

Effluent Quality Assessment

Spanish Lakes Fairways Reverse Osmosis

St. Lucie County

NPDES #FL0140023

Sampled May 26, 2009

August 2009

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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Spanish Lakes Fairways Reverse Osmosis (RO), 6200 Spanish Lakes Blvd., Ft. Pierce, St. Lucie County, Florida, 34951. NPDES #FL0140023. Effluent grab samples for bioassay and chemical analyses for this facility were collected on May 26, 2009.

Introduction

Spanish Lakes Fairways Reverse Osmosis (RO) is a RO water treatment plant which produces potable water. (See Appendix F for detailed facility information provided by Terry Davis of FDEP Southeast District.)

Methods

Samples were collected from the EFF-01 NPDES sampling point for Outfall D-001 by Terry Davis and Victor Faconti (FDEP Southeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

See Appendix A for the completed chain of custody form.

The 48-hour 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.

Results and Discussion

- **Toxicity Test Results**

  Tests were performed May 27 - 29, 2009.

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

  Cyprinella leedsi 48-hour acute screening bioassay – LC_{50} > 100%, 10% mortality* in 100% sample at 48 hours

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

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

  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 6.87 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 predicted AGP based on inorganic nitrogen concentrations was 11.4 (±20%) mg dry wt/L. The ratio of inorganic nitrogen to ortho-phosphate in the effluent suggests nitrogen-limitation; whereas,

the ratio of total nitrogen to total phosphorus in the effluent suggests co-limitation by both nitrogen and phosphorus. 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 was not detected in the bioassay sample in the laboratory. Total ammonia (0.152 mg N/L) was detected in the bioassay sample in the laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.26 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.

  The effluent's Chlorophyll *a* (corrected) (49 µg/L) concentration was high.

  The effluent iron concentration (2530 µg/L) exceeded the Class III fresh water criteria for iron (≤ 1000 µg/L, 62-302.530(38) F.A.C.). Arsenic and copper were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Atrazine, aluminum, chromium III, lead, nickel and selenium were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Diethyl phthalate and nitrate + nitrite were detected in the field blank.

  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 the EFF-01 NPDES sampling point for Outfall D-001 for this facility on May 26, 2009, was not acutely toxic to either test species during the 48-hour acute screening bioassays. The effluent AGP result was slightly higher than the "problem" threshold for fresh receiving waters, suggesting nutrient enrichment may be an issue. The effluent's Chlorophyll *a* (corrected) (49 µg/L) concentration was high. Effluent water quality samples collected on May 26, 2009, exceeded the water quality criterion for iron.

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* for samples collected from the Spanish Lakes Fairways RO plant on May 26, 2009.

Spanish Lakes Fairways RO NPDES# FL0140023							
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	6.9	11.4 ±	36.1 ± 7.2	100.3 ± 20.1	77.4 ± 15.5	3.6	14.7

Table 2. Effluent limits, Class III Freshwater Criteria and chemical data for samples collected from Spanish Lakes RO plant on May 26, 2009.

Spanish Lakes Fairways RO NPDES# FL0140023	Class III Criteria	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
Atrazine	-	-	0.16	IN
Diethyl phthalate	-	-	-	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	110	I
Arsenic	≤ 50	-	2.15	
Cadmium	≤ 0.8 b	-	0.03	U
Calcium (mg/L)	-	-	233	
Chromium-III	≤ 268.2 b	-	0.52	I
Copper	≤ 30.5 b	-	4.98	
Iron	≤ 1,000	-	2530	
Lead	≤ 18.6 b	-	0.34	I
Magnesium (mg/L)	-	-	14.6	
Mercury	≤ 0.012	-	-	
Nickel	≤ 168.5 b	-	0.76	I
Selenium	≤ 5.0	-	0.21	I
Silver	≤ 0.07	-	0.025	U
Zinc	≤ 387.8 b	-	5	U
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.084	
Total Phosphorus	-	-	0.18	
Total Ammonia	-	-	0.26	
Un-ionized Ammonia	≤ 0.02 s	Report	≤ 0.02	c
Nitrate and Nitrite	-	-	0.04	U
Total Kjeldahl Nitrogen	-	-	2.6	
Organic Nitrogen	-	-	2.34	c
Total Nitrogen	-	-	2.602	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0	-	8.9	£
pH (SU)	6.0 - 8.5	Report	7.0	
Conductivity (µmhos/cm)	≤ 1,275	Report	1683	
Temperature (°C)	-	-	26.7	
Salinity	-	-	< 0.82	c
Total Residual Chlorine (mg/L)	≤ 0.01	-	< 0.03	£
Chlorophyll *a* (µg/L) - Corrected	-	-	49	
Phaeophytin (µg/L)	-	-	3.5	
Total Suspended Solids (mg/L)	-	-	17	
Total Dissolved Solids (mg/L)	-	Report	1210	
Sulfate (mg/L)	-	Report	290	
Flow (MGD)	-	≤ 0.193 d	-	
Hardness (mg $CaCO_3$)	-	-	641.92	c

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness

c - Value is calculated

d - Daily maximum

I - The reported value is between the laboratory MDL and the laboratory PQL

N - Presumptive evidence of presence of material

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

£- Measured in Central Labs and entered into Tox sheets

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-05-25-28
Spanish Lake Fairways R O Concentrate

Requester: Jennifer Paris
Field Report Prepared By: T Davis
Collected By: T. Davis V. Facciolli
Send Final Report To Linda Brien
Sampling Agency: Southeast District DEP

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

Lab ID *	Location: Blended effluent			☐ Comp ☒ Grab	Collection (begin) Date 5/26 Time 1000	Eastern Central	Collection (end) Date Time	Eastern Central	Bottle Group(s)**
	Field ID: 51-SL-1			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 15.20		Storet Station Number		A
	Matrix (Include type e.g. Salt, Fresh, etc): water	Temp (C): 26.70	pH: 6.96	Sample Depth ☒ m ☐ ft: .05	1,683		☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "		Comments: Samples preserved as required pH=<2					
Lab ID *	Location: Blank			☐ Comp ☒ Grab	Collection (begin) Date 5/26 Time 1015	Eastern Central	Collection (end) Date Time	Eastern Central	Bottle Group(s)**
	Field ID: 51-SL-2			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		B
	Matrix (Include type e.g. Salt, Fresh, etc): water, d. i.	Temp (C)	pH	Sample Depth ☒ m ☐ ft: .01			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "		Comments: Sample preserved as required pH=<2					
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date Time	Eastern Central	Collection (end) Date Time	Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "		Comments					
Lab ID *	Location			☐ Comp ☐ Grab	Collection (begin) Date Time	Eastern Central	Collection (end) Date Time	Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)		Storet Station Number		
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "		Comments: 2 Bioassay Read in Tox by J.D. 10:22 5.27.09					

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
T.Davis	5/26/1300	Fed Ex						5.27.09 9:35a

* 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: Spanish Lake Fairways RO Concentrate Discharge Facility

Address: 6200 Spanish Lakes Boulevard

City: Fort Pierce County: St. Lucie 34951

Contact/District: Terry Davis / Southeast

NPDES Permit #: FL 0140023

LIMS Job #: FIH-2009-05-27-20 LIMS Sample #: 1189859

Lims Data Entry: 6-4-09 MF Data Entry Verification: 6-5-09 BA

Sample Collection: Date: 5.26.09 Time: 10:00

Hold Time Start: Date: 5.26.09 Time: 10:00

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_01
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 fL candles
Photoperiod : 16 light 8 dark
Temperature Range °C: (If used)
Incubator # 2 min 260 max 266 mean 26.3
Incubator # ____ min ____ max ____ mean ____
Waterbath # ____ min ____ max ____ mean ____
Room B246 min 25.1 max 25.8 mean 25.5

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 #		5-18.24	5-27-09							
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		NOT measured		MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03					<0.03	JD	BA
Alkalinity (mg/L as $CaCO_3$):	83	151					200	BA JD	JD
Hardness (mg/L as $CaCO_3$):	96	134					615	BA JD	JD
Total Ammonia (mg/L as N):	<0.217	<0.217					0.152	BA JD	JD
Conductivity (umhos) mmhos:	194	290					1730	JD	BA
Salinity (ppth):	—	—					—	JD	—

(A) Incorrectly wrote mg/L in record by Coleman. MF for BA 6/8/09

Investigators' Signatures

James Danish
Bruce Alexander
Marshall Faircloth
John Lamb
Loretta C Wolfe

REVIEWER

V 1.6 7/8/08

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1158859 Test #: 1/2 SOP#:TA 07 01 Test Started: Date 5-27-09 Time: 13:50

Organism/Batch/Age: C. dubia / 1-18-09 / <24 hrs Test Ended: Date 5-29-09 Time: 1200

Chamber/Test Volume: 30 / 20 ml Diluent/ Batch: DMW / 5-18-09 Test Duration: (48) hr / 96 hr

Food/Batch: [✓] YCT 1-22-09 [✓] P.sub 2-13-09

[ ] ~~Artemia Lot#~~ YCT Batch 1-22-09 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			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
100%	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
Checked by:			BA	JD	JD			

Loaded/Verified by: JD / BA

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

Comments:

Test Results:

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

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

If Calculated: 95% CI_________ Method_________

V 2.3 7/15/2008

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

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1189859 Test #: 2/2 SOP#:TA 07 02 Test Started: Date 5.27.09 Time: 1200
Organism/Batch/Age: C.dubia / 5.27.09 / 8 days Test Ended: Date 5.29.09 Time: 1200
Chamber/Test Volume: 1000 / 500 ml Diluent/ Batch: Well / 5.27.09 Test Duration: (48) hr 96 hr

Food/Batch: [ ] YCT____ [ ] P.sub____
[✓] Artemia Lot# 38138 Batch #: 0hr 69.09 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	B9	5	5	5			
	B	B10	5	5	5			
	C	B11	5	5	5			
	D	B12	5	5	5			
100%	A	B13	5	5	5			
	B	B14	5	5	5			
	C	B15	5	4 1D	4			
	D	B16	5	5	4 1D			
Loaded/Verified by: JD/ BA		Checked by:	BA	JW	JW			

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: 10 LC50: >100%
If Calculated: 95% CI________ Method________

V 2.3 7/15/2008

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

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FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 118959 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 6:1	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		M			
pH (S.U.)	7.9		8.0			
Temperature °C	24.3		24.0			
Dissolved Oxygen mg/L aerate if < 4	7.9		7.7			
Conductivity µmhos mmhos	194		189			
Salinity ppth	–		–			
(initials) Measured by:	[illegible]		[illegible]			
(initials) Recorded by:	[illegible]		[illegible]			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M		M			
pH (S.U.)	7.5		8.3			
Temperature °C	24.0		24.0			
Dissolved Oxygen mg/L aerate if < 4	8.3		8.2			
Conductivity µmhos mmhos	1699		1910			
Salinity ppth	–		–			
(initials) Measured by:	[illegible]		[illegible]			
(initials) Recorded by:	[illegible]		[illegible]			

Comments:

Salinity only needs measuring if saltwater.

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

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L aerate if < 4						
Conductivity µmhos mmhos						
Salinity ppth						
(initials) Measured by:						
(initials) Recorded by:						000

Comments:

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FDEP Biology Laboratory - Bioassay Parameter Bench Sheet

LIMS Sample # : 1185859 Test #: 2 of 2

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

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

Concentration 4rl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.7	8.1	8.0			
Temperature °C	24.0	24.9 JW	24.0			
Dissolved Oxygen mg/L aerate if < 4	8.0	7.8	6.7			
Conductivity µmhos mmhos	290	286	315			
Salinity ppth	—	—	—			
(initials) Measured by:	JW	JW	JW			
(initials) Recorded by:	JW	JW	JW			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	7.3	8.1	8.4			
Temperature °C	25.9	24.2	24.0			
Dissolved Oxygen mg/L aerate if < 4	8.4	8.9	7.2			
Conductivity µmhos mmhos	1730	1692	1720			
Salinity ppth	—	—	—			
(initials) Measured by:	JW	JW	JW			
(initials) Recorded by:	JW	JW	JW			

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: Spanish lakes fairways Reuse Ammonia (20) concentration Dates: May 27 – 29, 2009

METER / DEVICE	ID	SOP	Parameter	Method	√used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Metller-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity	SM 2510 B	✓
			Salinity	SM 2520 B	
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT–Chronic SRT)

entered by M. Faircloth 6/4/09

V 1.1 6/12/08 MF

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Appendix C. SRT Bench Sheets and Statistical Analysis

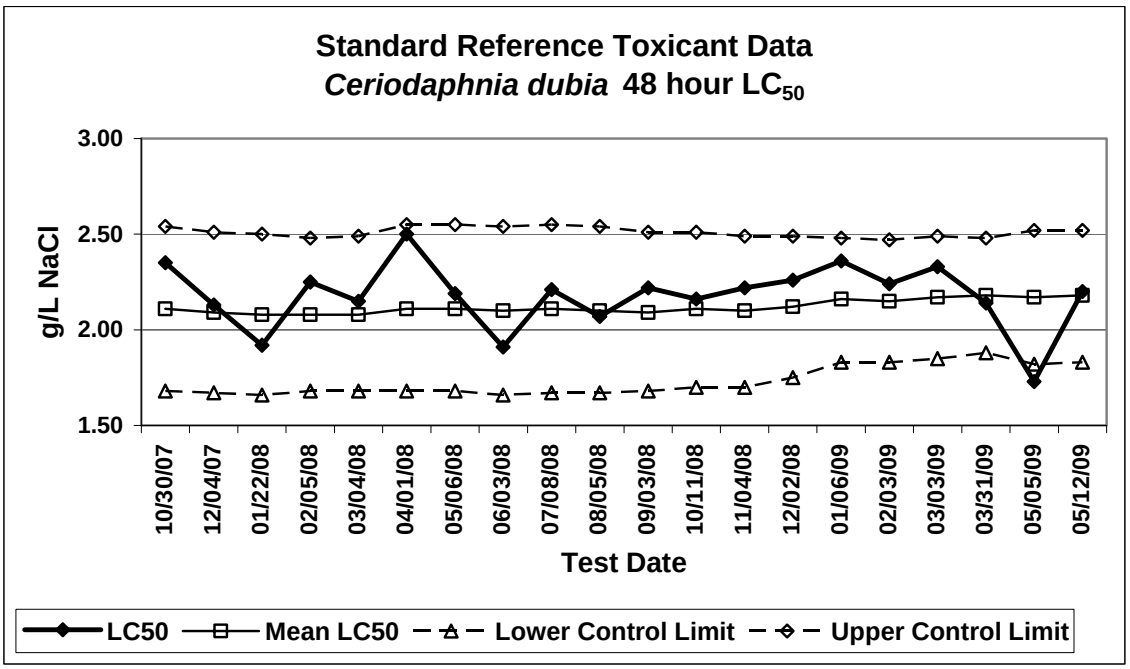
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
10/30/07	2.35	2.11	0.21	1.68	2.54
12/04/07	2.13	2.09	0.20	1.67	2.51
01/22/08	1.92	2.08	0.20	1.66	2.50
02/05/08	2.25	2.08	0.20	1.68	2.48
03/04/08	2.15	2.08	0.20	1.68	2.49
04/01/08	2.50	2.11	0.22	1.68	2.55
05/06/08	2.19	2.11	0.22	1.68	2.55
06/03/08	1.91	2.10	0.22	1.66	2.54
07/08/08	2.21	2.11	0.22	1.67	2.55
08/05/08	2.07	2.10	0.22	1.67	2.54
09/03/08	2.22	2.09	0.21	1.68	2.51
10/11/08	2.16	2.11	0.20	1.70	2.51
11/04/08	2.22	2.10	0.20	1.70	2.49
12/02/08	2.26	2.12	0.19	1.75	2.49
01/06/09	2.36	2.16	0.16	1.83	2.48
02/03/09	2.24	2.15	0.16	1.83	2.47
03/03/09	2.33	2.17	0.16	1.85	2.49
03/31/09	2.14	2.18	0.15	1.88	2.48
05/05/09	1.73	2.17	0.18	1.82	2.52
05/12/09	2.20	2.18	0.17	1.83	2.52

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

CV = 7.93
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

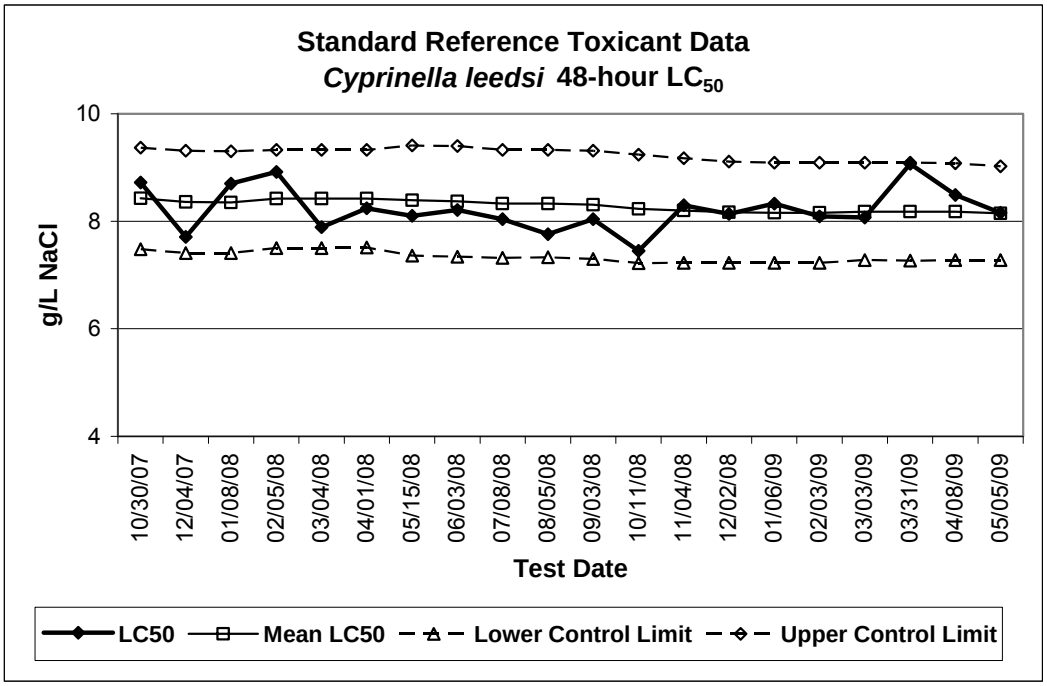
Florida Department of Environmental Protection
Bureau of Laboratories

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

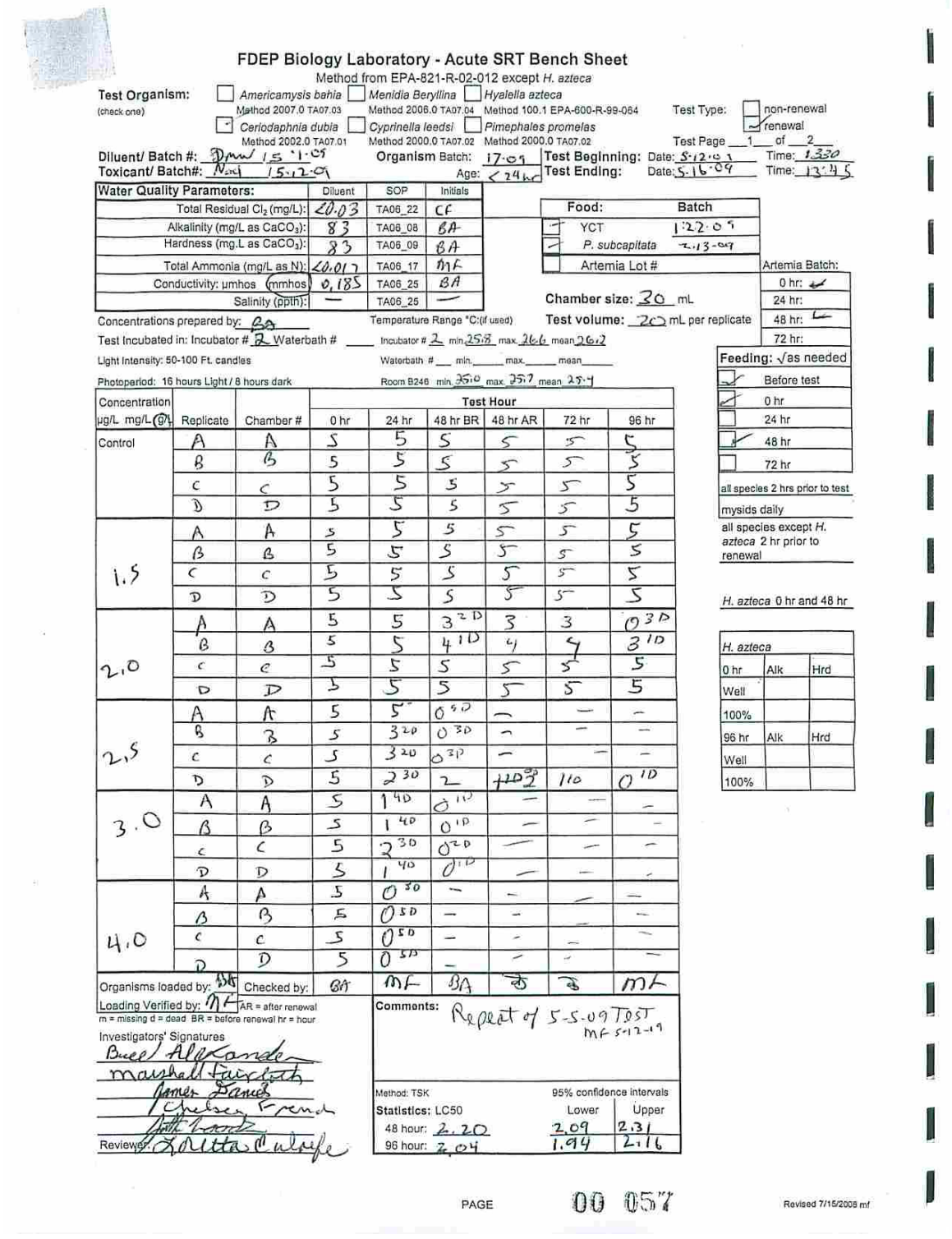
Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
10/30/07	8.72	8.43	0.47	7.48	9.37
12/04/07	7.71	8.36	0.47	7.41	9.31
01/08/08	8.7	8.35	0.47	7.41	9.30
02/05/08	8.92	8.42	0.46	7.50	9.33
03/04/08	7.89	8.42	0.46	7.50	9.33
04/01/08	8.24	8.42	0.45	7.51	9.33
05/15/08	8.1	8.39	0.51	7.36	9.41
06/03/08	8.21	8.37	0.51	7.34	9.40
07/08/08	8.04	8.33	0.50	7.32	9.33
08/05/08	7.76	8.33	0.50	7.33	9.33
09/03/08	8.04	8.31	0.50	7.30	9.31
10/11/08	7.45	8.23	0.51	7.22	9.24
11/04/08	8.3	8.20	0.48	7.23	9.17
12/02/08	8.14	8.17	0.47	7.23	9.11
01/06/09	8.33	8.16	0.47	7.23	9.09
02/03/09	8.09	8.16	0.47	7.23	9.09
03/03/09	8.07	8.18	0.45	7.28	9.09
03/31/09	9.07	8.18	0.45	7.27	9.09
04/08/09	8.49	8.18	0.45	7.28	9.08
05/05/09	8.16	8.15	0.43	7.28	9.02

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

CV = 5.32
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 15 · 1 · 09 Toxicant/ Batch#: NaCl 15.12.09 Organism Batch: 17.09 Age: < 24 hr

Test Beginning: Date: 5.12.09 Time: 1330 Test Ending: Date: 5.16.09 Time: 1345

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	CF
Alkalinity (mg/L as $CaCO_3$):	83	TA06_08	BA
Hardness (mg/L as $CaCO_3$):	83	TA06_09	BA
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: µmhos (mmhos)	0.185	TA06_25	BA
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	1.22.09
☑ *P. subcapitata*	2.13-09
☐ 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

Test Incubated in: Incubator # 2 Waterbath # ____ Temperature Range °C:(if used) Incubator # 2 min 25.8 max 26.6 mean 26.2

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

Photoperiod: 16 hours Light / 8 hours dark Room B248 min 25.0 max 25.7 mean 25.4

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 (@)	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	3 2D	3	3	0 3D
	B	B	5	5	4 1D	4	4	3 1D
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
2.5	A	A	5	5	0 5D	—	—	—
	B	B	5	3 2D	0 3D	—	—	—
	C	C	5	3 2D	0 3D	—	—	—
	D	D	5	2 3D	2	+1D 3	1 1D	0 1D
3.0	A	A	5	1 4D	0 1D	—	—	—
	B	B	5	1 4D	0 1D	—	—	—
	C	C	5	2 3D	0 2D	—	—	—
	D	D	5	1 4D	0 1D	—	—	—
4.0	A	A	5	0 3D	—	—	—	—
	B	B	5	0 5D	—	—	—	—
	C	C	5	0 5D	—	—	—	—
	D	D	5	0 5D	—	—	—	—
Organisms loaded by: BK		Checked by:	BA	MF	BA	[illegible]	[illegible]	MF

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

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

Investigators' Signatures

Brent Alexander

Marshall Fairbrother

James Daniel

Chelsea French

Jeff Ward

Reviewer: Britta Mulvihill

Comments: Repeat of 5-5-09 Test MF 5-12-09

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour:	2.20	2.09 2.31
96 hour:	2.04	1.94 2.16

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Revised 7/15/2005 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: 5-12-07 Time: 17:30
Test Ending: Date: 5-16-07 Time: 13:45

Test Type: ☐ non-renewal ☑ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L g/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	7.4	0.185	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.1	24.0	7.8	0.210	—
	M	48 hr AR	8.1	24.0	7.9	0.175	—
	—	72 hr	—	—	—	—	—
	A	96 hr	8.0	25.2	7.9	0.204	
1.5	M	0 hr	7.9	24.2	7.1	2.94	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.1	24.0	7.6	3.44	—
	M	48 hr AR	8.0	24.0	7.8	2.88	—
	—	72 hr	—	—	—	—	—
	A	96 hr	8.1	25.3	7.7	2.99	—
2.0	M	0 hr	8.0	24.3	7.3	3.87	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.1	24.0	7.4	4.65	—
	M	48 hr AR	8.0	24.0	7.7	3.79	—
	—	72 hr	—	—	—	—	—
	A	96 hr	8.1	25.3	8.0	3.86	—
2.5	M	0 hr	8.0	24.2	7.5	4.68	—
	—	24 hr	—	—	—	—	—
	A	48 hr BR	8.2	24.0	7.2	5.49	
	M	48 hr AR	8.1	24.0	7.8	4.52	—
	—	72 hr	—	—	—	—	—
	D	96 hr	8.1	24.9	7.9	5.08	—
3.0	M	0 hr	8.1	24.1	7.1	5.54	—
	—	24 hr	—	—	—	—	—
	D	48 hr BR	8.2	24.0	7.8 6A	6.38	—
	M	48 hr AR	—	—	—	—	—
	—	72 hr	—	—	—	—	—
	—	96 hr					
4.0	M	0 hr	8.1	24.0	7.1	7.31	—
	A	24 hr	8.1	24.8	7.6	7.65	—
	—	48 hr BR	—	—	—	—	—
	—	48 hr AR	—	—	—	—	—
	—	72 hr	—	—	—	—	—
	—	96 hr	—	—	—	—	—

Investigators Signatures
Daniel Alexander
Marshall Faircloth
James Daniel
Debra Fagnan
Reviewed By: Matthew Wolfe

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

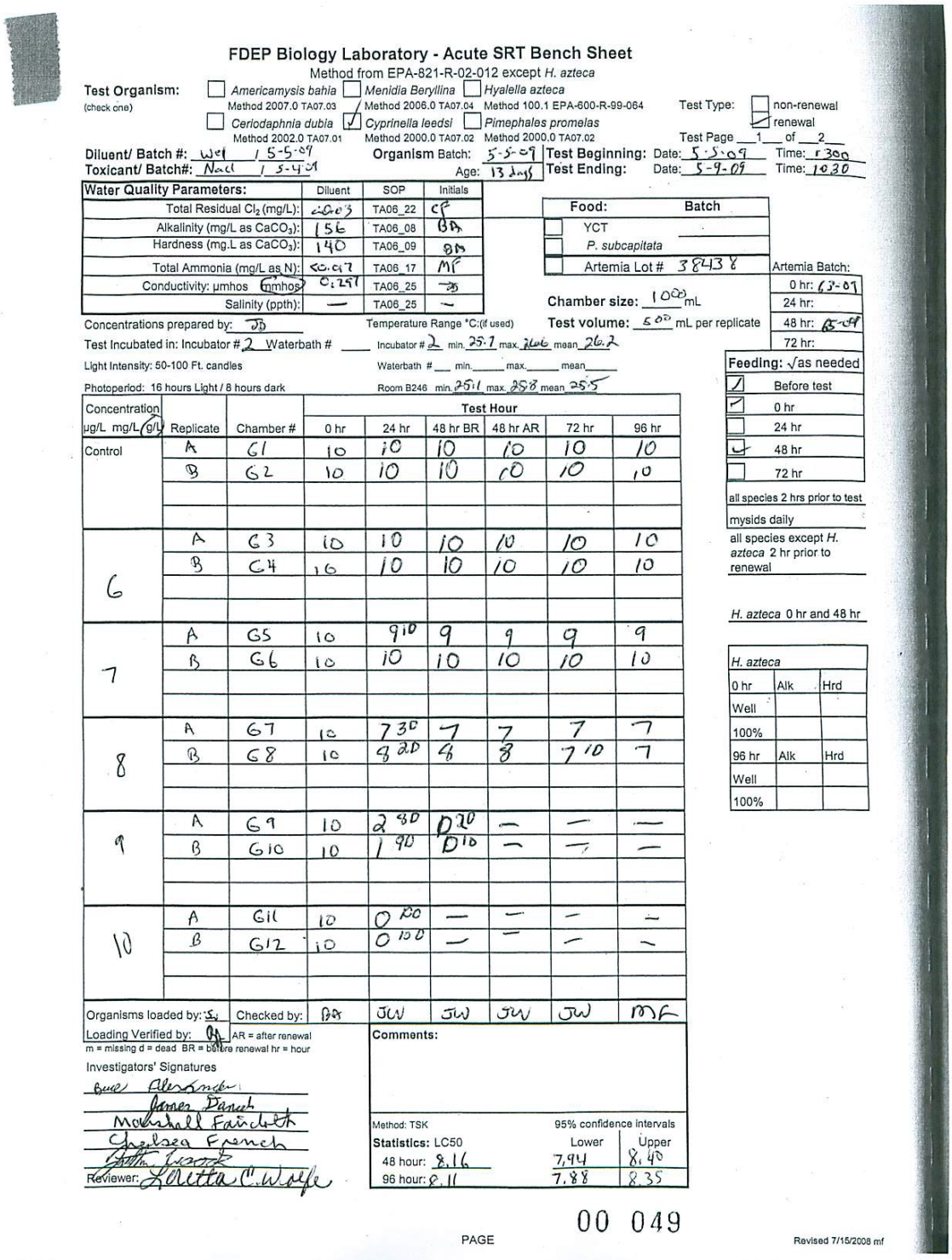
Measure/record salinity for marine tests

Comments:

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Revised 07/15/2008 MF

Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☑ renewal

Test Page 1 of 2

Diluent/ Batch #: Well 1 5-5-09 Organism Batch: 5-5-09 Test Beginning: Date: 5-5-09 Time: 1300

Toxicant/ Batch#: NaCl 1 5-4-09 Age: 13 days Test Ending: Date: 5-9-09 Time: 1030

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	CF
Alkalinity (mg/L as $CaCO_3$):	156	TA06_08	BA
Hardness (mg.L as $CaCO_3$):	140	TA06_09	BA
Total Ammonia (mg/L as N):	<0.097	TA06_17	MF
Conductivity: µmhos (mmhos)	0.297	TA06_25	—
Salinity (ppth):	—	TA06_25	—

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

Artemia Batch: 0 hr: 5-7-09; 24 hr:; 48 hr: 5-9-09; 72 hr:

Chamber size: 1000 mL

Test volume: 500 mL per replicate

Concentrations prepared by: DD

Temperature Range °C:(if used)

Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min. 25.1 max. 26.6 mean 26.2

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

Photoperiod: 16 hours Light / 8 hours dark Room B246 min. 25.1 max. 25.8 mean 25.5

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	G1	10	10	10	10	10	10
			B	G2	10	10	10	10	10	10
6			A	G3	10	10	10	10	10	10
			B	G4	10	10	10	10	10	10
7			A	G5	10	9 10	9	9	9	9
			B	G6	10	10	10	10	10	10
8			A	G7	10	7 30	7	7	7	7
			B	G8	10	9 20	8	8	7 10	7
9			A	G9	10	2 30	D 20	—	—	—
			B	G10	10	1 90	D 10	—	—	—
10			A	G11	10	0 100	—	—	—	—
			B	G12	10	0 100	—	—	—	—
Organisms loaded by: SL			Checked by:		BR	JW	JW	JW	JW	MF

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

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

Comments:

Investigators' Signatures

Brian Alexander

James Planck

Marshall Faircloth

Chelsea French

Reviewer: Loretta C. Wolfe

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 8.16	7.94	8.40
96 hour: 8.11	7.88	8.35

00 049

PAGE

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: 5-5-09 Time: 1300
Test Ending: Date: 5-9-09 Time: 1030

Test Type: ☐ non-renewal ☐ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (pt)	Replicate	Test Hour	pH (SU)	Temperature (° C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☑ ~~mmhos~~	Salinity (ppth)
Control	A	0 hr	7.8	24.1	7.3	0.297	–
	B	24 hr	8.0	24.4	7.3	0.297	–
	A	48 hr BR	8.2	25.5	6.7	0.298	–
	A	48 hr AR	8.1	24.6	7.3	0.306	–
	B	72 hr	7.9	25.1	7.1	0.285	–
	A	96 hr	8.1	25.3	7.3	0.294	–
6	A	0 hr	7.8	24.6	7.1	11.2	–
	B	24 hr	7.9	24.4	6.3	11.7	–
	A	48 hr BR	8.1	25.3	6.5	11.7	–
	A	48 hr AR	8.0	25.6	6.9	11.7	–
	B	72 hr	8.0	25.1	6.6	11.3	–
	A	96 hr	8.0	25.4	6.9	11.6	–
7	A	0 hr	7.8	24.8	7.2	13.5	–
	B	24 hr	7.9	24.8	6.4	13.4	–
	A	48 hr BR	8.1	25.1	6.2	13.7	–
	A	48 hr AR	8.0	25.1	6.9	13.5	–
	B	72 hr	8.0	25.0	6.4	13.1	–
	A	96 hr	8.0	25.5	6.8	13.5	–
8	A	0 hr	7.9	24.9	7.3	15.3	–
	B	24 hr	7.9	24.8	5.8	15.4	–
	A	48 hr BR	8.1	25.2	6.5	15.6	–
	A	48 hr AR	8.0	24.9	6.9	15.5	–
	B	72 hr	8.0	24.9	6.3	15.1	–
	A	96 hr	8.1	25.3	6.9	15.5	–
9	A	0 hr	7.9	25.1	7.4	16.9	–
	B	24 hr	7.8	24.8	5.8	17.0	–
	A	48 hr BR	8.1	24.9	6.4	16.8	–
	–	48 hr AR	–	–	–	–	–
	–	72 hr	–	–	–	–	–
	–	96 hr	–	–	–	–	–
10	A	0 hr	7.9	25.3	7.2	18.8	–
	B	24 hr	7.8	24.7	5.6	16.7	–
	–	48 hr BR	–	–	–	–	–
	–	48 hr AR	–	–	–	–	–
	–	72 hr	–	–	–	–	–
	–	96 hr	–	–	–	–	–

Investigators Signatures

Bruce Alexander
Chelsey Lynch
James Daniels
Marshall Faircloth
John Logan

Reviewed By: Lollie C Wolfe

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

Measure/record salinity for marine tests

Comments:

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Revised 07/15/2008 MF

Appendix C. (continued)

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

DATE: 5-12-09 DURATION: 48 h TOXICANT: NaCl
SPECIES: *Ceriodaphnia dubia*

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

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: **2.20**
95% LOWER CONFIDENCE: 2.09
95% UPPER CONFIDENCE: 2.31

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

DATE: 5-5-09 DURATION: 48 h TOXICANT: NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
6.00	20	0
7.00	20	1
8.00	20	5
9.00	20	20
10.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: **8.16**
95% LOWER CONFIDENCE: 7.94
95% UPPER CONFIDENCE: 8.40

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 5/4/09

Shipped to: FDEP

P.O. No:

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia	200	4 DAYS	MS090430	25°C	7.9	20‰
Menidia beryllina	200	12 DAYS	SS090422	25°C	7.9	20‰
						Hardness
Cyprinella leedsi	150	12 DAYS	CL090422	25°C	7.8	80mg/L
Pimephales promelas	150	8 DAYS	FM090426	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 D. (continued)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 5/26/09

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia						
Menidia beryllina						
						Hardness
Cyprinella leedsi	100	7 Days	CL090519	25°C	7.8	80 mg/L
Pimephales promelas						

Packed by: MP

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 Spanish Lakes Fairways RO Plant Outfall D-001, sampled on May 26, 2009.

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
5/26/2009 10:00	Effluent	AGP/LN	Algal Growth Potential	6.87		mg DryWt/L	0.3	0.9
5/26/2009 10:00	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	3.5		ug/L	0.57	1.7
5/26/2009 10:00	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	49		ug/L	0.79	2.4
5/26/2009 10:00	Effluent	Toxicology	BSY-AS-FW-C.dubia, LC50	100	L	LC50		
5/26/2009 10:00	Effluent	Toxicology	BSY-AS-FW-Fish, LC50	100	L	LC50		
5/26/2009 10:00	Effluent	Metals	Chromium	0.52	I	ug/L	0.3	1.2
5/26/2009 10:00	Effluent	Metals	Nickel	0.76	I	ug/L	0.25	1
5/26/2009 10:00	Effluent	Metals	Selenium	0.21	I	ug/L	0.2	0.8
5/26/2009 10:00	Effluent	Metals	Arsenic	2.15		ug/L	0.25	1
5/26/2009 10:00	Effluent	Metals	Iron	2530		ug/L	30	120
5/26/2009 10:00	Effluent	Metals	Copper	4.98		ug/L	0.5	0.5
5/26/2009 10:00	Effluent	Metals	Zinc	5	U	ug/L	5	20
5/26/2009 10:00	Effluent	Metals	Calcium	233		mg/L	0.37	1.5
5/26/2009 10:00	Effluent	Metals	Lead	0.34	I	ug/L	0.2	0.8
5/26/2009 10:00	Effluent	Metals	Aluminum	110	I	ug/L	60	240
5/26/2009 10:00	Effluent	Metals	Magnesium	14.6		mg/L	0.04	0.16
5/26/2009 10:00	Effluent	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
5/26/2009 10:00	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
5/26/2009 10:00	Effluent	Nutrients	TSS	17		mg/L	4	16
5/26/2009 10:00	Effluent	Nutrients	Sulfate	290		mg SO4/L	2	5
5/26/2009 10:00	Effluent	Nutrients	Ammonia-N	0.26		mg N/L	0.01	0.02
5/26/2009 10:00	Effluent	Nutrients	Kjeldahl Nitrogen	2.6		mg N/L	0.08	0.2
5/26/2009 10:00	Effluent	Nutrients	Total-P	0.18		mg P/L	0.004	0.01
5/26/2009 10:00	Effluent	Nutrients	NO2NO3-N	0.04	U	mg N/L	0.04	0.1
5/26/2009 10:00	Effluent	Nutrients	TDS	1210		mg/L	15	60
5/26/2009 10:00	Effluent	Nutrients	O-Phosphate-P	0.084		mg P/L	0.004	0.01
5/26/2009 10:00	Effluent	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
5/26/2009 10:00	Effluent	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
5/26/2009 10:00	Effluent	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
5/26/2009 10:00	Effluent	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
5/26/2009 10:00	Effluent	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
5/26/2009 10:00	Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
5/26/2009 10:00	Effluent	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
5/26/2009 10:00	Effluent	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
5/26/2009 10:00	Effluent	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
5/26/2009 10:00	Effluent	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
5/26/2009 10:00	Effluent	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
5/26/2009 10:00	Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
5/26/2009 10:00	Effluent	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
5/26/2009 10:00	Effluent	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
5/26/2009 10:00	Effluent	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
5/26/2009 10:00	Effluent	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
5/26/2009 10:00	Effluent	Pesticides	Azinphos Methyl	0.2	UJ	ug/L	0.2	0.8
5/26/2009 10:00	Effluent	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
5/26/2009 10:00	Effluent	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
5/26/2009 10:00	Effluent	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
5/26/2009 10:00	Effluent	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
5/26/2009 10:00	Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
5/26/2009 10:00	Effluent	Pesticides	Hexazinone	0.1	UJ	ug/L	0.1	0.4
5/26/2009 10:00	Effluent	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
5/26/2009 10:00	Effluent	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
5/26/2009 10:00	Effluent	Pesticides	Bromacil	0.2	UJ	ug/L	0.2	0.8
5/26/2009 10:00	Effluent	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
5/26/2009 10:00	Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
5/26/2009 10:00	Effluent	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
5/26/2009 10:00	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
5/26/2009 10:00	Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
5/26/2009 10:00	Effluent	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
5/26/2009 10:00	Effluent	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
5/26/2009 10:00	Effluent	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
5/26/2009 10:00	Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
5/26/2009 10:00	Effluent	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
5/26/2009 10:00	Effluent	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
5/26/2009 10:00	Effluent	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
5/26/2009 10:00	Effluent	Pesticides	Atrazine	0.16	IN	ug/L	0.05	0.2
5/26/2009 10:00	Effluent	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
5/26/2009 10:00	Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
5/26/2009 10:00	Effluent	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
5/26/2009 10:00	Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
5/26/2009 10:00	Effluent	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
5/26/2009 10:00	Effluent	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3	U	ug/L	3	12
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	U	ug/L	5.1	20
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	20
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	1	UJ	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Hexachloroethane	3	U	ug/L	3	12
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	61
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	3	UJ	ug/L	3	12
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3	U	ug/L	3	12
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	41
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.1

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	410
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	61
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	41
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Pentachlorophenol	3	U	ug/L	3	12
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3	U	ug/L	3	12
5/26/2009 10:00	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41	U	ug/L	41	160
5/26/2009 10:00	Effluent	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	61
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	3	U	ug/L	3	12
5/26/2009 10:00	Effluent	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4.1
5/26/2009 10:00	Effluent	Field Parameter	Sample Depth	0.05		m		
5/26/2009 10:00	Effluent	Field Parameter	Specific Conductance	1683		umhos/cm		
5/26/2009 10:00	Effluent	Field Parameter	pH	6.96				
5/26/2009 10:00	Effluent	Field Parameter	Temperature	26.7		C		
5/26/2009 10:15	Blank	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
5/26/2009 10:15	Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
5/26/2009 10:15	Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
5/26/2009 10:15	Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
5/26/2009 10:15	Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
5/26/2009 10:15	Blank	Metals	Iron	30	U	ug/L	30	120
5/26/2009 10:15	Blank	Metals	Nickel	0.25	U	ug/L	0.25	1

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
5/26/2009 10:15	Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
5/26/2009 10:15	Blank	Metals	Zinc	5	U	ug/L	5	20
5/26/2009 10:15	Blank	Metals	Aluminum	60	U	ug/L	60	240
5/26/2009 10:15	Blank	Metals	Copper	0.5	U	ug/L	0.5	0.5
5/26/2009 10:15	Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
5/26/2009 10:15	Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
5/26/2009 10:15	Blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
5/26/2009 10:15	Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
5/26/2009 10:15	Blank	Nutrients	NO2NO3-N	0.006	I	mg N/L	0.004	0.01
5/26/2009 10:15	Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
5/26/2009 10:15	Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
5/26/2009 10:15	Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
5/26/2009 10:15	Blank	Pesticides	Ametryn	0.047	U	ug/L	0.047	0.19
5/26/2009 10:15	Blank	Pesticides	Fenamiphos	0.19	U	ug/L	0.19	0.76
5/26/2009 10:15	Blank	Pesticides	Mevinphos	0.19	U	ug/L	0.19	0.76
5/26/2009 10:15	Blank	Pesticides	Parathion Methyl	0.095	U	ug/L	0.095	0.38
5/26/2009 10:15	Blank	Pesticides	Simazine	0.047	U	ug/L	0.047	0.19
5/26/2009 10:15	Blank	Pesticides	Delta-BHC	0.0095	U	ug/L	0.0095	0.038
5/26/2009 10:15	Blank	Pesticides	Alachlor	0.57	U	ug/L	0.57	2.3
5/26/2009 10:15	Blank	Pesticides	Butylate	0.19	U	ug/L	0.19	0.76
5/26/2009 10:15	Blank	Pesticides	Norflurazon	0.14	U	ug/L	0.14	0.56
5/26/2009 10:15	Blank	Pesticides	DDT-p,p'	0.028	U	ug/L	0.028	0.11
5/26/2009 10:15	Blank	Pesticides	Metribuzin	0.095	U	ug/L	0.095	0.38
5/26/2009 10:15	Blank	Pesticides	Parathion Ethyl	0.14	U	ug/L	0.14	0.56
5/26/2009 10:15	Blank	Pesticides	Dieldrin	0.019	U	ug/L	0.019	0.076
5/26/2009 10:15	Blank	Pesticides	Endosulfan I	0.019	U	ug/L	0.019	0.076
5/26/2009 10:15	Blank	Pesticides	Atrazine	0.047	U	ug/L	0.047	0.19
5/26/2009 10:15	Blank	Pesticides	Azinphos Methyl	0.19	UJ	ug/L	0.19	0.76
5/26/2009 10:15	Blank	Pesticides	Chlorpyrifos Ethyl	0.047	U	ug/L	0.047	0.19
5/26/2009 10:15	Blank	Pesticides	Fonofos	0.095	U	ug/L	0.095	0.38
5/26/2009 10:15	Blank	Pesticides	Prometryn	0.14	U	ug/L	0.14	0.56
5/26/2009 10:15	Blank	Pesticides	Chlordane	0.19	U	ug/L	0.19	0.76
5/26/2009 10:15	Blank	Pesticides	DDE-p,p'	0.019	U	ug/L	0.019	0.076
5/26/2009 10:15	Blank	Pesticides	Endrin	0.047	U	ug/L	0.047	0.19

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
5/26/2009 10:15	Blank	Pesticides	Heptachlor Epoxide	0.019	U	ug/L	0.019	0.076
5/26/2009 10:15	Blank	Pesticides	Bromacil	0.19	UJ	ug/L	0.19	0.76
5/26/2009 10:15	Blank	Pesticides	Chlorpyrifos Methyl	0.095	U	ug/L	0.095	0.38
5/26/2009 10:15	Blank	Pesticides	Ethion	0.047	U	ug/L	0.047	0.19
5/26/2009 10:15	Blank	Pesticides	Diazinon	0.047	U	ug/L	0.047	0.19
5/26/2009 10:15	Blank	Pesticides	Ethoprop	0.095	U	ug/L	0.095	0.38
5/26/2009 10:15	Blank	Pesticides	Hexazinone	0.095	UJ	ug/L	0.095	0.38
5/26/2009 10:15	Blank	Pesticides	Malathion	0.14	U	ug/L	0.14	0.56
5/26/2009 10:15	Blank	Pesticides	Metalaxyl	0.24	U	ug/L	0.24	0.96
5/26/2009 10:15	Blank	Pesticides	Metolachlor	0.47	U	ug/L	0.47	1.9
5/26/2009 10:15	Blank	Pesticides	Aldrin	0.0095	U	ug/L	0.0095	0.038
5/26/2009 10:15	Blank	Pesticides	DDD-p,p'	0.019	U	ug/L	0.019	0.076
5/26/2009 10:15	Blank	Pesticides	Endosulfan II	0.019	U	ug/L	0.019	0.076
5/26/2009 10:15	Blank	Pesticides	Naled	0.76	U	ug/L	0.76	3
5/26/2009 10:15	Blank	Pesticides	Alpha-BHC	0.0095	U	ug/L	0.0095	0.038
5/26/2009 10:15	Blank	Pesticides	Gamma-BHC	0.0095	U	ug/L	0.0095	0.038
5/26/2009 10:15	Blank	Pesticides	Phorate	0.047	U	ug/L	0.047	0.19
5/26/2009 10:15	Blank	Pesticides	Beta-BHC	0.0095	U	ug/L	0.0095	0.038
5/26/2009 10:15	Blank	Pesticides	Endosulfan Sulfate	0.019	U	ug/L	0.019	0.076
5/26/2009 10:15	Blank	Pesticides	Endrin Aldehyde	0.019	U	ug/L	0.019	0.076
5/26/2009 10:15	Blank	Pesticides	Heptachlor	0.0095	U	ug/L	0.0095	0.038
5/26/2009 10:15	Blank	Pesticides	Methoxychlor	0.047	U	ug/L	0.047	0.19
5/26/2009 10:15	Blank	Pesticides	Toxaphene	0.71	U	ug/L	0.71	2.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Phenanthrene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Benzidine	95	U	ug/L	95	380
5/26/2009 10:15	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Chrysene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
5/26/2009 10:15	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.95	UJ	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Isophorone	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Pyrene	0.95	U	ug/L	0.95	3.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
5/26/2009 10:15	Blank	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
5/26/2009 10:15	Blank	Priority Organic Pollutants	Naphthalene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.5	U	ug/L	9.5	38
5/26/2009 10:15	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Fluorene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Diethyl phthalate	0.95	I	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
5/26/2009 10:15	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
5/26/2009 10:15	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	11
5/26/2009 10:15	Blank	Priority Organic Pollutants	Fluoranthene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Phenol	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Dimethyl phthalate	9.5	U	ug/L	9.5	38
5/26/2009 10:15	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.6
5/26/2009 10:15	Blank	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	11
5/26/2009 10:15	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	2-Nitrophenol	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.6
5/26/2009 10:15	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
5/26/2009 10:15	Blank	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.6
5/26/2009 10:15	Blank	Priority Organic Pollutants	2-Chlorophenol	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Acenaphthene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	11
5/26/2009 10:15	Blank	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	11
5/26/2009 10:15	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.6
5/26/2009 10:15	Blank	Priority Organic Pollutants	Anthracene	0.95	U	ug/L	0.95	3.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis Group	Components	Results	Remarks	Units	MDL	PQL
5/26/2009 10:15	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
5/26/2009 10:15	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	11
5/26/2009 10:15	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	11
5/26/2009 10:15	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	11
5/26/2009 10:15	Blank	Priority Organic Pollutants	Acenaphthylene	0.95	U	ug/L	0.95	3.8
5/26/2009 10:15	Blank	Field Parameter	Sample Depth	0.01		m		

Appendix F. Facility Summary, Effluent Limits, and DMR Violations

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Terry Davis	**Contact Number:** (772) 398-2806 X122
Facility Name (as it appears on permit): Spanish Lakes Fairways Reverse Osmosis	**Former Names:**
NPDES Permit Number: FL0140023-002-IW5C	**Permit Expiration Date:** 27 February, 2010
Physical Address: 6200 Spanish Lakes Blvd., Ft. Pierce, FL 34951	
District: SED – PSL Branch	**County:** St. Lucie
Function of Facility: Produce Potable Water	
Facility Type: Water Treatment Plant	**Permitted Capacity (MGD):** 0.193 undiluted R.O. concentrate – daily max
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): Averages for 2008 quarterly data – UNDILUTED (INF-01) – 0.033 MGD maximum monthly avg., 0.528 MGD avg. of daily max. DILUTED (EFF-01) – 0.1733 MGD maximum monthly avg., 0.281 MGD avg. of daily max.	
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 **Discharge to stormwater lake system (SLS) depends on demand for water. Discharge from SLS depends on rainfall.**	
Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): **D-001 (EFF-01) Blended R.O. concentrate sample is taken at blending tank after mixing with dilution water but before mixing with receiving water.**	
Description of Permitted Outfall(s): **D-001 – Discharge of diluted concentrate to SLS. D-002 – Outfall from SLS to Fort Pierce Farms Water Management District (FPFWMD) Canal No. 9. D-003 – Outfall from SLS to FPFWMD Canal No. 10**	
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): R.O. concentrate is diluted with water from Lake No. 7 at a ratio of a minimum of 5 lake water: 1 concentrate dilution at a blending tank at the WTP. Further dilution is achieved by mixing with waters in a sequence of 4 lakes before discharge to FPFWMD canals.	

PART I: Continued										
List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)										
			Effluent Limitations				Monitoring Requirements – Daily when discharging			
Parameter	Units	Max/Min	Monthly Average	Daily Maximum	Daily Minimum	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow (INF-01)										
Max Monthly avg.	MGD		Report				Daily	Meter	INF-01	
Daily max.	MGD			0.193			Daily	Calculated	INF-01	
Flow (EFF-01)										
Max Monthly avg.	MGD			Report				Meter	EFF-01	
Daily max	MGD			Report				Meter	EFF-01	
Specific conductance	umhos/cm			Report*				Grab	EFF-01	
Solids,Total Dissolved	mg/L			Report				Grab	EFF-01	
Ammonia, unionized	mg/L			Report				Grab	EFF-01	
Hydrogen sulfide	mg/L			Report				Grab	EFF-01	
Sulfate, Total	mg/L			Report				Grab	EFF-01	
pH	s.u.			Report	Report			Grab	EFF-01	

*Exceedance is considered to have occurred if the blended effluent specific conductance exceeds the greater of 1,912.5 umhos/cm, or the ambient level measured at FPFWMD Canal No. 10. To refute this finding, the permittee may sample again from the south end of Lake 6 before Outfall D-003.

Appendix F. (continued)

PART I: Continued	
Receiving Waters: On-site stormwater lake system and then Fort Pierce Farms WMD canals 9 & 10	**Classification (indicate whether fresh or marine): FPFWMD Canals – Class III Fresh Waters**

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):
None

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
None

Facility Mixing Zone Details (if applicable):
None

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

Date	Parameter and Units	Limit	Result

Describe previous FYI and WQBEL study: FYI3 - RQ-2003-08-11-06 – Blended effluent not toxic

None

Describe previous or current Enforcement Actions (including WLs):

None

Describe any violations or problems noted in previous inspection:

None

Discuss whether DMR trends within previous five years are improving or declining: No apparent trends in quality of effluent. There has been a trend of decreasing daily maximum flow values, a good thing

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

Appendix F. (continued)

PART II: Sampling Event Information	
Date(s) sample collected: 26 May, 2009	Sampler(s): Terry Davis & Victor Faconti
Temperature (Deg C):26.70	pH (SU):6.96
Dissolved Oxygen (mg/L):150%	Conductivity (umhos/cm):1,683
Total Residual Chlorine (mg/L):	Total Residual Chlorine - after Disinfection (mg/L):
Method of Chlorination:	Method of De-chlorination:
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

Appendix G. EPA End Sheet

The Bioassay of Spanish Lakes Fairways Reverse Osmosis Plant effluent sampled on May 26, 2009. NPDES #FL0140023.

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 1 4 0 0 2 3 11	12 0 9 0 5 2 6	18 **B**	19 **S**	20 2

Remarks

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The Priority Pollutants Analysis of Spanish Lakes Fairways Reverse Osmosis Plant effluent sampled on May 26, 2009. NPDES #FL0140023.

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 1 4 0 0 2 3 11	12 0 9 0 5 2 6	18 **X**	19 **S**	20 2

Remarks

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Biological Analyses of Spanish Lakes Fairways Reverse Osmosis Plant effluent sampled on May 26, 2009. NPDES #FL0140023.

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 1 4 0 0 2 3 11	12 0 9 0 5 2 6	18 **S**	19 **S**	20 2

Remarks

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