

Effluent Quality Assessment

River Oaks AWWTP

Hillsborough County

NPDES #FL0027821

Sampled January 26, 2009

June 2009
(Resubmitted with corrected tables March 2011)

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

River Oaks AWWTP, 8425 Sheldon Road, Tampa, Hillsborough County, Florida, 33615. NPDES #FL0027821. Effluent samples for this facility were collected on January 26, 2009.

Introduction

River Oaks AWWTP (Advanced Wastewater Treatment Plant) is an advanced domestic wastewater treatment facility which uses the activated-sludge treatment process to treat domestic wastewater. The wastewater treatment system consists of:

- headworks with;
  - a flow equalization basin
  - screening
  - Parshall flumes
  - odor control
- two primary sedimentation basins;
- three aeration tanks;
- three secondary sedimentation tanks;
- two denitrification tanks with a methanol injection system;
- three final sedimentation tanks;
- eight dual-media deep bed filters;
- two post aeration tanks;
- one filter backwash water holding tank;
- one chlorine contact chamber;
- one sludge re-aeration tank;
- one aerated sludge storage system;
- one dechlorination unit;
- a sodium aluminate addition system; and
- an ammoniation system.

Chlorine gas is used for chlorination. Sodium bisulfite is used for dechlorination. Residuals are pumped to the Northwest Regional Residuals Recovery Facility (permit #FLA012119) for treatment and disposal.

Effluent disposal is continuous and consists of two surface water discharges, a master reuse system and an aquifer storage and recovery system (ARS).

The surface water discharges consist of:

1) D-001: A permitted 10.0 MGD 12-month average daily flow (12MADF) discharge at Outfall D-001 to the Class III freshwaters of Channel A and Rocky Creek then to Old Tampa Bay. The outfall structure (Outfall D-001) is approximately 6.1 m (20 feet) long and discharges at a depth of about 0.61 m (2 feet). Outfall D-001 is located approximately at latitude 28° 01’ 41” N, longitude 82° 34’ 58” W. The AADF to Outfall D-001 from January 2008 to December 2008 was 4.8253 MGD.

2) D-002: A permitted 5.0 MGD 12-month average daily flow (12MADF) discharge at Outfall D-002 to the Class III freshwaters of Channel A and Rocky Creek then to Old Tampa Bay. Outfall D-002 is a combined outfall for effluents generated by the Northwest Regional Water reclamation Facility (WRF) and the River Oaks AWWTP and is conveyed to the outfall (identified as D-001 in the Northwest Regional WRF) through the Northwest Hillsborough County Master Reuse System. The outfall structure (Outfall D-002) is approximately 0.3 m (1 foot) long and discharges at a depth of about 0.61 m (2 feet). The point of discharge is located approximately at latitude 28° 01’ 26” N, longitude 82° 35’ 54” W. There was no discharge to Outfall D-002 from January 2008 to December 2008.

Master Reuse System R-001:
The River Oaks AWWTP serves as a source plant for up to 10.0 MGD 12MADF of reclaimed water which is transferred to the Northwest Hillsborough County Master Reuse System at a transfer point located immediately downstream of the distribution flow meter at the River Oaks plant. The Northwest Hillsborough County Master Reuse System provides reclaimed water to major and minor users, directs

surpluses to the ASR (U-001) or to the combined outfall for the Northwest Regional WRF and the River Oaks AWWTP.

Aquifer Storage and Recovery System U-001:
This system is being tested under Department (FDEP) Class V Injection Well permit # 029951-004-UC, for injection storage and recovery of Part III public access reclaimed water. The recovered water will be reused in the Northwest Hillsborough County Master Reuse System. Up to 2.0 MGD AADF can be stored in and recovered from the ASR well (TPW-1).

The facility has no Administrative Orders, Consent Orders or mixing zones. A review of Discharge Monitoring Report (DMR) data for the past year, revealed several permit violations: (total residual chlorine, (TRC), May 2008, value 0.43 mg/L; October 2008, value 0.47 mg/L; permitted value ≥ 1mg/L); (Carbonaceous Biological Oxygen Demand (CBOD), August 2008, value 15 mg/L; October 2008, value 14.5; permitted value ≤ 10 mg/L); (total nitrogen (TN) September 2008, value 6.49 mg/L, permitted value ≤ 6 mg/L). (Facility information provided by Jason Cohen of FDEP Southwest District.)

Methods

Samples were collected from Outfall D-001 by Peter Wenner, Jason Cohen and Joe Squitieri (FDEP Southwest District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

See Appendix A for the completed chain of custody form.

The 96-hour acute screening toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

Toxicity Test Results

Tests were performed January 27 - 31, 2009.

Ceriodaphnia dubia 96-hour acute screening bioassay –	LC_{50} > 100%, 5% mortality* in 100% sample at 96 hours
Pimephales promelas 96-hour acute screening bioassay –	LC_{50} > 100%, 0% mortality* in 100% sample at 48 hours

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

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

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

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 42.2 mg dry wt/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. The ratio of inorganic nitrogen to ortho-phosphate in the effluent suggests that the effluent is nitrogen-limited; whereas, the ratio of total nitrogen to total phosphorus in the effluent suggests that the effluent is co-limited by both nitrogen and phosphorus. By comparing the laboratory AGP result (42.2 (±20%) mg dry wt/L) to the predicted AGP values of 47.0 (±20%) mg dry wt/L for inorganic nitrogen, 98.8 (±20%) mg dry wt/L for total nitrogen, 64.5 (±20%) mg dry wt/L for ortho-phosphate and 68.8 (±20%) mg dry wt/L for total phosphorus, an inference can be made that not all of the nitrogen in the effluent was bio-available to the test species, providing additional evidence the effluent is nitrogen limited. To determine actual nutrient limitation, a limiting-nutrient algal growth potential test should be performed (Table 1; Miller et al. 1978).

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine and total ammonia were not detected in the bioassay sample in the laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.036 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

Copper, nickel and zinc were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Aluminum, arsenic, cadmium, chromium-III and selenium were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). CBOD (17 mg/L) exceeded the facility's permitted limit of ≤ 10 mg/L.

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 sample collected from Outfall D-001 for this facility on January 27, 2009, was not acutely toxic to either test species during the 96-hour acute screening bioassays. The effluent AGP result exceeded the "problem" threshold for fresh receiving waters suggesting nutrient enrichment may be an issue. CBOD (17 mg/L) exceeded the facility's permitted limit of ≤ 10 mg/L. Other effluent water quality samples did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

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

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

Table 1. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), orthophosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the River Oaks AWWTP facility on January 26, 2009.

River Oaks AWWTP							
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Grab	42.2	47.0 ± 9.4	64.5 ± 12.9	98.8 ± 19.8	68.8 ± 13.8	8.2	16.3

Table 2. Effluent limits, Class III Freshwater Criteria and chemical and microbiological data for samples collected from the River Oaks AWWTP facility on January 26, 2009.

River Oaks AWWTP NPDES# FL0027821	Class III Criteria	Effluent Limits EFA-01	Effluent	
Organic Constituents (µg/L)				
None Detected	-	-	-	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	90	I
Arsenic	≤ 50	-	0.48	I
Cadmium	≤ 0.52 b	-	0.038	I
Calcium (mg/L)	-	-	82.9	A
Chromium-III	≤ 176.98 b	-	0.21	I
Copper	≤ 19.77 b	-	1.7	A
Iron	≤ 1,000	-	30	U
Lead	≤ 9.74 b	-	0.2	U
Magnesium (mg/L)	-	-	8.2	A
Mercury	≤ 0.012	≤ 0.012 s	0.12	U
Nickel	≤ 109.7 b	-	1.25	A
Selenium	≤ 5.0	-	0.47	I
Silver	≤ 0.07	-	0.01	U
Zinc	≤ 252.26 b	-	29	A
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.15	
Total Phosphorus	-	2.0 sp	0.16	
Total Ammonia	-	-	0.036	
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02	c
Nitrate and Nitrite	-	-	1.2	
Total Kjeldahl Nitrogen	-	-	1.4	
Organic Nitrogen	-	-	1.364	c
Total Nitrogen	-	6.0 sp	2.6	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L) EFD-01	≥ 5.0 s	≥ 5.0 s	8.8	
pH (SU)	6.0 - 8.5 s	6.0 - 8.5 s	7.6	
Conductivity (µmhos/cm)	≤ 1,275 s	-	949	
Temperature °C	-	-	23.8	
Total Residual Chlorine (mg/L)	≤ 0.01 s	≤ 0.01 s	0.02	
Chlorophyll a (µg/L) - Corrected	-	-	0.55	U
Phaeophytin (µg/L)	-	-	0.24	U
Total Suspended Solids (mg/L)	-	10 sp	4	U
CBOD, 5 day (mg/L), N - inhibited	-	10 sp	17	
Cyanide (µg/L)	≤ 5.2 s	≤ 5.2 s	0.005	U
Flow (MGD) to D-001	-	10.0 a	4.825	a
Hardness (mg $CaCO_3$)	-	-	240.77	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms	≤ 400 s #	≤ 25 s	2	U

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
p - Limit is based on 24 hour flow proportioned sample
s - Single sample
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
U - Material analyzed for but not detected; value reported is the method detection limit
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-01-26-22
River Oaks WWTP

Requester: Jennifer Paris
Field Report Prepared By:

Customer: SW-DIST
Collected By: P. WENNER, J. COHEN, J. SQUITIERI
Send Final Report To Tom Gucciardo

Project ID: FYI3
Sampling Agency: FDEP SW-DISTRICT

PMAS: 1143

Lab ID *	Location: D-001	Field ID: 37140	Matrix: FRESH	Temp (C): 23.75	pH: 7.58	Latitude: N 28 01.748	Longitude: W 82 34.867	☐ Comp ☑ Grab	Collection (begin) Date 1/26/09 Time 1015 Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
37140									Tot Res Chlorine (mg/L): 0.02	Diss Oxygen (mg/L): 8.77	Storet Station Number
									Sample Depth: 0.2 ☑ m ☐ ft	0.47 / 949 ☑ Salinity (PPTh) ☑ Sp Conductance (umho/cm)	NPDES Number: A
									Comments: SAMPLES PULLED @ D-001 THROUGH A COMPOSITE SAMPLER THAT BELONGED TO THE FACILITY		
Lab ID *	Location: FIELD BLANK	Field ID: 37142	Matrix: DI WATER	Temp (C):	pH:	Latitude:	Longitude:	☐ Comp ☑ Grab	Collection (begin) Date 1/26/09 Time 1030 Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
37142									Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number
									Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number: B
									Comments: SINCE FACILITY COMPOSITE SAMPLER WAS USED WE WERE UNABLE TO PULL AN EQUIPMENT BLANK THUS A FIELD BLANK WAS DONE		
Lab ID *	Location: D-001	Field ID: 37141	Matrix: FRESH	Temp (C):	pH:	Latitude: N 28 01.748	Longitude: W 82° 34.867	☑ Comp ☐ Grab	Collection (begin) Date 1/25/09 Time 800 Eastern Central	Collection (end) Date 1/26/09 Time 800 Eastern Central	Bottle Group(s)**
37141									Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number
									Sample Depth ☑ m ☐ ft 0.2	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number: A
									Comments: INC TOX SAMPLES		
Lab ID *	Location: COMPOSITE BLANK	Field ID: 37143	Matrix:	Temp (C):	pH:	Latitude: 1/26/09	Longitude:	☑ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
37143									Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number
									Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number: B
									Comments: NOT SENT		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	1/26/09 1400	FED EX						

2 B-Assay 11:00 B Alexander 1-27-09

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Laboratory - Acute Screen Bioassay Bench Sheets

Facility: River Oaks WWTP

Address: 8425 Sheldon Road Tampa, Fl 33615

City: TAMPA County: Hillsborough 33615

Contact/District: P. Wenner, J. Cohen, J. Squitieri / Southwest

NPDES Permit #: FL 0027821

LIMS Job #: TLH-2009-01-27-45 LIMS Sample #: 1161140

Lims Data Entry: 2-16.09 MF Data Entry Verification: 2/17/09 JD

Sample Collection: Date: 1-26-09 Time: 0800

Hold Time Start: Date: 1-26-09 Time: 0800

Comments:

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

Test Type: (Screen)

(Static) / Static Renewal / Flow-through

Test Duration: (48) 96 Hours.

Test 1 validation: Test 1: SOP TA 07_01

Control survival ≥90%: (Yes) No

Temperature Range ≤3°C: (Yes) No

Test 2 validation: Test 2: SOP TA 07_02

Control survival ≥90%: (Yes) No

Temperature Range ≤3°C: (Yes) No

(√one)

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

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

Initial sample handling:

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

Aeration : yes (no) Initial DO: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: - ____bubbles/min

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

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

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

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C: (If used)

Incubator # 2 min. 25.2 max. 26.1 mean 25.7

Incubator # ____ min.____ max.____ mean____

Waterbath # ____ min.____ max.____ mean____

Room B246 min. 24.1 max. 25.8 mean 25.0

Sample Validation:

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

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

Batch #	1-23-09		1-23-09						
Water Quality Parameters	20% DMW	Well Water	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A		<0.02	JS	MF
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03				<0.03	AG-R	MF
Alkalinity (mg/L as $CaCO_3$):	82		74				227	BA	MF
Hardness (mg/L as $CaCO_3$):	88		100				240	BA	MF
Total Ammonia (mg/L as N):	<0.017		<0.017				<0.017	MF	
Conductivity (umhos) mmhos	177		322				990	MF	MF wrong range
Salinity (ppth):	—		—				—	—	

Investigators' Signatures

James Daniel

Marshall Faircloth

Amelia Parker

Brent Alexander

Dr. Anita C. Wolfe

REVIEWER

V 1.6 7/8/08

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1161140 **Test #:** 1/2 **SOP#:TA 07** 01 **Test Started: Date** 1-27-09 **Time:** 1510

Organism/Batch/Age: c. dubia / 3-09 / < 24 hours **Test Ended: Date** 1/30/09 (DoGerwen) **Time:** 1145

Chamber/Test Volume: 30 / 20 ml **Diluent/ Batch:** DMW / 1-23-09 **Test Duration:** 48 hr / 96 hr (circled)

Food/Batch: [✓] YCT 6-18-08 [✓] P.sub 7-18-08

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

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

Concentration	Replicate	Chamber #	Test Hour: 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	4/0
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
100%	A	A	5	4/0	4	4	4	4
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
Loaded/Verified by: MF / BA		Checked by:	BA	ABR	MC	MF	MF	[illegible]

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

Comments:

Test Results:

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

% mortality in 100% sample: 5% LC50: >100%

If Calculated: 95% CI______ Method______

V 2.3 7/15/2008

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

Page 00 026

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1161140 Test #: 2/2 SOP#:TA 07 02 Test Started: Date 1-27-09 Time: 1600

Organism/Batch/Age: ~~Enhedys~~ JD Pipron / 1-23-09 / 8 day Test Ended: Date 1/31/09 Time: 1200

Chamber/Test Volume: 1000 / 500 ml Diluent/ Batch: ~~WH MHW~~ JD MHW ~~1-26-09~~ JD 1.23.09 Test Duration: 48 hr (96 hr)

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

[✓] Artemia Lot# 38348 Batch #: 0hr 1-01 24hr____ 48hr 1-09 72hr____

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

Concentration	Replicate	Chamber #	Test Hour: 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A17	5	5	5	5	5	5
	B	A18	5	5	5	5	5	5
	C	A19	5	5	5	5	5	5
	D	A20	5	5	5	5	5	5
100%	A	A21	5	5	5	5	5	5
	B	A22	5	5	5	5	5	5
	C	A23	5	5	5	5	5	5
	D	A24	5	5	5	5	5	5
Loaded/Verified by: JA / MF		Checked by:	mf	JD	JD	JD	JD	JD

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

Comments:

Test Results:

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

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

If Calculated: 95% CI________ Method________

V 2.3 7/15/2008

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

Page 00 027

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample #: 1/6//40 Test #: 1 of 2

TEST SOP #: TA07_01 Test Species: [X] *Ceriodaphnia dubia* [ ] *Cyprinella leedsi* [ ] *Pimephales promelas*

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

Concentration 47r)	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		SM	M		M
pH (S.U.)	7.9		8.1	8.7		
Temperature °C	25.0		24.1	24.0		24.0
Dissolved Oxygen mg/L aerate if < 4	7.5		6.8	6.4		7.6
Conductivity (µmhos) mmhos	177		191	185		204
Salinity ppth	–		–	–		
(initials) Measured by:	MF		ATOL	ATOL		TS
(initials) Recorded by:	MF		ATOL	ATOL		TS

Comments: ② measurement error ADE 1-29-09

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		C	ATOL ② M		M
pH (S.U.)	7.8		8.0	8.1		8.2
Temperature °C	25.9		24.0	24.0		24.0
Dissolved Oxygen mg/L aerate if < 4	8.6		5.9	7.2		7.5
Conductivity (µmhos) mmhos	990	ADE ~~10~~	1047	998		1090
Salinity ppth	–		–	–		
(initials) Measured by:	MF		ATOL	ATOL		TS
(initials) Recorded by:	MF		ATOL	ATOL		TS

Comments: ② transcription error ADE 1/29/09
③ transcription error ADE 1/30/09

Salinity only needs measuring if saltwater.

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

Comments:

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

Comments: 00 028

Page

FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 1/6 1140 Test #: 2 of 2

TEST SOP #: TA07_02 Test Species: ☐ Ceriodaphnia dubia ☒ Cyprinella leedsi ☒ Pimephales promelas (interest species mf 1-27-09)

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

Concentration (Ctrl)	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.8	8.0	7.1	8.0	7.5	7.5
Temperature °C	24.9	24.7	24.9	24.0	25.0	24.3
Dissolved Oxygen mg/L aerate if < 4	7.5	6.5	6.4	7.2	5.3	6.5
Conductivity ~~µmhos~~ mmhos	322	353	355	332	350	371
Salinity ppth	—	0.10	—	—	—	—
(initials) Measured by:	MF	ROR	JD	JD	JD	JD
(initials) Recorded by:	MF	ROR	JD	ROR	JD	JD

Comments: Note: Salinity not necessary. mf 2-10-09

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.8	8.3	8.1	7.9	7.9	8.2
Temperature °C	25.9	24.6	25.4	24.1	25.4	24.3
Dissolved Oxygen mg/L aerate if < 4	8.6	6.0	5.7	7.5	5.2	6.4
Conductivity ~~µmhos~~ mmhos	990	1001	1029	1015	1049	1072
Salinity ppth	—	0.44	—	—	—	—
(initials) Measured by:	MF	ROR	JD	JD	JD	JD
(initials) Recorded by:	MF	ROR	JD	ROR	JD	JD

Comments:

Salinity only needs measuring if saltwater.

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

Comments:

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

Comments:

Appendix B. (continued)

Bioassay Instrument ID

Test ID: Rivs Carbs Unit LC Dates: Jan 27-31- 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 of electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT–Chronic SRT)

Reviewed by MF 2/3/2009

V 1.1 6/12/08 MF

PAGE 00 030

Appendix C. SRT Bench Sheets and Statistical Analysis

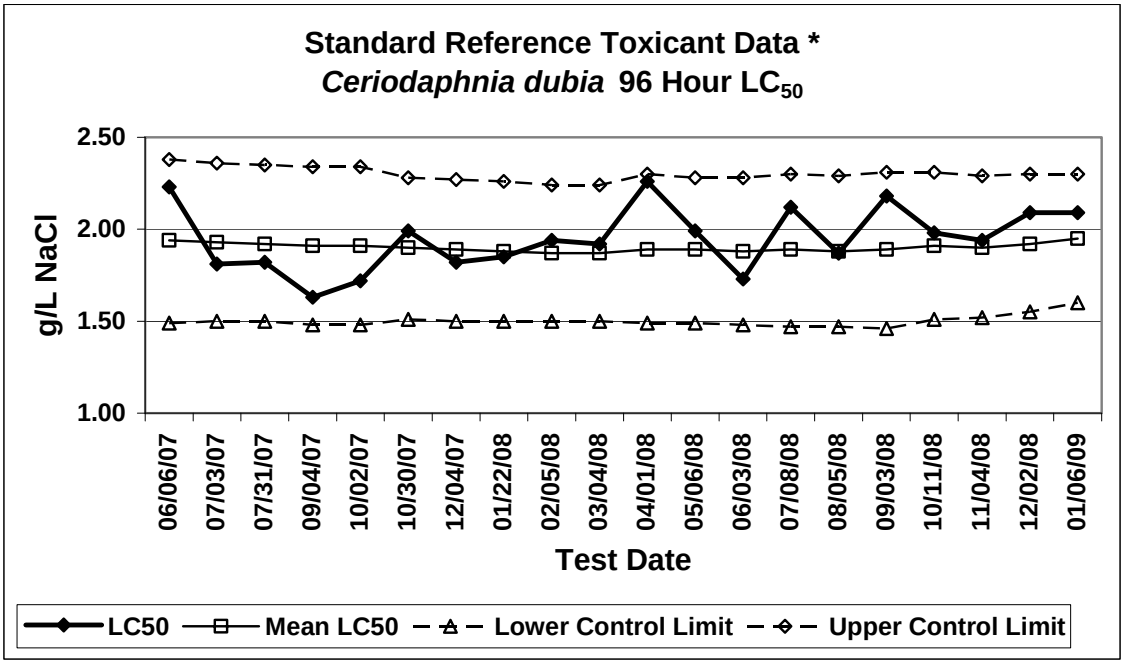
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
06/06/07	2.23	1.94	0.22	1.49	2.38
07/03/07	1.81	1.93	0.22	1.50	2.36
07/31/07	1.82	1.92	0.21	1.50	2.35
09/04/07	1.63	1.91	0.22	1.48	2.34
10/02/07	1.72	1.91	0.21	1.48	2.34
10/30/07	1.99	1.90	0.19	1.51	2.28
12/04/07	1.82	1.89	0.19	1.50	2.27
01/22/08	1.85	1.88	0.19	1.50	2.26
02/05/08	1.94	1.87	0.18	1.50	2.24
03/04/08	1.92	1.87	0.18	1.50	2.24
04/01/08	2.26	1.89	0.20	1.49	2.30
05/06/08	1.99	1.89	0.20	1.49	2.28
06/03/08	1.73	1.88	0.20	1.48	2.28
07/08/08	2.12	1.89	0.21	1.47	2.30
08/05/08	1.87	1.88	0.20	1.47	2.29
09/03/08	2.18	1.89	0.21	1.46	2.31
10/11/08	1.98	1.91	0.20	1.51	2.31
11/04/08	1.94	1.90	0.19	1.52	2.29
12/02/08	2.09	1.92	0.19	1.55	2.30
01/06/09	2.09	1.95	0.17	1.60	2.30

Lower Control Limit = mean - 2 * Std Dev
Upper Control Limit = mean + 2 * Std Dev

CV = 8.92
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

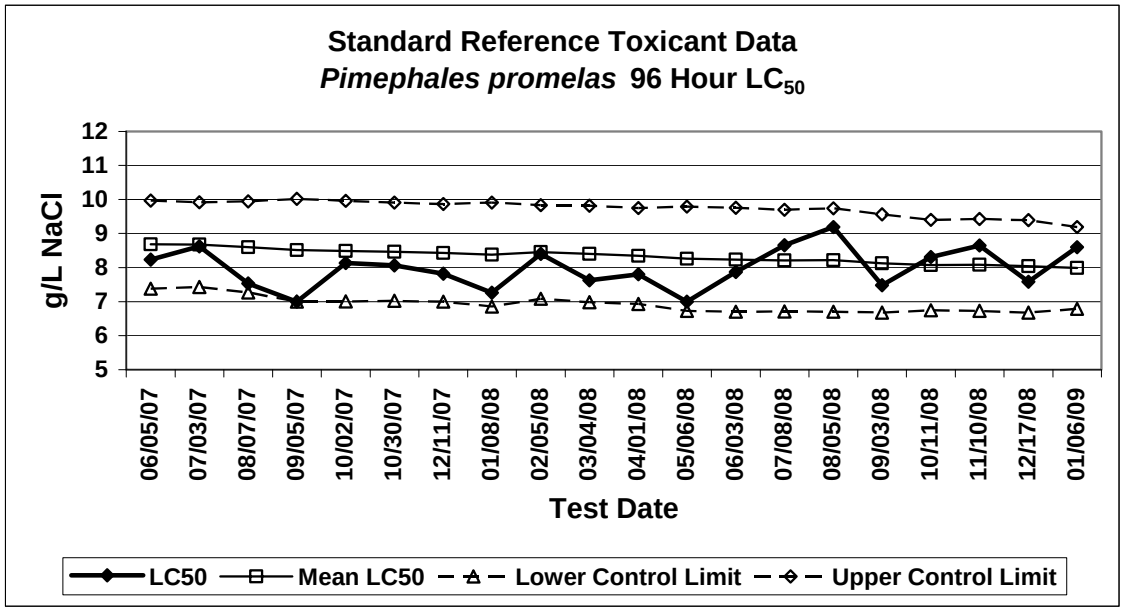
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Pimephales promelas (fathead minnow) - Sodium Chloride (NaCl)

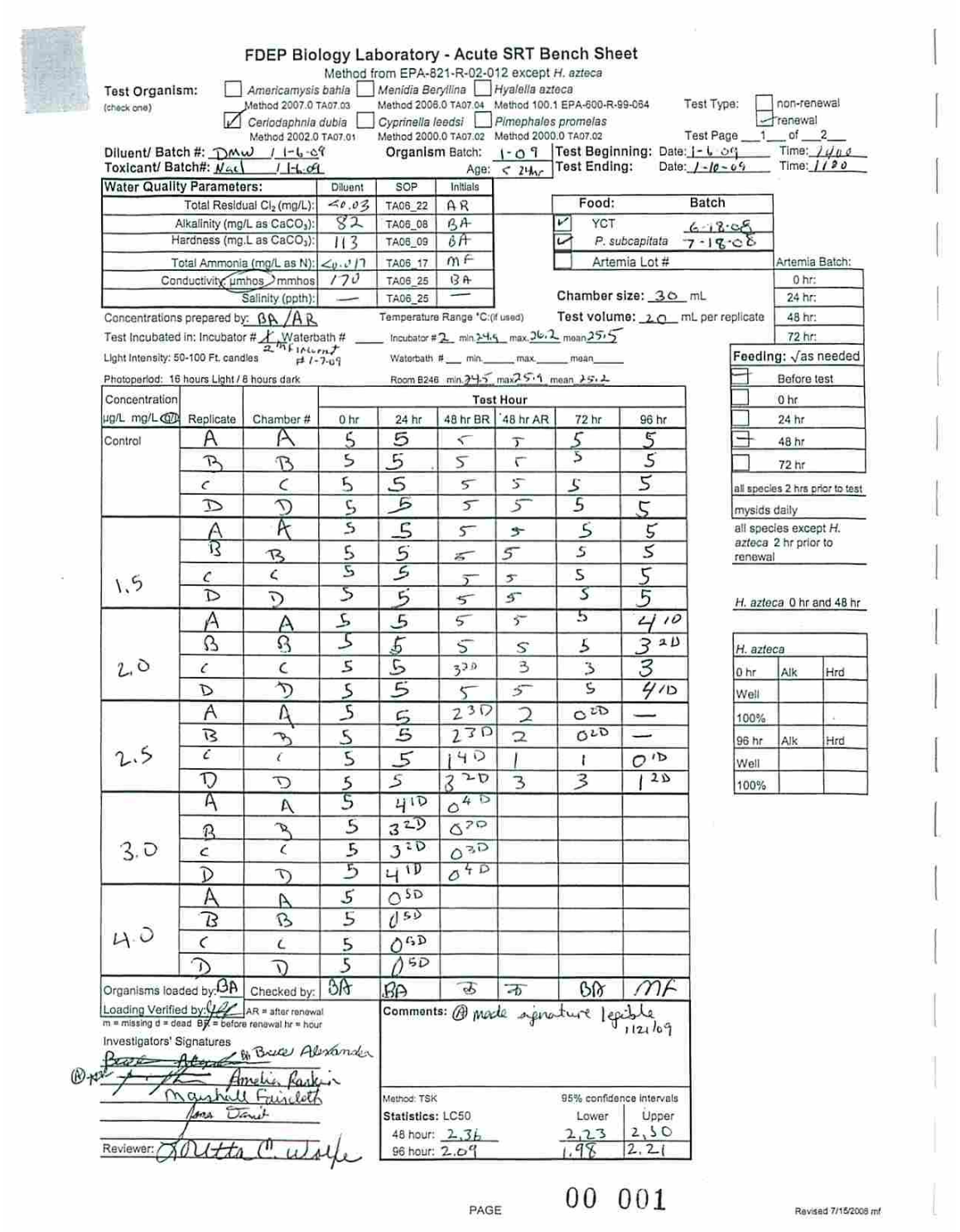
Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
06/05/07	8.23	8.68	0.65	7.38	9.97
07/03/07	8.62	8.67	0.62	7.43	9.92
08/07/07	7.53	8.60	0.67	7.27	9.94
09/05/07	7.00	8.51	0.75	7.00	10.02
10/02/07	8.13	8.49	0.74	7.01	9.96
10/30/07	8.06	8.46	0.72	7.02	9.91
12/11/07	7.82	8.43	0.72	7.00	9.87
01/08/08	7.26	8.38	0.76	6.85	9.91
02/05/08	8.40	8.45	0.69	7.08	9.83
03/04/08	7.62	8.40	0.71	6.98	9.82
04/01/08	7.80	8.34	0.71	6.93	9.75
05/06/08	7.00	8.26	0.76	6.73	9.79
06/03/08	7.87	8.23	0.77	6.7	9.76
07/08/08	8.66	8.21	0.75	6.71	9.70
08/05/08	9.19	8.22	0.76	6.7	9.74
09/03/08	7.48	8.12	0.72	6.68	9.56
10/11/08	8.31	8.07	0.67	6.74	9.40
11/10/08	8.65	8.08	0.67	6.73	9.43
12/17/08	7.58	8.04	0.68	6.68	9.39
01/06/09	8.60	7.99	0.60	6.79	9.19

Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

CV = 7.48%
EPA reference 75th quartile CV = 19%



Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☑ renewal

Test Page 1 of 2

Diluent/ Batch #: DMW / 1-6-09 Toxicant/ Batch#: NaCl / 1-6-09

Organism Batch: 1-09 Age: < 24hr

Test Beginning: Date: 1-6-09 Time: 1400

Test Ending: Date: 1-10-09 Time: 1130

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AR
Alkalinity (mg/L as $CaCO_3$):	82	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	113	TA06_09	BA
Total Ammonia (mg/L as N):	<0.07	TA06_17	MF
Conductivity: µmhos / mmhos	170	TA06_25	BA
Salinity (ppth):	—	TA06_25	—

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

Artemia Batch:

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

Chamber size: 30 mL

Test volume: 20 mL per replicate

Concentrations prepared by: BA / AR

Temperature Range °C: (if used)

Test Incubated in: Incubator # 1 Waterbath # ____ Incubator # 2 min. 24.9 max. 26.2 mean 25.5

Light Intensity: 50-100 Ft. candles (2 MF Instrument # 1-7-09)

Waterbath # ___ min. ____ max. ____ mean ____

Photoperiod: 16 hours Light / 8 hours dark

Room B246 min. 24.5 max 25.9 mean 25.2

Feeding: √as needed

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

all species 2 hrs prior to test

mysids daily

all species except *H. azteca* 2 hr prior to renewal

H. azteca 0 hr and 48 hr

Concentration µg/L mg/L (circle)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1.5	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
2.0	A	A	5	5	5	5	5	4 1D
	B	B	5	5	5	5	5	3 2D
	C	C	5	5	3 2D	3	3	3
	D	D	5	5	5	5	5	4 1D
2.5	A	A	5	5	2 3D	2	0 2D	—
	B	B	5	5	2 3D	2	0 2D	—
	C	C	5	5	1 4D	1	1	0 1D
	D	D	5	5	3 2D	3	3	1 2D
3.0	A	A	5	4 1D	0 4D			
	B	B	5	3 2D	0 3D			
	C	C	5	3 2D	0 3D			
	D	D	5	4 1D	0 4D			
4.0	A	A	5	0 5D				
	B	B	5	0 5D				
	C	C	5	0 5D				
	D	D	5	0 5D				
Organisms loaded by: BA		Checked by:	BA	BA	~~B~~	~~B~~	BA	MF

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

Loading Verified by: AR = after renewal

m = missing d = dead BR = before renewal hr = hour

Comments: @ made signature legible 1/21/09

Investigators' Signatures

@ Bruce Alexander

Amelia Parkin

Marshall Faircloth

Jana Davis

Reviewer: Britta C. Wolfe

Method: TSK	95% confidence Intervals	
Statistics: LC50	Lower	Upper
48 hour: 2.36	2.23	2.50
96 hour: 2.09	1.98	2.21

PAGE 00 001

Revised 7/15/2008 mf

Appendix C. (continued)

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

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

Test Beginning: Date: 1-6-09 Time: 1400
Test Ending: Date: 1-10-09 Time: 1100
Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (circle)	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☐ mmhos	Salinity (ppth)
Control	M	0 hr	7.9	24.0	7.6	0.~~1[illegible]~~ 0.170	corrected reading 1-12-09 MF
	A	24 hr					
	M	48 hr BR	8.0	23.7	7.2	0.235	
	M	48 hr AR	8.1	24.0	7.8	0.179	
		72 hr					
	A	96 hr	8.1	24.1	7.5	0.195	
1.5	M	0 hr	7.9	24.0	7.7	2.91	
	A	24 hr					
	M	48 hr BR	8.0	23.5	6.5	3.41	
	M	48 hr AR	8.1	24.0	7.7	2.87	
		72 hr					
	A	96 hr	8.0	24.1	7.6	3.01	
2.0	M	0 hr	8.0	24.0	7.8	3.81	
	A	24 hr					
	M	48 hr BR	8.1	23.4	6.1	4.59	
	M	48 hr AR	8.1	24.0	7.8	3.83	
		72 hr					
	A	96 hr	8.0	24.0	7.6	4.29	
2.5	M	0 hr	8.0	24.0	7.8	4.75	
	A	24 hr					
	M	48 hr BR	8.1	23.5	6.6	5.45	
	M	48 hr AR	8.1	24.0	7.8	4.74	
		72 hr					
	D	96 hr	8.0	24.1	7.6	5.18	
3.0	M	0 hr	8.1	24.0	7.8	5.62	
	A	24 hr					
	M	48 hr BR	8.1	23.5	6.3	6.19	
	M (A)	48 hr AR	8.1	24.1	7.7	5.59	
		72 hr					
		96 hr					
4.0	M	0 hr	8.1	24.0	7.9	7.3	
	A	24 hr	7.7	24.0	6.7	7.2	
		48 hr BR					
		48 hr AR					
	NA MF	72 hr					
	~~D~~ 1-10-09	96 hr					

Investigators Signatures
(B) Brent Alexander
Amalia Rankin
Marshall Faircloth
James David
Bruce Alexander
Reviewed By: Loretta C. Wolf

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

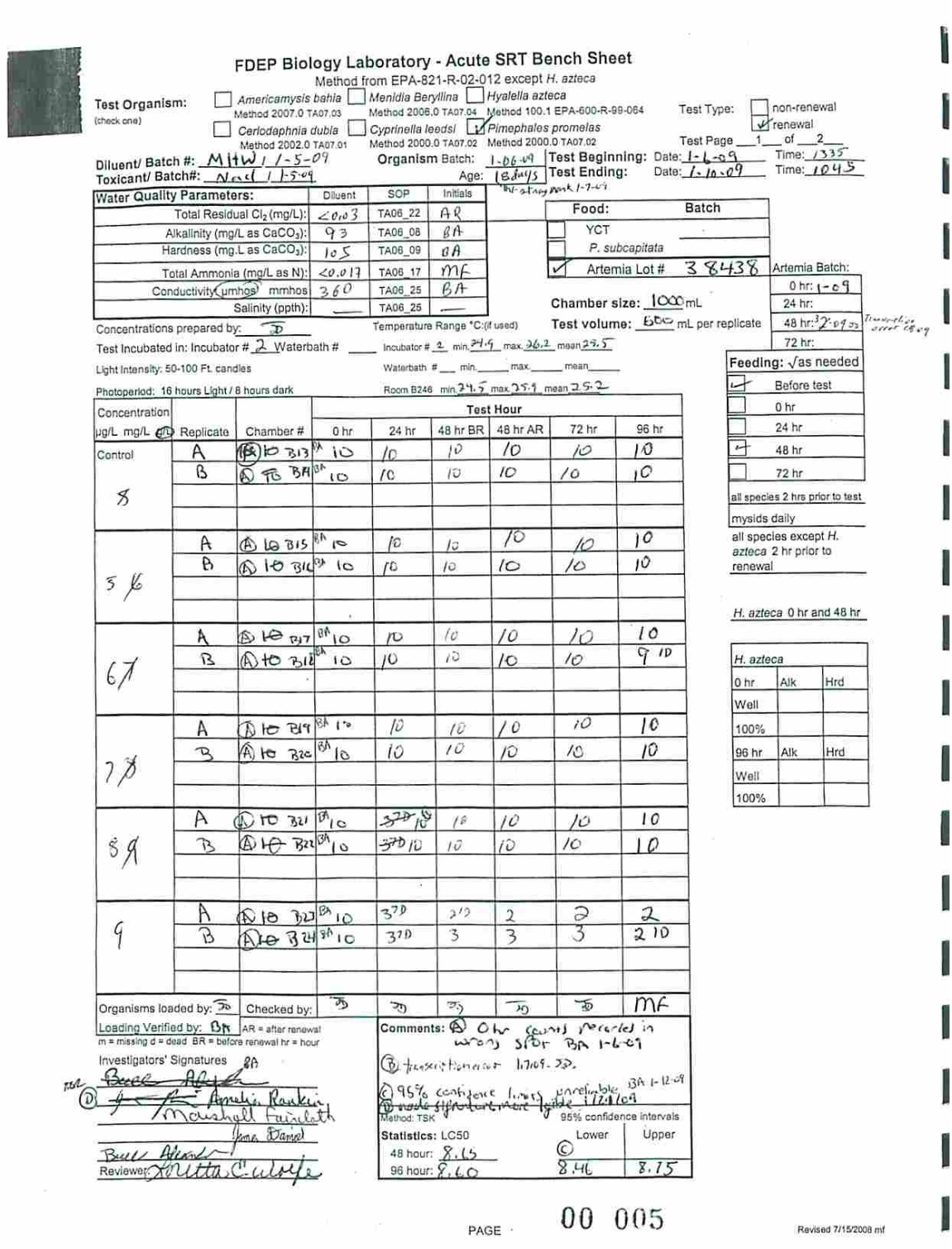
Measure/record salinity for marine tests

Comments:
(A) 48 hr AR not applicable MF 1-12-09
(B) made signature legible 1/21/09

PAGE 00 002

Revised 07/15/2008 MF

Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☑ renewal

Test Page 1 of 2

Diluent/ Batch #: M+W 1-5-09 Organism Batch: 1-06-09 Test Beginning: Date: 1-6-09 Time: 1335

Toxicant/ Batch#: NaCl 1-5-09 Age: 18 days Test Ending: Date: 1-10-09 Time: 1045

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	AR
Alkalinity (mg/L as $CaCO_3$):	93	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	105	TA06_09	BA
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity (µmhos) mmhos	3.60	TA06_25	BA
Salinity (ppth):	—	TA06_25	—

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

Artemia Batch:

0 hr:	1-09
24 hr:	
48 hr:	1-09 1035
72 hr:	

Chamber size: 1000 mL

Test volume: 800 mL per replicate

Concentrations prepared by: D Temperature Range °C:(if used)

Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min. 24.9 max. 26.2 mean 25.5

Light Intensity: 50-100 Ft. candles Waterbath # ___ min. ____ max. ____ mean ____

Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 24.5 max. 25.9 mean 25.2

Concentration µg/L mg/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	(A) 10 B13	BA 10	10	10	10	10	10
	B	(A) 10 B14	BA 10	10	10	10	10	10
8								
	A	(A) 10 B15	BA 10	10	10	10	10	10
	B	(A) 10 B16	BA 10	10	10	10	10	10
5 6								
	A	(A) 10 B17	BA 10	10	10	10	10	10
	B	(A) 10 B18	BA 10	10	10	10	10	9 10
6 7								
	A	(A) 10 B19	BA 10	10	10	10	10	10
	B	(A) 10 B20	BA 10	10	10	10	10	10
7 8								
	A	(A) 10 B21	BA 10	~~370~~ 10	10	10	10	10
	B	(A) 10 B22	BA 10	~~370~~ 10	10	10	10	10
8 9								
	A	(A) 10 B23	BA 10	370	3 10	2	2	2
	B	(A) 10 B24	BA 10	370	3	3	3	2 10
9								
Organisms loaded by: JD	Checked by:		JD	JD	JD	JD	JD	MF

Loading Verified by: BA AR = after renewal

m = missing d = dead BR = before renewal hr = hour

Investigators' Signatures BA

Reviewer: Loretta C. Wolfe

Comments: (A) 0 hr counts recorded in wrong spot BA 1-6-09

(B) Transcription error 1/7/09 JD

(C) 95% confidence limits unreliable BA 1-12-09

(D) made significant figure 1/22/09

Method: TSK 95% confidence intervals

Statistics: LC50	Lower	Upper
48 hour: 8.65	(C)	
96 hour: 8.60	8.46	8.75

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

Feeding: √as needed

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

all species 2 hrs prior to test

mysids daily

all species except *H. azteca* 2 hr prior to renewal

H. azteca 0 hr and 48 hr

PAGE 00 005

Revised 7/15/2008 mf

Appendix C. (continued)

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

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

Test Page 2 of 2

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

Test Beginning: Date: 1-6-09 Time: 1335
Test Ending: Date: 1-10-09 Time: 1045

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L %	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity (ppth)
Control	A	0 hr	7.5	24.0	8.0	0.360	
	B	24 hr	7.8	24.2	6.9	0.342	
	A	48 hr BR	8.0	24.5	7.2	0.387	
	A	48 hr AR	8.2	24.0	7.5	0.394	
	B	72 hr	7.9	24.0	7.2	0.357	
	A	96 hr	8.1	24.5	7.2	0.358	
5.0	A	0 hr	7.6	24.0	8.1	9.65	
	B	24 hr	7.8	24.4	6.8	8.99	
	A	48 hr BR	7.9	24.5	6.8	9.44	
	A	48 hr AR	8.1	24.0	7.5	9.46	
	B	72 hr	7.8	24.2	6.7	9.62	
	A	96 hr	8.2	25.0	6.5	9.7	
6.0	A	0 hr	7.8	24.0	8.2	11.6	
	B	24 hr	7.8	24.5	6.7	11.2	
	A	48 hr BR	7.9	24.5	6.8	11.7	
	A	48 hr AR	8.1	24.0	7.5	11.5	
	B	72 hr	7.8	24.1	6.9	11.6	
	A	96 hr	8.2	24.6	6.4	11.8	
7.0	A	0 hr	7.9	24.0	8.2	13.2	
	B	24 hr	7.8	24.4	6.6	12.2	
	A	48 hr BR	7.9	24.1	6.7	12.7	
	A	48 hr AR	8.0	24.0	7.5	13.0	
	B	72 hr	7.8	24.0	6.7	13.1	
	A	96 hr	8.1	24.6	6.5	12.3	
8.0	A	0 hr	8.0	24.0	8.2	15.2	
	B	24 hr	7.7	24.6	6.6	14.1	
	A	48 hr BR	7.8	24.2	6.6	14.7	
	A	48 hr AR	8.0	24.0	7.4	15.1	
	B	72 hr	7.8	24.0	6.6	15.3	
	A	96 hr	8.0	25.0	6.5	15.5	
9.0	A	0 hr	8.0	24.0	8.1	16.5	
	B	24 hr	7.7	24.6	6.5	15.4	
	A	48 hr BR	8.8	24.2	6.6	16.2	
	A	48 hr AR	8.0	24.0	7.4	16.4	
	B	72 hr	7.8	24.0	6.8	16.5	
	A	96 hr	8.0	24.6	6.7	16.9	

Investigators Signatures
(A) Amelia Rankin
Marshall Faircloth
Reviewed By: Arletta Cichra

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

Measure/record salinity for marine tests

Comments: (A) made signature more legible 1/21/09

PAGE 00 006

Revised 07/15/2008 MF

Appendix C. (continued)

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

DATE: 1-6-09 DURATION: 96 hr TOXICANT : NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
1.50	20	0
2.00	20	6
2.50	20	19
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: 0.00%

SPEARMAN-KARBER ESTIMATES: **LC50: 2.09**
95% LOWER CONFIDENCE: 1.98
95% UPPER CONFIDENCE: 2.21

***Pimephales promelas* Acute Standard Reference Toxicant Test**

DATE: 1-6-09 DURATION: 96 hr TOXICANT: NaCl
SPECIES: *Pimephales promelas*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
5.00	20	0
6.00	20	1
7.00	20	0
8.00	20	0
9.00	20	16

SPEARMAN-KARBER TRIM: 20.00%

SPEARMAN-KARBER ESTIMATES: **LC50: 8.60**
95% LOWER CONFIDENCE: 8.46
95% UPPER CONFIDENCE: 8.75

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING. ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

Appendix D. Test Organism Receipt(s)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 1/5/09

Shipped to: FDEP

P.O. No:

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia	150	4 DAYS	M5090101	25°C	7.9	20‰
Menidia beryllina	150	12 DAYS	SS081224	25°C	7.9	20‰
						Hardness
Cyprinella leedsi	200	12 DAYS	CL081224	25°C	7.7	76mg/L
Pimephales promelas	150	7 DAYS	FM081229	25°C	7.7	76mg/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: 1/26/09

Shipped to: FDEP

P.O. No: N/A

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia						
Menidia beryllina						
						Hardness
Cyprinella leedsi	X					
Pimephales promelas	450	<24Hrs	FM090125-1445	25°C	7.8	80mg/L
	100	8DA-1S	FM090118	25°C	7.8	80mg/L

Packed by: JW

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 River Oaks AWWTP facility Outfall D-001, sampled on January 26, 2009.

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
1/26/2009 10:30	Field Blank	Metals	Aluminum	60	U	ug/L	60	240
1/26/2009 10:30	Field Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
1/26/2009 10:30	Field Blank	Metals	Beryllium	0.025	U	ug/L	0.025	0.1
1/26/2009 10:30	Field Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
1/26/2009 10:30	Field Blank	Metals	Mercury	0.12	U	ug/L	0.12	0.5
1/26/2009 10:30	Field Blank	Metals	Copper	0.5	U	ug/L	0.5	0.5
1/26/2009 10:30	Field Blank	Metals	Zinc	5	U	ug/L	5	20
1/26/2009 10:30	Field Blank	Metals	Antimony	0.25	U	ug/L	0.25	1
1/26/2009 10:30	Field Blank	Metals	Chromium	0.2	U	ug/L	0.2	0.8
1/26/2009 10:30	Field Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
1/26/2009 10:30	Field Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
1/26/2009 10:30	Field Blank	Metals	Silver	0.01	U	ug/L	0.01	0.04
1/26/2009 10:30	Field Blank	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
1/26/2009 10:30	Field Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
1/26/2009 10:30	Field Blank	Metals	Iron	30	U	ug/L	30	120
1/26/2009 10:30	Field Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
1/26/2009 10:30	Field Blank	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
1/26/2009 10:30	Field Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
1/26/2009 10:30	Field Blank	Pesticides	Butylate	0.19	UJ	ug/L	0.19	0.76
1/26/2009 10:30	Field Blank	Pesticides	Fonofos	0.097	UJ	ug/L	0.097	0.39
1/26/2009 10:30	Field Blank	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
1/26/2009 10:30	Field Blank	Pesticides	Aldrin	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:30	Field Blank	Pesticides	DDD-p,p'	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:30	Field Blank	Pesticides	Toxaphene	0.74	UQ	ug/L	0.74	3
1/26/2009 10:30	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
1/26/2009 10:30	Field Blank	Pesticides	DDE-p,p'	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:30	Field Blank	Pesticides	Delta-BHC	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:30	Field Blank	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
1/26/2009 10:30	Field Blank	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
1/26/2009 10:30	Field Blank	Pesticides	Metalaxyl	0.24	UJ	ug/L	0.24	0.96
1/26/2009 10:30	Field Blank	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
1/26/2009 10:30	Field Blank	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
1/26/2009 10:30	Field Blank	Pesticides	Alpha-BHC	0.0098	UQ	ug/L	0.0098	0.039

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
1/26/2009 10:30	Field Blank	Pesticides	Endosulfan I	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:30	Field Blank	Pesticides	Endrin	0.049	UQ	ug/L	0.049	0.2
1/26/2009 10:30	Field Blank	Pesticides	Methoxychlor	0.049	UQJ	ug/L	0.049	0.2
1/26/2009 10:30	Field Blank	Pesticides	Chlorpyrifos Methyl	0.097	U	ug/L	0.097	0.39
1/26/2009 10:30	Field Blank	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
1/26/2009 10:30	Field Blank	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
1/26/2009 10:30	Field Blank	Pesticides	Hexazinone	0.097	U	ug/L	0.097	0.39
1/26/2009 10:30	Field Blank	Pesticides	Metribuzin	0.097	U	ug/L	0.097	0.39
1/26/2009 10:30	Field Blank	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
1/26/2009 10:30	Field Blank	Pesticides	Endosulfan Sulfate	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:30	Field Blank	Pesticides	Gamma-BHC	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:30	Field Blank	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
1/26/2009 10:30	Field Blank	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
1/26/2009 10:30	Field Blank	Pesticides	Parathion Methyl	0.097	U	ug/L	0.097	0.39
1/26/2009 10:30	Field Blank	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
1/26/2009 10:30	Field Blank	Pesticides	DDT-p,p'	0.029	UQ	ug/L	0.029	0.12
1/26/2009 10:30	Field Blank	Pesticides	Alachlor	0.58	UJ	ug/L	0.58	2.3
1/26/2009 10:30	Field Blank	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
1/26/2009 10:30	Field Blank	Pesticides	Ethoprop	0.097	U	ug/L	0.097	0.39
1/26/2009 10:30	Field Blank	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
1/26/2009 10:30	Field Blank	Pesticides	Chlordane	0.2	UQ	ug/L	0.2	0.8
1/26/2009 10:30	Field Blank	Pesticides	Endosulfan II	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:30	Field Blank	Pesticides	Naled	0.78	U	ug/L	0.78	3.1
1/26/2009 10:30	Field Blank	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
1/26/2009 10:30	Field Blank	Pesticides	Endrin Aldehyde	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:30	Field Blank	Pesticides	Heptachlor	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:30	Field Blank	Pesticides	Heptachlor Epoxide	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:30	Field Blank	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
1/26/2009 10:30	Field Blank	Pesticides	Beta-BHC	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:30	Field Blank	Pesticides	Dieldrin	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Endrin aldehyde	3.9	U	ug/L	3.9	16
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Fluoranthene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Naphthalene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Endosulfan I	3.9	U	ug/L	3.9	16
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Endosulfan sulfate	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	4,4'-DDE	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Aldrin	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Anthracene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Dieldrin	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Fluorene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	alpha-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Heptachlor	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Phenanthrene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	UJ	ug/L	39	160
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	beta-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	delta-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	4,4'-DDD	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Chrysene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Pyrene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Endosulfan II	3.9	U	ug/L	3.9	16
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Heptachlor epoxide	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	gamma-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	4,4'-DDT	1.5	U	ug/L	1.5	5.8
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Acenaphthene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:30	Field Blank	Priority Organic Pollutants	Endrin	1.5	U	ug/L	1.5	5.8
1/26/2009 8:00	Effluent Comp	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
1/26/2009 8:00	Effluent Comp	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
1/26/2009 8:00	Effluent Comp	Field Parameter	Sample Depth	0.2		m		
1/26/2009 10:15	Effluent Grab	AGP/LN	Algal Growth Potential	42.2		mg DryWt/L	0.3	0.9

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
1/26/2009 10:15	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
1/26/2009 10:15	Effluent Grab	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	17		mg/L	0.2	2
1/26/2009 10:15	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.24	U	ug/L	0.24	0.71
1/26/2009 10:15	Effluent Grab	Overflow	Fecal Coliforms-Membrane Filter	2	U	#/100 mL	2	
1/26/2009 10:15	Effluent Grab	Metals	Mercury	0.12	U	ug/L	0.12	0.5
1/26/2009 10:15	Effluent Grab	Metals	Selenium	0.47	I	ug/L	0.2	0.8
1/26/2009 10:15	Effluent Grab	Metals	Aluminum	90	I	ug/L	60	240
1/26/2009 10:15	Effluent Grab	Metals	Nickel	1.25	A	ug/L	0.25	1
1/26/2009 10:15	Effluent Grab	Metals	Lead	0.2	U	ug/L	0.2	0.8
1/26/2009 10:15	Effluent Grab	Metals	Copper	1.7	A	ug/L	0.5	0.5
1/26/2009 10:15	Effluent Grab	Metals	Chromium	0.21	I	ug/L	0.2	0.8
1/26/2009 10:15	Effluent Grab	Metals	Calcium	82.9	A	mg/L	0.075	0.3
1/26/2009 10:15	Effluent Grab	Metals	Zinc	29	A	ug/L	5	20
1/26/2009 10:15	Effluent Grab	Metals	Antimony	0.29	I	ug/L	0.25	1
1/26/2009 10:15	Effluent Grab	Metals	Cadmium	0.038	I	ug/L	0.03	0.12
1/26/2009 10:15	Effluent Grab	Metals	Silver	0.01	U	ug/L	0.01	0.04
1/26/2009 10:15	Effluent Grab	Metals	Iron	30	U	ug/L	30	120
1/26/2009 10:15	Effluent Grab	Metals	Magnesium	8.2	A	mg/L	0.04	0.16
1/26/2009 10:15	Effluent Grab	Metals	Arsenic	0.48	I	ug/L	0.25	1
1/26/2009 10:15	Effluent Grab	Metals	Beryllium	0.025	U	ug/L	0.025	0.1
1/26/2009 10:15	Effluent Grab	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
1/26/2009 10:15	Effluent Grab	Nutrients	NO2NO3-N	1.2		mg N/L	0.04	0.1
1/26/2009 10:15	Effluent Grab	Nutrients	O-Phosphate-P	0.15		mg P/L	0.008	0.02
1/26/2009 10:15	Effluent Grab	Nutrients	Kjeldahl Nitrogen	1.4		mg N/L	0.4	1
1/26/2009 10:15	Effluent Grab	Nutrients	TSS	4	U	mg/L	4	16
1/26/2009 10:15	Effluent Grab	Nutrients	Total-P	0.16		mg P/L	0.02	0.06
1/26/2009 10:15	Effluent Grab	Nutrients	Ammonia-N	0.036		mg N/L	0.01	0.02
1/26/2009 10:15	Effluent Grab	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
1/26/2009 10:15	Effluent Grab	Pesticides	Aldrin	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:15	Effluent Grab	Pesticides	Endrin	0.049	UQ	ug/L	0.049	0.2
1/26/2009 10:15	Effluent Grab	Pesticides	Atrazine	0.048	U	ug/L	0.048	0.19
1/26/2009 10:15	Effluent Grab	Pesticides	Bromacil	0.19	U	ug/L	0.19	0.76
1/26/2009 10:15	Effluent Grab	Pesticides	Parathion Methyl	0.095	U	ug/L	0.095	0.38
1/26/2009 10:15	Effluent Grab	Pesticides	Chlordane	0.2	UQ	ug/L	0.2	0.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
1/26/2009 10:15	Effluent Grab	Pesticides	DDE-p,p'	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:15	Effluent Grab	Pesticides	Toxaphene	0.73	UQ	ug/L	0.73	2.9
1/26/2009 10:15	Effluent Grab	Pesticides	Alachlor	0.57	UJ	ug/L	0.57	2.3
1/26/2009 10:15	Effluent Grab	Pesticides	Ametryn	0.048	U	ug/L	0.048	0.19
1/26/2009 10:15	Effluent Grab	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
1/26/2009 10:15	Effluent Grab	Pesticides	Gamma-BHC	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:15	Effluent Grab	Pesticides	Metolachlor	0.48	U	ug/L	0.48	1.9
1/26/2009 10:15	Effluent Grab	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
1/26/2009 10:15	Effluent Grab	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
1/26/2009 10:15	Effluent Grab	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
1/26/2009 10:15	Effluent Grab	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
1/26/2009 10:15	Effluent Grab	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
1/26/2009 10:15	Effluent Grab	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
1/26/2009 10:15	Effluent Grab	Pesticides	Naled	0.76	U	ug/L	0.76	3
1/26/2009 10:15	Effluent Grab	Pesticides	Dieldrin	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:15	Effluent Grab	Pesticides	Endosulfan II	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:15	Effluent Grab	Pesticides	Heptachlor	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:15	Effluent Grab	Pesticides	Methoxychlor	0.049	UQJ	ug/L	0.049	0.2
1/26/2009 10:15	Effluent Grab	Pesticides	Ethoprop	0.095	U	ug/L	0.095	0.38
1/26/2009 10:15	Effluent Grab	Pesticides	Beta-BHC	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:15	Effluent Grab	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
1/26/2009 10:15	Effluent Grab	Pesticides	Chlorpyrifos Methyl	0.095	U	ug/L	0.095	0.38
1/26/2009 10:15	Effluent Grab	Pesticides	Metribuzin	0.095	U	ug/L	0.095	0.38
1/26/2009 10:15	Effluent Grab	Pesticides	Alpha-BHC	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:15	Effluent Grab	Pesticides	DDT-p,p'	0.029	UQ	ug/L	0.029	0.12
1/26/2009 10:15	Effluent Grab	Pesticides	Endosulfan I	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:15	Effluent Grab	Pesticides	Endosulfan Sulfate	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:15	Effluent Grab	Pesticides	Heptachlor Epoxide	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:15	Effluent Grab	Pesticides	Butylate	0.19	UJ	ug/L	0.19	0.76
1/26/2009 10:15	Effluent Grab	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
1/26/2009 10:15	Effluent Grab	Pesticides	Metalaxyl	0.24	UJ	ug/L	0.24	0.96
1/26/2009 10:15	Effluent Grab	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
1/26/2009 10:15	Effluent Grab	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
1/26/2009 10:15	Effluent Grab	Pesticides	DDD-p,p'	0.02	UQ	ug/L	0.02	0.08

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
1/26/2009 10:15	Effluent Grab	Pesticides	Delta-BHC	0.0098	UQ	ug/L	0.0098	0.039
1/26/2009 10:15	Effluent Grab	Pesticides	Endrin Aldehyde	0.02	UQ	ug/L	0.02	0.08
1/26/2009 10:15	Effluent Grab	Pesticides	Fonofos	0.095	UJ	ug/L	0.095	0.38
1/26/2009 10:15	Effluent Grab	Pesticides	Hexazinone	0.095	U	ug/L	0.095	0.38
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Acenaphthylene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Aldrin	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Fluoranthene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	4,4'-DDT	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Anthracene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Dieldrin	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Phenanthrene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Heptachlor	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Naphthalene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9

Appendix E. (continued)

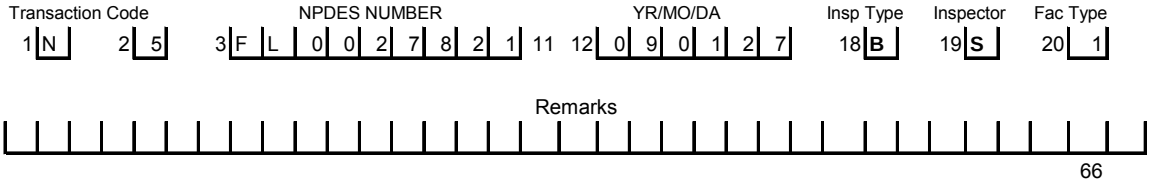
Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	4,4'-DDD	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Endosulfan I	3.9	U	ug/L	3.9	16
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Endosulfan II	3.9	U	ug/L	3.9	16
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Endosulfan sulfate	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	alpha-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Chrysene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Endrin aldehyde	3.9	U	ug/L	3.9	16
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Fluorene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Heptachlor epoxide	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	gamma-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	UJ	ug/L	39	160
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	4,4'-DDE	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Pyrene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	beta-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Acenaphthene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Endrin	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
1/26/2009 10:15	Effluent Grab	Priority Organic Pollutants	delta-BHC	1.5	U	ug/L	1.5	5.8
1/26/2009 10:15	Effluent Grab	Field Parameter	Specific Conductance	949		umhos/cm		
1/26/2009 10:15	Effluent Grab	Field Parameter	Sample Depth	0.2		m		
1/26/2009 10:15	Effluent Grab	Field Parameter	Dissolved Oxygen	8.77		mg/L		
1/26/2009 10:15	Effluent Grab	Field Parameter	Total Residual Chlorine	0.02		mg/L		
1/26/2009 10:15	Effluent Grab	Field Parameter	pH	7.58				
1/26/2009 10:15	Effluent Grab	Field Parameter	Temperature	23.75		C		

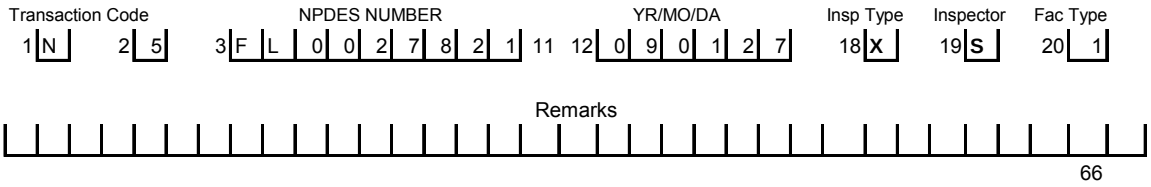
The Bioassay of River Oaks Advanced Wastewater Treatment Plant effluent sampled on January 26, 2009. NPDES #FL0027821.

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



The Priority Pollutants Analysis of River Oaks Advanced Wastewater Treatment Plant effluent sampled on January 26, 2009. NPDES #FL0027821.

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



Biological Analyses of River Oaks Advanced Wastewater Treatment Plant effluent sampled on January 26, 2009. NPDES #FL0027821.

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

