

Effluent Quality Assessment

Georgia-Pacific Corporation – Palatka Operations

Putnam County

NPDES #FL0002763

Sampled June 20, 22 and 24, 2011

November 2011

REVISED November 15, 2011

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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Georgia-Pacific Corporation – Palatka Operations, 215 County Road 216, Palatka, Putnam County, Florida. NPDES #FL0002763. Effluent samples for biological and chemical analyses for this facility were collected on June 20, 2011. Samples for bioassay analyses were collected on June 20, 22 and 24, 2011. Water quality samples were collected from Rice Creek @ Bardin Road on June 22, 2011.

Introduction

The Georgia-Pacific Corporation – Palatka Operations is a pulp and paper mill which produces both bleached and unbleached pulp and paper products. The facility operates a 40 MGD permitted capacity wastewater treatment facility providing primary clarification followed by secondary treatment consisting of 900 plus acres of facultative and aerobic lagoons. The facility is currently operating under Administrative Order No. 039-NE. (See Appendix F for detailed facility information provided by Samuel Schllesinger of FDEP Northeast District.)

Methods

Samples were collected from the EFF-1 NPDES sampling point for Outfall D-001 by Eesa Ali and Sharon Piltz (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/bars/sas/sop/index.htm.

See Appendix A for the completed chain of custody form.

The chronic toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_05, TA07_09, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

An aliquot of the AGP sample was salinity adjusted by the addition of artificial sea salts to meet the salinity requirements of the marine test species.

Results and Discussion

- **Toxicity Test Results**
  Tests performed June 21 - 28, 2011.

  Ceriodaphnia dubia 7-day chronic definitive bioassay – NOEC = 50%
  IC25 = 35.4%

  Pimephales promelas 7-day chronic screening bioassay – NOEC = 100%
  IC25 = > 100%

  The bioassay samples were toxic to the *Ceriodaphnia dubia* test organisms, producing a no observed effect concentration (NOEC) for reproduction of 50% sample. The samples were not chronically toxic to the *Pimephales promelas* test species.

  See Appendix B for bioassay bench sheets. See Appendix C for results of the last 20 standard reference toxicant (SRT) tests and the bench sheets and statistical analyses of the SRT tests that correspond to these facility tests. See Appendix D for test organism receipts.

- **Algal Growth Potential**
  The effluent Algal Growth Potential (AGP) was 11.2 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) determined that AGP values above 5.0 mg dry weight/L represent a “problem” threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent

is nitrogen-limited. To determine actual nutrient limitation, a limiting-nutrient algal growth potential test with associated nutrient chemistry should be performed (Miller et al. 1978).

The salinity adjusted effluent Algal Growth Potential (AGP) was 3.6 mg dry wt/L of the saltwater species, *Dunaliella tertiolecta.* Raschke and Schultz determined that AGP values above 10.0 mg dry weight/L represent a “problem” threshold for marine receiving waters, implying nutrient enrichment (personal communication, Marshall Faircloth, et. al. FDEP, with Ron Raschke USEPA Region 4 1987).

See Table 1 for AGP results and qualifiers.

- **Chemistry Results**
  Total residual chlorine (TRC) was detected (0.05 mg/L) in the bioassay sample (LIMS ID 1358976) collected on June 20, 2011, but was not detected in the other two bioassay samples. The TRC detected in Sample 1358976 was thought to be the result of interfering substances in the sample. Total ammonia was not detected in the three bioassay samples in the laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.019 I mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

  Chromium, iron, fluoride and nickel were detected in the effluent at levels that comply with Class III freshwater quality criteria (62-302.530, F.A.C.) and /or permitted limits (NPDES# FL0002763). Arsenic, copper, lead and zinc were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Aluminum, chloride, sulfate, total suspended solids (TSS), and carbonaceous biochemical oxygen demand (CBOD) were also detected in the effluent.

  The effluent chlorophyll concentration (300 µg/L) was very high.

  See Table 2 for results of analytes detected in the effluent, corresponding limits, and qualifiers. See Appendix E for a complete list of chemical analyses performed. See Appendix B for bioassay lab equipment.

Conclusion

The effluent samples collected from the EFF-1 NPDES sampling point for Outfall D-001 for this facility on June 20, 22 and 24, 2011, were chronically toxic to the *Ceriodaphnia dubia* test organisms but were not toxic to the *Pimephales promelas* test organisms during the 7-day chronic bioassays. The effluent AGP result was greater than the "problem” threshold for fresh receiving waters and the effluent chlorophyll *a* concentration was very high suggesting that nutrient enrichment may be an issue.

Effluent water quality samples collected on June 20 and 22nd, 2011, did not exceed any applicable water quality standards or exceed any conditions of Administrative Order No. 039-NE.

Literature Cited

Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. U. S. EPA, Cincinnati, Ohio. 126 p.

Raschke, R. L. and D. A. Schultz. 1987. The use of the algal growth potential test for data assessment. J. Wat. Poll. Cont. Fed. 59(4): 222-227.

Table 1a. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN) and total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the Georgia-Pacific Corporation - Palatka Operations on June 20, 2011.

Georgia-Pacific Corporation - Palatka Operations					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Final Effluent	11.2	0.9 ± 0.2	167.4 ± 33.5	0.3	7.9

Table 1b. Measured algal growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus for samples collected from the Georgia-Pacific Corporation - Palatka Operations on June 20, 2011.

Georgia-Pacific Corporation - Palatka Operations			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Final Effluent	3.6	0.3	7.9

* - sample salinity adjusted to 7ppt

Table 2. Effluent limits, Class III Freshwater Criteria and chemical data for samples collected from the EFF-1 NPDES sampling point for Outfall D-001 of the Georgia-Pacific Corporation - Palatka Operations facility on June 20, 22 and 24, 2011; and chemical data for samples collected from Rice Creek on June 22, 2011.

Georgia-Pacific Corporation - Palatka Operations NPDES #FL0002763	Class III Criteria	Effluent Limits	Final Effluent Sampled June 20, 2011	Final Effluent Sampled June 22, 2011	Rice Creek @ Bardin Road Sampled June 22, 2011	Final Effluent Sampled June 24, 2011
Organic Constituents (µg/L) None Detected						
Metals (µg/L unless otherwise noted)						
Aluminum	-	-	2890	-	-	-
Arsenic	≤ 50	-	1.2 I	-	-	-
Cadmium	≤ 0.42 b	Report	0.15 U	-	-	-
Calcium (mg/L)	-	-	51.8	-	-	-
Chromium-III	≤ 141.29 b	-	4	-	-	-
Copper	≤ 15.63 b	-	2.5 I	-	-	-
Iron	≤ 1,000	Report	410	-	-	-
Lead	≤ 6.86 b	Report	0.91 I	-	-	-
Magnesium (mg/L)	-	-	13	-	-	-
Nickel	≤ 86.93 b	-	10.9	-	-	-
Selenium	≤ 5.0	-	0.6 U	-	-	-
Silver	≤ 0.07	-	0.075 U	-	-	-
Zinc	≤ 199.82 b	≤ 199.82 c	15 I	-	-	-
Nutrients (mg/L)						
Ortho-phosphate	-	-	0.08	-	-	-
Total Phosphorus	-	-	0.56	-	-	-
Total Ammonia	-	Report	0.019 I	-	-	-
Un-ionized Ammonia	≤ 0.02 s	Report	< 0.02 c			
Nitrate and Nitrite	-	-	0.004 UJ	-	-	-
Total Kjeldahl Nitrogen	-	Report	4.4	-	-	-
Organic Nitrogen	-	-	4.381 c	-	-	-
Total Nitrogen	-	Report	4.402 c	-	-	-

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness

c - Value is calculated

s - Single sample

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

J - Estimated value

U - Material analyzed for but not detected; value reported is the method detection limit

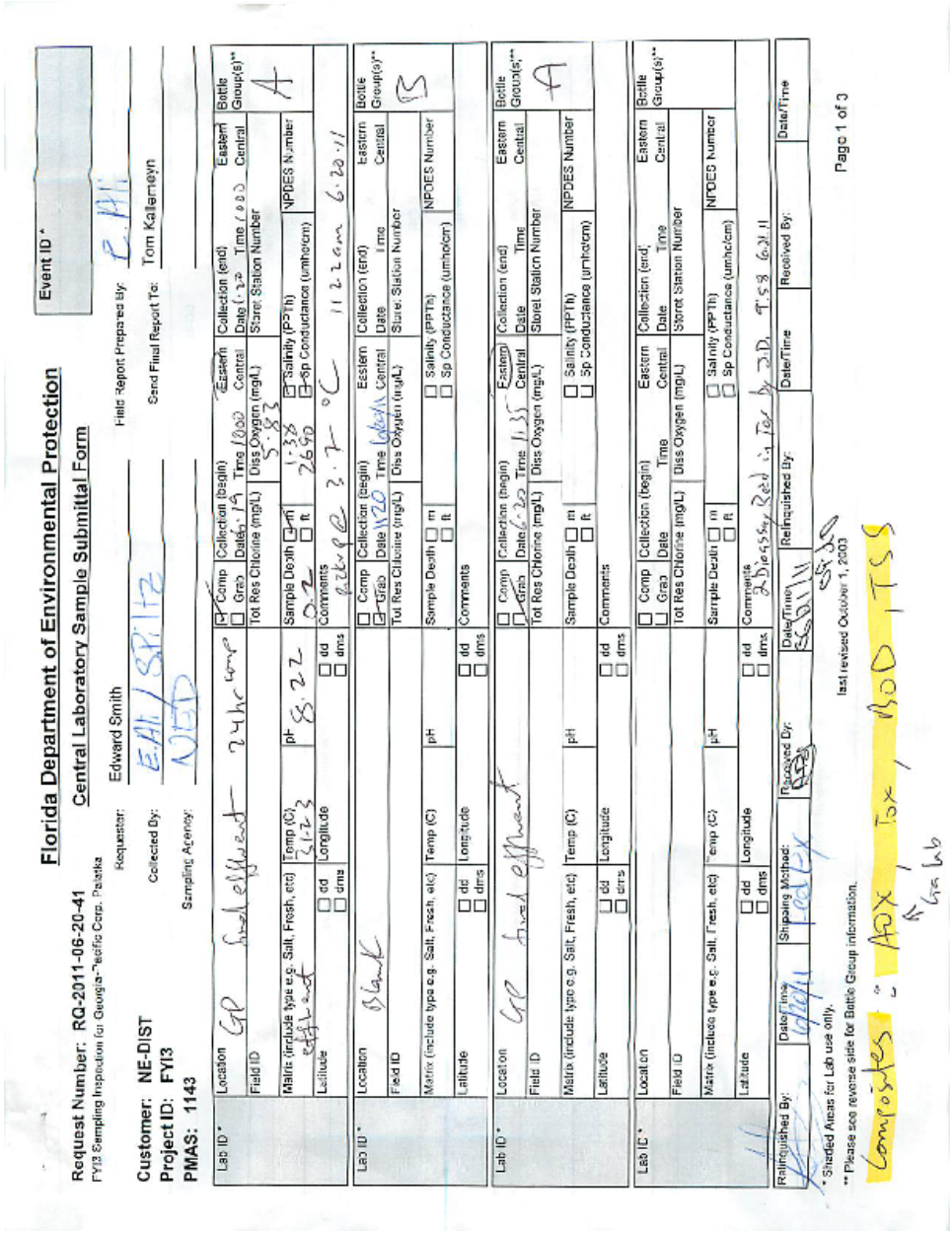
Table 2. Continued

Georgia-Pacific Corporation - Palatka Operations NPDES #FL0002763	Class III Criteria	Effluent Limits	Final Effluent Sampled June 20, 2011	Final Effluent Sampled June 22, 2011	Rice Creek @ Bardin Road Sampled June 22, 2011	Final Effluent Sampled June 24, 2011
General Physical and Chemical Parameters						
Dissolved Oxygen (mg/L)	≥ 5.0 s	≥ 4.0 s	5.8	4.5	5.6	3.8
pH (SU)	6.0 - 8.5 s	6.0 - 8.5 s	8.2	8.4	7.5	8.4
Specific Conductance (µmhos/cm)	≤ 1,275 s	-	-	-	-	-
Specific Conductance (µmhos/cm) Permit FL0002763 Expire 2007 Limit	-	≤ 2467 s	-	-	-	-
Specific Conductance (µmhos/cm) Administrative Order Limit	-	Report	2690	2674	521	2654
Temperature (°C)	-	Report	31.2	30.5	26.3	30.1
Salinity	-	-	1.22 c	1.23 c	0.25 c	1.23 c
Sample Depth (m)	-	-	0.2	0.2	0.4	0.1
Total Residual Chlorine (mg/L)	≤ 0.01 s	-	0.05 *Q£	0.03 UQ£	-	0.03 UQ£
Chlorophyll *a* (µg/L) - Corrected	-	-	300	-	-	-
Phaeophytin (µg/L)	-	-	50	-	-	-
Total Suspended Solids (mg/L)	-	Report	43 p	36	3 I	-
Turbidity (NTU)	< 29 ts	Report	37	38	1.5	-
CBOD, 5 day (mg/L), N - inhibited	-	Report	9.2 A p	-	-	-
Chloride (mg/L)	-	-	170	150	78	-
Fluoride (mg/L)	≤ 10.0 s	-	0.16	0.16	0.17	-
Sulfate (mg/L)	-	-	570	510	25	-
Hardness (mg $CaCO_3$)	-	Report	182.88 c	-	-	-
Flow (MGD) D-001 + D-002	-	≤ 40 a	16.9 a	-	-	-

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
c - Value is calculated
p - 24 hour flow proportioned composite
s - Single sample
t - Shall not exceed 29 NTUs above background
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
£ - measurement taken in the FDEP laboratory
* - Residual chlorine result likely due to interference

Appendix A. Chain of Custody Form



Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2011-06-20-41

FY13 Sampling Inspection for Georgia-Pacific Corp. Palatka

Event ID *

Requestor: Edward Smith

Field Report Prepared By: E. Hill

Customer: NE-DIST

Project ID: FY13

PMAS: 1143

Collected By: E. Hill / SR. Hill

Sampling Agency: NDEP

Send Final Report To: Tom Kallenbeyn

Lab ID * | Location GP Shell effluent 24hr comp | Field ID Shell effluent | Matrix (include type e.g. Salt, Fresh, etc) | Latitude | Longitude | Comp / Grab | Collection (begin) Date 6-19 Time 1000 | Tot Res Chlorine (mg/L) | Sample Depth m / ft | Temp (C) 21.2 | pH 8.22 | Comments pickup @ 2.7 °C | Collection (end) Date 6-20 Time 1000 | Diss Oxygen (mg/L) 5.83 | Store: Station Number | Salinity (PPTh) 1.38 | Sp Conductance (umho/cm) 2690 | NPDES Number | Eastern Central | Bottle Group(s)** 4

Lab ID * | Location Blank | Field ID | Matrix (include type e.g. Salt, Fresh, etc) | Latitude | Longitude | Comp / Grab | Collection (begin) Date 6-20 Time 1120 | Tot Res Chlorine (mg/L) | Sample Depth m / ft | pH | Temp (C) | Comments | Collection (end) Date Time | Diss Oxygen (mg/L) | Store: Station Number | Salinity (PPTh) | Sp Conductance (umho/cm) | NPDES Number | Eastern Central | Bottle Group(s)** 15

Lab ID * | Location GP Final effluent | Field ID | Matrix (include type e.g. Salt, Fresh, etc) | Latitude | Longitude | Comp / Grab | Collection (begin) Date 6-20 Time 1135 | Tot Res Chlorine (mg/L) | Sample Depth m / ft | pH | Temp (C) | Comments | Collection (end) Date Time | Diss Oxygen (mg/L) | Stored Station Number | Salinity (PPTh) | Sp Conductance (umho/cm) | NPDES Number | Eastern Central | Bottle Group(s)** 9

Lab ID * | Location | Field ID | Matrix (include type e.g. Salt, Fresh, etc) | Latitude | Longitude | Comp / Grab | Collection (begin) Date | Time | Tot Res Chlorine (mg/L) | Sample Depth m / ft | pH | Temp (C) | Comments 3 Diesel Bed in Tar by 3.D. TSS 6.21.11 | Collection (end) Date | Time | Diss Oxygen (mg/L) | Store Station Number | Salinity (PPTh) | Sp Conductance (umho/cm) | NPDES Number | Eastern Central | Bottle Group(s)**

Relinquished By: | Date/Time | Shipping Method: | Received By: | Date/Time | Relinquished By: | Date/Time | Received By: | Date/Time

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

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Composites: AOX, Tox, NOD, TSS

Appendix A. continued

NED FD0511 **Florida Department of Environmental Protection *North East District* Field sheet**

Sample Project GP 341 LabRequest number 1041 06 20 41

Collected By: CA/SO Date Collected: 6-22-11

Lab ID #	Storet#	Site Name	Matrix:Water Surface Fresh Surface Salt Effluent	Comments Air Temp ____ Wind Sp ____ Wind Dir ____
	GP 4.1 Effluent		Effluent	

Time	Total depth(m)	Sample depth(m)	Temp (C)	Conductivity (µmhos)	Salinity (%)	pH s.u.	D.O. mg/l	D.O. (%)	Secchi meters	Velocity ft./sec.	Tide Ebb/Flood/Slack	Turb. NTU
1037		0.2	30.45	52.4	1.32	8.42	4.53	64.1		1	—	—

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler(HS), Grab(G), Pole(P)	Preservation	Bottle/Suite =A/B/C,etc.	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP ☐HS ☐G ☐P	Ice& H_2SO_4 less than 2 pH*		
G / C / Na	Ortho Phosphorous ☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD ☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll,Phaeophytin ½ secchi ½ tot depth ☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4 ☐HS ☐G ☐P	Ice	A	C
G / C / Na	Metals: ICP,ICPMS ☐HS ☐G ☐P	Ice& HNO_3 less than 2 pH*		
G / C / Na	Other: Tox 3.1°C ☐HS ☐G ☐P	Ice/	A	C
G / C / Na	Microbiology: Fecal Coliform ☐HS ☐G ☐P	Ice		

Lab ID #	Storet#	Site Name	Matrix:Water Surface Fresh Surface Salt Effluent	Comments
	Ice Creek @ Bowden Road		Surface Fresh	

Time	Total depth(m)	Sample depth(m)	Temp (C)	Conductivity (µmhos)	Salinity (%)	pH s.u.	D.O. mg/l	D.O. (%)	Secchi meters	Velocity ft./sec	Tide Ebb/Flood/Slack	Turb NTU
1117	0.4L	0.4	26.3	521	0.25	7.42	5.68	69.5	0.4L	0.0K	—	—

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler(HS), Grab(G), Pole(P)	Preservation	Bottle/Suite =A/B/C,etc.	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP ☐HS ☐G ☐P	Ice& H_2SO_4 less than 2 pH*		
G / C / Na	Ortho Phosphorous ☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD ☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll,Phaeophytin ½ secchi ½ tot depth ☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4 ☐HS ☐G ☐P	Ice		A
G / C / Na	Metals: ICP,ICPMS ☐HS ☐G ☐P	HNO_3 less than 2 pH*		
G / C / Na	Other: ☐HS ☐G ☐P	Ice/		
G / C / Na	Microbiology: Fecal Coliform ☐HS ☐G ☐P	Ice		

Lab ID #	Storet#	Site Name	Matrix:Water Surface Fresh Surface Salt Effluent	Comments

Time	Total depth(m)	Sample depth(m)	Temp (C)	Conductivity (µmhos)	Salinity (%)	pH s.u.	D.O. mg/l	D.O. (%)	Secchi meters	Velocity ft./sec	Tide Ebb/Flood/Slack	Turb NTU

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler(HS), Grab(G), Pole(P)	Preservation	Bottle/Suite =A/B/C,etc.	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP ☐HS ☐G ☐P	Ice& H_2SO_4 less than 2 pH*		
G / C / Na	Ortho Phosphorous ☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD ☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll,Phaeophytin ½ secchi ½ tot depth ☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4 ☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS ☐HS ☐G ☐P	HNO_3 lesss than 2 pH*		
G / C / Na	Other: ☐HS ☐G ☐P	Ice/		
G / C / Na	Microbiology: Fecal Coliform ☐HS ☐G ☐P	Ice		

Relinquished	Date	Time	Shipping	Received	Date/Time
Cesar M.	6/22/11		FEDEX	[illegible]	6/23/11 920A

*All acid preserved samples are with 2ml of (1to1 acid) H_2SO_4 Lot #_____ HNO_3 Lot #_____

Patrick O'Connor (PWO) / Jeremy Parrish (JP) / Chuck Plank (CP) / Jann Gruentzel (JG) / Sharon Piltz (SP) / Eesa Ali (EA) / Jake Mast (JM) / Bipin Adhyaru (BA) / Stephany Birkholz (SB)

2 Brassy Reed in Top by JD. 10:04 . 6.23.11

Appendix A. continued

NED FD0511 **Florida Department of Environmental Protection *North East District* Field sheet**

Sample Project GP 3YI LabRequest number 2011-06-20-41

Collected By: E.Ali/S.Piltz Date Collected: 6/24/11

Lab ID #	Storet#									Matrix:Water Surface Fresh Surface Salt Effluent	Comments Air Temp ____ Wind Sp ____ Wind Dir ____ 10x Sample 2.7°C 6/23/11 0800 - 6-24/11 0800		
	Georgia Pacific Final Eff												
Time	Total depth(m)	Sample depth(m)	Temp (C)	Conductivity (µmhos)	Salinity (%)	pH s.u.	D.O. mg/l	D.O. (%)	Secchi meters	Velocity ft./sec.	Tide Ebb/Flood/Slack	Turb. NTU	
09:53		0.1	30.06	2665	1.36	8.40	3.84	57.2	—	—	—	—	

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler (HS), Grab(G), Pole(P)	Preservation	Bottle/Suite =A/B/C,etc.	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP ☐HS ☐G ☐P	Ice& H_2SO_4 less than 2 pH*		
G / C / Na	Ortho Phosphorous ☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD ☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll,Phaeophytin ½ secchi ½ to depth ☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Al,Cl,F,SO_4 ☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS ☐HS ☐G ☐P	Ice& HNO_3 less than 2 pH*		
G / C / Na	Other:_____ ☐HS ☐G ☐P	Ice/	A	EA
G / C / Na	Microbiology: Fecal Coliform ☐HS ☐G ☐P	Ice		

Lab ID #	Storet# Site Name									Matrix:Water Surface Fresh Surface Salt Effluent	Comments		
Time	Total depth(m)	Sample depth(m)	Temp (C)	Conductivity (µmhos)	Salinity (%)	pH s.u.	D.O. mg/l	D.O. (%)	Secchi meters	Velocity ft./sec	Tide Ebb/Flood/Slack	Turb NTU	

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler (HS), Grab(G), Pole(P)	Preservation	Bottle/Suite =A/B/C,etc.	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP ☐HS ☐G ☐P	Ice& H_2SO_4 less than 2 pH*		
G / C / Na	Ortho Phosphorous ☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD ☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll,Phaeophytin ½ secchi ½ to depth ☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Al,Cl,F,SO_4 ☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS ☐HS ☐G ☐P	HNO_3 less than 2 pH*		
G / C / Na	Other:_____ ☐HS ☐G ☐P	Ice/		
G / C / Na	Microbiology: Fecal Coliform ☐HS ☐G ☐P	Ice		

Lab ID #	Storet# Site Name									Matrix:Water Surface Fresh Surface Salt Effluent	Comments		
Time	Total depth(m)	Sample depth(m)	Temp (C)	Conductivity (µmhos)	Salinity (%)	pH s.u.	D.O. mg/l	D.O. (%)	Secchi meters	Velocity ft./sec	Tide Ebb/Flood/Slack	Turb NTU	

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler (HS), Grab(G), Pole(P)	Preservation	Bottle/Suite =A/B/C,etc.	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP ☐HS ☐G ☐P	Ice& H_2SO_4 less than 2 pH*		
G / C / Na	Ortho Phosphorous ☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD ☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll,Phaeophytin ½ secchi ½ to depth ☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Al,Cl,F,SO_4 ☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS ☐HS ☐G ☐P	HNO_3 lesss than 2 pH*		
G / C / Na	Other:_____ ☐HS ☐G ☐P	Ice/		
G / C / Na	Microbiology: Fecal Coliform ☐HS ☐G ☐P	Ice		

Relinquished	Date	Time	Shipping	Received	Date/Time
	6/24/11	1130	FEDEX	B. Alexander	6.25.11 9:45

*All acid preserved samples are with 2ml of (1to1 acid) H_2SO_4 Lot #_____ HNO_3 Lot #_____ Temp: 1.0

Patrick O'Connor (PWO) / Jeremy Parrish (JP) / Chuck Plank (CP) / Jann Gruentzel (JG) / Sharon Piltz (SP) / Eesa Ali (EA) / Jake Mast (JM) / Bipin Adhyaru (BA) / Stephany Birkholz (SB)

Appendix B. Bench Sheets

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia

Facility: Georgia Pacific
Address: 215 County Rd. 216, Palatka, FL
County: Duval
NPDES Permit #: FL 0002763
Contact/District: Eesa Ali /Northeast

LIMS entry: 7/13/11 mf verified: 7/13/11 KC

Diluent/ Batch: 20% DMW /6.15.11 Test Days Used: 0–1
20% DMW /6.17.11 Test Days Used: 2–6

SOP#: TA07_05 EPA 821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #: 6.21.11
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 5.5.11 4.18.11
Chamber size : 30 ml
Sample volume : 20 ml

Sample Received	LAB Sample #	LIMS JOB #	LIMS SAMPLE #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2011-06-21-60	1358976	06.20.11/1000	06.21.11/0920
Test Day 2	2	TLH-2011-06-23-53	1359640	06.22.11/1037	06.23.11/0920
Test Day 4	3	TLH-2011-06-27-20	1360236	06.24.11/0800	06.25.11/0945

Water Quality Parameters	Batch # 6.15.11 20% DMW	6.17.11 20% DMW	NA Sample 1	NA Sample 2	NA Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	not measured				n/a	KC
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03	0.05	<0.03	<0.03		KC/JD	KC
Alkalinity (mg/L as $CaCO_3$):	85	86	600	660	559		KC/BA	KC
Hardness (mg/L as $CaCO_3$):	82	82	190	150	180		KC/BA	KC
Total Ammonia (mg/L as N):	<0.017	<0.017	<0.017	<0.017	<0.017		BA	KC
Conductivity: ~~µmhos~~ mmhos:	178	175	2650	2620	2590		BA	KC
Salinity (ppth):	—	—	—	—	—		—	KC

Test Incubated in: Incubator #: 2

Temperature Shipped ≤ 6° C (all samples) (yes) no
Holding Time ≤ 36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C: 25.6
Incubator # 2 min ~~6.21~~ KC max 27.5 mean –
Room B246 min.____ max.____ mean____
Test min 22.5 max 24.5 mean –

Loaded by:

Test Replicates	Loaded from culture vial
1	A22
2	A16
3	C27
4	C25
5	C16
6	A24
7	A17
8	A9
9	C26
10	C23

Results	
Control % CV:	57.9 %
Dunnetts PMSD:	41.5%
Reproduction NOEC:	50%
Reproduction LOEC:	100%
Survival NOEC:	100%
Survival LOEC:	>100%
ICP_{20}:	30.74
ICP_{25}:	35.41

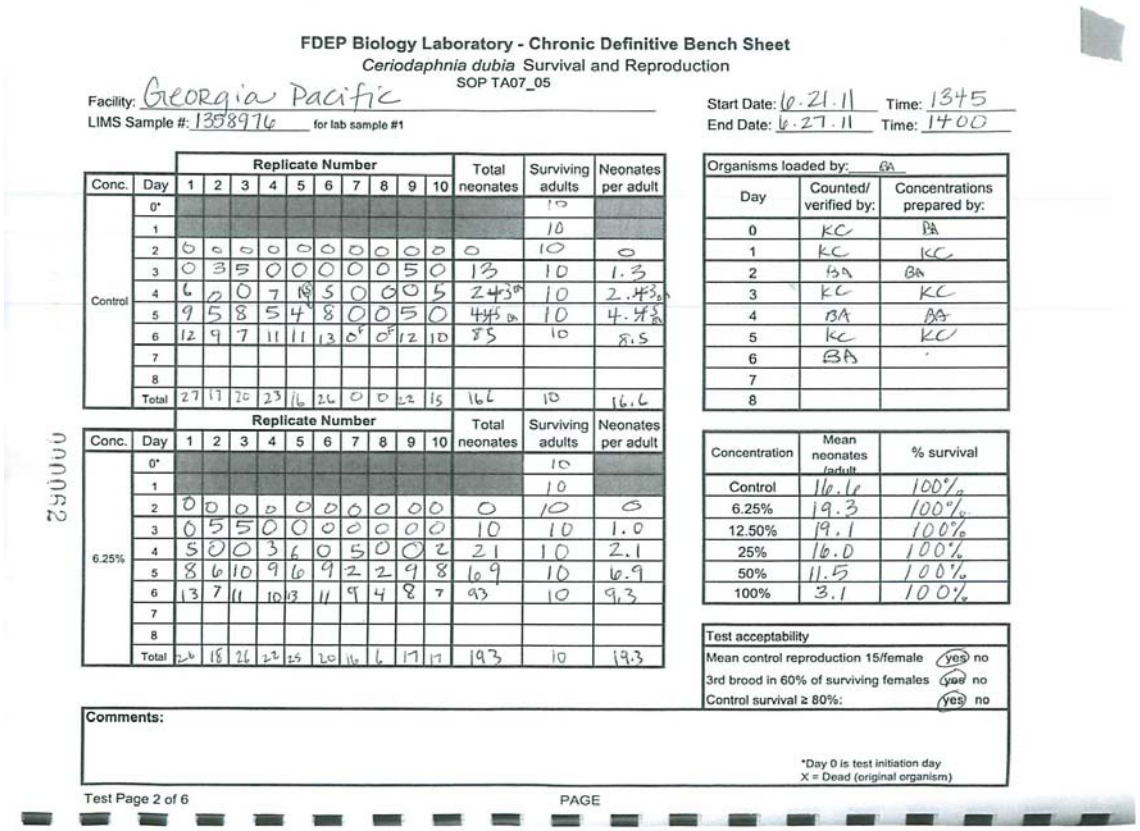
Investigators' signatures
Kara Day
Bruce Ablard
James Jarrell
Marshall Fairchild
Liz Mallon
REVIEWER

Comments:

000061

Test Page 1 of 6 PAGE revised 07/15/08 MF

Appendix B. continued



FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Georgia Pacific

LIMS Sample #: 1358976 for lab sample #1

Start Date: 6.21.11 Time: 1345

End Date: 6.27.11 Time: 1400

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	3	5	0	0	0	0	0	5	0	13	10	1.3
	4	6	0	0	7	19	5	0	0	0	5	243 DA	10	2.43 DA
	5	9	5	8	5	4	8	0	0	5	0	445 DA	10	4.45 DA
	6	12	9	7	11	11	13	0 X	0 X	12	10	85	10	8.5
	7													
	8													
	Total	27	17	20	23	16	26	0	0	22	15	166	10	16.6

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
6.25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	5	5	0	0	0	0	0	0	0	10	10	1.0
	4	5	0	0	3	6	0	5	0	0	2	21	10	2.1
	5	8	6	10	9	6	9	2	2	9	8	69	10	6.9
	6	13	7	11	10	13	11	9	4	8	7	93	10	9.3
	7													
	8													
	Total	26	18	26	22	25	20	16	6	17	17	193	10	19.3

Organisms loaded by: BA		
Day	Counted/ verified by:	Concentrations prepared by:
0	KC	BA
1	KC	KC
2	BA	BA
3	KC	KC
4	BA	BA
5	KC	KC
6	BA	
7		
8		

Concentration	Mean neonates /adult	% survival
Control	16.6	100%
6.25%	19.3	100%
12.50%	19.1	100%
25%	16.0	100%
50%	11.5	100%
100%	3.1	100%

Test acceptability	
Mean control reproduction 15/female	(yes) no
3rd brood in 60% of surviving females	(yes) no
Control survival ≥ 80%:	(yes) no

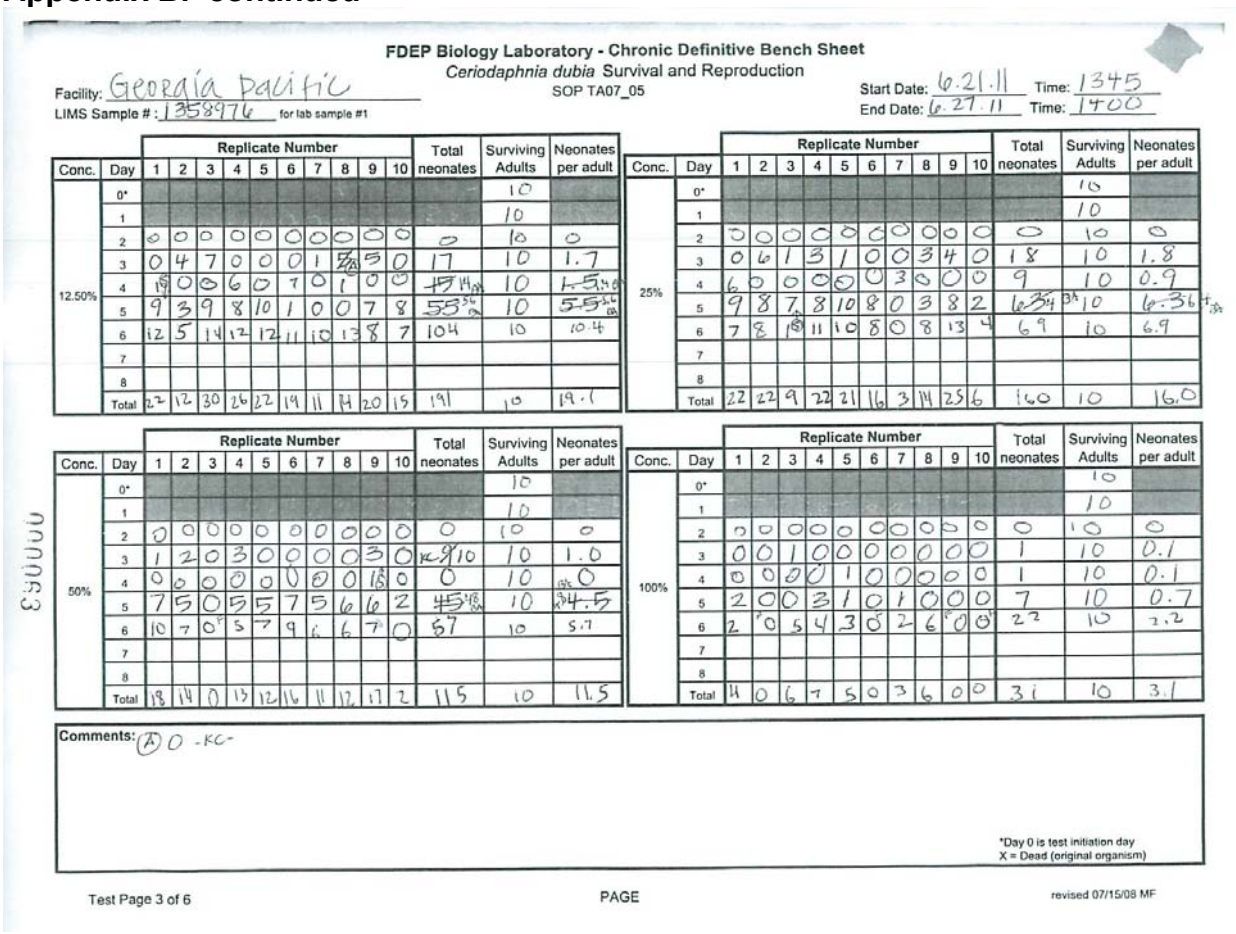
Comments:

*Day 0 is test initiation day
X = Dead (original organism)

Test Page 2 of 6

PAGE

Appendix B. continued



FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Georgia Pacific

LIMS Sample # : 1358976 for lab sample #1

Start Date: 6.21.11 Time: 1345

End Date: 6.27.11 Time: 1400

Conc.	Day	Rep 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
12.50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	4	7	0	0	0	1	X	5	0	17	10	1.7
	4	X	0	0	6	0	7	0	1	0	0	14	10	1.4
	5	9	3	9	8	10	1	0	0	7	8	55	10	5.5
	6	12	5	14	12	12	11	10	13	8	7	104	10	10.4
	7													
	8													
	Total	22	12	30	26	22	19	11	14	20	15	191	10	19.1

Conc.	Day	Rep 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	6	1	3	1	0	0	3	4	0	18	10	1.8
	4	6	0	0	0	0	0	3	0	0	0	9	10	0.9
	5	9	8	7	8	10	8	0	3	8	2	63	10	6.3
	6	7	8	X	11	10	8	0	8	13	4	69	10	6.9
	7													
	8													
	Total	22	22	9	22	21	16	3	14	25	6	160	10	16.0

Conc.	Day	Rep 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	1	2	0	3	0	0	0	0	3	0	9	10	1.0
	4	0	0	0	0	0	0	0	0	X	0	0	10	0
	5	7	5	0	5	5	7	5	6	6	2	45	10	4.5
	6	10	7	0	5	7	9	6	6	7	0	57	10	5.7
	7													
	8													
	Total	18	14	0	13	12	16	11	12	17	2	115	10	11.5

Conc.	Day	Rep 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
100%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	1	0	0	0	0	0	0	0	1	10	0.1
	4	0	0	0	0	1	0	0	0	0	0	1	10	0.1
	5	2	0	0	3	1	0	1	0	0	0	7	10	0.7
	6	2	0	5	4	3	0	2	6	0	0	22	10	2.2
	7													
	8													
	Total	4	0	6	7	5	0	3	6	0	0	31	10	3.1

Comments: (A) 0 -KC-

*Day 0 is test initiation day
X = Dead (original organism)

Test Page 3 of 6

PAGE

revised 07/15/08 MF

Appendix B. continued

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Georgia Pacific SOP TA07_05

LIMS Sample #: 1358976 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample	Control	M	7.9	24.4	7.6	178					
	1	6.25%	M	8.1	25.1	7.7	347					
	1	12.5%	M	8.2	24.8	7.7	510					
	1	25%	M	8.3	24.7	7.8	828					
	1	50%	M	8.5	25.0	7.8	1453					
	1	100%	M	8.5	25.0	7.9	2650					
	Measured by:			BA	BA	BA	BA					
	Recorded by:			BA	BA	BA	BA					
Day 1	sample:	Control	M	8.2	24.0	8.1	167	M	7.9	24.0	7.5	192
	1	6.25%	M	8.4	24.0	8.1	384	M	8.2	24.0	7.5	366
	1	12.5%	M	8.5	24.2	8.1	465	M	8.4	24.0	7.5	550
	1	25%	M	8.6	24.4	8.1	765	M	8.5	24.0	7.6	890
	1	50%	M	8.7	25.0	8.1	1410	M	8.7	24.0	7.8	1559
	1	100%	M	8.8	25.3	8.2	2580	M	8.9	24.0	8.0	2680
	Measured by:			KC	KC	KC	KC		KC	KC	KC	KC
	Recorded by:			KC	KC	KC	KC		KC	KC	KC	KC
Day 2	sample:	Control	M	8.0	24.0	6.4	175	M	7.9	24.2	6.5	182
	2	6.25%	M	8.3	25.1	7.0	348	M	8.0	24.0	6.6	425
	2	12.5%	M	8.4	25.4	7.2	521	M	8.2	24.0	6.6	510
	2	25%	M	8.5	25.2	7.3	837	M	8.5	24.0	6.7	830
	2	50%	M	8.6	24.9	7.3	1458	M	8.7	24.0	6.6	1487
	2	100%	M	8.6	25.1	7.3	2620	M	8.9	24.0	7.1	2610
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 3	sample:	Control	M	8.1	24.0	8.3	169	M	8.0	24.0	8.0	194
	2	6.25%	M	8.3	24.1	8.3	323	M	8.1	24.0	8.1	351
	2	12.5%	M	8.4	24.1	8.3	476	M	8.3	24.0	8.1	517
	2	25%	M	8.6	24.0	8.3	775	M	8.5	24.0	~~8.1~~ 8.2 (A)	836
	2	50%	M	8.7	24.0	8.4	1361	M	8.8	24.0	8.2	1456
	2	100%	M	8.7	24.0	8.4	~~2510~~ 2510	M	9.0	24.0	8.4	2700
	Measured by:			KC	KC	KC	KC		KC	KC	KC	KC
	Recorded by:			KC	KC	KC	KC		KC	KC	KC	KC

Comments: (A) 8.1 KC

Replicate M= "Metered" vial, a surrogate vial for parameters

Test Page 4 of 6 PAGE 000064 revised 07/15/08 MF

Appendix B. continued

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Georgia Pacific SOP TA07_05

LIMS Sample #: 1358976 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	sample:	Control	M	8.0	24.9	8.1	175	M	7.9	24.0	7.3	189
	3	6.25%	M	8.3	25.4	8.2	337	M	8.0	24.0	7.1	337
	3	12.5%	M	8.4	25.5	8.2	497	M	8.1	24.0	7.2	497
	3	25%	M	8.5	25.5	8.3	814	M	8.4	24.0	7.2	805
	3	50%	M	8.7	25.6	8.2	1415	M	8.7	24.0	7.5	1415
	3	100%	M	8.7	25.7	7.9	2590	M	8.9	24.0	7.5	2700
	Measured by:			JD	BA	JD	JD		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 5	sample:	Control	M	8.0	24.0	8.2	166	M	8.0	24.0	8.6	179
	3	6.25%	M	8.3	24.4	8.4	325	M	8.2	24.0	8.4	345
	3	12.5%	M	8.5	24.8	8.4	478	M	8.4	24.0	8.5	519
	3	25%	M	8.6	24.9	8.4	778	M	8.5	24.0	8.5	853
	3	50%	M	8.7	25.2	8.4	1358	M	8.7	24.0	8.6	1480
	3	100%	M	8.8	25.7	8.1	2470	M	9.0	24.0	8.8	2610
	Measured by:			KC	KC	KC	KC		KC	KC	KC	KC
	Recorded by:			KC	KC	KC	KC		KC	KC	KC	KC
Day 6	sample:	Control	M					M	7.9	24.0	7.4	182
	3	6.25%	M					M	8.0	24.0	7.8	349
	3	12.5%	M					M	8.2	24.0	7.8	517
	3	25%	M					M	8.4	24.0	7.9	843
	3	50%	M					M	8.7	24.0	8.0	1430
	3	100%	M					M	8.9	24.0	8.1	2540
	Measured by:								BA	BA	BA	BA
	Recorded by:								BA	BA	BA	BA
Day 7	sample:	Control	M					M				
	3	6.25%	M					M				
	3	12.5%	M					M				
	3	25%	M					M				
	3	50%	M					M				
	3	100%	M					M				
	Measured by:											
	Recorded by:											

Not Renewed MF

Comments:

Replicate M= "Metered" vial, a surrogate vial for parameters

Test Page 5 of 6 PAGE 65 revised 07/15/08 MF

Appendix B. continued

Test ID: Georgia Pacific Dates: 6.21.11 – 6.27.11

METER / DEVICE	ID	SOP	Parameter	Method	√ used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5 SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #5
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Entered By: KC 7-12-11

V 1.1 9/21/10 MF/jd

Appendix B. continued

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet
Pimphales promelas or Menidia beryllina

Facility: Georgia Pacific
Address: 215 CR 216, Palatka, FL
County: Duval
NPDES Permit #: FL 0002763
Contact/District: Eesa Ali/ Northeast

Test Species (circle one)
(P. promelas) SOP#: TA07_09 EPA-821-R-02-013 Method 1000.0
M. beryllina SOP#: TA07_14 EPA-821-R-02-014 Method 1006.0

Start Date: 6.21.11 Time: 1300
End Date: 6.28.11 Time: 1055

Diluent/ Batch:
MHW / 6.10.11 Test Days Used: 0-3
MHW / 6.22.11 Test Days Used: 4-7
ASW / Test Days Used:
ASW / Test Days Used:

Organism age : ~~<24 hrs~~ ~~days~~
Feeding Prior to Test and Daily
Artemia Lot # : 23613
Chamber size : 1000 ml
Test volume : 500 ml

Artemia Batch #	Day 3 115-11	
Day 0 112-11	Day 4 ~~116-11~~ *	KC
Day 1 113-11	Day 5 * ~~117-11~~	KC
Day 2 114-11	Day 6 118-11	

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-~~2011-06-21-02~~	1358976	06/20/11@1000	06/21/11@0920
Test Day 2	2	TLH-2011-06-23-53	1359690	06/22/11@1037	06/23/11@0920
Test Day 4	3	TLH-2011-06-27-20	1360236	06/24/11@0800	06/25/11@0945

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3	1	2	3
Sample:	not measured			0.05	<0.03	<0.03	600	660	559	190	150	180
Diluent/Control:				<0.03	<0.03	<0.03	78	78	79	96	96	90
Method:	—	—	—	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	—	—	—	KC/JD	KC/JD	JD/KC	KC	KC	BA	KC	KC	BA
Verified by:	KC	KC	KC	KC	KC	KC	KC	KC	KC	KC	KC	KC

	Conductivity (circle one) (µmhos-cm) mmhos-cm)			Ammonia (mg/L)			Salinity (ppth)		
Lab Sample#:	1	2	3	1	2	3	1	2	3
Sample:	2730	7540	2690	<0.017	<0.017	<0.017			
Diluent/Control:	333	320	316	<0.017	<0.017	<0.017			
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler
Measured by:	JD	JD	JD	BA	BA	BA			
Verified by:	KC	KC	KC	KC	KC	KC			

LIMS entry 7-13-11 mr
verification: 7/13/11 KC

Statistics	
Growth NOEC:	100 %
Growth LOEC:	>100 %
Growth IC_{20}:	>100 %
Growth IC_{25}:	>100 %
Ctrl % CV:	13.4 %
Dunnetts PMSD:	18.62 %
Survival NOEC:	100 %
Survival LOEC:	>100 %

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 5 min 25.1 max 26.6 mean —
Water bath # ___ min. ___ max. ___ mean ___
Room B246 min 22.5 max 24.5 mean —

Investigators' signatures
James Daniels
Kara Coy
Brec Hoefle
Marshall Faircloth
Reviewer

KC 11-6-11
Comments: * Artemia batch # ~~117-11~~ was dead on day 5 b/c of aeration problem. #~~116-11~~ was used to feed instead. 115-11 KC -KC-

(A) TLH-2011-06-21-60 -KC-

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revised 08/24/06 MF/SP

Appendix B. continued

Chronic Bioassay Survival Benchsheet

Facility: Georgia Pacific

LIMS Sample Number: 1358976
(for Lab Sample # 1)

Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
P. promelas SOP TA07_09 *M. beryllina* SOP TA07_14

Organism: (*P. promelas*) *M.beryllina* (circle one)

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10	9 ID	9	9
	B	10	9 ID	9	9	8 ID	7 ID	7	7
	C	10	10	10	10	10	10	10	9 ID
	D	10	10	10	10	10	10	10	10
Sample 100 %	A	10	10	10	10	10	9 ID	9	9
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	9 ID
	D	10	10	10	10	10	10	10	10
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: JD	Checked by:		BA	JD	JD	JD	KC	JD	JD
Verified by: BA									

Comments:

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Appendix B. continued

Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg. 1

Sample Source: Georgia Pacific — Start Date: 6.21.11 — End Date: 6.28.11

LIMS Sample #: 13589776 (for Lab sample #1) — Start Time: 1300 — End Time: 1055

conc = concentration — rep = replicate — circle umhos or mmhos

Test Day		Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos) mmhos	Salinity ppth	Test Start and After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos) mmhos	Salinity ppth
Day 0	sample:	Control							A	8.0	25.9	8.0	333	
	1	100%							A	8.5	25.9	7.8	2730	
	1								A					
	1								A					
	1								A					
	1								A					
	1								A					
	Measured by:									JD	JD	JD	JD	
	Recorded by:									JD	JD	JD	JD	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	8.2	25.4	6.3	329		B	7.8	25.6	7.0	328	
	1	100%	B	8.8	25.8	6.4	2520		B	8.6	25.5	6.4	2600	
	1		B						B					
	1		B						B					
	1		B						B					
	1		B						B					
	1		B						B					
	Measured by:			BA	BA	BA	BA			BA	BA	BA	BA	
	Recorded by:			BA	BA	BA	BA			BA	BA	BA	BA	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	sample:	Control	C	8.0	25.1	7.3	328		C	7.8	25.9	7.5	320	
	2	100%	C	8.8	25.7	8.9	2600		C	8.6	25.9	7.4	2540	
	2		C						C					
	2		C						C					
	2		C						C					
	2		C						C					
	2		C						C					
	Measured by:			JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD			JD	JD	JD	JD	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	sample:	Control	D	7.8	25.1	6.5	326		D	7.8	25.0	7.2	319	
	2	100%	D	8.7	25.6	8.3	2590		D	8.7	25.0	7.0	2510	
	2		D						D					
	2		D						D					
	2		D						D					
	2		D						D					
	2		D						D					
	Measured by:			JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD			JD	JD	JD	JD	

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional

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Appendix B. continued

Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg. 2

Sample Source: Geofix Pacific — Start Date: 4.21.11 — End Date: 4.28.11

LIMS Sample #: 1358976 (for Lab sample #1) — Start Time: 1300 — End Time: 1055

conc = concentration — rep = replicate

Test Day			Before Renewal							Test Start and After Renewal						
		Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos/mmhos	Salinity ppth		Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos/mmhos	Salinity ppth	
Day 4	sample:	Control	A	7.8	25.3	6.2	324			A	7.9	24.0	7.5	316		
	3	100%	A	8.8	25.2	8.2	2600			A	8.7	25.1	7.9	2690		
	3		A							A						
	3		A							A						
	3		A							A						
	3		A							A						
	3		A							A						
	Measured by:			JD	JD	JD	JD				JD	JD	JD	JD		
	Recorded by:			JD	JD	JD	JD				JD	JD	JD	JD		
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 5	sample:	Control	B	8.0	24.9	7.6	328			B	8.0	25.4	8.3	314		
	3	100%	B	8.9	24.9	8.3	2640			B	8.8	24.4	7.8	2570		
	3		B							B						
	3		B							B						
	3		B							B						
	3		B							B						
	3		B							B						
	Measured by:			KC	KC	KC	KC				KC	KC	KC	KC		
	Recorded by:			KC	KC	KC	KC				KC	KC	KC	KC		
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 6	sample:	Control	C	7.9	25.5	7.6	321			C	8.1	25.6	7.7	315		
	3	100%	C	8.9	26.0	8.9	2640			C	8.9	24.6	7.9	2520		
	3		C							C						
	3		C							C						
	3		C							C						
	3		C							C						
	3		C							C						
	Measured by:			JD	JD	JD	JD				JD	JD	JD	JD		
	Recorded by:			JD	JD	JD	JD				JD	JD	JD	JD		
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 7	sample:	Control	D	7.8	25.2	7.5	313									
	3	100%	D	8.9	25.7	7.4	2560									
	3		D													
	3		D													
	3		D													
	3		D													
	3		D													
	Measured by:			JD KC	JD	JD KC	JD KC									
	Recorded by:			JD KC	JD	JD KC	JD KC									

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

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Appendix B. continued

Chronic Bioassay Weighing Benchsheet

Facility: KC Georgia Pacific

LIMS Sample Number: 1358976
(for Lab Sample # 1)

P. promelas and *M. beryllina* Bench Sheet
SOP TA06_21

			mean wt = fish wt divided by 10 convert g to mg: move decimal 3 places to right				
Concentration	Replicate	Pan #	Pan wt. g	Pan + Fish g	Fish wt. g	Original # Fish	Mean wt. mg
Control	A	44	0.02297	0.02801	0.00504	10	.504
	B	45	0.02311	0.02720	0.00409	10	.409
	C	46	0.02322	0.02766	0.00444	10	.444
	D	47	0.02336	0.02890	0.00554	10	.554
sample 100 %	A	48	0.02305	0.02843	0.00538	10	.538
	B	49	0.02257	0.02926	0.00669	10	.669
	C	50	0.02152	0.02717	0.00565	10	.565
	D	51	0.02390	0.03046	0.00656	10	.656
sample %	A					10	
	B					10	
	C					10	
	D					10	
sample %	A					10	
	B					10	
	C					10	
	D					10	
sample %	A					10	
	B					10	
	C					10	
	D					10	
sample %	A					10	
	B					10	
	C					10	
	D					10	
sample %	A					10	
	B					10	
	C					10	
	D					10	
	Weighed by initials:		JD	JD		revised 7/16/08 mf	

Comments:

Balance: Ohaus 250D Ser# 1125481084
S-Weights: BIO-S-Weights-01

Note: Pan number (#) refers to actual Pan number.

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Appendix B. continued

Chronic Bioassay Weighing Benchsheet

Quality Control

Facility: Georgia Pacific

LIMS Sample Number: 1358976
(for Lab Sample # 1)

P. promelas and M. beryllina Bench sheet
SOPs TA07_09, TA07_14 and TA06_21

Drying Oven ID:	ERO34000
Temperature °C:	100
Hours:	8

Tare weighed by: JD
Final weighed by: JD

Tare Weighing Date: 6.27.11 Final Weighing Date: 6.30.11

			Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.02298	@ 0.02297	S-weights	@	0.01
Tare Pan 1 after Pan 10 (g)	0.02298	@ 0.02297	at tare	0.03004	@ 0.03
Tare Pan 1 after Pan 15 (g)		@	S-weights	0.01	@ 0.01
Tare Pan 1 after Pan 20 (g)		@	at final	0.05003	@ 0.05
Tare Pan 1 after Pan 25 (g)		@			
Tare Pan 1 after Pan 30 (g)		@	Balance: Ohaus 250D Ser# 1125481084		
Tare Pan 1 after Pan 35 (g)		@	S-Weights: BIO-S-Weights-01		
Tare Pan 1 after Pan 40 (g)		@			
Tare Pan 1 after Pan 45 (g)		@			
Tare Pan 1 after Pan 48 (g)		@			
Final Pan 1 after Pan 5 (g)	0.02804	@ 0.02801			
Final Pan 1 after Pan 10 (g)	0.02803	@ 0.02801			
Final Pan 1 after Pan 15 (g)		@			
Final Pan 1 after Pan 20 (g)		@			
Final Pan 1 after Pan 25 (g)		@			
Final Pan 1 after Pan 30 (g)		@			
Final Pan 1 after Pan 35 (g)		@			
Final Pan 1 after Pan 40 (g)		@			
Final Pan 1 after Pan 45 (g)		@			
Final Pan 1 after Pan 48 (g)		@			

Note: Pan numbers (5, 10, etc.) for Tare and Final refers to sequence of weighing as actual Pan #s may differ.

Comments:

revised 7/16/08 MF

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Appendix B. continued

Test ID: Georgia Pacific Dates: 6.21.11 – 6.28.11

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5 SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #5
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Kara Cox 6/28/11

V 1.1 9/21/10 MF/jd

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Appendix C. SRT Bench Sheets and Statistical Analysis

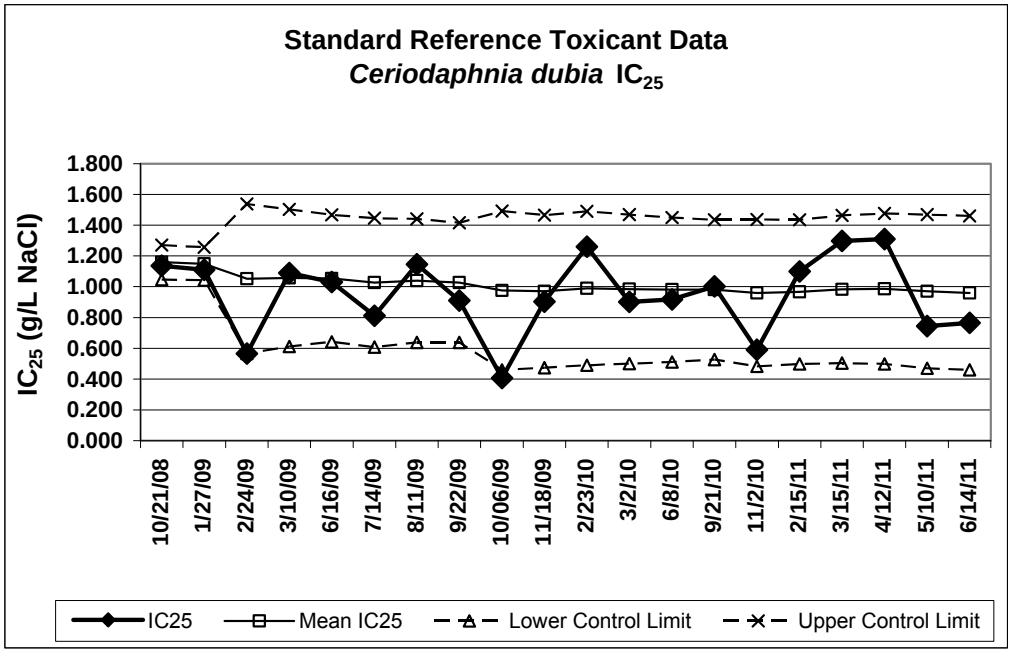
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit
10/21/08	1.138	1.16	0.06	1.05	1.27
1/27/09	1.110	1.15	0.05	1.04	1.26
2/24/09	0.565	1.05	0.24	0.57	1.54
3/10/09	1.090	1.06	0.22	0.61	1.50
6/16/09	1.030	1.05	0.21	0.64	1.47
7/14/09	0.812	1.03	0.21	0.61	1.45
8/11/09	1.146	1.04	0.20	0.64	1.44
9/22/09	0.911	1.03	0.19	0.64	1.42
10/06/09	0.406	0.98	0.26	0.46	1.49
11/18/09	0.903	0.97	0.25	0.47	1.47
2/23/10	1.260	0.99	0.25	0.49	1.49
3/2/10	0.902	0.98	0.24	0.50	1.47
6/8/10	0.917	0.98	0.23	0.51	1.45
9/21/10	1.002	0.98	0.23	0.53	1.44
11/2/10	0.590	0.96	0.24	0.48	1.44
2/15/11	1.100	0.97	0.23	0.50	1.44
3/15/11	1.297	0.98	0.24	0.50	1.46
4/12/11	1.310	0.99	0.24	0.50	1.48
5/10/11	0.744	0.97	0.25	0.47	1.47
6/14/11	0.765	0.96	0.25	0.46	1.46

Means are of the last 20 SRT tests.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

EPA 75th Percentile %CV for Reproduction **45%**
Lab %CV Reproduction **24 25.90%**

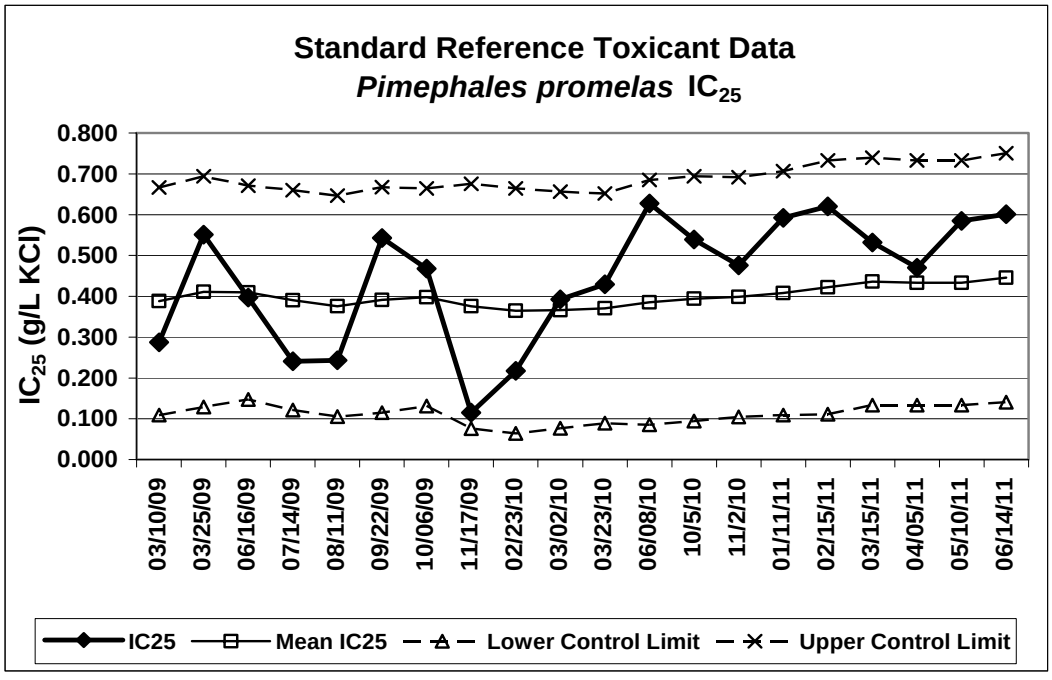


Appendix C. (continued)

Florida Department of Environmental Protection
Bureau of Laboratories
Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Pimephales promelas (fathead minnow) - Potassium Chloride (KCl)

Date	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit
03/10/09	0.287	0.388	0.14	0.109	0.667
03/25/09	0.551	0.411	0.14	0.129	0.694
06/16/09	0.397	0.410	0.13	0.148	0.671
07/14/09	0.241	0.391	0.13	0.121	0.660
08/11/09	0.243	0.376	0.14	0.105	0.647
09/22/09	0.543	0.391	0.14	0.115	0.667
10/06/09	0.468	0.398	0.13	0.131	0.664
11/17/09	0.115	0.376	0.15	0.076	0.676
02/23/10	0.217	0.365	0.15	0.064	0.665
03/02/10	0.393	0.366	0.14	0.077	0.656
03/23/10	0.429	0.370	0.14	0.089	0.652
06/08/10	0.628	0.385	0.15	0.086	0.685
10/05/10	0.539	0.394	0.15	0.094	0.694
11/02/10	0.476	0.398	0.15	0.105	0.692
01/11/11	0.592	0.408	0.15	0.109	0.707
02/15/11	0.620	0.422	0.16	0.111	0.733
03/15/11	0.532	0.436	0.15	0.133	0.740
04/05/11	0.470	0.433	0.15	0.133	0.733
05/10/11	0.585	0.433	0.15	0.133	0.733
06/14/11	0.601	0.446	0.15	0.141	0.751

Means are from the last 20 SRTs.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev



FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia

Diluent/ Batch: 20% DMW / 6.10.11 Test Days Used: 0-4
20% DMW / 6.15.11 Test Days Used: 5-6
Toxicant/ Batch: NaCl / 6.13.11

SOP # : TA 07_05
EPA-821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #/ Age: 6.14.11 / <24 hr.
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 5.5.11 4.18.11
Chamber size: 30 mL
Test Volume: 20 mL

Start Date: 6.14.11 Time: 1015
End Date: ~~6.21.11~~ 6.20.11 Time: 2100

Batch:	6.10.11	6.15.11			
Water Quality Parameters	20% DMW	20% DMW	Other	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03		JD/KC	KC
Alkalinity (mg/L as $CaCO_3$):	82	85		KC	KC
Hardness (mg/L as $CaCO_3$):	82	87		KC	KC
Total Ammonia (mg/L as N):	<0.017	<0.017		BA	KC
Conductivity (µmhos-cm) mmhos-cm :	186	180		MF	KC

Loaded by: MF

Results	
Control % CV:	47.3 %
Dunnetts PMSD:	38.7 %
Reproduction NOEC:	1.3 g/L
Reproduction LOEC:	2.0 g/L
Survival NOEC:	2.0 g/L
Survival LOEC:	3.0 g/L
IC_{20}:	0.72989
IC_{25}:	0.7654

Day	Concentrations prepared by	Counted by
0	MF	KC
1	KC	KC
2	KC	KC
3	KC	KC
4	KC	KC
5	KC	MF
6	~~BA~~ BA	BA
7		
8		

Test Replicate	Loaded from culture vial
1	A4
2	A17
3	A29
4	B25
5	B26
6	B9
7	C4
8	B12
9	B7
10	C~~B~~21 MF

Comments:

Investigators' signatures

Kara Coy
marshall Fairlett
Jessa Abeles
James Daniels

Test Incubated in: Incubator: # 2
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min 25.6 max 27.4 mean —
Room B246 ___ min 22.5 max 23.3 mean —
Test min.____ max.____ mean____

REVIEWER

Appendix C. (continued)

Ceriodaphnia dubia Survival and Reproduction

Start Date: 6.14.11 Time: 1015 Loaded by: MF
End Date: 6.20.11 Time: 21:00 Verified by: KC

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
Control	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	3	0	5	0	5	0	4	1	0	22	10	2.2
	4	0	0	3	0	0	0	5	0	0	5	13	10	1.3
	5	8	5	5	5	0	6	5	4	5	8	51	10	5.1
	6	10	7	8	ox	O[F]	11	5	6	6	12	65	9	6.5
	7													
	8									12 [8]				
	Total	22	15	16	10	0	22	15	14	~~11~~	25	151	9	15.1
0.59	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	4	3	4	0	6	0	4	5	0	29	10	2.9
	4	0	0	0	0	0	0	0	0	0	4	4	10	0.4
	5	7	7	6	7	0	6	4	3	8	7	55	10	5.5
	6	12	11	2	9	M O	5	6	9	12	9	75	10	7.5
	7													
	8											(A) 3X 163	9	18.1
	Total	22	22	11	20	0	17	10	16	25	20	163	~~10~~	~~16.3~~
0.89	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	1	5	0	0	2	0	0	1	0	13	10	1.3
	4	0	0	0	0	0	0	0	0	0	2	2	10	0.2
	5	5	5	6	0	0	5	0	~~M~~ 8	8	7	36	10	3.6
	6	5	0	9	O[M]	O[M]	3	3	X O[MF]	7	0	27	10	2.7
	7													
	8											(A) 78	8	9.75
	Total	14	6	20	0	0	10	3	0	16	9	78	~~10~~	~~7.8~~

Comments: Day 5 Rep 8 0.89 ppth = ♂ MF 6-19-11 (A) Males not counted in final tally BF 7-13-11

F = Female
M = Male

Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
1.3	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	1	3	3	4	0	0	0	0	0	14	10	1.4
	4	0	0	0	0	0	2	0	1	0	1	4	10	0.4
	5	0	8	5	4	4	8	.1	.0	0	6	36	10	3.6
	6	0	8	6	1	0	5	0	0	0[M]	0	20	10	2.0
	7													
	8											Ⓐ 14	9	8.2
	Total	3	17	14	8	8	15	1	1	0	7	74	~~10~~	~~7.4~~
2.0	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	1	0	0	0	0	0	0	0	1	10	0.1
	4	0	0	0	0	0	0	0	0	0	0	0	10	0
	5	0	3	1	4	0	0	0	0	0	1	9	10	0.9
	6	0	0	0	0	0	0	0	3	0	0	3	10	0.3
	7													
	8													
	Total	0	3	2	4	0	0	0	3	0	1	13	10	1.3
3.0	0												10	
	1			X	X	X				X			10	
	2	X	0	|	|	|	X	X	X	|	X	0	1	0
	3	|	X	|	|	|	|	|	|	|	|	0	0	0
	4	|	|	|	|	|	|	|	|	|	|			
	5	|	|	|	|	|	|	|	|	|	|			
	6	|	|	|	|	|	|	|	|	|	|			
	7	|	|	|	|	|	|	|	|	|	|			
	8	|	|	|	|	|	|	|	|	|	|			
	Total	|	|	|	|	|	|	|	|	|	|			

Comments: Ⓐ see NOTE Page #2

Test Page 3 of 6 PAGE 3 07/15/08 MF

Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day ↓	Conc.	New Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	Control	M	7.9	~~24.9~~ MF	7.8	186					
	0.59	M	7.9	25.5	7.8	1345					
	0.89	M	7.9	25.5	7.7	1870					
	1.3	M	7.9	25.4	7.5	2650					
	2.0	M	7.9	25.5	7.6	3780					
	3.0	M	8.0	25.4	7.5	5470					
	Measured by:		MF	MF	MF	MF					
	Recorded by:		MF	MF	MF	MF					
Day 1	Control	M	7.9	~~24.1~~ 24.1	7.9	177	A	7.8	24.5	7.5	203
	0.59	M	8.0	25.3	7.7	1291	A	7.9	24.0	7.5	1462
	0.89	M	8.1	24.6	7.8	1832	A	8.0	24.3	7.5	2030
	1.3	M	8.1	24.4	7.8	2600	A	8.0	24.1	7.5	2760
	2.0	M	8.1	24.1	7.7	3740	A	8.0	24.0	7.4	3970
	3.0	M	8.1	24.0	7.6	5480	A	8.0	24.8	7.3	5660
	Measured by:		KC	KC	KC	KC		KC	KC	KC	KC
	Recorded by:		KC	KC	KC	KC		KC	KC	KC	KC
Day 2	Control	M	8.1	25.8	8.1	174	A	7.9	25.2	7.3	195
	0.59	M	8.1	24.8	7.7	1243	A	7.9	25.3	7.5	1360
	0.89	M	8.1	25.1	7.9	1765	A	7.9	25.1	7.8	1949
	1.3	M	8.1	24.6	7.7	2520	A	7.9	24.9	7.8	~~2800~~ (A)
	2.0	M	8.1	24.2	7.8	3630	A	7.9	25.1	7.7	4000
	3.0	M	8.1	24.0	7.8	5290	A	7.9	25.1	7.7	5630
	Measured by:		KC	KC	KC	KC		KC	KC	KC	KC
	Recorded by:		KC	KC	KC	KC		KC	KC	KC	KC
Day 3	Control	M	8.0	25.2	~~25.2~~ (B)	171					
	0.59	M	8.0	25.1	~~25.1~~ (B)	1246	(*) See comment below.				
	0.89	M	8.1	24.8	~~24.8~~	1786					
	1.3	M	8.1	24.5	~~24.5~~	2570					
	2.0	M	8.1	24.0	~~24.0~~	3730					
	3.0	M	8.1	24.0	~~24.0~~	5260					
	Measured by:		KC	KC	KC	KC					
	Recorded by:		KC	KC	KC	KC					

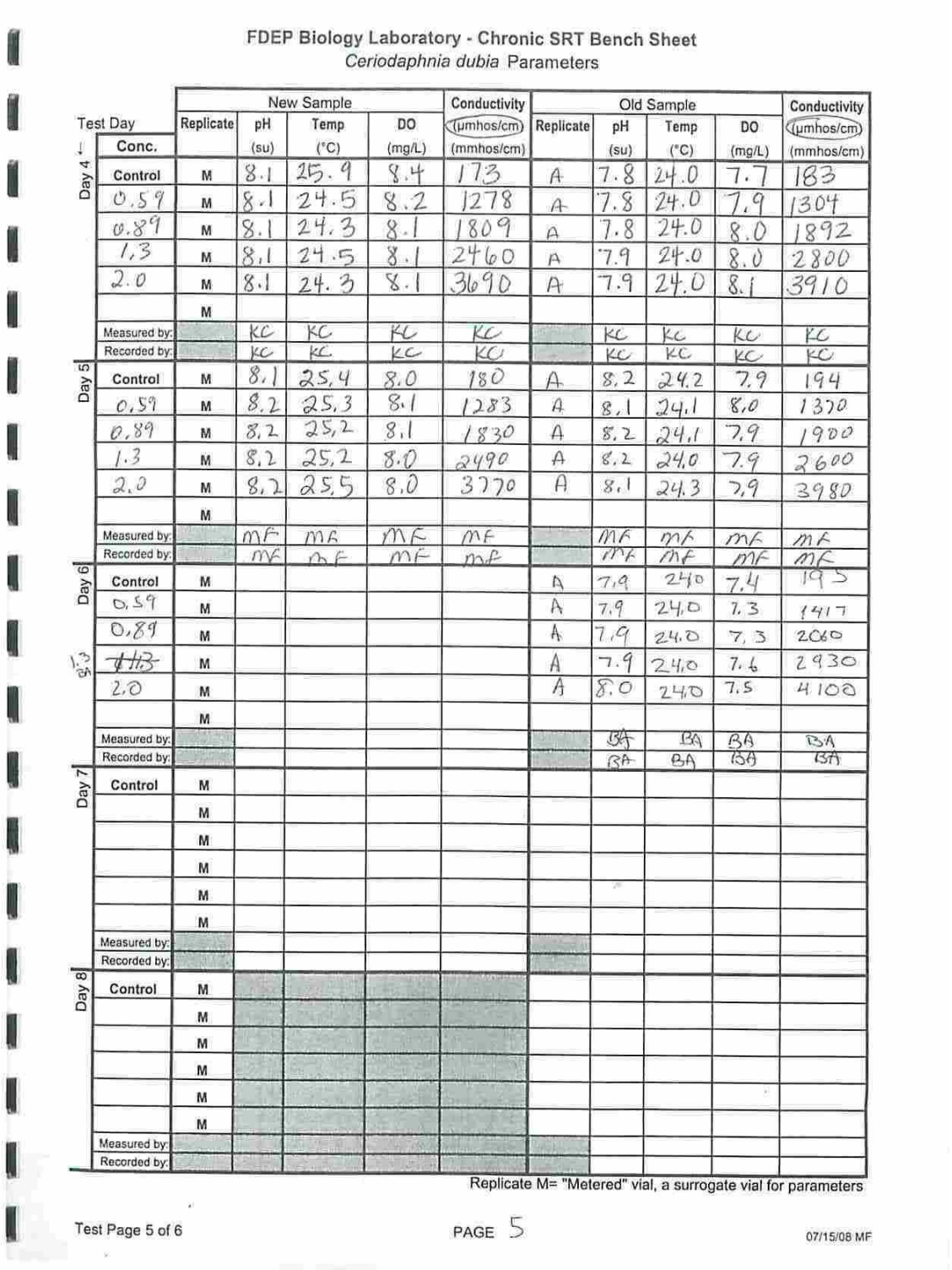
Comments: (A) 2800 - KC -

(B) Day 3 New Sample DO's: CTRL. = 7.6
0.59 = 7.7
0.89 = 7.8
1.3 = 7.8
2.0 = 7.8
3.0 = 7.9
- KC -

(*) Accidently dumped out old sample vials before they were parameterized. - KC - 6.17.11

M= "Metered" vial, a surrogate vial for parameters

Appendix C. (continued)



FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day	Conc.	Replicate	New Sample pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Replicate	Old Sample pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	Control	M	8.1	25.9	8.4	173	A	7.8	24.0	7.7	183
	0.59	M	8.1	24.5	8.2	1278	A	7.8	24.0	7.9	1304
	0.89	M	8.1	24.3	8.1	1809	A	7.8	24.0	8.0	1892
	1.3	M	8.1	24.5	8.1	2460	A	7.9	24.0	8.0	2800
	2.0	M	8.1	24.3	8.1	3690	A	7.9	24.0	8.1	3910
		M									
	Measured by:		KC	KC	KC	KC		KC	KC	KC	KC
	Recorded by:		KC	KC	KC	KC		KC	KC	KC	KC
Day 5	Control	M	8.1	25.4	8.0	180	A	8.2	24.2	7.9	194
	0.59	M	8.2	25.3	8.1	1283	A	8.1	24.1	8.0	1370
	0.89	M	8.2	25.2	8.1	1830	A	8.2	24.1	7.9	1900
	1.3	M	8.2	25.2	8.0	2490	A	8.2	24.0	7.9	2600
	2.0	M	8.2	25.5	8.0	3770	A	8.1	24.3	7.9	3980
		M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 6	Control	M					A	7.9	24.0	7.4	195
	0.59	M					A	7.9	24.0	7.3	1417
	0.89	M					A	7.9	24.0	7.3	2060
1.3	~~1.3~~	M					A	7.9	24.0	7.6	2930
	2.0	M					A	8.0	24.0	7.5	4100
		M									
	Measured by:							BA	BA	BA	BA
	Recorded by:							BA	BA	BA	BA
Day 7	Control	M									
		M									
		M									
		M									
		M									
		M									
	Measured by:										
	Recorded by:										
Day 8	Control	M									
		M									
		M									
		M									
		M									
		M									
	Measured by:										
	Recorded by:										

Replicate M= "Metered" vial, a surrogate vial for parameters

Test Page 5 of 6

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07/15/08 MF

Appendix C. (continued)

C. dubia

Test ID: June 2011 SRT

Dates: 6-14-11 — 6.20.11

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Metller-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5 SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ acpH
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	—
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	—

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Reviewed 6-14-11 MF

V 1.1 9/21/10 MF/jd

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Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina*

Test Species (circle one)

(*P. promelas*)	SOP#: TA07_09	EPA-821-R-02-013	Method 1000.0
M. beryllina	SOP#: TA07_14	EPA-821-R-02-014	Method 1006.0

Diluent/ Batch: MHW/6.10.11 Test Days Used: 0-7

Diluent/ Batch: _____ Test Days Used: _____

Toxicant/ Batch # : KCl / ~~KBr 6.11~~ 6.13.11

Artemia Lot # : 23613

Start Date: 6.14.11 Time: 1300

End Date: 6.21.11 Time: 0830

Organism Batch #/ Age: 6.14.11 / < 24 HRS.

Artemia Batch #	Day 2 107-11	Day 5 110-11
Day 0 105-11	Day 3 108-11	Day 6 111-11
Day1 106-11	Day 4 109-11	

Chamber size : 1000 ml

Test volume : 500 ml

Feeding: *P. promelas* 0.15 g wet wt. 2X day 6 hour interval

M. beryllina 0.10 g wet wt days 0-2 0.15g wet wt. days 3-7

Water Quality Parameters	Diluent	Diluent (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03		HACH	JD	KC
Alkalinity (mg/L as $CaCO_3$):	78		HACH	KC	KC
Hardness (mg/L as $CaCO_3$):	96		HACH	KC	KC
Total Ammonia (mg/L as N):	<0.017		DENVER	BA	KC
Conductivity (µmhos-cm mmhos-cm):	325		METTLER	JD	KC

Statistics	(calculated?)	(T_{25} adjusted)
Growth NOEC:	0.5 g/L	
Growth LOEC:	~~1.0 g/L~~ 1.0 g/L	BA
Growth IC_{20}:	0.5756	0.573
Growth IC_{25}:	0.6012	0.5977
Ctrl % CV:	13%	
Dunnetts PMSD:	20.8%	14.9 %
Survival NOEC:	0.5 g/L	
Survival LOEC:	1.0 g/L	

Test incubated in : ☑ Incubator # 5

☐ Waterbath #____

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C:

Incubator # 5 min. 24.8 max. 26.3 mean –

Water bath # ____ min.____ max.____ mean____

Room B246 min. 22.5 max 23.4 mean –

P. promelas PMSD Bounds for Growth: Lower 12 Upper 30

M. beryllina PMSD Bounds for Growth: Lower 11 Upper 28

Investigators' signatures

Kara Cov

Marshall Faircloth

Bruce Noble

James Daniel

Liz Miller

REVIEWER

Comments:

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revised 7/16/08 MF

Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or Menidia beryllina Survival

Organism: (*P. promelas*) *M.beryllina* (circle one) D = dead M = missing

Concentration: µg/L (g/L) (circle one)

			TEST DAY							
Concentration	Replicate	Chamber	0	1	2	3	4	5	6	7
Control	A	A1	10	10	10	10	9 JD	9	9	9
	B	A2	10	10	10	10	10	8 JD	8	8
	C	A3	10	10	10	10	10	10	10	10
	D	A4	10	10	10	10	10	10	10	10
.125	A	A5	10	10	10	9 JD	9	9	9	~~8~~ 9 JD
	B	A6	10	10	10	10	10	10	10	10
	C	A7	10	10	10	10	10	10	10	10
	D	A8	10	10	10	10	10	10	10	10
.25	A	A9	10	10	10	10	10	10	10	10
	B	A10	10	10	10	10	10	10	10	9 JD
	C	A11	10	10	10	10	10	10	10	10
	D	A12	10	10	10	10	10	10	10	10
.5	A	A13	10	10	9 JD	9	9	9	9	8 JD
	B	A14	10	9 JD	9	9	9	9	9	9
	C	A15	10	10	9 JD	9	9	9	9	9
	D	A16	10	10	10	10	10	10	10	10
1	A	A17	10	~~0~~ 3 JD	3	1 JD	1	1	1	1
	B	A18	10	~~0~~ 2 JD	2	2	1 JD	0 JD	—	—
	C	A19	10	~~0~~ 2 JD	2	2	2	2	0 JD	—
	D	A20	10	~~0~~ 4 JD	4	4	4	~~8~~ 5 JD	2 JD	X JD
2	A	A21	10	0 JD						
	B	A22	10	0 JD						
	C	A23	10	0 JD						
	D	A24	10	0 JD						
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): JD		Checked by:		JD	JD	JD	JD	JD	JD	JD
Verified by (0 hr): KC										
Concentrations prepared by:				JD	JD	JD	JD	JD	JD	JD

Comments:

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revised 7/16/08 MF

Appendix C. (continued)

Chronic SRT Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg. 1

Start Date: 6.14.11 End Date: 6.21.11

Start Time: 1300 End Time: 0830

conc = concentration rep = replicate circle umhos or mmhos

Test Day	Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	Control	A	8.0	25.4	7.3	325							
	.125	A	8.0	25.8	7.4	537							
	.25	A	8.1	24.9	7.6	739							
	.5	A	8.1	24.0	7.6	1218							
	1	A	8.1	24.9	7.7	2150							
	2	A	8.1	25.9	7.7	3960							
		A											
	Measured by		KC	JD	KC	KC							
	Recorded by		KC	JD	KC	KC							
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	7.7	24.4	7.3	331		B	7.8	25.0	7.5	328	
	.125	B	7.8	24.2	7.3	534		B	7.9	24.6	7.0	548	
	.25	B	7.8	24.2	7.4	743		B	7.9	24.4	7.3	753	
	.5	B	7.9	24.1	7.5	1234		B	7.9	24.4	7.4	1264	
	1	B	7.9	24.8	7.2	2130		B	8.0	24.6	7.6	2150	
	2	B	7.9	24.3	7.3	3880		B					
		B						B					
	Measured by		JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by		JD	JD	JD	JD			JD	JD	JD	JD	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	8.0	25.7	6.2	330		C	8.1	24.6	7.4	321	
	.125	C	7.9	25.6	6.3	541		C	8.0	24.6	7.4	544	
	.25	C	7.9	25.4	7.7	780		C	8.0	24.5	7.4	784	
	.5	C	7.9	25.5	6.9	1235		C	8.0	24.4	7.5	1222	
	1	C	7.9	25.2	7.2	2070		C	8.0	24.3	7.4	2100	
		C						C					
		C						C					
	Measured by		JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by		JD	JD	JD	JD			JD	KC	JD	JD	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	7.8	25.5	5.8	346		D	7.6	25.3	7.1	330	
	.125	D	7.8	25.3	5.9	578		D	7.7	24.0	7.0	547	
	.25	D	7.8	25.5	5.8	835		D	7.7	24.0	7.1	780	
	.5	D	7.8	25.3	5.3	1280		D	7.7	24.0	7.0	1224	
	1	D	7.8	25.1	6.5	2180		D	7.8	24.0	7.1	2120	
		D						D					
		D						D					
	Measured by		JD	JD	JD	JD			JD	KC/JD	JD	JD	
	Recorded by		JD	JD	JD	JD			JD	KC/JD	JD	JD	

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

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Appendix C. (continued)

Chronic SRT Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg 2

Start Date: 6.14.11 End Date: 6.21.11

Start Time: 1300 End Time: 0830

conc = concentration rep = replicate

Test Day ↓	Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos/mmhos)	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos/mmhos)	Salinity ppth
Day 4	Control	A	7.8	25.9	6.6	339		A	7.7	25.9	7.5	333	
	.125	A	7.8	25.7	6.4	569		A	7.7	25.9	7.8	572	
	.25	A	7.8	25.4	6.3	811		A	7.8	25.7	8.0	800	
	.5	A	7.8	25.9	6.6	1277		A	7.8	25.7	8.0	1275	
	1	A	7.9	25.7	7.1	2180		A	7.9	25.9	8.3	2210	
		A						A					
		A						A					
	Measured by		JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by		JD	JD	JD	JD			JD	JD	JD	JD	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	Control	B	7.8	25.8	6.2	349		B	8.0	25.9	7.7	340	
	.125	B	7.8	25.4	6.3	591		B	8.0	25.5	7.8	572	
	.25	B	7.8	25.2	6.1	826		B	8.0	25.8	8.0	827	
	.5	B	7.8	25.0	5.8	1296		B	8.0	25.8	7.9	1296	
	1	B	7.8	25.4	6.3	2250		B/C	8.0	25.9	8.0	2210	
		B						B					
		B						B					
	Measured by		JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by		JD	JD	JD	JD			JD	JD	JD	JD	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	Control	C	7.8	25.9	6.8	339		C	7.6	25.4	7.5	323	
	.125	C	7.7	25.7	6.8	573		C	7.8	25.7	7.7	~~407~~ JD 568	
JD	~~.25~~ .25	C	7.8	25.8	6.7	815		C	7.8	25.5	7.7	~~462~~ JD 785	
	.5	C	7.8	25.7	6.6	1294		C	7.8	25.4	7.7	1240	
	1	C	7.8	25.9	6.6	2230		E.D	7.9	25.9	7.8	2140	
		C						C					
		C						C					
	Measured by		JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by		JD	JD	JD	JD			JD	JD	JD	JD	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	Control	D	7.6	25.9	7.5	336		D					
	.125	D	7.6	25.9	7.4	570		D					
	.25	D	7.6	25.9	6.7	801		D					
	.5	D	7.6	25.9	6.8	1271		D					
	1	D	7.7	25.9	7.5	2190		D					
								D					
								D					
	Measured by		KC	JD	KC	KC							
	Recorded by		KC	JD	KC	KC							

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional

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Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Weights

SOP TA06_21

Organism: (*P. promelas*) *M.beryllina* (circle one)

Concentration: µg/L (g/L) (circle one)

mean wt = fish wt divided by 10

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)
Control	A	25	0.02126	0.02666	0.00540	10	.540
	B	26	0.02248	0.02771	0.00523	10	.523
	C	27	0.02170	0.02862	0.00692	10	.692
	D	28	0.02337	0.02941	0.00604	10	.604
.125	A	29	0.02275	0.02752	0.00477	10	.477
	B	30	0.02240	0.02827	0.00587	10	.587
	C	31	0.02365	0.02988	0.00623	10	.623
	D	32	0.02266	0.02821	0.00555	10	.555
.25	A	33	0.02319	0.02916	0.00597	10	.597
	B	34	0.02301	0.02881	0.00580	10	.580
	C	35	0.02204	0.02698	0.00494	10	.494
	D	36	0.02188	0.02696	0.00508	10	.508
.5	A	37	0.02240	0.02771	0.00531	10	.531
	B	38	0.02208	0.02796	0.00588	10	.588
	C	39	0.02181	0.02791	0.00610	10	.610
	D	40	0.02249	0.02837	0.00588	10	.588
1	A	41	0.02317	0.02351	0.00034	10	0.034
	B	—	—	—	—	10	—
	C	—	—	—	—	10	—
	D	42	0.02260	0.02299	0.00039	10	.039
2	A					10	
	B					10	
	C					10	
	D					10	
	A					10	
	B					10	
	C					10	
	D					10	
		Weighed by:	JD	JD			

Comments:

Note: Pan number (#) refers to actual Pan number.

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revised 8/24/06 MF/SP

Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* QC

SOPs TA07_09, TA07_14 and TA06_21

all weights in grams

(A) Fish + Pan

~~Empty~~ Pan Weights Date: 6.24.11 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02665 @	0.2666
after Pan 10	0.02661 @	0.2666
after Pan 15	0.02661 @	0.2666
after Pan 20	0.02662 @	0.2666
after Pan 25	@	
after Pan 30	@	
after Pan 35	@	
after Pan 40	@	
after Pan 45	@	
after Pan 48	@	

	Measured Value	S-weight Value
S-weights	0.01 @	0.01
	0.03003 @	0.03

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

(A) Empty

~~Fish + Pan~~ Weights Date: 6.20.11 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02124 @	0.02126
after Pan 10	0.02127 @	0.02126
after Pan 15	0.02125 @	0.02126
after Pan 20	0.02126 @	0.02126
after Pan 25	@	
after Pan 30	@	
after Pan 35	@	
after Pan 40	@	
after Pan 45	@	
after Pan 48	@	

	Measured Value	S-weight Value
S-weights	0.00999 @	0.01
	0.05006 @	0.05

Drying Oven ID: ER034000

Temperature °C: 100

Drying Hours: 8

Note: Pan number (5, 10, etc.) refers to sequence of weighing as actual Pan #s may differ.

Comments:

(A) Transcription ERROR. -KC-
↳ Table at the top is the "Fish + Pan" weights & the bottom table lists the "Empty Pan" weights.

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revised 7/16/08 MF

Appendix C. (continued)

Test ID: P.DROmulas SRT Dates: 6.14.11 – 6.21.11

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 (#5) SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #5
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT–Chronic SRT)

entered 6/21/11 by Karen Cox

V 1.1 9/21/10 MF/jd

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Appendix C. (continued)

CETIS Analytical Report

Report Date: 27 Oct-11 08:12 (p 1 of 4)
Test Code: 16-4029-5966/61C4EE1E

Ceriodaphnia 7-d Survival and Reproduction Test — **DEP-Bureau of Labs**

Analysis ID:	17-4290-9502	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.7.0
Analyzed:	05 Jul-11 12:25	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	18-3027-1946	**Test Type:**	Survival-Reproduction	**Analyst:**	
Start Date:	14 Jun-11 10:15	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	20% DMW
Ending Date:	20 Jun-11 21:00	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 11h	**Source:**	In-House Culture	**Age:**	<24
Sample ID:	16-6983-2845	**Code:**	6387A08D	**Client:**	Internal Lab
Sample Date:	14 Jun-11	**Material:**	Sodium chloride	**Project:**	WET Monthly Compliance Test (JUN)
Receive Date:	14 Jun-11	**Source:**	Reference Toxicant		
Sample Age:	10h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Extreme Value	Grubbs Extreme Value	3.112	3.173	0.0643	No Outliers Detected

Point Estimates

Level	gm/L	95% LCL	95% UCL
IC5	0.6236	0.1694	0.7022
IC10	0.658	0.3675	0.8223
IC15	0.6931	0.5922	0.9157
IC20	0.7289	0.6329	0.9999
IC25	0.7654	0.6717	1.069
IC40	0.8799	0.7659	1.378
IC50	1.276	0.8193	1.496

Reproduction Summary

			Calculated Variate						
Conc-gm/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	10	15.1	0	25	1.304	7.141	47.29%	0.0%
0.59		9	18.11	10	25	0.9285	5.085	28.08%	-19.94%
0.89		8	9.75	0	20	1.23	6.735	69.07%	35.43%
1.3		9	8.222	1	17	1.098	6.016	73.17%	45.55%
2		10	1.3	0	4	0.2861	1.567	120.5%	91.39%
3		10	0	0	0	0	0		100.0%

Reproduction Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	22	15	16	10	0	22	15	14	12	25
0.59		22	22	11	20	17	10	16	25	20	
0.89		14	6	20	10	3	0	16	9		
1.3		3	17	14	8	8	15	1	1	7	
2		0	3	2	4	0	0	0	3	0	1
3		0	0	0	0	0	0	0	0	0	0

Appendix C. (continued)

CETIS Analytical Report

Report Date: 27 Oct-11 08:17 (p 3 of 6)
Test Code: 00-2350-5366/166A9D6

Larval Fish 7-d Survival and Growth Test — DEP-Bureau of Labs

Analysis ID:	11-1466-3045	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.7.0
Analyzed:	06 Jul-11 8:25	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	14-0912-0848	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	14 Jun-11 13:00	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	21 Jun-11 08:30	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 20h	Source:	Marinco	Age:	<24
Sample ID:	20-3933-0155	Code:	798DB56B	Client:	Internal Lab
Sample Date:	13 Jun-11	Material:	Potassium chloride	Project:	Concurrent SRT
Receive Date:	13 Jun-11	Source:	Reference Toxicant		
Sample Age:	37h	Station:	In House		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	57951	200	Yes	Two-Point Interpolation

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Extreme Value	Grubbs Extreme Value	2.094	2.652	0.4695	No Outliers Detected

Point Estimates

Level	gm/L	95% LCL	95% UCL
IC5	0.501	N/A	0.5367
IC10	0.5255	N/A	0.5598
IC15	0.5503	N/A	0.5833
IC20	0.5756	0.4851	0.6072
IC25	0.6012	0.5152	0.6315
IC40	0.6808	0.6091	0.7064
IC50	0.736	0.6746	0.7582

Mean Dry Weight-mg Summary

			Calculated Variate						
Conc-gm/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Dilution Water	4	5.897	5.23	6.92	0.1398	0.7657	12.98%	0.0%
0.125		4	5.605	4.77	6.23	0.1136	0.6221	11.1%	4.96%
0.25		4	5.447	4.94	5.97	0.09368	0.5131	9.42%	7.63%
0.5		4	5.793	5.31	6.1	0.0617	0.338	5.84%	1.78%
1		2	0.365	0.34	0.39	0.006455	0.03535	9.69%	93.81%

Mean Dry Weight-mg Detail

Conc-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Dilution Water	5.4	5.23	6.92	6.04
0.125		4.77	5.87	6.23	5.55
0.25		5.97	5.8	4.94	5.08
0.5		5.31	5.88	6.1	5.88
1		0.34	0.39		

Appendix D. Test Organism Receipt(s)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 6/13/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi	200 ac	7-10 DAYS	CL 110661	25	7.8	60
Pimephales promelas	600	< 24 Hrs	FM 110612-1715	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

Appendix D. continued

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 6/20/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	600	<24Hrs	FM110619-1620	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

4569 Samuel Street · Sarasota, FL 34233 · Tel: 941-925-3594 · Fax: 941-922-3874 · Web: www.biologylab.com

Appendix E. Chemical Analyses performed on the effluent collected from the Georgia-Pacific Corporation-Palatka Operations facility's EFF-1 NPDES sampling point for Outfall D-001, sampled June 20, 2011 and Rice Creek sampled June 22, 2011.

Date	Field ID	Analysis	Component	Value	Qualifier	Units	MDL	PQL
6/20/2011 11:35	Final Effluent	AGP/LN	Algal Growth Potential	11.2		mg DryWt/L	0.3	0.9
6/20/2011 11:35	Final Effluent	AGP/LN	Algal Growth Potential-Salinity Adjusted	3.63		mg DryWt/L	3	3
6/20/2011 10:00	Final Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	9.2	A	mg/L	0.2	2
6/20/2011 11:35	Final Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	300		ug/L	4.4	14
6/20/2011 11:35	Final Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	50		ug/L	3.2	9.6
6/20/2011 10:00	Final Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	35.4		IC25		
6/20/2011 10:00	Final Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	50		NOEC		
6/20/2011 10:00	Final Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100	L	IC25		
6/20/2011 10:00	Final Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100		NOEC		
6/20/2011 11:35	Final Effluent	Metals	Silver	0.075	U	ug/L	0.075	0.3
6/20/2011 11:35	Final Effluent	Metals	Lead	0.91	I	ug/L	0.6	2.4
6/20/2011 11:35	Final Effluent	Metals	Iron	410		ug/L	30	120
6/20/2011 11:35	Final Effluent	Metals	Chromium	4		ug/L	0.9	3.6
6/20/2011 11:35	Final Effluent	Metals	Calcium	51.8		mg/L	0.075	0.3
6/20/2011 11:35	Final Effluent	Metals	Sodium	587		mg/L	2.5	10
6/20/2011 11:35	Final Effluent	Metals	Arsenic	1.2	I	ug/L	0.75	3
6/20/2011 11:35	Final Effluent	Metals	Nickel	10.9		ug/L	0.75	3
6/20/2011 11:35	Final Effluent	Metals	Cadmium	0.15	U	ug/L	0.15	0.6
6/20/2011 11:35	Final Effluent	Metals	Zinc	15	I	ug/L	5	20
6/20/2011 11:35	Final Effluent	Metals	Copper	2.5	I	ug/L	1.5	3
6/20/2011 11:35	Final Effluent	Metals	Magnesium	13		mg/L	0.04	0.16
6/20/2011 11:35	Final Effluent	Metals	Selenium	0.6	U	ug/L	0.6	2.4
6/20/2011 11:35	Final Effluent	Metals	Aluminum	2890		ug/L	15	60
6/20/2011 10:00	Final Effluent	Nutrients	Alkalinity	516		mg CaCO3/L	0.65	2.5
6/20/2011 11:35	Final Effluent	Nutrients	Kjeldahl Nitrogen	4.4		mg N/L	0.4	1
6/20/2011 11:35	Final Effluent	Nutrients	NO2NO3-N	0.004	UJ	mg N/L	0.004	0.01
6/20/2011 10:00	Final Effluent	Nutrients	TSS	43		mg/L	3.8	19
6/20/2011 11:35	Final Effluent	Nutrients	Organic Carbon	63		mg C/L	1	5
6/20/2011 10:00	Final Effluent	Nutrients	Sulfate	570		mg SO4/L	4	10
6/20/2011 11:35	Final Effluent	Nutrients	O-Phosphate-P	0.08		mg P/L	0.02	0.05
6/20/2011 11:35	Final Effluent	Nutrients	Ammonia-N	0.019	I	mg N/L	0.01	0.02
6/20/2011 10:00	Final Effluent	Nutrients	Color (true)	960		PCU	20	60
6/20/2011 10:00	Final Effluent	Nutrients	Chloride	170		mg Cl/L	4	10
6/20/2011 10:00	Final Effluent	Nutrients	Color (apparent)	1200	A	PCU	120	120

Appendix E. continued

Date	Field ID	Analysis	Component	Value	Qualifier	Units	MDL	PQL
6/20/2011 10:00	Final Effluent	Nutrients	Turbidity	37		NTU	0.1	0.1
6/20/2011 10:00	Final Effluent	Nutrients	Fluoride	0.16		mg F/L	0.035	0.1
6/20/2011 11:35	Final Effluent	Nutrients	Total-P	0.56		mg P/L	0.025	0.25
6/20/2011 11:35	Final Effluent	Overflow	Settleable solids	0.1	U	ml/L	0.1	0.1
6/20/2011 10:00	Final Effluent	Overflow	AOX Result 2	1650		ug/L	6.2	20
6/20/2011 10:00	Final Effluent	Overflow	AOX Result 1	1560		ug/L	6.2	20
6/20/2011 10:00	Final Effluent	Overflow	Adsorbable Organic Halides	1600		ug/L	6.2	20
6/20/2011 11:35	Final Effluent	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
6/20/2011 11:35	Final Effluent	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
6/20/2011 11:35	Final Effluent	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
6/20/2011 11:35	Final Effluent	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
6/20/2011 11:35	Final Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
6/20/2011 11:35	Final Effluent	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
6/20/2011 11:35	Final Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
6/20/2011 11:35	Final Effluent	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
6/20/2011 11:35	Final Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
6/20/2011 11:35	Final Effluent	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
6/20/2011 11:35	Final Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
6/20/2011 11:35	Final Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
6/20/2011 11:35	Final Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
6/20/2011 11:35	Final Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
6/20/2011 11:35	Final Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
6/20/2011 11:35	Final Effluent	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
6/20/2011 11:35	Final Effluent	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
6/20/2011 11:35	Final Effluent	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
6/20/2011 11:35	Final Effluent	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
6/20/2011 11:35	Final Effluent	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
6/20/2011 11:35	Final Effluent	Pesticides	Naled	0.8	UJ	ug/L	0.8	3.2
6/20/2011 11:35	Final Effluent	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
6/20/2011 11:35	Final Effluent	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
6/20/2011 11:35	Final Effluent	Pesticides	Ethion	0.05	UJ	ug/L	0.05	0.2
6/20/2011 11:35	Final Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
6/20/2011 11:35	Final Effluent	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Chloroform	2	U	ug/L	2	10
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.2	U	ug/L	0.2	0.82

Appendix E. continued

Date	Field ID	Analysis	Component	Value	Qualifier	Units	MDL	PQL
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Chrysene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	12
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2,4,5-Trichlorophenol	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	U	ug/L	5.1	20
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8.2
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Acenaphthylene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	410
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8.2
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8.2
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	12
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	12
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Phenanthrene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2,3,4,6-Tetrachlorophenol	2	U	ug/L	2	8.2
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	41
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	61
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	61
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	12
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	41
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Fluoranthene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Fluorene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	U	ug/L	3.1	12

Appendix E. continued

Date	Field ID	Analysis	Component	Value	Qualifier	Units	MDL	PQL
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Anthracene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Naphthalene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Pyrene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	12
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41	UJ	ug/L	41	160
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	61
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	20
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	12
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8.2
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.1
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Acenaphthene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.2	U	ug/L	0.2	0.82
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	12
6/20/2011 11:35	Final Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.2	U	ug/L	0.2	0.82
6/20/2011 10:00	Final Effluent	Field Parameter	Temperature	31.23		C		
6/20/2011 10:00	Final Effluent	Field Parameter	Sample Depth	0.2		m		
6/20/2011 10:00	Final Effluent	Field Parameter	Dissolved Oxygen	5.83		mg/L		
6/20/2011 10:00	Final Effluent	Field Parameter	Specific Conductance	2690		umhos/cm		
6/20/2011 10:00	Final Effluent	Field Parameter	pH	8.22				
6/22/2011 10:37	Final Effluent	Nutrients	Chloride	150		mg Cl/L	4	10
6/22/2011 10:37	Final Effluent	Nutrients	Color (true)	1000		PCU	20	60
6/22/2011 10:37	Final Effluent	Nutrients	TSS	36		mg/L	3.1	16
6/22/2011 10:37	Final Effluent	Nutrients	Alkalinity	553		mg CaCO3/L	0.65	2.5
6/22/2011 10:37	Final Effluent	Nutrients	Turbidity	38		NTU	0.1	0.1
6/22/2011 10:37	Final Effluent	Nutrients	Sulfate	510		mg SO4/L	4	10
6/22/2011 10:37	Final Effluent	Nutrients	Fluoride	0.16		mg F/L	0.035	0.1
6/22/2011 10:37	Final Effluent	Field Parameter	pH	8.42				
6/22/2011 10:37	Final Effluent	Field Parameter	Sample Depth	0.2		m		
6/22/2011 10:37	Final Effluent	Field Parameter	Temperature	30.45		C		
6/22/2011 10:37	Final Effluent	Field Parameter	Specific Conductance	2674		umhos/cm		
6/22/2011 10:37	Final Effluent	Field Parameter	Dissolved Oxygen	4.53		mg/L		
6/20/2011 11:35	Final Effluent	Overflow	Fecal Coliforms-Membrane Filter	120		cfu/100 mL	2	2

Appendix E. continued

Date	Field ID	Analysis	Component	Value	Qualifier	Units	MDL	PQL
6/22/2011 11:17	Rice Creek @ Bardin Road	Nutrients	Fluoride	0.17		mg F/L	0.035	0.1
6/22/2011 11:17	Rice Creek @ Bardin Road	Nutrients	Sulfate	25		mg SO4/L	2	5
6/22/2011 11:17	Rice Creek @ Bardin Road	Nutrients	Alkalinity	101		mg CaCO3/L	0.65	2.5
6/22/2011 11:17	Rice Creek @ Bardin Road	Nutrients	Color (true)	31		PCU	2	6
6/22/2011 11:17	Rice Creek @ Bardin Road	Nutrients	TSS	3	I	mg/L	2	10
6/22/2011 11:17	Rice Creek @ Bardin Road	Nutrients	Turbidity	1.5		NTU	0.1	0.1
6/22/2011 11:17	Rice Creek @ Bardin Road	Nutrients	Chloride	78		mg Cl/L	2	5
6/22/2011 11:17	Rice Creek @ Bardin Road	Field Parameter	Dissolved Oxygen	5.6		mg/L		
6/22/2011 11:17	Rice Creek @ Bardin Road	Field Parameter	Temperature	26.25		C		
6/22/2011 11:17	Rice Creek @ Bardin Road	Field Parameter	Sample Depth	0.4		m		
6/22/2011 11:17	Rice Creek @ Bardin Road	Field Parameter	pH	7.47				
6/22/2011 11:17	Rice Creek @ Bardin Road	Field Parameter	Specific Conductance	521		umhos/cm		
6/24/2011 8:00	Final Effluent	Field Parameter	Temperature	30.06		C		
6/24/2011 8:00	Final Effluent	Field Parameter	Specific Conductance	2654		umhos/cm		
6/24/2011 8:00	Final Effluent	Field Parameter	Sample Depth	0.1		m		
6/24/2011 8:00	Final Effluent	Field Parameter	pH	8.4				
6/24/2011 8:00	Final Effluent	Field Parameter	Dissolved Oxygen	3.84		mg/L		
6/20/2011 11:20	Equipment Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
6/20/2011 11:20	Equipment Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
6/20/2011 11:20	Equipment Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
6/20/2011 11:20	Equipment Blank	Metals	Aluminum	5	U	ug/L	5	20
6/20/2011 11:20	Equipment Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
6/20/2011 11:20	Equipment Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
6/20/2011 11:20	Equipment Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
6/20/2011 11:20	Equipment Blank	Metals	Zinc	5	U	ug/L	5	20
6/20/2011 11:20	Equipment Blank	Metals	Iron	30	U	ug/L	30	120
6/20/2011 11:20	Equipment Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
6/20/2011 11:20	Equipment Blank	Metals	Copper	0.5	U	ug/L	0.5	1
6/20/2011 11:20	Equipment Blank	Metals	Sodium	0.5	U	mg/L	0.5	2
6/20/2011 11:20	Equipment Blank	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
6/20/2011 11:20	Equipment Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
6/20/2011 11:20	Equipment Blank	Nutrients	Turbidity	0.1	U	NTU	0.1	0.1
6/20/2011 11:20	Equipment Blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
6/20/2011 11:20	Equipment Blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
6/20/2011 11:20	Equipment Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
6/20/2011 11:20	Equipment Blank	Nutrients	Organic Carbon	1	U	mg C/L	1	5

Appendix E. continued

Date	Field ID	Analysis	Component	Value	Qualifier	Units	MDL	PQL
6/20/2011 11:20	Equipment Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
6/20/2011 11:20	Equipment Blank	Nutrients	Color (true)	2	U	PCU	2	6
6/20/2011 11:20	Equipment Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
6/20/2011 11:20	Equipment Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
6/20/2011 11:20	Equipment Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
6/20/2011 11:20	Equipment Blank	Nutrients	Color (apparent)	5	U	PCU	5	5
6/20/2011 11:20	Equipment Blank	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
6/20/2011 11:20	Equipment Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
6/20/2011 11:20	Equipment Blank	Overflow	AOX Result 2	10.4	I	ug/L	6.2	20
6/20/2011 11:20	Equipment Blank	Overflow	AOX Result 1	6.2	U	ug/L	6.2	20
6/20/2011 11:20	Equipment Blank	Overflow	Adsorbable Organic Halides	6.95	I	ug/L	6.2	20
6/20/2011 11:20	Equipment Blank	Pesticides	Diazinon	0.053	U	ug/L	0.053	0.21
6/20/2011 11:20	Equipment Blank	Pesticides	Metribuzin	0.11	U	ug/L	0.11	0.43
6/20/2011 11:20	Equipment Blank	Pesticides	Parathion Ethyl	0.16	U	ug/L	0.16	0.64
6/20/2011 11:20	Equipment Blank	Pesticides	Alachlor	0.64	U	ug/L	0.64	2.6
6/20/2011 11:20	Equipment Blank	Pesticides	Ethion	0.053	U	ug/L	0.053	0.21
6/20/2011 11:20	Equipment Blank	Pesticides	Naled	0.85	UJ	ug/L	0.85	3.4
6/20/2011 11:20	Equipment Blank	Pesticides	Simazine	0.053	U	ug/L	0.053	0.21
6/20/2011 11:20	Equipment Blank	Pesticides	Fenamiphos	0.21	U	ug/L	0.21	0.85
6/20/2011 11:20	Equipment Blank	Pesticides	Fonofos	0.11	U	ug/L	0.11	0.43
6/20/2011 11:20	Equipment Blank	Pesticides	Ametryn	0.053	U	ug/L	0.053	0.21
6/20/2011 11:20	Equipment Blank	Pesticides	Atrazine	0.053	U	ug/L	0.053	0.21
6/20/2011 11:20	Equipment Blank	Pesticides	Chlorpyrifos Methyl	0.11	U	ug/L	0.11	0.43
6/20/2011 11:20	Equipment Blank	Pesticides	Hexazinone	0.11	U	ug/L	0.11	0.43
6/20/2011 11:20	Equipment Blank	Pesticides	Malathion	0.16	U	ug/L	0.16	0.64
6/20/2011 11:20	Equipment Blank	Pesticides	Norflurazon	0.16	U	ug/L	0.16	0.64
6/20/2011 11:20	Equipment Blank	Pesticides	Azinphos Methyl	0.21	U	ug/L	0.21	0.85
6/20/2011 11:20	Equipment Blank	Pesticides	Mevinphos	0.21	U	ug/L	0.21	0.85
6/20/2011 11:20	Equipment Blank	Pesticides	Parathion Methyl	0.11	U	ug/L	0.11	0.43
6/20/2011 11:20	Equipment Blank	Pesticides	Phorate	0.053	U	ug/L	0.053	0.21
6/20/2011 11:20	Equipment Blank	Pesticides	Metalaxyl	0.27	U	ug/L	0.27	1.1
6/20/2011 11:20	Equipment Blank	Pesticides	Metolachlor	0.53	U	ug/L	0.53	2.1
6/20/2011 11:20	Equipment Blank	Pesticides	Bromacil	0.21	U	ug/L	0.21	0.85
6/20/2011 11:20	Equipment Blank	Pesticides	Butylate	0.21	U	ug/L	0.21	0.85
6/20/2011 11:20	Equipment Blank	Pesticides	Chlorpyrifos Ethyl	0.053	U	ug/L	0.053	0.21
6/20/2011 11:20	Equipment Blank	Pesticides	Ethoprop	0.11	U	ug/L	0.11	0.43
6/20/2011 11:20	Equipment Blank	Pesticides	Prometryn	0.16	U	ug/L	0.16	0.64

Appendix E. continued

Date	Field ID	Analysis	Component	Value	Qualifier	Units	MDL	PQL
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	13
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Chrysene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	U	ug/L	2.1	8.3
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2,3,4,6-Tetrachlorophenol	2.1	U	ug/L	2.1	8.3
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	42
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	420
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Fluorene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	13
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Pyrene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2,4,5-Trichlorophenol	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	63
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Acenaphthylene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	63
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	U	ug/L	2.1	8.3
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	13
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Phenanthrene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	13
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Chloroform	0.2	U	ug/L	0.2	1
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Anthracene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	42
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Fluoranthene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Nitrobenzene	2.1	U	ug/L	2.1	8.3
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.2

Appendix E. continued

Date	Field ID	Analysis	Component	Value	Qualifier	Units	MDL	PQL
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	13
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	42	UJ	ug/L	42	170
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5.2	U	ug/L	5.2	21
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	U	ug/L	3.1	13
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	63
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Acenaphthene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5.2	U	ug/L	5.2	21
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	13
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	13
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	Naphthalene	0.21	U	ug/L	0.21	0.83
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.2
6/20/2011 11:20	Equipment Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	U	ug/L	2.1	8.3
6/20/2011 10:00	Trip Blank	Priority Organic Pollutants	Chloroform	0.2	U	ug/L	0.2	1

Appendix F. Facility Summary, Effluent Limits, and Permit Violations Recorded on Discharge Monitoring Report

GP – FL0002763 – May-2011

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Samuel Schllesinger, E.I.	**Contact Number:** 904-256-1687
Facility Name (as it appears on permit): Georgia-Pacific Corporation - Palatka Operations	**Current Name:** same
NPDES Permit Number: FL0002763	**Permit Expiration Date:** April 5,2007 Permit has been administratively extended.
Physical Address: 215 County Road 216, Palatka, Florida	
District: Northeast	**County:** Duval
Function of Facility: This is a 40 MGD average wastewater treatment facility providing primary clarification followed by secondary treatment consisting of 900 plus acres of facultative and aerobic lagoons. Wastewater treatment solids from the primary clarifier are pumped to sludge lagoons for dewatering. The dewatered wastewater treatment solids are land applied on-site. Treated effluent is discharged through an effluent riffle channel to Outfall D-001 with effluent for sidestream oxygenation discharging at Outfall D-002. A liquid oxygen injection system also injects pure oxygen at Outfall D-001 to offset the BOD of the effluent. This is a fully integrated pulp and paper mill producing both bleached and unbleached pulp and paper utilizing the kraft process. Products include kraft paper and finished tissue products.	
Facility Type: Industrial Wastewater	**Permitted Capacity (MGD):** 40 MGD

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Appendix F. continued

GP – FL0002763 – May-2011

Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months):

Outfall D 001	
Month	Average Daily Flow (MGD)
May--2010	11.3 MGD
June--2010	9.6 MGD
July--2010	16.4 MGD
August--2010	12.9 MGD
September--2010	10.2 MGD
October--2010	9.6 MGD
November--2010	6.7 MGD
December--2010	7.0 MGD
January--2010	20.5 MGD
February--2011	14.1 MGD

Outfall D-001 and D-002 Combined	
Month	Average Daily Flow (MGD)
May--2010	19.8 MGD
June--2010	18 MGD
July--2010	24.8 MGD
August--2010	21.3 MGD
September--2010	18.5 MGD
October--2010	17.9 MGD
November--2010	14.5 MGD
December--2010	14.7 MGD
January--2010	28.1 MGD
February--2011	21.2 MGD

If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):

N/A

Description of type of Discharge:

☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):

Rice Creek Outfalls D-001 and D-002
D-001 – Outfall to Rice Creek
D-002 – Injection point for Oxygen in Rice Creek
D-003 – Direct discharge into St. Johns River

Description of Permitted Outfall(s): (excerpted from current permit)

Surface Water Discharge:
An existing maximum permitted discharge of 40 MGD through Outfall D-001 and D-002, to Rice Creek, a Class III surface water and thence to the St. Johns River a Class III surface water. Outfall D-001 is located at latitude 29°40'44" N, longitude 81°41'33" W, Outfall D-002 is located at latitude 29°41'14" N, longitude 81°40'58".

A proposed maximum permitted discharge of 40 MGD through Outfall D-003 direct discharge to the St. Johns River through a 1043-foot diffuser located approximately 3,300 feet from the western shore at latitude 29°41'13" N, longitude 81°38'24" W.

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Appendix F. continued

GP – FL0002763 – May-2011

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

The manufacturing process improvements that will improve effluent water quality to the extent that the effluent discharge may remain in Rice Creek, as opposed to construction of a pipeline for a direct discharge to the St. Johns River. The manufacturing process improvements consist of: 1) the construction of a new bleach line; 2) enhanced (i.e. two stage) oxygen delignification system (or like system producing similar or better environmental benefits) 3) new brownstock washing systems to replace four existing brownstock wash lines; 4) green liquor dregs filter; 5) minimize all pulping liquor leaks and spills; 6) handling the chlorine dioxide generator waste (i.e., salt cake), including efforts to find a viable, long term sustainable market for such material and evaluation of alternative technologies for treating such material; and 7) required appurtenances. These improvements are also consistent with the Cluster Rule requirements (Title 40, chapter I of the Code of Federal Regulations (CFR) Part 430, Subpart B, promulgated April 15, 1998). The discharge points at Outfalls D-001 and D-002 may be used for supplemental oxygen addition in Rice Creek and for seasonal supplemental oxygen addition in the event of a direct discharge to the St. Johns River through Outfall D-003. Construction and operation of a pipeline for a direct discharge into the St. Johns River is authorized by the Department, unless the Permittee demonstrates an ability to meet applicable water quality standards in Rice Creek. If the Permittee can comply with applicable water quality standards in Rice Creek, the permit will be automatically re-opened to include proposed modifications and to incorporate appropriate effluent limitations for final discharge in Rice Creek.

The proposed modifications for a discharge to the St. Johns River will consist of the construction of a pump station, 4 mile long 48 inch diameter ductile iron pipe force main, high purity oxygen will be added to the pump station discharge from a liquid oxygen storage tank to provide for the required dissolved oxygen at the discharge and required appurtenances for the conveyance of the effluent from the treatment lagoons to the river through Outfall D-003 via a 1043 foot long diffuser. The discharge points at mile point 2.4 (D-002) and 3.4 (D-001) will be also be used for supplemental oxygen addition in Rice Creek in the event the discharge remains in Rice Creek, and for emergencies and supplemental liquid oxygen addition to offset the tidal impact in the event the discharge is authorized for a direct discharge to the St. Johns River.

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Appendix F. continued

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	PART I: Continued						
	List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under 1. The Permittee shall comply with Parts V.11. and 12. of Permit FL0002763 and the interim limits referenced below beginning on the effective date of this Administrative Order and ending upon completion of the compliance plan referenced in Part III. 5. of this Administrative Order. During this interim period, the Permittee is authorized to discharge from Outfalls D-001 and D-002, treated process wastewater, sanitary wastewater, and storm water. Such discharge shall be limited and monitored by the Permittee as specified below						
		Effluent Limitations			Monitoring Requirements		
Parameter	Effluent Sampling Location	Other	Daily Maximum	Daily Average	Measure Frequency	Monitoring Location Site Number	
Flow, (MGD)	See note 5.	--	Report	Report	Continuous	Recorder	
BOD5-day, mg/l	See note 5.	--	Report	Report	3 Days/Week	**24-hour composite	
BOD5-day (lbs/day) Summer (June 1-Nov 30)	See note 5.	--	7,000, See note 1.	3,500, See note 1.	3 Days/Week	**24-hour composite	
BOD5-day (lbs/day) Winter (Dec. 1 - May 31)	See note 5.	--	14,340, See note 1.	7,170, See note 1.	3 Days/Week	**24-hour composite	
TSS, mg/l	See note 5..	--	Report	Report	3 Days/Week	**24-hour composite	
TSS (lbs/day) - Summer (June 1 - Nov. 30)	See note 5.	--	10,000, See note 1.	5,000, See note 1.	3 Days/Week	**24-hour composite	
TSS (lbs/day) - Winter (Dec. 1 - May 31)	See note 5.	--	17,500, See note 1.	10,000, See note 1.	3 Days/Week	**24-hour composite	
pH (S.U.)	See note 5.	6.0 Daily Min	8.5	--	5 Days/Week	Grab	
Total Nitrogen, as N (mg/l)	See note 5.	--	Report	--	1/Month	Grab	

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Appendix F. continued

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	PART I: Continued
	List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under 1. The Permittee shall comply with Parts V.11. and 12. of Permit FL0002763 and the interim limits referenced below beginning on the effective date of this Administrative Order and ending upon completion of the compliance plan referenced in Part III. 5. of this Administrative Order. During this interim period, the Permittee is authorized to discharge from Outfalls D-001 and D-002, treated process wastewater, sanitary wastewater, and storm water. Such discharge shall be limited and monitored by the Permittee as specified below

		Effluent Limitations			Monitoring Requirements		
Parameter	Effluent Sampling Location	Other	Daily Maximum	Daily Average	Measure Frequency	Monitoring Location Site Number	
TKN, as N (mg/L)	See note 5.	--	Report	--	1/Month	Grab	
Total Ammonia, as N (mg/l)	See note 5..	--	Report	--	1/Month	Grab	
Un-ionized Ammonia (mg/L) as NH_3	See note 5.	--	Report	--	1/Quarter	Calculated, See Pt III.2.u.	
Color, PCU	See note 5.	--	Report	--	1/Month	Grab	
Fecal Coliform, #/100 ml	See note 5.	200	800	--	1/Month	Grab	
Total Coliform, #/100 ml	See note 5 and 6.	1000	2400	--	1/Month	Grab	
Settleable Solids, (ml/l/hr)	See note 5.	--	0.1	--	1/Month	Grab	
*Iron, total recoverable, mg/L	See note 5.	--	Report	--	1/Quarter	Grab	
*Zinc, total recoverable, ug/l	See note 5.	--	See note 2.	--	1/Quarter	Grab	
*Cadmium, total recoverable (ug/l)	See note 5.	--	Report	--	1/Quarter	Grab	
*Lead, total recoverable (ug/l)	See note 5.	--	Report	--	1/Quarter	Grab	

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Appendix F. continued

GP – FL0002763 – May-2011

	PART I: Continued
	List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under 1. The Permittee shall comply with Parts V.11. and 12. of Permit FL0002763 and the interim limits referenced below beginning on the effective date of this Administrative Order and ending upon completion of the compliance plan referenced in Part III. 5. of this Administrative Order. During this interim period, the Permittee is authorized to discharge from Outfalls D-001 and D-002, treated process wastewater, sanitary wastewater, and storm water. Such discharge shall be limited and monitored by the Permittee as specified below

		Effluent Limitations			Monitoring Requirements		
Parameter	Effluent Sampling Location	Other	Daily Maximum	Daily Average	Measure Frequency	Monitoring Location Site Number	
Temperature, Degrees F.	See note 5.	--	Report	--	1/Quarter	Grab	
Total Hardness, mg/l as $CaCO_3$	See note 5.	--	Report	--	1/Quarter	Grab	
Specific Conductance, umhos/cm	See note 5.	--	Report	--	1/Month	Grab	
Turbidity, NTU	See note 5.	--	Report	--	1/Month	Grab	
Dissolved Oxygen, mg/l	See note 5, 7 and 8.	Report	--	--	5 Days/Week	Grab or insitu	
Dissolved Oxygen, mg/l Summer-Jun. 1 - Nov. 30	See note 9.	4.0 daily min., See note 3.	--	--	5 Days/Week	Grab or insitu	
Dissolved Oxygen, mg/l Winter-Dec. 1 - May 31	See note 9.	5.0 daily min., See note 3.	--	--	5 Days/Week	Grab or insitu	
Oxygen Injected, lb/day Summer-Jun. 1 - Nov. 30	See note 7.	4,150, See note 3.	--	--	5 Days/Week	Log	

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Appendix F. continued

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	PART I: Continued						
	List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under 1. The Permittee shall comply with Parts V.11. and 12. of Permit FL0002763 and the interim limits referenced below beginning on the effective date of this Administrative Order and ending upon completion of the compliance plan referenced in Part III. 5. of this Administrative Order. During this interim period, the Permittee is authorized to discharge from Outfalls D-001 and D-002, treated process wastewater, sanitary wastewater, and storm water. Such discharge shall be limited and monitored by the Permittee as specified below						
		Effluent Limitations			Monitoring Requirements		
Parameter	Effluent Sampling Location	Other	Daily Maximum	Daily Average	Measure Frequency	Monitoring Location Site Number	
Oxygen Injected, lb/day Winter-Dec. 1 - May 31	See note 8.	1,950, See note 3.	--	--	5 Days/Week	Log	
Oxygen Injected, lb/day Summer-Jun. 1 - Nov. 30	See note 8.	5,750, See note 3.	--	--	5 Days/Week	Log	
Oxygen Injected, lb/day Winter-Dec. 1 - May 31	See note 8.	2,800, See note 3.	--	--	5 Days/Week	Log	
2,3,7,8-TCDD, pg/l	See note 5.	--	--	0.014, See Part note 4.	Quarterly, See Part note 4.	Composite See Part note 4.	
COD, mg/l	See note 5.	--	Report	--	1/Month	**24-hour composite	
Adsorbable Organic Halides (AOX), (lbs/day) (EPA Method 1650)	See note 5.	1077 monthly average	1644	--	Daily	**24 hour composite	
2,3,7,8 TCDD, pg/l (EPA Method 1613)	See note 10.	--	<10.0	--	Monthly	**24 hour composite	

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Appendix F. continued

GP – FL0002763 – May-2011

	PART I: Continued						
	List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under 1. The Permittee shall comply with Parts V.11. and 12. of Permit FL0002763 and the interim limits referenced below beginning on the effective date of this Administrative Order and ending upon completion of the compliance plan referenced in Part III. 5. of this Administrative Order. During this interim period, the Permittee is authorized to discharge from Outfalls D-001 and D-002, treated process wastewater, sanitary wastewater, and storm water. Such discharge shall be limited and monitored by the Permittee as specified below						
		Effluent Limitations			Monitoring Requirements		
Parameter	Effluent Sampling Location	Other	Daily Maximum	Daily Average	Measure Frequency	Monitoring Location Site Number	
2,3,7,8 TCDF, pg/l (EPA Method 1613)	See note 10.	--	<31.9	--	Monthly	**24 hour composite	
Chloroform, (lbs/day)	See note 10.	--	11.96	7.16	Weekly	**24 hour composite	
Trichlorosyringol, ug/l (EPA Method 1653)	See note 10.	--	<2.5	--	Monthly	**24 hour composite	
3,4,5 - trichlorocatechol, ug/l (EPA Method 1653)	See note 10.	--	<5.0	--	Monthly	**24 hour composite	
3,4,6 - trichlorocatechol, ug/l (EPA Method 1653)	See note 10.	--	<5.0	--	Monthly	**24 hour composite	
3,4,5 - trichloroguaiacol, ug/l (EPA Method 1653)	See note 10.	--	<2.5	--	Monthly	**24 hour composite	
3,4,6 - trichloroguaiacol, ug/l (EPA Method 1653)	See note 10.	--	<2.5	--	Monthly	**24 hour composite	
4,5,6 trichloroguaiacol, ug/l (EPA Method 1653)	See note 10.	--	<2.5	--	Monthly	**24 hour composite	

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Appendix F. continued

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	PART I: Continued						
	List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under 1. The Permittee shall comply with Parts V.11. and 12. of Permit FL0002763 and the interim limits referenced below beginning on the effective date of this Administrative Order and ending upon completion of the compliance plan referenced in Part III. 5. of this Administrative Order. During this interim period, the Permittee is authorized to discharge from Outfalls D-001 and D-002, treated process wastewater, sanitary wastewater, and storm water. Such discharge shall be limited and monitored by the Permittee as specified below						
		Effluent Limitations			Monitoring Requirements		
Parameter	Effluent Sampling Location	Other	Daily Maximum	Daily Average	Measure Frequency	Monitoring Location Site Number	
2,4,5 - trichlorophenol, ug/l (EPA Method 1653)	See note 10.	--	<2.5	--	Monthly	**24 hour composite	
2,4,6 - trichlorophenol, ug/l (EPA Method 1653)	See note 10.	--	<2.5	--	Monthly	**24 hour composite	
Tetrachlorocatechol, ug/l (EPA Method 1653)	See note 10.	--	<5.0	--	Monthly	**24 hour composite	
Tetrachloroguaiacol, ug/l (EPA Method 1653)	See note 10.	--	<5.0	--	Monthly	**24 hour composite	
2,3,4,6 - tetrachloro-phenol, ug/l (EPA Method 1653)	See note 10.	--	<2.5	--	Monthly	**24 hour composite	
Pentachlorophenol, ug/l (EPA Method 1653)	See note 10.	--	<5.0	--	Monthly	**24 hour composite	
Acute Whole Effluent Toxicity, (%)	Effluent See note 5.	LC50 >100, see note 11			see note 11	**24-hour composite	
Chronic Whole Effluent Toxicity, (%)	Effluent See note 5.	Report, see note 12			see note 12	**24-hour composite	

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NOTES:

1. For BOD_5 and TSS, the total loadings per day (lb/day) shall be determined by measuring the 24 hour composited effluent concentrations (mg/l) at the monitoring point in Part III.2.b. and multiplying these values by the sum of the effluent flows (MGD) from Outfalls D-001 and D-002 and by the conversion factor.

2. A sample for effluent hardness as mg/l CaCO3 must be taken at the same time of sampling for zinc from the effluent discharge. The hardness value must be used to determine compliance with the standard in rule 62-302.530(71) where the total recoverable zinc concentration in the effluent shall not be > $e^{(0.8473[\ln H]+0.7614)}$, where [ln H] is the natural logarithm of total hardness expressed as mg/l of CaCO3. The hardness shall be set at 25 mg/l if actual hardness is <25 mg/l and set at 400 mg/l if actual hardness is >400 mg/l.

3. The oxygen injection rates shall be adjusted at the specified monitoring locations (B&C) to maintain applicable dissolved oxygen standards within Rice Creek. The dissolved oxygen concentrations apply at location R3 (Rice Creek mile point 1.4) when the high tide condition of Etonia and Rice Creek is less than 1.5 feet. When the high tide condition of Etonia and Rice Creek is greater than or equal to 1.5 feet, the minimum amount of liquid oxygen injected (lbs/day) shall be met, unless instream D.O. concentration (mg/l) exceeds the standards listed in Part III.2.a. During periods of high stage levels (greater than or equal to 1.5 feet) in Rice and Etonia Creeks, the Permittee will only be held responsible for violations of the D.O. standards (listed in Part III.2.a) attributable to the mill effluent. If at anytime the facility is adding more oxygen than is listed in Part III.2.a. the dissolved oxygen standards do not apply at monitoring location R3. It is the responsibility of the Permittee to monitor and maintain records of the stage heights within the creeks. The Permittee shall obtain Department approval for an alternate method to add oxygen to Rice Creek which does not include the use of effluent.
4. After three consecutive sampling events indicating dioxin compliance the sampling analysis frequency shall be reduced to once per year. If the concentration of 2,3,7,8-TCDD is determined to be less than the minimum detection level of 10 pg/l for method 1613, then compliance with the 2,3,7,8-TCDD limitation in this permit is demonstrated. The samples shall be a 72-hour composite sample consisting of three 24-hour composite samples. The effluent limitation for 2,3,7,8-TCDD is for that isomer only.
5. Monitoring point A shall be located after final treatment but prior to actual discharge or mixing with the receiving waters. Monitoring of all parameters except effluent dissolved oxygen and internal bleach plant monitoring required by the Cluster Rule may be at a point above the effluent riffleway. Monitoring and reporting for effluent dissolved oxygen shall be monitored below the effluent riffleway. Flow shall be reported as the sum of flows from Outfalls D-001 and D-002.
6. After three consecutive years of demonstrating compliance with the Total Coliform standard pursuant to 62-302.530(7), FAC, the Permittee may discontinue monitoring for Total Coliform. In the event that after three years of monitoring compliance with the Total Coliform is not achieved, the Permittee shall submit a Corrective Actin Plan to the Department for review and approval in accordance with Part III. 5.l. of this order.
7. Outfall D-001 (Monitoring Point B) - Shall be located near Little Rice Creek mile point 3.4 (upstream from mouth) and shall measure total pounds of oxygen injected per day and flow for one of two oxygenated effluent sidestreams.

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8. Outfall D-002 (Monitoring Point C) - Shall be located near Rice Creek mile point 2.4 (upstream from mouth) and shall measure total pounds of oxygen injected per day and flow for one of two oxygenated effluent sidestreams.
9. Instream monitoring point shall be located at sample point R3 (Rice Creek mile point 1.4, upstream from mouth).
10. The Permittee shall submit a plan identifying internal monitoring locations for the internal bleach plant monitoring required by the Cluster Rule. Upon Department review and approval, these internal monitoring locations will become an enforceable part of this permit.
11. Acute Whole Effluent Toxicity Monitoring Program

In accordance with Part III.2.a. of this order, the Permittee shall initiate the series of tests described below to evaluate acute whole effluent toxicity of the discharge from Outfall D001. Tests shall be conducted quarterly beginning within 30 days of the effective date of this order. All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA/600/4-90/027F (4th edition), or the most current edition. The control and dilution water will be moderately hard water as described in EPA/600/4-91/002, Table 3. A standard reference toxicant quality assurance acute test shall be conducted concurrently with each species used in the toxicity tests and the results submitted with the discharge monitoring report (DMR). Alternatively, if monthly QA/QC reference toxicant tests are conducted, these results must be submitted with the DMR. Any deviation from the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

1. Routine Test Requirements

a. The Permittee shall conduct 96 hour acute static renewal toxicity tests using the *Ceriodaphnia dubia* (water flea) and the *Cyprinella Leedsi* (bannerfin shiner). All tests shall be 24-hour composite samples and shall consist of 6 representative separate grab samples taken every 4 hours or the 24 hour accumulation of a continuous sampler. The toxicity tests specified above shall be conducted using a control (0% effluent) and a test concentration of 100% final effluent. These tests are referred to as "routine tests".

b. If control mortality exceeds 10% for either species in any test, the test(s) for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 10% for either species. If, in any separate test, 100% mortality occurs prior to the end of the test, and control mortality is less than 10% at that time, that test (including the control) shall be terminated with the conclusion that the sample demonstrates a violation of the acute toxicity limit.

c. Results from "routine" tests shall be reported according to EPA/600/4-90/027F, Section 12, Report Preparation (or the most current edition), and shall be submitted within thirty (30) days to:

Florida Department of Environmental Protection
Northeast District
7825 Baymeadows Way Suite B-200
Jacksonville, Florida 32256

The results shall be entered on the DMR in the following manner: if less than 50% survival of test species occurs "<100%" shall be entered on the DMR for that species. If 50% or greater survival occurs in the composite sample tests, ">100%" shall be entered.

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2. Additional Testing Requirements

a. If unacceptable acute toxicity (greater than 20% mortality in any grab sample of 100% effluent) is determined in a routine test, the Permittee shall conduct a minimum of three (3) valid additional 96 hour acute static renewal definitive tests on the specie(s) indicating toxicity. The first test shall begin within 7 days of the failed routine test and be conducted weekly there after until three valid additional tests are complete. The additional tests sample collection requirements and test acceptability criteria specified in paragraphs '1.a.' and '1.b.' above must be met for the tests to be considered valid. All additional definitive tests shall be conducted with a control (0% effluent) and effluent concentrations of 6.25%, 12.5%, 25%, 50%, and 100%. The dilution series may be modified in the second and third tests to more accurately identify the toxicity, such that at least two dilution's above and two dilution's below the target toxicity and a control (0% effluent) are run. The additional tests will be used to determine if the toxicity found in the routine test is still present.

b. Results for each additional test will include the determination of LC50 values with 95% confidence limits. Results from the additional tests, required due to unacceptable acute toxicity in the "routine" tests, shall be submitted in a single report prepared according to EPA/600/4-90/027F, Section 12, Report Preparation (or the most current edition) and submitted within thirty (30) days of completion of the three valid additional tests. If the additional tests demonstrate continued unacceptable toxicity, the Permittee will meet with the Department within 30 days of the report submittal to identify corrective actions necessary to remedy the unacceptable toxicity.

c. For all tests conducted, a final effluent sample must be used.

12. Interim Chronic Whole Effluent Toxicity Monitoring Program

In accordance with Part III.2.a of this order, the Permittee shall initiate the series of tests described below to evaluate chronic whole effluent toxicity of the discharge from Outfall D001. Tests shall be conducted quarterly beginning within 30 days of the effective date of this order. For the purposes of this section, "Interim", shall cover that period of time beginning upon the effective date of the permit and administrative order and ending upon establishing a final limit for chronic toxicity pursuant to Part III.5.d of this Order. All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA/600/4-91/002, or the most current edition. The control and dilution water will be moderately hard water as described in EPA/600/4-91/002, Table 3. A standard reference toxicant quality assurance chronic toxicity test shall be conducted concurrently with each species used in the toxicity tests and the results submitted with the bioassay report or if monthly QA/QC reference toxicant tests are conducted, these results must be submitted. Any deviation from the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

1. The Permittee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction test and a fathead minnow, Pimephales promelas, Larval Survival and Growth Test. These tests shall be conducted using a control (0% effluent) and one test concentration of 100%. All test results shall be statistically analyzed according to the Appendix in EPA/600/4-91-002, or the most current edition.

2. For each set of tests conducted, a 24-hour composite sample of final effluent shall be collected and used per the sampling schedule discussed in EPA/600/4-91/002, Section 8 (or the most current edition). All test solutions shall be renewed daily. Two additional composite samples collected on day two and day four of the test, used as renewal solutions, shall be collected according to the protocol.

3. If control mortality exceeds 20% for either species in any test, the test(s) for that species (including the control) shall be repeated. A test will be

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Appendix F. continued

considered valid only if control mortality does not exceed 20% for either species. If, in any separate test, 100% mortality occurs prior to the end of the test, and control mortality is less than 20% at that time, that test (including the control) shall be terminated with the conclusion that the sample demonstrates un-acceptable acute toxicity. Additionally, all tests must meet the acceptability criteria for each species as defined in EPA/600/4-91/002 Section 13.11 and Section 11.11, respectively.

4. The toxicity tests specified above shall be conducted once every three months during the interim period. These tests are referred to as "routine" tests. Upon the completion of four valid tests during the final period which demonstrate that no chronic toxicity has occurred, the Permittee may petition the Department for a reduction in monitoring frequency.

5. Results from "routine" tests shall be reported according to EPA/600/4-91/002, Section 10, Report Preparation (or the most current edition), and shall be submitted to:

FL Department of Environmental Protection
7825 Baymeadows Way, Suite B-200
Jacksonville, Florida 32256
Attn: Industrial Waste Section

Additionally, all results shall be recorded and submitted as instructed on the Discharge Monitoring Report (DMR).

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PART I: Continued	
Receiving Waters: **Rice Creek** **St. Johns River**	**Classification (indicate whether fresh or marine):** **Class III Surface waters**

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):

See Notes 11 and 12 pages 13 and 14

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):

AO – 039 – NE
Issued 8/6/2002
This Order establishes the overall schedule for the construction of the pump station, force main, and required appurtenances for the final effluent discharge to the St. Johns River, in accordance with Part III. 4. of this Order, and for meeting the new Cluster Rule discharge requirements for bleached kraft mill as required by Part I.B.13. of NPDES Permit FL0002763 (in accordance with the revised Title 40, chapter I of the Code of Federal Regulations (CFR) Part 430, Subpart B, promulgated April 15, 1998). This is consistent with Section 403.151 and 403.088, F.S., which allows the Department to establish a schedule for compliance with a permit or rules of the Department. Interim limits are listed above.

Facility Mixing Zone Details (if applicable): NA

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:
For May 1, 2010 to Feb 28, 2011(from PCS)

Date	Parameter and Units	Limit	Result
1st Quarter 2010	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.014 pg/L	10.0 pg/L

Describe previous FYI3 and WQBEL study:
Last Biological Assessment sampling was done by FDEP in 2006 see lab website for results.
Last WEBEL Study July 6, 2009 see lab website for results.

Discuss whether DMR trends within previous five years are improving or declining:
No comments

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

No comments

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PART II: Sampling Event Information	
Date(s) sample collected:	Sampler(s):
Temperature (Deg C):	pH (SU):
Dissolved Oxygen (mg/L):	Conductivity (umhos/cm):
Total Residual Chlorine (mg/L):	Total Residual Chlorine - after Disinfection (mg/L):
Method of Chlorination:	Method of De-chlorination:
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☐ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

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Appendix G. EPA End Sheet

The Bioassay of the Georgia-Pacific Corporation - Palatka Operations effluent sampled on June 20, 22 and 24, 2011. NPDES #FL0002763.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 0 2 7 6 3 11	12 1 1 0 6 2 0	18 **B**	19 **S**	20 2

Remarks

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The Priority Pollutants Analysis of the Georgia-Pacific Corporation - Palatka Operations effluent sampled on June 20, 2011. NPDES #FL0002763.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 0 2 7 6 3 11	12 1 1 0 6 2 0	18 **X**	19 **S**	20 2

Remarks

66

Biological Analyses of the Georgia-Pacific Corporation - Palatka Operations effluent sampled on June 20, 2011. NPDES #FL0002763.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 0 2 7 6 3 11	12 1 1 0 6 2 0	18 **S**	19 **S**	20 2

Remarks

66