



ANALYTICAL REPORT

PREPARED FOR

Attn: Sam Bocook
TransAlta Centralia Generation LLC
913 Big Hanaford Rd
Centralia, Washington 98531

Generated 10/24/2023 10:05:56 AM

JOB DESCRIPTION

TransAlta Corporation - 001

JOB NUMBER

192-5442-1

Eurofins Arkansas

Job Notes

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Authorization



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Re: Chronic *Ceriodaphnia dubia*
NPDES Permit No.
Control No. 274683-1

This report is the analytical results and supporting information for the samples submitted to Eurofins Arkansas. The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the Laboratory Manager or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" EPA-821-R-02-013, Fourth Edition, October 2002. The supporting chemistry data included with this report is intended for accessing the basic water quality of the effluent as required by this test method and is not intended to be utilized for discharge monitoring reports. Test results are summarized below:

Method 1002.0 Chronic *Ceriodaphnia dubia* Survival and Reproduction Test: The permit requirement is CCEC not less than 100. The following were concluded from the test:

Survival:	NOEC	LOEC	Reproduction:	NOEC	LOEC	IC25
	100	>100		6.25	12.5	10.2

The sample therefore FAILED the *Ceriodaphnia dubia* test as the CCEC was 6.25

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Ceriodaphnia dubia Survival and Reproduction

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I. Control Acceptance Criteria

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	28.8	PASS
Control CV < or = 40% per Surviving Female *	6.08	PASS
Reproduction Minimum Significant Difference 13 to 47%	14.5	PASS
Critical Dilution CV < or = 40% *	81.0	FAIL

* EPA Region 6 Requirement

II. Outlined Report

A. Introduction

1. Permit Number:
2. Test Requirements: Test Method 1002.0

B. Source of Effluent/Dilution Water:

1. Effluent Samples:

- a. Sampling Point:
- b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	6.5	6.8	7.8
pH (standard units)	7.4	7.5	7.6
Alkalinity (mg/l as CaCO ₃)	90	82	77
Hardness (mg/l as CaCO ₃)	250	230	270
Conductivity (umhos/cm)	680	620	620
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	0.10	33	0.27

2. Dilution Water Samples:

Analysis	192-5297-A-1	192-5425-A-1
Dissolved oxygen (mg/l)	8.1	7.0
pH (standard units)	7.7	7.7
Alkalinity (mg/l as CaCO ₃)	59	62
Hardness (mg/l as CaCO ₃)	83	92
Conductivity (umhos/cm)	280	280
Residual Chlorine (mg/l)	<0.05	<0.05

C. Test Methods

1. Test methods used:

Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test Method 1002.0, *Ceriodaphnia dubia* Survival and Reproduction.

2. Endpoint: No Observable Effects Concentration (NOEC)

3. Test Conditions:

Ceriodaphnia dubia Survival and Reproduction Method 1002.0

Date & Time Test Initiated: September 26, 2023 at 1114

Date & Time Test Terminated: October 03, 2023 at 0940

Type & Volume of Test Chamber: 30 ml disposable beaker

Volume of Sample: 15 ml

Number of Organisms per replicate: 1

Number of Replicates per dilution: 10

4. Source of test organisms: In-house culture

5. Test Temperature: 25 +/- 1 degree Celsius

D. Test Organisms

1. Scientific Name

a. Test 1002.0 *Ceriodaphnia dubia*

III. Data Analysis

The data was analyzed using EPA method criteria and CETIS statistical software.

IV. Standard Reference Toxicants

Sodium chloride in synthetic moderately hard water.

Ceriodaphnia dubia

A chronic reference test was performed on August 01, 2023 at 1105 to August 07, 2023 at 1300

The results were as follows: (Control No. 274631-2.)

Survival LC-50: 1864 mg/l

Reproduction IC-25: 995.6 mg/l

Reproduction PMSD: 14

V. Organism History

Ceriodaphnia dubia

Date: September 26, 2023

Age: <24 hours

Source: In-house culture

Water: Moderately hard synthetic

Temperature: 25 deg.C

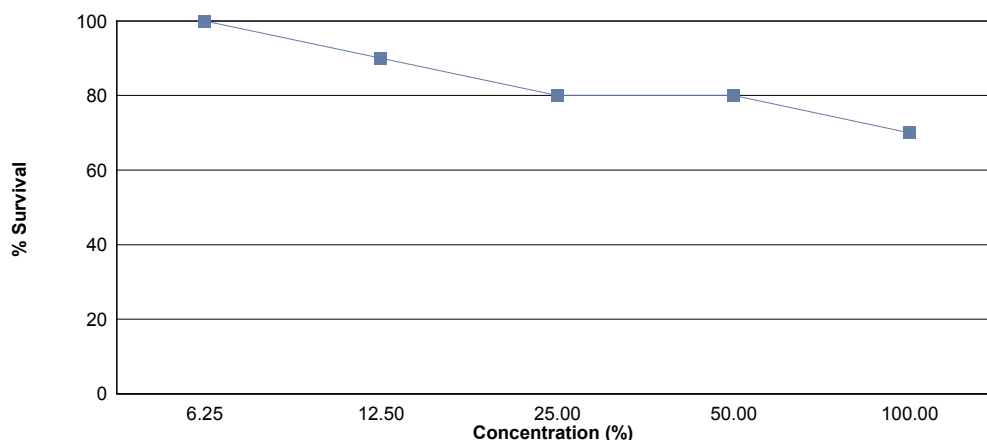
VI. Results Summary *Ceriodaphnia dubia*, Cladoceran Survival and Reproduction Test -- Method 1002.0

Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring or a maximum of eight test days.

Effluent concentrations for this test were 6.25 %, 12.5 %, 25 %, 50 %, 100 % in accordance with the NPDES permit

The test was initiated on September 26, 2023 at 1114 and continued through October 03, 2023 at 0940. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

- a.) NOEC survival = 100 % effluent
- b.) NOEC reproduction = 6.25 % effluent



Summary of the 7-day <i>Ceriodaphnia dubia</i> Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	28.8
6.25 %	100	26.8
12.5 %	90.0	18.7
25 %	80.0	13.5
50 %	80.0	8.50
100 %	70.0	1.40

Appendix (Data): Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: September 26, 2023 at 1114

Date and Time Test Terminated: October 03, 2023 at 0940

Concentration: Control													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	2	7	6	2	3	6	3	5	5	6	45	10	4.50
4	0	10	0	0	0	10	9	10	11	10	60	10	6.00
5	11	0	10	10	9	0	0	0	0	0	40	10	4.00
6	16	15	14	14	15	13	15	14	14	13	143	10	14.3
7	0E	19E	15E	17E	13E	20E	17E	14E	17E	17E	0	10	0.00
8													
TOTAL	29	32	30	26	27	29	27	29	30	29	288	10	28.8

E = Excluded fourth brood neonates

Concentration: 6.25 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	4	5	5	4	5	6	6	4	6	5	50	10	5.00
4	0	0	0	0	7	10	0	0	0	8	25	10	2.50
5	9	10	6	10	0	0	11	7	11	0	64	10	6.40
6	17	14	13	13	15	15	15	0	15	12	129	10	12.9
7	19E	20E	0E	18E	19E	17E	0E	0E	16E	22E	0	10	0.00
8													
TOTAL	30	29	24	27	27	31	32	11	32	25	268	10	26.8

E = Excluded fourth brood neonates

Concentration: 12.5 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	2	5	6	5	4	5	5	6	4	0	42	10	4.20
4	0	0	0	0	0	9	0	9	10	7	35	10	3.50
5	9	12	10	3X	8	0	9	0	0	0	51	9	5.67
6	9	0	12	X	0	10	13	10	5	0	59	9	6.56
7	0E	0E	18E	X	10E	19E	18E	14E	13E	14E	0	9	0.00
8													
TOTAL	20	17	28	8	12	24	27	25	19	7	187	10	18.7

E = Excluded fourth brood neonates

Appendix (Data): Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: September 26, 2023 at 1114

Date and Time Test Terminated: October 03, 2023 at 0940

Concentration: 25 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	3	3	5	3	3	6	5	5	6	5	44	10	4.40
4	0	0	0	0	0	0	0	0	0	0	0	10	0.00
5	7	10	9	10	0	0	10	6	7	6	65	10	6.50
6	0	6	8	0	2X	3	0	0X	3	4	26	8	3.25
7	0E	0E	0E	0E	X	0E	0E	X	0E	13E	0	8	0.00
8													
TOTAL	10	19	22	13	5	9	15	11	16	15	135	10	13.5

E = Excluded fourth brood neonates

Concentration: 50 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	4	4	0	0	7	6	3	6	6	36	10	3.60
4	3	0	0	3	3	0	0	0	0	0	9	10	0.900
5	7	6	5	4	0	0	0	6	0	0X	28	9	3.11
6	0	4	0	5	0	3	0	0	0	X	12	9	1.33
7	0E	0E	0E	0E	0E	X	0E	0E	0E	X	0	8	0.00
8													
TOTAL	10	14	9	12	3	10	6	9	6	6	85	10	8.50

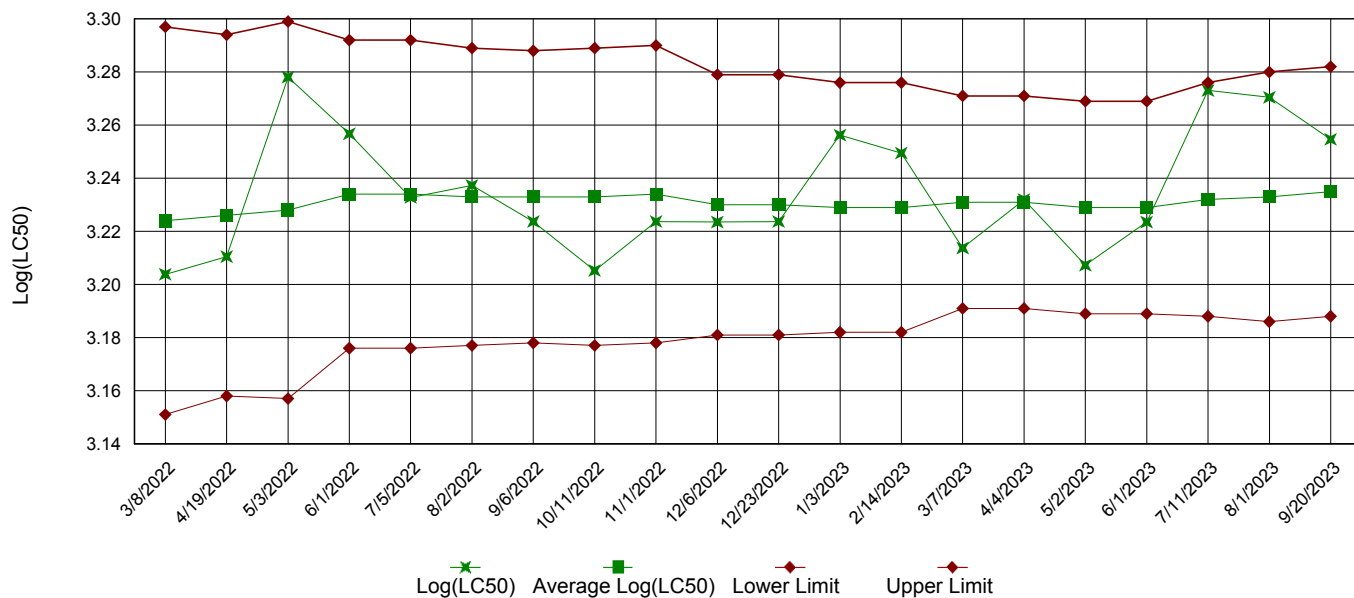
E = Excluded fourth brood neonates

Concentration: 100 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	1	0	0	1	2	4	10	0.400
4	3	2	0	3	0	0	0X	2	0X	0	10	8	1.25
5	0	0	0	0	0	0	X	0	X	0	0	8	0.00
6	0	0	0	0	0	0	X	0	X	0	0	8	0.00
7	0E	0E	0E	0E	0E	0E	X	0E	X	0X	0	7	0.00
8													
TOTAL	3	2	0	3	0	1	0	2	1	2	14	10	1.40

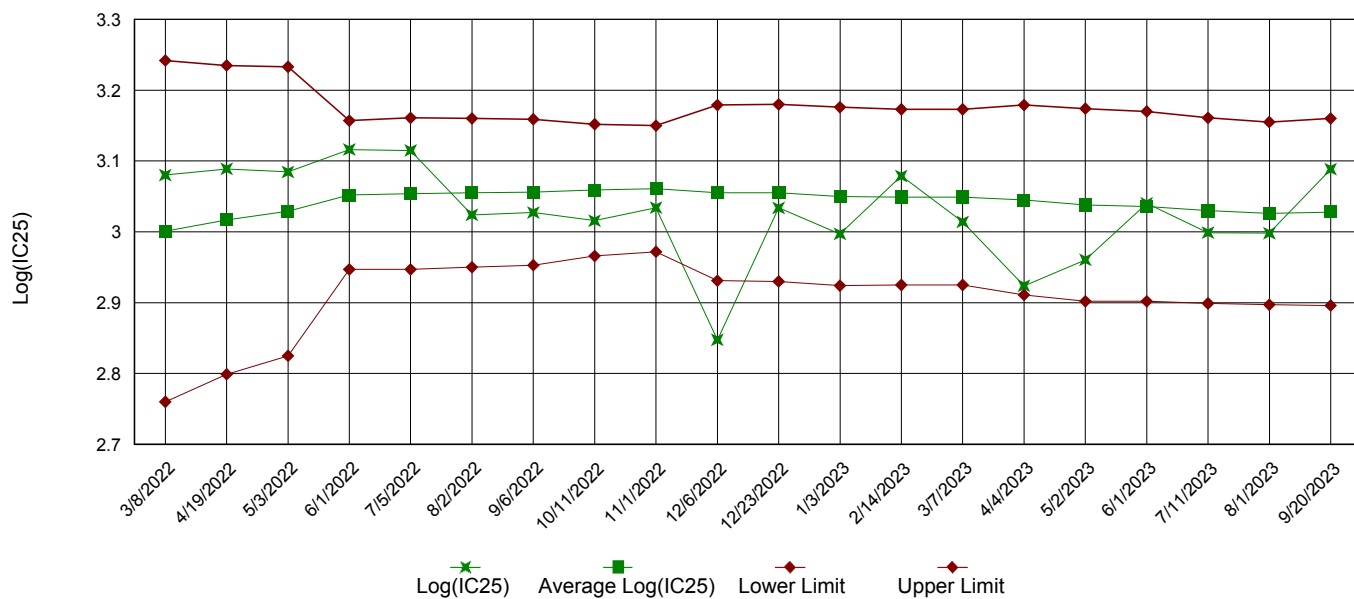
E = Excluded fourth brood neonates

Appendix (Reference Toxicant): Test 1002.0
Chronic Reference Toxicant, *Ceriodaphnia dubia*

LC50 Survival Data



IC25 Reproduction Data



CETIS Summary Report

Report Date: 04 Oct-23 12:20 (p 1 of 1)
Test Code/ID: 274683_CD / 14-1432-5546

Ceriodaphnia 7-d Survival and Reproduction Test

Eurofins Arkansas

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	PMSD	TU
00-4508-0528	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	>100	---	---	1
10-7286-4340	Reproduction	Steel Many-One Rank Sum Test	6.25	12.5	8.839	17.0%	16

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU
15-9130-2211	Reproduction	Linear Interpolation (ICPIN)	IC25	10.23	7.829	14.51	9.8

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
00-4508-0528	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
10-7286-4340	Reproduction	Control Resp	28.8	15	>>	Yes	Passes Criteria
15-9130-2211	Reproduction	Control Resp	28.8	15	>>	Yes	Passes Criteria
10-7286-4340	Reproduction	PMSD	0.1703	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	0.9000	0.6738	1.1260	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
25		10	0.8000	0.4984	1.1020	0.0000	1.0000	0.1333	0.4216	52.70%	20.00%
50		10	0.8000	0.4984	1.1020	0.0000	1.0000	0.1333	0.4216	52.70%	20.00%
100		10	0.8000	0.4984	1.1020	0.0000	1.0000	0.1333	0.4216	52.70%	20.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	28.8	27.55	30.05	26	32	0.5538	1.751	6.08%	0.00%
6.25		10	26.7	22.21	31.19	11	32	1.984	6.273	23.49%	7.29%
12.5		10	18.7	13.24	24.16	7	28	2.413	7.631	40.81%	35.07%
25		10	13.5	9.927	17.07	5	22	1.579	4.994	37.00%	53.13%
50		10	8.5	6.158	10.84	3	14	1.035	3.274	38.52%	70.49%
100		10	1.4	0.5603	2.24	0	3	0.3712	1.174	83.84%	95.14%

7d Survival Rate Detail

MD5: 318DEED82E266A796E419D6D3209A377

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	0.0000	1.0000

Reproduction Detail

MD5: 44AC45E3E1DEF5645BC50B6D0451DBCFF

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	29	32	30	26	27	29	27	29	30	29
6.25		30	29	23	27	27	31	32	11	32	25
12.5		20	17	28	8	12	24	27	25	19	7
25		10	19	22	13	5	9	15	11	16	15
50		10	14	9	12	3	10	6	9	6	6
100		3	2	0	3	0	1	0	2	1	2

CETIS Analytical Report

Report Date: 04 Oct-23 12:20 (p 1 of 2)
Test Code/ID: 274683_CD / 14-1432-5546

Ceriodaphnia 7-d Survival and Reproduction Test

Eurofins Arkansas

Analysis ID: 00-4508-0528 Endpoint: 7d Survival Rate CETIS Version: CETIS v2.1.5
Analyzed: 04 Oct-23 12:19 Analysis: STP 2xK Contingency Tables Status Level: 1
Edit Date: 04 Oct-23 0:00 MD5 Hash: 318DEED82E266A796E419D6D3209A377 Editor ID: 004-572-886-9

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Untransformed	C > T	100	>100	---	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		12.5	0.5000	Exact	1.0000	Non-Significant Effect
		25	0.2368	Exact	1.0000	Non-Significant Effect
		50	0.2368	Exact	1.0000	Non-Significant Effect
		100	0.2368	Exact	1.0000	Non-Significant Effect

Test Acceptability Criteria

TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	>>	Yes	Passes Criteria

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	D	10	0	10	1.0000	0.0000	0.00%
6.25		10	0	10	1.0000	0.0000	0.00%
12.5		9	1	10	0.9000	0.1000	10.00%
25		8	2	10	0.8000	0.2000	20.00%
50		8	2	10	0.8000	0.2000	20.00%
100		8	2	10	0.8000	0.2000	20.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	0.9000	0.6738	1.0000	1.0000	0.0000	1.0000	0.1000	35.14%	10.00%
25		10	0.8000	0.4984	1.0000	1.0000	0.0000	1.0000	0.1333	52.70%	20.00%
50		10	0.8000	0.4984	1.0000	1.0000	0.0000	1.0000	0.1333	52.70%	20.00%
100		10	0.8000	0.4984	1.0000	1.0000	0.0000	1.0000	0.1333	52.70%	20.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	0.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	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	0/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	0/1	1/1	1/1	0/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1	0/1
100		1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	0/1	1/1

CETIS Analytical Report

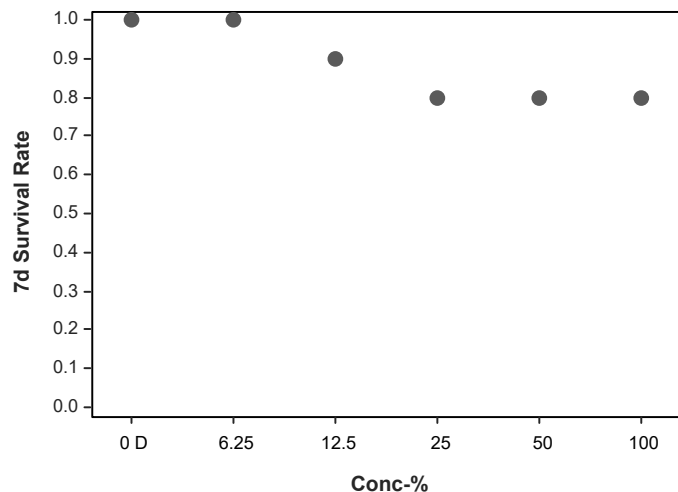
Report Date: 04 Oct-23 12:20 (p 2 of 2)
Test Code/ID: 274683_CD / 14-1432-5546

Ceriodaphnia 7-d Survival and Reproduction Test

Eurofins Arkansas

Analysis ID:	00-4508-0528	Endpoint:	7d Survival Rate	CETIS Version:	CETIS v2.1.5
Analyzed:	04 Oct-23 12:19	Analysis:	STP 2xK Contingency Tables	Status Level:	1
Edit Date:	04 Oct-23 0:00	MD5 Hash:	318DEED82E266A796E419D6D3209A377	Editor ID:	004-572-886-9

Graphics



CETIS Analytical Report

Report Date: 04 Oct-23 12:20 (p 1 of 2)
 Test Code/ID: 274683_CD / 14-1432-5546

Ceriodaphnia 7-d Survival and Reproduction Test

Eurofins Arkansas

Analysis ID: 10-7286-4340 Endpoint: Reproduction CETIS Version: CETIS v2.1.5
 Analyzed: 04 Oct-23 12:19 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 04 Oct-23 0:00 MD5 Hash: 44AC45E3E1DEF5645BC50B6D0451DBC Editor ID: 004-572-886-9

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	6.25	12.5	8.839	16	4.904	17.03%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.25	18	100	75	4	CDF	0.6974	Non-Significant Effect
		12.5*	18	60	75	1	CDF	0.0016	Significant Effect
		25*	18	55	75	0	CDF	0.0004	Significant Effect
		50*	18	55	75	0	CDF	0.0004	Significant Effect
		100*	18	55	75	0	CDF	0.0004	Significant Effect

Test Acceptability Criteria

TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	28.8	15	>>	Yes	Passes Criteria
PMSD	0.1703	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5608.53	1121.71	5	48.88	<1.0E-05	Significant Effect
Error	1239.2	22.9482	54			
Total	6847.73		59			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	34.79	15.09	<1.0E-05	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9353	0.9459	0.0034	Non-Normal Distribution

Reproduction Summary

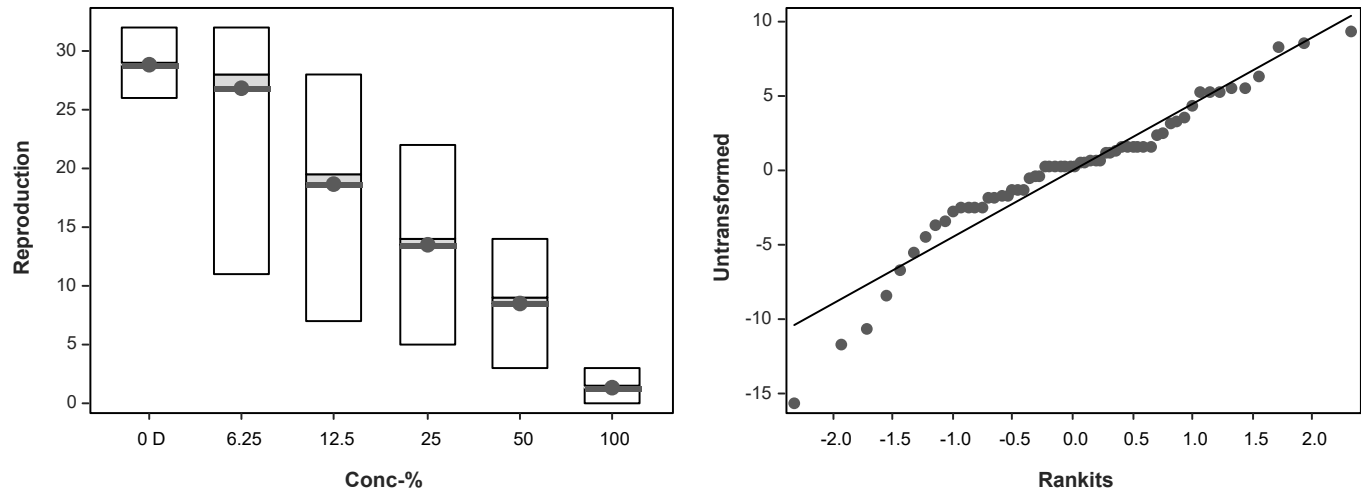
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	28.8	27.55	30.05	29	26	32	0.5538	6.08%	0.00%
6.25		10	26.7	22.21	31.19	28	11	32	1.984	23.49%	7.29%
12.5		10	18.7	13.24	24.16	19.5	7	28	2.413	40.81%	35.07%
25		10	13.5	9.927	17.07	14	5	22	1.579	37.00%	53.12%
50		10	8.5	6.158	10.84	9	3	14	1.035	38.52%	70.49%
100		10	1.4	0.5603	2.24	1.5	0	3	0.3712	83.84%	95.14%

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	D	29	32	30	26	27	29	27	29	30	29
6.25		30	29	23	27	27	31	32	11	32	25
12.5		20	17	28	8	12	24	27	25	19	7
25		10	19	22	13	5	9	15	11	16	15
50		10	14	9	12	3	10	6	9	6	6
100		3	2	0	3	0	1	0	2	1	2

Ceriodaphnia 7-d Survival and Reproduction Test			Eurofins Arkansas	
Analysis ID:	10-7286-4340	Endpoint:	Reproduction	CETIS Version: CETIS v2.1.5
Analyzed:	04 Oct-23 12:19	Analysis:	Nonparametric-Control vs Treatments	Status Level: 1
Edit Date:	04 Oct-23 0:00	MD5 Hash:	44AC45E3E1DEF5645BC50B6D0451DBC	Editor ID: 004-572-886-9

Graphics



CETIS Analytical Report

Report Date: 04 Oct-23 12:20 (p 1 of 1)
Test Code/ID: 274683_CD / 14-1432-5546

Ceriodaphnia 7-d Survival and Reproduction Test

Eurofins Arkansas

Analysis ID: 15-9130-2211 Endpoint: Reproduction CETIS Version: CETIS v2.1.5
Analyzed: 04 Oct-23 12:19 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 04 Oct-23 0:00 MD5 Hash: 44AC45E3E1DEF5645BC50B6D0451DBC Editor ID: 004-572-886-9

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	416017	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits		Overlap	Decision
Attribute	Test Stat	Lower	Upper		
Control Resp	28.8	15	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC25	10.23	7.829	14.51	9.8	6.9	12.8

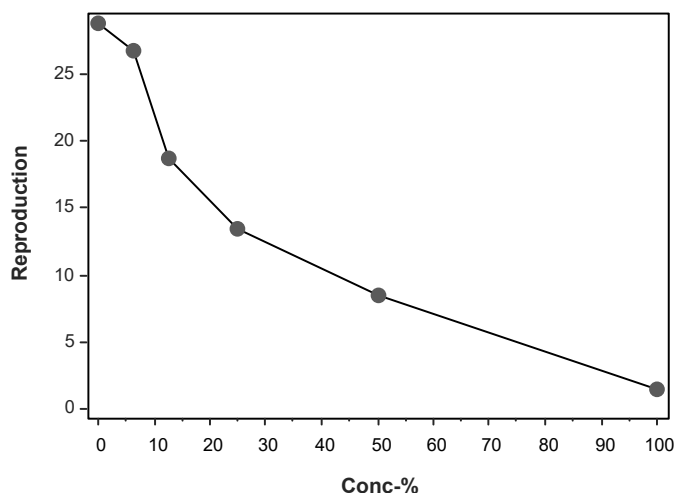
Reproduction Summary

		Calculated Variate							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	D	10	28.8	29	26	32	6.08%	0.00%	28.8	0.00%
6.25		10	26.7	28	11	32	23.49%	7.29%	26.7	7.29%
12.5		10	18.7	19.5	7	28	40.81%	35.07%	18.7	35.07%
25		10	13.5	14	5	22	37.00%	53.12%	13.5	53.12%
50		10	8.5	9	3	14	38.52%	70.49%	8.5	70.49%
100		10	1.4	1.5	0	3	83.84%	95.14%	1.4	95.14%

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	D	29	32	30	26	27	29	27	29	30	29
6.25		30	29	23	27	27	31	32	11	32	25
12.5		20	17	28	8	12	24	27	25	19	7
25		10	19	22	13	5	9	15	11	16	15
50		10	14	9	12	3	10	6	9	6	6
100		3	2	0	3	0	1	0	2	1	2

Graphics



Client Sample Results

Client: TransAlta Centralia Generation LLC
Project/Site: TransAlta Corporation - 001

Job ID: 192-5442-1

Client Sample ID: 3E

Date Collected: 09/25/23 09:00

Date Received: 09/26/23 08:55

Lab Sample ID: 192-5442-1

Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Calcium	84		1.0		mg/L		09/29/23 18:56	10	EQ5
Magnesium	10		0.50		mg/L		09/29/23 18:56	10	EQ5

Method: 2340B-2011 - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Hardness as calcium carbonate	250		1.0		mg/L		10/02/23 10:53	1	EQ5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Alkalinity	90		1.0		mg/L		09/26/23 10:07	1	RLM
Ammonia (as N)	0.32		0.10		mg/L		09/26/23 17:25	1	HR

Method: 1002 CD - Chronic C. dubia 7-Day Renewal

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Analyzed	Dil Fac	Analyst
Chronic C. dubia	Completed				NONE		09/26/23 11:14	1	SG

Client Sample ID: 3E

Date Collected: 09/27/23 09:00

Date Received: 09/28/23 09:15

Lab Sample ID: 192-5442-2

Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Calcium	78		1.0		mg/L		09/29/23 19:10	10	EQ5
Magnesium	9.3		0.50		mg/L		09/29/23 19:10	10	EQ5

Method: 2340B-2011 - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Hardness as calcium carbonate	230		1.0		mg/L		10/02/23 10:53	1	EQ5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Alkalinity	82		1.0		mg/L		09/29/23 17:39	1	AJ
Ammonia (as N)	33	B	2.6		mg/L		09/29/23 16:49	25.714	AJ

Client Sample ID: 3E

Date Collected: 09/29/23 00:00

Date Received: 09/30/23 09:04

Lab Sample ID: 192-5442-3

Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Calcium	83		1.0		mg/L		10/02/23 16:46	10	EQ5
Magnesium	15		0.50		mg/L		10/02/23 16:46	10	EQ5

Method: 2340B-2011 - Total Hardness (as CaCO3) by calculation


Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Hardness as calcium carbonate	270		1.0		mg/L		10/02/23 10:53	1	EQ5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Alkalinity	77		1.0		mg/L		10/04/23 10:19	1	AJ
Ammonia (as N)	0.27		0.10		mg/L		10/03/23 16:46	1	HR

Eurofins Arkansas

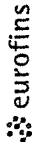
Age Group	Percentage
18-24	10%
25-34	20%
35-44	30%
45-54	25%
55-64	10%
65-74	5%
75+	10%

Empty Kit Relinquished by		Date	Time	Method of Shipment	
Relinquished by		Date/Time 9-25-23 0900	Company	Received by	Date/Time Company
Relinquished by		Date/Time	Company	Received by	Date/Time Company
Relinquished by		Date/Time	Company	Received by	Date/Time Company
Custody Seal No		Cooler Temperature(s) °C and Other Remarks.			
Custody Seals Intact	Δ Yes Δ No	D. Brown 9-26-23/0855 0.7			

Little Rock, AR 72204
Phone 501-224-5060 Fax: 501-224-5075

Ver 06/08/2021

Chain of Custody Record

[illegible]



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

PO Box 488 • Manchester, WA 98353-0488 • (360) 871-8840

July 14, 2023

John Overbey
Eurofins Arkansas
8600 Kanis Road
Little Rock, AR 72204

Dear John Overbey:

Thank you for your initial application to the Environmental Laboratory Accreditation Program. Attached is a Certificate of Accreditation covering the one-year period beginning July 14, 2023 and a current Scope of Accreditation.

Your WA accreditation is based in part on your Arkansas NELAP accreditation.

A Proficiency Test provided by ERA, DMRQA-42, closed 7/15/2022, reports acceptable results for the accredited parameters. Eurofins Arkansas has enrolled in ERA DMRQA-43 which closes 8/4/2023.

As a reminder, continued participation in the Ecology Lab Accreditation Program requires the lab to:

- Submit a renewal application and fees annually
- Report significant changes in facility, personnel, analytical methods, equipment, the lab's quality assurance (QA) manual or QA procedures as they occur
- Participate in proficiency testing studies semi-annually, with the following exception: For each parameter where all PT results were satisfactory, you are required to submit only one PT result over this next year, and in subsequent years, as long as the results are satisfactory.
- Submit copies of current third-party Scopes of Accreditation when they are available.

If you have any questions concerning the accreditation of your lab, please contact Ruth Powers-Piccone at (360) 280-9288, or by e-mail at rp461@ecy.wa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Rebecca Wood".

Rebecca Wood
Lab Accreditation Unit Supervisor

RW:RW:rw
Enclosures

The State of Washington Department of Ecology



Eurofins Arkansas Little Rock, AR

has complied with provisions set forth in Chapter 173-50 WAC and is hereby recognized by the Department of Ecology as an ACCREDITED LABORATORY for the analytical parameters listed on the accompanying Scope of Accreditation.

This certificate is effective July 14, 2023 and shall expire July 13, 2024.

Witnessed under my hand on July 14, 2023.

A handwritten signature in black ink, appearing to read "Rebecca Wood".

Rebecca Wood
Lab Accreditation Unit Supervisor

Laboratory ID
C1087

WASHINGTON STATE DEPARTMENT OF ECOLOGY

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

SCOPE OF ACCREDITATION

Eurofins Arkansas

Little Rock, AR

is accredited for the analytes listed below using the methods indicated. Full accreditation is granted unless stated otherwise in a note. EPA is the U.S. Environmental Protection Agency. SM is "Standard Methods for the Examination of Water and Wastewater." SM refers to EPA approved method versions. ASTM is the American Society for Testing and Materials. USGS is the U.S. Geological Survey. AOAC is the Association of Official Analytical Chemists. Other references are described in notes.

Matrix/Analyte	Method	Notes
Non-Potable Water		
Ceriodaphnia dubia (Daphnid)	EPA 2002.0 (2002)	1, 2, 3
Ceriodaphnia dubia, 7-d surv & reprod	EPA 1002.0 (2002)	1, 2, 4
Daphnia pulex (Daphnid)	EPA 2021.0 (2002)	1, 2, 3
Pimephales promelas (Fathead Minnow)	EPA 1000.0 (2002)	1, 2, 4
Pimephales promelas, 96-hr surv	EPA 2000.0 (2002)	1, 2, 3

Accredited Parameter Note Detail

(1) Accreditation is based in part on recognition of Arkansas NELAP accreditation. (2) Meets requirements of "Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria." Washington Department of Ecology Publication Number WQ-R-95-80, Revised June 2016. (3) USEPA. "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms." EPA-821-R-02-012. Fifth Edition. October 2002. (4) USEPA. "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms." EPA-821-R-02-013. Fourth Edition. October 2002.



07/20/2023

Authentication Signature

Date

Rebecca Wood, Lab Accreditation Unit Supervisor