Georgia-Pacific

Georgia-Pacific Crossett LLC
Consumer Products

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

March 18, 2016

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

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

Dear Mr. Healey:

Attached are the Discharge Monitoring Reports (DMRs) for the Georgia-Pacific Crossett Paper Operations' - NPDES Permit # **AR0001210** - for February 2016. As required by Part III, Section 4 paragraph a, of our NPDES Permit, a full report of the chronic toxicity testing has also been included with this submittal.

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

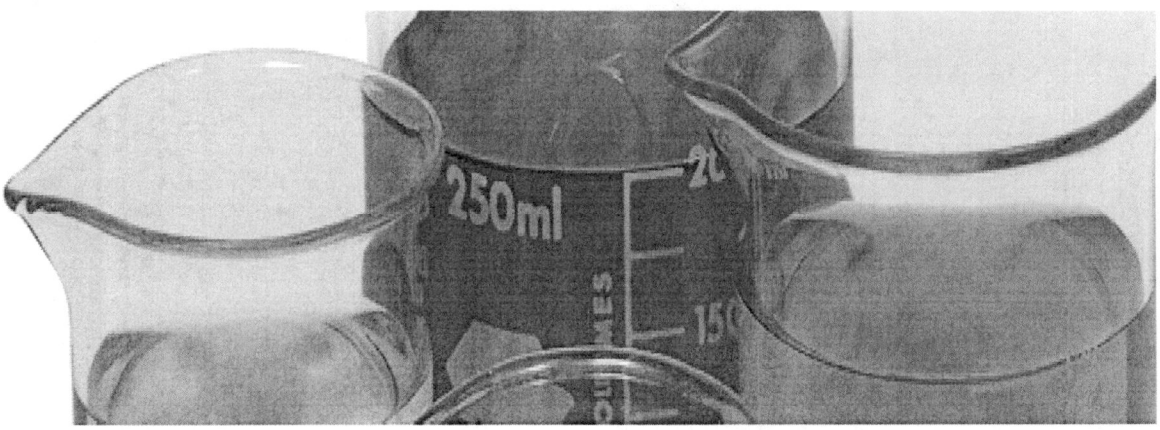
Sincerely,

Sarah M. Ross
Environmental Manager
Crossett Paper Operations

Prepared for
Georgia-Pacific Crossett Mill
Crossett, AR

Date
February 2016

CHRONIC TOXICITY TEST RESULTS – OUTFALL 001 EFFLUENT PROJECT NUMBER: 38-39396A



RAMBOLL ENVIRON

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

CHRONIC TOXICITY TEST RESULTS - OUTFALL 001 EFFLUENT
RAMBOLL ENVIRON PROJECT NO. 38-39396A

Dear Ms. Johnson:

March 2, 2016

Ramboll Environ
201 Summit View Dr. Ste 300
Brentwood, TN 37027
USA

T +1 615 277 7570
F +1 615 377 4976
www.ramboll-environ.com

Ramboll Environ conducted a chronic (7-day) whole effluent toxicity (WET) test for the Georgia-Pacific Crossett, AR facility. The test was conducted according to requirements in Arkansas NPDES permit AR0001210, and is a follow up for a non-compliant test conducted January 12, 2016. The test organism utilized for the chronic toxicity test was the water flea *Ceriodaphnia dubia* (*C. dubia*).

Composite samples of Outfall 001 effluent were collected on February 15, 17, and 19, 2016. The samples were received at Ramboll Environ on February 16, 18, and 20, 2016, within the USEPA-required receipt temperature range of 0-6.0 °C. The grab samples of river water were received in good condition on the same days as the effluent samples. The tests were initiated upon receipt of the first sample. Test concentrations consisted of 25, 34, 45, 60, and 80 percent effluent and a river water control. A secondary control of moderately hard water was also initiated.

Tests were conducted in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition (EPA-821-R-02-013). Controls met test acceptability criteria (TAC). 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)	60%

The results of the chronic test with *C. dubia* indicated NOEC values for lethality and sub-lethality of 80 percent effluent and 60 percent effluent, respectively. These test results indicate sub-lethal toxicity for *C. dubia*. The next scheduled test will occur March 2016 for *C. dubia* WET.

The *C. dubia* reproduction CV values (for surviving adults) for the river water control and critical dilution are 18.4 and 23.2 percent respectively. The PMSD value was 16.8 percent, which is within the USEPA PMSD bounds of 13 to 47 percent for *C. dubia* reproduction. The effluent concentration-response can be described as a Type 7 response in EPA 821-B-00-004. A Type 7 concentration-response curve demonstrates toxicity in the highest test concentration. In this case both the 60 and 80 percent effluent exposures were significantly impacted. Reproduction in these test concentrations was inhibited in excess of 29 percent, indicating that the inhibition effect is not a false positive effect due to high test sensitivity. 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 25 pages, including this cover letter, attachment pages and separator pages.

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

Yours sincerely,

Richard Lockwood
Project Manager
Water Quality and Ecotoxicology

D 615-277-7523
RLOCKWOOD@RAMBOLL.COM

Robin L. Richards, REM
Department Head
Water Management and Planning

2/2

Data Review Form

Acute and Chronic WET Tests

Ramboll Environ

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, Department Manager
Water Quality and Ecotoxicology

[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

Ceriodaphnia 7-d Survival and Reproduction Test

Ramboll Environ

Analysis ID:	07-6249-3014	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	24 Feb-16 12:00	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes
Batch ID:	09-1419-3119	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	16 Feb-16	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	22 Feb-16	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	16-8169-2223	**Code:**	643C963F	**Client:**	GPAC Crossett
Sample Date:	15 Feb-16	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (FEB)
Receive Date:	16 Feb-16	**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%)
Lab 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	Lab Water	10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
34		10	0	10	1	0	0.0%
45		10	0	10	1	0	0.0%
60		10	0	10	1	0	0.0%
80		10	0	10	1	0	0.0%

7d Survival Rate Detail

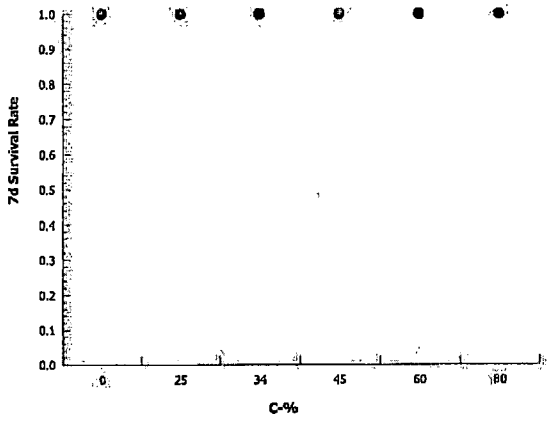
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water	1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
34		1	1	1	1	1	1	1	1	1	1
45		1	1	1	1	1	1	1	1	1	1
60		1	1	1	1	1	1	1	1	1	1
80		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

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

Analysis ID:	07-6249-3014	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	24 Feb-16 12:00	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

Graphics



Ceriodaphnia 7-d Survival and Reproduction Test — Ramboll Environ

Analysis ID:	14-9618-1722	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.4
Analyzed:	24 Feb-16 12:01	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	09-1419-3119	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Feb-16	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Receiving Water
Ending Date:	22 Feb-16	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	6d 0h	Source:	In-House Culture	Age:	
Sample ID:	16-8169-2223	Code:	643C963F	Client:	GPAC Crossett
Sample Date:	15 Feb-16	Material:	Industrial Effluent	Project:	WET Monthly Compliance Test (FEB)
Receive Date:	16 Feb-16	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	60	80	69.28	1.667	16.8%

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Lab Water		25	-3.102	2.289	4.206	18	1.0000	CDF	Non-Significant Effect
		34	-2.34	2.289	4.206	18	0.9999	CDF	Non-Significant Effect
		45	-1.796	2.289	4.206	18	0.9989	CDF	Non-Significant Effect
		60	1.197	2.289	4.206	18	0.3307	CDF	Non-Significant Effect
		80*	3.157	2.289	4.206	18	0.0057	CDF	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	25	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1682	0.13 - 0.47	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	956.6833	191.3367	5	11.34	<0.0001	Significant Effect
Error	911.5	16.87963	54			
Total	1868.183		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	6.278	15.09	0.2801	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9794	0.9459	0.4038	Normal Distribution

Reproduction Summary

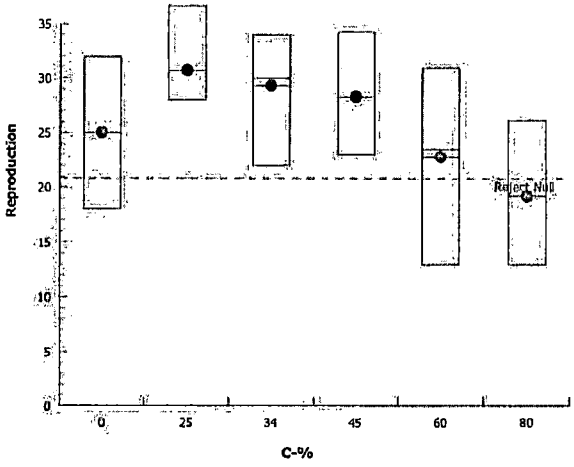
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water	10	25	21.7	28.3	25	18	32	1.461	18.48%	0.0%
25		10	30.7	28.7	32.7	29	28	35	0.8825	9.09%	-22.8%
34		10	29.3	26.23	32.37	30	22	34	1.359	14.66%	-17.2%
45		10	28.3	26.33	30.27	28	23	34	0.8699	9.72%	-13.2%
60		10	22.8	18.87	26.73	23.5	13	31	1.737	24.09%	8.8%
80		10	19.2	16.34	22.06	19	13	26	1.263	20.8%	23.2%

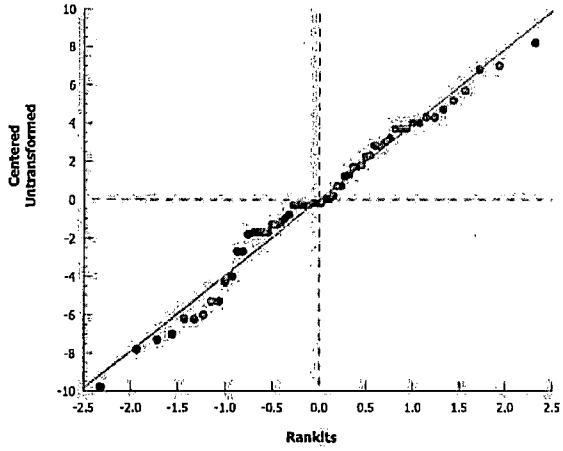
Reproduction Detail

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

Analysis ID:	14-9618-1722	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	24 Feb-16 12:01	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Ramboll Environ**

Analysis ID:	06-2050-9984	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	24 Feb-16 12:01	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	09-1419-3119	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	16 Feb-16	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	22 Feb-16	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 0h	**Source:**	In-House Culture	**Age:**	
Sample ID:	16-8169-2223	**Code:**	643C963F	**Client:**	GPAC Crossett
Sample Date:	15 Feb-16	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (FEB)
Receive Date:	16 Feb-16	**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	455595	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	25	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	68.61	56.66	N/A	1.457	NA	1.765

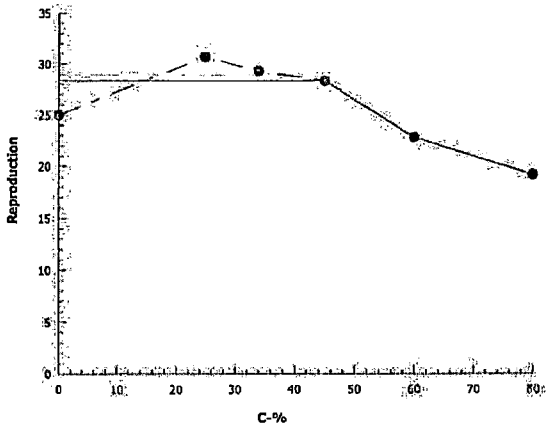
Reproduction Summary

			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water	10	25	18	32	1.461	4.619	18.48%	0.0%
25		10	30.7	28	35	0.8825	2.791	9.09%	-22.8%
34		10	29.3	22	34	1.359	4.296	14.66%	-17.2%
45		10	28.3	23	34	0.8699	2.751	9.72%	-13.2%
60		10	22.8	13	31	1.737	5.493	24.09%	8.8%
80		10	19.2	13	26	1.263	3.994	20.8%	23.2%

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	Lab Water	28	29	29	24	19	18	21	32	25	25
25		29	29	28	28	29	35	32	35	33	29
34		29	22	33	33	31	33	29	34	25	24
45		23	27	28	28	34	27	29	28	29	30
60		15	21	13	28	26	25	24	22	23	31
80		13	13	22	22	21	18	19	26	19	19

Graphics



RAMBOLL ENVIRON CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION 3-BROOD CHRONIC TOXICITY TEST

EPA-821-R-02-013 Method 1002.0

TEST LOG NO.: 18052

JOB NUMBER.: 3839396A

INDUSTRY: Georgia Pacific-Crossett

EFFLUENT: Outfall 001

DILUTION WATER: River Water

NPDES (Y/N) : Yes

PHOTOPERIOD: 16 hr light/8 hr dark

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

TEST VESSEL CAPACITY: 30 mL

TEST SOLUTION VOLUME: 15 mL

NO. ORGANISMS/REPLICATE: 1

NO. REPLICATES: 10

ORGANISM SOURCE INFORMATION:

AGE (date): 12/15-16/16

TEMP @ TEST START: 24.4

RANDOMIZED BY: AH

SOURCE ID:	AGE (time):
11269	1200-2100
11272	1200-2100

TEST START:

HOURS: 1115 DATE: 2/16/16

TEST END:

HOURS: 1300 DATE: 2/22/16

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding/ End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Control River Water Temp (°C)			REPLICATES 69 72										Notes
						1	2	3	4	5	6	7	8	9	10	
					Adult	4	20	1	5	9	10	11	12	16	18	
AH 1115		2/16	24.4		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1001	2/17	24.2	24.1	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1009	2/18	24.5	24.3	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1031	2/19	24.3	24.2	Day 3	6	6	4	4	4	4	4	6	4	5	
	AW 1028	2/20	25.0	25.1	Day 4	6	7	✓	✓	✓	✓	✓	✓	✓	✓	
	AW 1009	2/21	24.7	25.0	Day 5	✓	2	7	4	5	2	6	8	5	6	
AH 1300		2/22		25.4	Day 6	16	14	18	16	10	12	11	18	16	14	
					Day 7											
					Day 8											
			Total			28	29	29	24	19	18	21	32	25	25	250

(R. 7.20.16)

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

TEST LOG # 18052 JOB # 3839396A

CLIENT/SAMPLE ID: Georgia Pacific - Crossett LAB/STATE: RAMBOLL 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											
AD 1115		2/16	24.5		Day 0	✓	-	-	-	-	✓	-	-	-	-	
	HM 1001	2/17	24.3	24.4	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1019	2/18	24.4	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1031	2/19	24.3	24.4	Day 3	4	5	✓	✓	4	4	5	4	4	4	
	AW 1028	2/20	24.9	25.3	Day 4	7	5	4	5	7	✓	8	✓	11	9	
	AW 1009	2/21	24.6	25.5	Day 5	✓	✓	8	7	✓	13	✓	13	✓	✓	
LH 1300		2/22		25.3	Day 6	18	19	16	16	18	18	19	18	18	16	
					Day 7											
					Day 8											
			Total			29	29	28	28	29	35	32	35	33	29	307

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
AD 1115		2/16	24.4		Day 0	✓	✓	-	-	-	-	-	✓	-	-	
	HM 1001	2/17	24.5	24.4	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1019	2/18	24.2	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1031	2/19	24.5	24.2	Day 3	5	4	4	5	4	5	4	5	4	6	
	AW 1028	2/20	24.6	24.4	Day 4	6	6	✓	✓	✓	✓	7	✓	7	9	
	AW 1009	2/21	24.8	24.6	Day 5	✓	12	13	14	11	9	✓	11	✓	9	
LH 1300		2/22		25.3	Day 6	18	✓	16	14	16	19	18	18	14	✓	
					Day 7											
					Day 8											
			Total			29	22	33	33	31	33	29	34	25	24	293

✓ = 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 # 18052 JOB # 3839396A

CLIENT/SAMPLE ID: Georgia Pacific - Crossett LAB/STATE: RAMBOLL 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											
PW 1115		2/16	24.5		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1001	2/17	24.2	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1019	2/18	24.1	24.4	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1031	2/19	24.5	24.3	Day 3	5	4	4	✓	6	4	5	4	3	4	
	AW 1028	2/20	24.4	24.8	Day 4	5	9	8	5	10	✓	8	✓	✓	9	
	AW 1009	2/21	24.7	24.9	Day 5	✓	✓	✓	6	✓	9	✓	11	9	✓	
LH 1300		2/22		24.9	Day 6	13	14	16	17	18	14	16	13	17	17	
					Day 7											
					Day 8											
			Total			23	27	28	28	34	27	29	28	29	30	313 (233 + 80)

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
PW 1115		2/16	24.4		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1001	2/17	24.1	24.4	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1019	2/18	24.5	24.4	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1031	2/19	24.2	24.2	Day 3	4	4	4	5	4	4	3	✓	4	5	
	AW 1028	2/20	24.6	24.7	Day 4	✓	6	✓	✓	8	6	✓	2	6	✓	
	AW 1009	2/21	25.1	24.5	Day 5	✓	✓	8	9	✓	✓	7	8	✓	12	
LH 1300		2/22		25.0	Day 6	11	11	1-	14	14	15	14	12	13	14	
					Day 7											
					Day 8											
			Total			15	21	13	28	26	25	24	22	23	31	228

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

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TEST LOG # 18052 JOB # 3839396A

CLIENT/SAMPLE ID: Georgia Pacific - Crossett LAB/STATE: RAMBOLL ENVIRON / TN

SURVIVAL AND REPRODUCTION DATA

Test Start & Feeding / End Initials/ Time	Daily Renewal & Feeding Initials/ Time	Date	Concentration 80% Temp (°C)			1	2	3	4	5	6	7	8	9	10	Notes
					Adult											
PB 1115		2/16	24.4		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1001	2/17	24.2	24.5	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1019	2/18	24.3	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1031	2/19	24.2	24.1	Day 3	4	4	4	5	5	3	3	4	4	4	
	AW 1028	2/20	24.6	25.2	Day 4	6	7	✓	✓	6	7	5	✓	4	5	
	AW 1009	2/21	25.0	25.2	Day 5	2	✓	8	11	✓	8	✓	11	2	✓	
LM 1300		2/22		24.7	Day 6	1	2	10	6	10	11	11	11	9	✓	
					Day 7											
					Day 8											
			Total			13	13	22	22	21	18	19	26	19	9	~~178~~ 192 ① HM 2/21/16

SURVIVIAL AND REPRODUCTION DATA

Test Start & Feeding / End Initials/ Time.	Daily Renewal & Feeding Initials/ Time	Date	Concentration MH Temp (°C)			1	2	3	4	5	6	7	8	9	10	Notes
PB 1115		2/16	24.7		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1001	2/17	24.4	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1019	2/18	24.4	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	HM 1031	2/19	24.5	24.2	Day 3	6	5	6	5	6	6	6	4	5	4	
	AW 1028	2/20	24.0	25.4	Day 4	11	12	10	✓	✓	✓	9	✓	11	12	
	AW 1009	2/21	25.2	25.6	Day 5	13	14	✓	6	13	12	✓	14	✓	✓	
LM 1300		2/22		25.2	Day 6	✓	✓	16	14	17	19	16	15	15	16	
					Day 7											
					Day 8											
			Total			30	31	32	25	36	37	31	33	31	32	318

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

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Page 4 of 4

TEST LOG NO. 18052

CLIENT/SAMPLE ID: Georgia Pacific Crossett

JOB NO. 20-196751

TEST ORGANISM: Cd

DATE: 2/16/16

D.O. (mg/L)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	8.3	8.6	8.4	8.3	8.2	8.1	8.4	8.2	8.1	8.5	8.0	8.4		
25	8.4	8.6	8.4	8.4	8.2	8.2	8.3	8.4	8.1	8.5	7.8	8.5		
34	8.4	8.4	8.3	8.4	8.1	8.2	8.3	8.6	8.3	8.4	7.9	8.4		
45	8.4	8.6	8.3	8.4	8.1	8.2	8.2	8.5	8.5	8.6	8.3	8.4		
60	8.3	8.5	8.3	8.3	8.2	8.4	8.1	8.2	8.4	8.6	8.5	8.3		
80	8.3	8.8	8.2	8.3	8.3	8.2	8.2	8.3	8.4	8.5	8.4	8.1		
MH	8.4	8.7	8.3	8.5	8.3	8.2	8.2	8.1	8.3	8.4	8.3	8.6		

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	7.49	7.01	7.54	6.95	10.65	10.99	10.70	7.03	10.79	7.03	6.43	7.04		
25	7.07	7.63	7.12	7.49	6.84	7.74	7.23	7.82	7.08	7.79	7.17	7.86		
34	7.12	7.74	7.15	7.56	7.14	7.89	7.30	7.95	7.15	7.99	7.26	8.00		
45	7.17	7.80	7.23	7.68	7.25	7.98	7.29	8.03	7.22	8.12	7.37	8.09		
60	7.22	8.00	7.25	7.80	7.23	8.11	7.48	8.18	7.30	8.26	7.42	8.21		
80	7.27	8.14	7.30	8.05	7.41	8.04	7.51	8.29	7.34	8.34	7.51	8.33		
MH	7.45	7.49	7.52	7.20	7.49	7.52	7.56	7.61	7.44	7.60	7.67	7.50		

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	149	106	147	97	90	95	82	86	84	89	80	92		
25	622	580	598	541	515	562	505	531	525	516	545	527		
34	813	750	792	751	705	754	742	728	745	718	732	727		
45	975	899	991	937	931	916	974	911	945	918	908	918		
60	1313	1228	1266	1226	1195	1229	1191	1160	1171	1140	1114	1140		
80	1610	1505	1632	1575	1021	1515	1500	1510	1516	1469	1509	1525		
MH	259	203	249	264	213	212	208	214	205	218	227	209		
Params Intl/Time:	AW1054	HM1019	AW0750	HM1130	HM0920	HM1050	HM 0920	AW1043	AW 1023	AW1024	AW 0923	LN1310		
Dilutions Intl/Time:	AW 1050		AW0750		HM0910		HM 0910		AW 1013		AW 0914			
Control Water Batch:	6150		6150	6150, 19498		6150, 19498 ①		6150, 19507		6150, 19507				
Food Batch	544.542		544.542	51,32		51,32		51,32		51,32				

① [illegible] 2/18/16

1/ie AW 2/21/16

TEST LOG NO. 18052 **CLIENT:** Georgia Pacific Crossett **DATE OF TEST:** 2/16/16

JOB NO. 20-196751 **TEST TYPE(S) PERFORMED:** Fm & Cd Chronic

100% EFFLUENT

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH_3N mg/L
19489	Outfall 001	2/14-15/16	2/16/16	240	455	<0.02	1) ~~<0.1~~ 0.297
19499	Outfall 001	2/16-17/16	2/18/16	232	390	0.04	1) ~~<0.1~~ 0.315
19508	Outfall 001	2/18-19/16	2/20/16	236	385	0.02	1) ~~<0.1~~ 0.373
n/a	Fm treated				325		

1) Die [illegible] 2/21/16

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
19488	River Water	2/15/16	2/16/16	18.4	35	0.04	<0.1
6150	MH	2/10/16	2/16/16	81.6	45	<0.02	<0.1
19498	River Water	2/15/16	2/18/16	16	22	<0.02	<0.1
19507	River Water	2/15/16	2/20/16	19.2	25	0.04	<0.1

ATTACHMENT 2

CHAIN OF CUSTODY DOCUMENTATION AND REFERENCE TOXICANT DATA

Ramboll Environ Test Log No. 18052

Project Name: | Project Number:

Industry: Georgia Pacific Paper

Phone: 870-567-8170 | FAX:

County: Ashley | City: Crossett | State: AR

Sample Collected by (print): Danny / Chris

Sample Collected by (signature): Chris Roan

NPDES Permit No.: AR0001210

NPDES Test: ☐ No ☑ Yes

CHAIN-OF-CUSTODY

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

Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs	Total Volume in liters	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	G	PLASTIC	N/A	2/15/16 1:35pm		1	10										Dilution Water	19488
Outfall 001	C	PLASTIC	Y	2/14/16 3:50PM	2/15/16 5:46PM	1	10						✓					19489

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

Remarks:

Measured TRC (if applicable): 0.0 mg/L

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition:	(lab use only)
Chris Roan	2/15/16	3:30pm			ONICE	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Receipt Temp:	Containers/Volume Received: 10L 10L	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/16/16	Time: 0835	pH upon arrival: 7.02	DO upon arrival: 8.2

1.6 cc

1.6 cc

pH) 7.56 8.3

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 2/16/16 0835 by AW

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

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
19488	River Wat	1.6	7.02	8.2	0.04
19489	Effluent	1.6	7.56	8.3	<0.02

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Ramboll Environ Test Log No. 18052

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CHAIN-OF-CUSTODY

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

Project Name: | Project Number:

Industry: Georgia Pacific Paper

Phone: 870-567-8170 FAX:

County: Ashley City: Crossett State: AR

Sample Collected by (print): Danny / Chris

Sample Collected by (signature): Chris Roan

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)	Receipt Temp °C
River	G	Plastic	NA	2/15/16	12:35pm												DI Water	19496	0.1
OUTFALL 001	C	Plastic	Yes	2/16/16 6:09AM	2/17/16 6:11 AM								✓					19495	2.4

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

Remarks:

Measured TRC (if applicable): 0.0 mg/L

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition: (lab use only)
Chris Roan	2/17/16	3:00 pm			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Containers/Volume Received: 10L+10L	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/19/16	Time: 0833

pH upon arrival: 9.8 0.7 = 9.1

DO upon arrival: 9.1 8.6

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 2/20/16 0939 by AW

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

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
19507	River	2.0	6.61	8.5	0.04
19508	Outfall 001	1.9	7.56	8.8	0.02

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Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 2/18/16 0839 by AD

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

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
19498	River	2.1	6.75	9.1	20.02
19499	Outfall 001	2.4	7.50	8.4	0.04

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Ramboll Environ Test Log No. 18052

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Project Name:	Project Number:
Industry: Georgia Pacific Paper	
Phone: 870-567-8170 FAX:	
County: Ashley City: Crossett State: AR	
Sample Collected by (print): Chris Doan	NPDES Permit No.: AR 0001210
Sample Collected by (signature): Chris Doan	NPDES Test: ☐ No ☑ Yes

CHAIN-OF-CUSTODY

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

Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs	Total Volume in liters	Acute Fathead minnow	Acute Bannerfin shiner	Acute *Ceriodaphnia dubia*	Acute *Daphnia pulex*	Chronic Fathead minnow	Chronic *Ceriodaphnia dubia*	Continuous Batch Tests	Discrete Batch Tests	Other	Description Definitive or Screen	Sample B# (lab only)	Receipt Temp °C
River	G	Plastic	N/A	2/15/16	12:35												DrL Water	19507	2.0
OUTFALL 001	C	Plastic	yes	2/19/16 6:05AM	2/19/16 6:13AM								✓					19508	1.9

Analysis Requested

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

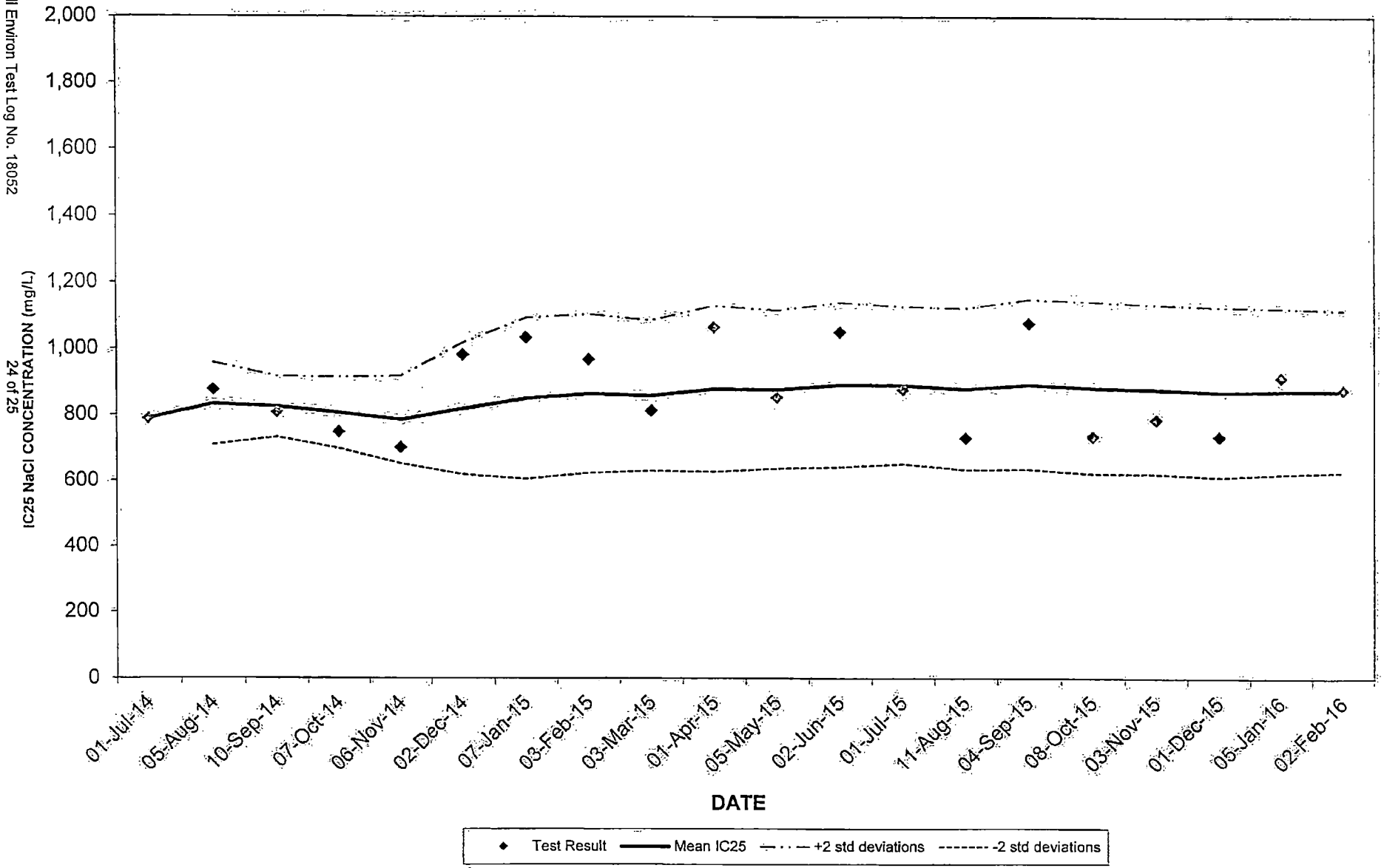
Remarks:

Measured TRC (if applicable): 0.0 mg/L

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples shipped via: ☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	Condition: (lab use only)
Chris Doan	2-19-16	3:00PM			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Containers/Volume Received: 10 of each	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/20/16	Time: 0939

pH upon arrival:	DO upon arrival:
6.6, 7.56	8.5, 8.8

CHRONIC REFERENCE TOXICANT (NaCl) 2014-2016
Ceriodaphnia dubia



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3/2/2016

Ceriodaphnia dubia CHRONIC REFERENCE TOXICANT TESTING - SODIUM CHLORIDE (NaCl) 2014-2016

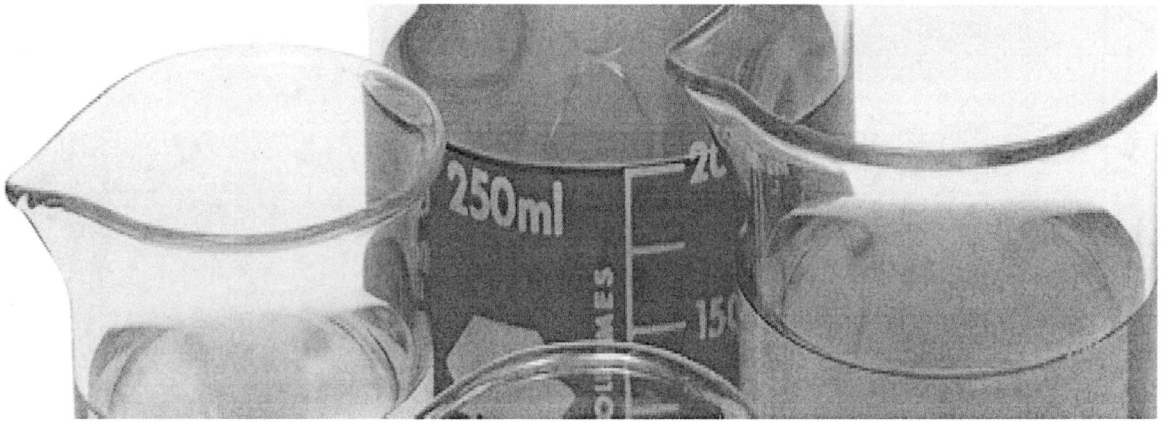
Test Number	Log Number	Test Initiation Date	Control Survival (%) (*)	3 Brood Production (%) (*)	Control Average Repro (*)	Survival		Reproduction			IC25 VALUE (mg/L)	IC25 CUMULATIVE MEAN (mg/L)	IC25 ST. DEV. (mg/L)	IC25 2+ STD. DEV.	IC25 2- STD. DEV.	Coefficient of Variation (%)
						NOEC (mg/L)	LOEC (mg/L)	NOEC (mg/L)	LOEC (mg/L)	PMSD						
1	16909	01-Jul-14	100	100	31.3	1,000	2,000	500	1,000	21.7	789	789				
2	16989	05-Aug-14	100	90	28.7	2,000	>2000	500	1,000	17.4	877	833	62	957	709	5
3	17077	10-Sep-14	100	90	28.4	1,000	2,000	500	1,000	17.3	808	825	46	917	732	5
4	17124	07-Oct-14	100	100	29.7	1,000	2,000	500	1,000	26.8	747	805	54	914	697	6
5	17201	06-Nov-14	100	80	23.8	1,000	2,000	500	1,000	21.5	700	784	66	917	651	8
6	17248	02-Dec-14	100	80	26.1	2,000	>2000	500	1,000	14.1	980	817	100	1,016	618	11
7	17316	07-Jan-15	100	90	28.2	2,000	>2000	500	1,000	17.8	1,032	848	122	1,092	604	13
8	17380	03-Feb-15	100	90	33.2	2,000	>2000	500	1,000	18.7	966	862	120	1,103	621	13
9	17427	03-Mar-15	100	90	26.7	1,000	2,000	500	1,000	21.4	811	857	114	1,085	629	13
10	17504	01-Apr-15	100	90	24.5	1,000	2,000	1,000	2,000	24.9	1,064	877	126	1,129	626	14
11	17571	05-May-15	100	80	22.9	2,000	>2000	500	1,000	22.0	851	875	120	1,114	636	13
12	17622	02-Jun-15	100	80	27.4	1,000	2,000	1,000	2,000	22.3	1,048	889	125	1,139	640	13
13	17675	01-Jul-15	100	100	26.4	2,000	>2000	500	1,000	16.0	875	888	119	1,127	650	13
14	17746	11-Aug-15	100	80	20.6	2,000	>2000	500	1,000	33.1	728	877	122	1,122	632	13
15	17798	04-Sep-15	100	100	27.7	2,000	>2000	500	1,000	13.4	1,075	890	129	1,147	633	14
16	17856	08-Oct-15	100	80	25.5	2,000	>2000	500	1,000	22.0	733	880	130	1,141	620	14
17	17904	03-Nov-15	100	100	27.8	1,000	2,000	500	1,000	12.4	783	875	128	1,131	618	14
18	17947	01-Dec-15	100	100	26.0	2,000	>2,000	500	1,000	19.8	732	867	129	1,124	609	14
19	17995	05-Jan-16	100	90	30.4	2,000	>2,000	500	1,000	19.1	912	869	126	1,120	618	14
20	18024	02-Feb-16	100	100	27.7	1,000	2,000	500	1,000	23.5	873	869	122	1,114	624	14
		Avg	100	90	27	1556	889	556	1111	20	869	852	107	1069	643	

Notes:
NOEC - No Observable Effect Concentration (survival or reproduction)
LOEC - Lowest Observable Effect Concentration (survival or reproduction)
(*) Minimum USEPA CONTROL CRITERIA - 80 percent survival, 80 percent with 3 broods, and average reproduction of 15 neonates/adult.

Prepared for
Georgia-Pacific Crossett Mill
Crossett, AR

Date
January 2016

CHRONIC TOXICITY TEST RESULTS – OUTFALL 001 EFFLUENT PROJECT NUMBER: 38-39396A



RAMBOLL ENVIRON

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

CHRONIC TOXICITY TEST RESULTS - OUTFALL 001 EFFLUENT
RAMBOLL ENVIRON PROJECT NO. 38-39396A

Dear Ms. Johnson:

January 27, 2016

Ramboll Environ
201 Summit View Dr. Ste 300
Brentwood, TN 37027
USA

T +1 615 277 7570
F +1 615 377 4976
www.ramboll-environ.com

Ramboll Environ conducted chronic (7-day) whole effluent toxicity (WET) tests for the Georgia-Pacific Crossett, AR facility. The tests were conducted according to requirements in Arkansas NPDES permit AR0001210. Composite samples of Outfall 001 effluent were collected on January 11, 13, and 15, 2016. The samples were received at Ramboll Environ on January 12, 14, and 16, 2016, within the USEPA-required receipt temperature range of 0-6.0 °C. The grab samples of river water were received in good condition on the same days as the effluent samples. Test organisms utilized for the chronic toxicity tests were the fathead minnow (*Pimephales promelas*) and *Ceriodaphnia dubia* (*C. dubia*). The tests were initiated upon receipt of the first sample. Test concentrations consisted of 25, 34, 45, 60, and 80 percent effluent and a river water control. A secondary control of moderately hard water was also initiated.

Tests were conducted in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition (EPA-821-R-02-013). All controls met test acceptability criteria (TAC). 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%	45%

The results of the chronic test with the fathead minnow indicated a No Observable Effect Concentration (NOEC) value for lethality and sub-lethality of 80 percent effluent. The results of the chronic test with *C. dubia* indicated NOEC values for lethality and sub-lethality of 80 percent effluent and 45 percent effluent, respectively. These test results indicate no significant toxicity at the critical dilution (80 percent effluent) for the fathead minnow, but indicate sub-lethal toxicity for *C. dubia*. A retest has been scheduled in February 2016 for *C. dubia* WET.

The Coefficient of Variation (CV) values for the fathead minnow survival in the river water control and critical dilution are both zero percent. The CV values for growth in the control and critical dilution are 11.5 and 9.1 percent, respectively, and meet the CV limit of 40 percent for findings of no toxicity. Test precision for growth results (as Percent Minimum Significant Difference, PMSD) value was 15.2, which is within the USEPA PMSD bounds of 12 to 30 percent when alpha 0.05 is used for hypothesis testing. 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 curve is indicative of 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.

The *C. dubia* reproduction CV values (for surviving adults) for the river water control and critical dilution are 11.2 and 24.9 percent respectively. The PMSD value was 17.5 percent, which is within the USEPA PMSD bounds of 13 to 47 percent for *C. dubia* reproduction. The effluent concentration-response can be described as a Type 7 response in EPA 821-B-00-004. A Type 7 concentration-response curve demonstrates toxicity in the highest test concentration. In this case both the 60 and 80 percent effluent exposures were significantly impacted. Reproduction in these test concentrations was inhibited in excess of 29 percent, indicating that the inhibition effect is not a false positive effect due to high test sensitivity. 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 36 pages, including this cover letter, attachment pages and separator pages.

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

Yours sincerely,

Richard Lockwood
Project Manager
Water Quality and Ecotoxicology

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Robin L. Richards, REM
Department Head
Water Management and Planning

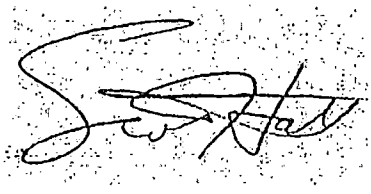
2/2

Data Review Form

Acute and Chronic WET Tests

Ramboll Environ

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, Department Manager
Water Quality and Ecotoxicology

[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

Fathead Minnow 7-d Larval Survival and Growth Test — **Ramboll Environ**

Analysis ID:	09-3410-6374	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 12:35	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	04-1472-0791	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	12 Jan-16	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	19 Jan-16	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Environmental Consult & Test	**Age:**	
Sample ID:	07-3776-1688	**Code:**	2BF95998	**Client:**	GPAC Crossett
Sample Date:	11 Jan-16	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JAN)
Receive Date:	12 Jan-16	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	001		

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

Steel Many-One Rank Sum Test

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

Test Acceptability Criteria

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

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5	65540	<0.0001	Significant Effect
Error	0	0	24			
Total	0		29			

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	5	1	1	1	1	1	1	0	0.0%	0.0%
25		5	1	1	1	1	1	1	0	0.0%	0.0%
34		5	1	1	1	1	1	1	0	0.0%	0.0%
45		5	1	1	1	1	1	1	0	0.0%	0.0%
60		5	1	1	1	1	1	1	0	0.0%	0.0%
80		5	1	1	1	1	1	1	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Wate	5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	0.0%
25		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	0.0%
34		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	0.0%
45		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	0.0%
60		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	0.0%
80		5	1.393	1.393	1.393	1.393	1.393	1.393	0	0.0%	0.0%

7d Survival Rate Detail

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

Fathead Minnow 7-d Larval Survival and Growth Test — **Ramboll Environ**

Analysis ID:	09-3410-6374	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 12:35	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

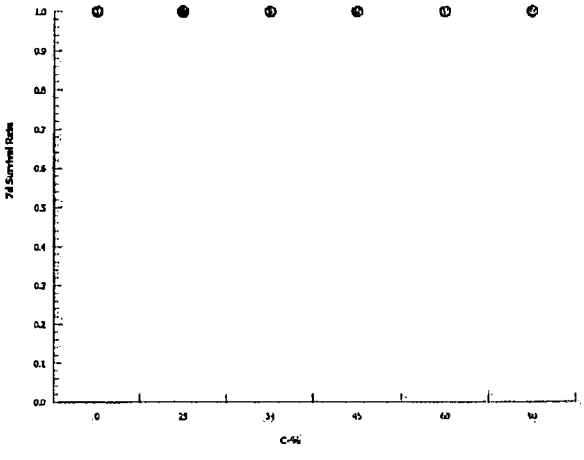
Angular (Corrected) Transformed Detail

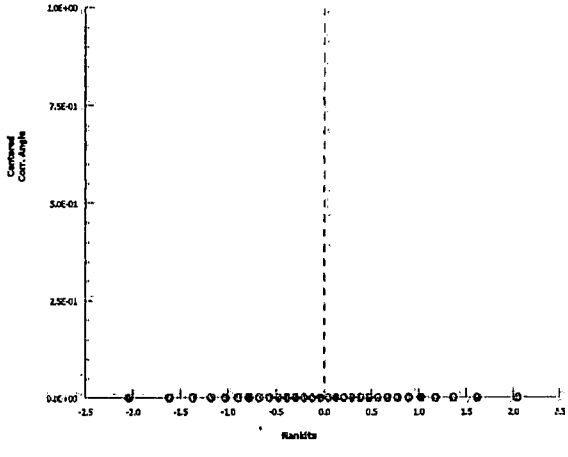
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	1.393	1.393	1.393	1.393	1.393
25		1.393	1.393	1.393	1.393	1.393
34		1.393	1.393	1.393	1.393	1.393
45		1.393	1.393	1.393	1.393	1.393
60		1.393	1.393	1.393	1.393	1.393
80		1.393	1.393	1.393	1.393	1.393

7d Survival Rate Binomials

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

Graphics





Fathead Minnow 7-d Larval Survival and Growth Test — **Ramboll Environ**

Analysis ID:	08-2181-5894	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 12:36	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	04-1472-0791	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	12 Jan-16	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	19 Jan-16	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	7d 0h	**Source:**	Environmental Consult & Test	**Age:**	
Sample ID:	07-3776-1688	**Code:**	2BF95998	**Client:**	GPAC Crossett
Sample Date:	11 Jan-16	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JAN)
Receive Date:	12 Jan-16	**Source:**	Discharge Monitoring Report		
Sample Age:	24h	**Station:**	001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	NA	C > T	NA	NA	80	>80	NA	1.25	15.2%

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	-0.6543	2.362	0.086	8	0.9586	CDF	Non-Significant Effect
		34	-1.791	2.362	0.086	8	0.9985	CDF	Non-Significant Effect
		45	0.08257	2.362	0.086	8	0.8078	CDF	Non-Significant Effect
		60	2.128	2.362	0.086	8	0.0785	CDF	Non-Significant Effect
		80	1.446	2.362	0.086	8	0.2418	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.564	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.152	0.12 - 0.3	Yes	Passes Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	2.222	2.908	0.6291	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.06599662	0.01319932	5	4.008	0.0087	Significant Effect
Error	0.07904477	0.003293532	24			
Total	0.1450414		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	1.843	15.09	0.8704	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.931	0.9031	0.0523	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	0.564	0.4834	0.6446	0.5863	0.4488	0.605	0.02901	11.5%	0.0%
25		5	0.5878	0.5312	0.6443	0.5862	0.5213	0.6475	0.02038	7.76%	-4.21%
34		5	0.629	0.5468	0.7112	0.6325	0.525	0.705	0.0296	10.52%	-11.52%
45		5	0.561	0.4722	0.6498	0.5875	0.445	0.6325	0.03197	12.74%	0.53%
60		5	0.4867	0.434	0.5395	0.485	0.4438	0.5362	0.019	8.73%	13.7%
80		5	0.5115	0.4535	0.5695	0.5025	0.4688	0.5838	0.02088	9.13%	9.31%

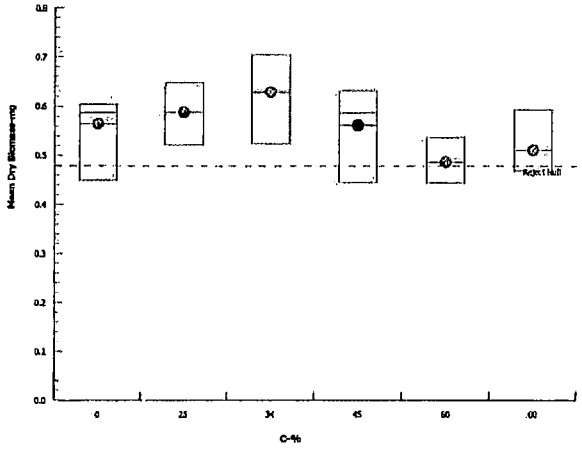
Fathead Minnow 7-d Larval Survival and Growth Test — **Ramboll Environ**

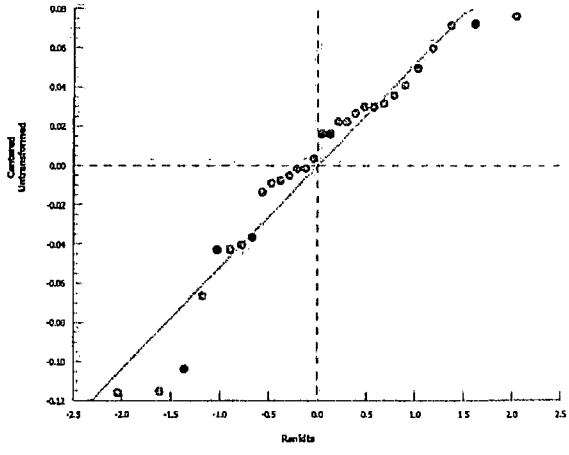
Analysis ID:	08-2181-5894	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 12:36	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Receiving Water	0.5938	0.5862	0.4488	0.5863	0.605
25		0.5213	0.6475	0.58	0.5862	0.6037
34		0.705	0.6588	0.525	0.6237	0.6325
45		0.5875	0.5925	0.445	0.5475	0.6325
60		0.5362	0.4438	0.4463	0.5225	0.485
80		0.5025	0.4688	0.475	0.5838	0.5275

Graphics





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

TEST LOG NO.: 18003
JOB NUMBER.: ~~20-19875~~ 383936A
INDUSTRY: Georgia Pacific Crossett
EFFLUENT: Outfall 001
DILUTION WATER: River Water
NPDES: Yes ____ No ____
FOOD BATCH: 5284

BEGINNING: HRS: 1342 DATE: 1/12/16
ENDING: HRS: 1200 DATE: 1/19/16
TEST DILUTIONS: 25, 34, 45, 60, 80%
ORGANISM AGE (date): 1/11/16
ORGANISM SOURCE: ECT #5403
SOURCE TEMP @ TEST START: 24.0
RANDOMIZED BY: AH

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

CONC (%)	REP ID	SURVIVAL (#) START	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
RW	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.2	24.2 | 24.1	24.1 | 24.3	24.1 | 24.2	24.0 | 24.1	24.0 | 24.1	24.1 | 24.0	24.0
25	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.2	24.1 | 24.2	24.3 | 24.2	24.2 | 24.3	24.0 | 24.2	24.0 | 24.1	24.1 | 24.1	24.0
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	24.2	24.2 | 24.2	24.1 | 24.3	24.1 | 24.2	24.0 | 24.2	24.0 | 24.0	24.1 | 24.2	24.0
45	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.1	24.2 | 24.1	24.1 | 24.4	24.1 | 24.2	24.0 | 24.1	24.0 | 24.0	24.0 | 24.1	24.0
60	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.2	24.2 | 24.1	24.0 | 24.4	24.1 | 24.2	24.0 | 24.1	24.0 | 24.1	24.1 | 24.1	24.0
80	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	Temp(°c):old/new	24.1	24.2 | 24.1	24.3 | 24.4	24.1 | 24.1	24.0 | 24.1	24.0 | 24.2	24.1 | 24.2	24.0
Test Renewal	Time	1342	1254	1259	0918	1247	1204	1054	
	Date	1/12/16	1/13/16	1/14/16	1/15/16	1/16/16	1/17/16	1/18/16	1/19/16
	Initials	AH	AH	CM	AH	AH	AH	AH	CM
morning feeding	Int/Time		LM0740	LM0717	LM0705	AW0728	AW0741	LM0702	
afternoon feeding	Int/Time	AH1500	LM1350	AH1317	AH1305	AH1328	AW1341	AH1502	

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

TEST LOG NO.: 18003
JOB NUMBER.: 20-19675I
INDUSTRY: Georgia Pacific Crossett
EFFLUENT: 001
DILUTION WATER: River Water
NPDES: Yes _______ No _______
FOOD BATCH: _______________

BEGINNING: HRS: 1342 DATE: 1/12/16
ENDING: HRS: 1200 DATE: 1/19/16

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	24.2	24.1/24.1	24.3/24.1	24.1/24.1	24.1/24.1	24.0/24.0	24.1/24.2	24.0
	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								

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

TEST LOG NO.: 18003 BEGINNING: HRS: 1342 DATE: 1/12/16
JOB NO.: 20-19675I ENDING: HRS: 1220 DATE: 1/19/16
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 3	Tare wt (g)	Combined wt (g)	Tot Fish wt (g)	# of Fish	Fish Wt (mg) Per Final # of Fish	
RW	A	1	1.08075	1.08550	0.00475	8	0594	
	B	2	1.08738	1.09207	0.00469	8	0.586	AVG Control
	C	3	1.09358	1.09717	0.00359	8	0449	Fish wt. 0.5164
	D	4	1.10773	1.11242	0.00469	8	0.5865	(using final #)
Q.C AH 1/21/16	E	5	1.09892	1.10412	0.00489	8	0.581	M 1/21/16
25	A	6	1.09673	1.10090	0.00417	8		
	B	7	1.08413	1.08931	0.00518	8		
	C	8	1.09356	1.09800	0.00464	8	Oven ID:	1
	D	9	1.09443	1.09912	0.00469	8		
	E	10	1.11502	1.11985	0.00483	8	Tins In:	
34	A	11	1.10349	1.10913	0.00564	8	Date:	1/19/16
	B	12	1.10242	1.10751	0.00509	8	Time:	1220
1.11209	C	13	1.10789	1.11209	0.00420	8	Temp (°C):	100
	D	14	1.09545	1.10048	0.00499	8	Initials:	LH
(66)	E	15	1.08544	1.09050	0.00506	8		
1.11625 17	45	A	16	1.11155	1.11625	0.00470	8	Tins Out:
1.07993	B	17	1.07519	1.07993	0.00474	8	Date:	1/20/15
1.10214 15	C	18	1.09758	1.10214	0.00456	8	Time:	0735
	D	19	1.07642	1.08080	0.00438	8	Temp (°C):	102
	E	20	1.06624	1.07130	0.00506	8	Initials:	VAW
60	A	21	1.06279	1.06708	0.00429	8		
	B	22	1.07949	1.08304	0.00355	8		
	C	23	1.07573	1.07930	0.00357	8		
	D	24	1.10856	1.11274	0.00418	8		
	E	25	1.10440	1.10828	0.00388	8		
80	A	26	1.10620	1.11022	0.00402	8	FINAL WEIGHTS	
	B	27	1.06705	1.07080	0.00375	8		
	C	28	1.09138	1.09518	0.00380	8	DATE:	1/20/15
	D	29	1.10572	1.11039	0.00467	8	INITIALS:	AW
	E	30	1.10406	1.10828	0.00422	8		
MH	A	31	1.10546	1.10944	0.00398	8		
	B	32	1.11959	1.12370	0.00411	8		
	C	33	1.11608	1.11994	0.00386	8		
	D	34	1.09080	1.09392	0.00312	8		
	E	35	1.07698	1.08070	0.00372	7		
	Initials / Date:		AH 1/15					

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Ramboll Environ Test Log No. 18003

13 of 36

TEST LOG NO. 18003

JOB NO. 20-196751

CLIENT/SAMPLE ID: Georgia Pacific Crossett

TEST ORGANISM: Fm

DATE: 1/12/16

D.O. (mg/L)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	8.2	8.5	8.5	8.4	8.2	8.2	8.4	8.1	8.2	8.3	8.3	8.4	8.3	8.2
25	8.2	8.4	8.4	8.6	8.3	8.3	8.1	7.9	8.1	8.4	8.5	8.4	8.3	8.1
34	8.3	8.4	8.6	8.6	8.4	8.3	8.0	7.7	8.3	8.2	8.0	8.3	8.4	8.1
45	8.2	8.3	8.5	8.4	8.3	8.2	8.3	7.5	8.3	8.0	8.3	9.0	8.4	8.2
60	8.2	8.2	8.1	8.1	8.2	8.2	7.9	7.4	8.2	7.6	8.0	7.6	8.3	8.2
80	8.2	8.2	8.3	7.5	8.2	8.3	8.1	7.5	8.3	7.4	8.4	6.8	8.3	8.3
MH	8.2	8.3	8.2	8.1	8.3	8.2	8.3	7.9	8.2	7.8	8.4	8.2	8.3	8.2

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	734	765	6.58	6.65	7.07	753	6.44	6.78	6.47	6.81	6.42	6.67	749	754
25	775	748	7.36	7.58	6.99	734	7.29	7.52	7.24	7.48	7.19	7.49	726	731
34	773	768	7.49	7.65	729	751	7.36	7.55	7.31	7.48	7.29	7.58	757	756
45	758	763	7.57	7.74	741	759	7.41	7.64	7.37	7.53	7.34	7.59	740	762
60	763	786	7.59	7.83	745	771	7.48	7.75	7.45	7.63	7.46	7.78	748	765
80	772	792	7.62	7.82	752	781	7.57	7.81	7.56	7.75	7.52	7.83	751	774
MH	780	772	7.61	7.70	761	773	7.81	7.68	7.88	7.73	7.87	7.60	785	767

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	99	99	55	41	44	104	48	41	45	41	44	40	56	96
25	512	456	500	423	459	463	500	425	453	402	463	410	472	461
34	638	615	650	568	686	612	622	569	558	547	658	594	649	630
45	880	617	824	730	800	772	800	743	773	710	745	683	814	763
60	1425	1005	1040	918	1062	974	1016	974	954	893	1012	923	1016	966
80	1280	1237	1360	1210	1346	1244	1206	1212	1231	1195	1302	1180	1305	1233
MH	249	236	217	188	243	237	211	229	222	257	217	201	242	225
Params Intl/Time:	AH 1102	AW 0703	AH 0807	LH 0720	AW 0941	AW 0719	LH 0831	AW 0754	AW 1030	AW 0807	AW 0923	LM 0706	AW 0927	AH 0712
Dilutions Intl/Time:	AW 1050		AH 1314		AW 0936		LH 0821		AW 1020		AW 0921		AW 0918	

	Start	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Control Water Batches:	6124, 19399	6126, 19399	6128, 19406	6128, 19406	6130, 19417	6130, 19417	6131, 19417
Food Batch	5394, 8D	5407, 5380	5284	5284	5284	5284	5284

TEST LOG NO. 18003 CLIENT: Georgia Pacific Crossett DATE OF TEST: 1/12/16

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

100% EFFLUENT

Batch #	Sample ID	Sample Date	1st Use Date	Hardness mg/L CaCO3	Alkalinity mg/L	TRC mg/L	NH_3N mg/L
19400	Outfall 001	1/10 - 11/16	1/12/16	248	310	<0.02	0.363
19407	Outfall 001	1/13 - 14/16	1/14/16	236	340	<0.02	0.604
19418	Outfall 001	1/14 - 15/16	1/16/16	232	310	<0.02	0.369

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
19399	River Water	1/11/16	1/12/16	134	14	<0.02	<0.1
19406	River Water	1/11/16	1/14/16	19.2	19	0.04	<0.1
19417	River Water	1/11/16	1/16/16	12	15	<0.02	<0.1
6124	MH	1/10/16	1/9/16	80.8	44	<0.02	
6126	MH	1/7/16	1/13/16	81.6	44	<0.02	
6128	MH	1/11/16	1/14/16	83.2	41	<0.02	
6130	MH	1/13/16	1/15/16	84.8	44	<0.02	

Ceriodaphnia 7-d Survival and Reproduction Test — **Ramboll Environ**

Analysis ID:	02-7573-6387	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 10:44	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes
Batch ID:	09-8449-8367	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	12 Jan-16 11:35	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	19 Jan-16 09:41	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 22h	**Source:**	In-House Culture	**Age:**	
Sample ID:	09-8494-6089	**Code:**	3AB515A9	**Client:**	GPAC Crossett
Sample Date:	11 Jan-16	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JAN)
Receive Date:	12 Jan-16	**Source:**	Discharge Monitoring Report		
Sample Age:	36h	**Station:**	001		

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

Fisher Exact/Bonferroni-Holm Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	1	1.0000	Exact	Non-Significant Effect
		34	1	1.0000	Exact	Non-Significant Effect
		45	1	1.0000	Exact	Non-Significant Effect
		60	0.5	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	1	10	0.9	0.1	10.0%
80		10	0	10	1	0	0.0%

7d Survival Rate Detail

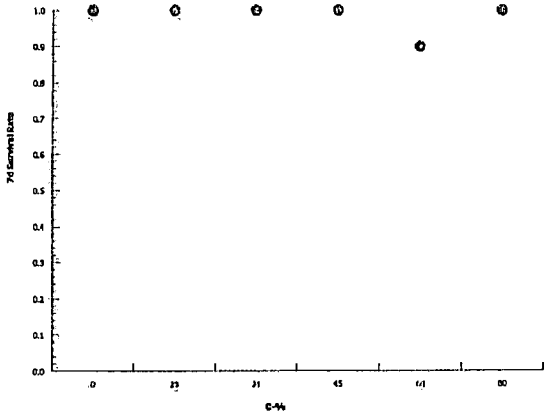
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
34		1	1	1	1	1	1	1	1	1	1
45		1	1	1	1	1	1	1	1	1	1
60		1	1	1	1	1	1	1	1	1	0
80		1	1	1	1	1	1	1	1	1	1

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	0/1
80		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Analysis ID:	02-7573-6387	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 10:44	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

Graphics



CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Ramboll Environ**

Analysis ID:	20-7136-9179	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 10:54	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	09-8449-8367	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	12 Jan-16 11:35	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	19 Jan-16 09:41	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 22h	**Source:**	In-House Culture	**Age:**	
Sample ID:	09-8494-6089	**Code:**	3AB515A9	**Client:**	GPAC Crossett
Sample Date:	11 Jan-16	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JAN)
Receive Date:	12 Jan-16	**Source:**	Discharge Monitoring Report		
Sample Age:	36h	**Station:**	001		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	NA	C > T	NA	NA	45	60	51.96	2.222	17.5%

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Receiving Water		25	-0.8253	2.289	4.715	18	0.9742	CDF	Non-Significant Effect
		34	-1.893	2.289	4.715	18	0.9992	CDF	Non-Significant Effect
		45	-0.9224	2.289	4.715	18	0.9803	CDF	Non-Significant Effect
		60*	4.661	2.289	4.715	18	<0.0001	CDF	Significant Effect
		80*	3.884	2.289	4.715	18	0.0007	CDF	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	26.9	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1753	0.13 - 0.47	Yes	Passes Acceptability Criteria

Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.109	3.2	0.0723	No Outliers Detected

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1608.683	321.7367	5	15.17	<0.0001	Significant Effect
Error	1145.5	21.21296	54			
Total	2754.183		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	12.76	15.09	0.0257	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9712	0.9459	0.1666	Normal Distribution

Reproduction Summary

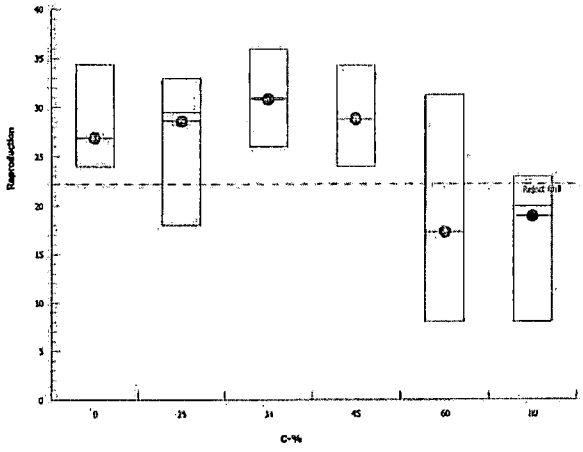
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Receiving Water	10	26.9	24.76	29.04	26.5	24	34	0.9481	11.15%	0.0%
25		10	28.6	25.47	31.73	29.5	18	33	1.384	15.3%	-6.32%
34		10	30.8	28.28	33.32	31	26	36	1.114	11.43%	-14.5%
45		10	28.8	26.81	30.79	28.5	24	34	0.8794	9.66%	-7.06%
60		10	17.3	11.9	22.7	17	8	31	2.385	43.6%	35.69%
80		10	18.9	15.54	22.26	20	8	23	1.487	24.87%	29.74%

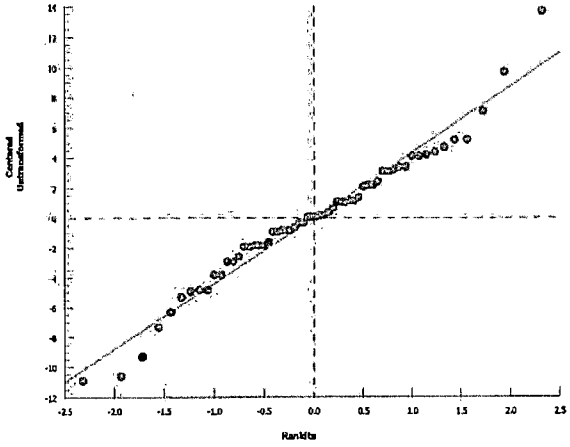
Analysis ID:	20-7136-9179	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 10:54	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Receiving Water	24	29	25	27	34	26	27	28	25	24
25		29	30	27	33	18	28	32	26	32	31
34		33	35	26	32	36	27	30	33	27	29
45		30	32	34	28	29	27	24	27	28	29
60		12	27	31	10	8	18	22	17	17	11
80		22	14	23	8	20	23	19	22	18	20

Graphics





CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Ramboll Environ**

Analysis ID:	18-6971-6779	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 10:55	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	09-8449-8367	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	12 Jan-16 11:35	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	19 Jan-16 09:41	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 22h	**Source:**	In-House Culture	**Age:**	
Sample ID:	09-8494-6089	**Code:**	3AB515A9	**Client:**	GPAC Crossett
Sample Date:	11 Jan-16	**Material:**	Industrial Effluent	**Project:**	WET Monthly Compliance Test (JAN)
Receive Date:	12 Jan-16	**Source:**	Discharge Monitoring Report		
Sample Age:	36h	**Station:**	001		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1280418	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	26.9	15 - NL	Yes	Passes Acceptability Criteria

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Extreme Value	Grubbs Extreme Value	3.109	3.2	0.0723	No Outliers Detected

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	55.11	52.54	61.12	1.815	1.636	1.903

Reproduction Summary

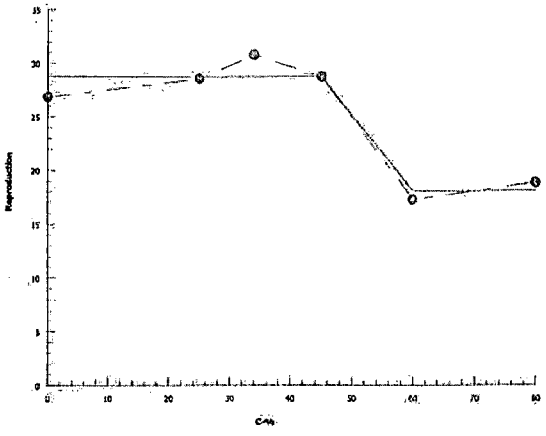
			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Receiving Water	10	26.9	24	34	0.9481	2.998	11.15%	0.0%
25		10	28.6	18	33	1.384	4.377	15.3%	-6.32%
34		10	30.8	26	36	1.114	3.521	11.43%	-14.5%
45		10	28.8	24	34	0.8794	2.781	9.66%	-7.06%
60		10	17.3	8	31	2.385	7.543	43.6%	35.69%
80		10	18.9	8	23	1.487	4.701	24.87%	29.74%

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	24	29	25	27	34	26	27	28	25	24
25		29	30	27	33	18	28	32	26	32	31
34		33	35	26	32	36	27	30	33	27	29
45		30	32	34	28	29	27	24	27	28	29
60		12	27	31	10	8	18	22	17	17	11
80		22	14	23	8	20	23	19	22	18	20

Analysis ID:	18-6971-6779	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.8.4
Analyzed:	20 Jan-16 10:55	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



RAMBOLL ENVIRON CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION 3-BROOD CHRONIC TOXICITY TEST

EPA-821-R-02-013 Method 1002.0

TEST LOG NO.: 160003

JOB NUMBER.: ~~20-198751~~ 3K 39764

INDUSTRY: Georgia Pacific-Crossett

EFFLUENT: Outfall 001

DILUTION WATER: River Water

NPDES (Y/N) : Yes

PHOTOPERIOD: 16 hr light/8 hr dark

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

TEST VESSEL CAPACITY: 30 mL

TEST SOLUTION VOLUME: 15 mL

NO. ORGANISMS/REPLICATE: 1

NO. REPLICATES: 10

ORGANISM SOURCE INFORMATION:

AGE (date): 11/8/16 (c.)

TEMP @ TEST START: 24.2

RANDOMIZED BY: AH

SOURCE ID:	AGE (time):
11233	1502-2245
11236	1505-2250
11237	1507-2255
11235	1501-2248

TEST START:

HOURS: 1112 DATE: 11/12/16

TEST END:

HOURS: 1026 DATE: 11/19/16

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	7	6	11	19	4	5	9	11	15	6	
AH 1112		11/12	24.3		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1004	11/13	24.2	24.3	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1049	11/14	24.1	24.2	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	11/15	24.1	24.1	Day 3	3	3	2	✓	✓	5	2	4	3	2	
	AW 1100	11/16	24.4	24.0	Day 4	✓	✓	✓	3	4	✓	✓	✓	✓	✓	
	AW 1015	11/17	24.0	24.0	Day 5	5	8	6	✓	11	9	6	9	6	6	
	AH 1018	11/18	24.2	24.1	Day 6	✓	✓	✓	9	✓	12	✓	✓	✓	✓	
AH 1026		11/19		24.2	Day 7	16	18	17	15	19	16	19	15	16	16	100%
					Day 8	24 AW								M		
			Total			34	29	25	27	34	26	27	29	25	24	~~289~~ 269

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

TEST LOG # 18003 JOB # 20-19675I

CLIENT/SAMPLE ID: Georgia Pacific - Crossett LAB/STATE: RAMBOLL 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											
ATH 1112		4/12	24.3		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	ATH 1004	4/13	24.2	24.1	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1049	4/14	24.1	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	ATH 1022	4/15	24.2	24.2	Day 3	✓	4	4	5	✓	4	4	2	6	✓	
	AW 1100	4/16	24.2	24.0	Day 4	3	✓	✓	✓	6	✓	✓	✓	✓	5	
	AW 1015	4/17	24.0	24.0	Day 5	10	✓	7	12	✓	9	12	7	11	10	
	ATH 1018	4/18	24.2	24.1	Day 6	✓	9	✓	✓	12	✓	✓	✓	✓	✓	
ATH 1026		4/19		24.2	Day 7	16	17	16	16	✓	15	16	17	15	16	
					Day 8											
			Total			29	30	27	33	18	28	32	26	32	31	286

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
ATH 1112		4/12	24.4		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	ATH 1004	4/13	24.2	24.3	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1049	4/14	24.0	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	ATH 1022	4/15	24.1	24.2	Day 3	3	6	✓	✓	✓	2	5	6	4	3	
	AW 1100	4/16	24.1	24.0	Day 4	✓	✓	3	4	5	✓	✓	✓	✓	✓	
	AW 1015	4/17	24.0	24.0	Day 5	14	12	8	12	15	11	9	12	7	11	
	ATH 1018	4/18	24.0	24.1	Day 6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
ATH 1026		4/19		24.2	Day 7	16	17	15	16	16	14	16	15	16	15	
					Day 8											
			Total			33	35	26	32	36	27	30	33	27	29	308

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

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TEST LOG # 18003 JOB # 20-19675

CLIENT/SAMPLE ID: Georgia Pacific - Crossett LAB/STATE: RAMBOLL 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											
ATH 1112		Y12	24.3		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	ATH 1004	Y13	24.2	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1049	1/14	24.1	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	ATH 1022	Y15	24.2	24.1	Day 3	3	✓	5	✓	✓	2	5	5	5	5	✓
	AW 1100	1/16	24.3	24.0	Day 4	✓	2	✓	3	2	✓	✓	✓	✓	✓	
	AW 1015	1/17	24.0	24.0	Day 5	11	13	11	(1)	11	10	7	✓	10	9	
	ATH 1018	1/18	24.2	24.1	Day 6	✓	✓	✓	8	✓	✓	✓	10	✓	✓	
ATH 1026		1/19		24.2	Day 7	16	17	18	16	16	15	12	12	13	15	
					Day 8											
			Total			30	32	34	28	29	27	24	27	29	29	270 255

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
ATH 1112		Y12	24.1		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	ATH 1004	Y13	24.2	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1049	1/14	24.1	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	ATH 1022	Y15	24.3	24.1	Day 3	3	3	✓	3	✓	2	3	4	3	3	
	AW 1100	1/16	24.4	24.0	Day 4	✓	✓	5	✓	4	✓	✓	✓	✓	✓	
	AW 1015	1/17	24.0	24.0	Day 5	✓	11	13	7	4	4	1	8	4	8	
	ATH 1018	1/18	24.1	24.0	Day 6	9	✓	✓	✓	✓	✓	6	✓	✓	D0	
ATH 1026		1/19	-	24.1	Day 7	✓	13	13	✓	✓	12	12	5	11	1	
					Day 8											
			Total			12	27	31	10	8	18	22	17	17	11/D	173 1/D

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

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TEST LOG # 18003 JOB # 20-19675I

CLIENT/SAMPLE ID: Georgia Pacific - Crossett LAB/STATE: RAMBOLL 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 1112		Y/12	24.4		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1004	Y/13	24.2	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1049	1/14	24.1	24.0	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	1/15	24.2	24.1	Day 3	2	2	✓	5	✓	✓	✓	3	3	3	
	AW 1100	1/16	24.1	24.0	Day 4	✓	✓	3	✓	4	5	3	✓	✓	✓	
	AW 1015	1/17	24.1	24.0	Day 5	5	3	8	✓	10	✓	4	6	8	6	
	AH 1018	Y/18	24.4	24.1	Day 6	✓	9	✓	3	6	6	✓	✓	✓	✓	
AH 1026		Y/19		24.2	Day 7	15	✓	12	✓	✓	12	12	13	7	11	
					Day 8											
			Total			22	14	23	8	20	23	7+1 (-1)	22	18	20	189

SURVIVIAL AND REPRODUCTION DATA (-1) = wrote number illegibly 1/14/15

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 1112		Y/12	24.2		Day 0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1004	Y/13	24.2	24.2	Day 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	LM 1049	1/14	24.1	24.3	Day 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	AH 1022	Y/15	24.1	24.2	Day 3	6	5	✓	✓	✓	3	5	5	✓	4	
	AW 1100	1/16	24.1	24.0	Day 4	✓	✓	5	5	4	✓	✓	✓	4	✓	
	AW 1015	1/17	24.0	24.0	Day 5	11	12	10	✓	8	9	12	10	✓	8	
	AH 1018	Y/18	24.1	24.2	Day 6	✓	✓	✓	10	✓	✓	✓	✓	12	✓	
AH 1026		Y/19		24.1	Day 7	20	21	17	17	19	16	16	17	16	16	
					Day 8											
			Total			37	38	32	32	31	28	33	32	32	28	323

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

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TEST LOG NO. 18003 **CLIENT/SAMPLE ID:** Georgia Pacific Crossett

JOB NO. 20-19675I **TEST ORGANISM:** Cd **DATE:** 1/12/16

D.O. (mg/L)

Concentration (%)	Start	Day 1 Old	Day 1 New	Day 2 Old	Day 2 New	Day 3 Old	Day 3 New	Day 4 Old	Day 4 New	Day 5 Old	Day 5 New	Day 6 Old	Day 6 New	Day 7
RW	8.2	8.2	8.5	8.8	8.2	8.3	8.1	8.6	8.2	8.5	8.3	8.2	8.3	8.2
25	8.2	8.3	8.4	8.4	8.3	8.3	8.1	8.5	8.1	8.6	8.5	8.2	8.3	8.3
34	8.3	8.3	8.6	8.6	8.4	8.2	8.0	8.5	8.0	8.6	8.0	8.2	8.4	8.2
45	8.2	8.2	8.5	8.5	8.3	8.2	8.0	8.6	8.3	8.6	8.3	8.3	8.4	8.2
60	8.2	8.2	8.5	8.4	8.2	8.2	7.9	8.4	8.5	8.5	8.0	8.3	8.3	8.2
80	8.2	8.3	8.5	8.4	8.2	8.2	8.1	8.4	8.5	8.4	8.4	8.2	8.3	8.4
MH	8.2	8.3	8.2	7.6	8.3	8.2	8.0	8.4	8.2	8.4	8.4	8.2	8.3	8.2

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	734	787	10.58	7.04	7.07	769	10.44	7.01	6.47	7.02	6.42	778	7.49	764
25	715	778	7.36	7.85	6.99	763	7.79	7.97	7.24	7.99	7.19	786	7.26	774
34	743	789	7.49	8.00	729	8.02	7.30	8.04	7.31	8.02	7.29	8.01	739	8.02
45	754	8.06	7.57	8.12	741	8.19	7.41	8.15	7.31	8.15	7.34	8.19	740	8.14
60	763	8.16	7.59	8.22	745	8.21	7.48	8.28	7.45	8.24	7.40	8.29	748	8.29
80	772	8.23	7.107	8.36	752	8.21	7.51	8.37	7.56	8.24	7.52	8.42	7.51	8.51
MH	780	760	7.101	7.79	761	767	7.81	7.66	7.88	7.70	7.81	7.72	7.65	769

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	99	96	~~58~~ 55 ①	52	46	101	58	51	45	49	44	104	96	104
25	512	453	500	463	459	439	500	456	453	477	463	202	472	425
34	638	640	650	618	656	654	1029	584	558	586	658	668	644	664
45	880	835	824	768	800	778	800	744	773	758	745	744	814	874
60	1055	1005	1046	979	1062	1027	1065	990	954	951	1012	1042	1016	1006
80	1290	1312	1320	1280	1346	1263	1306	1218	1231	1242	1302	1323	1305	1310
MH	249	255	217	201	242	255	211	200	222	210	217	264	272	265
Params Intl/Time:	HH 1102	AH 1014	HH 0827	LM 1100	AH 0941	AH 1029	HH 0831	HM 1117	AW 1030	HM 1030	AW 0931	AH 1025	AH 0927	1032 AW
Dilutions Intl/Time:	AW 1030		HH 0817		AH 0936		HH 0821		AW 1024		AW 0921		AH 0918	
Control Water Batch#:	6124, 19399	6126, 19399		6128, 19406		6128, 19400		6130, 19417		6130, 19417		6131, 19417		
Food Batch	5380, 80	5380, 5407		5380, 5407		5380, 5407		5380, 5414		5380, 5414		5380, 5414		

① HH
CA 1/12/16

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ATTACHMENT 2

CHAIN OF CUSTODY DOCUMENTATION AND REFERENCE TOXICANT DATA

Ramboll Environ Test Log No. 18003

27 of 36

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 / BOBBIE / CHRIS	NPDES Permit No.: AR0001210
Sample Collected by (signature):	NPDES Test: ☐ No ☑ Yes

CHAIN-OF-CUSTODY

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

Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs	Total Volume in liters	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)	Receipt Temp °C
RIVER	G	PLASTIC	NA	1-11-16 10:22AM		2	20											19399	2.3
OUTFALL 001	C	PLASTIC	YES	1-10-16 3:55PM	1-11-16 6:15AM	2	20					✓	✓					19400	2.2

* 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)	Containers/Volume Received: 2D L of each	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) Anita Winton	Date: 1/12/16 Time: 0901	pH upon arrival: 7.2, 7.7 DO upon arrival: 8.2 8.4

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 1/12/16 0901 by AW

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

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
19399	River	2.3	7.02	8.2	<0.02
19400	Outfall 001	2.2	7.70	8.4	<0.02

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CHAIN-OF-CUSTODY

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

Project Name: | Project Number:

Industry: Georgia Pacific

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

County: Ashley City: Crossett State: AR

Sample Collected by (print): Danny/Chris/Bobbie

NPDES Permit No.: AR0001210

Sample Collected by (signature):

NPDES Test: ☐ No ☑ Yes

Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs	Total Volume in liters	Acute Fathead minnow	Acute Bannerfin shiner	Acute *Ceriodaphnia dubia*	Acute *Daphnia pulex*	Chronic Fathead minnow	Chronic *Ceriodaphnia dubia*	Continuous Batch Tests	Discrete Batch Tests	Other	Description Definitive or Screen	Sample B# (lab only)	Receipt Temp °C
River	G	Plastic	N/A	1-11-16 10:22AM		2	20											19406	1.2
OUTFALL 001	C	Plastic	yes	1-~~13~~ 12-16 6:15AM	1-~~14~~ 13-16 6:15AM	2	20					✓	✓					19407	1.0

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

Remarks: See corrected sampling dates as per Rachel Johnson.

Measured TRC (if applicable): 0.00 mg/L

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples shipped via:	Condition: (lab use only)
Chris Roan	1-13-16			☑ FedEx ☐ Other Courier ☐ UPS ☐ Hand Delivered	On Ice
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Containers/Volume Received: 4L	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 1/14/16	Time: 0820
				pH upon arrival: (66) 6.7 (73) 7.67	DO upon arrival: 8.4 8.4

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 1/14/16 0920 by AU

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

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
19406	River	1.2	6.17	8.4	0.04
19407	Outfall 001	1.0	7.67	8.4	<0.02

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Project Name: | Project Number:

Industry: Georgia Pacific

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

County: Ashley City: Crossett State: AR

Sample Collected by (print): DANNY RICE

Sample Collected by (signature): DANNY RICE

NPDES Permit No.: AR0001210

NPDES Test: ☐ No ☑ Yes

CHAIN-OF-CUSTODY

ENVIRON

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

Sample Location / ID	Comp/Grab	Container Type	Chilled During Collection (Y/N)	Start Date/Time	End Date/Time	No. of Cntrs	Total Volume in liters	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)	Receipt Temp °C
River	G	Plastic	N/A	1-14-16 10 22 AM		2	20					✓	✓					19417	2.8
Out Fall	C	Plastic	Yes	1-14-16 6 15 PM	1-15-16 6 05 AM	2	20					✓	✓					19418	1.7

* 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 RICE	1-15-16	3:00 PM			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Containers/Volume Received: 20L of each	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) Anita Winton	Date: 1/16/16 Time: 0855	pH upon arrival: RW 7.62 6.54 DO upon arrival: RW 8.1 8.6

Sample Receipt Checklist:

Client: GP Crossett

Date/Time received 1/16/16 0855 by AW

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

Comments:

Batch #	Sample ID	Temp (C°)	pH	DO	TRC
19417	River	2.8	6.54	8.6	<0.02
19418	Outfall 001	1.3	7.62	8.1	<0.02

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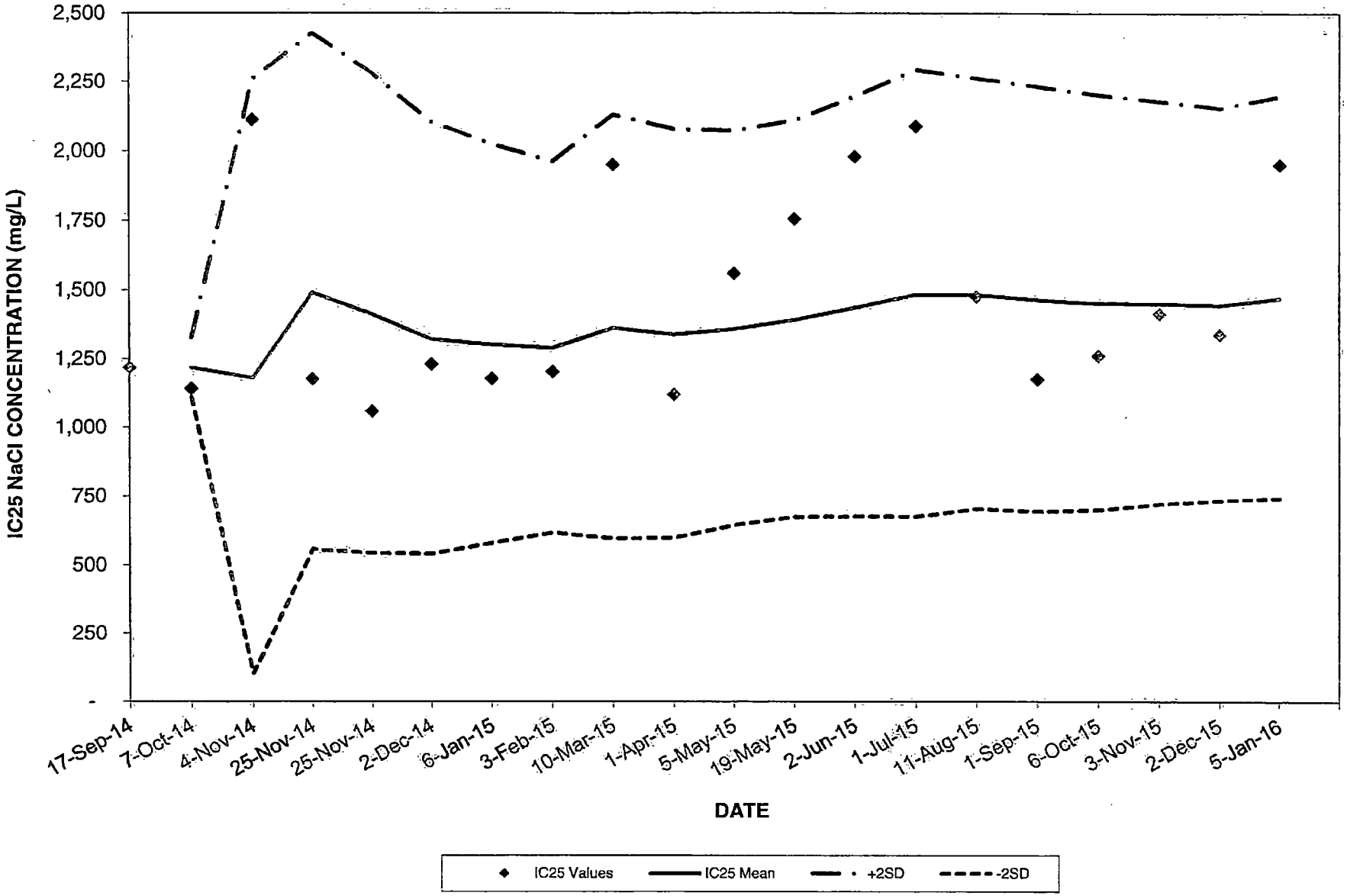
CHRONIC REFERENCE TOXICANT TEST (NaCl) 2014 - 2016
FATHEAD MINNOWS



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1/25/2016

Fathead Minnow CHRONIC REFERENCE TOXICANT TESTING-SODIUM CHLORIDE (NaCl) 2014 - 2016

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	17095	17-Sep-14	100	0.458	750	1,500	750	1,500	17.3	1,218					
2	17125	07-Oct-14	100	0.280	750	1,500	750	1,500	32.7	1,141	1,218	54	1,327	1,109	3
3	17193	04-Nov-14	100	0.400	750	1,500	1,500	3,000	31.3	2,111	1,180	539	2,258	101	30
4	17242	25-Nov-14	100	0.433	750	1,500	750	1,500	17.4	1,175	1,490	468	2,425	555	29
5	17243	25-Nov-14	97.5	0.483	750	1,500	750	1,500	22.1	1,057	1,411	435	2,281	542	29
6	17258	02-Dec-14	100	0.317	750	1,500	750	1,500	27.7	1,228	1,322	392	2,105	538	27
7	17317	06-Jan-15	97.5	0.476	1,500	3,000	1,500	3,000	42.2	1,176	1,301	362	2,024	577	26
8	17379	03-Feb-15	100	0.515	750	1,500	750	1,500	25.3	1,200	1,288	337	1,962	615	24
9	17427	10-Mar-15	97.5	0.519	1,500	3,000	1,500	3,000	34.3	1,948	1,362	384	2,130	593	27
10	17504	01-Apr-15	90	0.316	750	1,500	750	1,500	39.1	1,117	1,337	370	2,078	596	26
11	17570	05-May-15	95	0.346	750	1,500	1,500	3,000	32.6	1,556	1,357	358	2,072	642	25
12	17604*	19-May-15	97.5	0.284	1,500	3,000	1,500	3,000	24.3	1,753	1,390	360	2,109	671	25
13	17621*	02-Jun-15	95	0.335	1,500	3,000	1,500	3,000	24.8	1,978	1,435	381	2,197	673	25
14	17676	01-Jul-15	95	0.452	1,500	3,000	1,500	3,000	23.4	2,087	1,482	405	2,292	671	26
15	17740	11-Aug-15	97.5	0.402	1,500	3,000	1,500	3,000	32.8	1,473	1,481	391	2,262	700	25
16	17790	01-Sep-15	100	0.524	750	1,500	750	1,500	18.4	1,171	1,462	385	2,232	691	26
17	17848	06-Oct-15	95	0.406	750	1,500	1,500	3,000	34.4	1,258	1,450	376	2,202	697	25
18	17903	03-Nov-15	100	0.269	750	1,500	1,500	3,000	30.0	1,411	1,448	365	2,178	717	25
19	17946	02-Dec-15	100	0.330	750	1,500	1,500	3,000	27.0	1,334	1,442	356	2,153	730	24
20	17994	05-Jan-16	100	0.339	750	1,500	1,500	3,000	19.8	1,948	1,467	364	2,196	738	24
		Avg	98	0.394	975	1950	1200	2400	28	1467	1385	373	2131	640	

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.

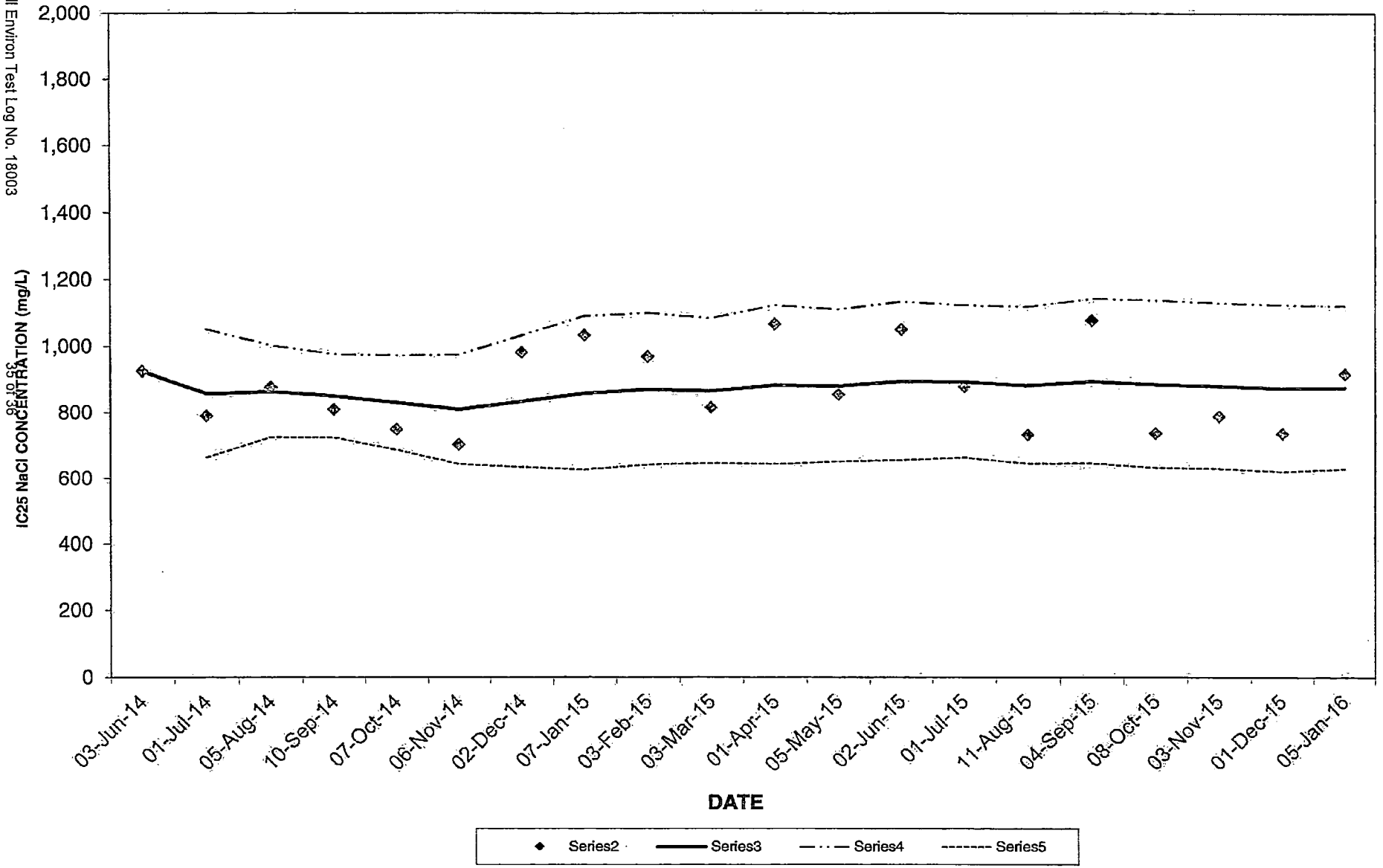
(*) used ABS fish

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

Ramboll Environ Test Log No. 18003

CHRONIC REFERENCE TOXICANT (NaCl) 2014-2016

Ceriodaphnia dubia



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1/25/2016

Ceriodaphnia dubia CHRONIC REFERENCE TOXICANT TESTING - SODIUM CHLORIDE (NaCl) 2014-2016

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	16834	03-Jun-14	100	80	26.1	1,000	2,000	1,000	2,000	22.9	926	926				
2	16909	01-Jul-14	100	100	31.3	1,000	2,000	500	1,000	21.7	789	858	97	1,051	664	8
3	16989	05-Aug-14	100	90	28.7	2,000	>2000	500	1,000	17.4	877	864	69	1,003	725	7
4	17077	10-Sep-14	100	90	28.4	1,000	2,000	500	1,000	17.3	808	850	63	976	724	6
5	17124	07-Oct-14	100	100	29.7	1,000	2,000	500	1,000	26.8	747	829	72	972	686	8
6	17201	06-Nov-14	100	80	23.8	1,000	2,000	500	1,000	21.5	700	808	83	974	642	9
7	17248	02-Dec-14	100	80	26.1	2,000	>2000	500	1,000	14.1	980	832	100	1,032	633	11
8	17316	07-Jan-15	100	90	28.2	2,000	>2000	500	1,000	17.8	1,032	857	116	1,090	625	13
9	17380	03-Feb-15	100	90	33.2	2,000	>2000	500	1,000	18.7	966	869	115	1,099	640	12
10	17427	03-Mar-15	100	90	26.7	1,000	2,000	500	1,000	21.4	811	864	110	1,083	644	12
11	17504	01-Apr-15	100	90	24.5	1,000	2,000	1,000	2,000	24.9	1,064	882	120	1,122	641	13
12	17571	05-May-15	100	80	22.9	2,000	>2000	500	1,000	22.0	851	879	115	1,109	649	13
13	17622	02-Jun-15	100	80	27.4	1,000	2,000	1,000	2,000	22.3	1,048	892	120	1,132	653	13
14	17675	01-Jul-15	100	100	26.4	2,000	>2000	500	1,000	16.0	875	891	115	1,121	661	12
15	17746	11-Aug-15	100	80	20.6	2,000	>2000	500	1,000	33.1	728	880	119	1,117	643	13
16	17798	04-Sep-15	100	100	27.7	2,000	>2000	500	1,000	13.4	1,075	892	125	1,141	643	14
17	17856	08-Oct-15	100	80	25.5	2,000	>2000	500	1,000	22.0	733	883	127	1,136	630	14
18	17904	03-Nov-15	100	100	27.8	1,000	2,000	500	1,000	12.4	783	877	125	1,128	627	14
19	17947	01-Dec-15	100	100	26.0	2,000	>2,000	500	1,000	19.8	732	870	126	1,122	618	14
20	17995	05-Jan-16	100	90	30.4	2,000	>2,000	500	1,000	19.1	912	872	123	1,118	626	14
Avg			100	89	27	1500	1000	583	1167	20	872	869	105	1076	655	

Notes:
NOEC - No Observable Effect Concentration (survival or reproduction)
LOEC - Lowest Observable Effect Concentration (survival or reproduction)
(*) Minimum USEPA CONTROL CRITERIA - 80 percent survival, 80 percent with 3 broods, and average reproduction of 15 neonates/adult.

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