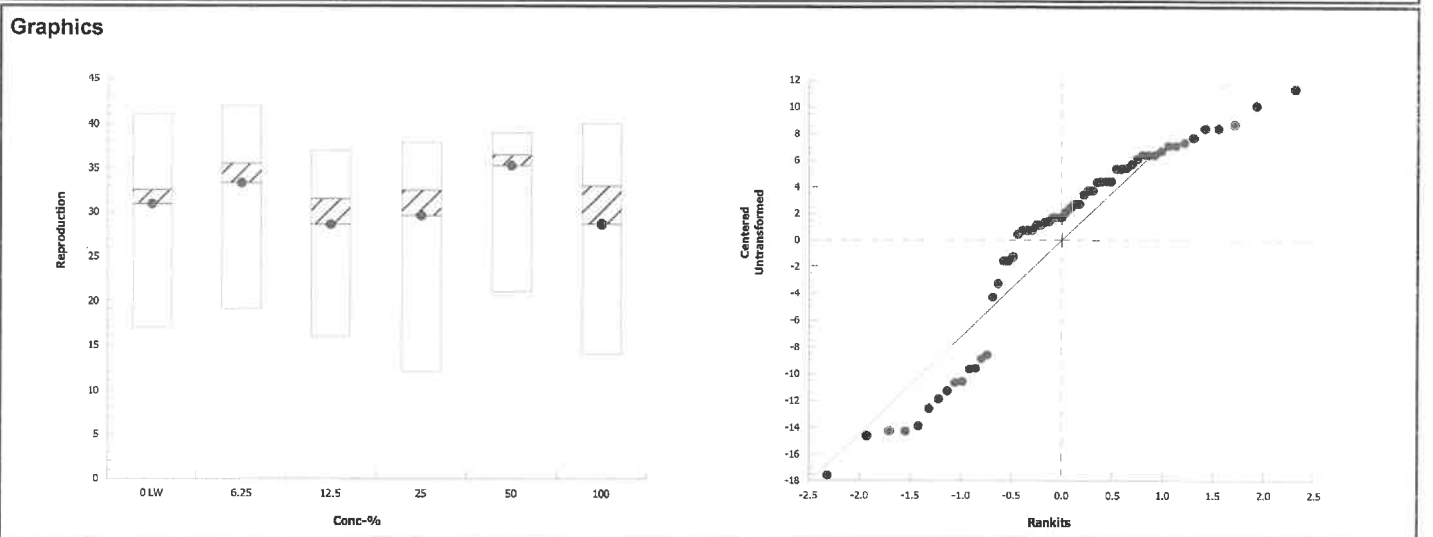
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	363.49	72.698	5	1.17	0.3370	Non-Significant Effect
Error	3297.9	62.2245	53			
Total	3661.39		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	2.8	15.1	0.7310	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.894	0.945	8.8E-05	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30.9	24.8	37	32.5	17	41	2.71	27.73%	0.00%
6.25		10	33.3	27.5	39.1	35.5	19	42	2.55	24.19%	-7.77%
12.5		10	28.6	23.1	34.1	31.5	16	37	2.43	26.84%	7.44%
25		10	29.6	23.8	35.4	32.5	12	38	2.57	27.41%	4.21%
50		10	35.3	31.5	39.1	36.5	21	39	1.66	14.87%	-14.24%
100		9	28.7	21.6	35.8	33	14	40	3.08	32.21%	7.23%



CETIS Analytical Report

Report Date: 23 Jan-19 12:35 (p 1 of 1)
 Test Code: 81011 | 03-3182-1165

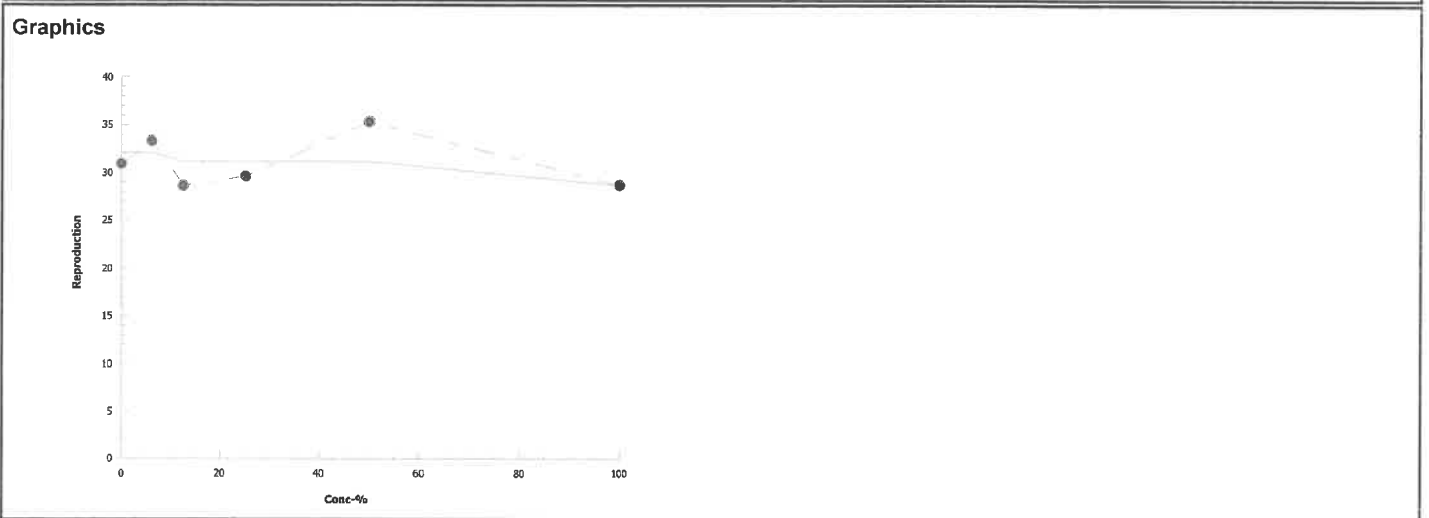
Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 09-7231-5060 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 12:35 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	35768	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	63.4	3.24	n/a	1.576	n/a	30.91
IC10	95.5	6.64	n/a	1.047	n/a	15.05
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a > <td <1	n/a	n/a	
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.9	17	41	2.71	8.57	27.70%	0.0%
6.25		10	33.3	19	42	2.55	8.06	24.20%	-7.77%
12.5		10	28.6	16	37	2.43	7.68	26.80%	7.44%
25		10	29.6	12	38	2.57	8.11	27.40%	4.21%
50		10	35.3	21	39	1.66	5.25	14.90%	-14.2%
100		9	28.7	14	40	3.08	9.23	32.20%	7.23%



CETIS Summary Report

Report Date: 23 Jan-19 12:09 (p 1 of 2)
 Test Code: 81010 | 01-4115-7670

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 18-0529-2883	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford
Start Date: 16 Jan-19 14:01	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 13:54	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d	Source: In-House Culture	Age: 1

Sample ID: 01-3970-1167	Code: 71-UPLAND-154	Client: Larry Walker Associates
Sample Date: 15 Jan-19 19:10	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 19h (2.8 °C)	Station: UPLAND	

Comments:
 Includes Reproductive Outlier 6.25-B.

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
01-2517-2156	Reproduction	Wilcoxon/Bonferroni Adj Test	50	100	70.71	2	38.4%
11-0817-6591	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
19-8009-4099	Reproduction	Linear Interpolation (ICPIN)	IC5	16.6	1.78	54.2	6.019	
			IC10	20.7	3.56	60.8	4.824	
			IC15	24.8	5.35	69.6	4.025	
			IC20	57.6	11.8	78.2	1.737	
			IC25	65.5	20.5	90.7	1.528	
			IC40	89.1	55.8	n/a	1.123	
IC50	>100	n/a	n/a	<1				

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.3	22.8	37.8	16	42	3.32	10.5	34.69%	0.00%
6.25		10	29.4	20.2	38.6	0	40	4.05	12.8	43.59%	2.97%
12.5		9	32.4	25.8	39.1	17	43	2.9	8.69	26.79%	-7.08%
25		10	26	18.3	33.7	14	40	3.4	10.8	41.38%	14.19%
50		10	26.1	18.3	33.9	0	35	3.46	10.9	41.91%	13.86%
100		10	16.3	8.66	23.9	0	29	3.38	10.7	65.51%	46.20%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
12.5		9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 23 Jan-19 12:09 (p 2 of 2)
Test Code: 81010 | 01-4115-7670

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	35	16	36	37	28	40	42	37	16	16
6.25		36	0	34	40	37	37	33	19	19	39
12.5		32	17	43	36	36	19	37	37	35	
25		16	35	16	14	16	40	34	38	18	33
50		30	29	33	25	32	30	35	33	0	14
100		29	16	8	26	28	11	28	11	0	6
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1

CETIS Analytical Report

Report Date: 23 Jan-19 12:08 (p 1 of 1)
 Test Code: 81010 | 01-4115-7670

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 11-0817-6591 Endpoint: Survival CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 12:08 Analysis: STP 2xK Contingency Tables Official Results: Yes

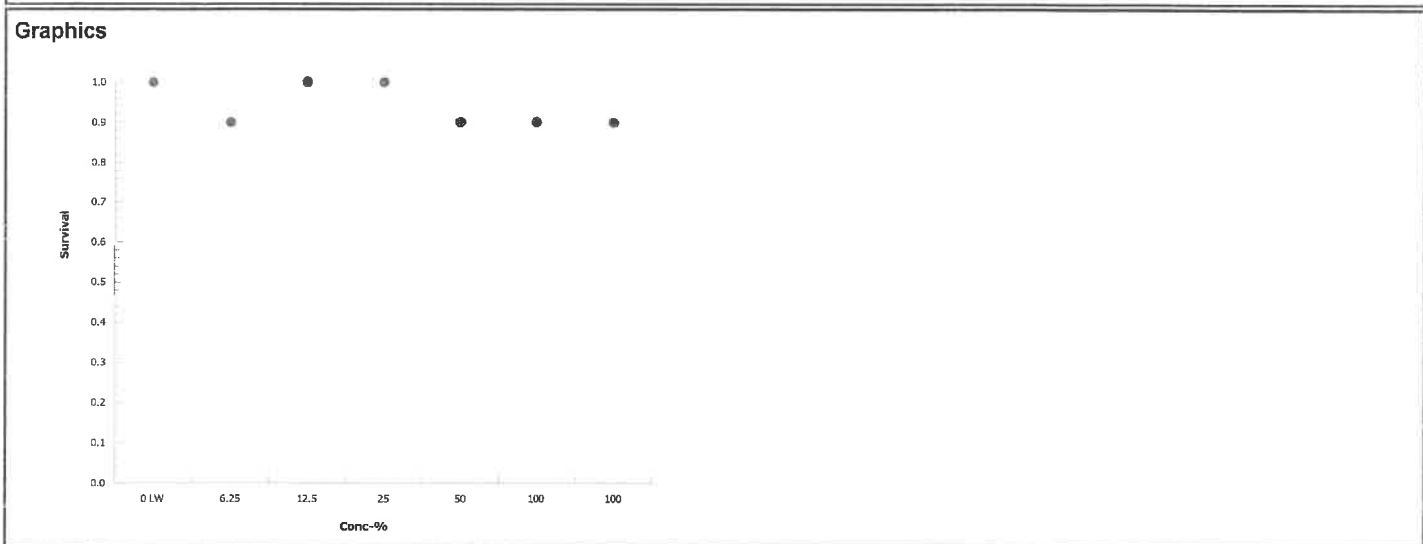
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Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	0.500	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	0.500	Exact	1.0000	Non-Significant Effect
		100	0.500	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		9	1	10	0.9	0.1	10.0%
12.5		9	0	9	1	0	0.0%
25		10	0	10	1	0	0.0%
50		9	1	10	0.9	0.1	10.0%
100		9	1	10	0.9	0.1	10.0%



Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk		
Analysis ID: 01-2517-2156	Endpoint: Reproduction	CETIS Version: CETISv1.9.2			
Analyzed: 23 Jan-19 12:08	Analysis: Nonparametric-Multiple Comparison	Official Results: Yes			

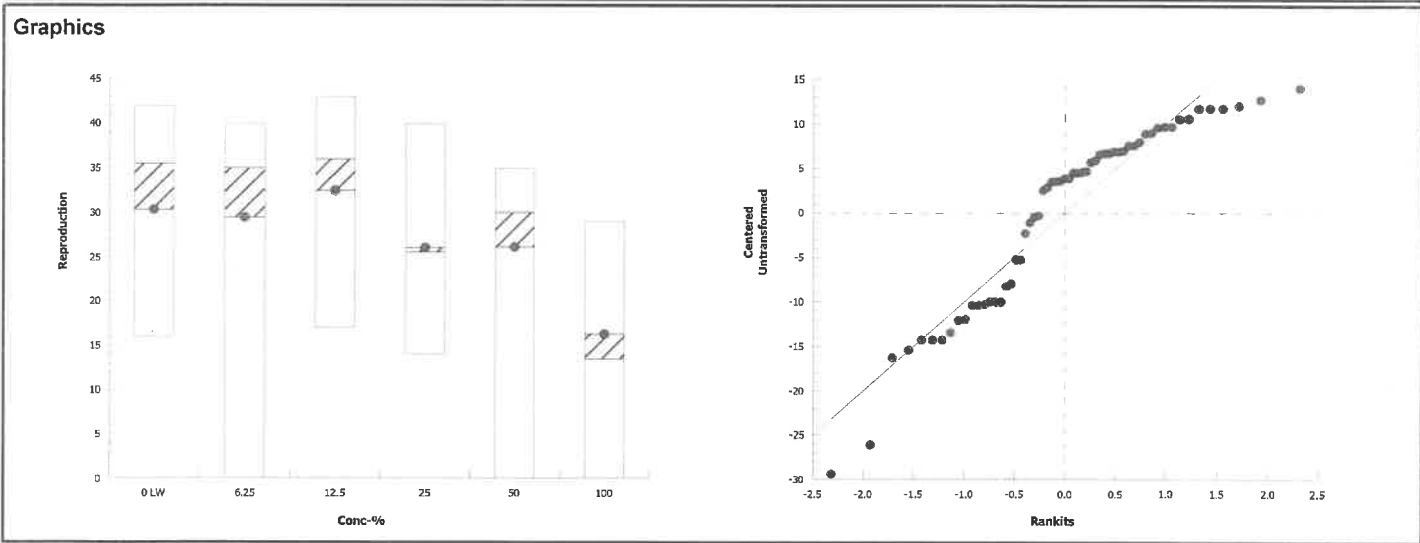
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	50	100	70.71	2	38.36%

Wilcoxon/Bonferroni Adj Test									
Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	105	n/a	3	18	Exact	1.0000	Non-Significant Effect
		12.5	94.5	n/a	3	17	Exact	1.0000	Non-Significant Effect
		25	91.5	n/a	3	18	Exact	0.7912	Non-Significant Effect
		50	86.5	n/a	1	18	Exact	0.4250	Non-Significant Effect
		100*	70.5	n/a	2	18	Exact	0.0168	Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1589.5	317.9	5	2.71	0.0298	Significant Effect
Error	6221.72	117.391	53			
Total	7811.22		58			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	1.21	15.1	0.9435	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.904	0.945	2.1E-04	Non-Normal Distribution	

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30.3	22.8	37.8	35.5	16	42	3.32	34.69%	0.00%
6.25		10	29.4	20.2	38.6	35	0	40	4.05	43.59%	2.97%
12.5		9	32.4	25.8	39.1	36	17	43	2.9	26.79%	-7.08%
25		10	26	18.3	33.7	25.5	14	40	3.4	41.38%	14.19%
50		10	26.1	18.3	33.9	30	0	35	3.46	41.91%	13.86%
100		10	16.3	8.66	23.9	13.5	0	29	3.38	65.51%	46.20%



CETIS Analytical Report

Report Date: 23 Jan-19 12:08 (p 1 of 1)
 Test Code: 81010 | 01-4115-7670

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 19-8009-4099 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 12:08 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

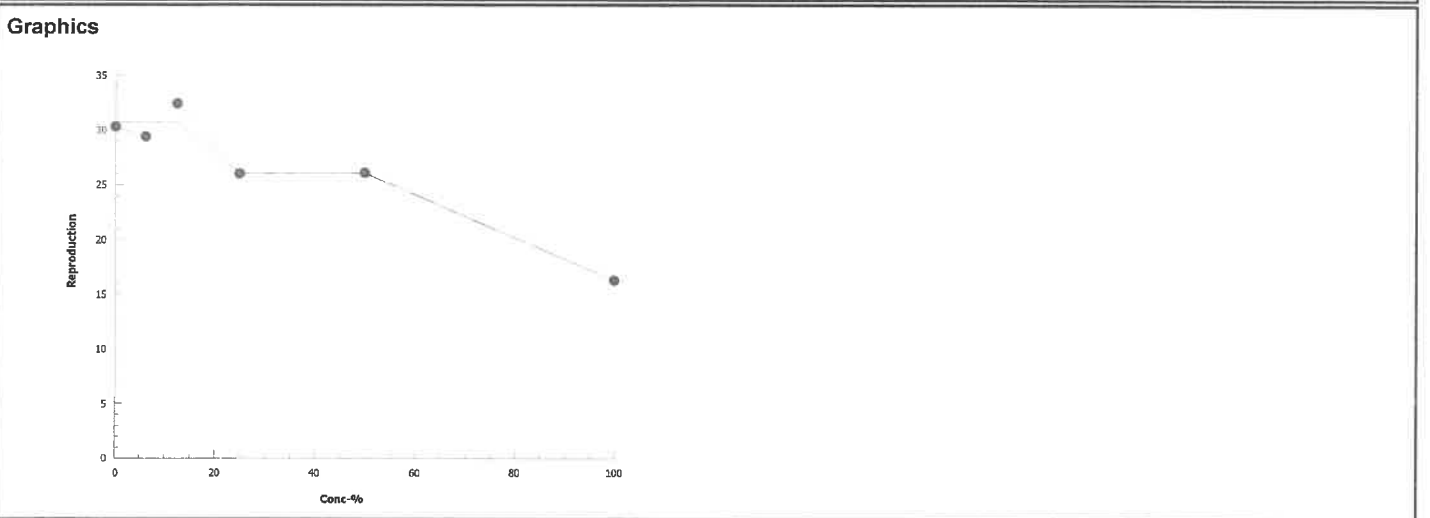
Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	500598	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	16.6	1.78	54.2	6.019	1.845	56.12
IC10	20.7	3.56	60.8	4.824	1.645	28.06
IC15	24.8	5.35	69.6	4.025	1.438	18.71
IC20	57.6	11.8	78.2	1.737	1.279	8.504
IC25	65.5	20.5	90.7	1.528	1.102	4.887
IC40	89.1	55.8	n/a	1.123	n/a	1.794
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.3	16	42	3.32	10.5	34.70%	0.0%
6.25		10	29.4	0	40	4.05	12.8	43.60%	2.97%
12.5		9	32.4	17	43	2.9	8.69	26.80%	-7.08%
25		10	26	14	40	3.4	10.8	41.40%	14.2%
50		10	26.1	0	35	3.46	10.9	41.90%	13.9%
100		10	16.3	0	29	3.38	10.7	65.50%	46.2%



CETIS Summary Report

Report Date: 30 Jan-19 10:55 (p 1 of 2)
 Test Code: 81007 | 07-7301-8391

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 10-3555-0651	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 16 Jan-19 15:14	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 22 Jan-19 15:45	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 1h	Source: In-House Culture	Age: 1

Sample ID: 17-3258-3584	Code: 71-HITCH-160	Client: Larry Walker Associates
Sample Date: 15 Jan-19 17:10	Material: Ambient Water	Project: 29677
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek	
Sample Age: 22h (2.7 °C)	Station: HITCH	

Comments:
 Stats include reproductive outlier LWC-H

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
16-6040-1878	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	30.3%
04-5160-1992	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
06-0602-9319	Reproduction	Linear Interpolation (ICPIN)	IC5	74.7	19.4	n/a	1.339	
			IC10	99.4	42	n/a	1.006	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.1	25.5	34.7	14	38	2.02	6.38	21.21%	0.00%
6.25		10	34.1	27.6	40.6	17	42	2.87	9.07	26.61%	-13.29%
12.5		10	38.2	32.6	43.8	23	46	2.49	7.87	20.61%	-26.91%
25		10	34.9	28.1	41.7	18	44	3.01	9.52	27.26%	-15.95%
50		10	34.6	28.4	40.8	19	45	2.73	8.64	24.98%	-14.95%
100		10	30.9	22.9	38.9	5	41	3.54	11.2	36.24%	-2.66%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 30 Jan-19 10:55 (p 2 of 2)
 Test Code: 81007 | 07-7301-8391

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	30	27	38	32	35	32	32	14	31	30
6.25		41	39	28	42	22	42	40	31	39	17
12.5		37	25	42	43	40	44	46	41	23	41
25		38	37	42	40	25	40	43	22	44	18
50		41	45	25	39	35	25	36	42	19	39
100		18	34	36	28	37	39	35	5	41	36
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1

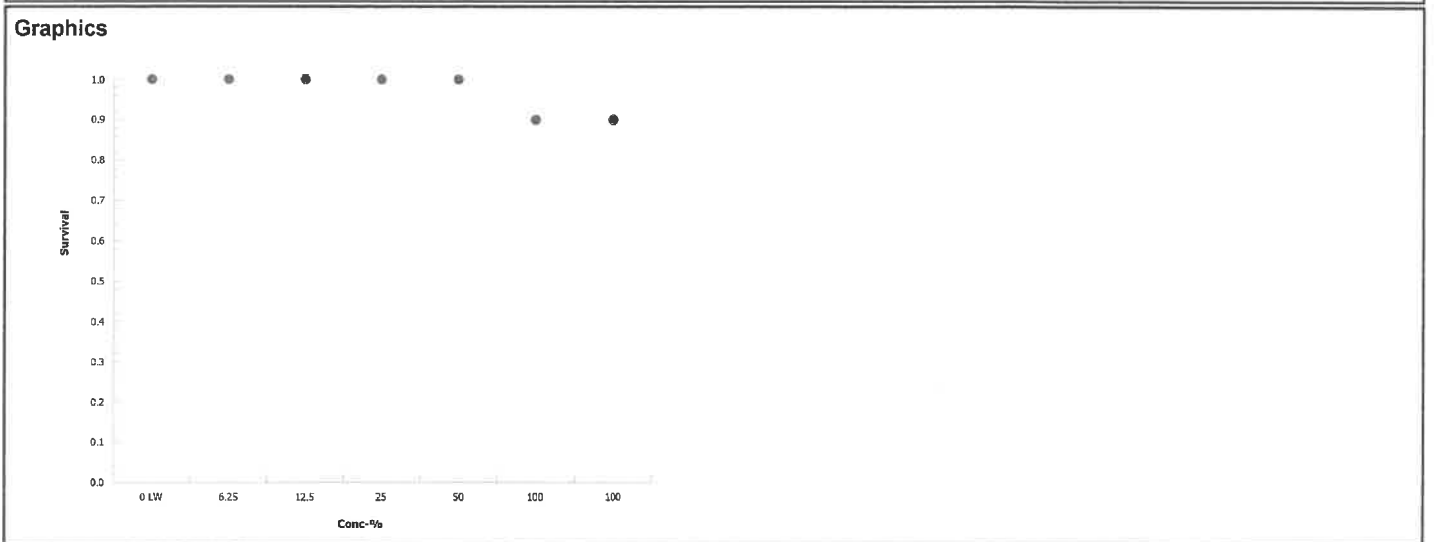
CETIS Analytical Report

Report Date: 30 Jan-19 10:55 (p 1 of 1)
 Test Code: 81007 | 07-7301-8391

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk			
Analysis ID: 04-5160-1992		Endpoint: Survival		CETIS Version: CETISv1.9.2			
Analyzed: 30 Jan-19 10:55		Analysis: STP 2xK Contingency Tables		Official Results: Yes			
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU		
Untransformed	C > T	100	> 100	n/a	1		

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	0.500	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		9	1	10	0.9	0.1	10.0%



CETIS Analytical Report

Report Date: 30 Jan-19 10:55 (p 1 of 1)

Test Code: 81007 | 07-7301-8391

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 16-6040-1878	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 30 Jan-19 10:55	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	30.29%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	124	75	1	18	Asymp	0.9960	Non-Significant Effect
		12.5	136	75	0	18	Asymp	0.9999	Non-Significant Effect
		25	126	75	1	18	Asymp	0.9983	Non-Significant Effect
		50	126	75	1	18	Asymp	0.9977	Non-Significant Effect
		100	122	75	1	18	Asymp	0.9933	Non-Significant Effect

ANOVA Table

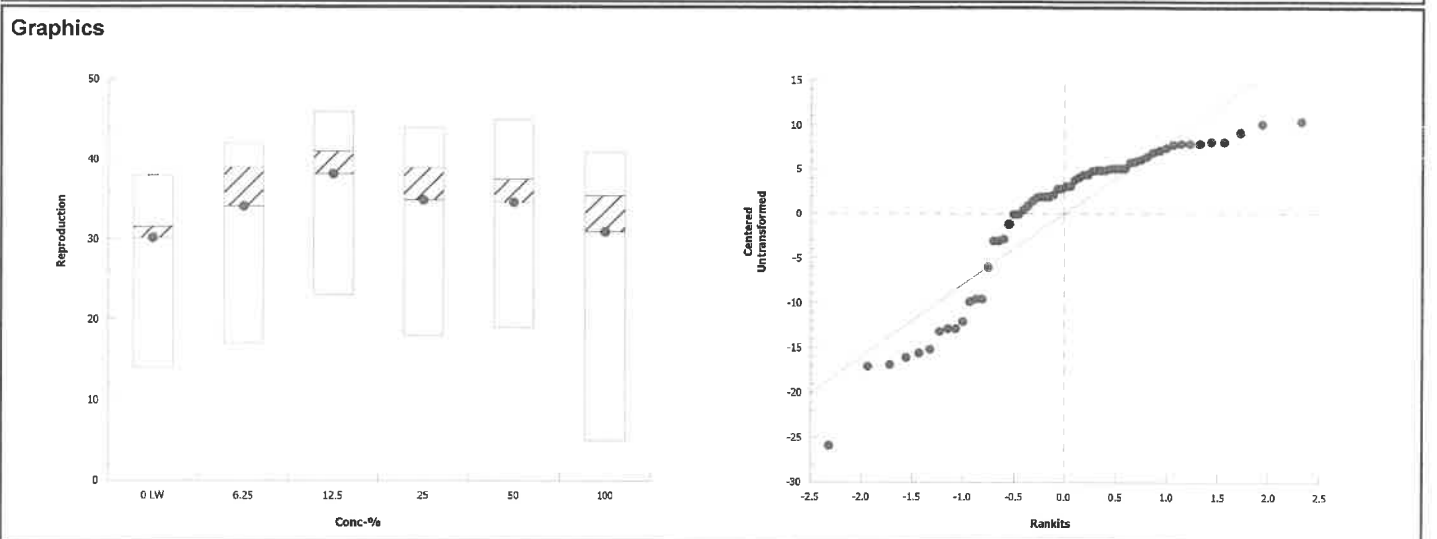
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	434	86.8	5	1.09	0.3740	Non-Significant Effect
Error	4281.6	79.2889	54			
Total	4715.6		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	2.95	15.1	0.7071	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.856	0.946	4.5E-06	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30.1	25.5	34.7	31.5	14	38	2.02	21.21%	0.00%
6.25		10	34.1	27.6	40.6	39	17	42	2.87	26.61%	-13.29%
12.5		10	38.2	32.6	43.8	41	23	46	2.49	20.61%	-26.91%
25		10	34.9	28.1	41.7	39	18	44	3.01	27.26%	-15.95%
50		10	34.6	28.4	40.8	37.5	19	45	2.73	24.98%	-14.95%
100		10	30.9	22.9	38.9	35.5	5	41	3.54	36.24%	-2.66%



CETIS Analytical Report

Report Date: 30 Jan-19 10:55 (p 1 of 1)
 Test Code: 81007 | 07-7301-8391

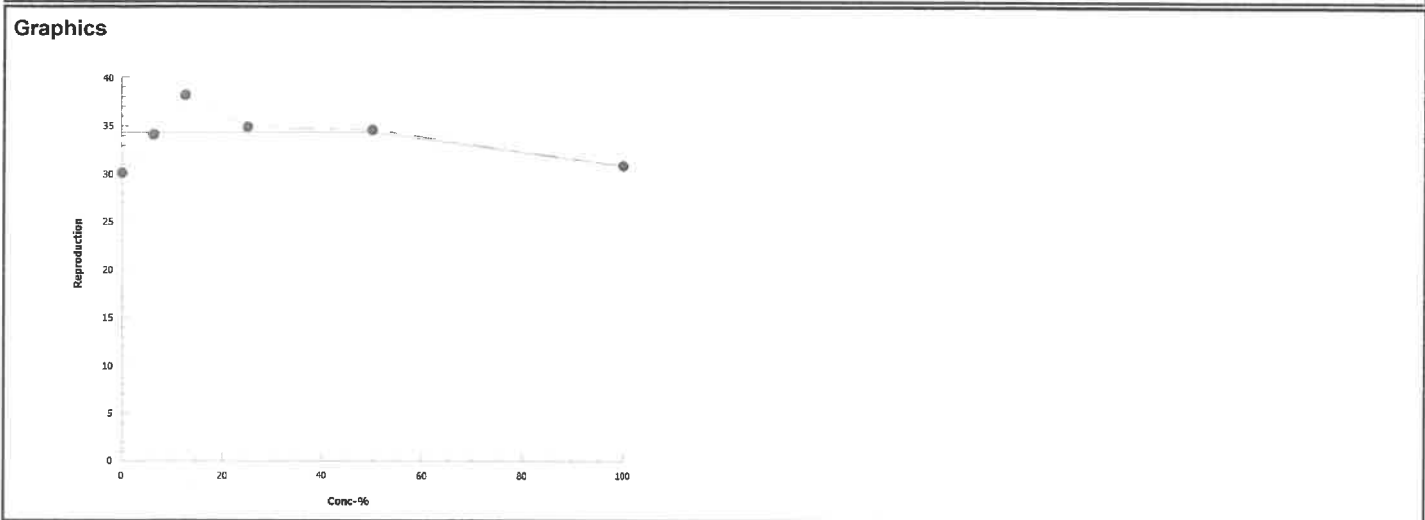
Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 06-0602-9319 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 30 Jan-19 10:55 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	650936	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	74.7	19.4	n/a	1.339	n/a	5.146
IC10	99.4	42	n/a	1.006	n/a	2.38
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.1	14	38	2.02	6.38	21.20%	0.0%
6.25		10	34.1	17	42	2.87	9.07	26.60%	-13.3%
12.5		10	38.2	23	46	2.49	7.87	20.60%	-26.9%
25		10	34.9	18	44	3.01	9.52	27.30%	-15.9%
50		10	34.6	19	45	2.73	8.64	25.00%	-15.0%
100		10	30.9	5	41	3.54	11.2	36.20%	-2.66%



CETIS Summary Report

Report Date: 23 Jan-19 13:43 (p 1 of 2)

Test Code: 81008 | 05-3448-0352

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk
Batch ID: 12-5313-3263	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford		
Start Date: 16 Jan-19 15:15	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water		
Ending Date: 22 Jan-19 16:00	Species: Ceriodaphnia dubia	Brine: Not Applicable		
Duration: 6d 1h	Source: In-House Culture	Age: 1		
Sample ID: 05-0581-9958	Code: 71-GATE-207	Client: Larry Walker Associates		
Sample Date: 15 Jan-19 15:40	Material: Ambient Water	Project: 29677		
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek			
Sample Age: 24h (2 °C)	Station: GATE			

Comments:
Includes Reproductive Outliers 12.5-B and 25-H.

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
15-6024-4934	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	24.9%
02-4507-3225	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
16-0995-8912	Reproduction	Linear Interpolation (ICPIN)	IC5	46.7	30	n/a	2.143
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	34.1	30.2	38	24	43	1.74	5.51	16.15%	0.00%
6.25		10	33.6	27.2	40	13	40	2.83	8.96	26.66%	1.47%
12.5		10	36.7	31.6	41.8	20	44	2.26	7.13	19.44%	-7.62%
25		10	39.5	34.3	44.7	21	48	2.3	7.26	18.38%	-15.84%
50		10	33.9	26.1	41.7	17	44	3.47	11	32.36%	0.59%
100		10	33.7	27.3	40.1	18	44	2.82	8.91	26.43%	1.17%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 23 Jan-19 13:43 (p 2 of 2)
 Test Code: 81008 | 05-3448-0352

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	33	24	33	37	42	43	34	32	32	31
6.25		40	39	39	38	22	13	38	33	38	36
12.5		32	20	36	41	44	35	36	37	44	42
25		37	38	43	41	42	45	40	21	48	40
50		37	17	21	39	44	17	43	40	40	41
100		34	34	35	42	44	18	19	42	36	33
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

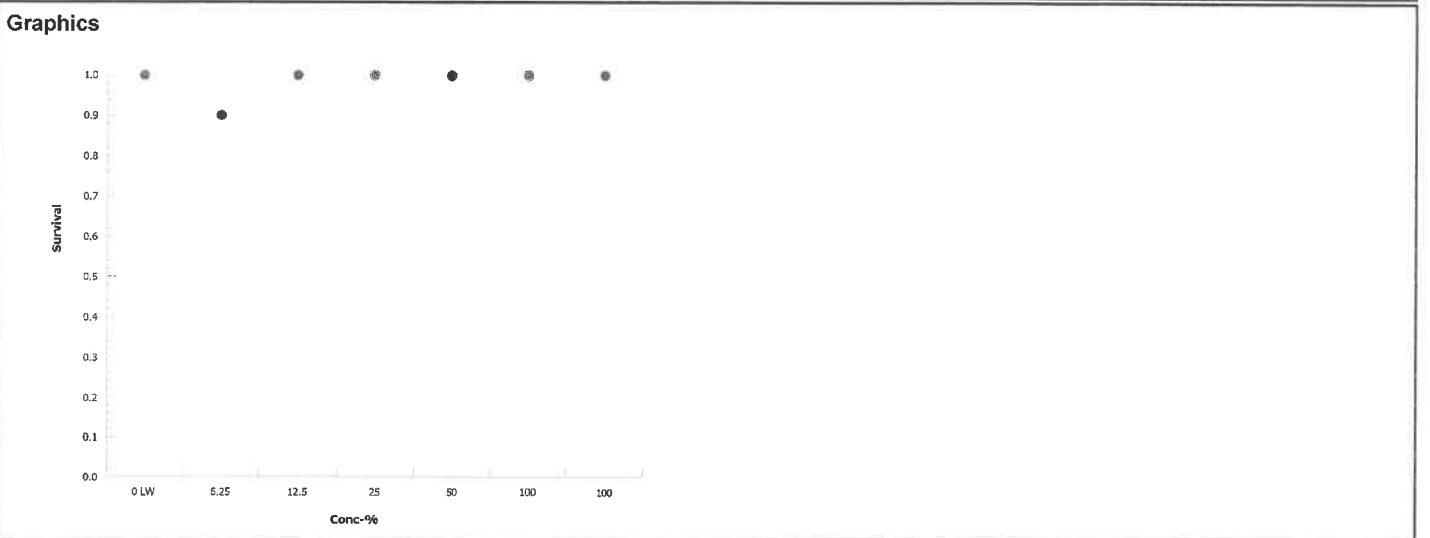
CETIS Analytical Report

Report Date: 23 Jan-19 13:43 (p 1 of 1)
 Test Code: 81008 | 05-3448-0352

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk	
Analysis ID: 02-4507-3225	Endpoint: Survival	CETIS Version: CETISv1.9.2		Official Results: Yes	
Analyzed: 23 Jan-19 13:43	Analysis: STP 2xK Contingency Tables				
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	0.500	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		9	1	10	0.9	0.1	10.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 15-6024-4934 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 13:43 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	24.93%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	115	75	1	18	Asymp	0.9697	Non-Significant Effect
		12.5	123	75	3	18	Asymp	0.9955	Non-Significant Effect
		25	132	75	3	18	Asymp	0.9998	Non-Significant Effect
		50	114	75	2	18	Asymp	0.9629	Non-Significant Effect
		100	114	75	3	18	Asymp	0.9629	Non-Significant Effect

ANOVA Table

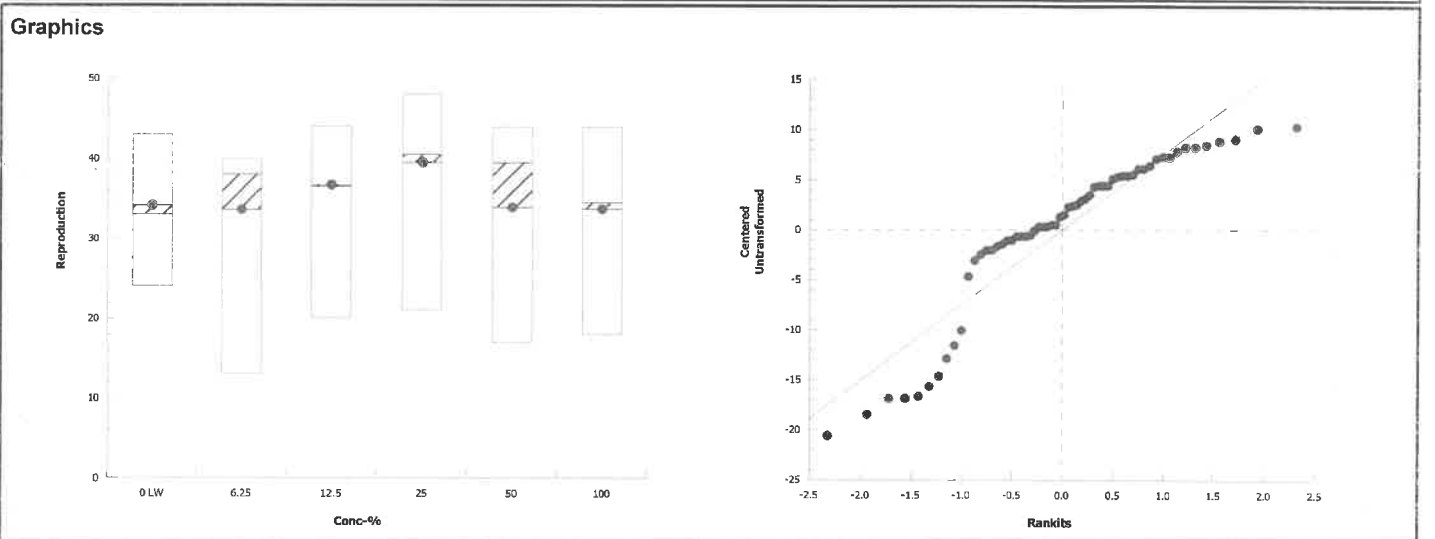
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	284.35	56.87	5	0.824	0.5378	Non-Significant Effect
Error	3724.9	68.9796	54			
Total	4009.25		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	4.72	15.1	0.4514	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.871	0.946	1.3E-05	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	34.1	30.2	38	33	24	43	1.74	16.15%	0.00%
6.25		10	33.6	27.2	40	38	13	40	2.83	26.66%	1.47%
12.5		10	36.7	31.6	41.8	36.5	20	44	2.26	19.44%	-7.62%
25		10	39.5	34.3	44.7	40.5	21	48	2.3	18.38%	-15.84%
50		10	33.9	26.1	41.7	39.5	17	44	3.47	32.36%	0.59%
100		10	33.7	27.3	40.1	34.5	18	44	2.82	26.43%	1.17%



CETIS Analytical Report

Report Date: 23 Jan-19 13:43 (p 1 of 1)
 Test Code: 81008 | 05-3448-0352

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 16-0995-8912 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 23 Jan-19 13:43 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

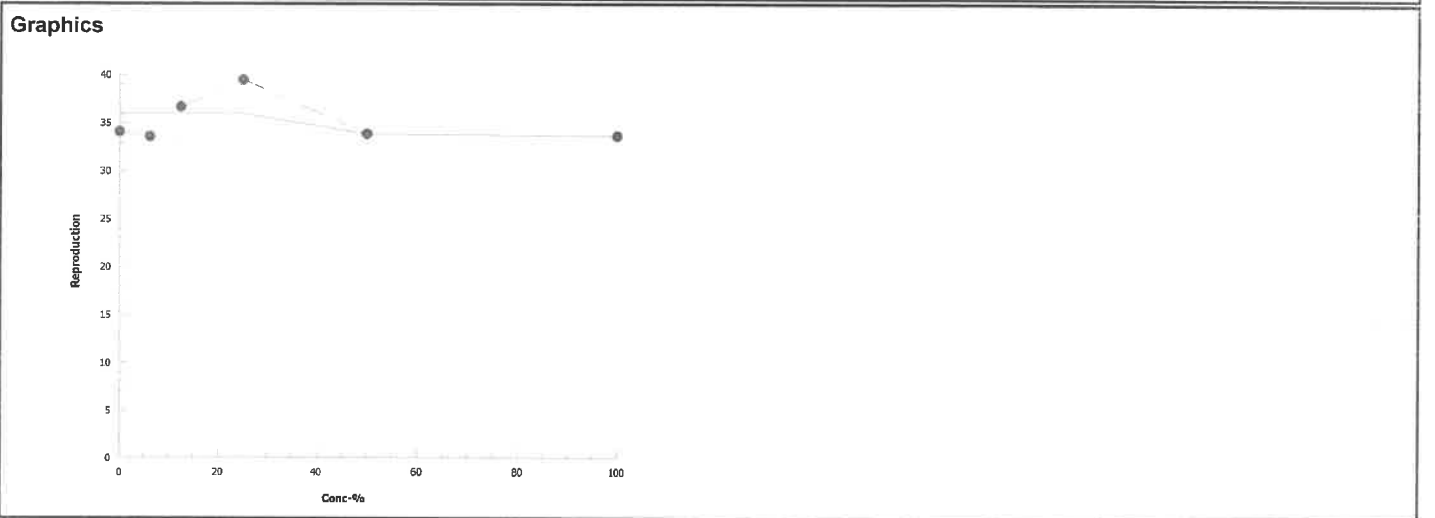
Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2134673	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	46.7	30	n/a	2.143	n/a	3.332
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	34.1	24	43	1.74	5.51	16.10%	0.0%
6.25		10	33.6	13	40	2.83	8.96	26.70%	1.47%
12.5		10	36.7	20	44	2.26	7.13	19.40%	-7.62%
25		10	39.5	21	48	2.3	7.26	18.40%	-15.8%
50		10	33.9	17	44	3.47	11	32.40%	0.59%
100		10	33.7	18	44	2.82	8.91	26.40%	1.17%



CETIS Summary Report

Report Date: 24 Jan-19 15:20 (p 1 of 2)
 Test Code: 81009 | 11-1566-6183

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk
Batch ID: 09-7841-8727	Test Type: Reproduction-Survival (7d)	Analyst: Scott Ford	
Start Date: 16 Jan-19 13:06	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 22 Jan-19 16:50	Species: Ceriodaphnia dubia	Brine: Not Applicable	
Duration: 6d 4h	Source: In-House Culture	Age: 1	
Sample ID: 01-6470-8578	Code: 71-BELT-210	Client: Larry Walker Associates	
Sample Date: 15 Jan-19 16:25	Material: Ambient Water	Project: 29677	
Receipt Date: 16 Jan-19 07:00	Source: Calleguas Creek		
Sample Age: 21h (3 °C)	Station: BELT		

Comments:
 Includes Reproductive Outlier 12.5-C.

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
20-0763-8405	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	20.4%
17-8874-5733	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
10-6816-4039	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	31.9	27.8	36	20	40	1.83	5.78	18.13%	0.00%
6.25		10	34.1	28.7	39.5	18	42	2.38	7.52	22.05%	-6.90%
12.5		10	39.5	33.8	45.2	19	47	2.51	7.93	20.09%	-23.82%
25		10	39.5	34.3	44.7	23	47	2.28	7.21	18.27%	-23.82%
50		10	42.6	39.9	45.3	35	48	1.19	3.78	8.87%	-33.54%
100		10	43.6	40.1	47.1	34	53	1.54	4.86	11.14%	-36.68%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 24 Jan-19 15:20 (p 2 of 2)
 Test Code: 81009 | 11-1566-6183

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	33	32	20	35	27	35	29	30	38	40
6.25		42	33	18	27	33	40	34	41	32	41
12.5		40	36	19	42	38	45	47	42	45	41
25		37	33	43	23	39	45	46	40	42	47
50		39	40	46	44	48	35	43	45	44	42
100		53	47	41	42	45	44	41	45	34	44
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 24 Jan-19 15:20 (p 1 of 1)
 Test Code: 81009 | 11-1566-6183

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 17-8874-5733 Endpoint: Survival CETIS Version: CETISv1.9.2
 Analyzed: 24 Jan-19 15:15 Analysis: STP 2xK Contingency Tables Official Results: Yes

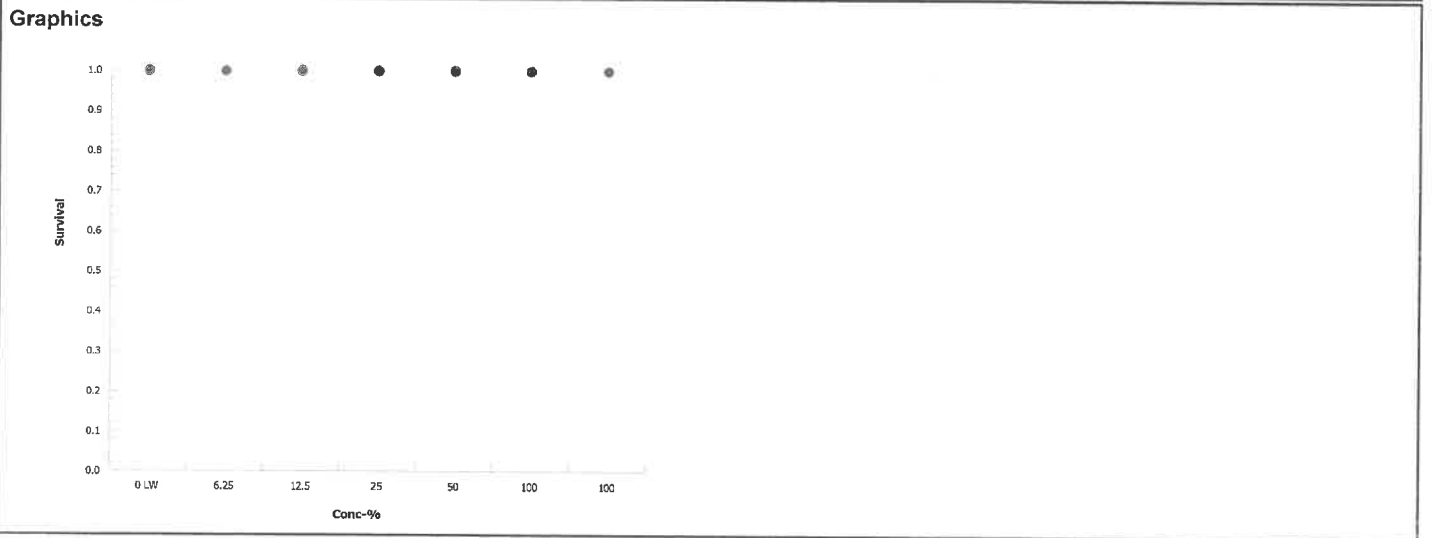
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



CETIS Analytical Report

Report Date: 24 Jan-19 15:20 (p 1 of 1)
 Test Code: 81009 | 11-1566-6183

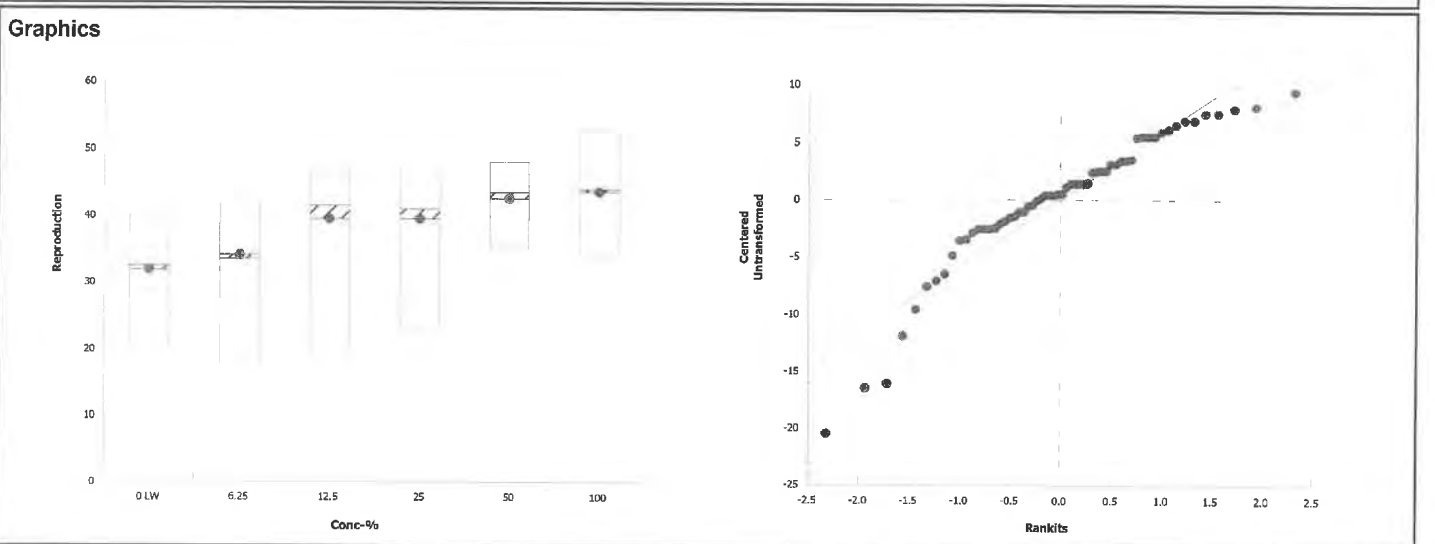
Ceriodaphnia Survival and Reproduction Test						Pacific EcoRisk	
Analysis ID: 20-0763-8405	Endpoint: Reproduction			CETIS Version: CETISv1.9.2			
Analyzed: 24 Jan-19 15:20	Analysis: Nonparametric-Control vs Treatments			Official Results: Yes			
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD	
Untransformed	C > T	100	> 100	n/a	1	20.42%	

Steel Many-One Rank Sum Test									
Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	118	75	4	18	Asymp	0.9824	Non-Significant Effect
		12.5	141	75	2	18	Asymp	1.0000	Non-Significant Effect
		25	138	75	2	18	Asymp	1.0000	Non-Significant Effect
		50	150	75	2	18	Asymp	1.0000	Non-Significant Effect
		100	151	75	0	18	Asymp	1.0000	Non-Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1077.33	215.467	5	5.32	4.8E-04	Significant Effect
Error	2185.6	40.4741	54			
Total	3262.93		59			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	6.43	15.1	0.2663	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.907	0.946	2.4E-04	Non-Normal Distribution	

Reproduction Summary												
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
0	LW	10	31.9	27.8	36	32.5	20	40	1.83	18.13%	0.00%	
6.25		10	34.1	28.7	39.5	33.5	18	42	2.38	22.05%	-6.90%	
12.5		10	39.5	33.8	45.2	41.5	19	47	2.51	20.09%	-23.82%	
25		10	39.5	34.3	44.7	41	23	47	2.28	18.27%	-23.82%	
50		10	42.6	39.9	45.3	43.5	35	48	1.19	8.87%	-33.54%	
100		10	43.6	40.1	47.1	44	34	53	1.54	11.14%	-36.68%	



CETIS Analytical Report

Report Date: 24 Jan-19 15:20 (p 1 of 1)
 Test Code: 81009 | 11-1566-6183

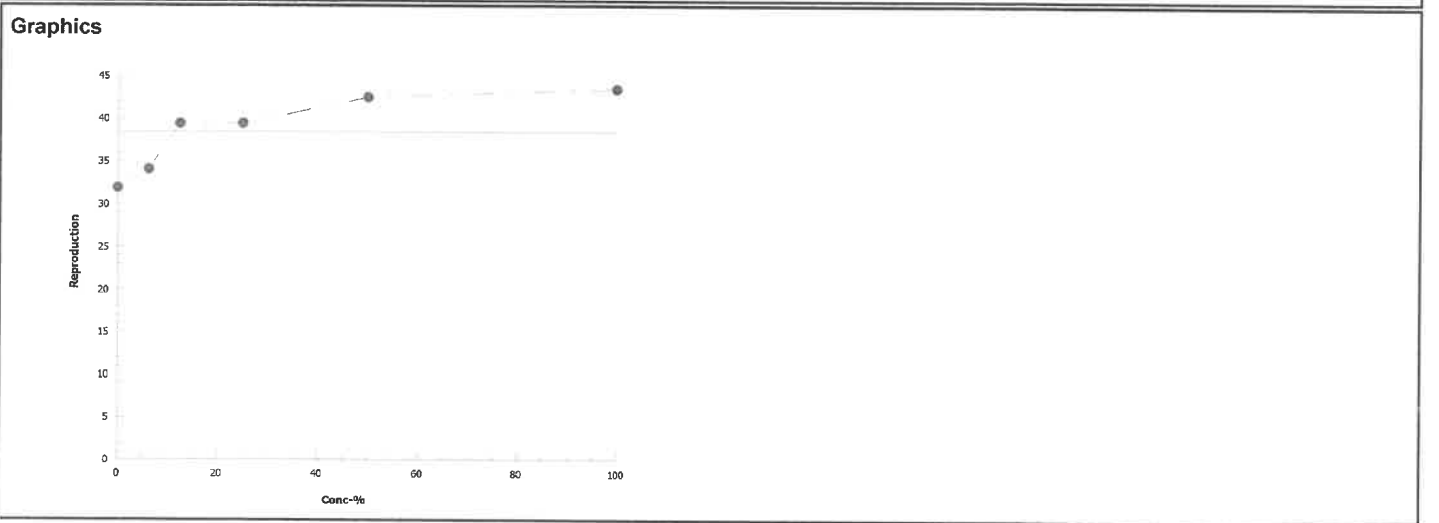
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 10-6816-4039 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 24 Jan-19 15:20 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1973521	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	31.9	20	40	1.83	5.78	18.10%	0.0%
6.25		10	34.1	18	42	2.38	7.52	22.10%	-6.9%
12.5		10	39.5	19	47	2.51	7.93	20.10%	-23.8%
25		10	39.5	23	47	2.28	7.21	18.30%	-23.8%
50		10	42.6	35	48	1.19	3.78	8.87%	-33.5%
100		10	43.6	34	53	1.54	4.86	11.10%	-36.7%



Appendix D

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Ceriodaphnia dubia*

CETIS Summary Report

Report Date: 23 Jan-19 14:05 (p 1 of 2)
 Test Code: 81526 | 00-3491-5140

Ceriodaphnia Survival and Reproduction Test							Pacific EcoRisk				
Batch ID: 03-3921-1003	Test Type: Reproduction-Survival (7d)	Analyst: Jessica Okutsu									
Start Date: 16 Jan-19 16:30	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water									
Ending Date: 22 Jan-19 15:50	Species: Ceriodaphnia dubia	Brine: Not Applicable									
Duration: 5d 23h	Source: In-House Culture	Age: 1									
Sample ID: 07-8784-7026	Code: NaCl	Client: Reference Toxicant									
Sample Date: 16 Jan-19 16:30	Material: Sodium chloride	Project: 29838									
Receipt Date: 16 Jan-19 16:30	Source: Reference Toxicant										
Sample Age: n/a (24.2 °C)	Station: In House										
Multiple Comparison Summary											
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD				
17-8643-4039	Reproduction	Steel Many-One Rank Sum Test	500	1000	707.1		21.6%				
02-0097-6370	Survival	Fisher Exact/Bonferroni-Holm Test	1500	2000	1732		n/a				
Point Estimate Summary											
Analysis ID	Endpoint	Point Estimate Method	Level	mg/L	95% LCL	95% UCL	TU				
09-6557-4974	Reproduction	Linear Interpolation (ICPIN)	IC5	398	101	804					
			IC10	590	203	1170					
			IC15	711	304	1510					
			IC20	832	406	1540					
			IC25	953	529	1580					
			IC40	1590	991	1670					
10-9821-3314	Survival	Spearman-Kärber	EC50	1920	1770	2080					
Reproduction Summary											
Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	33.4	26.5	40.3	14	46	3.07	9.71	29.07%	0.00%
500		10	31.3	26.2	36.4	16	36	2.27	7.18	22.94%	6.29%
1000		10	24.4	18.5	30.3	14	36	2.6	8.24	33.75%	26.95%
1500		10	24.2	21.3	27.1	15	29	1.26	3.99	16.51%	27.54%
2000		10	2.1	-0.0181	4.22	0	7	0.936	2.96	140.99%	93.71%
2500		10	0	0	0	0	0	0	0		100.00%
Survival Summary											
Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
500		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1000		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1500		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
2000		10	0.400	0.031	0.769	0.000	1.000	0.163	0.516	129.10%	60.00%
2500		10	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

CETIS Summary Report

Report Date: 23 Jan-19 14:05 (p 2 of 2)
 Test Code: 81526 | 00-3491-5140

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	14	37	46	36	20	41	30	39	34	37
500		34	16	20	34	36	32	36	34	35	36
1000		16	26	29	27	34	17	36	14	30	15
1500		22	15	23	28	25	22	26	26	26	29
2000		0	3	0	7	0	0	4	7	0	0
2500		0	0	0	0	0	0	0	0	0	0
Survival Detail											
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
500		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1500		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2000		0.000	1.000	0.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000
2500		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Survival Binomials											
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
500		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1000		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1500		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
2000		0/1	1/1	0/1	1/1	0/1	0/1	1/1	1/1	0/1	0/1
2500		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

Ceriodaphnia Survival and Reproduction Test

Pacific EcoRisk

Test Type: Reproduction-Survival (7d)

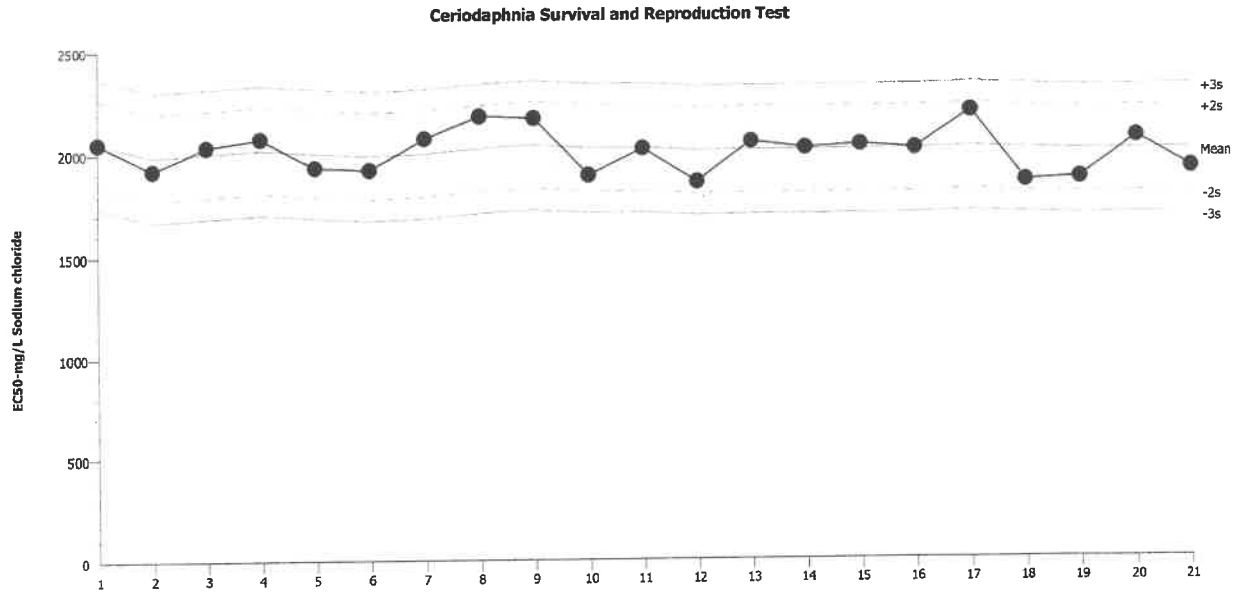
Organism: Ceriodaphnia dubia (Water Flea)

Material: Sodium chloride

Protocol: EPA-821-R-02-013 (2002)

Endpoint: Survival

Source: Reference Toxicant-REF



Mean: 2011 Count: 20 -2s Warning Limit: 1800 -3s Action Limit: 1695
 Sigma: 105.4 CV: 5.24% +2s Warning Limit: 2222 +3s Action Limit: 2327

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	Oct	11	14:50	2050	38.88	0.3689			20-2439-9413	10-4540-0750
2			16	13:11	1918	-92.64	-0.8789			03-5850-8111	20-6659-7771
3			18	15:16	2032	20.64	0.1958			05-8033-5759	02-3631-3458
4			19	15:05	2071	60.13	0.5705			02-1441-2791	17-1340-7957
5			23	15:40	1930	-80.54	-0.7641			10-7048-8617	14-7553-0745
6			30	10:35	1918	-92.64	-0.8789			05-8645-6876	01-6608-5367
7			31	14:47	2071	60.13	0.5705			15-6701-8818	10-0650-6684
8		Nov	6	15:55	2180	168.7	1.6			06-4622-5066	07-3608-9199
9			8	16:11	2170	158.8	1.506			07-3988-3316	08-3419-0126
10			13	16:18	1890	-120.9	-1.147			10-7032-1533	04-1396-8369
11			27	13:39	2019	7.902	0.07497			01-2067-8558	07-2924-3826
12			30	14:32	1855	-155.9	-1.479			06-8813-8043	14-0037-6886
13		Dec	4	15:51	2050	38.88	0.3689			08-4916-6117	20-2985-9813
14			6	12:50	2019	7.902	0.07497			11-7194-5224	02-1820-6786
15			11	14:40	2035	23.6	0.2239			19-5932-5774	12-8055-7359
16			13	13:23	2015	3.991	0.03787			21-1019-4551	19-0963-7901
17			18	14:06	2200	188.9	1.792			18-0750-8197	12-5737-9688
18	2019	Jan	3	16:01	1855	-156.1	-1.481			04-9626-1701	16-4368-7905
19			8	13:08	1870	-141	-1.338			17-4279-3792	13-0560-2722
20			10	13:47	2071	60.13	0.5705			06-2090-7526	04-4730-1098
21			16	16:30	1918	-92.64	-0.8789			00-3491-5140	10-9821-3314

Ceriodaphnia Survival and Reproduction Test

Pacific EcoRisk

Test Type: Reproduction-Survival (7d)

Organism: Ceriodaphnia dubia (Water Flea)

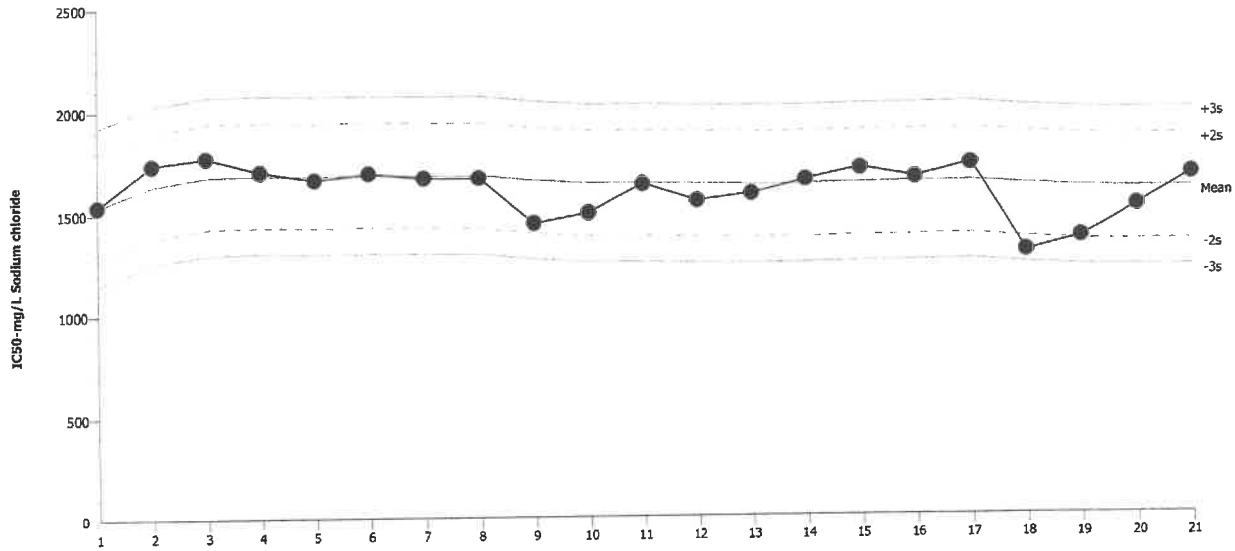
Material: Sodium chloride

Protocol: EPA-821-R-02-013 (2002)

Endpoint: Reproduction

Source: Reference Toxicant-REF

Ceriodaphnia Survival and Reproduction Test



Mean: 1603 Count: 20 -2s Warning Limit: 1345 -3s Action Limit: 1217
 Sigma: 128.7 CV: 8.03% +2s Warning Limit: 1860 +3s Action Limit: 1989

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	Oct	11	14:50	1535	-67.65	-0.5256			20-2439-9413	04-4179-5524
2			16	13:11	1738	135.1	1.05			03-5850-8111	05-4684-8364
3			18	15:16	1772	168.7	1.311			05-8033-5759	10-5626-5735
4			19	15:05	1704	100.9	0.7844			02-1441-2791	18-9658-3991
5			23	15:40	1663	60.4	0.4693			10-7048-8617	19-2272-0008
6			30	10:35	1694	90.9	0.7063			05-8645-6876	20-8136-4320
7			31	14:47	1670	67.45	0.5241			15-6701-8818	09-4862-8045
8		Nov	6	15:55	1669	65.63	0.51			06-4622-5066	01-6239-3016
9			8	16:11	1445	-158.4	-1.23			07-3988-3316	04-7517-9392
10			13	16:18	1493	-110.4	-0.8579			10-7032-1533	07-8371-8990
11			27	13:39	1633	29.89	0.2323			01-2067-8558	17-6140-1063
12			30	14:32	1548	-54.52	-0.4236			06-8813-8043	05-8989-8676
13		Dec	4	15:51	1581	-21.75	-0.169			08-4916-6117	16-9668-1931
14			6	12:50	1650	47	0.3652			11-7194-5224	10-4724-9405
15			11	14:40	1704	101	0.7849			19-5932-5774	10-2122-6418
16			13	13:23	1656	53.02	0.4119			21-1019-4551	15-0430-3092
17			18	14:06	1725	121.6	0.9448			18-0750-8197	00-5728-7998
18	2019	Jan	3	16:01	1294	-309.1	-2.402	(-)		04-9626-1701	04-5525-5647
19			8	13:08	1363	-239.6	-1.861			17-4279-3792	04-9661-7901
20			10	13:47	1515	-88.07	-0.6843			06-2090-7526	06-4954-9155
21			16	16:30	1670	66.68	0.5181			00-3491-5140	09-6557-4974

Short-Term Chronic 3-Brood Ceriodaphnia dubia Survival & Reproduction Test Data

Client: _____ Reference Toxicant: _____ Material: Sodium Chloride Test Date: 1/16/19
 Project #: 29838 Test ID: 81526 Randomization: 16.7.2 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SIGN-OFF									
		New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J	Date:	New WQ:	Counts:							
Lab Water Control	0	7.82		9.7		358		24.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/16/19	New WQ: AR	Test Init: 16:30	
	1	7.98	7.75	10.3	8.2	353	392	24.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/17/19	New WQ: XE	Counts: MB	
	2	7.81	7.64	10.2	8.0	348	371	24.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/18/19	New WQ: MB	Counts: TF	
	3	7.82	7.66	10.1	8.2	361	376	24.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 1/19/19	New WQ: MWL	Counts: AEF	
	4	7.81	7.77	9.9	7.2	338	389	24.7	0	7	8	7	7	6	0	6	5	6							Date: 1/20/19	New WQ: MWL	Counts: KP	
	5	7.89	7.57	9.6	6.4	336	517	24.1	1	13	17	11	13	15	13	15	14	14							Date: 1/21/19	New WQ: KP	Counts: KP	
	6	-	7.80	-	7.2	-	406	24.5	13	17	21	18	20	20	17	18	15	17							Date: 1/22/19	New WQ: -	Counts: TF	
	7																									Date:	New WQ:	Counts:
	8																									Date:	Old WQ:	Time:
Total=									14	37	46	36	20	41	30	39	34	37	Mean Neonates/Female = 33.4									
500 mg/L	0	7.85		9.8		1372		24.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	1	7.95	7.79	10.3	8.1	1345	1426	24.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	2	7.81	7.70	10.5	7.6	1314	1403	25.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	3	7.85	7.69	10.3	8.2	1364	1434	24.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	4	7.83	7.76	10.0	7.4	1336	1436	24.4	6	4	6	5	6	7	8	6	5	6										
	5	7.89	7.63	10.0	6.5	1315	1460	25.0	12	12	14	12	12	11	13	12	12	13										
	6	-	7.78	-	6.5	-	1481	24.6	16	0	0	17	18	14	15	16	18	17										
	7																											
	8																											
Total=									34	16	20	34	36	32	36	34	35	36	Mean Neonates/Female = 27.5 31.3									

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: _____ Reference Toxicant: _____ Material: Sodium Chloride Test Date: 1/16/19
 Project #: 29838 Test ID: 81526 Randomization: 10.7.2 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J	
0	7.86		9.8		2278		24.2	0	0	0	0	0	0	0	0	0	0	
1	7.96	7.84	10.5	8.0	2271	2477	24.8	0	0	0	0	0	0	0	0	0	0	
2	7.86	7.77	10.5	7.9	2184	2535	24.8	0	0	0	0	0	0	0	0	0	0	
3	7.84	7.68	10.3	8.0	2280	2401	24.2	0	0	0	0	0	0	0	0	0	0	
4	7.81	7.74	10.1	7.4	2206	2451	24.5	5	5	5	5	5	5	7	5	7	4	
5	7.88	7.70	10.1	7.1	2214	2691	24.5	11	10	11	11	14	12	13	9	11	11	
6	—	7.78	—	7.4	—	2588	24.6	0	11	13	11	15	0	16	0	12	0	
7																		
8																		
Total=								16	26	29	27	34	17	36	14	30	15	Mean Neonates/Female = 24.4
Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SAMPLE ID
	New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J	
0	7.86		9.9		3217		24.9	0	0	0	0	0	0	0	0	0	0	
1	7.94	7.86	10.5	8.2	3183	3474	24.9	0	0	0	0	0	0	0	0	0	0	
2	7.81	7.76	10.7	7.9	3210	3346	24.7	0	0	0	0	0	0	0	0	0	0	
3	7.81	7.71	10.7	8.1	3178	3510	24.8	0	0	0	0	0	0	0	0	0	0	
4	7.80	7.71	10.1	7.1	3143	3471	24.4	1	3	3	3	2	4	4	5	3	3	
5	7.86	7.68	10.2	6.3	3200	3363	24.8	9	11	9	12	9	8	10	8	10	10	
6	—	7.75	—	7.5	—	3448	24.7	12	1	11	13	14	10	12	13	13	16	
7																		
8																		
Total=								22	15	23	28	25	22	26	26	26	24	Mean Neonates/Female = 24.2

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: _____ Reference Toxicant: _____ Material: Sodium Chloride Test Date: 1/16/19
 Project #: 29838 Test ID: 81526 Randomization: 10.7.2 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SIGN-OFF
		New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J	
2000 mg/L	0	7.85		9.9		4067		25.0	0	0	0	0	0	0	0	0	0	0	
	1	7.92	7.87	10.7	8.2	4123	4327	24.3	0	0	0	0	0	0	0	0	0	0	
	2	7.79	7.74	10.5	7.9	4152	4524	25.1	1/0	0	1/0	0	1/0	1/0	0	0	1/0	1/0	
	3	7.80	7.74	10.9	8.3	4156	4342	24.4	-	0	-	0	-	-	0	0	-	-	
	4	7.79	7.75	9.9	7.8	4087	4344	24.6	-	1	-	1	-	-	2	1	-	-	
	5	7.86	7.68	10.2	6.7	4124	4410	25.0	-	2	-	2	-	-	2	6	-	-	
	6	-	7.76	-	7.8	-	4487	24.8	-	0	-	4	-	-	0	0	-	-	
	7									-		-					-	-	
	8																		
Total=									1/0	3	1/0	7	1/0	1/0	4	7	1/0	1/0	Mean Neonates/Female = 2.1
2500 mg/L	0	7.82		9.8		5019		24.8	0	0	0	0	0	0	0	0	0	0	
	1	7.91	7.87	10.8	8.3	5015	5207	24.8	0	0	0	0	0	0	0	0	0	0	
	2	7.80	7.77	10.6	8.0	5009	5305	24.8	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	7																		
	8																		
Total=									1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	Mean Neonates/Female = 0.0

Ms. Amy Storm
 Larry Walker Associates
 2151 Alessandro Dr., Suite 100
 Ventura, CA 93001

April 4, 2019

Dear Amy:

I have enclosed our report “A Toxicity Characterization Study of Ambient Waters Collected from the Calleguas Creek Watershed: Event 72” for samples collected March 19, 2019. The results of our evaluation are summarized below.

Effects of Calleguas Creek Ambient Waters on *Ceriodaphnia dubia*

There were no significant reductions in survival or reproduction in the Calleguas Creek ambient water samples tested.

Effects of Calleguas Creek Ambient Waters on *Hyalella azteca*

The 72-WOOD-097 ambient water was the only sample tested with this species; there were no significant reductions in survival in this sample.

Toxicity Summary for Calleguas Creek: Event 72 Ambient Waters.			
Sample Station ID	Toxicity relative to the Lab Control treatment?		
	<i>Ceriodaphnia dubia</i>		<i>Hyalella azteca</i>
	Survival	Reproduction	Survival
72-UNIV-029	no	no	testing with this species was not performed
72-ADOLF-045	no	no	testing with this species was not performed
72-HITCH-155	no	no	testing with this species was not performed
72-GATE-216	no	no	testing with this species was not performed
72-BELT-219	no	no	testing with this species was not performed
72-WOOD-097	testing with this species was not performed		no

If you have any questions regarding the performance and interpretation of these tests, feel free to contact my colleague Jeffrey Cotsifas or myself at (707) 207-7763.

Sincerely,

Michael McElroy
 Senior Project Manager



Pacific EcoRisk is accredited in accordance with NELAP (ORELAP ID 4043). Pacific EcoRisk certifies that the test results reported herein conform to the most current NELAP requirements for parameters for which accreditation is required and available. Any exceptions to NELAP requirements are noted, where applicable, in the body of the report. This report shall not be reproduced, except in full, without the written consent of Pacific EcoRisk. This testing was performed under Lab Order 29876.

**A Toxicity Characterization Study of Ambient Waters
Collected from the Calleguas Creek Watershed**

(Water Samples Collected on March 19, 2019)

Event 72

Prepared For

Larry Walker Associates
720 Wilshire Blvd., Suite 207
Santa Monica, CA 90401

Prepared By

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

April 2019



Table of Contents

	Page
1. INTRODUCTION	1
2. COLLECTION AND DELIVERY OF AMBIENT WATER SAMPLES	1
3. TOXICITY TEST PROCEDURES FOR AMBIENT WATERS	2
3.1 Survival and Reproduction Chronic Toxicity Testing with <i>Ceriodaphnia dubia</i>	2
3.1.1 Reference Toxicant Testing of the <i>Ceriodaphnia dubia</i>	3
3.2 Survival Toxicity Testing of Ambient Waters with <i>Hyalella azteca</i>	3
3.2.1 Reference Toxicant Testing of the <i>Hyalella azteca</i>	4
4. RESULTS OF THE AMBIENT WATER TOXICITY EVALUATIONS.....	5
4.1. Effects of Calleguas Creek Ambient Waters on <i>Ceriodaphnia dubia</i>	5
4.1.2 Reference Toxicant Toxicity to <i>Ceriodaphnia dubia</i>	8
4.2 Effects of Calleguas Creek Ambient Water on <i>Hyalella azteca</i>	9
4.2.1 Reference Toxicant Toxicity to <i>Hyalella azteca</i>	10
5. SUMMARY AND CONCLUSIONS.....	11
5.1 QA/QC Summary.....	11

Appendices

Appendix A	Chain-of-Custody Record for the Collection and Delivery of the Calleguas Creek Ambient Water Samples
Appendix B	Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to <i>Ceriodaphnia dubia</i> : Data Analyses Excluding Statistical Outliers
Appendix C	Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to <i>Ceriodaphnia dubia</i> : Data Analyses Including Statistical Outliers
Appendix D	Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the <i>Ceriodaphnia dubia</i>
Appendix E	Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Calleguas Creek Ambient Waters to <i>Hyalella azteca</i>
Appendix F	Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the <i>Hyalella azteca</i>

1. INTRODUCTION

In support of the Calleguas Creek Watershed Monitoring Program, Larry Walker Associates (LWA) has contracted Pacific EcoRisk (PER) to evaluate the potential toxicity of surface waters and sediments collected from within the Calleguas Creek Watershed. The current evaluation, which comprises Event 72 of the overall study, consisted of performing the following U.S. EPA toxicity tests:

- 3-brood (6-8 day) survival and reproduction chronic toxicity test with the crustacean *Ceriodaphnia dubia*; and
- For ambient water samples with a conductivity >3000 $\mu\text{S}/\text{cm}$ but <15 ppt salinity, the 10-day survival test with the freshwater amphipod, *Hyalella azteca* was performed in place of the *C. dubia* test.

In order to evaluate the magnitude of any observed toxicity, all water samples were tested using a series of sample dilutions (100%, 50%, 25%, 12.5%, and 6.25%). In order to document that the test organisms were responding to toxic stress in a typical fashion, reference toxicant tests were also performed. This report describes and summarizes the performance and results of the Event 72 surface water toxicity testing performed in support of the Calleguas Creek Watershed Monitoring Program.

2. COLLECTION AND DELIVERY OF AMBIENT WATER SAMPLES

On March 19, 2019, Kinnetic Laboratories, Inc. (KLI) collected ambient water samples from six locations within the Calleguas Creek watershed (Table 1). Each water sample was collected into two pre-cleaned 5-gallon fluorocarbon-lined polyethylene jerricans. The samples were transported on ice and under chain-of-custody to the PER laboratory facility in Fairfield, CA, arriving approximately 24 hrs after collection. Upon receipt at the testing laboratory, aliquots of each water sample were collected for analysis of initial water quality characteristics (Table 2). The remainder of the water samples were stored at 0-6°C. All initial surface water tests were initiated within 36 hrs of sample collection. The chain-of-custody record for the collection and delivery of these samples is presented in Appendix A.

Station Code	Sample Collection Date (Time)	Test Initiation Date (Time)
UNIV	3/19/19 (1640)	3/20/19 (1325)
ADOLF	3/19/19 (1510)	3/20/19 (1244)
HITCH	3/19/19 (0830)	3/20/19 (1215)
GATE	3/19/19 (1210)	3/20/19 (1315)
BELT	3/19/19 (1115)	3/20/19 (1343)
WOOD	3/19/19 (1240)	3/20/19 (1512)

Sample ID	Temp (°C)	pH	D.O. (mg/L)	Alkalinity (mg/L as CaCO ₃)	Hardness (mg/L as CaCO ₃)	Conductivity (µS/cm)	Salinity (ppt)	Total Ammonia (mg/L)
72-UNIV-029	1.0	8.09	11.3	259	454	1659	0.9	<1.0
72-ADOLF-045	0.6	8.38	12.0	231	438	1430	0.8	<1.0
72-HITCH-155	0.3	7.99	11.2	197	562	1855	1.0	<1.0
72-GATE-216	0.3	8.05	11.1	219	424	1372	0.7	<1.0
72-BELT-219	0.3	8.40	11.5	296	622	1646	0.9	<1.0
72-WOOD-097	0.5	8.40	14.3	209	1595	3867	2.1	<1.0

3. TOXICITY TEST PROCEDURES FOR AMBIENT WATERS

The Calleguas Creek ambient waters were tested for toxicity using the following chronic toxicity tests:

- Water samples with a conductivity <3000 µS/cm were tested using the 3-brood (6-8 day) survival and reproduction test with the freshwater crustacean *C. dubia*; and
- Water samples with a conductivity >3000 µS/cm but <15 ppt salinity were tested using the 10-day survival test with the amphipod *H. azteca*.

The methods used in conducting the chronic toxicity tests (and any follow-up TIEs) followed the guidance established by the following EPA manuals:

- Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition" (EPA-821-R-02-013); and
- A Surface Water Ambient Monitoring Program (SWAMP) test protocol based on a modification of the US EPA guidelines, "Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates" (EPA/630/R-99/064).

3.1 Survival and Reproduction Chronic Toxicity Testing with *Ceriodaphnia dubia*

The chronic toxicity test with *C. dubia* consists of exposing individual females to the ambient water samples for the length of time it takes for the Lab Control treatment females to produce three broods (typically 6-8 days), after which effects on survival and reproduction are evaluated. The specific procedures used in these tests are described below.

The Lab Water Control medium for this test consisted of a modified EPA moderately-hard water. For each water sample, the Lab Control water and 100% water sample were used to prepare test solutions at additional interim test treatment concentrations of 6.25%, 12.5%, 25%, and 50% ambient water. For each treatment, 200 mL aliquots of test solution were amended with the alga *Selenastrum capricornutum* and Yeast-Cerophyll®-Trout Food (YCT) to provide food for the test

organisms. “New” water quality characteristics (pH, D.O., and conductivity) were measured on these food-amended test solutions prior to use in these tests.

There were 10 replicates each for each test treatment, each replicate consisting of 15 mL of test solution in a 30-mL plastic cup. These “3-brood” tests were initiated by allocating one neonate (<24 hrs old, and within 8 hours of age) *C. dubia*, obtained from in-house laboratory cultures, into each replicate cup. The replicate cups were placed into a temperature-controlled room at 25°C, under cool-white fluorescent lighting on a 16L:8D photoperiod.

Each test replicate cup was examined daily, with surviving organisms being transferred to the corresponding new cup containing fresh test solution. The contents of each remaining “old” replicate cup were carefully examined, and the number of neonate offspring produced by each original organism was determined, after which “old” water quality characteristics (pH, D.O., and conductivity) were measured for the “old” test solution from one randomly-selected replicate at each treatment.

After it was determined that $\geq 60\%$ of the *C. dubia* in a Lab Water Control treatment had produced their third brood of offspring, the corresponding ambient water test was terminated. The resulting survival and reproduction (number of offspring) data were analyzed to evaluate any impairment(s) caused by the effluent sample; all statistical analyses were made using CETIS (TidePool Scientific Software, McKinleyville, CA).

3.1.1 Reference Toxicant Testing of the *Ceriodaphnia dubia*

In order to assess the sensitivity of the *C. dubia* test organisms to toxic stress, a concurrent reference toxicant test was performed. This reference toxicant test was performed similarly to the ambient water test except that test solutions consisted of Lab Water Control medium spiked with NaCl at test concentrations of 500, 1000, 1500, 2000, and 2500 mg/L. The resulting test response data were statistically analyzed to determine key concentration-response point estimates (e.g., EC₅₀); all statistical analyses were made using CETIS[®]. These response endpoints were then compared to the typical response range established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

3.2 Survival Toxicity Testing of Ambient Waters with *Hyaella azteca*

This test consists of exposing individual *H. azteca* to the ambient water samples for 10 days, after which effects on survival are evaluated. The specific procedures used in this testing are described below.

The *H. azteca* used in this testing were obtained from a commercial supplier (Aquatic BioSystems, CO); upon receipt at the lab, the test organisms were held in aerated tanks containing Lab Control water, and were fed *S. capricornutum* and *Spirulina*-amended YCT *ad libitum* during this pre-test holding period.

The Lab Water Control medium for this testing consisted of EPA synthetic moderately-hard water, modified for use with *H. azteca* as per EPA test guidelines, and adjusted to the conductivity of the site water via addition of an artificial sea salt (Crystal Seas[®]- bioassay grade). For each ambient water sample, the Lab Control water and 100% ambient water sample were used to prepare test solutions at additional interim test treatment concentrations of 6.25%, 12.5%, 25%, and 50% ambient water. A “Culture” Control, consisting of *H. azteca* culture water was also prepared and tested. “New” water quality characteristics (pH, D.O., and conductivity) were measured on these test solutions prior to use in the test(s).

There were five replicates for each test treatment, each replicate consisting of a 250-mL glass beaker containing 100 mL of test solution; a small (~1 cm x 2 cm) piece of NITEX[®] mesh was placed in the beaker to provide an attachment substrate for the thigmotactic amphipods. Testing was initiated by allocating ten 10-11 day old *H. azteca*, into each replicate. The replicate beakers were placed into a temperature-controlled room at 23°C, under cool-white fluorescent lighting on a 16L:8D photoperiod.

Each day of the test(s), each replicate beaker was examined and the number of surviving organisms determined; ‘old’ water quality characteristics of the test solutions were measured in one randomly-selected beaker at each test treatment at this time. On Days 2, 4, 6, and 8 of the tests, 1.0 mL of *Spirulina*-amended YCT food was added to each test replicate to provide food for the test organisms.

On Day 5 of the 10-day test(s), fresh test solutions were prepared and characterized as before. Each replicate was examined, with any dead animals, uneaten food, wastes, and other detritus being removed. The number of live organisms in each replicate was determined and then approximately 80% of the old test solution in each beaker was carefully poured out and replaced with fresh test solution. “Old” water quality characteristics (pH, D.O., and conductivity) were measured on the old test solution that had been discarded from one randomly-selected replicate at each treatment.

After 10 days of exposure, testing was terminated and the number of live organisms in each replicate was recorded. The resulting survival data were analyzed to evaluate any impairment(s) caused by the ambient water sample; all statistical analyses were made using CETIS[®].

3.2.1 Reference Toxicant Testing of the *Hyaella azteca*

In order to assess the sensitivity of the *H. azteca* test organisms to toxic stress, a concurrent reference toxicant test was performed. The reference toxicant test was performed similarly to the ambient water tests, except that test solutions consisted of the Lab Water Control medium spiked with KCl at concentrations of 0.1, 0.2, 0.4, 0.8, and 1.6 g/L. The resulting test response data were statistically analyzed to determine key concentration-response point estimates (e.g., EC₅₀); all statistical analyses were performed using CETIS[®]. These response endpoints were then compared to the typical response range established by the mean ± 2 SD of the point estimates generated by the 20 most-recent previous reference toxicant tests performed by this lab.

4. RESULTS OF THE AMBIENT WATER TOXICITY EVALUATIONS

4.1 Effects of Calleguas Creek Ambient Water on *Ceriodaphnia dubia*

The results of the ambient water tests with *C. dubia* are summarized below in Tables 3 through 7. There were no significant reductions in survival or reproduction in the Calleguas Creek ambient water samples tested.

The test data and summary of statistical analyses for these tests, excluding statistical outliers where appropriate, are presented in Appendix B; the summary of statistical analyses for these tests, including statistical outliers, is presented in Appendix C.

Table 3. Effects of Ambient Water 72-UNIV-029 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	25.3
6.25%	100	25.0
12.5%	100	34.1 ^b
25%	100	34.2 ^b
50%	100	35.1 ^b
100%	100	37.1
Summary of Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 4. Effects of Ambient Water 72-ADOLF-045 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	28.1
6.25%	100	30.5
12.5%	100	34.0
25%	100	34.5
50%	90	37.2
100%	100	35.6
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

Table 5. Effects of Ambient Water 72-HITCH-155 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	30.4
6.25%	100	29.9
12.5%	100	32.6
25%	100	38.6 ^b
50%	100	37.6
100%	90	27.6
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 6. Effects of Ambient Water 72-GATE-216 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	25.7
6.25%	100	22.8
12.5%	100	23.1
25%	100	31.4
50%	100	29.0
100%	100	32.1
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

Table 7. Effects of Ambient Water 72-BELT-219 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	Mean % Survival	Mean Reproduction (# neonates/female)
Lab Water Control	100	25.9
6.25%	100	25.3
12.5%	100	27.3
25%	100	30.7
50%	100	37.2
100%	100	40.1 ^b
Summary of Key Statistics		
No Observable Effect Concentration (NOEC) =	100% ambient water	100% ambient water
TUc (where TUc = 100/NOEC) =	1	1
Survival EC25 or Reproduction IC25 =	>100% ambient water ^a	>100% ambient water
Survival EC50 or Reproduction IC50 =	>100% ambient water ^a	>100% ambient water
TUc (where TUc = 100/EC50 or 100/IC50) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - The reproduction response for one of the replicates at this test treatment was determined to be a statistical outlier, and the results reported above are for the analysis of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

4.1.2 Reference Toxicant Toxicity to *Ceriodaphnia dubia*

The results of this test are summarized below in Table 8. The EC50 and IC50 for these tests were both consistent with the typical response ranges established by the reference toxicant test database for this species. These results indicate that the organisms used for ambient water testing were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix D.

Table 8. Reference toxicant testing: effects of NaCl on <i>Ceriodaphnia dubia</i> .		
NaCl Treatment (mg/L)	Mean % Survival	Mean Reproduction (# neonates/female)
Lab Water Control	100	25.1
500	100	29.0
1000	90	28.5
1500	100	23.9
2000	90	9.0*
2500	10*	-
Summary of Statistics		
Survival EC50 or Reproduction IC50 =	2250 mg/L NaCl	1840 mg/L NaCl
Typical Response Range (mean \pm 2 SD)	1468 - 2442 mg/L NaCl	1076 - 2009 mg/L NaCl

* The response at this test treatment was significantly less than the Lab Control treatment response at $p < 0.05$

4.2 Effects of Calleguas Creek Ambient Water on *Hyalella azteca*

The results of this test are summarized below in Table 9. The 72-WOOD-097 ambient water sample was the only sample tested with this species; there were no significant reductions in survival in this sample. The test data and summary of statistical analyses for this test are presented in Appendix E.

Table 9. Effects of Ambient Water 72-WOOD-097 on <i>Hyalella azteca</i> Survival.	
Ambient Water Treatment	10-Day Mean % Survival
Lab Control	100
6.25%	100
12.5%	92
25%	98
50%	94
100%	96
Culture Control	100
Summary of Key Statistics	
No Observable Effect Concentration (NOEC) =	100% ambient water
TUc (where TUc = 100/NOEC) =	1
Survival EC25 =	>100% ambient water ^a
Survival EC50 =	>100% ambient water ^a
TUc (where TUc = 100/EC50) =	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

4.2.1 Reference Toxicant Toxicity to *Hyalella azteca*

The results of this test are summarized below in Table 10. The LC₅₀ for this test was consistent with the typical response range established by the reference toxicant test database for this species. These results indicate that the organisms used for ambient water testing were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix F.

Table 10. Reference Toxicant Testing: Effects of KCl on <i>Hyalella azteca</i> .	
KCl Treatment (g/L)	Mean % Survival
Lab Control	100
0.1	90
0.2	100
0.4	40*
0.8	0*
1.6	0*
Summary of Statistics	
Survival LC ₅₀ =	0.36 g/L KCl
Typical Response Range (mean ± 2 SD)	0.21 - 0.54 g/L KCl

* - The response at this test treatment was significantly less than the Lab Control treatment response at $p < 0.05$.

5. SUMMARY AND CONCLUSIONS

Effects of Calleguas Creek Ambient Waters on *Ceriodaphnia dubia*

There were no significant reductions in survival or reproduction in the Calleguas Creek ambient water samples tested.

Effects of Calleguas Creek Ambient Waters on *Hyalella azteca*

The 72-WOOD-097 ambient water was the only sample tested with this species; there were no significant reductions in survival in this sample.

Toxicity Summary for Calleguas Creek: Event 72 Ambient Waters.			
Sample Station ID	Toxicity relative to the Lab Control treatment?		
	<i>Ceriodaphnia dubia</i>		<i>Hyalella azteca</i>
	Survival	Reproduction	Survival
72-UNIV-029	no	no	testing with this species was not performed
72-ADOLF-045	no	no	testing with this species was not performed
72-HITCH-155	no	no	testing with this species was not performed
72-GATE-216	no	no	testing with this species was not performed
72-BELT-219	no	no	testing with this species was not performed
72-WOOD-097	testing with this species was not performed		no

5.1 QA/QC Summary

Test Conditions – Due to the observation of low D.O. (≤ 2.8 mg/L) during the PM check on March 26, the *Hyalella azteca* test was aerated for the balance of testing to maintain D.O. levels above 2.5 mg/L. Otherwise, all test conditions (pH, D.O., temperature, etc.) were within acceptable limits during testing. All test analyses were performed according to laboratory Standard Operating Procedures.

Negative Control – The biological responses for the test organisms in the Lab Control treatments were within acceptable limits.

Positive Control – All reference toxicant test results were consistent with the “typical response” ranges established by the reference toxicant test database, indicating that these test organisms were responding to toxic stress in a typical fashion.

Concentration Response Relationships – The concentration-response relationships for these tests were evaluated as per EPA guidelines (EPA-821-B-00-004), and were determined to be acceptable.

Appendix A

Chain-of-Custody Record for the Collection and Delivery of the Calleguas Creek Ambient Water Samples

Appendix B

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to *Ceriodaphnia dubia*: Data Analyses Excluding Statistical Outliers

CETIS Summary Report

Report Date: 31 Mar-19 09:18 (p 1 of 2)
 Test Code: 81655 | 04-3835-5245

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk
Batch ID: 20-9103-8815	Test Type: Reproduction-Survival (7d)	Analyst: James Lem	
Start Date: 20 Mar-19 13:25	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 26 Mar-19 15:25	Species: Ceriodaphnia dubia	Brine: Not Applicable	
Duration: 6d 2h	Source: In-House Culture	Age: 1	
Sample ID: 17-6964-4394	Code: 72-UNIV-029	Client: Larry Walker Associates	
Sample Date: 19 Mar-19 16:40	Material: Ambient Water	Project: 29876	
Receipt Date: 20 Mar-19 07:06	Source: Calleguas Creek		
Sample Age: 21h (1 °C)	Station: UNIV		

Comments:
 Statistics excluding reproductive outliers: 12.5-I, 25-J, 50-C

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
20-0082-1589	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	24.5%
01-2321-2651	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
09-6539-2948	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	25.3	20.4	30.2	13	34	2.17	6.86	27.13%	0.00%
6.25		10	25	20.6	29.4	12	34	1.95	6.16	24.66%	1.19%
12.5		9	34.1	31.2	37	25	38	1.25	3.76	11.01%	-34.83%
25		9	34.2	31.5	36.9	29	40	1.18	3.53	10.31%	-35.27%
50		9	35.1	32.4	37.8	30	41	1.17	3.52	10.01%	-38.78%
100		10	37.1	31.2	43	19	46	2.61	8.27	22.28%	-46.64%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 31 Mar-19 09:18 (p 2 of 2)
 Test Code: 81655 | 04-3835-5245

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	13	25	34	28	27	28	29	13	28	28
6.25		25	12	23	22	29	34	28	27	20	30
12.5		34	25	34	35	35	33	38	36		37
25		37	32	36	30	40	36	29	35	33	
50		37	38		35	34	33	37	41	30	31
100		19	34	38	46	39	42	45	44	34	30
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

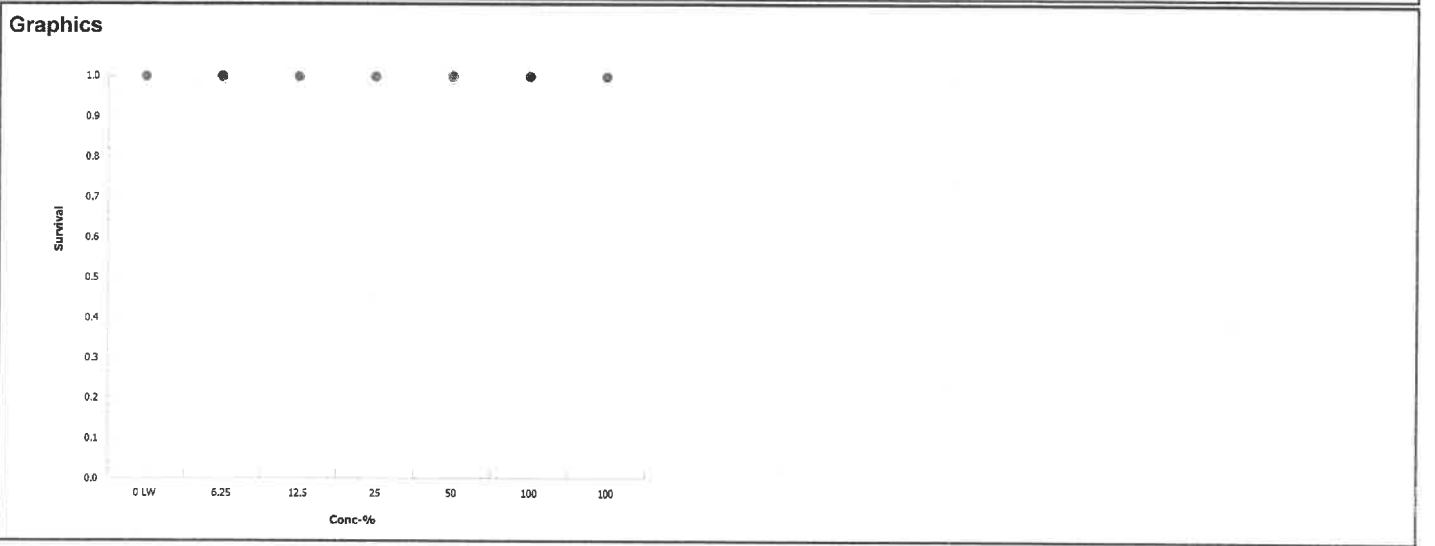
CETIS Analytical Report

Report Date: 31 Mar-19 09:15 (p 1 of 1)
 Test Code: 81655 | 04-3835-5245

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk	
Analysis ID: 01-2321-2651	Endpoint: Survival	CETIS Version: CETISv1.9.2			
Analyzed: 31 Mar-19 9:09	Analysis: STP 2xK Contingency Tables	Official Results: Yes			
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 20-0082-1589	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 31 Mar-19 9:18	Analysis: Nonparametric-Multiple Comparison	Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	24.46%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	100	n/a	5	18	Exact	1.0000	Non-Significant Effect
		12.5	126	n/a	2	17	Exact	1.0000	Non-Significant Effect
		25	130	n/a	1	17	Exact	1.0000	Non-Significant Effect
		50	132	n/a	1	17	Exact	1.0000	Non-Significant Effect
		100	145	n/a	1	18	Exact	1.0000	Non-Significant Effect

ANOVA Table

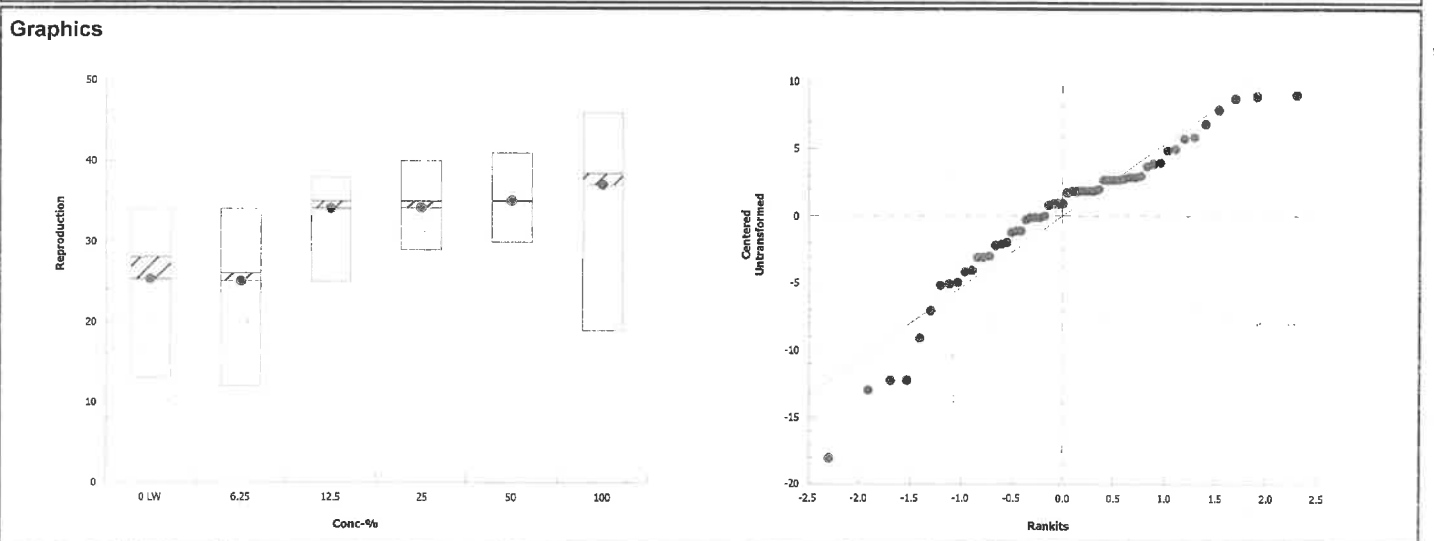
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1364.33	272.867	5	8.22	9.4E-06	Significant Effect
Error	1692.33	33.183	51			
Total	3056.67		56			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	11.2	15.1	0.0476	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.925	0.943	0.0017	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	25.3	20.4	30.2	28	13	34	2.17	27.13%	0.00%
6.25		10	25	20.6	29.4	26	12	34	1.95	24.66%	1.19%
12.5		9	34.1	31.2	37	35	25	38	1.25	11.01%	-34.83%
25		9	34.2	31.5	36.9	35	29	40	1.18	10.31%	-35.27%
50		9	35.1	32.4	37.8	35	30	41	1.17	10.01%	-38.78%
100		10	37.1	31.2	43	38.5	19	46	2.61	22.28%	-46.64%



CETIS Analytical Report

Report Date: 31 Mar-19 09:18 (p 1 of 1)
 Test Code: 81655 | 04-3835-5245

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 09-6539-2948 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:18 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	591583	200	Yes	Two-Point Interpolation

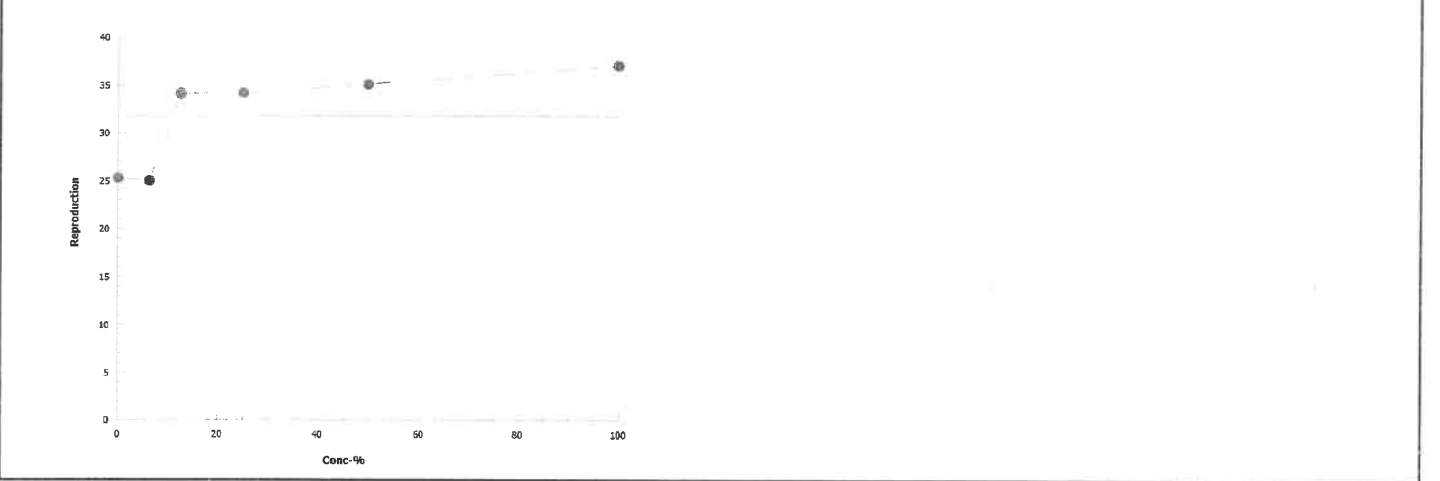
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary **Calculated Variate**

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	25.3	13	34	2.17	6.86	27.10%	0.0%
6.25		10	25	12	34	1.95	6.16	24.70%	1.19%
12.5		9	34.1	25	38	1.25	3.76	11.00%	-34.8%
25		9	34.2	29	40	1.18	3.53	10.30%	-35.3%
50		9	35.1	30	41	1.17	3.52	10.00%	-38.8%
100		10	37.1	19	46	2.61	8.27	22.30%	-46.6%

Graphics



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-UNIV-629 Test Date: 3/20/19
 Project #: 29876 Test ID: 81655 Randomization: 10-7-8 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.82		9.6		340	24.1	0	0	0	0	0	0	0	0	0	0	0	Date: 3/20/19 New WQ: <u>JK</u> Test Init. <u>JK</u> Sol'n Prep: <u>JK</u> Time: <u>1525</u>
1	7.89	7.82	9.4	7.1	359	23.9	0	0	0	0	0	0	0	0	0	0	0	Date: 3/21/19 New WQ: <u>MDL</u> Counts: <u>TK</u> Sol'n Prep: <u>JK</u> Old WQ: <u>TA</u> Time: <u>1044</u>
2	7.95	7.60	10.0	7.7	366	24.3	0	0	0	0	0	0	0	0	0	0	0	Date: 3/22/19 New WQ: <u>TA</u> Counts: <u>TF</u> Sol'n Prep: <u>JK</u> Old WQ: <u>TF</u> Time: <u>1144</u>
3	7.75	7.85	9.3	7.7	360	25.6	0	0	6	3	5	80	5	0	0	0	0	Date: 3/23/19 New WQ: <u>BM</u> Counts: <u>SD</u> Sol'n Prep: <u>ED</u> Old WQ: <u>MYL</u> Time: <u>1309</u>
4	7.76	8.00	10.3	8.0	365	25.3	6	0	0	0	0	4	0	6	5	6	0	Date: 3/24/19 New WQ: <u>JK</u> Counts: <u>KL</u> Sol'n Prep: <u>KB</u> Old WQ: <u>TP</u> Time: <u>1345</u>
5	7.83	7.82	9.1	7.4	359	25.1	7	8	10	9	8	10	9	7	8	8	0	Date: 3/25/19 New WQ: <u>NW</u> Counts: <u>CL</u> Sol'n Prep: <u>KB</u> Old WQ: <u>BJ</u> Time: <u>1410</u>
6	-	7.80	-	7.3	395	25.5	0	17	18	16	14	14	15	0	15	14	0	Date: 3/26/19 New WQ: <u>-</u> Counts: <u>KL</u> Sol'n Prep: <u>-</u> Old WQ: <u>TF</u> Time: <u>1525</u>
7																		Date: <u>-</u> New WQ: <u>-</u> Counts: <u>-</u> Sol'n Prep: <u>-</u> Old WQ: <u>-</u> Time: <u>-</u>
8																		Date: <u>-</u> Old WQ: <u>-</u> Counts: <u>-</u> Time: <u>-</u>
Total=							13	25	34	28	27	28	29	13	28	28	0	Mean Neonates/Female = <u>25.3</u>

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.88		9.8		431	24.0	0	0	0	0	0	0	0	0	0	0	0	52396
1	7.96	7.86	9.6	7.3	450	23.8	0	0	0	0	0	0	0	0	0	0	0	52396
2	7.96	7.71	9.9	8.0	457	24.6	0	0	0	0	0	0	0	0	0	0	0	62396
3	7.79	7.98	9.6	8.0	450	25.4	0	0	5	0	6	0	0	0	0	0	0	52396
4	7.82	8.07	10.5	8.1	453	25.2	5	6	0	5	0	7	6	5	0	6	0	52396
5	7.92	7.95	9.1	7.7	452	25.4	2	6	3	0	7	9	7	8	5	8	0	52396
6	-	7.78	-	6.6	497	25.2	18	0	15	17	16	18	15	14	15	16	0	-
7																		
8																		
Total=							25	12	23	22	29	34	28	27	20	30	0	Mean Neonates/Female = <u>25.0</u>

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-UNIV-029 Test Date: 3/20/19

Project #: 29876 Test ID: 81655 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
0	7.97		9.8		520	24.0	0	0	0	0	0	0	0	0	0	0	
1	8.01	7.98	9.6	7.7	533	23.7	0	0	0	0	0	0	0	0	0	0	
2	8.00	7.74	9.9	7.8	532	24.6	0	0	0	0	0	0	0	0	0	0	
3	7.88	8.07	9.8	8.3	536	25.2	6	6	0	6	0	0	6	0	0	0	
4	7.87	8.13	10.6	8.0	545	25.5	0	0	6	0	5	5	0	6	0	6	
5	7.41	8.06	9.1	7.9	535	24.9	10	0	9	12	12	11	12	13	8	12	
6	—	7.74	—	5.6	572	25.0	18	19	19	17	18	17	20	17	0	19	
7																	
8																	
Total=							34	25	34	35	35	33	38	36	8	37	Mean Neonates/Female = <u>28.5</u> ^{31.5}
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
0	8.02		9.9		685	24.5	0	0	0	0	0	0	0	0	0	0	
1	8.08	8.08	9.8	7.9	688	23.7	0	0	0	0	0	0	0	0	0	0	
2	8.06	7.88	10.0	8.1	686	24.2	0	0	0	0	0	0	0	0	0	0	
3	7.98	8.18	9.7	8.4	691	25.0	0	5	6	0	6	5	4	0	0	0	
4	7.96	8.22	10.6	8.0	708	25.2	7	0	0	0	0	0	1	5	5	0	
5	8.03	8.15	9.3	8.0	688	24.7	12	11	11	13	16	11	10	11	12	0	
6	—	7.75	—	5.0	735	25.3	18	16	19	17	18	20	14	19	16	15	
7																	
8																	
Total=							37	32	36	30	40	36	29	35	33	15	Mean Neonates/Female = <u>32.3</u>

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-UNIV-029 Test Date: 2/20/19

Project #: 29876 Test ID: 81655 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
50%	0	8.11		10.3		1011	24.0	0	0	0	0	0	0	0	0	0	0	
	1	8.14	8.21	10.0	7.8	1013	23.6	0	0	0	0	0	0	0	0	0	0	
	2	8.14	8.06	9.9	8.2	1010	24.8	0	0	0	0	0	0	0	0	0	0	
	3	8.06	8.31	10.0	8.5	1005	25.0	5	5	0	0	0	6	7	0	0		
	4	8.08	8.35	10.7	8.0	1013	25.0	0	0	5	5	2	0	0	1	0		
	5	8.12	8.31	9.3	7.9	1019	24.9	12	14	11	11	15	12	14	14	11	14	
	6	—	7.99	—	4.6	1104	25.5	20	19	0	19	17	21	17	20	18	17	
	7																	
	8																	
Total=							37	38	16	35	34	33	37	41	30	31	Mean Neonates/Female = 33.2	
100%	0	8.16		10.5		1617	24.1	0	0	0	0	0	0	0	0	0	0	
	1	8.17	8.38	10.1	7.3	1628	23.7	0	0	0	0	0	0	0	0	0	0	
	2	8.20	8.27	10.3	8.3	1617	25.1	0	0	0	0	0	0	0	0	0	0	
	3	8.14	8.51	10.3	8.5	1607	24.9	0	0	4	8	0	7	7	7	0	6	
	4	8.15	8.51	10.8	8.1	1619	25.3	5	6	0	0	3	6	0	0	6	0	
	5	8.18	8.48	9.4	7.9	1636	24.8	14	5	13	15	17	16	14	15	6	9	
	6	—	8.38	—	5.8	1716	25.2	0	23	21	23	19	20	24	22	22	15	
	7																	
	8																	
Total=							19	34	38	46	39	42	45	44	34	30	Mean Neonates/Female = 37.1	

CETIS Summary Report

Report Date: 31 Mar-19 09:31 (p 1 of 2)
 Test Code: 81656 | 11-0627-6093

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk
Batch ID: 04-7254-3461	Test Type: Reproduction-Survival (7d)	Analyst: James Lem		
Start Date: 20 Mar-19 12:44	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water		
Ending Date: 26 Mar-19 15:03	Species: Ceriodaphnia dubia	Brine: Not Applicable		
Duration: 6d 2h	Source: In-House Culture	Age: 1		
Sample ID: 06-0022-5108	Code: 72-ADOLF-045	Client: Larry Walker Associates		
Sample Date: 19 Mar-19 15:10	Material: Ambient Water	Project: 29876		
Receipt Date: 20 Mar-19 07:06	Source: Calleguas Creek			
Sample Age: 22h (0.6 °C)	Station: ADOLF			

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
18-2894-2932	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	20.8%
08-6738-3862	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
03-5880-5629	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	28.1	25.3	30.9	20	34	1.25	3.96	14.08%	0.00%
6.25		10	30.5	27.6	33.4	23	35	1.29	4.09	13.41%	-8.54%
12.5		10	34	32.1	35.9	30	39	0.856	2.71	7.96%	-21.00%
25		10	34.5	29.8	39.2	23	42	2.08	6.59	19.09%	-22.78%
50		10	37.2	32	42.4	21	44	2.28	7.22	19.42%	-32.38%
100		10	35.6	30	41.2	18	43	2.47	7.82	21.97%	-26.69%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date:
Test Code:

31 Mar-19 09:31 (p 2 of 2)
81656 | 11-0627-6093

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	30	27	29	31	24	31	27	20	34	28
6.25		30	32	35	31	32	34	35	23	28	25
12.5		32	33	30	36	33	39	35	31	36	35
25		32	32	38	42	40	42	38	23	32	26
50		40	37	21	30	33	44	42	42	41	42
100		28	40	41	18	41	33	36	34	42	43
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

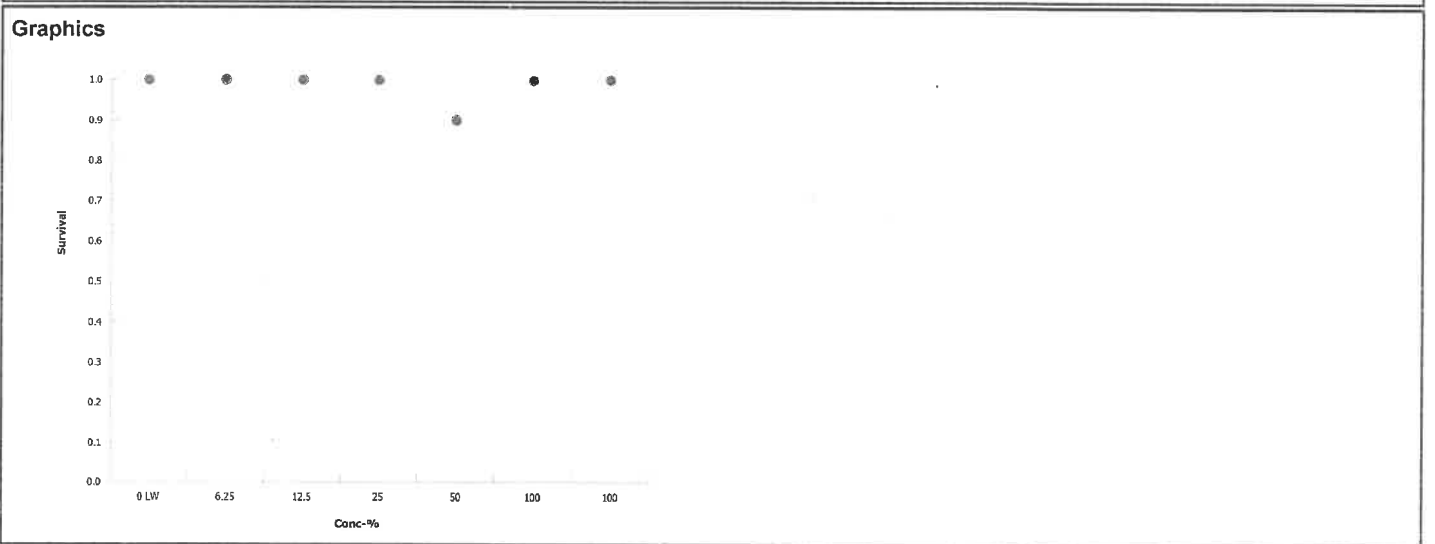
CETIS Analytical Report

Report Date: 31 Mar-19 09:31 (p 1 of 1)
 Test Code: 81656 | 11-0627-6093

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk	
Analysis ID: 08-6738-3862	Endpoint: Survival	CETIS Version: CETISv1.9.2		Official Results: Yes	
Analyzed: 31 Mar-19 9:31	Analysis: STP 2xK Contingency Tables				
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	0.500	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		9	1	10	0.9	0.1	10.0%
100		10	0	10	1	0	0.0%



CETIS Analytical Report

Report Date: 31 Mar-19 09:31 (p 1 of 1)
 Test Code: 81656 | 11-0627-6093

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 18-2894-2932 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:31 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	20.85%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	124	75	4	18	Asymp	0.9970	Non-Significant Effect
		12.5	146	75	2	18	Asymp	1.0000	Non-Significant Effect
		25	135	75	0	18	Asymp	0.9999	Non-Significant Effect
		50	142	75	1	18	Asymp	1.0000	Non-Significant Effect
		100	138	75	2	18	Asymp	1.0000	Non-Significant Effect

ANOVA Table

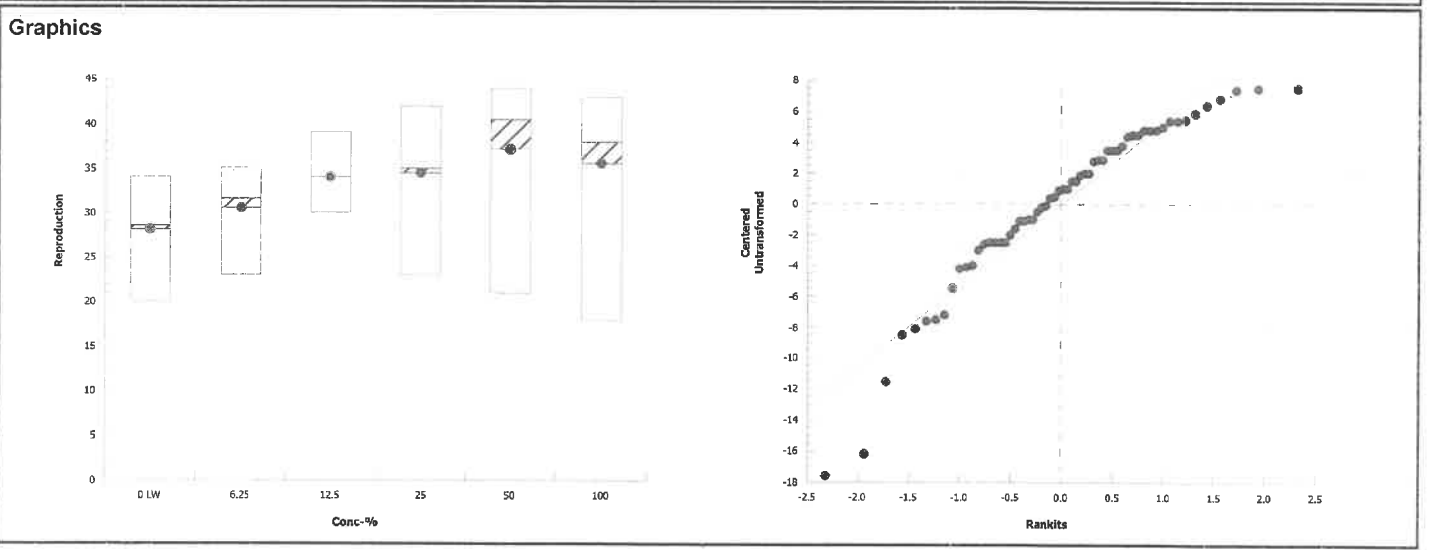
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	573.083	114.617	5	3.5	0.0082	Significant Effect
Error	1767.9	32.7389	54			
Total	2340.98		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	13.2	15.1	0.0213	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.92	0.946	7.9E-04	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	28.1	25.3	30.9	28.5	20	34	1.25	14.08%	0.00%
6.25		10	30.5	27.6	33.4	31.5	23	35	1.29	13.41%	-8.54%
12.5		10	34	32.1	35.9	34	30	39	0.856	7.96%	-21.00%
25		10	34.5	29.8	39.2	35	23	42	2.08	19.09%	-22.78%
50		10	37.2	32	42.4	40.5	21	44	2.28	19.42%	-32.38%
100		10	35.6	30	41.2	38	18	43	2.47	21.97%	-26.69%



CETIS Analytical Report

Report Date: 31 Mar-19 09:31 (p 1 of 1)
 Test Code: 81656 | 11-0627-6093

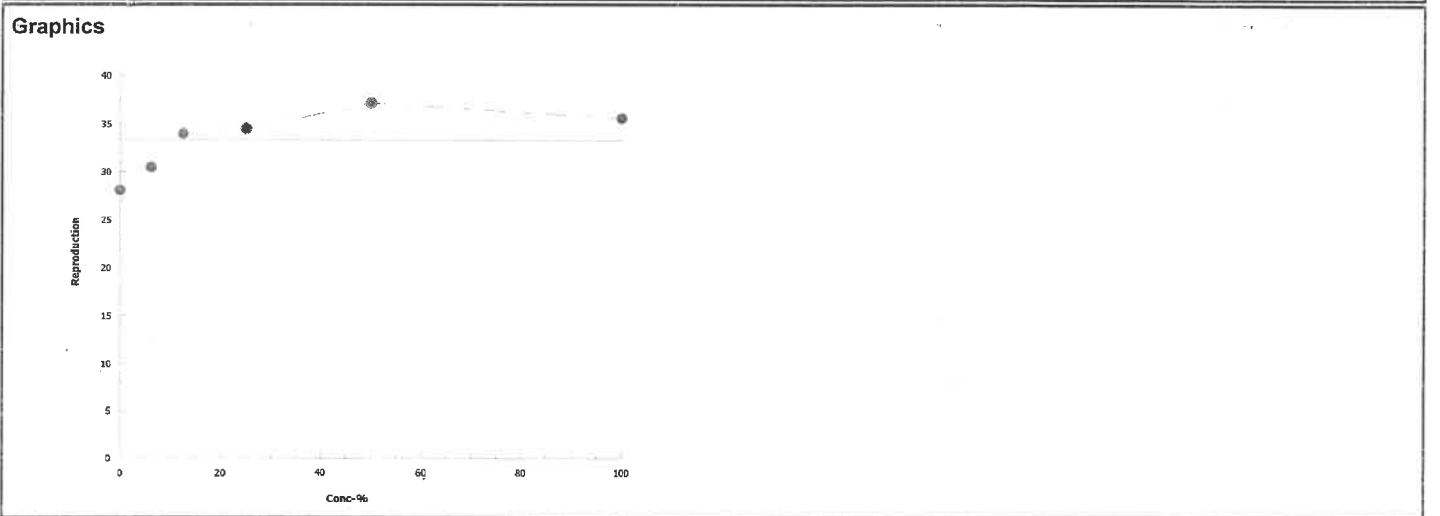
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 03-5880-5629	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 31 Mar-19 9:31	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	959198	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	28.1	20	34	1.25	3.96	14.10%	0.0%
6.25		10	30.5	23	35	1.29	4.09	13.40%	-8.54%
12.5		10	34	30	39	0.856	2.71	7.96%	-21.0%
25		10	34.5	23	42	2.08	6.59	19.10%	-22.8%
50		10	37.2	21	44	2.28	7.22	19.40%	-32.4%
100		10	35.6	18	43	2.47	7.82	22.00%	-26.7%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-ADOLF-045 Test Date: 3/20/19
 Project #: 29876 Test ID: 81656 Randomization: 10-7-1 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.82		9.6		341	25.2	0	0	0	0	0	0	0	0	0	0	0	Date: 3/20/19 New WQ: KR Test Init.: KR Sol'n Prep: B Time: 12:44
1	7.91	7.82	8.4	7.6	358	25.0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/21/19 New WQ: SM Counts: 00 Sol'n Prep: SK Old WQ: TA Time: 1:50
2	7.95	7.83	10.2	7.9	379	25.1	0	0	0	0	0	0	0	0	0	0	0	Date: 3/22/19 New WQ: TA Counts: 00 Sol'n Prep: HPC Old WQ: TA Time: 1:00
3	7.78	8.00	10.1	8.4	367	25.4	4	4	6	6	5	4	0	0	6	0	0	Date: 3/23/19 New WQ: BM Counts: 00 Sol'n Prep: CO Old WQ: TP Time: 3:18
4	7.72	7.93	9.7	7.7	367	25.3	0	0	0	0	0	0	6	3	0	6	0	Date: 3/24/19 New WQ: KR Counts: KB Sol'n Prep: KB Old WQ: BM Time: 4:27
5	7.84	7.96	9.6	7.7	362	25.2	9	9	8	9	7	10	0	6	10	8	0	Date: 3/25/19 New WQ: TP Counts: KB Sol'n Prep: KB Old WQ: B Time: 4:13
6	-	7.90	-	6.5	377	25.5	17	14	15	16	12	17	15	11	18	14	0	Date: 3/26/19 New WQ: - Counts: 00 Sol'n Prep: - Old WQ: MB Time: 1:50
7																		Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
8																		Date: Old WQ: Counts: Sol'n Prep: Time:
Total=							30	27	29	31	24	31	27	20	34	28		Mean Neonates/Female = 28/14.19

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.89		9.8		415	25.3	0	0	0	0	0	0	0	0	0	0	0	52397
1	7.98	7.89	9.2	7.6	425	25.2	0	0	0	0	0	0	0	0	0	0	0	52397
2	7.99	7.94	10.1	7.9	437	25.0	0	0	0	0	0	0	0	0	0	0	0	52397
3	7.88	8.01	9.9	8.3	440	25.7	4	6	6	6	5	7	0	0	6	0	0	52397
4	7.79	8.03	10.1	7.5	437	25.4	0	0	0	0	0	0	0	9	6	0	0	52397
5	7.93	8.04	9.7	7.9	436	25.5	9	8	9	6	9	10	10	0	8	4	0	52397
6	-	7.90	-	6.4	442	25.5	17	18	20	19	17	19	18	14	14	15	0	-
7																		
8																		
Total=							30	32	35	31	32	34	35	23	28	25		Mean Neonates/Female = 30.5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-ADOLF-045 Test Date: 3/26/19
 Project #: 29876 Test ID: 81656 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
12.5%	0	7.99		9.8		490	25.1	0	0	0	0	0	0	0	0	0	0	
	1	8.05	7.93	9.3	7.6	499	25.7	0	0	0	0	0	0	0	0	0	0	
	2	8.06	8.09	10.0	8.2	507	25.3	0	0	0	0	0	0	0	0	0	0	
	3	8.00	8.05	10.2	8.3	511	25.7	6	6	3	6	5	6	5	4	7	6	
	4	7.90	8.11	10.6	7.5	508	25.6	0	0	0	12	10	0	11	7	0	0	
	5	8.00	8.08	9.7	7.9	506	25.3	0	8	10	0	0	14	0	0	12	11	
	6	-	7.88	-	6.0	545	25.4	18	19	17	18	18	19	19	20	17	18	
	7																	
	8																	
Total=							32	33	30	36	33	39	35	31	36	35	Mean Neonates/Female = 34.0	
25%	0	8.11		10.1		624	25.7	0	0	0	0	0	0	0	0	0	0	
	1	8.15	8.04	9.5	7.6	635	25.7	0	0	0	0	0	0	0	0	0	0	
	2	8.17	8.02	10.1	8.2	628	25.4	0	0	0	0	0	0	0	0	0	0	
	3	8.08	8.13	10.1	8.4	636	25.3	5	4	7	7	6	6	6	0	6	5	
	4	8.09	8.18	10.7	7.6	627	25.0	0	10	0	0	12	0	13	5	0	0	
	5	8.11	8.17	9.8	8.0	636	25.6	12	0	13	13	0	14	0	0	13	11	
	6	-	7.87	-	5.2	790	25.3	15	18	18	22	22	22	19	18	13	10	
	7																	
	8																	
Total=							32	32	38	42	40	42	38	23	32	26	Mean Neonates/Female = 34.5	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-ADOLF-045 Test Date: 3/20/19

Project #: 29876 Test ID: 81656 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
50%	0	8.26		10.4		895	25.3	0	0	0	0	0	0	0	0	0	0	
	1	8.25	8.19	9.6	7.6	895	25.7	0	0	0	0	0	0	0	0	0	0	
	2	8.31	8.22	10.2	8.1	896	25.2	0	0	0	0	0	0	0	0	0	0	
	3	8.24	8.25	10.3	8.3	904	25.4	6	7	8	7	6	8	6	6	6	5	
	4	8.20	8.30	10.8	7.7	906	24.8	0	0	0	0	11	0	0	6	0	0	
	5	8.25	8.31	10.0	8.0	900	25.1	15	13	13	15	0	16	14	8	13	14	
	6	-	8.04	-	4.0	948	25.3	19	17	-	8	16	20	22	22	22	23	
	7																	
	8																	
Total=							40	37	43	30	33	44	42	42	41	42	Mean Neonates/Female = 37.2	
100%	0	8.37		10.9		1408	25.4	0	0	0	0	0	0	0	0	0	0	
	1	8.36	8.35	9.9	7.4	1411	25.6	0	0	0	0	0	0	0	0	0	0	
	2	8.40	8.42	10.9	8.3	1400	24.9	0	0	0	0	0	0	0	0	0	0	
	3	8.35	8.43	11.0	8.2	1404	25.5	5	6	5	6	6	5	6	5	6	7	
	4	8.30	8.48	11.1	7.6	1400	24.6	0	11	0	12	11	0	10	11	0	0	
	5	8.35	8.49	10.5	8.0	1412	25.4	14	0	15	0	0	8	0	0	15	15	
	6	-	8.43	-	3.7	1404	25.4	9	23	21	0	24	20	20	18	21	21	
	7																	
	8																	
Total=							28	40	41	18	41	33	36	34	42	43	Mean Neonates/Female = 35.6	

CETIS Summary Report

Report Date: 31 Mar-19 09:58 (p 1 of 2)
 Test Code: 81657 | 10-7913-4004

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 17-3885-2372	Test Type: Reproduction-Survival (7d)	Analyst: James Lem
Start Date: 20 Mar-19 12:15	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 26 Mar-19 14:40	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 2h	Source: In-House Culture	Age: 1

Sample ID: 12-1756-8359	Code: 72-HITCH-155	Client: Larry Walker Associates
Sample Date: 19 Mar-19 08:30	Material: Ambient Water	Project: 29876
Receipt Date: 20 Mar-19 07:06	Source: Calleguas Creek	
Sample Age: 28h (0.3 °C)	Station: HITCH	

Comments:
 Statistics excluding reproductive outliers: 25-D

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
00-7890-7629	Reproduction	Bonferroni Adj t Test	100	> 100	n/a	1	24.6%
21-1901-1700	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
17-8969-8253	Reproduction	Linear Interpolation (ICPIN)	IC5	63.6	55.7	n/a	1.572	
			IC10	77.2	61.4	n/a	1.295	
			IC15	90.8	67.2	n/a	1.101	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.4	28	32.8	25	34	1.08	3.41	11.20%	0.00%
6.25		10	29.9	27.3	32.5	24	35	1.14	3.6	12.05%	1.64%
12.5		10	32.6	27.5	37.7	21	43	2.27	7.17	21.99%	-7.24%
25		9	38.6	36	41.1	34	44	1.09	3.28	8.51%	-26.83%
50		10	37.6	34.8	40.4	29	43	1.25	3.95	10.50%	-23.68%
100		10	27.6	17.9	37.3	1	43	4.3	13.6	49.27%	9.21%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 31 Mar-19 09:58 (p 2 of 2)
Test Code: 81657 | 10-7913-4004

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	30	32	30	32	34	34	34	26	27	25
6.25		29	32	24	31	28	31	35	35	26	28
12.5		26	28	25	36	37	40	43	35	35	21
25		41	35	37		37	34	44	42	38	39
50		29	36	38	36	41	35	43	39	41	38
100		17	15	43	34	21	42	33	1	38	32
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1

CETIS Analytical Report

Report Date: 31 Mar-19 09:52 (p 1 of 1)
 Test Code: 81657 | 10-7913-4004

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 21-1901-1700	Endpoint: Survival	CETIS Version: CETISv1.9.2
Analyzed: 31 Mar-19 9:52	Analysis: STP 2xK Contingency Tables	Official Results: Yes

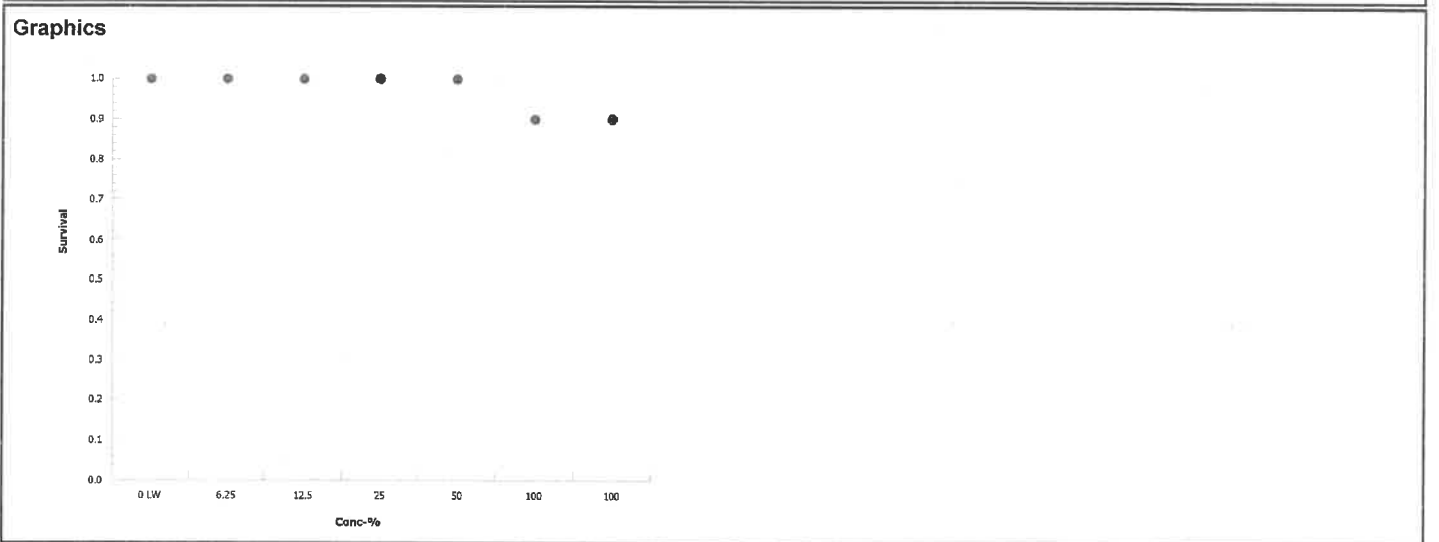
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	0.500	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		9	1	10	0.9	0.1	10.0%



CETIS Analytical Report

Report Date: 31 Mar-19 09:58 (p 1 of 1)
 Test Code: 81657 | 10-7913-4004

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 00-7890-7629 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:58 Analysis: Parametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	24.60%

Bonferroni Adj t Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	0.16	2.4	7.48	18	CDF	1.0000	Non-Significant Effect
		12.5	-0.706	2.4	7.48	18	CDF	1.0000	Non-Significant Effect
		25	-2.55	2.4	7.68	17	CDF	1.0000	Non-Significant Effect
		50	-2.31	2.4	7.48	18	CDF	1.0000	Non-Significant Effect
		100	0.898	2.4	7.48	18	CDF	0.9327	Non-Significant Effect

ANOVA Table

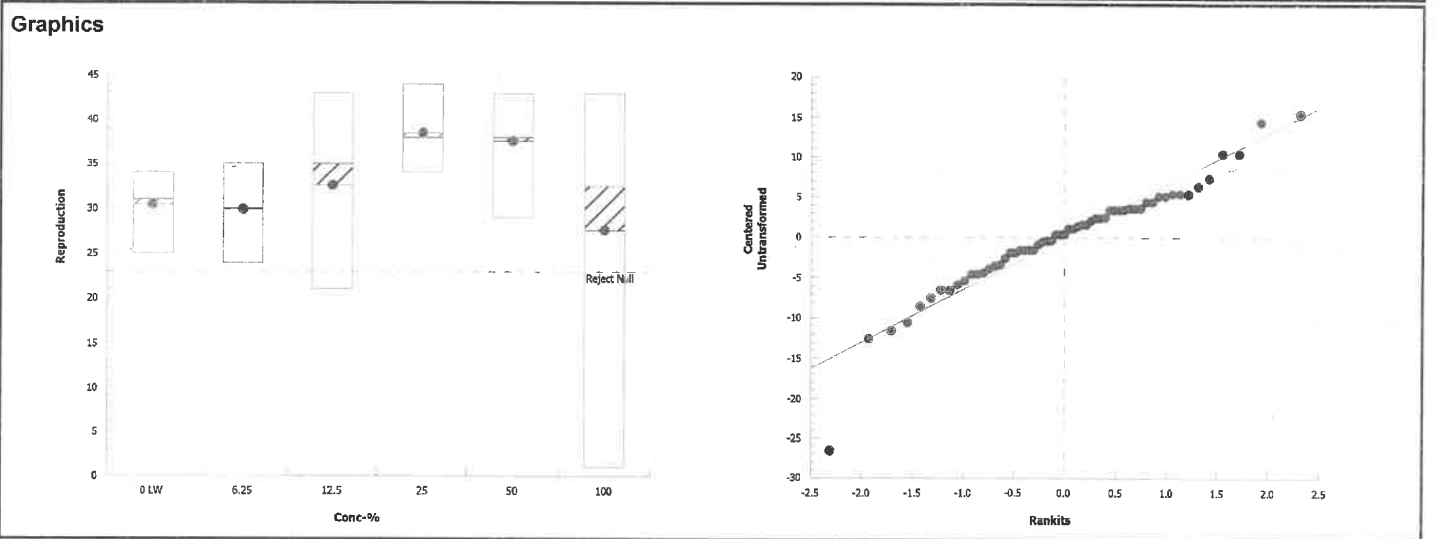
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	940.159	188.032	5	3.87	0.0046	Significant Effect
Error	2574.72	48.5797	53			
Total	3514.88		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	33	15.1	3.7E-06	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.938	0.945	0.0047	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30.4	28	32.8	31	25	34	1.08	11.20%	0.00%
6.25		10	29.9	27.3	32.5	30	24	35	1.14	12.05%	1.64%
12.5		10	32.6	27.5	37.7	35	21	43	2.27	21.99%	-7.24%
25		9	38.6	36	41.1	38	34	44	1.09	8.51%	-26.83%
50		10	37.6	34.8	40.4	38	29	43	1.25	10.50%	-23.68%
100		10	27.6	17.9	37.3	32.5	1	43	4.3	49.27%	9.21%



CETIS Analytical Report

Report Date: 31 Mar-19 09:58 (p 1 of 1)
 Test Code: 81657 | 10-7913-4004

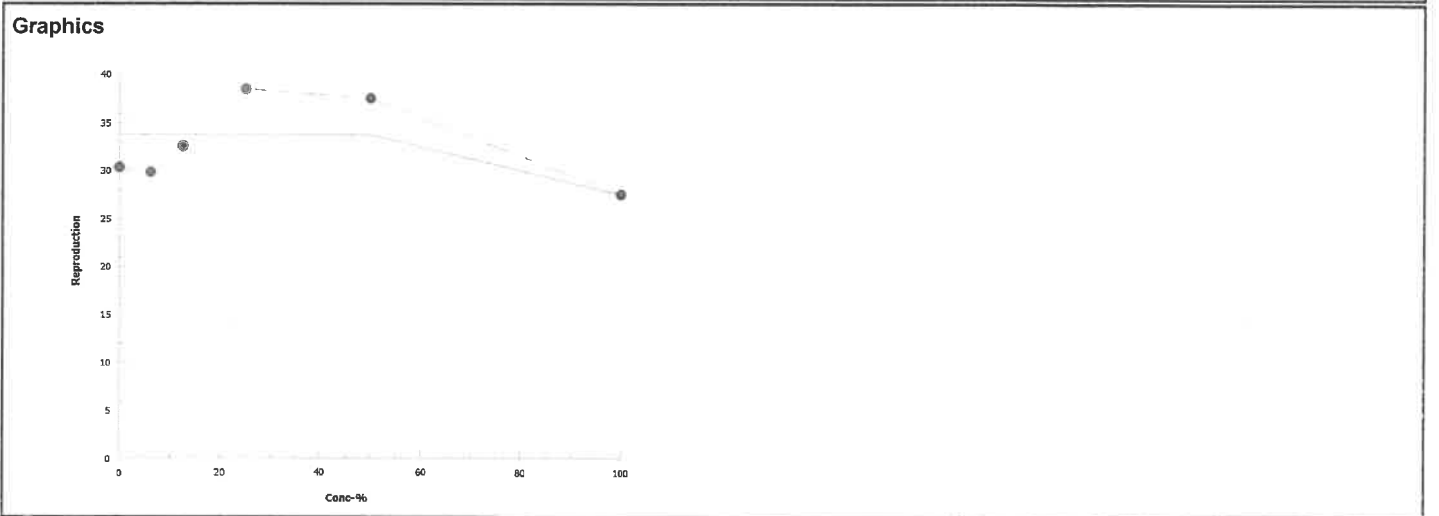
Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 17-8969-8253 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:58 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	830995	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	63.6	55.7	n/a	1.572	n/a	1.795
IC10	77.2	61.4	n/a	1.295	n/a	1.627
IC15	90.8	67.2	n/a	1.101	n/a	1.489
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.4	25	34	1.08	3.41	11.20%	0.0%
6.25		10	29.9	24	35	1.14	3.6	12.10%	1.64%
12.5		10	32.6	21	43	2.27	7.17	22.00%	-7.24%
25		9	38.6	34	44	1.09	3.28	8.51%	-26.8%
50		10	37.6	29	43	1.25	3.95	10.50%	-23.7%
100		10	27.6	1	43	4.3	13.6	49.30%	9.21%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-HITCH-155 Test Date: 3/20/19
 Project #: 29876 Test ID: 81657 Randomization: 10.7.5 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF													
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	Date	New WQ	Test Init.											
0	7.76		8.9		341	24.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3/20/19	SR	12:15		
1	7.87	7.80	9.1	7.5	357	25.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3/21/19	SR	11:30	
2	7.92	7.60	10.0	7.6	363	25.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3/22/19	TA	10:57	
3	7.75	7.72	9.6	8.1	357	25.0	0	0	4	6	6	6	6	6	6	2	0	0	0	0	0	0	0	0	0	0	3/23/19	BM	12:45	
4	7.67	7.95	10.2	7.9	368	25.3	6	6	0	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	3/24/19	TR	1:33	
5	7.73	7.92	9.4	7.7	361	24.2	9	11	8	11	10	8	11	2	11	6	0	0	0	0	0	0	0	0	0	0	3/25/19	TR	1:38	
6	-	7.87	-	7.1	389	25.0	15	15	18	15	18	20	17	18	13	15	0	0	0	0	0	0	0	0	0	0	3/26/19	TR	1:44	
7																														
8																														
Total=							30	32	30	32	34	34	34	26	27	25	Mean Neonates/Female = 30.4													
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID													
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	Date	New WQ	Counts											
0	7.80		9.2		450	24.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52399
1	7.92	7.87	9.2	7.6	457	25.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52399
2	7.93	7.71	9.9	7.8	464	25.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52399
3	7.78	7.84	10.8	8.3	464	25.6	0	6	0	5	5	5	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52399
4	7.71	8.06	10.5	7.9	462	25.6	6	0	6	0	0	0	8	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	52399
5	7.85	7.99	9.7	7.9	479	24.3	8	10	8	9	8	9	9	10	7	9	0	0	0	0	0	0	0	0	0	0	0	0	0	52399
6	-	7.86	-	6.5	487	24.9	15	16	10	17	15	17	18	19	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	-
7																														
8																														
Total=							29	32	24	31	28	31	35	35	26	28	Mean Neonates/Female = 29.9													

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-HITCH-155 Test Date: 3/20/19
 Project #: 29876 Test ID: 81657 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
12.5%	0	7.82		9.3		550	24.4	0	0	0	0	0	0	0	0	0	0	
	1	7.96	7.93	9.3	7.9	567	25.8	0	0	0	0	0	0	0	0	0	0	
	2	7.94	7.79	9.7	7.9	566	24.6	0	0	0	0	0	0	0	0	0	0	
	3	7.84	7.94	10.1	8.3	562	24.9	0	0	5	5	6	6	6	6	5	0	
	4	7.77	8.09	10.6	8.0	553	25.6	5	6	0	0	0	0	0	0	0	6	
	5	7.87	8.04	9.8	8.0	584	24.7	10	8	12	11	12	13	16	12	9	12	
	6	-	7.84	-	6.4	590	24.9	11	14	8	20	19	21	21	17	21	3	
	7																	
	8																	
Total=							2628	25	36	37	40	43	35	35	21	Mean Neonates/Female = 32.6		
25%	0	7.87		9.4		753	24.7	0	0	0	0	0	0	0	0	0	0	
	1	8.00	8.04	9.4	8.0	769	25.9	0	0	0	0	0	0	0	0	0	0	
	2	8.00	7.86	9.8	8.1	745	25.4	0	0	0	0	0	0	0	0	0	0	
	3	7.89	8.03	10.3	8.4	753	25.1	6	6	5	7	5	5	6	6	5	5	
	4	7.83	8.16	10.8	8.0	741	25.7	0	0	0	0	0	0	0	0	12	0	
	5	7.96	8.11	9.9	8.0	771	24.9	14	10	13	8	11	11	14	14	0	15	
	6	-	7.85	-	6.2	770	25.6	21	19	19	18	21	18	24	22	21	19	
	7																	
	8																	
Total=							41	35	37	25	37	34	44	42	38	39	Mean Neonates/Female = 37.2	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-HITCH-155 Test Date: 3/20/19
 Project #: 29876 Test ID: 81657 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
50%	0	7.91		9.6		1141	24.5	0	0	0	0	0	0	0	0	0	0	
	1	8.63	8.15	9.5	7.9	1128	25.4	0	0	0	0	0	0	0	0	0	0	
	2	8.03	7.98	9.8	8.1	1112	25.5	0	0	0	0	0	0	0	0	0	0	
	3	7.95	8.20	10.2	8.4	1112	25.4	6	6	6	4	5	7	6	5	6	4	
	4	7.94	8.27	10.9	8.0	1113	25.4	0	0	0	0	0	0	0	0	0	0	
	5	8.00	8.23	10.1	8.0	1162	25.2	2	11	11	14	14	8	14	15	15	14	
	6	—	8.00	—	6.0	1155	25.4	21	19	21	18	22	20	23	19	20	20	
	7																	
	8																	
Total=							29	36	38	36	41	35	43	39	41	38	Mean Neonates/Female = 37.6	
100%	0	7.93		10.6		1834	24.4	0	0	0	0	0	0	0	0	0	0	
	1	8.07	8.30	9.7	7.6	1816	25.6	0	0	0	0	0	0	0	0	0	0	
	2	8.07	8.17	10.1	8.0	1812	25.6	0	0	0	0	0	0	0	0	0	0	
	3	7.97	8.39	11.3	8.3	1807	25.3	5	0	4	5	7	8	6	1/1	3	0	
	4	7.98 7.88	8.42	11.3	8.0	1821	25.4	0	0	17	9	0	0	0	—	0	4	
	5	8.04	8.39	10.3	8.0	1900	25.4	2	5	0	0	1	13	16	—	12	12	
	6	—	8.22	—	5.2	895	25.6	10	10	22	20	13	21	11	—	23	16	
	7																	
	8																	
Total=							17	15	43	34	21	42	33	1/1	38	32	Mean Neonates/Female = 27.6	

CETIS Summary Report

Report Date: 31 Mar-19 10:43 (p 1 of 2)
Test Code: 81658 | 20-4107-0244

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk		
Batch ID: 06-6262-4807	Test Type: Reproduction-Survival (7d)	Analyst: James Lem			
Start Date: 20 Mar-19 13:15	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 26 Mar-19 15:52	Species: Ceriodaphnia dubia	Brine: Not Applicable			
Duration: 6d 3h	Source: In-House Culture	Age: 1			
Sample ID: 07-2714-8763	Code: 72-GATE-216	Client: Larry Walker Associates			
Sample Date: 19 Mar-19 12:10	Material: Ambient Water	Project: 29876			
Receipt Date: 20 Mar-19 07:06	Source: Calleguas Creek				
Sample Age: 25h (0.3 °C)	Station: GATE				

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
06-1347-0919	Reproduction	Bonferroni Adj t Test	100	> 100	n/a	1	37.2%
00-2659-2174	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
14-0913-1986	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	25.7	20.3	31	10	34	2.32	6.95	27.06%	0.00%
6.25		10	22.8	18.3	27.3	11	30	1.99	6.29	27.57%	11.17%
12.5		10	23.1	14.6	31.6	5	38	3.75	11.8	51.28%	10.00%
25		10	31.4	25.3	37.5	13	44	2.72	8.59	27.36%	-22.34%
50		10	29	23.3	34.7	17	38	2.53	8	27.59%	-12.99%
100		10	32.1	25.7	38.5	16	40	2.84	8.97	27.96%	-25.06%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 31 Mar-19 10:43 (p 2 of 2)
Test Code: 81658 | 20-4107-0244

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	26	26	32	27	28	34	27	21	10	
6.25		27	17	11	19	28	20	30	29	27	20
12.5		5	35	19	31	36	10	38	17	13	27
25		36	13	24	34	37	27	44	34	29	36
50		35	38	23	35	35	23	36	30	18	17
100		24	38	40	39	35	16	39	37	34	19
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1

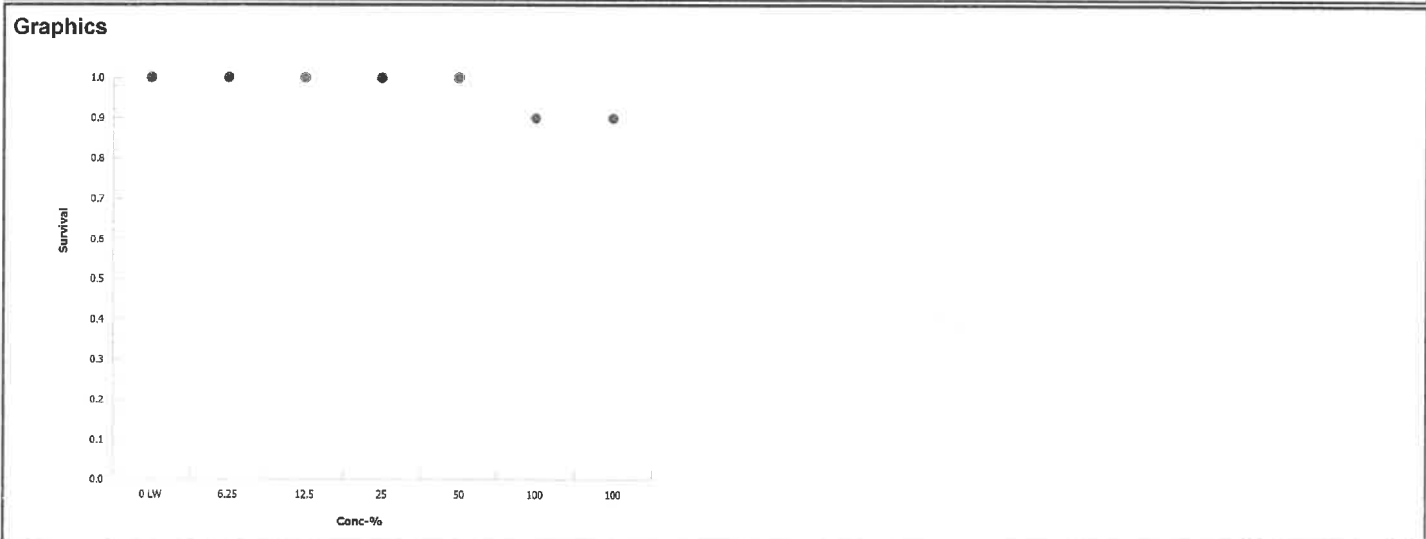
CETIS Analytical Report

Report Date: 31 Mar-19 10:43 (p 1 of 1)
 Test Code: 81658 | 20-4107-0244

Ceriodaphnia Survival and Reproduction Test					Pacific EcoRisk	
Analysis ID: 00-2659-2174	Endpoint: Survival		CETIS Version: CETISv1.9.2			
Analyzed: 31 Mar-19 10:41	Analysis: STP 2xK Contingency Tables		Official Results: Yes			
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	
Untransformed	C > T	100	> 100	n/a	1	

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	0.526	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	9	0	9	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		9	1	10	0.9	0.1	10.0%



Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 06-1347-0919 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 10:43 Analysis: Parametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	37.16%

Bonferroni Adj t Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	0.721	2.4	9.54	17	CDF	1.0000	Non-Significant Effect
		12.5	0.645	2.4	9.54	17	CDF	1.0000	Non-Significant Effect
		25	-1.44	2.4	9.54	17	CDF	1.0000	Non-Significant Effect
		50	-0.838	2.4	9.54	17	CDF	1.0000	Non-Significant Effect
		100	-1.62	2.4	9.54	17	CDF	1.0000	Non-Significant Effect

ANOVA Table

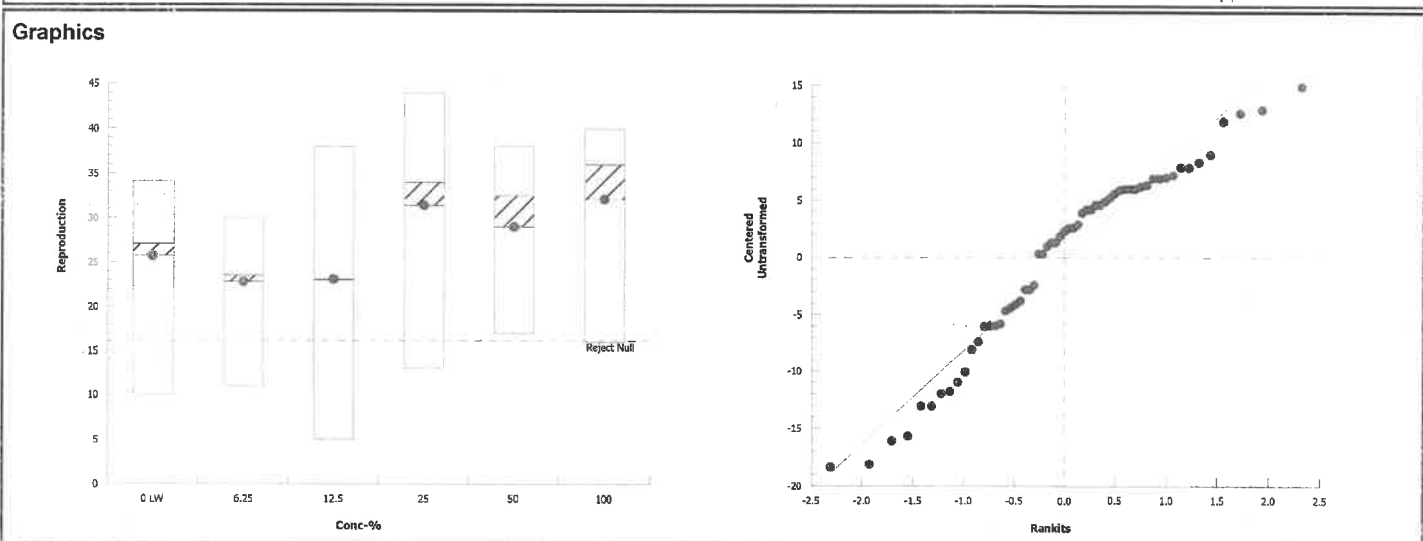
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	829.997	165.999	5	2.22	0.0662	Non-Significant Effect
Error	3969.8	74.9019	53			
Total	4799.8		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	4.33	15.1	0.5034	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.948	0.945	0.0140	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	9	25.7	20.3	31	27	10	34	2.32	27.06%	0.00%
6.25		10	22.8	18.3	27.3	23.5	11	30	1.99	27.57%	11.17%
12.5		10	23.1	14.6	31.6	23	5	38	3.75	51.28%	10.00%
25		10	31.4	25.3	37.5	34	13	44	2.72	27.36%	-22.34%
50		10	29	23.3	34.7	32.5	17	38	2.53	27.59%	-12.99%
100		10	32.1	25.7	38.5	36	16	40	2.84	27.96%	-25.06%



CETIS Analytical Report

Report Date: 31 Mar-19 10:43 (p 1 of 1)
 Test Code: 81658 | 20-4107-0244

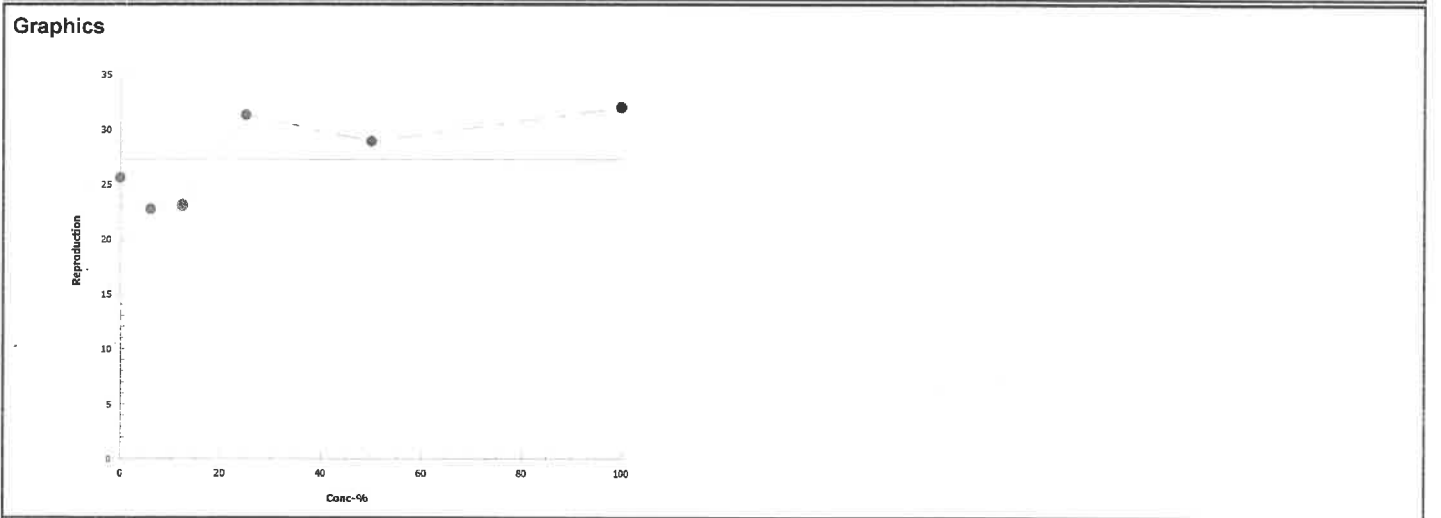
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 14-0913-1986 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 10:43 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	691884	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	25.7	10	34	2.32	6.95	27.10%	0.0%
6.25		10	22.8	11	30	1.99	6.29	27.60%	11.2%
12.5		10	23.1	5	38	3.75	11.8	51.30%	10.0%
25		10	31.4	13	44	2.72	8.59	27.40%	-22.3%
50		10	29	17	38	2.53	8	27.60%	-13.0%
100		10	32.1	16	40	2.84	8.97	28.00%	-25.1%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-GATE-216 Test Date: 3/20/19
 Project #: 29876 Test ID: 81658 Randomization: 10.7.2 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF				
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J					
Lab Water Control	0	7.68		9.2		342	24.8	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/20/19 New WQ: <u>6V</u> Test Init.: <u>K6</u> Sol'n Prep: <u>SR</u> Time: <u>1315</u>	
	1	7.90	7.87	9.2	7.6	357	24.7	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/21/19 New WQ: <u>SAT</u> Counts: <u>14</u> Sol'n Prep: <u>SV</u> Old WQ: <u>SAT</u> Time: <u>1015</u>	
	2	7.61	7.98	9.5	7.6	362	24.1	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/21/19 New WQ: <u>TP</u> Counts: <u>TF</u> Sol'n Prep: <u>40</u> Old WQ: <u>TP</u> Time: <u>254</u>	
	3	7.77	8.00	9.3	7.9	361	25.5	0	0	0	2	0	0	6	0	0	0	0	0	Date: 3/23/19 New WQ: <u>BM</u> Counts: <u>50</u> Sol'n Prep: <u>10</u> Old WQ: <u>mn</u> Time: <u>1430</u>	
	4	7.67	7.98	10.1	7.9	379	24.7	5	5	6	4	6	4	0	4	4	4	4	4	Date: 3/24/19 New WQ: <u>10</u> Counts: <u>14</u> Sol'n Prep: <u>K6</u> Old WQ: <u>TP</u> Time: <u>1405</u>	
	5	7.78	8.09	9.1	8.2	369	25.2	9	7	7	12	8	7	11	9	5	6	6	6	Date: 3/25/19 New WQ: <u>N</u> Counts: <u>62</u> Sol'n Prep: <u>K6</u> Old WQ: <u>DM</u> Time: <u>1354</u>	
	6	-	7.77	-	7.5	404	25.1	12	-	13	14	13	17	17	14	12	0	0	0	Date: 3/26/19 New WQ: <u>-</u> Counts: <u>16</u> Sol'n Prep: <u>-</u> Old WQ: <u>R6</u> Time: <u>1552</u>	
	7								-											Date: <u>-</u> New WQ: <u>-</u> Counts: <u>-</u> Sol'n Prep: <u>-</u> Old WQ: <u>-</u> Time: <u>-</u>	
	8																			Date: <u>-</u> Old WQ: <u>-</u> Counts: <u>-</u> Time: <u>-</u>	
Total=							26	7	26	32	27	29	34	29	21	10	Mean Neonates/Female = <u>25.7</u>				
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID				
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J					
6.25%	0	7.83		9.5		414	24.8	0	0	0	0	0	0	0	0	0	0	0	0	52406	
	1	7.95	7.92	9.0	7.5	421	24.8	0	0	0	0	0	0	0	0	0	0	0	0	52400	
	2	7.18	8.00	9.4	7.7	432	24.2	0	0	0	0	0	0	0	0	0	0	0	0	52400	
	3	7.83	8.00	9.4	8.0	424	25.5	0	0	0	0	0	0	0	0	0	0	0	0	52400	
	4	7.70	8.05	10.4	8.0	428	24.8	6	2	0	0	6	0	6	6	3	0	0	0	52400	
	5	7.61	8.07	9.2	8.1	432	25.2	8	5	0	8	8	7	10	9	8	8	8	8	52400	
	6	-	7.76	-	6.7	465	24.4	13	10	11	11	14	13	14	14	16	12	12	12	-	
	7																				
	8																				
Total=							27	17	11	19	20	20	30	29	29	20	Mean Neonates/Female = <u>22.8</u>				

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-GATE- 216 Test Date: 3/20/19
 Project #: 29876 Test ID: 81658 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.87		9.8		483	24.7	0	0	0	0	0	0	0	0	0	0	0	
1	8.01	7.97	9.1	7.5	492	24.6	0	0	0	0	0	0	0	0	0	0	0	
2	7.71	8.01	9.4	7.7	500	24.9	0	0	0	0	0	0	0	0	0	0	0	
3	7.88	8.04	9.6	8.1	497	25.4	0	0	0	0	3	0	6	0	0	0	0	
4	7.78	8.08	10.8	8.1	501	25.1	2	6	7	8	0	0	0	0	4	5		
5	7.91	8.10	9.2	8.0	500	25.2	3	13	0	8	13	15	12	6	9	8		
6	-	7.72	-	5.5	537	24.0	0	16	12	15	20	9	20	11	0	14		
7																		
8																		
Total=							5	35	19	31	36	10	35	17	13	27	Mean Neonates/Female = 23.1	
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.95		9.6		621	25.0	0	0	0	0	0	0	0	0	0	0	0	
1	8.05	8.08	9.4	7.7	617	24.8	0	0	0	0	0	0	0	0	0	0	0	
2	7.76	8.11	9.4	8.0	625	25.0	0	0	0	0	0	0	0	0	0	0	0	
3	7.94	8.16	9.7	8.3	615	25.5	0	0	0	0	5	0	0	6	0	0		
4	7.86	8.17	11.1	8.1	621	25.3	6	4	6	5	0	3	8	0	5	4		
5	7.97	8.16	9.1	8.0	617	25.1	14	9	0	12	15	8	15	10	10	14		
6	-	7.68	-	3.6	667	24.4	16	0	13	17	17	16	21	13	14	18		
7																		
8																		
Total=							36	13	24	37	37	27	44	34	29	36	Mean Neonates/Female = 31.4	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-GATE-216 Test Date: 3/20/19
 Project #: 29876 Test ID: 81658 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	8.03		9.9		881	25.1	0	0	0	0	0	0	0	0	0	0		
1	8.10	8.19	9.9	7.6	879	24.9	0	0	0	0	0	0	0	0	0	0		
2	7.85	8.22	9.4	8.2	861	24.7	0	0	0	0	0	0	0	0	0	0		
3	8.01	8.28	9.8	8.3	872	25.4	0	0	0	5	5	0	6	0	0	0		
4	7.95	8.30	11.3	8.1	867	25.1	7	7	1	0	0	6	0	5	5	6		
5	8.03	8.27	9.2	8.0	869	25.0	10	12	9	15	13	0	16	7	13	11		
6	—	7.76	—	2.3	974	24.7	18	19	17	15	17	17	14	18	0	0		
7																		
8																		
Total=							35	38	23	35	35	23	36	30	18	17	Mean Neonates/Female = 29.0	
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	8.05		10.5		1360	24.8	0	0	0	0	0	0	0	0	0	0		
1	8.12	8.34	9.9	7.3	1362	24.7	0	0	0	0	0	0	0	0	0	0		
2	7.95	8.36	9.7	8.2	1355	24.5	0	0	0	0	0	0	0	0	0	0		
3	7.99	8.46	10.1	8.4	1346	25.5	0	0	7	7	0	0	6	0	0	0		
4	8.02	8.43	11.4	8.1	1349	25.0	1	4	0	0	6	5	0	5	6	4		
5	8.06	8.43	9.4	7.9	1356	24.5	7	16	14	13	11	11	17	15	13	15		
6	—	8.26	—	5.2	1452	24.8	16	18	19	19	18	16	16	17	15	0		
7																		
8																		
Total=							24	37	40	39	35	16	39	37	33	19	34	Mean Neonates/Female = 32.81

4+19

CETIS Summary Report

Report Date: 31 Mar-19 10:53 (p 1 of 2)
 Test Code: 81659 | 02-2011-9944

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 05-7549-8706	Test Type: Reproduction-Survival (7d)	Analyst: James Lem
Start Date: 20 Mar-19 13:43	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 26 Mar-19 15:09	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 1h	Source: In-House Culture	Age: 1

Sample ID: 11-9678-9924	Code: 72-BELT-219	Client: Larry Walker Associates
Sample Date: 19 Mar-19 11:15	Material: Ambient Water	Project: 29876
Receipt Date: 20 Mar-19 07:06	Source: Calleguas Creek	
Sample Age: 26h (0.3 °C)	Station: BELT	

Comments:
 Statistics excluding reproductive outliers: 100-A

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
13-6525-2187	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	18.3%
02-6179-9058	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
15-5967-6718	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	25.9	23.5	28.3	20	31	1.05	3.31	12.80%	0.00%
6.25		10	25.3	20.3	30.3	9	31	2.23	7.06	27.89%	2.32%
12.5		10	27.3	25.1	29.5	24	34	0.955	3.02	11.06%	-5.41%
25		10	30.7	28.2	33.2	24	37	1.13	3.56	11.60%	-18.53%
50		10	37.2	35	39.4	34	41	0.952	3.01	8.09%	-43.63%
100		9	40.1	36.8	43.4	35	47	1.45	4.34	10.83%	-54.87%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 31 Mar-19 10:53 (p 2 of 2)
 Test Code: 81659 | 02-2011-9944

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	30	24	31	20	24	26	29	25	26	24
6.25		26	24	31	28	9	17	30	29	29	30
12.5		29	27	34	29	25	25	25	26	29	24
25		37	30	32	33	30	29	24	34	30	28
50		41	36	40	35	34	37	41	34	34	40
100			46	35	41	38	47	37	37	37	43
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

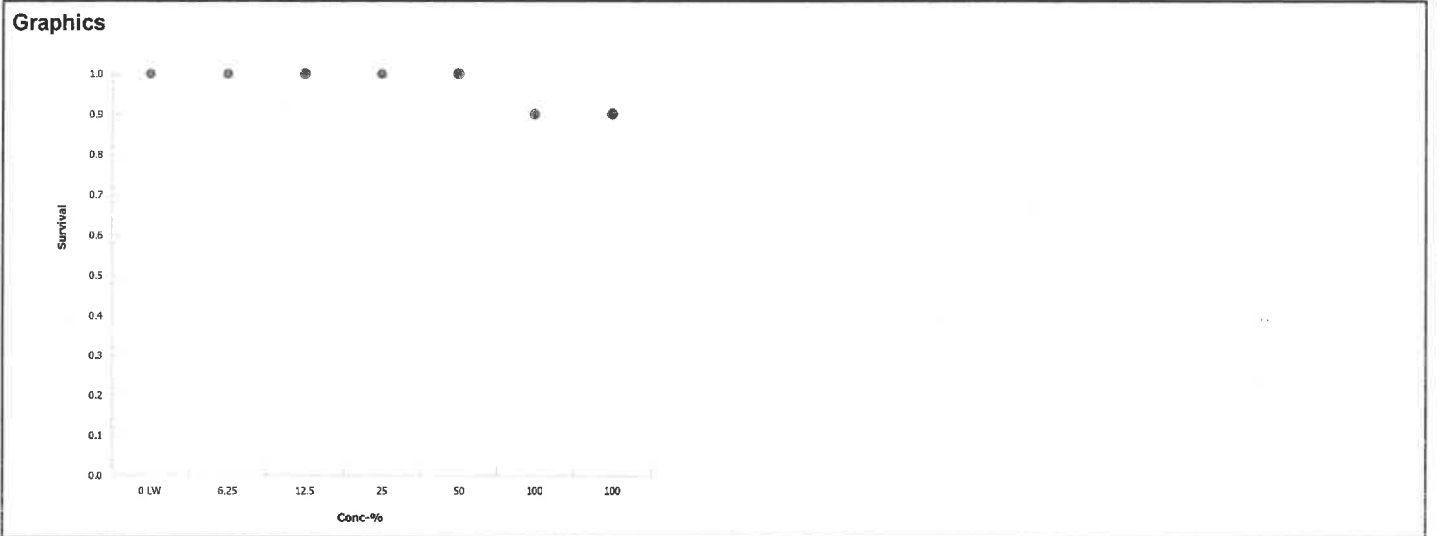
CETIS Analytical Report

Report Date: 31 Mar-19 10:52 (p 1 of 1)
 Test Code: 81659 | 02-2011-9944

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk	
Analysis ID: 02-6179-9058	Endpoint: Survival	CETIS Version: CETISv1.9.2		Official Results: Yes	
Analyzed: 31 Mar-19 10:51	Analysis: STP 2xK Contingency Tables				
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	0.500	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		9	1	10	0.9	0.1	10.0%



CETIS Analytical Report

Report Date: 31 Mar-19 10:53 (p 1 of 1)
 Test Code: 81659 | 02-2011-9944

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 13-6525-2187 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 10:53 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	18.26%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	112	n/a	5	18	Exact	1.0000	Non-Significant Effect
		12.5	116	n/a	4	18	Exact	1.0000	Non-Significant Effect
		25	138	n/a	3	18	Exact	1.0000	Non-Significant Effect
		50	155	n/a	0	18	Exact	1.0000	Non-Significant Effect
		100	135	n/a	0	17	Exact	1.0000	Non-Significant Effect

ANOVA Table

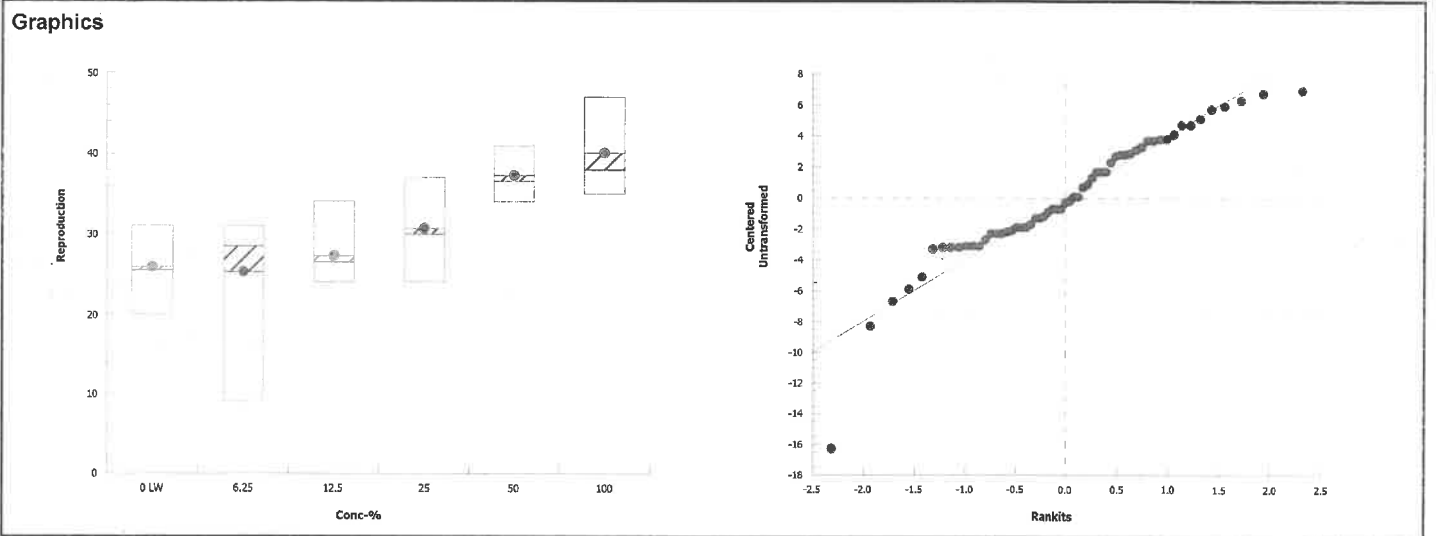
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1854.04	370.808	5	20.1	<1.0E-37	Significant Effect
Error	975.689	18.4092	53			
Total	2829.73		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	11.1	15.1	0.0502	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.932	0.945	0.0027	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	25.9	23.5	28.3	25.5	20	31	1.05	12.80%	0.00%
6.25		10	25.3	20.3	30.3	28.5	9	31	2.23	27.89%	2.32%
12.5		10	27.3	25.1	29.5	26.5	24	34	0.955	11.06%	-5.41%
25		10	30.7	28.2	33.2	30	24	37	1.13	11.60%	-18.53%
50		10	37.2	35	39.4	36.5	34	41	0.952	8.09%	-43.63%
100		9	40.1	36.8	43.4	38	35	47	1.45	10.83%	-54.87%



CETIS Analytical Report

Report Date: 31 Mar-19 10:53 (p 1 of 1)
 Test Code: 81659 | 02-2011-9944

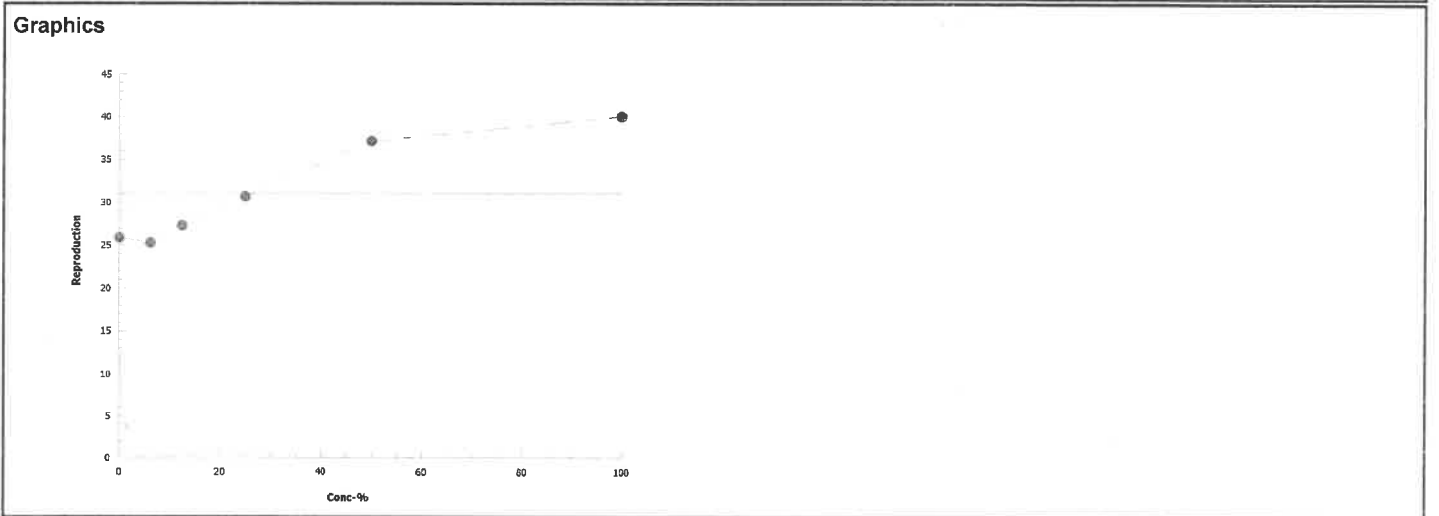
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 15-5967-6718 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 10:53 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1326095	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a <td <1	n/a	n/a	
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	25.9	20	31	1.05	3.31	12.80%	0.0%
6.25		10	25.3	9	31	2.23	7.06	27.90%	2.32%
12.5		10	27.3	24	34	0.955	3.02	11.10%	-5.41%
25		10	30.7	24	37	1.13	3.56	11.60%	-18.5%
50		10	37.2	34	41	0.952	3.01	8.09%	-43.6%
100		9	40.1	35	47	1.45	4.34	10.80%	-54.9%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-BELT-219 Test Date: 3/20/19
 Project #: 29876 Test ID: 81659 Randomization: _____ Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	Date	New WQ	Test Init.
0	7.75		10.0		346	24.4	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/20/19 New WQ: HK Test Init.: 72 Sol'n Prep: 13V Time: 1341
1	7.90 7.98 7.98	7.71	9.9 9.7	7.2	352	24.9	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/21/19 New WQ: TA Counts: TF Sol'n Prep: 96 Old WQ: SAT Time: 1333
2	7.60	7.84	9.5	7.4	363	24.8	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/21/19 New WQ: TP Counts: TF Sol'n Prep: 106 Old WQ: TA Time: 1322
3	7.85	7.84	9.3	8.3	360	24.3	0	0	0	0	0	0	5	0	0	0	0	0	Date: 3/23/19 New WQ: BM Counts: CD Sol'n Prep: 100 Old WQ: AR Time: 1515
4	7.62	7.99	10.0	7.7	375 372	24.3	5	4	6	3	4	6	0	4	5	5	5	5	Date: 3/24/19 New WQ: 2D Counts: K6 Sol'n Prep: K6 Old WQ: BV Time: 1343
5	7.82	7.95	9.2	7.3	360	25.3	11	7	10	7	8	8	9	7	8	6	6	6	Date: 3/25/19 New WQ: TP Counts: W Sol'n Prep: 146 Old WQ: BV Time: 1443
6	-	7.91	-	6.7	403	24.7	14	13	15	10	12	12	15	14	13	13	13	13	Date: 3/26/19 New WQ: - Counts: CR Sol'n Prep: - Old WQ: MB Time: 1504
7																			Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
8																			Date: Old WQ: Counts: Time:
Total=							30	24	31	20	24	26	29	25	26	24	Mean Neonates/Female = 25.9		
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.83		10.1		434	24.5	0	0	0	0	0	0	0	0	0	0	0	0	52401
1	8.00	7.87	9.0	7.3	450	24.7	0	0	0	0	0	0	0	0	0	0	0	0	52401
2	7.70	7.94	9.5	7.6	442	24.0	0	0	0	0	0	0	0	0	0	0	0	0	52401
3	7.93	7.91	9.4	8.2	462	24.3	0	0	0	5	0	0	0	0	0	0	0	0	52401
4	7.79	8.06	10.1	7.6	461 461	24.3	4	5	6	0	4	2	6	6	6	4	4	4	52401
5	7.95	8.04	9.5	7.3	457	25.4	8	7	11	9	5	4	10	8	10	10	10	10	52401
6	-	7.93	-	6.9	508	24.3	14	12	14	14	0	11	14	15	13	16	16	16	-
7																			
8																			
Total=							26	24	31	28	9	17	30	29	29	30	Mean Neonates/Female = 25.3		

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-BELT- 219 Test Date: 3/20/19
 Project #: 29876 Test ID: 81659 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
12.5%	0	8.07		9.2	518	24.8	0	0	0	0	0	0	0	0	0	0	
	1	8.10	296	9.1	7.1	538	25.0	0	0	0	0	0	0	0	0	0	
	2	7.87	8.01	9.7	7.5	559	24.5	0	0	0	0	0	0	0	0	0	
	3	8.03	8.00	9.5	8.2	546	24.3	4	0	0	0	0	0	0	0	0	
	4	7.44	8.13	10.3	7.8	532	24.7	0	5	6	4	5	4	4	5	6	5
	5	8.00	8.14	9.8	7.3	543	25.6	10	8	10	10	7	8	9	7	9	7
	6	-	7.99	-	7.3	501	24.4	15	14	18	15	13	13	12	14	14	12
	7																
	8																
Total=							29	27	34	29	25	25	25	26	29	24	Mean Neonates/Female = 27.3
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
25%	0	8.22		9.9	686	24.6	0	0	0	0	0	0	0	0	0	0	
	1	8.20	8.10	9.1	7.2	696	24.7	0	0	0	0	0	0	0	0	0	
	2	8.02	8.11	9.7	7.6	695	25.1	0	0	0	0	0	0	0	0	0	
	3	8.17	8.15	9.6	8.1	711	24.2	5	0	0	0	0	0	0	0	0	
	4	8.18	8.23	10.6	7.8	691	24.1	0	7	6	5	4	5	6	7	6	5
	5	8.20	8.26	9.7	7.2	685	25.5	14	8	12	11	10	10	7	11	9	9
	6	-	8.17	-	7.3	745	24.7	18	15	14	17	16	14	11	16	15	14
	7																
	8																
Total=							37	30	32	33	30	29	24	34	30	28	Mean Neonates/Female = 30.7

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-72-BELT-29 Test Date: 3/20/19
 Project #: 29876 Test ID: 81659 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
50%	0	8.36		10.1	1017	24.5	0	0	0	0	0	0	0	0	0	0	0		
	1	8.31	8.28	9.2	6.9	1018	25.2	0	0	0	0	0	0	0	0	0	0	0	
	2	8.15	8.38	9.6	7.6	1000	24.8	0	0	0	0	0	0	0	0	0	0	0	
	3	8.29	8.35	9.5	8.3	1025	24.3	6	0	0	5	0	0	5	0	0	0	0	
	4	8.32	8.41	11.0	7.6	996	24.1	0	6	6	0	4	6	0	4	5	7		
	5	8.32	8.41	9.7	7.3	1023	25.4	15	12	14	11	12	14	15	13	12	14		
	6	-	8.34	-	7.1	1001	24.7	20	18	20	19	18	17	21	17	17	19		
	7																		
	8																		
Total=							41	36	40	35	34	37	41	34	34	40	Mean Neonates/Female = 37.2		
100%	0	8.43		11.0	1619	24.6	0	0	0	0	0	0	0	0	0	0	0		
	1	8.38	8.38	9.2	7.0	1624	25.0	0	0	0	0	0	0	0	0	0	0	0	
	2	8.26	8.38	9.9	7.6	1617	24.3	0	0	0	0	0	0	0	0	0	0	0	
	3	8.30	8.45	10.1	8.2	1614	24.3	-	0	5	5	0	0	4	0	0	6		
	4	8.44	8.41	11.8	7.7	1608	24.3	-	7	0	0	6	7	0	4	6	0		
	5	8.38	8.38	10.4	7.3	1635	25.7	-	15	12	15	12	16	12	13	14	13		
	6	-	8.30	-	7.0	1644	24.4	-	24	18	21	20	24	21	20	17	24		
	7																		
	8																		
Total=							40	46	35	44	38	47	37	37	37	43	Mean Neonates/Female = 36.4 36.1		

3/23/19

3/23/19

Appendix C

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to *Ceriodaphnia dubia*: Data Analyses Including Statistical Outliers

CETIS Summary Report

Report Date: 31 Mar-19 09:15 (p 1 of 2)
 Test Code: 81655 | 04-3835-5245

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 20-9103-8815	Test Type: Reproduction-Survival (7d)	Analyst: James Lem
Start Date: 20 Mar-19 13:25	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 26 Mar-19 15:25	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 2h	Source: In-House Culture	Age: 1

Sample ID: 17-6964-4394	Code: 72-UNIV-029	Client: Larry Walker Associates
Sample Date: 19 Mar-19 16:40	Material: Ambient Water	Project: 29876
Receipt Date: 20 Mar-19 07:06	Source: Calleguas Creek	
Sample Age: 21h (1 °C)	Station: UNIV	

Comments:
 Statistics including reproductive outliers: 12.5-I, 25-J, 50-C

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
19-4667-0582	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	30.0%
01-2321-2651	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
11-1210-7048	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1	
			IC10	>100	n/a	n/a	<1	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	25.3	20.4	30.2	13	34	2.17	6.86	27.13%	0.00%
6.25		10	25	20.6	29.4	12	34	1.95	6.16	24.66%	1.19%
12.5		10	31.5	25.1	37.9	8	38	2.84	8.98	28.52%	-24.51%
25		10	32.3	27.3	37.3	15	40	2.19	6.93	21.45%	-27.67%
50		10	33.2	28.3	38.1	16	41	2.18	6.89	20.76%	-31.23%
100		10	37.1	31.2	43	19	46	2.61	8.27	22.28%	-46.64%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 31 Mar-19 09:15 (p 2 of 2)
Test Code: 81655 | 04-3835-5245

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	13	25	34	28	27	28	29	13	28	28
6.25		25	12	23	22	29	34	28	27	20	30
12.5		34	25	34	35	35	33	38	36	8	37
25		37	32	36	30	40	36	29	35	33	15
50		37	38	16	35	34	33	37	41	30	31
100		19	34	38	46	39	42	45	44	34	30
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 31 Mar-19 09:15 (p 1 of 1)
 Test Code: 81655 | 04-3835-5245

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 19-4667-0582 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:09 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	30.00%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	100	75	5	18	Asymp	0.6974	Non-Significant Effect
		12.5	136	75	2	18	Asymp	0.9999	Non-Significant Effect
		25	142	75	1	18	Asymp	1.0000	Non-Significant Effect
		50	144	75	1	18	Asymp	1.0000	Non-Significant Effect
		100	145	75	1	18	Asymp	1.0000	Non-Significant Effect

ANOVA Table

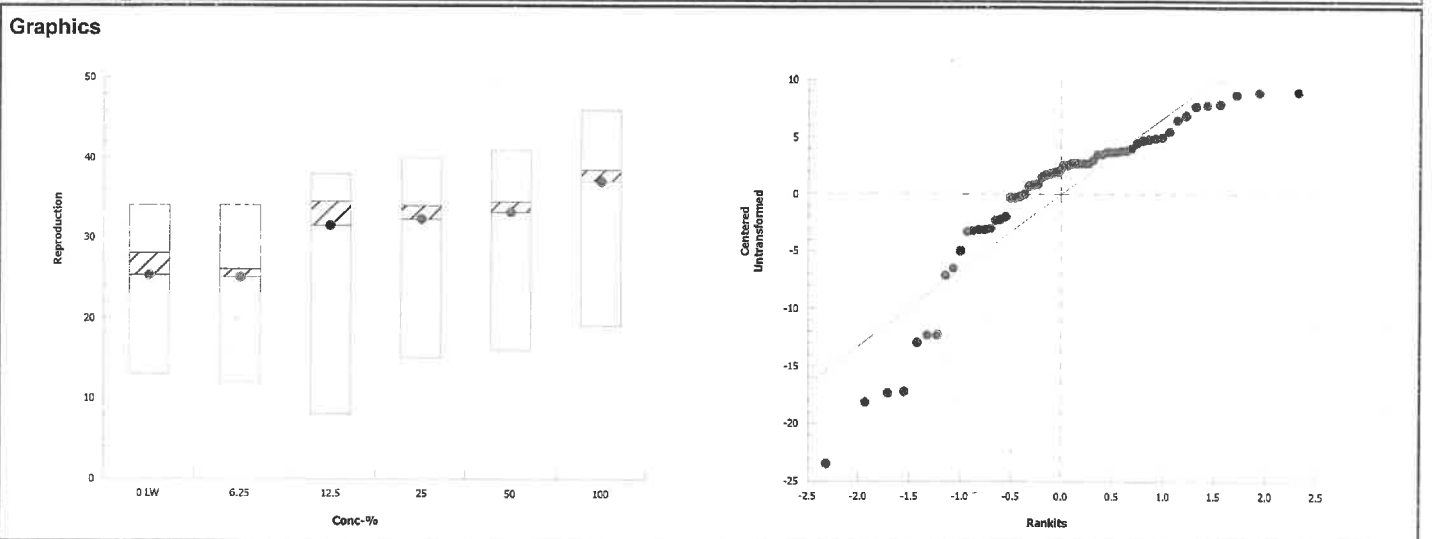
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1120.53	224.107	5	4.08	0.0033	Significant Effect
Error	2967.2	54.9481	54			
Total	4087.73		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	1.73	15.1	0.8853	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.85	0.946	3.1E-06	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	25.3	20.4	30.2	28	13	34	2.17	27.13%	0.00%
6.25		10	25	20.6	29.4	26	12	34	1.95	24.66%	1.19%
12.5		10	31.5	25.1	37.9	34.5	8	38	2.84	28.52%	-24.51%
25		10	32.3	27.3	37.3	34	15	40	2.19	21.45%	-27.67%
50		10	33.2	28.3	38.1	34.5	16	41	2.18	20.76%	-31.23%
100		10	37.1	31.2	43	38.5	19	46	2.61	22.28%	-46.64%



CETIS Analytical Report

Report Date: 31 Mar-19 09:15 (p 1 of 1)
 Test Code: 81655 | 04-3835-5245

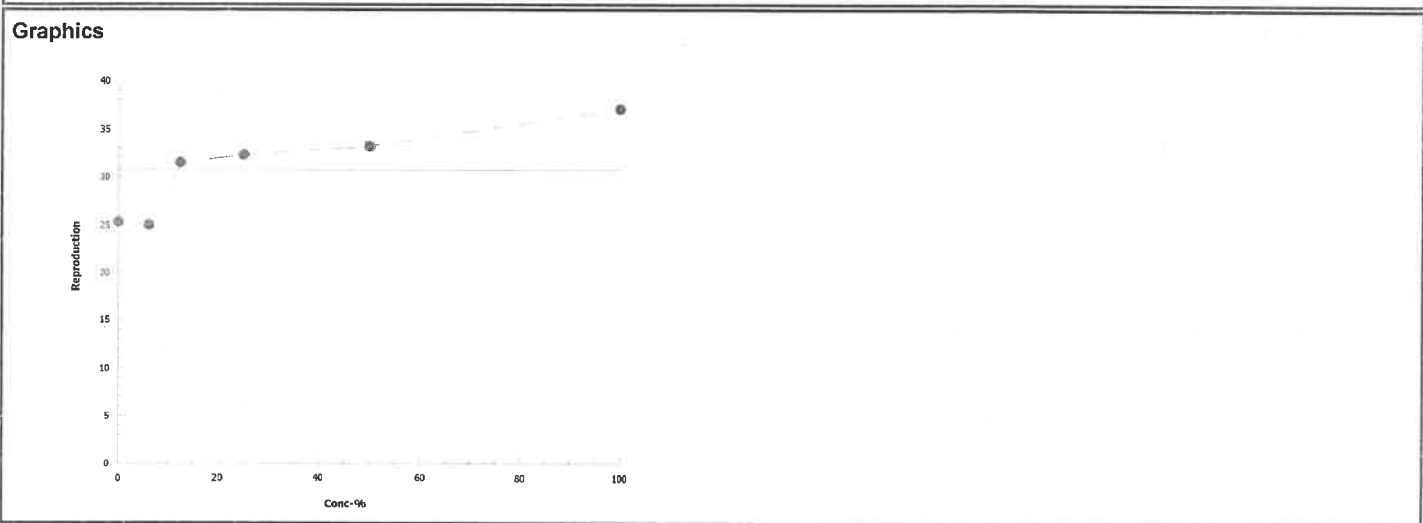
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 11-1210-7048 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:09 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1268077	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	25.3	13	34	2.17	6.86	27.10%	0.0%
6.25		10	25	12	34	1.95	6.16	24.70%	1.19%
12.5		10	31.5	8	38	2.84	8.98	28.50%	-24.5%
25		10	32.3	15	40	2.19	6.93	21.50%	-27.7%
50		10	33.2	16	41	2.18	6.89	20.80%	-31.2%
100		10	37.1	19	46	2.61	8.27	22.30%	-46.6%



CETIS Summary Report

Report Date: 31 Mar-19 09:52 (p 1 of 2)
 Test Code: 81657 | 10-7913-4004

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 17-3885-2372	Test Type: Reproduction-Survival (7d)	Analyst: James Lem
Start Date: 20 Mar-19 12:15	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 26 Mar-19 14:40	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 2h	Source: In-House Culture	Age: 1

Sample ID: 12-1756-8359	Code: 72-HITCH-155	Client: Larry Walker Associates
Sample Date: 19 Mar-19 08:30	Material: Ambient Water	Project: 29876
Receipt Date: 20 Mar-19 07:06	Source: Calleguas Creek	
Sample Age: 28h (0.3 °C)	Station: HITCH	

Comments:
 Statistics including reproductive outliers: 25-D

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
20-6700-4290	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	24.0%
21-1901-1700	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
00-2215-7683	Reproduction	Linear Interpolation (ICPIN)	IC5	64.1	56.1	n/a	1.56
			IC10	78.2	62.1	n/a	1.278
			IC15	92.3	68.2	n/a	1.083
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.4	28	32.8	25	34	1.08	3.41	11.20%	0.00%
6.25		10	29.9	27.3	32.5	24	35	1.14	3.6	12.05%	1.64%
12.5		10	32.6	27.5	37.7	21	43	2.27	7.17	21.99%	-7.24%
25		10	37.2	33.4	41	25	44	1.67	5.29	14.21%	-22.37%
50		10	37.6	34.8	40.4	29	43	1.25	3.95	10.50%	-23.68%
100		10	27.6	17.9	37.3	1	43	4.3	13.6	49.27%	9.21%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date:

31 Mar-19 09:52 (p 2 of 2)

Test Code:

81657 | 10-7913-4004

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	30	32	30	32	34	34	34	26	27	25
6.25		29	32	24	31	28	31	35	35	26	28
12.5		26	28	25	36	37	40	43	35	35	21
25		41	35	37	25	37	34	44	42	38	39
50		29	36	38	36	41	35	43	39	41	38
100		17	15	43	34	21	42	33	1	38	32
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1

CETIS Analytical Report

Report Date: 31 Mar-19 09:52 (p 1 of 1)
 Test Code: 81657 | 10-7913-4004

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 20-6700-4290 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:52 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	23.99%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	102	75	2	18	Asymp	0.7427	Non-Significant Effect
		12.5	120	75	2	18	Asymp	0.9902	Non-Significant Effect
		25	144	75	2	18	Asymp	1.0000	Non-Significant Effect
		50	148	75	0	18	Asymp	1.0000	Non-Significant Effect
		100	106	75	2	18	Asymp	0.8650	Non-Significant Effect

ANOVA Table

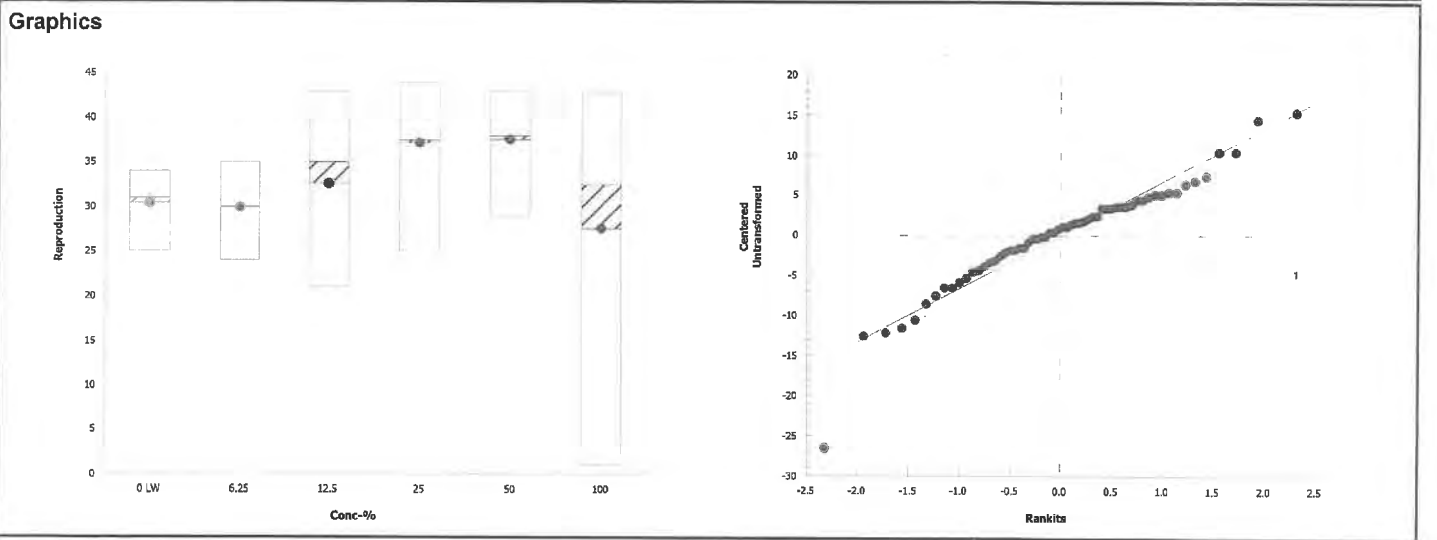
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	832.75	166.55	5	3.28	0.0117	Significant Effect
Error	2740.1	50.7426	54			
Total	3572.85		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	28.5	15.1	2.9E-05	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.942	0.946	0.0064	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30.4	28	32.8	31	25	34	1.08	11.20%	0.00%
6.25		10	29.9	27.3	32.5	30	24	35	1.14	12.05%	1.64%
12.5		10	32.6	27.5	37.7	35	21	43	2.27	21.99%	-7.24%
25		10	37.2	33.4	41	37.5	25	44	1.67	14.21%	-22.37%
50		10	37.6	34.8	40.4	38	29	43	1.25	10.50%	-23.68%
100		10	27.6	17.9	37.3	32.5	1	43	4.3	49.27%	9.21%



CETIS Analytical Report

Report Date: 31 Mar-19 09:52 (p 1 of 1)
 Test Code: 81657 | 10-7913-4004

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 00-2215-7683 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:52 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options

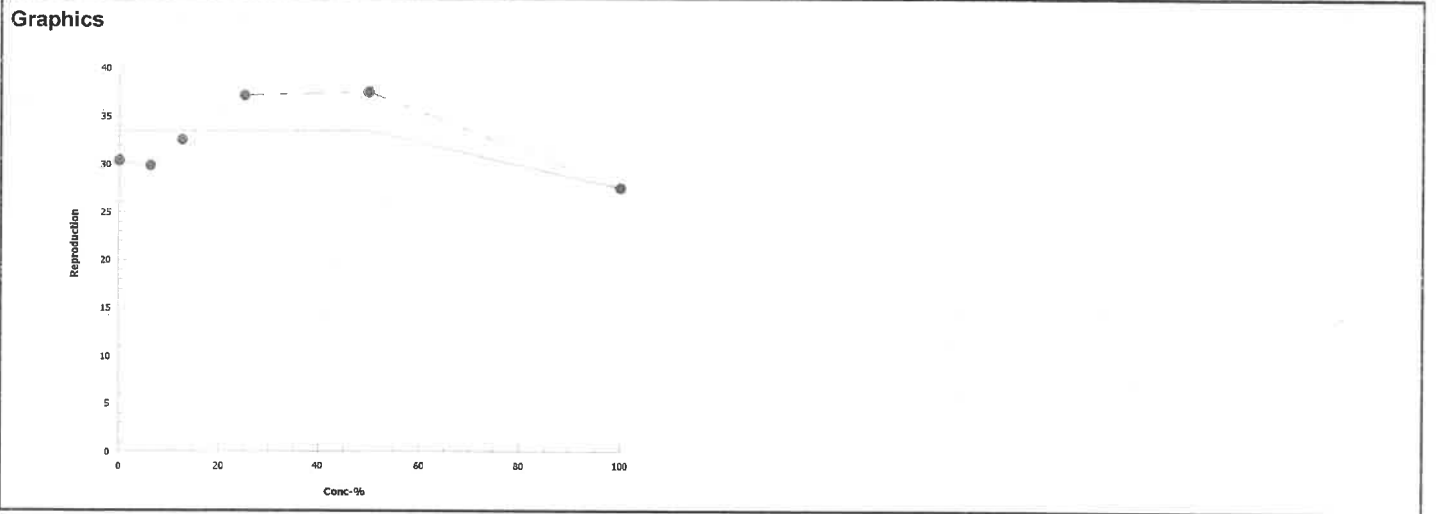
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	910687	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	64.1	56.1	n/a	1.56	n/a	1.784
IC10	78.2	62.1	n/a	1.278	n/a	1.61
IC15	92.3	68.2	n/a	1.083	n/a	1.466
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary Calculated Variate

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.4	25	34	1.08	3.41	11.20%	0.0%
6.25		10	29.9	24	35	1.14	3.6	12.10%	1.64%
12.5		10	32.6	21	43	2.27	7.17	22.00%	-7.24%
25		10	37.2	25	44	1.67	5.29	14.20%	-22.4%
50		10	37.6	29	43	1.25	3.95	10.50%	-23.7%
100		10	27.6	1	43	4.3	13.6	49.30%	9.21%



CETIS Summary Report

Report Date: 31 Mar-19 10:52 (p 1 of 2)
 Test Code: 81659 | 02-2011-9944

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk
Batch ID: 05-7549-8706	Test Type: Reproduction-Survival (7d)	Analyst: James Lem	
Start Date: 20 Mar-19 13:43	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 26 Mar-19 15:09	Species: Ceriodaphnia dubia	Brine: Not Applicable	
Duration: 6d 1h	Source: In-House Culture	Age: 1	
Sample ID: 11-9678-9924	Code: 72-BELT-219	Client: Larry Walker Associates	
Sample Date: 19 Mar-19 11:15	Material: Ambient Water	Project: 29876	
Receipt Date: 20 Mar-19 07:06	Source: Calleguas Creek		
Sample Age: 26h (0.3 °C)	Station: BELT		

Comments:
 Statistics including reproductive outliers: 100-A

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-8772-2794	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	26.5%
02-6179-9058	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
14-6339-3530	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	25.9	23.5	28.3	20	31	1.05	3.31	12.80%	0.00%
6.25		10	25.3	20.3	30.3	9	31	2.23	7.06	27.89%	2.32%
12.5		10	27.3	25.1	29.5	24	34	0.955	3.02	11.06%	-5.41%
25		10	30.7	28.2	33.2	24	37	1.13	3.56	11.60%	-18.53%
50		10	37.2	35	39.4	34	41	0.952	3.01	8.09%	-43.63%
100		10	36.1	26.6	45.6	0	47	4.21	13.3	36.92%	-39.38%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 31 Mar-19 10:52 (p 2 of 2)
 Test Code: 81659 | 02-2011-9944

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	30	24	31	20	24	26	29	25	26	24
6.25		26	24	31	28	9	17	30	29	29	30
12.5		29	27	34	29	25	25	25	26	29	24
25		37	30	32	33	30	29	24	34	30	28
50		41	36	40	35	34	37	41	34	34	40
100		0	46	35	41	38	47	37	37	37	43
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 31 Mar-19 10:52 (p 1 of 1)
 Test Code: 81659 | 02-2011-9944

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 12-8772-2794 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 10:51 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	26.48%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	112	75	5	18	Asymp	0.9455	Non-Significant Effect
		12.5	116	75	4	18	Asymp	0.9780	Non-Significant Effect
		25	138	75	3	18	Asymp	1.0000	Non-Significant Effect
		50	155	75	0	18	Asymp	1.0000	Non-Significant Effect
		100	145	75	0	18	Asymp	1.0000	Non-Significant Effect

ANOVA Table

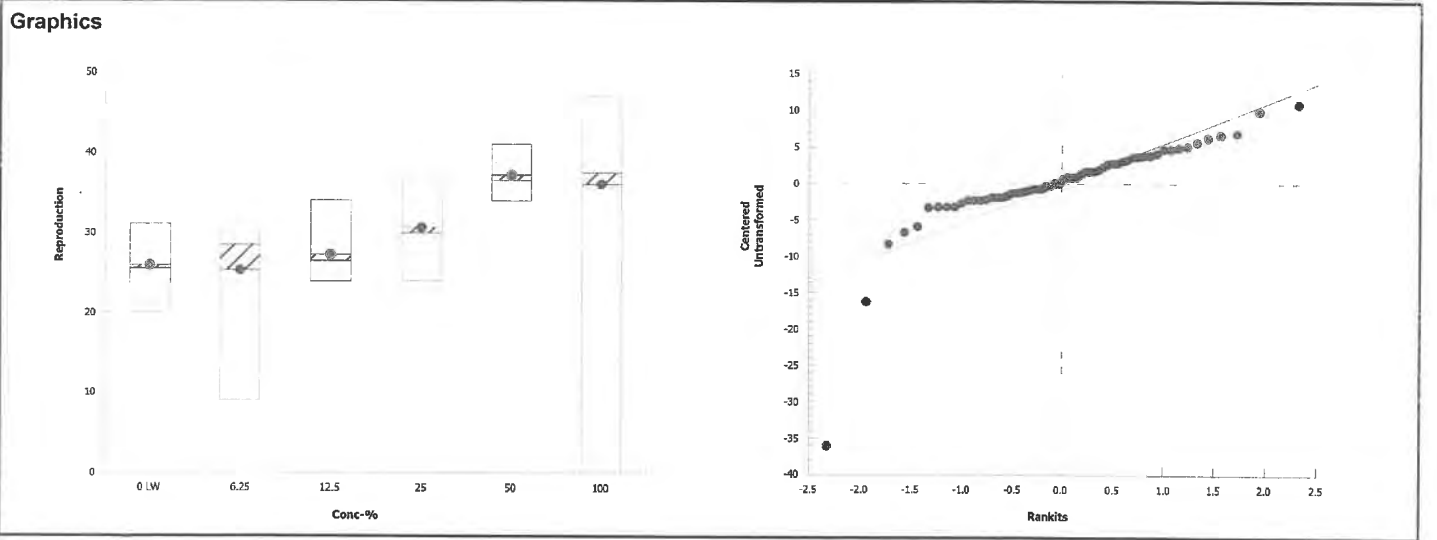
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1346.88	269.377	5	6	1.7E-04	Significant Effect
Error	2423.7	44.8833	54			
Total	3770.58		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	37.8	15.1	4.7E-07	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.729	0.946	3.3E-09	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	25.9	23.5	28.3	25.5	20	31	1.05	12.80%	0.00%
6.25		10	25.3	20.3	30.3	28.5	9	31	2.23	27.89%	2.32%
12.5		10	27.3	25.1	29.5	26.5	24	34	0.955	11.06%	-5.41%
25		10	30.7	28.2	33.2	30	24	37	1.13	11.60%	-18.53%
50		10	37.2	35	39.4	36.5	34	41	0.952	8.09%	-43.63%
100		10	36.1	26.6	45.6	37.5	0	47	4.21	36.92%	-39.38%



CETIS Analytical Report

Report Date: 31 Mar-19 10:52 (p 1 of 1)
 Test Code: 81659 | 02-2011-9944

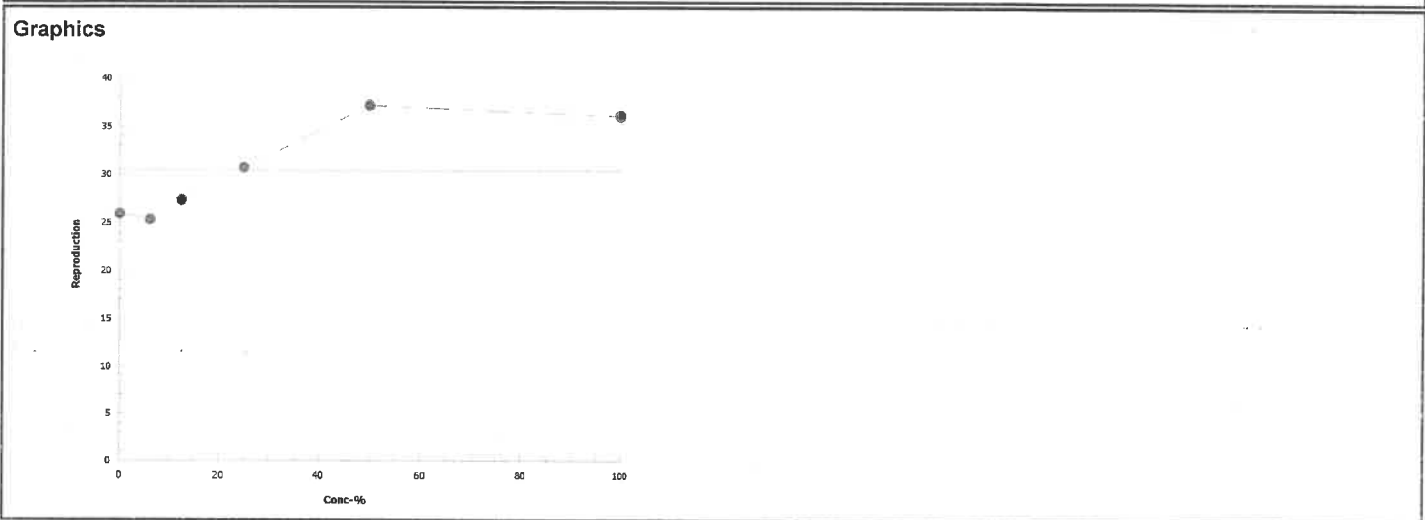
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 14-6339-3530 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 10:51 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1104477	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	25.9	20	31	1.05	3.31	12.80%	0.0%
6.25		10	25.3	9	31	2.23	7.06	27.90%	2.32%
12.5		10	27.3	24	34	0.955	3.02	11.10%	-5.41%
25		10	30.7	24	37	1.13	3.56	11.60%	-18.5%
50		10	37.2	34	41	0.952	3.01	8.09%	-43.6%
100		10	36.1	0	47	4.21	13.3	36.90%	-39.4%



Appendix D

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Ceriodaphnia dubia*

CETIS Summary Report

Report Date: 30 Mar-19 13:49 (p 1 of 2)
 Test Code: 81668 | 13-6770-5053

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Batch ID: 02-3904-7963	Test Type: Reproduction-Survival (7d)	Analyst: James Lem
Start Date: 20 Mar-19 13:55	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 26 Mar-19 14:39	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 1h	Source: In-House Culture	Age: 1

Sample ID: 20-8612-7743	Code: NaCl	Client: Reference Toxicant
Sample Date: 20 Mar-19 13:55	Material: Sodium chloride	Project: 29877
Receipt Date: 20 Mar-19 13:55	Source: Reference Toxicant	
Sample Age: n/a (25.5 °C)	Station: In House	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD
03-2259-7981	Reproduction	Steel Many-One Rank Sum Test	1500	2000	1732		23.3%
10-1500-6089	Survival	Fisher Exact/Bonferroni-Holm Test	2000	2500	2236		n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	mg/L	95% LCL	95% UCL	TU
08-5924-2670	Reproduction	Linear Interpolation (ICPIN)	IC5	1190	638	1500	
			IC10	1380	775	1540	
			IC15	1520	913	1580	
			IC20	1560	1460	1630	
			IC25	1610	1540	1670	
			IC40	1750	1690	1830	
			IC50	1840	1770	1930	
03-6635-8138	Survival	Regression: Log-Normal (Probit)	EC5	1960	1450	2140	
			EC10	2020	1570	2190	
			EC15	2070	1660	2220	
			EC20	2100	1730	2250	
			EC25	2130	1790	2280	
			EC40	2200	1940	2370	
			EC50	2250	2020	2440	

Reproduction Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	25.1	22.3	27.9	17	31	1.22	3.87	15.42%	0.00%
500		10	29	26	32	22	34	1.32	4.19	14.45%	-15.54%
1000		10	28.5	21.2	35.8	0	35	3.24	10.3	35.98%	-13.55%
1500		10	23.9	21.6	26.2	18	29	1.04	3.28	13.73%	4.78%
2000		10	9	5.5	12.5	0	15	1.55	4.9	54.43%	64.14%
2500		10	0	0	0	0	0	0	0		100.00%

Survival Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
500		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1000		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
1500		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
2000		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
2500		10	0.100	0.000	0.326	0.000	1.000	0.100	0.316	316.23%	90.00%

CETIS Summary Report

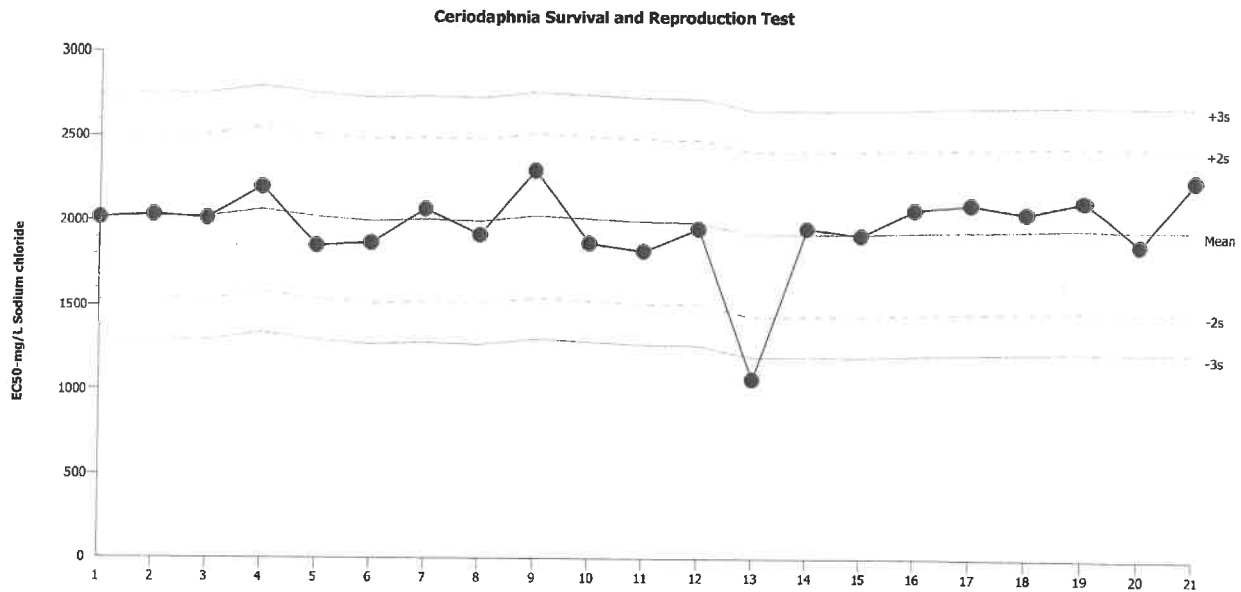
Report Date: 30 Mar-19 13:49 (p 2 of 2)
 Test Code: 81668 | 13-6770-5053

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	26	25	31	25	30	23	25	23	26	17
500		31	24	34	33	27	32	32	25	30	22
1000		32	0	30	33	31	35	34	29	28	33
1500		26	29	22	21	27	26	23	25	18	22
2000		8	14	8	13	13	15	0	3	9	7
2500		0	0	0	0	0	0	0	0	0	0
Survival Detail											
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
500		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1000		1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1500		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2000		1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
2500		0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Survival Binomials											
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
500		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1000		1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1500		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
2000		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
2500		0/1	0/1	1/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

Ceriodaphnia Survival and Reproduction Test

Pacific EcoRisk

Test Type: Reproduction-Survival (7d) Organism: Ceriodaphnia dubia (Water Flea) Material: Sodium chloride
 Protocol: EPA-821-R-02-013 (2002) Endpoint: Survival Source: Reference Toxicant-REF



Mean: 1955 Count: 20 -2s Warning Limit: 1468 -3s Action Limit: 1224
 Sigma: 243.6 CV: 12.50% +2s Warning Limit: 2442 +3s Action Limit: 2686

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	Dec	6	12:50	2019	63.9	0.2623			11-7194-5224	02-1820-6786
2			11	14:40	2035	79.6	0.3268			19-5932-5774	12-8055-7359
3			13	13:23	2015	59.99	0.2463			21-1019-4551	19-0963-7901
4			18	14:06	2200	244.9	1.005			18-0750-8197	12-5737-9688
5	2019	Jan	3	16:01	1855	-100.1	-0.4107			04-9626-1701	16-4368-7905
6			8	13:08	1870	-85.02	-0.349			17-4279-3792	13-0560-2722
7			10	13:47	2071	116.1	0.4767			06-2090-7526	04-4730-1098
8			16	16:30	1918	-36.64	-0.1504			00-3491-5140	10-9821-3314
9			22	13:02	2301	346	1.42			09-8302-1094	04-9270-5455
10		Feb	5	11:48	1870	-85.02	-0.349			19-2505-0818	04-3057-0941
11			7	14:24	1823	-132.2	-0.5426			05-4119-2759	15-7867-3372
12			12	14:34	1957	2.424	0.009951			08-7216-8629	01-3498-0247
13			19	13:44	1064	-890.8	-3.657	(-)	(-)	00-0115-5403	06-2611-8138
14			25	13:35	1961	5.684	0.02333			10-9428-7596	01-1206-3574
15			26	15:14	1918	-36.64	-0.1504			17-0157-5830	13-0869-9903
16			27	13:33	2071	116.1	0.4767			07-5647-2609	08-4091-9717
17		Mar	5	14:07	2105	150.4	0.6175			08-5302-8650	07-8664-6558
18			6	15:10	2053	98.05	0.4025			08-2248-1351	11-7438-2792
19			12	13:30	2125	169.7	0.6967			06-1496-1658	15-3638-9154
20			19	10:27	1869	-86.28	-0.3542			06-5764-8687	04-8642-9089
21			20	13:55	2251	295.8	1.214			13-6770-5053	03-6635-8138

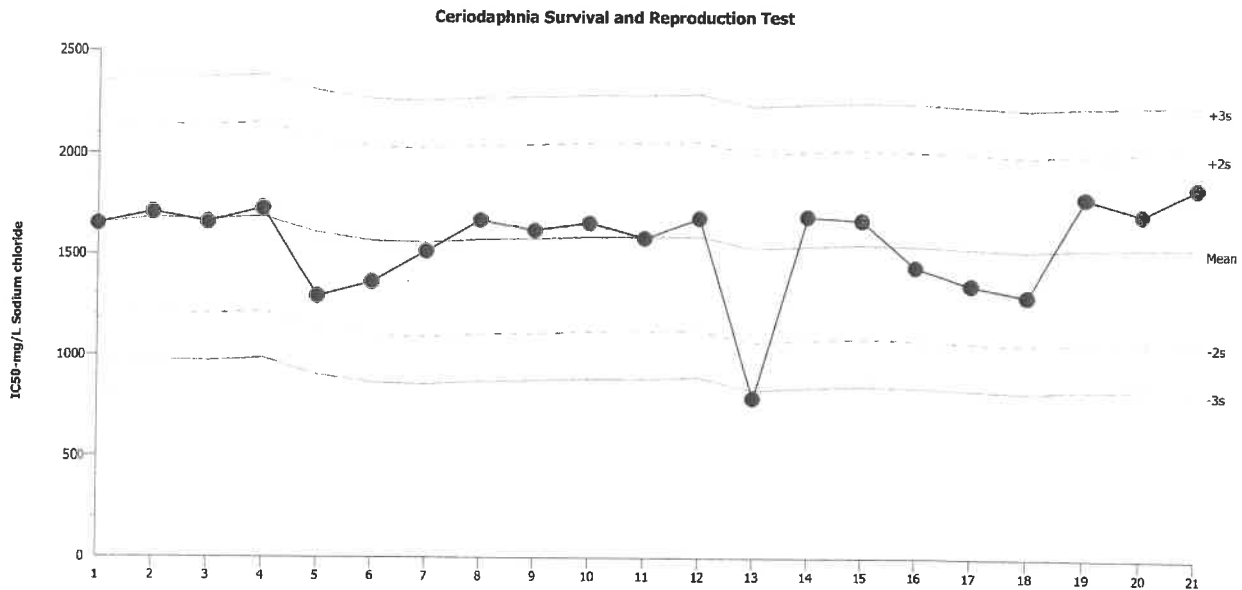
Ceriodaphnia Survival and Reproduction Test

Pacific EcoRisk

Test Type: Reproduction-Survival (7d)
 Protocol: EPA-821-R-02-013 (2002)

Organism: Ceriodaphnia dubia (Water Flea)
 Endpoint: Reproduction

Material: Sodium chloride
 Source: Reference Toxicant-REF



Mean: 1543 Count: 20 -2s Warning Limit: 1076 -3s Action Limit: 842.8
 Sigma: 233.3 CV: 15.10% +2s Warning Limit: 2009 +3s Action Limit: 2243

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	Dec	6	12:50	1650	107	0.4586			11-7194-5224	10-4724-9405
2			11	14:40	1704	161	0.6902			19-5932-5774	10-2122-6418
3			13	13:23	1656	113	0.4844			21-1019-4551	15-0430-3092
4			18	14:06	1725	181.6	0.7784			18-0750-8197	00-5728-7998
5	2019	Jan	3	16:01	1294	-249.1	-1.068			04-9626-1701	04-5525-5647
6			8	13:08	1363	-179.6	-0.7696			17-4279-3792	04-9661-7901
7			10	13:47	1515	-28.07	-0.1203			06-2090-7526	06-4954-9155
8			16	16:30	1670	126.7	0.543			00-3491-5140	09-6557-4974
9			22	13:02	1620	76.68	0.3287			09-8302-1094	14-6851-8484
10		Feb	5	11:48	1657	113.8	0.4877			19-2505-0818	04-4010-6373
11			7	14:24	1582	38.76	0.1661			05-4119-2759	03-2239-8742
12			12	14:34	1683	140.3	0.6015			08-7216-8629	04-9601-7232
13			19	13:44	790.3	-752.7	-3.226	(-)	(-)	00-0115-5403	08-0859-3261
14			25	13:35	1690	146.9	0.6298			10-9428-7596	05-6460-7541
15			26	15:14	1673	129.5	0.5552			17-0157-5830	14-8257-7949
16			27	13:33	1439	-103.8	-0.445			07-5647-2609	00-2607-0883
17		Mar	5	14:07	1352	-190.7	-0.8175			08-5302-8650	17-7906-0097
18			6	15:10	1297	-246.1	-1.055			08-2248-1351	04-5210-3087
19			12	13:30	1787	244	1.046			06-1496-1658	00-6040-0530
20			19	10:27	1709	165.6	0.7097			06-5764-8687	18-0750-6505
21			20	13:55	1840	297	1.273			13-6770-5053	08-5924-2670

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: _____ Reference Toxicant: _____ Material: Sodium Chloride Test Date: 3/20/19
 Project #: 29877 Test ID: 81668 Randomization: 10.7.1 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SIGN-OFF				
		New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J	Date:	New WQ:	Counts:		
Lab Water Control	0	7.45		9.1		359		25.5	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/20/19	New WQ: SAT	Test Init: KCL
	1	7.90	7.81	9.6	7.5	356	354	24.6	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/21/19	New WQ: SAT	Counts: 152
	2	7.74	7.72	9.4	7.7	363	395	25.1	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/22/19	New WQ: NN	Counts: 126
	3	7.71	7.97	10.3	8.4	365	380	25.3	0	0	0	0	0	0	0	0	0	0	0	0	Date: 3/23/19	New WQ: TP	Counts: TK
	4	7.85	7.91	10.5	7.8	365	382	25.0	5	4	6	5	5	5	5	4	4	4	4	4	Date: 3/24/19	New WQ: K	Counts: 152
	5	7.78	7.96	9.4	8.1	372	377	25.9	8	7	9	7	10	7	8	6	8	5	5	5	Date: 3/25/19	New WQ: TP	Counts: 32
	6	-	7.73	-	7.4	-	376	25.8	13	14	16	13	15	11	12	13	14	8	8	8	Date: 3/26/19	New WQ: -	Counts: 146
	7																					Date:	New WQ:
8																					Date:	Old WQ:	Time:
Total=									26	25	31	25	30	23	25	23	26	17	Mean Neonates/Female = 25.1				
500 mg/L	0	7.55		9.4		1320		25.3	0	0	0	0	0	0	0	0	0	0	0	RT BATCH NUMBER			
	1	7.85	7.76	9.0	7.9	1313	1330	24.9	0	0	0	0	0	0	0	0	0	0	0	0	294 / 295		
	2	7.72	7.69	9.5	7.6	1335	1376	25.2	0	0	0	0	0	0	0	0	0	0	0	0	295		
	3	7.74	7.94	10.3	8.2	1337	1389	25.2	0	5	0	0	0	0	0	0	0	0	0	0	295		
	4	7.81	7.94	10.5	7.9	1298	1381	25.0	7	0	7	6	6	6	6	5	5	4	4	4	295		
	5	7.82	7.95	9.6	8.1	1405	1386	25.8	10	2	10	10	8	10	11	7	10	7	7	7	295		
	6	-	7.80	-	7.0	-	1420	24.7	14	17	17	17	13	16	15	13	15	11	11	11	-		
	7																						
8																							
Total=									31	20	34	33	27	32	32	25	30	22	Mean Neonates/Female = 29.0				

4-1-19

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: _____ Reference Toxicant: _____ Material: Sodium Chloride Test Date: 3/20/19
 Project #: 29877 Test ID: 81668 Randomization: 10.7.1 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SIGN-OFF
		New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J	
1000 mg/L	0	7.61		9.8		2258		25.4	0	0	0	0	0	0	0	0	0	0	
	1	7.84	7.77	9.2	7.2	2284	2329	24.9	0	0	0	0	0	0	0	0	0	0	
	2	7.68	7.69	9.4	7.6	2269	2388	25.3	0	0	0	0	0	0	0	0	0	0	
	3	7.75	7.96	10.4	8.1	2251	2324	25.1	6	0	5	0	0	0	0	0	0	0	
	4	7.79	7.97	10.5	7.7	2261	2323	25.1	0	4	0	5	5	6	5	5	4	5	
	5	7.83	7.98	9.5	8.0	2304 2438	2355	25.7	12	-	8	11	9	11	12	10	9	12	
	6	-	7.80	-	7.3	-	2426	25.4	14	-	17	17	17	18	17	14	15	16	
	7									-									
	8									-									
Total=									32	40	30	33	31	35	34	29	29	33	Mean Neonates/Female = 28.5
1500 mg/L	0	7.64		9.9		3198		25.6	0	0	0	0	0	0	0	0	0	0	
	1	7.79	7.78	9.5	6.7	3265	3295	24.8	0	0	0	0	0	0	0	0	0	0	
	2	7.66	7.62	9.4	7.7	3189	3413	25.3	0	0	0	0	0	0	0	0	0	0	
	3	7.74	7.94	10.6	8.3	3181	3253	25.2	5	5	0	0	0	0	0	0	0	0	
	4	7.73	7.97	10.4	7.8	3190	3301	25.0	0	0	3	2	3	5	2	5	5	3	
	5	7.82	7.94	9.5	7.9	3231 3424	3386	25.8	8	10	7	8	9	8	8	7	0	6	
	6	-	7.79	-	7.3	-	3350	25.1	13	14	12	11	15	13	13	13	13	13	
	7																		
	8																		
Total=									20	29	22	21	27	20	23	25	19	22	Mean Neonates/Female = 23.9

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: _____ Reference Toxicant: _____ Material: Sodium Chloride Test Date: 3/20/19
 Project #: 29877 Test ID: 81668 Randomization: 10-7-1 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SIGN-OFF	
		New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J		
2000 mg/L	0	7.66		10.1		4136		25.7	0	0	0	0	0	0	0	0	0	0		
	1	7.76	7.75	9.5	6.7	4130	4255	25.1	0	0	0	0	0	0	0	0	0	0		
	2	7.64	7.68	9.4	7.7	4140	4377	25.1	0	0	0	0	0	0	X/0	0	0	0		
	3	7.74	7.95	10.5	8.3	4039	4277	25.2	0	0	0	0	0	0	-	0	0	0		
	4	7.73	7.97	10.3	7.8	4178	4287	25.2	1	2	1	3	0	3	-	0	0	0		
	5	7.82	7.93	9.6	7.9	4266	4349	25.9	3	5	2	5	4	4	-	0	2	2		
	6	-	7.80	-	7.4	-	4440		24.9	4	7	5	5	9	8	-	3	7	5	
	7																			
	8																			
Total=									8	14	8	13	13	15	X/0	3	7	7	Mean Neonates/Female = 9.0	
2500 mg/L	0	7.67		10.3		5016		25.2	0	0	0	0	0	0	0	0	0	0		
	1	7.73	7.75	9.6	6.3	5012	5245	25.0	0	0	0	0	0	X/0	0	0	0	0		
	2	7.60	7.67	9.6	7.7	5079	5261	25.0	X/0	X/0	0	X/0	X/0	-	X/0	X/0	X/0	X/0		
	3	7.74	7.94	10.5	8.2	4978	5091	25.1	-	-	0	-	-	-	-	-	-	-		
	4	7.72	7.96	10.3	7.7	5024	5130	25.3	-	-	0	-	-	-	-	-	-	-		
	5	7.80	7.87	9.5	7.4	5145	5109	25.7	-	-	0	-	-	-	-	-	-	-		
	6	-	7.80	-	7.3	-	5112		25.1	-	-	0	-	-	-	-	-	-		
	7																			
	8																			
Total=									X/0	X/0	0	X/0	X/0	X/0	X/0	X/0	X/0	X/0	Mean Neonates/Female = 0.0	

Appendix E

Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Calleguas Creek Ambient Waters to *Hyalella azteca*

CETIS Summary Report

Report Date: 31 Mar-19 09:40 (p 1 of 1)
Test Code: 81661 | 02-9839-3901

Hyalella azteca 10-Day Water Toxicity Test				Pacific EcoRisk
Batch ID: 00-3410-3476	Test Type: Survival	Analyst: James Lem		
Start Date: 20 Mar-19 15:12	Protocol: EPA/600/R-99/064 M	Diluent: Laboratory Water		
Ending Date: 30 Mar-19 11:52	Species: Hyalella azteca	Brine: Not Applicable		
Duration: 9d 21h	Source: Aquatic Biosystems, CO	Age: 11		
Sample ID: 12-3061-2858	Code: 72-WOOD-097	Client: Larry Walker Associates		
Sample Date: 19 Mar-19 12:40	Material: Ambient Water	Project: 29876		
Receipt Date: 20 Mar-19 07:06	Source: Calleguas Creek			
Sample Age: 27h (0.5 °C)	Station: WOOD			

Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
06-7133-0637	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	Culture Control passed survival rate

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
05-8599-6908	Survival Rate	Dunnett Multiple Comparison Test	100	> 100	n/a	1	8.38%

Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	cu	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	LW	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		5	0.920	0.816	1.000	0.800	1.000	0.037	0.084	9.09%	8.00%
25		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	2.00%
50		5	0.940	0.829	1.000	0.800	1.000	0.040	0.089	9.52%	6.00%
100		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%

Survival Rate Detail						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	cu	1.000	1.000	1.000	1.000	1.000
0	LW	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000
12.5		1.000	0.900	0.800	1.000	0.900
25		1.000	1.000	1.000	1.000	0.900
50		1.000	1.000	0.900	0.800	1.000
100		0.900	0.900	1.000	1.000	1.000

Survival Rate Binomials						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	cu	10/10	10/10	10/10	10/10	10/10
0	LW	10/10	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10	10/10
12.5		10/10	9/10	8/10	10/10	9/10
25		10/10	11/11	10/10	10/10	9/10
50		10/10	10/10	9/10	8/10	10/10
100		9/10	9/10	10/10	10/10	10/10

CETIS Analytical Report

Report Date: 31 Mar-19 09:40 (p 1 of 3)
 Test Code: 81661 | 02-9839-3901

Hyalella azteca 10-Day Water Toxicity Test **Pacific EcoRisk**

Analysis ID: 05-8599-6908 Endpoint: Survival Rate CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:40 Analysis: Parametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	8.38%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	0	2.36	0.135	8	CDF	0.8333	Non-Significant Effect
		12.5	2.21	2.36	0.135	8	CDF	0.0675	Non-Significant Effect
		25	0.544	2.36	0.135	8	CDF	0.6274	Non-Significant Effect
		50	1.64	2.36	0.135	8	CDF	0.1822	Non-Significant Effect
		100	1.14	2.36	0.135	8	CDF	0.3588	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0662183	0.0132437	5	1.62	0.1921	Non-Significant Effect
Error	0.195857	0.0081607	24			
Total	0.262075		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	7.67	3.9	2.0E-04	Unequal Variances
Variances	Mod Levene Equality of Variance Test	1.61	4.25	0.2079	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.927	0.903	0.0399	Normal Distribution

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
6.25		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
12.5		5	0.920	0.816	1.000	0.900	0.800	1.000	0.037	9.09%	8.00%
25		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%
50		5	0.940	0.829	1.000	1.000	0.800	1.000	0.040	9.52%	6.00%
100		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	4.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
6.25		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
12.5		5	1.29	1.13	1.45	1.25	1.11	1.41	0.0577	10.03%	8.93%
25		5	1.38	1.29	1.47	1.41	1.25	1.42	0.033	5.34%	2.20%
50		5	1.32	1.15	1.49	1.41	1.11	1.41	0.0615	10.44%	6.63%
100		5	1.35	1.24	1.46	1.41	1.25	1.41	0.0399	6.63%	4.62%

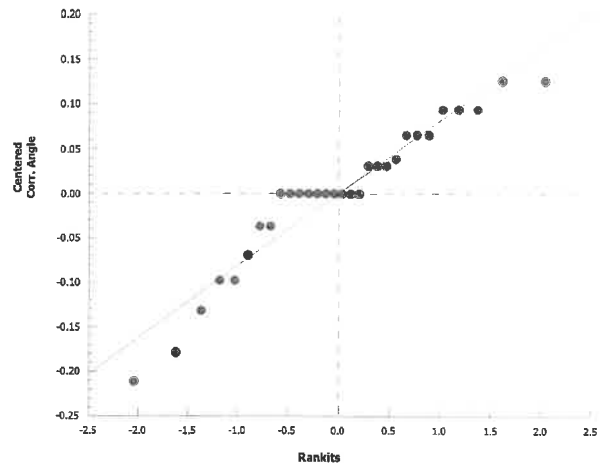
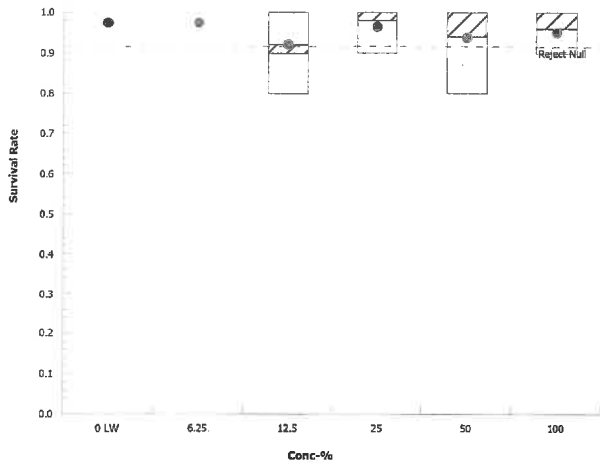
Hyalella azteca 10-Day Water Toxicity Test

Pacific EcoRisk

Analysis ID: 05-8599-6908 Endpoint: Survival Rate
Analyzed: 31 Mar-19 9:40 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



10 Day Acute *Hyaella azteca* Toxicity Test Data

Client: LWA-Calleguas Creek Organism Log#: 114 B1 Age: 10-11 d
 Test Material: CCWTMP-72-WOOD- Organism Supplier: ABS
 Test ID#: 81661 Project #: 29876 Control/Diluent: SAM-5 (Conductivity Adjusted)
 Test Date: 3/20/19 Control Water Batch: 375

Treatment	Temp (°C)	pH		D.O. (mg/L)		Conductivity (µS/cm)	# Live Organisms					SIGN-OFF
		new	old	new	old		A	B	C	D	E	
Lab Control (Cond. Adj.)	23.0	7.83		8.6		3879	10	10	10	10	10	Date: 3/20/19 Sample ID: 52378 Test Solution Prep: BV New WQ: PK Initiation Time: 1512 Initiation Signoff: NB
6.25%	23.0	7.88		8.7		3879	10	10	10	10	10	
12.5%	22.9	7.99		8.8		3879	10	10	10	10	10	
25%	23.0	8.13		8.9		3879	10	11 ⁰⁰ 10 ¹¹	10	10	10	
50%	22.9	8.25		9.4		3879	10	10	10	10	10	
100%	22.5	8.30		10.4		3879	10	10	10	10	10	
Meter ID	938	8126		RD13		EC11						
Lab Control (Cond. Adj.)	23.3			5.0			10	10	10	10	10	Date: 3/21/19 Count Time: 0857 Count Signoff: Aef Old WQ: MYL
6.25%	23.1			3.6			10	10	10	10	10	
12.5%	23.1			5.1			10	9	10	10	10	
25%	23.1			5.3			10	10 ¹⁰ 10 ¹¹	10	10	10	
50%	23.1			5.5			10	10	10	10	10	
100%	23.1			6.0			10	10	10	10	10	
Meter ID	814			RD11								
Lab Control (Cond. Adj.)	23.2			6.7			10	10	10	10	10	Date: 3/22/19 Count Time: 1600 Count Signoff: CD Old WQ: TP Feed: CD
6.25%	23.2			5.4			10	10	10	10	10	
12.5%	23.2			6.5			10	9	10	10	10	
25%	23.3			7.0			10	11	10	10	10	
50%	23.3			7.1			10	10	10	10	10	
100%	23.3			7.1			10	10	10	10	10	
Meter ID	998			RD12								
Lab Control (Cond. Adj.)	22.9			5.8			10	10	10	10	10	Date: 3/23/19 Count Time: 1355 Count Signoff: CD Old WQ: K
6.25%	23.1			5.4			10	10	10	10	10	
12.5%	23.0			5.7			10	9	10	10	10	
25%	23.0			5.8			10	11	10	10	10	
50%	23.1			6.3			10	10	9	10	10	
100%	23.2			4.9			10	9	10	10	10	
Meter ID	110			RD12								

10 Day Acute *Hyalella azteca* Toxicity Test Data

Client: LWA-Calleguas Creek Organism Log#: 11480 Age: 10-112
 Test Material: CCWTMP-72-WOOD- Organism Supplier: ABS
 Test ID#: 81661 Project #: 29876 Control/Diluent: SAM-5 (Conductivity Adjusted)
 Test Date: 3/20/19 Control Water Batch: 375

Treatment	Temp (°C)	pH		D.O. (mg/L)		Conductivity (µS/cm)	# Live Organisms					SIGN-OFF
		new	old	new	old		A	B	C	D	E	
Lab Control (Cond. Adj.)	23.4					6.4	10	10	10	10	10	Date: 3/24/19 Count Time: 140 Count Signoff: JK Old WQ: TP Feed: JK
6.25%	23.3					6.5	10	10	10	10	10	
12.5%	23.3					6.4	10	9	10	10	10	
25%	23.4					6.4	10	11	10	10	10	
50%	23.4					6.4	10	10	9	9	10	
100%	23.5					6.5	10	9	10	10	10	
Meter ID	81K					RD2						
Lab Control (Cond. Adj.)	23.6	7.78	7.42	8.8	6.6	4067	10	10	10	10	10	Date: 3/25/19 Sample ID: 5239B Test Solution Prep: KB New WQ: NN Renewal Time: 1550 Renewal Signoff: JL Old WQ: DM
6.25%	23.6	7.88	7.46	8.4	6.3	4067	10	10	10	10	10	
12.5%	23.6	7.95	7.65	8.5	6.8	4067	10	9	10	10	9	
25%	23.6	8.04	7.69	8.7	6.6	4067	10	11	10	10	10	
50%	23.6	8.13	7.88	9.1	6.9	4067	10	10	9	8	10	
100%	23.7	8.16	8.05	9.6	6.4	4067	9	9	10	10	10	
Meter ID	106A	PH25	PH26	RD13	RD10	5113						
Lab Control (Cond. Adj.)	23.5					5.9	10	10	10	10	10	Date: 3/26/19 Count Time: 6948 Count Signoff: BV Old WQ: AR Feed: BV
6.25%	23.3					6.3	10	10	10	10	10	
12.5%	23.2					6.3	10	9	10	10	9	
25%	23.3					5.8	10	11	10	10	10	
50%	23.2					6.7	10	10	9	8	10	
100%	23.2					6.7	9	9	10	10	10	
Meter ID	81A					RD11						
Lab Control (Cond. Adj.)	22.9					8.0	10	10	10	10	10	Date: 3/27/19 Count Time: 2910 Count Signoff: ARF Old WQ: CD
6.25%	23.0					7.9	10	10	10	10	10	
12.5%	23.0					7.9	10	9	10	10	8	
25%	23.0					8.0	10	11	10	10	9	
50%	22.9					8.0	10	10	9	8	10	
100%	23.0					8.0	9	9	10	10	10	
Meter ID	81A					RD13						

10 Day Acute *Hyalella azteca* Toxicity Test Data

Client: LWA-Calleguas Creek Organism Log#: 11480. Age: 10-11 d
 Test Material: CCWTMP-72-WOOD- Organism Supplier: ABC
 Test ID#: 81661 Project #: 29876 Control/Diluent: SAM-5 (Conductivity Adjusted)
 Test Date: 3/20/19 Control Water Batch: 375

Treatment	Temp (°C)	pH		D.O. (mg/L)		Conductivity (µS/cm)	# Live Organisms					SIGN-OFF
		new	old	new	old		A	B	C	D	E	
Lab Control (Cond. Adj.)	21.8				7.5		10	10	10	10	10	Date: 3/28/19 Count Time: 1138 Count Signoff: <u>JK</u> Old WQ: <u>MB</u>
6.25%	23.0				7.8		10	10	10	10	10	Feed: <u>JK</u>
12.5%	23.0				8.1		10	9	8	10	9	
25%	23.0				7.9		10	11	10	10	9	
50%	23.0				8.1		10	10	9	8	10	
100%	23.0				7.9		9	9	10	10	10	
Meter ID	81A				RP10							
Lab Control (Cond. Adj.)	23.1 23.6				7.8		10	10	10	10	10	Date: 3/29/19 Count Time: 1137 Count Signoff: <u>JK</u> Old WQ: <u>MB</u>
6.25%	22.8				7.2		10	10	10	10	10	
12.5%	22.8				7.4		10	9	8	10	9	
25%	22.9				7.1		10	11	10	10	9	
50%	23.2				7.3		10	10	9	8	10	
100%	23.2				7.5		9	9	10	10	10	
Meter ID	80A				RD11							
Lab Control (Cond. Adj.)	22.8		7.68		8.3	1267	10	10	10	10	10	Date: 3/20/19 Termination Time: 1152 Termination Signoff: <u>JK</u> Old WQ: <u>NJ</u>
6.25%	22.7		7.68		7.6	4312	10	10	10	10	10	
12.5%	22.7		7.76		7.2	4432	10	9	8	10	9	
25%	22.6		8.01		7.8	4444	10	11	10	10	9	
50%	22.7		8.14		7.6	4378	10	10	9	8	10	
100%	22.7		8.34		7.8	4125	9	9	10	10	10	
Meter ID	94A		PH25		SD13	EC13						

CETIS Analytical Report

Report Date: 31 Mar-19 09:40 (p 3 of 3)
 Test Code: 81661 | 02-9839-3901

Hyalella azteca 10-Day Water Toxicity Test Pacific EcoRisk

Analysis ID: 06-7133-0637 Endpoint: Survival Rate CETIS Version: CETISv1.9.2
 Analyzed: 31 Mar-19 9:40 Analysis: Nonparametric-Two Sample Official Results: Yes

Data Transform Alt Hyp Comparison Result
 Angular (Corrected) C > T Culture Control passed survival rate

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Control II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		Culture Control	27.5	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	65500	<1.0E-37	Significant Effect
Error	0	0	8			
Total	0		9			

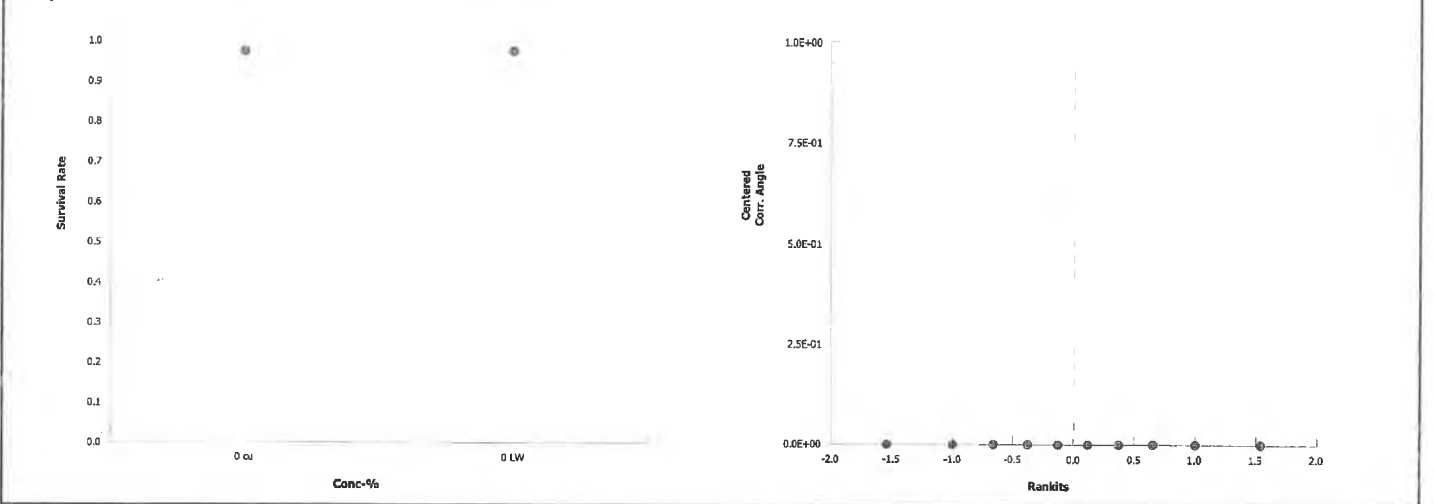
Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	cu	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
0	LW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	cu	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
0	LW	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics



10 Day Acute *Hyaella azteca* Toxicity Test Data

Client: LWA-Calleguas Creek Organism Log#: 11480 Age: 10-11d
 Test Material: Controls Organism Supplier: ABS
 Test ID#: 81661 Project #: 29876 Control/Diluent: SAM-5 (Conductivity Adjusted)
 Test Date: 3/20/19 Control Water Batch: 375

Treatment	Temp (°C)	pH		D.O. (mg/L)		Conductivity (µS/cm)	# Live Organisms					SIGN-OFF
		new	old	new	old		A	B	C	D	E	
Lab Control (Cond. Adj.)	23.0	7.83		8.6		3879	10	10	10	10	10	Date: 3/20/19 Sample ID: 52398
Culture Control (SAM-5)	23.1	7.84		8.6		405	10	10	10	10	10	Test Solution Prep: B1 New WQ: No
Meter ID	934	PH26		RD13		EC11						Initiation Time: 1512 Initiation Signoff: NB
Lab Control (Cond. Adj.)	23.3					5.0	10	10	10	10	10	Date: 3/21/19 Count Time: 0857
Culture Control (SAM-5)	23.1					5.2	10	10	10	10	10	Count Signoff: AEF Old WQ: mdc
Meter ID	81A					RD11						
Lab Control (Cond. Adj.)	23.2					6.7	10	10	10	10	10	Date: 3/22/19 Count Time: 1600
Culture Control (SAM-5)	23.2					6.9	10	10	10	10	10	Count Signoff: CO Old WQ: TP
Meter ID	99A					RD12						Feed: CO
Lab Control (Cond. Adj.)	22.9					5.8	10	10	10	10	10	Date: 3/23/19 Count Time: 1355
Culture Control (SAM-5)	23.0					6.3	10	10	10	10	10	Count Signoff: CO Old WQ: 74
Meter ID	111A					RD2						
Lab Control (Cond. Adj.)	23.4					5.6	10	10	10	10	10	Date: 3/24/19 Count Time: 1404
Culture Control (SAM-5)	23.2					6.3	10	10	10	10	10	Count Signoff: NA Old WQ: TP
Meter ID	81A					RD12						Feed: K
Lab Control (Cond. Adj.)	23.6	7.78	7.42	8.5	6.6	4067	10	10	10	10	10	Date: 3/25/19 Sample ID: 52398
Culture Control (SAM-5)	23.7	7.85	7.46	8.4	6.2	417	10	10	10	10	10	Test Solution Prep: K6 New WQ: NN
Meter ID	106A	PH25	PH26	RD13	RD10	EL13						Renewal Time: 3/20/19 1550 Renewal Signoff: JL Old WQ: JM
Lab Control (Cond. Adj.)	23.5					5.9	10	10	10	10	10	Date: 3/26/19 Count Time: 0948
Culture Control (SAM-5)	23.2					6.0	10	10	10	10	10	Count Signoff: AV Old WQ: AR
Meter ID	81A					RD11						Feed: AV
Lab Control (Cond. Adj.)	22.9					8.0	10	10	10	10	10	Date: 3/27/19 Count Time: 0910
Culture Control (SAM-5)	22.9					8.1	10	10	10	10	10	Count Signoff: AEF Old WQ: CO
Meter ID	81A					RD13						
Lab Control (Cond. Adj.)	22.8					7.5	10	10	10	10	10	Date: 3/28/19 Count Time: 1138
Culture Control (SAM-5)	22.9					7.7	10	10	10	10	10	Count Signoff: NA Old WQ: MB
Meter ID	81A					RD10						Feed: NA
Lab Control (Cond. Adj.)	23.1					7.2	10	10	10	10	10	Date: 3/29/19 Count Time: 1137
Culture Control (SAM-5)	23.0					7.1	10	10	10	10	10	Count Signoff: NA Old WQ: MB
Meter ID	80A					RD11						
Lab Control (Cond. Adj.)	22.8		7.68		8.3	4410	10	10	10	10	10	Date: 3/30/19 Termination Time: 1152
Culture Control (SAM-5)	22.7		7.75		7.9	488	10	10	10	10	10	Termination Signoff: NA Old WQ: NN
Meter ID	94A		PH25		RD13	EL13						

Appendix F

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Hyalella azteca*

CETIS Summary Report

Report Date: 31 Mar-19 11:25 (p 1 of 1)
 Test Code: 81669 | 01-7546-0826

Hyalella Reference Toxicant Survival Test Pacific EcoRisk

Batch ID: 00-3467-2837	Test Type: Survival (96h)	Analyst: James Lem
Start Date: 20 Mar-19 13:32	Protocol: EPA-821-R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 24 Mar-19 13:20	Species: Hyalella azteca	Brine: Not Applicable
Duration: 96h	Source: Aquatic Biosystems, CO	Age: 12

Sample ID: 09-1066-4522	Code: KCl	Client: Reference Toxicant
Sample Date: 20 Mar-19 13:32	Material: Potassium chloride	Project: 29878
Receipt Date: 20 Mar-19 13:32	Source: Reference Toxicant	
Sample Age: n/a (23 °C)	Station: In House	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
15-6817-9014	96h Survival Rate	Fisher Exact/Bonferroni-Holm Test	0.2	0.4	0.2828		n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	g/L	95% LCL	95% UCL	TU	✓
05-9037-7090	96h Survival Rate	Trimmed Spearman-Kärber	EC50	0.364	0.286	0.464		

96h Survival Rate Summary

Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.1		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
0.2		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.4		10	0.400	0.031	0.769	0.000	1.000	0.163	0.516	129.10%	60.00%
0.8		9	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
1.6		10	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

96h Survival Rate Detail

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.1		0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.2		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.4		0.000	0.000	1.000	0.000	1.000	0.000	1.000	1.000	0.000	0.000
0.8		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
1.6		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

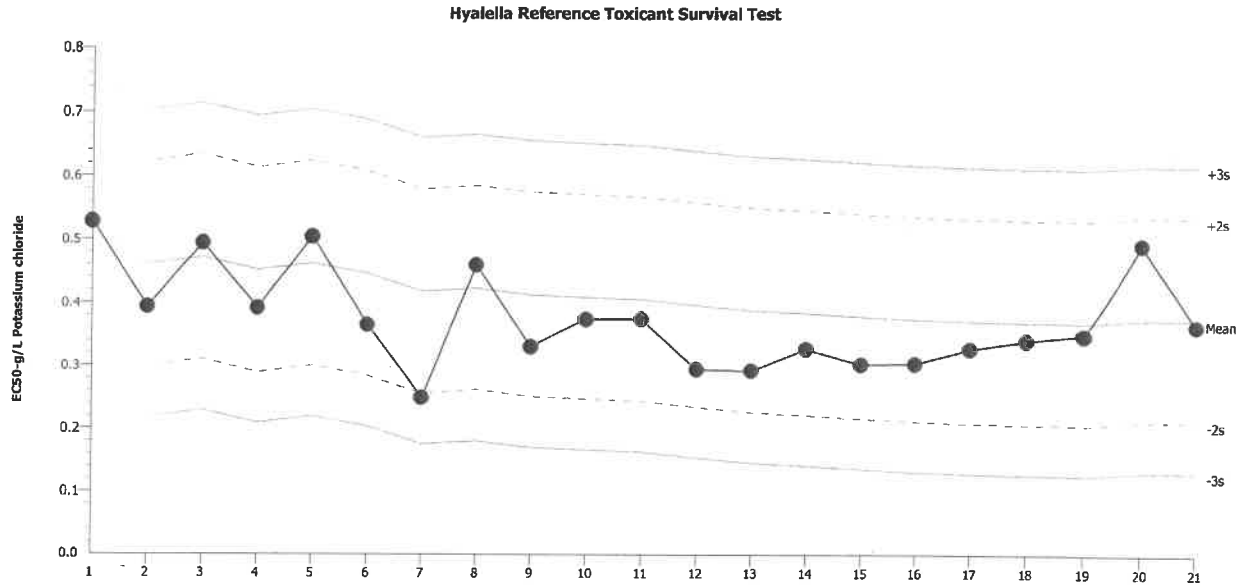
96h Survival Rate Binomials

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0.1		0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0.2		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0.4		0/1	0/1	1/1	0/1	1/1	0/1	1/1	1/1	0/1	0/1
0.8		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	
1.6		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

Hyalella Reference Toxicant Survival Test

Pacific EcoRisk

Test Type: Survival (96h) Organism: Hyalella azteca (Freshwater Amphip) Material: Potassium chloride
 Protocol: EPA-821-R-02-012 (2002) Endpoint: 96h Survival Rate Source: Reference Toxicant-REF



Mean: 0.3741 Count: 20 -2s Warning Limit: 0.2124 -3s Action Limit: 0.1316
 Sigma: 0.08086 CV: 21.60% +2s Warning Limit: 0.5359 +3s Action Limit: 0.6167

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2017	Dec	4	16:30	0.5278	0.1537	1.901			09-9590-2070	18-7306-3573
2	2018	Jan	9	19:13	0.3931	0.01903	0.2353			05-2232-4768	00-9328-2087
3			17	15:40	0.4938	0.1197	1.481			17-7568-9822	12-5928-4930
4		Feb	8	15:57	0.391	0.01694	0.2094			13-6969-1958	02-2461-7172
5		Mar	2	17:52	0.5037	0.1296	1.602			10-1610-0738	05-9100-3645
6		Apr	8	13:38	0.3642	-0.00994	-0.1229			14-6470-8596	05-1973-4354
7		May	16	17:55	0.2486	-0.1255	-1.552			05-9866-1037	11-2195-3653
8		Jun	14	16:35	0.4595	0.08538	1.056			18-1605-2758	14-8406-0239
9		Jul	18	16:20	0.3299	-0.04416	-0.5461			11-4094-7394	20-3811-7615
10		Aug	6	14:44	0.3732	-0.00089	-0.01097			16-9077-3352	08-2793-0151
11			9	17:00	0.3732	-0.00089	-0.01097			14-1761-7282	03-9488-5843
12			16	11:27	0.2941	-0.07998	-0.9892			12-7542-2334	14-0979-7400
13			21	16:03	0.2922	-0.08192	-1.013			19-3911-4177	09-8363-6416
14		Sep	4	14:11	0.3265	-0.04764	-0.5892			00-7654-6742	11-6933-8211
15		Oct	22	15:45	0.3021	-0.07201	-0.8906			08-4484-9174	20-9708-5657
16		Nov	8	16:10	0.3031	-0.07096	-0.8775			20-3402-4533	15-9735-9663
17		Dec	30	10:50	0.3265	-0.04764	-0.5892			07-2846-0604	07-9228-2474
18	2019	Jan	16	15:28	0.3394	-0.03466	-0.4286			05-9424-3991	13-8222-5294
19		Feb	4	14:55	0.3482	-0.02588	-0.3201			13-3563-0230	03-4597-8225
20		Mar	16	14:47	0.4925	0.1184	1.464			20-8092-8579	07-7078-6737
21			20	13:32	0.3642	-0.00994	-0.1229			01-7546-0826	05-9037-7090

Ms. Amy Storm
 Larry Walker Associates
 2151 Alessandro Dr., Suite 100
 Ventura, CA 93001

July 5, 2019

Dear Amy:

I have enclosed our *supplemental* report “A Toxicity Characterization Study of Ambient Waters Collected from the Calleguas Creek Watershed: Event 73” for samples collected May 29, 2019. This report was revised to correct the *Ceriodaphnia dubia* 25% concentration reproduction data for 73-HITCH-164 in Table 5 and to update the footnote for the table to remove discussion regarding the interrupted concentration-response. Please note that the conclusions reported in the initial report are *not* changed by the revisions in this supplemental report. The results of our evaluation are summarized below.

Effects of Calleguas Creek Ambient Waters on *Ceriodaphnia dubia*

There were no significant reductions in survival. However, there was a significant reduction in reproduction in the 73-BELT-214 sample. There were no significant reductions in reproduction in the remaining Calleguas Creek ambient waters.

Effects of Calleguas Creek Ambient Waters on *Hyalella azteca*

The 73-WOOD-128 ambient water was the only sample tested with this species; there was a significant reduction in survival in this sample.

Toxicity Summary for Calleguas Creek: Event 73 Ambient Waters.			
Sample Station ID	Toxicity relative to the Lab Control treatment?		
	<i>Ceriodaphnia dubia</i>		<i>Hyalella azteca</i>
	Survival	Reproduction	Survival
73-UNIV-029	no	no	testing with this species was not performed
73-ADOLF-067	no	no	testing with this species was not performed
73-HITCH-164	no	no	testing with this species was not performed
73-GATE-211	no	no	testing with this species was not performed
73-BELT-214	no	YES	testing with this species was not performed
73-WOOD-128	testing with this species was not performed		YES

If you have any questions regarding the performance and interpretation of these tests, feel free to contact my colleague Jeffrey Cotsifas or myself at (707) 207-7763.

Sincerely,

Michael McElroy
Senior Project Manager



Pacific EcoRisk is accredited in accordance with NELAP (ORELAP ID 4043). Pacific EcoRisk certifies that the test results reported herein conform to the most current NELAP requirements for parameters for which accreditation is required and available. Any exceptions to NELAP requirements are noted, where applicable, in the body of the report. This report shall not be reproduced, except in full, without the written consent of Pacific EcoRisk. This testing was performed under Lab Order 30314.

A Toxicity Characterization Study of Ambient Waters Collected from the Calleguas Creek Watershed

(Water Samples Collected on May 29, 2019)

Event 73

Prepared For

Larry Walker Associates
720 Wilshire Blvd., Suite 207
Santa Monica, CA 90401

Prepared By

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

July 2019



Table of Contents

	Page
1. INTRODUCTION	1
2. COLLECTION AND DELIVERY OF AMBIENT WATER SAMPLES.....	1
3. TOXICITY TEST PROCEDURES FOR AMBIENT WATERS.....	2
3.1 Chronic Toxicity Testing with <i>Ceriodaphnia dubia</i>	2
3.1.1 Reference Toxicant Testing of the <i>Ceriodaphnia dubia</i>	3
3.2 Survival Toxicity Testing with <i>Hyalella azteca</i>	3
3.2.1 Reference Toxicant Testing of the <i>Hyalella azteca</i>	4
4. RESULTS OF THE AMBIENT WATER TOXICITY EVALUATIONS	5
4.1. Effects of Calleguas Creek Ambient Waters on <i>Ceriodaphnia dubia</i>	5
4.1.2 Reference Toxicant Toxicity to <i>Ceriodaphnia dubia</i>	8
4.2 Effects of Calleguas Creek Ambient Water on <i>Hyalella azteca</i>	8
4.2.1 Reference Toxicant Toxicity to <i>Hyalella azteca</i>	9
5. SUMMARY AND CONCLUSIONS	10
5.1 QA/QC Summary	10

Appendices

Appendix A	Chain-of-Custody Record for the Collection and Delivery of the Samples
Appendix B	Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to <i>Ceriodaphnia dubia</i> : Data Analyses Excluding Statistical Outliers
Appendix C	Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to <i>Ceriodaphnia dubia</i> : Data Analyses Including Statistical Outliers
Appendix D	Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the <i>Ceriodaphnia dubia</i>
Appendix E	Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Calleguas Creek Ambient Waters to <i>Hyalella azteca</i>
Appendix F	Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the <i>Hyalella azteca</i>

1. INTRODUCTION

In support of the Calleguas Creek Watershed Monitoring Program, Larry Walker Associates (LWA) has contracted Pacific EcoRisk (PER) to evaluate the potential toxicity of surface waters and sediments collected from within the Calleguas Creek Watershed. The current evaluation, which comprises Event 73 of the overall study, consisted of performing the following U.S. EPA toxicity tests:

- 3-brood survival and reproduction test with the *Ceriodaphnia dubia*; and
- For ambient water samples with a conductivity >3000 $\mu\text{S}/\text{cm}$ but <15 ppt salinity, the 10-day survival test with the freshwater amphipod, *Hyaella azteca* was performed in place of the *C. dubia* test.

In order to evaluate the magnitude of any observed toxicity, all water samples were tested using a series of sample dilutions (100%, 50%, 25%, 12.5%, and 6.25%). In order to document that the test organisms were responding to toxic stress in a typical fashion, reference toxicant tests were also performed. This report describes and summarizes the performance and results of these tests.

2. COLLECTION AND DELIVERY OF AMBIENT WATER SAMPLES

On May 29, 2019, Kinnetic Laboratories, Inc. (KLI) collected ambient water samples from six locations within the Calleguas Creek watershed (Table 1). Each water sample was collected into two pre-cleaned 5-gallon fluorocarbon-lined polyethylene jerricans. The samples were transported on ice and under chain-of-custody to the PER laboratory facility in Fairfield, CA, arriving approximately 24 hours after collection. Upon receipt at the testing laboratory, aliquots of each water sample were collected for analysis of initial water quality characteristics (Table 2). The remainder of the water samples were stored at 0-6°C. All initial surface water tests were initiated within 36 hours of sample collection. The chain-of-custody record for the collection and delivery of these samples is presented in Appendix A.

Table 1. Collection of Calleguas Creek Watershed Ambient Water Samples.		
Station Code	Sample Collection Date (Time)	Test Initiation Date (Time)
UNIV	5/29/19 (1610)	5/30/19 (1445)
ADOLF	5/29/19 (1445)	5/30/19 (1334)
HITCH	5/29/19 (0910)	5/30/19 (1215)
GATE	5/29/19 (1130)	5/30/19 (1315)
BELT	5/29/19 (1230)	5/30/19 (1343)
WOOD	5/29/19 (1510)	5/30/19 (1614)

Sample ID	Temp (°C)	pH	D.O. (mg/L)	Alkalinity (mg/L as CaCO ₃)	Hardness (mg/L as CaCO ₃)	Conductivity (µS/cm)	Salinity (ppt)	Total Ammonia (mg/L)
73-UNIV-029	9.2*	8.17	9.0	236	463	1797	0.9	<1.0
73-ADOLF-067	5.8	8.62	10.4	194	380	1262	0.7	<1.0
73-HITCH-164	1.4	8.04	10.7	158	535	1747	0.9	<1.0
73-GATE-211	1.6	7.94	10.9	179	328	1212	0.6	<1.0
73-BELT-214	2.0	8.29	10.8	276	578	1523	0.8	<1.0
73-WOOD-128	3.5	8.53	10.5	124	1390	3678	1.9	<1.0

* The temperature inside of the ice chest used to transport the sample was 0.0°C and ice was present.

3. TOXICITY TEST PROCEDURES FOR AMBIENT WATERS

The Calleguas Creek ambient waters were tested for toxicity using the following chronic toxicity tests:

- Water samples with a conductivity <3000 µS/cm were tested using the 3-brood (6-8 day) survival and reproduction test with the freshwater crustacean *C. dubia*; and
- Water samples with a conductivity >3000 µS/cm but <15 ppt salinity were tested using the 10-day survival test with the amphipod *H. azteca*.

The methods used in conducting the chronic toxicity tests (and any follow-up TIEs) followed the guidance established by the following EPA manuals:

- Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition" (EPA-821-R-02-013); and
- A Surface Water Ambient Monitoring Program (SWAMP) test protocol based on a modification of the US EPA guidelines, "Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates" (EPA/630/R-99/064).

3.1 Chronic Toxicity Testing with *Ceriodaphnia dubia*

The chronic toxicity test with *C. dubia* consists of exposing individual females to the ambient water samples for the length of time it takes for the Lab Control treatment females to produce three broods (typically 6-8 days), after which effects on survival and reproduction are evaluated. The specific procedures used in these tests are described below.

The Lab Water Control medium for this test consisted of a modified EPA moderately-hard water. For each water sample, the Lab Control water and 100% water sample were used to prepare test solutions at additional interim test treatment concentrations of 6.25%, 12.5%, 25%, and 50% ambient water. For each treatment, 200 mL aliquots of test solution were amended with the alga

Selenastrum capricornutum and Yeast-Cerophyll®-Trout Food (YCT) to provide food for the test organisms. “New” water quality characteristics (pH, D.O., and conductivity) were measured on these food-amended test solutions prior to use in these tests.

There were 10 replicates each for each test treatment, each replicate consisting of 15 mL of test solution in a 30-mL plastic cup. These “3-brood” tests were initiated by allocating one neonate (<24 hours old, and within 8 hours of age) *C. dubia*, obtained from in-house laboratory cultures, into each replicate cup. The replicate cups were placed into a temperature-controlled room at 25°C, under cool-white fluorescent lighting on a 16L:8D photoperiod.

Each test replicate cup was examined daily, with surviving organisms being transferred to the corresponding new cup containing fresh test solution. The contents of each remaining “old” replicate cup were carefully examined, and the number of neonate offspring produced by each original organism was determined, after which “old” water quality characteristics (pH, D.O., and conductivity) were measured for the “old” test solution from one randomly-selected replicate at each treatment.

After it was determined that $\geq 60\%$ of the *C. dubia* in a Lab Water Control treatment had produced their third brood of offspring, the corresponding ambient water test was terminated. The resulting survival and reproduction data were analyzed to evaluate any impairment caused by the ambient water sample. Statistical analyses were performed using CETIS® (TidePool Scientific Software, McKinleyville, CA).

3.1.1 Reference Toxicant Testing of the *Ceriodaphnia dubia*

The reference toxicant test was performed similarly to the ambient water test except that test solutions consisted of Lab Water Control medium spiked with NaCl at test concentrations of 500, 1000, 1500, 2000, and 2500 mg/L. The resulting test response data were statistically analyzed to determine key concentration-response point estimates. Statistical analyses were performed using CETIS. These response endpoints were then compared to the typical response range established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

3.2 Survival Toxicity Testing with *Hyaella azteca*

This test consists of exposing individual *H. azteca* to the ambient water samples for 10 days, after which effects on survival are evaluated. The specific procedures used in this testing are described below.

The *H. azteca* used in this testing were obtained from a commercial supplier (Aquatic BioSystems, CO). Upon receipt at the lab, the test organisms were held in aerated tanks containing Lab Control water, and were fed *S. capricornutum* and *Spirulina*-amended YCT *ad libitum* during this pre-test holding period.

The Lab Water Control medium for this testing consisted of EPA synthetic moderately-hard water, modified for use with *H. azteca* as per EPA test guidelines, and adjusted to the conductivity of the site water via addition of an artificial sea salt (Crystal Seas[®]- bioassay grade). For each ambient water sample, the Lab Control water and 100% ambient water sample were used to prepare test solutions at additional interim test treatment concentrations of 6.25%, 12.5%, 25%, and 50% ambient water. A “Culture” Control, consisting of *H. azteca* culture water was also prepared and tested. “New” water quality characteristics (pH, D.O., and conductivity) were measured on these test solutions prior to use in the test(s).

There were five replicates for each test treatment, each replicate consisting of a 250-mL glass beaker containing 100 mL of test solution; a small (~1 cm x 2 cm) piece of NITEX[®] mesh was placed in the beaker to provide an attachment substrate for the thigmotactic amphipods. Testing was initiated by allocating ten 9-10 day old *H. azteca*, into each replicate. The replicate beakers were placed into a temperature-controlled room at 23°C, under cool-white fluorescent lighting on a 16L:8D photoperiod.

On each day of the test, each replicate beaker was examined and the number of surviving organisms determined. Oldwater quality characteristics of the test solutions were measured in one randomly-selected beaker at each test treatment at this time. On Days 2, 4, 6, and 8 of the tests, 1.0 mL of *Spirulina*-amended YCT food was added to each test replicate to provide food for the test organisms.

On Day 5, fresh test solutions were prepared and characterized as before. Each replicate was examined, with any dead animals, uneaten food, wastes, and other detritus being removed. The number of live organisms in each replicate was determined and then approximately 80% of the old test solution in each beaker was carefully poured out and replaced with fresh test solution. “Old” water quality characteristics (pH, D.O., and conductivity) were measured on the old test solution that had been discarded from one randomly-selected replicate at each treatment.

After 10 days of exposure, testing was terminated and the number of live organisms in each replicate was recorded. The resulting survival data were analyzed to evaluate any impairment caused by the ambient water sample. Statistical analyses were performed using CETIS.

3.2.1 Reference Toxicant Testing of the *Hyaella azteca*

The reference toxicant test was performed similarly to the ambient water tests, except that test solutions consisted of the Lab Water Control medium spiked with KCl at concentrations of 0.1, 0.2, 0.4, 0.8, and 1.6 g/L. The resulting test response data were statistically analyzed to determine key concentration-response point estimates. Statistical analyses were performed using CETIS. These response endpoints were then compared to the typical response range established by the mean \pm 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

4. RESULTS OF THE AMBIENT WATER TOXICITY EVALUATIONS

4.1 Effects of Calleguas Creek Ambient Water on *Ceriodaphnia dubia*

The results of the ambient water tests with *C. dubia* are summarized in Tables 3 through 7. There were no significant reductions in survival. However, there was a significant reduction in reproduction in the 73-BELT-214 sample. There were no significant reductions in reproduction in the remaining Calleguas Creek ambient waters. The test data and summary of statistical analyses for these tests excluding outliers, are presented in Appendix B; the summary of statistical analyses for these tests including outliers is presented in Appendix C.

Table 3. Effects of Ambient Water 73-UNIV-029 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	30.0
6.25%	100	21.0
12.5%	100	28.7
25%	80	22.9
50%	90	37.0 ^b
100%	90	28.3
Summary of Statistics		
NOEC =	100% ambient water	100% ambient water
TU _c (100/NOEC) =	1	1
Survival EC ₂₅ or Reproduction IC ₂₅ =	>100% ambient water ^a	>100% ambient water
Survival EC ₅₀ or Reproduction IC ₅₀ =	>100% ambient water ^a	>100% ambient water
TU _c (100/EC ₅₀ or 100/IC ₅₀) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - Analysis of the data indicated the presence of an outlier in this treatment, and the results reported above are for the analyses of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	90	36.9 ^b
6.25%	100	30.0 ^c
12.5%	100	22.9 ^c
25%	100	26.7 ^c
50%	100	30.7
100%	100	35.3
Summary of Statistics		
NOEC =	100% ambient water	100% ambient water
TU _c (100/NOEC) =	1	1
Survival EC ₂₅ or Reproduction IC ₂₅ =	>100% ambient water ^a	>100% ambient water
Survival EC ₅₀ or Reproduction IC ₅₀ =	>100% ambient water ^a	>100% ambient water
TU _c (100/EC ₅₀ or 100/IC ₅₀) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - Analysis of the data indicated the presence of an outlier in this treatment, and the results reported above are for the analyses of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

c - There was an interrupted concentration-response with a statistically significant reduction in reproduction at this test treatment. However, as there was no significant reduction in reproduction at the higher 50% and 100% treatments, the reduction at this interim treatment are not considered toxicologically significant.

Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	36.8
6.25%	100	38.8 ^b
12.5%	100	34.3
25%	100	33 ^b
50%	90	26.8
100%	100	35.1
Summary of Statistics		
NOEC =	100% ambient water	100% ambient water
TU _c (100/NOEC) =	1	1
Survival EC ₂₅ or Reproduction IC ₂₅ =	>100% ambient water ^a	>100% ambient water
Survival EC ₅₀ or Reproduction IC ₅₀ =	>100% ambient water ^a	>100% ambient water
TU _c (100/EC ₅₀ or 100/IC ₅₀) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - Analysis of the data indicated the presence of an outlier in this treatment, and the results reported above are for the analyses of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 6. Effects of Ambient Water 73-GATE-211 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	% Survival	Reproduction (# neonates /female)
Lab Water Control	100	30.2
6.25%	100	29.5
12.5%	100	35.1
25%	90	32.8 ^b
50%	100	31.2
100%	100	30.8
Summary of Statistics		
NOEC =	100% ambient water	100% ambient water
TUc (100/NOEC) =	1	1
Survival EC ₂₅ or Reproduction IC ₂₅ =	>100% ambient water ^a	>100% ambient water
Survival EC ₅₀ or Reproduction IC ₅₀ =	>100% ambient water ^a	>100% ambient water
TUc (100/EC ₅₀ or 100/IC ₅₀) =	<1	<1

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - Analysis of the data indicated the presence of an outlier in this treatment, and the results reported above are for the analyses of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

Table 7. Effects of Ambient Water 73-BELT-214 on <i>Ceriodaphnia dubia</i> .		
Ambient Water Treatment	Mean % Survival	Mean Reproduction (# neonates/female)
Lab Water Control	100	37.1 ^b
6.25%	100	31.1
12.5%	100	29.7
25%	100	37.3 ^b
50%	100	35.6 ^b
100%	100	27.6*
Summary of Statistics		
NOEC =	100% ambient water	50% ambient water
TUc (100/NOEC) =	1	2
Survival EC ₂₅ or Reproduction IC ₂₅ =	>100% ambient water ^a	98% ambient water
Survival EC ₅₀ or Reproduction IC ₅₀ =	>100% ambient water ^a	>100% ambient water
TUc (100/EC ₅₀ or 100/IC ₅₀) =	<1	<1

* The response at this test treatment was significantly less than the Lab Water Control treatment response at p<0.05

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% ambient water.

b - Analysis of the data indicated the presence of an outlier in this treatment, and the results reported above are for the analyses of the test data excluding this outlier. As per EPA guidelines, the test data were analyzed both with and without the outlier, and the results of both sets of analyses are reported in the appendices.

4.1.2 Reference Toxicant Toxicity to *Ceriodaphnia dubia*

The results of this test are summarized in Table 8. The EC₅₀ and IC₅₀ for these tests were both consistent with the typical response ranges established by the reference toxicant test database for this species. These results indicate that the organisms used for ambient water testing were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix D.

Table 8. Reference toxicant testing: effects of NaCl on <i>Ceriodaphnia dubia</i> .		
NaCl Treatment (mg/L)	Mean % Survival	Mean Reproduction (# neonates/female)
Lab Water Control	90	31.4
500	100	29.3
1000	80	19.8*
1500	60	11.2*
2000	60	4.8*
2500	0*	-
Summary of Statistics		
Survival EC ₅₀ or Reproduction IC ₅₀ =	1760 mg/L NaCl	1240 mg/L NaCl
Typical Response Range (mean ± 2 SD)	1712-2318 mg/L NaCl	1178-1936 mg/L NaCl

* The response at this test treatment was significantly less than the Lab Water Control treatment response at p<0.05

4.2 Effects of Calleguas Creek Ambient Water on *Hyaella azteca*

The results of this test are summarized in Table 9. The 73-WOOD-128 ambient water sample was the only sample tested with this species; there was a significant reduction in survival in this sample. The test data and summary of statistical analyses are presented in Appendix E.

Table 9. Effects of Ambient Water 73-WOOD-128 on <i>Hyaella azteca</i> Survival.	
Ambient Water Treatment	10-Day Mean % Survival
Lab Control	96
6.25%	100
12.5%	100
25%	60
50%	34*
100%	2.0*
Culture Control	98
Summary of Statistics	
NOEC =	25% ambient water
TU _c (100/NOEC) =	4
Survival EC ₂₅ =	24.0% ambient water
Survival EC ₅₀ =	35.1% ambient water
TU _c (100/EC ₅₀) =	2.8

* The response at this test treatment was significantly less than the Lab Water Control treatment response at p<0.05.

4.2.1 Reference Toxicant Toxicity to *Hyalella azteca*

The results of this test are summarized in Table 10. The growth LC₅₀ was consistent with the typical response range established by the reference toxicant test database for this species, indicating that these test organisms were responding to toxicant stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix F.

Table 10. Reference Toxicant Testing: Effects of KCl on <i>Hyalella azteca</i> .	
KCl Treatment (g/L)	Mean % Survival
Lab Control	100
0.1	100
0.2	100
0.4	40*
0.8	0*
1.6	0*
Summary of Statistics	
Survival LC ₅₀ =	0.37 g/L KCl
Typical Response Range (mean ± 2 SD)	0.22 - 0.49 g/L KCl

* The response at this test treatment was significantly less than the Lab Water Control treatment response at p<0.05.

5. SUMMARY AND CONCLUSIONS

Effects of Calleguas Creek Ambient Waters on *Ceriodaphnia dubia*

There were no significant reductions in survival. However, there was a significant reduction in reproduction in the 73-BELT-214 sample. There were no significant reductions in reproduction in the remaining Calleguas Creek ambient waters.

Effects of Calleguas Creek Ambient Waters on *Hyalella azteca*

The 73-WOOD-128 ambient water was the only sample tested with this species; there was a significant reduction in survival in this sample.

Toxicity Summary for Calleguas Creek: Event 73 Ambient Waters.			
Sample Station ID	Toxicity relative to the Lab Control treatment?		
	<i>Ceriodaphnia dubia</i>		<i>Hyalella azteca</i>
	Survival	Reproduction	Survival
73-UNIV-029	no	no	testing with this species was not performed
73-ADOLF-067	no	no	testing with this species was not performed
73-HITCH-164	no	no	testing with this species was not performed
73-GATE-211	no	no	testing with this species was not performed
73-BELT-214	no	YES	testing with this species was not performed
73-WOOD-128	testing with this species was not performed		YES

5.1 QA/QC Summary

Test Conditions – All test conditions (pH, D.O., temperature, etc.) were within acceptable limits during testing. All test analyses were performed according to laboratory Standard Operating Procedures.

Negative Control – The biological responses for the test organisms in the Lab Control treatments were within acceptable limits.

Positive Control – All reference toxicant test results were consistent with the “typical response” ranges established by the reference toxicant test database, indicating that these test organisms were responding to toxic stress in a typical fashion.

Concentration Response Relationships – The concentration-response relationships for these tests were evaluated as per EPA guidelines (EPA-821-B-00-004), and were determined to be acceptable.

Appendix A

Chain-of-Custody Record for the Collection and Delivery of the Samples

Appendix B

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to *Ceriodaphnia dubia*: Data Analyses Excluding Statistical Outliers

CETIS Summary Report

Report Date: 14 Jun-19 15:58 (p 1 of 2)
 Test Code: 84000 | 15-1951-9495

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Batch ID: 16-3196-0458	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 30 May-19 14:45	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Jun-19 14:25	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d	Source: In-House Culture	Age: 1

Sample ID: 05-9772-1801	Code: 73-UNIV-029	Client: Larry Walker Associates
Sample Date: 29 May-19 16:10	Material: Ambient Water	Project: 30314
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek	
Sample Age: 23h (9.2 °C)	Station: UNIV	

Comments:
 Stats exclude reproductive outlier 50G

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
02-8672-7601	Reproduction	Bonferroni Adj t Test	100	> 100	n/a	1	33.0%
20-2931-4518	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
12-5720-3050	Reproduction	Linear Interpolation (ICPIN)	IC5	3.87	1.66	n/a	25.81
			IC10	>100	n/a	n/a	<1
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1



Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30	26.1	33.9	19	38	1.73	5.48	18.26%	0.00%
6.25		10	21	15	27	12	34	2.64	8.34	39.71%	30.00%
12.5		10	28.7	23.5	33.9	12	37	2.32	7.33	25.55%	4.33%
25		10	22.9	14.6	31.2	0	40	3.67	11.6	50.69%	23.67%
50		9	37	32.3	41.7	26	45	2.05	6.16	16.66%	-23.33%
100		10	28.3	18.7	37.9	3	42	4.24	13.4	47.41%	5.67%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	0.800	0.498	1.000	0.000	1.000	0.133	0.422	52.70%	20.00%
50		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 14 Jun-19 15:58 (p 2 of 2)
 Test Code: 84000 | 15-1951-9495

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	19	30	27	38	27	33	34	26	31	35
6.25		13	17	30	30	16	34	18	27	12	13
12.5		30	30	31	22	25	12	32	37	33	35
25		21	0	18	25	29	14	40	25	19	38
50		38	39	33	30	43	40		39	26	45
100		36	3	14	42	28	36	13	37	35	39
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
100		1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	0/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
100		1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Analyst:  QA: 

CETIS Analytical Report

Report Date: 14 Jun-19 15:57 (p 1 of 1)
 Test Code: 84000 | 15-1951-9495

Ceriodaphnia Survival and Reproduction Test					Pacific EcoRisk	
Analysis ID: 20-2931-4518	Endpoint: Survival		CETIS Version: CETISv1.9.2			
Analyzed: 14 Jun-19 15:57	Analysis: STP 2xK Contingency Tables		Official Results: Yes			
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	
Untransformed	C > T	100	> 100	n/a	1	

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	0.237	Exact	1.0000	Non-Significant Effect
		50	0.500	Exact	1.0000	Non-Significant Effect
		100	0.500	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		8	2	10	0.8	0.2	20.0%
50		9	1	10	0.9	0.1	10.0%
100		9	1	10	0.9	0.1	10.0%



CETIS Analytical Report

Report Date: 14 Jun-19 15:57 (p 1 of 1)
 Test Code: 84000 | 15-1951-9495

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 02-8672-7601 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 14 Jun-19 15:57 Analysis: Parametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	33.01%

Bonferroni Adj t Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	2.18	2.4	9.9	18	CDF	0.0843	Non-Significant Effect
		12.5	0.315	2.4	9.9	18	CDF	1.0000	Non-Significant Effect
		25	1.72	2.4	9.9	18	CDF	0.2283	Non-Significant Effect
		50	-1.65	2.4	10.2	17	CDF	1.0000	Non-Significant Effect
		100	0.412	2.4	9.9	18	CDF	1.0000	Non-Significant Effect

ANOVA Table

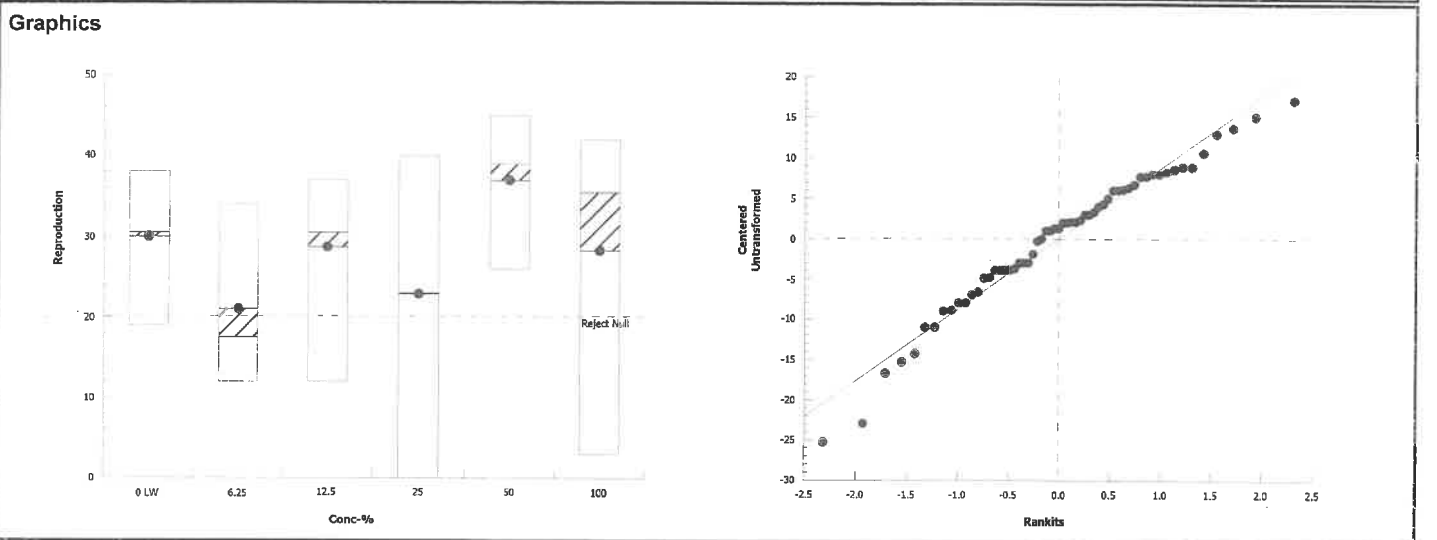
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1523.21	304.641	5	3.57	0.0074	Significant Effect
Error	4517.1	85.2283	53			
Total	6040.31		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	10.5	15.1	0.0619	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.97	0.945	0.1473	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30	26.1	33.9	30.5	19	38	1.73	18.26%	0.00%
6.25		10	21	15	27	17.5	12	34	2.64	39.71%	30.00%
12.5		10	28.7	23.5	33.9	30.5	12	37	2.32	25.55%	4.33%
25		10	22.9	14.6	31.2	23	0	40	3.67	50.69%	23.67%
50		9	37	32.3	41.7	39	26	45	2.05	16.66%	-23.33%
100		10	28.3	18.7	37.9	35.5	3	42	4.24	47.41%	5.67%



CETIS Analytical Report

Report Date: 14 Jun-19 15:57 (p 1 of 1)
 Test Code: 84000 | 15-1951-9495

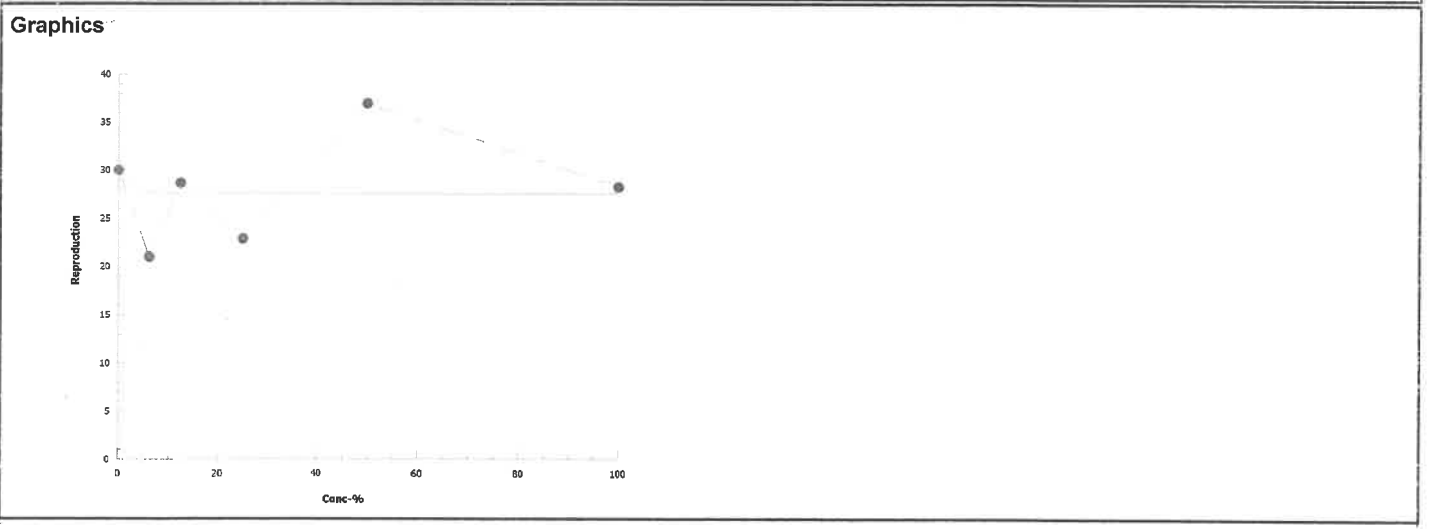
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 12-5720-3050 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 14 Jun-19 15:57 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	668202	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	3.87	1.66	n/a	25.81	n/a	60.07
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30	19	38	1.73	5.48	18.30%	0.0%
6.25		10	21	12	34	2.64	8.34	39.70%	30.0%
12.5		10	28.7	12	37	2.32	7.33	25.60%	4.33%
25		10	22.9	0	40	3.67	11.6	50.70%	23.7%
50		9	37	26	45	2.05	6.16	16.70%	-23.3%
100		10	28.3	3	42	4.24	13.4	47.40%	5.67%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-UNIV-02⁹ Test Date: 5/30/19
 Project #: 30314 Test ID: 84000 Randomization: 10.7.3 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.72		6.8		358	24.8	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/30/19 New WQ: TA Test Init: TK Sol'n Prep: SL ER SAT Counts: 3445
1	7.97	7.69	8.5	7.5	366	24.1	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/30/19 New WQ: TA Counts: 32 Sol'n Prep: SL Old WQ: TA Time: 1037
2	8.11	8.01	8.5	7.7	352	24.0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 6/1/19 New WQ: JR Counts: 30 Sol'n Prep: SL Old WQ: TP Time: 1410
3	7.99	7.99	8.3	8.0	357	24.0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 6/1/19 New WQ: KP Counts: 30 Sol'n Prep: SL Old WQ: NN Time: 1252
4	7.92	7.97	8.6	7.5	352	24.4	0	6	5	5	6	6	6	7	5	7			Date: 6/3/19 New WQ: TP Counts: 60 Sol'n Prep: KB Old WQ: TP Time: 1321
5	8.14	7.85	9.0	7.6	351	25.1	4	10	0	50	5	13	0	14	0	12			Date: 6/4/19 New WQ: JR Counts: 126 Sol'n Prep: KB Old WQ: TP Time: 1255
6	8.22	7.96	8.3	6.7	377	24.8	15	0	10	12	0	14	10	0	11	0			Date: 6/5/19 New WQ: JR Counts: 12 Sol'n Prep: KL Old WQ: TP Time: 1435
7	-	8.17	-	6.9	385	24.8	0	14	12	21	16	0	18	5	15	16			Date: 6/6/19 New WQ: - Counts: 82 Sol'n Prep: - Old WQ: - Time: 1425
8																			Date: 6/6/19 Old WQ: - Counts: -
Total=							19	30	27	38	27	33	34	26	31	35	Mean Neonates/Female = 30.0		
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.79		7.0		451	24.8	0	0	0	0	0	0	0	0	0	0	0	0	53054
1	8.05	7.81	8.8	7.6	455	24.1	0	0	0	0	0	0	0	0	0	0	0	0	53054
2	8.14	8.04	8.7	7.6	448	25.0	0	0	0	0	0	0	0	0	0	0	0	0	53054
3	8.01	7.86	8.1	7.8	449	24.0	0	0	0	0	0	0	0	0	0	0	0	0	53054
4	8.04	7.97	8.5	7.0	442	24.9	0	0	3	0	0	4	0	0	0	0	0	0	53054
5	8.17	7.92	8.9	7.6	449	25.1	0	3	0	10	0	11	0	0	0	0	0	0	53054
6	8.24	8.02	8.4	6.5	458	24.8	0	0	11	0	0	0	0	10	0	0	0	0	53054
7	-	8.14	-	7.1	498	24.3	13	14	16	20	16	19	18	17	12	13			-
8																			
Total=							13	17	30	30	16	34	18	27	12	13	Mean Neonates/Female = 21.0		

6/6/19
1245

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-UNIV-02⁰¹ Test Date: 5/30/19

Project #: 30314 Test ID: 84000 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
12.5%	0	7.87		7.3	550	24.9	0	0	0	0	0	0	0	0	0	0	0		
	1	8.09	7.76	9.0	7.1	557	24.1	0	0	0	0	0	0	0	0	0	0	0	
	2	8.17	8.08	8.9	7.5	545 545	24.8	0	0	0	0	0	0	0	0	0	0	0	
	3	8.04	8.11	8.3	7.7	544	24.3	0	0	0	0	0	0	0	0	0	0	0	
	4	8.11	8.12	8.4	7.4	539	24.9	0	0	3	0	0	5	6	6	0	3		
	5	8.18	8.08	8.9	7.8	545	25.2	0	11	0	0	0	7	7	13	0	0		
	6	8.23	8.15	8.2	6.8	554	24.9	11	0	12	8	8	0	0	0	12	14		
	7	-	8.23	-	7.1	599	24.9	19	19	16	14	17	0	19	18	21	18		
	8																		
Total=							30	30	31	22	25	12	32	37	33	35	Mean Neonates/Female =	28.7	
25%	0	7.98		6.9	738	24.9	0	0	0	0	0	0	0	0	0	0	0		
	1	8.16	7.86	9.1	7.2	728	24.1	0	0	0	0	0	0	0	0	0	0		
	2	8.21	8.23	8.6	7.8	722	24.4	0	0	0	0	0	0	0	0	0	0		
	3	8.11	8.02	8.5	7.7	722	24.3	0	0	0	0	0	0	0	0	0	0		
	4	8.16	8.20	8.7	7.8	712	24.9	7	0	5	7	4	0	8	6	7	6		
	5	8.21	8.19	9.0	8.0	715	25.1	0	X/0	0	0	10	0	0	0	0	8		
	6	8.24	8.26	8.5	6.9	718	24.9	10	-	X/3	10	0	6	14	0	10	6		
	7	-	8.30	-	7.3	770	24.4	4	-	-	8	15	8	18	19	2	18		
	8																		
Total=							21	X/0	X/18	25	29	14	40	25	19	38	Mean Neonates/Female =	22.9	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-UNIV-029 Test Date: 5/30/19
 Project #: 30314 Test ID: 84000 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
50%	0	8.12		6.8		1091	24.8	0	0	0	0	0	0	0	0	0	0	0	
	1	8.18	8.04	9.1	7.3	1079	24.1	0	0	0	0	0	0	0	0	0	0	0	
	2	8.22	8.34	8.8	8.0	1065	24.2	0	0	0	0	0	0	0	0	0	0	0	
	3	8.17	8.25	8.6	8.0	1085	24.0	0	0	0	0	0	0	0	0	0	0	0	
	4	8.20	8.32	8.8	8.0	1067	25.0	3	6	6	7	6	5	0	6	6	8		
	5	8.23	8.34	9.1	7.9	1065	24.9	0	12	7	10	0	12	4	12	0	0		
	6	8.26	8.32	8.9	7.0	1081	24.8	13	0	0	0	12	0	-	10	10	13		
	7	-	8.45	-	7.9	1141	25.2	22	21	20	13	25	23	-	23	10	24		
	8																		
Total=							38	39	33	30	43	40	40	39	26	45	Mean Neonates/Female = 33.3		
100%	0	8.22		8.1		1777	24.8	0	0	0	0	0	0	0	0	0	0	0	
	1	8.22	7.93	9.4	8.1	1741	24.1	0	0	0	0	0	0	0	0	0	0	0	
	2	8.22	8.46	9.1	8.1	1755	24.4	0	0	0	0	0	0	0	0	0	0	0	
	3	8.22	8.43	8.7	8.0	1754	24.2	0	0	0	0	0	0	0	0	0	0	0	
	4	8.23	8.49	9.1	8.0	1734	25.0	4	3	4	7	8	0	4	4	6	3		
	5	8.24	8.52	9.5	7.8	1749	24.9	0	0	10	12	14	0	8	10	13	14		
	6	8.24	8.49	9.4	7.1	1780	24.7	11	0	0	0	0	10	0	0	0	0		
	7	-	8.66	-	7.0	1860	25.3	21	10	0	23	6	26	1	23	16	22		
	8																		
Total=							36	13	14	42	28	36	13	37	35	39	Mean Neonates/Female = 28.3		

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-UNIV- Test Date: 5/30/19
 Project #: 30314 Test ID: 84000 Randomization: 10.7.3 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)											SIGN-OFF				
	New	Old	New	Old																	
0	PH24		RD11		EC14	40A													Date: 5/30/19	New WQ: SAT -	Old WQ:
1	PH24	PH24	RD10	RD10	EC10	93A													Date: 5/31/19	New WQ: TA	Old WQ: TA
2	PH15	PH26	RD13	RD10	EC10	97A													Date: 6/1/19	New WQ: SR	Old WQ: TP
3	PH24	PH25	RD13	RD10	EC10	20A													Date: 6/2/19	New WQ: KR	Old WQ: NN
4	PH24	PH24	RD10	RD10	EC10	111A													Date: 6/3/19	New WQ: TP	Old WQ: 5/73
5	PH26	PH25	RD11	RD13	EC11	105A													Date: 6/4/19	New WQ: JKR	Old WQ: 79
6	PH24	PH26	RD12	RD13	EC11	59A													Date: 6/5/19	New WQ: KR	Old WQ: 32
7	-	PH24	-	RD11	EC11	111A													Date: 6/6/19	New WQ: -	Old WQ: JKR
8																			Date:	New WQ:	Old WQ:

CETIS Summary Report

Report Date: 15 Jun-19 09:28 (p 1 of 2)
 Test Code: 84001 | 10-5346-7983

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 04-3245-3526	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 30 May-19 13:34	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Jun-19 14:19	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d 1h	Source: In-House Culture	Age: 1

Sample ID: 10-9422-2778	Code: 73-ADOLF-067	Client: Larry Walker Associates
Sample Date: 29 May-19 14:45	Material: Ambient Water	Project: 30314
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek	
Sample Age: 23h (24.2 °C)	Station: ADOLF	

Comments:
 Stats exclude outlier LWC F

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
16-9276-6811	Reproduction	Bonferroni Adj t Test	100	> 100	n/a	1	18.5%
09-4500-4474	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
02-6030-0880	Reproduction	Linear Interpolation (ICPIN)	IC5	1.67	1.25	3.52	59.76	
			IC10	3.35	2.51	7.14	29.88	
			IC15	5.02	3.76	n/a	19.92	
			IC20	9.03	5.02	n/a	11.08	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	36.9	34.4	39.4	30	41	1.09	3.26	8.83%	0.00%
6.25		10	30	25.8	34.2	20	38	1.85	5.85	19.50%	18.67%
12.5		10	22.9	17.5	28.3	10	30	2.37	7.49	32.71%	37.92%
25		10	26.7	22.7	30.7	19	39	1.78	5.62	21.04%	27.62%
50		10	30.7	26.3	35.1	21	41	1.96	6.2	20.20%	16.78%
100		10	35.3	30	40.6	21	43	2.35	7.42	21.03%	4.31%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%

Analyst:  QA: 

CETIS Summary Report

Report Date:

15 Jun-19 09:28 (p 2 of 2)

Test Code:

84001 | 10-5346-7983

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	36	40	35	41	39		36	37	30	38
6.25		31	20	31	35	20	31	30	30	34	38
12.5		19	25	30	29	10	27	26	10	29	24
25		24	22	27	23	30	26	39	26	19	31
50		33	21	29	41	21	34	35	32	28	33
100		40	35	43	42	34	26	39	31	21	42
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 15 Jun-19 09:28 (p 1 of 1)
 Test Code: 84001 | 10-5346-7983

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk			
Analysis ID: 09-4500-4474	Endpoint: Survival	CETIS Version: CETISv1.9.2		Official Results: Yes		
Analyzed: 15 Jun-19 9:27	Analysis: STP 2xK Contingency Tables					
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	
Untransformed	C > T	100	> 100	n/a	1	

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	9	1	10	0.9	0.1	0.0%
6.25		10	0	10	1	0	-11.1%
12.5		10	0	10	1	0	-11.1%
25		10	0	10	1	0	-11.1%
50		10	0	10	1	0	-11.1%
100		10	0	10	1	0	-11.1%



CETIS Analytical Report

Report Date: 15 Jun-19 09:28 (p 1 of 1)
 Test Code: 84001 | 10-5346-7983

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 16-9276-6811 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 9:27 Analysis: Parametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	18.46%

Bonferroni Adj t Test

Control	vs	Control II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25*	2.43	2.4	6.81	17	CDF	0.0467	Significant Effect
		12.5*	4.93	2.4	6.81	17	CDF	2.1E-05	Significant Effect
		25*	3.59	2.4	6.81	17	CDF	0.0018	Significant Effect
		50	2.18	2.4	6.81	17	CDF	0.0844	Non-Significant Effect
		100	0.56	2.4	6.81	17	CDF	1.0000	Non-Significant Effect

ANOVA Table

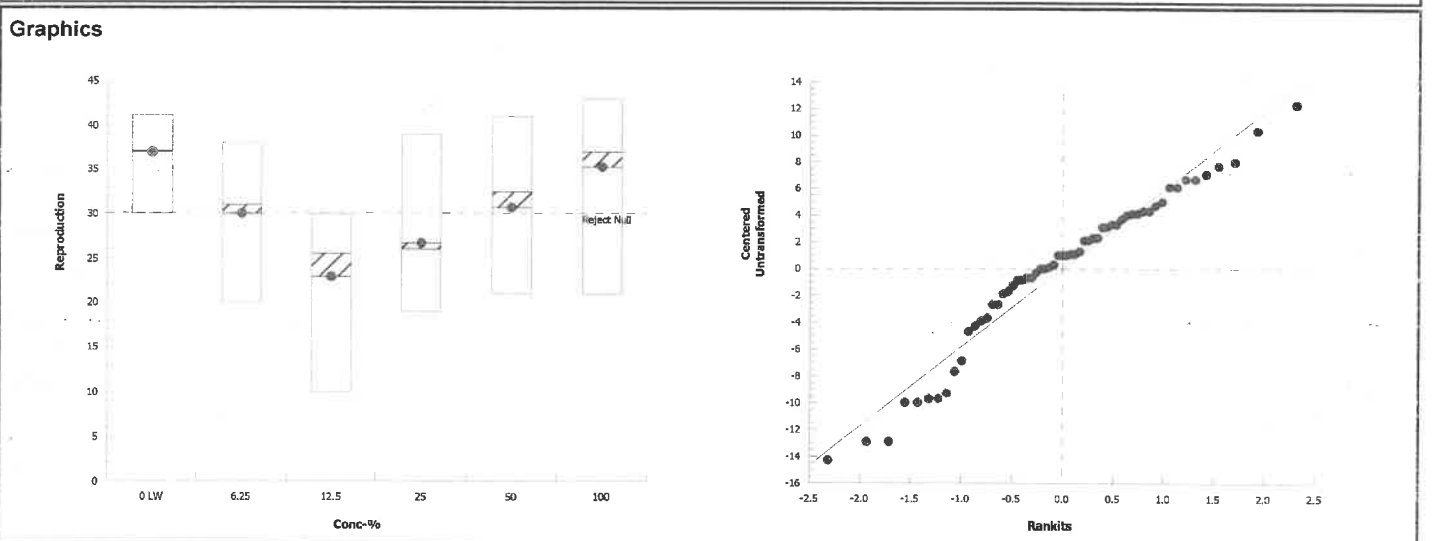
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1320.42	264.084	5	6.91	4.9E-05	Significant Effect
Error	2024.09	38.1904	53			
Total	3344.51		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	5.86	15.1	0.3198	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.958	0.945	0.0416	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	9	36.9	34.4	39.4	37	30	41	1.09	8.83%	0.00%
6.25		10	30	25.8	34.2	31	20	38	1.85	19.50%	18.67%
12.5		10	22.9	17.5	28.3	25.5	10	30	2.37	32.71%	37.92%
25		10	26.7	22.7	30.7	26	19	39	1.78	21.04%	27.62%
50		10	30.7	26.3	35.1	32.5	21	41	1.96	20.20%	16.78%
100		10	35.3	30	40.6	37	21	43	2.35	21.03%	4.31%



CETIS Analytical Report

Report Date: 15 Jun-19 09:28 (p 1 of 1)
 Test Code: 84001 | 10-5346-7983

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 02-6030-0880 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 9:27 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options

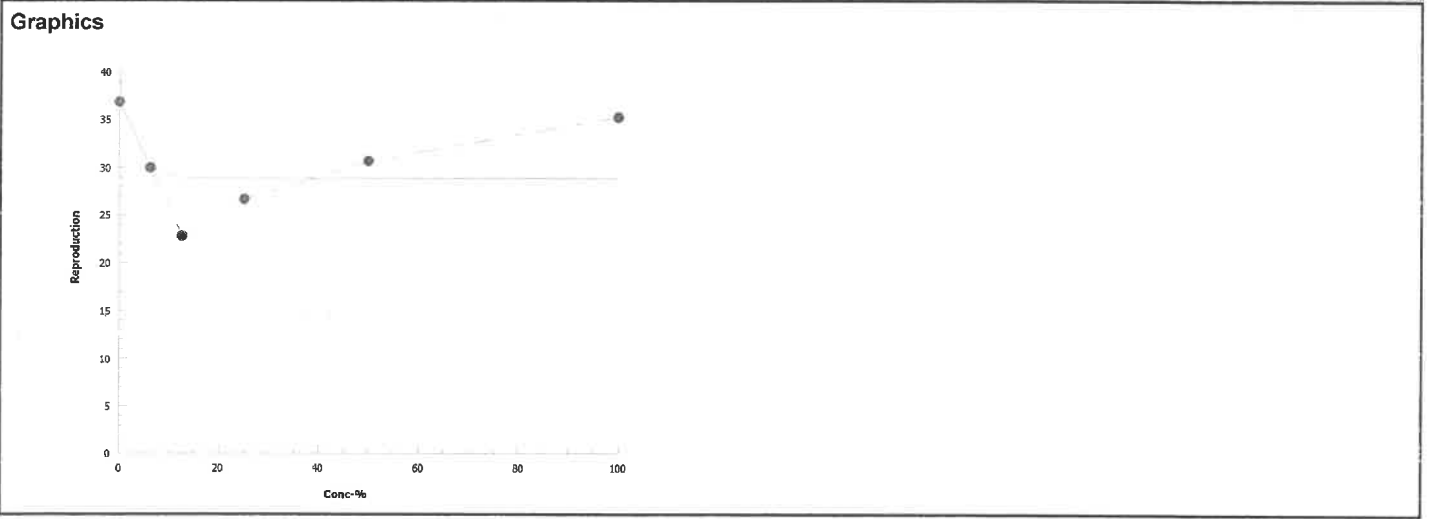
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	659282	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	1.67	1.25	3.52	59.76	28.42	79.72
IC10	3.35	2.51	7.14	29.88	14	39.86
IC15	5.02	3.76	n/a	19.92	n/a	26.57
IC20	9.03	5.02	n/a	11.08	n/a	19.93
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary **Calculated Variate**

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	36.9	30	41	1.09	3.26	8.83%	0.0%
6.25		10	30	20	38	1.85	5.85	19.50%	18.7%
12.5		10	22.9	10	30	2.37	7.49	32.70%	37.9%
25		10	26.7	19	39	1.78	5.62	21.00%	27.6%
50		10	30.7	21	41	1.96	6.2	20.20%	16.8%
100		10	35.3	21	43	2.35	7.42	21.00%	4.31%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-ADOLF-067 Test Date: 5/30/19
 Project #: 30314 Test ID: 84001 Randomization: 1077 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF			
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J				
0	7.79		6.8		358	24.2	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/30/19 New WQ: SAT Test Init. [initials] Sol'n Prep: ER Time: 1334	
1	8.01	7.63	8.9	7.5	356	24.6	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/31/19 New WQ: TA Counts: 32 Sol'n Prep: JL Old WQ: TA Time: 1101	
2	8.08	8.27	8.8	6.7 8.5	363	24.7	0	0	0	0	0	0	0	0	0	0	0	0	Date: 6/1/19 New WQ: TP Counts: 20 Sol'n Prep: JL Old WQ: JR Time: 1042	
3	7.97	7.85	8.4	7.4	357	24.3	0	0	0	0	0	0	0	0	0	0	0	0	Date: 4/4/19 New WQ: KP Counts: KL Sol'n Prep: [initials] Old WQ: [initials] Time: 1350	
4	8.02	7.97	8.5	7.4	353	24.4	6	7	5	7	5	1/5	4	6	7	6	6	6	Date: 6/1/19 New WQ: [initials] Counts: 61 Sol'n Prep: [initials] Old WQ: [initials] Time: 1432	
5	8.11	7.80	9.4	7.2	353	24.2	0	12	0	0	0	-	0	0	0	0	0	0	Date: 6/1/19 New WQ: JR Counts: 60 Sol'n Prep: [initials] Old WQ: [initials] Time: 1300	
6	7.98	8.0	8.0	7.6	354	24.4	13	0	12	14	15	-	12	12	11	15	15	15	Date: 6/5/19 New WQ: KL Counts: KL Sol'n Prep: KL Old WQ: JR Time: 1540	
7	-	8.03	-	7.7	375	25.1	17	21	18	20	19	-	20	19	12	17	17	17	Date: 6/16/19 New WQ: [initials] Counts: 26 Sol'n Prep: [initials] Old WQ: [initials] Time: 146	
8																			Date: [initials] Old WQ: [initials] Counts: [initials] Time: [initials]	
Total=							36	40	35	41	39	1/5	36	37	30	38	38	38	38	Mean Neonates/Female = 33.7
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID			
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J				
0	7.84		7.3		419	24.3	0	0	0	0	0	0	0	0	0	0	0	0	53055	
1	8.09	7.72	9.0	7.6	424	24.6	0	0	0	0	0	0	0	0	0	0	0	0	53055	
2	8.20	8.23	8.9	7.6 8.7	415	24.7	0	0	0	0	0	0	0	0	0	0	0	0	53055	
3	8.06	7.90	8.5	7.2	416	24.5	0	0	0	0	0	0	0	0	0	0	0	0	53055	
4	8.12	8.00	8.5	7.5	411	24.3	0	0	0	0	0	0	0	0	2	0	0	0	53055	
5	8.18	7.88	9.2	7.3	411	24.2	0	0	0	15	0	11	10	0	0	7	7	7	53055	
6	8.13	8.15	8.2	7.3	417	24.3	12	0	12	0	0	0	0	11	15	14	14	14	53055	
7	-	8.12	-	7.0	415	25.0	19	20	19	20	20	20	20	19	17	17	17	17	-	
8																				
Total=							31	20	31	35	20	31	30	30	34	38	38	38	38	Mean Neonates/Female = 30.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-ADOLF-067 Test Date: 5/30/19
 Project #: 30314 Test ID: 84001 Control Water: Mod I:PAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
0	7.96		7.4		482	24.0	0	0	0	0	0	0	0	0	0	0	
1	8.13	7.71	9.1	7.5	480	24.6	0	0	0	0	0	0	0	0	0	0	
2	8.28	8.18	9.0	6.8	478	24.8	0	0	0	0	0	0	0	0	0	0	
3	8.09	7.95	8.5	7.2	477	24.6	0	0	0	0	0	0	0	0	0	0	
4	8.19	8.03	8.6	7.5	478	24.7	4	0	0	0	0	0	0	0	0	0	
5	8.29	7.96	9.1	7.4	475	24.1	0	0	14	0	10	0	10	8	0	0	
6	8.23	8.19	8.4	7.5	478	24.1	0	8	0	14	0	11	0	0	14	13	
7	-	8.21	-	7.8	507	25.1	15	17	16	15	0	16	16	2	15	11	
8																	
Total=							19	25	30	29	10	27	26	10	29	24	Mean Neonates/Female = <u>20.2</u>

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
0	8.10		7.4		662	24.6	0	0	0	0	0	0	0	0	0	0	
1	8.24	7.78	9.3	7.4	589	24.6	0	0	0	0	0	0	0	0	0	0	
2	8.40	8.29	9.2	7.8	586	25.0	0	0	0	0	0	0	0	0	0	0	
3	8.25	7.96	8.7	7.4	592	24.6	0	0	0	0	0	0	0	0	0	0	
4	8.25	8.18	8.6	8.0	577	24.7	0	0	0	6	0	0	7	0	4	0	
5	8.38	8.09	9.3	7.6	579	24.3	0	2	11	0	11	9	12	10	0	0	
6	8.34	8.24	8.6	7.6	582	24.5	7	0	0	0	0	0	0	0	0	13	
7	-	8.20	-	7.8	615	25.1	17	20	16	17	19	17	20	16	15	18	
8																	
Total=							24	22	27	23	30	26	39	26	19	24	Mean Neonates/Female = <u>25.7</u>

APC 6/14/19
22.9

31
APC
6/14/19

APC
6/14/19

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-ADOLF-067 Test Date: 5/20/19
 Project #: 30314 Test ID: 84001 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
0	8.29		7.9		826	24.8	0	0	0	0	0	0	0	0	0	0	
1	8.36	7.93	7.5	7.6	808	24.6	0	0	0	0	0	0	0	0	0	0	
2	8.53	8.34	9.6	8.1	811	24.4	0	0	0	0	0	0	0	0	0	0	
3	8.42	8.15	9.1	7.7	798	24.4	0	0	0	0	0	0	0	0	0	0	
4	8.38	8.23	8.7	8.1	798	24.2	0	0	0	7	0	3	4	7	0	0	
5	8.49	8.24	9.6	8.0	804	24.3	0	0	0	14	0	0	0	13	0	0	
6	8.46	8.35	8.9	7.8	806	24.2	13	0	12	0	0	14	13	0	11	13	
7	—	8.37	—	7.6	872	25.1	20	21	17	20	21	17	18	12	17	20	
8																	
Total=							33	21	29	41	21	34	35	32	28	33	Mean Neonates/Female = 30.7
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
0	8.47		8.6		1255	24.3	0	0	0	0	0	0	0	0	0	0	
1	8.47	8.05	10.4	6.8	1241	24.5	0	0	0	0	0	0	0	0	0	0	
2	8.62	8.41	10.5	7.8	1242	24.6	0	0	0	0	0	0	0	0	0	0	
3	8.52	8.29	10.0	7.6	1233	24.5	0	0	0	0	0	0	0	0	0	0	
4	8.52	8.39	9.1	8.1	1227	24.6	6	6	7	7	4	0	0	0	0	6	
5	8.63	8.38	9.7	7.9	1271	24.2	0	9	13	14	0	0	16	0	0	0	
6	8.57	8.48	10.2	7.9	1249	24.2	13	0	0	0	14	0	14	4	15		
7	—	8.39	—	7.8	1310	25.1	21	20	23	21	16	22	23	17	17	21	
8																	
Total=							40	35	43	42	36	26	39	31	21	42	Mean Neonates/Female = 35.5 36.3

34/110
 34
 APF
 6/14/19
 26
 6/16/19

CETIS Summary Report

Report Date: 05 Jul-19 14:08 (p 1 of 2)
 Test Code: 84002 | 18-8068-1800

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 06-4446-1663	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 30 May-19 13:44	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Jun-19 13:35	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d	Source: In-House Culture	Age: 1

Sample ID: 17-2370-1603	Code: 73-HITCH-164	Client: Larry Walker Associates
Sample Date: 29 May-19 09:10	Material: Ambient Water	Project: 30314
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek	
Sample Age: 29h (1.4 °C)	Station: HITCH	

Comments:
 Stats exclude 6.25E and 25J

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
07-6165-5856	Reproduction	Wilcoxon/Bonferroni Adj Test	100	> 100	n/a	1	19.1%
05-8710-8139	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
09-5239-4891	Reproduction	Linear Interpolation (ICPIN)	IC5	9.63	7.14	26.2	10.38	
			IC10	15.3	10	n/a	6.541	
			IC15	35.7	12.3	n/a	2.799	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	36.8	33.9	39.7	31	43	1.26	3.99	10.85%	0.00%
6.25		9	38.8	36.2	41.4	34	43	1.13	3.38	8.72%	-5.37%
12.5		10	34.3	30.9	37.7	25	42	1.49	4.72	13.75%	6.79%
25		9	33	30.1	35.9	28	40	1.26	3.77	11.44%	10.33%
50		10	26.8	18.1	35.5	0	38	3.84	12.1	45.32%	27.17%
100		10	35.1	30.6	39.6	23	45	1.97	6.24	17.79%	4.62%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 05 Jul-19 14:08 (p 2 of 2)
 Test Code: 84002 | 18-8068-1800

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	34	31	43	41	40	36	38	31	37	37
6.25		35	38	40	34		43	37	37	43	42
12.5		25	31	31	34	36	37	39	42	34	34
25		40	34	35	35	35	28	30	30	30	
50		33	18	38	32	38	32	0	17	36	24
100		41	36	33	36	39	28	23	35	45	35
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

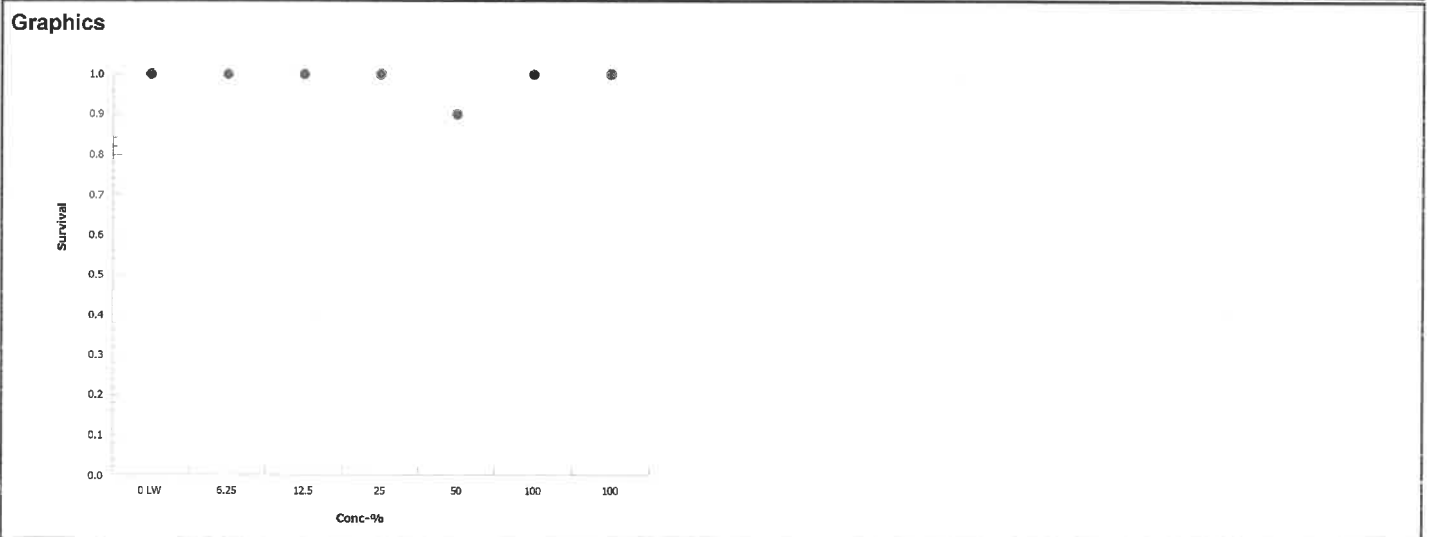
CETIS Analytical Report

Report Date: 15 Jun-19 10:39 (p 1 of 1)
 Test Code: 84002 | 18-8068-1800

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk	
Analysis ID: 05-8710-8139	Endpoint: Survival	CETIS Version: CETISv1.9.2			
Analyzed: 15 Jun-19 10:39	Analysis: STP 2xK Contingency Tables	Official Results: Yes			
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	0.500	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		9	1	10	0.9	0.1	10.0%
100		10	0	10	1	0	0.0%



CETIS Analytical Report

Report Date: 05 Jul-19 14:08 (p 1 of 1)
 Test Code: 84002 | 18-8068-1800

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 07-6165-5856 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 05 Jul-19 14:06 Analysis: Nonparametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	19.09%

Wilcoxon/Bonferroni Adj Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	102	n/a	5	17	Exact	1.0000	Non-Significant Effect
		12.5	89	n/a	4	18	Exact	0.5889	Non-Significant Effect
		25	64	n/a	2	17	Exact	0.0800	Non-Significant Effect
		50	77.5	n/a	2	18	Exact	0.0930	Non-Significant Effect
		100	95.5	n/a	2	18	Exact	1.0000	Non-Significant Effect

ANOVA Table

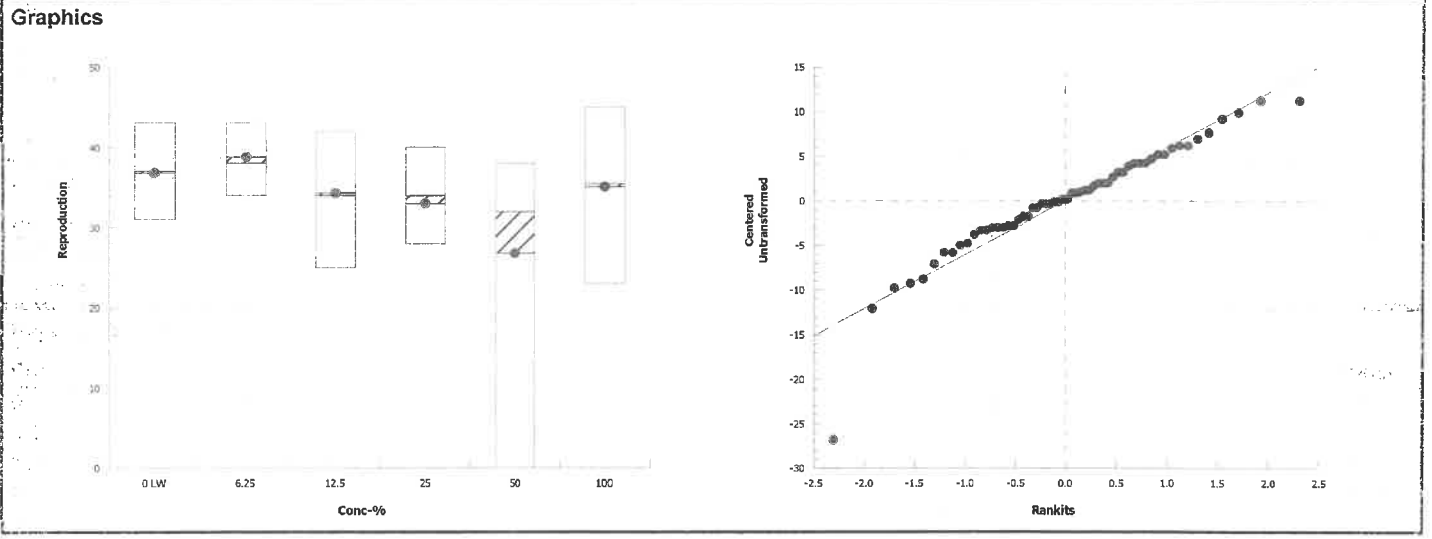
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	823.969	164.794	5	3.85	0.0049	Significant Effect
Error	2227.76	42.8415	52			
Total	3051.72		57			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	22.9	15.1	3.6E-04	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.919	0.944	8.6E-04	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	36.8	33.9	39.7	37	31	43	1.26	10.85%	0.00%
6.25		9	38.8	36.2	41.4	38	34	43	1.13	8.72%	-5.37%
12.5		10	34.3	30.9	37.7	34	25	42	1.49	13.75%	6.79%
25		9	33	30.1	35.9	34	28	40	1.26	11.44%	10.33%
50		10	26.8	18.1	35.5	32	0	38	3.84	45.32%	27.17%
100		10	35.1	30.6	39.6	35.5	23	45	1.97	17.79%	4.62%



CETIS Analytical Report

Report Date: 05 Jul-19 14:08 (p 1 of 1)
 Test Code: 84002 | 18-8068-1800

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 09-5239-4891 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 05 Jul-19 14:07 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1416390	200	Yes	Two-Point Interpolation

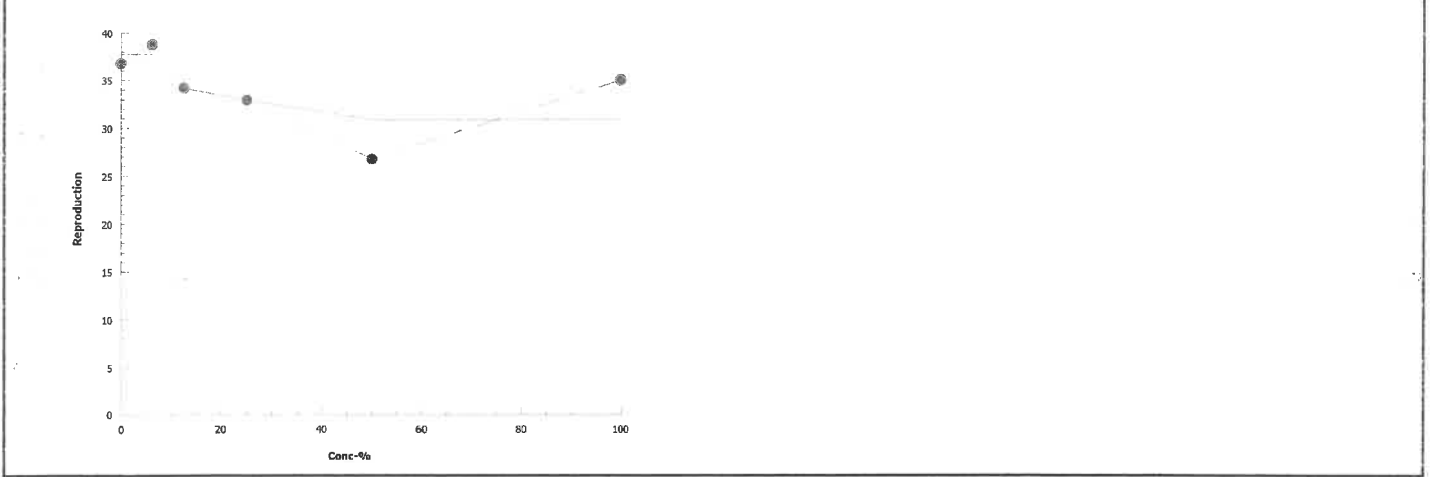
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	9.63	7.14	26.2	10.38	3.818	14.01
IC10	15.3	10	n/a	6.541	n/a	9.958
IC15	35.7	12.3	n/a	2.799	n/a	8.16
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary **Calculated Variate**

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	36.8	31	43	1.26	3.99	10.90%	0.0%
6.25		9	38.8	34	43	1.13	3.38	8.72%	-5.37%
12.5		10	34.3	25	42	1.49	4.72	13.70%	6.79%
25		9	33	28	40	1.26	3.77	11.40%	10.3%
50		10	26.8	0	38	3.84	12.1	45.30%	27.2%
100		10	35.1	23	45	1.97	6.24	17.80%	4.62%

Graphics



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-HITCH-164 Test Date: 5/30/19
 Project #: 30314 Test ID: 84002 Randomization: 10.7.1 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	8.00		8.2		377	25.1	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/29/19 New WQ: AR Test Init: SMC Sol'n Prep: ER Time: 1344
1	8.03	7.52	8.7	7.2	359	24.4	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/31/19 New WQ: TA Counts: 2L Sol'n Prep: SL Old WQ: TA Time: 1040
2	8.08	8.03	8.8	7.4	361	25.3	0	0	0	0	0	0	0	0	0	0	0	0	Date: 6/1/19 New WQ: JR Counts: 26 Sol'n Prep: JR Old WQ: TP Time: 1116
3	7.91	7.83	8.1	7.1	358	24.5	0	0	0	0	0	0	0	0	0	0	0	0	Date: 6/2/19 New WQ: KP Counts: 6L Sol'n Prep: KP Old WQ: SP Time: 1415
4	8.11	7.7	8.4	7.2	352	24.4	5	4	5	5	6	6	7	5	6	5			Date: 6/3/19 New WQ: PR Counts: 12L Sol'n Prep: PR Old WQ: SP Time: 1245
5	8.14	8.10	9.2	7.8	353	25.2	13	8	18	15	13	12	12	13	12	12			Date: 6/4/19 New WQ: JR Counts: 26 Sol'n Prep: JR Old WQ: JR Time: 1345
6	8.11	8.00	8.5	6.9	351	24.1	0	0	0	21	0	0	1	0	0	0			Date: 6/5/19 New WQ: JR Counts: 12L Sol'n Prep: JR Old WQ: JR Time: 1350
7	—	8.16	—	8.2	369	24.4	18	16	20	0	21	18	18	13	19	20			Date: 6/16/19 New WQ: — Counts: 16 Sol'n Prep: — Old WQ: SMC Time: 1335
8																			Date: Old WQ: Counts: Time:
Total=							34	31	43	41	39	33	38	31	37	37			Mean Neonates/Female = 316.8
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	8.05		8.8		453	24.6	0	0	0	0	0	0	0	0	0	0	0	0	53057
1	8.06	7.63	8.9	7.5	457	24.4	0	0	0	0	0	0	0	0	0	0	0	0	53057
2	8.10	8.11	8.8	7.5	452	25.1	0	0	0	0	0	0	0	0	0	0	0	0	53057
3	7.97	7.88	8.3	7.3	453	24.7	0	0	0	0	0	0	0	0	0	0	0	0	53057
4	8.12	7.91	8.3	7.5	450	24.6	4	4	5	4	5	7	6	6	7	7			53057
5	8.13	8.17	9.2	7.7	451	25.3	11	13	13	11	2	14	13	11	14	14			53057
6	8.13	8.09	8.5	7.2	451	24.3	0	0	1	19	0	0	0	0	0	0			53057
7	—	8.20	—	8.3	470	24.6	20	21	21	0	13	22	18	20	22	21			—
8																			
Total=							35	38	40	34	20	43	37	37	43	42			Mean Neonates/Female = 316.9

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-HITCH-164 Test Date: 5/30/19
 Project #: 30314 Test ID: 84002 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
12.5%	0	8.08		8.9		555	24.9	0	0	0	0	0	0	0	0	0	0	0	
	1	8.06	7.68	9.0	7.5	554	24.5	0	0	0	0	0	0	0	0	0	0	0	
	2	8.10	8.11	8.8	7.4	547	25.0	0	0	0	0	0	0	0	0	0	0	0	
	3	8.00	8.03	8.4	7.6	550	24.7	0	0	0	0	0	0	0	0	0	0	0	
	4	8.13	8.04	8.3	7.7	551	24.6	4	4	2	4	6	6	7	6	6	5		
	5	8.12	8.16	9.4	7.8	544	25.1	4	10	10	11	11	11	15	14	12	11		
	6	8.14	8.15	8.6	7.2	553	24.0	0	0	0	19	0	0	0	0	0	0		
	7	—	8.22	—	8.4	573	24.7	17	17	19	0	19	20	17	22	16	18		
	8																		
Total=							25	31	31	34	36	37	39	42	34	34	Mean Neonates/Female = 34.3		
25%	0	8.09		8.9		741	25.4	0	0	0	0	0	0	0	0	0	0	0	
	1	8.07	7.77	9.3	7.5	729	24.5	0	0	0	0	0	0	0	0	0	0	0	
	2	8.09	8.24	9.0	8.0	726	24.8	0	0	0	0	0	0	0	0	0	0	0	
	3	8.00	8.08	8.6	7.9	735	24.8	0	0	0	0	0	0	0	0	0	0	0	
	4	8.10	8.12	8.4	7.9	722	24.5	6	4	3	5	6	3	6	4	6	0		
	5	8.10	8.25	9.4	7.7	716	25.0	15	15	13	16	13	13	8	10	9	8		
	6	8.14	8.25	8.6	7.4	712	24.1	0	0	0	0	0	0	0	0	0	0		
	7	—	8.28	—	8.2	740	24.5	19	15	19	14	16	12	16	16	15	7		
	8																		
Total=							40	34	35	35	35	28	30	30	30	15	Mean Neonates/Female = 31.2		

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-HITCH-164 Test Date: 5/30/19

Project #: 30314 Test ID: 84002 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	8.10		9.1		1086	25.4	0	0	0	0	0	0	0	0	0	0	0	
1	8.04	7.89	9.5	7.5	1074	24.5	0	0	0	0	0	0	0	0	0	0	0	
2	8.06	8.33	9.1	7.7	1066	24.4	0	0	0	0	0	0	0	0	0	0	0	
3	8.04	8.21	8.7	8.0	1072	24.8	0	0	0	0	0	0	0	0	0	0	0	
4	8.09	8.29	7.0	7.9	1071	24.8	4	0	6	3	5	6	-	5	5	0		
5	8.07	8.34	9.8	7.7	1053	25.2	11	0	14	12	13	12	-	12	13	12		
6	8.12	8.34	9.1	7.4	1050	24.2	0	0	0	17	0	0	-	0	0	0		
7	-	8.37	-	8.3	1099	24.6	18	18	18	0	20	14	-	0	18	12		
8													-					
Total=							33	15	35	32	38	32	0	17	36	24	Mean Neonates/Female = 26.8	
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	8.09		9.5		1730	24.9	0	0	0	0	0	0	0	0	0	0	0	
1	8.01	8.15	9.8	7.4	1767	24.5	0	0	0	0	0	0	0	0	0	0	0	
2	8.00	8.45	9.9	8.0	1716	25.1	0	0	0	0	0	0	0	0	0	0	0	
3	8.02	8.37	9.6	8.1	1713	24.5	0	0	0	0	0	0	0	0	0	0	0	
4	8.09	8.44	8.6	7.9	1678	24.5	6	6	7	6	8	7	4	5	8	0		
5	8.01	8.48	10.3	7.5	1714	25.1	11	11	9	11	12	0	12	12	15	14		
6	8.04	8.47	9.8	7.5	1706	24.0	1	0	0	0	0	0	0	0	0	0		
7	-	8.51	-	8.1	1762	24.6	23	19	17	19	19	21	7	18	22	21		
8																		
Total=							41	30	33	30	39	28	23	35	45	35	Mean Neonates/Female = 35.1	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-HITCH- Test Date: 5/30/19
 Project #: 30314 Test ID: 84002 Randomization: 107.1 Control Water: Mod EPAMH

Meter ID's	Day	pH		D.O.		Cond (µS/cm)	Temp (°C)											SIGN-OFF					
		New	Old	New	Old																Date:	New WQ:	Old WQ:
	0	PH26		RD10		EC10	12A														Date:	New WQ:	Old WQ:
	1	PH24	PH24	RD10	RD10	EC10	93A														Date:	New WQ:	Old WQ:
	2	PH15	PH26	RD13	RD10	EC10	105A														Date:	New WQ:	Old WQ:
	3	PH24	PH24	RD13	RD13	EC10	97A														Date:	New WQ:	Old WQ:
	4	PH26	PH25	RD11	RD11	EC11	59A														Date:	New WQ:	Old WQ:
	5	PH26	PH26	RD11	RD11	EC11	105A														Date:	New WQ:	Old WQ:
	6	PH24	PH24	RD12	RD12	EC11	59A														Date:	New WQ:	Old WQ:
	7	—	PH24	—	RD10	EC10	48A														Date:	New WQ:	Old WQ:
	8																				Date:	New WQ:	Old WQ:

CETIS Summary Report

Report Date: 15 Jun-19 11:00 (p 1 of 2)
 Test Code: 30314 | 03-1797-0554

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 13-5756-1761	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 30 May-19 13:13	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Jun-19 13:42	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age: 1

Sample ID: 17-3139-5963	Code: 73-GATE-211	Client: Larry Walker Associates
Sample Date: 29 May-19 11:30	Material: Ambient Water	Project: 30314
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek	
Sample Age: 26h (1.6 °C)	Station: GATE	

Comments:
 Stats exclude 25C

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
00-4450-8614	Reproduction	Bonferroni Adj t Test	100	> 100	n/a	1	22.9%
16-0509-4870	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
11-2522-3128	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1	
			IC10	>100	n/a	n/a	<1	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.2	24.7	35.7	19	40	2.43	7.69	25.45%	0.00%
6.25		10	29.5	25	34	21	40	2.01	6.35	21.51%	2.32%
12.5		10	35.1	31.7	38.5	24	42	1.5	4.75	13.53%	-16.23%
25		9	32.8	29.9	35.7	28	38	1.26	3.77	11.49%	-8.54%
50		10	31.2	27.1	35.3	19	40	1.79	5.67	18.18%	-3.31%
100		10	30.8	24.5	37.1	12	41	2.8	8.84	28.71%	-1.99%

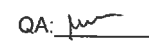
Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 15 Jun-19 11:00 (p 2 of 2)
 Test Code: 30314 | 03-1797-0554

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	26	31	36	37	19	34	19	40	36	24
6.25		22	40	23	28	21	35	35	32	32	27
12.5		36	33	24	42	39	34	38	34	36	35
25		31	38		36	29	32	38	33	30	28
50		35	32	29	33	40	35	27	19	33	29
100		41	35	30	37	40	23	35	26	12	29
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Analyst:  QA: 

CETIS Analytical Report

Report Date: 15 Jun-19 11:00 (p 1 of 1)
 Test Code: 30314 | 03-1797-0554

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 16-0509-4870 Endpoint: Survival CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 10:59 Analysis: STP 2xK Contingency Tables Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1



Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	0.500	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		9	1	10	0.9	0.1	10.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



Analyst:  QA: 

CETIS Analytical Report

Report Date: 15 Jun-19 11:00 (p 1 of 1)
 Test Code: 30314 | 03-1797-0554

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 00-4450-8614 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 11:00 Analysis: Parametric-Multiple Comparison Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	22.91%

Bonferroni Adj t Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	0.243	2.4	6.92	18	CDF	1.0000	Non-Significant Effect
		12.5	-1.7	2.4	6.92	18	CDF	1.0000	Non-Significant Effect
		25	-0.87	2.4	7.11	17	CDF	1.0000	Non-Significant Effect
		50	-0.347	2.4	6.92	18	CDF	1.0000	Non-Significant Effect
		100	-0.208	2.4	6.92	18	CDF	1.0000	Non-Significant Effect

ANOVA Table

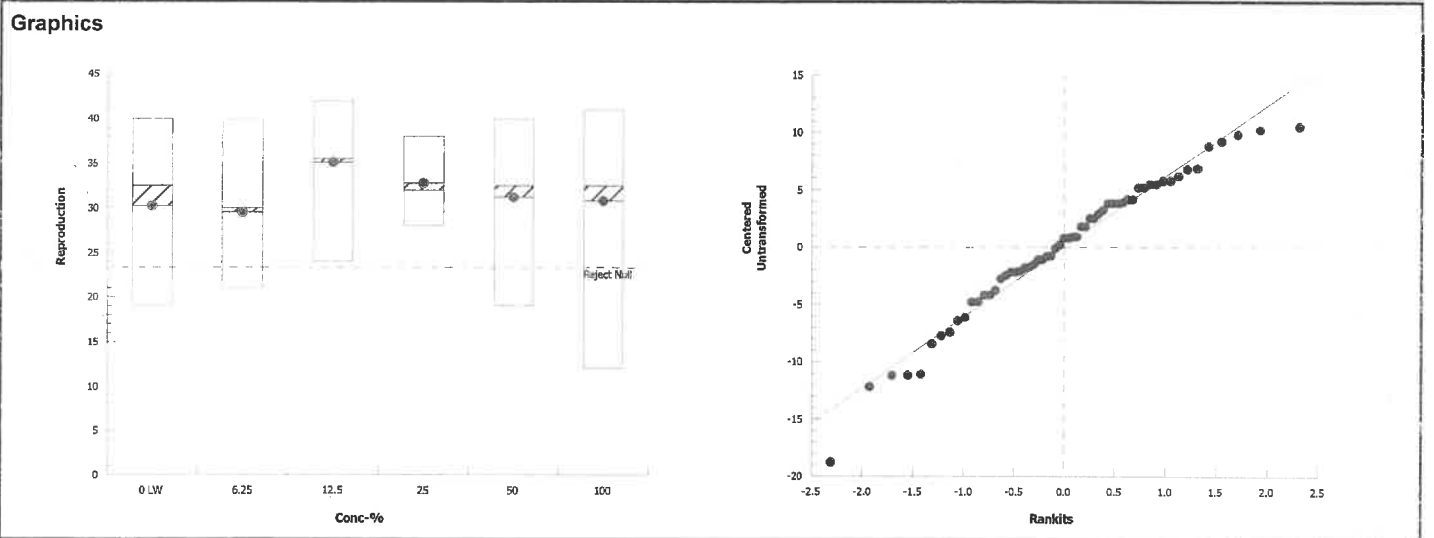
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	206.651	41.3302	5	0.994	0.4304	Non-Significant Effect
Error	2203.76	41.5803	53			
Total	2410.41		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	7.53	15.1	0.1843	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.97	0.945	0.1474	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30.2	24.7	35.7	32.5	19	40	2.43	25.45%	0.00%
6.25		10	29.5	25	34	30	21	40	2.01	21.51%	2.32%
12.5		10	35.1	31.7	38.5	35.5	24	42	1.5	13.53%	-16.23%
25		9	32.8	29.9	35.7	32	28	38	1.26	11.49%	-8.54%
50		10	31.2	27.1	35.3	32.5	19	40	1.79	18.18%	-3.31%
100		10	30.8	24.5	37.1	32.5	12	41	2.8	28.71%	-1.99%



CETIS Analytical Report

Report Date: 15 Jun-19 11:00 (p 1 of 1)
 Test Code: 30314 | 03-1797-0554

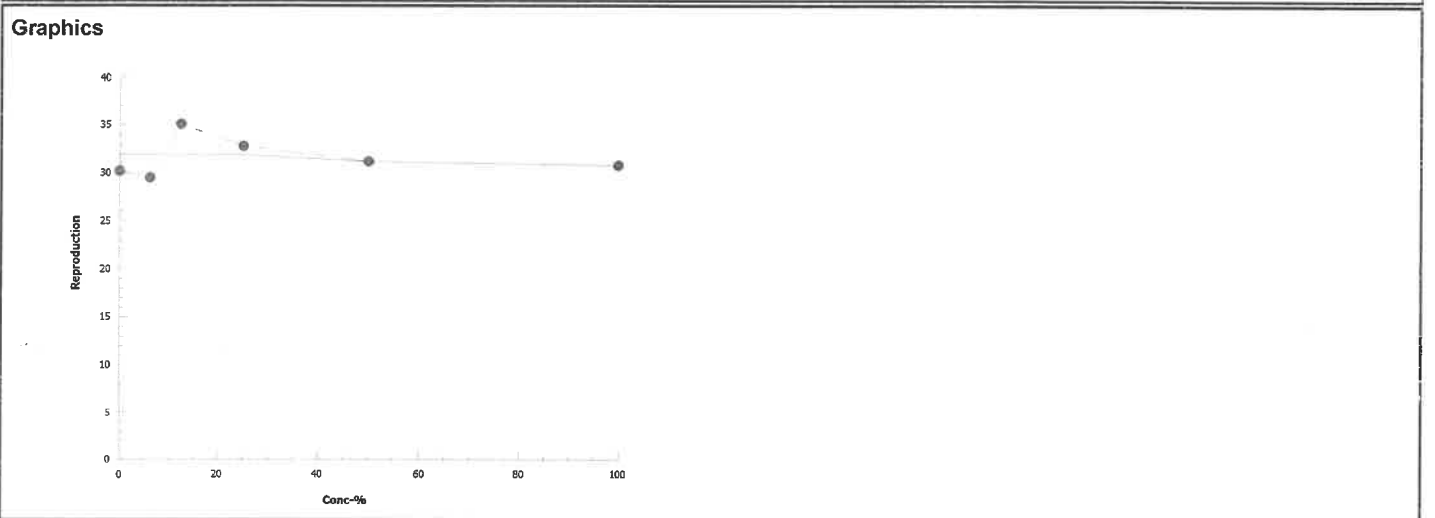
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**



Analysis ID: 11-2522-3128 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 11:00 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2068467	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.2	19	40	2.43	7.69	25.40%	0.0%
6.25		10	29.5	21	40	2.01	6.35	21.50%	2.32%
12.5		10	35.1	24	42	1.5	4.75	13.50%	-16.2%
25		9	32.8	28	38	1.26	3.77	11.50%	-8.54%
50		10	31.2	19	40	1.79	5.67	18.20%	-3.31%
100		10	30.8	12	41	2.8	8.84	28.70%	-1.99%



Analyst:  QA: 

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-GATE-211 Test Date: 5/30/19
 Project #: 30314 Test ID: 84003 Randomization: 10.7.4 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.74		6.4		362	24.9	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/29/19 New WQ: JK Test Init.: RB Sol'n Prep: ER Time: 1313
1	7.76	7.58	8.5	7.1	361	24.1	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/31/19 New WQ: TA Counts: JF Sol'n Prep: JL Old WQ: Time: 1125
2	8.14	8.02	8.8	7.0	356	25.2	0	0	0	0	0	0	0	0	0	0	0	0	Date: 6/1/19 New WQ: SP Counts: RO Sol'n Prep: JL Old WQ: TP Time: 9401
3	7.92	7.95	8.5	7.7	356	24.4	0	0	0	0	0	0	0	0	0	0	0	0	Date: 6/2/19 New WQ: KP Counts: KL Sol'n Prep: JL Old WQ: NN Time: 1310
4	7.95	7.94	8.4	7.9	373	24.3	0	4	4	5	4	5	5	6	6	5			Date: 6/3/19 New WQ: TP Counts: KL Sol'n Prep: KL Old WQ: ER Time: 1340
5	8.15	8.17	8.7	7.5	371	24.2	8	10	11	12	6	11	8	12	13	0			Date: 6/14/19 New WQ: SAT Counts: AF Sol'n Prep: KL Old WQ: MFS Time: 1420
6	8.13	8.18	8.6	7.4	353	25.3	18	17	0	0	10	0	0	0	0	0			Date: 6/15/19 New WQ: K Counts: 26 Sol'n Prep: KL Old WQ: JR Time: 1510
7	-	8.04	-	7.8	374	25.0	0	0	21	20	0	18	6	22	17	19			Date: 6/16/19 New WQ: Counts: 26 Sol'n Prep: - Old WQ: JF Time: 1342
8																			Date: Old WQ: Counts: Time:
Total=							26	31	36	37	19	34	19	40	36	24	Mean Neonates/Female = 30.2		
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.78		6.6		423	25.2	0	0	0	0	0	0	0	0	0	0	0	0	53058
1	7.79	7.74	8.7	7.3	419	24.0	0	0	0	0	0	0	0	0	0	0	0	0	53058
2	8.12	8.01	8.7	7.1	411	24.9	0	0	0	0	0	0	0	0	0	0	0	0	53058
3	7.97	7.95	8.3	7.7	411	24.6	0	0	0	0	0	0	0	0	0	0	0	0	53058
4	8.00	8.07	8.2	7.9	406	24.5	5	6	1	6	5	7	4	5	5	4			53058
5	8.10	8.14	8.6	7.6	401	24.3	0	12	4	6	0	10	10	10	9	0			53058
6	8.14	8.21	8.6	7.6	411	24.9	0	0	0	16	16	17	1	0	1	2			53058
7	-	8.12	-	7.9	434	25.1	17	22	18	0	0	1	20	17	17	21			-
8																			
Total=							22	40	23	28	21	35	35	32	32	27	Mean Neonates/Female = 29.5		

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-GATE-211 Test Date: 5/30/19
 Project #: 30314 Test ID: 84003 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.79		7.1		474	24.7	0	0	0	0	0	0	0	0	0	0	0	
1	7.81	7.75	9.0	7.4	474	24.0	0	0	0	0	0	0	0	0	0	0	0	
2	8.08	8.03	8.8	7.2	466	25.1	0	0	0	0	0	0	0	0	0	0	0	
3	7.96	7.92	8.3	7.8	469	24.6	0	0	0	0	0	0	0	0	0	0	0	
4	8.06	8.03	8.1	8.0	461	24.4	5	6	5	5	7	5	7	6	5	6		
5	8.11	8.15	8.5	7.8	465	24.4	10	11	7	16	12	12	12	10	13	12		
6	8.13	8.20	8.6	7.5	466	25.2	0	16	0	0	0	17	0	0	0	0		
7	-	8.17	-	7.8	639	24.8	21	0	12	21	20	0	19	18	18	17		
8																		
Total=							36	33	24	42	39	34	38	34	36	35		Mean Neonates/Female = 35.1
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
0	7.84		7.0		583	24.9	0	0	0	0	0	0	0	0	0	0	0	
1	7.84	7.83	9.1	7.4	583	24.0	0	0	0	0	0	0	0	0	0	0	0	
2	8.08	8.14	8.9	7.6	575	25.2	0	0	0	0	0	0	0	0	0	0	0	
3	7.97	8.08	8.5	8.1	575	24.7	0	0	0	0	0	0	0	0	0	0	0	
4	8.03	8.19	8.8	8.1	559	24.4	7	7	0	5	3	2	6	5	4	0		
5	8.11	8.16	8.6	7.8	564	24.5	9	10	10	11	6	12	12	7	8	10		
6	8.12	8.29	8.7	7.7	572	25.1	0	0	-	0	0	0	0	0	0	0		
7	-	8.24	-	8.1	603	24.8	15	21	-	20	20	18	20	21	18	18		
8																		
Total=							31	38	10	36	29	32	38	34	30	28		Mean Neonates/Female = 29.5

33
 no 6/6/5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

5/30/19

Client: LWA: Calleguas Creek Material: CCWTMP-73-GATE-211 Test Date: 5/30/19
 Project #: 30314 Test ID: 84003 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
50%	0	7.86		7.7		790	25.2	0	0	0	0	0	0	0	0	0	0	0	0	
	1	7.84	7.95	9.5	7.2	789	24.0	0	0	0	0	0	0	0	0	0	0	0	0	
	2	8.03	8.26	9.2	7.7	780	25.1	0	0	0	0	0	0	0	0	0	0	0	0	
	3	7.94	8.20	9.0	8.3	789	24.6	0	0	0	0	0	0	0	0	0	0	0	0	
	4	8.02	8.29	9.0	8.3	771	24.4	5	7	6	6	5	5	1	5	6	0			
	5	8.15	8.27	8.6	7.9	767	24.5	9	2	6	9	14	13	11	8	0	10			
	6	8.11	8.36	9.0	7.6	772	24.9	21	0	17	0	0	0	0	14	0	0			
	7	—	8.30	—	7.9	825	24.7	0	23	0	18	21	17	15	0	19	19			
	8																			
Total=							35	32	29	33	40	35	27	19	33	29	Mean Neonates/Female = 31.2			
100%	0	7.84		9.1		1199	25.2	0	0	0	0	0	0	0	0	0	0	0		
	1	7.82	8.00	10.2	6.2	1199	24.1	0	0	0	0	0	0	0	0	0	0	0		
	2	7.96	8.35	10.2	7.9	1191	25.1	0	0	0	0	0	0	0	0	0	0			
	3	7.89	8.24	10.0	7.5	1185	24.8	0	0	0	0	0	0	0	0	0	0			
	4	7.99	8.31	9.9	8.1	1172	24.2	5	5	0	5	5	5	4	0	0	0			
	5	8.13	8.42	8.9	7.9	1187	24.4	12	10	6	14	12	10	13	4	12	12			
	6	8.03	8.44	8.3	7.6	1189	24.7	0	0	0	0	0	0	0	0	0	0			
	7	—	8.48	—	7.7	1264	24.6	24	20	25	18	23	8	18	22	0	17			
	8																			
Total=							41	35	30	37	40	23	35	26	12	29	Mean Neonates/Female = 30.8			

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-GATE- Test Date: 5/30/19
 Project #: 30314 Test ID: 84003 Randomization: 10.7.7 Control Water: Mod EPAMH

Meter ID's	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)											SIGN-OFF		
		New	Old	New	Old															
	0	PH24		RD11		EC14	10.5A											Date: 5/30/19	New WQ: JR	Old WQ:
	1	PH24	PH24	RD10	RD10	EC10	9.9A											Date: 5/31/19	New WQ: TA	Old WQ: TA
	2	PH15	PH26	RD13	RD10	EC10	10.5A											Date: 6/1/19	New WQ: JR	Old WQ: TP
	3	PH24	PH25	RD13	RD10	EC10	5.9A											Date: 6/2/19	New WQ: KP	Old WQ: NW
	4	PH25	PH24	RD10	RD10	EC10	5.9A											Date: 6/3/19	New WQ: TP	Old WQ: ER
	5	PH26	PH26	RD11	RD11	EC14	9.9A											Date: 6/4/19	New WQ: SAT	Old WQ: MP
	6	PH24	PH24	RD12	RD12	EC11	10.5A											Date: 6/5/19	New WQ: JK	Old WQ: JR
	7	-	PH25	-	RD11	EC11	10.5A											Date: 6/6/19	New WQ: -	Old WQ: -
	8																	Date:	New WQ:	Old WQ:

CETIS Summary Report

Report Date: 18 Jun-19 17:26 (p 1 of 2)
 Test Code: 84004 | 18-5245-5819

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 18-3769-2812	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 30 May-19 14:41	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Jun-19 13:31	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: In-House Culture	Age: 1

Sample ID: 04-2520-0615	Code: 73-BELT-214	Client: Larry Walker Associates
Sample Date: 29 May-19 12:30	Material: Ambient Water	Project: 30314
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek	
Sample Age: 26h (2 °C)	Station: BELT	

Comments:
 Stats exclude LWC-C, 25D, and 50H

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
01-0263-4061	Reproduction	Bonferroni Adj t Test	50	100	70.71	2	23.2%
12-6927-2705	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
17-0400-4133	Reproduction	Linear Interpolation (ICPIN)	IC5	3.14	1.72	59.7	31.81	
			IC10	50.2	3.43	n/a	1.992	
			IC15	66.1	5.15	n/a	1.512	
			IC20	82.1	55.7	n/a	1.219	
			IC25	98	68.6	n/a	1.02	
			IC40	>100	n/a	n/a	<1	
IC50	>100	n/a	n/a	<1				

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	37.1	34	40.2	31	42	1.36	4.08	10.98%	0.00%
6.25		10	31.1	25	37.2	17	42	2.71	8.56	27.51%	16.20%
12.5		10	29.7	23.4	36	19	43	2.78	8.78	29.57%	19.97%
25		9	37.3	33.3	41.3	32	43	1.73	5.2	13.92%	-0.60%
50		9	35.6	31.4	39.7	28	41	1.8	5.41	15.22%	4.19%
100		10	27.6	19.4	35.8	5	37	3.62	11.4	41.42%	25.63%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 18 Jun-19 17:26 (p 2 of 2)
 Test Code: 84004 | 18-5245-5819

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	39	42		34	41	38	32	41	31	36
6.25		26	37	39	29	37	33	17	18	33	42
12.5		19	39	36	20	32	22	32	34	20	43
25		43	43	33		34	32	42	34	43	32
50		40	40	39	29	40	32	41		31	28
100		5	37	34	29	37	34	32	37	17	14
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

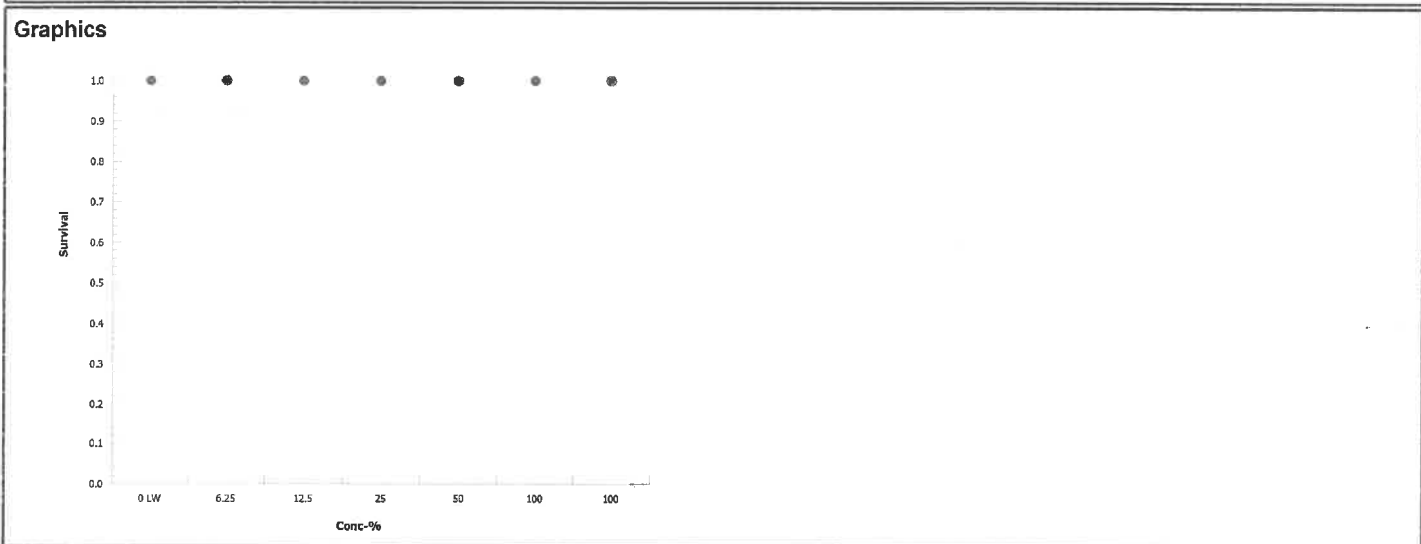
CETIS Analytical Report

Report Date: 18 Jun-19 17:26 (p 1 of 1)
 Test Code: 84004 | 18-5245-5819

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk	
Analysis ID: 12-6927-2705	Endpoint: Survival	CETIS Version: CETISv1.9.2			
Analyzed: 15 Jun-19 9:49	Analysis: STP 2xK Contingency Tables	Official Results: Yes			
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



CETIS Analytical Report

Report Date: 18 Jun-19 17:26 (p 1 of 1)
 Test Code: 84004 | 18-5245-5819

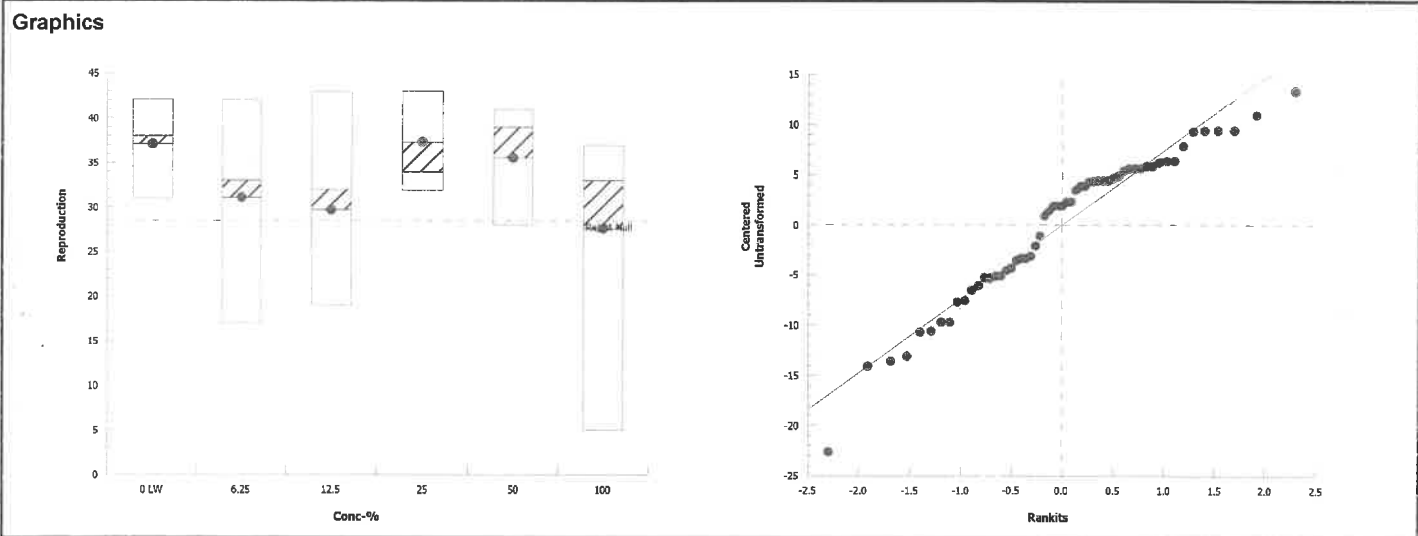
Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk		
Analysis ID:	01-0263-4061	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.2	
Analyzed:	18 Jun-19 17:24	Analysis:	Parametric-Multiple Comparison	Official Results:	Yes	
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	50	100	70.71	2	23.23%

Bonferroni Adj t Test									
Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.67	2.4	8.62	17	CDF	0.2503	Non-Significant Effect
		12.5	2.06	2.4	8.62	17	CDF	0.1101	Non-Significant Effect
		25	-0.0603	2.4	8.84	16	CDF	1.0000	Non-Significant Effect
		50	0.422	2.4	8.84	16	CDF	1.0000	Non-Significant Effect
		100*	2.65	2.4	8.62	17	CDF	0.0267	Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	815.629	163.126	5	2.67	0.0320	Significant Effect
Error	3112.51	61.0296	51			
Total	3928.14		56			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	11.7	15.1	0.0395	Equal Variances	
Distribution	Shapiro-Wilk W Normality Test	0.95	0.943	0.0192	Normal Distribution	

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	9	37.1	34	40.2	38	31	42	1.36	10.98%	0.00%
6.25		10	31.1	25	37.2	33	17	42	2.71	27.51%	16.20%
12.5		10	29.7	23.4	36	32	19	43	2.78	29.57%	19.97%
25		9	37.3	33.3	41.3	34	32	43	1.73	13.92%	-0.60%
50		9	35.6	31.4	39.7	39	28	41	1.8	15.22%	4.19%
100		10	27.6	19.4	35.8	33	5	37	3.62	41.42%	25.63%



CETIS Analytical Report

Report Date: 18 Jun-19 17:26 (p 1 of 1)
 Test Code: 84004 | 18-5245-5819

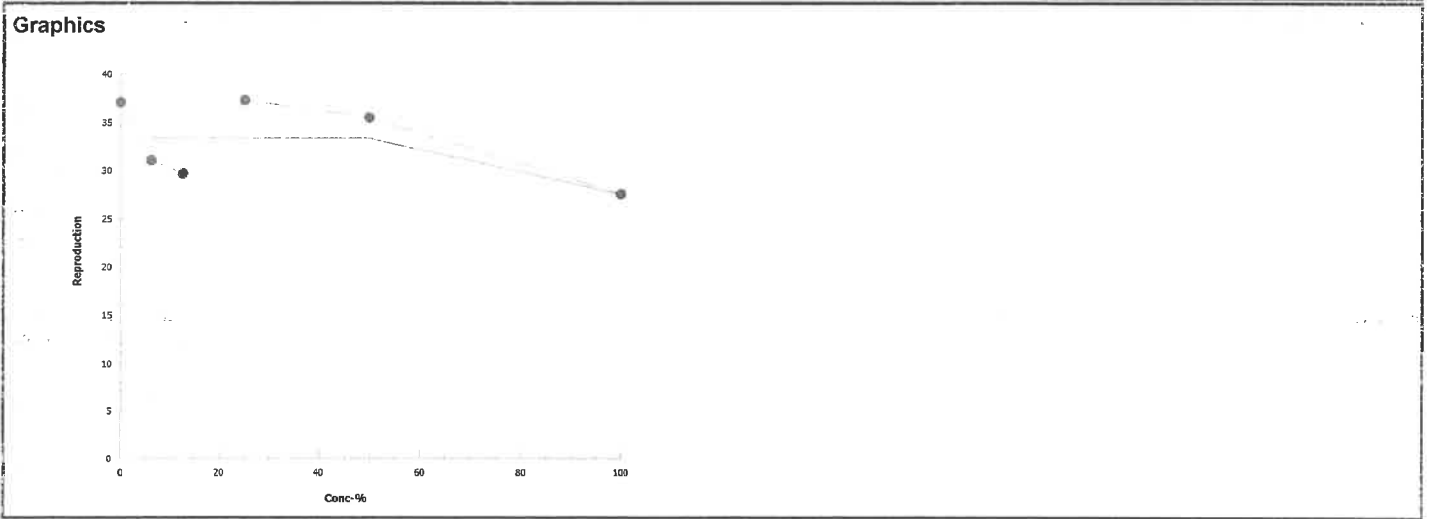
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 17-0400-4133 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 18 Jun-19 17:24 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	730496	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	3.14	1.72	59.7	31.81	1.676	58.23
IC10	50.2	3.43	n/a	1.992	n/a	29.11
IC15	66.1	5.15	n/a	1.512	n/a	19.41
IC20	82.1	55.7	n/a	1.219	n/a	1.795
IC25	98	68.6	n/a	1.02	n/a	1.459
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	9	37.1	31	42	1.36	4.08	11.00%	0.0%
6.25		10	31.1	17	42	2.71	8.56	27.50%	16.2%
12.5		10	29.7	19	43	2.78	8.78	29.60%	20.0%
25		9	37.3	32	43	1.73	5.2	13.90%	-0.6%
50		9	35.6	28	41	1.8	5.41	15.20%	4.19%
100		10	27.6	5	37	3.62	11.4	41.40%	25.6%



Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-BELT-244 Test Date: 5/30/19
 Project #: 30314 Test ID: 84004 Randomization: 10.7.2 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.77		7.0		355	24.4	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/21/19 New WQ: SAT Test Init. SMC Sol'n Prep: ER Time: 1441
1	7.74	7.63	8.9	7.8	359	24.4	0	0	0	0	0	0	0	0	0	0	0	0	Date: 5/21/19 New WQ: TA Counts: 2 Sol'n Prep: JL Old WQ: TA Time: 1055
2	8.07	8.07	8.8	6.5	355	24.0	0	0	0	0	0	0	0	0	0	0	0	0	Date: 6/1/19 New WQ: TP Counts: 26 Sol'n Prep: JL Old WQ: JR Time: 1150
3	7.84	7.84	8.4	6.9	360	24.2	0	0	0	0	0	0	0	0	0	0	0	0	Date: 6/2/19 New WQ: KP Counts: 0 Sol'n Prep: A Old WQ: KP Time: 1406
4	7.95	7.95	8.5	7.5	356	24.9	6	6	0	5	5	6	6	6	5	5			Date: 6/13/19 New WQ: SPT Counts: ER Sol'n Prep: KL Old WQ: SPT Time: 430
5	8.04	7.97	8.8	7.3	346	24.6	0	0	0	10	0	12	9	14	11	0			Date: 6/14/19 New WQ: SAT Counts: 12 Sol'n Prep: KL Old WQ: JR Time: 1520
6	8.12	7.91	8.4	7.6	360	24.7	13	15	0	0	15	0	0	0	0	16			Date: 6/5/19 New WQ: JR Counts: 8 Sol'n Prep: KL Old WQ: SAT Time: 1533
7	-	8.09	-	8.1	383	24.7	20	21	3	19	21	20	17	21	15	21			Date: 6/6/19 New WQ: - Counts: ER Sol'n Prep: - Old WQ: SMC Time: 1331
8																			Date: Old WQ: Counts: Time:
Total=							39	42	3	34	41	38	32	41	31	36	Mean Neonates/Female = 33.7		
Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										Sample ID		
	New	Old	New	Old			A	B	C	D	E	F	G	H	I	J			
0	7.84		7.1		436	24.7	0	0	0	0	0	0	0	0	0	0	0	0	53059
1	7.89	7.80	8.9	8.1	441	24.2	0	0	0	0	0	0	0	0	0	0	0	0	53059
2	8.14	8.20	8.9	6.4	437	24.5	0	0	0	0	0	0	0	0	0	0	0	0	53059
3	7.97	7.93	8.4	6.7	438	24.3	0	0	0	0	0	0	0	0	0	0	0	0	53059
4	8.09	8.05	8.5	7.5	436	24.8	0	4	5	0	6	4	4	0	6	5			53059
5	8.09	8.12	8.8	7.3	427	24.4	0	10	0	8	11	10	0	0	10	0			53059
6	8.16	7.97	8.4	7.4	440	24.2	11	0	12	0	0	0	13	0	0	12			53059
7	-	8.19	-	8.1	474	24.5	15	23	22	21	20	19	0	18	17	25			-
8																			
Total=							26	37	39	29	37	33	17	18	33	42	Mean Neonates/Female = 31.1		

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-BELT- 214 Test Date: 5/30/19

Project #: 30314 Test ID: 84004 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J	
12.5%	0	7.96		7.1		522	24.7	0	0	0	0	0	0	0	0	0	0	
	1	7.98	7.91	8.9	8.3	517	24.2	0	0	0	0	0	0	0	0	0	0	
	2	8.21	8.24	9.0	6.5	517	24.3	0	0	0	0	0	0	0	0	0	0	
	3	8.06	8.03	8.6	6.7	517	24.4	0	0	0	0	0	0	0	0	0	0	
	4	8.17	8.12	8.5	7.4	510	23.9	0	6	6	6	9	7	5	4	5	7	
	5	8.19	8.18	8.7	6.9	515	24.5	6	12	12	0	14	10	12	0	0	0	
	6	8.23	8.09	8.5	7.5	522	24.2	13	0	0	14	0	0	0	12	15	15	
	7	-	8.21	-	8.0	548	24.9	0	21	18	0	13	5	15	18	15	21	
	8																	
Total=							19	39	36	20	32	22	32	34	20	43	Mean Neonates/Female = 29.7	
25%	0	8.08		7.7		676	24.7	0	0	0	0	0	0	0	0	0	0	
	1	8.06	8.04	9.1	8.1	667	24.2	0	0	0	0	0	0	0	0	0	0	
	2	8.29	8.32	9.1	6.5	664	24.3	0	0	0	0	0	0	0	0	0	6	
	3	8.16	8.15	9.0	7.0	663	24.4	0	0	0	0	0	0	0	0	0	0	
	4	8.23	8.24	8.6	7.6	656	24.4	7	8	5	5	3	6	6	8	6		
	5	8.25	8.20	8.8	6.9	651	24.5	0	0	9	-	10	9	0	10	12	10	
	6	8.28	8.21	8.7	7.7	654	24.3	14	11	1	-	0	0	13	18	0	0	
	7	-	8.34	-	7.9	727	25.0	25	18	18	-	19	20	23	23	23	16	
	8																	
Total=							43	43	33	15	34	32	42	34	43	32	Mean Neonates/Female = 34.1	

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-BELT-214 Test Date: 5/30/19
 Project #: 30314 Test ID: 84004 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
50%	0	8.22		8.1		960	24.4	0	0	0	0	0	0	0	0	0	0	0	
	1	8.12	8.22	9.6	8.2	951	24.2	0	0	0	0	0	0	0	0	0	0	0	
	2	8.33	8.46	9.5	6.9	945	24.1	0	0	0	0	0	0	0	0	0	0	0	
	3	8.23	8.36	9.2	6.9	941	24.0	0	0	0	0	0	0	0	0	0	0	0	
	4	8.30	8.42	8.8	7.6	944	24.5	5	7	7	3	6	6	8	8	8	0	0	
	5	8.35	8.45	8.9	7.0	938	24.3	0	12	0	11	14	9	0	0	0	0	0	
	6	8.34	8.37	9.1	7.2	947	24.0	13	0	13	0	0	0	15	0	16	11	0	
	7	-	8.52	-	7.8	1039	24.4	22	21	19	15	20	17	18	7	7	17	0	
	8																		
Total=							40	40	39	29	40	32	41	15	31	28	Mean Neonates/Female = 33.5		
	Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)	Survival / Reproduction										SIGN-OFF	
		New	Old	New	Old			A	B	C	D	E	F	G	H	I	J		
100%	0	8.30		9.2		1502	24.6	0	0	0	0	0	0	0	0	0	0	0	
	1	8.19	8.38	10.1	8.4	1485	24.2	0	0	0	0	0	0	0	0	0	0	0	
	2	8.33	8.44	10.3	7.2	1422	24.1	0	0	0	0	0	0	0	0	0	0	0	
	3	8.28	8.35	10.9	7.0	1489	24.6	0	0	0	0	0	0	0	0	0	0	0	
	4	8.33	8.40	9.3	7.8	1476	24.1	0	4	6	6	6	5	5	7	3	0	0	
	5	8.40	8.43	9.2	7.2	1475	24.4	0	14	11	7	0	0	10	0	10	0	0	
	6	8.34	8.48	10.9	7.3	1504	24.3	0	0	0	0	10	12	0	13	0	14	0	
	7	-	8.61	-	7.9	1587	24.6	5	19	17	16	21	17	17	17	4	0	0	
	8																		
Total=							5	37	34	23	37	34	42	37	17	14	Mean Neonates/Female = 27.6		

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: LWA: Calleguas Creek Material: CCWTMP-73-BELT- Test Date: 5/30/19
 Project #: 30314 Test ID: 84004 Randomization: 10-7-2 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)	Temp (°C)											SIGN-OFF			
	New	Old	New	Old															Date:	New WQ:
0	PH24		RD1		EC14 2330 5.20	112A												5/30/19	SAT	
1	PH24	PH24	RD10	RD10	EC10	93A												5/31/19	TA	TA
2	PH26	PH15	RD10	RD3	EC13	105A												6/1/19	TP	JR
3	PH24	PH24	RD13	RD13	EC10	80A												6/2/19	KP	KP
4	PH24	PH24	RD10	RD10	EC10	111A												6/3/19	SM	SM
5	PH26	PH26	RD11	RD11	EC14	99A												6/4/19	SAT	JR
6	PH24	PH25	RD12	RD10	EC11	80A												6/5/19	JR	SAT
7	-	PH24	-	RD10	EC10	111A												6/6/19	-	SMC
8																		Date:		Old WQ:

Appendix C

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of the Calleguas Creek Ambient Waters to *Ceriodaphnia dubia*: Data Analyses Including Statistical Outliers

CETIS Summary Report

Report Date: 14 Jun-19 15:43 (p 1 of 2)
 Test Code: 84000 | 15-1951-9495

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk
Batch ID: 16-3196-0458	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley	
Start Date: 30 May-19 14:45	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 06 Jun-19 14:25	Species: Ceriodaphnia dubia	Brine: Not Applicable	
Duration: 7d	Source: In-House Culture	Age: 1	
Sample ID: 05-9772-1801	Code: 73-UNIV-029	Client: Larry Walker Associates	
Sample Date: 29 May-19 16:10	Material: Ambient Water	Project: 30314	
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek		
Sample Age: 23h (9.2 °C)	Station: UNIV		

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-6730-3670	Reproduction	Steel Many-One Rank Sum Test	< 6.25	6.25	n/a	>16	35.2%
13-7886-2572	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
03-4753-9690	Reproduction	Linear Interpolation (ICPIN)	IC5	2.97	1.37	n/a	33.71
			IC10	5.93	2.74	n/a	16.85
			IC15	>100	n/a	n/a	<1
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30	26.1	33.9	19	38	1.73	5.48	18.26%	0.00%
6.25		10	21	15	27	12	34	2.64	8.34	39.71%	30.00%
12.5		10	28.7	23.5	33.9	12	37	2.32	7.33	25.55%	4.33%
25		10	22.9	14.6	31.2	0	40	3.67	11.6	50.69%	23.67%
50		10	33.3	24	42.6	0	45	4.13	13.1	39.23%	-11.00%
100		10	28.3	18.7	37.9	3	42	4.24	13.4	47.41%	5.67%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	0.800	0.498	1.000	0.000	1.000	0.133	0.422	52.70%	20.00%
50		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
100		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%

CETIS Summary Report

Report Date: 14 Jun-19 15:43 (p 2 of 2)
 Test Code: 84000 | 15-1951-9495

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	19	30	27	38	27	33	34	26	31	35
6.25		13	17	30	30	16	34	18	27	12	13
12.5		30	30	31	22	25	12	32	37	33	35
25		21	0	18	25	29	14	40	25	19	38
50		38	39	33	30	43	40	0	39	26	45
100		36	3	14	42	28	36	13	37	35	39
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
100		1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	0/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
100		1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 14 Jun-19 15:43 (p 1 of 1)
 Test Code: 84000 | 15-1951-9495

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 13-7886-2572 Endpoint: Survival CETIS Version: CETISv1.9.2
 Analyzed: 14 Jun-19 15:42 Analysis: STP 2xK Contingency Tables Official Results: Yes

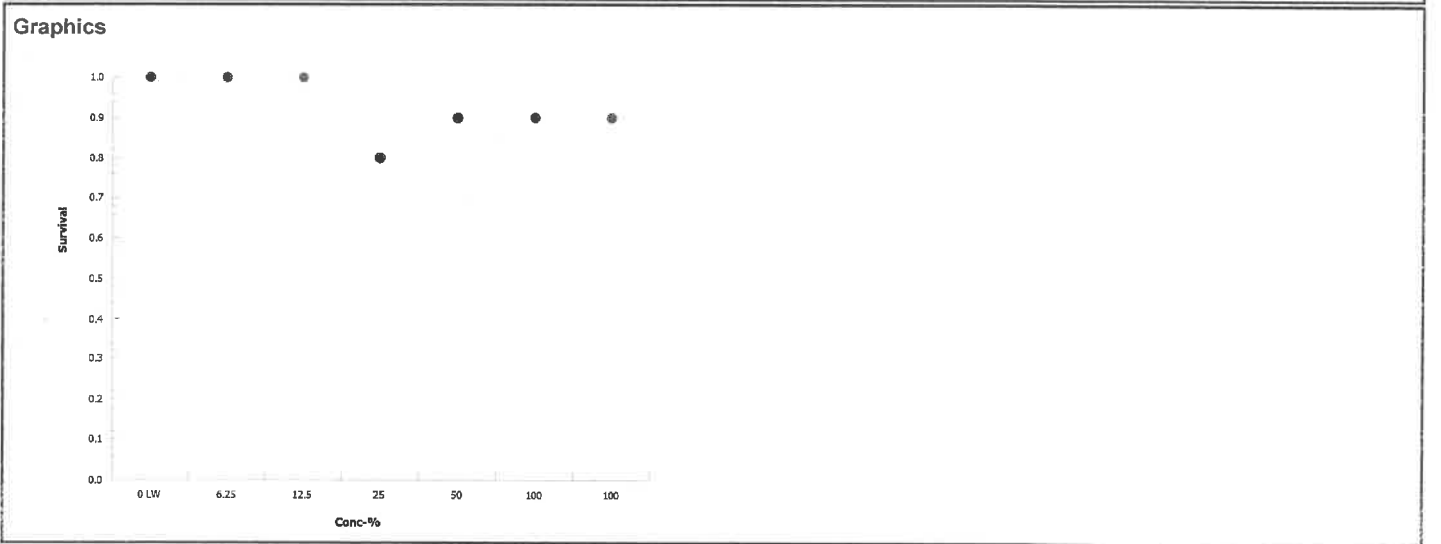
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	0.237	Exact	1.0000	Non-Significant Effect
		50	0.500	Exact	1.0000	Non-Significant Effect
		100	0.500	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		8	2	10	0.8	0.2	20.0%
50		9	1	10	0.9	0.1	10.0%
100		9	1	10	0.9	0.1	10.0%



CETIS Analytical Report

Report Date: 14 Jun-19 15:43 (p 1 of 1)
 Test Code: 84000 | 15-1951-9495

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 12-6730-3670 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 14 Jun-19 15:43 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	< 6.25	6.25	n/a	>16	35.21%

Steel Many-One Rank Sum Test

Control	vs	Control II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25*	74.5	75	3	18	Asymp	0.0421	Significant Effect
		12.5	102	75	4	18	Asymp	0.7427	Non-Significant Effect
		25	82	75	2	18	Asymp	0.1407	Non-Significant Effect
		50	127	75	4	18	Asymp	0.9986	Non-Significant Effect
		100	114	75	1	18	Asymp	0.9664	Non-Significant Effect

ANOVA Table

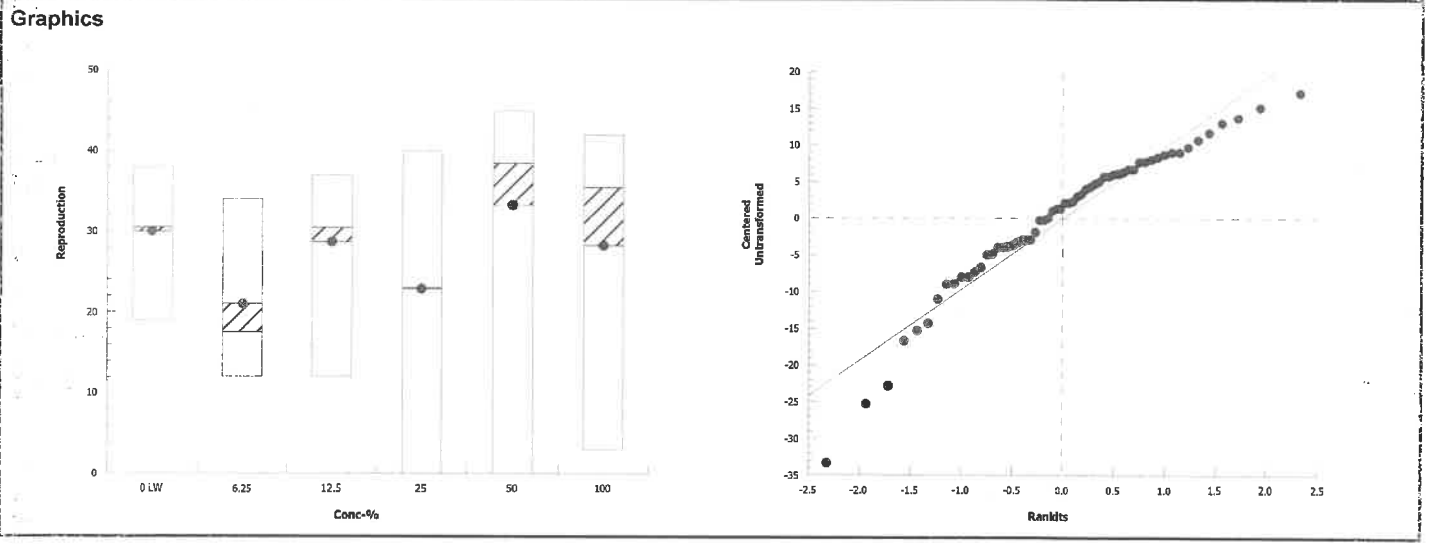
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1052.73	210.547	5	1.98	0.0967	Non-Significant Effect
Error	5749.2	106.467	54			
Total	6801.93		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	9.85	15.1	0.0795	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.939	0.946	0.0048	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30	26.1	33.9	30.5	19	38	1.73	18.26%	0.00%
6.25		10	21	15	27	17.5	12	34	2.64	39.71%	30.00%
12.5		10	28.7	23.5	33.9	30.5	12	37	2.32	25.55%	4.33%
25		10	22.9	14.6	31.2	23	0	40	3.67	50.69%	23.67%
50		10	33.3	24	42.6	38.5	0	45	4.13	39.23%	-11.00%
100		10	28.3	18.7	37.9	35.5	3	42	4.24	47.41%	5.67%



Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 03-4753-9690 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 14 Jun-19 15:43 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options

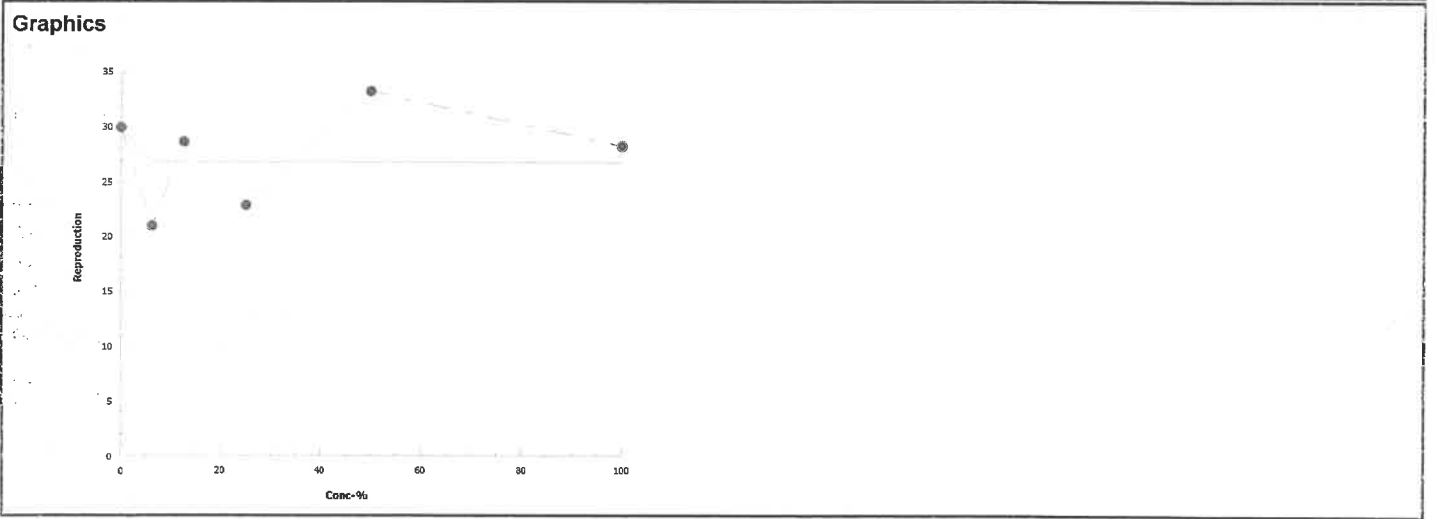
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1110871	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	2.97	1.37	n/a	33.71	n/a	72.98
IC10	5.93	2.74	n/a	16.85	n/a	36.49
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary **Calculated Variate**

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30	19	38	1.73	5.48	18.30%	0.0%
6.25		10	21	12	34	2.64	8.34	39.70%	30.0%
12.5		10	28.7	12	37	2.32	7.33	25.60%	4.33%
25		10	22.9	0	40	3.67	11.6	50.70%	23.7%
50		10	33.3	0	45	4.13	13.1	39.20%	-11.0%
100		10	28.3	3	42	4.24	13.4	47.40%	5.67%



CETIS Summary Report

Report Date: 15 Jun-19 09:30 (p 1 of 2)
 Test Code: 84001 | 10-5346-7983

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 04-3245-3526	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 30 May-19 13:34	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Jun-19 14:19	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d 1h	Source: In-House Culture	Age: 1

Sample ID: 10-9422-2778	Code: 73-ADOLF-067	Client: Larry Walker Associates
Sample Date: 29 May-19 14:45	Material: Ambient Water	Project: 30314
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek	
Sample Age: 23h (24.2 °C)	Station: ADOLF	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
07-1516-6923	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	22.4%
03-5610-5803	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
18-4312-2202	Reproduction	Linear Interpolation (ICPIN)	IC5	2.85	1.35	n/a	35.13	
			IC10	5.69	2.7	n/a	17.57	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	33.7	26.2	41.2	5	41	3.33	10.5	31.28%	0.00%
6.25		10	30	25.8	34.2	20	38	1.85	5.85	19.50%	10.98%
12.5		10	22.9	17.5	28.3	10	30	2.37	7.49	32.71%	32.05%
25		10	26.7	22.7	30.7	19	39	1.78	5.62	21.04%	20.77%
50		10	30.7	26.3	35.1	21	41	1.96	6.2	20.20%	8.90%
100		10	35.3	30	40.6	21	43	2.35	7.42	21.03%	-4.75%



Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%

CETIS Summary Report

Report Date: 15 Jun-19 09:30 (p 2 of 2)
 Test Code: 84001 | 10-5346-7983

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	36	40	35	41	39	5	36	37	30	38
6.25		31	20	31	35	20	31	30	30	34	38
12.5		19	25	30	29	10	27	26	10	29	24
25		24	22	27	23	30	26	39	26	19	31
50		33	21	29	41	21	34	35	32	28	33
100		40	35	43	42	34	26	39	31	21	42
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Analyst:  QA: 

CETIS Analytical Report

Report Date: 15 Jun-19 09:30 (p 1 of 1)
 Test Code: 84001 | 10-5346-7983

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 03-5610-5803 Endpoint: Survival CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 9:30 Analysis: STP 2xK Contingency Tables Official Results: Yes

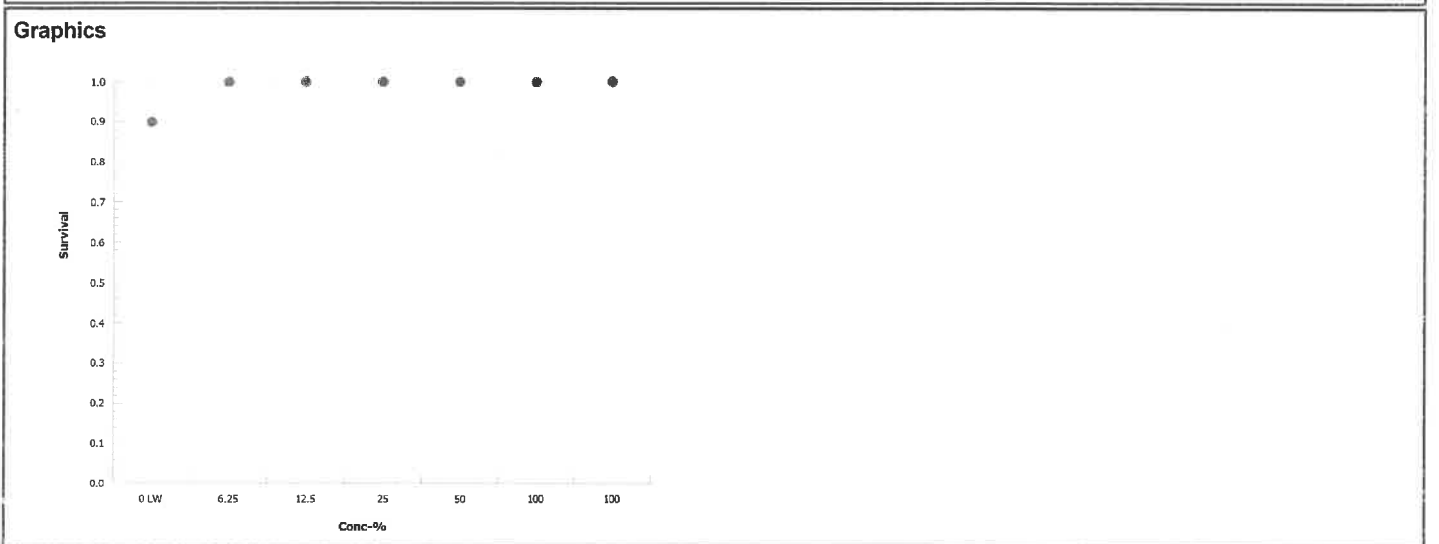
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	9	1	10	0.9	0.1	0.0%
6.25		10	0	10	1	0	-11.1%
12.5		10	0	10	1	0	-11.1%
25		10	0	10	1	0	-11.1%
50		10	0	10	1	0	-11.1%
100		10	0	10	1	0	-11.1%



CETIS Analytical Report

Report Date: 15 Jun-19 09:30 (p 1 of 1)
 Test Code: 84001 | 10-5346-7983

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 07-1516-6923 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 9:30 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	22.41%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	77	75	3	18	Asymp	0.0654	Non-Significant Effect
		12.5*	65.5	75	1	18	Asymp	0.0063	Significant Effect
		25*	73	75	2	18	Asymp	0.0318	Significant Effect
		50	79	75	2	18	Asymp	0.0904	Non-Significant Effect
		100	110	75	3	18	Asymp	0.9155	Non-Significant Effect

ANOVA Table

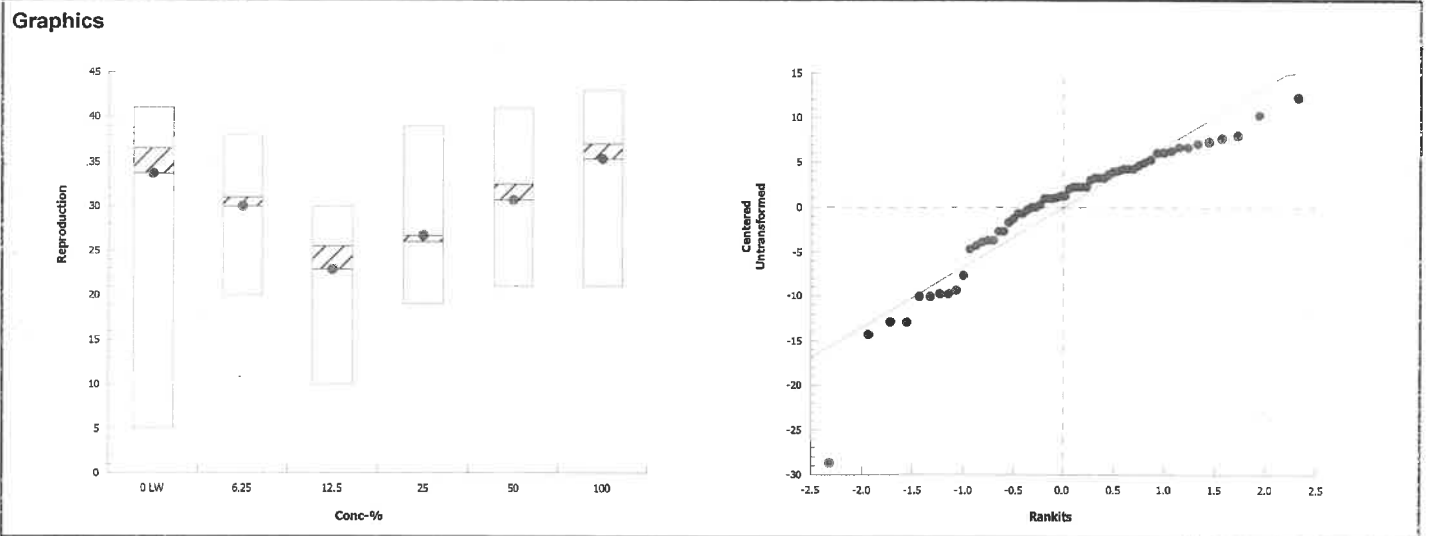
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1034.88	206.977	5	3.8	0.0051	Significant Effect
Error	2939.3	54.4315	54			
Total	3974.18		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	5.18	15.1	0.3949	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.897	0.946	1.1E-04	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	33.7	26.2	41.2	36.5	5	41	3.33	31.28%	0.00%
6.25		10	30	25.8	34.2	31	20	38	1.85	19.50%	10.98%
12.5		10	22.9	17.5	28.3	25.5	10	30	2.37	32.71%	32.05%
25		10	26.7	22.7	30.7	26	19	39	1.78	21.04%	20.77%
50		10	30.7	26.3	35.1	32.5	21	41	1.96	20.20%	8.90%
100		10	35.3	30	40.6	37	21	43	2.35	21.03%	-4.75%



CETIS Analytical Report

Report Date: 15 Jun-19 09:30 (p 1 of 1)
 Test Code: 84001 | 10-5346-7983

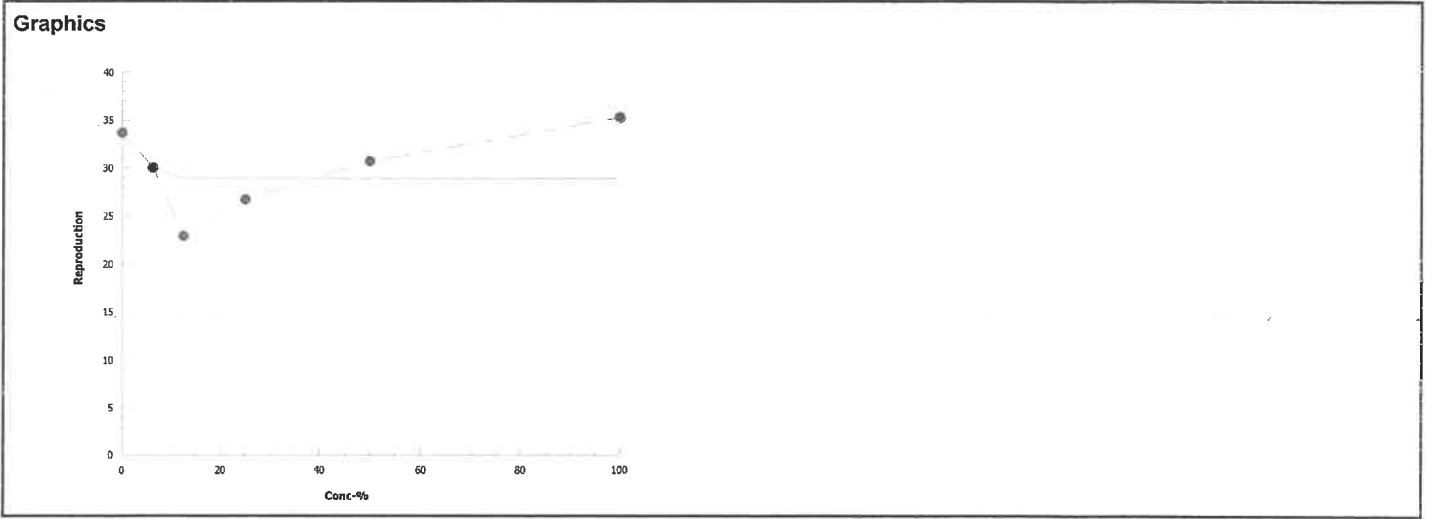
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 18-4312-2202	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 15 Jun-19 9:30	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	987545	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	2.85	1.35	n/a	35.13	n/a	74.16
IC10	5.69	2.7	n/a	17.57	n/a	37.08
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	33.7	5	41	3.33	10.5	31.30%	0.0%
6.25		10	30	20	38	1.85	5.85	19.50%	11.0%
12.5		10	22.9	10	30	2.37	7.49	32.70%	32.0%
25		10	26.7	19	39	1.78	5.62	21.00%	20.8%
50		10	30.7	21	41	1.96	6.2	20.20%	8.9%
100		10	35.3	21	43	2.35	7.42	21.00%	-4.75%



CETIS Summary Report

Report Date: 15 Jun-19 10:33 (p 1 of 2)
 Test Code: 84002 | 18-8068-1800

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 06-4446-1663	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 30 May-19 13:44	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Jun-19 13:35	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d	Source: In-House Culture	Age: 1

Sample ID: 17-2370-1603	Code: 73-HITCH-164	Client: Larry Walker Associates
Sample Date: 29 May-19 09:10	Material: Ambient Water	Project: 30314
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek	
Sample Age: 29h (1.4 °C)	Station: HITCH	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
17-8008-1244	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	20.2%
00-8536-7215	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
19-7844-8392	Reproduction	Linear Interpolation (ICPIN)	IC5	10.8	2.99	20	9.289	
			IC10	17.1	5.98	n/a	5.856	
			IC15	24.5	11.8	n/a	4.081	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	36.8	33.9	39.7	31	43	1.26	3.99	10.85%	0.00%
6.25		10	36.9	32.1	41.7	20	43	2.13	6.74	18.27%	-0.27%
12.5		10	34.3	30.9	37.7	25	42	1.49	4.72	13.75%	6.79%
25		10	31.2	26.4	36	15	40	2.12	6.71	21.52%	15.22%
50		10	26.8	18.1	35.5	0	38	3.84	12.1	45.32%	27.17%
100		10	35.1	30.6	39.6	23	45	1.97	6.24	17.79%	4.62%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date:

15 Jun-19 10:33 (p 2 of 2)

Test Code:

84002 | 18-8068-1800

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	34	31	43	41	40	36	38	31	37	37
6.25		35	38	40	34	20	43	37	37	43	42
12.5		25	31	31	34	36	37	39	42	34	34
25		40	34	35	35	35	28	30	30	30	15
50		33	18	38	32	38	32	0	17	36	24
100		41	36	33	36	39	28	23	35	45	35
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

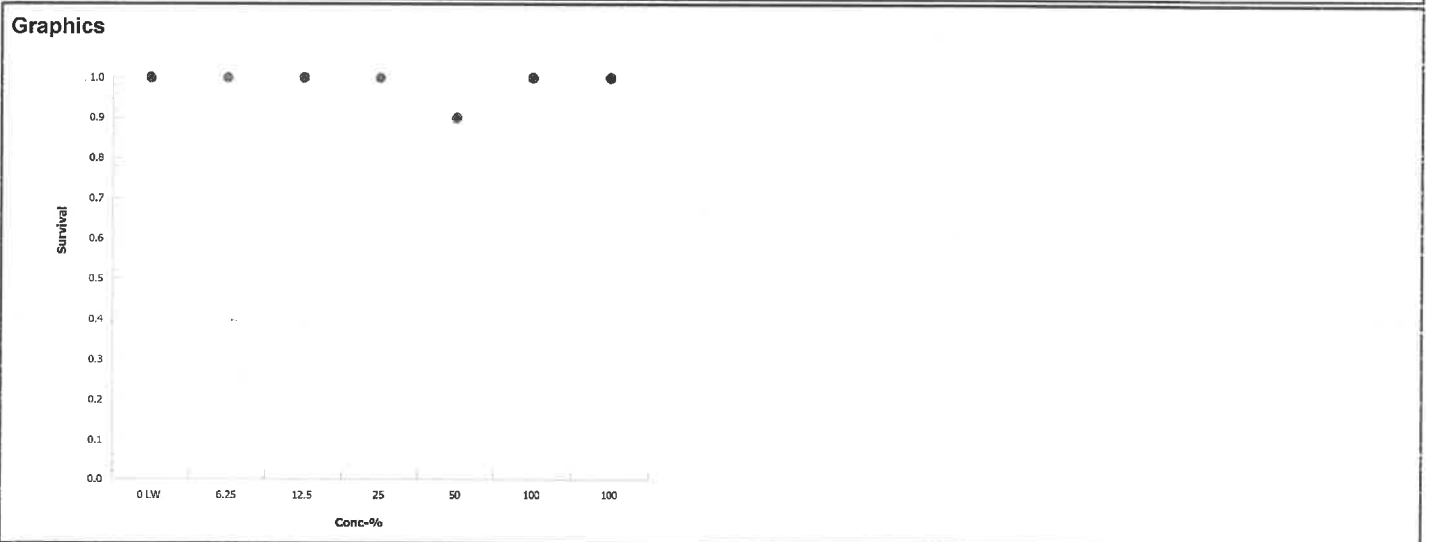
CETIS Analytical Report

Report Date: 15 Jun-19 10:33 (p 1 of 1)
 Test Code: 84002 | 18-8068-1800

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk			
Analysis ID:	00-8536-7215	Endpoint:	Survival	CETIS Version:	CETISv1.9.2		
Analyzed:	15 Jun-19 10:32	Analysis:	STP 2xK Contingency Tables	Official Results:	Yes		
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU		
Untransformed	C > T	100	> 100	n/a	1		

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	0.500	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		9	1	10	0.9	0.1	10.0%
100		10	0	10	1	0	0.0%



CETIS Analytical Report

Report Date: 15 Jun-19 10:33 (p 1 of 1)
 Test Code: 84002 | 18-8068-1800

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 17-8008-1244 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 10:33 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	20.16%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	112	75	5	18	Asymp	0.9503	Non-Significant Effect
		12.5	89	75	4	18	Asymp	0.3218	Non-Significant Effect
		25*	74	75	2	18	Asymp	0.0384	Significant Effect
		50	77.5	75	2	18	Asymp	0.0711	Non-Significant Effect
		100	95.5	75	2	18	Asymp	0.5455	Non-Significant Effect

ANOVA Table

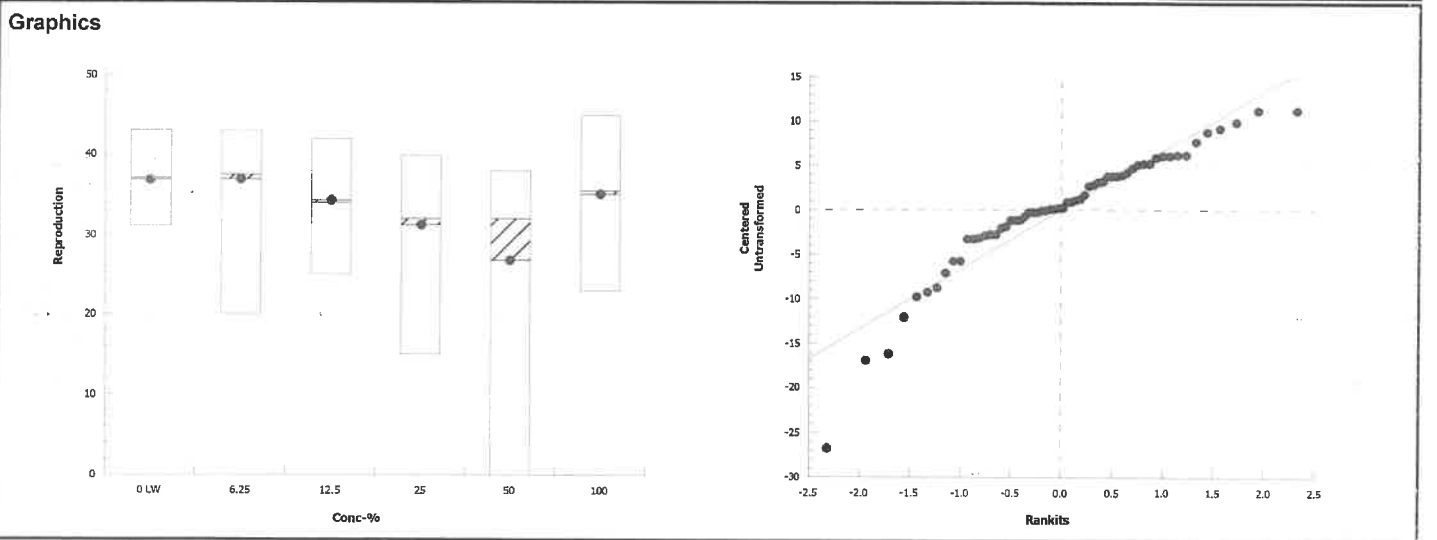
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	758.283	151.657	5	2.89	0.0221	Significant Effect
Error	2836.7	52.5315	54			
Total	3594.98		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	13.9	15.1	0.0160	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.911	0.946	3.3E-04	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	36.8	33.9	39.7	37	31	43	1.26	10.85%	0.00%
6.25		10	36.9	32.1	41.7	37.5	20	43	2.13	18.27%	-0.27%
12.5		10	34.3	30.9	37.7	34	25	42	1.49	13.75%	6.79%
25		10	31.2	26.4	36	32	15	40	2.12	21.52%	15.22%
50		10	26.8	18.1	35.5	32	0	38	3.84	45.32%	27.17%
100		10	35.1	30.6	39.6	35.5	23	45	1.97	17.79%	4.62%



CETIS Analytical Report

Report Date: 15 Jun-19 10:33 (p 1 of 1)
 Test Code: 84002 | 18-8068-1800

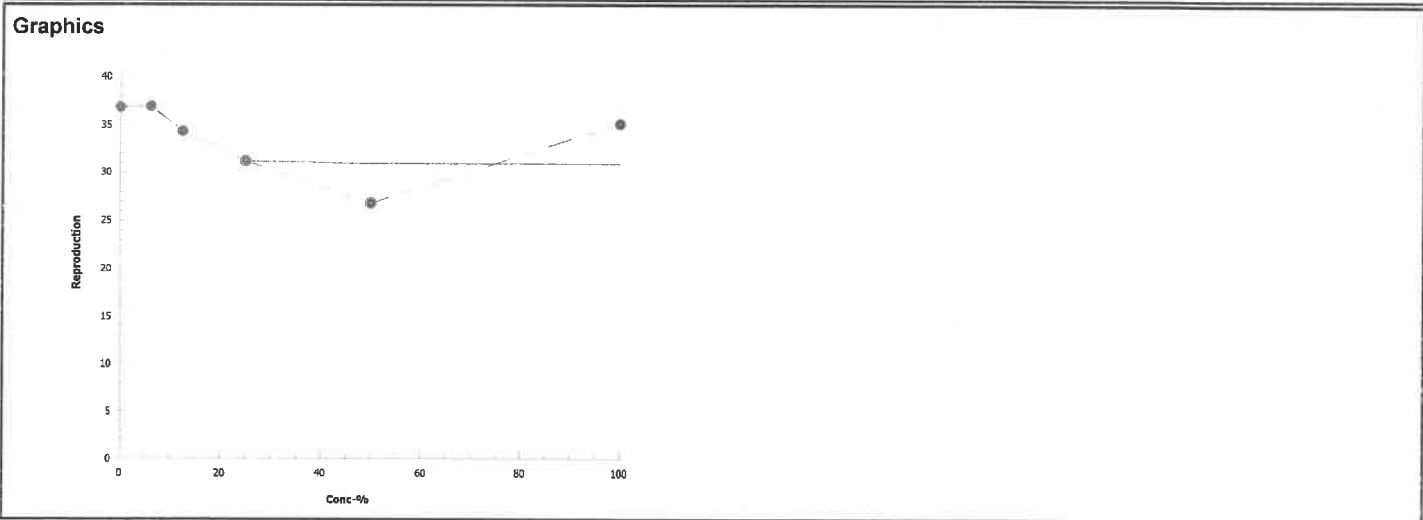
Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 19-7844-8392 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 10:33 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	946851	200	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	10.8	2.99	20	9.289	5.006	33.42
IC10	17.1	5.98	n/a	5.856	n/a	16.71
IC15	24.5	11.8	n/a	4.081	n/a	8.455
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	36.8	31	43	1.26	3.99	10.90%	0.0%
6.25		10	36.9	20	43	2.13	6.74	18.30%	-0.27%
12.5		10	34.3	25	42	1.49	4.72	13.70%	6.79%
25		10	31.2	15	40	2.12	6.71	21.50%	15.2%
50		10	26.8	0	38	3.84	12.1	45.30%	27.2%
100		10	35.1	23	45	1.97	6.24	17.80%	4.62%



CETIS Summary Report

Report Date: 15 Jun-19 10:52 (p 1 of 2)
 Test Code: 30314 | 03-1797-0554

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 13-5756-1761	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 30 May-19 13:13	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Jun-19 13:42	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age: 1

Sample ID: 17-3139-5963	Code: 73-GATE-211	Client: Larry Walker Associates
Sample Date: 29 May-19 11:30	Material: Ambient Water	Project: 30314
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek	
Sample Age: 26h (1.6 °C)	Station: GATE	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
01-2819-3596	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	26.0%
19-1856-6466	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
20-2221-4287	Reproduction	Linear Interpolation (ICPIN)	IC5	>100	n/a	n/a	<1	
			IC10	>100	n/a	n/a	<1	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.2	24.7	35.7	19	40	2.43	7.69	25.45%	0.00%
6.25		10	29.5	25	34	21	40	2.01	6.35	21.51%	2.32%
12.5		10	35.1	31.7	38.5	24	42	1.5	4.75	13.53%	-16.23%
25		10	29.5	21.7	37.3	0	38	3.46	11	37.14%	2.32%
50		10	31.2	27.1	35.3	19	40	1.79	5.67	18.18%	-3.31%
100		10	30.8	24.5	37.1	12	41	2.8	8.84	28.71%	-1.99%

Survival Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Summary Report

Report Date: 15 Jun-19 10:52 (p 2 of 2)
 Test Code: 30314 | 03-1797-0554

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	26	31	36	37	19	34	19	40	36	24
6.25		22	40	23	28	21	35	35	32	32	27
12.5		36	33	24	42	39	34	38	34	36	35
25		31	38	0	36	29	32	38	33	30	28
50		35	32	29	33	40	35	27	19	33	29
100		41	35	30	37	40	23	35	26	12	29
Survival Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Survival Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

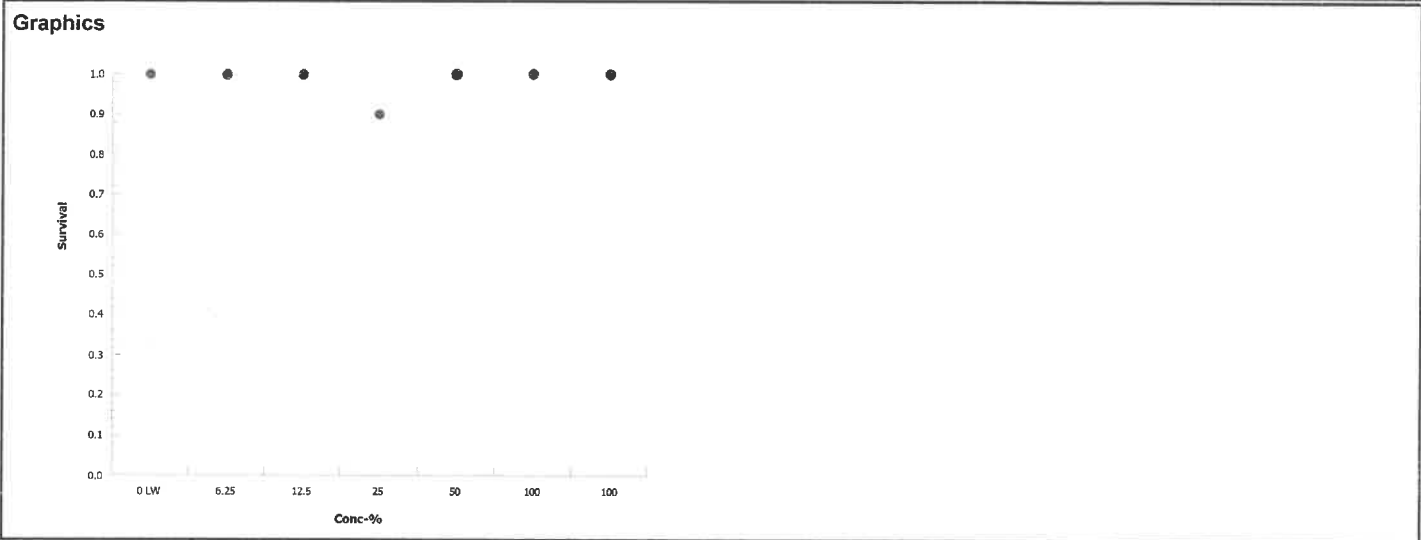
CETIS Analytical Report

Report Date: 15 Jun-19 10:52 (p 1 of 1)
 Test Code: 30314 | 03-1797-0554

Ceriodaphnia Survival and Reproduction Test			Pacific EcoRisk			
Analysis ID: 19-1856-6466	Endpoint: Survival	CETIS Version: CETISv1.9.2				
Analyzed: 15 Jun-19 10:51	Analysis: STP 2xK Contingency Tables	Official Results: Yes				
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	
Untransformed	C > T	100	> 100	n/a	1	

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	0.500	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		9	1	10	0.9	0.1	10.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



CETIS Analytical Report

Report Date: 15 Jun-19 10:52 (p 1 of 1)
 Test Code: 30314 | 03-1797-0554

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 01-2819-3596 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 10:51 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	25.98%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	100	75	1	18	Asymp	0.7129	Non-Significant Effect
		12.5	122	75	3	18	Asymp	0.9933	Non-Significant Effect
		25	106	75	2	18	Asymp	0.8650	Non-Significant Effect
		50	104	75	2	18	Asymp	0.8218	Non-Significant Effect
		100	108	75	3	18	Asymp	0.9005	Non-Significant Effect

ANOVA Table

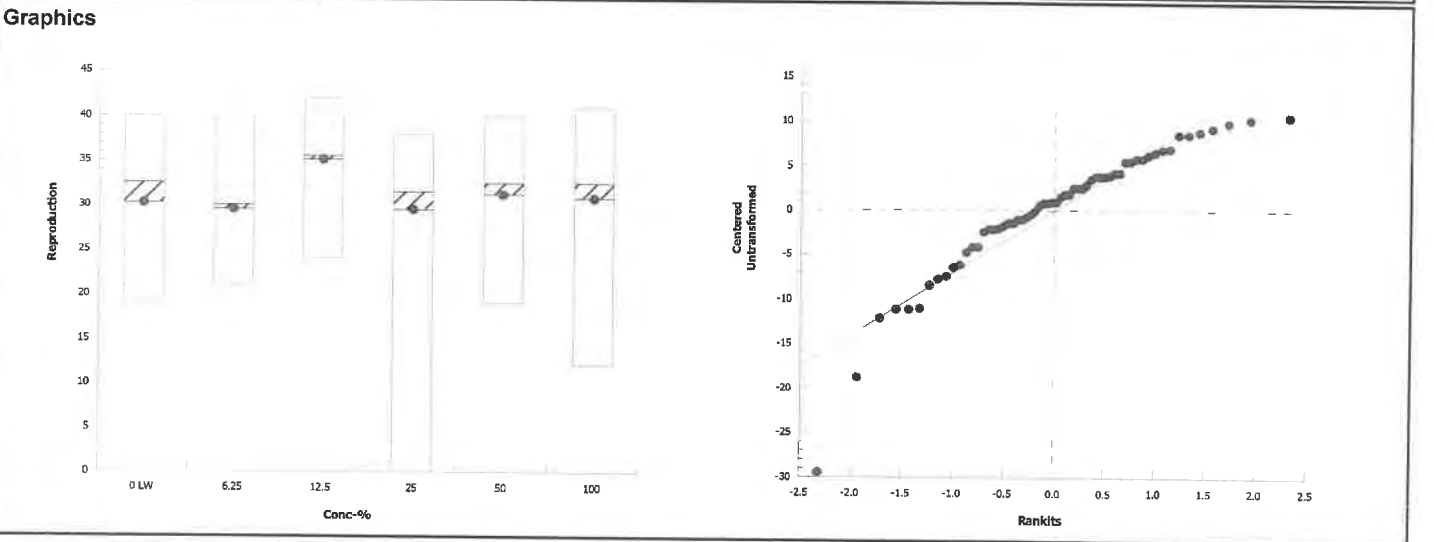
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	220.15	44.03	5	0.75	0.5898	Non-Significant Effect
Error	3170.7	58.7167	54			
Total	3390.85		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	8.01	15.1	0.1558	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.905	0.946	2.1E-04	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	30.2	24.7	35.7	32.5	19	40	2.43	25.45%	0.00%
6.25		10	29.5	25	34	30	21	40	2.01	21.51%	2.32%
12.5		10	35.1	31.7	38.5	35.5	24	42	1.5	13.53%	-16.23%
25		10	29.5	21.7	37.3	31.5	0	38	3.46	37.14%	2.32%
50		10	31.2	27.1	35.3	32.5	19	40	1.79	18.18%	-3.31%
100		10	30.8	24.5	37.1	32.5	12	41	2.8	28.71%	-1.99%



CETIS Analytical Report

Report Date: 15 Jun-19 10:52 (p 1 of 1)
 Test Code: 30314 | 03-1797-0554

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 20-2221-4287 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 10:51 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

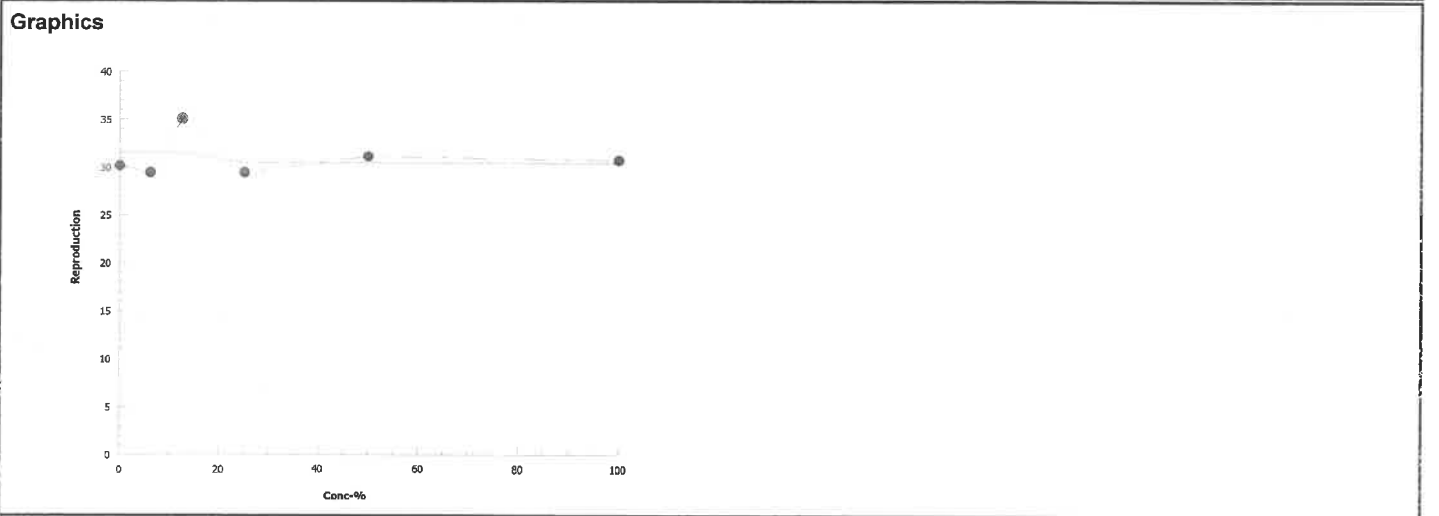
Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2108718	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	30.2	19	40	2.43	7.69	25.40%	0.0%
6.25		10	29.5	21	40	2.01	6.35	21.50%	2.32%
12.5		10	35.1	24	42	1.5	4.75	13.50%	-16.2%
25		10	29.5	0	38	3.46	11	37.10%	2.32%
50		10	31.2	19	40	1.79	5.67	18.20%	-3.31%
100		10	30.8	12	41	2.8	8.84	28.70%	-1.99%



CETIS Summary Report

Report Date: 15 Jun-19 09:42 (p 1 of 2)
 Test Code: 84004 | 18-5245-5819

Ceriodaphnia Survival and Reproduction Test				Pacific EcoRisk
Batch ID: 18-3769-2812	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley		
Start Date: 30 May-19 14:41	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water		
Ending Date: 06 Jun-19 13:31	Species: Ceriodaphnia dubia	Brine: Not Applicable		
Duration: 6d 23h	Source: In-House Culture	Age: 1		
Sample ID: 04-2520-0615	Code: 73-BELT-214	Client: Larry Walker Associates		
Sample Date: 29 May-19 12:30	Material: Ambient Water	Project: 30314		
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek			
Sample Age: 26h (2 °C)	Station: BELT			

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
16-5871-4478	Reproduction	Steel Many-One Rank Sum Test	100	> 100	n/a	1	30.6%
01-7244-5520	Survival	Fisher Exact/Bonferroni-Holm Test	100	> 100	n/a	1	n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU ✓
07-0971-7025	Reproduction	Linear Interpolation (ICPIN)	IC5	50.9	1.84	n/a	1.963
			IC10	69.7	3.68	n/a	1.435
			IC15	88.4	5.52	n/a	1.131
			IC20	>100	n/a	n/a	<1
			IC25	>100	n/a	n/a	<1
			IC40	>100	n/a	n/a	<1
			IC50	>100	n/a	n/a	<1

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	33.7	25.5	41.9	3	42	3.62	11.5	33.98%	0.00%
6.25		10	31.1	25	37.2	17	42	2.71	8.56	27.51%	7.72%
12.5		10	29.7	23.4	36	19	43	2.78	8.78	29.57%	11.87%
25		10	34.1	26	42.2	5	43	3.59	11.3	33.25%	-1.19%
50		10	33.5	27.6	39.4	15	41	2.61	8.26	24.67%	0.59%
100		10	27.6	19.4	35.8	5	37	3.62	11.4	41.42%	18.10%

Survival Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

CETIS Analytical Report

Report Date: 15 Jun-19 09:42 (p 1 of 1)
 Test Code: 84004 | 18-5245-5819

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 16-5871-4478 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 9:42 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	> 100	n/a	1	30.61%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	91	75	2	18	Asymp	0.3875	Non-Significant Effect
		12.5	88.5	75	4	18	Asymp	0.3061	Non-Significant Effect
		25	110	75	3	18	Asymp	0.9287	Non-Significant Effect
		50	97.5	75	4	18	Asymp	0.6152	Non-Significant Effect
		100	83.5	75	2	18	Asymp	0.1720	Non-Significant Effect

ANOVA Table

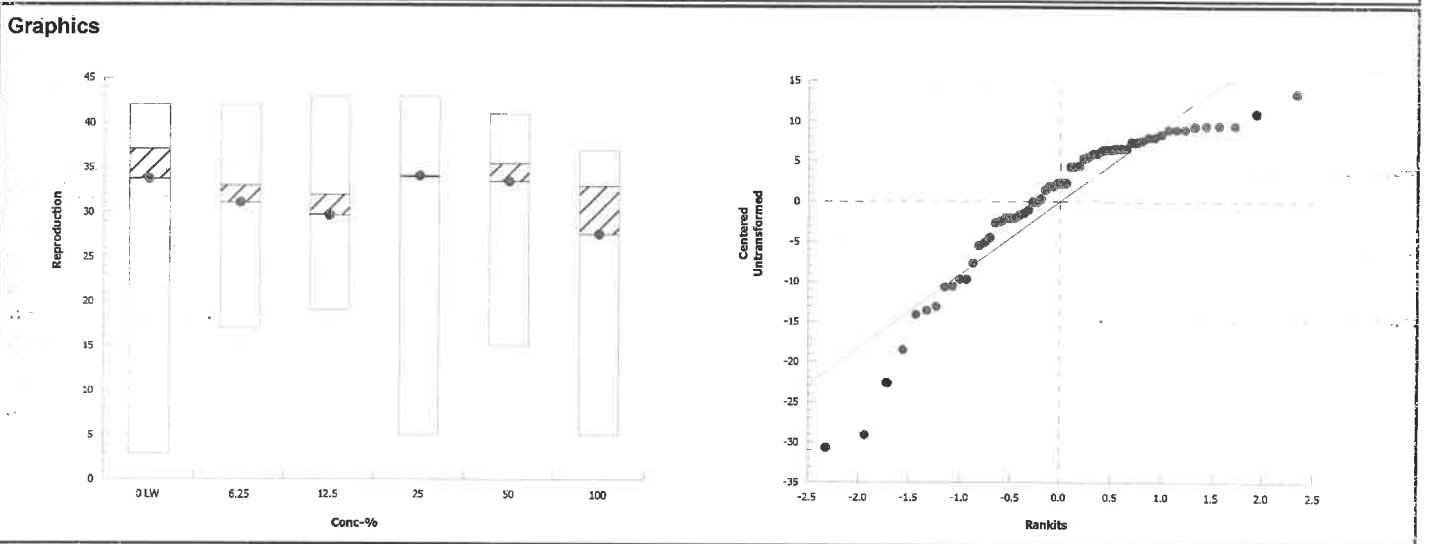
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	341.283	68.2567	5	0.672	0.6460	Non-Significant Effect
Error	5480.9	101.498	54			
Total	5822.18		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	2.18	15.1	0.8239	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.875	0.946	1.8E-05	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	10	33.7	25.5	41.9	37	3	42	3.62	33.98%	0.00%
6.25		10	31.1	25	37.2	33	17	42	2.71	27.51%	7.72%
12.5		10	29.7	23.4	36	32	19	43	2.78	29.57%	11.87%
25		10	34.1	26	42.2	34	5	43	3.59	33.25%	-1.19%
50		10	33.5	27.6	39.4	35.5	15	41	2.61	24.67%	0.59%
100		10	27.6	19.4	35.8	33	5	37	3.62	41.42%	18.10%



CETIS Analytical Report

Report Date: 15 Jun-19 09:42 (p 1 of 1)
 Test Code: 84004 | 18-5245-5819

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk

Analysis ID: 07-0971-7025 Endpoint: Reproduction CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 9:42 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

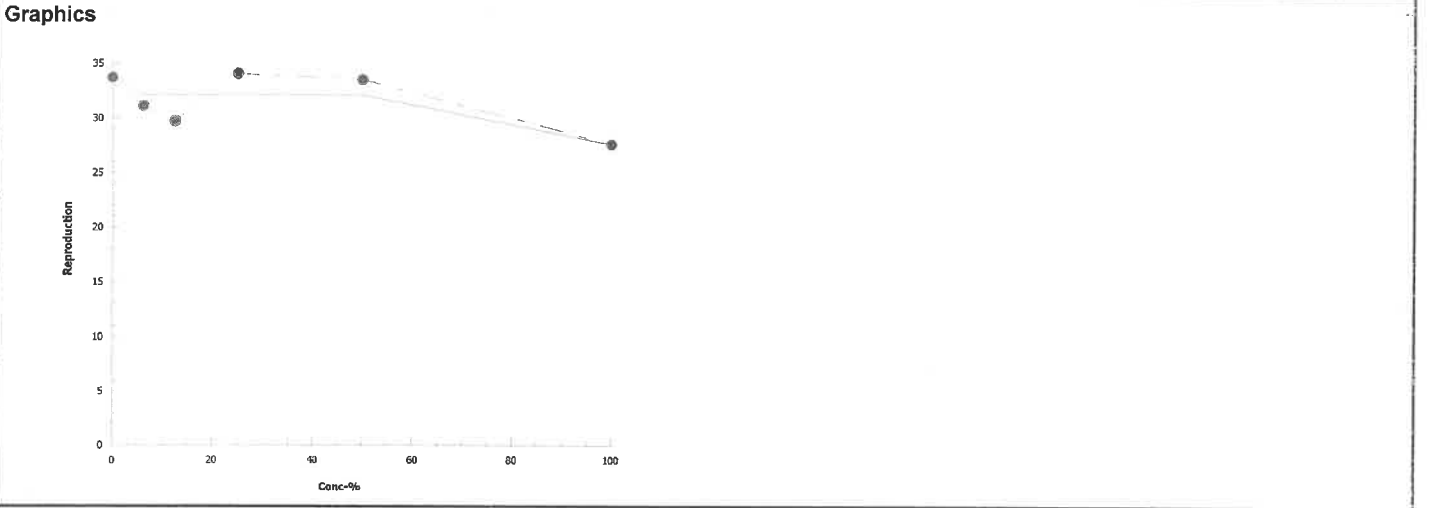
Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1853125	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	50.9	1.84	n/a	1.963	n/a	54.36
IC10	69.7	3.68	n/a	1.435	n/a	27.18
IC15	88.4	5.52	n/a	1.131	n/a	18.12
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	33.7	3	42	3.62	11.5	34.00%	0.0%
6.25		10	31.1	17	42	2.71	8.56	27.50%	7.72%
12.5		10	29.7	19	43	2.78	8.78	29.60%	11.9%
25		10	34.1	5	43	3.59	11.3	33.20%	-1.19%
50		10	33.5	15	41	2.61	8.26	24.70%	0.59%
100		10	27.6	5	37	3.62	11.4	41.40%	18.1%



CETIS Analytical Report

Report Date: 15 Jun-19 09:42 (p 1 of 1)
 Test Code: 84004 | 18-5245-5819

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Analysis ID: 01-7244-5520 Endpoint: Survival CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 9:41 Analysis: STP 2xK Contingency Tables Official Results: Yes

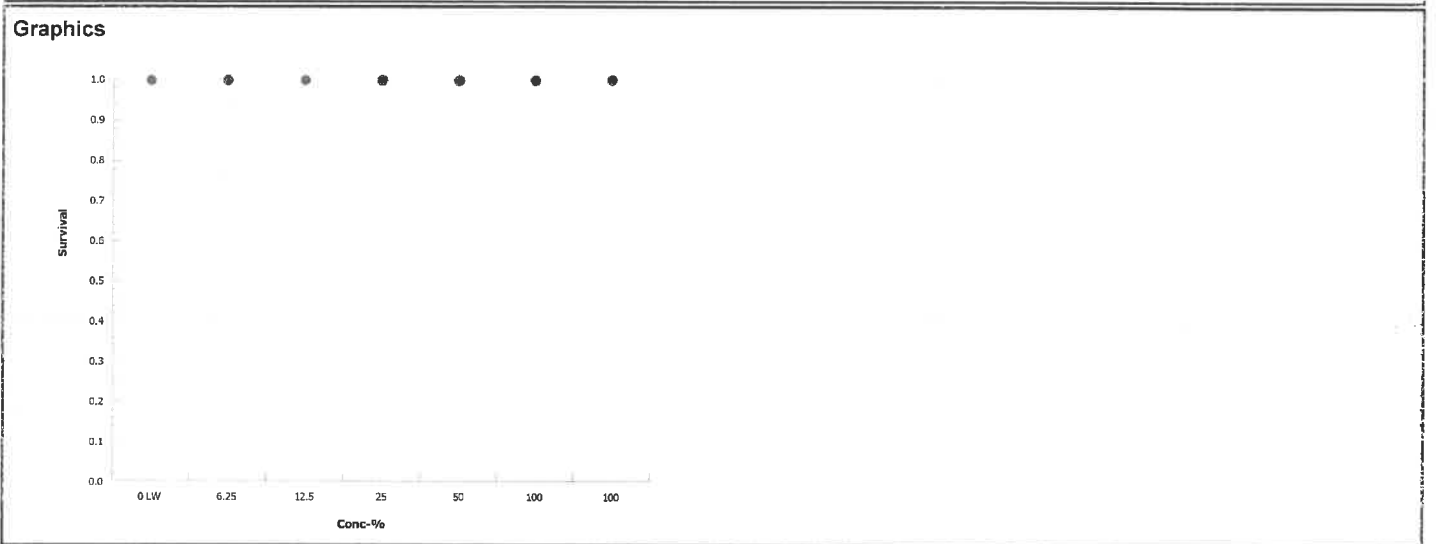
Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		6.25	1.000	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	1.000	Exact	1.0000	Non-Significant Effect
		50	1.000	Exact	1.0000	Non-Significant Effect
		100	1.000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	LW	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%



Appendix D

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Ceriodaphnia dubia*

CETIS Summary Report

Report Date: 14 Jun-19 14:10 (p 1 of 2)
 Test Code: 84007 | 06-3808-2480

Ceriodaphnia Survival and Reproduction Test **Pacific EcoRisk**

Batch ID: 20-6296-0260	Test Type: Reproduction-Survival (7d)	Analyst: Ashleigh Findley
Start Date: 30 May-19 15:52	Protocol: EPA-821-R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Jun-19 12:40	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 21h	Source: In-House Culture	Age: 1

Sample ID: 16-1518-0610	Code: NaCl	Client: Reference Toxicant
Sample Date: 30 May-19 15:52	Material: Sodium chloride	Project: 30315
Receipt Date: 30 May-19 15:52	Source: Reference Toxicant	
Sample Age: n/a (24.4 °C)	Station: In House	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
06-2688-3456	Reproduction	Steel Many-One Rank Sum Test	500	1000	707.1		28.1%
16-3615-1106	Survival	Fisher Exact/Bonferroni-Holm Test	2000	> 2000	n/a		n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	mg/L	95% LCL	95% UCL	TU	✓
21-2013-2173	Reproduction	Linear Interpolation (ICPIN)	IC5	374	96.7	652		
			IC10	555	193	804		
			IC15	637	290	956		
			IC20	720	387	1050		
			IC25	803	483	1130		
			IC40	1060	799	1340		
			IC50	1240	925	1570		
03-8633-0740	Survival	Regression: Log-Normal (Probit)	EC5	956	135	1330		
			EC10	1090	224	1450		
			EC15	1200	314	1540		
			EC20	1290	409	1620		
			EC25	1370	512	1700		
			EC40	1600	883	1950		
			EC50	1760	1180	2210		

Reproduction Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	31.4	23.3	39.5	0	38	3.6	11.4	36.26%	0.00%
500		10	29.3	22.9	35.7	16	38	2.81	8.9	30.36%	6.69%
1000		10	19.8	13.5	26.1	0	31	2.78	8.8	44.46%	36.94%
1500		10	11.2	4.99	17.4	1	25	2.74	8.68	77.47%	64.33%
2000		10	4.8	0.659	8.94	0	15	1.83	5.79	120.60%	84.71%
2500		10	0	0	0	0	0	0	0		100.00%

Survival Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	0.00%
500		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-11.11%
1000		10	0.800	0.498	1.000	0.000	1.000	0.133	0.422	52.70%	11.11%
1500		10	0.600	0.231	0.969	0.000	1.000	0.163	0.516	86.07%	33.33%
2000		10	0.600	0.231	0.969	0.000	1.000	0.163	0.516	86.07%	33.33%
2500		10	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

CETIS Summary Report

Report Date: 14 Jun-19 14:10 (p 2 of 2)
 Test Code: 84007 | 06-3808-2480

Ceriodaphnia Survival and Reproduction Test											Pacific EcoRisk
Reproduction Detail											
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	36	0	35	35	34	28	34	38	36	38
500		37	34	38	35	16	34	33	32	17	17
1000		0	23	26	15	13	25	25	22	31	18
1500		20	19	2	1	7	17	25	11	9	1
2000		4	1	0	0	5	15	12	0	0	11
2500		0	0	0	0	0	0	0	0	0	0
Survival Detail											
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
500		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1000		0.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000
1500		1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	0.000
2000		1.000	1.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	1.000
2500		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Survival Binomials											
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
500		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1000		0/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1
1500		1/1	1/1	0/1	0/1	0/1	1/1	1/1	1/1	1/1	0/1
2000		1/1	1/1	0/1	0/1	1/1	1/1	1/1	0/1	0/1	1/1
2500		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

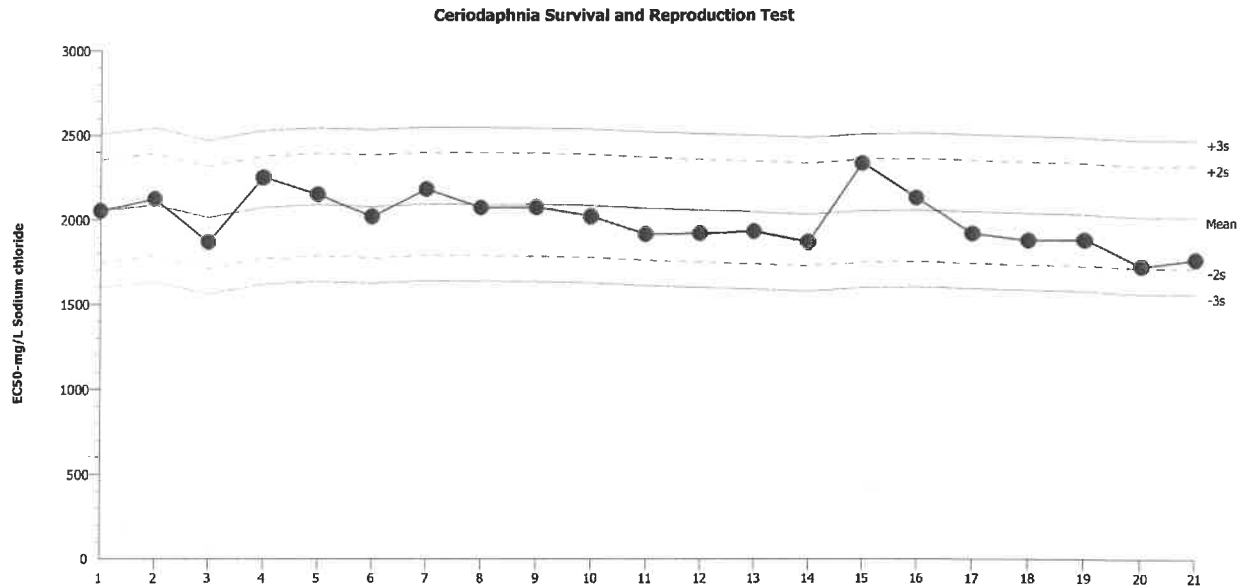
Ceriodaphnia Survival and Reproduction Test

Pacific EcoRisk

Test Type: Reproduction-Survival (7d)
 Protocol: EPA-821-R-02-013 (2002)

Organism: Ceriodaphnia dubia (Water Flea)
 Endpoint: Survival

Material: Sodium chloride
 Source: Reference Toxicant-REF



Mean: 2015 Count: 20 -2s Warning Limit: 1712 -3s Action Limit: 1560
 Sigma: 151.5 CV: 7.52% +2s Warning Limit: 2318 +3s Action Limit: 2469

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2019	Mar	6	15:10	2053	38.05	0.2511			08-2248-1351	11-7438-2792
2			12	13:30	2125	109.7	0.7242			06-1496-1658	15-3638-9154
3			19	10:27	1869	-146.3	-0.9655			06-5764-8687	04-8642-9089
4			20	13:55	2251	235.8	1.557			13-6770-5053	03-6635-8138
5			21	14:00	2150	134.9	0.8904			07-5389-0787	21-3270-7525
6			26	13:27	2019	3.902	0.02576			06-0740-8705	19-4070-6702
7			28	14:43	2180	164.7	1.087			16-4623-8001	14-8475-0968
8		Apr	2	12:50	2071	56.13	0.3705			04-9809-2518	03-0091-6218
9			3	15:40	2071	56.13	0.3705			07-1306-4019	11-7175-2930
10			9	15:18	2019	3.902	0.02576			08-3811-6538	11-8045-9836
11			16	13:30	1913	-101.8	-0.6721			09-6387-0659	10-1743-2920
12			18	14:30	1918	-96.64	-0.6379			00-3914-8582	14-7321-6086
13			23	11:25	1930	-84.54	-0.558			00-8186-3812	05-1111-4970
14			24	14:35	1869	-146.3	-0.9655			03-8436-9146	18-8432-7091
15			30	10:51	2332	316.6	2.09	(+)		05-9725-7220	16-4602-9284
16		May	7	12:30	2128	113.2	0.7474			09-3555-4774	03-2994-7826
17			8	13:04	1918	-96.64	-0.6379			07-9517-3369	00-8994-0431
18			9	12:56	1878	-137.1	-0.9051			17-3408-9246	00-8702-7456
19			14	13:45	1880	-134.8	-0.8894			06-0431-3772	20-7504-7881
20			21	11:32	1721	-293.6	-1.938			05-5559-8922	19-3367-4552
21			30	15:52	1763	-251.9	-1.662			06-3808-2480	03-8633-0740

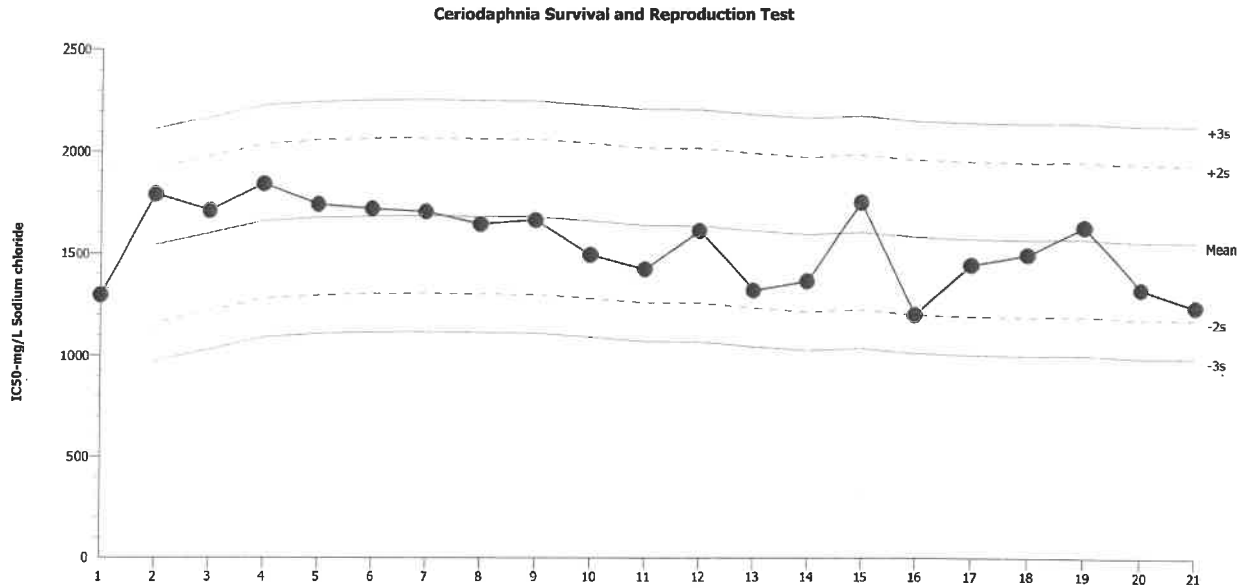
Ceriodaphnia Survival and Reproduction Test

Pacific EcoRisk

Test Type: Reproduction-Survival (7d)
 Protocol: EPA-821-R-02-013 (2002)

Organism: Ceriodaphnia dubia (Water Flea)
 Endpoint: Reproduction

Material: Sodium chloride
 Source: Reference Toxicant-REF



Mean: 1557 Count: 20 -2s Warning Limit: 1178 -3s Action Limit: 988.7
 Sigma: 189.5 CV: 12.20% +2s Warning Limit: 1936 +3s Action Limit: 2126

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2019	Mar	6	15:10	1297	-260.1	-1.373			08-2248-1351	04-5210-3087
2			12	13:30	1787	230	1.214			06-1496-1658	00-6040-0530
3			19	10:27	1709	151.6	0.7998			06-5764-8687	18-0750-6505
4			20	13:55	1840	283	1.494			13-6770-5053	08-5924-2670
5			21	14:00	1739	181.9	0.9598			07-5389-0787	10-9451-3924
6			26	13:27	1718	161.3	0.8512			06-0740-8705	12-8195-7300
7			28	14:43	1704	146.6	0.7735			16-4623-8001	02-6475-8996
8		Apr	2	12:50	1643	85.65	0.452			04-9809-2518	00-3428-0464
9			3	15:40	1661	104.5	0.5513			07-1306-4019	19-9739-2021
10			9	15:18	1492	-64.58	-0.3408			08-3811-6538	00-2435-9971
11			16	13:30	1423	-134.5	-0.7096			09-6387-0659	13-3448-9942
12			18	14:30	1610	52.81	0.2787			00-3914-8582	02-7709-4056
13			23	11:25	1319	-238.3	-1.257			00-8186-3812	20-7625-9411
14			24	14:35	1364	-193	-1.018			03-8436-9146	08-1128-7959
15			30	10:51	1749	192.3	1.015			05-9725-7220	16-7354-6194
16		May	7	12:30	1199	-357.5	-1.887			09-3555-4774	10-1922-2100
17			8	13:04	1443	-113.9	-0.6012			07-9517-3369	10-9692-1632
18			9	12:56	1493	-63.69	-0.3361			17-3408-9246	17-1799-8194
19			14	13:45	1629	71.54	0.3775			06-0431-3772	20-4854-7061
20			21	11:32	1325	-232.2	-1.225			05-5559-8922	15-4136-4957
21			30	15:52	1238	-318.6	-1.681			06-3808-2480	21-2013-2173

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: _____ Reference Toxicant: _____ Material: Sodium Chloride
 Project #: 30315 Test ID: 84007 Randomization: 10-7-3 Test Date: 5/30/19
 Control Water: Mod EPAMH

Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SIGN-OFF	
	New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J		
0	7.66		6.5		366		24.4	0	0	0	0	0	0	0	0	0	0	Date: <u>5/30/19</u> New WQ: <u>JR</u> Test Init. <u>TF</u> Sol'n Prep: <u>TK</u> Time: <u>1552</u>	
1	8.08	7.70	6.6	7.6	359	422	24.6	0	0	0	0	0	0	0	0	0	0	Date: <u>5/31/19</u> New WQ: <u>JR</u> Counts: <u>Acc</u> Sol'n Prep: <u>JL</u> Old WQ: <u>TA</u> Time: <u>1655</u>	
2	8.07	8.05	8.7	7.4	362	381	25.1	0	0	0	0	0	0	0	0	0	0	Date: <u>6/1/19</u> New WQ: <u>TP</u> Counts: <u>26</u> Sol'n Prep: <u>TK</u> Old WQ: <u>TP</u> Time: <u>1434</u>	
3	8.10	7.80	8.5	6.4	357	379	24.6	0	0	0	0	0	0	0	0	0	0	Date: <u>6/2/19</u> New WQ: <u>NJ</u> Counts: <u>KL</u> Sol'n Prep: <u>46</u> Old WQ: <u>TP</u> Time: <u>1505</u>	
4	8.05	7.77	8.6	6.4	355	423	24.1	5	X/0	5	5	5	5	6	6	4	6	Date: <u>6/3/19</u> New WQ: <u>DH</u> Counts: <u>162</u> Sol'n Prep: <u>KL</u> Old WQ: <u>SAB</u> Time: <u>1535</u>	
5	8.04	8.00	8.7	7.8	356	380	24.9	0	-	12	12	13	12	11	13	0	13	Date: <u>6/4/19</u> New WQ: <u>Acc</u> Counts: <u>KL</u> Sol'n Prep: <u>SD</u> Old WQ: <u>JR</u> Time: <u>1445</u>	
6	8.12	7.85	8.1	7.7	350	388	24.6	12	-	18	0	16	11	17	0	13	0	Date: <u>6/5/19</u> New WQ: <u>KL</u> Counts: <u>5D</u> Sol'n Prep: <u>46</u> Old WQ: <u>JAT</u> Time: <u>1521</u>	
7	-	7.96	-	7.8	-	381	25.1	19	-	0	18	0	0	0	19	19	19	Date: <u>6/6/19</u> New WQ: <u>-</u> Counts: <u>20</u> Sol'n Prep: <u>-</u> Old WQ: <u>max</u> Time: <u>1240</u>	
8																		Date: _____ Counts: _____ Old WQ: _____ Time: _____	
Total=								36	X/0	35	35	34	²⁸ 38	34	38	36	38	Mean Neonates/Female = <u>32.9</u> <u>31.4</u>	

Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										RT BATCH NUMBER
	New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J	
0	7.77		6.2		1283		24.2	0	0	0	0	0	0	0	0	0	0	299
1	8.05	7.73	6.9	7.8	1355	1402	24.6	0	0	0	0	0	0	0	0	0	0	299
2	8.00	8.03	8.9	7.7	1288	1455	25.1	0	0	0	0	0	0	0	0	0	0	299
3	8.00	7.89	8.9	6.7	1364	1465	24.7	0	0	0	0	0	0	0	0	0	0	299
4	8.05	7.86	8.7	6.4	1316	1683	24.2	5	4	5	4	0	4	6	5	5	6	299
5	8.02	8.01	8.5	7.3	1312	1456	24.6	12	0	0	13	9	13	0	0	0	0	299/300
6	8.09	7.90	8.1	7.9	1285	1410	24.7	0	12	12	0	7	0	14	11	12	11	300
7	-	7.98	-	7.4	-	1441	25.2	20	18	21	18	0	17	13	16	0	0	-
8																		
Total=								37	34	38	35	16	34	33	32	17	17	Mean Neonates/Female = <u>29.3</u>

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Reference Toxicant Material: Sodium Chloride Test Date: 5/30/19
 Project #: 30315 Test ID: 84007 Randomization: 10-7-3 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SIGN-OFF
		New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J	
1000 mg/L	0	7.84		6.3		2201		24.1	0	0	0	0	0	0	0	0	0	0	
	1	8.01	7.73	6.9	7.8	2262	2391	24.5	0	0	0	0	0	0	0	0	0	0	
	2	7.98	8.04	9.3	7.6	2203	2512	25.1	0	0	0	0	0	0	0	0	0	0	
	3	7.91	7.94	9.1	6.8	2215	2538	24.8	0	0	0	0	0	0	0	0	0	0	
	4	8.02	7.82	8.9	6.8	2193	2573	24.0	1/0	5	5	4	4	2	2	0	5	5	
	5	7.99	8.01	8.8	7.3	2242	2386	24.5	-	11	0	0	0	12	9	10	0	0	
	6	8.67	7.99	8.3	7.8	2190	2438	24.1	-	0	9	1/0	1/9	11	0	0	12	8	
	7	-	7.98	-	7.5	-	2450	25.2	-	7	12	1/2	1/2	0	14	12	14	5	
	8											1/2	1/2						
Total=									1/0	23	26	1/4	1/13	25	25	22	31	18	Mean Neonates/Female = 19.9 19.8
1500 mg/L	0	7.85		7.3		3104		24.2	0	0	0	0	0	0	0	0	0	0	
	1	7.96	7.72	7.6	7.7	3234	3359	24.7	0	0	0	0	0	0	0	0	0	0	
	2	7.92	8.01	9.5	7.8	3078	3467	25.0	0	0	0	0	0	0	0	0	0	0	
	3	7.90	7.92	9.5	7.2	3156	3466	24.7	0	0	0	0	0	0	0	0	0	0	
	4	7.98	7.90	9.1	6.8	3139	4059	24.3	3	4	2	1	3	2	4	2	4	1	
	5	7.91	8.00	8.9	7.2	3189	3415	24.4	0	0	1/0	1/0	0	1	0	4	0	1/0	
	6	8.03	7.98	8.5	7.6	3099	3572	24.0	3	2	-	-	1/4	3	6	5	5	-	
	7	-	8.00	-	7.3	-	3502	24.7	14	13	-	-	-	11	15	0	0	-	
	8											-	-						
Total=									20	19	1/2	1/1	1/7	17	25	11	9	1/1	Mean Neonates/Female = 11.2

AKG
6/11/19

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: _____ Reference Toxicant: _____ Material: Sodium Chloride Test Date: 5/30/19
 Project #: 30315 Test ID: 84007 Randomization: 10-7-3 Control Water: Mod EPAMH

	Day	pH		D.O.		Cond. (µS/cm)		Temp (°C)	Survival / Reproduction										SIGN-OFF	
		New	Old	New	Old	New	Old		A	B	C	D	E	F	G	H	I	J		
2000 mg/L	0	7.88		7.6		4028		24.1	0	0	0	0	0	0	0	0	0	0		
	1	7.91	7.74	7.7	7.8	4042	4324	24.4	0	0	0	0	0	0	0	0	0	0	0	
	2	7.90	7.99	10.0	7.8	4003	4356	25.0	0	0	0	0	0	0	0	0	0	0	0	
	3	7.86	7.95	9.9	6.7	4052	4390	24.4	0	0	0	0	0	0	0	0	1/0	0		
	4	7.92	7.88	9.4	6.4	4078	4864	24.1	0	0	0	0	0	0	0	0	-	0		
	5	7.91	7.98	9.2	7.0	4063	4321	24.1	1	1	1/0	1/0	0	0	0	1/0	-	1		
	6	8.04	7.99	8.7	7.7	4024	4333	24.1	0	0	-	-	0	5	2	-	-	2		
	7	-	7.98	-	7.4	-	4435	24.8	3	0	-	-	5	10	10	-	-	8		
	8											-	-			-	-			
Total=									4	1	1/0	1/0	5	15	12	1/0	1/0	11	Mean Neonates/Female = 4.8	
2.500 mg/L	0	7.87		8.0		4966		24.2	0	0	0	0	0	0	0	0	0	0		
	1	7.87	7.76	8.4	7.9	5007	5377	24.7	0	0	0	0	0	0	0	0	0	0		
	2	7.87	8.00	10.2	7.8	5042	5290	24.9	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0		
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	5																			
	6																			
	7																			
	8																			
Total=									1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	Mean Neonates/Female = 0.0

Appendix E

Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Calleguas Creek Ambient Waters to *Hyalella azteca*

CETIS Summary Report

Report Date: 15 Jun-19 11:07 (p 1 of 1)
 Test Code: 84006 | 00-6553-8625

Hyalella azteca 10-Day Water Toxicity Test **Pacific EcoRisk**

Batch ID: 01-1753-7051	Test Type: Survival	Analyst: Ashleigh Findley
Start Date: 30 May-19 16:14	Protocol: EPA/600/R-99/064 M	Diluent: Laboratory Water
Ending Date: 09 Jun-19 15:26	Species: Hyalella azteca	Brine: Not Applicable
Duration: 9d 23h	Source: Aquatic Biosystems, CO	Age: 10

Sample ID: 21-1128-8963	Code: 73-WOOD-128	Client: Larry Walker Associates
Sample Date: 29 May-19 15:10	Material: Ambient Water	Project: 30314
Receipt Date: 30 May-19 07:55	Source: Calleguas Creek	
Sample Age: 25h	Station: WOOD	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
15-6351-1206	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.9167	Culture Control passed survival rate

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
03-2158-4559	Survival Rate	Steel Many-One Rank Sum Test	25	50	35.36	4	16.3%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
07-6220-0563	Survival Rate	Regression: Log-Normal (Probit)	EC5	13.9	8.26	18.7	7.174	
			EC10	17.1	11	22	5.85	
			EC15	19.6	13.4	24.6	5.098	
			EC20	21.9	15.6	27	4.569	
			EC25	24	17.7	29.3	4.16	
			EC40	30.5	24.2	36.4	3.284	
EC50	35.1	28.7	42.1	2.848				

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	cu	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
0	LW	5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	2.04%
6.25		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
12.5		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
25		5	0.600	0.283	0.917	0.300	1.000	0.114	0.255	42.49%	38.78%
50		5	0.340	0.114	0.566	0.100	0.600	0.081	0.182	53.43%	65.31%
100		5	0.020	0.000	0.076	0.000	0.100	0.020	0.045	223.61%	97.96%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	cu	0.900	1.000	1.000	1.000	1.000
0	LW	1.000	1.000	1.000	0.900	0.900
6.25		1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000
25		1.000	0.300	0.500	0.600	0.600
50		0.100	0.600	0.300	0.400	0.300
100		0.000	0.000	0.000	0.000	0.100

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	cu	9/10	10/10	10/10	10/10	10/10
0	LW	10/10	10/10	10/10	9/10	9/10
6.25		10/10	10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10	10/10
25		10/10	3/10	5/10	6/10	6/10
50		1/10	6/10	3/10	4/10	3/10
100		0/10	0/10	0/10	0/10	1/10

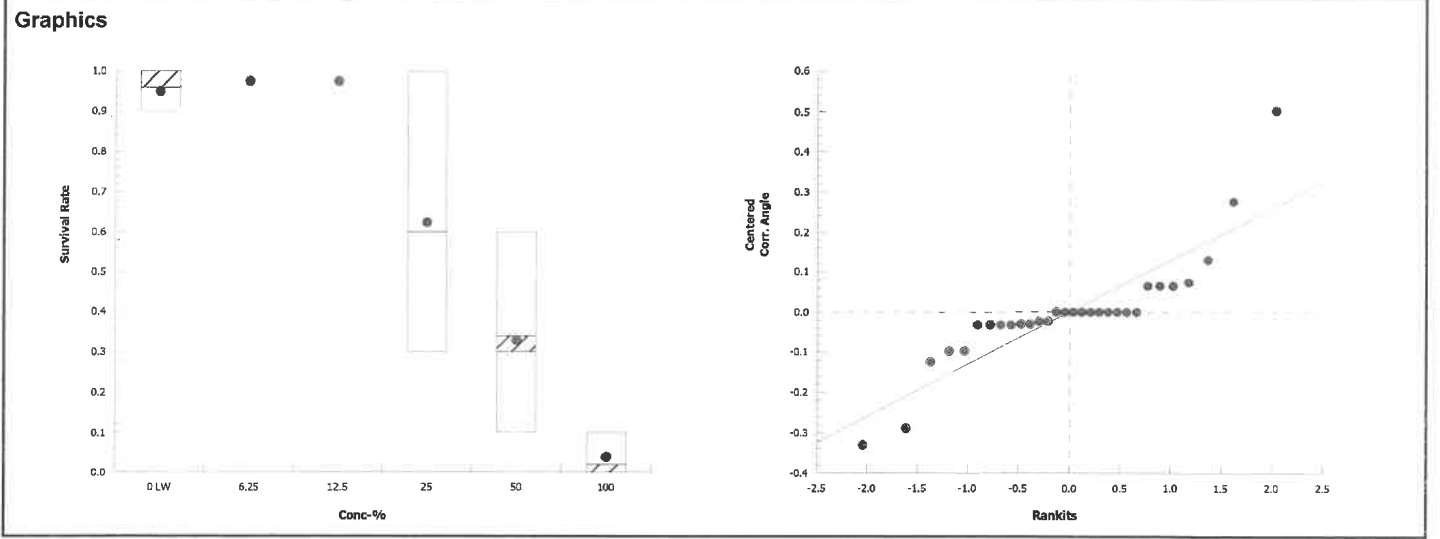
CETIS Analytical Report

Report Date: 15 Jun-19 11:07 (p 1 of 3)
 Test Code: 84006 | 00-6553-8625

Hyalella azteca 10-Day Water Toxicity Test										Pacific EcoRisk	
Analysis ID: 03-2158-4559		Endpoint: Survival Rate				CETIS Version: CETISv1.9.2					
Analyzed: 15 Jun-19 11:06		Analysis: Nonparametric-Control vs Treatments				Official Results: Yes					
Data Transform		Alt Hyp		NOEL	LOEL	TOEL	TU	PMSD			
Angular (Corrected)		C > T		25	50	35.36	4	16.34%			
Steel Many-One Rank Sum Test											
Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Water Contr		6.25	32.5	16	1	8	Asymp	0.9870	Non-Significant Effect		
		12.5	32.5	16	1	8	Asymp	0.9870	Non-Significant Effect		
		25	18.5	16	1	8	Asymp	0.1075	Non-Significant Effect		
		50*	15	16	0	8	Asymp	0.0191	Significant Effect		
		100*	15	16	0	8	Asymp	0.0191	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	6.3566		1.27132	5	51.1	<1.0E-37	Significant Effect				
Error	0.597679		0.0249033	24							
Total	6.95428			29							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Levene Equality of Variance Test			3.01	3.9	0.0302	Equal Variances				
Variances	Mod Levene Equality of Variance Test			2.42	4.25	0.0763	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.803	0.903	7.3E-05	Non-Normal Distribution				
Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	0.00%
6.25		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-4.17%
12.5		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-4.17%
25		5	0.600	0.283	0.917	0.600	0.300	1.000	0.114	42.49%	37.50%
50		5	0.340	0.114	0.566	0.300	0.100	0.600	0.081	53.43%	64.58%
100		5	0.020	0.000	0.076	0.000	0.000	0.100	0.020	223.61%	97.92%
Angular (Corrected) Transformed Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.35	1.24	1.46	1.41	1.25	1.41	0.0399	6.63%	0.00%
6.25		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-4.84%
12.5		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-4.84%
25		5	0.91	0.528	1.29	0.886	0.58	1.41	0.137	33.78%	32.45%
50		5	0.61	0.357	0.864	0.58	0.322	0.886	0.0913	33.45%	54.68%
100		5	0.191	0.101	0.282	0.159	0.159	0.322	0.0326	38.08%	85.79%

Hyalella azteca 10-Day Water Toxicity Test **Pacific EcoRisk**

Analysis ID: 03-2158-4559 Endpoint: Survival Rate CETIS Version: CETISv1.9.2
Analyzed: 15 Jun-19 11:06 Analysis: Nonparametric-Control vs Treatments Official Results: Yes



CETIS Analytical Report

Report Date: 15 Jun-19 11:07 (p 3 of 3)
 Test Code: 84006 | 00-6553-8625

Hyalella azteca 10-Day Water Toxicity Test Pacific EcoRisk

Analysis ID: 15-6351-1206 Endpoint: Survival Rate CETIS Version: CETISv1.9.2
 Analyzed: 15 Jun-19 11:07 Analysis: Nonparametric-Two Sample Official Results: Yes

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	Culture Control passed survival rate	6.13%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Control II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		Culture Control	30	n/a	2	8	Exact	0.9167	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0026559	0.0026559	1	0.4	0.5447	Non-Significant Effect
Error	0.0531187	0.0066398	8			
Total	0.0557746		9			

Distributional Tests

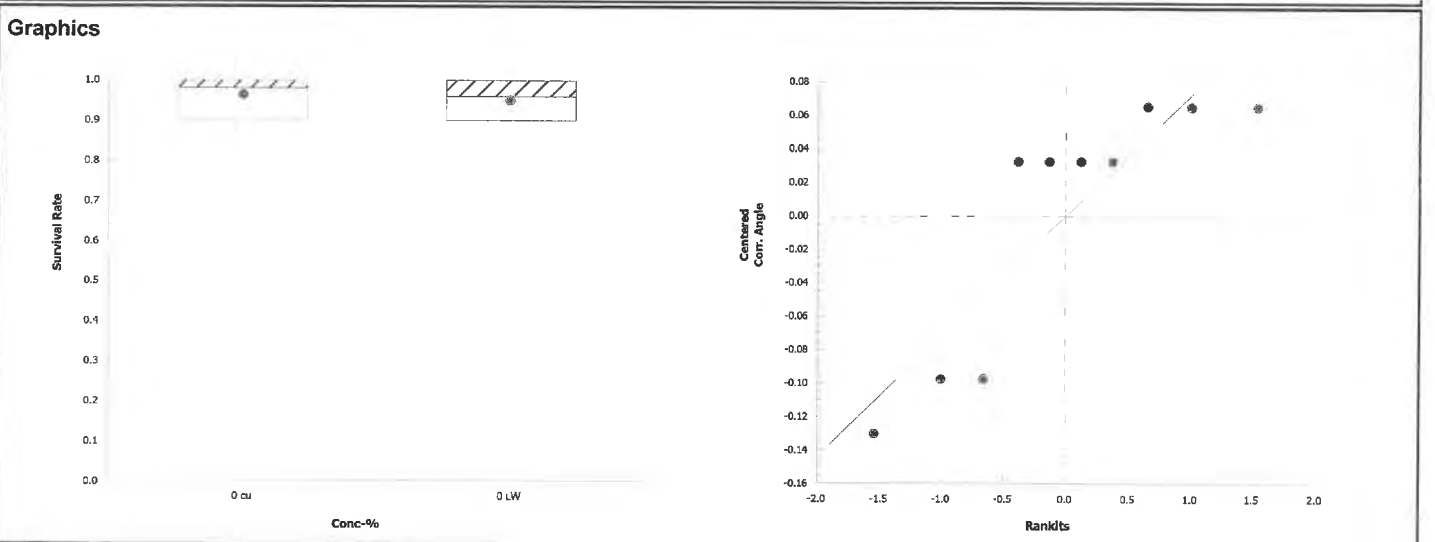
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F Test	1.5	23.2	0.7040	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.759	0.741	0.0045	Non-Normal Distribution

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	cu	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
0	LW	5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	2.04%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	cu	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
0	LW	5	1.35	1.24	1.46	1.41	1.25	1.41	0.0399	6.63%	2.36%



CETIS Analytical Report

Report Date: 15 Jun-19 11:07 (p 1 of 2)
 Test Code: 84006 | 00-6553-8625

Hyalella azteca 10-Day Water Toxicity Test										Pacific EcoRisk	
Analysis ID: 07-6220-0563		Endpoint: Survival Rate			CETIS Version: CETISv1.9.2						
Analyzed: 15 Jun-19 11:06		Analysis: Linear Regression (GLM)			Official Results: Yes						
Linear Regression Options											
Model Name	Link Function	Threshold Option	Thresh	Optimized	Pooled	Het Corr	Weighted				
Log-Normal (Probit)	$\eta = \text{inv } \Phi[\pi]$	Control Threshold	0.04	Yes	No	Yes	Yes				
Regression Summary											
Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision(α :5%)	
35	-34.9	76.8	80	1.55	0.244	0.986	2.78	3.01	0.0628	Non-Significant Lack of Fit	
Point Estimates											
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL					
EC5	13.9	8.26	18.7	7.174	5.361	12.1					
EC10	17.1	11	22	5.85	4.548	9.052					
EC15	19.6	13.4	24.6	5.098	4.06	7.459					
EC20	21.9	15.6	27	4.569	3.702	6.41					
EC25	24	17.7	29.3	4.16	3.413	5.64					
EC40	30.5	24.2	36.4	3.284	2.745	4.138					
EC50	35.1	28.7	42.1	2.848	2.376	3.481					
Regression Parameters											
Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α :5%)				
Threshold	0.0149	0.0151	-0.016	0.0458	0.989	0.3317	Non-Significant Parameter				
Slope	4.1	0.642	2.78	5.42	6.39	7.7E-07	Significant Parameter				
Intercept	-6.34	1.02	-8.42	-4.25	-6.24	1.1E-06	Significant Parameter				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)					
Model	3200	1600	2	1050	<1.0E-37	Significant					
Lack of Fit	10.6	3.54	3	2.78	0.0628	Non-Significant					
Pure Error	30.5	1.27	24								
Residual	41.1	1.52	27								
Residual Analysis											
Attribute	Method	Test Stat	Critical	P-Value	Decision(α :5%)						
Goodness-of-Fit	Pearson Chi-Sq GOF Test	41.1	40.1	0.0400	Significant Heterogeneity						
	Likelihood Ratio GOF Test	40.5	40.1	0.0464	Significant Heterogeneity						
Variances	Mod Levene Equality of Variance	1.75	2.77	0.1751	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.932	0.93	0.0570	Normal Distribution						
	Anderson-Darling A2 Normality Te	1.16	2.49	0.0049	Non-Normal Distribution						
Survival Rate Summary											
Calculated Variate(A/B)											
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	LW	5	0.960	0.900	1.000	0.025	0.055	5.71%	0.0%	48	50
6.25		5	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%	50	50
12.5		5	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%	50	50
25		5	0.600	0.300	1.000	0.114	0.255	42.50%	37.5%	30	50
50		5	0.340	0.100	0.600	0.081	0.182	53.40%	64.6%	17	50
100		5	0.020	0.000	0.100	0.020	0.045	224.00%	97.9%	1	50

Hyalella azteca 10-Day Water Toxicity Test

Pacific EcoRisk

Analysis ID: 07-6220-0563

Endpoint: Survival Rate

CETIS Version: CETISv1.9.2

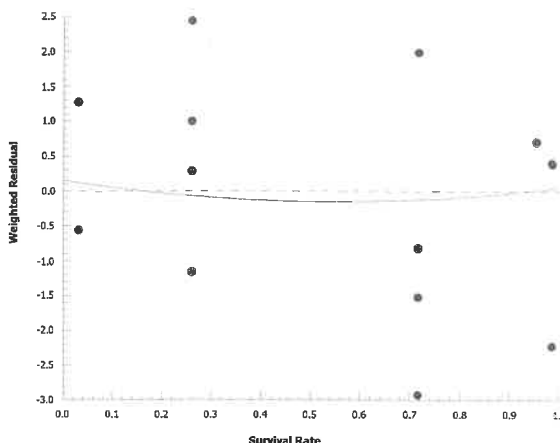
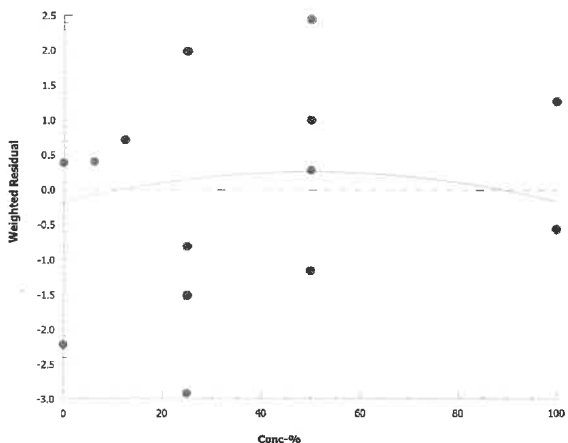
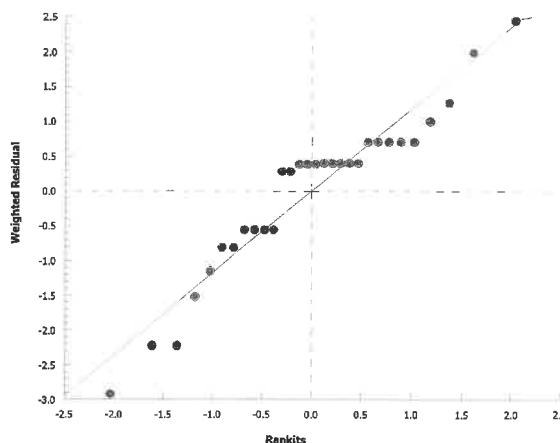
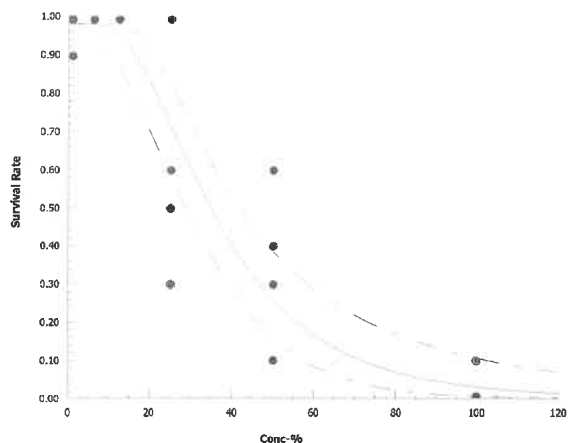
Analyzed: 15 Jun-19 11:06

Analysis: Linear Regression (GLM)

Official Results: Yes

Graphics

Log-Normal: $\text{inv } \Phi[\pi] = \alpha + \beta \cdot \log[x]$



Analyst:  QA: 

10 Day Acute *Hyaella azteca* Toxicity Test Data

Client: LWA-Calleguas Creek
 Test Material: Controls
 Test ID#: - Project #: 30314
 Test Date: 5/30/19

Organism Log#: 11612 Age: 9-10 DAYS
 Organism Supplier: AMS
 Control/Diluent: SAM 5 (Conductivity Adjusted)
 Control Water Batch: 382

Treatment	Temp (°C)	pH		D.O. (mg/L)		Conductivity (µS/cm)	# Live Organisms					SIGN-OFF
		new	old	new	old		A	B	C	D	E	
Lab Control (Cond. Adj.)	22.0	7.61		7.7		3641	10	10	10	10	10	Date: 5/30/19 Sample ID: - Test Solution Prep: KB New WQ: myc Initiation Time: 16:14 Initiation Signoff: KB
Culture Control	22.3	7.51		8.2		400	10	10	10	10	10	Date: 5/31/19 Count Time: 08:54 Count Signoff: APF Old WQ: TA
Meter ID	48A	PH24		RD11		EC14						
Lab Control (Cond. Adj.)	22.4				8.1		10	10	10	10	10	Date: 5/31/19 Count Time: 08:54 Count Signoff: APF Old WQ: TA
Culture Control	22.5				8.4		10	10	10	10	10	Date: 6/1/19 Count Time: 11:0 Count Signoff: TP Old WQ: TP Feed: TP
Meter ID	49A				RD10							
Lab Control (Cond. Adj.)	22.5				6.3		10	10	10	10	10	Date: 6/2/19 Count Time: 11:3 Count Signoff: BV Old WQ: NN
Culture Control	22.5				7.4		9	10	10	10	10	Date: 6/3/19 Count Time: 10:45 Count Signoff: KL Old WQ: KL Feed: KL
Meter ID	48A				RD10							
Lab Control (Cond. Adj.)	22.7				5.7		10	10	10	10	10	Date: 6/3/19 Count Time: 10:45 Count Signoff: KL Old WQ: KL Feed: KL
Culture Control	22.7				5.1		9	10	10	10	10	Date: 6/5/19 Count Time: 08:30 Count Signoff: CD Old WQ: KL Feed: CD
Meter ID	50A				RD10							
Lab Control (Cond. Adj.)	22.5				3.4		10	10	10	10	10	Date: 6/5/19 Count Time: 08:30 Count Signoff: CD Old WQ: KL Feed: CD
Culture Control	22.3				4.1		9	10	10	10	10	Date: 6/5/19 Count Time: 08:30 Count Signoff: CD Old WQ: KL Feed: CD
Meter ID	59A				RD10							
Lab Control (Cond. Adj.)	22.4	8.04	7.49	8.5	6.6	3616	10	10	10	10	10	Date: 6/5/19 Count Time: 08:30 Count Signoff: CD Old WQ: KL Feed: CD
Culture Control	22.3	8.07	7.51	8.4	6.8	404	9	10	10	10	10	Date: 6/5/19 Count Time: 08:30 Count Signoff: CD Old WQ: KL Feed: CD
Meter ID	49A	PH24	PH25	RD13	RD13	EC13						
Lab Control (Cond. Adj.)	23.0				6.5		10	10	10	10	10	Date: 6/7/19 Count Time: 09:40 Count Signoff: TF Old WQ: myc Feed: TF
Culture Control	23.0				6.3		9	10	10	10	10	Date: 6/7/19 Count Time: 09:40 Count Signoff: TF Old WQ: myc Feed: TF
Meter ID	54				RD12							
Lab Control (Cond. Adj.)	22.4				6.4		10	10	10	10	10	Date: 6/7/19 Count Time: 09:40 Count Signoff: TF Old WQ: myc Feed: TF
Culture Control	22.5				7.1		9	10	10	10	10	Date: 6/7/19 Count Time: 09:40 Count Signoff: TF Old WQ: myc Feed: TF
Meter ID	57				RD11							
Lab Control (Cond. Adj.)	23.8				3.9		10	10	10	10	10	Date: 6/8/19 Count Time: 09:21 Count Signoff: TF Old WQ: TA
Culture Control	23.7				3.0		9	10	10	10	10	Date: 6/8/19 Count Time: 09:21 Count Signoff: TF Old WQ: TA
Meter ID	55A				RD10							
Lab Control (Cond. Adj.)	23.5				3.3		10	10	10	10	10	Date: 6/9/19 Termination Time: 15:26 Termination Signoff: sml Old WQ: TP
Culture Control	23.7				4.8		9	10	10	10	10	Date: 6/9/19 Termination Time: 15:26 Termination Signoff: sml Old WQ: TP
Meter ID	55A				RD10							
Lab Control (Cond. Adj.)	23.6		7.43		6.2	3898	10	10	10	9	9	Date: 6/9/19 Termination Time: 15:26 Termination Signoff: sml Old WQ: TP
Culture Control	23.6		7.53		6.3	486	9	10	10	10	10	Date: 6/9/19 Termination Time: 15:26 Termination Signoff: sml Old WQ: TP
Meter ID	112A	PH24		RD11		EC10						

10 Day Acute *Hyaella azteca* Toxicity Test Data

Client: LWA-Calleguas Creek
 Test Material: CCWTMP-73-WOOD- 12.8
 Test ID#: 84006 Project #: 30314
 Test Date: 5/30/19

Organism Log#: 11612 Age: 9-10 DAYS
 Organism Supplier: ABS
 Control/Diluent: SAM 5 (Conductivity Adjusted)
 Control Water Batch: 382

Treatment	Temp (°C)	pH		D.O. (mg/L)		Conductivity (µS/cm)	# Live Organisms					SIGN-OFF
		new	old	new	old		A	B	C	D	E	
Lab Control (Cond. Adj.)	22.6	7.61		7.7		3641	10	10	10	10	10	Date: 5/30/19 Sample ID: 53054 Test Solution Prep: KB New WQ: mxt Initiation Time: 11:14 Initiation Signoff: KB
6.25%	23.6	7.77		8.2		3641	10	10	10	10	10	
12.5%	23.6	7.86		8.3		3641	10	10	10	10	10	
25%	22.3	8.03		8.4		3641	10	10	10	10	10	
50%	22.4	8.31		8.9		3641	10	10	10	10	10	
100%	22.3	8.47		9.8		3641	10	10	10	10	10	
Meter ID	45A	PH24		RD11		FC10						
Lab Control (Cond. Adj.)	22.4			8.1			10	10	10	10	10	Date: 5/31/19 Count Time: Count Signoff: ABS Old WQ: TA
6.25%	22.5			8.4			10	10	10	10	10	
12.5%	22.4			8.5			10	10	10	10	10	
25%	22.5			8.6			10	10	10	10	9	
50%	22.5			8.4			10	10	10	10	10	
100%	22.6			8.5			10	10	10	10	10	
Meter ID	44A			RD10								
Lab Control (Cond. Adj.)	22.5			6.3			10	10	10	10	10	Date: 6/1/19 Count Time: 11:10 Count Signoff: TA Old WQ: TP Feed: TA
6.25%	22.5			7.0			10	10	10	10	10	
12.5%	22.5			7.2			10	10	10	10	10	
25%	22.5			7.6			10	10	10	10	9	
50%	22.5			7.6			10	10	10	10	10	
100%	22.6			7.5			10	10	10	10	10	
Meter ID	48A			RD10								
Lab Control (Cond. Adj.)	22.7			5.7			10	10	10	10	10	Date: 6/2/19 Count Time: 11:13 Count Signoff: BV Old WQ: MV
6.25%	22.6			6.9			10	10	10	10	10	
12.5%	22.5			6.9			10	10	10	10	10	
25%	22.5			7.0			10	6	7	7	8	
50%	22.5			7.3			5	8	6	9	5	
100%	22.3			6.9			2	0	0	1	3	
Meter ID	40A			RD10								

10 Day Acute *Hyaella azteca* Toxicity Test Data

Client: LWA-Calleguas Creek Organism Log#: 11612 Age: 7-10 DAYS
 Test Material: CCWTMP-73-WOOD-128 Organism Supplier: MBS
 Test ID#: 84006 Project #: 30314 Control/Diluent: SAM 5 (Conductivity Adjusted)
 Test Date: 5/30/19 Control Water Batch: 382

Treatment	Temp (°C)	pH		D.O. (mg/L)		Conductivity (µS/cm)	# Live Organisms					SIGN-OFF
		new	old	new	old		A	B	C	D	E	
Lab Control (Cond. Adj.)	22.3				3.4		10	10	10	10	10	Date: 6/3/19 Count Time: 1045
6.25%	22.4				5.7		10	10	10	10	10	Count Signoff: KT Old WQ: ER
12.5%	22.4				5.9		10	10	10	10	10	Feed: KL
25%	22.4				6.0		10	6	5	6	8	
50%	22.4				4.1		5	7	6	7	5	
100%	22.5				4.7		0	0	0	0	2	
Meter ID	574				11A							
Lab Control (Cond. Adj.)	22.4	8.04	7.49	8.5	6.6	3616	10	10	10	10	10	Date: 6/4/19 Sample ID: 53056
6.25%	22.4	8.07	7.45	8.3	6.8	3616	10	10	10	10	10	Test Solution Prep: Y6 New WQ: JR
12.5%	22.4	8.08	7.53	8.4	6.3	3616	10	10	10	10	10	Renewal Time: 1710 Renewal Signoff: ARF
25%	22.5	8.28	7.56	8.4	6.1	3616	10	4	5	6	7	Old WQ: SR
50%	22.5	8.44	7.67	8.9	6.2	3616	3	7	5	5	4	
100%	22.4	8.66	7.72	9.6	5.0	3616	-	-	-	-	1	
Meter ID	99A	PH25	PH25	RD13	RD13	EL13						
Lab Control (Cond. Adj.)	23.0				6.5		10	10	10	10	10	Date: 6/5/19 Count Time: 0830
6.25%	22.8				6.7		10	10	10	10	10	Count Signoff: CD Old WQ: JT
12.5%	22.9				6.2		10	10	10	10	10	Feed: CD
25%	23.1				6.1		10	4	5	6	7	
50%	22.9				6.0		1	6	4	5	3	
100%	22.8				6.0		-	-	-	-	1	
Meter ID	54				RD12							
Lab Control (Cond. Adj.)	22.5				6.4		10	10	10	10	10	Date: 6/16/19 Count Time: 0847
6.25%	22.7				6.6		10	10	10	10	10	Count Signoff: SD Old WQ: K
12.5%	22.7				7.0		10	10	10	10	10	
25%	22.9				6.1		10	3	5	6	7	
50%	22.8				6.6		1	6	4	4	3	
100%	22.8				6.5		-	-	-	-	1	
Meter ID	57				RD11							

10 Day Acute *Hyaella azteca* Toxicity Test Data

Client: LWA-Calleguas Creek Organism Log#: 11612 Age: 9-10 DAYS
 Test Material: CCWTMP-73-WOOD-128 Organism Supplier: AMS
 Test ID#: 84006 Project #: 30314 Control/Diluent: SAM 5 (Conductivity Adjusted)
 Test Date: 5/30/19 Control Water Batch: 352

Treatment	Temp (°C)	pH		D.O. (mg/L)		Conductivity (µS/cm)	# Live Organisms					SIGN-OFF	
		new	old	new	old		A	B	C	D	E		
Lab Control (Cond. Adj.)	23.8					3.9	10	10	10	10	10	Date: 6/7/19 Count Time: 0940 Count Signoff: TF Old WQ: MSH Feed: TF	
6.25%	23.8					4.8	10	10	10	10	10		
12.5%	23.8					4.6	10	10	10	10	10		
25%	23.8					4.7	10	3	5	6	7		
50%	23.8					4.4	1	6	3	4	3		
100%	23.7					3.6	-	-	-	-	1		
Meter ID	354					RD10							
Lab Control (Cond. Adj.)	23.5					3.3	10	10	10	10	10	Date: 6/18/19 Count Time: 0121 Count Signoff: TF Old WQ: TA	
6.25%	23.5					3.7	10	10	10	10	10		
12.5%	23.0					4.6	10	10	10	10	10		
25%	23.6					6.2	10	3	5	6	6		
50%	23.8					6.1	1	6	3	4	3		
100%	23.8					6.1	-	-	-	-	1		
Meter ID	35A					RD10							
Lab Control (Cond. Adj.)	23.6		7.43			6.2	3898	10	10	10	9	9	Date: 6/19/19 Termination Time: 1526 Termination Signoff: SMC Old WQ: TP
6.25%	23.8		7.44			6.5	3785	10	10	10	10	10	
12.5%	23.9		7.51			6.5	3989	10	10	10	10	10	
25%	24.0		7.59			6.5	3810	10	3	5	6	6	
50%	23.9		7.74			7.1	3883	1	6	3	4	3	
100%	23.5		7.86			6.5	4068	-	-	-	-	1	
Meter ID	112A		PH2H			RD1	EC10						

Appendix F

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Hyalella azteca*

CETIS Summary Report

Report Date: 14 Jun-19 13:49 (p 1 of 1)
 Test Code: 84008 | 18-4813-9142

Hyalella Reference Toxicant Survival Test **Pacific EcoRisk**

Batch ID: 14-1061-4924	Test Type: Survival (96h)	Analyst: Ashleigh Findley
Start Date: 30 May-19 15:27	Protocol: EPA-821-R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 03 Jun-19 14:30	Species: Hyalella azteca	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age: 10

Sample ID: 10-2672-4478	Code: KCL	Client: Reference Toxicant
Sample Date: 30 May-19 15:27	Material: Potassium chloride	Project: 30316
Receipt Date: 30 May-19 15:27	Source: Reference Toxicant	
Sample Age: n/a (22.3 °C)	Station: In House	

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
01-9222-0630	96h Survival Rate	Fisher Exact/Bonferroni-Holm Test	0.2	0.4	0.2828		n/a

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	Level	g/L	95% LCL	95% UCL	TU ✓
09-1354-2456	96h Survival Rate	Spearman-Kärber	EC50	0.373	0.301	0.463	

96h Survival Rate Summary											
Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.1		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.2		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.4		10	0.400	0.031	0.769	0.000	1.000	0.163	0.516	129.10%	60.00%
0.8		10	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
1.6		10	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

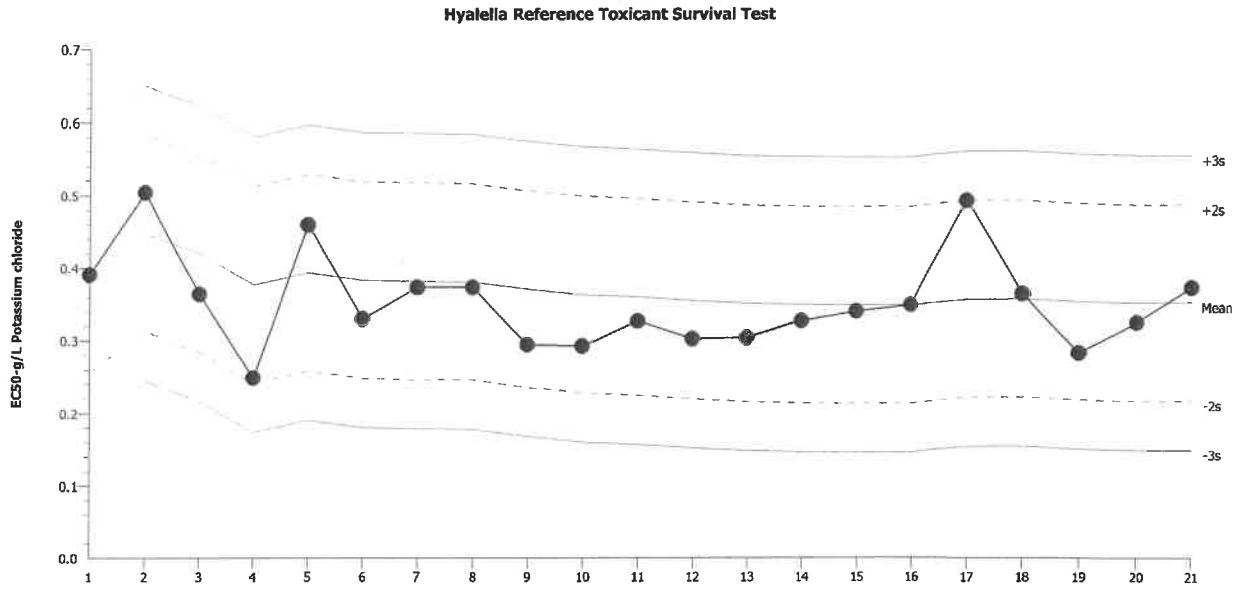
96h Survival Rate Detail											
Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.1		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.2		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.4		0.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	0.000	1.000
0.8		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.6		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

96h Survival Rate Binomials											
Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	LW	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0.1		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0.2		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0.4		0/1	0/1	0/1	1/1	0/1	0/1	1/1	1/1	0/1	1/1
0.8		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
1.6		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

Hyalella Reference Toxicant Survival Test

Pacific EcoRisk

Test Type: Survival (96h) Organism: Hyalella azteca (Freshwater Amphip Material: Potassium chloride
 Protocol: EPA-821-R-02-012 (2002) Endpoint: 96h Survival Rate Source: Reference Toxicant-REF



Mean: 0.352 Count: 20 -2s Warning Limit: 0.2167 -3s Action Limit: 0.149
 Sigma: 0.06766 CV: 19.20% +2s Warning Limit: 0.4873 +3s Action Limit: 0.555

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	Feb	8	15:57	0.391	0.03904	0.5769			13-6969-1958	02-2461-7172
2		Mar	2	17:52	0.5037	0.1517	2.242	(+)		10-1610-0738	05-9100-3645
3		Apr	8	13:38	0.3642	0.01216	0.1798			14-6470-8596	05-1973-4354
4		May	16	17:55	0.2486	-0.1034	-1.528			05-9866-1037	11-2195-3653
5		Jun	14	16:35	0.4595	0.1075	1.589			18-1605-2758	14-8406-0239
6		Jul	18	16:20	0.3299	-0.02206	-0.326			11-4094-7394	20-3811-7615
7		Aug	6	14:44	0.3732	0.02121	0.3135			16-9077-3352	08-2793-0151
8			9	17:00	0.3732	0.02121	0.3135			14-1761-7282	03-9488-5843
9			16	11:27	0.2941	-0.05788	-0.8555			12-7542-2334	14-0979-7400
10			21	16:03	0.2922	-0.05982	-0.8841			19-3911-4177	09-8363-6416
11		Sep	4	14:11	0.3265	-0.02554	-0.3775			00-7654-6742	11-6933-8211
12		Oct	22	15:45	0.3021	-0.04991	-0.7377			08-4484-9174	20-9708-5657
13		Nov	8	16:10	0.3031	-0.04886	-0.7221			20-3402-4533	15-9735-9663
14		Dec	30	10:50	0.3265	-0.02554	-0.3775			07-2846-0604	07-9228-2474
15	2019	Jan	16	15:28	0.3394	-0.01256	-0.1856			05-9424-3991	13-8222-5294
16		Feb	4	14:55	0.3482	-0.00378	-0.05586			13-3563-0230	03-4597-8225
17		Mar	16	14:47	0.4925	0.1405	2.076	(+)		20-8092-8579	07-7078-6737
18			20	13:32	0.3642	0.01216	0.1798			01-7546-0826	05-9037-7090
19		Apr	20	15:01	0.2828	-0.06916	-1.022			16-6914-2737	19-6559-5883
20		May	18	16:51	0.3249	-0.0271	-0.4005			06-3838-3283	17-8731-6575
21			30	15:27	0.3732	0.02121	0.3135			18-4813-9142	09-1354-2456

96 Hour *Hyaella azteca* Reference Toxicant Test Data

Client: Reference Toxicant
 Test Material: Potassium Chloride
 Test ID#: 84008 Project #: 30316
 Test Date: 5/30/19 Randomization: 10.7.1
 Feeding T-2 Time: 0730 Initials: BY

Organism Log #: 11612 Age: 9-10 days
 Organism Supplier: ABS
 Control/Diluent: SAM-5
 Control Water Batch: 382
 Feeding T48 Time: 1204 Initials: JF

Treatment (g/L)	Temp (°C)	pH	D.O. (mg/L)	Conductivity (µS/cm)	# Live Animals										Sign-Off
					A	B	C	D	E	F	G	H	I	J	
Control	22.3	8.01	8.1	426	1	1	1	1	1	1	1	1	1	1	Test Solution Prep: <u>ec</u>
0.1	22.2	7.90	8.2	591	1	1	1	1	1	1	1	1	1	1	New WQ: <u>JR</u>
0.2	22.2	7.87	8.4	779	1	1	1	1	1	1	1	1	1	1	Initiation Date: <u>5/30/19</u>
0.4	22.2	7.85	8.8	1158	1	1	1	1	1	1	1	1	1	1	Initiation Time: <u>1527</u>
0.8	22.6	7.84	9.1	1873	1	1	1	1	1	1	1	1	1	1	Initiation Signoff: <u>Kb</u>
1.6	22.6	7.87	11.3	3317	1	1	1	1	1	1	1	1	1	1	RT Batch #: <u>21</u>
Meter ID	48A	pH24	RD11	EC14											
Control	22.1				1	1	1	1	1	1	1	1	1	1	Count Date: <u>5/31/19</u>
0.1	22.0				1	1	1	1	1	1	1	1	1	1	Count Time: <u>0955</u>
0.2	22.0				1	1	1	1	1	1	1	1	1	1	Count Signoff: <u>ARF</u>
0.4	22.1				1	1	1	1	1	1	1	1	1	1	
0.8	22.0				0	0	0	0	0	0	0	0	0	0	
1.6	22.0				0	0	0	0	0	0	0	0	0	0	
Meter ID	99A														
Control	22.1				1	1	1	1	1	1	1	1	1	1	Count Date: <u>6/1/19</u>
0.1	22.1				1	1	1	1	1	1	1	1	1	1	Count Time: <u>1150</u>
0.2	22.1				1	1	1	1	1	1	1	1	1	1	Count Signoff: <u>JF</u>
0.4	22.2				1	1	1	1	1	1	1	1	1	1	
0.8	-				-	-	-	-	-	-	-	-	-	-	
1.6	-				-	-	-	-	-	-	-	-	-	-	
Meter ID	48A														
Control	22.1				1	1	1	1	1	1	1	1	1	1	Count Date: <u>6/4/19</u>
0.1	22.3				1	1	1	1	1	1	1	1	1	1	Count Time: <u>1102</u>
0.2	22.4				1	1	1	1	1	1	1	1	1	1	Count Signoff: <u>JR</u>
0.4	22.5				1	1	0	1	0	0	1	1	0	1	
0.8	-				-	-	-	-	-	-	-	-	-	-	
1.6	-				-	-	-	-	-	-	-	-	-	-	
Meter ID	57														
Control	22.1	7.40	7.6	434	1	1	1	1	1	1	1	1	1	1	Termination Date: <u>6/3/19</u>
0.1	22.1	7.83	7.6	654	1	1	1	1	1	1	1	1	1	1	Termination Time: <u>1430</u>
0.2	22.2	7.82	7.7	836	1	1	1	1	1	1	1	1	1	1	Termination Signoff: <u>KL</u>
0.4	22.2	7.80	7.4	1262	0	0	-	1	-	-	1	1	-	1	Old WQ: <u>DH</u>
0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Meter ID	59A	pH26	RD11	EC13											