

Effluent Quality Assessment

Jefferson Smurfit Corporation

Fernandina Beach Mill

Nassau County

NPDES #FL0001104

Sampled February 16, 2009

June 2009

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

Jefferson Smurfit Corporation, Fernandina Beach Mill, North 8th Street, Fernandina Beach, Nassau County, Florida, 32035. NPDES #FL0001104. Effluent samples for bioassay and chemical analyses for this facility were collected on February 16, 2009.

Introduction

Jefferson Smurfit Corporation, Fernandina Beach Mill, is an industrial facility which manufactures Kraft linerboard using an unbleached Kraft process. The facility has an industrial wastewater treatment system consisting of:

- grit chamber with mechanical screening;
- primary clarifier;
- wastewater cooling tower;
- a UNOX activated sludge system;
- dual secondary clarifiers;
- a holding pond for influent loading control;
- dewatering presses for primary and secondary wastewater solids;
- blending tank systems for primary and secondary solids.

Effluent discharge from the facility is continuous and rainfall dependent. The facility has a design flow of 37.5 million gallons per day (MGD) (30 MGD design wastewater flow and 7.5 MGD stormwater flow) annual average daily flow (AADF). The AADF through the facility from January 2008 through December 2008 was 16.39 MGD.

Treated wastewater is discharged through a Parshall flume (outfall D-001) to the Class III Marine waters of the Amelia River via a multiport diffuser. The diffuser is 76.2 m (250 feet) long and has 20 ports spaced at 3.8 m (12.5 feet) intervals. The point of discharge is located approximately at latitude 30º 41' 09" N, longitude 81º 27' 32" W. Sludge is disposed of at an off-site, company owned landfill located in Callahan, Nassau County, Florida.

The facility has no current active Administrative Orders or Consent Orders. The facility has a mixing zone for dissolved oxygen, temperature, chronic toxicity, copper, nickel, and pH for effluent discharged from Outfall D-001 into the Amelia River. The mixing zone measures 106.22 m in length by 20 m in width and has a surface are of 2,124 m^2. The mixing zone includes the entire water column from the surface to the bottom, and runs parallel to, and is centered on, the diffuser structure. A review of the facility's Discharge Monitoring Report (DMR) data for the past year revealed several violations of permit conditions. The facility is required to prepare and to follow a Best Management Practices Plan. The facility completed an in-kind project to install five additional conductivity meters (total = 12) in its internal sewer pipelines. The facility submitted the final report of its Pollution Prevention Plan on July 16, 2006.

List of permit violations (DMR data) and plant violations that occurred within the last year:

Date	Parameter & Units	Limit	Result
03/2008	pH (SU)	6.0 - 9.0	5.9
04/2008	Total Recoverable Nickel (mg/L)	24.2	29
05/2008	Total Recoverable Nickel (mg/L)	24.2	41
06/2008	Temperature (°F)	105	105.7
06/2008	Total Recoverable Nickel (mg/L)	24.2	27

The results of a third year inspection performed on May 19, 2008, showed that the facility's effluent was acutely toxic to *Ceriodaphnia dubia*, the AGP was less than the "problem" threshold of 10 mg/L dry-weight/L and effluent iron (310 µg/L) and nickel (39.2 µg/L) exceeded Class III Marine water quality criteria and/or permit conditions. (Facility information provided by Heather Webber of FDEP Northeast District.)

Methods

Samples were collected from the EFF-1 NPDES sampling point for Outfall D-001 by Eesa Ali and Stephen Nye (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/qa/sops.htm.

See Appendix A for the completed chain of custody form.

The 48-hour screening toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, 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. Prior to test initiation, bioassay samples were aerated for 30 minutes at approximately 100 bubbles per minute, to decrease the dissolved oxygen concentration from 10.5 mg/L to 8.1 mg/L.

The apparent salinity of the effluent (1.67 parts per thousand (ppth) based on conductivity and temperature measurements) exceeded the limit (1 ppth salinity) for performing algal growth potential analyses with the freshwater species, *Pseudokirchneriella subcapitata* (DEP SOP TA08_01). Therefore, the AGP analyses were performed as a marine test. The AGP sample was salinity adjusted to meet the minimum salinity requirements of the marine test species.

Toxicity Test Results

Tests were performed February 17 - 19, 2009.

Ceriodaphnia dubia 48-hour acute screening bioassay – LC_{50} > 100%, 0% mortality* in 100% sample at 48 hours

Cyprinella leedsi 48-hour acute screening bioassay – LC_{50} > 100%, 0% mortality* in 100% sample at 48 hours

The bioassay samples were not acutely toxic to the test organisms.

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.

*NOTE: In a 48-hour acute screening test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule 62-302.500 (1)(a)4, F.A.C.). Mortality between 20-50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3)(a), F.A.C.).

Algal Growth Potential

The salinity-adjusted effluent AGP was 3.0 U (U - Material was analyzed for but not detected; the report value is the minimum detection limit) mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* Raschke and Schultz found 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). The analytical chemistry suggests that the effluent is nitrogen-limited. (Table 1; Maloney et al. 1974).

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine and total ammonia were not detected in the bioassay sample in the laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.16 Y (Y – The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate) mg/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

Aluminum, copper, iron, nickel and zinc were detected in the effluent at levels that comply with Class III marine water quality criteria (WQC) (62-302.530, F.A.C.). Chromium-III was also detected in the effluent. Arsenic, cadmium and lead were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Effluent Fecal Coliforms (2,000 colony forming units/100 mL (cfu/100 mL)) exceeded the Class III marine WQC of < 800 cfu/100 mL on any one day.

See Table 2 for results of analytes detected in the effluent, and corresponding limits. See Appendix E for a complete list of chemical analyses performed. See Appendix F for additional facility information.

Conclusion

The effluent sample collected from the EFF-1 NPDES sampling point for Outfall D-001 for this facility on February 16, 2009, was not acutely toxic to either test species during the 48-hour acute screening bioassays. The effluent AGP result was less than the "problem" threshold for marine receiving waters. Effluent Fecal Coliforms (2,000 colony forming units/100 mL (cfu/100 mL)) exceeded the Class III marine WQC of < 800 cfu/100 mL on any one day. Other water quality samples did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

Maloney, T. E., W. E. Miller, and D. T. Specht. 1974. The Marine Algal Assay Procedure: Bottle Test. National Environmental Research Center Office of Research and Development. U. S. EPA, Corvallis, Oregon. 43 p.

Table 1. 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 Jefferson Smurfit Corporation, Fernandina Beach Mill facility on February 16, 2009.

Jefferson Smurfit Corporation, Fernandina Beach Mill				
Location	**AGP (measured)**		**Inorganic N:P ratio**	**Total N:P ratio**
Effluent*	3.0	U	20.5	11.3

* - sample salinity adjusted to 7ppt

Table 2. Effluent limits, Class III Criteria for predominantly marine waters and chemical and microbiological data for samples collected from the Jefferson Smurfit Corporation, Fernandina Beach Mill facility on February 16, 2009.

Jefferson Smurfit Corporation Fernandina Beach Mill NPDES# FL0001104	Class III Criteria	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
None Detected	-	-	None Detected	
Metals (µg/L unless otherwise noted)				
Aluminum	≤ 1500	-	1,060	
Arsenic	≤ 50	-	0.49	I
Cadmium	≤ 8.8	-	0.097	I
Calcium (mg/L)	-	-	97.9	
Chromium-III	-	-	3.8	
Copper	≤ 3.7	≤ 12.8	1.07	
Iron	≤ 300	-	190	
Lead	≤ 8.5	-	0.5	I
Magnesium (mg/L)	-	-	36.5	
Nickel	≤ 8.3	≤ 24.2	5.59	
Selenium	≤ 71	-	0.2	U
Silver	≤ 2.3	-	0.025	U
Zinc	≤ 86	-	30	
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.008	I
Total Phosphorus	-	Report	0.3	Y
Total Ammonia	-	Report	0.16	Y
Un-ionized Ammonia	-	-	≤ 0.02	c
Nitrate and Nitrite	-	-	0.004	UJY
Total Kjeldahl Nitrogen	-	Report	3.4	Y
Organic Nitrogen	-	-	3.24	c
Total Nitrogen	-	-	3.402	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 4.0	≥ 1.7 s	10.5	Q£
pH (SU)	6.5 - 8.5	6.0 - 9.0 s	6.2	
Conductivity (µmhos/cm)	-	-	2,913	
Temperature (°C)	-	≤ 40.56	35.2	
Sample Depth (m)	-	-	1	
Total Residual Chlorine (mg/L)	≤ 0.01	-	≤ 0.03	UQ£
Chlorophyll *a* (µg/L) - Corrected	-	-	11	I
Phaeophytin (µg/L)	-	-	1.6	U
Total Suspended Solids (mg/L)	-	180.5 dp	53	
CBOD, 5 day (mg/L), N - inhibited	-	117.9 dp	9	A
Flow (MGD)	-	Report	16.39	a
Hardness (mg $CaCO_3$)	-	-	394.76	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms	≤ 400s #	-	2,000	*

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
b - Value is calculated based on hardness
c - Value is calculated
d - daily maximum calculated from Lbs/day based on permitted wastewater flow of 30 MGD
p - permitted value based on 24-hour composite sample
s - Single sample
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
£ - Analyses performed in bioassay laboratory
* Analysis performed by Columbia Analytical Services, Inc., Jacksonville

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-02-16-~~08~~ 34
GROUP2 IMPAIRED

Customer: ~~SE DIST~~ MSP
Project ID: ~~TMDL~~ FY13
PMAS: ~~1306~~

Requester: ~~Harold Moesch~~ E. Ali
Collected By: SNEA
Sampling Agency: FDEP NED

Field Report Prepared By: Stephen Myra
Send Final Report To ~~Harold Moesch~~

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Jefferson Sandhill FY13 CF01	☒ Comp ☒ Grab Date 02/15/09 Time 1030 ☒ Eastern ☐ Central	Date 02/16/09 Time 1130 ☒ Eastern ☐ Central	A
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C) 35.15	pH 4.21	Sample Depth 1.0 ☒ m ☐ ft
		1.76 ☒ Salinity (PPTh) 2913 ☒ Sp Conductance (umho/cm)	NPDES Number FL0001104	
	Latitude o ' " .	Longitude o ' " .	Comments 2 Tox, 4 BNA, 4 Pest, AGP, BOD, CHL, NUT, ortho, met, TSS	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Blank	☐ Comp ☐ Grab Date Time ☐ Eastern ☐ Central	Date Time ☐ Eastern ☐ Central	B
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft
		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number ~~FL0001104~~	
	Latitude o ' " .	Longitude o ' " .	Comments 2 BNA, 2 Pest, MET, NUT, ORTHO	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time ☐ Eastern ☐ Central	Date Time ☐ Eastern ☐ Central	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft
		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time ☐ Eastern ☐ Central	Date Time ☐ Eastern ☐ Central	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft
		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments 2 bottles acid in top by JD 1020 2/17/09	

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	02/16/09 1800	FEDEX		02/17/09 0930				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Laboratory - Acute Screen Bioassay Bench Sheets

Facility: Jefferson Smurfit Corp. Fernandina Beach Mill (Transmitting 3/2/09)

Address: North 8th St.

City: Fernandina Beach County: Nassau

Contact/District: Heather Webber / NE

NPDES Permit #: FL0001104

LIMS Job #: TLH-2009-02-17-10 LIMS Sample #: 1166235

Lims Data Entry: 3-2-09 MF Data Entry Verification: 3-2-09 RP

Sample Collection: Date: 2.16.09 Time: 10:30

Hold Time Start: Date: 2.16.09 Time: 10:30

Comments:

Instructions (for below): Circle appropriate wording. If yes is circled, complete blanks.

Test Type: (Screen)

Static / Static Renewal / Flow-through

Test Duration: (48) 96 Hours.

Test 1 validation: Test 1: SOP TA 07_01

Control survival ≥90%: (Yes) No

Temperature Range ≤3°C: (Yes) No

Test 2 validation: Test 2: SOP TA 07_02

Control survival ≥90%: (Yes) No

Temperature Range ≤3°C: (Yes) No

(√one)

Test 1 incubated in: [√] Incubator #: 2 [ ] Waterbath #:

Test 2 incubated in: [ ] Incubator #: [ ] Waterbath #:

Initial sample handling:

PH adjustment: yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____

Aeration: (yes) no Initial DO: 10.5 mg/L Final DO: 9.1 mg/L Duration: 30 minutes Rate: ~ 100 bubbles/min

Salinity adjusted (Test 1): yes (no) Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine

Salinity adjusted (Test 2): yes (no) Initial Salinity: ____ Final Salinity: ____ Salts Hypersaline brine

Dechlorination: yes (no) ____mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Sample Validation:

Temperature: Shipped ≤6°C (Yes) No — IF Hand Delivered: Cooling (received °C < collected °C) Yes No

Holding Time: ≤36 Hours (Yes) No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Light Intensity: 50 - 100 fL candles

Photoperiod: 16 light 8 dark

Temperature Range °C: (If used)

Incubator # 2 min. 25.9 max. 26.5 mean 26.2

Incubator # ____ min. ____ max. ____ mean ____

Waterbath # ____ min. ____ max. ____ mean ____

Room B246 min. 23.0 max. 24.8 mean 23.9

Investigators' Signatures

James Bands

Marshall Faircloth

Bree Alexander

Kim M. Spencer

Heather C. Webber

REVIEWER

Water Quality Parameters	Batch #	1.26.09	2.16.09	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Measured by	Verified by
		20% DMW	Well Water							
Field Total Residual Cl_2 (mg/L):		N/A	N/A	N/A	N/A	N/A		Not measured		MF
Lab Total Residual Cl_2 (mg/L):		<0.03	<0.03					<0.03	DD	MF
Alkalinity (mg/L as $CaCO_3$):		83	159					264	ASZ BA	MF
Hardness (mg/L as $CaCO_3$):		85	151					—	BA	MF
Total Ammonia (mg/L as N):		<0.017	<0.017					<0.017	MF	"
Conductivity: (µmhos) mmhos		185	288					324 mmhos	"	MF
Salinity (ppth):		—	—					1.67 ppt	"	MF

V 1.5 7/3/06

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1166235 Test #: 1/2 SOP#:TA 07 01 Test Started: Date 2.17.09 Time: 12:10

Organism/Batch/Age: C. dubia / 6-09 / <24hrs Test Ended: Date 2.19.09 Time: 12:35

Chamber/Test Volume: 30 / 20 ml Diluent/ Batch: Dmw / 1.30.09 Test Duration: 48 hr

Food/Batch: [✓] YCT 1.22.09 [✓] P.sub 2.13.09 96 hr

[ ] Artemia Lot#____ Batch #: 0hr____ 24hr____ 48hr____ 72hr____

Feeding: [✓] Prior to Test [ ] Prior to Renewal [✓] 0 hr [ ] 24 hr [ ] 48 hr [ ] 72 hr

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A	5	4 1D	4			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
100%	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
Loaded/Verified by: BA / ð		Checked by:	ð	BA	BA			

m = missing d = dead BR/AR = Before/After Renewal

Comments:

Test Results:

Screening Tests: Report LC50 as >100%, =100%, or <100%.

% mortality in 100% sample: 0% LC50: >100%

If Calculated: 95% CI______ Method______ V 2.3 7/15/2008

Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

JD wrong month 2.17.09

LIMS Sample #: 1166235 Test #: 2/2 SOP#:TA 07 02 Test Started: Date 2.17.09 Time: 1230

Organism/Batch/Age: C. leedsi / 2.17.09 / 11 days Test Ended: Date 2.19.09 Time: 1245

Chamber/Test Volume: 1000 / 500 ml Diluent/ Batch: Vell / 2.16.09 Test Duration: (48) hr 96 hr

Food/Batch: [ ] YCT____ [ ] P.sub____

[✓] Artemia Lot# 38433 Batch #: 0hr 2.20.09 24hr____ 48hr____ 72hr____

Feeding: [X] Prior to Test [ ] Prior to Renewal [X] 0 hr [ ] 24 hr [ ] 48 hr [ ] 72 hr

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
ct-1	A	A9	5	5	5			
	B	A10	5	5	5			
	C	A11	5	5	5			
	D	A12	5	5	5			
100%	A	A13	5	5	5			
	B	A14	5	5	5			
	C	A15	5	5	5			
	D	A16	5	5	5			
Loaded/Verified by: JD / BA		Checked by:	JD	JD	JD			

m = missing d = dead BR/AR = Before/After Renewal

Comments:

Test Results:

Screening Tests: Report LC50 as >100%, =100%, or <100%.

% mortality in 100% sample: 0% LC50: >100%

If Calculated: 95% CI____ Method____

V 2.3 7/15/2008

Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 1166235 Test #: 1 of 2

TEST SOP #: TA07_01 Test Species: ☒ *Ceriodaphnia dubia* ☐ *Cyprinella leedsi* ☐ *Pimephales promelas*

Test aerated: yes (no) (circle one) Check 1: ☐ *Americamysis bahia* ☐ *Menidia beryllina* ☐ Other:_____

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A			
pH (S.U.)	7.9		8.0			
Temperature °C	24.0		24.0			
Dissolved Oxygen mg/L aerate if < 4	7.7		7.6			
Conductivity µmhos mmhos	185		220			
Salinity ppth	–		–			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments:

Concentration 100%	.0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		A			
pH (S.U.)	7.4 (A)		8.6			
Temperature °C	24.0 MF for 2-23-09 ~~24.0~~ BA		24.0			
Dissolved Oxygen mg/L aerate if < 4	7.8		8.1			
Conductivity µmhos mmhos	3.240		3.47			
Salinity ppth	–		–			
(initials) Measured by:	BA		BA			
(initials) Recorded by:	BA		BA			

Comments: (A) make 24.0 legible mf 2-23-09

Salinity only needs measuring if saltwater.

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 1166235 Test #: 2 of 2

TEST SOP #: TA07_02 Test Species: ☐ *Ceriodaphnia dubia* ☒ *Cyprinella leedsi* ☐ *Pimephales promelas*

Test aerated: yes (no) (circle one) Check 1: ☐ *Americamysis bahia* ☐ *Menidia beryllina* ☐ Other:_____

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.8	8.2	8.3			
Temperature °C	24.0	24.4	24.0			
Dissolved Oxygen mg/L aerate if < 4	8.0	7.8	8.4			
Conductivity (µmhos) mmhos	288	304	291			
Salinity ppth	—	—	—			
(initials) Measured by:	[illegible]	[illegible]	[illegible]			
(initials) Recorded by:	[illegible]	[illegible]	[illegible]			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.3	7.9	8.2			
Temperature °C	24.0	24.3	24.5			
Dissolved Oxygen mg/L aerate if < 4	8.1	6.8	7.2			
Conductivity (µmhos) mmhos	3230	3120	3180			
Salinity ppth	—	—	—			
(initials) Measured by:	[illegible]	[illegible]	[illegible]			
(initials) Recorded by:	[illegible]	[illegible]	[illegible]			

Comments:

Salinity only needs measuring if saltwater.

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Appendix B. (continued)

Bioassay Instrument ID

Test ID: Jeffrison Spring Fish Bioassay Bench #11 Dates: Feb 17-19, 2009

METER / DEVICE	ID	SOP	Parameter	Method	√used
YSI Model 58 Dissolved Oxygen Meter	90H018262	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	SM 2510 B	✓
			Salinity	SM 2520 B	
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
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 MF 2/19/09

V 1.1 6/12/08 MF

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Appendix C. SRT Bench Sheets and Statistical Analysis

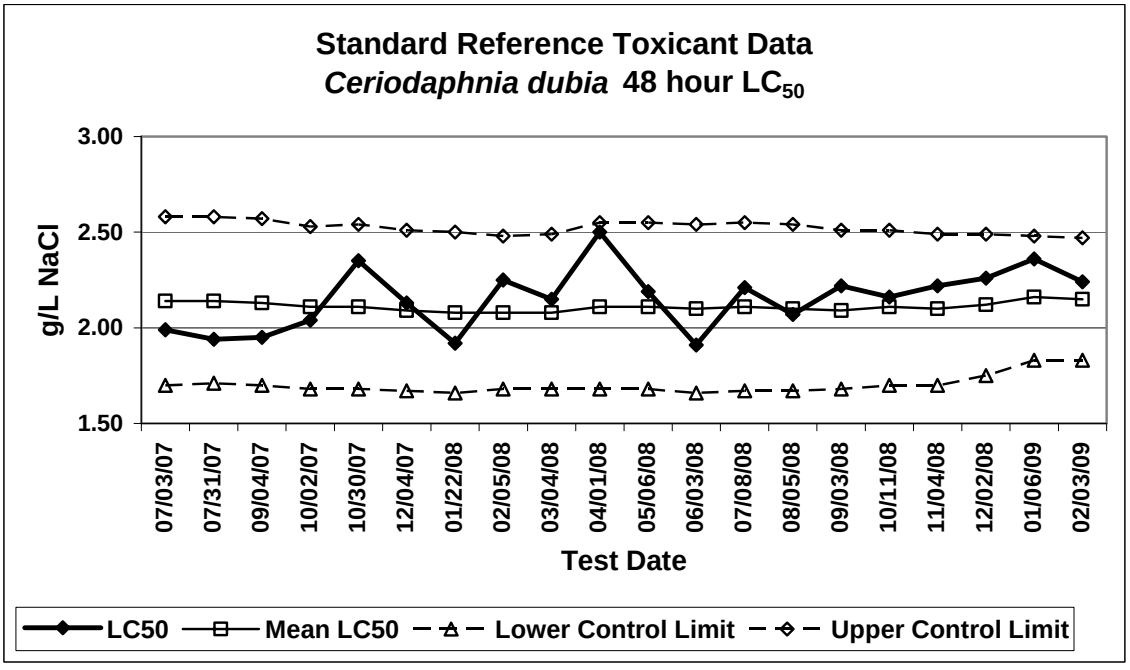
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
07/03/07	1.99	2.14	0.22	1.70	2.58
07/31/07	1.94	2.14	0.22	1.71	2.58
09/04/07	1.95	2.13	0.22	1.70	2.57
10/02/07	2.04	2.11	0.21	1.68	2.53
10/30/07	2.35	2.11	0.21	1.68	2.54
12/04/07	2.13	2.09	0.20	1.67	2.51
01/22/08	1.92	2.08	0.20	1.66	2.50
02/05/08	2.25	2.08	0.20	1.68	2.48
03/04/08	2.15	2.08	0.20	1.68	2.49
04/01/08	2.50	2.11	0.22	1.68	2.55
05/06/08	2.19	2.11	0.22	1.68	2.55
06/03/08	1.91	2.10	0.22	1.66	2.54
07/08/08	2.21	2.11	0.22	1.67	2.55
08/05/08	2.07	2.10	0.22	1.67	2.54
09/03/08	2.22	2.09	0.21	1.68	2.51
10/11/08	2.16	2.11	0.20	1.70	2.51
11/04/08	2.22	2.10	0.20	1.70	2.49
12/02/08	2.26	2.12	0.19	1.75	2.49
01/06/09	2.36	2.16	0.16	1.83	2.48
02/03/09	2.24	2.15	0.16	1.83	2.47

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

CV = 7.47
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

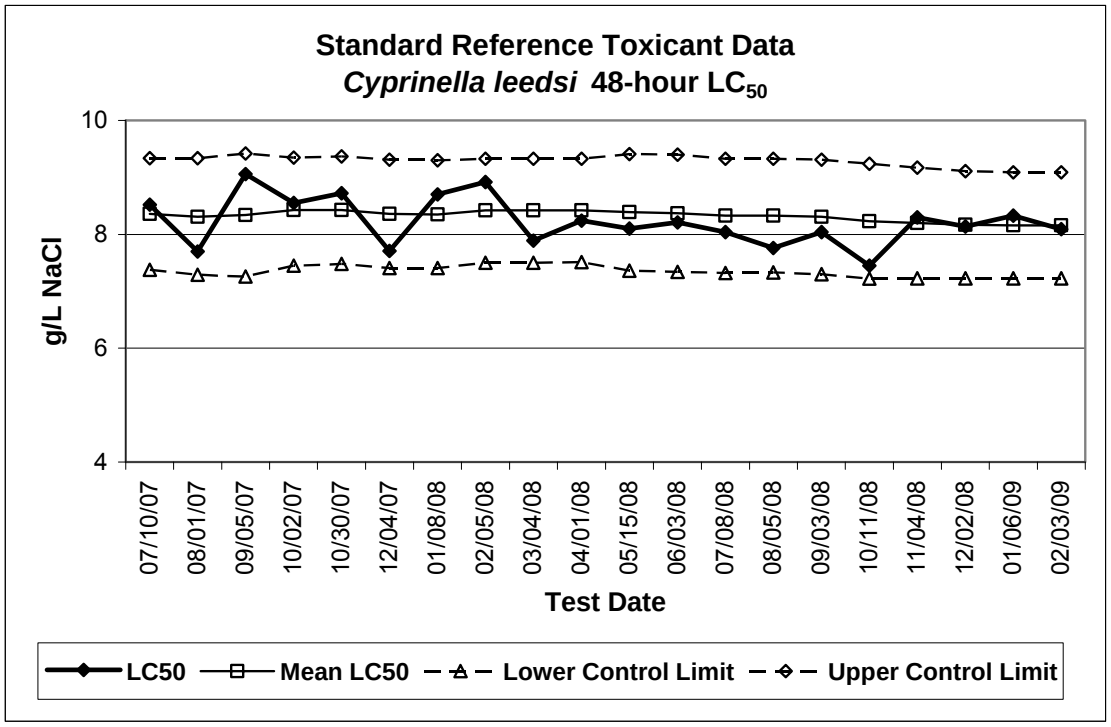
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Cyprinella leedsi (bannerfin shiner) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
07/10/07	8.52	8.36	0.49	7.38	9.34
08/01/07	7.7	8.31	0.51	7.29	9.34
09/05/07	9.06	8.34	0.54	7.26	9.42
10/02/07	8.55	8.43	0.47	7.45	9.35
10/30/07	8.72	8.43	0.47	7.48	9.37
12/04/07	7.71	8.36	0.47	7.41	9.31
01/08/08	8.7	8.35	0.47	7.41	9.30
02/05/08	8.92	8.42	0.46	7.50	9.33
03/04/08	7.89	8.42	0.46	7.50	9.33
04/01/08	8.24	8.42	0.45	7.51	9.33
05/15/08	8.1	8.39	0.51	7.36	9.41
06/03/08	8.21	8.37	0.51	7.34	9.40
07/08/08	8.04	8.33	0.50	7.32	9.33
08/05/08	7.76	8.33	0.50	7.33	9.33
09/03/08	8.04	8.31	0.50	7.30	9.31
10/11/08	7.45	8.23	0.51	7.22	9.24
11/04/08	8.3	8.20	0.48	7.23	9.17
12/02/08	8.14	8.17	0.47	7.23	9.11
01/06/09	8.33	8.16	0.47	7.23	9.09
02/03/09	8.09	8.16	0.47	7.23	9.09

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

CV = 5.7
EPA reference 75th quartile CV = 19%



Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one)
☐ *Americamysis bahia* Method 2007.0 TA07.03 ☐ *Menidia Beryllina* Method 2006.0 TA07.04 ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
☑ *Ceriodaphnia dubia* Method 2002.0 TA07.01 ☐ *Cyprinella leedsi* Method 2000.0 TA07.02 ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☐ renewal
Test Page 1 of 2

Diluent/ Batch #: DMW / 1.30.09 **Organism Batch:** 4-09
Toxicant/ Batch#: NaCl / 2.3.09 Age: <24hr DH

Test Beginning: Date: 2-3-09 Time: 11:30
Test Ending: Date: 2-7-09 Time: 0900

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AGR
Alkalinity (mg/L as $CaCO_3$):	83	TA06_08	AGR
Hardness (mg.L as $CaCO_3$):	85	TA06_09	AGR
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: µmhos ,mmhos	184	TA06_25	BA
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	6-18-08
☑ *P. subcapitata*	7-18-08
☐ Artemia Lot #	

Artemia Batch:

0 hr:	
24 hr:	
48 hr:	
72 hr:	

Concentrations prepared by: BA
Temperature Range °C:(if used)
Chamber size: 30 mL
Test volume: 20 mL per replicate

Test Incubated in: Incubator #2 Waterbath # ____ Incubator # 2 min. 22.7 max. 25.9 mean 24.3
Light Intensity: 50-100 Ft. candles Waterbath # ___ min. ____ max. ____ mean ____
Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 23.5 max. 25.1 mean 24.3

Feeding: √as needed

☑	Before test
☐	0 hr
☐	24 hr
☑	48 hr
☐	72 hr

all species 2 hrs prior to test
mysids daily
all species except *H. azteca* 2 hr prior to renewal
H. azteca 0 hr and 48 hr

Concentration ug/L mg/L g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1.5	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	4 1D	4 MF Transcription error MF 2/7/09
2.0	A	A	5	5	5	5	2 3D	2
	B	B	5	5	5	5	1 4D	1
	C	C	5	5	5	5	3 2D	3
	D	D	5	5	5	5	4 1D	4
2.5	A	A	5	5	0 5D	—	—	—
	B	B	5	5	0 5D	—	—	—
	C	C	5	5	0 5D	—	—	—
	D	D	5	5	0 5D	—	—	—
3.0	A	A	5	5	0 5D	—	—	—
	B	B	5	5	0 5D	—	—	—
	C	C	5	5	0 5D	—	—	—
	D	D	5	5	0 5D	—	—	—
4.0	A	A	5	5	0 5D	—	—	—
	B	B	5	5	0 5D	—	—	—
	C	C	5	5	0 5D	—	—	—
	D	D	5	5	0 5D	—	—	—
Organisms loaded by: BA		Checked by:	BA	BA	BA	BA	MM	MF

H. azteca		
0 hr	Alk	Hrd
Well		
100%		
96 hr	Alk	Hrd
Well		
100%		

Loading Verified by: MF AR = after renewal
m = missing d = dead BR = before renewal hr = hour

Investigators' Signatures
Bruce Alexander
Marshall Faircloth
Mindy M. Spencer
Amelia Rankin
Reviewer: Loretta C. Wolfe

Comments: (A) Transcription error BA 2-9-09
(B) 95% confidence limits unreliable BA 2-9-09

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 2.24	(B)	(A)
96 hour: 1.96	1.83	2.09

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Revised 7/15/2008 mf

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters

Methods from EPA-821-R-02-012 except *H. azteca*

Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☑ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☐ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 2-3-09 Time: 1130
Test Ending: Date: 2-7-09 Time: 0900

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (circle)	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity (ppth)
Control	M	0 hr	7.9	24.0	8.3	184	—
		24 hr	—	—	—	~~2930~~ (A)	—
	A	48 hr BR	7.7	24.0	8.1	195	
	m	48 hr AR	7.9	24.0	8.0	178	
		72 hr	—	—	—	—	
	A	96 hr	8.1	24.1	7.6	210	
1.5	M	0 hr	7.9	24.0	8.3	2930	
		24 hr	—	—	—	~~3200~~ (A)	
	A	48 hr BR	7.8	24.0	8.0	3200	
	m	48 hr AR	8.0	24.0	8.1	2930	
		72 hr	—	—	—	—	
	A	96 hr	8.0	24.3	7.8	3150	
2.0	M	0 hr	7.9	24.0	8.3	3870	
		24 hr	—	—	—	—	
	A	48 hr BR	7.8	24.0	7.9	4400	
	m	48 hr AR	8.0	24.0	8.2	3760	
		72 hr	—	—	—	—	
	A	96 hr	8.1	24.3	7.7	4070	
2.5	M	0 hr	7.9	24.0	8.3	4760	
		24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.0	8.0	5430	
		48 hr AR					
		72 hr					
		96 hr					
3.0	M	0 hr	8.0	24.0	8.3	5610	
		24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.0	7.9	6300	
		48 hr AR					
		72 hr					
		96 hr					
4.0	M	0 hr	8.0	24.0	8.3	7290	
		24 hr	—	—	—	—	
	A	48 hr BR	8.0	24.0	7.7	8050	
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Brent Allen Snyder
Marshall Faircloth
Kim M. Spencer
James Davis
Reviewed By: Loretta C Wolf

Measured by:
0 hr: BA
24 hr: BA
48 hr BR: BA
48 hr AR: BA
72 hr: DA
96 hr: MF

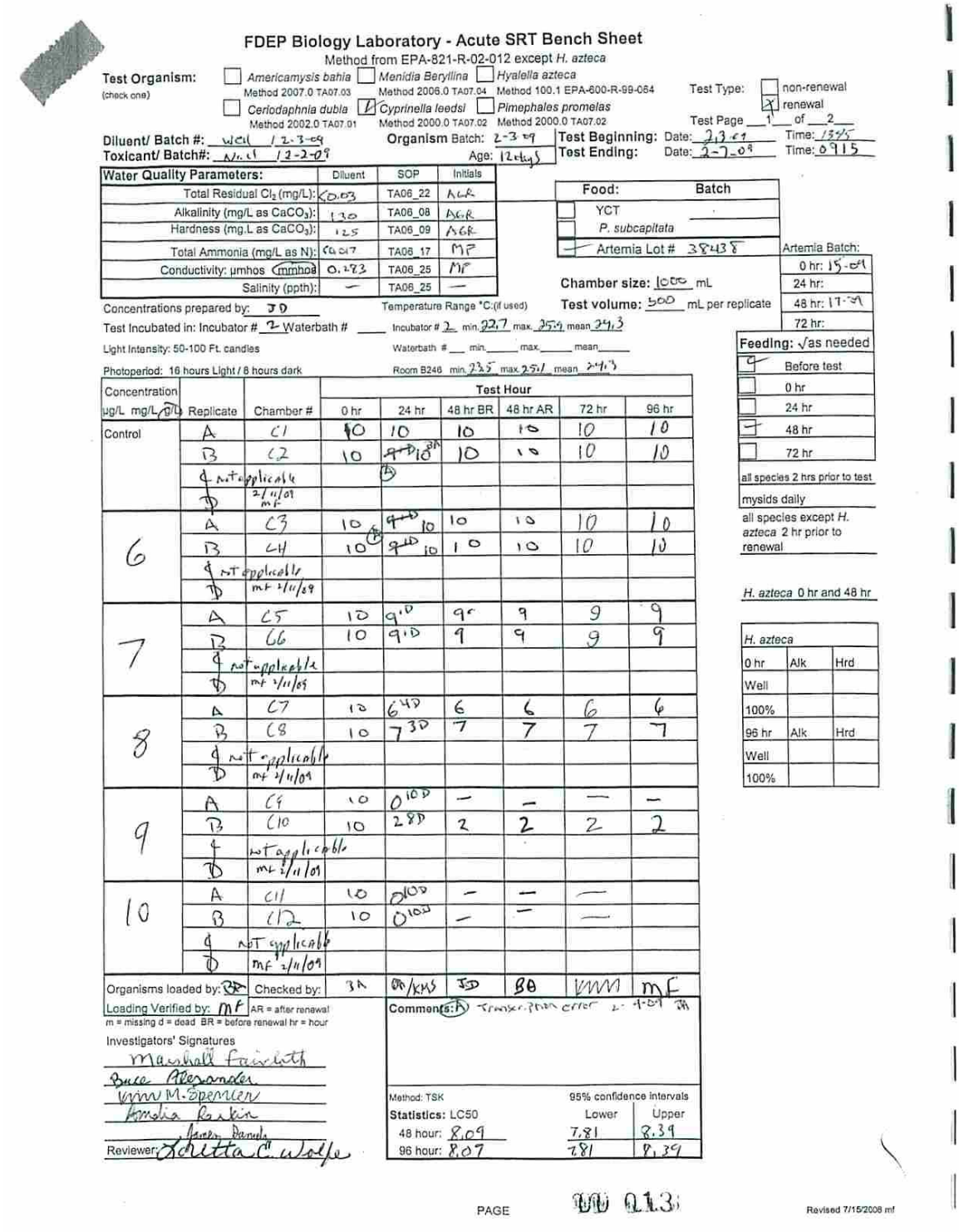
Measure/record salinity for marine tests

Comments: (A) Transcription error BA 2-3-09

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Revised 07/15/2008 MF

Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

Method from EPA-821-R-02-012 except *H. azteca*

Test Organism: (check one)
☐ *Americamysis bahia* Method 2007.0 TA07.03 ☐ *Menidia Beryllina* Method 2006.0 TA07.04 ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01 ☑ *Cyprinella leedsi* Method 2000.0 TA07.02 ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Type: ☐ non-renewal ☒ renewal
Test Page 1 of 2

Diluent/ Batch #: well / 2-3-09
Toxicant/ Batch#: NaCl / 12-2-09
Organism Batch: 2-3 09 Age: 12 days
Test Beginning: Date: 2-3-09 Time: 1325
Test Ending: Date: 2-7-09 Time: 0915

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AGR
Alkalinity (mg/L as $CaCO_3$):	130	TA06_08	AGR
Hardness (mg.L as $CaCO_3$):	125	TA06_09	AGR
Total Ammonia (mg/L as N):	<0.07	TA06_17	MF
Conductivity: µmhos (mmhos)	0.283	TA06_25	MF
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
— Artemia Lot #	38438

Artemia Batch:
0 hr: 15-09
24 hr:
48 hr: 17-09
72 hr:

Chamber size: 1000 mL
Test volume: 500 mL per replicate

Concentrations prepared by: JD
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ___ Incubator # 2 min. 22.7 max. 25.4 mean 24.3
Light Intensity: 50-100 Ft. candles Waterbath # ___ min. ___ max. ___ mean. ___
Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 23.5 max. 25.1 mean 24.3

Feeding: √as needed

☐	Before test
☐	0 hr
☐	24 hr
☐	48 hr
☐	72 hr

all species 2 hrs prior to test
mysids daily
all species except *H. azteca* 2 hr prior to renewal
H. azteca 0 hr and 48 hr

Concentration µg/L mg/L g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	C1	10	10	10	10	10	10
	B	C2	10	9 10 10	10	10	10	10
	♀	not applicable		(A)				
	♂	2/11/09 mf						
6	A	C3	10	(A) 9 10	10	10	10	10
	B	C4	10	(A) 9 10	10	10	10	10
	♀	not applicable						
	♂	mf 2/11/09						
7	A	C5	10	9.0	9	9	9	9
	B	C6	10	9.0	9	9	9	9
	♀	not applicable						
	♂	mf 2/11/09						
8	A	C7	10	6 4D	6	6	6	6
	B	C8	10	7 3D	7	7	7	7
	♀	not applicable						
	♂	mf 2/11/09						
9	A	C9	10	0 10D	—	—	—	—
	B	C10	10	2 8D	2	2	2	2
	♀	not applicable						
	♂	mf 2/11/09						
10	A	C11	10	8 10D	—	—	—	
	B	C12	10	0 10D	—	—	—	
	♀	not applicable						
	♂	mf 2/11/09						
Organisms loaded by: BR		Checked by:	3A	BR/KHS	JD	BB	KMM	MF

H. azteca		
0 hr	Alk	Hrd
Well		
100%		
96 hr	Alk	Hrd
Well		
100%		

Loading Verified by: MF AR = after renewal
m = missing d = dead BR = before renewal hr = hour

Comments: (A) Transfer error 2-9-09 3A

Investigators' Signatures
Marshall Faircloth
Bruce Alexander
Kim M. Spencer
Amelia Parkin
James Daniels
Reviewer: Loretta C. Wolfe

Method: TSK — 95% confidence intervals

Statistics: LC50	Lower	Upper
48 hour: 8.09	7.81	8.39
96 hour: 8.07	7.81	8.39

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Revised 7/15/2008 mf

Appendix C. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet
0-96 hour parameters
Methods from EPA-821-R-02-012 except *H. azteca*
Test Page 2 of 2

Test Organism: (check one)
- ☐ *Americamysis bahia* Method 2007.0 TA07.03
- ☐ *Menidia Beryllina* Method 2006.0 TA07.04
- ☐ *Hyalella azteca* Method 100.1 EPA-600-R-99-064
- ☐ *Ceriodaphnia dubia* Method 2002.0 TA07.01
- ☑ *Cyprinella leedsi* Method 2000.0 TA07.02
- ☐ *Pimephales promelas* Method 2000.0 TA07.02

Test Beginning: Date: 2-3-09 Time: 1350
Test Ending: Date: 2-7-09 Time: 0915
Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L %	Replicate	Test Hour	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity (ppth)
Control	A	0 hr	7.9	24.0	7.9	0.283	
	B	24 hr	7.8	24.0	7.5	0.295	
	A ¢	48 hr BR	8.1	24.0	7.4	0.297	
	A ¢	48 hr AR	8.1	24.2	7.9	0.298	
	B	72 hr	7.8	23.1	7.0	0.308	
	A	96 hr	8.2	24.1	7.0	0.319	
6	A	0 hr	7.9	24.2	8.1	11.5	
	B	24 hr	7.9	24.0	7.3	11.6	
	A	48 hr BR	8.1	24.0	7.3	11.7	
	A	48 hr AR	8.1	24.2	7.4	11.4	
	B	72 hr	7.8	23.0	6.9	12.0	
	A	96 hr	8.1	24.1	7.0	12.4	
7	A	0 hr	7.9	24.1	8.2	12.5	
	B	24 hr	8.0	24.0	7.2	13.4	
	A	48 hr BR	8.1	24.0	6.8	13.4	
	A	48 hr AR	8.0	24.2	7.4	13.3	
	B	72 hr	7.8	23.2	6.5	13.9	
	A	96 hr	8.1	24.6	6.7	14.3	
8	A	0 hr	7.9	24.2	8.2	15.2	
	B	24 hr	7.9	24.0	6.8	15.3	
	A	48 hr BR	8.1	24.0	6.9	15.4	
	B	48 hr AR	8.0	24.1	7.4	15.0	
	B	72 hr	7.8	23.1	6.6	15.6	
	A	96 hr	8.1	24.0	6.6	16.2	
9	A	0 hr	7.9	24.2	8.1	16.9	
	B	24 hr	7.9	24.0	6.6	16.9	
	B	48 hr BR	8.1	24.0	7.0	16.9	
	B	48 hr AR	8.0	24.1	7.3	16.0	
	B	72 hr	7.8	22.7	6.7	16.9	
	B	96 hr	8.1	24.1	6.9	17.3	
10	A	0 hr	7.9	24.3	8.0	18.6	
	B	24 hr	7.9	24.0	6.2	18.6	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Marshall Faircloth
Kimm. Spencer
Bruce Alexander
Amelia Rankin
James Dysart
Reviewed By: Anita C Wolfe

Measured by:
0 hr: MF
24 hr: BJA
48 hr BR: KMS
48 hr AR: KMS
72 hr: BA
96 hr: MF

Measure/record salinity for marine tests

Comments:

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Revised 07/15/2008 MF

Appendix C. (continued)

***Ceriodaphnia dubia* Acute Standard Reference Toxicant Test**

DATE: 2-3-09 DURATION: 48 hr TOXICANT: NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
1.50	20	0
2.00	20	0
2.50	20	20
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.24
95% CONFIDENCE LIMITS ARE NOT RELIABLE.

***Cyprinella leedsi* Acute Standard Reference Toxicant Test**

DATE: 2-3-09 DURATION: 48 hr TOXICANT: NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
6.00	20	0
7.00	20	2
8.00	20	7
9.00	20	18
10.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 8.09
95% LOWER CONFIDENCE: 7.81
95% UPPER CONFIDENCE: 8.39

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 8/2/09

Shipped to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia	150	4 DAYS	MS090129	25°C	7.9	20‰
Menidia beryllina	150	17 DAYS 11 DAYS STR	MS090122	25°C	7.9	20‰
						Hardness
Cyprinella leedsi	200	11 DAYS	CL090122	25°C	7.8	80mg/L
Pimephales promelas	150	9 DAY	FM090124	25°C	7.8	80mg/L

Packed by:

Shipped Via: FedEx

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

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 2/16/09

Shipped to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia						
Menidia beryllina						
						Hardness
Cyprinella leedsi	150	10 DAYS	CL090216	25°C	7.8 s.u.	80 mg/L
Pimephales promelas						

Packed by: [signature]

Shipped Via: FedEx

Notes:

Thank you for your order.

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Appendix E. Chemical Analyses performed on the effluent from the Jefferson Smurfit Corporation, Fernandina Beach Mill Plant Outfall D-001, sampled on February 16, 2009.

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
2/16/2009 11:30	Effluent EFD-1	AGP/LN	Algal Growth Potential	3	U	mg DryWt/L	3	3
2/16/2009 11:30	Effluent EFD-1	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	9	A	mg/L	0.2	2
2/16/2009 11:30	Effluent EFD-1	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.6	U	ug/L	1.6	4.7
2/16/2009 11:30	Effluent EFD-1	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	11	I	ug/L	3.7	11
2/16/2009 11:30	Effluent EFD-1	Overflow	Fecal Coliforms-Membrane Filter	2,000		#/100 mL	1	
2/16/2009 11:30	Effluent EFD-1	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
2/16/2009 11:30	Effluent EFD-1	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
2/16/2009 11:30	Effluent EFD-1	Metals	Cadmium	0.097	I	ug/L	0.03	0.12
2/16/2009 11:30	Effluent EFD-1	Metals	Calcium	97.9		mg/L	0.075	0.3
2/16/2009 11:30	Effluent EFD-1	Metals	Arsenic	0.49	I	ug/L	0.25	1
2/16/2009 11:30	Effluent EFD-1	Metals	Magnesium	36.5		mg/L	0.04	0.16
2/16/2009 11:30	Effluent EFD-1	Metals	Aluminum	1060		ug/L	60	240
2/16/2009 11:30	Effluent EFD-1	Metals	Zinc	30		ug/L	5	20
2/16/2009 11:30	Effluent EFD-1	Metals	Chromium	3.8		ug/L	0.3	1.2
2/16/2009 11:30	Effluent EFD-1	Metals	Iron	190		ug/L	30	120
2/16/2009 11:30	Effluent EFD-1	Metals	Copper	1.07		ug/L	0.5	0.5
2/16/2009 11:30	Effluent EFD-1	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/16/2009 11:30	Effluent EFD-1	Metals	Nickel	5.59		ug/L	0.25	1
2/16/2009 11:30	Effluent EFD-1	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/16/2009 11:30	Effluent EFD-1	Metals	Lead	0.5	I	ug/L	0.2	0.8
2/16/2009 11:30	Effluent EFD-1	Nutrients	Kjeldahl Nitrogen	3.4	Y	mg N/L	0.08	0.2
2/16/2009 11:30	Effluent EFD-1	Nutrients	Ammonia-N	0.16	Y	mg N/L	0.01	0.02
2/16/2009 11:30	Effluent EFD-1	Nutrients	Total-P	0.3	Y	mg P/L	0.02	0.06
2/16/2009 11:30	Effluent EFD-1	Nutrients	O-Phosphate-P	0.008	I	mg P/L	0.004	0.01
2/16/2009 11:30	Effluent EFD-1	Nutrients	TSS	53		mg/L	11	45
2/16/2009 11:30	Effluent EFD-1	Nutrients	NO2NO3-N	0.004	UJY	mg N/L	0.004	0.01
2/16/2009 11:30	Effluent EFD-1	Pesticides	Diazinon	0.055	U	ug/L	0.055	0.22
2/16/2009 11:30	Effluent EFD-1	Pesticides	Gamma-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 11:30	Effluent EFD-1	Pesticides	Parathion Methyl	0.11	U	ug/L	0.11	0.44
2/16/2009 11:30	Effluent EFD-1	Pesticides	Dieldrin	0.022	U	ug/L	0.022	0.088
2/16/2009 11:30	Effluent EFD-1	Pesticides	Endosulfan I	0.022	U	ug/L	0.022	0.088
2/16/2009 11:30	Effluent EFD-1	Pesticides	Endrin Aldehyde	0.022	U	ug/L	0.022	0.088
2/16/2009 11:30	Effluent EFD-1	Pesticides	Heptachlor	0.082	U	ug/L	0.082	0.33

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
2/16/2009 11:30	Effluent EFD-1	Pesticides	Methoxychlor	0.055	U	ug/L	0.055	0.22
2/16/2009 11:30	Effluent EFD-1	Pesticides	Toxaphene	0.82	U	ug/L	0.82	3.3
2/16/2009 11:30	Effluent EFD-1	Pesticides	Butylate	0.22	UJ	ug/L	0.22	0.88
2/16/2009 11:30	Effluent EFD-1	Pesticides	Metalaxyl	0.27	U	ug/L	0.27	1.1
2/16/2009 11:30	Effluent EFD-1	Pesticides	Norflurazon	0.16	U	ug/L	0.16	0.64
2/16/2009 11:30	Effluent EFD-1	Pesticides	Prometryn	0.16	U	ug/L	0.16	0.64
2/16/2009 11:30	Effluent EFD-1	Pesticides	Alpha-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 11:30	Effluent EFD-1	Pesticides	DDD-p,p'	0.022	U	ug/L	0.022	0.088
2/16/2009 11:30	Effluent EFD-1	Pesticides	Malathion	0.16	U	ug/L	0.16	0.64
2/16/2009 11:30	Effluent EFD-1	Pesticides	Phorate	0.055	U	ug/L	0.055	0.22
2/16/2009 11:30	Effluent EFD-1	Pesticides	DDT-p,p'	0.033	U	ug/L	0.033	0.13
2/16/2009 11:30	Effluent EFD-1	Pesticides	Azinphos Methyl	0.22	U	ug/L	0.22	0.88
2/16/2009 11:30	Effluent EFD-1	Pesticides	Ethion	0.055	U	ug/L	0.055	0.22
2/16/2009 11:30	Effluent EFD-1	Pesticides	Fenamiphos	0.22	U	ug/L	0.22	0.88
2/16/2009 11:30	Effluent EFD-1	Pesticides	Fonofos	0.11	U	ug/L	0.11	0.44
2/16/2009 11:30	Effluent EFD-1	Pesticides	Mevinphos	0.22	U	ug/L	0.22	0.88
2/16/2009 11:30	Effluent EFD-1	Pesticides	Naled	0.87	UJ	ug/L	0.87	3.5
2/16/2009 11:30	Effluent EFD-1	Pesticides	Endrin	0.055	U	ug/L	0.055	0.22
2/16/2009 11:30	Effluent EFD-1	Pesticides	Chlorpyrifos Methyl	0.11	U	ug/L	0.11	0.44
2/16/2009 11:30	Effluent EFD-1	Pesticides	Ametryn	0.055	U	ug/L	0.055	0.22
2/16/2009 11:30	Effluent EFD-1	Pesticides	Beta-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 11:30	Effluent EFD-1	Pesticides	Parathion Ethyl	0.16	U	ug/L	0.16	0.64
2/16/2009 11:30	Effluent EFD-1	Pesticides	Heptachlor Epoxide	0.022	U	ug/L	0.022	0.088
2/16/2009 11:30	Effluent EFD-1	Pesticides	Endosulfan Sulfate	0.022	U	ug/L	0.022	0.088
2/16/2009 11:30	Effluent EFD-1	Pesticides	Aldrin	0.11	U	ug/L	0.11	0.44
2/16/2009 11:30	Effluent EFD-1	Pesticides	Simazine	0.055	U	ug/L	0.055	0.22
2/16/2009 11:30	Effluent EFD-1	Pesticides	Chlorpyrifos Ethyl	0.055	U	ug/L	0.055	0.22
2/16/2009 11:30	Effluent EFD-1	Pesticides	Atrazine	0.055	U	ug/L	0.055	0.22
2/16/2009 11:30	Effluent EFD-1	Pesticides	Alachlor	0.65	UJ	ug/L	0.65	2.6
2/16/2009 11:30	Effluent EFD-1	Pesticides	Delta-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 11:30	Effluent EFD-1	Pesticides	Endosulfan II	0.022	U	ug/L	0.022	0.088
2/16/2009 11:30	Effluent EFD-1	Pesticides	DDE-p,p'	0.022	U	ug/L	0.022	0.088
2/16/2009 11:30	Effluent EFD-1	Pesticides	Chlordane	0.22	U	ug/L	0.22	0.88
2/16/2009 11:30	Effluent EFD-1	Pesticides	Metribuzin	0.11	U	ug/L	0.11	0.44

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
2/16/2009 11:30	Effluent EFD-1	Pesticides	Metolachlor	0.55	UJ	ug/L	0.55	2.2
2/16/2009 11:30	Effluent EFD-1	Pesticides	Ethoprop	0.11	UJ	ug/L	0.11	0.44
2/16/2009 11:30	Effluent EFD-1	Pesticides	Bromacil	0.22	U	ug/L	0.22	0.88
2/16/2009 11:30	Effluent EFD-1	Pesticides	Hexazinone	0.11	U	ug/L	0.11	0.44
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.2	U	ug/L	3.2	13
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Anthracene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Chrysene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Hexachlorobutadiene	3.2	U	ug/L	3.2	13
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Nitrobenzene	2.1	U	ug/L	2.1	8.4
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Phenanthrene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	U	ug/L	2.1	8.4
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Benzo(b)fluoranthene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Di-n-butyl phthalate	5.3	U	ug/L	5.3	21
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.2	U	ug/L	3.2	13
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	3,3'-Dichlorobenzidine	42	U	ug/L	42	170
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Benzo(k)fluoranthene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Butyl benzyl phthalate	5.3	U	ug/L	5.3	21
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Fluorene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.2	UJ	ug/L	3.2	13
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	63
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Dimethyl phthalate	11	UJ	ug/L	11	42
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Fluoranthene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	42

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	420
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.2	U	ug/L	3.2	13
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Naphthalene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	63
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Acenaphthylene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	63
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Hexachloroethane	3.2	U	ug/L	3.2	13
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	U	ug/L	2.1	8.4
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Benzo(g,h,i)perylene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	UJ	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Pyrene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Acenaphthene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Benzo(a)anthracene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Benzo(a)pyrene	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	U	ug/L	2.1	8.4
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Pentachlorophenol	3.2	UJ	ug/L	3.2	13
2/16/2009 11:30	Effluent EFD-1	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.2
2/16/2009 11:30	Effluent EFD-1	Field Parameter	pH	6.21				
2/16/2009 11:30	Effluent EFD-1	Field Parameter	Temperature	35.15		C		
2/16/2009 11:30	Effluent EFD-1	Field Parameter	Sample Depth	1		m		
2/16/2009 11:30	Effluent EFD-1	Field Parameter	Specific Conductance	2913		umhos/cm		
2/16/2009 11:50	Equipment Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
2/16/2009 11:50	Equipment Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
2/16/2009 11:50	Equipment Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
2/16/2009 11:50	Equipment Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
2/16/2009 11:50	Equipment Blank	Metals	Aluminum	60	U	ug/L	60	240
2/16/2009 11:50	Equipment Blank	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
2/16/2009 11:50	Equipment Blank	Metals	Zinc	5	U	ug/L	5	20

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
2/16/2009 11:50	Equipment Blank	Metals	Copper	0.5	U	ug/L	0.5	0.5
2/16/2009 11:50	Equipment Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
2/16/2009 11:50	Equipment Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/16/2009 11:50	Equipment Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
2/16/2009 11:50	Equipment Blank	Metals	Iron	30	U	ug/L	30	120
2/16/2009 11:50	Equipment Blank	Metals	Silver	0.01	U	ug/L	0.01	0.04
2/16/2009 11:50	Equipment Blank	Nutrients	Total-P	0.02	U	mg P/L	0.02	0.06
2/16/2009 11:50	Equipment Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
2/16/2009 11:50	Equipment Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
2/16/2009 11:50	Equipment Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
2/16/2009 11:50	Equipment Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
2/16/2009 11:50	Equipment Blank	Pesticides	DDD-p,p'	0.022	U	ug/L	0.022	0.088
2/16/2009 11:50	Equipment Blank	Pesticides	Diazinon	0.056	U	ug/L	0.056	0.22
2/16/2009 11:50	Equipment Blank	Pesticides	Hexazinone	0.11	U	ug/L	0.11	0.44
2/16/2009 11:50	Equipment Blank	Pesticides	Norflurazon	0.17	U	ug/L	0.17	0.68
2/16/2009 11:50	Equipment Blank	Pesticides	Phorate	0.056	U	ug/L	0.056	0.22
2/16/2009 11:50	Equipment Blank	Pesticides	Heptachlor	0.011	U	ug/L	0.011	0.044
2/16/2009 11:50	Equipment Blank	Pesticides	Alachlor	0.67	UJ	ug/L	0.67	2.7
2/16/2009 11:50	Equipment Blank	Pesticides	Beta-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 11:50	Equipment Blank	Pesticides	DDT-p,p'	0.033	U	ug/L	0.033	0.13
2/16/2009 11:50	Equipment Blank	Pesticides	Dieldrin	0.022	U	ug/L	0.022	0.088
2/16/2009 11:50	Equipment Blank	Pesticides	Heptachlor Epoxide	0.022	U	ug/L	0.022	0.088
2/16/2009 11:50	Equipment Blank	Pesticides	Azinphos Methyl	0.22	U	ug/L	0.22	0.88
2/16/2009 11:50	Equipment Blank	Pesticides	Bromacil	0.22	U	ug/L	0.22	0.88
2/16/2009 11:50	Equipment Blank	Pesticides	Mevinphos	0.22	U	ug/L	0.22	0.88
2/16/2009 11:50	Equipment Blank	Pesticides	Naled	0.89	UJ	ug/L	0.89	3.6
2/16/2009 11:50	Equipment Blank	Pesticides	Simazine	0.056	U	ug/L	0.056	0.22
2/16/2009 11:50	Equipment Blank	Pesticides	Endrin Aldehyde	0.022	U	ug/L	0.022	0.088
2/16/2009 11:50	Equipment Blank	Pesticides	Malathion	0.17	U	ug/L	0.17	0.68
2/16/2009 11:50	Equipment Blank	Pesticides	Delta-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 11:50	Equipment Blank	Pesticides	Methoxychlor	0.056	U	ug/L	0.056	0.22
2/16/2009 11:50	Equipment Blank	Pesticides	Toxaphene	0.83	U	ug/L	0.83	3.3
2/16/2009 11:50	Equipment Blank	Pesticides	Ethoprop	0.11	UJ	ug/L	0.11	0.44
2/16/2009 11:50	Equipment Blank	Pesticides	Metalaxyl	0.28	U	ug/L	0.28	1.1

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
2/16/2009 11:50	Equipment Blank	Pesticides	Metolachlor	0.56	UJ	ug/L	0.56	2.2
2/16/2009 11:50	Equipment Blank	Pesticides	Chlordane	0.22	U	ug/L	0.22	0.88
2/16/2009 11:50	Equipment Blank	Pesticides	Endosulfan II	0.022	U	ug/L	0.022	0.088
2/16/2009 11:50	Equipment Blank	Pesticides	Alpha-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 11:50	Equipment Blank	Pesticides	Aldrin	0.011	U	ug/L	0.011	0.044
2/16/2009 11:50	Equipment Blank	Pesticides	Parathion Methyl	0.11	U	ug/L	0.11	0.44
2/16/2009 11:50	Equipment Blank	Pesticides	Parathion Ethyl	0.17	U	ug/L	0.17	0.68
2/16/2009 11:50	Equipment Blank	Pesticides	Metribuzin	0.11	U	ug/L	0.11	0.44
2/16/2009 11:50	Equipment Blank	Pesticides	Fenamiphos	0.22	U	ug/L	0.22	0.88
2/16/2009 11:50	Equipment Blank	Pesticides	Ethion	0.056	U	ug/L	0.056	0.22
2/16/2009 11:50	Equipment Blank	Pesticides	Chlorpyrifos Ethyl	0.056	U	ug/L	0.056	0.22
2/16/2009 11:50	Equipment Blank	Pesticides	Ametryn	0.056	U	ug/L	0.056	0.22
2/16/2009 11:50	Equipment Blank	Pesticides	Endosulfan I	0.022	U	ug/L	0.022	0.088
2/16/2009 11:50	Equipment Blank	Pesticides	Fonofos	0.11	U	ug/L	0.11	0.44
2/16/2009 11:50	Equipment Blank	Pesticides	Chlorpyrifos Methyl	0.11	U	ug/L	0.11	0.44
2/16/2009 11:50	Equipment Blank	Pesticides	Atrazine	0.056	U	ug/L	0.056	0.22
2/16/2009 11:50	Equipment Blank	Pesticides	Endrin	0.056	U	ug/L	0.056	0.22
2/16/2009 11:50	Equipment Blank	Pesticides	Endosulfan Sulfate	0.022	U	ug/L	0.022	0.088
2/16/2009 11:50	Equipment Blank	Pesticides	DDE-p,p'	0.022	U	ug/L	0.022	0.088
2/16/2009 11:50	Equipment Blank	Pesticides	Gamma-BHC	0.011	U	ug/L	0.011	0.044
2/16/2009 11:50	Equipment Blank	Pesticides	Butylate	0.22	UJ	ug/L	0.22	0.88
2/16/2009 11:50	Equipment Blank	Pesticides	Prometryn	0.17	U	ug/L	0.17	0.68
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	63
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	42	U	ug/L	42	170
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	13
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.2

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5.2	U	ug/L	5.2	21
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1	UJ	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	13
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	UJ	ug/L	3.1	13
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	13
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	13
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	U	ug/L	2.1	8.3
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	420
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5.2	U	ug/L	5.2	21
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	U	ug/L	2.1	8.3
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Nitrobenzene	2.1	U	ug/L	2.1	8.3
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Pentachlorophenol	3.1	UJ	ug/L	3.1	13
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	42
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Dimethyl phthalate	10	UJ	ug/L	10	42
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	U	ug/L	2.1	8.3
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	63

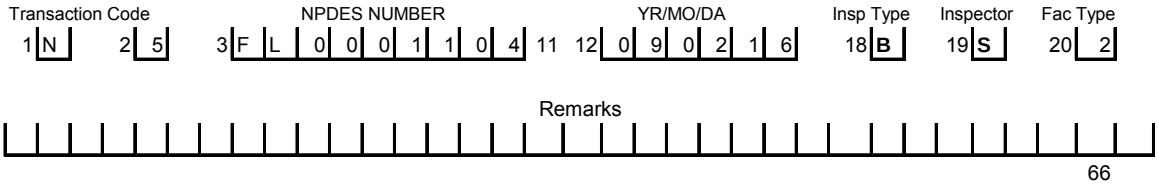
Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4.2
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	13
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	63
2/16/2009 11:50	Equipment Blank	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.2

APPENDIX F. EPA Last Page

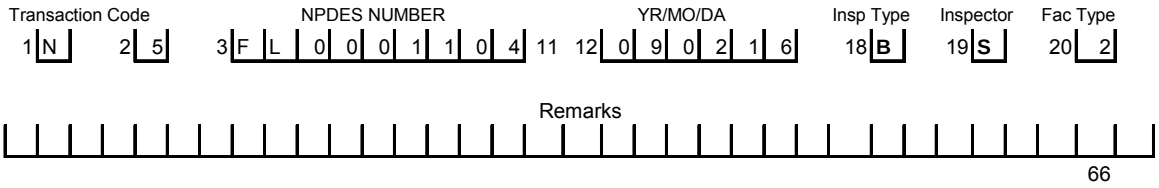
The Bioassay of the Jefferson Smurfit Corporation, Fernandina Beach Mill facility effluent sampled on February 16, 2009. NPDES #FL0001104.

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



The Priority Pollutants Analysis of the Jefferson Smurfit Corporation, Fernandina Beach Mill facility effluent sampled on February 16, 2009. NPDES #FL0001104.

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



Biological Analyses of the Jefferson Smurfit Corporation, Fernandina Beach Mill facility effluent sampled on February 16, 2009. NPDES #FL0001104.

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

