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
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July 20, 2012

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 2012. 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) 567-8144 or by email at james.cutbirth@gapac.com.

Sincerely,

James W. Cutbirth

James W. Cutbirth
Environmental Services Superintendent

TRE Activities Report
For Second Quarter of 2012

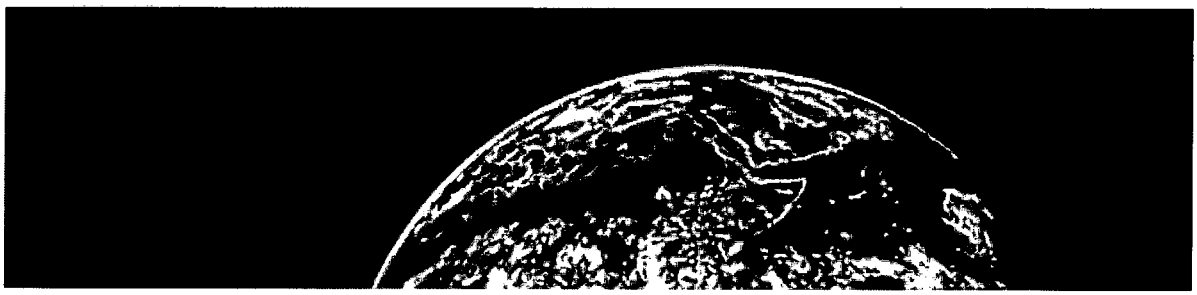
A Toxicity Reduction Evaluation (TRE) Action Plan was submitted on July 12, 2011 after sub-lethal effects were demonstrated in three consecutive Whole Effluent Toxicity (WET) tests for *Ceriodaphnia dubia*, as required by Part II, Condition 15, Paragraph 5 of NPDES permit number AR0001210. As per the plan the mill has begun conducting monthly WET testing for *Ceriodaphnia dubia* in an attempt to capture episodes of sub-lethal toxicity.

All samples collected during the second quarter did demonstrate sub-lethal effects. A series of treatment manipulations were performed on the remaining sample collected during week of April 2, 2012. The results of these manipulations are outlined in Table 1 below. It was noted that toxicity was again significantly reduced by the ferric chloride treatments during the investigation process. This is consistent with previous manipulation results. We are continuing investigations and testing to determine if we can identify the source(s) of the observed effects.

TABLE 1.
Percent Effect to C. dubia Reproduction for Untreated and Treated Effluent
Georgia Pacific, Crossett Arkansas - April 2012

Water/Test Date	Average Neonates per Female	Percent Inhibition
River Water 4/3/12	28.6	NA
80% 001 Effluent	21.3	26[1]
River Water 4/13/12	32.0	NA
80% 001 Effluent[2]	19.4	39[1]
80% GAC[3] treated 001	19.7	38[1]
80% Ferric/Floc treated 001	30.9	3[1]

[1] Impaired compared to river water control.
[2] 4/13/12 effluent sample used is a composite of the same samples used for the 4/3/12 test.
[3] GAC = Granular activated carbon.



Chronic *Ceriodaphnia dubia* Toxicity Test Results

Prepared for:

Georgia-Pacific Crossett Mill
Crossett, Arkansas

Prepared by:
ENVIRON International Corporation
Nashville, Tennessee

Date:
May 2012

Project Number:
20-19675E

ENVIRON

June 11, 2012

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

Re: Chronic *Ceriodaphnia dubia* Toxicity Test: May 2012
ENVIRON Job No. 20-19675E

Dear Ms. Johnson:

ENVIRON conducted a chronic (7-day) whole effluent toxicity (WET) test for Georgia-Pacific in Crossett, AR. The test was conducted according to requirements in Arkansas NPDES permit AR0001210. This test was conducted for an accelerated test schedule in response to previous tests that failed to meet sublethal permit limits for *Ceriodaphnia dubia (C. dubia)* in February to April, 2011. Composite samples of Outfall 001 effluent were collected on May 21, 23, and 25, 2012. The samples were received at ENVIRON on May 22, 24, and 26, 2012, within the USEPA-required receipt temperature range of 0-6.0 °C. The grab samples of river water were collected on May 21, and 24, and were received the day following collection. The test organism utilized for the chronic toxicity test was *C. dubia*. 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 as per EPA-821-R-02-013. All control organisms met USEPA test acceptability criteria. The results of the chronic toxicity tests are as follows:

TEST RESULTS FOR OUTFALL 001 EFFLUENT

Permit Limits	*C. dubia*
NOEC Value 80% (lethality)	80%
NOEC Value 80% (sub-lethality)	45%

The results of the chronic test with *C. dubia* indicated No Observable Effect Concentration (NOEC) values for survival (lethality) of 80 percent effluent. The *C. dubia* test results indicate no significant toxicity at the critical dilution to the survival of *C. dubia*. The sub-lethal NOEC value for *C. dubia* reproduction was 45 percent, which indicates sub-lethal toxicity to *C. dubia* below the reproduction critical dilution for *C. dubia*.

The river water control for the *C. dubia* test met USEPA criteria for test acceptability. The Coefficient of Variation (CV) values for reproduction in the control and critical dilution are 8.76 and

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

23.68 percent respectively, which meet the control CV limit of 40 percent for findings of toxicity. The PMSD value was 13.1 percent, which is within the USEPA PMSD bounds of 13 to 47 percent for *C. dubia* reproduction.

The effluent concentration-response curve may be described as a Type 1 response in EPA 821-B-00-004 *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing.* A Type 1 response demonstrates an ideal dose response. Since precision and dose response criteria are normal, the NOEC result is considered valid for the purpose of assessing 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 24 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 Scientist

Robin L. Richards, REM
Principal

DATA REVIEW FORM

ACUTE AND CHRONIC WET TESTS

ENVIRON INTERNATIONAL

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

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

Analysis ID:	18-2294-0296	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 May-12 14:48	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes
Batch ID:	00-7972-6380	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	22 May-12	**Protocol:**	EPA/600/4-91/002 (1994)	**Diluent:**	Receiving Water
Ending Date:	28 May-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	00-5204-3642	**Code:**	31A1F7A	**Client:**	GPAC Crossett
Sample Date:	21 May-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (MAY)
Receive Date:	22 May-12	**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	1	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

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

Data Summary

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

7d Survival Rate Detail

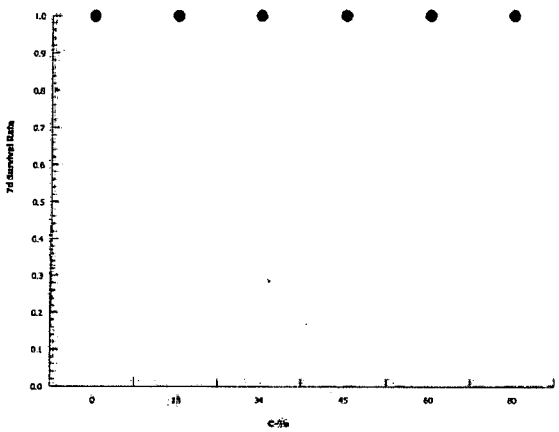
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
34		1	1	1	1	1	1	1	1	1	1
45		1	1	1	1	1	1	1	1	1	1
60		1	1	1	1	1	1	1	1	1	
80		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

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

Analysis ID:	18-2294-0296	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 May-12 14:48	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

Graphics



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

Analysis ID:	05-5337-2499	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 May-12 14:49	**Analysis:**	Nonparametric-Multiple Comparison	**Official Results:**	Yes
Batch ID:	00-7972-6380	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	22 May-12	**Protocol:**	EPA/600/4-91/002 (1994)	**Diluent:**	Receiving Water
Ending Date:	28 May-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	00-5204-3642	**Code:**	31A1F7A	**Client:**	GPAC Crossett
Sample Date:	21 May-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (MAY)
Receive Date:	22 May-12	**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	13.1%

Wilcoxon/Bonferroni Adj Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	91	NA	3	18	0.7536	Exact	Non-Significant Effect
		34	77	NA	4	18	0.0837	Exact	Non-Significant Effect
		45	78	NA	3	18	0.1012	Exact	Non-Significant Effect
		60*	53	NA	2	17	0.0032	Exact	Significant Effect
		80*	55	NA	0	18	<0.0001	Exact	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	37.3	15 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1246.568	249.3135	5	12.03	<0.0001	Significant Effect
Error	1098.822	20.73249	53			
Total	2345.39		58			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	7.235	15.09	0.2037	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9405	0.9451	0.0062	Non-normal Distribution

Reproduction Summary

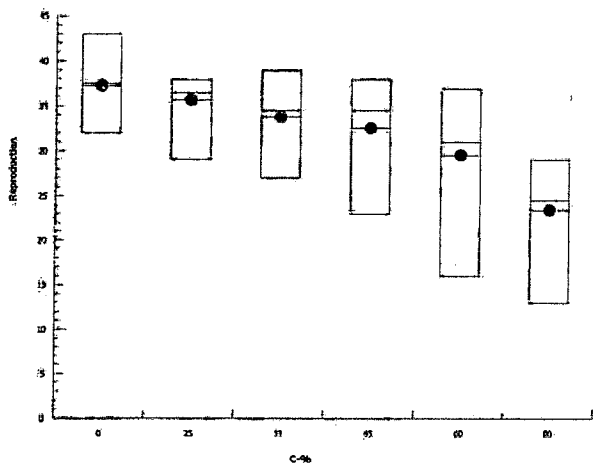
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	10	37.3	34.96	39.64	37.5	32	43	1.033	8.76%	0.0%
25		10	35.7	33.54	37.86	36.5	29	38	0.9551	8.46%	4.29%
34		10	33.8	31.26	36.34	34.5	27	39	1.123	10.51%	9.38%
45		10	32.6	28.92	36.28	34.5	23	38	1.628	15.79%	12.6%
60		9	29.56	24.91	34.2	31	16	37	2.015	20.45%	20.76%
80		10	23.4	19.44	27.36	24.5	13	29	1.752	23.68%	37.27%

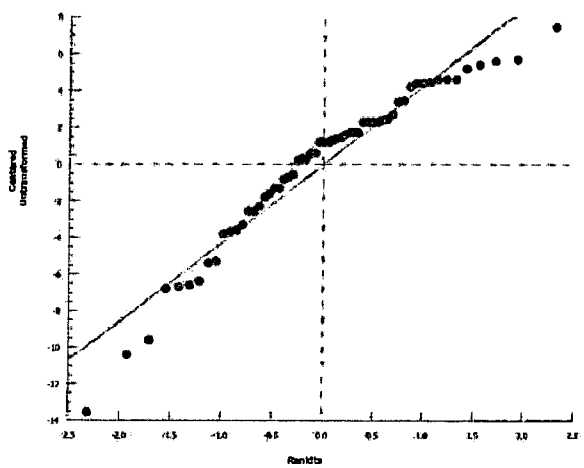
Reproduction Detail

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	43	39	40	39	39	36	34	35	36	32
25		38	36	37	32	36	38	35	38	38	29
34		33	34	38	39	35	32	35	35	30	27
45		38	36	37	26	37	23	35	31	34	29
60		16	31	37	27	27	34	32	33	29	
80		29	24	25	13	18	28	28	28	17	24

Analysis ID:	05-5337-2499	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 May-12 14:49	**Analysis:**	Nonparametric-Multiple Comparison	**Official Results:**	Yes

Graphics





CETIS Analytical Report

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

Analysis ID:	11-8918-0499	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 May-12 14:51	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	00-7972-6380	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	22 May-12	**Protocol:**	EPA/600/4-91/002 (1994)	**Diluent:**	Receiving Water
Ending Date:	28 May-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	00-5204-3642	**Code:**	31A1F7A	**Client:**	GPAC Crossett
Sample Date:	21 May-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (MAY)
Receive Date:	22 May-12	**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	334016	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	37.3	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	65.14	52.9	74.06	1.535	1.35	1.89

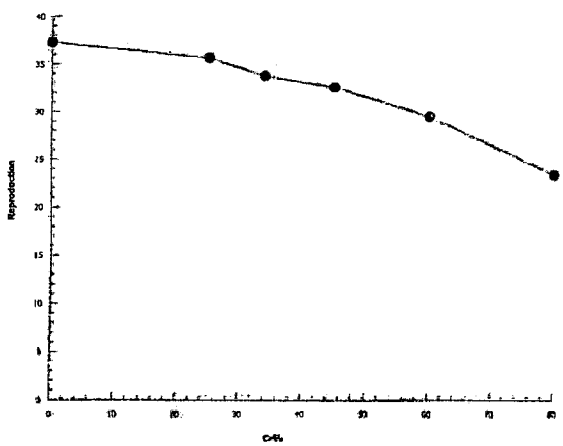
Reproduction Summary

			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Receiving Water	10	37.3	32	43	1.033	3.268	8.76%	0.0%
25		10	35.7	29	38	0.9551	3.02	8.46%	4.29%
34		10	33.8	27	39	1.123	3.553	10.51%	9.38%
45		10	32.6	23	38	1.628	5.147	15.79%	12.6%
60		9	29.56	16	37	2.015	6.044	20.45%	20.76%
80		10	23.4	13	29	1.752	5.542	23.68%	37.27%

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	43	39	40	39	39	36	34	35	36	32
25		38	36	37	32	36	38	35	38	38	29
34		33	34	38	39	35	32	35	35	30	27
45		38	36	37	26	37	23	35	31	34	29
60		16	31	37	27	27	34	32	33	29	
80		29	24	25	13	18	28	28	28	17	24

Graphics



CETIS Analytical Report

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

Analysis ID:	05-5555-3344	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 May-12 14:55	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	00-7972-6380	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	22 May-12	**Protocol:**	EPA/600/4-91/002 (1994)	**Diluent:**	Receiving Water
Ending Date:	28 May-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	00-5204-3642	**Code:**	31A1F7A	**Client:**	GPAC Crossett
Sample Date:	21 May-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (MAY)
Receive Date:	22 May-12	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	Outfall 001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	Test Result	PMSD
Untransformed	NA	C > T	NA	NA	Sample passes reproduction endpoint	7.27%

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		Lab Water	1.471	1.734	2.712	18	0.0793	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	37.3	15 - NL	Yes	Passes Acceptability Criteria
Control Resp	35	15 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	26.45	26.45	1	2.163	0.1586	Non-Significant Effect
Error	220.1	12.22778	18			
Total	246.55		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.29	6.541	0.7103	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9625	0.866	0.5942	Normal Distribution

Reproduction Summary

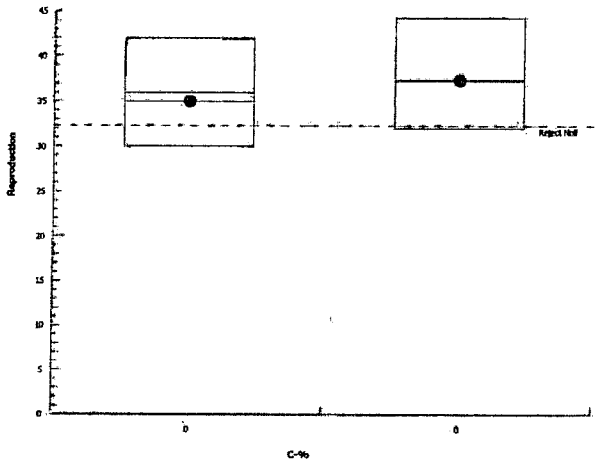
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	10	37.3	34.96	39.64	36	32	43	1.033	8.76%	0.0%
0	Lab Water	10	35	32.34	37.66	36	30	42	1.174	10.61%	6.17%

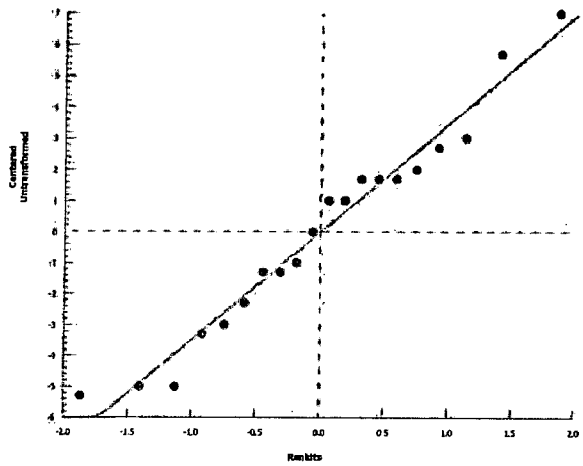
Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	36	30	32	36	35	38	42	30	37	34
0	Receiving Water	43	39	40	39	39	36	34	35	36	32

Analysis ID:	05-5555-3344	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	29 May-12 14:55	**Analysis:**	Parametric-Two Sample	**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.:	15387	PHOTOPERIOD:	16 hr light/8 hr dark
JOB NUMBER.:	20-19675F	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) :	y	NO. REPLICATES:	10

ORGANISM SOURCE INFORMATION:

AGE (date): 5/21/12
TEMP @ TEST START: 24.1
RANDOMIZED BY: LH

TEST START:
HOURS: 1019 DATE: 5/22/12

TEST END:
HOURS: 1200 DATE: 5/28/12

SOURCE ID:	AGE (time):
9907	1210-1700

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Control River Water Temp (°C)			REPLICATES 1	2	3	4	5	6	7	8	9	10	Notes
					Adult	11	1	13	9	8	2	4	17	14	3	
LH 1019		5/22	24.6		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 1210	5/23	24.7	24.8	Day 1	✓	✓	✓	✓	/	/	/	/	/	/	
	LH 1013	5/24	24.0	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1019	5/25	24.4	25.1	Day 3	✓	5	5	6	5	6	✓	✓	3	5	
	AW 1128	5/26	24.3	24.2	Day 4	7	11	✓	12	✓	11	6	5	✓	10	
	AW 1105	5/27	24.0	24.1	Day 5	17	✓	11	✓	12	✓	9	10	11	✓	
AW 1200	/	5/28		24.3	Day 6	19	23	24	21	22	19	19	20	22	17	100 %
					Day 7											
					Day 8											
			Total			~~3~~43 AW	39	40	39	39	36	34	35	36	32	373 [illegible]

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

TEST LOG # 15387 JOB # 20-19675F

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											
LM 1019		5/22	24.1		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1210	5/23	24.4	24.3	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1013	5/24	24.0	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1019	5/25	24.6	25.0	Day 3	4	5	6	5	6	5	6	✓	5	4	
	AW 1128	5/26	24.0	24.1	Day 4	✓	✓	10	9	10	✓	10	6	✓	✓	
	AW 1105	5/27	24.0	24.0	Day 5	12	11	✓	✓	✓	12	✓	13	13	10	
AW 1200		5/28		24.7	Day 6	22	20	21	18	20	21	19	19	20	15	
					Day 7											
					Day 8											
			Total			38	36	37	32	36	38	35	38	38	29	357

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
LM 1019		5/22	24.2		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1210	5/23	24.1	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1013	5/24	24.0	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1019	5/25	25.0	24.4	Day 3	✓	5	6	6	✓	5	5	5	5	3	
	AW 1128	5/26	24.0	24.0	Day 4	5	11	11	11	6	10	✓	✓	8	6	
	AW 1105	5/27	24.0	24.0	Day 5	11	✓	✓	✓	11	✓	11	11	✓	✓	
AW 1200		5/28		24.9	Day 6	17	18	21	22	18	17	19	19	17	18	
					Day 7											
					Day 8											
			Total			33	34	38	39	35	32	35	35	30	27	338

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

TEST LOG # 15387 JOB # 20-19675F

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											
LH 1019		5/22	24.1		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 1210	5/23	24.2	24.1	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 1013	5/24	24.0	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1019	5/25	24.2	25.2	Day 3	4	5	5	5	5	5	5	✓	6	5	
	AW 1128	5/26	24.0	24.1	Day 4	✓	10	10	✓	✓	✓	✓	6	✓	10	
	AW 1105	5/27	24.7	24.0	Day 5	13	✓	✓	8	13	4	11	9	7	14	
AW 1200		5/28		24.8	Day 6	21	21	22	13	19	14	19	16	21	~~21~~ ✓ AW 5/29/12	
					Day 7											
					Day 8											
			Total			38	36	37	26	37	23	35	31	34	29	326

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
LH 1019		5/22	24.0		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 1210	5/23	24.1	24.6	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 1013	5/24	24.0	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1019	5/25	24.0	24.1	Day 3	✓	6	5	5	5	5	✓	✓	6	4	
	AW 1128	5/26	24.0	24.3	Day 4	6	✓	9	8	7	11	6	6	7	7	
	AW 1105	5/27	24.1	24.2	Day 5	10	6	✓	✓	✓	✓	12	10	✓	✓	
AW 1200		5/28		24.8	Day 6	✓	19	23	14	15	18	14	17	Miss	18	
					Day 7											
					Day 8											
			Total			16	31	37	~~29~~ 27	27	3	32	33	N-1	29	266/270 N-1 296

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

TEST LOG # 15387 JOB # 20-19675F

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											
LM 1019		5/22	24.0		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1210	5/23	24.1	24.3	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1013	5/24	24.0	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1019	5/25	24.8	25.1	Day 3	6	5	5	5	5	5	6	✓	5	4	
	AW 1128	5/26	24.0	24.1	Day 4	✓	✓	6	8	✓	✓	✓	5	✓	7	
	AW 1105	5/27	24.0	24.0	Day 5	9	8	✓	✓	✓	7	8	10	✓	✓	
AW 1200		5/28		25.0	Day 6	14	11	14	✓	13	16	14	13	12	13	70%
					Day 7											
					Day 8											
			Total			29	24	25	13	18	28	28	28	17	24	234

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
LM 1019		5/22	24.0		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1210	5/23	24.1	24.0	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1013	5/24	24.0	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1019	5/25	25.1	25.3	Day 3	3	5	4	6	6	5	✓	✓	4	6	
	AW 1128	5/26	24.8	25.0	Day 4	✓	7	9	10	✓	✓	8	5	✓	✓	
	AW 1105	5/27	24.3	24.0	Day 5	13	✓	✓	✓	11	11	12	10	12	9	
AW 1200		5/28		25.2	Day 6	20	18	19	20	18	22	22	15	21	19	100
					Day 7											
					Day 8											
			Total			36	30	32	36	35	38	42	30	37	34	350

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

L/Ecotoxlab/Labforms/ToxTestSheets/7DchronicCD.doc

TEST LOG NO. 15387 CLIENT/SAMPLE ID: Georgia Pacific Crossett

JOB NO. 20-19675F TEST ORGANISM: Cd DATE: 5/22

ENVIRON Test Log No. 15387

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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	7.8	7.8	8.1	8.8	8.6	8.7	8.3	8.6	8.4	8.7	8.7	7.6		
25	7.9	7.9	8.0	8.1	8.5	8.1	8.0	8.5	8.1	8.6	8.4	7.5		
34	8.2	8.0	7.9	9.1	8.4	8.3	8.1	8.4	8.0	8.8	8.4	7.4		
45	7.9	8.0	7.9	9.0	8.4	8.2	7.9	8.4	8.0	8.5	8.3	7.4		
60	8.3	8.1	8.0	9.0	8.5	8.4	7.9	8.6	8.1	8.6	8.5	7.5		
80	8.1	7.9	8.0	9.0	8.5	8.5	8.0	8.3	8.0	8.6	8.4	7.2		
MH	8.6	8.4	8.2	8.8	8.4	8.4	8.0	8.3	8.1	8.6	8.4	7.8		

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	7.80	7.80	7.87	7.68	7.76	8.12	7.42	7.57	7.43	7.62	7.56	8.09		
25	7.47	7.74	7.76	7.95	7.32	8.16	7.46	8.25	7.51	8.16	7.57	8.37		
34	7.56	8.03	7.42	8.20	7.51	8.27	7.64	8.41	7.62	8.41	7.63	8.50		
45	7.73	8.25	7.75	8.37	7.62	8.34	7.75	8.51	7.75	8.54	7.73	8.62		
60	7.82	8.40	7.84	8.55	7.73	8.47	7.84	8.61	7.81	8.66	7.86	8.70		
80	7.91	8.60	7.90	8.69	7.82	8.59	7.91	8.73	7.88	8.74	7.89	8.84		
MH	7.82	7.45	7.45	7.79	7.76	8.01	7.92	7.95	7.95	7.96	7.98	8.00		

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	104	127	94	~~208~~	~~240~~	110	108	107	122	123	128	109		
25	6476	1075	6001	658	6089	721	704	679	622	653	664	685		
34	852	872	815	849	888	902	926	918	901	874	851	875		
45	1113	1135	1093	1126	1161	1199	1126	1116	1106	1096	1094	1120		
60	1397	1446	1375	1434	1451	1498	1428	1409	1339	1359	1402	1433		
80	1861	1887	1752	1821	1864	1982	1833	1784	1759	1822	1785	1818		
MH	221	255	185	208	210	227	207	233	251	260	254	248		

MH 5/24 120 Day 2 109 CR

Params Init/Time:	CR0825	CR1255	AW0754	AW1224	CR0915	CR1155	CR0805	AW1242	AW1035	AW1330	AW0915	AW1314		
Dilutions Init/Time:	AW0815		AW0749		CR0905		AW0750		AW1025		AW0905			
Control Water Batch#:	4905	MH	4906		4906		4908	MW	4908	MH	4903			
Food Batch	3941, 13		13,4R		45,13		45,13		45,13		47,13			

TEST LOG NO. 15387 CLIENT: Georgia Pacific Crossett DATE OF TEST: 5/22/12

JOB NO. 20-19675F TEST TYPE(S) PERFORMED: Fm & Cd

100% EFFLUENT

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH_3N mg/L
15064	Outfall 001	5/20-21/12	5/22/12	42	410	0.08	0.356
15076	001	5/22-23/12	5/24/12	155	504	0.07	0.742
15092	001	5/24-25/12	5/26/12	192	430	0.07	1.11

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
15065	River Water	5/21/12	5/22/12	24	29	0.07	<0.1
4905	MH	5/18/12	5/20/12	84	53	<0.02	
15077	RW	5/21/12	5/24/12	32	20	0.02	<0.1
4906	MH	5/19/12	5/23/12	84	55	<0.02	
15093	RW	5/25/12	5/26/12	29.6	27	0.06	<0.1
4909	MH	5/21/12	5/25/12	82	51	<0.02	

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

ENVIRON Test Log No. 15387

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CHAIN-OF-CUSTODY

ENVIRON
201 Summit View Drive, Suite 300
Brentwood, TN 37027
PHONE: (615) 377-4775
FAX: (615) 377-4976

Project Name:
Project Number:
Industry: Georgia-Pacific
Phone: 870-567-8170 FAX: 870-364-9070
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

Analysis Requested

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	Yes	5/20/12 3:12am	5/21/12 6:50am	1							✓					15064
River	Grab	Plastic	NA	5/21/12 11:20am		1											Dilution Water	15065

* 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)	
Rachel Johnson	5/21/12	3:00pm		Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered; Condition: (lab use only) on ice
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: 1.6, 1.3; Containers/Volume Received: 1/10L, 1L
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 5/22/12; Time: 0710; pH upon arrival: 8.01, 6.99; DO upon arrival: 12.0, 13.6

ENVIRON Test Log No. 15387

21 of 24

Project Name: | Project Number:

Industry: Georgia-Pacific Crossett

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

County: Ashley City: Crossett State: AR

Sample Collected by (print): Rachel Johnson

Sample Collected by (signature): Rachel Johnson

NPDES Permit No.: AR0001210

NPDES Test: ☐ No ☑ Yes

CHAIN-OF-CUSTODY

ENVIRON

201 Summit View Drive, Suite 300
Brentwood, TN 37027
PHONE: (615) 377-4775
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	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)
Outfall 001	Comp	Plastic	Yes	5/22/12 6:36	5/23/12 6:39	1							✓					15076
River	Grab	Plastic	NA	5/21/12 11:20am		1											Dilution Water	15077

* 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)
Rachel Johnson	5/23/12	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)

Receipt Temp: 0.8 1.3

Containers/Volume Received: 1 1oL 1 4L

Date: 5/24/12 Time: 0723

pH upon arrival: 7.6 7.86

DO upon arrival: 9.6

77 719 M.S

ENVIRON Test Log No. 15387

CHAIN-OF-CUSTODY

ENVIRON
201 Summit View Drive, Suite 300
Brentwood, TN 37027
PHONE: (615) 377-4775
FAX: (615) 377-4976

Project Name: Project Number:

Industry: Georgia Pacific Crossett

Phone: 870-567-3170 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	5/24/12 6:35	5/25/12 6:35am								✓					15092
River	Grab	Plastic	NA	6/24/12 11:38am													Dilution Water	15093

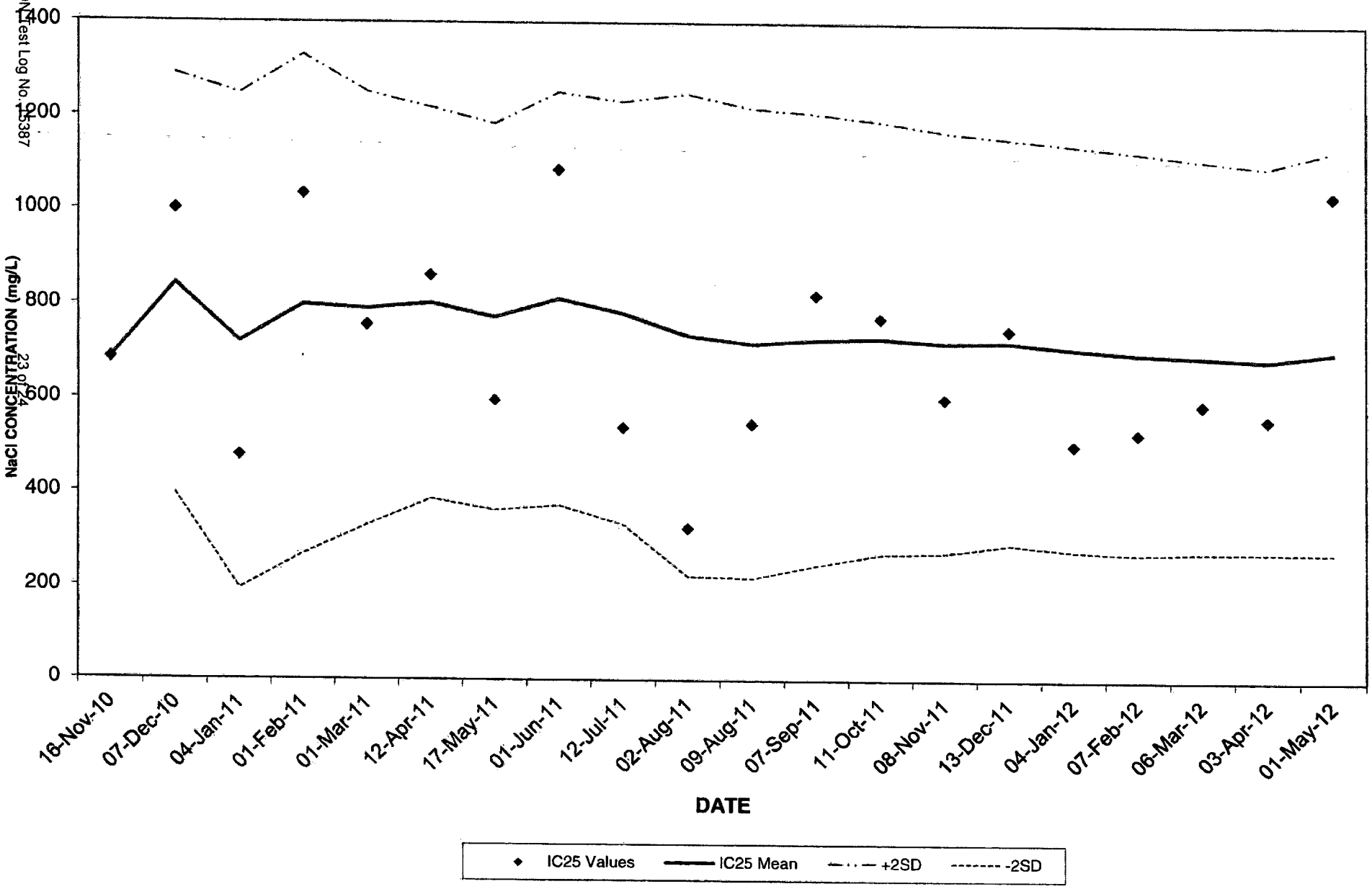
* Matrix: SS - Soil GW - Groundwater WW - Wastewater (circled) AW - Ambient Water ML - Mixed Liquor SL - Sludge SD - Sediment OT - Other ______

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	5/25/12	15:00			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: 2.1, 1.9	Containers/Volume Received: 1 4L, 1 10L
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) Anita Bryant-Winters	Date: 5/26/12	Time: 0915
				pH upon arrival: 7.45, 7.56	DO upon arrival: 8.4, 11.8

CHRONIC REFERENCE TOXICANT (NaCl) 2010-2012
Ceriodaphnia dubia



9003/05reftox/cdchronic

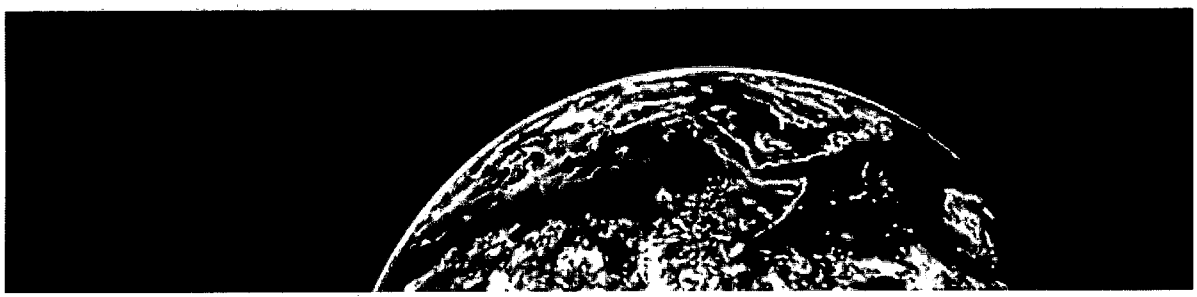
5/31/2012

Ceriodaphnia dubia CHRONIC REFERENCE TOXICANT TESTING - SODIUM CHLORIDE (NaCl) 2010-2012

ENVIRON Test Log No. 15387

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	13043	16-Nov-10	90	90	23.8	1,000	2,000	500	1,000	21.8	686	686				0
2	13067	07-Dec-10	80	80	23.1	2,000	>2,000	1,000	2,000	28.9	1002	844	223	1,291	397	19
3	13099	04-Jan-11	100	90	17.5	1,000	2,000	500	1,000	27.1	479	722	263	1,249	196	30
4	13147	01-Feb-11	90	100	25.7	1,000	2,000	1,000	2,000	22.1	1034	800	266	1,331	269	29
5	13208	01-Mar-11	100	90	16.2	500	1,000	500	1,000	24.7	759	792	231	1,253	331	26
6	13583	12-Apr-11	100	90	33.2	2,000	>2,000	500	1,000	18.3	863	804	208	1,221	387	24
7	13649	17-May-11	100	90	30.0	1,000	2,000	500	1,000	24.5	598	774	206	1,186	363	25
8	13667	01-Jun-11	100	100	31.7	1,000	2,000	500	1,000	13.1	1087	814	220	1,254	373	25
9	13736	12-Jul-11	100	90	27.5	1,000	2,000	500	1,000	21.3	540	783	225	1,233	333	27
10	13776	02-Aug-11	100	100	29.9	1,000	2,000	250	500	28.4	326	737	257	1,251	224	33
11	13793	09-Aug-11	100	100	28.4	500	1,000	250	500	19.9	549	720	250	1,221	220	33
12	13829	07-Sep-11	100	100	31.3	1,000	2,000	250	500	8.7	823	729	240	1,210	248	32
13	13887	11-Oct-11	100	100	28.3	2,000	>2,000	500	1,000	16.2	775	732	230	1,193	271	30
14	13963	08-Nov-11	100	90	17.9	2,000	>2,000	500	1,000	26.1	603	723	224	1,171	275	30
15	14306	13-Dec-11	100	100	21.4	1,000	2,000	500	1,000	16.8	750	725	216	1,157	293	29
16	14055	04-Jan-12	90	80	25.4	1,000	2,000	500	1,000	46.4	504	711	216	1,143	279	29
17	15131	07-Feb-12	100	100	27.1	1,000	2,000	500	1,000	29.7	530	700	214	1,128	273	30
18	15206	06-Mar-12	100	100	31.4	1,000	2,000	500	1,000	24.6	592	694	209	1,112	277	29
19	15283	03-Apr-12	100	100	33.4	500	1,000	500	1,000	27.3	560	687	205	1,098	277	29
20	15344	01-May-12	100	90	32.9	2,000	>2,000	500	1,000	22.4	1036	705	214	1,134	276	30
Avg			98	94	27	1175	1350	513	1025	23	705	744	227	1202	293	

Notes:
NOEC - No Observable Effect Concentration (survival or reproduction)
LOEC - Lowest Observable Effect Concentration (survival or reproduction)
ACCEPTABLE TEST RESULTS - A reproduction NOEC ranging from 250 mg/L to 1,000 mg/L.
(*) Minimum USEPA CONTROL CRITERIA - 80 percent survival, 80 percent with 3 broods, and average reproduction of 15 neonates/adult.



Chronic Toxicity Test Results

Prepared for:

Georgia-Pacific Crossett Mill
Crossett, Arkansas

Prepared by:
ENVIRON International Corporation
Nashville, Tennessee

Date:
June 2012

Project Number:
20-19675E

ENVIRON

ENVIRON

July 2, 2012

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

Re: Results of Chronic Toxicity Test: June 2012
ENVIRON Job No. 20-19675E

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 4, 6, and 8, 2012. The samples were received at ENVIRON on June 5, 7, and 9, 2012, within the USEPA-required receipt temperature range of 0-6.0 °C. The grab samples of river water were received on the same dates as the effluent samples, and in good condition. Test organisms utilized for the chronic toxicity tests were the fathead minnow (*Pimephales promelas*) and *Ceriodaphnia dubia* (*C. dubia*). 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 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%	34%

The results of the chronic tests with the fathead minnow indicated No Observable Effect Concentration (NOEC) values for survival (lethality) of 80 percent effluent. The fathead minnow test results indicate no significant toxicity at the critical dilution to the survival of fathead minnow. The sub-lethal NOEC value for fathead minnow growth was 80 percent, which demonstrates no sub-lethal toxicity to the fathead minnow. The results of the chronic tests with *C. dubia* indicated No Observable Effect Concentration (NOEC) values for survival (lethality) of 80 percent effluent. The *C. dubia* test results indicate no significant toxicity at the critical dilution to the survival of *C. dubia*. The sub-lethal NOEC value for *C. dubia* reproduction was 34 percent, which demonstrates sub-lethal toxicity to *C. dubia*.

The laboratory water control for the fathead minnow test met USEPA criteria for test acceptability. The Coefficient of Variation (CV) values for survival in the control and critical dilution are 7.2 and 0 percent respectively. The Coefficient of Variation (CV) values for growth in the control and critical

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dilution are 16.0 and 12.0 percent respectively, and are below the CV limit of 40 percent for findings of no toxicity. The PMSD value was 25.3 percent, which is within the USEPA PMSD bounds of 12 to 30 percent for fathead minnow growth. The effluent concentration-response curve is flat and not described in EPA 821-B-00-004 *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing.* A flat concentration-response demonstrates a lack of toxicity. This test is considered valid for assessment of permit compliance. The monthly reference toxicant test also met all the test acceptability criteria.

All *C. dubia* test controls met USEPA criteria for test acceptability. The reproduction CV values for the control and critical dilution are 11.8 and 40.0 percent respectively, which meets the Test Acceptability Criteria (TAC) limit of 40 percent for a finding of no toxicity (not relevant since sample toxicity was determined). The PMSD value was 19.5 percent, which is within the USEPA PMSD bounds of 13 to 47 percent for *C. dubia* reproduction. The effluent concentration-response curve can be described as a Type 1 response in EPA 821-B-00-004. A Type 1 concentration-response is considered an "ideal" response, and demonstrates a toxic effect. 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 38 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

Robin L. Richards

Richard Lockwood
Project Scientist

Robin L. Richards, REM
Principal

DATA REVIEW FORM

ACUTE AND CHRONIC WET TESTS

ENVIRON INTERNATIONAL

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 with Statistical Data

CETIS Analytical Report

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

Analysis ID:	08-5868-9022	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	21 Jun-12 17:26	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	13-5453-4286	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	05 Jun-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	12 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Environmental Consult & Test	**Age:**	
Sample ID:	04-6620-0457	**Code:**	1BC9A789	**Client:**	GPAC Crossett
Sample Date:	04 Jun-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	05 Jun-12	**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	8.02%

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	25	16	2	8	0.6353	Asymp	Non-Significant Effect
		34	32.5	16	1	8	0.9870	Asymp	Non-Significant Effect
		45	30	16	2	8	0.9446	Asymp	Non-Significant Effect
		60	30	16	2	8	0.9446	Asymp	Non-Significant Effect
		80	32.5	16	1	8	0.9870	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.95	0.8 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04609728	0.009219456	5	1.64	0.1877	Non-Significant Effect
Error	0.1349189	0.00562162	24			
Total	0.1810161		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	226.1	15.09	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9039	0.9031	0.0105	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	0.95	0.865	1	1	0.875	1	0.03062	7.21%	0.0%
25		5	0.925	0.84	1	0.875	0.875	1	0.03062	7.4%	2.63%
34		5	1	1	1	1	1	1	0	0.0%	-5.26%
45		5	0.975	0.9056	1	1	0.875	1	0.025	5.73%	-2.63%
60		5	0.975	0.9056	1	1	0.875	1	0.025	5.73%	-2.63%
80		5	1	1	1	1	1	1	0	0.0%	-5.26%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Wate	5	1.32	1.195	1.445	1.393	1.209	1.393	0.04499	7.62%	0.0%
25		5	1.283	1.158	1.408	1.209	1.209	1.393	0.04499	7.84%	2.78%
34		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	-5.57%
45		5	1.356	1.254	1.458	1.393	1.209	1.393	0.03673	6.06%	-2.78%
60		5	1.356	1.254	1.458	1.393	1.209	1.393	0.03673	6.06%	-2.78%
80		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	-5.57%

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

Analysis ID:	08-5868-9022	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	21 Jun-12 17:26	**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	0.875	0.875	1
25		1	0.875	0.875	1	0.875
34		1	1	1	1	1
45		1	1	0.875	1	1
60		1	1	0.875	1	1
80		1	1	1	1	1

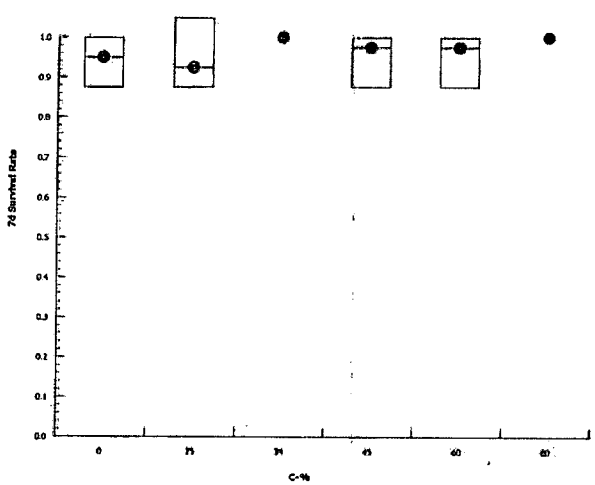
Angular (Corrected) Transformed Detail

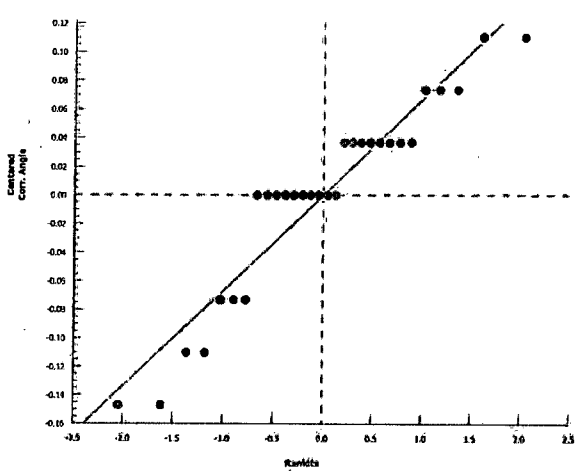
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	1.393	1.393	1.209	1.209	1.393
25		1.393	1.209	1.209	1.393	1.209
34		1.393	1.393	1.393	1.393	1.393
45		1.393	1.393	1.209	1.393	1.393
60		1.393	1.393	1.209	1.393	1.393
80		1.393	1.393	1.393	1.393	1.393

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	8/8	8/8	7/8	7/8	8/8
25		8/8	7/8	7/8	8/8	7/8
34		8/8	8/8	8/8	8/8	8/8
45		8/8	8/8	7/8	8/8	8/8
60		8/8	8/8	7/8	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:	09-1212-0594	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	21 Jun-12 17:27	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	13-5453-4286	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	05 Jun-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	12 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Environmental Consult & Test	**Age:**	
Sample ID:	04-6620-0457	**Code:**	1BC9A789	**Client:**	GPAC Crossett
Sample Date:	04 Jun-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	05 Jun-12	**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	25.3%

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	-0.6662	2.362	0.167	8	0.9598	CDF	Non-Significant Effect
		34	-2.413	2.362	0.167	8	0.9998	CDF	Non-Significant Effect
		45	-2.814	2.362	0.167	8	1.0000	CDF	Non-Significant Effect
		60	-2.527	2.362	0.167	8	0.9999	CDF	Non-Significant Effect
		80	-2.243	2.362	0.167	8	0.9997	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.6588	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.2529	0.12 - 0.3	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.1654951	0.03309902	5	2.66	0.0474	Significant Effect
Error	0.2985995	0.01244165	24			
Total	0.4640946		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	2.53	15.09	0.7720	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9731	0.9031	0.6281	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	0.6588	0.5277	0.7898	0.6563	0.5562	0.83	0.04721	16.02%	0.0%
25		5	0.7057	0.5688	0.8427	0.6475	0.61	0.8412	0.04933	15.63%	-7.13%
34		5	0.829	0.7359	0.9221	0.8337	0.735	0.9287	0.03352	9.04%	-25.84%
45		5	0.8573	0.6548	1.06	0.87	0.6363	1.089	0.07293	19.02%	-30.13%
60		5	0.837	0.7157	0.9583	0.8587	0.73	0.9512	0.0437	11.67%	-27.06%
80		5	0.817	0.6955	0.9385	0.7875	0.705	0.9538	0.04377	11.98%	-24.02%

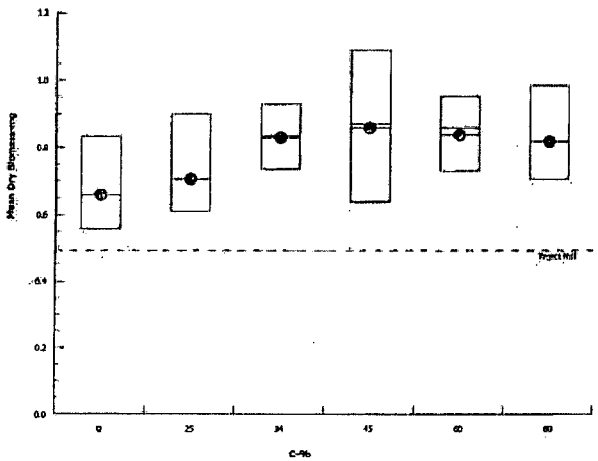
Mean Dry Biomass-mg Detail

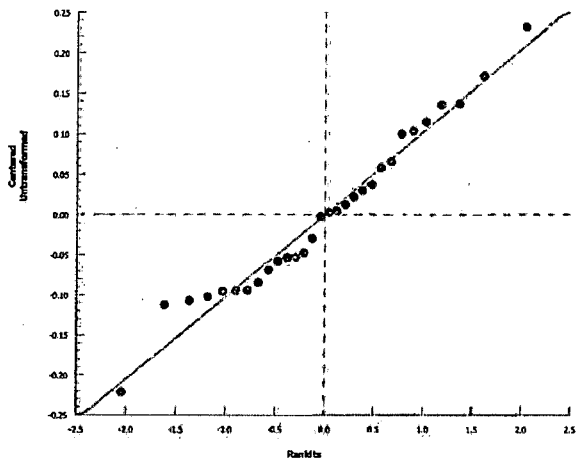
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	0.59	0.6563	0.5562	0.6613	0.83
25		0.61	0.6212	0.8087	0.6475	0.8412
34		0.735	0.8337	0.7813	0.8663	0.9287
45		0.8875	0.6363	0.8037	0.87	1.089
60		0.7425	0.8587	0.9025	0.73	0.9512
80		0.875	0.7637	0.705	0.7875	0.9538

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

Analysis ID:	09-1212-0594	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	21 Jun-12 17:27	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Report Date: 21 Jun-12 17:28 (p 1 of 1)
Test Code: 15117fm | 14-5221-3103

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

Analysis ID:	07-1340-3796	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	21 Jun-12 17:27	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	13-5453-4286	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	05 Jun-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	12 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Environmental Consult & Test	**Age:**	
Sample ID:	04-6620-0457	**Code:**	1BC9A789	**Client:**	GPAC Crossett
Sample Date:	04 Jun-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	05 Jun-12	**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	490282	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.6588	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

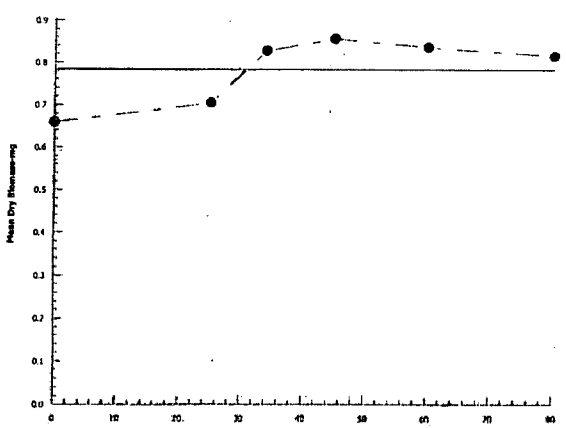
Mean Dry Biomass-mg Summary

			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Receiving Water	5	0.6588	0.5562	0.83	0.04721	0.1056	16.02%	0.0%
25		5	0.7057	0.61	0.8412	0.04933	0.1103	15.63%	-7.13%
34		5	0.829	0.735	0.9287	0.03352	0.07496	9.04%	-25.84%
45		5	0.8573	0.6363	1.089	0.07293	0.1631	19.02%	-30.13%
60		5	0.837	0.73	0.9512	0.0437	0.09772	11.67%	-27.06%
80		5	0.817	0.705	0.9538	0.04377	0.09787	11.98%	-24.02%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	0.59	0.6563	0.5562	0.6613	0.83
25		0.61	0.6212	0.8087	0.6475	0.8412
34		0.735	0.8337	0.7813	0.8663	0.9287
45		0.8875	0.6363	0.8037	0.87	1.089
60		0.7425	0.8587	0.9025	0.73	0.9512
80		0.875	0.7637	0.705	0.7875	0.9538

Graphics



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

Analysis ID:	10-3788-7988	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	21 Jun-12 17:27	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	13-5453-4286	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	05 Jun-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	12 Jun-12	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Environmental Consult & Test	**Age:**	
Sample ID:	04-6620-0457	**Code:**	1BC9A789	**Client:**	GPAC Crossett
Sample Date:	04 Jun-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	05 Jun-12	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	Outfall 001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	Test Result	PMSD
Untransformed	NA	C > T	NA	NA	Sample passes mean dry biomass-mg endpoint	4.0%

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		Lab Water	1.476	1.86	0.092	8	0.0890	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.6588	0.25 - NL	Yes	Passes Acceptability Criteria
Control Resp	0.5855	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1401	0.12 - 0.3	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0134144	0.0134144	1	2.18	0.1781	Non-Significant Effect
Error	0.04923715	0.006154644	8			
Total	0.06265155		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	9.555	23.15	0.0505	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8691	0.7411	0.0976	Normal Distribution

Mean Dry Biomass-mg Summary

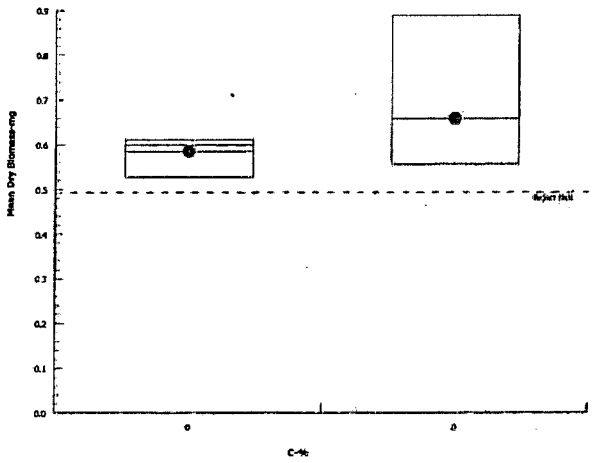
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	5	0.6588	0.5277	0.7898	0.5994	0.5562	0.83	0.04721	16.02%	0.0%
0	Lab Water	5	0.5855	0.5431	0.6279	0.5994	0.5275	0.6125	0.01527	5.83%	11.12%

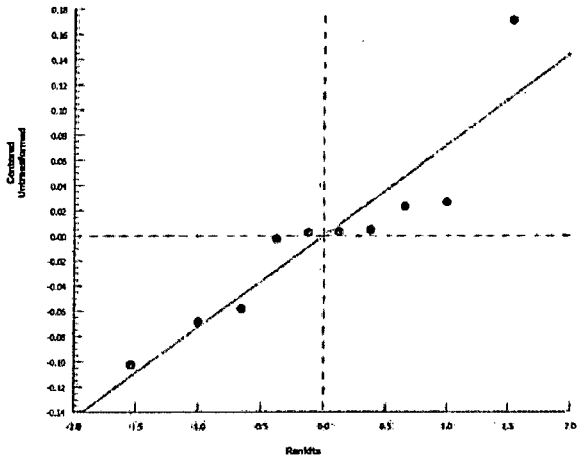
Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Lab Water	0.5275	0.6087	0.59	0.5888	0.6125
0	Receiving Water	0.59	0.6563	0.5562	0.6613	0.83

Analysis ID:	10-3788-7988	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	21 Jun-12 17:27	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes

Graphics





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

TEST LOG NO.: 15117
JOB NUMBER.: 20-19675F
INDUSTRY: Georgia Pacific Crossett
EFFLUENT: Outfall 001
DILUTION WATER: River Water
NPDES: Yes____ No____
FOOD BATCH: 3733 ;

BEGINNING: HRS: 1145 DATE: 6/5/12
ENDING: HRS: 1100 DATE: 6/12/12
TEST DILUTIONS: 25, 34, 45, 60, 80
ORGANISM AGE (date): 6/4/12
ORGANISM SOURCE: ECT # 3960
SOURCE TEMP @ TEST START: 24.1
RANDOMIZED BY: CAR

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	7	7
	D	8	8	8	7	7	7	7	7
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.1	24.0/24.1	24.0/24.0	24.3/24.2	24.0/24.0	24.5/24.9	24.2/24.6	24.1
25	A	8	8	8	8	8	8	8	8
	B	8	8	8	7	7	7	7	7
	C	8	8	8	8	8	8	7	7
	D	8	8	8	8	8	8	AM 6/11 8	8
	E	8	8	8	8	7	7	7	7
	Temp(°c):old/new	24.2	24.1/24.1	24.0/24.5	24.3/24.1	24.0/25.0	24.6/24.7	24.1/24.3	24.2
34	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	24.1/24.2	24.2/24.1	24.3/24.2	24.2/24.0	24.4/24.5	24.3/24.6	24.1
45	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	7	7
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.3	24.5/24.3	24.4/24.2	24.4/24.3	24.4/24.8	24.3/24.4	24.2/24.5	24.1
60	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	7	7	7	7
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.2	24.4/24.2	24.4/24.2	24.4/24.3	24.8/24.4	24.1/24.4	24.6/24.4	24.6
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	24.2	24.4/24.1	24.3/24.0	24.6/24.4	25.1/24.0	24.0/24.1	24.8/24.4	24.0
Test Renewal	Time	1245	1210	1037	0930	1144	1245	1005	1100
	Date	6/5	6/6	6/7	6/8	6/9	6/10	6/11	6/12
	Initials	CR	CR	LH	CR	LH	AW	AH	AW
morning feeding	Int/Time		LM 0700	LM 0700	LM 0700	AW 0800	AW 0800	LM 0700	
afternoon feeding	Int/Time	AW 1400	CR 1630	AH 1300	AH 1450	AW 1400	AW 1400	AW 1300	

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

TEST LOG NO.: 15117
JOB NUMBER.: 20-19675F
INDUSTRY: Georgia Pacific Crossett
EFFLUENT: 001
DILUTION WATER: River Water
NPDES: Yes ______ No ______
FOOD BATCH: 3733

BEGINNING: HRS: 1145 DATE: 6/5/12
ENDING: HRS: 1100 DATE: 6/12/12

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	24.2/24.1	24.1/24.0	24.3/24.1	24.4/24.0	24.9/24.0	25.4/24.1	24.4
	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.: 15117 BEGINNING: HRS: 1146 DATE: 6/5/12
JOB NO.: 20-19675F ENDING: HRS: 1152 DATE: 6/12/12
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 7	Tare wt (g)	Combined wt (g)	Tot Fish wt (g)	# of Fish	Fish Wt (mg) Per Final # of Fish
RW	A	1	1.11708	1.12180	0.00472	8	0.590
	B	2	1.09070	1.09595	0.00525	8	0.656
	C	3	1.08837	1.09282	0.00445	7	0.635
	D	4	1.09107	1.09636	0.00529	7	0.755
	E	5	1.07526	1.08189	0.00664	8	0.830
25	A	6	1.06685	1.07173	0.00488	8	
	B	7	1.10131	1.10628	0.00497	7	
	C	8	1.11255	1.11902	0.00647	7	
	D	9	1.09901	1.10419	0.00518	8	
	E	10	1.07673	1.08346	0.00673	7	
34	A	11	1.08839	1.09427	0.00588	8	
	B	12	1.07456	1.08123	0.00667	8	
	C	13	1.12365	1.12990	0.00625	8	
	D	14	1.09986	1.10679	0.00693	8	
	E	15	1.09716	1.10459	0.00743	8	
45	A	16	1.05841	1.06551	0.00710	8	
	B	17	1.09209	1.09718	0.00509	7 (n-1)	
	C	18	1.10527	1.11170	0.00643	7	
	D	19	1.08915	1.09611	0.00696	8	
	E	20	1.08533	1.09404	0.00871	8	
60	A	21	1.09598	1.10192	0.00594	8	
	B	22	1.08130	1.08817	0.00687	8	
	C	23	1.09929	1.10651	0.00722	7	
	D	24	1.11179	1.11763	0.00584	8	
	E	25	1.06976	1.07737	0.00761	8	
80	A	26	1.12163	1.12863	0.00700	8	
	B	27	1.10778	1.11389	0.00611	8	
	C	28	1.09853	1.10417	0.00564	8	
	D	29	1.09946	1.09876	0.00630	8	
	E	30	1.09846	1.10609	0.00763	8	
MH	A	31	1.09952	1.10374	0.00422	8	
	B	32	1.10504	1.10991	0.00487	8	
	C	33	1.06830	1.07302	0.00472	8	
	D	34	1.06721	1.07192	0.00471	8	
	E	35	1.09900	1.10390	0.00490	8	
	Initials / Date:		LR 6/8	HM 6/14			

AVG Control Fish wt. 0.1093 mg (using final #)

Oven ID: 2

Temp 106 Tins In: 6/12/12 1156 Date/Time

Temp 102 Tins Out: 6/13/12 1435 Date/Time

FINAL WEIGHTS

DATE: 6/14/12
INITIALS: HM

TEST LOG NO. 15117

JOB NO. 20-19675F

CLIENT/SAMPLE ID: Georgia Pacific Crossett

TEST ORGANISM: Fm

DATE: 6/5/12

ENVIRON Test Log No. 15117

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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	7.8	8.4	8.3	8.5	8.3	8.5	8.4	8.5	8.8	8.4	8.4	8.4	8.3	8.0
25	7.6	8.4	8.1	8.3	8.2	8.5	8.2	8.5	8.9	8.4	8.2	8.4	8.2	8.7
34	7.5	8.3	8.0	8.5	8.1	8.6	8.2	8.5	8.7	8.3	8.1	8.3	8.1	8.7
45	7.5	8.3	8.0	8.4	8.2	8.5	8.1	8.4	8.4	8.3	8.1	8.3	8.1	8.6
60	7.6	8.1	7.9	8.4	8.0	8.4	8.1	8.4	8.5	8.3	8.1	8.1	8.0	8.6
80	7.7	8.1	7.9	8.3	7.9	8.4	8.1	8.3	8.6	8.2	8.0	8.0	7.9	8.5
MH	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.2	8.6	8.1	8.1	8.4	8.4	8.7

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	7.61	7.69	7.57	7.74	7.70	7.93	7.68	7.77	7.36	7.78	7.58	7.85	7.92	7.85
25	7.67	7.63	7.54	7.46	7.50	7.72	7.58	7.62	7.44	7.65	7.52	7.66	7.66	7.75
34	7.70	7.90	7.69	7.87	7.61	7.89	7.66	7.73	7.54	7.73	7.65	7.69	7.69	7.71
45	7.78	8.06	7.78	7.98	7.71	7.94	7.73	7.83	7.61	7.79	7.74	7.73	7.73	7.76
60	7.79	8.13	7.85	8.19	7.76	8.13	7.80	7.98	7.77	7.91	7.81	7.88	7.79	7.89
80	7.85	8.24	7.88	8.27	7.81	8.22	7.85	8.13	7.73	8.12	7.82	8.04	7.80	7.94
MH	7.57	7.56	7.70	7.85	7.80	7.82	7.84	7.94	7.91	7.88	7.98	7.90	7.98	7.91

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	110	108	102	100	97	97	100	136	108	125	113	~~221~~	101	~~222~~
25	1660	631	651	544	640	608	651	685	659	576	648	639	637	626
34	910	803	892	850	893	742	801	782	848	784	877	822	846	831
45	1152	1112	1114	908	1098	1035	1135	1081	1109	1038	1046	1030	1067	1037
60	1427	1398	1409	1349	1403	1349	1396	1332	1360	1331	1387	1351	1410	1376
80	1802	1768	1825	1745	1808	1744	1823	1788	1745	1715	1825	1809	1760	1750
MH	207	224	200	199	210	206	210	258	241	264	251	221	217	222

106 A.H. 6/11

195 A.H. 6/12

Params Intl/Time:	OR 0930	AW 0944	OR 0850	AW 0735	OR 0810	AW 0746	OR 0835	AW 0917	AW 1005	AW 0829	AW 1015	AH 0721	AH 0808	AH 0724
Dilutions Intl/Time:	AW 0920		AH 0840		AH 0755		AH 0825		AW 0955		AW 1005		AW 0805	
Control Water Batch#:	4918		4922		4923		4923		4923		4925		4925	
Food Batch	3733		3733		3733		3733		3733		3733		3733	

TEST LOG NO. 15117 CLIENT: Georgia Pacific Crossett DATE OF TEST: 6/5/12

JOB NO. 20-19675F TEST TYPE(S) PERFORMED: Fm & Cd

100% EFFLUENT

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH_3N mg/L
15112	Outfall 001	6/3-4/12	6/5/12	280	455	0.04	2.73
15119	Outfall 001	6/5-6/12	6/7/12	284	440	<0.02	2.45
15130	Outfall 001	6/7-8/12	6/9/12	280	450	<0.02	2.55

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
15111	River Water	6/4/12	6/5/12	20.8	24	0.	0.108
4918	MH	6/1/12	6/4/12	94	54	<0.02	
15127	River Water	6/7/12	6/8/12	44	27	0.08	<0.1
4922	MH	6/4/12	6/6/12	90	50	<0.02	
4923	MH	6/5/12	6/7/12	92	52	<0.02	
15127	River Water	6/7/12	6/8/12	44	27		<0.1
4925	MH	6/7/12	6/9/12	95	54	<0.02	

CETIS Analytical Report

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

Analysis ID:	16-0352-8882	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	12 Jun-12 12:25	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes
Batch ID:	19-9865-7364	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	05 Jun-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	11 Jun-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	13-4169-2648	**Code:**	4FF89AE8	**Client:**	GPAC Crossett
Sample Date:	04 Jun-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	05 Jun-12	**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	0.5	1.0000	Exact	Non-Significant Effect
		60	1	1.0000	Exact	Non-Significant Effect
		80	0.5	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

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

Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Receiving Wate	10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
34		10	0	10	1	0	0.0%
45		9	1	10	0.9	0.1	10.0%
60		10	0	10	1	0	0.0%
80		9	1	10	0.9	0.1	10.0%

7d Survival Rate Detail

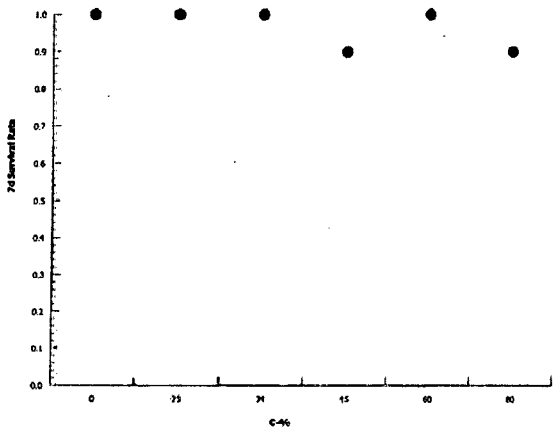
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
34		1	1	1	1	1	1	1	1	1	1
45		0	1	1	1	1	1	1	1	1	1
60		1	1	1	1	1	1	1	1	1	1
80		1	1	1	1	1	0	1	1	1	1

7d Survival Rate Binomials

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

Analysis ID:	16-0352-8882	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	12 Jun-12 12:25	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

Graphics



CETIS Analytical Report

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

Analysis ID:	13-3121-4920	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	12 Jun-12 12:26	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	19-9865-7364	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	05 Jun-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	11 Jun-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	13-4169-2648	**Code:**	4FF89AE8	**Client:**	GPAC Crossett
Sample Date:	04 Jun-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	05 Jun-12	**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	34	45	39.12	2.941	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	101.5	75	2	18	0.7427	Asymp	Non-Significant Effect
		34	83.5	75	3	18	0.1720	Asymp	Non-Significant Effect
		45*	62	75	2	18	0.0027	Asymp	Significant Effect
		60*	57	75	0	18	0.0007	Asymp	Significant Effect
		80*	55	75	0	18	0.0004	Asymp	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	31.1	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1953	0.13 - 0.47	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1564.333	312.8667	5	8.892	<0.0001	Significant Effect
Error	1900	35.18518	54			
Total	3464.333		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	4.751	15.09	0.4470	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8911	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	31.1	28.61	33.59	30.5	27	37	1.1	11.18%	0.0%
25		10	28.7	24.68	32.72	30.5	13	32	1.777	19.58%	7.72%
34		10	25.9	21.13	30.67	28.5	14	33	2.111	25.77%	16.72%
45		10	23	17.84	28.16	25.5	5	29	2.28	31.35%	26.05%
60		10	20.5	16.52	24.48	20.5	11	28	1.759	27.14%	34.08%
80		10	15.8	11.28	20.32	16.5	5	24	1.999	40.01%	49.2%

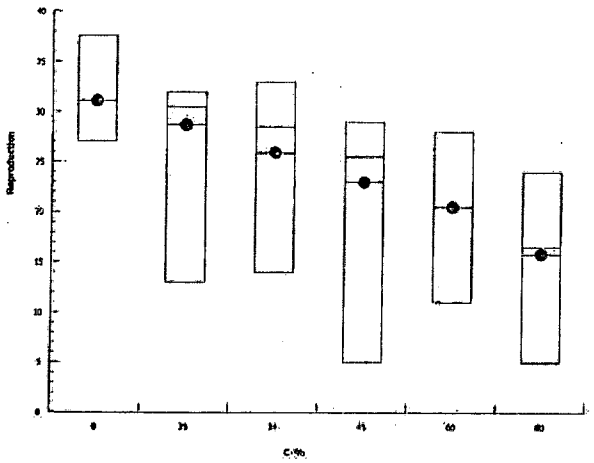
Reproduction Detail

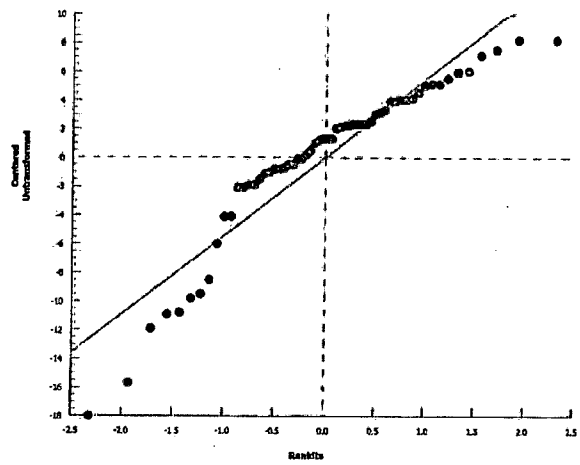
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	37	35	35	27	31	29	29	27	30	31
25		31	13	30	31	31	28	32	31	30	30
34		14	31	31	30	15	28	29	33	24	24
45		5	28	22	24	17	29	25	27	26	27
60		12	11	19	23	25	28	20	20	26	21
80		17	24	15	5	15	6	18	24	16	18

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

Analysis ID:	13-3121-4920	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	12 Jun-12 12:26	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Report Date: 12 Jun-12 12:32 (p 1 of 1)
Test Code: 15117cd | 11-4164-5279

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

Analysis ID:	08-6526-2043	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	12 Jun-12 12:27	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	19-9865-7364	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	05 Jun-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	11 Jun-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	13-4169-2648	**Code:**	4FF89AE8	**Client:**	GPAC Crossett
Sample Date:	04 Jun-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	05 Jun-12	**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	1465968	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	31.1	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	43.77	32.37	60	2.285	1.667	3.089

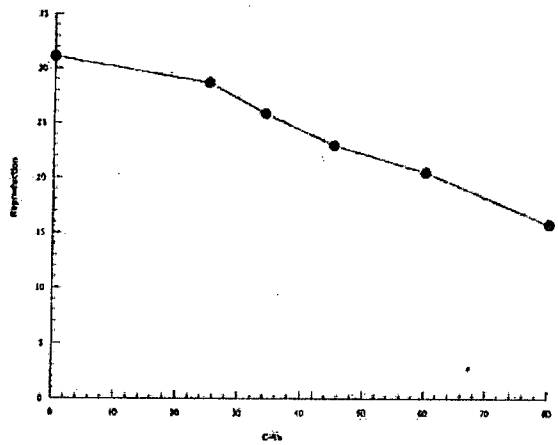
Reproduction Summary

			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Receiving Water	10	31.1	27	37	1.1	3.479	11.18%	0.0%
25		10	28.7	13	32	1.777	5.618	19.58%	7.72%
34		10	25.9	14	33	2.111	6.674	25.77%	16.72%
45		10	23	5	29	2.28	7.211	31.35%	26.05%
60		10	20.5	11	28	1.759	5.563	27.14%	34.08%
80		10	15.8	5	24	1.999	6.321	40.01%	49.2%

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	37	35	35	27	31	29	29	27	30	31
25		31	13	30	31	31	28	32	31	30	30
34		14	31	31	30	15	28	29	33	24	24
45		5	28	22	24	17	29	25	27	26	27
60		12	11	19	23	25	28	20	20	26	21
80		17	24	15	5	15	6	18	24	16	18

Graphics



CETIS Analytical Report

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

Analysis ID:	14-3322-4349	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	12 Jun-12 12:33	**Analysis:**	Parametric-Two Sample	**Official Results:**	Yes
Batch ID:	19-9865-7364	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	05 Jun-12	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	11 Jun-12	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	13-4169-2648	**Code:**	4FF89AE8	**Client:**	GPAC Crossett
Sample Date:	04 Jun-12	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	05 Jun-12	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	Outfall 001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	Test Result	PMSD
Untransformed	NA	C > T	NA	NA	Sample passes reproduction endpoint	9.96%

Equal Variance t Two-Sample Test

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		Lab Water	0.2798	1.734	3.098	18	0.3914	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	31.1	15 - NL	Yes	Passes Acceptability Criteria
Control Resp	30.6	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.09962	0.13 - 0.47	Yes	Below Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.25	1.25	1	0.07832	0.7828	Non-Significant Effect
Error	287.3	15.96111	18			
Total	288.55		19			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.638	6.541	0.4736	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9135	0.866	0.0743	Normal Distribution

Reproduction Summary

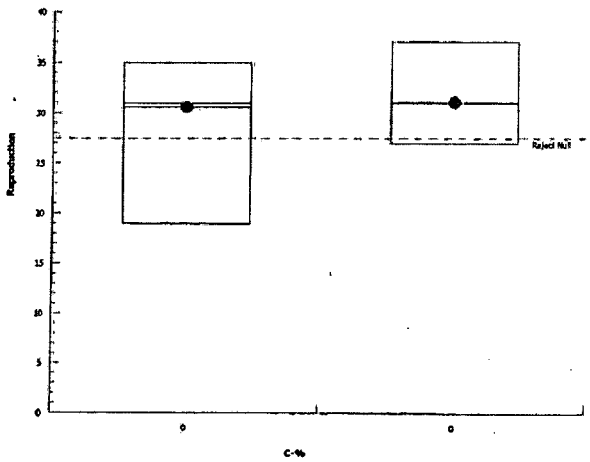
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	10	31.1	28.61	33.59	31	27	37	1.1	11.18%	0.0%
0	Lab Water	10	30.6	27.42	33.78	31	19	35	1.408	14.55%	1.61%

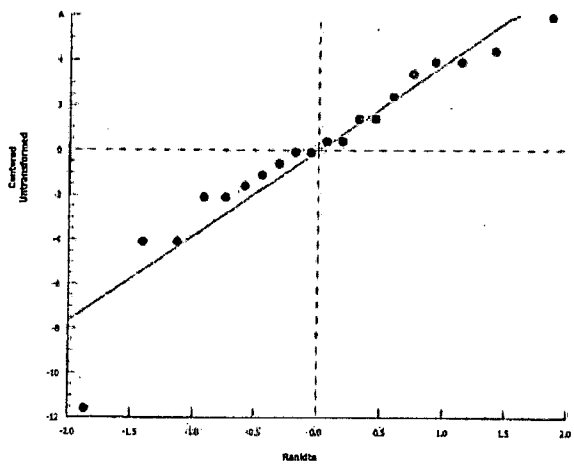
Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	32	31	33	31	30	29	35	34	32	19
0	Receiving Water	37	35	35	27	31	29	29	27	30	31

Analysis ID:	14-3322-4349	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	12 Jun-12 12:33	**Analysis:**	Parametric-Two Sample	**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.:	15117	PHOTOPERIOD:	16 hr light/8 hr dark
JOB NUMBER.:	20-19675F	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) :	y	NO. REPLICATES:	10

ORGANISM SOURCE INFORMATION:

AGE (date): 6/4-5/12

TEMP @ TEST START: 24.0

RANDOMIZED BY: AH

TEST START:

HOURS: 1041 DATE: 6/5/12

TEST END:

HOURS: 1239 DATE: 6/11/12

SOURCE ID:	AGE (time):
9914	1720-2050
9917	1720-2058

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Control River Water Temp (°C)			Replicates (9914) 1	2	3	4	5	Replicates (9917) 6	7	8	9	10	Notes
					Adult	13	16	3	12	4	10	5	9	2	1	
AH 1041		6/5	24.0		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1010	6/6	24.0	24.0	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 0940	6/7	24.3	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 0910	6/8	24.0	24.1	Day 3	✓	✓	✓	5	✓	✓	✓	✓	✓	✓	
	AW 1112	6/9	24.1	24.9	Day 4	7	6	5	✓	6	5	5	6	5	5	
	AW 1126	6/10	24.2	24.8	Day 5	12	13	13	9	11	10	11	10	11	12	
AW 1239		6/11		24.2	Day 6	18	16	17	13	14	12	13	11	14	14	100%
					Day 7											
					Day 8											
			Total			37	35	35	27	31	29	29	27	30	31	311

x.75 = 233

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

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

TEST LOG # 15117

JOB # 20-19675F

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)			Replicate 1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
AH 1041		6/5	25.6		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1010	6/6	24.0	24.0	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 0940	6/7	24.7	24.7	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 0910	6/8	24.0	24.1	Day 3	✓	✓	✓	✓	4	✓	5	✓	✓	✓	
	AW 1112	6/9	24.0	24.4	Day 4	6	5	3	6	✓	4	✓	6	5	5	
	AW 1126	6/10	24.0	24.3	Day 5	11	8	9	12	12	10	11	9	12	10	
AW 1239		6/11		24.7	Day 6	14	✓	18	13	15	14	16	16	13	15	
					Day 7											
					Day 8											
			Total			31	13	30	31	31	28	32	31	30	30	

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration 34% Temp (°C)			Replicate 1	2	3	4	5	6	7	8	9	10	Notes
AH 1041		6/5	25.8		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1010	6/6	24.3	24.0	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 0940	6/7	24.7	24.9	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 0910	6/8	24.0	24.0	Day 3	✓	✓	✓	✓	✓	4	✓	✓	4	3	
	AW 1112	6/9	24.0	24.0	Day 4	6	6	6	4	4	° ~~7~~ ✓ [illegible] AW	5	5	✓	✓	° no babies on wall
	AW 1126	6/10	24.0	24.2	Day 5	8	10	11	12	✓	11	12	12	10	9	
AW 1239		6/11		25.3	Day 6	✓	15	14	14	11	13	12	16	10	12	
					Day 7											
					Day 8											
			Total			14	31	31	30	15	28	29	33	24	24	

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

L/Ecotoxlab/Labforms/ToxTestSheets/7DchronicCD.doc

TEST LOG # 15117 JOB # 20-19675F

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											
AH 1041		6/5	25.6		Day 0	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	
	LH 1010	6/6	24.1	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 0940	6/7	24.8	24.9	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 0910	6/8	24.4	24.7	Day 3	✓	✓	✓	✓	✓	5 AW	5	✓	✓	4	✓ rabbies
	AW 1112	6/9	24.0	24.0	Day 4	5	5	7	4	6	6	✓	5	6	✓	
	AW 1126	6/10	24.0	24.3	Day 5	D/0	9	✓	7	✓	9	8	8	9	10	
AW 1239		6/11		24.6	Day 6		14	15	13	11	14	12	14	11	13	
					Day 7											
					Day 8											
			Total			5	28	22	24	17	29	25	27	26	27	

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
AH 1041		6/5	25.8		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 1010	6/6	24.0	24.1	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LH 0940	6/7	24.7	24.6	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 0910	6/8	24.0	24.5	Day 3	✓	✓	5	3	4	5	✓	✓	✓	✓	
	AW 1112	6/9	24.1	24.4	Day 4	5	5	✓	✓	✓	✓	7	5	7	5	
	AW 1126	6/10	24.2	24.2	Day 5	7	6	5	7	9	9	✓	4	8	6	
AW 1239		6/11		24.1	Day 6	✓	✓	9	13	12	14	13	11	P1	8	
					Day 7											
					Day 8											
			Total			12	11	19	23	25	28	20	20	26	21	

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

TEST LOG # 15117 JOB # 20-19675F

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											
AH 1041		6/5	25.4		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1010	6/6	24.4	24.3	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 0940	6/7	24.3	24.6	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 0910	6/8	24.0	24.5	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1112	6/9	24.0	24.1	Day 4	5	5	7	5	5	6	4	6	3	6	
	AW 1126	6/10	24.2	24.9	Day 5	3	7	✓	✓	5	D/0	5	8	6	4	
AW 1239		6/11		24.8	Day 6	9	12	8	✓	5		9	10	7	8	
					Day 7											
					Day 8						D/6					
			Total			17	24	15	5	15		18	24	16	18	158

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
AH 1041		6/5	24.0		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1010	6/6	24.0	24.0	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 0940	6/7	24.3	24.7	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 0910	6/8	24.0	24.0	Day 3	✓	✓	✓	✓	✓	✓	✓	✓	–	✓	
	AW 1112	6/9	24.3	24.6	Day 4	6	6	6	7	5	5	7	6	7	7	
	AW 1126	6/10	24.6	24.1	Day 5	11	10	10	9	11	9	11	10	11	12	
AW 1239		6/11		24.8	Day 6	15	13	17	15	14	15	17	18	14	✓	90%
					Day 7											
					Day 8											
			Total			32	31	33	31	30	29	35	34	32	19	326

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

TEST LOG NO. 15117

JOB NO. 20-19675F

CLIENT/SAMPLE ID: Georgia Pacific Crossett

TEST ORGANISM: Cd

DATE: 6/5/12

ENVIRON Test Log No. 15117

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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	7.8	8.5	8.3	8.1	8.5	8.1	8.4	8.4	8.8	8.5	8.4	8.5		
25	7.6	8.5	8.1	8.4	8.2	8.4	8.2	8.3	8.9	8.6	8.4	8.6		
34	7.5	8.5	8.0	8.4	8.1	8.3	8.2	8.4	8.7	8.4	8.2	8.5		
45	7.5	8.4	8.0	8.3	8.2	8.2	8.1	8.5	8.4	8.5	8.1	8.4		
60	7.6	8.4	7.9	8.4	8.0	8.2	8.1	8.5	8.5	8.5	8.1	8.4		
80	7.7	8.5	7.9	8.5	7.9	8.3	8.1	8.5	8.6	8.5	8.0	8.5		
MH	8.5	8.4	6.5	8.4	8.5	8.4	8.5	8.6	8.6	8.5	8.1	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	7.61	7.52	7.57	7.79	7.70	7.82	7.68	7.52	7.36	7.70	7.56	7.93		
25	7.67	7.47	7.54	8.10	7.50	7.97	7.58	8.15	7.44	8.25	7.52	8.19		
34	7.70	7.79	7.69	8.26	7.61	8.18	7.66	8.31	7.54	8.39	7.65	8.34		
45	7.78	8.09	7.78	8.36	7.71	8.24	7.73	8.46	7.61	8.50	7.74	8.32		
60	7.77	8.38	7.85	8.47	7.75	8.45	7.80	8.57	7.71	8.60	7.81	8.49		
80	7.85	8.58	7.88	8.64	7.81	8.64	7.85	8.63	7.73	8.70	7.82	8.66		
MH	7.57	7.41	7.70	7.78	7.80	7.78	7.84	8.00	7.91	7.94	7.98	7.80		

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	110	915	102	110	97	115	100	114	108	116	113	121		
25	660	614	651	633	640	665	651	649	659	668	669	701		
34	910	858	892	862	893	913	801	802	868	851	877	917		
45	1152	1088	1114	1084	1098	1128	1135	1136	1109	1104	1046	1110		
60	1427	1366	1409	1364	1403	1420	1396	1402	1360	1405	1381	1454		
80	1802	1766	1825	1767	1809	1830	1823	1842	1745	1781	1825	1884		
MH	209	227	200	209	210	233	210	232	214	227	251	232		

Params Intl/Time:	ER 0930	AW1356	CR0850	CR1005	CR0810	CR1020	CR0835	AW1326	AW1005	AW1329	AW1015	CR1430		
Dilutions Intl/Time:	AW0920		AH0840		AH0785		AH0825		AW0955		AW1005			
Control Water Batch#:	4918		4922		4923		4923		4923		4925			
Food Batch	3957,13		3962,13		3962,13		62,13		62,51		62,51			

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

ENVIRON Test Log No. 15117

Project Name: Project Number:

Industry: GEORGIA PACIFIC PAPER

Phone: 870-367-8170 FAX: 870-364-9076

County: ASHLEY City: CROSSETT State: AR.

Sample Collected by (print): DANNY JONES

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) 377-4775
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	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)
RIVER	GRAB	PLASTIC	NA	10:45am 6/4/12		2	20	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	DILUTION	WATER [redacted]
OUTFALL 001	COMP	PLASTIC	YES	6/3/12 3:06pm	6/4/12 6:38am	2	14	[redacted]		[redacted]		[redacted]	✓	[redacted]		[redacted]		[redacted]
								[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

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: 4.8°C, 3.3°C	Containers/Volume Received: 2 10L, 1 10L, 4 1L
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [redacted]	Date: 6/5/12	Time: 0825	pH upon arrival: 7.96, 7.86	DO upon arrival: 10.2, 9.5

31 of 38

ENVIRON Test Log No. 15117

Project Name: Project Number:

Industry: GEORGIA PACIFIC PAPER

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

County: ASHLEY City: HAMBURG State: AR.

Sample Collected by (print): R. JEFFERSON

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) 377-4775
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	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)
OUTFALL 001	COMP	PLASTIC	YES	6-5-12 6:27 PM	6-6-12 6:54 AM	2	14					☑	✓	✓				

* 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)	Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition: (lab use only)
Danny W. Rice	6-6-12	3:00pm			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: 2.9	Containers/Volume Received: 10L
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6/7/12	Time: 0850 pH upon arrival: 7.81 DO upon arrival: 10.4

ENVIRON Test Log No. 15117

33 of 38

Project Name: Project Number:

Industry: GEORGIA PACIFIC PAPER

Phone: 870-867-8170 FAX:

County: ASHLEY City: CROSSETT State: AR

Sample Collected by (print): DANNY W. ROSS

Sample Collected by (signature): Danny Ross

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	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)
OUTFALL 001	COMP	PLASTIC	YES	6-7-12 6:30pm	6-8-12 6:30am	2	4					☑						15130

* 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)
Danny Ross	6-8-12	3:00pm	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Cynthia Bryant-Wade

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

Condition: (lab use only)

Receipt Temp: 0.4

Containers/Volume Received: 1 4L & 1 1L

Date: 6/9/12 Time: 0940

pH upon arrival: 7.86

DO upon arrival: 9.0

CHAIN-OF-CUSTODY

ENVIRON

201 Summit View Drive, Suite 300
Brentwood, TN 37027
PHONE: (615) 377-4775
FAX: (615) 377-4976

ENVIRON Test Log No. 15171

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 / PAT

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) 377-4775
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	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)
RIVER	GRAB	PLASTIC	NA	6-7-12	10:45am	2	20					✓						

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

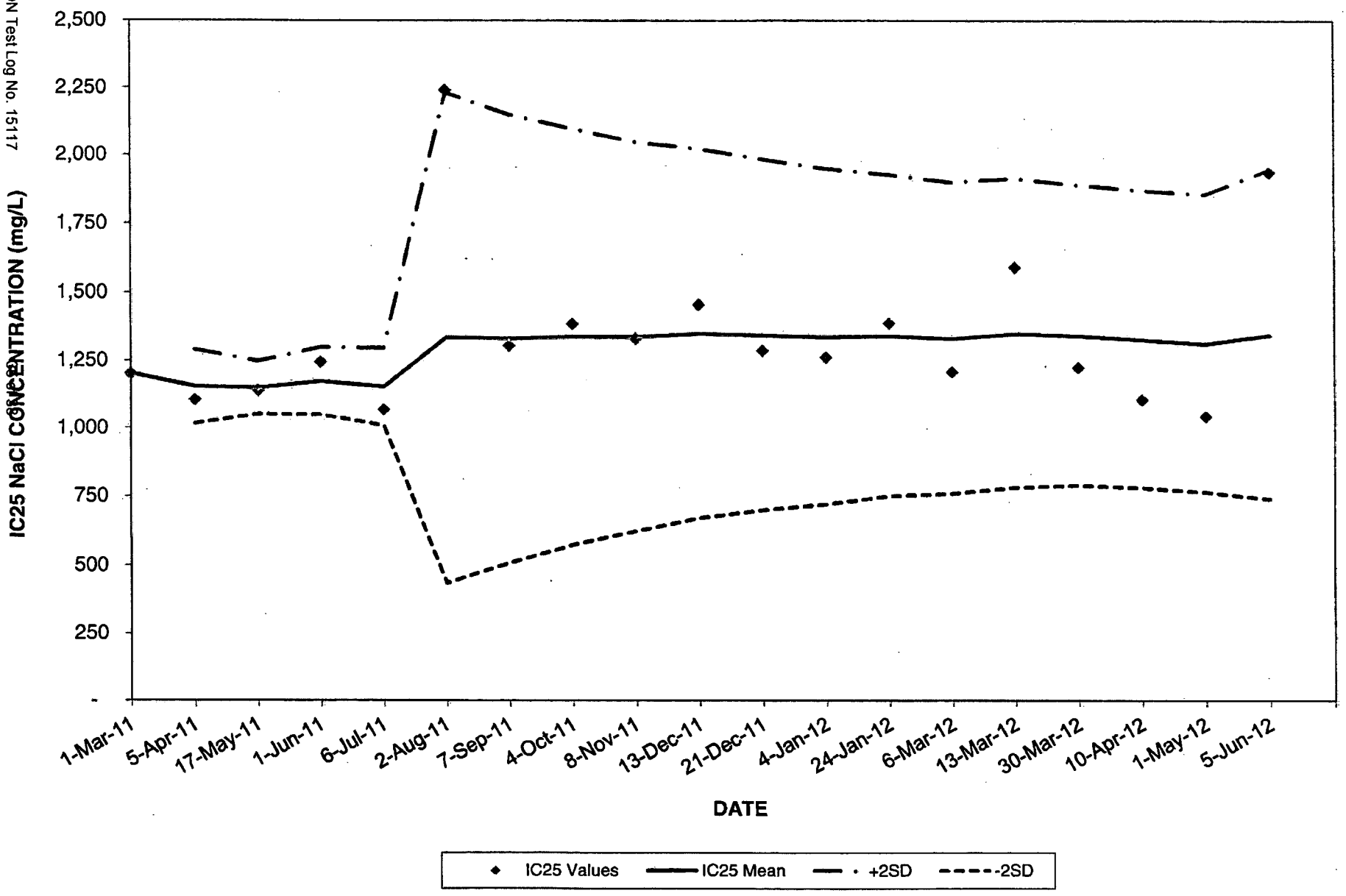
Remarks:

Measured TRC (if applicable): [redacted] mg/L

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition: (lab use only)
DANNY W. RICO	6-7-12	3:00pm			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp: [redacted]	Containers/Volume Received: [redacted]
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [redacted]	Date: 6/8/12	Time: 8:50	pH upon arrival: [redacted]	DO upon arrival: [redacted]

ENVIRON Test Log No. 15117

CHRONIC REFERENCE TOXICANT TEST (NaCl) 2011 - 2012
FATHEAD MINNOWS



9003/05reftox/fmchronic

6/21/2012

Fathead Minnow CHRONIC REFERENCE TOXICANT TESTING-SODIUM CHLORIDE (NaCl) 2011 - 2012

Test Number	Log Number	Test Initiation Date	Control Survival (%) (*)	Control Mean Dry Weight (mg/fish) (*)	SURVIVAL NOEC (mg/L)	SURVIVAL LOEC (mg/L)	GROWTH NOEC (mg/L)	GROWTH LOEC (mg/L)	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 (%)
1	13214	01-Mar-11	95	0.583	6,000	>6,000	750	1,500	25.7	1,203	1,203				
2	13572	05-Apr-11	100	0.530	750	1,500	750	1,500	24.2	1,106	1,155	69	1,292	1,017	4
3	13648	17-May-11	95	0.586	750	1,500	750	1,500	17.7	1,140	1,150	49	1,248	1,051	3
4	13666	01-Jun-11	97.5	0.680	1,500	3,000	750	1,500	24.5	1,246	1,174	63	1,299	1,048	5
5	13725	06-Jul-11	100	0.565	750	1,500	750	1,500	26.5	1,069	1,153	72	1,296	1,009	6
6	13775	02-Aug-11	96	0.534	1,500	3,000	1,500	3,000	10.5	2,243	1,335	450	2,234	435	31
7	13828	07-Sep-11	97.5	0.571	3,000	6,000	750	1,500	17.4	1,306	1,330	411	2,152	509	29
8	13877	04-Oct-11	100	0.579	1,500	3,000	750	1,500	20.4	1,385	1,337	381	2,099	576	27
9	13967	08-Nov-11	100	0.586	1,500	3,000	750	1,500	22.6	1,331	1,337	356	2,049	624	25
10	14036	13-Dec-11	92.5	0.256	3,000	6,000	1,500	3,000	33.6	1,457	1,349	338	2,024	673	24
11	14047	21-Dec-11	100	0.270	750	1,500	750	1,500	30.3	1,286	1,343	321	1,985	701	23
12	14056	04-Jan-12	89	0.305	750	1,500	750	1,500	29.1	1,261	1,336	307	1,950	722	22
13	14095	24-Jan-12	97.5	0.476	1,500	3,000	750	1,500	25.6	1,387	1,340	294	1,929	751	21
14	15207	06-Mar-12	97.5	0.372	750	1,500	1,500	3,000	39.2	1,209	1,331	285	1,901	761	21
15	15225	13-Mar-12	85	0.290	6,000	>6,000	1,500	3,000	30.2	1,593	1,348	283	1,914	783	20
16	15248	30-Mar-12	100	0.383	750	1,500	750	1,500	28.1	1,225	1,340	275	1,890	791	20
17	15299	10-Apr-12	100	0.716	750	1,500	750	1,500	17.0	1,105	1,327	272	1,871	782	20
18	15343	01-May-12	100	0.562	750	1,500	750	1,500	25.0	1,042	1,311	273	1,856	766	20
20	15115	05-Jun-12	100	0.499	750	1,500	1,500	3,000	24.0	1,937	1,344	301	1,946	741	22
Avg			97	0.492	1737	2211	947	1895		1344	1292	267	1830	763	

Notes:

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

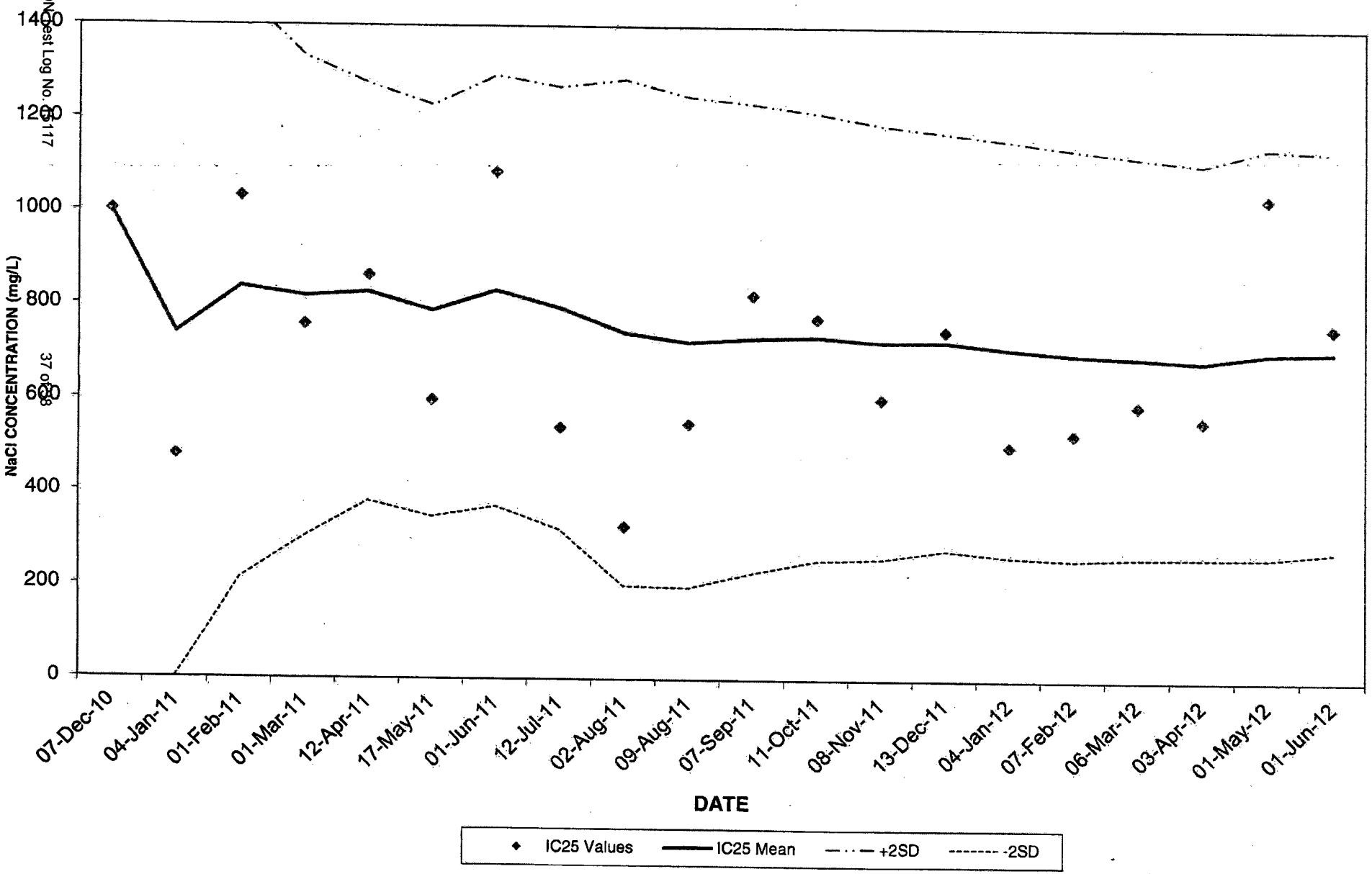
NOEC - No Observable Effect Concentration (survival or growth)

LOEC - Lowest Observable Effect Concentration (survival or growth)

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

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

CHRONIC REFERENCE TOXICANT (NaCl) 2010-2012
Ceriodaphnia dubia



9003/05reftox/cdchronic

6/21/2012

Ceriodaphnia dubia CHRONIC REFERENCE TOXICANT TESTING - SODIUM CHLORIDE (NaCl) 2010-2012

ENVIRON Test Log No. 15117

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	13067	07-Dec-10	80	80	23.1	2,000	>2,000	1,000	2,000	28.9	1002	1,002				0
2	13099	04-Jan-11	100	90	17.5	1,000	2,000	500	1,000	27.1	479	741	370	1,480	1	35
3	13147	01-Feb-11	90	100	25.7	1,000	2,000	1,000	2,000	22.1	1034	838	312	1,462	215	30
4	13208	01-Mar-11	100	90	16.2	500	1,000	500	1,000	24.7	759	819	257	1,333	304	27
5	13583	12-Apr-11	100	90	33.2	2,000	>2,000	500	1,000	18.3	863	827	224	1,275	380	24
6	13649	17-May-11	100	90	30.0	1,000	2,000	500	1,000	24.5	598	789	221	1,231	347	26
7	13667	01-Jun-11	100	100	31.7	1,000	2,000	500	1,000	13.1	1087	832	231	1,294	370	26
8	13736	12-Jul-11	100	90	27.5	1,000	2,000	500	1,000	21.3	540	795	237	1,270	320	28
9	13776	02-Aug-11	100	100	29.9	1,000	2,000	250	500	28.4	326	743	272	1,287	200	34
10	13793	09-Aug-11	100	100	28.4	500	1,000	250	500	19.9	549	724	263	1,251	197	35
11	13829	07-Sep-11	100	100	31.3	1,000	2,000	250	500	8.7	823	733	252	1,236	229	33
12	13887	11-Oct-11	100	100	28.3	2,000	>2,000	500	1,000	16.2	775	736	240	1,217	256	31
13	13963	08-Nov-11	100	90	17.9	2,000	>2,000	500	1,000	26.1	603	726	233	1,192	260	31
14	14306	13-Dec-11	100	100	21.4	1,000	2,000	500	1,000	16.8	750	728	224	1,176	280	30
15	14055	04-Jan-12	90	80	25.4	1,000	2,000	500	1,000	46.4	504	713	223	1,160	266	30
16	15131	07-Feb-12	100	100	27.1	1,000	2,000	500	1,000	29.7	530	701	221	1,143	260	30
17	15206	06-Mar-12	100	100	31.4	1,000	2,000	500	1,000	24.6	592	695	215	1,125	264	30
18	15283	03-Apr-12	100	100	33.4	500	1,000	500	1,000	27.3	560	687	211	1,110	265	30
19	15344	01-May-12	100	90	32.9	2,000	>2,000	500	1,000	22.4	1036	706	220	1,146	265	30
20	15100	01-Jun-12	80	100	28.8	2,000	>2,000	500	1,000	14.6	759	708	215	1,138	279	30
Avg			97	95	27	1225	1250	513	1025	23	708	762	244	1238	261	

Notes:

NOEC - No Observable Effect Concentration (survival or reproduction)

LOEC - Lowest Observable Effect Concentration (survival or reproduction)

ACCEPTABLE TEST RESULTS - A reproduction NOEC ranging from 250 mg/L to 1,000 mg/L.

(*) Minimum USEPA CONTROL CRITERIA - 80 percent survival, 80 percent with 3 broods, and average reproduction of 15 neonates/adult.

Do not ship liquids, blood or diagnostics in this packaging.

Reuse this enve

IMPORTANT: Peel away only the top adhesive strip for first use.

Page 1

RT 177

FZ

From: (870) 567-8812
Becky Blankenship
Georgia-Pacific
100 Supply Road
Drop Point 33
Crossett, AR 71635

Origin ID: ELDA

FedEx Express

J1220120716032S

Ship Date: 24JUL12
ActWgt: 1.0 LB
CAD: 102787395/INET3300

Delivery Address Bar Code

Ref # DMR'S
Invoice #
PO #
Dept #

SHIP TO: (501) 682-0744 BILL SENDER

CRAIG UYEDA
ADEQ
5301 NORTHSHORE DR

NORTH LITTLE ROCK, AR 72118

1 of 2

WED - 25 JUL A4
STANDARD OVERNIGHT

TRK# 7986 5659 6832
0201

MASTER

X2 LITA

72118
AR-US
MEM