

Effluent Quality Assessment

Buckeye Florida

Taylor County

NPDES #FL0000876

Sampled August 10, 12, and 14, 2009

and

September 21, 23 and 25, 2009

January 2010

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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Buckeye Florida, One Buckeye Drive, Perry, Taylor County, Florida, 32348. NPDES #FL0000876. Effluent samples for bioassay, algal growth potential (AGP) and chemical analyses for this facility were collected on August 10, 2009. Additional samples for the chronic bioassay tests were collected on August 12 and 14, 2009. Due to the invalidation of the *P. promelas* chronic bioassay, additional bioassays were performed from September 22-29, 2009. Samples for these bioassays were collected on September 21, 23 and 25, 2009.

Introduction

Buckeye Florida is a pulp and paper mill. The facility operates a 58 million gallon per day design capacity industrial wastewater treatment system. The facility has no Administrative Orders or Consent Orders. There have been no reported permit violations within the past year. The facility has a mixing zone which encompasses the entire 22.1 mile length of the Fenholloway River before effluent reaches the Gulf of Mexico (See Appendix F for detailed facility information provided by Brian Kirts of FDEP Northeast District.)

Methods

Samples for bioassay, AGP and chemical analyses were collected from the EFF-1 NPDES sampling point for Outfall D-001 on August 10, 2009, by Eesa Ali and Stephen Nye, who also collected the samples for the chronic bioassay analyses on August 12 and 14, 2009. The effluent samples for the additional bioassays were collected from the EFF-1 sampling point on September 21, 23 and 25, 2009, respectively, by Sharon Piltz and Jann Gruentzel, Sharon Piltz and Eesa Ali, and Sharon Piltz and Stephen Nye (all sampling personnel from 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 forms.

The freshwater chronic screening toxicity tests and the 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.

Due to the apparent salinity (~ 1.26 parts per thousand) of the AGP sample, a freshwater AGP test was not performed on the sample collected on August 10, 2009. The AGP sample was salinity adjusted to meet the minimum salinity requirements of the marine test species.

Although an AGP sample was not collected during the second sampling event, a freshwater AGP test (based on Class III freshwater receiving water classification) was performed on an aliquot of effluent from the bioassay sample that was collected on September 25, 2009.

Results and Discussion

Toxicity Test Results

Tests performed August 11 - 17, 2009.

Ceriodaphnia dubia chronic screening bioassay – NOEC = 100% for survival; LOEC = 100% for reproduction

Pimephales promelas chronic screening bioassay* – No Result

The bioassay samples were chronically toxic to the *Ceriodaphnia dubia* test organisms. The *Pimephales promelas* test was invalidated on Day 4 due to excessive control mortality.

The cause of the toxicity noted in the August bioassays was not determined.

Tests performed September 22 - 29, 2009.

Ceriodaphnia dubia chronic screening bioassay –	NOEC = 100% for survival; LOEC = 100% for reproduction
Pimephales promelas chronic screening bioassay –	NOEC = 100% for survival; LOEC = 100% for growth

The bioassay samples were chronically toxic to both the *Ceriodaphnia dubia* and *Pimephales promelas* test organisms.

The cause of the toxicity noted in the September bioassays was not determined.

See Appendix B for bioassay bench sheets (*Ceriodaphnia dubia* from August 11, 2009, and *C. dubia* and *Pimephales promelas* from September 22, 2009). 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 the facility tests from September 22, 2009. See Appendix D for test organism receipts. See Appendix G for Bioassay Instrument ID.

Algal Growth Potential

The Algal Growth Potential (AGP) of the effluent collected on August 10, 2009, was 110 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 ratio of inorganic nitrogen to ortho-phosphate as well as the ratio of total nitrogen to total phosphorus in the effluent suggests that the effluent is nitrogen-limited. To determine actual nutrient limitation, a limiting-nutrient algal growth potential test should be performed (Maloney et al. 1974).

Due to the apparent salinity (~1.26 ppth) of the sample an AGP test with the freshwater species, *Pseudokirchneriella subcapitata*, was not performed. However, an inference can be made that the freshwater problem threshold of 5 mg dry wt/L (Raschke and Schultz, 1987) would have also been exceeded.

AGP performed September 25, 2009

AGP and nutrient samples were not collected during the follow-up bioassay sampling event; however, for information purposes AGP was measured in an aliquot of effluent from the bioassay sample (collected on September 25, 2009). Based on past experience and best professional judgment, the apparent salinity (1.00 ppth) of the sample was not thought to be due to seawater ions; therefore, the AGP test was performed as a freshwater test. The AGP was 100 mg dry weight/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) found that AGP values above 5.0 mg dry weight/L represent a “problem” threshold for fresh receiving waters, implying nutrient enrichment.

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine was not detected in any of the bioassay samples (collected August 10, 12 and 14; nor, in those collected September 21, 23 and 25, 2009) in the bioassay laboratory. Total ammonia concentrations measured in the effluent in the bioassay laboratory on August 10, 12 and 14, were, respectively, 3.57 mg N/L, 4.53 mg N/L and 4.66 mg N/L. Based on the pH, salinity, and temperature of the bioassay samples, the unionized ammonia concentrations were, respectively, 0.07 mg N/L, 0.11 mg N/L and 0.12 mg N/L. Total ammonia concentrations measured in the effluent in the bioassay laboratory on September 21, 23 and 25, were,

respectively, 3.795 mg N/L, 3.48 mg N/L and 3.34 mg N/L. Based on the pH, salinity, and temperature of the bioassay samples, the unionized ammonia concentrations were, respectively, 0.06 mg N/L, 0.08 mg N/L and 0.09 mg N/L.

The total ammonia concentration in the sample collected (August 10, 2009) and preserved for chemical analysis was 0.17 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg N/L. A sample for chemical analyses of total ammonia was not collected during the September 2009 sampling event.

Aluminum, cadmium, chromium, copper, iron and zinc were detected in the effluent collected on August 10, 2009, at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Arsenic, lead and silver were detected between the laboratory method detection limits (MDL) and the laboratory practical quantification limits (PQL). Fecal coliforms were detected in the effluent. Priority organic pollutants and pesticides were not detected in the effluent.

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.

Conclusion

The effluent samples collected from the EFF-1 NPDES sampling point for Outfall D-001 for this facility on August 10, 12 and 14, 2009, were chronically toxic to the *Ceriodaphnia dubia* test organisms. The *Pimephales promelas* test was invalidated due to excess control mortality. The effluent AGP result greatly exceeded the "problem" threshold for marine receiving waters and by inference fresh receiving waters suggesting that nutrient enrichment may be an issue. Effluent water quality samples collected on August 10, 2009, did not violate water quality criteria or permit limits.

The effluent samples collected from the EFF-1 NPDES sampling point for Outfall D-001 on September 21, 23 and 25, 2009, were chronically toxic to both test species. An AGP test performed on an aliquot of bioassay sample greatly exceeded the "problem" threshold for freshwater receiving water, providing additional evidence that nutrient enrichment may be an issue. Effluent water quality samples for chemical analyses were not collected during the September sampling event.

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.

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 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 Buckeye Florida facility on August 10, 2009.

Buckeye Florida			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Effluent *	110	0.2	5.1

* - sample salinity adjusted to 7ppt

Table 1b. Measured algal growth potential (AGP; mg dry weight/L) of the freshwater species *Pseudokirchneriella subcapitata* for an aliquot of a bioassay sample collected from the Buckeye Florida facility on September 25, 2009.

Buckeye Florida			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Effluent	100	*	*

* Nutrient samples were not collected.

Table 2. Effluent limits, Class III Freshwater Criteria and chemical and microbiological data for samples collected from the Buckeye Florida facility on August 10, 2009.

Buckeye Florida NPDES# FL0000876	Class III Criteria	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
None Detected	-	-	None Detected	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	890	
Arsenic	≤ 50	-	0.46	I
Cadmium	≤ 0.4 b	-	0.16	
Calcium (mg/L)	-	-	42.3	
Chromium-III	≤ 137.5 b	-	3.5	
Copper	≤ 15.2 b	-	4.06	
Iron	≤ 1,000	-	280	
Lead	≤ 6.6 b	-	0.39	I
Magnesium (mg/L)	-	-	17.3	
Nickel	≤ 84.5 b	-	7.68	
Selenium	≤ 5.0	-	0.2	U
Silver	≤ 0.07	-	0.068	I
Zinc	≤ 194.2 b	-	20	
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.96	
Total Phosphorus	-	-	1.4	A
Total Ammonia	-	-	0.17	
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02	c
Nitrate and Nitrite	-	-	0.005	I
Total Kjeldahl Nitrogen	-	-	7.1	
Organic Nitrogen	-	-	6.93	c
Total Nitrogen	-	-	7.105	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0 s	≥ 0.3*	3.0	
pH (SU)	6.0 - 8.5 s	6.0 - 8.5	7.2	
Conductivity (µmhos/cm)	≤ 1,275	≤ 4,000 s	2,348	
Temperature (°C)	-	-	33.3	
Total Residual Chlorine (mg/L)	≤ 0.01	-	0.03	UQ£
Chlorophyll *a* (µg/L) - Corrected	-	-	0.88	I
Phaeophytin (µg/L)	-	-	0.48	I
Total Suspended Solids (mg/L)	-	≤ 10.3 dmax	7	I
CBOD, 5 day (mg/L), N - inhibited	-	≤ 27.3 d	9	
Oils and Greases (mg/L)	≤ 5.0	≤ 10 s	1.4	UJ
Flow (MGD)	-	≤ 58.0	41.8	a
Hardness (mg $CaCO_3$)	-	-	176.86	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms @	≤ 400s #	-	26	B

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
dmax - Approximate daily maximum calculated based on permitted capacity of 58 MGD
s - Single sample
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptance range
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
@ - Fecal coliform analysis performed by FDEP Central Lab
# - If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
* ≥ 0.3 mg/L 50% of the time on an annual basis when flow is ≥ 250 CFS at SR356 bridge over Fenholloway River
£ - Analyses performed in bioassay laboratory

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2009-08-10-37
Buckeye Florida

Event ID *

Requester: Jennifer Paris
Field Report Prepared By: S NYE

Customer: NE-DIST
Collected By: Esra Ali / Stephen Nye
Send Final Report To Tom Kallemeyn

Project ID: FYI3
Sampling Agency: FDEP NED

PMAS: 1143

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Buckeye Third year Effluent	☐ Comp ☒ Grab Date 08-10-09 Time 1120 Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 2.97 mg/L @ 41.8%	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C) 33.29	pH 7.21	Sample Depth 0.157 ☒ m ☐ ft
			1.19 ☐ Salinity (PPTh) 2348 ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments TOX, PWA, O&G, ALP, BOD, CHL, FC, ENT, Colors, OP, PCHF, MET, NUT, Pest	A

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Blank	☐ Comp ☒ Grab Date ~~10-5~~ 10-9 Time 1205 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) DI	Temp (C)	pH	Sample Depth ☐ m ☐ ft
			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments	B

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	

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	8/10/09	Hand		8/10/09 1333	2 by			13:37

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

1 lot of Micro 1411 8-10-09

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: ~~RQ-2008-02-0037~~
SMN5MU

Event ID * RQ 2009-08-10-57

Customer: NE-DIST

Project ID: ~~SMP~~ FYT-3

PMAS: ~~4200~~ 1143

Requester: ~~Stephen Nye~~ Jen Paris

Collected By: Stephen Nye / Besa Ali

Sampling Agency: FDEP NED

Field Report Prepared By: Tom McNemeyn

Send Final Report To ~~Stephen Nye~~

Lab ID *	Location	Temp (C)	pH	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	Buckeye FYI 3 Final Eff	33.94	7.24	☐ Comp ☒ Grab Date 8/12/09 Time 1130		A
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 2.84 mg/L	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc			Sample Depth 0.5 ☒ m ☐ ft	1.25 ☐ Salinity (PPTh) 2432 ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' " .	Longitude o ' " .		Comments BSY ES FFS BSY CSFCD x2		

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

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

Lab ID *	Location	Temp (C)	pH	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
				☐ Comp ☐ Grab Date Time	Date Time	
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (Include type e.g. Salt, Fresh, etc			Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' " .	Longitude o ' " .		Comments 2 bkwy Recd in Tor by JD. 1305 8.12.09		

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SMN	08/12/09/1300	SELF	~~AFB~~	8/12/09 13:05				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID * RQ-08-10-37

Request Number: ~~RQ-2009-03-30-01~~
SCI 2365 Grover Br

Requester: ~~Stephen Nye~~ JenniferPenis

Field Report Prepared By: Stephen Nye

Customer: NE-DIST

Collected By: Eesa Ali / Stephen Nye

Send Final Report To ~~Stephen Nye~~ Tom Kallemeyn

Project ID: SMP

Sampling Agency: FDEP NED

PMAS: 1306

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Buckeye FYI	☐ Comp ☒ Grab	Date 07-14-09 Time 1120 Central	Date Time	A×2
	Field ID: Buckeye Final eff	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 2.48 e37.4%	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C): 32.74	pH: 7.34	Sample Depth: ☒ m 0.4 ☐ ft	1.24 ☐ Salinity (PPTh) 2482 ☐ Sp Conductance (umho/cm)
	Latitude o ' "	Longitude o ' "	Comments: BSY CS FFS BSY CS FED		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	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	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	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	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	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		

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S. Nye	081409	SELF	Tahmoures Ebrahimi	8/14/09 12:39			Received 3 Bioassay Trays MF 1313 8/14/09	

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-09-21-23
Buckeye Toxicity Re-sample

Requester: Jennifer Paris

Field Report Prepared By:

Customer: NE-DIST

Collected By: SP/JG J. Geventzel

Send Final Report To Tom Kallemeyn

Project ID: CSI

Sampling Agency: NED DEP

PMAS: 1163

Lab ID *	Location			Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Buckeye Eff. 3rd (Final Eff)			☐ Comp ☒ Grab	Date 9/21/09 Time 1023		A
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
					7.5		
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☒ m ☐ ft	1.66	☒ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number
	Eff	30.86	7.44	1.496	2105		
	Latitude o ' " .	Longitude o ' " .		Comments			

Lab ID *	Location			Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
				☐ Comp ☐ Grab			
	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			Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
				☐ Comp ☐ Grab			
	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			Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
				☐ Comp ☐ Grab			
	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			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
J. Geventzel	9/21/09 1320							9-21-09 1820pm

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-09-21-23
Buckeye Toxicity Re-sample

Customer: NE-DIST
Project ID: CSI
PMAS: 1163

Requester: Jennifer Paris
Collected By: SP IEA
Sampling Agency: DEP - NE

Field Report Prepared By: EA
Send Final Report To: Tom Kallemeyn

Lab ID *	Location: Buckeye Ind Eff		☐ Comp ☑ Grab	Collection (begin) Date 9/23/09 Time 1323 Eastern Central		Collection (end) Date Time Eastern Central		Bottle Group(s)** A×2	
	Field ID		Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 3.04		Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C) 31.73	pH 7.44	Sample Depth 0.23 ☑ m ☐ ft	1.03 2055	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number		
	Latitude o ' " .	Longitude o ' " .	Comments						
Lab ID *	Location		☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central		Collection (end) Date Time Eastern Central		Bottle Group(s)**	
	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		☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central		Collection (end) Date Time Eastern Central		Bottle Group(s)**	
	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		☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central		Collection (end) Date Time Eastern Central		Bottle Group(s)**	
	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 Dossy, Rec'd by Fax. J.D. 2.53 9.23.09						

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
EA	9/23/09	SELF	[illegible]	9/23/09 14:49				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix A. (continued)

Appendix A. (continued)

NED FD0108 **Florida Department of Environmental Protection *North East District* Field sheet**

Sample Project Buckeye FY'09 LabRequest number RQ 2009-09-21-23

Collected By: SM/SP Date Collected: 09-25-09

Lab ID #	Storet#	Site Name						Matrix: Water / Surface Fresh / Surface Salt / ~~Effluent~~		Comments: Air Temp ____ Wind Sp ____ Wind Dir ____		
		Buckeye 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
1125	1.9	1.0	31.61	2004	1.01	7.45	3.05	41.7	0.1	—	—	—

Grab/Comp Not applicable	Parameter/Method	Preservation	Bottle/Suite =A/B/C,etc.	Initials
G/C/Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	Ice& H_2SO_4 less than 2 pH		
G/C/Na	Ortho Phosphorous	Ice & .45µm filtered		
G/C/Na	BOD/CBOD	Ice		
G/C/Na	Chlorophyll.Phaeophytin	Ice		
G/C/Na	Physical Aggregate:TSS.TDS.Turb..Color.Alk..Cl-.F-.SO_4-	Ice		
G/C/Na	Metals: ICP,ICPMS	HNO_3 less than 2 pH		
~~G~~/C/Na	Other: Tox	Ice	A	
G/C/Na	Microbiology: Fecal Coliform	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/Comp Not applicable	Parameter/Method	Preservation	Bottle/Suite =A/B/C,etc.	Initials
G/C/Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	Ice& H_2SO_4 less than 2 pH		
G/C/Na	Ortho Phosphorous	Ice & .45µm filtered		
G/C/Na	BOD/CBOD	Ice		
G/C/Na	Chlorophyll.Phaeophytin	Ice		
G/C/Na	Physical Aggregate:TSS.TDS.Turb..Color.Alk.,Cl-.F-.SO_4-	Ice		
G/C/Na	Metals: ICP.ICPMS	HNO_3 less than 2 pH		
G/C/Na	Other:	Ice/		
G/C/Na	Microbiology: Fecal Coliform	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/Comp Not applicable	Parameter/Method	Preservation	Bottle/Suite =A/B/C,etc.	Initials
G/C/Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	Ice& H_2SO_4 less than 2 pH		
G/C/Na	Ortho Phosphorous	Ice & .45µm filtered		
G/C/Na	BOD/CBOD	Ice		
G/C/Na	Chlorophyll.Phaeophytin	Ice		
G/C/Na	Physical Aggregate:TSS.TDS.Turb.,Color.Alk..Cl-.F-,SO_4-	Ice		
G/C/Na	Metals: ICP.ICPMS	HNO_3 lesss than 2 pH		
G/C/Na	Other:	Ice/		
G/C/Na	Microbiology: Fecal Coliform	Ice		

Relinquished	Date	Time	Shipping	Received	Date/Time
	09-25-09	1330	~~FEDEX~~ SELF	~~[illegible]~~	9/25/09 1330

3 biossay Recd into By J.D. 13:31
9.25.09

Appendix B. Bench Sheets

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia

Facility: Buckeye MF NWWTF
Address: One Buckeye Drive
County: Perry, Taylor County, FL. 32345
NPDES Permit #: FL 0000876
Contact/District: Barar Kirts / Northeast

LIMS entry: 8.27.09 MF verified: 8.27.09 BA

Diluent/ Batch: 20% DMW / 8.10.09 Test Days Used: 0-5
20% DMW / 8.15.09 Test Days Used: 6

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

Start Date: 8/11/09 Time: 14:30
End Date: 8/17/09 Time: 1315

Organism: *Ceriodaphnia dubia*
Organism Batch #: 28.09
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: YCT *P. subcapitata*
Food Batch: 1.22.09 7.23.09
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-2009-08-10-06	1207498	08-10-09 1120	8-10-09 1340
Test Day 2	2	TLH-2009-08-12-48	1208400	08-12-09 1130	8-12-09 1305
Test Day 4	3	TLH-2009-08-14-51	1209109	08-14-09 1120	8-14-09 1313

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	not measured			<0.03	<0.03	0.04	160	222	256
Diluent/Control:				<0.03	<0.03	<0.03	80	80	77
Method:				Hach	Hach	Hach	Hach	Hach	Hach
Measured by:				JD	JD	JS	JS	JS/BA	BA
Verified by:	MF	MF	MF	BA	BA	BA	BA	MF	MF
	Conductivity (circle one) MF (µmhos-cm) (mmhos-cm)			Ammonia (mg/L)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	2450	2410	2420	3.57	4.53	4.66	—	—	—
Diluent/Control:	180	176	177	<0.017	<0.017	<0.017	84	84	85
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Hach	Hach	Hach
Measured by:	BA	MF	MF	BA	BA	BA	JS	JS	BA
Verified by:	MF	BA	BA	MF	MF	MF	BA	BA	MF

Temperature Shipped ≤6° C (all samples) (yes) no * hand delivered courtesy MF.
Holding Time ≤36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 3 min. 24.9 max. 27.4 mean 26.2
Room B246 min 25.2 max. 25.9 mean 25.6

Investigators' signatures
Marshall Faircloth
Jackie Jain
Brad Alexander
Jane Daniel
Andrea Rankin
Loretta C. Wolfe
REVIEWER

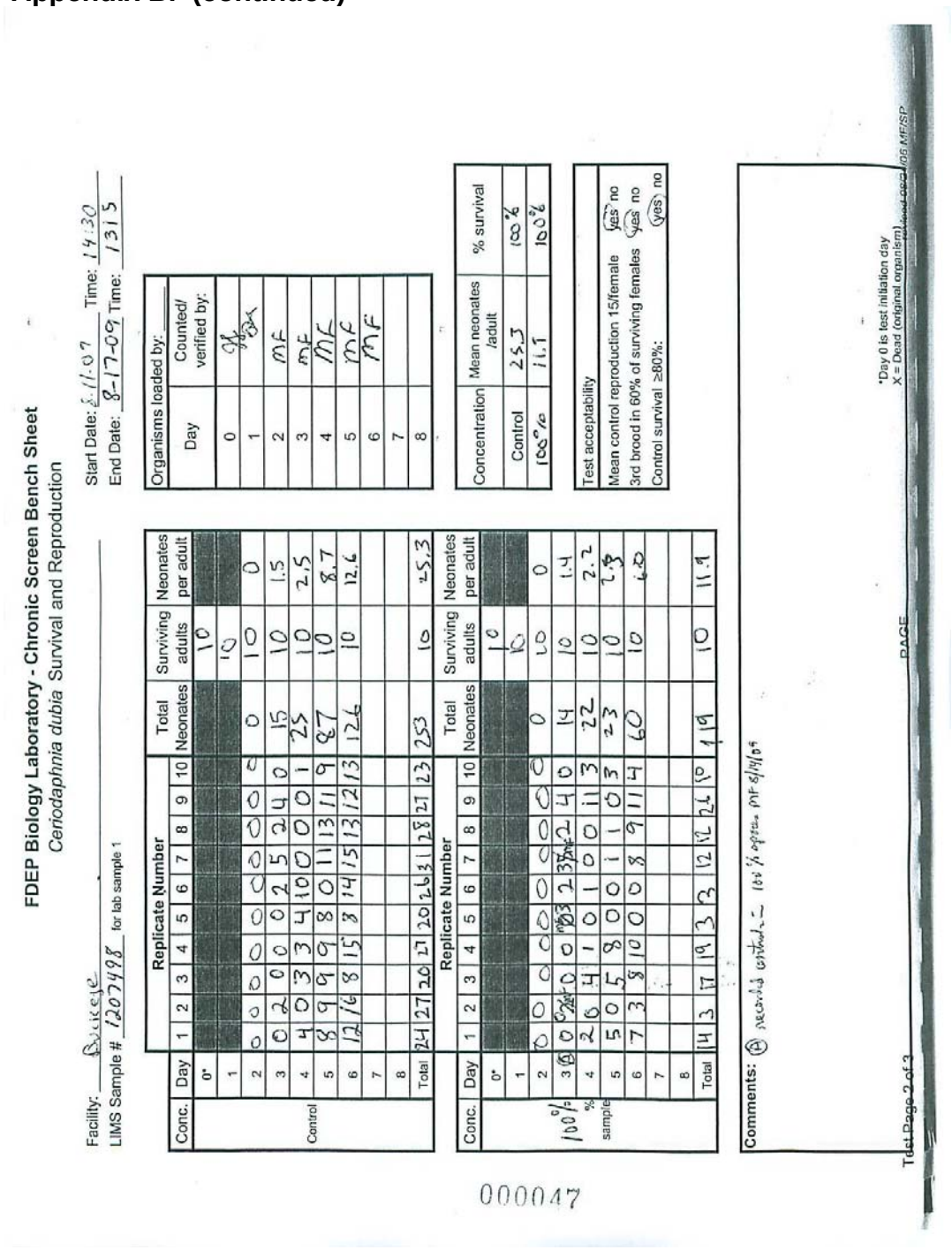
Test Replicate	Loaded from culture vial
1	A18
2	A13
3	A22
4	A23
5	B18
6	A25
7	A4
8	A2
9	A3
10	A7

Statistics	
Control % CV:	13.75%
Dunnetts PMSD:	18.2%
Reproduction NOEC:	< 100%
Survival NOEC:	100%
T-test value	5.05271
T- table value:	1.734
df:	18

Comments:

Test Page 1 of 3 PAGE 000046 revised 08/24/06 MF/SP

Appendix B. (continued)



FDEP Biology Laboratory - Chronic Screen Bench Sheet
Ceriodaphnia dubia Survival and Reproduction

Facility: Burnside
LIMS Sample # 1207498 for lab sample 1

Start Date: 8-11-09 Time: 14:30
End Date: 8-17-09 Time: 1315

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	2	0	0	0	2	5	2	4	0	15	10	1.5
	4	4	0	3	3	4	10	0	0	0	1	25	10	2.5
	5	8	9	9	9	8	0	11	13	11	9	87	10	8.7
	6	12	16	8	15	8	14	15	13	12	13	124	10	12.4
	7													
	8													
	Total	24	27	20	27	20	26	31	28	27	23	253	10	25.3

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total Neonates	Surviving adults	Neonates per adult
100% sample	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	3	2	2	4	0	14	10	1.4
	4	2	6	4	1	0	1	0	0	1	3	22	10	2.2
	5	5	0	5	8	0	0	1	1	0	3	23	10	2.3
	6	7	3	8	10	0	0	8	9	11	4	60	10	6.0
	7													
	8													
	Total	14	3	17	19	3	3	12	12	16	10	119	10	11.9

Organisms loaded by: _____

Day	Counted/ verified by:
0	JK
1	JK
2	MF
3	MF
4	MF
5	MF
6	MF
7	
8	

Concentration	Mean neonates /adult	% survival
Control	25.3	100%
100%	11.9	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: (A) records entered - 100% approx MF 8/19/09

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

Page 2 of 3 PAGE

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Appendix B. (continued)

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Buckeye

LIMS Sample # : 1207498 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	24.0	7.8	0.180					
	1	100%	M	7.5	25.6	5.5	2.45					
	Measured by:			BA	BA	BA	BA					
	Recorded by:			BA	BA	BA	BA					
Day 1	sample: Control		M	8.1	24.0	7.6	0.193	M	8.0	24.0	7.1	0.212
	1	100%	M	7.7	26.0	5.8	2.40	M	8.2	24.0	6.8	2.37
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 2	sample: Control		M	8.0	24.9	7.7	0.176	M	8.1	24.7	7.7	0.192
	2	100%	M	7.6	25.4	6.0	8.241 (decimal wrong)	M	8.1	24.6	7.5	2.50
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 3	sample: Control		M	7.6	24.9	7.2	0.176	M	8.0	25.5	7.5	0.200
	2	100%	M	7.6	25.0	6.2	2.39	M	8.3	25.6	6.9	2.380
	Measured by:			gs	gs	gs	gs		MF	MF	MF	MF
	Recorded by:			gs	gs	gs	gs		MF	MF	MF	MF
Day 4	sample: Control		M	8.2	24.4	7.6	0.177	M	8.2	25.3	7.6	0.202
	3	100%	M	7.6	24.9	6.5	2.42	M	8.2	25.2	7.1	2.55
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 5	sample: Control		M	8.0	24.1	7.9	0.178	M	8.2	25.2	7.7	0.200
	3	100%	M	7.7	25.0	5.0	2.47	M	8.3	25.3	7.1	2.46
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 6	sample: Control		M					M	8.2	23.7	7.9	198.4
	3	100%	M					M	8.3	23.7	7.1	2.70
	Measured by:								gs	gs	gs	gs
	Recorded by:								AGK	AGK	AGK	AGK
Day 7	sample: Control		M					M				
	3		M					M				
	Measured by:											
	Recorded by:											
Day 8	sample: Control							M				
	3							M				
	Measured by:											
	Recorded by:											

Comments:

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

Test Page 3 of 3 PAGE 000048 revised 08/24/06 MF/SP

Appendix B. (continued)

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia

Facility: Buckeye
Address: one Buckeye drive, Perry, FL
County: Taylor 32345
NPDES Permit #: FL 0000876
Contact/District: Brian KIMS / NED

LIMS entry: 10-16-09 BK verified: 10.16.09 JD

Diluent/ Batch: 20% DMW / 8.19.09 BK Test Days Used: 0 - 6
20% DMW / _____ Test Days Used: _____

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

Start Date: 9.22.09 Time: 11.45
End Date: 9-29-09 Time: 1100

Organism: *Ceriodaphnia dubia*
Organism Batch #: 34.09
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: YCT *P. subcapitata*
Food Batch: 7.15.09 7.23.09
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- 2009-09-21-03	1216253	9-21-09 1023	9.21.09 14:10
Test Day 2	2	TLH- 2009-09-23-59	1216946	9-23-09 1323	9.23.09 14:53
Test Day 4	3	TLH- 2009-09-25-23	1217348	9-25-09 1125	9.26.09 1420

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	Not Measured		Not measured	<0.03	<0.03	<0.03	241	270	229
Diluent/Control:				<0.03	<0.03	<0.03	75	75	75
Method:	—	—	—	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	—	—	—	SD/CF	SD/CF	SA/SD	BA	BA	BA
Verified by:	BA	BA	BA	BA	BA	BA/JD	JD	JD	JD
	Conductivity (circle one) (µmhos-cm) (mmhos-cm)			Ammonia (mg/L)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	2.05	1.99	1.96	⇐ 3.795	3.48	3.34	200	200	200
Diluent/Control:	0.174	0.176	0.178	<0.017	<0.017	<0.017	84	84	84
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Hach	Hach	Hach
Measured by:	BA	BA	MF	MF	MF	MF	BA	BA	BA
Verified by:	JD	JD	BA	BA	BA	BA	JD	JD	JD

Temperature Shipped ≤6° C (all samples) (yes) no * Temperatures were either less than 6°C on cooling chamber delivered within an hour of sampling. MF 10-16-09
Holding Time ≤36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 3 min. 25.1 max. 26.1 mean 25.6
Room B246 min. 25.2 max. 25.8 mean 25.5

Test Replicate	Loaded from culture vial
1	B19
2	B25
3	~~B16~~ A16 BA
4	A18
5	B9
6	B24
7	A27
8	B16
9	A15
10	A4

Statistics	
Control % CV:	17.4%
Dunnetts PMSD:	~~15.3~~ %
Reproduction NOEC:	≥100%
Survival NOEC:	100%
T-test value	6.71320
T- table value:	1.740
df:	~~18~~ 17

MF

MF Fountain, 2
H, 2%
LOEC=100%

Investigators' signatures
Bruce Alexander
Marshall Faircloth
James Janick
Paul Frenzel

Melissa Cutcliffe
REVIEWER

Comments:

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revised 08/24/06 MF/SP

Appendix B. (continued)

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Facility: Biocon

LIMS Sample # 121623 for lab sample 1

Start Date: 9.22.09 Time: 11.45

End Date: 9-29-09 Time: 11:00

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	0	0	0	0	0	0	0	0	0	0	10	0
	4	3	2	3	3	0	3	3	2	2	2		10	
	5	6	0	0	0	5	7	6	7	3	5		10	
	6	7	2	3	5	8	0	0	0	0	11		10	
	7	0	8	10	9	0	10	11	7	8	0		10	
	8													
	Total	16	12	16	17	13	20	20	16	13	18	161	10	16.1

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

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total Neonates	Surviving adults	Neonates per adult
100% sample	0*												10	
	1												10	
	2	X	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	4	4	4	4	0	0	0	0	0	16	10	1.6
	5	0	4	0	7	2	0	0	2	7	0	22	10	2.2
	6	3	0	0	0	0	0	6	0	0	0	9	10	0.9
	7	2	0	0	0	0	*0	0	0	0	*0	2	10	0.2
	8													
	Total	5	8	4	11	6	0	6	2	7	0	49	10 (8)	6.125

Concentration	Mean neonates /adult	% survival
Control	16.1	100%
100%	6.125	100%

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

Comments: * Day 7 100% sample Replicate 6 and 10 ID'd as Male. MF 9-29-09 males not counted for reproduction mean

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

Test Page 2 of 3 PAGE

Revised 08/31/06 ME/SP

000053

Appendix B. (continued)

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Buckeye

LIMS Sample # : 1216253 for lab sample 1

Circle µmhos-cm or mmhos-cm

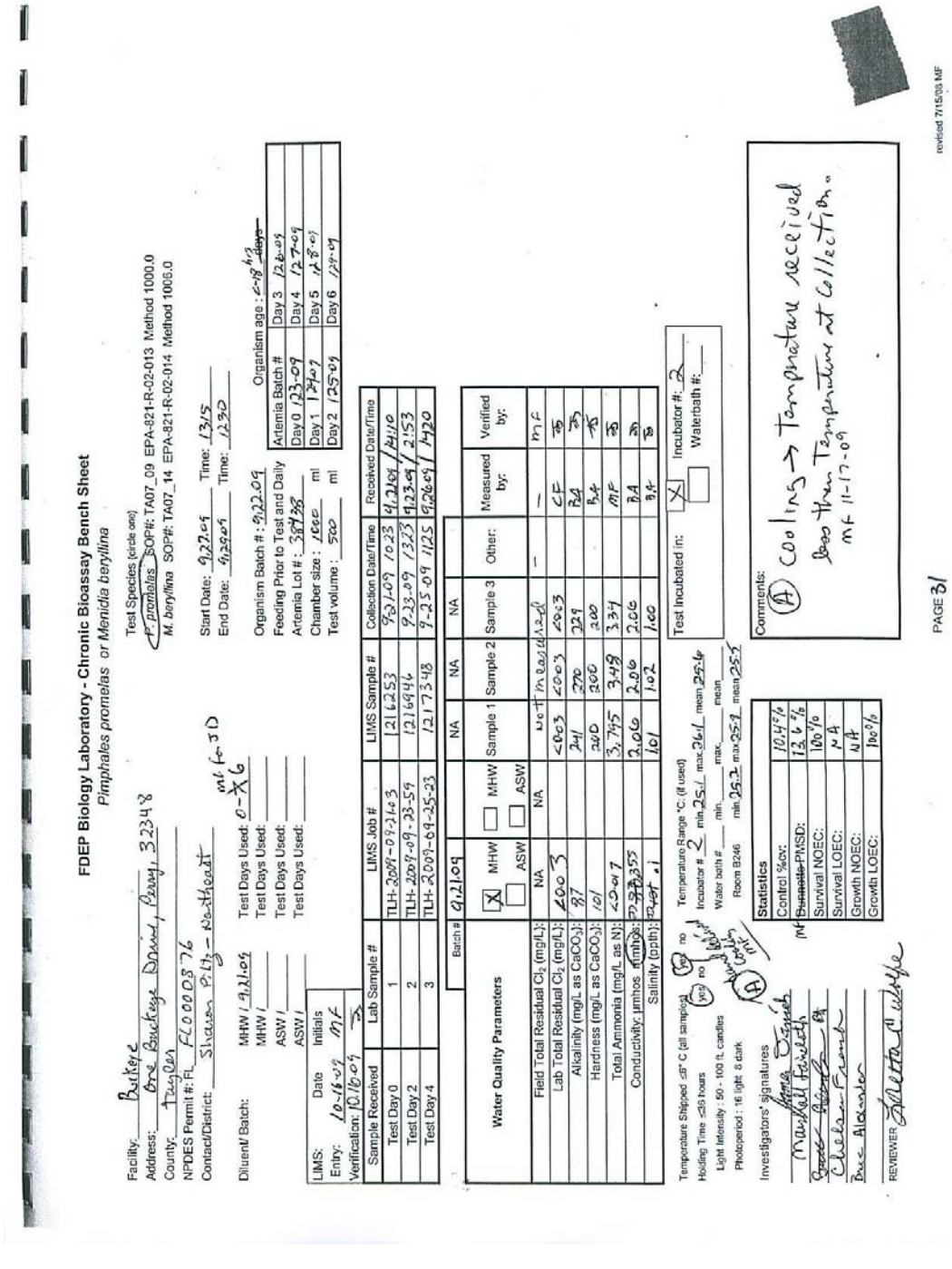
Test Day ↓		Concentration	New Sample: Test Replicate	New Sample: pH (su)	New Sample: Temp (°C)	New Sample: DO (mg/L)	New Sample: Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	Old Sample: pH (su)	Old Sample: Temp (°C)	Old Sample: DO (mg/L)	Old Sample: Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample:	Control	M	7.9	24.0	7.7	0.174					
	1	100%	M	8.0	24.0	7.2	2.05					
	Measured by:			BA	BA	BA	BA					
	Recorded by:			BA	BA	BA	BA					
Day 1	sample:	Control	M	8.0	24.0	7.2	0.182	M	7.9	24.0	7.5	0.181
	1	100%	M	8.2	24.0	7.4	2.03	M	8.2	24.0	6.8	2.11
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 2	sample:	Control	M	7.8	24.0	7.5	0.172	M	7.8	24.0	7.1	0.176
	2	100%	M	7.7	24.0	5.8	2.02	M	8.2	24.0	7.0	2.16
	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	7.9	24.0	7.4	0.176	M	7.7	24.0	7.1	0.180
	2	100%	M	7.7	24.0	6.0	1.99	M	8.1	24.0	7.0	2.08
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 4	sample:	Control	M	8.2	24.4	7.7	0.178	M	7.9	24.3	7.4	0.180
	3	100%	M	8.5	25.0	7.6	1.96	M	8.1	24.1	7.0	2.25
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 5	sample:	Control	M	7.8	24.5 MF	7.7	0.175	M	7.9	24.1	7.2	0.179
	3	100%	M	7.8	24.29 MF	7.4	MF 2.44 1.98	M	8.1	24.4	6.9	1.99
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 6	sample:	Control	M	8.0	24.2	7.7	0.172	M	8.1	24.4	7.4	0.184
	3	100%	M	8.3	24.6	7.4	1.98	M	8.1	24.4	6.8	2.07
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 7	sample:	Control	M					M	7.9	24.6	7.5	0.182
	3		M					M	8.1	24.4	6.8	1.99
	Measured by:								MF	MF	MF	MF
	Recorded by:								MF	MF	MF	MF
Day 8	sample:	Control						M				
	3							M				
	Measured by:											
	Recorded by:											

Comments:

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

Test Page 3 of 3 PAGE 000054 revised 08/24/06 MF/SP

Appendix B. (continued)



FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: Burkere
Address: Ore Buckeye Depot, Perry, 32348
County: Taylor
NPDES Permit #: FL FL0000876
Contact/District: Shawn Pitz – 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: 9.22.09 Time: 1315
End Date: 9.29.09 Time: 1230

Organism age : 2-48 hrs days

Artemia Batch #	
Day 0 123-09	Day 3 126-09
Day 1 124-09	Day 4 127-09
Day 2 125-09	Day 5 128-09
	Day 6 129-09

Feeding Prior to Test and Daily
Artemia Lot # : 38788
Chamber size : 1000 ml
Test volume : 500 ml

Diluent/ Batch: MHW / 9.21.09 Test Days Used: 0-X 6 ml for D
MHW / Test Days Used:
ASW / Test Days Used:
ASW / Test Days Used:

LIMS:	Date	Initials
Entry:	10-16-09	MF
Verification:	10-16-09	

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2009-09-0143	1216253	9.21.09 1023	9.21.09 / 1110
Test Day 2	2	TLH-2009-09-33-59	1216946	9.23.09 1323	9.23.09 / 2153
Test Day 4	3	TLH-2009-09-25-33	1217348	9-25-09 1125	9.26.09 / 1420

Water Quality Parameters	Batch # 9.21.09		NA	NA	NA			
	☒ MHW ☐ ASW ☐ MHW ☐ ASW		Sample 1	Sample 2	Sample 3	Other:	Measured by:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	not measured			–	–	MF
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03	<0.03	<0.03		CF	BS
Alkalinity (mg/L as $CaCO_3$):	87		241	220	229		BA	BS
Hardness (mg/L as $CaCO_3$):	101		240	200	200		BA	BS
Total Ammonia (mg/L as N):	<0.07		3.745	3.498	3.334		MF	BS
Conductivity: µmhos	73,335		2.06	2.06	2.06		BA	BS
Salinity (ppth):	0.1		1.01	1.02	1.00		BA	BS

Temperature Shipped ≤8° 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: (if used)
Incubator # 2 min 25.1 max 26.1 mean 25.6
Water bath # ___ min ___ max ___ mean ___
Room B246 min 25.2 max 25.3 mean 25.2

Test Incubated in: ☒ Incubator #: 2 ☐ Waterbath #: ___

Investigators' signatures
Marshall Brownlee MF
Bruce Alexander

Statistics	
Control %cv:	10.4 %
~~Survival~~ PMSD:	12.6 %
Survival NOEC:	100 %
Survival LOEC:	NA
Growth NOEC:	NA
Growth LOEC:	100 %

Comments:
(A) Coolings → Temperature received does Not Temperature at collection. MF 11-17-09

REVIEWER Paulette Wolfe

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revised 7/15/09 MF

Appendix B. (continued)

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Pimphales promelas or *Menidia beryllina* Survival

Facility: Buckeye

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

LIMS Sample Number: 216253 for lab sample #1

Start Date: 9.22.09 Time: 1315

End Date: 9.29.09 Time: 1230

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

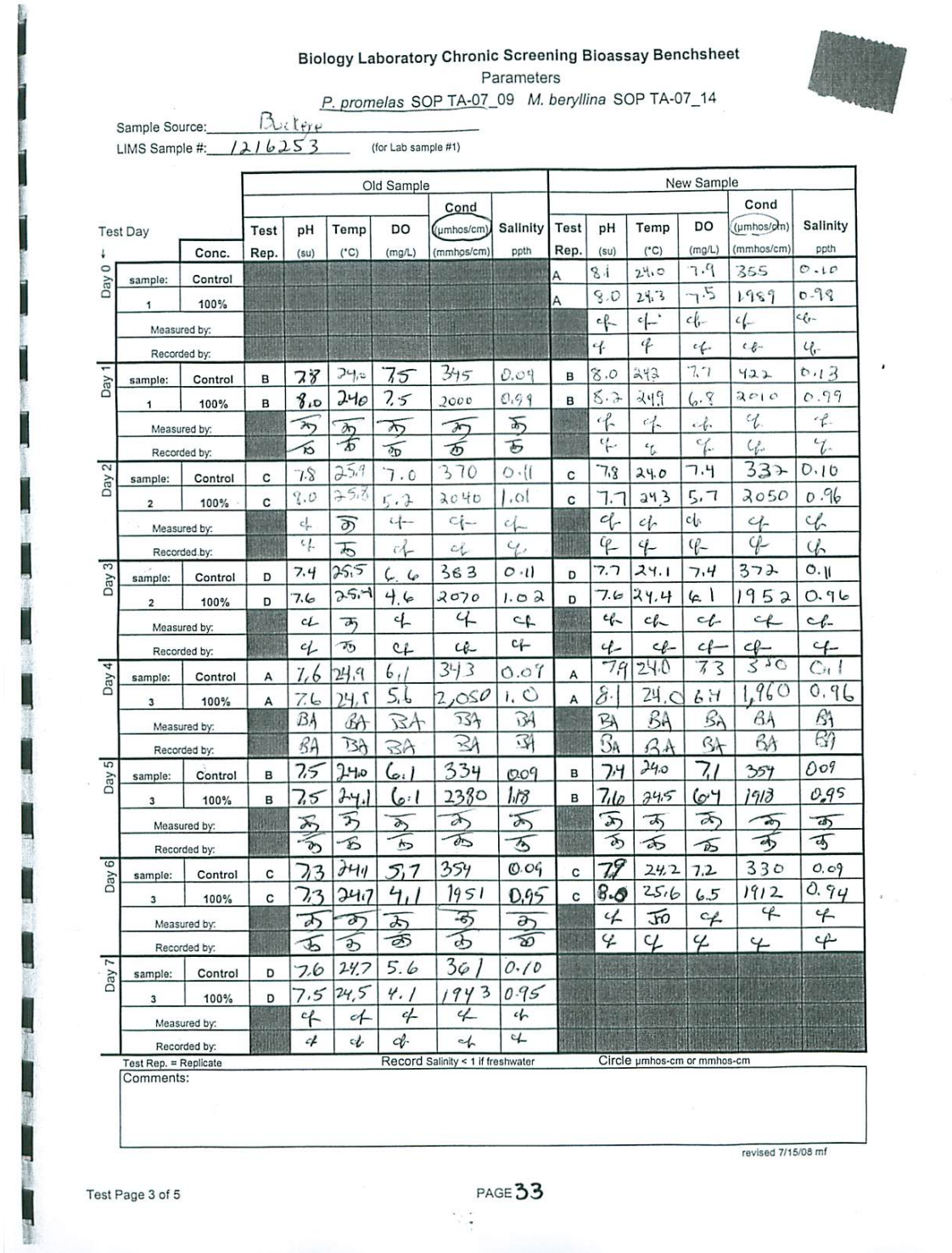
Comments:

Test Page 2 of 5

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revised 07/15/08 MF

Appendix B. (continued)



Biology Laboratory Chronic Screening Bioassay Benchsheet

Parameters

P. promelas SOP TA-07_09 *M. beryllina* SOP TA-07_14

Sample Source: Burbee

LIMS Sample #: 1216253 (for Lab sample #1)

Test Day			Old Sample							New Sample						
			Test	pH	Temp	DO	Cond (µmhos/cm)	Salinity		Test	pH	Temp	DO	Cond (µmhos/cm)	Salinity	
		Conc.	Rep.	(su)	(°C)	(mg/L)	(mmhos/cm)	ppth		Rep.	(su)	(°C)	(mg/L)	(mmhos/cm)	ppth	
Day 0	sample:	Control								A	8.1	24.0	7.9	355	0.10	
	1	100%								A	8.0	24.3	7.5	1989	0.98	
	Measured by:										cf	cf	cf	cf	cf	
	Recorded by:										cf	cf	cf	cf	cf	
Day 1	sample:	Control	B	7.8	24.0	7.5	345	0.09		B	8.0	24.2	7.7	422	0.13	
	1	100%	B	8.0	24.0	7.5	2000	0.99		B	8.7	24.9	6.8	2010	0.99	
	Measured by:			~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~			cf	cf	cf	cf	cf	
	Recorded by:			~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~			cf	cf	cf	cf	cf	
Day 2	sample:	Control	C	7.8	25.9	7.0	370	0.11		C	7.8	24.0	7.4	332	0.10	
	2	100%	C	8.0	25.8	5.7	2040	1.01		C	7.7	24.3	5.7	2050	0.96	
	Measured by:			cf	~~JD~~	cf	cf	cf			cf	cf	cf	cf	cf	
	Recorded by:			cf	~~JD~~	cf	cf	cf			cf	cf	cf	cf	cf	
Day 3	sample:	Control	D	7.4	25.5	6.6	383	0.11		D	7.7	24.1	7.4	372	0.11	
	2	100%	D	7.6	25.4	4.6	2070	1.02		D	7.6	24.4	6.1	1952	0.96	
	Measured by:			cf	~~JD~~	cf	cf	cf			cf	cf	cf	cf	cf	
	Recorded by:			cf	~~JD~~	cf	cf	cf			cf	cf	cf	cf	cf	
Day 4	sample:	Control	A	7.6	24.9	6.1	343	0.09		A	7.9	24.0	7.3	350	0.11	
	3	100%	A	7.6	24.8	5.6	2,050	1.0		A	8.1	24.0	6.4	1,960	0.96	
	Measured by:			BA	BA	BA	BA	BA			BA	BA	BA	BA	BA	
	Recorded by:			BA	BA	BA	BA	BA			BA	BA	BA	BA	BA	
Day 5	sample:	Control	B	7.5	24.0	6.1	334	0.09		B	7.4	24.0	7.1	354	0.09	
	3	100%	B	7.5	24.1	6.1	2380	1.18		B	7.10	24.5	6.4	1918	0.95	
	Measured by:			~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~			~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~	
	Recorded by:			~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~			~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~	
Day 6	sample:	Control	C	7.3	24.1	5.7	354	0.09		C	7.8	24.2	7.2	330	0.09	
	3	100%	C	7.3	24.7	4.1	1951	0.95		C	8.0	25.6	6.5	1912	0.94	
	Measured by:			~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~			cf	JD	cf	cf	cf	
	Recorded by:			~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~			cf	cf	cf	cf	cf	
Day 7	sample:	Control	D	7.6	24.7	5.6	361	0.10								
	3	100%	D	7.5	24.5	4.1	1943	0.95								
	Measured by:			cf	cf	cf	cf	cf								
	Recorded by:			cf	cf	cf	cf	cf								

Test Rep. = Replicate Record Salinity < 1 if freshwater Circle µmhos-cm or mmhos-cm

Comments:

revised 7/15/08 mf

Test Page 3 of 5

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Appendix B. (continued)

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Facility: Buckeye

LIMS Sample Number: 121253 for lab sample #1

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # Fish	Mean wt. (mg)
			mean wt = fish wt divided by 10 convert g to mg: move decimal 3 places to right				
Control	A	1	0.02722	0.03514	0.00792	10	.792
	B	2	0.02230	0.03114	0.00884	10	.884
	C	3	0.02169	0.02858	0.00689	10	.689
	D	4	0.02209	0.03045	0.00836	10	.836
100 % sample	A	5	0.02296	0.02660	0.00364	10	.364
	B	6	0.02248	0.02691	0.00443	10	.443
	C	7	0.02240	0.02502	0.00262	10	.262
	D	8	0.02722	0.03050	0.00328	10	.328
Control	A					10	
	B					10	
	C					10	
	D					10	
% sample	A					10	
	B					10	
	C					10	
	D					10	
	Weighed by initials:		CF	JD			

Growth	%CV	PMSD
Control	10.4%	13.6%

Switch 10-14-09 MF

	Growth	Table	Calculated	dF
	T-test	1.94300	0.74063	6
	T-test	1.94300	8.03486	6

DUP ID: EP034000

Drying	
Temperature °C:	95
Hours:	8

S-weight ID: BIO-S-WEIGHTS-01

Balance ID: OHAUS 250D SER. 1125481084

Tare Weighing Date: 9.28.09 Final Weighing Date: 10.2.09

							Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.02722	@	0.02722	S-weights	0.00999	@	0.01
Tare Pan 1 after Pan 8 (g)	0.02722	@	0.02722	at tare	0.03001	@	0.05
Final Pan 1 after Pan 5 (g)	0.03514	@	0.03514	S-weights	0.00997	@	0.01
Final Pan 1 after Pan 8 (g)	0.03515	@	0.03514	at final	0.05002	@	0.05

Comments:

Test Page 4 of 5 PAGE 34 revised 07/15/08 MF

Appendix B. (continued)

Bioassay Instrument ID

Test ID: Buckeye Chronic P. promelas Dates: Sept 22-29, 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+	✓
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	✓
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	-	✓
Drying Oven	Drying Oven	—	—	—	✓

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 M. Fairchild 9-29-09

V 1.1 6/12/08 MF

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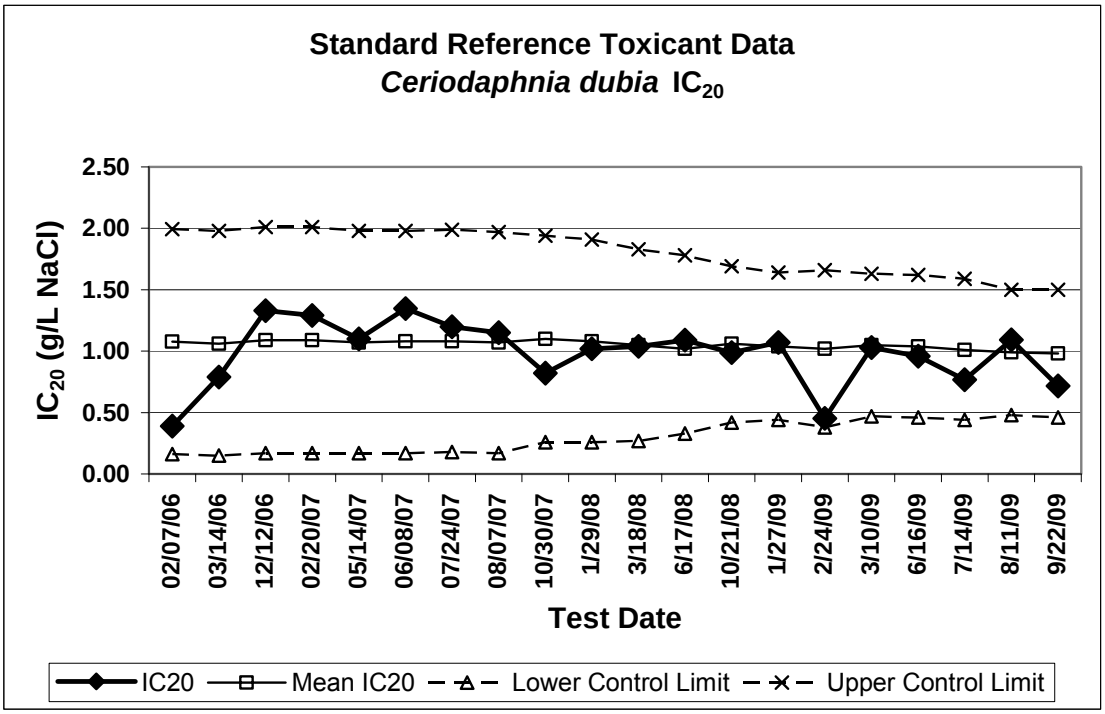
Appendix C. SRT Bench Sheets and Statistical Analysis

Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
02/07/06	0.39	1.08	0.46	0.16	1.99
03/14/06	0.79	1.06	0.46	0.15	1.98
12/12/06	1.33	1.09	0.46	0.17	2.01
02/20/07	1.29	1.09	0.46	0.17	2.01
05/14/07	1.10	1.07	0.45	0.17	1.98
06/08/07	1.35	1.08	0.45	0.17	1.98
07/24/07	1.20	1.08	0.45	0.18	1.99
08/07/07	1.15	1.07	0.45	0.17	1.97
10/30/07	0.82	1.10	0.42	0.26	1.94
1/29/08	1.02	1.08	0.41	0.26	1.91
3/18/08	1.04	1.05	0.39	0.27	1.83
6/17/08	1.09	1.02	0.36	0.33	1.78
10/21/08	0.99	1.06	0.32	0.42	1.69
1/27/09	1.07	1.04	0.30	0.44	1.64
2/24/09	0.45	1.02	0.32	0.38	1.66
3/10/09	1.03	1.05	0.29	0.47	1.63
6/16/09	0.96	1.04	0.29	0.46	1.62
7/14/09	0.77	1.01	0.29	0.44	1.59
8/11/09	1.09	0.99	0.26	0.48	1.50
9/22/09	0.72	0.98	0.26	0.46	1.50

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



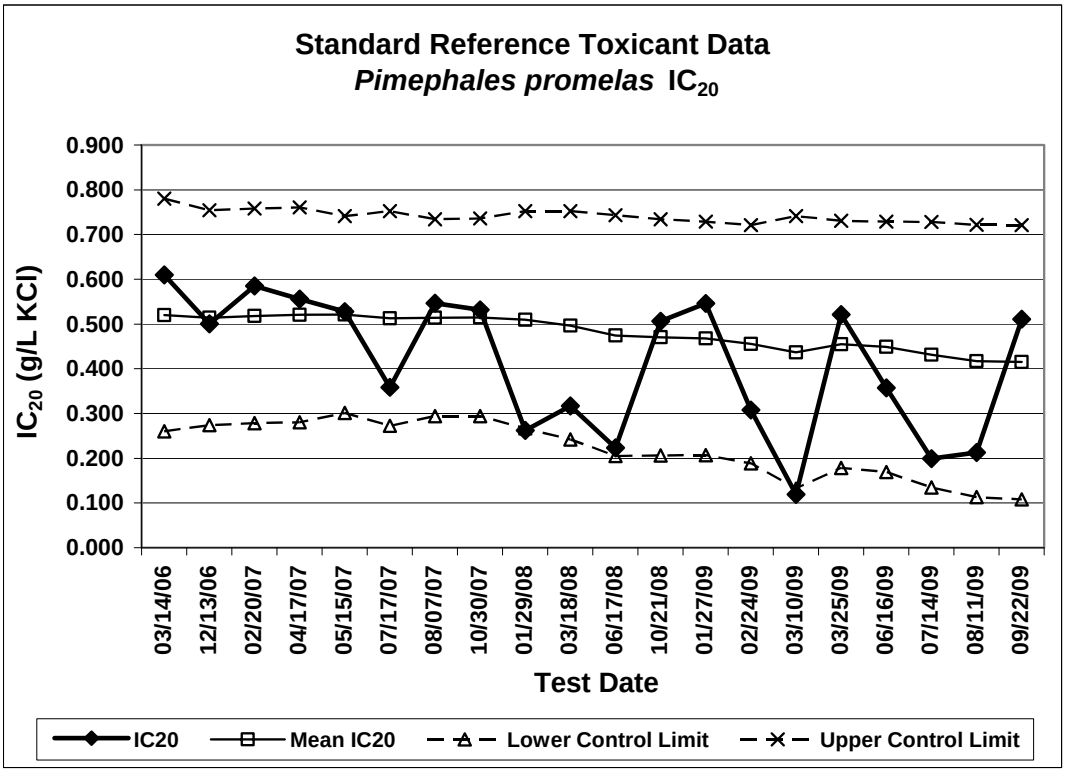
Appendix C. (continued)

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	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
03/14/06	0.610	0.520	0.13	0.260	0.780
12/13/06	0.501	0.514	0.12	0.274	0.754
02/20/07	0.585	0.518	0.12	0.278	0.758
04/17/07	0.556	0.521	0.12	0.281	0.761
05/15/07	0.528	0.521	0.11	0.301	0.741
07/17/07	0.358	0.513	0.12	0.273	0.753
08/07/07	0.547	0.514	0.11	0.294	0.734
10/30/07	0.531	0.515	0.11	0.294	0.736
01/29/08	0.263	0.509	0.12	0.267	0.752
03/18/08	0.317	0.497	0.13	0.242	0.752
06/17/08	0.223	0.474	0.13	0.205	0.743
10/21/08	0.506	0.470	0.13	0.206	0.734
01/27/09	0.546	0.468	0.13	0.207	0.729
02/24/09	0.308	0.455	0.13	0.189	0.721
03/10/09	0.119	0.437	0.15	0.132	0.741
03/25/09	0.521	0.455	0.14	0.178	0.731
06/16/09	0.357	0.449	0.14	0.169	0.729
07/14/09	0.199	0.432	0.15	0.135	0.728
08/11/09	0.213	0.417	0.15	0.113	0.722
09/22/09	0.511	0.415	0.15	0.108	0.721

Means are from all SRT tests, up to 20 tests..
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 / 8.14.09 (9MF) Test Days Used: 0-4 (BA)
20% DMW / 9-21-09 Test Days Used: 5-6
Toxicant/ Batch: NaCl / 9.21.09

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

Organism: *Ceriodaphnia dubia*
Organism Batch #/ Age: 34.09 / <24 hr.
Feeding: Prior to Test and Daily
Food: ☐ YCT ☑ *P. subcapitata*
Food Batch: 7.15.09 7.23.09
Chamber size: 30 mL
Test Volume: 20 mL

Start Date: 9.22.09 Time: 11:20
End Date: 9-29-09 Time: 1100

Batch:	8.14.09 (BA)	9.21.09 (BA)			
Water Quality Parameters	20% DMW	20% DMW	Other	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03		JD	BA
Alkalinity (mg/L as $CaCO_3$):	75	81		BA	MF
Hardness (mg/L as $CaCO_3$):	84	86		BA	MF
Total Ammonia (mg/L as N):	<0.017	<0.017		MF	BA
Conductivity µmhos-cm (mmhos-cm)	0.173	0.182		BA	MF

Results	
Control % CV:	11.5%
Dunnetts PMSD:	27.5%
Reproduction NOEC:	0.89 g/L
Reproduction LOEC:	1.3 g/L
Survival NOEC:	1.3 g/L
Survival LOEC:	2 g/L
IC_{20}:	0.7160 g/L
IC_{25}:	0.9105 g/L

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

Loaded by:

Test Replicate	Loaded from culture vial
1	B19
2	B25
3	A16
4	A18
5	B9
6	B24
7	A27
8	B16
9	A15
10	A4

Comments:

Investigators' signatures

Bree Almeda
Marshall Faircloth
Jane Daniels

Loretta C. Wolfe
REVIEWER

Test Incubated in: Incubator: # 2
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min. 25.2 max. 25.8 mean 25.3
Room B246 ____ min. 24.8 max. 25.8 mean 25.3
Test min. 24.0 max. 24.8 mean NA

Appendix C. (continued)

Ceriodaphnia dubia Survival and Reproduction

Start Date: 9.27.09 Time: 11:20 Loaded by: BA
End Date: 9-29-09 Time: 1100 Verified by: MF

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	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	3	2	3	3	3	2	2	0	2	1	21	10	2.1
	5	0	0	0	0	0	5	0	0	3	6	14	10	1.4
	6	3	7	5	4	5	0	5	5	9	10	53	10	5.3
	7	7	9	10	9	10	7	10	11	0	0	73	10	7.3
	8													
	Total	13	18	18	16	18	14	17	16	14	17	161	10	16.1
0.59 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	0	2	0	0	2	2	0	2	2	10	10	1
	5	0	1	0	0	0	6	0	7	6	6	26	10	2.6
	6	4	6	6	6	1	0	6	0	2 (S)	10	41	10	4.1
	7 (A)	0	11 ~~9~~	~~9~~	10	0	8	10	9	0	0	57	10	5.7
	8													
	Total	4	18	17	16	1	16	18	15	18 (MF) 80	18	133	10	13.3
0.89 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	3	0	0	2	0	0	0	1	3	1	10	10	1.0
	5	0	0	0	0	0	2	7	6	8	6	29	10	2.9
	6	0	1	7	1	5	0	0	0	0	0	14	10	1.4
	7	0	12	11	1	6	8	10	4	10	8	70	10	7.0
	8													
	Total	3	13	18	4	11	10	17	11	21	15	123	10	12.3

Comments: (S) rep 9 DAY 6 0.59ppth – split brood MF 9-28-09
(A) wrote 0.89 in 0.59 spot – MF 9-29-09

000026

Test Page 2 of 6 PAGE 07/15/08 MF

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 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	mf~~0~~	10	0
	4	0	0	0	0	0	0	0	0	1	0	mf~~0~~ 1	10	0.1
	5	4	0	0	0	4	5	0	0	0	0	13	10	1.3
	6	2	3	5	3	0	0	1	6	7	0	27	10	2.7
	7	0	8	6	0	3	5	8	7	0	0	37	10	3.7
	8													
	Total	6	11	11	3	7	10	9	13	8	0	78	10	7.8
2.0 ppth	0												10	
	1												10	
	2	0	X	0	0	0	X	X	0	0	0	0	7	0
	3	0		0	0	X			0	0	0	0	6	0
	4	0		0	0				0	0	0	0	6	0
	5	0		0	0				0	0	0	0	6	0
	6	0		0	0				0	0	0	0	6	0
	7	0		0	0				0	1	0	1	6	0.1~~67~~ mf
	8													
	Total	0		0	0				0	1	0	1	6(10)	0.1~~67~~ 1 mf
3.0 ppth	0												10	
	1	X	X							X			7	
	2			X	X	X	X	X	X		X			
	3													
	4													
	5													
	6													
	7													
	8													
	Total													

Comments:

000027

Test Page 3 of 6 PAGE 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	24.0	7.7	0.173					
	0.59 ppth	M	7.9	24.0	7.6	1.29					
	0.89 ppth	M	7.9	24.0	7.6	1.86					
	1.3ppth	M	7.9	24.0	7.7	2.64					
	2.0 ppth	M	7.9	24.0	7.6	3.83					
	3.0 ppth	M	8.0	24.0	7.7	5.58					
	Measured by:		BA	BA	BA	BA					
	Recorded by:		BA	BA	BA	BA					
Day 1	Control	M	7.9	24.0	7.3	0.186	1	7.9	24.0	7.2	0.205
	0.59 ppth	M	7.8	24.0	7.3	1.29	1	7.8	24.0	7.3	1.35
	0.89 ppth	M	7.9	24.0	7.3	1.84	1	7.8	24.0	7.2	1.94
	1.3ppth	M	7.9	24.0	7.3	2.64	1	7.8	24.0	7.1	2.72
	2.0 ppth	M	7.9	24.0	7.3	3.78	1	7.8	24.0	7.2	3.99
	3.0 ppth	M	7.9	24.0	7.2	5.59	1	7.8	24.0	7.2	5.68
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 2	Control	M	7.8	24.0	7.4	0.172	1	7.8	24.0	7.4	0.177
	0.59 ppth	M	7.8	24.0	7.3	1.28	1	7.8	24.0	7.3	1.34
	0.89 ppth	M	7.9	24.0	7.3	1.81	1	7.8	24.0	7.2	1.88
	1.3ppth	M	7.9	24.0	7.4	2.62	1	7.8	24.0	7.2	2.77
	2.0 ppth	M	7.9	24.0	7.4	3.79	1	7.8	24.0	7.2	3.86
	3.0 ppth	M	7.9	24.0	7.5	5.48	1	7.8	24.0	7.3	5.66
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 3	Control	M	7.9	24.2	7.3	0.173	1	7.8	24.0	7.0	0.181
	0.59 ppth	M	7.8	24.0	7.4	1.27	1	7.8	24.0	6.9	1.31
	0.89 ppth	M	7.9	24.0	7.4	1.84	1	7.8	24.0	7.0	1.96
	1.3ppth	M	7.9	24.0	7.4	2.71	1	7.8	24.0	7.2	2.71
	2.0 ppth	M	7.9	24.0	7.3	3.82	1	7.8	24.0	7.2	5.87
	3.0 ppth	M									
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA

Comments:

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

Test Page 4 of 6 PAGE 000028 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 4	Control	M	8.2	24.6	7.6	0.179	A	7.9	24.4	7.6	0.182
	0.59 ppth	M	8.2	24.5	7.6	1.29	A	7.8	24.2	7.4	1.40
	0.89 ppth	M	8.1	24.7	7.5	1.87	A	7.8	24.2	7.4	1.95
	1.3ppth	M	8.1	24.6	7.5	2.67	A	7.8	24.2	7.4	2.87
	2.0 ppth	M	8.1	24.6	7.5	3.84	A	7.8	24.3	7.3	3.89
	3.0 ppth	M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 5	Control	M	7.8	24.5	7.7	0.173	A	7.9	24.6	7.3	0.179
	0.59 ppth	M	7.9	24.4	7.6	1.29	A	8.0	24.4	7.2	1.31
	0.89 ppth	M	7.9	24.5	7.8	1.85	A	7.9	24.4	7.2	1.92
	1.3ppth	M	7.9	24.5	7.7	2.68	A	7.9	24.3	7.3	2.69
	2.0 ppth	M	7.9	24.5	7.8	3.84	A	7.9	24.4	7.3	3.82
	3.0 ppth	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	8.0	24.2	7.8	0.175	A	8.1	24.7	7.6	0.150
	0.59 ppth	M	8.2	24.1	7.8	1.28	A	8.0	24.6	7.4	1.37
	0.89 ppth	M	8.2	24.2	7.7	1.83	A	8.0	24.6	7.4	1.91
	1.3ppth	M	8.1	24.3	7.8	2.65	A	8.0	24.6	7.2	2.40
	2.0 ppth	M	8.1	24.3	7.7	3.80	A	8.0	24.4	7.3	3.85
	3.0 ppth	M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 7	Control	M					A	8.0	24.8	7.2	0.178
	0.59 ppth	M					A	7.9	24.7	7.2	1.31
	0.89 ppth	M					A	7.9	24.4	7.1	1.96
	1.3ppth	M					A	7.9	24.3	7.0	2.72
	2.0 ppth	M					A	7.9	24.3	7.1	3.81
	3.0 ppth	M									
	Measured by:							MF	MF	MF	MF
	Recorded by:							MF	MF	MF	MF
Day 8	Control	M									
	0.59 ppth	M									
	0.89 ppth	M									
	1.3ppth	M									
	2.0 ppth	M									
	3.0 ppth	M									
	Measured by:										
	Recorded by:										

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

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Appendix C. (continued)

Bioassay Instrument ID

Test ID: SRT (c.dubia) Dates: 9-22-29-09

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+	✓
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	✓
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 SRT's (acute SRT--Chronic SRT)

entered by M. Feinholt QMF 10-14-09

V 1.1 6/12/08 MF

000030

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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/9.22.09 Test Days Used: 0-96 hr 9.22-9.25.09 Start Date: 9.22.09 Time: 1200

Diluent/ Batch: _____ Test Days Used: _____ End Date: 9.29.09 Time: 1200

Toxicant/ Batch # : KCl/9.21.09 Organism Batch #/ Age: 9.22.09/ <48hrs

Artemia Lot # : 2B4338

Artemia Batch #	Day 2 -125-09	Day 5 128-09
Day 0 123.09	Day 3 126-09	Day 6 129-09
Day1 124.09	Day 4 127.09	

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	GF	BA
Alkalinity (mg/L as $CaCO_3$):	97		HACH	BA	
Hardness (mg/L as $CaCO_3$):	101		HACH	BA	
Total Ammonia (mg/L as N):	<0.017		DENVER	MF	BA
Conductivity (mmhos-cm) mmhos-cm:	369		METTLER	CP	BA

Statistics	
Growth NOEC:	0.5 g/L
Growth LOEC:	1.0 g/L
Growth IC_{20}:	0.511 g/L
Growth IC_{25}:	0.5435 g/L
Ctrl % CV:	17.1%
Dunnetts PMSD:	20.5%
Survival NOEC:	0.5 g/L
Survival LOEC:	1.0 g/L

Test incubated in : [X] Incubator # 2

[ ] Waterbath #_____

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C:

Incubator # 2 min. 25.1 max. 26.1 mean 25.6

Water bath # ____ min.____ max.____ mean____

Room B246 min. 23.2 max. 25.8 mean 25.5

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

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

Investigators' signatures

James Daniels

Renee Nicole

Marshall Faircloth

Chris Frank

Loretta C. Wolfe

REVIEWER

Comments:

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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	F1	10	9[D]	9	9	9	9	9	9
	B	F2	10	10	10	10	10	10	10	10
	C	F3	10	10	10	10	10	10	10	10
	D	F4	10	10	10	10	10	10	10	10
.125	A	F5	10	10	10	10	10	10	10	10
	B	F6	10	10	10	10	10	10	10	10
	C	F7	10	9[D]	9	9	9	9	9	9
	D	F8	10	10	10	10	10	10	10	10
.25	A	F9	10	10	10	10	10	10	10	10
	B	F10	10	9[D]	9	9	9	9	9	9
	C	F11	10	10	10	10	10	10	10	10
	D	F12	10	10	10	10	10	10	10	10
.5	A	F13	10	8[2D]	8	8	8	8	8	8
	B	F14	10	10	10	10	10	10	10	10
	C	F15	10	8[2D]	8	8	8	8	8	8
	D	F16	10	10	10	10	10	10	10	10
1.0	A	F17	10	2[3D]	1[1D]	1	0[4D]	—	—	—
	B	F18	10	3[3D]	1[2D]	1	1	1	1	1[4D]
	C	F19	10	1[3D]	1	1	1	1	1	1
	D	F20	10	1[3D]	0[1D]	—	—	—	—	—
2.0	A	F4	10	0[1D]	—	—	—			
	B	F22	10	0[1D]	—	—	—			
	C	F23	10	0[1D]	—	—	—			
	D	F24	10	0[1D]	—	—	—			
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): BA Checked by:				~~JD~~	~~JD~~	~~JD~~	BA	~~JD~~	~~JD~~	~~JD~~
Verified by (0 hr): JD										
Concentrations prepared by:				~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~	~~JD~~	—

Comments:

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Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Parameters

Start Date: 9-22-09 Time: 1200

End Date: 9.29.09 Time: 1200

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

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

circle µmhos or mmhos

Test Day		Before Renewal					Test Start and After Renewal				
↓	Concentration	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos) mmhos	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos) mmhos
Day 0	Control						A	8.1	24.6	7.7	369
	0.125						A	8.1	24.3	7.7	566
	0.25						A	8.1	24.2	7.4	836
	.5						A	8.2	24.0	7.3	1242
	1.0						A	8.2	24.0	7.8	2180
	2.0						A	8.2	24.0	8.0	3800
							A				
	Measured by:							cf	cf	cf	cf
	Recorded by:							cf	cf	cf	cf
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 1	Control	B	8.0	24.0	7.5	337	B	8.0	24.1	7.8	377
	0.125	B	8.0	24.0	7.6	572	B	8.0	24.1	7.7	567
	0.25	B	8.0	24.0	7.6	845	B	8.0	24.0	7.6	806
	0.5	B	8.0	24.0	7.6	1299	B	8.0	24.1	7.6	1268
	1.0	B	8.0	24.0	7.6	2240	B	8.0	24.0	7.7	2190
	2.0	B	8.1	24.0	7.6	4000	B				
		B					B				
	Measured by:		cf	cf	cf	cf		cf	cf	cf	cf
	Recorded by:		cf	cf	cf	cf		cf	cf	cf	cf
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 2	Control	C	7.8	25.4	6.7	347	C	7.7	24.1	7.6	365
	0.125	C	7.8	25.3	6.5	571	C	7.8	24.0	7.5	548
	0.25	C	7.9	25.2	6.3	818	C	7.8	24.0	7.5	799
	0.5	C	7.8	25.3	6.3	1288	C	7.9	24.0	7.5	1219
	1.0	C	7.8	25.7	6.4	2210	C	7.9	24.0	7.5	2090
		C					C				
		C					C				
	Measured by:		cf	cf	cf	cf		cf	cf	cf	cf
	Recorded by:		cf	cf	cf	cf		cf	cf	cf	cf
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 3	Control	D	7.5	25.1	7.2	358	D	7.8	24.5	7.2	333
	0.125	D	7.5	25.1	6.3	571	D	7.8	24.4	7.1	566
	0.25	D	7.5	25.1	6.3	806	D	7.8	24.4	7.1	~~1268~~22 cf
	.5	D	7.5	24.8	6.3	1262	D	7.9	24.3	7.1	1268
	1.0	DA	7.6	25.3	6.7	2160	A-D	7.9	24.2	7.3	2240
		D					D				
		D					D				
	Measured by:		cf	cf	cf	cf		cf	cf	cf	cf
	Recorded by:		cf	cf	cf	cf		cf	cf	cf	cf

Comments:

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revised 8/24/06 MF/SP

Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Parameters

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

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

circle µmhos or mmhos

Test Day		Before Renewal					After Renewal					
	Concentration	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos mmhos	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos mmhos
Day 4	Control	A	7.5	25.1	6.2	343	A	7.7	24.0	7.2	334
	0.125	A	7.5	24.9	6.1	583	A	7.7	24.0	7.1	538
	0.25	A	7.5	25.0	6.2	813	A	7.7	24.0	7.0	788
	0.5	A	7.5	24.8	6.1	1,285	A	7.7	24.0	7.0	1,257
	1.0	A	7.5	24.6	6.0	2,290	A	7.8	24.0	6.9	2,190
		A					A				
		A					A				
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 5	Control	B	7.5	24.0	6.4	342	B	7.8	24.0	6.7	339
	.125	B	7.6	24.0	6.5	541	B	7.8	24.0	7.0	529
	.25	B	7.5	24.0	6.5	805	B	7.9	24.0	7.2	780
	.5	B	7.6	24.0	6.5	1270	B	7.9	24.0	7.3	1254
	1.0	B	7.6	24.0	6.6	2260	B	7.9	24.0	7.4	2210
		B					B				
		B					B				
	Measured by:		[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
	Recorded by:		[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 6	Control	C	7.5	24.8	5.7	348	C	7.5	24.2	7.0	327
	.125	C	7.4	25.0	5.4	538	C	7.7	24.2	7.1	540
	.25	C	7.5	25.3	5.2	783	C	7.8	24.1	6.9	798
	.5	C	7.5	25.3	5.6	1263	C	7.8	24.0	7.1	1278
	1.0	A→C	7.5	25.1	6.4	2180	A→C	7.8	24.1	7.2	1846
		C					C				
		C					C				
	Measured by:		[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
	Recorded by:		[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 7	Control	D	6.7	24.6	6.0	358	D				
	0.125	D	7.2	24.3	6.0	569	D				
	0.25	D	7.3	24.3	6.4	815	D				
	0.5	D	7.4	24.1	6.0	1303	D				
	1.0	B→D	7.5	24.2	6.2	1898	B→D				
		D					D				
		D					D				
	Measured by:		[illegible]	[illegible]	[illegible]	[illegible]					
	Recorded by:		[illegible]	[illegible]	[illegible]	[illegible]					

Comments:

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 ~~mg/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	17	0.02745	0.03080	0.00835	10	.835
	B	18	0.02742	0.03115	0.00873	10	.873
	C	19	0.02492	0.03155	0.00663	10	.663
	D	20	0.02451	0.03466	0.01015	10	1.015
0.175	A	21	0.02373	0.03304	0.00931	10	.931
	B	22	0.02540	0.03416	0.00876	10	.876
	C	23	0.02168	0.03018	0.00850	10	.850
	D	24	0.02173	0.03281	0.01108	10	1.108
0.25	A	25	0.02287	0.03059	0.00772	10	0.772
	B	26	0.02252	0.02967	0.00715	10	.715
	C	27	0.02232	0.03080	0.00848	10	.848
	D	28	0.02175	0.02859	0.00684	10	.684
.5	A	29	0.02476	0.03041	0.00565	10	.565
	B	30	0.02231	0.03037	0.00806	10	.806
	C	31	0.02267	0.03039	0.00772	10	.772
	D	32	0.02166	0.02946	0.00780	10	.780
1.0	A	—	~~0.02272~~ SD	—	—	10	—
	B	33	0.02222 SD 72	0.02298	0.00026	10	.026
	C	34	0.02222	0.02316	0.00094	10	.094
	D	—		—	—	10	—
	A					10	
	B					10	
	C					10	
	D					10	
	A					10	
	B					10	
	C					10	
	D					10	
		Weighed by:	CF	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

Empty Pan Weights Date: 9.28.09 Weighed by: CF

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.07245	@ 0.07245
after Pan 10	0.07245	@ 0.07245
after Pan 15	0.07245	@ 0.07245
after Pan 20	0.07245	@ 0.07245
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 g	@ 0.01 g
	0.03001 g	@ 0.03 g

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 10.2.09 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.03083	@ 0.03080
after Pan 10	0.03083	@ 0.03080
after Pan 15	0.03083	@ 0.03080
after Pan 20	0.03082	@ 0.03080
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	0.00997	@ 0.01
	0.05002	@ 0.05

Drying Oven ID: ER03400

Temperature °C: 95

Drying Hours: 8

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

Comments:

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revised 7/16/08 MF

Appendix C. (continued)

Bioassay Instrument ID

Test ID: P. promelas SIT Sept 22, '09 Dates: 9-22-09 — 9-29-01

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+	✓
Mettler-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	-	✓
Drying oven	ERO 34400	—	—	—	✓

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 M. Faircloth 10-2-09

V 1.1 6/12/08 MF

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Appendix C. (continued)

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	9/22/2009 11:20	Test ID:	cdsrt9229	Sample ID:	REF-Ref Toxicant
End Date:	9/29/2009 11:00	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAFW02-EPA/821/R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:	SRT concurrent with Buckeye and Millville				

Conc-gm/L	1	2	3	4	5	6	7	8	9	10
D-Control	13.000	18.000	18.000	16.000	18.000	14.000	17.000	16.000	14.000	17.000
0.59	4.000	18.000	17.000	16.000	1.000	16.000	18.000	15.000	10.000	18.000
0.89	3.000	13.000	18.000	4.000	11.000	10.000	17.000	11.000	21.000	15.000
1.3	6.000	11.000	11.000	3.000	7.000	10.000	9.000	13.000	8.000	0.000
2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000
3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

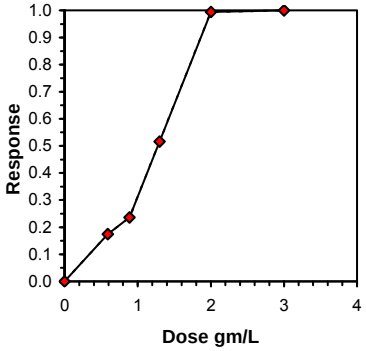
			Transform: Untransformed					Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	16.100	1.0000	16.100	13.000	18.000	11.509	10	16.100	1.0000
0.59	13.300	0.8261	13.300	1.000	18.000	46.626	10	13.300	0.8261
0.89	12.300	0.7640	12.300	3.000	21.000	47.103	10	12.300	0.7640
1.3	7.800	0.4845	7.800	0.000	13.000	50.853	10	7.800	0.4845
2	0.100	0.0062	0.100	0.000	1.000	316.228	10	0.100	0.0062
3	0.000	0.0000	0.000	0.000	0.000	0.000	10	0.000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.923683	0.93	-0.96555	1.502193
Bartlett's Test indicates unequal variances (p = 6.17E-10)	48.88601	13.2767		

Linear Interpolation (200 Resamples)

Point	gm/L	SD	95% CL		Skew
IC05*	0.1696	0.1798	0.0929	0.6676	1.5343
IC10*	0.3393	0.1875	0.1859	0.7912	0.7774
IC15*	0.5089	0.1904	0.2788	0.9232	0.4041
IC20	0.7160	0.1889	0.3717	0.9857	-0.0222
IC25	0.9105	0.1711	0.4646	1.0677	-0.5766
IC40	1.1305	0.1289	0.8101	1.3197	-0.4230
IC50	1.2772	0.1147	0.9736	1.4343	-0.7996

* indicates IC estimate less than the lowest concentration



Appendix C. (continued)

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	9/22/2009 12:00	Test ID:	ppsrt92209	Sample ID:	REF-Ref Toxicant
End Date:	9/29/2009 12:00	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	PP-Pimephales promelas
Comments:	P. promelas chronic SRT concurrent with Buckeye and Millville				

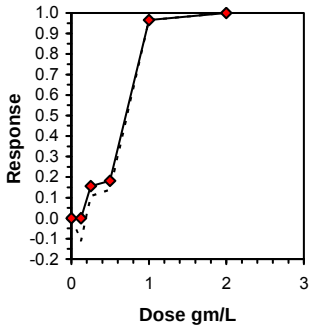
Conc-gm/L	1	2	3	4
D-Control	0.8350	0.8730	0.6630	1.0150
0.125	0.9310	0.8760	0.8500	1.1080
0.25	0.7720	0.7150	0.8480	0.6840
0.5	0.5650	0.8060	0.7720	0.7800
1	0.0000	0.0260	0.0940	0.0000
2	0.0000	0.0000	0.0000	0.0000

			Transform: Untransformed					Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.8465	1.0000	0.8465	0.6630	1.0150	17.105	4	0.8939	1.0000
0.125	0.9413	1.1119	0.9413	0.8500	1.1080	12.343	4	0.8939	1.0000
0.25	0.7548	0.8916	0.7548	0.6840	0.8480	9.548	4	0.7548	0.8444
0.5	0.7308	0.8633	0.7308	0.5650	0.8060	15.251	4	0.7308	0.8175
1	0.0300	0.0354	0.0300	0.0000	0.0940	147.974	4	0.0300	0.0336
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4	0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.973812	0.868	-0.08238	0.148952
Bartlett's Test indicates equal variances (p = 0.44)	3.736975	13.2767		

Linear Interpolation (200 Resamples)

Point	gm/L	SD	95% CL(Exp)		Skew
IC05	0.1652	0.0311	0.0409	0.2811	0.1374
IC10	0.2053	0.0817	0.1144	0.6832	2.3883
IC15	0.2455	0.1283	0.1607	0.7040	0.6198
IC20	0.5112	0.1154	0.0619	0.5902	-0.9844
IC25	0.5431	0.0681	0.1788	0.6184	-2.4476
IC40	0.6387	0.0298	0.5082	0.6972	-1.0466
IC50	0.7025	0.0245	0.5981	0.7514	-0.9638



Appendix C. (continued)

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	8/11/2009 14:30	Test ID:	buck0811	Sample ID:	FL0000876-NPDES Permit #
End Date:	8/17/2009 13:15	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	EFF2-Industrial
Sample Date:		Protocol:	EPAFW02-EPA/821/R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:	Buckeye C. dubia				

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean		Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
D-Control	1.0000	1.0000		0	10	10	10		
100	1.0000	1.0000		0	10	10	10	1.0000	0.0500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs D-Control				

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	8/11/2009 14:30	Test ID:	cdbuck809	Sample ID:	FL0000876-NPDES Permit #
End Date:	8/17/2009 13:15	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	EFF2-Industrial
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	CD-Ceriodaphnia dubia
Comments:	C. dubia chronic screening test for buckeye aug 2009				

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	24.000	27.000	20.000	27.000	20.000	26.000	31.000	28.000	27.000	23.000
100	14.000	3.000	17.000	19.000	3.000	3.000	12.000	12.000	26.000	10.000

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	25.300	1.0000	25.300	20.000	31.000	13.950	10			
*100	11.900	0.4704	11.900	3.000	26.000	63.931	10	5.053	1.734	4.599

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95049	0.868	0.331211	0.648367
F-Test indicates equal variances (p = 0.03)	4.646744	6.54109		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	4.598812	0.181771	897.8	35.16667	8.3E-05	1, 18
Treatments vs D-Control						

Appendix C. (continued)

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	9/22/2009 11:45	Test ID:	buck0921	Sample ID:	FL0000876-NPDES Permit #
End Date:	9/29/2009 11:00	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	EFF2-Industrial
Sample Date:		Protocol:	EPAFW02-EPA/821/R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:	Buckeye repeat C. dubia				

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean		Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
D-Control	1.0000	1.0000		0	10	10	10		
100	1.0000	1.0000		0	10	10	10	1.0000	0.0500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs D-Control				

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	9/22/2009 11:45	Test ID:	buck0921	Sample ID:	FL0000876-NPDES Permit #
End Date:	9/29/2009 11:00	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	EFF2-Industrial
Sample Date:		Protocol:	EPAFW02-EPA/821/R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:	Buckeye repeat C. dubia				

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	16.000	12.000	16.000	17.000	13.000	20.000	20.000	16.000	13.000	18.000
100	5.000	8.000	4.000	11.000	6.000	6.000	2.000	7.000		

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	16.100	1.0000	16.100	12.000	20.000	17.433	10			
*100	6.125	0.3804	6.125	2.000	11.000	44.015	8	7.623	1.746	2.285

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.951198	0.858	0.13678	-0.61821
F-Test indicates equal variances (p = 0.94)	1.08392	8.513824		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	2.284681	0.141906	442.225	7.610938	1.0E-06	1, 16
Treatments vs D-Control						

Appendix C. (continued)

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	9/22/2009 13:15	Test ID:	Buck92209	Sample ID:	FL0000876-NPDES Permit #	
End Date:	9/29/2009 12:30	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	EFF2-Industrial	
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	PP-Pimephales promelas	
Comments:	Buckeye chronic P. promelas repeat for invalidated August test					

Conc-%	1	2	3	4
D-Control	1.0000	1.0000	0.9000	1.0000
100	0.8000	1.0000	0.7000	1.0000

			Transform: Arcsin Square Root					1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4			
100	0.8750	0.8974	1.2306	0.9912	1.4120	17.454	4	1.225	1.943	0.2232

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.910034	0.749	-0.29595	-0.93397
F-Test indicates equal variances (p = 0.15)	6.947814	47.46723		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences Treatments vs D-Control	0.129014	0.134289	0.039587	0.026386	0.266528	1, 6

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	9/22/2009 13:15	Test ID:	Buck92209	Sample ID:	FL0000876-NPDES Permit #	
End Date:	9/29/2009 12:30	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	EFF2-Industrial	
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	PP-Pimephales promelas	
Comments:	Buckeye chronic P. promelas repeat for invalidated August test					

Conc-%	1	2	3	4
D-Control	0.7920	0.8840	0.6890	0.8360
100	0.3640	0.4430	0.2620	0.3280

			Transform: Untransformed					1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.8003	1.0000	0.8003	0.6890	0.8840	10.389	4			
*100	0.3493	0.4364	0.3493	0.2620	0.4430	21.599	4	8.035	1.943	0.1091

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.948774	0.749	-0.28357	-0.91023
F-Test indicates equal variances (p = 0.88)	1.214753	47.46723		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences Treatments vs D-Control	0.109072	0.136297	0.406802	0.006301	2.0E-04	1, 6

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: 8/10/09

Shipped to: FDEP

P.O. No:

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia	100	4 DAYS	MS090806	25°C	8.0 s.u.	20‰
Menidia beryllina	100	12 DAYS	SS090729	25°C	8.0 s.u.	20‰
						Hardness
Cyprinella leedsi						
Pimephales promelas	4350 8/10/09	C24Hrs	FM090809-1530	25°C	7.8 s.u.	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: 9/21/09

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia						
Menidia beryllina						
						Hardness
Cyprinella leedsi						
Pimephales promelas	450+	<24 hrs	FM090920-1610	25°C	7.8 s.u.	80 mg/l

Packed by: [illegible]

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 E. Chemical Analyses performed on the effluent from the Buckeye Facility Outfall D-001, sampled on August 10, 2009.

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/10/2009 11:20	EFFLUENT	AGP/LN	Algal Growth Potential	110		mg DryWt/L	3.00	3.00
8/10/2009 11:20	EFFLUENT	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.48	I	ug/L	0.4	1.2
8/10/2009 11:20	EFFLUENT	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.88	I	ug/L	0.55	1.7
8/10/2009 11:20	EFFLUENT	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	9		mg/L	0.2	2
8/10/2009 11:20	EFFLUENT	Microbiology	Fecal Coliforms-Membrane Filter	26	B	#/100 mL	2	2
8/10/2009 11:20	EFFLUENT	Microbiology	Enterococci-Membrane Filter	44		#/100 mL	2	2
8/10/2009 11:20	EFFLUENT	Microbiology	Escherichia Coli-Membrane Filter	2	U	#/100 mL	2	2
8/10/2009 11:20	EFFLUENT	Microbiology	Fecal Coliforms-Membrane Filter	25	B	#/100 mL	2	2
8/10/2009 11:20	EFFLUENT	Toxicology	Bioassay-Chronic-Scrn-FW-Fish, NOEC	No Result	O	NOEC		
8/10/2009 11:20	EFFLUENT	Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100	K	NOEC		
8/10/2009 11:20	EFFLUENT	Metals	Zinc	20		ug/L	5	20
8/10/2009 11:20	EFFLUENT	Metals	Chromium	3.5		ug/L	0.3	1.2
8/10/2009 11:20	EFFLUENT	Metals	Magnesium	17.3		mg/L	0.04	0.16
8/10/2009 11:20	EFFLUENT	Metals	Iron	280		ug/L	30	120
8/10/2009 11:20	EFFLUENT	Metals	Silver	0.068	I	ug/L	0.025	0.1
8/10/2009 11:20	EFFLUENT	Metals	Arsenic	0.46	I	ug/L	0.25	1
8/10/2009 11:20	EFFLUENT	Metals	Nickel	7.68		ug/L	0.25	1
8/10/2009 11:20	EFFLUENT	Metals	Selenium	0.2	U	ug/L	0.2	0.8
8/10/2009 11:20	EFFLUENT	Metals	Cadmium	0.16		ug/L	0.03	0.12
8/10/2009 11:20	EFFLUENT	Metals	Lead	0.39	I	ug/L	0.2	0.8
8/10/2009 11:20	EFFLUENT	Metals	Calcium	42.3		mg/L	0.075	0.3
8/10/2009 11:20	EFFLUENT	Metals	Copper	4.06		ug/L	0.5	0.5
8/10/2009 11:20	EFFLUENT	Metals	Aluminum	890		ug/L	60	240
8/10/2009 11:20	EFFLUENT	Nutrients	Ammonia-N	0.17		mg N/L	0.01	0.02
8/10/2009 11:20	EFFLUENT	Nutrients	Total-P	1.4	A	mg P/L	0.04	0.1
8/10/2009 11:20	EFFLUENT	Nutrients	TSS	7	I	mg/L	4	16
8/10/2009 11:20	EFFLUENT	Nutrients	NO2NO3-N	0.005	I	mg N/L	0.004	0.01
8/10/2009 11:20	EFFLUENT	Nutrients	Kjeldahl Nitrogen	7.1		mg N/L	0.4	1
8/10/2009 11:20	EFFLUENT	Nutrients	Color (true)	800	A	PCU	100	100
8/10/2009 11:20	EFFLUENT	Nutrients	O-Phosphate-P	0.96		mg P/L	0.04	0.1
8/10/2009 11:20	EFFLUENT	Overflow	Oil and Grease	1.4	UJ	mg/L	1.4	5
8/10/2009 11:20	EFFLUENT	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
8/10/2009 11:20	EFFLUENT	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/10/2009 11:20	EFFLUENT	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
8/10/2009 11:20	EFFLUENT	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
8/10/2009 11:20	EFFLUENT	Pesticides	Alpha-BHC	0.032	UJ	ug/L	0.032	0.13
8/10/2009 11:20	EFFLUENT	Pesticides	DDD-p,p'	0.029	U	ug/L	0.029	0.12
8/10/2009 11:20	EFFLUENT	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
8/10/2009 11:20	EFFLUENT	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
8/10/2009 11:20	EFFLUENT	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
8/10/2009 11:20	EFFLUENT	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
8/10/2009 11:20	EFFLUENT	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
8/10/2009 11:20	EFFLUENT	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
8/10/2009 11:20	EFFLUENT	Pesticides	Heptachlor	0.01	UJ	ug/L	0.01	0.04
8/10/2009 11:20	EFFLUENT	Pesticides	Methoxychlor	0.16	U	ug/L	0.16	0.64
8/10/2009 11:20	EFFLUENT	Pesticides	Hexazinone	0.1	UJ	ug/L	0.1	0.4
8/10/2009 11:20	EFFLUENT	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
8/10/2009 11:20	EFFLUENT	Pesticides	Heptachlor Epoxide	0.074	U	ug/L	0.074	0.3
8/10/2009 11:20	EFFLUENT	Pesticides	Norflurazon	0.15	UJ	ug/L	0.15	0.6
8/10/2009 11:20	EFFLUENT	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
8/10/2009 11:20	EFFLUENT	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
8/10/2009 11:20	EFFLUENT	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
8/10/2009 11:20	EFFLUENT	Pesticides	Ethion	0.05	UJ	ug/L	0.05	0.2
8/10/2009 11:20	EFFLUENT	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
8/10/2009 11:20	EFFLUENT	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
8/10/2009 11:20	EFFLUENT	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
8/10/2009 11:20	EFFLUENT	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
8/10/2009 11:20	EFFLUENT	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
8/10/2009 11:20	EFFLUENT	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
8/10/2009 11:20	EFFLUENT	Pesticides	Chlorpyrifos Ethyl	0.05	UJ	ug/L	0.05	0.2
8/10/2009 11:20	EFFLUENT	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
8/10/2009 11:20	EFFLUENT	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
8/10/2009 11:20	EFFLUENT	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
8/10/2009 11:20	EFFLUENT	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
8/10/2009 11:20	EFFLUENT	Pesticides	Delta-BHC	0.033	U	ug/L	0.033	0.13
8/10/2009 11:20	EFFLUENT	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
8/10/2009 11:20	EFFLUENT	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/10/2009 11:20	EFFLUENT	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
8/10/2009 11:20	EFFLUENT	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
8/10/2009 11:20	EFFLUENT	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
8/10/2009 11:20	EFFLUENT	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
8/10/2009 11:20	EFFLUENT	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
8/10/2009 11:20	EFFLUENT	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
8/10/2009 11:20	EFFLUENT	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
8/10/2009 11:20	EFFLUENT	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
8/10/2009 11:20	EFFLUENT	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	U	ug/L	2.1	8.3
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Nitrobenzene	2.1	U	ug/L	2.1	8.3
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	62
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	12
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	U	ug/L	2.1	8.3
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	U	ug/L	3.1	12
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	12
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	U	ug/L	2.1	8.3

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	62
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	12
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Di-n-butyl phthalate	5.2	U	ug/L	5.2	21
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	12
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41	U	ug/L	41	170
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	62
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Butyl benzyl phthalate	5.2	U	ug/L	5.2	21
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	41
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	41
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	12
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	410
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.1
8/10/2009 11:20	EFFLUENT	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	12
8/10/2009 11:20	EFFLUENT	Field Parameter	Specific Conductance	2348		umhos/cm		
8/10/2009 11:20	EFFLUENT	Field Parameter	Temperature	33.29		C		
8/10/2009 11:20	EFFLUENT	Field Parameter	pH	7.21				
8/10/2009 11:20	EFFLUENT	Field Parameter	Sample Depth	0.157		m		
8/10/2009 11:20	EFFLUENT	Field Parameter	Dissolved Oxygen	2.97		mg/L		
8/10/2009 12:05	EQUIPMENT BLK	Metals	Magnesium	0.04	U	mg/L	0.04	0.16

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/10/2009 12:05	EQUIPMENT BLK	Metals	Selenium	0.2	U	ug/L	0.2	0.8
8/10/2009 12:05	EQUIPMENT BLK	Metals	Copper	0.5	U	ug/L	0.5	0.5
8/10/2009 12:05	EQUIPMENT BLK	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
8/10/2009 12:05	EQUIPMENT BLK	Metals	Lead	0.2	U	ug/L	0.2	0.8
8/10/2009 12:05	EQUIPMENT BLK	Metals	Aluminum	60	U	ug/L	60	240
8/10/2009 12:05	EQUIPMENT BLK	Metals	Arsenic	0.25	U	ug/L	0.25	1
8/10/2009 12:05	EQUIPMENT BLK	Metals	Chromium	0.3	U	ug/L	0.3	1.2
8/10/2009 12:05	EQUIPMENT BLK	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/10/2009 12:05	EQUIPMENT BLK	Metals	Nickel	0.25	U	ug/L	0.25	1
8/10/2009 12:05	EQUIPMENT BLK	Metals	Iron	30	U	ug/L	30	120
8/10/2009 12:05	EQUIPMENT BLK	Metals	Zinc	5	U	ug/L	5	20
8/10/2009 12:05	EQUIPMENT BLK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
8/10/2009 12:05	EQUIPMENT BLK	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
8/10/2009 12:05	EQUIPMENT BLK	Nutrients	TSS	4	U	mg/L	4	16
8/10/2009 12:05	EQUIPMENT BLK	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
8/10/2009 12:05	EQUIPMENT BLK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
8/10/2009 12:05	EQUIPMENT BLK	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
8/10/2009 12:05	EQUIPMENT BLK	Nutrients	Color (true)	5	U	PCU	5	5
8/10/2009 12:05	EQUIPMENT BLK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
8/10/2009 12:05	EQUIPMENT BLK	Overflow	Oil and Grease	1.4	U	mg/L	1.4	5
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Atrazine	0.055	U	ug/L	0.055	0.22
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Gamma-BHC	0.011	U	ug/L	0.011	0.044
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Azinphos Methyl	0.22	U	ug/L	0.22	0.88
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Chlorpyrifos Methyl	0.11	U	ug/L	0.11	0.44
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Ethion	0.055	U	ug/L	0.055	0.22
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Naled	0.89	U	ug/L	0.89	3.6
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Aldrin	0.011	U	ug/L	0.011	0.044
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	DDE-p,p'	0.022	U	ug/L	0.022	0.088
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Endosulfan II	0.022	U	ug/L	0.022	0.088
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Endosulfan Sulfate	0.022	U	ug/L	0.022	0.088
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Endrin	0.055	U	ug/L	0.055	0.22
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Heptachlor Epoxide	0.022	U	ug/L	0.022	0.088
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Ethoprop	0.11	U	ug/L	0.11	0.44
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Prometryn	0.17	U	ug/L	0.17	0.68

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Alpha-BHC	0.011	U	ug/L	0.011	0.044
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Chlordane	0.22	U	ug/L	0.22	0.88
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Bromacil	0.22	U	ug/L	0.22	0.88
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Butylate	0.22	U	ug/L	0.22	0.88
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Fonofos	0.11	U	ug/L	0.11	0.44
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Malathion	0.17	U	ug/L	0.17	0.68
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Metolachlor	0.55	U	ug/L	0.55	2.2
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Mevinphos	0.22	U	ug/L	0.22	0.88
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Norflurazon	0.17	UJ	ug/L	0.17	0.68
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Simazine	0.055	U	ug/L	0.055	0.22
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Beta-BHC	0.011	U	ug/L	0.011	0.044
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Ametryn	0.055	U	ug/L	0.055	0.22
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Diazinon	0.055	U	ug/L	0.055	0.22
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Hexazinone	0.11	UJ	ug/L	0.11	0.44
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Alachlor	0.66	U	ug/L	0.66	2.6
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Chlorpyrifos Ethyl	0.055	U	ug/L	0.055	0.22
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Fenamiphos	0.22	U	ug/L	0.22	0.88
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Metalaxyl	0.28	U	ug/L	0.28	1.1
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Metribuzin	0.11	U	ug/L	0.11	0.44
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Delta-BHC	0.011	U	ug/L	0.011	0.044
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Parathion Ethyl	0.17	U	ug/L	0.17	0.68
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Phorate	0.055	U	ug/L	0.055	0.22
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Endosulfan I	0.022	U	ug/L	0.022	0.088
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Parathion Methyl	0.11	U	ug/L	0.11	0.44
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	DDD-p,p'	0.022	U	ug/L	0.022	0.088
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	DDT-p,p'	0.033	U	ug/L	0.033	0.13
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Dieldrin	0.022	U	ug/L	0.022	0.088
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Endrin Aldehyde	0.022	U	ug/L	0.022	0.088
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Heptachlor	0.011	U	ug/L	0.011	0.044
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Methoxychlor	0.055	U	ug/L	0.055	0.22
8/10/2009 12:05	EQUIPMENT BLK	Pesticides	Toxaphene	0.83	U	ug/L	0.83	3.3
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2,4-Dinitrophenol	17	U	ug/L	17	66
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Acenaphthene	1.1	U	ug/L	1.1	4.4

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Fluorene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Hexachlorobutadiene	3.3	U	ug/L	3.3	13
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Hexachloroethane	3.3	U	ug/L	3.3	13
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Benzo(a)pyrene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Acenaphthylene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Phenanthrene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Naphthalene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	440
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Benzo(k)fluoranthene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	8.9
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Pyrene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	44
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Dimethyl phthalate	11	U	ug/L	11	44
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	8.9
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	8.9
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Anthracene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Butyl benzyl phthalate	5.5	U	ug/L	5.5	22
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Fluoranthene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.3	U	ug/L	3.3	13
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	44	U	ug/L	44	180

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Benzo(a)anthracene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Pentachlorophenol	3.3	U	ug/L	3.3	13
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Chrysene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Di-n-butyl phthalate	5.5	U	ug/L	5.5	22
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.3	U	ug/L	3.3	13
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	4-Nitrophenol	17	U	ug/L	17	66
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Benzo(b)fluoranthene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Benzo(g,h,i)perylene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.3	U	ug/L	3.3	13
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	17	U	ug/L	17	66
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.3	U	ug/L	3.3	13
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1.1	U	ug/L	1.1	4.4
8/10/2009 12:05	EQUIPMENT BLK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	8.9
8/12/2009 11:30	BUCKEYE FINAL EFF	Field Parameter	Specific Conductance	2432		umhos/cm		
8/12/2009 11:30	BUCKEYE FINAL EFF	Field Parameter	Temperature	33.94		C		
8/12/2009 11:30	BUCKEYE FINAL EFF	Field Parameter	Sample Depth	0.5		m		
8/12/2009 11:30	BUCKEYE FINAL EFF	Field Parameter	pH	7.26				
8/12/2009 11:30	BUCKEYE FINAL EFF	Field Parameter	Dissolved Oxygen	2.84		mg/L		
8/14/2009 11:20	BUCKEYE FINAL EFF	Field Parameter	Temperature	32.76		C		
8/14/2009 11:20	BUCKEYE FINAL EFF	Field Parameter	Specific Conductance	24.82		umhos/cm		
8/14/2009 11:20	BUCKEYE FINAL EFF	Field Parameter	Dissolved Oxygen	2.68		mg/L		
8/14/2009 11:20	BUCKEYE FINAL EFF	Field Parameter	pH	7.32				
8/14/2009 11:20	BUCKEYE FINAL EFF	Field Parameter	Sample Depth	0.4		m		

Appendix F. Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Brian Kirts	Contact Number:904-807-3340
Facility Name (as it appears on permit):Buckeye	Former Names:
NPDES Permit Number:FL0000876	Permit Expiration Date:7/27/1995
Physical Address: One Buckeye Drive Perry Florida32348	
District: NED	County: Taylor
Function of Facility: Pulp and paper mill	
Facility Type: Industrial wastewater	Permitted Capacity (MGD): 58 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 41MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): NA	
Description of type of Discharge: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	

Appendix F. (continued)

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): **Nearest accessable point after treatment but prior to actual discharge or mixing with the receiving waters.**
Description of Permitted Outfall(s): **Fenholloway River at milepoint 24.6 upstream of the River mouth, Class III freshwaters**
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): **Operation of a 58 million gallon per day (design) industrial wastewater treatment system serving a dissolved kraft pulp mill that includes a lift station, bar racks, a 320 foot diameter primary clarifier with skimming pond, sludge pumps, 225 acres of sludge storage lagoons with conveyance structures, and a 30 acre aerated lagoon followed by a 120 acre aerated lagoon.**

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
(Leave cell blank if not applicable)

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Daily Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	MGD						continuous	recorder		
BOD	Lbs/day	19800		13200			2/week	24 hr composite		
TSS	Lbs/day	50000		2500			2/week	24 hour composite		
pH	S.U.	6/8.5					2/week	grab		
Oil and Grease	mg/L	10					1/month	grab		
Specific Conductance	umhos/cm	4000					1/month	grab		
Temperature	Degrees F						1/month	grab		
Phenolic Compounds	mg/L	.2					2/week	grab		
Acute Toxicity	NA	100					1/month	grab		
Dissolved Oxygen	mg/L	State road 356 bridge					Daily (5 per week)	grab		

The DO criteria for the Fenholloway River at the state road 356 bridge shall be .3mg/L or greater 50 percent of the time on an annual basis when the flow at the bridge is 250cfs or greater. The DO is required to be 0.1 mg/L 99% of the time on an annual basis regardless of flow.

The temperature of the RBW shall not be increased

Appendix F. (continued)

PART I: Continued			
Receiving Waters: **Fenholloway River**		**Classification (indicate whether fresh or marine):** **Class 3 fresh water**	
Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.): **Semiannual Toxicity Testing using the daphnid and flathead minnows**			
Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): **Not any**			
Facility Mixing Zone Details (if applicable): **22.1 mile mixing zone the entire length of the Fenholloway River before effluent reached the Gulf**			
List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:			
Date	Parameter and Units	Limit	Result
Not any			
Describe previous FYI and WQBEL study: Sampled 3/20/2006 **Effluent total phosphorus (2.2 mg/L), ortho-phosphate (1.5 mg/L), TKN (8.3 mg/L), nitrate+nitrite (1.0 mg/L) and total ammonia concentration (4.6 mg/L as N) were elevated and contributed to high nutrient levels at the Test Sites. Unionized ammonia (0.05 mg/L NH3 as N) exceeded the Class III Water Quality Criterion (≤ 0.02 mg/L, 62-302.530(3) F.A.C.).**			
Describe previous or current Enforcement Actions (including WLs): **NA**			
Describe any violations or problems noted in previous inspection: **NA**			
Discuss whether DMR trends within previous five years are improving or declining: **Data over the past few years has remained steadily constant**			

Appendix F. (continued)

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

Appendix F. (continued)

Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:

Appendix G. Bioassay Instrument ID

FDEP Biology Laboratory - Bioassay Instrument Identification

Test ID: Buckeye C. dubia Bioassay Dates: August 11 - 17, 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^+	√
Mettler-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 electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Comments: Entered by M. Faircloth 12/31/2009

V 1.4 8/21/08 BA

Appendix G. (continued)

FDEP Biology Laboratory - Bioassay Instrument Identification

Test ID: Buckeye C. dubia Bioassay Dates: September 22 - 29, 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^+	√
Mettler-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 electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

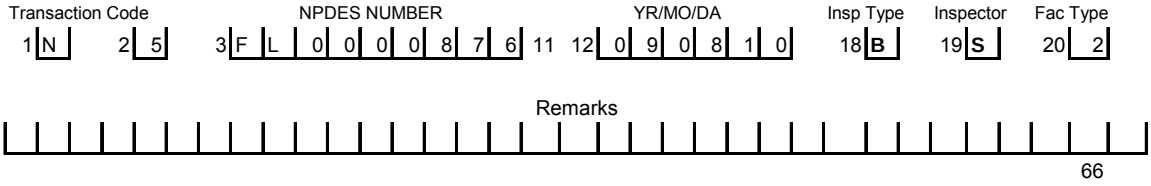
Comments: Entered by M. Faircloth 12/31/2009

V 1.4 8/21/08 BA

Appendix H. EPA End Sheet

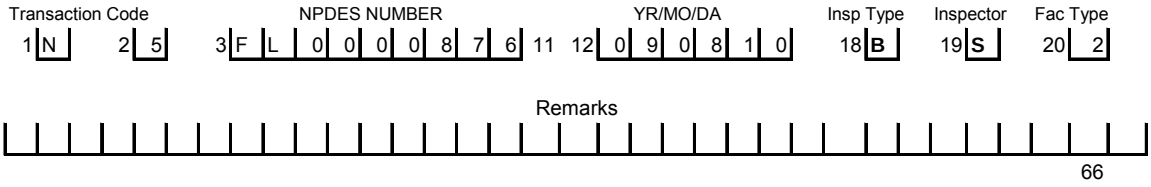
The Bioassay of the Buckeye Florida facility effluent sampled on August 10, 12 and 14, 2009. NPDES #FL0000876.

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



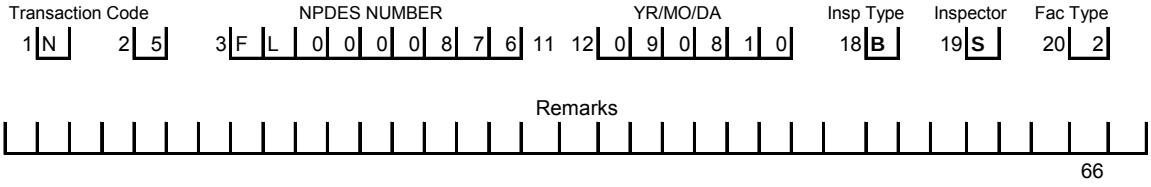
The Priority Pollutants Analysis of the Buckeye Florida facility effluent sampled on August 10, 2009. NPDES #FL0000876.

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



Biological Analyses of the Buckeye Florida facility effluent sampled on August 10, 2009. NPDES #FL0000876.

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



Appendix H. (continued)

The Bioassay of the Buckeye Florida facility effluent sampled on September 21, 23 and 25, 2009. NPDES #FL0000876.

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

