Georgia-Pacific

Georgia-Pacific LLC
Consumer Products

Crossett Paper Operations
100 Mill Supply Rd.
P.O. Box 3333
Crossett, AR 71635
(870) 567-8000
(870) 364-9076 fax
www.gp.com

July 22, 2014

Mr. Craig Uyeda
NPDES Enforcement Section
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Reference: Georgia-Pacific LLC: Crossett Paper Operations
NPDES Permit # **AR0001210**

Dear Mr. Uyeda:

Attached are the Discharge Monitoring Reports (DMRs) for the Georgia-Pacific Crossett Paper Operations' - NPDES Permit # **AR0001210** - for June 2014. As required by Part II, Section 5, paragraph d, of our NPDES Permit, a Toxicity Reduction Evaluation (TRE) Activities Report has also been included to cover TRE activities conducted this quarter.

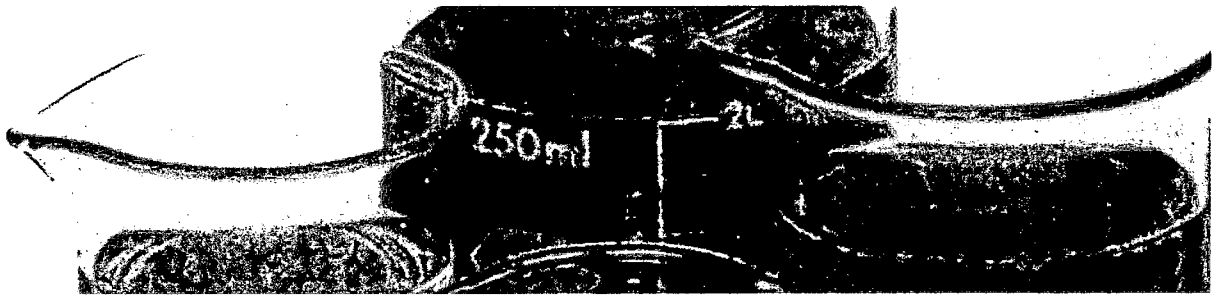
If you have any questions or need additional information, please feel free to contact me at (870) 567-8170 or by email at rachel.johnson2@gapac.com.

Sincerely,

Rachel M. Johnson
Environmental Engineer

TRE Activities Report
For Second Quarter of 2014

A Toxicity Reduction Evaluation (TRE) Action Plan was submitted on July 12, 2011 after sub-lethal effects were demonstrated in three consecutive Whole Effluent Toxicity (WET) tests for *Ceriodaphnia dubia*, as required by Part II, Condition 15, Paragraph 5 of NPDES permit number AR0001210. As per the plan the mill has begun conducting monthly WET testing for *Ceriodaphnia dubia* in an attempt to capture episodes of sub-lethal toxicity. There were no episodes of toxicity noted during the second quarter of 2014; therefore, no addition Toxicity Identification Evaluation (TIE) manipulations were conducted.



Chronic Toxicity Test Results
Outfall 001 Effluent

Prepared for:
Georgia Pacific Crossett Mill
Crossett, Arkansas

Prepared by:
ENVIRON International Corporation
Nashville, Tennessee

Date:
July 2014

Project Number:
20-19675H

ENVIRON

ENVIRON

July 18, 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 June 16, 18, and 20, 2014. The samples were received at ENVIRON on June 17, 19, and 21, 2014, within the USEPA-required receipt temperature range of 0-6.0 °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). All controls met test acceptability criteria (TAC), therefore, the river water control was used for statistical analyses. The results of the chronic toxicity tests are as follows:

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

The results of the chronic test with the fathead minnow indicated a No Observable Effect Concentration (NOEC) value for lethality and sub-lethality of 80 percent effluent. The results of the chronic test with *C. dubia* indicated NOEC values for lethality and sub-lethality of 80 percent effluent. These test results indicate no significant toxicity at the critical dilution for either fathead minnow or *C. dubia*.

The Coefficient of Variation (CV) values for the fathead minnow survival in the river water control and critical dilution are six and zero percent, respectively. The CV values for growth in the control and critical dilution are 13 and 10 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

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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 21 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.

The *C. dubia* reproduction CV values for the control and critical dilution are 26 and 31 percent respectively, which meets the TAC limit of 40 percent for a finding of no toxicity. The PMSD value was 30 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 4 dose response. A Type 4 concentration-response curve is characterized by stimulation at low concentrations but non-significant effects at higher concentrations. 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 45 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,

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

Fathead Minnow 7-d Larval Survival and Growth Test — **ENVIRON International Corp**

Analysis ID:	11-1461-1551	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 Jun-14 14:13	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	02-9633-5083	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	17 Jun-14	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Jun-14	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Environmental Consult & Test	**Age:**	
Sample ID:	15-4665-6719	**Code:**	5C301BCF	**Client:**	GPAC Crossett
Sample Date:	16 Jun-14	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	17 Jun-14	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	Outfall 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	12.6%

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	27	16	1	8	0.8003	Asymp	Non-Significant Effect
		34	30	16	1	8	0.9446	Asymp	Non-Significant Effect
		45	27.5	16	2	8	0.8333	Asymp	Non-Significant Effect
		60	30	16	1	8	0.9446	Asymp	Non-Significant Effect
		80	30	16	1	8	0.9446	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.975	0.8 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.05566118	0.01113224	5	0.7647	0.5842	Non-Significant Effect
Error	0.3493949	0.01455812	24			
Total	0.4050561		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	357.6	15.09	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.6102	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	Receiving Water	5	0.975	0.9056	1	1	0.875	1	0.025	5.73%	0.0%
25		5	0.9	0.6224	1	1	0.5	1	0.1	24.85%	7.69%
34		5	1	1	1	1	1	1	0	0.0%	-2.56%
45		5	0.975	0.9056	1	1	0.875	1	0.025	5.73%	0.0%
60		5	1	1	1	1	1	1	0	0.0%	-2.56%
80		5	1	1	1	1	1	1	0	0.0%	-2.56%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Wate	5	1.356	1.254	1.458	1.393	1.209	1.393	0.03673	6.06%	0.0%
25		5	1.272	0.9341	1.609	1.393	0.7854	1.393	0.1215	21.37%	6.25%
34		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	-2.71%
45		5	1.356	1.254	1.458	1.393	1.209	1.393	0.03673	6.06%	0.0%
60		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	-2.71%
80		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	-2.71%

Fathead Minnow 7-d Larval Survival and Growth Test — **ENVIRON International Corp**

Analysis ID:	11-1461-1551	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 Jun-14 14:13	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

7d Survival Rate Detail

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

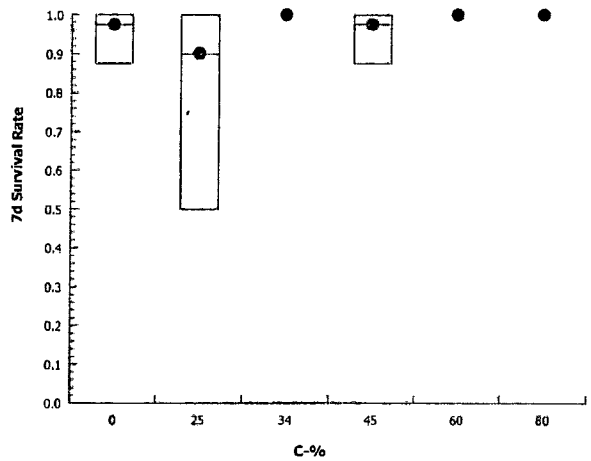
Angular (Corrected) Transformed Detail

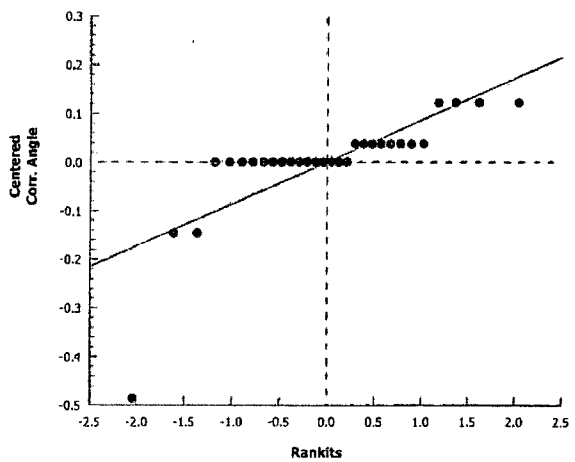
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	1.393	1.393	1.393	1.209	1.393
25		1.393	1.393	1.393	1.393	0.7854
34		1.393	1.393	1.393	1.393	1.393
45		1.209	1.393	1.393	1.393	1.393
60		1.393	1.393	1.393	1.393	1.393
80		1.393	1.393	1.393	1.393	1.393

7d Survival Rate Binomials

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

Graphics





Fathead Minnow 7-d Larval Survival and Growth Test — **ENVIRON International Corp**

Analysis ID:	13-8353-4028	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 Jun-14 14:13	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	02-9633-5083	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	17 Jun-14	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Jun-14	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Environmental Consult & Test	**Age:**	
Sample ID:	15-4665-6719	**Code:**	5C301BCF	**Client:**	GPAC Crossett
Sample Date:	16 Jun-14	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	17 Jun-14	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	Outfall 001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	NA	C > T	NA	NA	80	>80	NA	1.25	21.4%

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	39	16	0	8	0.9999	Asymp	Non-Significant Effect
		34	38	16	0	8	0.9999	Asymp	Non-Significant Effect
		45	40	16	0	8	1.0000	Asymp	Non-Significant Effect
		60	40	16	0	8	1.0000	Asymp	Non-Significant Effect
		80	40	16	0	8	1.0000	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.5432	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.2138	0.12 - 0.3	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2412968	0.04825936	5	7.981	0.0002	Significant Effect
Error	0.1451176	0.006046569	24			
Total	0.3864145		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	15.22	15.09	0.0095	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9682	0.9031	0.4920	Normal Distribution

Mean Dry Biomass-mg Summary

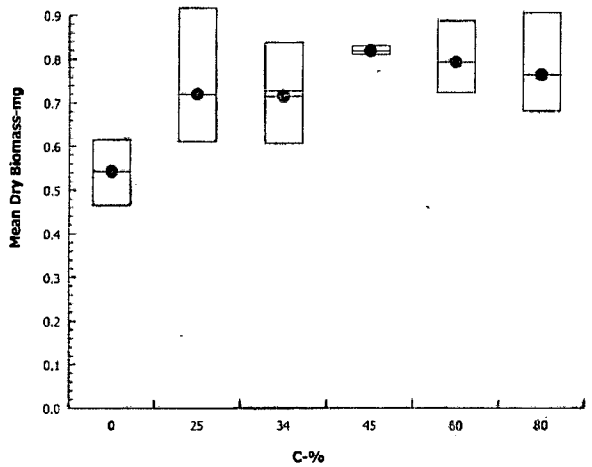
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	5	0.5432	0.4563	0.6302	0.5425	0.465	0.6163	0.03131	12.89%	0.0%
25		5	0.72	0.5782	0.8619	0.6975	0.6113	0.895	0.05109	15.87%	-32.54%
34		5	0.7153	0.5977	0.8328	0.7275	0.6075	0.8388	0.04234	13.24%	-31.66%
45		5	0.8193	0.8092	0.8293	0.8187	0.8112	0.8313	0.003637	0.99%	-50.81%
60		5	0.7937	0.7224	0.8651	0.7762	0.7237	0.8712	0.02571	7.24%	-46.11%
80		5	0.7637	0.6676	0.8599	0.7337	0.6812	0.8763	0.03462	10.14%	-40.59%

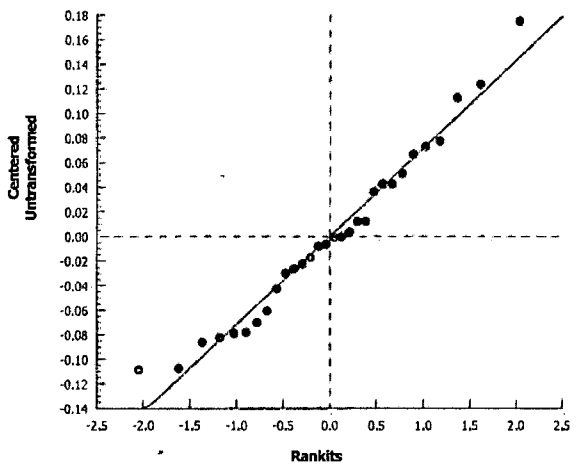
Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	0.4825	0.61	0.465	0.5425	0.6163
25		0.7625	0.6975	0.6337	0.895	0.6113
34		0.6075	0.7663	0.6363	0.7275	0.8388
45		0.8112	0.8187	0.8313	0.8225	0.8125
60		0.7237	0.7762	0.7675	0.8712	0.83
80		0.6812	0.7213	0.8062	0.7337	0.8763

Analysis ID:	13-8353-4028	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 Jun-14 14:13	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test — **ENVIRON International Corp**

Analysis ID:	20-2240-4463	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 Jun-14 14:14	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	02-9633-5083	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	17 Jun-14	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Jun-14	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Environmental Consult & Test	**Age:**	
Sample ID:	15-4665-6719	**Code:**	5C301BCF	**Client:**	GPAC Crossett
Sample Date:	16 Jun-14	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	17 Jun-14	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	Outfall 001		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	605521	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.5432	0.25 - NL	Yes	Passes Acceptability Criteria

Point Estimates

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

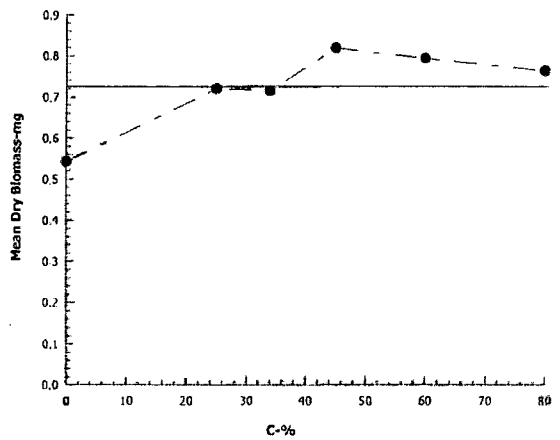
Mean Dry Biomass-mg Summary

			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Receiving Water	5	0.5432	0.465	0.6163	0.03131	0.07	12.89%	0.0%
25		5	0.72	0.6113	0.895	0.05109	0.1142	15.87%	-32.54%
34		5	0.7153	0.6075	0.8388	0.04234	0.09468	13.24%	-31.66%
45		5	0.8193	0.8112	0.8313	0.003637	0.008132	0.99%	-50.81%
60		5	0.7937	0.7237	0.8712	0.02571	0.05748	7.24%	-46.11%
80		5	0.7637	0.6812	0.8763	0.03462	0.07742	10.14%	-40.59%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	0.4825	0.61	0.465	0.5425	0.6163
25		0.7625	0.6975	0.6337	0.895	0.6113
34		0.6075	0.7663	0.6363	0.7275	0.8388
45		0.8112	0.8187	0.8313	0.8225	0.8125
60		0.7237	0.7762	0.7675	0.8712	0.83
80		0.6812	0.7213	0.8062	0.7337	0.8763

Graphics



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

TEST LOG NO.: 16874
JOB NUMBER.: 20-19675H
INDUSTRY: Georgia Pacific Crossett
EFFLUENT: Outfall 001
DILUTION WATER: River Water
NPDES: Yes / No
FOOD BATCH: 4721

BEGINNING: HRS: 1130 DATE: 6/17/14
ENDING: HRS: 1254 DATE: 6/24/14
TEST DILUTIONS: 25, 34, 45, 60, 80%
ORGANISM AGE (date): 10/16/14
ORGANISM SOURCE: ELI #47216
SOURCE TEMP @ TEST START: 24.8
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	DAY 4	DAY 5	DAY 6	DAY 7
RW	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 AW	7 AW
	Temp(°c):old/new	24.3	24.2/24.3	24.0/24.0	24.0/24.0	24.0/24.3	24.0/24.0	24.0/24.0	24.1
25	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	7 AW 6/24
	Temp(°c):old/new	24.4	24.4/24.5	24.0/24.0	24.0/24.0	24.0/24.1	24.0/24.3	24.0/24.1	24.0
34	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	8	8	8	8	8
	Temp(°c):old/new	24.2	24.2/24.4	24.0/24.3	24.1/24.1	24.0/24.2	24.0/24.1	24.0/24.0	24.0
45	A	8	8	8	8	8	8	8	7 AW
	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	24.3	24.3/24.5	24.0/24.1	24.0/24.0	24.0/24.1	24.0/24.2	24.0/24.0	24.0
60	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	24.1	24.1/24.6	24.0/24.3	24.1/24.0	24.0/24.1	24.0/24.0	24.0/24.1	24.0
80	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	24.4	24.4/24.3	24.0	24.1/24.0	24.1/24.4	24.0/24.0	24.0/24.1	24.0
Test Renewal	Time	1130	1122	1135	1145	1222	1147	1129	1254
	Date	6/17/14	6/18/14	6/19/14	6/20/14	6/21/14	6/22/14	6/23/14	6/24/14
	Initials	LM	PTP	LM	LM	AW	AW	AW	AW
morning feeding	Int/Time	[redacted]	LM0710	LM0730	LM0710	AW0720	AW0755	LM0715	[redacted]
afternoon feeding	Int/Time	AW1610	AW1530	AW1511	AW1510	AW1510	AW1500	AW1520	[redacted]

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

TEST LOG NO.: 16874
JOB NUMBER.: 20-19675H
INDUSTRY: Georgia Pacific Crossett
EFFLUENT: 001
DILUTION WATER: ✓ River Water
NPDES: Yes ✓ No
FOOD BATCH: 4224

BEGINNING: HRS: 1130 DATE: 6/17/14
ENDING: HRS: 1284 DATE: 6/24/14

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	24.3	24.2/24.4	24.3/24.0	24.0/24.0	24.2/24.1	24.0/24.1	24.0/24.0	24.1
	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.: 16874 BEGINNING: HRS: 1130 DATE: 6/17/14
JOB NO.: 20-19675H ENDING: HRS: 1259 DATE: 6/24/14
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	1.06518	1.06904	0.00386	8	0.483
	B	2	1.08834	1.09322	0.00488	8	0.610
	C	3	1.07724	1.08096	0.00372	8	0.4165
	D	4	1.08026	1.08460	0.00434	8 7	0.1620
	E	5	1.07394	1.07887	0.00493	8 LM	1/6 = 0.1616
25	A	6	1.07335	1.07945	0.00610	8	
	B	7	1.05720	1.06278	0.00558	8	
	C	8	1.09216	1.09723	0.00507	8	
	D	9	1.08574	1.09290	0.00716	8	
	E	10	1.07149	1.07638	0.00489	6	
34	A	11	1.08729	1.09215	0.00486	8	
	B	12	1.06984	1.07597	0.00613	8	
	C	13	1.08182	1.08691	0.00509	8	
	D	14	1.07579	1.08161	0.00582	8	
	E	15	1.08770	1.09441	0.00671	8	
45	A	16	1.07481	1.08138	0.00649	7	
	B	17	1.04530	1.05185	0.00655	8	
	C	18	1.07869	1.08553	0.00685	8	
	D	19	1.07996	1.08654	0.00658	8	
1.06556	E	20	~~1.06553~~	1.07206	0.00650	8	
60	A	21	~~1.06553~~	1.07146	0.00579	8	
	B	22	1.07389	1.08010	0.00621	8	
	C	23	1.06469	1.07083	0.00614	8	
	D	24	1.07605	1.08302	0.00697	8	
	E	25	1.07317	1.07781	0.00464	8	
80	A	26	1.06340	1.06885	0.00545	8	
	B	27	1.06488	1.07065	0.00577	8	
	C	28	1.08139	1.08784	0.00645	8	
	D	29	1.08065	1.08652	0.00587	8	
	E	30	1.04492	1.05193	0.00701	5	
MH	A	31	1.06240	1.06821	0.00555	8	
	B	32	1.07789	1.08343	0.00554	8	
	C	33	1.07696	1.08353	0.00657	8	
	D	34	1.06350	1.06946	0.00596	8	
	E	35	1.07840	1.08322	0.00482	5	
	Initials / Date:		LM 6/22				

1.06507

AVG Control Fish wt. 0.559 (using final #)

Oven ID: 2

Tins In:
Date: 6/24/14
Time: 1335
Temp (°C): 102
Initials: AW

Tins Out:
Date: 6/26/14
Time: 1025 6/24 LM
Temp (°C): 1345
Initials: LM

FINAL WEIGHTS
DATE: 6/26/14
INITIALS: LM

TEST LOG NO. 16874

JOB NO. 20-19675H

CLIENT/SAMPLE ID: Georgia Pacific Crossett

TEST ORGANISM: Fm

DATE: 6/17/14

D.O. (mg/L)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	8.0	8.4	8.4	8.3	8.3	8.2	8.3	8.5	8.0	7.7	7.8	7.4	8.1	7.9
25	8.1	8.3	8.2	8.3	8.2	8.3	8.2	8.5	8.1	7.6	7.7	7.2	8.1	7.8
34	8.0	8.3	8.2	8.3	8.3	8.1	8.2	8.4	8.1	7.6	7.7	7.3	8.2	8.0
45	8.0	8.2	8.3	8.3	8.3	8.2	8.1	8.4	8.3	7.7	7.7	7.6	8.1	8.1
60	8.2	8.2	8.1	8.1	8.3	8.0	8.2	8.4	8.3	7.7	7.8	7.6	8.1	7.7
80	8.2	7.7	8.0	7.6	8.3	8.1	8.1	8.3	8.4	7.6	7.9	7.7	8.0	7.6
MH	8.4	8.5	8.3	8.2	8.4	8.2	8.4	8.3	8.4	7.5	7.9	7.4	7.8	7.7

pH (s.u.)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	7.48	7.83	7.72	7.79	7.96	7.86	7.96	7.78	7.92	7.93	7.07	7.82	7.43	7.71
25	7.40	7.80	7.72	7.63	7.64	7.80	7.65	7.51	7.72	7.66	7.35	7.76	7.51	7.76
34	7.62	7.88	7.87	7.65	7.65	7.74	7.68	7.55	7.71	7.64	7.81	7.66	7.59	7.79
45	7.73	7.95	7.91	7.73	7.64	7.70	7.73	7.72	7.70	7.65	7.84	7.68	7.75	7.74
60	7.80	8.03	7.90	7.88	7.74	7.92	7.78	7.87	7.77	7.69	7.81	7.71	7.78	7.76
80	7.85	8.14	7.94	8.06	7.84	8.04	7.88	8.03	8.00	8.03	7.82	8.07	7.85	8.04
MH	8.00	7.71	7.86	7.62	7.83	7.77	7.78	7.90	8.05	7.99	8.04	7.88	7.90	7.86

Conductivity (µmhos/cm)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	1316	91	91	76	124	84	120	62	52	60	80	44	64	78
25	592	457	512	375	573	477	519	396	457	396	432	422	509	406
34	784	612	722	606	668	659	726	583	637	583	636	619	669	657
45	961	805	867	799	859	846	845	739	846	511	796	804	851	821
60	1161	1023	1049	987	1169	1070	1031	983	988	1033	1080	1052	1113	1069
80	1460	1334	1504	1310	1471	1450	1470	1283	1377	1370	1411	1408	1485	1440
MH	212	201	227	185	243	226	242	288	246	208	203	202	215	209

	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
Params Intl/Time:	CR1000	LM0730	AH0920	LM0657	AW0940	LM0658	AW1017	AW0748	AW1058	AW0310	AW0944	LM0724	AW0935	LM0708
Dilutions Intl/Time:	AW0930		AH0910		AW0938		AW1012		AW1040		AW0930		AW0925	
Control Water Batch#:	5561,171636		5561,171826		RW 17652,9564		RW 17652,9564		RW 17660,9564		17660,9567		17660,9567	
Food Batch	4721		4721		4721		4721		4721		4721		4721	

TEST LOG NO. 16874 CLIENT: Georgia Pacific Crossett DATE OF TEST: 6/17/14

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_3N mg/L
17635	Outfall 001	6/15-16/14	6/17/14	260	355	<0.02	1.12
17653	Outfall 001	6/17-18/14	6/19/14	260	315	<0.02	0.970
17659 59 AW 6/21/14	Outfall 001	6/19-20/14	6/21/14	252	350	<0.02	1.03

CONTROL / DILUTION WATER

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH_3N mg/L
17636	River Water	6/16/14	6/17/14	20.8	26	0.08	<0.1
17652	River Water	6/18/14	6/19/14	20	30	<0.02	<0.1
17660 AW	River Water	6/18/14	6/21/14	21.6	27	0.08	<0.1

Ceriodaphnia 7-d Survival and Reproduction Test — **ENVIRON International Corp**

Analysis ID:	01-3164-6558	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	17 Jul-14 14:12	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes
Batch ID:	16-9259-3212	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	17 Jun-14 10:59	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Jun-14 12:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	7d 2h	**Source:**	In-House Culture	**Age:**	
Sample ID:	16-3798-2917	**Code:**	61A1A2C5	**Client:**	GPAC Crossett
Sample Date:	16 Jun-14	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUL)
Receive Date:	17 Jun-14	**Source:**	Discharge Monitoring Report		
Sample Age:	35h	**Station:**	Outfall 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%)
Dilution Water		25	1	1.0000	Exact	Non-Significant Effect
		34	0.5	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	Dilution Water	10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
34		9	1	10	0.9	0.1	10.0%
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

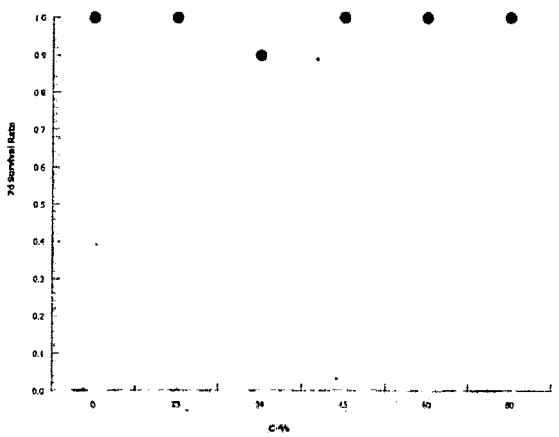
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
34		1	1	1	1	1	1	0	1	1	1
45		1	1	1	1	1	1	1	1	1	1
60		1	1	1	1	1	1	1	1	1	1
80		1	1	1	1	1	1	1	1	1	

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	Dilution 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	0/1	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	

Analysis ID:	01-3164-6558	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	17 Jul-14 14:12	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **ENVIRON International Corp**

Analysis ID:	12-2850-6226	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	30 Jun-14 10:16	**Analysis:**	Parametric-Multiple Comparison	**Official Results:**	Yes
Batch ID:	16-9259-3212	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	17 Jun-14 10:59	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Jun-14 12:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	7d 2h	**Source:**	In-House Culture	**Age:**	
Sample ID:	16-3798-2917	**Code:**	61A1A2C5	**Client:**	GPAC Crossett
Sample Date:	16 Jun-14	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUL)
Receive Date:	17 Jun-14	**Source:**	Discharge Monitoring Report		
Sample Age:	35h	**Station:**	Outfall 001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	NA	C > T	NA	NA	80	>80	NA	1.25	30.3%

Bonferroni Adj t Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Dilution Water		25	-1.746	2.399	7.557	18	1.0000	CDF	Non-Significant Effect
		34	-0.3809	2.399	7.557	18	1.0000	CDF	Non-Significant Effect
		45	-0.6984	2.399	7.557	18	1.0000	CDF	Non-Significant Effect
		60	0.3809	2.399	7.557	18	1.0000	CDF	Non-Significant Effect
		80	0.1511	2.399	7.764	17	1.0000	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	25.6	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.3033	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	2.733	3.193	0.2866	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	292.5162	58.50324	5	1.179	0.3318	Non-Significant Effect
Error	2629.789	49.61866	53			
Total	2922.305		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	14.54	15.09	0.0125	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9681	0.9451	0.1244	Normal Distribution

Reproduction Summary

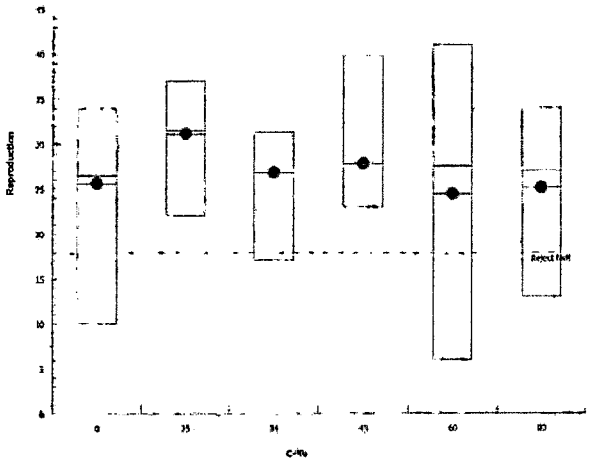
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	10	25.6	20.77	30.43	26.5	10	34	2.135	26.38%	0.0%
25		10	31.1	28.23	33.97	31.5	22	37	1.269	12.9%	-21.48%
34		10	26.8	23.69	29.91	26.5	17	31	1.373	16.2%	-4.69%
45		10	27.8	24.19	31.41	26	23	38	1.597	18.17%	-8.59%
60		10	24.4	16.17	32.63	27.5	6	41	3.64	47.17%	4.69%
80		9	25.11	19.14	31.08	27	13	34	2.59	30.94%	1.91%

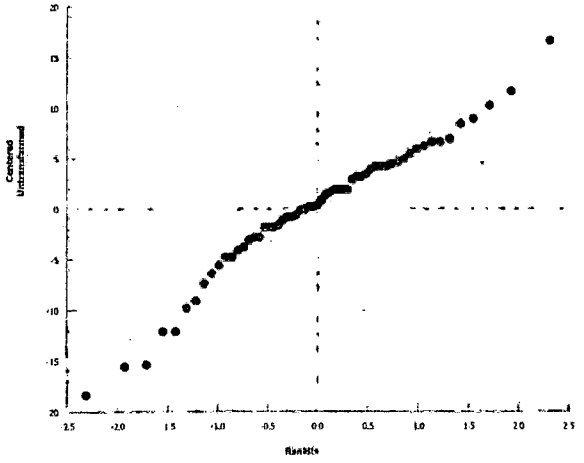
Analysis ID: 12-2850-6226 **Endpoint:** Reproduction **CETIS Version:** CETISv1.8.4
Analyzed: 30 Jun-14 10:16 **Analysis:** Parametric-Multiple Comparison **Official Results:** Yes

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	Dilution Water	20	24	10	27	29	30	34	31	25	26
25		30	28	22	31	37	31	34	33	33	32
34		30	25	25	31	26	27	17	31	25	31
45		27	25	28	24	34	31	23	23	25	38
60		9	18	26	36	29	6	17	41	31	31
80		30	13	27	32	21	13	29	27	34	

Graphics





CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **ENVIRON International Corp**

Analysis ID:	19-9211-8917	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	30 Jun-14 10:17	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	16-9259-3212	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	17 Jun-14 10:59	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	24 Jun-14 12:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	7d 2h	**Source:**	In-House Culture	**Age:**	
Sample ID:	16-3798-2917	**Code:**	61A1A2C5	**Client:**	GPAC Crossett
Sample Date:	16 Jun-14	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUL)
Receive Date:	17 Jun-14	**Source:**	Discharge Monitoring Report		
Sample Age:	35h	**Station:**	Outfall 001		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1378682	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	25.6	15 - NL	Yes	Passes Acceptability Criteria

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.733	3.193	0.2866	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

Reproduction Summary

			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	10	25.6	10	34	2.135	6.753	26.38%	0.0%
25		10	31.1	22	37	1.269	4.012	12.9%	-21.48%
34		10	26.8	17	31	1.373	4.341	16.2%	-4.69%
45		10	27.8	23	38	1.597	5.051	18.17%	-8.59%
60		10	24.4	6	41	3.64	11.51	47.17%	4.69%
80		9	25.11	13	34	2.59	7.769	30.94%	1.91%

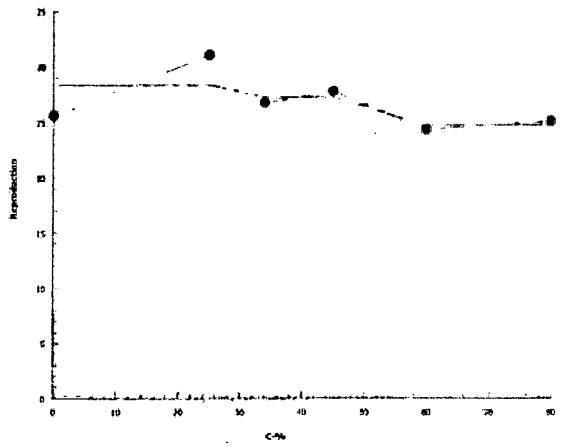
Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	20	24	10	27	29	30	34	31	25	26
25		30	28	22	31	37	31	34	33	33	32
34		30	25	25	31	26	27	17	31	25	31
45		27	25	28	24	34	31	23	23	25	38
60		9	18	26	36	29	6	17	41	31	31
80		30	13	27	32	21	13	29	27	34	

Ceriodaphnia 7-d Survival and Reproduction Test — **ENVIRON International Corp**

Analysis ID:	19-9211-8917	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	30 Jun-14 10:17	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



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

TEST LOG NO.:	16874	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): 6/16/14

TEMP @ TEST START: 24.2

RANDOMIZED BY: CR

TEST START:

HOURS: 1055 DATE: 6/17/14

TEST END:

HOURS: 1243 DATE: 6/23/14

SOURCE ID:	AGE (time):
10640	1217-1700
10639	1216-1700

SURVIVAL AND REPRODUCTION DATA															
Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Control River Water Temp (°C)			REPLICATES 40		39							Notes
						1	2	3	4	5	6	7	8	9	10	
					Adult	7	1	19	9	13	18	11	17	4	19	
CR 1055		6/17	24.3		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1103	6/18	24.2	24.7	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	6/19	24.7	24.4	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1230	6/20	24.3	24.4	Day 3	2	4	✓	4	5	5	4	5	4	3	
	AW 1124	6/21	24.1	24.3	Day 4	✓	6	4	6	7	7	✓	✓	✓	✓	
	AW 1027	6/22	24.0	24.2	Day 5	5	✓	6	✓	✓	✓	14	11	8	9	
AW 1243		6/23		24.7	Day 6	13	14	✓	17	17	18	16	15	13	14	90%
					Day 7											
					Day 8											
			Total			20	24	10	27	29	30	34	31	25	24	250

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

TEST LOG # ____________

JOB # 20-19675H

CLIENT/SAMPLE ID: Georgia Pacific - Crossett

LAB/STATE: ENVIRON / TN

SURVIVAL AND REPRODUCTION DATA

Concentration 25%

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Temp (°C)	Temp (°C)		1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
CR 1055		6/17	24.3		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1103	6/18	24.3	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	6/19	24.4	24.4	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1230	6/20	24.5	24.0	Day 3	3	4	✓	3	5	✓	5	5		3	
	AW 1124	6/21	24.1	24.1	Day 4	✓	✓	✓	✓	11	3	9	✓	5	✓	
	AW 1027	6/22	24.0	24.0	Day 5	11	9	10	11	✓	12	✓	13	11	11	
AW 1243		6/23		24.2	Day 6	16	15	12	17	21	16	20	15	17	18	100% (#3 included)
					Day 7											
					Day 8											
			Total			30	28	22	31	37	31	34	33	33	32	311

SURVIVIAL AND REPRODUCTION DATA

Concentration 34%

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Temp (°C)	Temp (°C)		1	2	3	4	5	6	7	8	9	10	Notes
CR 1055		6/17	24.0		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1103	6/18	24.3	24.3	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	6/19	24.4	24.3	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1230	6/20	24.5	24.3	Day 3	3	3	✓	5	3	3	4	3	6	4	
	AW 1124	6/21	24.1	24.4	Day 4	✓	5	✓	7	✓	6	✓	✓	✓	✓	
	AW 1027	6/22	24.0	24.0	Day 5	9	✓	9	✓	9	✓	13	8	✓	9	
AW 1243		6/23		24.3	Day 6	18	17	16	19	14	18	D/0	20	19	18	80%
					Day 7											
					Day 8											
			Total			30	25	25	31	26	27	D/17	31	25	31	268

✓ = 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 # 16874 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 45% Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
CK 1055		6/17	24.1		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1103	6/18	24.1	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	6/19	24.2	24.3	Day 2	✓	4	4	—	5	✓	✓	✓	✓	✓	CR 16p2
	CR 1230	6/20	24.3	24.5	Day 3	✓			✓		✓	✓	✓	✓	✓	
	AW 1124	6/21	24.1	24.1	Day 4	3	5	6	4	9	4	6	7	5	2	
	AW 1027	6/22	24.0	24.1	Day 5	9	✓	✓	5	✓	10	✓	✓	✓	11	
AW 1243		6/23		25.0	Day 6	15	16	18	15	20	17	17	16	20	19	72%
					Day 7											
					Day 8											
			Total			27	25	28	24	34	31	23	23	25	38	277

SURVIVIAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration 60% Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
CK 1055		6/17	24.4		Day 0	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	
	LM 1103	6/18	24.3	24.3	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	6/19	24.3	24.2	Day 2	—	—	—	—	—	—	—	—	—	—	
	CR 1230	6/20	24.4	24.2	Day 3	4	✓	3	3	5	3	6	4	✓	2	
	AW 1124	6/21	24.0	24.0	Day 4	✓	6	✓	11	9	3	✓	3	3	✓	
	AW 1027	6/22	24.0	24.0	Day 5	5	✓	8	✓	13	✓	11	14	9	8	
AW 1243		6/23		24.8	Day 6	✓	12	15	22	2	✓	✓	20	19	21	60%
					Day 7											
					Day 8											
			Total			9	18	26	30	29	6	17	41	31	31	244

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

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TEST LOG # 16874 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 80% Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
CR 1055		6/17	24.2		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 1103	6/18	24.2	24.1	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	6/19	24.3	24.3	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1230	6/20	24.5	24.6	Day 3	✓	4	3	3	2	3	4	MISS	4	2	
	AW 1124	6/21	24.0	24.0	Day 4	6	✓	6	✓	7	✓	✓		✓	✓	
	AW 1327	6/22	24.0	24.1	Day 5	9	9	✓	13	12	10	10		6	4	
E	AW 1243	6/23		25.1	Day 6	15	✓	18	16	✓	✓	15		17	18	77
					Day 7											
					Day 8											
			Total			30	13	27	32	21	13	29	NA	27	34	226/9 = 25.1

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration MH Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
CR 1055		6/17	24.3		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 1103	6/18	24.1	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	6/19	24.3	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1408	6/20	24.2	24.4	Day 3	3	4	5	4	4	4	4	3	4	3	
	AW 1124	6/21	24.1	24.2	Day 4	7	9	10	✓	✓	11	12	13	14	14	
	AW 1027	6/22	24.0	24.3	Day 5	✓	✓	2	11	7	✓	✓	✓	✓	✓	
E	AW 1243	6/23		25.1	Day 6	18	19	16	15	19	✓	16	19	17	20	
					Day 7											
					Day 8											
			Total			28	32	33	30	30	15	32	35	35	37	307 /10 = 23.0

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

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TEST LOG NO. 16874

JOB NO. 20-19675H

CLIENT/SAMPLE ID: Georgia Pacific Crossett

TEST ORGANISM: Cd

DATE: 6/17/14

ENVIRON Test Log No. 16874

D.O. (mg/L)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	8.0	8.4	8.4	8.3	8.2	8.2	8.3	8.3	8.0	8.1	7.8	7.8		
25	8.1	8.5	8.2	8.4	8.2	8.3	8.2	8.3	8.1	8.2	7.7	7.8		
34	8.0	8.5	8.2	8.4	8.3	8.4	8.2	8.4	8.1	8.4	7.7	7.9		
45	8.0	8.5	8.3	8.2	8.3	8.4	8.1	8.4	8.3	8.4	7.7	7.7		
60	8.2	8.4	8.1	8.4	8.3	8.4	8.2	8.5	8.3	8.3	7.8	7.8		
80	8.2	8.4	8.0	8.4	8.3	8.3	8.1	8.4	8.4	8.2	7.4	7.8		
MH	8.4	8.4	8.1	8.4	8.4	8.2	8.4	8.4	8.4	8.1	7.9	7.1		

pH (s.u.)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	7.48	757	7.22	7.41	796	784	7.96	7.75	7.92	7.54	7.07	7.80		
25	7.40	787	7.72	778	764	768	765	7.59	772	8.02	7.35	8.05		
34	7.62	748	7.83	803	767	787	768	7.99	771	8.17	7.81	8.15		
45	7.73	817	7.91	820	761	802	773	8.17	770	8.33	7.82	8.29		
60	7.80	827	790	834	774	818	778	8.32	771	8.39	781	8.40		
80	7.85	838	7.94	846	784	834	788	8.51	8.00	8.54	7.83	8.51		
MH	8.00	781	786	768	783	761	778	7.89	8.05	786	8.00	7.98		

Conductivity (μmhos/cm)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	136	144	91	156	124	129	120	125	52	90	80	78		
25	592	565	517	487	513	513	519	539	454	490	433	503		
34	744	765	777	743	668	649	726	720	632	666	636	690		
45	796	948	867	746	859	859	885	873	846	896	796	904		
60	dn ~~1107~~ 1161	1159	1019	1123	1169	1150	1031	1133	985	1134	1084	1194		
80	1467	1450	1504	1503	1471	1435	1470	1457	1377	1466	1411	1502		
MH	212	258	227	261	272	262	242	217	244	241	202	205		
Params Intl/Time:	AK1000	AH1410	HH0920	AH1037	AW0940	AH1420	AH1017	DR1223	AW1058	AH1309	AW0946	AW1357		~~AW~~
Dilutions Intl/Time:	AW0930		HH0910		AW0938		AW1012		AW1048		AW0930			
Control Water Batch#:	5501,171636		5563,171636		5564,171652		MH 5564, RW 171652		17660,5564		17660,5567			
Food Batch	4722,41616		22,196		22,30		23,30		23,30		23,32 AW 6/22/14			

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TEST LOG #

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 ~~Ferric~~ 80% Temp (°C)		Filtered 80% ~~10ppm~~ ~~300ppm~~	REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
LM 1103		6/18	24.0		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	6/19	24.5	24.4	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1408	6/20	24.3	24.4	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1124	6/21	24.1	24.0	Day 3	✓	✓	✓	✓	3	✓	✓	3	✓	2	
	AW 1027	6/22	24.1	24.0	Day 4	3/8	12	5	3	5	6	4	✓	7	6	• split based on size
	AW 1243	6/23	25.0	24.9	Day 5	14	9	13	12	15	14	15	14	17	14	
AW 1220		6/24		24.5	Day 6	15	17	✓	14	✓	19	18	15	11	✓	
					Day 7											
					Day 8											
			Total			25	38	18	29	23	39	37	32	35	22	298

SURVIVIAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration ~~Ferric~~ 100% Temp (°C)		Filtered 100% ~~10ppm~~	REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
LM 1103		6/18	24.0		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	6/19	24.5	24.7	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1408	6/20	24.5	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1124	6/21	24.1	24.0	Day 3	2	✓	✓	✓	✓ p. ruby	✓	✓	✓	5	✓	
	AW 1027	6/22	24.1	24.2	Day 4	6	5	7	6	D/0	7	2	4	✓	4	
	AW 1243	6/23	24.9	24.8	Day 5	15	11	13	14		11	11	13	14	15	
AW 1220		6/24		24.5	Day 6	✓	12	11	16		11	8	16	13	✓	80+8
					Day 7											
					Day 8											
			Total			23	28	31	36	NA / 28	29	21	33	32	19	252/5 280

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

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

TEST LOG NO.: 16889

JOB NUMBER.: 20-19675H

INDUSTRY: Georgia Pacific-Crossett

EFFLUENT: Outfall 001

DILUTION WATER: River Water

NPDES (Y/N) : Yes

PHOTOPERIOD: 16 hr light/8 hr dark

FEEDING REGIME: 0.1 mL YCT / 0.1 mL P. subcapitata per 15 mL

TEST VESSEL CAPACITY: 30 mL

TEST SOLUTION VOLUME: 15 mL

NO. ORGANISMS/REPLICATE: 1

NO. REPLICATES: 10

ORGANISM SOURCE INFORMATION:

AGE (date): 6/23/14

TEMP @ TEST START: 24.8

RANDOMIZED BY: AW

SOURCE ID:	AGE (time):
10646	1506-2035
10647	1508-2057
10648	1517-2043
10649	1518-2040

TEST START:

HOURS: 1205 DATE: 6/24/14

TEST END:

HOURS: 1140 DATE: 7/1/14

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Control River Water Temp (°C)			REPLICATES 10649 10647 10648 10649										Notes
						1	2	3	4	5	6	7	8	9	10	
					Adult	20	16	8	13	15	5	12	8	20	4	
AW 1205		24.4	6/24		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1115	6/25 ~~24.3~~	24.3	24.5	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1119	6/26	24.2	24.4	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1140	6/27	24.4	24.6	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1045	6/28	24.3	24.9	Day 4	5	3	2	5	5	4	3	6	4	3	
	AW 1125	6/29	24.1	24.1	Day 5	11	11	12	7	9	✓	✓	7	Miss	12	
	AH 0954	6/30	24.4	24.3	Day 6	✓	18	17	17	17	9	✓	10	/	✓	
AH 1140		7/1		24.3	Day 7	16	✓	21	✓	✓	15	12	16	/	16	D.C.
					Day 8											
			Total			32	32	31	29	31	28	15	23	n-1	31	252

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

TEST LOG # _____ 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 Ferric Temp (°C)		30 ppm 3REPLICATES	1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
AW 1205		6/24	24.6		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
OR	CR 1115	6/25	24.4	24.3	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1119	6/26	24.4	24.5	Day 2	✓	–	–	✓	✓	–	–	–	✓	✓	
	CR 1140	6/27	24.5	24.3	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1045	6/28	24.2	24.2	Day 4	6	6	✓	5	6	5	6	5	4	✓	
	AW 1125	6/29	24.0	24.6	Day 5	9	7	6	10	8	8	7	10	6	6	
	AW 0954	6/30	24.4	24.3	Day 6	12	13	12	14	12	12	14	14	12	12	
AH 1140		7/1		24.2	Day 7	15	15	16	✓	✓	15	✓	16	✓	16	
					Day 8											
			Total			27	26	34	29	26	25	27	29	22	34	279

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding/ / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration Baseline Temp (°C)		REPLICATES	1	2	3	4	5	6	7	8	9	10	Notes
AW 1205		6/24	24.5		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1115	6/25	24.2	24.5	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	ALL LOOK DEAD
	AH 1119	6/26	24.5	24.4	Day 2	✓	✓	✓	✓	–	–	miss	–	–	✓	
	CR 1140	6/27	24.4	24.5	Day 3	✓	✓	✓	✓	✓	✓		✓	✓	✓	
	AW 1045	6/28	24.1	24.3	Day 4	5	5	✓	✓	4	4		6	2	✓	
	AW 1125	6/29	24.0	24.4	Day 5	5	4	5	3	4	6		6	5	7	
	AW 0954	6/30	24.3	24.2	Day 6	10	9	10	9	8	12		✓	10	12	
AH 1140		7/1		24.4	Day 7	15	✓	12	✓	✓	✓		✓	✓	✓	
					Day 8											
			Total			20	18	27	12	16	22	11	12	17	19	163 = 181

✓ = Test Organism Alive 0 = Live neonates Miss = Lost or Missing

D = Test Organism Dead (-0) = Dead neonates M = Male

TEST LOG # _____ 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 MH Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
AW 1205		6/24	24.4		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1115	6/25	24.4	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	PTH 1119	6/26	24.3	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CR 1140	6/27	24.6	24.5	Day 3	✓	✓	4	✓	✓	✓	✓	✓	✓	✓	
	AW 1045	6/28	24.8	24.9	Day 4	5	3	✓	4	5	6	3	4	3	5	
	AW 1125	6/29	24.3	24.5	Day 5	11	8	11	7	7	11	9	11	9	12	
	PTH 0954	6/30	24.3	24.2	Day 6	✓	✓	14	12	10	✓	✓	✓	✓	✓	
PTH 1140		7/1		24.1	Day 7	15	✓	17	15	✓	15	18	16	12	16	
					Day 8											
			Total			31	11	~~39~~ 37 LTH 7/3/14	23	22	32	30	31	24	33	266

SURVIVIAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
					Day 0											
					Day 1											
					Day 2											
					Day 3											
					Day 4											
					Day 5											
					Day 6											
					Day 7											
					Day 8											
			Total													

✓ = Test Organism Alive 0 = Live neonates Miss = Lost or Missing

TEST LOG NO. _____ CLIENT/SAMPLE ID: Georgia Pacific Crossett TIE

JOB NO. 20-19675G TEST ORGANISM: CD DATE: _____

ENVIRON Test Log No. 16874

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D.O. (mg/L)

Concentration	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
Filtered 80%	8.2	8.3	8.3	8.2	8.2	8.3	8.1	8.0	7.9	7.5	8.3	8.4		
Filtered 100%	8.1	8.4	8.3	8.3	8.1	8.4	8.1	8.1	8.2	7.8	8.3	8.6		
Ferric 80%	8.1	8.4	8.4	8.2	8.1	8.3	8.2	7.9	8.3	7.7	8.4	8.4		
Ferric 100%	8.1	8.4	8.4	8.2	8.2	8.3	8.2	8.1	8.2	7.7	8.4	8.4		

pH (s.u.)

Concentration	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
Filtered 80%	8.05	8.55	8.08	8.56	7.86	8.57	7.90	8.61	8.03	8.57	8.23	8.54		
Filtered 100%	8.06	8.61	8.20	8.60	7.90	8.67	7.92	8.65	8.15	8.67	8.27	8.66		
Ferric 80%	8.04	8.55	8.31	8.52	8.15	8.60	8.22	8.41	8.19	8.55	8.13	8.57		
Ferric 100%	8.23	8.54	8.30	8.18	8.21	8.20	8.25	8.61	8.16	8.60	8.00	8.56		

Conductivity (µmhos/cm)

Concentration	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
Filtered 80%	1478	1498	1527	1495	1595	1354	1401	1403	1044	1390	1365	1528		
Filtered 100%	1804	1755	1652	1795	1734	1764	1820	1818	1824	1836	1814	1878		
Ferric 80%	2010	1899	1851	1691	1694	1983	1744	1714	1643	1723	1683	1827		
Ferric 100%	2420	2490	2400	1905	2500	2350	2680	2050	2000	2130	2090	2200		

6/22/14 AW 1479

	Start	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Params Intl/Time:	AW 0724	AW 1037	AW 1420	AW 1223	AW 1349	AW 1357	AW 1237	
Dilutions Intl/Time:	AW 1417	AW 0740 AW 0938	AW 1017 AW 1012	AW 1058 AW 1443	AW 0940 AW 0938	AW 0940 AW 0938		
Control Water Batch#:	5503	5564, 17652	5564, 17652	5564, 17660	5567, 17660	5561, 17660		
Food Batch	4722, 4169	4723, 4736	4723, 30	4723, 32	4723, 32	4723, 32		

TEST LOG NO. 16889 CLIENT/SAMPLE ID: Georgia Pacific Crossett

JOB NO. 20-19675H TEST ORGANISM: Cd DATE: 6/24/14

ENVIRON Test Log No. 16874

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D.O. (mg/L)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	8.5	7.9	8.2	8.3	8.0	8.2	7.9	8.1	8.4	8.5	8.5	8.5	7.8	8.4
Ferric	8.4	7.9	8.1	8.3	8.3	8.2	7.9	8.4	8.4	8.6	8.5	8.5	7.9	8.5
Baseline	8.4	7.6	8.4	8.4	8.3	8.4	8.0	8.3	8.3	8.7	8.3	8.4	8.0	8.7
MH	8.5	7.5	8.2	8.1	8.2	8.4	8.0	8.2	8.3	8.6	8.2	8.5	8.0	8.5

pH (s.u.)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	7.37	7.94	7.89	8.10	8.09	8.00	8.10	7.96	7.93	7.81	7.58	8.08	7.78	8.09
Ferric	8.27	8.47	8.22	8.29	8.03	8.18	8.03	7.96	7.88	7.82	7.77	8.52	7.74	8.21
Baseline	7.85	8.59	7.92	8.54	7.95	8.56	7.93	7.99	7.78	8.31	7.57	8.62	8.04	8.08
MH	8.01	7.81	7.93	7.98	7.90	7.69	7.95	7.82	7.74	7.98	7.81	7.99	8.15	7.85

Conductivity (µmhos/cm)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	71	95	73	121	156	133	1158	103	82	113	75	127	64	152
Ferric	2100	1810	1800	1728	1821	2190	1856	1944	1780	2220	1819	1953	1988	9750
Baseline	1285	1298	1826	1860	1517	1964	1893	1818	1715	1848	1810	1837	1787	1920
MH	202	203	218	266	245	210	225	206	231	237	201	247	208	276

Params Init/Time:	AW 0937	LM 1155	LM 0948	AW 1125	AW 0940	UK 1338	AD 0818	HH 1216	AW 0835	AW 1231	AW 0910	AW 1034	AW 0947	AK 1148
Dilutions Init/Time:	AW 0927		LM 0980		pH: CB38		AD 0815		AW 0825		AW 0909		AW 0833	
Control Water Batch#:	176605		176605		176672		176672		176672		5574 17660		5574 17660	
Food Batch	4732,23		4732,23		4737,23		4737,23		4737,23		4739,23		4734,23	

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

Sample Receipt Checklist:

Client: GPCrossett

Date/Time received 6/17/14 0841 by AV

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 in River water
   - 1.0 mg/L? (did dechlor occur) Yes (No)

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
17635	Outfall 001	2.3	7.82	8.3	<0.02
17636	River	2.4	7.60	8.5	0.08

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ENVIRON Test Log No. 16874

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CHAIN-OF-CUSTODY

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

Project Name: | Project Number:

Industry: Georgia Pacific LLC, Crossett Paper Ops

Phone: 870-567-8170 FAX: 870-364-9076

County: Ashley City: Crossett State: AR

Sample Collected by (print): Rachel Johnson

NPDES Permit No.: AR0001210

Sample Collected by (signature): Rachel Johnson

NPDES Test: ☐ No ☑ 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 Bannerfin shiner	Acute *Ceriodaphnia dubia*	Acute *Daphnia pulex*	Chronic Fathead minnow	Chronic *Ceriodaphnia dubia*	Continuous Batch Tests	Discrete Batch Tests	Other	Description Definitive or Screen	Sample B# (lab only)	
Outfall 001	Comp	Plastic	Y	6/15/14 4:50pm	6/16/14 6:15am	2	20					✓	✓					17635	23°C
River	Grab	Plastic	NA	6/16/14		2	20										Dilution water	17636	24°C

Analysis Requested

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

Remarks:

Measured TRC (if applicable): 0.0 mg/L

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition: (lab use only)
Rachel Johnson	6/16/14	4:00pm			Once
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: 5 cbw	Containers/Volume Received: 20L + 20L
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6/17/14	Time: 0841

pH upon arrival: 35) 7.82 36) 7.60

DO upon arrival: 35) 8.3 36) 8.5

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 6/19/14 0845 by AP

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
17652	River	4.6	7.84	82	<0.02
17653	Outfall 001	3.4	7.84	85	<0.02

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ENVIRON Test Log No. 16874

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Project Name: Project Number:

Industry: GEORGIA PACIFIC PAPER

Phone: 870-367-8170 FAX: 870-364-2076

County: ASHLEY City: CROSSETT State: AR

Sample Collected by (print): DANNY / BEN

Sample Collected by (signature):

NPDES Permit No.: AR0001210

NPDES Test: ☐ No ☑ Yes

CHAIN-OF-CUSTODY

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

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 Bannerfin shiner	Acute *Ceriodaphnia dubia*	Acute *Daphnia pulex*	Chronic Fathead minnow	Chronic *Ceriodaphnia dubia*	Continuous Batch Tests	Discrete Batch Tests	Other	Description Definitive or Screen	Sample B# (lab only)
																		17652
RIVER	G	PLASTIC	NA	6/8/14 8:45am		2	20 L											
																		17653
OUTFALL 001	C	PLASTIC	YES	6/17/14 6:14am	6/18/14 6:14am	2	20					V	V					

* 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:	Time:	Received by: (Signature)
	6/18/14	3:00pm	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered

Condition: (lab use only) ON ICE

Receipt Temp:

Containers/Volume Received: 2.10L

Date: 6/19/14

Time: 0845

pH upon arrival: 5.) 7.84 5.) 7.88

DO upon arrival: 8.2 8.5

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 10/21/14 0940 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 (In River No)

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
			CR 10/21		
17659	Outfall001	5.6	7.875	8.9	<0.02
17660	RW	5.3	8.03	8.6	0.08

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ENVIRON Test Log No. 16874

Project Name: Project Number:

Industry: GEORGIA PACIFIC . PAPER

Phone: 870-567-8170 FAX: 870-364-9076

County: Ashley City: CROSSETT State: AR.

Sample Collected by (print): DANNY / BEN

NPDES Permit No.: AR0001210

Sample Collected by (signature): [signature]

NPDES Test: ☐ No ☑ Yes

CHAIN-OF-CUSTODY

ENVIRON

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

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 Bannerfin shiner	Acute *Ceriodaphnia dubia*	Acute *Daphnia pulex*	Chronic Fathead minnow	Chronic *Ceriodaphnia dubia*	Continuous Batch Tests	Discrete Batch Tests	Other	Description Definitive or Screen	Sample B# (lab only)
RIVER	G	PLASTIC [redacted]	NA	6-18-14 8:45Am		2	20											171060
OUTFALL 001	C	PLASTIC	YES	6/19/14 6:16Am	6-20-14 6:17Am	2	20					✓	✓					171059

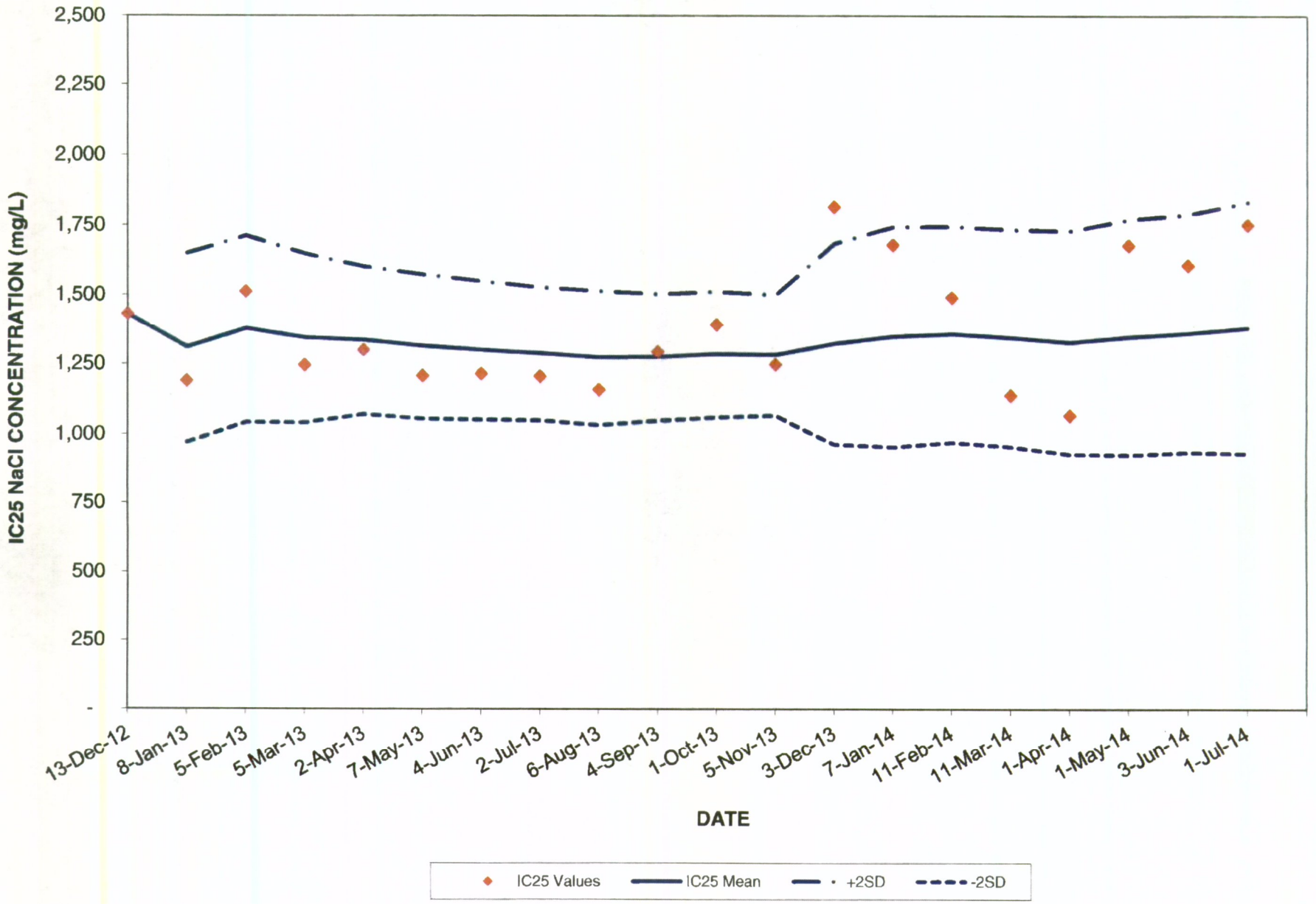
* Matrix: **SS** - Soil **GW** - Groundwater **WW** - Wastewater **AW** - Ambient Water **ML** - Mixed Liquor **SL** - Sludge **SD** - Sediment **OT** - Other ________

Remarks:

Measured TRC (if applicable): 0.00 mg/L

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)		
[signature]	6-20-14	3:00pm		Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition: (lab use only) GOOD
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: 5.6, 5.3	Containers/Volume Received: 4 10L
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) Courtney Abbott	Date: 6/21/14	Time: 0940 · pH upon arrival: 7.87, 8.03 · DO upon arrival: 8.6, 8.9

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



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7/17/2014

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

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	15807	13-Dec-12	100	0.362	750	1,500	750	1,500	17.1	1,430	1,430				
2	15863	08-Jan-13	100	0.431	750	1,500	750	1,500	15.5	1,190	1,310	170	1,649	971	9
3	15911	05-Feb-13	95	0.417	750	1,500	750	1,500	20.9	1,512	1,377	167	1,712	1,043	10
4	15965	05-Mar-13	100	0.538	750	1,500	750	1,500	28.1	1,246	1,345	152	1,648	1,041	10
5	16017	02-Apr-13	100	0.504	750	1,500	750	1,500	25.8	1,300	1,336	133	1,601	1,070	9
6	16088	07-May-13	100	0.390	750	1,500	750	1,500	29.3	1,207	1,314	130	1,574	1,054	9
7	16137	04-Jun-13	100	0.402	750	1,500	750	1,500	21.5	1,215	1,300	124	1,549	1,051	9
8	16189	02-Jul-13	100	0.444	750	1,500	750	1,500	26.7	1,205	1,288	120	1,528	1,048	9
9	16256	06-Aug-13	100	0.382	750	1,500	750	1,500	19.3	1,157	1,274	120	1,514	1,033	9
10	16309	04-Sep-13	97.5	0.369	750	1,500	750	1,500	27.1	1,293	1,276	114	1,503	1,048	8
11	16348	01-Oct-13	97.5	0.310	1,500	3,000	750	1,500	23.4	1,391	1,286	113	1,513	1,059	8
12	16425	05-Nov-13	100	0.335	750	1,500	750	1,500	19.7	1,248	1,283	109	1,500	1,066	8
13	16489	03-Dec-13	97.5	0.417	750	1,500	1,500	3,000	31.8	1,814	1,324	180	1,684	963	13
14	16554	07-Jan-14	100	0.464	750	1,500	1,500	3,000	27.8	1,679	1,349	198	1,744	954	14
15	16631	11-Feb-14	92.5	0.484	750	1,500	750	1,500	13.5	1,491	1,359	194	1,746	971	14
16	16684	11-Mar-14	100	0.543	750	1,500	750	1,500	28.8	1,138	1,345	195	1,735	954	14
17	16729	01-Apr-14	90	0.430	750	1,500	750	1,500	29.2	1,067	1,328	201	1,730	927	15
18	16782	01-May-14	97.5	0.378	1,500	3,000	1,500	3,000	28.2	1,678	1,348	211	1,771	925	15
19	16835	03-Jun-14	100	0.467	750	1,500	1,500	3,000	24.9	1,607	1,361	214	1,789	934	15
20	16907	01-Jul-14	100	0.447	1,500	3,000	1,500	3,000	22.3	1,751	1,381	226	1,832	930	16
		Avg	98	0.426	863	1725	938	1875	24	1381	1331	162	1649	1002	

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)

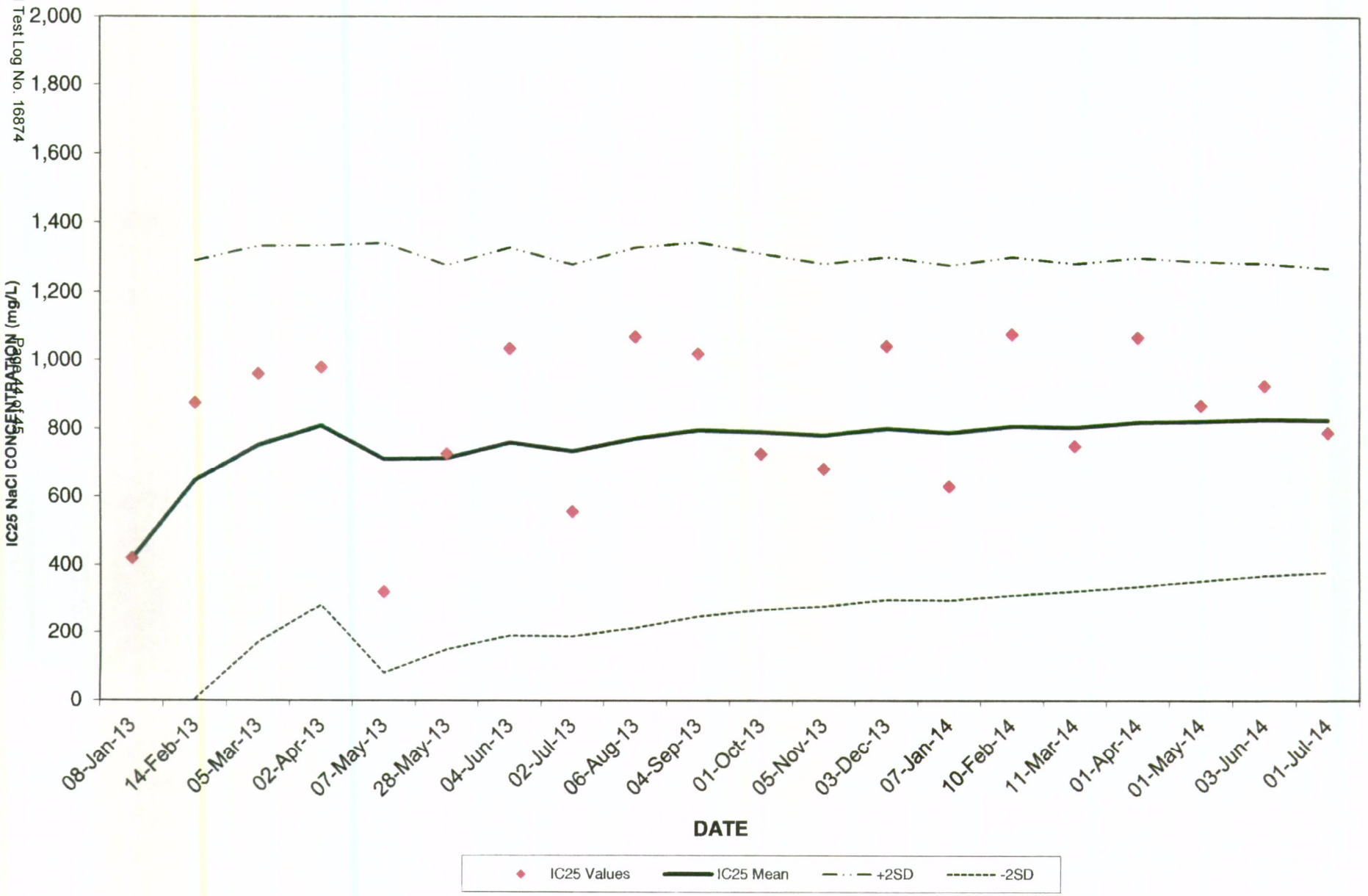
ACCEPTABLE TEST RESULTS - A growth NOEC ranging from 750 mg/L to 3,000 mg/L.

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

ENVIRON Test Log No. 16874

CHRONIC REFERENCE TOXICANT (NaCl) 2013-2014

Ceriodaphnia dubia



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7/17/2014

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

ENVIRON Test Log No. 16874

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	15864	08-Jan-13	100	80	30.5	2,000	>2,000	250	500	24.3	420	420				
2	15937	14-Feb-13	100	100	32.2	2,000	>2,000	500	1,000	18.1	875	648	322	1,291	4	35
3	15966	05-Mar-13	100	100	33.7	2,000	>2,000	500	1,000	21.8	960	752	290	1,332	171	32
4	16018	02-Apr-13	90	100	29.3	2,000	>2,000	500	1,000	16.8	979	809	263	1,334	283	28
5	16087	07-May-13	100	80	34.4	1,000	2,000	<125	125	27.3	321	711	315	1,341	81	40
6	16124	28-May-13	100	90	28.9	2,000	>2,000	500	1,000	20.5	727	714	282	1,278	150	36
7	16137	04-Jun-13	90	90	30.0	1,000	2,000	500	1,000	16.2	1,034	759	285	1,328	190	35
8	16188	02-Jul-13	100	80	21.5	2,000	>2,000	500	1,000	35.7	556	734	273	1,280	188	35
9	16257	06-Aug-13	100	90	29.1	1,000	2,000	500	1,000	24.9	1,068	771	279	1,328	214	34
10	16308	04-Sep-13	100	90	27.1	2,000	>2,000	500	1,000	14.6	1,018	796	274	1,344	248	33
11	16347	01-Oct-13	100	90	28.0	2,000	>2,000	1,000	2,000	26.0	726	789	261	1,311	268	32
12	16426	05-Nov-13	100	80	31.0	2,000	>2,000	250	500	27.1	681	780	251	1,282	279	31
13	16497	03-Dec-13	100	90	29.0	2,000	>2,000	500	1,000	12.3	1,041	800	251	1,302	299	30
14	16552	07-Jan-14	100	90	29.4	1,000	2,000	500	1,000	20.2	630	788	245	1,278	298	30
15	16630	10-Feb-14	100	100	31.1	1,000	2,000	500	1,000	13.4	1,076	807	248	1,303	312	30
16	16682	11-Mar-14	100	90	23.0	1,000	2,000	500	1,000	24.3	750	804	240	1,283	325	29
17	16730	01-Apr-14	100	100	28.8	2,000	>2,000	500	1,000	12.3	1,067	819	241	1,301	338	28
18	16782	01-May-14	100	100	33.6	2,000	>2,000	500	1,000	13.5	868	822	234	1,289	355	28
19	16834	03-Jun-14	100	80	26.1	1,000	2,000	1,000	2,000	22.9	926	828	228	1,284	371	27
20	16909	01-Jul-14	100	100	31.3	1,000	2,000	500	1,000	21.7	789	826	222	1,270	381	26
Avg			99	91	29	1600	800	500	1006	21	826	759	263	1303	250	

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.

Chronic Toxicity Test Results-
Outfall 001 Effluent

Prepared for:
Georgia Pacific Crossett Mill
Crossett, Arkansas

Prepared by:
ENVIRON International Corporation
Nashville, Tennessee

Date:
May 2014

Project Number:
20-19675H

ENVIRON

ENVIRON

June 11, 2014

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

Re: Chronic Toxicity Test Results- Outfall 001 Effluent - May 2014
ENVIRON Project No. 20-19675H

Dear Ms. Johnson:

ENVIRON conducted a chronic (seven-day) whole effluent toxicity (WET) test 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 May 26, 28, and 30, 2014. The samples were received at ENVIRON on May 27, 29, and 31, 2014, within the USEPA-required receipt temperature range of 0-6.0 °C. The grab sample of river water (collected on May 22, 2014) was received on May 23, 29 and 31, 2014 in good condition. The test organism utilized for the chronic toxicity test was *Ceriodaphnia dubia* (*C. dubia*). The test was initiated upon receipt of the first effluent sample (May 27, 2014). 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. All control organisms met USEPA test acceptability criteria. The results of the chronic toxicity test are as follows:

TEST RESULTS FOR OUTFALL 001 EFFLUENT

Permit Limits	*C. dubia*
NOEC Value 80% (lethality)	80%
NOEC Value 80% (sub-lethality)	80%

The results of the chronic test with *C. dubia* indicated NOEC values for lethality and sub-lethality of 80 percent effluent. The *C. dubia* test results indicate no significant toxicity at the critical dilution.

All *C. dubia* test controls met USEPA criteria for test acceptability. The reproduction Coefficient of Variation (CV) values for the control and critical dilution are 31.3 and 31.9 percent respectively, which meets the Test Acceptability Criteria (TAC) limit of 40 percent. The Percent Minimum Significant Difference (PMSD) value was 19.5 percent, which is within the USEPA PMSD bounds of 13 to 47 percent for *C. dubia* reproduction, indicating normal test sensitivity. The effluent concentration-response curve is flat and not described in EPA-B-00-004 *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing*. A flat dose-response is indicative of a lack of toxicity. This test is considered valid for assessment of permit requirements. The monthly reference toxicant test also met all the test acceptability criteria.

ENVIRON International Corp. 201 Summit View Drive, Suite 300, Brentwood, TN 37027
V +1 615.277.7570 F +1 615.377.4976

Copies of the laboratory bench sheets with statistical data and documentation from the terminated test 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 27 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:
Laboratory Bench Sheets and Statistical Data

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **ENVIRON International Corp**

Analysis ID:	16-4727-6628	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	08 Jun-14 13:18	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes
Batch ID:	16-0173-6508	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	27 May-14	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	03 Jun-14	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	17-4124-3608	**Code:**	67C944D8	**Client:**	GPAC Crossett
Sample Date:	26 May-14	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (MAY)
Receive Date:	27 May-14	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	Outfall 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	0.7632	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria

Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Receiving Wate	9	1	10	0.9	0.1	0.0%
25		10	0	10	1	0	-11.11%
34		10	0	10	1	0	-11.11%
45		10	0	10	1	0	-11.11%
60		10	0	10	1	0	-11.11%
80		9	1	10	0.9	0.1	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	0	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	0	1	1	1

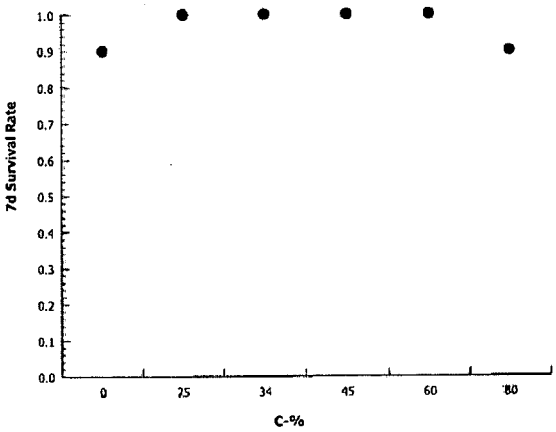
7d Survival Rate Binomials

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	0/1	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	0/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test — ENVIRON International Corp

Analysis ID:	16-4727-6628	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	08 Jun-14 13:18	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — ENVIRON International Corp

Analysis ID:	07-2543-6720	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	08 Jun-14 13:19	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	16-0173-6508	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	27 May-14	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	03 Jun-14	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	17-4124-3608	**Code:**	67C944D8	**Client:**	GPAC Crossett
Sample Date:	26 May-14	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (MAY)
Receive Date:	27 May-14	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	Outfall 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	19.5%

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	129	75	4	18	0.9992	Asymp	Non-Significant Effect
		34	109.5	75	3	18	0.9155	Asymp	Non-Significant Effect
		45	85.5	75	4	18	0.2204	Asymp	Non-Significant Effect
		60*	75	75	3	18	0.0461	Asymp	Significant Effect
		80	78	75	4	18	0.0771	Asymp	Non-Significant Effect

False

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	30.1	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1951	0.13 - 0.47	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	392.4	78.48	5	2.386	0.0500	Significant Effect
Error	1776	32.88889	54			
Total	2168.4		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	36.42	15.09	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.7153	0.9459	<0.0001	Non-normal Distribution

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	10	30.1	23.37	36.83	32.5	4	37	2.976	31.26%	0.0%
25		10	34.5	33.32	35.68	35	32	37	0.5217	4.78%	-14.62%
34		10	32.7	29.66	35.74	33.5	26	38	1.342	12.98%	-8.64%
45		10	31	28.95	33.05	30	28	38	0.9068	9.25%	-2.99%
60		10	28.6	26.69	30.51	28	25	33	0.8459	9.35%	4.98%
80		10	26.7	20.6	32.8	29	4	33	2.696	31.93%	11.3%

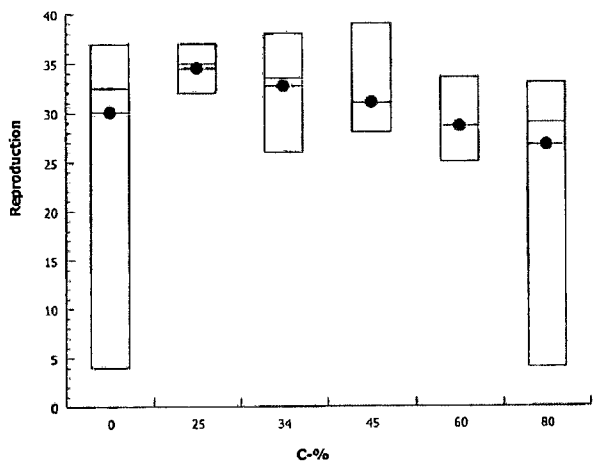
Reproduction Detail

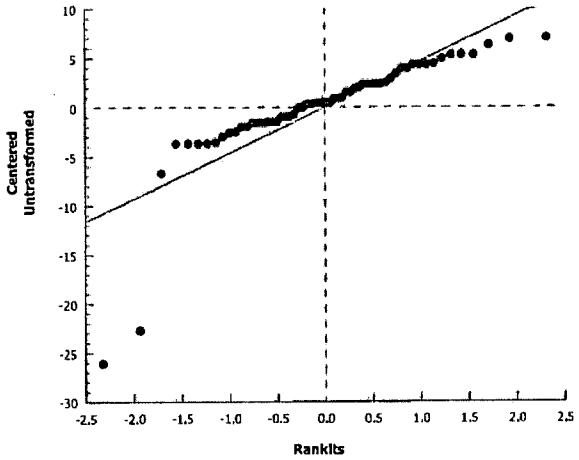
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	34	33	32	34	37	4	31	30	31	35
25		36	37	33	33	36	32	35	33	35	35
34		38	26	32	35	35	29	29	29	37	37
45		29	28	38	30	31	30	30	33	32	29
60		25	33	32	27	27	27	29	26	29	31
80		32	32	33	27	23	27	4	29	31	29

Ceriodaphnia 7-d Survival and Reproduction Test — **ENVIRON International Corp**

Analysis ID:	07-2543-6720	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	08 Jun-14 13:19	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Report Date: 08 Jun-14 13:20 (p 1 of 1)
Test Code: 16822cd | 18-8644-6052

Ceriodaphnia 7-d Survival and Reproduction Test — **ENVIRON International Corp**

Analysis ID:	03-7826-2372	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	08 Jun-14 13:20	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	16-0173-6508	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	27 May-14	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	03 Jun-14	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	17-4124-3608	**Code:**	67C944D8	**Client:**	GPAC Crossett
Sample Date:	26 May-14	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (MAY)
Receive Date:	27 May-14	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	Outfall 001		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1059094	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	30.1	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

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

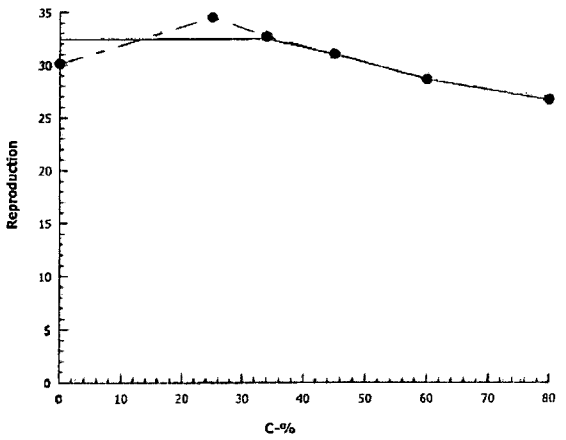
Reproduction Summary

			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Receiving Water	10	30.1	4	37	2.976	9.41	31.26%	0.0%
25		10	34.5	32	37	0.5217	1.65	4.78%	-14.62%
34		10	32.7	26	38	1.342	4.244	12.98%	-8.64%
45		10	31	28	38	0.9068	2.867	9.25%	-2.99%
60		10	28.6	25	33	0.8459	2.675	9.35%	4.98%
80		10	26.7	4	33	2.696	8.525	31.93%	11.3%

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	34	33	32	34	37	4	31	30	31	35
25		36	37	33	33	36	32	35	33	35	35
34		38	26	32	35	35	29	29	29	37	37
45		29	28	38	30	31	30	30	33	32	29
60		25	33	32	27	27	27	29	26	29	31
80		32	32	33	27	23	27	4	29	31	29

Graphics



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

TEST LOG NO.:	16822	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): 5/27/14

TEMP @ TEST START: 24.1

RANDOMIZED BY: [initials]

TEST START:

HOURS: 1800 DATE: 5/27/14

TEST END:

HOURS: 1600 DATE: 6/3/14

SOURCE ID:	AGE (time):
10620	0802-1345
10622	0811-1346
10623	0819-1346

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Control River Water Temp (°C)			REPLICATES 620 & 622 / 623: 1	2	3	4	5	6	7	8	9	10	Notes
					Adult	18	4	20	5	1	16	12	4	20	1	
Ul 1800		5/27	24.8		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1138	5/28	24.2	24.6	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AB 1813	5/29	24.1	24.5	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AB 1008	5/30	24.2	24.3	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1112	5/31	24.1	24.8	Day 4	5	6	5	4	4	4	5	4	5	6	
	AW 1026	6/1	24.2	24.1	Day 5	✓	9	✓	10	14	✓	10	9	✓	✓	pale
	AW 0927	6/2	24.2	24.1	Day 6	13	✓	11	✓	✓	✓	✓	✓	9	10	
AB 1600		6/3		24.3	Day 7	16	18	16	20	19	✓	16	17	17	19	90%
					Day 8											
			Total			34	33	32	D/4	37	4	31	30	31	35	301

1/D

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

1.75 = 22.6

vs 242 smooth

TEST LOG # 16822 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 25% Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
KW 1500					Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HH 1138	5/28	24.2	24.1	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1013	5/29	24.3	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1058	5/30	24.4	24.3	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1167	5/31	24.5	24.3	Day 4	4	5	4	5	5	4	4	5	6	6	
	AW 1026	6/1	24.3	24.1	Day 5	✓	✓	10	11	13	12	13	12	✓	✓	
	AW 0927	6/2	24.1	24.7	Day 6	13	14	✓	✓	✓	✓	✓	✓	12	10	
AH		6/3		24.5	Day 7	19	18	19	17	18	16	18	16	17	19	
					Day 8											
			Total			36	37	33	33	36	32	35	33	35	35	345

SURVIVIAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration 34% Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
KW 1500					Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HH 1138	5/28	24.3	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1013	5/29	24.2	24.4	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1058	5/30	24.3	24.4	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1167	5/31	24.3	24.4	Day 4	5	5	6	5	6	4	5	4	5	5	
	AW 1026	6/1	24.4	24.4	Day 5	✓	5	10	13	✓	11	13	8	✓	✓	
	AW 0927	6/2	24.3	24.5	Day 6	15	✓	✓	✓	9	14	11	✓	14	15	
AH		6/3		24.3	Day 7	18	16	16	17	20	16	✓	17	18	17	
					Day 8											
			Total			38	26	32	35	35	29	29	29	37	37	327

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

TEST LOG # 16822 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 45% Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
1800		5/27			Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1139	5/28	24.4	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1013	5/29	24.3	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1008	5/30	24.3	24.4	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1112	5/31	24.1	24.8	Day 4	3	6	4	5	5	4	4	6	5	5	
	AW 1026	6/1	24.4	24.5	Day 5	✓	7	14	7	✓	10	11	✓	✓	✓	
	AW 0927	6/2	24.4	24.9	Day 6	10	✓	✓	✓	8	✓	✓	13	11	8	
AH		6/3		24.4	Day 7	16	15	20	18	18	16	15	14	16	16	
					Day 8											
			Total			29	28	38	30	31	30	30	53	32	29	310

SURVIVIAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration 60% Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
1800		5/27			Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1138	5/28	24.2	24.5	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1013	5/29	24.3	24.4	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1008	5/30	24.2	24.4	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1112	5/31	24.4	24.5	Day 4	3	6	5	5	4	5	5	4	5	4	
	AW 1026	6/1	24.1	24.3	Day 5	✓	8	✓	7	7	10	8	✓	8	✓	
	AW 0927	6/2	24.1	24.8	Day 6	7	✓	11	✓	✓	12	✓	7	✓	9	
AH		6/3		24.2	Day 7	15	19	16	15	16	14	16	15	16	18	
					Day 8											
			Total			25	33	32	27	27	27	29	26	29	31	286

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

TEST LOG # _____ 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 80% Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
KW 1600		5/27			Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HH 1138	5/28	24.5	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1013	5/29	24.4	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1008	5/30	24.2	24.4	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1112	5/31	24.3	24.8	Day 4	4	4	5	3	2	3	4	6	5	5	
	AW 1024	6/1	24.4	24.2	Day 5	✓	✓	10	✓	5	8	D/0	8	✓	✓	
	AW 0927	6/2	24.3	24.9	Day 6	13	11	✓	7	✓	✓		✓	9	8	
AH 1600		6/3		24.4	Day 7	15	17	18	17	16	16		15	17	16	
					Day 8											
			Total			32	32	33	27	23	27	D/4	29	31	29	267

SURVIVIAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration MH Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
KW 1600		5/27			Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HH 1138	5/28	24.4	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1013	5/29	24.3	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1008	5/30	24.4	24.3	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1112	5/31	24.7	24.8	Day 4	4	2	1	4	4	4	3	5	✓	✓	
	AW 1024	6/1	24.1	24.7	Day 5	✓	8	✓	✓	✓	D/0	✓	✓	2	2	
	AW 0927	6/2	24.0	24.2	Day 6	10	✓	D/0	11	7		11	12	7	10	
AH 1600		6/3		24.3	Day 7	18	17		18	16		17	16	16	17	
					Day 8											
			Total			32	27	10/1	33	27	D/4	2	33	25	29	237 of leave or 296 for 8 liver

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

ENVIRON Test Log No. 16822

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TEST LOG NO. 16822

JOB NO. 20-19675H

CLIENT/SAMPLE ID: Georgia Pacific Crossett

TEST ORGANISM: Cd

DATE: 5/27/14

D.O. (mg/L)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	8.8	8.3	8.4	8.4	8.6	8.5	8.2	8.4	7.8	8.1	8.4	8.2	8.4	8.5
25	8.8	8.3	8.4	8.3	8.6	8.6	8.1	8.5	7.9	8.1	8.5	8.3	8.4	8.6
34	8.8	8.0	8.3	8.3	8.5	8.6	8.4	8.5	7.9	8.4	8.5	8.2	8.5	8.5
45	8.8	8.0	8.0	8.4	8.5	8.6	8.4	8.5	8.0	8.0	8.6	8.2	8.4	8.5
60	8.8	8.2	8.5	8.4	8.5	8.5	8.0	8.3	8.0	8.0	8.6	8.1	8.2	8.4
80	8.8	8.1	8.5	8.4	8.6	8.4	8.3	8.0	8.2	8.2	8.5	8.2	8.4	8.5
MH	8.6	8.4	8.5	8.2	8.5	8.6	8.1	8.0	8.0	8.2	8.4	8.4	8.4	8.4

pH (s.u.)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	6.94	7.56	7.25	7.83	7.91	7.88	7.37	7.53	6.70	7.82	6.79	7.92	8.01	7.90
25	7.68	8.14	7.59	7.90	7.61	8.08	7.56	8.19	7.42	8.19	7.49	8.07	7.63	7.87
34	7.60	8.22	7.71	8.14	7.64	8.27	7.69	8.31	7.54	8.26	7.49	7.84	7.61	8.21
45	7.86	8.39	7.82	8.30	7.72	8.39	7.73	8.41	7.67	8.42	7.54	8.34	7.63	8.37
60	7.93	8.47	7.87	8.41	7.78	8.52	7.81	8.52	7.68	8.53	7.78	8.57	7.72	8.44
80	7.97	8.60	7.90	8.56	7.83	8.56	7.86	8.63	7.72	8.59	7.81	8.68	7.78	8.86
MH	7.93	7.83	7.95	7.73	7.88	7.74	7.81	7.86	7.96	~~8.~~7.89	7.99	7.76	~~8.44~~ 7.99	7.74

Conductivity (µmhos/cm)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	103	120	116	119	121	135	71	80	77	73	80	118	115	175
25	576	634	547	568	643	509	534	512	505	519	544	605	607	683
34	724	791	758	792	775	759	705	719	701	721	725	742	787	851
45	931	1001	909	1022	1019	947	906	917	917	909	920	981	988	968
60	1193	1231	1290	1354	1290	1248	1176	1202	1198	1205	1210	1261	1214	1147
80	1543	1580	1607	1720	1681	1614	1541	1575	1546	1583	1536	1585	1571	1522
MH	258	219	212	275	254	259	212	225	200	217	223	258	244	280
Params Intl/Time:	✓ 1845	~~AM1150~~	PR0830	AH1020	AB0941	AB1012	~~HH0825~~	AW1239	AW1105	HH1152	AW0833	AW0935	AB0839	~~AB 1835~~ AW 615
Dilutions Intl/Time:	1730		PR0820		AW0937		HH0918		AW1055		AW0823		AB0828	16[illegible]
Control Water Batch#:			5543		5543		5543		5545		5545		5545	
Food Batch			4701,4676		4701,4676		4701,4676		4704,4696		4704,4696		4704,4696	

TEST LOG NO. 16822 CLIENT: Georgia Pacific Crossett DATE OF TEST: 5/27/14

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_3N mg/L
17567	Outfall 001	5/26-27/14	5/27/14	224	405	0.02	0.696
17578	Outfall 001	5/27-28/14	5/29/14	200	395	0.12	1.17
17586	Outfall 001	5/29-30/14	5/31/14	204	370	<0.02	1.82

CONTROL / DILUTION WATER

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH_3N mg/L
17551	River Water	5/22/14	5/28/14	25.6	20	0.13	<0.1
17577	River Water	5/22/14	5/29/14	23.7	23	<0.02	0.130
17585	River Water	5/22/14	5/31/14	~~23~~ 21.6 AW 6/1/14	21	<0.02	<0.1
5543	MH	5/23/14	5/28/14	82.4	43	<0.02	—
0545	MH	5/25/14	5/30/14	81.6	42	<0.02	—

HM 5/27/14

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

CHAIN-OF-CUSTODY

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

Project Name: Project Number:

Industry: GEORGIA PACIFIC PAPER

Phone: 870-567-8120 FAX: 870-364-9076

County: ASHLEY City: CROSSETT State: AR.

Sample Collected by (print): DANNY W. RICE NPDES Permit No.: AR0001210

Sample Collected by (signature): [signature] NPDES Test: ☐ No ☑ 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 Bannerfin shiner	Acute *Ceriodaphnia dubia*	Acute *Daphnia pulex*	Chronic Fathead minnow	Chronic *Ceriodaphnia dubia*	Continuous Batch Tests	Discrete Batch Tests	Other	Description Definitive or Screen	Sample B# (lab only)
RIVER	G	PLASTIC	NA	5-22-14	10:40AM	2	20										DILUTION WATER FOR NEXT WEEKS TEST	

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

Remarks:

Measured TRC (if applicable): ________ mg/L

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)			
[signature]	5-22-14	3:00pm		Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition: (lab use only)	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: 7.5 C	Containers/Volume Received: 20L	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 5/23/14	Time: 0900	pH upon arrival: 7.16	DO upon arrival: 8.1

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 5/23/14 0900 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? melted (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
17551	River	7.5	7.16	8.1	0.13

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ENVIRON Test Log No. 16822

CHAIN-OF-CUSTODY

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

Project Name: [illegible] Project Number: -

Industry: Georgia Pacific

Phone: 870-567-8170 FAX: 870-364-9076

County: Ashley City: Crossett State: AR

Sample Collected by (print): Paul Jordan

NPDES Permit No.: AR0001210

Sample Collected by (signature): Paul Jordan

NPDES Test: ☐ No ☑ Yes

Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cnt's	Total Volume in liters	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	Description Definitive or Screen	Sample B# (lab only)
Outfall 001	Comp	Plastic	Y	5/25/14	5/26/14	1							✓					[illegible]

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

Remarks:

Measured TRC (if applicable): 0.0 mg/L

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Paul Jordan	5/26/14	1:00pm	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]

Samples shipped via: ☒ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered

Condition: (lab use only) [illegible]

Receipt Temp: [illegible]

Containers/Volume Received: [illegible]

Date: 5/27/14 Time: 1200

pH upon arrival: [illegible] 7.85 HH 5/27

DO upon arrival: [illegible]

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 5/27/14 1700 by RC

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 (no time)
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
17567	outfall 001	5.3	7.85	8.8	20.02

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ENVIRON Test Log No. 16822

Project Name: Project Number:

Industry: GEORGIA PACIFIC PAPER

Phone: 870-567-8170 FAX: 870-364-9014

County: ASHLEY City: CROSSETT State: AR

Sample Collected by (print): DJR

Sample Collected by (signature):

NPDES Permit No.: AR0001210

NPDES Test: ☐ No ☑ 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 Bannerfin shiner	Acute *Ceriodaphnia dubia*	Acute *Daphnia pulex*	Chronic Fathead minnow	Chronic *Ceriodaphnia dubia*	Continuous Batch Tests	Discrete Batch Tests	Other	Description Definitive or Screen	Sample B# (lab only)
RIVER	G	PLASTIC	NA	5-27-14	10:40AM	1	10	■		■		■		■		■		[redacted]
OUTFALL 001	C	PLASTIC	YES	5-27-14	5-28-14	1	10	■		■		■		■		■		[redacted]
				6:17AM	6:18AM			■		■		■		■		■		[redacted]
								■		■		■		■		■		[redacted]
								■		■		■		■		■		[redacted]
								■		■		■		■		■		[redacted]
								■		■		■		■		■		[redacted]
								■		■		■		■		■		[redacted]

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:	Time:	Received by: (Signature)
	5-28-14	3:00PM	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [redacted]

Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered

Condition: [redacted] (lab use only)

Receipt Temp: [redacted]

Containers/Volume Received: [redacted]

Date: 5/29/14 Time: [redacted] pH upon arrival: [redacted] DO upon arrival: [redacted]

78) 782 8.4

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: GP Crossett

Date/Time received 0838 5/24/14 by

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
17577	River	2.1	7.52	8.1	0.02
17578	Outfall 001	2.1	7.82	8.4	0.12

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ENVIRON Test Log No. 16822

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Project Name: [redacted] Project Number: [redacted]

Industry: GEORGIA [redacted] PAPER

Phone: 870-367-8170 FAX: 870-364-9516

County: ASHLEY City: CROSSETT State: AR

Sample Collected by (print): [redacted] / PAUL

Sample Collected by (signature): [redacted]

NPDES Permit No.: AR 0001210

NPDES Test: ☐ No ☑ 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	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	Description Definitive or Screen	Sample B# (lab only)
								[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]
								[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]
RIVER	G	PLASTIC	NA	5-[redacted]-14	10:[redacted]am	1	10	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		175815
								[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]
OUTFALL 001	C	PLASTIC	YES	5-[redacted]-14 6:[redacted]pm	5-[redacted]-14 6:[redacted]pm	1	10	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		175816
								[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]
								[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]
								[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]
								[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]

* 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

CHAIN-OF-CUSTODY

ENVIRON

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

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition: (lab use only)
[redacted]					
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: [redacted]	Containers/Volume Received: 10 L of each
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [redacted]	Date: 5/30/14	Time: 1008

pH upon arrival: [redacted] DO upon arrival: [redacted]

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 5/21/14 1008 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
17585	RW	3.1	7.53	8.5	<0.02
17586	Outfall001	2.9	7.79	8.7	<0.02

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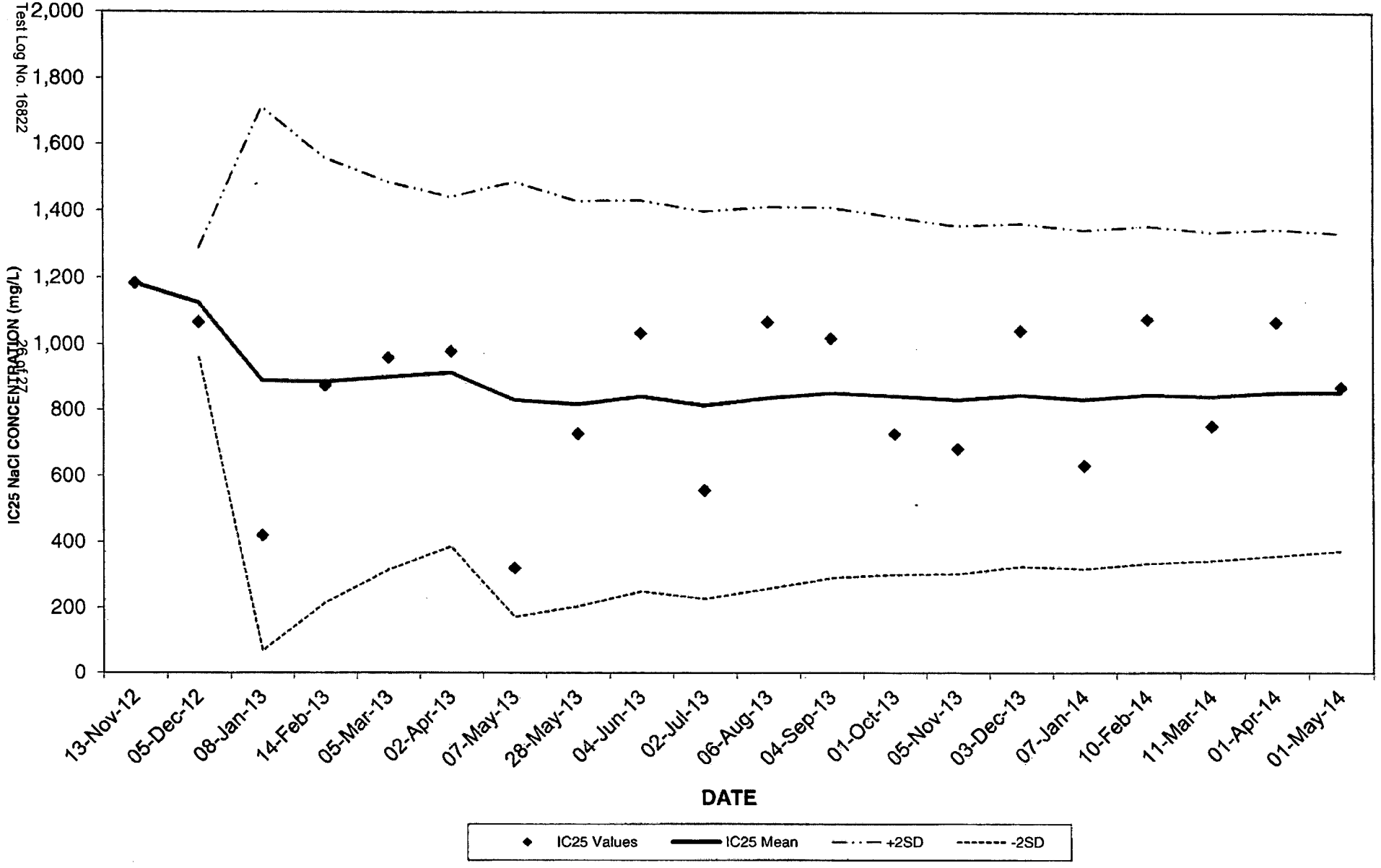
CHRONIC REFERENCE TOXICANT (NaCl) 2012-2014
Ceriodaphnia dubia



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6/9/2014

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

ENVIRON Test Log No. 16822

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	15742	13-Nov-12	100	100	31.6	2,000	>2,000	1,000	2,000	10.4	1,183	1,183				
2	15784	05-Dec-12	100	100	36.6	2,000	>2,000	500	1,000	12.8	1,067	1,125	82	1,289	961	5
3	15864	08-Jan-13	100	80	30.5	2,000	>2,000	250	500	24.3	420	890	411	1,712	68	38
4	15937	14-Feb-13	100	100	32.2	2,000	>2,000	500	1,000	18.1	875	886	336	1,558	215	33
5	15966	05-Mar-13	100	100	33.7	2,000	>2,000	500	1,000	21.8	960	901	293	1,486	316	29
6	16018	02-Apr-13	90	100	29.3	2,000	>2,000	500	1,000	16.8	979	914	264	1,441	387	26
7	16087	07-May-13	100	80	34.4	1,000	2,000	<125	125	27.3	321	829	329	1,487	171	37
8	16124	28-May-13	100	90	28.9	2,000	>2,000	500	1,000	20.5	727	817	307	1,430	203	35
9	16137	04-Jun-13	90	90	30.0	1,000	2,000	500	1,000	16.2	1,034	841	296	1,432	249	33
10	16188	02-Jul-13	100	80	21.5	2,000	>2,000	500	1,000	35.7	556	812	293	1,398	226	34
11	16257	06-Aug-13	100	90	29.1	1,000	2,000	500	1,000	24.9	1,068	835	289	1,413	258	33
12	16308	04-Sep-13	100	90	27.1	2,000	>2,000	500	1,000	14.6	1,018	851	280	1,411	290	32
13	16347	01-Oct-13	100	90	28.0	2,000	>2,000	1,000	2,000	26.0	726	841	270	1,382	300	31
14	16426	05-Nov-13	100	80	31.0	2,000	>2,000	250	500	27.1	681	830	263	1,356	303	31
15	16497	03-Dec-13	100	90	29.0	2,000	>2,000	500	1,000	12.3	1,041	844	260	1,363	325	30
16	16552	07-Jan-14	100	90	29.4	1,000	2,000	500	1,000	20.2	630	830	256	1,343	318	30
17	16630	10-Feb-14	100	100	31.1	1,000	2,000	500	1,000	13.4	1,076	845	255	1,355	334	29
18	16682	11-Mar-14	100	90	23.0	1,000	2,000	500	1,000	24.3	750	840	249	1,337	342	29
19	16730	01-Apr-14	100	100	28.8	2,000	>2,000	500	1,000	12.3	1,067	852	247	1,346	357	28
20	16782	01-May-14	100	100	33.6	2,000	>2,000	500	1,000	13.5	868	852	241	1,334	371	28
Avg			99	92	30	1684	632	500	1007	20	852	882	277	1419	312	

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.

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Becky Blankenship
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Crossett, AR 71635

Origin ID: ELDA

FedEx Express

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Ship Date: 25JUL14
ActWgt: 1.0 LB
CAD: 102787395/INET3550

Delivery Address Bar Code

Ref # dmr
Invoice #
PO #
Dept #

SHIP TO: (501) 682-0718 BILL SENDER
CRAIG UYEDA
ADEQ
5301 NORTHSHORE DR
NORTH LITTLE ROCK, AR 72118

MON - 28 JUL 10:30A
PRIORITY OVERNIGHT

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