



Chronic Toxicity Test Results
Outfall 001 Effluent

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Prepared for:
Georgia Pacific Crossett Mill
Crossett, Arkansas

Prepared by:
ENVIRON International Corporation
Nashville, Tennessee

Date:
March 2014

Project Number:
20-19675H



April 1, 2014

Ms. Rachel Johnson
 Georgia-Pacific Crossett Mill
 100 Mill Supply Road
 Crossett, Arkansas 71635

**Re: Chronic Toxicity Test Results – Outfall 001 Effluent
 ENVIRON Project No. 20-19675H**

Dear Ms. Johnson:

ENVIRON conducted chronic (7-day) whole effluent toxicity (WET) tests for Georgia-Pacific in Crossett, AR. The tests were conducted according to requirements in Arkansas NPDES permit AR0001210. Composite samples of Outfall 001 effluent were collected on March 10, 12, and 14, 2014. The samples were received at ENVIRON on March 11, 13, and 15, 2014, within the USEPA-required receipt temperature range of 0 to 6.0 °C. The grab samples of river water were received in good condition on the same days as the effluent samples. Test organisms utilized for the chronic toxicity tests were the fathead minnow (*Pimephales promelas*) and *Ceriodaphnia dubia* (*C. dubia*). The tests were initiated upon receipt of the first sample. Test concentrations consisted of 25, 34, 45, 60, and 80 percent effluent and a river water control. A secondary control of moderately hard water was also initiated.

Tests were conducted in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition for chronic testing (EPA-821-R-02-013). Pathogen interference was observed in the fathead minnow river water control, thereby not meeting test acceptability criteria (TAC). The moderately hard water secondary fathead minnow control met both the lethal and sub-lethal TAC. Therefore, the moderately hard secondary fathead minnow control was used for statistical analyses. *C. dubia* met USEPA TAC with the river water and moderately hard water controls. The results of the chronic toxicity tests are as follows:

TEST RESULTS FOR OUTFALL 001 EFFLUENT		
Permit Limits	Fathead Minnow*	<i>C. dubia</i>
NOEC Value 80% (lethality)	80%	80%
NOEC Value 80% (sub-lethality)	80%	45%

*Results based on comparison to secondary control.

The results of the chronic test with the fathead minnow indicated a No Observable Effect Concentration (NOEC) value for lethality of 80 percent effluent. The fathead minnow test results indicate no significant effects at the critical dilution to the survival of fathead minnow. The sub-lethal NOEC value for fathead minnow growth was 80 percent effluent, which demonstrates no sub-lethal toxicity to the fathead minnow. The results of the chronic test with *C. dubia* indicated

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NELAP Accredited and Laboratory Certification in the following States: AR (02-008-0), AZ (0751), CA (2465), FL (E87896), IA (386), KS (E-10391), LA (02061), MN, NC (003), OK (9973), SC (84015), TX (T104704410-11-2), VA (460171), WI (399050850), WV (351) Test Results Contained in this Report Meet NELAP Requirements

a NOEC value for lethality of 80 percent effluent and a NOEC value for the sub-lethal endpoint (reproduction) of 45 percent effluent. The *C. dubia* test results indicate significant sublethal toxicity at the critical dilution.

The river water control for the fathead minnow test did not meet USEPA criteria for test acceptability due to pathogen interference. Therefore, the secondary control (moderately hard water) was used for the statistical analyses. The Coefficient of Variation (CV) values for survival in the control and critical dilution are 7.4 and 7.2 percent, respectively. The CV values for growth in the control and critical dilution are 17 and 10.6 percent, respectively, and are below the CV limit of 40 percent for findings of no toxicity. The effluent concentration-response curve can be described as a Type 10 dose response in EPA 821-B-00-004 *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing*. A Type 10 response is characterized by an increase in fish growth as the test concentrations increase. Test precision for growth results (as Percent Minimum Significant Difference, PMSD) value was 26.6 percent, which is within the USEPA PMSD bounds of 12 to 30 percent when alpha 0.05 was used for hypothesis testing. The test is considered valid for assessment of permit compliance. The monthly reference toxicant test also met all the test acceptability criteria.

All *C. dubia* test controls met USEPA criteria for test acceptability. The reproduction CV values for the control and critical dilution are 27.3 and 22.5 percent respectively, which meets the TAC limit of 40 percent for a finding of no toxicity. The PMSD value was 19.1 percent, which is within the USEPA PMSD bounds of 13 to 47 percent for *C. dubia* reproduction. The effluent concentration-response can be described in EPA 821-B-00-004 as a Type 1 dose response. A Type 1 concentration-response curve is characterized by an ideal response. This test is considered valid for assessment of permit compliance. The monthly reference toxicant test also met all the test acceptability criteria.

Copies of the laboratory bench sheets with statistical data are presented in Attachment 1. Chain-of-custody documentation and reference toxicant data are presented in Attachment 2. In order to meet the NELAP requirement for listing the total number of report pages; this report consists of 41 pages including this cover letter, attachment pages and separator pages.

If you have any questions please contact Rick Lockwood at (615) 277-7523. ENVIRON appreciates the opportunity to assist Georgia-Pacific with their testing needs.

Sincerely,

ENVIRON International Corporation



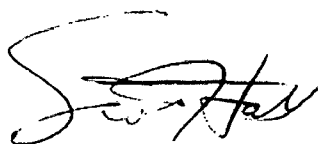
Richard E. Lockwood
Project Manager



Robin L. Richards, REM
Principal

DATA REVIEW FORM
ACUTE AND CHRONIC WET TESTS
ENVIRON International Corporation

The raw data (i.e., laboratory bench sheets) and data in the applicable summary sheets have been checked and found to be complete. Additionally, test conditions and control performance meet test acceptability criteria specified by the US Environmental Protection Agency and the certifying state authority for the tests conducted.¹



Scott Hall, Manager
Ecotoxicology Group

¹ Any data limitations regarding their applicability for determining NPDES permit compliance are discussed in the report cover letter.

**Attachment 1:
Statistical Analysis and
Raw Data Sheets**

CETIS Analytical Report

RW control

Report Date: 25 Mar-14 15:45 (p 1 of 8)
 Test Code: 16685fm | 05-8608-5648

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 12-0652-8057	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.8.4
Analyzed: 25 Mar-14 15:43	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes
Batch ID: 07-9655-7710	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 11 Mar-14 13:36	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 18 Mar-14 13:24	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d	Source: Environmental Consult & Test	Age:
Sample ID: 13-8077-3057	Code: 524CECC1	Client: GPAC Crossett
Sample Date: 10 Mar-14	Material: Industrial Effluent	Project: WET Monthly Compliance Test (MAR)
Receive Date: 11 Mar-14	Source: Discharge Monitoring Report	
Sample Age: 38h	Station: 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	NA	C > T	NA	NA	80	>80	NA	1.25	39.2%

Steel Many-One Rank Sum Test

Control	vs C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water	25	37	16	2	8	0.9996	Asymp	Non-Significant Effect
	34	37	16	2	8	0.9996	Asymp	Non-Significant Effect
	45	40	16	0	8	1.0000	Asymp	Non-Significant Effect
	60	37	16	2	8	0.9996	Asymp	Non-Significant Effect
	80	38	16	2	8	0.9999	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.6	0.8 - NL	Yes	Below Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.549	2.908	0.0015	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.7697306	0.1539461	5	5.626	0.0014	Significant Effect
Error	0.6566898	0.02736207	24			
Total	1.42642		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	130.6	15.09	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.8417	0.9031	0.0004	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	5	0.6	0.2135	0.9865	0.625	0.125	0.875	0.1392	51.87%	0.0%
25		5	0.925	0.84	1	0.875	0.875	1	0.03062	7.4%	-54.17%
34		5	0.925	0.84	1	0.875	0.875	1	0.03062	7.4%	-54.17%
45		5	1	1	1	1	1	1	0	0.0%	-66.67%
60		5	0.925	0.84	1	0.875	0.875	1	0.03062	7.4%	-54.17%
80		5	0.95	0.865	1	1	0.875	1	0.03062	7.21%	-58.33%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Wate	5	0.8955	0.4588	1.332	0.9117	0.3614	1.209	0.1573	39.28%	0.0%
25		5	1.283	1.158	1.408	1.209	1.209	1.393	0.04499	7.84%	-43.26%
34		5	1.283	1.158	1.408	1.209	1.209	1.393	0.04499	7.84%	-43.26%
45		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	-55.57%
60		5	1.283	1.158	1.408	1.209	1.209	1.393	0.04499	7.84%	-43.26%
80		5	1.32	1.195	1.445	1.393	1.209	1.393	0.04499	7.62%	-47.37%

CETIS Analytical Report

Report Date: 25 Mar-14 15:45 (p 2 of 8)
 Test Code: 16685fm | 05-8608-5648

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 12-0652-8057 Endpoint: 7d Survival Rate
 Analyzed: 25 Mar-14 15:43 Analysis: Nonparametric-Control vs Treatments

CETIS Version: CETISv1.8.4
 Official Results: Yes

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	0.875	0.125	0.875	0.5	0.625
25		0.875	1	1	0.875	0.875
34		0.875	0.875	1	1	0.875
45		1	1	1	1	1
60		0.875	1	0.875	0.875	1
80		1	0.875	1	1	0.875

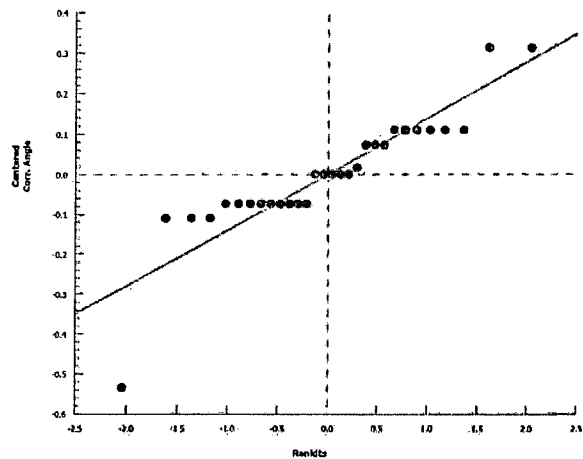
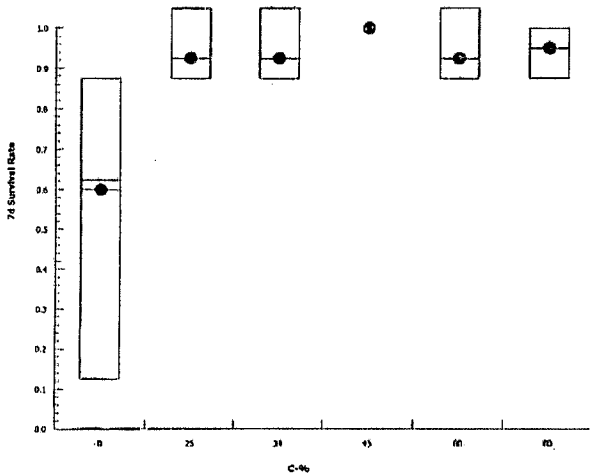
Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	1.209	0.3614	1.209	0.7854	0.9117
25		1.209	1.393	1.393	1.209	1.209
34		1.209	1.209	1.393	1.393	1.209
45		1.393	1.393	1.393	1.393	1.393
60		1.209	1.393	1.209	1.209	1.393
80		1.393	1.209	1.393	1.393	1.209

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	7/8	1/8	7/8	4/8	5/8
25		7/8	8/8	8/8	7/8	7/8
34		7/8	7/8	8/8	8/8	7/8
45		8/8	8/8	8/8	8/8	8/8
60		7/8	8/8	7/8	7/8	8/8
80		8/8	7/8	8/8	8/8	7/8

Graphics



TEST LOG NO.

16685

CLIENT/SAMPLE ID: Georgia Pacific Crossett

JOB NO. 20-19675H

TEST ORGANISM: Fm

DATE: 3/1/14

ENVIRON Test Log No. 16685

19 of 41

		D.O. (mg/L)													
Concentration (%)		Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7
			Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	
RW		8.5	8.2	8.2	8.6	8.2	8.5	8.3	8.2	8.4	8.5	8.6	7.9	8.6	8.6
25		8.2	8.0	8.1	8.5	8.2	8.2	8.2	8.0	8.0	8.0	8.7	8.0	8.5	8.4
34		8.3	7.9	8.1	8.6	8.4	8.4	8.4	8.3	8.1	8.0	8.7	7.9	8.6	8.3
45		8.5	7.8	8.4	8.6	8.2	8.3	8.2	8.4	8.1	8.5	8.7	7.8	8.5	8.6
60		8.4	7.7	8.2	8.5	8.1	8.3	8.7	8.4	8.4	8.6	8.5	7.7	8.5	8.6
80		8.5	7.4	8.2	8.4	8.5	8.4	8.4	8.4	8.4	8.6	8.5	7.6	8.5	8.6
MH		8.5	8.0	8.2	8.6	8.4	8.2	8.5	8.0	8.2	7.9	8.5	7.9	8.4	8.5
Concentration (%)		Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7
			Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	
RW		7.38	7.70	7.40	8.02	7.10	7.03	7.09	7.67	6.85	7.61	6.71	7.72	6.54	7.52
25		7.65	7.48	7.36	7.65	7.27	7.37	7.52	7.44	7.53	7.44	7.49	7.68	7.48	7.57
34		7.73	7.40	7.38	7.73	7.39	7.71	7.69	7.60	7.58	7.64	7.69	7.69	7.54	7.59
45		7.81	7.81	7.83	7.80	7.83	7.86	7.71	7.87	7.46	7.91	7.71	7.72	7.54	7.66
60		7.80	7.89	7.87	7.98	7.81	8.10	7.75	7.84	7.72	8.08	7.71	7.94	7.66	7.69
80		7.85	8.06	7.89	8.10	7.84	8.12	7.80	8.07	7.79	8.04	7.71	7.94	7.69	7.76
MH		7.89	7.76	7.93	8.20	7.94	7.88	7.89	7.97	7.94	7.92	7.99	7.94	8.03	7.79
Concentration (%)		Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7
			Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	
RW		125	79	76	74	90	108	93	108	89	108	89	91	103	94
25		122	490	122	473	108	103	103	578	614	577	575	566	562	557
34		793	716	738	714	787	793	807	765	751	715	655	709	763	741
45		121	935	975	924	999	1012	1022	986	948	822	884	980	975	916
60		362	1218	1262	1167	1229	1244	1260	1228	1251	1207	1226	1209	126	1211
80		1483	1411	1434	1384	1489	1434	1409	1409	1385	1358	1411	1397	1392	1380
MH		210	204	231	202	216	205	212	221	209	233	217	210	225	219
Params Int/Time:	CR 1029	M0721	M1024	M1024	M1023	M1100	M1022	CR 0320	M1020	M1035	M1020	M1025	M1020	M1035	M1013
Dilutions Int/Time:	M1010	M1010	M1010	M1010	M1010	M1010	M1010	M1010	M1010	M1010	M1010	M1010	M1010	M1010	M1010
Control Water Batch:	723054169	229165469	229165469	229165469	229165469	229165469	229165469	229165469	229165469	229165469	229165469	229165469	229165469	229165469	229165469
Food Batch	4572	4572	4572	4572	4572	4572	4572	4572	4572	4572	4572	4572	4572	4572	4572

TEST LOG NO. _____

CLIENT: Georgia Pacific Crossett

DATE OF TEST: 3/16/14

JOB NO. 20-19675H

TEST TYPE(S) PERFORMED: Fm & Cd Chronic

100% EFFLUENT

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH ₃ N mg/L
17281	Outfall 001	3/9-10/14	3/11/14	328	440	20.02	1.14
17304	Outfall 001	3/11/14-12/14	3/13/14	320	415	20.02	0.791
17314	Outfall 001	3/13-14/14	3/15/14	310	695	0.04	2.08

CONTROL / DILUTION WATER

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH ₃ N mg/L
17280	River Water	3/10/14	3/11/14	25.6	23	0.05004 0.12	2.01
17303	Riverwater	3/10/14	3/13/14	57.6	32	0.12	0.46
1733	Riverwater	3/10/14	3/15/14	44	30	0.08	0.135
5469	NH	3/7/14	3/11/14	88.8	44	20.02	
5470	NH	3/9/14	3/11/14	80.8	46	20.02	
5471	NH	3/10/14	3/13/14	82.4	45	20.02	
5473	NH	3/12/14	3/15/14	82.4	41	20.02	

Silica: untreated: 41.9
 Filtered: 23.6
 Ferric: non detectable

CETIS Analytical Report

MH Control

Report Date: 25 Mar-14 15:45 (p 3 of 8)
 Test Code: 16685fm | 05-8608-5648

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 10-8232-7821	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.8.4
Analyzed: 25 Mar-14 15:44	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes
Batch ID: 07-9655-7710	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 11 Mar-14 13:36	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 18 Mar-14 13:24	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d	Source: Environmental Consult & Test	Age:
Sample ID: 13-8077-3057	Code: 524CECC1	Client: GPAC Crossett
Sample Date: 10 Mar-14	Material: Industrial Effluent	Project: WET Monthly Compliance Test (MAR)
Receive Date: 11 Mar-14	Source: Discharge Monitoring Report	
Sample Age: 38h	Station: 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	NA	C > T	NA	NA	80	>80	NA	1.25	10.3%

Steel Many-One Rank Sum Test

Control	vs C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Lab Water	25	27.5	16	3	8	0.8333	Asymp	Non-Significant Effect
	34	27.5	16	3	8	0.8333	Asymp	Non-Significant Effect
	45	35	16	2	8	0.9979	Asymp	Non-Significant Effect
	60	27.5	16	3	8	0.8333	Asymp	Non-Significant Effect
	80	30	16	3	8	0.9446	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.925	0.8 - NL	Yes	Passes Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	1.319	2.908	1.0000	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04947025	0.009894051	5	1.173	0.3511	Non-Significant Effect
Error	0.2023783	0.008432429	24			
Total	0.2518486		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	114	15.09	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.8081	0.9031	<0.0001	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water	5	0.925	0.84	1	0.875	0.875	1	0.03062	7.4%	0.0%
25		5	0.925	0.84	1	0.875	0.875	1	0.03062	7.4%	0.0%
34		5	0.925	0.84	1	0.875	0.875	1	0.03062	7.4%	0.0%
45		5	1	1	1	1	1	1	0	0.0%	-8.11%
60		5	0.925	0.84	1	0.875	0.875	1	0.03062	7.4%	0.0%
80		5	0.95	0.865	1	1	0.875	1	0.03062	7.21%	-2.7%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water	5	1.283	1.158	1.408	1.209	1.209	1.393	0.04499	7.84%	0.0%
25		5	1.283	1.158	1.408	1.209	1.209	1.393	0.04499	7.84%	0.0%
34		5	1.283	1.158	1.408	1.209	1.209	1.393	0.04499	7.84%	0.0%
45		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	-8.59%
60		5	1.283	1.158	1.408	1.209	1.209	1.393	0.04499	7.84%	0.0%
80		5	1.32	1.195	1.445	1.393	1.209	1.393	0.04499	7.62%	-2.86%

CETIS Analytical Report

Report Date: 25 Mar-14 15:45 (p 4 of 8)
 Test Code: 16685fm | 05-8608-5648

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 10-8232-7821 Endpoint: 7d Survival Rate
 Analyzed: 25 Mar-14 15:44 Analysis: Nonparametric-Control vs Treatments

CETIS Version: CETISv1.8.4
 Official Results: Yes

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	1	1	0.875	0.875	0.875
25		0.875	1	1	0.875	0.875
34		0.875	0.875	1	1	0.875
45		1	1	1	1	1
60		0.875	1	0.875	0.875	1
80		1	0.875	1	1	0.875

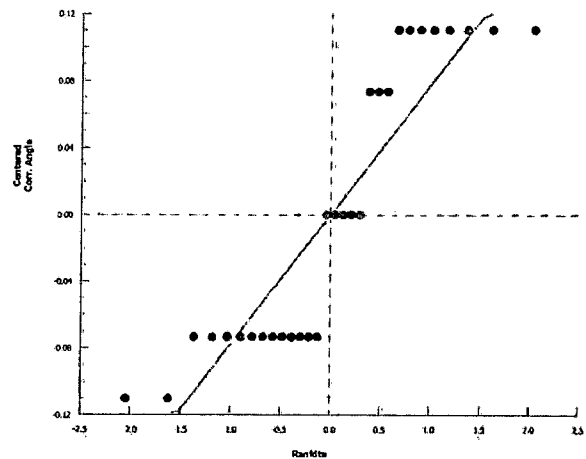
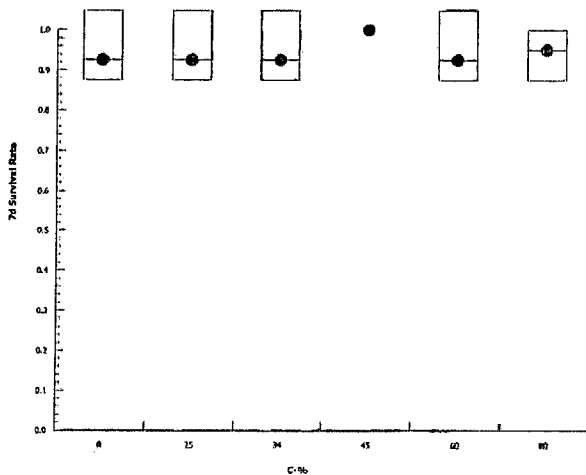
Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	1.393	1.393	1.209	1.209	1.209
25		1.209	1.393	1.393	1.209	1.209
34		1.209	1.209	1.393	1.393	1.209
45		1.393	1.393	1.393	1.393	1.393
60		1.209	1.393	1.209	1.209	1.393
80		1.393	1.209	1.393	1.393	1.209

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	8/8	8/8	7/8	7/8	7/8
25		7/8	8/8	8/8	7/8	7/8
34		7/8	7/8	8/8	8/8	7/8
45		8/8	8/8	8/8	8/8	8/8
60		7/8	8/8	7/8	7/8	8/8
80		8/8	7/8	8/8	8/8	7/8

Graphics



CETIS Analytical Report

RW Cantrell

Report Date: 25 Mar-14 15:45 (p 7 of 8)
 Test Code: 16685fm | 05-8608-5648

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 15-3247-4245	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.8.4
Analyzed: 25 Mar-14 15:44	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 07-9655-7710	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 11 Mar-14 13:36	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 18 Mar-14 13:24	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d	Source: Environmental Consult & Test	Age:
Sample ID: 13-8077-3057	Code: 524CECC1	Client: GPAC Crossett
Sample Date: 10 Mar-14	Material: Industrial Effluent	Project: WET Monthly Compliance Test (MAR)
Receive Date: 11 Mar-14	Source: Discharge Monitoring Report	
Sample Age: 38h	Station: 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	NA	C > T	NA	NA	80	>80	NA	1.25	40.4%

Dunnett Multiple Comparison Test

Control	vs C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water	25	-4.06	2.362	0.167	8	1.0000	CDF	Non-Significant Effect
	34	-2.954	2.362	0.167	8	1.0000	CDF	Non-Significant Effect
	45	-5.895	2.362	0.167	8	1.0000	CDF	Non-Significant Effect
	60	-5.213	2.362	0.167	8	1.0000	CDF	Non-Significant Effect
	80	-5.273	2.362	0.167	8	1.0000	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.4133	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.4043	0.12 - 0.3	Yes	Above Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.771	2.908	0.0899	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.5934088	0.1186818	5	9.486	<0.0001	Significant Effect
Error	0.3002646	0.01251102	24			
Total	0.8936734		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	4.434	15.09	0.4887	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9712	0.9031	0.5720	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	5	0.4133	0.198	0.6285	0.4738	0.1313	0.5938	0.07753	41.95%	0.0%
25		5	0.7005	0.6138	0.7872	0.7	0.615	0.7725	0.03122	9.97%	-69.51%
34		5	0.6223	0.5234	0.7211	0.6537	0.5287	0.7088	0.03559	12.79%	-50.57%
45		5	0.8303	0.698	0.9625	0.8488	0.7088	0.9812	0.04764	12.83%	-100.9%
60		5	0.782	0.6275	0.9365	0.7625	0.6037	0.9075	0.05566	15.91%	-89.23%
80		5	0.7862	0.6826	0.8899	0.8162	0.655	0.8775	0.03734	10.62%	-90.26%

CETIS Analytical Report

Report Date: 25 Mar-14 15:45 (p 8 of 8)
 Test Code: 16685fm | 05-8608-5648

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

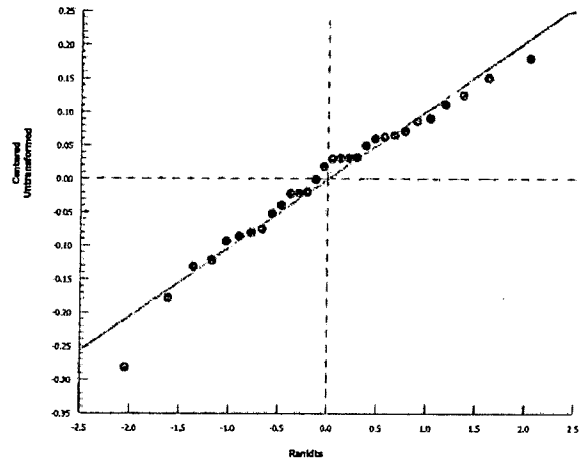
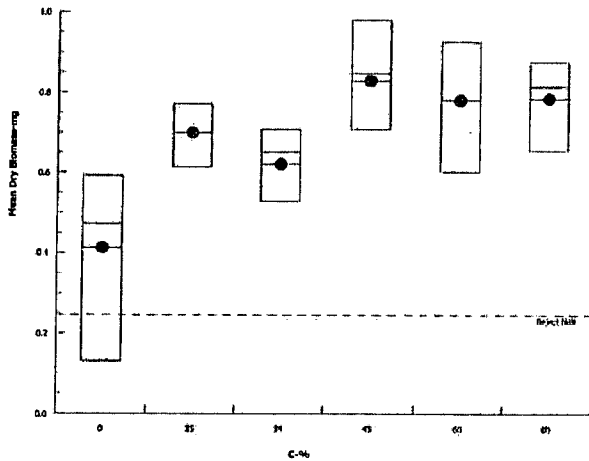
Analysis ID: 15-3247-4245 Endpoint: Mean Dry Biomass-mg
 Analyzed: 25 Mar-14 15:44 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.8.4
 Official Results: Yes

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	0.4763	0.1313	0.5938	0.3913	0.4738
25		0.615	0.6488	0.7	0.7725	0.7663
34		0.5287	0.5475	0.6725	0.6537	0.7088
45		0.7088	0.75	0.8488	0.9812	0.8625
60		0.7625	0.6037	0.9075	0.7425	0.8938
80		0.8162	0.655	0.765	0.8775	0.8175

Graphics



CETIS Analytical Report

MH control

Report Date: 25 Mar-14 15:45 (p 5 of 8)
 Test Code: 16685fm | 05-8608-5648

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 03-7438-0378	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.8.4
Analyzed: 25 Mar-14 15:44	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 07-9655-7710	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 11 Mar-14 13:36	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 18 Mar-14 13:24	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d	Source: Environmental Consult & Test	Age:
Sample ID: 13-8077-3057	Code: 524CECC1	Client: GPAC Crossett
Sample Date: 10 Mar-14	Material: Industrial Effluent	Project: WET Monthly Compliance Test (MAR)
Receive Date: 11 Mar-14	Source: Discharge Monitoring Report	
Sample Age: 38h	Station: 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	NA	C > T	NA	NA	80	>80	NA	1.25	26.6%

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Lab Water		25	-2.913	2.362	0.141	8	1.0000	CDF	Non-Significant Effect
		34	-1.597	2.362	0.141	8	0.9973	CDF	Non-Significant Effect
		45	-5.094	2.362	0.141	8	1.0000	CDF	Non-Significant Effect
		60	-4.283	2.362	0.141	8	1.0000	CDF	Non-Significant Effect
		80	-4.354	2.362	0.141	8	1.0000	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.5272	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.2664	0.12 - 0.3	Yes	Passes Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.084	2.908	0.9433	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.3331209	0.06662417	5	7.533	0.0002	Significant Effect
Error	0.2122672	0.008844467	24			
Total	0.545388		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	1.648	15.09	0.8953	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9783	0.9031	0.7786	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water	5	0.5272	0.4158	0.6387	0.5188	0.4037	0.6438	0.04014	17.02%	0.0%
25		5	0.7005	0.6138	0.7872	0.7	0.615	0.7725	0.03122	9.97%	-32.86%
34		5	0.6223	0.5234	0.7211	0.6537	0.5287	0.7088	0.03559	12.79%	-18.02%
45		5	0.8303	0.698	0.9625	0.8488	0.7088	0.9812	0.04764	12.83%	-57.47%
60		5	0.782	0.6275	0.9365	0.7625	0.6037	0.9075	0.05566	15.91%	-48.32%
80		5	0.7862	0.6826	0.8899	0.8162	0.655	0.8775	0.03734	10.62%	-49.12%

CETIS Analytical Report

Report Date: 25 Mar-14 15:45 (p 6 of 8)
 Test Code: 16685fm | 05-8608-5648

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

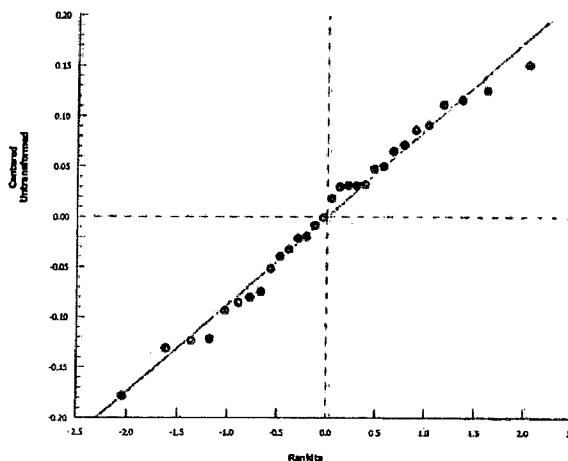
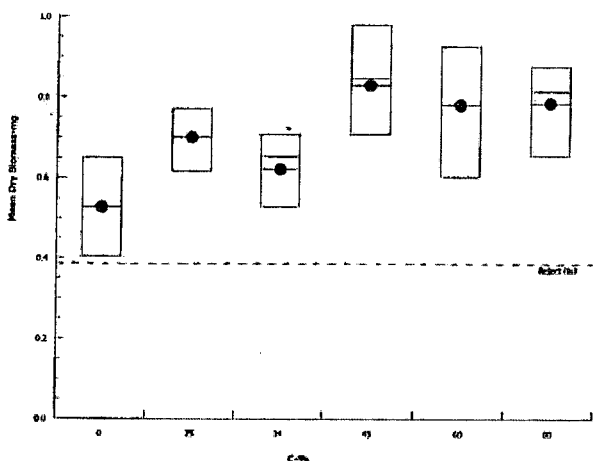
Analysis ID: 03-7438-0378 Endpoint: Mean Dry Biomass-mg
 Analyzed: 25 Mar-14 15:44 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.8.4
 Official Results: Yes

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	0.495	0.575	0.4037	0.6438	0.5188
25		0.615	0.6488	0.7	0.7725	0.7663
34		0.5287	0.5475	0.6725	0.6537	0.7088
45		0.7088	0.75	0.8488	0.9812	0.8625
60		0.7625	0.6037	0.9075	0.7425	0.8938
80		0.8162	0.655	0.765	0.8775	0.8175

Graphics



CETIS Analytical Report

W/M H control

Report Date: 25 Mar-14 15:45 (p 1 of 2)
 Test Code: 16685fm | 05-8608-5648

Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 19-8098-9961	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.8.4
Analyzed: 25 Mar-14 15:45	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 07-9655-7710	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 11 Mar-14 13:36	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 18 Mar-14 13:24	Species: Pimephales promelas	Brine: Not Applicable
Duration: 7d	Source: Environmental Consult & Test	Age:
Sample ID: 13-8077-3057	Code: 524CECC1	Client: GPAC Crossett
Sample Date: 10 Mar-14	Material: Industrial Effluent	Project: WET Monthly Compliance Test (MAR)
Receive Date: 11 Mar-14	Source: Discharge Monitoring Report	
Sample Age: 38h	Station: 001	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	447077	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.5272	0.25 - NL	Yes	Passes Acceptability Criteria

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.084	2.908	0.9433	No Outliers Detected

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	>80	N/A	N/A	<1.25	NA	NA
IC40	>80	N/A	N/A	<1.25	NA	NA
IC50	>80	N/A	N/A	<1.25	NA	NA

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Calculated Variate						
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	5	0.5272	0.4037	0.6438	0.04014	0.08975	17.02%	0.0%
25		5	0.7005	0.615	0.7725	0.03122	0.06982	9.97%	-32.86%
34		5	0.6223	0.5287	0.7088	0.03559	0.07958	12.79%	-18.02%
45		5	0.8303	0.7088	0.9812	0.04764	0.1065	12.83%	-57.47%
60		5	0.782	0.6037	0.9075	0.05566	0.1245	15.91%	-48.32%
80		5	0.7862	0.655	0.8775	0.03734	0.08349	10.62%	-49.12%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	0.495	0.575	0.4037	0.6438	0.5188
25		0.615	0.6488	0.7	0.7725	0.7663
34		0.5287	0.5475	0.6725	0.6537	0.7088
45		0.7088	0.75	0.8488	0.9812	0.8625
60		0.7625	0.6037	0.9075	0.7425	0.8938
80		0.8162	0.655	0.765	0.8775	0.8175

CETIS Analytical Report

Report Date: 25 Mar-14 15:45 (p 2 of 2)
Test Code: 16685fm | 05-8608-5648

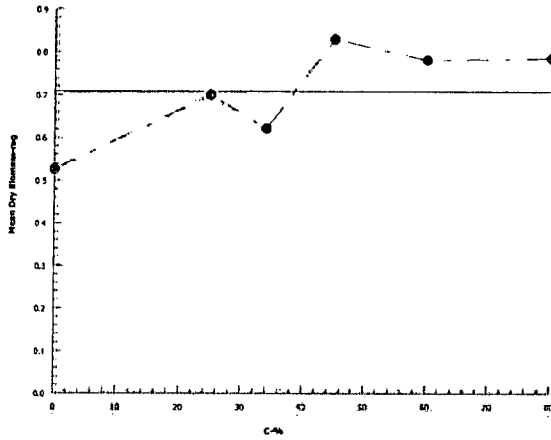
Fathead Minnow 7-d Larval Survival and Growth Test

ENVIRON International Corp

Analysis ID: 19-8098-9961 Endpoint: Mean Dry Biomass-mg
Analyzed: 25 Mar-14 15:45 Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.8.4
Official Results: Yes

Graphics



ENVIRON FATHEAD MINNOW SURVIVAL AND GROWTH 7-DAY CHRONIC TOXICITY TEST
EPA-821-R-02-013 Method 1000.0

TEST LOG NO.: 116685
 JOB NUMBER.: 20-19675H
 INDUSTRY: Georgia Pacific Crossett
 EFFLUENT: Outfall 001
 DILUTION WATER: River Water
 NPDES: Yes No
 FOOD BATCH: 41032

BEGINNING: HRS: 1350 DATE: 3/11/14
 ENDING: HRS: 1215 DATE: 3/18/14
 TEST DILUTIONS: 25, 34, 45, 60, 80%
 ORGANISM AGE (date): 3/10/14
 ORGANISM SOURCE: ABS # 4629
 SOURCE TEMP @ TEST START: 24.9
 RANDOMIZED BY: LM

PHOTOPERIOD: 16 hr light/8 hr dark
 FEEDING REGIME:
 0.15 mL Artemia @ 2 times/day
 TEST VESSEL CAPACITY: 450 mL
 TEST SOLUTION VOLUME: 250 - 300 mL
 NO. ORGANISMS/TREATMENT: 8
 NO. REPLICATES: 5

CONC (%)	REP ID	SURVIVAL (#)							
		START	DAY 1	DAY 2	DAY 3 21M AM	DAY 4	DAY 5	DAY 6	DAY 7
RW	A	8	8	8	8	8	8	8	7
	B	8	8	8	4	1	1	1	1
	C	8	8	8	8	7	7	7	7
	D	8	8	8	8	4	4	4	4
	E	8	8	8	7	6	5	5	5
	Temp(°c):old/new	24.8	24.0/24.6	24.1/24.1	24.1/24.1	24.5/24.4	24.5/24.4	24.2/24.6	24.7
25	A	8	8	8	8	7	7	7	7
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	7	7	7	7	7
	E	8	8	8	8	7	7	7	7
	Temp(°c):old/new	24.6	24.1/24.1	24.2/24.1	24.2/24.1	24.4/24.3	24.6/24.5	24.4/24.5	24.6
34	A	8	8	8	7	7	7	7	7
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	7	7	7	7	7	7
	Temp(°c):old/new	25.1	24.1/24.3	24.1/24.3	24.1/24.3	24.5/24.4	24.3/24.5	24.8/24.4	24.7
45	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.9	24.1/24.1	24.1/24.7	24.3/24.1	24.5/24.4	24.4/24.8	24.5/24.4	24.6
60	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	7	7	7	7	7
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.4	24.1/24.1	24.1/24.7	24.2/24.6	24.3/24.6	24.1/24.4	24.2/24.5	25.1
80	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	7
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	7	7	7	7	7
	Temp(°c):old/new	25.1	24.3/24.4	24.1/24.4	24.3/24.4	24.3/24.5	24.4/24.5	24.4/24.8	25.1
Test Renewal	Time	1350	1431	1432	1354	1148	1034	1110	1215
	Date	3/11/14	3/12/14	3/13/14	3/14/14	3/15/14	3/16/14	3/17/14	3/18/14
	Initials	LM	LM	LM	LM	JM	JM	AW	AW
morning feeding	Int/Time	AW1630	LM0700	LM0710	LM0700	AW0735	AW0740	LM0740	AW0740
afternoon feeding	Int/Time	AW1630	LM1530	LM1500	LM1530	AW1515	AW1500	AW1600	AW1600

1 Fungus on dead

ENVIRON FATHEAD MINNOW SURVIVAL AND GROWTH 7-DAY CHRONIC TOXICITY TEST
EPA-821-R-02-013 Method 1000.0

TEST LOG NO.: 16685
 JOB NUMBER: 20-19675H
 INDUSTRY: Georgia Pacific Crossett
 EFFLUENT: 001
 DILUTION WATER: River Water
 NPDES: Yes No
 FOOD BATCH: _____

BEGINNING: HRS: _____ DATE: 3/11/14
 ENDING: HRS: _____ DATE: _____

PHOTOPERIOD: 16 hr light/8 hr dark
 FEEDING REGIME:
 0.15 mL Artemia @ 2 times/day
 TEST VESSEL CAPACITY: 450 mL
 TEST SOLUTION VOLUME: 250 - 300 mL
 NO. ORGANISMS/TREATMENT: 8
 NO. REPLICATES: 5

CONC (%)	REP ID	SURVIVAL (#)							
		START	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
MH	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.9	24.1/24.6	24.1/24.1	24.2/24.1	24.3/24.5	24.2/24.4	24.5/24.2	25.2
	A								
	B								
	C								
	D								
	E								
	Temp(°c):old/new								
	A								
	B								
	C								
	D								
	E								
	Temp(°c):old/new								
	A								
	B								
	C								
	D								
	E								
	Temp(°c):old/new								
	A								
	B								
	C								
	D								
	E								
	Temp(°c):old/new								
	A								
	B								
	C								
	D								
	E								
	Temp(°c):old/new								
Test Renewal	Time								
	Date								
	Initials								
morning feeding	Int/Time								
afternoon feeding	Int/Time								

ENVIRON FATHEAD MINNOW SURVIVAL AND GROWTH 7-DAY CHRONIC TOXICITY TEST
EPA-821-R-02-013 Method 1000.0

TEST LOG NO.: 16685 BEGINNING: HRS: _____ DATE: 3/11/14
 JOB NO.: 20-19675H ENDING: HRS: _____ DATE: _____
 INDUSTRY: Georgia Pacific-Crossett
 EFFLUENT: Outfall 001 NO. ORGANISMS/TREATMENT: 8
 NPDES: Yes _____ No _____ NO. REPLICATES: 5

PHOTOPERIOD: 16 hr light
 FEEDING REGIME:
 0.15 mL Artemia @ 2 times/day
 TEST VESSEL CAPACITY: 450 mL
 TEST SOLUTION VOLUME: 250 mL

GROWTH RESULTS							
CONC (%)	REP ID	Boat ID	Tare wt (g)	Combined wt (g)	Tot Fish wt (g)	# of Fish	Fish Wt (mg) Per Final # of Fish
RW	A	1	1.09347	1.09728	0.00381	7	0.0544
	B	2	1.13138	1.13243	0.00105	1	0.105
	C	3	1.06198	1.06073	0.00475	7	0.079
	D	4	1.07053	1.07360	0.00313	4	0.783
	E	5	1.13924	1.14303	0.00379	5	0.758
25	A	6	1.12467	1.12959	0.00492	7	
	B	7	1.08333	1.08852	0.00519	8	
	C	8	1.07380	1.07940	0.00560	8	
	D	9	1.08923	1.09541	0.00618	7	
	E	10	1.09099	1.09712	0.00613	7	
34	A	11	1.09313	1.09736	0.00423	7	
	B	12	1.09952	1.10390	0.00438	7	
	C	13	1.12614	1.13152	0.00538	8	
	D	14	1.03316	1.03839	0.00523	8	
	E	15	1.11174	1.11741	0.00567	7	
45	A	16	1.10010	1.10577	0.00567	8	
	B	17	1.09216	1.09816	0.00600	8	
	C	18	1.11827	1.12506	0.00679	8	
	D	19	1.07078	1.078103	0.00785	8	
	E	20	1.05994	1.06684	0.00690	8	
60	A	21	1.05199	1.05809	0.00610	7	
	B	22	1.11077	1.11560	0.00483	8	
	C	23	1.13514	1.14240	0.00726	7	
	D	24	1.10089	1.10683	0.00594	7	
	E	25	1.13761	1.14476	0.00715	8	
80	A	26	1.11017	1.11670	0.00653	8	
	B	27	1.12814	1.13338	0.00524	7	
	C	28	1.07086	1.07698	0.00612	8	
	D	29	1.06602	1.07304	0.00702	8	
	E	30	1.07285	1.07939	0.00654	7	
MH	A	31	1.07743	1.08189	0.00396	8	
	B	32	1.06686	1.07146	0.00460	8	
	C	33	1.07823	1.08146	0.00323	7	
<i>OK</i> 1.09605	D	34	1.09090	1.09502	0.00515	7	
	E	35	1.17576	1.17991	0.00415	7	
	Initials / Date:		JH 3/14/14				

AVG Control Fish wt. 0.574 (using final #)

Oven ID: 1
 Tins In: _____
 Date: 3/18/14
 Time: 1251
 Temp (°C): 100
 Initials: AW
 Tins Out: _____
 Date: 3/20/14
 Time: 1120
 Temp (°C): 100
 Initials: LM

FINAL WEIGHTS
 DATE: 3/20/14
 INITIALS: OK

CETIS Analytical Report

Report Date: 24 Mar-14 17:32 (p 1 of 2)
 Test Code: 16685cd | 13-7349-9682

Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

Analysis ID: 18-3424-9433	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.8.4
Analyzed: 24 Mar-14 17:31	Analysis: STP 2x2 Contingency Tables	Official Results: Yes
Batch ID: 21-2806-4169	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 11 Mar-14 12:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 18 Mar-14 13:51	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d 2h	Source: In-House Culture	Age:
Sample ID: 08-6125-8523	Code: 3355C31B	Client: GPAC Crossett
Sample Date: 10 Mar-14	Material: Industrial Effluent	Project: WET Monthly Compliance Test (MAR)
Receive Date: 11 Mar-14	Source: Discharge Monitoring Report	
Sample Age: 36h	Station: 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	80	>80	NA	1.25

Fisher Exact/Bonferroni-Holm Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	1	1.0000	Exact	Non-Significant Effect
		34	1	1.0000	Exact	Non-Significant Effect
		45	1	1.0000	Exact	Non-Significant Effect
		60	1	1.0000	Exact	Non-Significant Effect
		80	1	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria

Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Receiving Water	10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
34		10	0	10	1	0	0.0%
45		10	0	10	1	0	0.0%
60		10	0	10	1	0	0.0%
80		9	0	9	1	0	0.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
34		1	1	1	1	1	1	1	1	1	1
45		1	1	1	1	1	1	1	1	1	1
60		1	1	1	1	1	1	1	1	1	1
80		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	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
34		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
45		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
60		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
80		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 Mar-14 17:32 (p 2 of 2)
Test Code: 16685cd | 13-7349-9682

Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

Analysis ID: 18-3424-9433

Endpoint: 7d Survival Rate

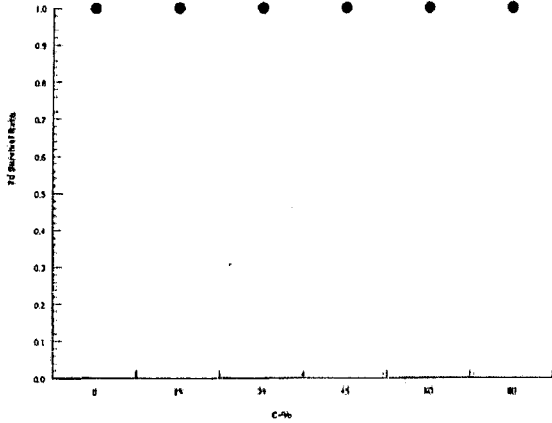
CETIS Version: CETISv1.8.4

Analyzed: 24 Mar-14 17:31

Analysis: STP 2x2 Contingency Tables

Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 24 Mar-14 17:32 (p 1 of 2)
 Test Code: 16685cd | 13-7349-9682

Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

Analysis ID: 07-6774-8917	Endpoint: Reproduction	CETIS Version: CETISv1.8.4
Analyzed: 24 Mar-14 17:32	Analysis: Nonparametric-Multiple Comparison	Official Results: Yes
Batch ID: 21-2806-4169	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 11 Mar-14 12:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 18 Mar-14 13:51	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 7d 2h	Source: In-House Culture	Age:
Sample ID: 08-6125-8523	Code: 3355C31B	Client: GPAC Crossett
Sample Date: 10 Mar-14	Material: Industrial Effluent	Project: WET Monthly Compliance Test (MAR)
Receive Date: 11 Mar-14	Source: Discharge Monitoring Report	
Sample Age: 36h	Station: 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	NA	C > T	NA	NA	45	60	51.96	2.222	19.1%

Wilcoxon/Bonferroni Adj Test

Control	vs C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water	25	119.5	NA	7	18	1.0000	Exact	Non-Significant Effect
	34	105	NA	5	18	1.0000	Exact	Non-Significant Effect
	45	83.5	NA	2	18	0.2691	Exact	Non-Significant Effect
	60*	65	NA	0	18	0.0033	Exact	Significant Effect
	80*	56.5	NA	1	17	0.0112	Exact	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	24.1	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1912	0.13 - 0.47	Yes	Passes Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.778	3.193	0.0032	Outlier Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2050.837	410.1674	5	23.46	<0.0001	Significant Effect
Error	926.7222	17.48532	53			
Total	2977.559		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	15.39	15.09	0.0088	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9569	0.9451	0.0354	Normal Distribution

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	10	24.1	19.4	28.8	26.5	9	30	2.079	27.28%	0.0%
25		10	27.8	25.47	30.13	27.5	24	34	1.031	11.72%	-15.35%
34		10	26	23.71	28.29	26	21	32	1.011	12.3%	-7.88%
45		10	20.2	16.49	23.91	19	14	28	1.638	25.65%	16.18%
60		10	12.4	11	13.8	12	10	15	0.6182	15.77%	48.55%
80		9	13.56	11.21	15.9	12	10	19	1.015	22.47%	43.75%

CETIS Analytical Report

Report Date: 24 Mar-14 17:32 (p 2 of 2)
 Test Code: 16685cd | 13-7349-9682

Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

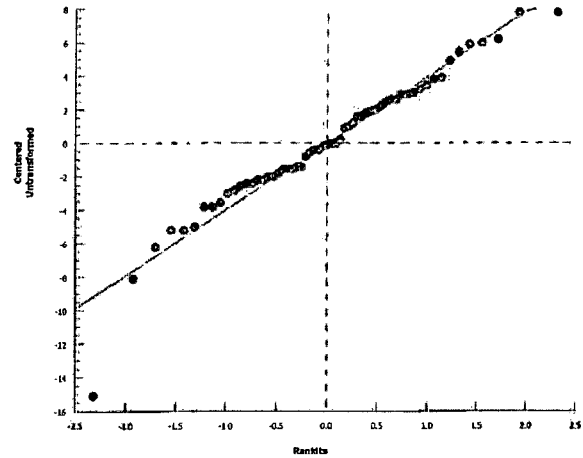
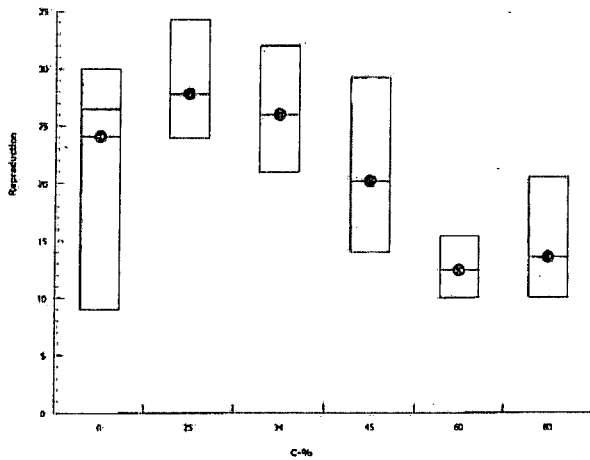
Analysis ID: 07-6774-8917 Endpoint: Reproduction
 Analyzed: 24 Mar-14 17:32 Analysis: Nonparametric-Multiple Comparison

CETIS Version: CETISv1.8.4
 Official Results: Yes

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	9	25	28	27	29	30	27	24	26	16
25		24	25	26	34	28	27	29	30	24	31
34		29	28	24	26	32	24	21	23	26	27
45		24	22	28	15	28	14	18	18	20	15
60		10	14	10	15	14	11	11	15	12	12
80		13	11	12	17	12	19	12	10	16	

Graphics



CETIS Analytical Report

Report Date: 24 Mar-14 17:32 (p 1 of 1)
 Test Code: 16685cd | 13-7349-9682

Ceriodaphnia 7-d Survival and Reproduction Test

ENVIRON International Corp

Analysis ID: 04-3827-1732 Endpoint: Reproduction CETIS Version: CETISv1.8.4
 Analyzed: 24 Mar-14 17:32 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Batch ID: 21-2806-4169 Test Type: Reproduction-Survival (7d) Analyst:
 Start Date: 11 Mar-14 12:00 Protocol: EPA/821/R-02-013 (2002) Diluent: Mod-Hard Synthetic Water
 Ending Date: 18 Mar-14 13:51 Species: Ceriodaphnia dubia Brine: Not Applicable
 Duration: 7d 2h Source: In-House Culture Age:

Sample ID: 08-6125-8523 Code: 3355C31B Client: GPAC Crossett
 Sample Date: 10 Mar-14 Material: Industrial Effluent Project: WET Monthly Compliance Test (MAR)
 Receive Date: 11 Mar-14 Source: Discharge Monitoring Report
 Sample Age: 36h Station: 001

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1573851	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	24.1	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	46.51	41.38	51.18	2.15	1.954	2.417

Reproduction Summary

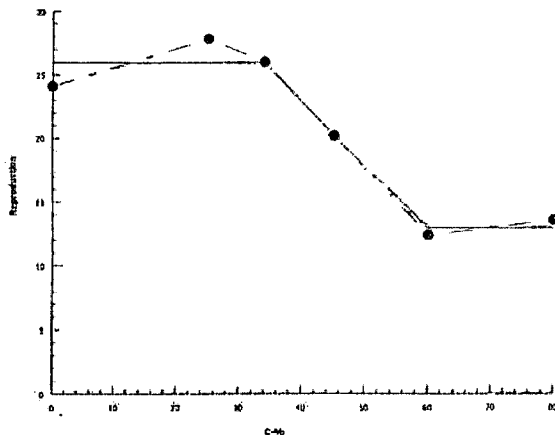
Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Receiving Water	10	24.1	9	30	2.079	6.574	27.28%	0.0%
25		10	27.8	24	34	1.031	3.259	11.72%	-15.35%
34		10	26	21	32	1.011	3.197	12.3%	-7.88%
45		10	20.2	14	28	1.638	5.181	25.65%	16.18%
60		10	12.4	10	15	0.6182	1.955	15.77%	48.55%
80		9	13.56	10	19	1.015	3.046	22.47%	43.75%

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	9	25	28	27	29	30	27	24	26	16
25		24	25	26	34	28	27	29	30	24	31
34		29	28	24	26	32	24	21	23	26	27
45		24	22	28	15	28	14	18	18	20	15
60		10	14	10	15	14	11	11	15	12	12
80		13	11	12	17	12	19	12	10	16	

Graphics



**ENVIRON CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION 3-BROOD CHRONIC TOXICITY TEST
EPA-821-R-02-013 Method 1002.0**

TEST LOG NO.: 10085 PHOTOPERIOD: 16 hr light/8 hr dark
 JOB NUMBER.: 20-19675H FEEDING REGIME: 0.1 mL YCT / 0.1 mL P. subcapitata per 15 mL
 INDUSTRY: Georgia Pacific-Crossett TEST VESSEL CAPACITY: 30 mL
 EFFLUENT: Outfall 001 TEST SOLUTION VOLUME: 15 mL
 DILUTION WATER: River Water NO. ORGANISMS/REPLICATE: 1
 NPDES (Y/N): Yes NO. REPLICATES: 10

ORGANISM SOURCE INFORMATION:

AGE (date): 3/10/14
 TEMP @ TEST START: 25.3 °C
 RANDOMIZED BY: LM
 TEST START:
 HOURS: 1132 DATE: 3/11/14
 TEST END:
 HOURS: 1323 DATE: 3/17/14

SOURCE ID:	AGE (time):
10545 10545	1211-1543
10546b	1212-1547

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding/End Initials/Time	Daily Renewal & Feeding Initials/Time	Date	Control		REPLICATES										Notes	
			River Water		45					46b						
			Temp (°C)		1	2	3	4	5	6	7	8	9	10		
					Adult	8	4	14	6	1	2	1	11	19	2	
LM 1132		3/11	25.2		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1148	3/12	24.8	24.9	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	OR 1240	3/13	24.3	24.7	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1240	3/14	24.4	24.0	Day 3	3	4	5	5	6	5	4	5	4	4	
	Aw 1052	3/15	24.1	24.3	Day 4	✓	✓	✓	8	✓	11	✓	5	✓	5	
	Aw 1028	3/16	24.6	24.7	Day 5	6	8	8	✓	8	✓	9	3	9	✓	
Aw 1323		3/17	24.0		Day 6	✓	13	15	14	15	14	14	11	13	7	80%
					Day 7											
					Day 8											
			Total			9	25	28	27	29	30	27	24	26	16	241

✓ = Test Organism Alive 0 = Live neonates Miss = Lost or Missing
 D = Test Organism Dead (-0) = Dead neonates M = Male

TEST LOG # 16685

JOB # 20-19675H

CLIENT/SAMPLE ID: Georgia Pacific - Crossett

LAB/STATE: ENVIRON / TN

SURVIVAL AND REPRODUCTION DATA																	
Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration		REPLICATES										Notes		
			25%	Temp (°C)	1	2	3	4	5	6	7	8	9	10			
					Adult												
LM 1132		3/11	25.3		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LM 1148	3/12	24.5	24.7	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	OR 1240	3/13	24.5	24.3	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LM 1246	3/14	24.6	24.5	Day 3	4	3	4	5	5	5	4	5	4	6		
	AW 1053	3/15	24.4	24.3	Day 4	✓	✓	✓	✓	7	8	9	10	7	11		
	AW 1028	3/16	25.0	24.9	Day 5	7	8	8	11	✓	✓	✓	✓	2	✓		
AW 1323		3/17		24.0	Day 6	13	13	14	18	16	14	16	15	13	14		
					Day 7												
					Day 8												
			Total			24	25	26	34	28	27	29	30	24	31	27	28

SURVIVAL AND REPRODUCTION DATA																	
Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration		REPLICATES										Notes		
			34%	Temp (°C)	1	2	3	4	5	6	7	8	9	10			
LM 1132		3/11	25.1		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LM 1148	3/12	25.1	25.1	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	OR 1240	3/13	24.6	24.5	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LM 1246	3/14	24.3	24.7	Day 3	4	4	✓	4	6	4	4	5	5	4		
	AW 1053	3/15	24.3	24.3	Day 4	✓	✓	3	7	✓	9	5	8	8	7		
	AW 1028	3/16	25.0	24.7	Day 5	10	9	8	✓	12	✓	✓	✓	✓	✓		
AW 1323		3/17		24.2	Day 6	15	15	13	15	14	11	12	10	13	16		
					Day 7												
					Day 8												
			Total			99	78	24	26	32	24	21	23	26	27	26	0

✓ = Test Organism Alive 0 = Live neonates Miss = Lost or Missing
 D = Test Organism Dead (-0) = Dead neonates M = Male

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TEST LOG # 116685

JOB # 20-19675H

CLIENT/SAMPLE ID: Georgia Pacific - Crossett

LAB/STATE: ENVIRON / TN

SURVIVAL AND REPRODUCTION DATA																	
Test Start & Feeding / End Initials / Time	Daily Renewal & Feeding Initials / Time	Date	Concentration		REPLICATES										Notes		
			45%	Temp (°C)	1	2	3	4	5	6	7	8	9	10			
					Adult												
LM 1132		3/11	25.5		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1240	3/12	25.1	25.1	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1240	3/13	25.0	24.5	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1246	3/14	24.4	24.3	Day 3	4	4	5	3	5	6	4	5	4	5		
	Aw 1053	3/15	24.3	24.1	Day 4	✓	✓	✓	✓	✓	✓	5	✓	✓	5		
	Aw 1028	3/16	24.8	25.1	Day 5	9	8	2	6	9	✓	✓	✓	4	✓		
Aw 1323		3/17		24.3	Day 6	11	10	15	6	14	8	9	13	12	5		
					Day 7												
					Day 8												
			Total			24	22	28	15	28	14	18	18	20	15	202	

SURVIVAL AND REPRODUCTION DATA																	
Test Start & Feeding / End Initials / Time	Daily Renewal & Feeding Initials / Time	Date	Concentration		REPLICATES										Notes		
			60%	Temp (°C)	1	2	3	4	5	6	7	8	9	10			
LM 1132		3/11	25.3		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1240	3/12	24.8	24.6	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1240	3/13	24.7	24.6	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1246	3/14	25.1	24.7	Day 3	✓	✓	3	6	5	4	4	5	4	5		
	Aw 1053	3/15	24.6	24.1	Day 4	3	2	✓	4	5	4	✓	7	8	✓		
	Aw 1028	3/16	25.2	24.8	Day 5	✓	7	4	✓	✓	✓	3	✓	✓	3		
Aw 1323		3/17		24.4	Day 6	7	5	3	5	4	3	4	3	✓	4		
					Day 7												
					Day 8												
			Total			10	14	10	15	14	11	15	12	12		124	

✓ = Test Organism Alive 0 = Live neonates Miss = Lost or Missing
 D = Test Organism Dead (-0) = Dead neonates M = Male

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TEST LOG # 16685

JOB # 20-19675H

CLIENT/SAMPLE ID: Georgia Pacific - Crossett

LAB/STATE: ENVIRON / TN

SURVIVAL AND REPRODUCTION DATA																	
Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration			REPLICATES										Notes	
			80%	Temp (°C)		1	2	3	4	5	6	7	8	9	10		
					Adult												
LM 1132		3/11	25.3		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LM 1148	3/12	24.8	24.9	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	OK 1240	3/13	24.7	24.3	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	HM 1246	3/14	24.5	24.9	Day 3	4	5	3	4	5	3	5	4	4	5		
	AW 1053	3/15	24.4	24.1	Day 4	✓	✓	✓	✓	8	✓	8	6	✓	6		
	AW 1028	3/16	24.5	25.0	Day 5	4	Miss	✓	4	✓	4	✓	✓	1	✓		
AW 1323		3/17	24.1		Day 6	5		8	4	4	5	6	2	5	5		
		3/18	24.9		Day 7	✓	✓	6	11	14	9	13	8	11	9		
					Day 8												
			Total			13	MS	11	12	7	12	19	12	10	16	127	9

= 135.6

SURVIVAL AND REPRODUCTION DATA																	
Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration			REPLICATES										Notes	
			MH	Temp (°C)		1	2	3	4	5	6	7	8	9	10		
LM 1132		3/11	24.6		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LM 1148	3/12	24.3	25.0	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	OK 1240	3/12	24.6	24.9	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	HM 1246	3/14	24.8	24.6	Day 3	5	5	5	4	5	4	5	4	4	5		
	AW 1053	3/15	24.6	24.7	Day 4	7	9	8	7	8	6	9	7	✓	8		
	AW 1028	3/16	24.8	25.1	Day 5	✓	3	✓	✓	✓	13	✓	✓	11	✓		
AW 1323		3/17	24.8		Day 6	13	11	11	13	13	✓	14	8	13	13		
		3/18	25.0		Day 7	19	17	16	16	19	19	18	18	21	19	22	
					Day 8	AW 1314				19	AW 1314				AW 1314		
			Total			25	28	24	24	26	23	28	19	28	26	251	

✓ = Test Organism Alive 0 = Live neonates Miss = Lost or Missing
 D = Test Organism Dead (-0) = Dead neonates M = Male

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TEST LOG NO. _____

CLIENT/SAMPLE ID: Georgia Pacific Crossett

JOB NO. 20-19675H

TEST ORGANISM: Cd

DATE: _____

ENVIRON Test Log No. 16685

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		D.O. (mg/L)													
Concentration (%)		Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7
			Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	
RW		8.3	8.1	8.2	8.4	8.3	8.4	8.3	8.4	8.4	8.0	8.6	8.0	8.6	
25		8.2	8.1	8.2	8.4	8.3	8.4	8.3	8.4	8.4	8.0	8.6	8.0	8.6	
34		8.3	8.1	8.2	8.4	8.3	8.4	8.3	8.4	8.4	8.0	8.6	8.0	8.6	
45		8.3	8.1	8.2	8.4	8.3	8.4	8.3	8.4	8.4	8.0	8.6	8.0	8.6	
60		8.3	8.1	8.2	8.4	8.3	8.4	8.3	8.4	8.4	8.0	8.6	8.0	8.6	
80		8.3	8.1	8.2	8.4	8.3	8.4	8.3	8.4	8.4	8.0	8.6	8.0	8.6	
MH		8.3	8.1	8.2	8.4	8.3	8.4	8.3	8.4	8.4	8.0	8.6	8.0	8.6	

		pH (s.u.)													
Concentration (%)		Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7
			Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	
RW		7.38	7.41	7.40	7.80	7.10	7.52	7.09	7.52	6.85	7.54	7.71	7.40	7.40	
25		7.62	7.19	7.16	7.89	7.27	7.90	7.52	7.99	7.53	8.22	7.49	8.25	7.49	
34		7.73	7.29	7.28	8.3	7.27	8.07	7.69	8.23	7.58	8.30	7.62	8.35	7.62	
45		7.81	7.41	7.23	8.46	7.83	8.30	7.71	8.38	7.66	8.39	7.11	8.46	7.11	
60		7.86	7.46	7.27	8.50	7.84	8.44	7.75	8.50	7.72	8.49	7.77	8.55	7.77	
80		7.85	7.51	7.89	8.54	7.84	8.40	7.80	8.57	7.19	8.52	7.77	8.59	7.77	
MH		7.84	7.91	7.91	7.89	7.94	7.89	7.89	7.93	7.94	7.99	7.99	8.00	7.99	

		Conductivity (µmhos/cm)													
Concentration (%)		Start	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7
			Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	
RW		125	87	76	97	80	91	83	130	84	92	89	121	89	
25		622	587	612	519	603	508	632	654	614	618	575	600	575	
34		793	755	782	790	712	763	807	867	757	736	658	799	658	
45		621	1002	935	999	999	968	1022	1051	948	926	987	1015	987	
60		812	1227	1262	1341	1229	1248	1260	1308	1251	1214	1226	1241	1226	
80		1483	1316	1434	1426	1454	1426	1407	1448	1385	1356	1411	1449	1411	
MH		210	285	231	230	210	212	212	221	209	238	212	233	212	

Params Int/Time:	CE 1020	AM1212	AM0949	OK 1332	AM1100	AM1414	OK 0823	OK 212	AM 1035	AM1228	AM0935	AM1445		
Dilutions Int/Time:	AM1010	AM 0936	AM 1046	AM 1046	AM 1046	AM 1046	AM 1046	AM 1025	AM 1025	AM 1025	AM 0925	AM 1025		
Control Water Batch:	17250	5419	5419	5419	5419	5419	5419	5419	5419	5419	5419	5419		
Food Batch	4024	4024	4024	4024	4024	4024	4024	4024	4024	4024	4024	4024		

**Attachment 2:
Chain-Of-Custody Documentation and
Reference Toxicant Data**

ENVIRON Test Log No.: 16935

Project Name:		Project Number:	
Industry: GEORGIA PACIFIC PAPER			
Phone: 870-567-8170		FAX: 870-364-9016	
County: ASALET		City: COSSEH	State: AR
Sample Collected by (print):		NPDES Permit No.:	
DANNY / MIKE		AR0001210	
Sample Collected by (signature):		NPDES Test:	No. of
<i>[Signature]</i>		<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	Cntrs

Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs	Total Volume in liters	Analysis Requested										Description Definitive or Screen	Sample B# (lab only)
								Acute Fathead minnow	Acute Bannerfin shiner	Acute Ceriodaphnia dubia	Acute Daphnia pulex	Chronic Fathead minnow	Chronic Ceriodaphnia dubia	Continuous Batch Tests	Discrete Batch Tests	Other			
RIVER	G	Plastic	NA	3-10-14 10:00am		2	20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DILUTION WATER	1728
FALL 001	C	Plastic	YES	3-9-14	3-10-14	2	20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		1728

* Matrix: SS - Soil GW - Groundwater WW - Wastewater AW - Ambient Water ML - Mixed Liquor SL - Sludge SD - Sediment OT - Other _____

Remarks:

Measured TRC (if applicable): 000 mg/L

Relinquished by: (Signature) 3-10-14 Danny W. Rice	Date: 3-10-14	Time: 3:00 PM	Received by: (Signature)	<input checked="" type="checkbox"/> Samples shipped via: FedEx <input type="checkbox"/> Other Courier	<input type="checkbox"/> UPS Hand Delivered	Condition: (lab use only) Good
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: 04°C / 16°C	Containers/Volume Received: 20 L of each	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: 3/10/14	Time: 08:53	pH upon arrival: 6.63 DO upon arrival: 9.16

CHAIN-OF-CUSTODY

ENVIRON

201 Summit View Drive, Suite 300
Brentwood, TN 37027
PHONE: (615) 277-7570
FAX: (615) 377-4976

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Sample Receipt Checklist:

Client: CPC


Date/Time received 0853 8/11/14 by CR

- 1. Cooler sealed and intact upon arrival? Yes No
- 2. Custody seals present? Yes No
- 3. Samples received below 6 degrees Celsius? Yes No
- 4. Was ice present? Yes No
- 5. Is the COC filled out correctly including the sample date/time and signed? Yes No
- 6. Was the sample received within 36 hours of collection? Yes No
- 7. Did the sample(s) arrive in good condition? Yes No
- 8. Was pH and DO measured and in range? Yes No
- 9. Was residual chlorine present? Yes No
 ➤ 1.0 mg/L? (did dechlor occur) Yes No *in filtered water*

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
17287	Outfall1001	1.0	6.68	9.6	20.02
17286	RW	0.4	7.61	9.2	0.04

ENVIRON Test Log No. 16695

Project Name:		Project Number:		Analysis Requested										CHAIN-OF-CUSTODY  201 Summit View Drive, Suite 300 Brentwood, TN 37027 PHONE: (615) 277-7570 FAX: (615) 377-4976					
Industry: <u>GEORGIA PACIFIC PAPER</u>				Total Volume in liters	Acute Fathead minnow	Acute Bannertin shiner	Acute Ceriodaphnia dubia	Acute Daphnia pulex	Chronic Fathead minnow	Chronic Ceriodaphnia dubia	Continuous Batch Tests	Discrete Batch Tests	Other			Description			
Phone: <u>870-667-8170</u> FAX: <u>870-364-9076</u>		State:														Definitive or Screen		Sample B# (lab only)	
County: <u>ASHLEY</u> City: <u>CROSSETT</u>		NPDES Permit No.: <u>AR0001210</u>																	
Sample Collected by (print): <u>DANNY / MIKE / ROBB</u>		NPDES Test:																	
Sample Collected by (signature): <u>Danny W. Price</u>		<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes																	
Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs	Total Volume in liters	Acute Fathead minnow	Acute Bannertin shiner	Acute Ceriodaphnia dubia	Acute Daphnia pulex	Chronic Fathead minnow	Chronic Ceriodaphnia dubia	Continuous Batch Tests	Discrete Batch Tests	Other	Description	Sample B# (lab only)	
<u>RIVER</u>	<u>G</u>	<u>PLASTIC</u>	<u>NA</u>	<u>3-10-14</u>	<u>10:00am</u>	<u>2</u>	<u>20</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>DILUTION</u>	<u>WATER T303</u>	
<u>OUTFALL 001</u>	<u>C</u>	<u>PLASTIC</u>	<u>YES</u>	<u>3-11-14</u>	<u>3-12-14</u>	<u>2</u>	<u>20</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<u>T302</u>	
				<u>6:15m</u>	<u>6:17m</u>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
* Matrix: SS - Soil GW - Groundwater WW - Wastewater AW - Ambient Water ML - Mixed Liquor SL - Sludge SD - Sediment OT - Other _____																			
Remarks: Measured TRC (if applicable): <u>000</u> mg/L																			
Relinquished by: (Signature) <u>Danny W. Price</u>		Date: <u>3-12-14</u>	Time: <u>3:00pm</u>	Received by: (Signature) <u>[Signature]</u>		Samples shipped via: <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Other Courier		<input type="checkbox"/> UPS <input type="checkbox"/> Hand Delivered		Condition: <u>Good</u> (lab use only)									
Relinquished by: (Signature) <u>[Signature]</u>		Date:	Time:	Received by: (Signature) <u>[Signature]</u>		Receipt Temp: <u>0.50, 0.99</u>		Containers/Volume Received: <u>2/20L</u>											
Relinquished by: (Signature) <u>[Signature]</u>		Date:	Time:	Received for lab by: (Signature) <u>[Signature]</u>		Date: <u>3/13/14</u>		Time: <u>0835</u>		pH upon arrival: <u>0.91</u>		DO upon arrival: <u>7.70</u>							

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Sample Receipt Checklist:

Client: COP Crossett

Date/Time received 3/13/14 0835 by HM

- 1. Cooler sealed and intact upon arrival? Yes No
- 2. Custody seals present? Yes No
- 3. Samples received below 6 degrees Celsius? Yes No
- 4. Was ice present? Yes No
- 5. Is the COC filled out correctly including the sample date/time and signed? Yes No
- 6. Was the sample received within 36 hours of collection? Yes No
- 7. Did the sample(s) arrive in good condition? Yes No
- 8. Was pH and DO measured and in range? Yes No
- 9. Was residual chlorine present? Yes No
 - 1.0 mg/L? (did dechlor occur) Yes No

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
17303	RW	0.3	6.91	9.6	0.12
17304	Outfall	0.9	7.70	8.1	20.02

ENVIRON Test Log No. 16685

Project Name: Project Number:

Industry: GEORGIA PULP & PAPER

Phone: 870-567-8170 FAX: 870-364-9074

County: Ashley City: CROSSETT State:


Sample Collected by (print): DANNY / ROBIE NPDES Permit No.: ARO0001210

Sample Collected by (signature): [Signature] NPDES Test: [] No [x] Yes

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Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs	Total Volume in liters	Analysis Requested										
								Acute Fathead minnow	Acute Bannerfin shiner	Acute Ceriodaphnia dubia	Acute Daphnia pulex	Chronic Fathead minnow	Chronic Ceriodaphnia dubia	Continuous Batch Tests	Discrete Batch Tests	Other		
RIVER	G	PLASTIC	NA	3-10-14	10:00am	2												
OUTFALL OOL	C	PLASTIC	YES	3-13-14 *6:17 am	3-14-14 *6:17 am	2												

CHAIN-OF-CUSTODY



201 Summit View Drive, Suite 300
Brentwood, TN 37027
PHONE: (615) 277-7570
FAX: (615) 377-4976

* Matrix: SS - Soil GW - Groundwater WW - Wastewater AW - Ambient Water ML - Mixed Liquor SL - Sludge SD - Sediment OT - Other

Remarks: Measured TRC (if applicable): 0.00 mg/L

Relinquished by: [Signature]	Date: 3/14/14	Time: 4:00pm	Received by: [Signature]	Samples shipped via: <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Other Courier	<input type="checkbox"/> UPS <input type="checkbox"/> Hand Delivered	Condition: (lab use only)
Relinquished by: [Signature]	Date:	Time:	Received by: [Signature]	Receipt Temp: 13.24	Containers/Volume Received: 20L of each	
Relinquished by: [Signature]	Date:	Time:	Received for lab by: [Signature]	Date: 3/18/14	Time: 0934	pH upon arrival: 7.54 DO upon arrival: 8.27

Sample Receipt Checklist:

Client: COP Crossett

Date/Time received 3/15/14 0939 by Aw

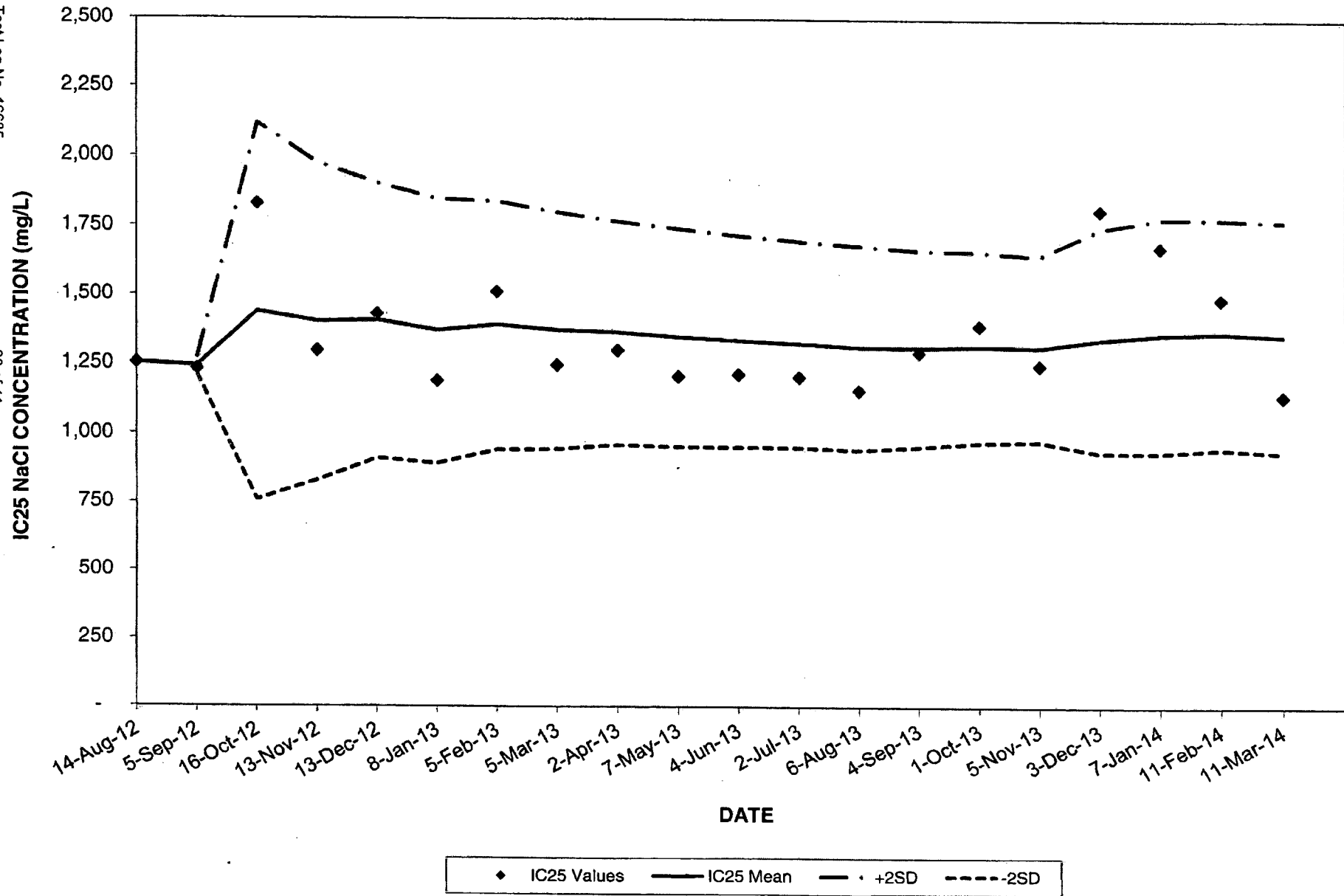
1. Cooler sealed and intact upon arrival? Yes No
2. Custody seals present? Yes No
3. Samples received below 6 degrees Celsius? Yes No
4. Was ice present? Yes No
5. Is the COC filled out correctly including the sample date/time and signed? Yes No
6. Was the sample received within 36 hours of collection? Yes No
7. Did the sample(s) arrive in good condition? Yes No
8. Was pH and DO measured and in range? Yes No
9. Was residual chlorine present? Yes No
 - 1.0 mg/L? (did dechlor occur) Yes No

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
17313	River	1.3	7.54	8.2	0.08
17314	Outfall	2.4	7.68	8.0	0.08

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CHRONIC REFERENCE TOXICANT TEST (NaCl) 2012 - 2014 FATHEAD MINNOWS



Fathead Minnow CHRONIC REFERENCE TOXICANT TESTING-SODIUM CHLORIDE (NaCl) 2012 - 2014

ENVIRON Test Log No. 16685

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Test Number	Log Number	Test Initiation Date	Control Survival (%) (*)	Control Mean Dry Weight (mg/fish) (*)	SURVIVAL		GROWTH		PMSD (%)	IC25 VALUE (mg/L)	IC25 CUMULATIVE MEAN (mg/L)	IC25 ST. DEV. (mg/L)	IC25 2+ STD. DEV.	IC25 2- STD. DEV.	Coefficient of Variation (%)
					NOEC (mg/L)	LOEC (mg/L)	NOEC (mg/L)	LOEC (mg/L)							
1	15548	14-Aug-12	100	0.406	750	1,500	750	1,500	24.6	1,254	1,254				
2	15603	05-Sep-12	100	0.429	750	1,500	750	1,500	16.7	1,232	1,243	16	1,274	1,212	1
3	15683	16-Oct-12	97.5	0.447	1,500	3,000	1,500	3,000	19.0	1,832	1,439	340	2,120	759	19
4	15743	13-Nov-12	100	0.514	750	1,500	750	1,500	15.9	1,297	1,404	287	1,977	830	18
5	15807	13-Dec-12	100	0.362	750	1,500	750	1,500	17.1	1,430	1,409	249	1,906	912	16
6	15863	08-Jan-13	100	0.431	750	1,500	750	1,500	15.5	1,190	1,373	240	1,852	893	16
7	15911	05-Feb-13	95	0.417	750	1,500	750	1,500	20.9	1,512	1,392	225	1,843	942	15
8	15965	05-Mar-13	100	0.538	750	1,500	750	1,500	28.1	1,246	1,374	215	1,804	945	15
9	16017	02-Apr-13	100	0.504	750	1,500	750	1,500	25.8	1,300	1,366	202	1,771	961	14
10	16088	07-May-13	100	0.390	750	1,500	750	1,500	29.3	1,207	1,350	197	1,745	955	14
11	16137	04-Jun-13	100	0.402	750	1,500	750	1,500	21.5	1,215	1,338	192	1,721	955	14
12	16189	02-Jul-13	100	0.444	750	1,500	750	1,500	26.7	1,205	1,327	187	1,700	953	13
13	16256	06-Aug-13	100	0.382	750	1,500	750	1,500	19.3	1,157	1,314	185	1,683	944	14
14	16309	04-Sep-13	97.5	0.369	750	1,500	750	1,500	27.1	1,293	1,312	178	1,667	957	13
15	16348	01-Oct-13	97.5	0.310	1,500	3,000	750	1,500	23.4	1,391	1,317	172	1,662	973	13
16	16425	05-Nov-13	100	0.335	750	1,500	750	1,500	19.7	1,248	1,313	167	1,648	978	12
17	16489	03-Dec-13	97.5	0.417	750	1,500	1,500	3,000	31.8	1,814	1,343	203	1,748	937	15
18	16554	07-Jan-14	100	0.464	750	1,500	1,500	3,000	27.8	1,679	1,361	212	1,785	937	15
19	16631	11-Feb-14	92.5	0.484	750	1,500	750	1,500	13.5	1,491	1,368	208	1,784	952	15
20	16684	11-Mar-14	100	0.543	750	1,500	750	1,500	28.8	1,138	1,357	209	1,774	939	15
Avg			99	0.429	825	1650	863	1725	23	1357	1348	204	1761	944	

Notes:

Dilution series - 0.375 g/L - 6.0 g/L

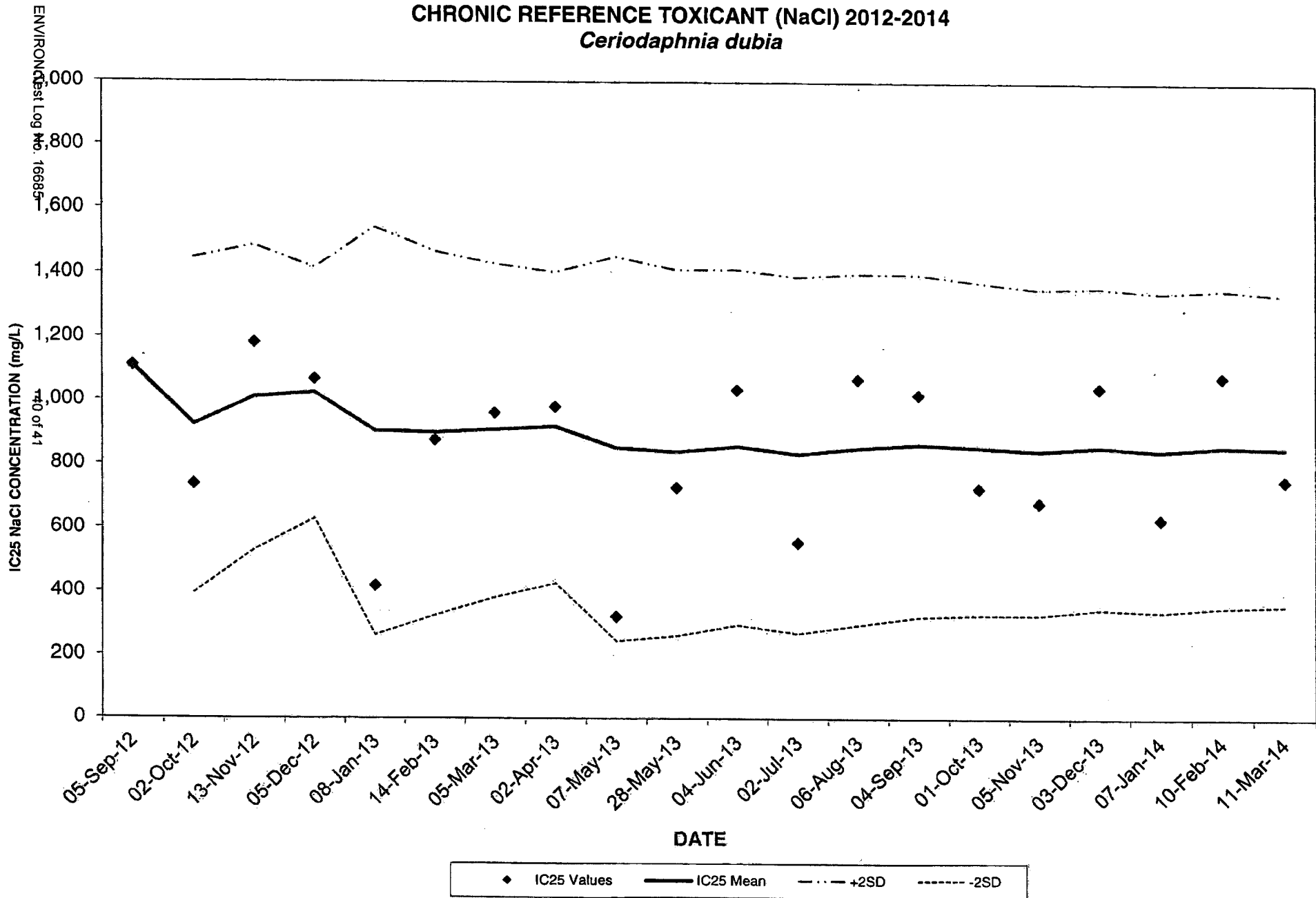
NOEC - No Observable Effect Concentration (survival or growth)

LOEC - Lowest Observable Effect Concentration (survival or growth)

ACCEPTABLE TEST RESULTS - A growth NOEC ranging from 750 mg/L to 3,000 mg/L.

(*) Minimum USEPA CONTROL CRITERIA - 80 percent survival and average dry weight of 0.25 mg (weight based on surviving number of fish).

CHRONIC REFERENCE TOXICANT (NaCl) 2012-2014
Ceriodaphnia dubia



Ceriodaphnia dubia CHRONIC REFERENCE TOXICANT TESTING - SODIUM CHLORIDE (NaCl) 2012-2014

ENVIRON TEST Log No. 16685

Test Number	Log Number	Test Initiation Date	Control Survival (%) (*)	3 Brood Production (%) (*)	Control Average Repro (*)	Survival		Reproduction			IC25 VALUE (mg/L)	IC25 CUMULATIVE MEAN (mg/L)	IC25 ST. DEV. (mg/L)	IC25 2+ STD. DEV.	IC25 2- STD. DEV.	Coefficient of Variation (%)
						NOEC (mg/L)	LOEC (mg/L)	NOEC (mg/L)	LOEC (mg/L)	PMSD						
1	15604	05-Sep-12	100	100	26.3	1,000	2,000	500	1,000	12.5	1,109	1,109				
2	15653	02-Oct-12	100	100	34.8	2,000	>2,000	500	1,000	22.0	737	923	263	1,449	397	20
3	15742	13-Nov-12	100	100	31.6	2,000	>2,000	1,000	2,000	10.4	1,183	1,010	239	1,488	532	19
4	15784	05-Dec-12	100	100	36.6	2,000	>2,000	500	1,000	12.8	1,067	1,024	197	1,419	629	17
5	15864	08-Jan-13	100	80	30.5	2,000	>2,000	250	500	24.3	420	903	320	1,542	264	32
6	15937	14-Feb-13	100	100	32.2	2,000	>2,000	500	1,000	18.1	875	899	286	1,471	326	29
7	15966	05-Mar-13	100	100	33.7	2,000	>2,000	500	1,000	21.8	960	907	262	1,432	383	27
8	16018	02-Apr-13	90	100	29.3	2,000	>2,000	500	1,000	16.8	979	916	244	1,404	428	25
9	16087	07-May-13	100	80	34.4	1,000	2,000	<125	125	27.3	321	850	302	1,455	245	34
10	16124	28-May-13	100	90	28.9	2,000	>2,000	500	1,000	20.5	727	838	288	1,413	262	33
11	16137	04-Jun-13	90	90	30.0	1,000	2,000	500	1,000	16.2	1,034	856	279	1,414	297	31
12	16188	02-Jul-13	100	80	21.5	2,000	>2,000	500	1,000	35.7	556	831	280	1,391	271	32
13	16257	06-Aug-13	100	90	29.1	1,000	2,000	500	1,000	24.9	1,068	849	276	1,401	297	31
14	16308	04-Sep-13	100	90	27.1	2,000	>2,000	500	1,000	14.6	1,018	861	269	1,399	323	30
15	16347	01-Oct-13	100	90	28.0	2,000	>2,000	1,000	2,000	26.0	726	852	262	1,375	329	30
16	16426	05-Nov-13	100	80	31.0	2,000	>2,000	250	500	27.1	681	841	256	1,354	329	30
17	16497	03-Dec-13	100	90	29.0	2,000	>2,000	500	1,000	12.3	1,041	853	253	1,359	347	29
18	16552	07-Jan-14	100	90	29.4	1,000	2,000	500	1,000	20.2	630	841	251	1,343	339	29
19	16630	10-Feb-14	100	100	31.1	1,000	2,000	500	1,000	13.4	1,076	853	250	1,353	354	28
20	16682	11-Mar-14	100	90	23.0	1,000	2,000	500	1,000	24.3	750	848	244	1,336	360	28

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Avg	99	92	30	1684	632	500	1007	20	853	896	265	1415	353
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Notes:
 NOEC - No Observable Effect Concentration (survival or reproduction)
 LOEC - Lowest Observable Effect Concentration (survival or reproduction)
 (*) Minimum USEPA CONTROL CRITERIA - 80 percent survival, 80 percent with 3 broods, and average reproduction of 15 neonates/adult.