

Effluent Quality Assessment

Florida Power and Light Company

Putnam Power Plant

Putnam County

NPDES #FL0032166

Sampled July 18, 2011

December 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 1a	Measured and predicted freshwater algal growth potential (AGP)
Table 1b	Measured marine algal growth potential (AGP)
Table 2	Effluent limits, Class III Marine Criteria and chemical data, and qualifiers

Appendices

Appendix A	Chain of Custody
Appendix B	Bioassay Bench Sheets
Appendix C	SRT Bench Sheets and Statistical Analyses
Appendix D	Organism Receipts
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

Florida Power and Light Company Putnam Power Plant, 392 U.S. Hwy. 17 South, East Palatka, Putnam County, Florida, 32131. NPDES #FL0032166. Effluent grab samples for biological and chemical analyses for this facility were collected on July 18, 2011.

Introduction

Florida Power and Light Company Putnam Power Plant is an electric power generating facility consisting of two combined cycle units (Units 1 and 2), using natural gas and No. 2 distillate as fuels, with a total name plate reading of 506 Megawatts. (See Appendix F for detailed facility information provided by Brian Kirks of FDEP Northeast District.)

Methods

Samples were collected from the EFF-1 and EFF-2 NPDES sampling point for Outfall D-01A by Brian Kirts and Sharon Piltz (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/bars/sas/sop/index.htm.

See Appendix A for the completed chain of custody form.

The 96-hour acute screening toxicity tests and algal growth potential tests were performed following internal DEP SOPs TA07_03, TA07_04, 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.

Aliquots of the bioassay sample were salinity-adjusted from an apparent salinity of approximately 1.9 parts per thousand (ppth) to a salinity of approximately 9.9 ppth for the *Americamysis bahia* test and to a salinity of approximately 3 ppth for the *Menidia beryllina* test. The salinity adjustments were performed in accordance with the permit requirements for the test species (original salinity plus 8 ppth for *Americamysis bahia* and original salinity plus 1 ppth for *Menidia beryllina*). Forty Fathoms® marine mix artificial sea salts was used for the salinity adjustments.

The salt control used for each test was prepared by diluting 20 ppth salinity artificial seawater (ASW) with well water to a salinity of approximately 1.9 ppth and then salting this solution with artificial sea salts to match the salinity of the appropriate test solution. The purpose of the salt controls was to confirm that there was no effect of adding artificial sea salts to the sample. There was no mortality in the salt controls of either test.

The AGP tests were performed with both the freshwater and marine test species. An aliquot of the AGP sample was salinity adjusted by the addition of artificial sea salts to meet the salinity requirements of the marine test species.

Results and Discussion

- **Toxicity Test Results**
  Tests were performed July 19-23, 2011.

Americamysis bahia 96-hour acute screening bioassay –	LC_{50} > 100%, 0%* mortality in the salinity adjusted100% sample at 96 hours
Menidia beryllina 96-hour acute screening bioassay –	LC_{50} > 100%, 0%* mortality in the salinity adjusted 100% sample at 96 hours

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

*NOTE: In a 96-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 19.6 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 a "problem" threshold for fresh receiving waters, implying nutrient enrichment. Based on the ratio of inorganic nitrogen to orthophosphate the analytical chemistry suggests that the effluent is nitrogen limited; whereas, the ratio of total nitrogen to total phosphorus suggests that the effluent is co-limited by both nitrogen and phosphorus. To determine actual nutrient limitation, a limiting-nutrient algal growth potential test with associated nutrient chemistry should be performed (Miller et al. 1978).

  Salinity-adjusted Effluent Sample
  The salinity adjusted effluent Algal Growth Potential (AGP) was 11.0 mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* Raschke and Schultz determined that AGP values above 10.0 mg dry weight/L represent a "problem" threshold for marine receiving waters, implying nutrient enrichment (personal communication, Marshall Faircloth, et. al. FDEP, with Ron Raschke USEPA Region 4 1987).

  See Tables 1a and 1b 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 composite sample collected and preserved for chemical analysis was 0.28 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.

  Aluminum, arsenic, chloride, copper, fluoride, iron, nickel, sulfate and zinc were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.) and/or permitted limits. Chromium, lead, and selenium were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). The effluent's dissolved oxygen (3.3 mg/L) was less than the minimum Class III freshwater criterion.

  See Table 2 for results of analytes detected in the effluent, corresponding limits, and qualifiers. See Appendix E for a complete list of chemical analyses performed. See Appendix B for bioassay lab equipment.

Conclusion

The salinity-adjusted effluent sample collected from the EFF-1 NPDES sampling point for outfall D-01A this facility on July 18, 2011, was not acutely toxic to either test species during the 96-hour acute screening bioassays. The effluent AGP results were greater than the "problem" threshold for both fresh and marine receiving waters suggesting that nutrient enrichment may be an issue. The effluent's dissolved oxygen (3.3 mg/L) was less than the minimum Class III freshwater criterion. Additional effluent water quality samples collected on July 18, 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 1a. 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 Florida Power and Light Company Putnam Power Plant facility on July 18, 2011.

Florida Power and Light Company Putnam Power Plant					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Tank Sampling Point	19.6	12.5 ± 2.5	81.7 ± 16.3	4.9	16.5

Table 1b. Measured algal growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus for samples collected from the Florida Power and Light Company Putnam Power Plant facility on July 18, 2011.

Florida Power and Light Company Putnam Power Plant			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Effluent Tank Sampling Point	11.0	4.9	16.5

* - sample salinity adjusted to 7ppt

Table 2. Effluent limits, Class III Freshwater Criteria and chemical data for samples collected from the Florida Power and Light Company Putnam Power Plant facility on July 18, 2011.

Florida Power And Light Company Putnam Power Plant NPDES# FL0032166	Class III Criteria	Effluent Limits	Effluent Toxicity Sampling Point	Effluent Tank Sampling Point
Organic Constituents (µg/L)				
None Detected	-	-	None Detected	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	-	41
Arsenic	≤ 50	-	-	2.14
Cadmium	≤ 0.76 b	-	-	0.05 U
Calcium (mg/L)	-	-	-	199
Chromium-III	≤ 268.22 b	-	-	0.61 I
Copper	≤ 30.50 b	≤ 250 s	-	43.5
Iron	≤ 1,000	≤ 4,700 s	-	400
Lead	≤ 18.58 b	-	-	0.22 I
Magnesium (mg/L)	-	-	-	77.9
Nickel	≤ 168.54 b	-	-	45.5
Selenium	≤ 5.0	-	-	0.38 I
Silver	≤ 0.07	-	-	0.025 U
Zinc	≤ 387.83 b	≤ 270 s	-	44
Nutrients (mg/L)				
Ortho-phosphate	-	-	-	0.067
Total Phosphorus	-	-	-	0.13
Total Ammonia	-	-	-	0.28
Un-ionized Ammonia	≤ 0.02 s	-	-	< 0.02 c
Nitrate and Nitrite	-	-	-	0.05
Total Kjeldahl Nitrogen	-	-	-	2.1
Organic Nitrogen	-	-	-	1.82 c
Total Nitrogen	-	-	-	2.15 c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0 s	-	3.3	-
pH (SU)	6.0 - 8.5 s	6.0 - 8.5 s	7.1	-
Conductivity (µmhos/cm)	≤ 1,275	≤ 6,560 s	3,622	-
Temperature (°C)	-	≤ 37s	28.8	-
Total Residual Chlorine (mg/L)	≤ 0.01s	≤ 0.01s*	0.03 UQ£	-
Chlorophyll *a* (µg/L) - Corrected	-	-	-	6.6
Phaeophytin (µg/L)	-	-	-	3.9
Total Suspended Solids (mg/L)	-	-	-	10
CBOD, 5 day (mg/L), N - inhibited	-	-	-	1.3 IJ
Oils and Greases (mg/L)	≤ 5.0	-	-	0.7 U
Chloride (mg/L)	-	-	-	840
Fluoride (mg/L)	≤ 10.0	-	-	0.59
Sulfate (mg/L)	-	-	-	450 A
Flow (MGD)	-	≤ 2.92 a	0.7745 a	-
Hardness (mg $CaCO_3$)	-	-	-	817.70 c

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
£ - measurement taken in the FDEP laboratory
* TRC limit ≤ 0.038 mg/L during chlorine addition. TRC Limit ≤ 0.01 mg/L all other times.

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ ~~2010-11-15-27~~ 2011 07 11 36

~~El Dupont de Nemours - Highland Mine FYI3~~

FP+L Putnam

Customer: NE-DIST

Project ID: FYI3

PMAS: 1143

Requester: ~~Carl Butler~~ Ed Smith

Collected By: B. Kirts / S. Piltz

Sampling Agency: DEP NED

Field Report Prepared By: S. Piltz

Send Final Report To: Tom Kallemeyn

Lab ID *	Location / Field ID / Matrix / Temp (C) / pH / Latitude / Longitude	Comp / Grab / Collection (begin) Date Time Eastern Central / Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L) / Sample Depth m ft / Salinity (PPTh) / Sp Conductance (umho/cm) / Comments	Collection (end) Date Time Eastern Central / Storet Station Number / NPDES Number	Bottle Group(s)**
	Location: FP+L D001A Tox Sample point Matrix: EA Temp (C): 28.79 pH: 7.08	Grab Collection (begin) Date 7/18/11 Time 1445 Eastern Central Diss Oxygen (mg/L): 3.28 Sample Depth ft: 1.89 Salinity (PPTh) Sp Conductance (umho/cm): 31622		A
	Location: FP+L D001A Sample point @ Tank Right 5ft Matrix: EA	Grab Collection (begin) Date 7/18/11 Time 1455 Eastern Central		A
	Location: Blank Matrix: DI	Grab Collection (begin) Date 7/18/11 Time 1520 Eastern Central Comments: Had to Rinse Refill Rest Bot due to add of acid.		B

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	7/18/11	FedEx						7/18/11

2. Biuret, Reid's tox by JD 10:17 7.19.11

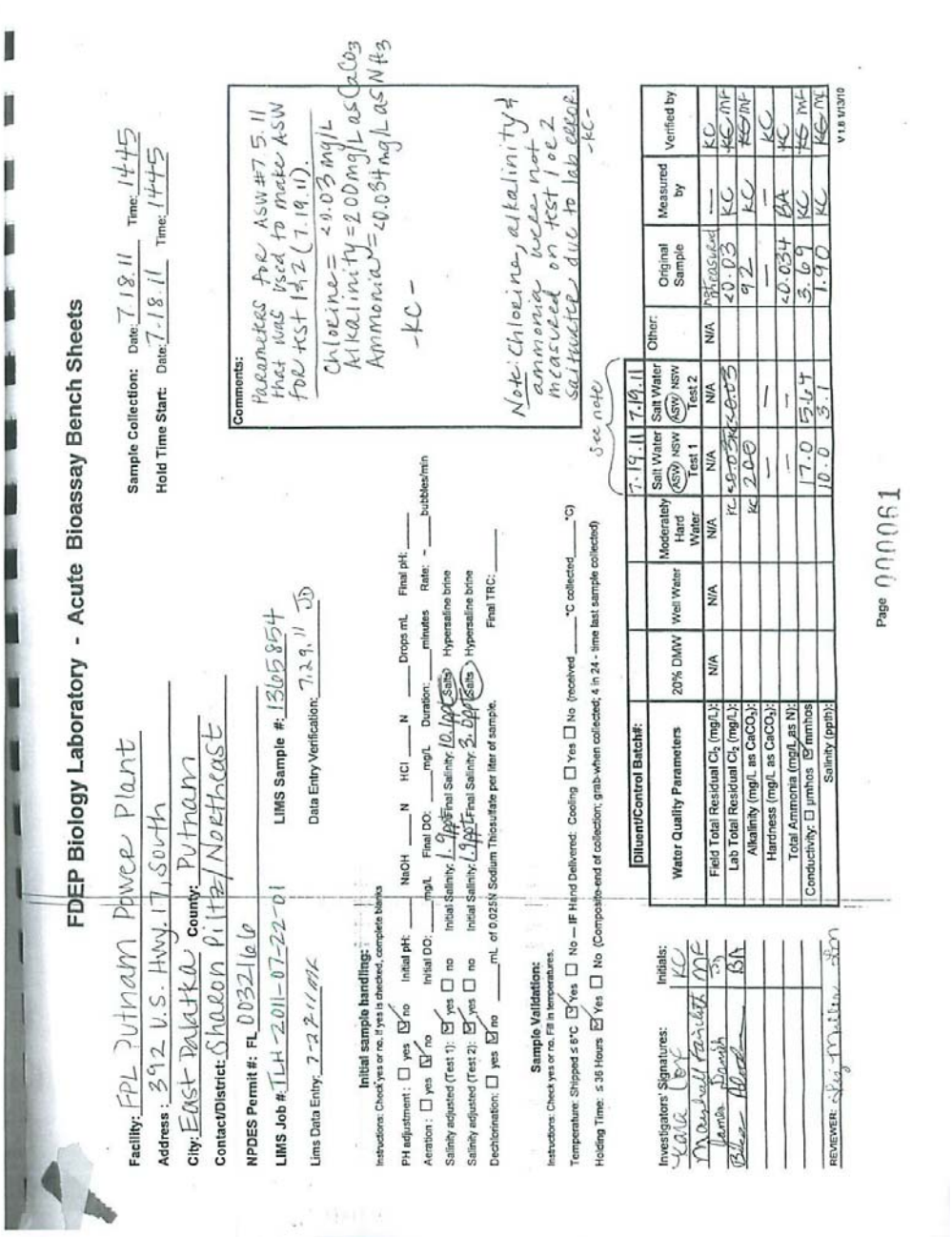
C135A

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix B. Bench Sheets



FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: FPL Putnam Power Plant
Address: 3912 U.S. Hwy. 17, South
City: East Palatka County: Putnam
Contact/District: Sharon Pitts/Northeast
NPDES Permit #: FL 0032166
LIMS Job #: TLH-2011-07-22-01
Lims Data Entry: 7-22-11 MK

Sample Collection: Date: 7.18.11 Time: 1445
Hold Time Start: Date: 7-18-11 Time: 1445

Comments:
Parameters for ASW #7 5.11 that was used to make ASW for test 1&2 (7.19.11).
Chlorine= <0.03 mg/L
Alkalinity = 200 mg/L as $CaCO_3$
Ammonia = 0.034 mg/L as NH_3
-KC-

LIMS Sample #: 13058854
Data Entry Verification: 7.29.11 (5)

Note: Chlorine, alkalinity & ammonia were not measured on test 1 or 2 saltwater due to lab error. -KC-

Initial sample handlings:
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: ___ mg/L Final DO: ___ mg/L Duration: ___ minutes Rate: ___ bubbles/min
Salinity adjusted (Test 1): ☑ yes ☐ no Initial Salinity: 1.9 ppt Final Salinity: 10 (ppt salts) Hypersaline brine
Salinity adjusted (Test 2): ☑ yes ☐ no Initial Salinity: 1.9 ppt Final Salinity: 2.0 (ppt 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:
KC
MF
BA

Diluent/Control Batch#:					7.19.11	7.19.11				
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	N/A	Not measured	—	KC
Lab Total Residual Cl_2 (mg/L):				KC <0.03 mg/L			<0.03	KC	KC MF
Alkalinity (mg/L as $CaCO_3$):				KC 200			92	KC	KC MF
Hardness (mg/L as $CaCO_3$):				—	—		—	—	KC
Total Ammonia (mg/L as N):				—	—		<0.034	BA	KC
Conductivity: ☐ µmhos ☑ mmhos				17.0	54.4		3.69	KC	HS MF
Salinity (ppth):				10.0	3.1		1.90	KC	KC MF

REVIEWER: [signature]

Page 000061

V 1.5 1/13/10

Appendix B. continued

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1365854 SOP#: TA 07 03 Test # 1 of 2

Test Species:
Batch #: 7.19.11 Age: 5days
- ☐ *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 # 7.19.11)
☑ ASW ☐ 20% DMW ☐ MHW ☐ Well

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

Test Duration: ☐ 48 hr ☑ 96 hr ☐ __hr

Test Started: Date 7.19.11 Time 1340

Test Ended: Date 7.23.11 Time 0900

Chamber Size 400ml
Test Volume: 319ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	K 1	5	5	5	5	5	5
	B	K 2	5	5	5	5	5	5
	C	K 3	5	5	5	5	5	5
	D	K 4	5	5	5	5	5	5
100%	A	K 5	5	5	5	5	5	5
	B	K 6	5	5	5	5	5	5
	C	K 7	5	5	5	5	5	5
	D	K 8	5	5	5	5	5	5
Salt Ctrl	A	K 9	5	5	5	5	5	5
	B	K 10	5	5	5	5	5	5
	C	K 11	5	5	5	5	5	5
	D	K 12	5	5	5	5	5	5
Checked or Verified by:			JD	JD	JD	JD	JD	KC

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

Feeding and Artemia Batch #
- ☑ 0 hr 123-11 ☑ Prior to Test
- ☑ 24 hr 124-11
- ☑ 48 hr 125-11 ☑ Prior to Renewal
- ☑ 72 hr 126-11

Temperature Range (°C)
Incubator # 2
min 25.3 max 27.0 mean –

Incubator #___
min._____max._____mean_____

Waterbath #___
min._____max._____mean_____

Room B246
min 23.1 max 25.0 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_____

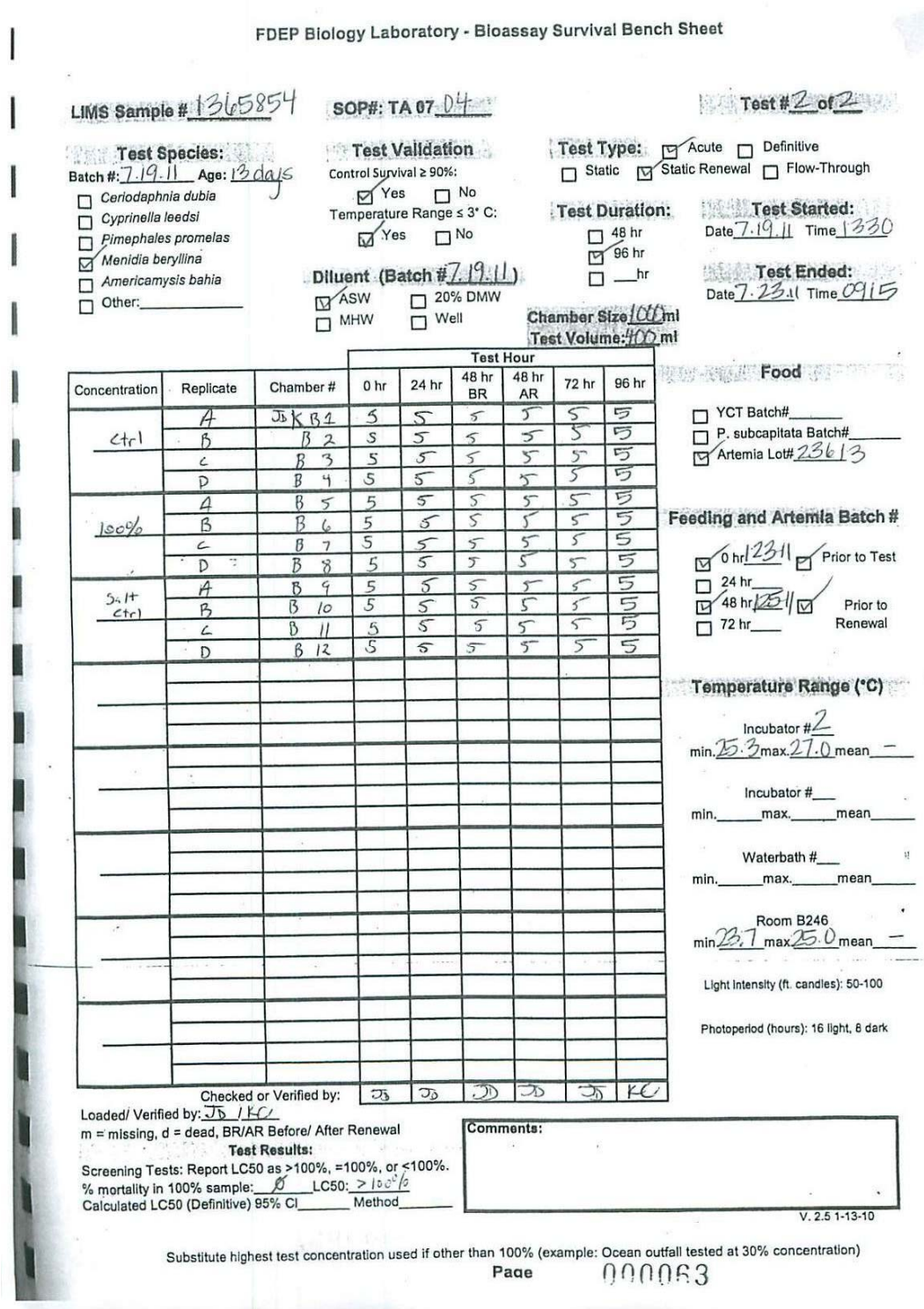
Comments:

V. 2.5 1-13-10

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

Page 000062

Appendix B. continued



FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1365854 SOP#: TA 07 04 Test # 2 of 2

Test Species:
Batch #: 7.19.11 Age: 13 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 # 7.19.11)
☑ ASW ☐ 20% DMW ☐ MHW ☐ Well

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

Test Duration: ☐ 48 hr ☑ 96 hr ☐ ___hr

Test Started: Date 7.19.11 Time 1330

Test Ended: Date 7.23.11 Time 0915

Chamber Size 100 ml
Test Volume: 400 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	JB KB1	5	5	5	5	5	5
	B	B 2	5	5	5	5	5	5
	C	B 3	5	5	5	5	5	5
	D	B 4	5	5	5	5	5	5
100%	A	B 5	5	5	5	5	5	5
	B	B 6	5	5	5	5	5	5
	C	B 7	5	5	5	5	5	5
	D	B 8	5	5	5	5	5	5
Salt Ctrl	A	B 9	5	5	5	5	5	5
	B	B 10	5	5	5	5	5	5
	C	B 11	5	5	5	5	5	5
	D	B 12	5	5	5	5	5	5
Checked or Verified by:			JB	JD	JD	JD	JD	KC

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

Feeding and Artemia Batch #
- ☑ 0 hr 1231 ☑ Prior to Test
- ☐ 24 hr___
- ☑ 48 hr 1231 ☑ Prior to Renewal
- ☐ 72 hr___

Temperature Range (°C)
Incubator # 2 min. 25.3 max. 27.0 mean ___
Incubator #___ min.___ max.___ mean___
Waterbath #___ min.___ max.___ mean___
Room B246 min 23.7 max 25.0 mean ___

Light Intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: JB / 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 000063

Appendix B. continued

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1385854 (2m for KC) 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.	A	0 hr	8.0	24.9	8.4	17.0	10.0
	B	24 hr	8.2	24.7	7.3	18.1	10.5
	C	48 hr BR	8.1	24.6	6.9	17.9	10.4
	C	48 hr AR	8.0	24.0	KC 7.8 6.9	17.1	10.0
KC	D	72 hr	7.9	25.1	5.4	17.5	10.3
	A	96 hr	7.9	25.0	4.7	17.8	10.5
100%	A	0 hr	8.1	25.1	8.4	17.2	10.1
	B	24 hr	8.1	24.9	7.5	18.2	10.5
	C	48 hr BR	7.9	25.1	6.4	17.6	10.3
	C	48 hr AR	8.0	24.7	KC 7.2 7.0	17.4	10.2
	D	72 hr	7.8	25.0	5.3	17.6	10.3
	A	96 hr	7.7	25.1	5.1	18.0	10.6
Salt Control	A	0 hr	8.2	24.3	7.8	16.9	9.9
	B	24 hr	8.3	24.6	7.5	18.0	10.4
	C	48 hr BR	8.1	25.3	6.4	17.6	10.3
	C	48 hr AR	8.2	24.6	7.0	17.1	10.2
	D	72 hr	8.1	24.4	6.1	17.4	10.2
	A	96 hr	7.9	24.9	5.0	17.6	10.3
		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					
		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					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

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

Page 000064

V. 2.3 1-13-10

Appendix B. continued

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample #1365854 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)
Ctrl	A	0 hr	7.9	~~24.0~~ 25.7 JD	8.7	5.64	3.1
	B	24 hr	8.2	24.0	7.5	6.00	3.2
	C	48 hr BR	8.2	24.5	7.4	5.93	3.2
	C	48 hr AR	8.0	24.0	7.0	5.56	3.0
	D	72 hr	8.1	24.2	6.6	5.63	3.1
	A	96 hr	8.0	24.9	6.1	5.71	3.1
100%	A	0 hr	8.0	24.1	8.6	5.53	3.0
	B	24 hr	8.0	24.0	7.5	5.90	3.2
	C	48 hr BR	8.0	24.3	7.5	5.94	3.2
	C	48 hr AR	8.0	24.1	7.2	5.49	2.9
	D	72 hr	7.8	24.5	6.7	5.63	3.1
	A	96 hr	7.8	24.9	6.3	5.70	3.1
Salt Control	A	0 hr	7.5	24.5	8.2	5.52	3.0
	B	24 hr	8.2	24.3	7.6	5.70	3.1
	C	48 hr BR	8.3	24.4	7.5	5.74	3.1
	C	48 hr AR	8.1	24.0	7.2	5.51	3.0
	D	72 hr	8.0	24.3 mF	6.5	5.62	3.1
	A	96 hr	8.1	24.~~6~~6	6.3	5.74	3.1
		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					
		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					
		0 hr					
		24 hr					
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

*Measure/ record salinity for marine tests

Comments:

Measured By:
0 hr: KC
24 hr: JD
48 hr BR: JD
48 hr AR: JD/KC
72 hr: JD
96 hr: KC /13A

Page 000065

V. 2.3 1-13-10

Appendix B. continued

FPL

Test ID: Putnam Power Plant Dates: 7/19/11-7/23/11

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-SN1016864 12 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5 SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #5
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 Kara Cop 7/25/11

V 1.1 9/21/10 MF/jd

990066

Appendix C. SRT Bench Sheets and Statistical Analysis

Florida Department of Environmental Protection
Bureau of Laboratories

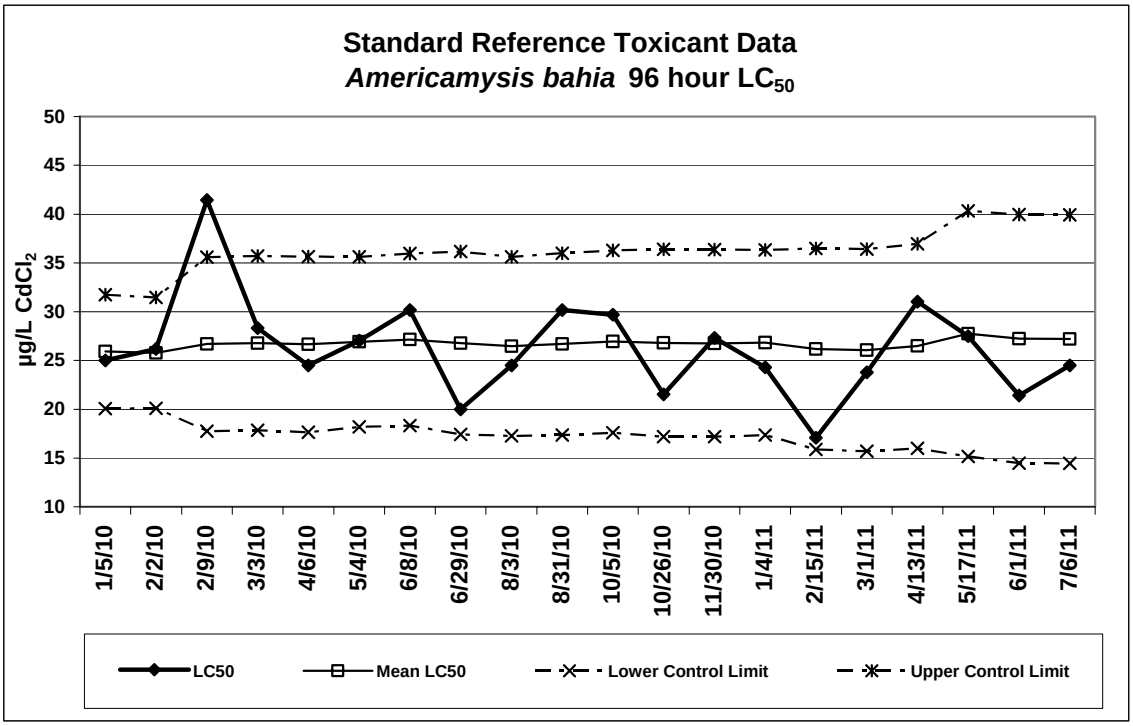
Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Americamysis bahia (mysid shrimp) - Cadmium Chloride ($CdCl_2$)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
1/5/10	25.00	25.91	2.92	20.06	31.75
2/2/10	26.18	25.77	2.84	20.09	31.46
2/9/10	41.45	26.68	4.46	17.76	35.59
3/3/10	28.31	26.78	4.47	17.84	35.72
4/6/10	24.49	26.66	4.50	17.66	35.65
5/4/10	27.02	26.91	4.36	18.20	35.63
6/8/10	30.17	27.15	4.40	18.34	35.95
6/29/10	20.00	26.78	4.68	17.42	36.15
8/3/10	24.49	26.45	4.59	17.27	35.62
8/31/10	30.17	26.68	4.66	17.37	35.99
10/5/10	29.70	26.94	4.67	17.60	36.29
10/26/10	21.53	26.80	4.80	17.20	36.39
11/30/10	27.31	26.76	4.79	17.18	36.35
1/4/11	24.29	26.83	4.74	17.35	36.32
2/15/11	17.08	26.19	5.15	15.88	36.49
3/1/11	23.78	26.07	5.18	15.71	36.43
4/13/11	31.04	26.48	5.24	16.00	36.95
5/17/11	27.50	27.75	6.29	15.16	40.33
6/1/11	21.40	27.22	6.36	14.49	39.95
7/6/11	24.49	27.20	6.37	14.45	39.94

CV = 23.44

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

EPA reference 75th quartile CV = 26%



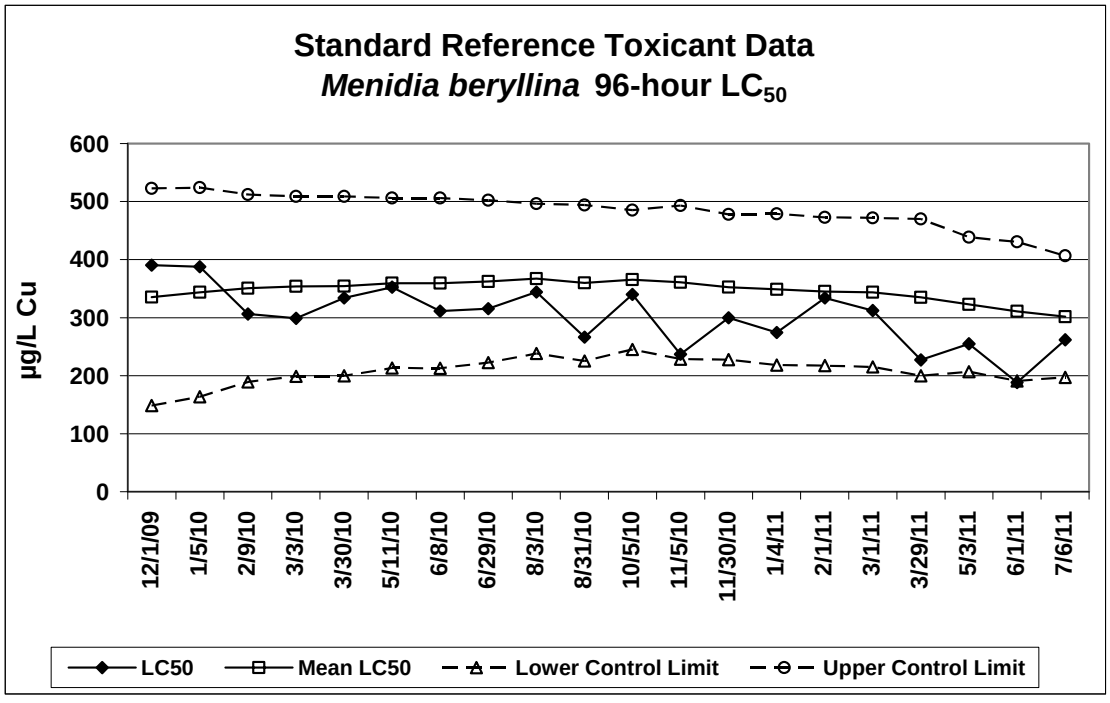
Appendix C. (continued)

Florida Department of Environmental Protection
Bureau of Laboratories

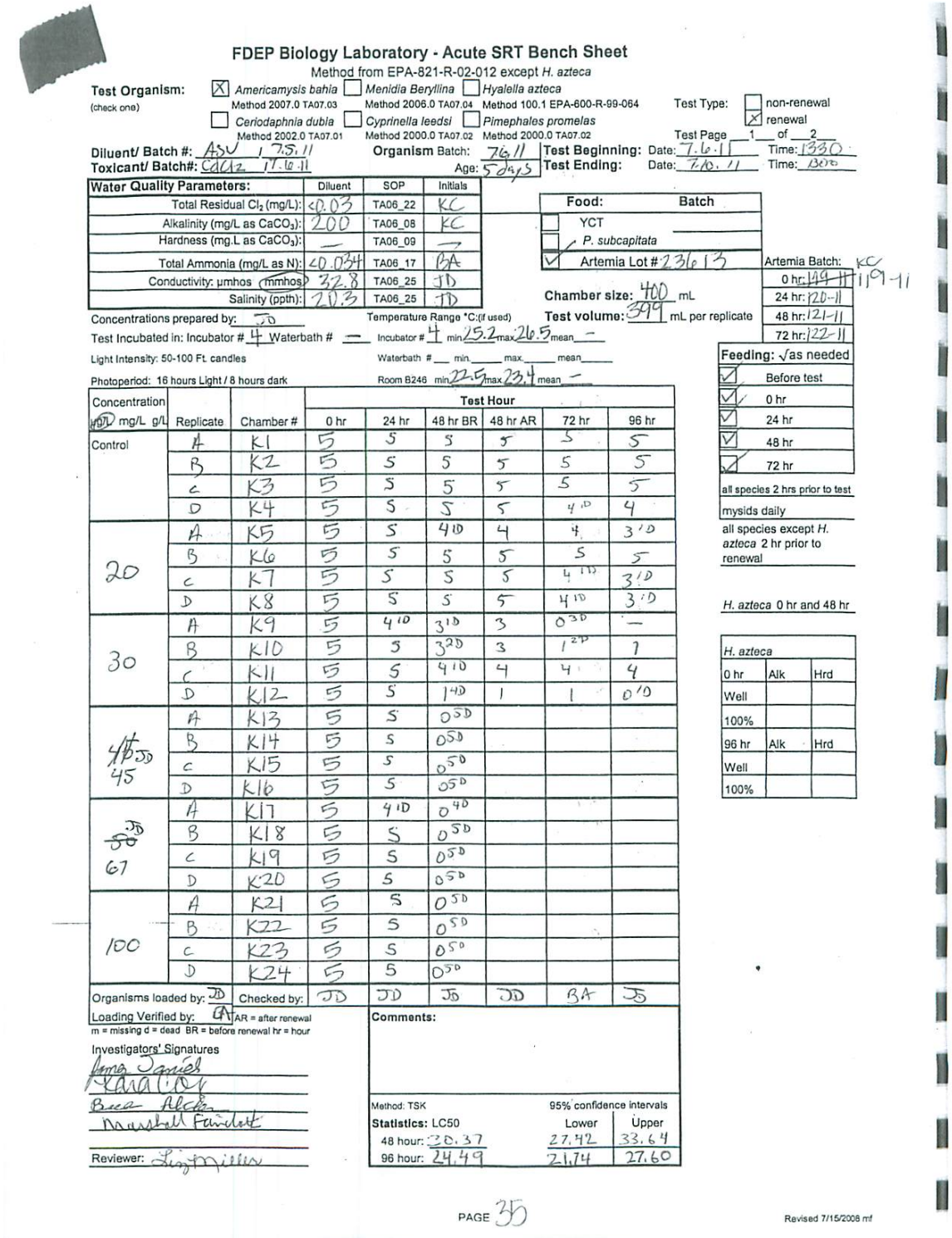
Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Menidia beryllina (inland silverside) - Copper Chloride ($CuCl_2$) as Cu

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
12/1/09	390.28	335.59	93.54	148.51	522.68
1/5/10	387.66	343.92	90.17	163.57	524.26
2/9/10	306.1	350.85	80.73	189.39	512.30
3/3/10	298.9	353.79	77.48	198.82	508.76
3/30/10	333.83	354.48	77.23	200.03	508.94
5/11/10	352.66	359.63	73.21	213.21	506.05
6/8/10	311.45	359.36	73.38	212.59	506.13
6/29/10	315.29	362.43	69.94	222.56	502.31
8/3/10	344.21	367.37	64.53	238.31	496.42
8/31/10	266.23	359.85	67.19	225.46	494.23
10/5/10	340.06	365.40	60.01	245.39	485.42
11/5/10	236.68	360.93	66.11	228.71	493.15
11/30/10	299.75	352.65	62.62	227.41	477.89
1/4/11	274.39	348.59	65.00	218.58	478.60
2/1/11	334.16	345.13	63.77	217.60	472.66
3/1/11	312.31	343.58	64.19	215.20	471.96
3/29/11	227.2	334.81	67.59	199.62	470.00
5/3/11	255.03	322.69	57.93	206.82	438.55
6/1/11	188.24	310.77	59.92	190.93	430.62
7/6/11	261.89	301.82	52.33	197.15	406.48

CV = 17.34
EPA reference 75th quartile CV = 21%



Appendix C. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

Test Organism: (check one) [X] *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 [X] renewal

Test Page 1 of 2

Diluent/ Batch #: ASW / 7.5.11 — Organism Batch: 7611 — Test Beginning: Date: 7.6.11 Time: 1330

Toxicant/ Batch#: CaCl2 / 7.6.11 — Age: 5 Days — Test Ending: Date: 7.10.11 Time: 1300

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	KC
Alkalinity (mg/L as $CaCO_3$):	200	TA06_08	KC
Hardness (mg.L as $CaCO_3$):	—	TA06_09	—
Total Ammonia (mg/L as N):	<0.034	TA06_17	BA
Conductivity: µmhos (mmhos)	32.8	TA06_25	JD
Salinity (ppth):	20.3	TA06_25	JD

Food:	Batch
[ ] YCT	
[ ] *P. subcapitata*	
[✓] Artemia Lot #	23013

Artemia Batch: KC

0 hr: 1149-11 1109-11

24 hr: 1220-11

48 hr: 1221-11

72 hr: 1222-11

Chamber size: 400 mL

Test volume: 399 mL per replicate

Concentrations prepared by: JD

Temperature Range °C:(if used)

Test Incubated in: Incubator # 4 Waterbath # — Incubator # 4 min 25.2 max 26.5 mean —

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

Photoperiod: 16 hours Light / 8 hours dark — Room B246 min 22.5 max 23.4 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

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

Concentration (NOT) mg/L g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	K1	5	5	5	5	5	5
	B	K2	5	5	5	5	5	5
	C	K3	5	5	5	5	5	5
	D	K4	5	5	5	5	4 1D	4
20	A	K5	5	5	4 1D	4	4	3 1D
	B	K6	5	5	5	5	5	5
	C	K7	5	5	5	5	4 1D	3 1D
	D	K8	5	5	5	5	4 1D	3 1D
30	A	K9	5	4 1D	3 1D	3	0 3D	—
	B	K10	5	5	3 2D	3	1 2D	1
	C	K11	5	5	4 1D	4	4	4
	D	K12	5	5	1 4D	1	1	0 1D
45	A	K13	5	5	0 5D			
	B	K14	5	5	0 5D			
	C	K15	5	5	0 5D			
	D	K16	5	5	0 5D			
67	A	K17	5	4 1D	0 4D			
	B	K18	5	5	0 5D			
	C	K19	5	5	0 5D			
	D	K20	5	5	0 5D			
100	A	K21	5	5	0 5D			
	B	K22	5	5	0 5D			
	C	K23	5	5	0 5D			
	D	K24	5	5	0 5D			
Organisms loaded by: JD		Checked by:	JD	JD	JS	JD	BA	JS

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

Investigators' Signatures

Anna Samek

Kara Ide

Brea Alcox

Marshall Faircloth

Reviewer: Lisa Miller

Comments:

Method: TSK	95% confidence intervals	
Statistics: LC50	Lower	Upper
48 hour: 30.37	27.42	33.64
96 hour: 24.49	21.74	27.60

PAGE 35

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)
- [X] *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: 7.6.11 Time: 1330
Test Ending: Date: 7.10.11 Time: 1300

Test Type: [ ] non-renewal [X] 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 [X] mmhos	Salinity (ppth)
Control	A	0 hr	8.4	25.1	6a 9	32.8	20.3
	B	24 hr	8.3	25.3	6.5	32.2	19.7
	C	48 hr BR	8.1	25.5	5.3	32.6	20.0
	C	48 hr AR	8.3	24.4	6.3	31.7	19.9
	D	72 hr	8.2	25.1	6.2	32.9	20.4
	A	96 hr	8.2	25.9	6.9	33.1	20.6
20	A	0 hr	8.4	25.6	6.6	33.0	20.5
	B	24 hr	8.3	25.0	6.4	32.4	20.0
	C	48 hr BR	8.2	25.8	5.6	33.2	20.6
	C	48 hr AR	8.3	24.5	6.3	32.3	20.1
	D	72 hr	8.2	25.2	6.0	32.7	20.3
	A	96 hr	8.2	25.3	6.7	33.5	20.8
30	A	0 hr	8.4	25.5	6.8	32.9	20.4
	B	24 hr	8.3	25.4	5.8	32.5	20.1
	C	48 hr BR	8.2	25.6	5.3	33.1	20.5
	C	48 hr AR	8.3	24.5	6.2	32.1	20.0
	D	72 hr	8.2	25.4	5.9	32.4	20.2
	D	96 hr	8.2	25.3	6.9	32.8	20.3
45	A	0 hr	8.4	25.4	6.9	32.9	20.4
	B	24 hr	8.4	25.4	6.3	32.5	20.1
	C	48 hr BR	8.2	25.5	5.3	32.8	20.3
		48 hr AR			~~6.1~~ JD		~~20.2~~ BA
		72 hr					
		96 hr					
67	A	0 hr	8.4	25.1	6.9	32.4	20.1
	B	24 hr	8.3	24.9	6.4	32.0	19.7
	C	48 hr BR	8.2	25.2	6.1	32.9	20.4
		48 hr AR					
		72 hr					
		96 hr					
100	A	0 hr	8.4	25.2	6.9	32.6	20.2
	B	24 hr	8.3	25.5	6.6	32.4	20.0
	C	48 hr BR	8.3	25.5	6.5	32.9	20.4
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
James David
Kayla Ott
Grace Abels
Marshall Faircloth

Reviewed By: Elizabeth Heller

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

Measure/record salinity for marine tests

Comments:

PAGE 36

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 #: ASW 1 7.5.11 Organism Batch: 76.11 Test Beginning: Date: 7.6.11 Time: 1400
Toxicant/ Batch#: CuCl2 1 7.6.11 Age: 3 days Test Ending: Date: 7.10.11 Time: 1305

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	KC
Alkalinity (mg/L as $CaCO_3$):	200	TA06_08	KC
Hardness (mg.L as $CaCO_3$):	—	TA06_09	—
Total Ammonia (mg/L as N):	<0.034	TA06_17	BA
Conductivity: µmhos (mmhos)	32.1	TA06_25	JD
Salinity (ppth):	20.2	TA06_25	JD

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☑ Artemia Lot #	23613

Artemia Batch:
0 hr: 19-11
24 hr:
48 hr: 21-11
72 hr:

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

Concentrations prepared by: JD
Test Incubated in: Incubator # 4 Waterbath # —
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark

Temperature Range °C: (if used)
Incubator # 4 min 25.2 max 26.5 mean —
Waterbath # ___ min ___ max ___ mean ___
Room B246 min 22.5 max 23.4 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 (ug/L mg/L g/L)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	B1	10	10	10	10	10	10
	B	B2	10	10	10	10	10	10
100	A	B3	10	10	10	10	10	10
	B	B4	10	10	10	10	10	10
						KJD		
200	A	B5	10	9D	9	9	9	9
	B	B6	10	10	10	10	10	10
300	A	B7	10	4 6D	4	4	2 2D	1 1D
	B	B8	10	6 4D	5 1D	5	A 4 1D dm for CA	2 2D
400	A	B9	10	4 6D	4	4	4	3 1D
	B	B10	10	3 7D	1 2D	1	0 1D	—
500	A	B11	10	0 10D	—	—	—	—
	B	B12	10	1 9D	1	1	1	1
Organisms loaded by: JD		Checked by:	JD	JD	JD	JD	BA	JD
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%		

Comments:

Investigators' Signatures
James Daniels
Kaila Cox
Bruce Applegate
Marshall Faircloth
Reviewer: Liz Pelham

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 302.43 NR	272.33	335.85
96 hour: 261.89	241.66	283.82

PAGE 33

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: 7.6.11 Time: 1400
Test Ending: Date: 7.10.11 Time: 1305

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration (circle) mg/L g/L	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity (ppth)
Control	A	0 hr	8.4	25.5	6.5	32.6	20.2
	B	24 hr	8.3	24.5	5.9	32.4	20.0
	A	48 hr BR	8.2	24.5	6.2	32.5	20.2
	A	48 hr AR	8.3	24.4	6.4	32.3	19.9
	B	72 hr	8.1	25.2	5.8	32.2	20.1
	A	96 hr	8.1	24.0	7.3	32.9	20.5
100	A	0 hr	8.4	25.7	6.6	32.8	20.4
	B	24 hr	8.3	24.0	5.6	32.2	19.8
	A	48 hr BR	8.2	24.1	6.2	32.5	20.2
	A	48 hr AR	8.3	24.5	6.3	KC 32.6 3	20.1
	B	72 hr	8.2	24.6	5.6	32.9	20.6 BA
	A	96 hr	8.2	24.0	7.2	32.6	20.2
200	A	0 hr	8.4	25.7	6.7	32.8	20.4
	B	24 hr	8.3	24.1	6.0	32.1	19.7
	A	48 hr BR	8.2	24.0	6.2	32.8	20.4
	A	48 hr AR	8.3	24.7	6.3	KC 32.4 6	20.3
	B	72 hr	8.2	24.9	5.9	32.8	20.4
	A	96 hr	8.2	24.3	7.3	32.8	20.4
300	A	0 hr	8.4	25.8	6.9	32.8	20.4
	B	24 hr	8.2	24.0	6.2	32.3	19.9
	A	48 hr BR	8.3	24.2	6.3	32.8	20.4
	A	48 hr AR	8.3	24.5	6.3	KC 31.9 32.4	20.2
	B	72 hr	8.2	24.7	5.9	32.7	20.3
	A	96 hr	8.2	24.1	7.2	32.8	20.4
400	A	0 hr	8.4	25.6	6.9	32.5	20.2
	B	24 hr	8.3	24.0	6.1	31.9	19.6
	A	48 hr BR	8.3	24.2	6.5	32.3	19.9
	A	48 hr AR	8.3	24.4	6.3	31.9	19.9
	B	72 hr	8.3	24.9	6.0	32.3	20.1
		96 hr	8.3	24.0	7.5	32.6	20.2
500	A	0 hr	8.4	25.9	6.9	32.8	20.4
	B	24 hr	8.3	24.2	6.3	32.3	19.9
	B	48 hr BR	8.3	24.9	6.6	32.8	20.4
	B	48 hr AR	8.3	24.6	6.4	32.3	20.1
	B	72 hr	8.3	25.1	6.3	32.5	20.3
	B	96 hr	8.3	24.0	7.7	32.3 32.3	19.9

Investigators Signatures
James Ogonik
Kara Ogonik
Bruce Nuttall
Marbel Faircloth

Reviewed By: Lynn Allen

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

Measure/record salinity for marine tests — KM for JD

Comments:

PAGE 34

Revised 07/15/2008 MF

Appendix C. (continued)

DATE: 7-6-11 DURATION: 96 h TOXICANT : CdCl2
SPECIES: *Americamysis bahia*

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	1
20.00	20	6
30.00	20	15
45.00	20	20
67.00	20	20
100.00	20	20

SPEARMAN-KARBER TRIM: 26.32%

SPEARMAN-KARBER ESTIMATES: LC50:24.49
95% LOWER CONFIDENCE: 21.74
95% UPPER CONFIDENCE: 27.60

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

DATE: 7-6-11 DURATION: 96 H TOXICANT : CuCl2
SPECIES: *Menidia beryllina*

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	0
100.00	20	0
200.00	20	1
300.00	20	17
400.00	20	17
500.00	20	19

SPEARMAN-KARBER TRIM: 5.00%

SPEARMAN-KARBER ESTIMATES: LC50: 261.89
95% LOWER CONFIDENCE: 241.66
95% UPPER CONFIDENCE: 283.82

Appendix D. Test Organism Receipt(s)

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 7/5/11

Ship to: FLDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150 ac	4 DAYS	MS 110701	25	7.9	20
Menidia beryllina	150 ac	12 DAYS	SS 110623	25	7.9	20
						Hardness mg/L
Cyprinella leedsi	150 ac	12 DAYS	CL 110623	25	7.8	80
Pimephales promelas	150 ac	8 DAYS	FM 110627	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: DM

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: 7/18/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	100 ac	4DAYS	MS 110714	25	7.9	13
Menidia beryllina	100 ac	12DAYS	SS 110706	25	7.9	13
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	600	<24HRS	FM110717-1615	25	7.8(PM)	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 Florida Power and Light Company – Putnam Power Plant Outfall D-01A, sampled on July 18, 2011.

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/18/2011 14:45	D-01A Tox Sample Point	Toxicology	Bioassay-Acute-Screen-SW-Fish, LC50	100	L	LC50		
7/18/2011 14:45	D-01A Tox Sample Point	Toxicology	Bioassay-Acute-Screen-SW-Mysid, LC50	100	L	LC50		
7/18/2011 14:45	D-01A Tox Sample Point	Field Parameter	Specific Conductance	3622		umhos/cm		
7/18/2011 14:45	D-01A Tox Sample Point	Field Parameter	Temperature	28.79		C		
7/18/2011 14:45	D-01A Tox Sample Point	Field Parameter	Dissolved Oxygen	3.28		mg/L		
7/18/2011 14:45	D-01A Tox Sample Point	Field Parameter	pH	7.08				
7/18/2011 14:55	D-01A Sample Point@Tank	AGP/LN	Algal Growth Potential-Salinity Adjusted	11		mg DryWt/L	3	3
7/18/2011 14:55	D-01A Sample Point@Tank	AGP/LN	Algal Growth Potential	19.6		mg DryWt/L	0.3	0.9
7/18/2011 14:55	D-01A Sample Point@Tank	Chlorophyll/Grain Size/BOD	Phaeophytin-a	3.9		ug/L	0.4	1.2
7/18/2011 14:55	D-01A Sample Point@Tank	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.3	IJ	mg/L	0.2	2
7/18/2011 14:55	D-01A Sample Point@Tank	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	6.6		ug/L	0.55	1.7
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Selenium	0.38	I	ug/L	0.2	0.8
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Iron	400		ug/L	30	120
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Copper	43.5		ug/L	0.5	1
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Calcium	199		mg/L	0.075	0.3
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Silver	0.025	U	ug/L	0.025	0.1
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Chromium	0.61	I	ug/L	0.3	1.2
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Aluminum	41		ug/L	5	20
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Nickel	45.5		ug/L	0.25	1
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Sodium	433		mg/L	2.5	10
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Arsenic	2.14		ug/L	0.25	1
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Magnesium	77.9		mg/L	0.04	0.16
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Lead	0.22	I	ug/L	0.2	0.8
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Metals	Zinc	44		ug/L	5	20
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	NO2NO3-N	0.05		mg N/L	0.004	0.01
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	TSS	10		mg/L	2	10
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	Fluoride	0.59		mg F/L	0.035	0.1
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	Total-P	0.13		mg P/L	0.005	0.05
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	Alkalinity	81		mg CaCO3/L	0.65	2.5
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	Ammonia-N	0.28		mg N/L	0.01	0.02
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	Kjeldahl Nitrogen	2.1		mg N/L	0.08	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	O-Phosphate-P	0.067		mg P/L	0.004	0.01

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	Sulfate	450	A	mg SO4/L	4	10
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	Chloride	840		mg Cl/L	4	10
7/18/2011 14:55	D-01A Sample Point@Tank	Nutrients	Organic Carbon	22	A	mg C/L	1	5
7/18/2011 14:55	D-01A Sample Point@Tank	Overflow	Oil and Grease	0.7	U	mg/L	0.7	2.5
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
7/18/2011 14:55	D-01A Sample Point@Tank	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2,4-Dichlorophenol	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.7
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2-Chlorophenol	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Benzidine	96	U	ug/L	96	380
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.7
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	58
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	58
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.77

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Phenol	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2-Chloronaphthalene	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2-Nitrophenol	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.7
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2,4-Dimethylphenol	9.6	U	ug/L	9.6	38
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Isophorone	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Di-n-octyl phthalate	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Diethyl phthalate	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Hexachlorobenzene	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.77
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.7
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	58
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Dimethyl phthalate	9.6	U	ug/L	9.6	38
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	UJ	ug/L	38	150
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96	U	ug/L	0.96	3.8
7/18/2011 14:55	D-01A Sample Point@Tank	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.77

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/18/2011 15:20	BLANK	Metals	Lead	0.2	U	ug/L	0.2	0.8
7/18/2011 15:20	BLANK	Metals	Iron	30	U	ug/L	30	120
7/18/2011 15:20	BLANK	Metals	Sodium	0.5	U	mg/L	0.5	2
7/18/2011 15:20	BLANK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
7/18/2011 15:20	BLANK	Metals	Arsenic	0.25	U	ug/L	0.25	1
7/18/2011 15:20	BLANK	Metals	Selenium	0.2	U	ug/L	0.2	0.8
7/18/2011 15:20	BLANK	Metals	Aluminum	5	U	ug/L	5	20
7/18/2011 15:20	BLANK	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
7/18/2011 15:20	BLANK	Metals	Nickel	0.25	U	ug/L	0.25	1
7/18/2011 15:20	BLANK	Metals	Copper	0.5	U	ug/L	0.5	1
7/18/2011 15:20	BLANK	Metals	Chromium	0.3	U	ug/L	0.3	1.2
7/18/2011 15:20	BLANK	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Metals	Silver	0.025	U	ug/L	0.025	0.1
7/18/2011 15:20	BLANK	Metals	Zinc	5	U	ug/L	5	20
7/18/2011 15:20	BLANK	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
7/18/2011 15:20	BLANK	Nutrients	Organic Carbon	1	U	mg C/L	1	5
7/18/2011 15:20	BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
7/18/2011 15:20	BLANK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
7/18/2011 15:20	BLANK	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
7/18/2011 15:20	BLANK	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
7/18/2011 15:20	BLANK	Overflow	Oil and Grease	0.7	U	mg/L	0.7	2.5
7/18/2011 15:20	BLANK	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
7/18/2011 15:20	BLANK	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
7/18/2011 15:20	BLANK	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
7/18/2011 15:20	BLANK	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
7/18/2011 15:20	BLANK	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
7/18/2011 15:20	BLANK	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
7/18/2011 15:20	BLANK	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
7/18/2011 15:20	BLANK	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/18/2011 15:20	BLANK	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
7/18/2011 15:20	BLANK	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
7/18/2011 15:20	BLANK	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
7/18/2011 15:20	BLANK	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
7/18/2011 15:20	BLANK	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
7/18/2011 15:20	BLANK	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
7/18/2011 15:20	BLANK	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
7/18/2011 15:20	BLANK	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
7/18/2011 15:20	BLANK	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
7/18/2011 15:20	BLANK	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
7/18/2011 15:20	BLANK	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
7/18/2011 15:20	BLANK	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
7/18/2011 15:20	BLANK	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
7/18/2011 15:20	BLANK	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
7/18/2011 15:20	BLANK	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
7/18/2011 15:20	BLANK	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
7/18/2011 15:20	BLANK	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
7/18/2011 15:20	BLANK	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
7/18/2011 15:20	BLANK	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
7/18/2011 15:20	BLANK	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
7/18/2011 15:20	BLANK	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
7/18/2011 15:20	BLANK	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
7/18/2011 15:20	BLANK	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
7/18/2011 15:20	BLANK	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
7/18/2011 15:20	BLANK	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
7/18/2011 15:20	BLANK	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
7/18/2011 15:20	BLANK	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
7/18/2011 15:20	BLANK	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
7/18/2011 15:20	BLANK	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.77

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.7
7/18/2011 15:20	BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	UJ	ug/L	38	150
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2-Nitrophenol	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Phenol	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.7
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	58
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Isophorone	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.7
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Benzidine	96	U	ug/L	96	380
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	58

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Dimethyl phthalate	9.6	U	ug/L	9.6	38
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
7/18/2011 15:20	BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.7
7/18/2011 15:20	BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
7/18/2011 15:20	BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	58
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Diethyl phthalate	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.6	U	ug/L	9.6	38
7/18/2011 15:20	BLANK	Priority Organic Pollutants	2-Chlorophenol	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.77
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.96	U	ug/L	0.96	3.8
7/18/2011 15:20	BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.96	U	ug/L	0.96	3.8

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: Brian Kirts		Contact Number: 904-256-1627
Facility Name (as it appears on permit): Florida Power and Light		Former Names:
NPDES Permit Number: FL0032166	Permit Expiration Date:	
Physical Address: US 17 Putnam County		
District: NED	County: Putnam County	
Function of Facility: Power Generation		
Facility Type: Industrial Wastewater	Permitted Capacity (MGD): 2.92	
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months):		
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		

Appendix F. continued

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

Eff-1 The nearest accessible point after discharge from the cooling tower. This monitoring location is used only when blowdown is discharged directly from the cooling tower to the St. John's River without passing through the blowdown storage tank.

EfF-2 Cooling tower blowdown storage tanks sampling taps.

EFF-3 - Nearest accessible point after final treatment but prior to mixing with other waste streams.

EFF-4 Nearest accessible point after final treatment but prior to discharge to the receiving waterbody.

EFF-5 Nearest accessible point after final treatment but prior to mixing with cooling tower blowdown

Description of Permitted Outfall(s):

EFFLUENT DISPOSAL:

Surface Water Discharge:

An existing 2.92 MGD maximum discharge to St. John's River (Class III Fresh waters), D-01A. The Cooling Tower Blowdown Storage Tanks point of discharge is located approximately at latitude 29° 37' 33" N, longitude 81° 35' 24" W.

An existing 1.0 MGD maximum discharge to St. John's River (Class III Fresh waters), D-01B. The Cooling Tower Blowdown point of discharge is located approximately at latitude 29° 37' 33" N, longitude 81° 35' 24" W.

An existing 1.6 MGD maximum discharge to unnamed tributary to the St. John's River (Class III Fresh waters), D-003. The Low Volume Waste point of discharge is located approximately at latitude 29° 37' 31" N, longitude 81° 35' 06" W.

An existing 0.0085 MGD annual average intermittent stormwater discharge to an unnamed stream and thence to the St. John's River (Class III Fresh waters) through Outfall D-005, located approximately at latitude 29° 37' 32" N, longitude 81° 35' 08" W.

Internal Outfalls:

An existing 0.0766 MGD annual average waste stream prior to discharge to the St. John's River. The Physical-Chemical Treatment (I-006) contents are routed to the west E/P Pond for reuse, or discharged to the St. John's River via the pipe that conveys the Cooling Tower Blowdown. The Physical-Chemical Treatment Systems wastewater point of discharge is located approximately at latitude 29° 37' 33" N, longitude 81° 35' 24" W.

Appendix F. continued

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

Cooling tower blowdown (CTBD) is chlorinated and dechlorinated, then discharged by one of the following two authorized means. The facility is authorized to pump CTBD into two aboveground storage tanks, each with a capacity of 5.25 million gallons for equalization and sedimentation. No chemical or physical treatment is performed in the tanks. The two tanks are filled sequentially, and when one is full, the CTBD discharges by gravity flow to the St. John's River, a Class III fresh water, while the other tank is filled. The facility is also authorized to discharge CTBD to the St. John's River without temporary storage in the two tanks. Although the facility routinely routes CTBD to the tanks, and only infrequently discharges CTBD to the St. John's River without temporary storage in the tanks, this permit authorizes both methods of discharge equally. Low volume wastewaters (LVW) from the Low Volume Waste System (West Evaporation/Percolation (E/P) Basin) consisting of influent from the pressure relief system, equipment area runoff, neutralization basin influent, and tank farm stormwater are discharged after treatment by sedimentation and evaporation, or used for land application and cooling tower make-up; non-equipment area stormwater is discharged after treatment by sedimentation, or is routed to the west evaporation pond for reuse for land application or cooling tower make-up; and metal cleaning wastewater, Heat Recovery Steam Generator (HRSG)

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)

Outfall D-01A - COOLING TOWER BLOWDOWN STORAGE TANK DISCHARGE **or**
D-01B - COOLING TOWER BLOWDOWN DISCHARGE

Parameters (units)	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point				
Flow (MGD)			Report				Report			
Flow (MGD)	Report	Report	--	Daily	Recorder	EFF-1				
Flow (MGD)	Report	Report	--	Daily	Pump logs	EFF-2				
Chlorine, Total Residual (MG/L)	--	0.038 during chlorine addition 0.01 all other times (See Condition I.A.4 & 5)	--	2 days/week	Grab	EFF-1				
Chlorine, Total Residual (MG/L)	--	0.01 (See Condition I.A.4 & 5)	--	Per Batch of Process	Composite	EFF-2				
Chlorine, Total Residual (Dsg. Time) (MIN/DAY)	--	120	--	Daily	Pump logs	EFF-1				
Zinc, Total Recoverable (MG/L)	Report	0.27 (See Condition I.A.5)	--	Monthly	Grab	EFF-1				
Zinc, Total Recoverable (MG/L)	Report	0.27 (See Condition I.A.5)	--	Monthly	Composite	EFF-2				
Iron, Total Recoverable (MG/L)	Report	4.70 (See Condition I.A.5)	--	Monthly	Grab	EFF-1				

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)

Outfall D-01A - COOLING TOWER BLOWDOWN STORAGE TANK DISCHARGE **or**
D-01B - COOLING TOWER BLOWDOWN DISCHARGE

Parameters (units)	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point				
Flow (MGD)			Report				Report			
Iron, Total Recoverable (MG/L)	Report	4.70 (See Condition I.A.5)	–	Monthly	Composite	EFF-2				
Copper, Total Recoverable (MG/L)	Report	0.25 (See Condition I.A.5)	–	Monthly	Grab	EFF-1				
Copper, Total Recoverable (MG/L)	Report	0.25 (See Condition I.A.5)	–	Monthly	Composite	EFF-2				

Appendix F. continued

Specific Conductance (UMHO/CM)	Report	6560 (See Condition I.A.5)	--	2 days/week	Grab	EFF-1
Specific Conductance (UMHO/CM)	Report	6560 (See Condition I.A.5)	--	Per Batch of Process	Composite	EFF-2
pH (SU)	--	8.5	6.0	Daily	Grab	EFF-1
pH (SU)	--	8.5	6.0	Per Batch of Process	Composite	EFF-2
Temperature (F), Water (DEG.F)	--	98.0 (See Condition I.A.5)	--	Continuous	Recorder	EFF-1
Temperature (F), Water (DEG.F)	--	98.0 (See Condition I.A.5)	--	Per Batch of Process	Composite	EFF-2
Whole Effluent Toxicity	See Permit Condition I.A.3			--	--	--

Outfall D-003-LOW VOLUME WASTES

Flow (MGD)	Report	Report	--	Weekly	Calculated	EFF-3
Oil and Grease (MG/L)	Report	5.0	--	Every two weeks	Grab	EFF-3
Solids, Total Suspended (MG/L)	30.0	100.0	--	Every two weeks	Composite	EFF-3
Hardness, Total (as CaCO3) (MG/L)	--	Report	--	Every two weeks	Grab	EFF-3
Specific Conductance (UMHO/CM)	--	1275 (See Condition I.A.15)	--	Daily	Grab	EFF-3
Copper, Total Recoverable (UG/L)	--	(See Condition I.A.11)	--	Every two weeks	Grab	EFF-3
Iron, Total Recoverable (MG/L)	1.0	1.0	--	Every two weeks	Grab	EFF-3
pH (SU)	--	8.5	6.0	Daily	Grab	EFF-3

Outfall D-005-STORMWATER DISCHARGE

Flow (MGD)	Report	Report	--	Daily, When Discharging	Calculated	EFF-4
Oil and Grease (MG/L)	Report	Report	--	Daily, When Discharging	Grab	EFF-4
Solids, Total Suspended (MG/L)	Report	Report	--	Daily, When Discharging	Grab	EFF-4
pH (SU)	--	8.5	6.0	Daily, When Discharging	Grab	EFF-4

Internal Outfall I-006-PHYSICAL/CHEMICAL TREATMENT SYSTEM WASTEWATER (formerly D-006)

Flow (MGD)	Report	Report	--	Weekly	Calculated	EFF-5

Appendix F. continued

Oil and Grease (MG/L)	--	5.0	--	Every two weeks	Grab	EFF-5
Solids, Total Suspended (MG/L)	30.0	100.0	--	Every two weeks	Composite	EFF-5
Hardness, Total (as CaCO3) (MG/L)	--	Report	--	Every two weeks	Grab	EFF-5
Copper, Total Recoverable (UG/L)	--	See Condition I.A.21	--	Every two weeks	Composite	EFF-5
Iron, Total Recoverable (MG/L)	1.0	1.0	--	Every two weeks	Composite	EFF-5
Specific Conductance (UMHO/CM)	--	1275 (See Condition I.A.24)	--	Daily	Grab	EFF-5
pH (SU)	--	8.5	6.0	Daily	Grab	EFF-5

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
St. Johns	Fresh Water

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):

Whole effluent acute toxicity shall not exceed in any "routine" test mortality greater than 50% in the 100% effluent concentration or in any "additional follow-up" test an LC50 of less than 100% effluent. [Rule 62-302.200(1), Rule 62-302.500(1)(a)4., and Rule 62-4.244(3)(a), F.A.C.]

Routine" toxicity tests shall be conducted once every six months, the first starting within 6 months of the most recent tests, and lasting for the duration of this permit unless a reduction in the frequency of monitoring is granted in writing by the Department.

The permittee shall conduct 96-hour acute static renewal toxicity tests using the mysid, Americamysis (Mysidopsis) bahia, **and the inland silverside,** Menidia beryllina, **concurrently.**

d. Sampling Requirements

(1) Routine tests shall be conducted on a single grab sample of final effluent.

Appendix F. continued

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

CO executed for TR Copper violations at D-01A and D-01B. No interim limits established.

Requirements follow:

By 11/25/2011 conduct a root cause analysis.
By 11/25/2011 Submit a BMP plan
By 2/25/2011 Complete all corrective actions
By 9/25/2011 pay the Department 5500 Dollars or submit a proposal for an in kind project.

Facility Mixing Zone Details (if applicable):
NA

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

Date	Parameter and Units	Limit	Result
June 2011 at D-01B	**Total recoverable Copper**	**0.25**	**.5**
June 2011 at D-01A	**Total Recoverable Copper**	**0.25**	**.38**
May 2011 at D-01B	**Total Recoverable Copper**	**0.25**	**.31**

Describe previous FYI and WQBEL study:

Describe previous or current Enforcement Actions (including WLs):

Refer to CO requirements in the previous page

Describe any violations or problems noted in previous inspection:

The last inspection was found to be in compliance

Discuss whether DMR trends within previous five years are improving or declining:

Effluent generally consistent. Exceedances are limited.

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

No Comments

Appendix F. continued

PART II: Sampling Event Information	
Date(s) sample collected:	Sampler(s):
Temperature (Deg C):	pH (SU):
Dissolved Oxygen (mg/L):	Conductivity (umhos/cm):
Total Residual Chlorine (mg/L):	Total Residual Chlorine - after Disinfection (mg/L):
Method of Chlorination:	Method of De-chlorination:
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☐ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
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 the Florida Power and Light Company - Putnam Power Plant sampled on July 18, 2011. NPDES #FL0032166.

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 3 2 1 6 6 11	12 1 1 0 7 1 8	18 B	19 S	20 2

Remarks

66

The Priority Pollutants Analysis of the Florida Power and Light Company - Putnam Power Plant sampled on July 18, 2011. NPDES #FL0032166.

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 3 2 1 6 6 11	12 1 1 0 7 1 8	18 X	19 S	20 2

Remarks

66

Biological Analyses of the Florida Power and Light Company - Putnam Power Plant sampled on July 18, 2011. NPDES #FL0032166.

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 3 2 1 6 6 11	12 1 1 0 7 1 8	18 S	19 S	20 2

Remarks

66