

Effluent Quality Assessment

Avon Park Correctional Institution WWTF

Polk County

NPDES #FL0040029

Sampled February 7, 2011

April 2011

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

CONTENTS

Introduction

Methods

Results and Discussion

Literature Cited

Tables

Table 1 Measured and predicted algal growth potential (AGP)

Table 2 Effluent limits, Class III Freshwater Criteria and chemical and microbiological data

Appendices

Appendix A Chain of Custody

Appendix B Bioassay Bench Sheets

Appendix C SRT Bench Sheets and Statistical Analyses

Appendix D Organism Receipt

Appendix E Chemical Analyses of Effluent

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

Appendix G EPA End Sheet

Avon Park Correctional Institution Wastewater Treatment Facility (WWTF) 10 miles East of U.S 27 on Hwy. 64, Avon Park, Polk County, Florida, 33825. NPDES #FL0040029. Effluent grab samples for biological and chemical analyses for this facility were collected on February 7, 2011.

Introduction

Avon Park Correctional Institution WWTF is a Type I activated sludge wastewater treatment facility which treats domestic wastewater. (See Appendix F for detailed facility information provided by Peter Wenner of FDEP Southwest District.)

Methods

Samples were collected from the EFD-01 and EFB-01 (total suspended solids only) NPDES sampling points for Outfall D-001 by Jason Cohen, Peter Wenner and Josephine Molé (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/bars/sas/sop/index.htm.

See Appendix A for the completed chain of custody form.

The 96-hour acute definitive 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.

The bioassay sample was aerated for 30 minutes at a rate of approximately 100 bubbles per minute to decrease the dissolved oxygen (DO) from 9.1 mg/L to 8.3 mg/L.

Results and Discussion

- **Toxicity Test Results**
  Tests were performed February 8 - 12, 2011.

  Ceriodaphnia dubia 96-hour acute definitive bioassay – LC_{50} > 100%, 5%* mortality in 100% sample at 96 hours

  Pimephales promelas 96-hour acute definitive bioassay – LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours

  *NOTE: In a 96-hour acute definitive 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.).

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

- **Algal Growth Potential**
  The effluent Algal Growth Potential (AGP) was 8.0 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) determined that AGP values above 5.0 mg dry weight/L represent "problem" threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen-limited. The predicted AGPs based on the inorganic nitrogen concentration and the total nitro-gen concentration were, respectively, 2.1 (±20%) mg dry wt/L and 25.8 (±20%) mg dry wt/L (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 N/L.

  Copper and zinc were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Chromium-III, iron and nickel were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Chlorophyll *a*, fecal coliforms and total suspended solids 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. See Appendix B for bioassay lab equipment.

Conclusion

The effluent sample collected from the EFD-01 sampling point for Outfall D-001 for this facility on February 7, 2011, was not acutely toxic to either test species during the 96-hour acute definitive bioassays. The effluent AGP result was greater than the "problem" threshold for fresh receiving waters suggesting that nutrient enrichment may be an issue. Effluent water quality samples collected on February 7, 2011, 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) and total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the Avon Park Correctionl Institution WWTF on February 7, 2011.

Avon Park Correctional Institution WWTF NPDES# FL0040029					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	8.0	2.1 ± 0.4	25.8 ± 5.2	0.035	0.4

Table 2. Effluent limits, Class III Freshwater Criteria and chemical and microbiological data for samples collected from the Avon Park Correctional Institution on February 7, 2011.

Avon Park Correctional Institution WWTF NPDES# FL0040029	Class III Criteria	Effluent Limits	Effluent	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	60	U
Arsenic	≤ 50	-	0.25	U
Cadmium	≤ 0.3 b	-	0.05	U
Calcium (mg/L)	-	-	24.5	A
Chromium-III	≤ 79.2 b	-	0.33	I
Copper	≤ 8.5 b	≤ 8.5 b	1.04	A
Iron	≤ 1,000	-	36	I
Lead	≤ 2.8 b	-	0.2	U
Magnesium (mg/L)	-	-	7.06	A
Mercury	≤ 0.012	-	-	
Nickel	≤ 47.8 b	-	0.82	I
Selenium	≤ 5.0	-	0.2	U
Silver	≤ 0.07	≤ 0.07 s	0.025	U
Zinc	≤ 109.8 b	-	23	A
Nutrients (mg/L)				
Ortho-phosphate	-	-	1.6	
Total Phosphorus	-	≤ 2.0 s	1.8	
Total Ammonia	-	Report	0.036	
Un-ionized Ammonia	≤ 0.02 s	≤ 0.02 s	≤ 0.02	c
Nitrate and Nitrite	-	Report	0.02	
Total Kjeldahl Nitrogen	-	-	0.66	
Organic Nitrogen	-	-	0.624	c
Total Nitrogen	-	≤ 6.0 s	0.68	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 6.0 s	8.0	
pH (SU)	6.0 - 8.5	6.0 - 8.5 s	7.9	
Conductivity (µmhos/cm)	≤ 1,275	-	456	
Temperature (°C)	-	Report	23.6	
Salinity	-	-	≤ 0.23	c
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01 s	≤ 0.03	UQ£
Chlorophyll *a* (µg/L) - Corrected	-	-	0.62	U
Phaeophytin (µg/L)	-	-	0.45	U
Total Suspended Solids (mg/L)	-	-	4	U
CBOD, 5 day (mg/L), N - inhibited	-	≤ 8.0 s	2.8	A
Flow (MGD)	-	0.5 a	0.295	a*
Hardness (mg $CaCO_3$)	-	Report	90.25	c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	≤ 25.0 s	1	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
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
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
NOEC - A no observed effect concentration less than 100% effluent will constitute a violation of this permit
¥ - Fecal coliform analysis performed at Advanced Environmental Laboratory, Tampa
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
£ - measurement taken in the FDEP laboratory
* - Measured from 12/09 - 11/10

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2011-02-07-20
Avon Park Correctional FYI3

Event ID *

Customer: SW-DIST
Project ID: FYI3
PMAS: 1143

Requester: Cari Butler
Collected By: P WEINNER, J. COHEN, J. MOLÉ
Sampling Agency:
Field Report Prepared By:
Send Final Report To: Joe Squitieri/ Michele Duggan

Lab ID *	Location / Field ID	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude / Longitude	Collection (begin)	Collection (end)	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number	Bottle Group(s)**	Comments
38172	EFD-01	FRESH	23.64	7.87	☐ dd ☐ dms	☐ Comp ☑ Grab Date 2/7/11 Time 1025 Eastern Central	Date Time Eastern Central		7.95		☐ m ☐ ft	0.22 / 456		A	
38173	BLANK	LAB DI H_2O			☐ dd ☐ dms	☐ Comp ☑ Grab Date 2/7/11 Time 1045 Eastern Central	Date Time Eastern Central				☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		B	
38174	EFB-01	FRESH			☐ dd ☐ dms	☐ Comp ☑ Grab Date 2/7/11 Time 1040 Eastern Central	Date Time Eastern Central				☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		C	
					☐ dd ☐ dms	☐ Comp ☐ Grab Date Time Eastern Central	Date Time Eastern Central				☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)			4 bissaw Rec'd in Tox by JD. 10:20 2.8.11

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	2/7/11 1500	FED Ex					CAL	2/8/11 920A

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: Avon Park Correctional

Address: 10 miles east of US 27 on Hwy 64

City: Avon Park County: Polk

Contact/District: Peter Wenner / SW

NPDES Permit #: FL 0040029

LIMS Job #: TLH-2011-02-08-16 LIMS Sample #: 1328105

Lims Data Entry: MF 2-15-11 Data Entry Verification: BA 2-15-11

Sample Collection: Date: 2-7-11 Time: 10:25

Hold Time Start: Date: 2-7-11 Time: 10:25

Comments:

Initial sample handling:

Instructions: Check yes or no. If yes is checked, complete blanks

PH adjustment: ☐ yes ☑ no Initial pH: ____ NaOH ____ N HCl ____ N ____ Drops mL Final pH: ____

Aeration: ☑ yes ☐ no Initial DO: 9.1 mg/L Final DO: 8.3 mg/L Duration: ~~15~~ 30 minutes Rate: ~ 100 bubbles/min BA 2-8-11

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

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

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

Sample Validation:

Instructions: Check yes or no. Fill in temperatures.

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

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

Investigators' Signatures:	Initials:
Kaia Cox	KC
Bruce Ac[illegible]	BA
Marshall Hamblett	MF
James Dimick	JD
REVIEWER: Suzy Miller	

Diluent/Control Batch#:	1.29.11	~~1.31.11~~ KC	1.31.11							
Water Quality Parameters	20% DMW	Well Water	Moderately Hard Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other: DMW 2.2.11	Original Sample	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	N/A	not measured		KC
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03			<0.03	<0.03	BA/KC	KC
Alkalinity (mg/L as $CaCO_3$):	83		78			86	138	KC	KC
Hardness (mg/L as $CaCO_3$):	87		92			86	93	KC	KC
Total Ammonia (mg/L as N):	<0.017		<0.017			<0.017	<0.017	MF	KC
Conductivity: ☑ µmhos ☐ mmhos	172		319			180	456	KC/JD	KC
Salinity (ppth):	—		—			—	—	—	—

V 1.8 1/13/10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1328105 SOP#: TA 07 01 Test # 1 of 2

Test Species:
Batch #: 2-7-11 Age: < 24hr
- [x] *Ceriodaphnia dubia*
- [ ] *Cyprinella leedsi*
- [ ] *Pimephales promelas*
- [ ] *Menidia beryllina*
- [ ] *Americamysis bahia*
- [ ] Other:_____

Test Validation
Control Survival ≥ 90%: [x] Yes [ ] No
Temperature Range ≤ 3° C: [x] Yes [ ] No

Diluent (Batch # (A) 1.29.11 2.2.11 **)**
- [ ] ASW
- [x] 20% DMW
- [ ] MHW
- [ ] Well

Test Type: [x] Acute [x] Definitive
[ ] Static [x] Static Renewal [ ] Flow-Through

Test Duration:
- [ ] 48 hr
- [x] 96 hr
- [ ] ___hr

Test Started: Date 2-8-11 Time 13:15

Test Ended: Date 2-12-11 Time 0940

Chamber Size 30 ml
Test Volume: 20 ml

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	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
6.25%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	4 ID	4
12.5%	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
25%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	4 ID	4	4	4
	D	D	5	5	5	5	5	5
50%	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
100%	A	A	5	5	5	5	5	5
	B	B	5	5	4 ID	4	4	4
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
Checked or Verified by:			BA	BA	BA	BA	BA	MF

Loaded/ Verified by: BA / MF
m = missing, d = dead, BR/AR Before/ After Renewal

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 5% LC50: >100%
Calculated LC50 (Definitive) 95% CI_____ Method_____

Food
- [x] YCT Batch# 11-7-10
- [x] P. subcapitata Batch# 10-22-10
- [ ] Artemia Lot#_____

Feeding and Artemia Batch #
- [x] 0 hr___ [x] Prior to Test
- [ ] 24 hr___
- [x] 48 hr___ [x] Prior to Renewal
- [ ] 72 hr___

Temperature Range (°C)
Incubator # 2
min. 26.2 max. 27.8 mean —
Incubator #___
min.___max.___mean___
Waterbath #___
min.___max.___mean___
Room B246
min. 22.5 max. 24.0 mean —
Light intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

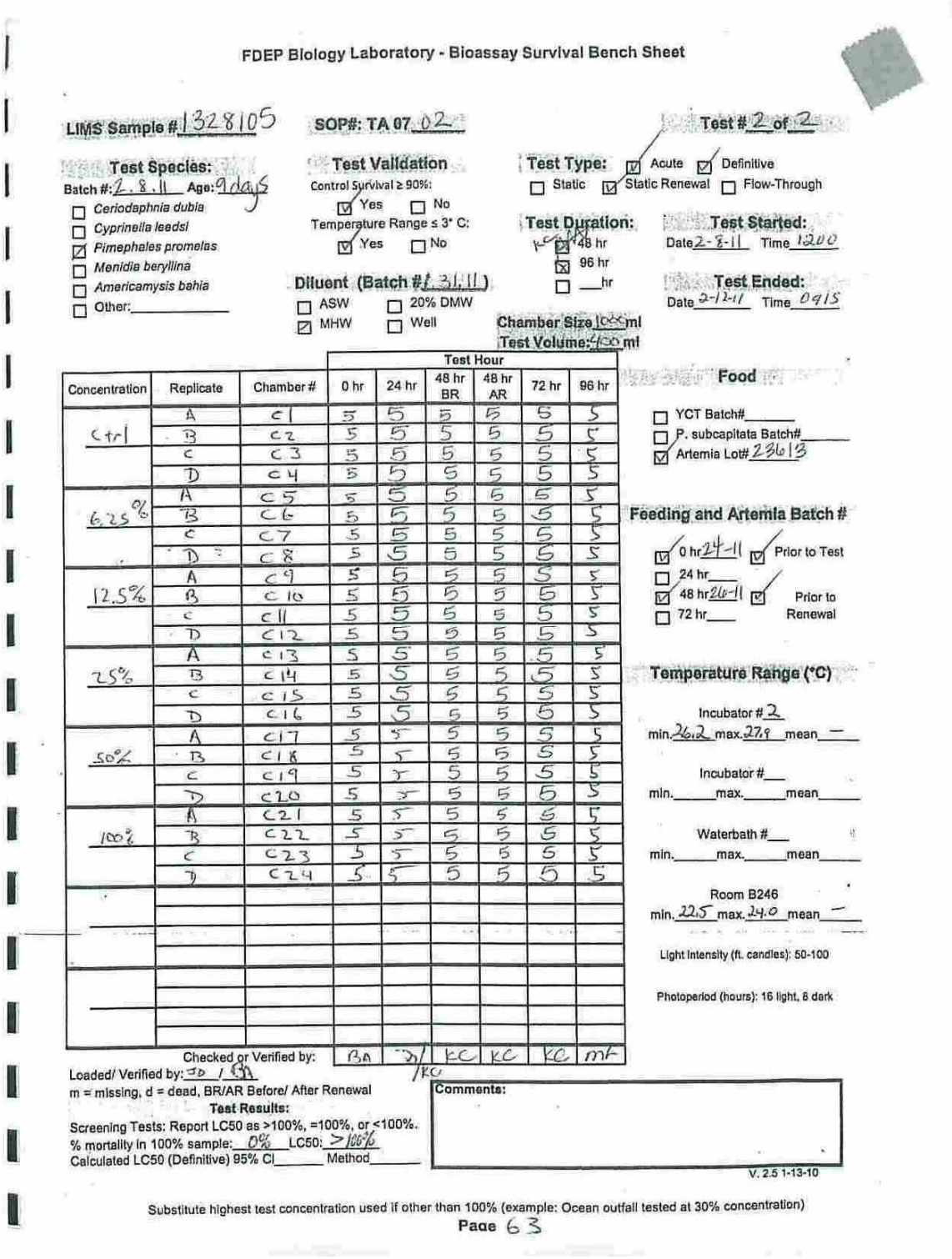
Comments: (A) DMW 1.29.11 used 2.8.11
DMW 2.2.11 used 2.9.11 through test end -KC-

V. 2.5 1-13-10

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

Page 52

Appendix B. (continued)



FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1328105 SOP#: TA 07.02 Test # 2 of 2

Test Species:
Batch #: 2.8.11 Age: 9 days
- ☐ *Ceriodaphnia dubia*
- ☐ *Cyprinella leedsi*
- ☒ *Pimephales promelas*
- ☐ *Menidia beryllina*
- ☐ *Americamysis bahia*
- ☐ Other:_____

Test Validation
Control Survival ≥ 90%: ☑ Yes ☐ No
Temperature Range ≤ 3° C: ☑ Yes ☐ No

Diluent (Batch # 1.31.11)
☐ ASW ☐ 20% DMW ☑ MHW ☐ Well

Test Type: ☐ Static ☑ Static Renewal ☑ Acute ☐ Flow-Through ☑ Definitive

Test Duration: ☑ 48 hr ☒ 96 hr ☐ ___hr

Test Started: Date 2-8-11 Time 1200

Test Ended: Date 2-12-11 Time 0915

Chamber Size 100 ml
Test Volume: 100 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	C1	5	5	5	5	5	5
	B	C2	5	5	5	5	5	5
	C	C3	5	5	5	5	5	5
	D	C4	5	5	5	5	5	5
6.25%	A	C5	5	5	5	5	5	5
	B	C6	5	5	5	5	5	5
	C	C7	5	5	5	5	5	5
	D	C8	5	5	5	5	5	5
12.5%	A	C9	5	5	5	5	5	5
	B	C10	5	5	5	5	5	5
	C	C11	5	5	5	5	5	5
	D	C12	5	5	5	5	5	5
25%	A	C13	5	5	5	5	5	5
	B	C14	5	5	5	5	5	5
	C	C15	5	5	5	5	5	5
	D	C16	5	5	5	5	5	5
50%	A	C17	5	5	5	5	5	5
	B	C18	5	5	5	5	5	5
	C	C19	5	5	5	5	5	5
	D	C20	5	5	5	5	5	5
100%	A	C21	5	5	5	5	5	5
	B	C22	5	5	5	5	5	5
	C	C23	5	5	5	5	5	5
	D	C24	5	5	5	5	5	5
Checked or Verified by:			BA	2/ KC	KC	KC	KC	mf

Food
- ☐ YCT Batch#_____
- ☐ P. subcapitata Batch#_____
- ☑ Artemia Lot# 23613

Feeding and Artemia Batch #
- ☑ 0 hr 24-11 ☑ Prior to Test
- ☐ 24 hr___
- ☑ 48 hr 26-11 ☑ Prior to Renewal
- ☐ 72 hr___

Temperature Range (°C)
Incubator # 2
min. 26.2 max. 27.9 mean —
Incubator #___
min.___ max.___ mean___
Waterbath #___
min.___ max.___ mean___
Room B246
min. 22.5 max. 24.0 mean —
Light Intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: JD / KC
m = missing, d = dead, BR/AR Before/ After Renewal

Test Results:
Screening Tests: Report LC50 as >100%, =100%, or <100%.
% mortality in 100% sample: 0% LC50: >100%
Calculated LC50 (Definitive) 95% CI_____ Method_____

Comments:

V. 2.5 1-13-10

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

Page 63

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1328105 Test # 1 of 2

Test Species:

☑ *Ceriodaphnia dubia* ☐ *Pimephales promelas* ☐ *Americamysis bahia*
☐ *Cyprinella leedsi* ☐ *Menidia beryllina* ☐ Other:_____

Test aerated: (if DO is < 4.0 mg/L) ☐ Yes ☑ No

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity* (ppth)
Ctrl	M	0 hr	7.9	26.0	8.2	172	
	—	24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.3	7.0	212	
	M	48 hr AR	7.9	26.0	7.8	180	
		72 hr	—	—	—	—	
	A	96 hr	7.9	24.2	7.8	200	
6.25%	M	0 hr	8.0	26.0	8.2	187	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.0	24.0	7.2	226	
	M	48 hr AR	8.0	26.0	8.3	198	
		72 hr	—	—	—	—	
	A	96 hr	8.0	24.4	8.0	207	
12.5%	M	0 hr	8.0	25.7	8.2	205	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.1	24.0	7.3	246	
	M	48 hr AR	8.1	26.0	8.1	217	
		72 hr	—	—	—	—	
	A	96 hr	8.0	24.2	8.1	223	
25%	M	0 hr	8.0	25.9	8.1	238	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.1	24.0	7.3	289	
	M	48 hr AR	8.1	26.0	8.4	258	
		72 hr	—	—	—	—	
	A	96 hr	8.0	24.3	8.1	281	
50%	M	0 hr	8.0	25.6	8.1	310	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.2	24.0	7.3	376	
	M	48 hr AR	8.1	26.0	8.4	323	
		72 hr	—	—	—	—	
	A	96 hr	8.1	24.3	8.1	372	
100%	M	0 hr	8.0	26.0	8.2	453	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.2	24.2	7.3	542	
	M	48 hr AR	8.0	26.0	8.3	469	
		72 hr	—	—	—	—	
	A	96 hr	8.1	24.1	8.2	498	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Comments:

Measured By:
0 hr: BA/KC
24 hr: —
48 hr BR: BA
48 hr AR: BA
72 hr: —
96 hr: MF

*Measure/ record salinity for marine tests

Page 64 V. 2.3 1-13-10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1328105 Test # 2 of 2

Test Species:

☐ *Ceriodaphnia dubia* ☒ *Pimephales promelas* ☐ *Americamysis bahia*
☐ *Cyprinella leedsi* ☐ *Menidia beryllina* ☐ Other:_____

Test aerated: (if DO is < 4.0 mg/L) ☐ Yes ☑ No

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☒ µmhos ☐ mmhos	Salinity* (ppth)
	A	0 hr	7.8	24.0	8.3	319	
	B	24 hr	7.7	24.2	7.3	329	
ctrl	C	48 hr BR	8.3	25.2	6.8	354	
	C	48 hr AR	7.8	24.0	7.3	335	
	D	72 hr	7.5	26.1	5.4	341	
	A	96 hr	8.1	24.5	7.0	358	
	A	0 hr	7.8	24.1	7.5	326	
	B	24 hr	7.7	24.7	7.2	340	
6.25	C	48 hr BR	8.1	25.2	7.0	357	
	C	48 hr AR	7.9	24.0	7.4	338	
	D	72 hr	7.5	25.5	6.4	346	
	A	96 hr	8.0	25.2	7.0	364	
	A	0 hr	7.9	24.2	8.0	337	
	B	24 hr	7.8	24.7	7.0	349	
12.5	C	48 hr BR	8.1	25.3	7.2	368	
	C	48 hr AR	7.9	24.0	7.5	349	
	D	72 hr	7.6	26.1	7.1	363	
	A	96 hr	8.0	25.2	6.9	372	
	A	0 hr	8.0	24.1	8.4	352	
	B	24 hr	7.8	24.4	6.9	364	
25	C	48 hr BR	8.1	25.3	7.3	391	
	C	48 hr AR	7.9	24.0	7.6	370	
	D	72 hr	7.6	26.1	5.9	381	
	A	96 hr	7.9	25.7	7.1	397	
	A	0 hr	8.0	24.6	8.6	390	
	B	24 hr	7.9	24.6	7.0	396	
50	C	48 hr BR	8.1	25.3	7.1	431	
	C	48 hr AR	7.9	24.1	7.6	402	
	D	72 hr	7.6	25.5	6.0	413	
	A	96 hr	7.9	25.5	6.9	433	
	A	0 hr	7.9	25.9	8.9	464	
	B	24 hr	8.0	24.9	6.8	470	
100%	C	48 hr BR	8.3	25.3	6.9	459	
	C	48 hr AR	7.9	24.3	7.6	483	
	D	72 hr	7.7	25.5	5.9	492	
	A	96 hr	8.1	25.4	6.9	500	
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

48 hr. After renewal pH
Ctrl. → 7.8
6.25% → 7.9
12.5% → 7.9
25% → 7.9
50% → 7.9
100% → 7.9
-KC

Comments:

Measured By:
0 hr: JD
24 hr: JD/KC
48 hr BR: JD
48 hr AR: JD/KC
72 hr: KC
96 hr: MF

Page 65

V. 2.3 1-13-10

Appendix B. (continued)

Test ID: Avon Point Dates: Feb 8-12, 2011

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity/Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5 SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
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)

Initialed by M. Faircloth 2-14-11

V 1.1 9/21/10 MF/jd

99

Appendix C. SRT Bench Sheets and Statistical Analysis

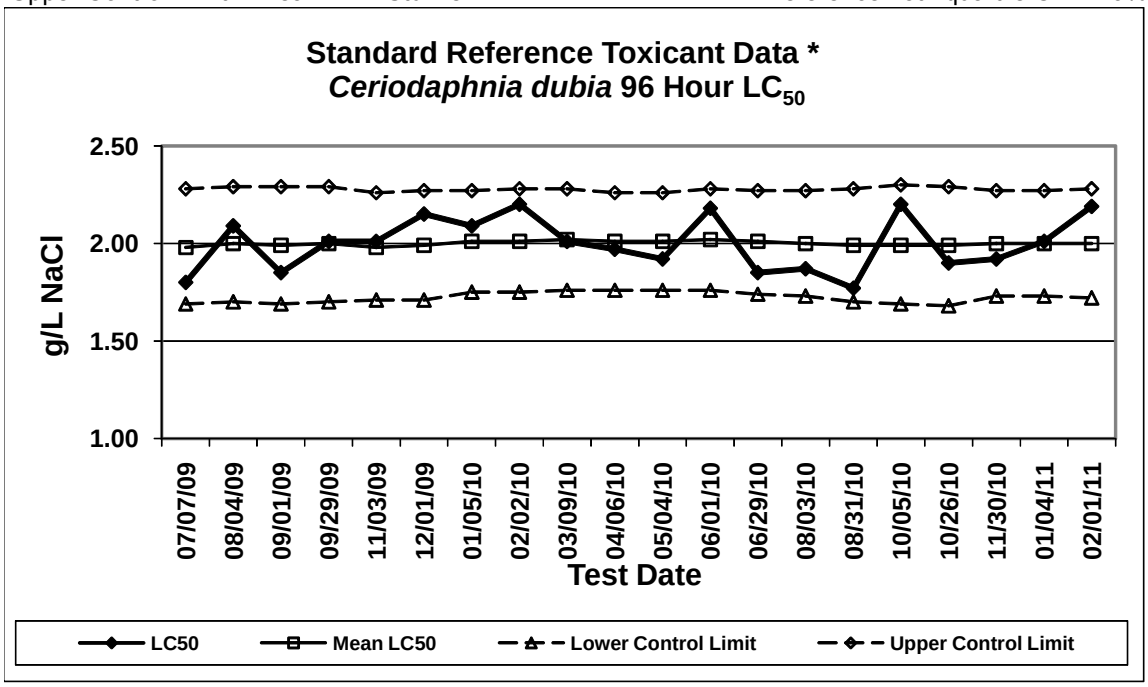
Florida Department of Environmental Protection
Bureau of Laboratories

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
07/07/09	1.80	1.98	0.15	1.69	2.28
08/04/09	2.09	2.00	0.15	1.70	2.29
09/01/09	1.85	1.99	0.15	1.69	2.29
09/29/09	2.01	2.00	0.15	1.70	2.29
11/03/09	2.01	1.98	0.14	1.71	2.26
12/01/09	2.15	1.99	0.14	1.71	2.27
01/05/10	2.09	2.01	0.13	1.75	2.27
02/02/10	2.20	2.01	0.13	1.75	2.28
03/09/10	2.01	2.02	0.13	1.76	2.28
04/06/10	1.97	2.01	0.12	1.76	2.26
05/04/10	1.92	2.01	0.12	1.76	2.26
06/01/10	2.18	2.02	0.13	1.76	2.28
06/29/10	1.85	2.01	0.13	1.74	2.27
08/03/10	1.87	2.00	0.14	1.73	2.27
08/31/10	1.77	1.99	0.14	1.70	2.28
10/05/10	2.20	1.99	0.15	1.69	2.30
10/26/10	1.90	1.99	0.15	1.68	2.29
11/30/10	1.92	2.00	0.14	1.73	2.27
01/04/11	2.01	2.00	0.14	1.73	2.27
02/01/11	2.19	2.00	0.14	1.72	2.28

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

CV = 6.94
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

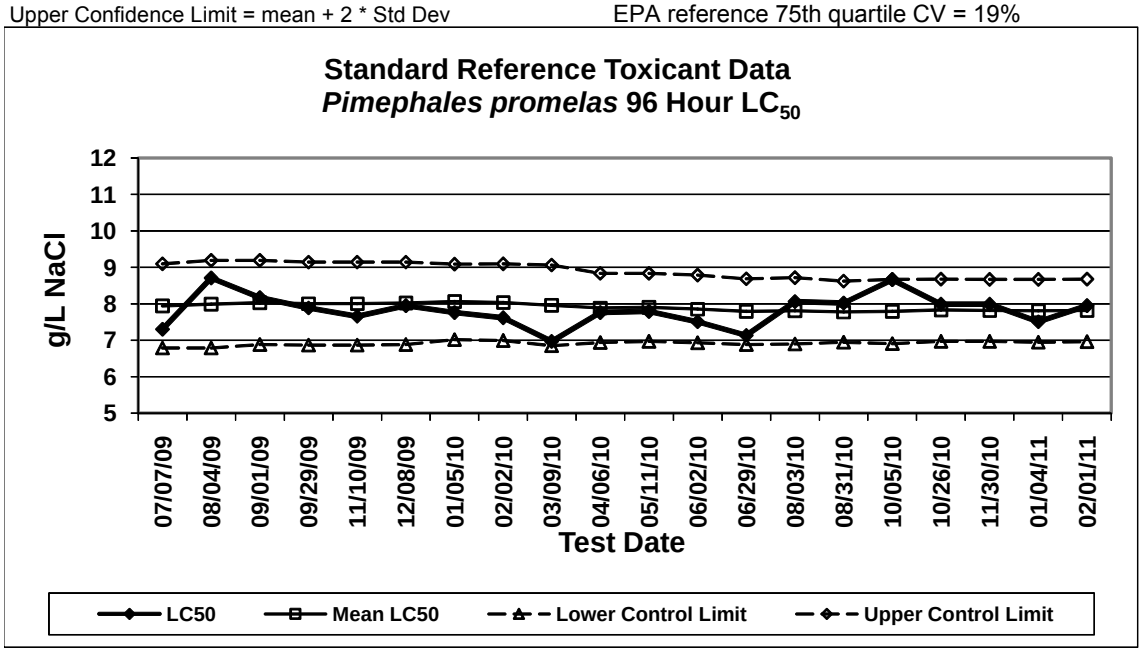
Florida Department of Environmental Protection
Bureau of Laboratories

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
07/07/09	7.30	7.94	0.58	6.79	9.10
08/04/09	8.71	7.99	0.60	6.79	9.19
09/01/09	8.17	8.03	0.58	6.88	9.19
09/29/09	7.89	8.01	0.57	6.87	9.15
11/10/09	7.66	8.01	0.57	6.87	9.15
12/08/09	7.95	8.02	0.57	6.88	9.15
01/05/10	7.76	8.06	0.52	7.02	9.09
02/02/10	7.62	8.04	0.53	6.99	9.10
03/09/10	6.97	7.96	0.56	6.85	9.07
04/06/10	7.76	7.89	0.48	6.94	8.84
05/11/10	7.79	7.9	0.47	6.97	8.84
06/02/10	7.51	7.86	0.46	6.93	8.79
06/29/10	7.14	7.79	0.45	6.88	8.69
08/03/10	8.06	7.81	0.45	6.9	8.72
08/31/10	8.02	7.78	0.42	6.95	8.62
10/05/10	8.66	7.79	0.44	6.91	8.67
10/26/10	7.99	7.83	0.43	6.97	8.68
11/30/10	7.99	7.82	0.42	6.97	8.67
01/04/11	7.51	7.81	0.43	6.95	8.67
02/01/11	7.95	7.82	0.43	6.96	8.68

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

CV = 5.52
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 11.29.11
Toxicant/ Batch#: NaCl 11.31.11
Organism Batch: 2.1.11 Age: <24hr
Test Beginning: Date: 2.1.11 Time: 1300
Test Ending: Date: 2.5.11 Time: 1020

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	KC
Alkalinity (mg/L as $CaCO_3$):	83	TA06_08	KC
Hardness (mg.L as $CaCO_3$):	87	TA06_09	KC
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: µmhos (mmhos)	0.173	TA06_25	BA
Salinity (ppth):	–	TA06_25	–

Food:	Batch
☑ YCT	11.17.10
☑ *P. subcapitata*	10.22.10
☐ 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
Temperature Range °C (if used)
Test incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min 26.3 max 28.1 mean ____
Light Intensity: 50-100 Ft. candles Waterbath # ___ min ____ max ____ mean ____
Photoperiod: 16 hours Light / 8 hours dark Room B246 min 25.1 max 25.3 mean ____

Feeding: √as needed
☑ Before test
☐ 0 hr
☐ 24 hr
☑ 48 hr
☐ 72 hr

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

Concentration µg/L mg/L g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	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	4 1D
	D	D	5	5	5	5	5	5
2.0	A	A	5	5	5	5	5	3 2D
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	4 1D
2.5	A	A	5	5	2 3D	2	2	1 1D
	B	B	5	5	2 3D	2	1 1D	0 1D
	C	C	5	5	2 2D	2	0 2D	–
	D	D	5	5	3 2D	3	3	1 2D
3.0	A	A	5	4 1D	0 1D	–	–	–
	B	B	5	4 1D	1 3D	1	0 1D	–
	C	C	5	5	0 CD	–	–	–
	D	D	5	5	0 CD	–	–	–
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	BA	BA	BA	MF

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

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

Investigators' Signatures
Bruce Nuckles
Tina Cox
Marshall Faircloth
James Daniels
Reviewer: Liz Miller

Comments:

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 2.48	2.36	2.61
96 hour: 2.19	2.08	2.32

Pg 37

Appendix C. (continued)

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

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

Test Page 2 of 2

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

Test Beginning: Date: 2-1-11 Time: 13:00
Test Ending: Date: 2-5-11 Time: 1020

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L@/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ mmhos	Salinity (ppth)
Control	M	0 hr	7.9	24.0	6.9	0.173	
	—	24 hr	—	—	BA —	—	
	A	48 hr BR	7.8	24.0	6.3 ~~7.8~~	0.191	
	M	48 hr AR	7.8	24.2	7.3	0.180	
	—	72 hr	—	—	—	—	
	A	96 hr	8.0	25.1	7.7	0.190	
1.5	M	0 hr	7.9	24.0	7.1	2.94	
	—	24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.0	6.5	3.06	
	M	48 hr AR	7.8	24.2	7.3	2.91	
	—	72 hr	—	—	—	—	
	A	96 hr	8.0	25.1	7.6	2.96	
2.0	M	0 hr	8.0	24.0	6.9	~~4.67~~ 3.80	BA
	—	24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.0	6.5	4.07	
	M	48 hr AR	7.9	24.3	7.3	3.77	
	—	72 hr	—	—	—	—	
	A	96 hr	8.0	25.2	7.8	3.84	
2.5	M	0 hr	8.0	24.0	7.0	4.67	
	—	24 hr	—	—	—	—	
	A	48 hr BR	7.9	24.0	6.8	4.84	
	M	48 hr AR	7.9	24.2	7.3	4.73	
	—	72 hr	—	—	—	—	
	A	96 hr	8.0	25.0	8.0	4.91	
3.0	M	0 hr	8.0	24.0	7.1	5.53	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.0	24.0	7.1	5.87	
	M	48 hr AR	8.0	24.1	7.4	5.13	
	B	72 hr	7.7	24.0	6.9	5.45	
	—	96 hr	—	—	—	—	
4.0	M	0 hr	8.0	24.0	6.7	7.21	
	A	24 hr	7.8	24.0	7.0	7.20	
	—	48 hr BR	—	—	—	—	
	—	48 hr AR	—	—	—	—	
	—	72 hr	—	—	—	—	
	—	96 hr	—	—	—	—	

Investigators Signatures
Bruce [illegible]
Kara [illegible]
Marshall Fajfich
James Daniel

Reviewed By: Liz Millen

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

Measure/record salinity for marine tests

Comments: Thermometer used 0-96 hr - EC #5

Pg 38

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* ☐ *Hyalella azteca* Method 2000.0 TA07.02 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 #: MHW / 1.3611
Toxicant/ Batch#: NaCl / 1.3611
Organism Batch: 2.1.11 Age: 8 days
Test Beginning: Date: 2.1.11 Time: 1205
Test Ending: Date: ~~2.3.11~~ 2-5-11 Time: 1040

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	KC
Alkalinity (mg/L as $CaCO_3$):	78	TA06_08	KC
Hardness (mg.L as $CaCO_3$):	92	TA06_09	KC
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: µmhos (mmhos)	0.337	TA06_25	JD
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☒ Artemia Lot # 2361 3	Artemia Batch:

Chamber size: 1000 mL
Test volume: 400 mL per replicate

Artemia Batch:
0 hr: 20:11
24 hr:
48 hr: 21:11
72 hr:

Concentrations prepared by: JD
Test Incubated in: Incubator # 2 Waterbath # ____
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:(if used)
Incubator # 2 min 26.8 max 28.1 mean
Waterbath # ___ min. ___ max. ___ mean ___
Room B246 min. 25.1 (5 MF) max. 25.8 mean

Feeding: √as needed

A	Before test
X	0 hr
☐	24 hr
X	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 (nil)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	E13	10	10	10	10	10	10
	B	E14	10	10	10	10	10	10
6	A	E15	10	10	10	10	10	10
	B	F16	10	10	10	10	10	10
7	A	E17	10	9 1D	8 1D	8	8	8
	B	E18	10	10	10	10	10	10
8	A	E19	10	10	6 1D	6	6	6
	B	E20	10	7 1D	6 1D	6	5 1D	5
9	A	E21	10	3 1D	1 2D	1	1	0 1D
	B	E22	10	6 1D	1 5D	1	1	1
10	A	E23	10	0 1DD	—	—	—	—
	B	E24	10	0 1DD	—	—	—	—
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

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

Investigators' Signatures
James Daniels
Marshall Faircloth
Reviewer: Liz Mullen

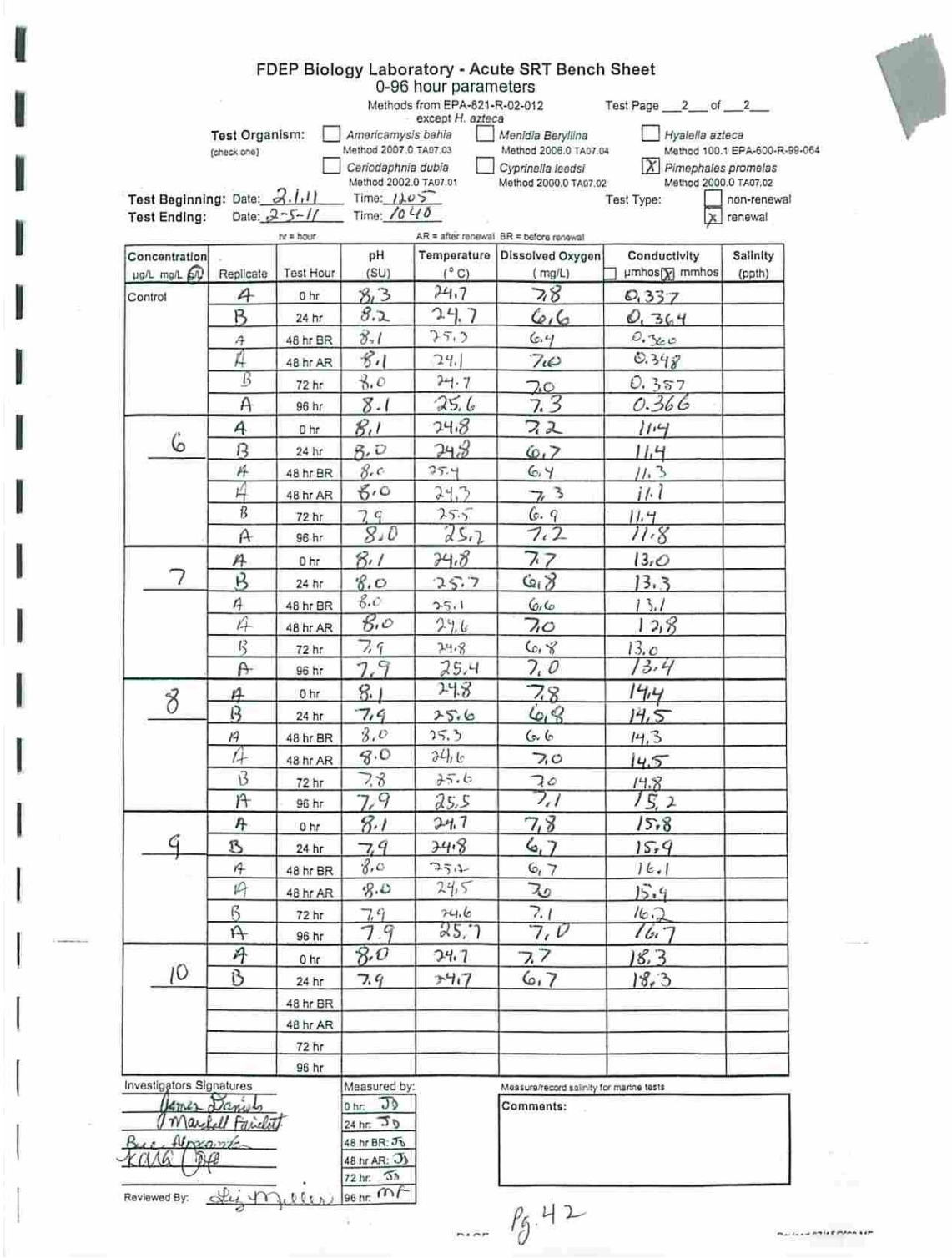
Comments:

Method: TSK

Statistics: LC50	95% confidence intervals BA Lower	Upper
48 hour: 8.04	~~7.757~~ 7.44	8.34
96 hour: 7.95	7.67	8.24

Pg 41

Appendix C. (continued)



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

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

Test Page 2 of 2

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

Test Beginning: Date: 2.1.11 Time: 1205
Test Ending: Date: 2-5-11 Time: 1040

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	A	0 hr	8.3	24.7	7.8	0.337	
	B	24 hr	8.2	24.7	6.6	0.364	
	A	48 hr BR	8.1	25.3	6.4	0.360	
	A	48 hr AR	8.1	24.1	7.0	0.348	
	B	72 hr	8.0	24.7	7.0	0.357	
	A	96 hr	8.1	25.6	7.3	0.366	
6	A	0 hr	8.1	24.8	7.2	11.4	
	B	24 hr	8.0	24.8	6.7	11.4	
	A	48 hr BR	8.0	25.4	6.4	11.3	
	A	48 hr AR	8.0	24.3	7.3	11.1	
	B	72 hr	7.9	25.5	6.9	11.4	
	A	96 hr	8.0	25.2	7.2	11.8	
7	A	0 hr	8.1	24.8	7.7	13.0	
	B	24 hr	8.0	25.7	6.8	13.3	
	A	48 hr BR	8.0	25.1	6.6	13.1	
	A	48 hr AR	8.0	24.6	7.0	12.8	
	B	72 hr	7.9	24.8	6.8	13.0	
	A	96 hr	7.9	25.4	7.0	13.4	
8	A	0 hr	8.1	24.8	7.8	14.4	
	B	24 hr	7.9	25.6	6.8	14.5	
	A	48 hr BR	8.0	25.3	6.6	14.3	
	A	48 hr AR	8.0	24.6	7.0	14.5	
	B	72 hr	7.8	25.6	7.0	14.8	
	A	96 hr	7.9	25.5	7.1	15.2	
9	A	0 hr	8.1	24.7	7.8	15.8	
	B	24 hr	7.9	24.8	6.7	15.9	
	A	48 hr BR	8.0	25.2	6.7	16.1	
	A	48 hr AR	8.0	24.5	7.0	15.9	
	B	72 hr	7.9	24.6	7.1	16.2	
	A	96 hr	7.9	25.7	7.0	16.7	
10	A	0 hr	8.0	24.7	7.7	18.3	
	B	24 hr	7.9	24.7	6.7	18.3	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
James Daniels
Marshall Faircloth
Bree Arrazola
KARA COLE

Reviewed By: Liz Miller

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

Measure/record salinity for marine tests

Comments:

Pg. 42

Appendix C. (continued)

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

DATE: 2-1-11 DURATION: 96 h TOXICANT : NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.50	20	1
2.00	20	3
2.50	20	18
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: 5.00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.19
95% LOWER CONFIDENCE: 2.08
95% UPPER CONFIDENCE: 2.32

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

DATE: 2-1-11 DURATION: 96 h TOXICANT : NaCl
SPECIES: *Pimephales promelas*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
6.00	20	0
7.00	20	2
8.00	20	9
9.00	20	19
10.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 7.95
95% LOWER CONFIDENCE: 7.67
95% UPPER CONFIDENCE: 8.24

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 1/31/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150 ac	4 days	MS 110127	25	8.0	20.0
Menidia beryllina	150 ac	12 days	SS 110119	25	8.0	20.0
						Hardness mg/L
Cyprinella leedsi	150 ac	12 days	CL 110119	25	7.8	80
Pimephales promelas	150 ac	7 days	FM 110124	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

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

Appendix D. (continued)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 2/7/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150	4 Days	MS 110203	25	8.0	20
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi	100	12 days	CL 110126	25	7.8	80
Pimephales promelas	150 ac	8 days	FM 110130	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

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

Appendix E. Chemical Analyses performed on the effluent from the Avon Park Correctional Institution WWTF Outfall D-001, sampled on February 7, 2011.

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
2/7/2011 10:25	38172	AGP/LN	Algal Growth Potential	8		mg DryWt/L	0.3	0.9
2/7/2011 10:25	38172	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.45	U	ug/L	0.45	1.3
2/7/2011 10:25	38172	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	2.8	A	mg/L	0.2	2
2/7/2011 10:25	38172	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.62	U	ug/L	0.62	1.9
2/7/2011 10:25	38172	SWD-AEL-FC	Fecal Coliforms-Membrane Filter	1	U	cfu/100 mL	1	
2/7/2011 10:25	38172	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100	L	LC50		
2/7/2011 10:25	38172	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	100	L	LC50		
2/7/2011 10:25	38172	Metals	Chromium	0.33	I	ug/L	0.3	1.2
2/7/2011 10:25	38172	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/7/2011 10:25	38172	Metals	Iron	36	I	ug/L	30	120
2/7/2011 10:25	38172	Metals	Zinc	23	A	ug/L	5	20
2/7/2011 10:25	38172	Metals	Antimony	0.25	U	ug/L	0.25	1
2/7/2011 10:25	38172	Metals	Lead	0.2	U	ug/L	0.2	0.8
2/7/2011 10:25	38172	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/7/2011 10:25	38172	Metals	Arsenic	0.25	U	ug/L	0.25	1
2/7/2011 10:25	38172	Metals	Copper	1.04	A	ug/L	0.5	1
2/7/2011 10:25	38172	Metals	Calcium	24.5	A	mg/L	0.075	0.3
2/7/2011 10:25	38172	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
2/7/2011 10:25	38172	Metals	Aluminum	60	U	ug/L	60	240
2/7/2011 10:25	38172	Metals	Magnesium	7.06	A	mg/L	0.04	0.16
2/7/2011 10:25	38172	Metals	Nickel	0.82	I	ug/L	0.25	1
2/7/2011 10:25	38172	Metals	Beryllium	0.025	U	ug/L	0.025	0.1
2/7/2011 10:25	38172	Nutrients	O-Phosphate-P	1.6		mg P/L	0.08	0.2
2/7/2011 10:25	38172	Nutrients	NO2NO3-N	0.02		mg N/L	0.004	0.01
2/7/2011 10:25	38172	Nutrients	Total-P	1.8		mg P/L	0.025	0.25
2/7/2011 10:25	38172	Nutrients	TSS	4	U	mg/L	4	16
2/7/2011 10:25	38172	Nutrients	Kjeldahl Nitrogen	0.66		mg N/L	0.08	0.2
2/7/2011 10:25	38172	Nutrients	Ammonia-N	0.036		mg N/L	0.01	0.02
2/7/2011 10:25	38172	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
2/7/2011 10:25	38172	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
2/7/2011 10:25	38172	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
2/7/2011 10:25	38172	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
2/7/2011 10:25	38172	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
2/7/2011 10:25	38172	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
2/7/2011 10:25	38172	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
2/7/2011 10:25	38172	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
2/7/2011 10:25	38172	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
2/7/2011 10:25	38172	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
2/7/2011 10:25	38172	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
2/7/2011 10:25	38172	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
2/7/2011 10:25	38172	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
2/7/2011 10:25	38172	Pesticides	Ametryn	0.05	UJ	ug/L	0.05	0.2
2/7/2011 10:25	38172	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
2/7/2011 10:25	38172	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
2/7/2011 10:25	38172	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
2/7/2011 10:25	38172	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
2/7/2011 10:25	38172	Pesticides	Metribuzin	0.1	UJ	ug/L	0.1	0.4
2/7/2011 10:25	38172	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
2/7/2011 10:25	38172	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
2/7/2011 10:25	38172	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
2/7/2011 10:25	38172	Pesticides	Chlorpyrifos Methyl	0.1	UJ	ug/L	0.1	0.4
2/7/2011 10:25	38172	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
2/7/2011 10:25	38172	Pesticides	Metolachlor	0.5	UJ	ug/L	0.5	2
2/7/2011 10:25	38172	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
2/7/2011 10:25	38172	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
2/7/2011 10:25	38172	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
2/7/2011 10:25	38172	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
2/7/2011 10:25	38172	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
2/7/2011 10:25	38172	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
2/7/2011 10:25	38172	Pesticides	Mevinphos	0.2	UJ	ug/L	0.2	0.8
2/7/2011 10:25	38172	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
2/7/2011 10:25	38172	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
2/7/2011 10:25	38172	Pesticides	Bromacil	0.2	UJ	ug/L	0.2	0.8
2/7/2011 10:25	38172	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
2/7/2011 10:25	38172	Pesticides	Prometryn	0.15	UJ	ug/L	0.15	0.6

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
2/7/2011 10:25	38172	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
2/7/2011 10:25	38172	Pesticides	Alachlor	0.6	UJ	ug/L	0.6	2.4
2/7/2011 10:25	38172	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
2/7/2011 10:25	38172	Pesticides	Naled	0.8	UJ	ug/L	0.8	3.2
2/7/2011 10:25	38172	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
2/7/2011 10:25	38172	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
2/7/2011 10:25	38172	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
2/7/2011 10:25	38172	Pesticides	Atrazine	0.05	UJ	ug/L	0.05	0.2
2/7/2011 10:25	38172	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
2/7/2011 10:25	38172	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
2/7/2011 10:25	38172	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
2/7/2011 10:25	38172	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
2/7/2011 10:25	38172	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
2/7/2011 10:25	38172	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
2/7/2011 10:25	38172	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
2/7/2011 10:25	38172	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.78

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
2/7/2011 10:25	38172	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
2/7/2011 10:25	38172	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	UJ	ug/L	39	160
2/7/2011 10:25	38172	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
2/7/2011 10:25	38172	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
2/7/2011 10:25	38172	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
2/7/2011 10:25	38172	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
2/7/2011 10:25	38172	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
2/7/2011 10:25	38172	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
2/7/2011 10:25	38172	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
2/7/2011 10:25	38172	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
2/7/2011 10:25	38172	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
2/7/2011 10:25	38172	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
2/7/2011 10:25	38172	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
2/7/2011 10:25	38172	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
2/7/2011 10:25	38172	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.78
2/7/2011 10:25	38172	Field Parameter	Specific Conductance	456		umhos/cm		
2/7/2011 10:25	38172	Field Parameter	Temperature	23.64		C		
2/7/2011 10:25	38172	Field Parameter	Dissolved Oxygen	7.95		mg/L		
2/7/2011 10:25	38172	Field Parameter	pH	7.87				

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
2/7/2011 10:55	38173	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.2	U	mg/L	0.2	2
2/7/2011 10:55	38173	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
2/7/2011 10:55	38173	Metals	Calcium	0.075	U	mg/L	0.075	0.3
2/7/2011 10:55	38173	Metals	Nickel	0.25	U	ug/L	0.25	1
2/7/2011 10:55	38173	Metals	Copper	0.5	U	ug/L	0.5	1
2/7/2011 10:55	38173	Metals	Antimony	0.25	U	ug/L	0.25	1
2/7/2011 10:55	38173	Metals	Aluminum	60	U	ug/L	60	240
2/7/2011 10:55	38173	Metals	Zinc	5	U	ug/L	5	20
2/7/2011 10:55	38173	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/7/2011 10:55	38173	Metals	Iron	30	U	ug/L	30	120
2/7/2011 10:55	38173	Metals	Beryllium	0.025	U	ug/L	0.025	0.1
2/7/2011 10:55	38173	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
2/7/2011 10:55	38173	Metals	Arsenic	0.25	U	ug/L	0.25	1
2/7/2011 10:55	38173	Metals	Lead	0.2	U	ug/L	0.2	0.8
2/7/2011 10:55	38173	Metals	Chromium	0.3	U	ug/L	0.3	1.2
2/7/2011 10:55	38173	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/7/2011 10:55	38173	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
2/7/2011 10:55	38173	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
2/7/2011 10:55	38173	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
2/7/2011 10:55	38173	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
2/7/2011 10:55	38173	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
2/7/2011 10:55	38173	Pesticides	Endosulfan I	0.019	U	ug/L	0.019	0.076
2/7/2011 10:55	38173	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
2/7/2011 10:55	38173	Pesticides	Metolachlor	0.48	UJ	ug/L	0.48	1.9
2/7/2011 10:55	38173	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
2/7/2011 10:55	38173	Pesticides	Atrazine	0.048	UJ	ug/L	0.048	0.19
2/7/2011 10:55	38173	Pesticides	Chlorpyrifos Ethyl	0.048	U	ug/L	0.048	0.19
2/7/2011 10:55	38173	Pesticides	Fonofos	0.096	U	ug/L	0.096	0.38
2/7/2011 10:55	38173	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
2/7/2011 10:55	38173	Pesticides	Prometryn	0.14	UJ	ug/L	0.14	0.56
2/7/2011 10:55	38173	Pesticides	DDE-p,p'	0.019	U	ug/L	0.019	0.076
2/7/2011 10:55	38173	Pesticides	Endosulfan II	0.019	U	ug/L	0.019	0.076
2/7/2011 10:55	38173	Pesticides	Endosulfan Sulfate	0.019	U	ug/L	0.019	0.076
2/7/2011 10:55	38173	Pesticides	Methoxychlor	0.048	U	ug/L	0.048	0.19

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
2/7/2011 10:55	38173	Pesticides	Chlorpyrifos Methyl	0.096	U	ug/L	0.096	0.38
2/7/2011 10:55	38173	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
2/7/2011 10:55	38173	Pesticides	Metribuzin	0.096	UJ	ug/L	0.096	0.38
2/7/2011 10:55	38173	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
2/7/2011 10:55	38173	Pesticides	Alpha-BHC	0.0096	U	ug/L	0.0096	0.038
2/7/2011 10:55	38173	Pesticides	Endrin Aldehyde	0.019	U	ug/L	0.019	0.076
2/7/2011 10:55	38173	Pesticides	Simazine	0.048	U	ug/L	0.048	0.19
2/7/2011 10:55	38173	Pesticides	Beta-BHC	0.0096	U	ug/L	0.0096	0.038
2/7/2011 10:55	38173	Pesticides	Chlordane	0.19	U	ug/L	0.19	0.76
2/7/2011 10:55	38173	Pesticides	Heptachlor	0.0096	U	ug/L	0.0096	0.038
2/7/2011 10:55	38173	Pesticides	Toxaphene	0.72	U	ug/L	0.72	2.9
2/7/2011 10:55	38173	Pesticides	Butylate	0.19	UJ	ug/L	0.19	0.76
2/7/2011 10:55	38173	Pesticides	Ethion	0.048	U	ug/L	0.048	0.19
2/7/2011 10:55	38173	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
2/7/2011 10:55	38173	Pesticides	Dieldrin	0.019	U	ug/L	0.019	0.076
2/7/2011 10:55	38173	Pesticides	Gamma-BHC	0.0096	U	ug/L	0.0096	0.038
2/7/2011 10:55	38173	Pesticides	Heptachlor Epoxide	0.019	U	ug/L	0.019	0.076
2/7/2011 10:55	38173	Pesticides	Diazinon	0.048	U	ug/L	0.048	0.19
2/7/2011 10:55	38173	Pesticides	Ethoprop	0.096	U	ug/L	0.096	0.38
2/7/2011 10:55	38173	Pesticides	Aldrin	0.0096	U	ug/L	0.0096	0.038
2/7/2011 10:55	38173	Pesticides	Alachlor	0.58	UJ	ug/L	0.58	2.3
2/7/2011 10:55	38173	Pesticides	Hexazinone	0.096	U	ug/L	0.096	0.38
2/7/2011 10:55	38173	Pesticides	Parathion Methyl	0.096	U	ug/L	0.096	0.38
2/7/2011 10:55	38173	Pesticides	DDD-p,p'	0.019	U	ug/L	0.019	0.076
2/7/2011 10:55	38173	Pesticides	Delta-BHC	0.0096	U	ug/L	0.0096	0.038
2/7/2011 10:55	38173	Pesticides	Endrin	0.048	U	ug/L	0.048	0.19
2/7/2011 10:55	38173	Pesticides	Ametryn	0.048	UJ	ug/L	0.048	0.19
2/7/2011 10:55	38173	Pesticides	Azinphos Methyl	0.19	U	ug/L	0.19	0.76
2/7/2011 10:55	38173	Pesticides	Bromacil	0.19	UJ	ug/L	0.19	0.76
2/7/2011 10:55	38173	Pesticides	Naled	0.77	UJ	ug/L	0.77	3.1
2/7/2011 10:55	38173	Pesticides	Phorate	0.048	U	ug/L	0.048	0.19
2/7/2011 10:55	38173	Pesticides	DDT-p,p'	0.029	U	ug/L	0.029	0.12
2/7/2011 10:55	38173	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	2-Chloronaphthalene	0.96	U	ug/L	0.96	3.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
2/7/2011 10:55	38173	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Di-n-octyl phthalate	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.7
2/7/2011 10:55	38173	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
2/7/2011 10:55	38173	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	UJ	ug/L	38	150
2/7/2011 10:55	38173	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	58
2/7/2011 10:55	38173	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Diethyl phthalate	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	58
2/7/2011 10:55	38173	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
2/7/2011 10:55	38173	Priority Organic Pollutants	Phenol	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
2/7/2011 10:55	38173	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Isophorone	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.7
2/7/2011 10:55	38173	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
2/7/2011 10:55	38173	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
2/7/2011 10:55	38173	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
2/7/2011 10:55	38173	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	Benzidine	96	U	ug/L	96	380
2/7/2011 10:55	38173	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.77

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Result	Remark	Units	MDL	PQL
2/7/2011 10:55	38173	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
2/7/2011 10:55	38173	Priority Organic Pollutants	Dimethyl phthalate	9.6	U	ug/L	9.6	38
2/7/2011 10:55	38173	Priority Organic Pollutants	Hexachlorobenzene	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.7
2/7/2011 10:55	38173	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	2,4-Dichlorophenol	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	2-Chlorophenol	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
2/7/2011 10:55	38173	Priority Organic Pollutants	2,4-Dimethylphenol	9.6	U	ug/L	9.6	38
2/7/2011 10:55	38173	Priority Organic Pollutants	2-Nitrophenol	0.96	U	ug/L	0.96	3.8
2/7/2011 10:55	38173	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.7
2/7/2011 10:55	38173	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	58
2/7/2011 10:55	38173	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.77
2/7/2011 10:55	38173	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
2/7/2011 10:40	38174	Nutrients	TSS	4	U	mg/L	4	16

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

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Peter Wenner	813-632-7600 x 442
Facility Name (as it appears on permit): Avon Park Correctional Institution WWTF	**Former Names:**
NPDES Permit Number: FL0040029	**Permit Expiration Date:** October 25, 2011
Physical Address: 10 Miles East of U.S. 27 on Hwy. 64, Avon Park, FL 33825	
District: Southwest	**County:** Polk
Function of Facility: Treatment of domestic wastewater	
Facility Type: Domestic Wastewater Treatment Plant	**Permitted Capacity (MGD):** 0.5
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 11/30/2009-10/31/2010: 0.28 MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):	
Description of type of Discharge: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	

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

Monitoring Location	Description of Monitoring Location
FLW-01	Flow meter/recorder at Chlorine Contact Chamber
EFB-01	Before disinfection
EFA-01	After disinfection
EFD-01	D001-At discharge to surface waters, after dechlorination

Description of Permitted Outfall(s):
EFFLUENT DISPOSAL:

Surface Water Discharge: An existing 0.5 MGD Annual Average Daily Flow (AADF) discharge (D-001), into a rim canal discharging to Arbuckle Creek a Class III Freshwater system, and ultimately to the Kissimmee River. The outfall is located approximately at latitude 27° 39' 23" N, longitude 81° 21' 15" W.

1

Appendix F. (continued)

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

TREATMENT FACILITIES: An existing 0.5 MGD Annual Average Daily Flow (AADF) Type I activated sludge domestic wastewater treatment plant consisting of: one flow equalization basin of 144,900 gallons, one aeration basin of 474,000 gallons, two clarifier basins with a total volume of 85,000 gallons with a total surface area of 1,121 square feet, one chlorine contact chamber of 14,000 gallons, a post aeration and dechlorination unit, and one digester of 60,000 gallons. [The facility also has a dual cell hypolon-lined polishing pond of 0.4 acres on standby for emergency storage for plant upset and maintenance purposes.]

MODIFICATION:

Remove the existing jet aeration system in the oxidation ditch and install a new jet aeration system with dissolved oxygen control to create anoxic and oxic zones for nitrification and denitrification. Install a methanol storage and feed system, to feed methanol at the head of the first anoxic zone and at the filter system. Construct an effluent transfer pump station using the existing chlorine contact basin to transfer effluent from the clarifier to the filter system. Construct three packed bed denitrification filters (total surface area of 235.5 square feet) downstream of the existing clairifiers. Install an alum storage and feed system for phosphorous reduction. Construct a new chlorine contact basin (two basins with a total volume of 16,000 gallons) downstream of the filtration system. A standby generator will be installed for backup power service.

AFTER MODIFICATION:

Operation of a 0.5 MGD Annual Average Daily Flow (AADF) Type I activated sludge domestic wastewater treatment plant consisting of: one flow equalization basin of 144,900 gallons, one aeration basin of 474,000 gallons, two clarifier basins with a total volume of 85,000 gallons with a total surface area of 1,121 square feet, three denitrifying filters having a total surface area of 235.5 square feet, one effluent transfer pump station, two chorine contact basins with a volume of 16,000 gallons, methanol & alum feed system, a post aeration and dechlorination unit, and one digester of 60,000 gallons. [The facility also has a dual cell hypolon-lined polishing pond of 0.4 acres on standby for emergency storage for plant upset and maintenance purposes.]

Appendix F. (continued)

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)

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS – FINAL

A.1. Surface Water Discharges. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D001 to the Rim Canal then to Arbuckle Creek. Such discharge shall be limited and monitored by the permittee as specified below:

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow to D-001	mgd	Maximum	0.5	Report	-	-	Continuous	Recording flow meters and totalizers	FLW-01	See Cond I.A.3.
BOD, Carbonaceous 5 day, 20°C	mg/L	Maximum	-	5.0	-	8.0	Weekly	FPC-8	EFD-01	
Total Suspended Solids	mg/L	Maximum	-	-	-	5.0	Weekly	Grab	EFD-01	See AO-113-SW
Coliform, Fecal, % less than detection	PERCENT	Minimum	-	75	-	-	Monthly	Calculation	EFA-01	See Cond I.A.4 & AO-113-SW
Coliform, Fecal	#/100ML	Maximum	-	-	-	25	Weekly	Grab	EFA-01	See Cond I.A.4 & AO-113-SW
pH	std. units	Range	-	-	-	6.0-8.5	5 Days/Week	Grab	EFD-01	See Cond. I.A.6
Total Residual Chlorine (For Disinfection)	mg/L	Minimum	-	-	-	1.0	5 Days/Week	Grab	EFA-01	See Cond I.A.5 & AO-113-SW
Total Residual Chlorine (For Dechlorination)	mg/L	Maximum	-	-	-	0.01	5 Days/Week	Grab	EFD-01	
Unionized Ammonia (as NH_3)	mg/L	Maximum	-	-	-	0.02	Weekly	Calculation	EFD-01	See Cond I.A.6.
Temperature	°C	Report	-	Report	-	Report	Weekly	Grab	EFD-01	See Cond I.A.6.
Total Ammonia Nitrogen (as N)	mg/L	Report	-	Report	-	Report	Weekly	Grab	EFD-01	See Cond I.A.6
Total Ammonia Nitrogen (as N)	mg/L	Maximum	-	0.2	-	-	Weekly	FPC-8	EFD-01	
Total Organic Nitrogen (as N)	mg/L	Maximum	-	1.4	-	-	Weekly	FPC-8	EFD-01	
Total Nitrogen	mg/L	Maximum	3.0	3.75	-	6.0	Weekly	FPC-8	EFD-01	See AO-113-SW
Total Phosphorus	mg/L	Maximum	1.0	1.25	-	2.0	Weekly	FPC-8	EFD-01	See AO-113-SW

3

Appendix F. (continued)

Parameter	Units	Max/Min	Effluent Limitations				Monitoring Requirements			
			Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Dissolved Oxygen	mg/L	Minimum	-	-	-	6.0	5 Days/Week	Grab	EFD-01	
NO_3/NO_2	mg/L	Report	-	-	-	Report	Weekly	FPC-8	EFD-01	
Chronic Whole Effluent Toxicity	PERCENT	Minimum	-	-	-	100	Bimonthly	FPC-24	EFD-01	See Cond.I.A.9
Silver, Total Recoverable	ug/L	Maximum	-	-	-	0.07	Monthly	Grab	EFD-01	
Copper, Total Recoverable	ug/L	Maximum	-	-	-	0.00	Monthly	Calculation	EFD-01	See Cond.I.A.7
Hardness, as $CaCO_3$	mg/L	Report	-	-	-	Report	Monthly	Grab	EFD-01	See Cond.I.A.7

4

Appendix F. (continued)

PART I: Continued	
Receiving Waters: Facility discharges into a rim canal which drains to Arbuckle Creek and ultimately to the Kissimmee River.	**Classification (indicate whether fresh or marine):** Freshwater

9. Chronic Whole Effluent Toxicity Testing

The permittee shall comply with the following whole effluent toxicity testing requirements and initiate the series of tests described below within 60 days of permit issuance, unless otherwise directed by the Department in writing, to evaluate chronic whole effluent toxicity of the discharge from outfall D-001.

a. Effluent Limitation
   1. A No Observed Effect Concentration (NOEC) of greater than or equal to 100% effluent in any routine test or any additional test shall constitute compliance with these permit conditions and Rule 62-302.530(62), F.A.C.
   2. A NOEC of less than 100% effluent in any routine test or additional test shall constitute a failure of the test. The permittee shall notify the Department via telephone or e-mail within 24 hours of notification that a routine or additional test failed.

b. Monitoring Frequency
   The "routine" toxicity tests specified shall be conducted *once every two months*.

c. Routine Test Requirements
   1. The permittee shall conduct a daphnid, *Ceriodaphnia dubia*, Survival and Reproduction Test and a fathead minnow, *Pimephales promelas*, Larval Survival and Growth Test, concurrently.
   2. All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th ed., EPA-821-R-02-013, or the most current edition. Any deviation of the toxicity procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.
   3. The control water and dilution water used shall be moderately hard water as described in EPA-821-R-02-013, Section 7, or the most current edition.
   4. All routine tests shall be conducted using a control (0% effluent) and a minimum of five test concentrations: 100%, 50%, 25%, 12.5%, and 6.25% final effluent.

d. Sampling Requirements
   1. For each routine test or additional test required, a total of three 24-hour, flow-proportioned composite samples of final effluent shall be collected and used per the sampling protocol discussed in EPA-821-R-02-013, Section 8, or the most current edition. The first sample shall be used to initiate the test. The remaining two composite samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test. If the duration of the discharge is less than 24-hours, the duration of discharge shall be documented on the chain of custody.

Appendix F. (continued)

e. Additional Testing Requirements, if required

1. If chronic toxicity (an NOEC of less than 100% effluent) is found in any routine test, the permittee shall conduct two valid additional definitive tests on each species indicating an NOEC of less than 100% effluent.
2. Each valid additional test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5% and 6.25% effluent. The dilution series may be modified in the second test to more accurately bracket the toxicity, such that at least two dilutions above (not to exceed 100% effluent) and two dilutions below the target concentration and a control (0% effluent) are run. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-013, or the most current edition.
3. The first valid additional test shall be initiated within two weeks of the end of the failed routine test. The second valid additional test shall be conducted one week thereafter. The additional tests will be used to evaluate the persistence of the observed toxicity.

f. Quality Assurance Requirements

1. A standard reference toxicant quality assurance chronic toxicity test (SRT-QA) shall be conducted with each species used in the toxicity tests, either concurrently or no more than 30 days before the date of each routine or additional test conducted. The SRT-QA data shall be submitted with each companion routine or additional test required.
2. A test, routine or additional, will be considered valid only if control mortality does not exceed 20% for either test species and all test acceptability criteria are met as described in 3 and 6.
   The results of any invalid test shall be submitted to the Department in conjunction with the results of the repeat test.
3. Test acceptability criteria for each species are defined in EPA-821-R-02-013, Section 13.12 (C. dubia) and Section 11.12 (P. promelas) or the most current edition.
4. If the mortality in the control (0% effluent) exceeds 20% for either species in any test, the test for that species (including the control) shall be invalidated and the test repeated.
5. If, in any test, 100% mortality occurs in any test concentration prior to the end of the seven days, and control mortality is less than 20% at that time, that test (including the control) shall be terminated with the conclusion that the test failed.
6. Routine and additional tests shall be evaluated for acceptability based on the observed dose-response relationship and the percent minimum significant difference (PMSD) as required by EPA-821-R-02-013, Sections 10.2.6 and 10.2.8, respectively.

g. Reporting Requirements

1. Results from all tests shall be reported and submitted on the Discharge Monitoring Report (DMR) in the following manner:
   - Routine Test Results: If the NOEC of a test species is less than 100% effluent, "<100%" should be entered on the DMR for that species. If the NOEC of a test species is greater than or equal to 100% effluent, ">100%" should be entered.
   - Additional Test Results: Report the % effluent determined to be the NOEC endpoint of the test.
2. A toxicity laboratory report for each routine test shall be prepared according to EPA-821-R-02-013, Section 10, Report Preparation and Test Review (or the most current edition) and mailed to the Department at the address in g.4. within 30 days of the completion of the test.

Appendix F. (continued)

3. For additional tests, a single toxicity report shall be prepared according to EPA-821-R-02-013, Section 10, or the most current edition, and mailed within 45 days of completion of the second additional, valid test. If the routine test and any additional test fail to meet the criteria listed in "Effluent Limitations", the permittee shall submit a plan to the Department within 60 days of completion of the additional test report as to the cause of the chronic toxicity and a plan to remedy the observed chronic toxicity.
4. All toxicity reports shall be submitted to:

Department of Environmental Protection
Southwest District Office
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Telephone No.: (813) 632-7600

Appendix F. (continued)

PART I: Continued	
Avon Park Correctional Institution WWTF Facility Summary	

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

Administrative Order: AO-113-SW: Based on December 2003 FYI-5 results:

Copper exceeded the hardness based 62-302 F.A.C. Class III Freshwater Limit of 8.16 µg/L in both the grab (10.2 µg/L) and composite (12.4 µg/L) samples.
Silver exceeded the 62-302 F.A.C. Class III Freshwater Limit of 0.07 µg/L in both the grab (0.098 µg/L) and composite (0.10 µg/L) samples.
From ambient monitoring program data:
Nitrite-nitrate levels at all locations were $\geq 95^{th}$ percentile of Typical Florida Streams (0.23 mg/L) (Hand, 1991)
As a result interim TN limits of: annual avg.: 3.0 mg/L; monthly avg.: 3.75 mg/L; single sample max: 6.0 mg/L were put in place
Total phosphorus levels at all locations were $\geq 95^{th}$ percentile of Typical Florida Streams (0.59 mg/L) (Hand, 1991)
Ortho-phosphorus levels at all locations were $\geq 95^{th}$ percentile of Typical Florida Streams (0.44 mg/L) (Hand, 1991)
As a result interim TP limits of: annual avg.: 1.0 mg/L; monthly avg.: 1.25 mg/L; single sample max: 3.0 mg/L were put in place.
Upgrades to wastewater treatment plant will require facility to meet high level disinfection with more stringent requirements for TSS, fecals and TRC. Interim limits with basic disinfection requirements from permit issuance for TSS, fecals and TRC with the limits for high level disinfection taking effect no later than November 1, 2009 have been established for incorporation into the permit.

Copy of AO has been included as a separate attachment.

Facility Mixing Zone Details (if applicable): N/A

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:

Date	Parameter and Units	Limit	Result
4/30/2010	Total Ammonia (mg/L)	0.2	1.0
4/30/2010	cBOD (mg/l)	5.0 (mo. avg.), 8.0 (max.)	7.6 (mo.avg.), 18.0 (max)
6/30/2010	cBOD (mg/l)	5.0 (mo. avg.), 8.0 (max.)	12.0 (max)
7/31/2010	cBOD (mg/l)	5.0 (mo. avg.), 8.0 (max.)	36.3 (mo.avg.), 80.0 (max)
8/31/2010	cBOD (mg/l)	5.0 (mo. avg.), 8.0 (max.)	6.6 (mo.avg.), 11.0 (max)
10/31/2010	Total Phosphorus (mg/L)	1.25 (mo. avg.)	1.4
11/30/2010	Total Phosphorus (mg/L)	1.25 (mo. avg.)	1.6
11/30/2010	Total Phosphorus (mg/L)	1.0 (annl. avg.)	1.1
11/30/2010	Fecal Coliform (% less than detection)	75 (minimum)	50
11/30/2010	cBOD (mg/l)	5.0 (mo. avg.), 8.0 (max.)	6.0 (mo. avg.), 12.0 (max.)

Describe previous FYI and WQBEL study:

Previous FYI report sent as separate attachment to this summary.

8

Appendix F. (continued)

Describe previous or current Enforcement Actions (including WLs): A Warning Letter was issued April 8, 2005 for the failure to submit the 2004 Residuals Annual Summary. The report was received and the case was closed on May 6, 2005.

Describe any violations or problems noted in previous inspection: A Compliance Evaluation Inspection was performed on February 16, 2010, and the facility was found to be significantly out of compliance. The following was observed:

1. New equipment was placed into service prior to submitting a Notification of Completion of Construction.
2. Proper chlorine meter calibration procedures were not being followed.
3. Significant figures, PARM Codes and laboratory qualifier codes were being reported incorrectly.
4. The toxicity page of the DMR was not being completed correctly.
5. The new flow meters were not calibrated.
6. The operation building was in need of a windsock.
7. The methanol system was not functioning properly.
8. The records for lime stabilization of the biosolids were not being properly maintained.
9. A review of the DMRs from January 2009 through January 2010 reflected a number of permit exceedences. The limit of 5.0 mg/L monthly average and 8.0 mg/L maximum for CBOD were exceeded in May. The limit of 0.2 mg/L for ammonia was exceeded in February and May. The limit of 1.4 mg/L for organic nitrogen was exceeded in May. The limit of 0.02 mg/L for unionized ammonia was exceeded in May and August.
10. Routine toxicity tests failed one or both test species in five of the six tests conducted in 2009. Of the six follow-up tests conducted two additional failures occurred. A report meeting the requirements of Section I.A.9.g.3 of the permit after the failure of a follow-up test was required, but no report was received.

Discuss whether DMR trends within previous five years are improving or declining: Trends for unionized ammonia, total recoverable silver, total recoverable copper, total organic nitrogen, and total ammonia nitrogen have improved over the previous five years. Trends for carbonaceous biochemical oxygen demand and total phosphorus have declined over the previous five years. Toxicity failures have occurred frequently throughout the previous five year period.

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

Appendix F. (continued)

PART II: Sampling Event Information	
Date(s) sample collected: 7 February 2011	**Sampler(s):** Peter Wenner, Jason Cohen, Josephine Molé
Temperature (Deg C): 23.64	**pH (SU):** 7.87
Dissolved Oxygen (mg/L): 7.95	**Conductivity (umhos/cm):** 456
Total Residual Chlorine (mg/L): >2.2	**Total Residual Chlorine - after Disinfection (mg/L):** 0.01
Method of Chlorination: Chlorine Gas	**Method of De-chlorination:** Sodium bisulfite
Flow During Sample Collection for each outfall(MGD): 0.0.277 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): Most recent DMR submittal is for November 2010, therefore, previous 12-month flow is for the period 12/09-11/10: 0.295 MGD	
Describe Discharge during Sampling Event: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

Appendix G. EPA End Sheet

The Bioassay of Avon Park Correctional Institution WWTF effluent sampled on February 7, 2011. NPDES #FL0040029.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 4 0 0 2 9 11	12 1 1 0 2 0 7	18 B	19 S	20 1

Remarks

66

The Priority Pollutants Analysis of Avon Park Correctional Institution WWTF effluent sampled on February 7, 2011. NPDES #FL0040029.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 4 0 0 2 9 11	12 1 1 0 2 0 7	18 X	19 S	20 1

Remarks

66

Biological Analyses of Avon Park Correctional Institution WWTF effluent sampled on February 7, 2011. NPDES #FL0040029.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 4 0 0 2 9 11	12 1 1 0 2 0 7	18 S	19 S	20 1

Remarks

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