

Effluent Quality Assessment

Ridge Generating Station L.P.
Electric Power Generating Station

Polk County

NPDES #FLS132772

Sampled August 22, 2011

February 2012

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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Ridge Generating Station L.P., Electric Power Generating Station, 3131 K-Ville Avenue, Auburndale, Polk County, Florida, 33823. NPDES #FLS132772. Effluent grab samples for biological and chemical analyses for this facility were collected on August 22, 2011.

Introduction

Ridge Generating Station L.P., Electric Power Generating Station is a 50-megawatt steam electric power generating plant which uses yard waste, waste wood, used tires and landfill gas for fuel. The facility provides treatment of process wastewater and contact stormwater runoff from the tire storage area prior to recycling within the plant. Contact stormwater from the wood storage area is routed to an unlined detention pond. The facility currently has a Consent Order (CO No. 04-0111C). The interim surface water limits in the consent order are no longer in effect. The only pending item in the consent order is the ground water contamination assessment. (See Appendix F for detailed facility information provided by Jason Cohen and Ilia Balcom of FDEP Southwest District.)

Methods

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

See Appendix A for the completed chain of custody form.

The 96-hour acute definitive toxicity tests and algal growth potential (AGP) 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 August 23 - August 27, 2011.

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

  Cyprinella leedsi 96-hour acute definitive bioassay – No Result

  The bioassay samples were not acutely toxic to the *Ceriodaphnia dubia* test organisms. The *Cyprinella leedsi* test was invalidated at 48 hours due to excess control mortality.

  *NOTE: In a 96-hour acute definitive test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule 62-302.500 (1) (a) 4, F.A.C.). Mortality between 20-50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3) (a), F.A.C.).

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

- **Algal Growth Potential**

  The effluent Algal Growth Potential (AGP) was 11.1 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. The analytical chemistry suggests that the effluent

is nitrogen limited. To determine actual nutrient limitation, a limiting-nutrient algal growth potential test with associated nutrient chemistry should be performed (Miller et al. 1978).
See Table 1 AGP results.

- **Chemistry Results**
  Total residual chlorine and total ammonia were not detected in the bioassay sample in the bioassay laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.061 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg N/L.

  Arsenic, chromium, copper, iron and nickel were detected in the effluent at levels that comply with Class III freshwater quality criteria (62-302.530, F.A.C.) and/or NPDES permit # FLS132772 limits. Anthracene, lead, selenium, and zinc were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Aluminum was also detected in the effluent.

  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 effluent samples collected from the EFF-1 NPDES sampling point for Outfall D-001 for this facility on August 22, 2011, were not acutely toxic to the *Ceriodaphnia dubia* (waterflea) test organisms during the 96-hour acute definitive bioassays. The *Cyprinella leedsi* (fish) bioassay was invalidated at 48 hours due to excessive control mortality. The effluent AGP exceeded the “problem” threshold for freshwaters, suggesting nutrient enrichment may be an issue. Effluent water quality samples did not exceed Class III freshwater criteria and/or permitted limits.

Literature Cited

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

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

Table 1. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN) and total nitrogen (TN) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata* for samples collected from the Ridge Generating Station L.P., facility on August 22, 2011.

Ridge Generating Station L.P.					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	11.1	2.5 ± 0.5	87.6 ± 17.5	0.1	1.6

Table 2. Effluent limits, Class III Freshwater Criteria and chemical data for samples collected from the Ridge Generating Station L.P., facility on August 22, 2011.

Ridge Generating Station L.P. NPDES# FLS132772	Class III Criteria	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
Anthracene	≤ 0.031 a	-	0.26	I
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	72	
Arsenic	≤ 50	≤ 50 s	7.36	
Cadmium	≤ 0.3 b	-	0.05	U
Calcium (mg/L)	-	-	40.5	
Chromium-III	≤ 104.0 b	≤ 104.0 bs	1.8	
Copper	≤ 11.3 b	≤ 11.3 bs	1.8	
Iron	≤ 1,000	≤ 1,000 s	170	
Lead	≤ 4.3 b	≤ 4.3 bs	0.63	I
Magnesium (mg/L)	-	-	5.98	
Nickel	≤ 63.3 b	-	1.42	
Selenium	≤ 5.0	-	0.21	I
Silver	≤ 0.07	-	0.025	U
Zinc	≤ 145.5 b	≤ 145.5 bs	13	I
Nutrients (mg/L)				
Ortho-phosphate	-	-	1.2	
Total Phosphorus	-	-	1.4	
Total Ammonia	-	-	0.061	
Un-ionized Ammonia	≤ 0.02 s	≤ 0.08 sc*	< 0.02	c
Nitrate and Nitrite	-	-	0.004	U
Total Kjeldahl Nitrogen	-	-	2.3	
Organic Nitrogen	-	-	2.239	c
Total Nitrogen	-	Report	2.32	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0 s	≥ 5.0 s	7.3	
pH (SU)	6.0 - 8.5 s	6.0 - 9.0 s*	7.3	
Conductivity (µmhos/cm)	≤ 1,275	≤ 1,275 s	415	
Temperature (°C)	-	-	26.8	
Salinity	-	-	2.1	c
Sample Depth (m)	-	-	0.2	
Total Residual Chlorine (mg/L)	≤ 0.01	-	0.03	UQ£
Chlorophyll *a* (µg/L) - Corrected	-	-	36	
Phaeophytin (µg/L)	-	-	0.4	U
Total Suspended Solids (mg/L)	-	-	6	I
CBOD, 5 day (mg/L), N - inhibited	-	-	34	J
Oils and Greases (mg/L)	≤ 5.0	≤ 5.0	1	U
Cyanide (µg/L)	≤ 5.2	-	0.005	U
Flow (MGD)	-	Report	0.093	a
Hardness (mg $CaCO_3$)	-	-	125.75	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

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

J - Estimated value

Q - Sample held beyond normal holding time

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

£ - Measurement taken in the FDEP laboratory

* - Consent Order OGC file # 04-0111C February 19, 2007

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-08-22-31
FYI3 Sampling Inspection for Ridge Generating Station

Requester: Edward Smith
Field Report Prepared By:

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

Collected By: P WENNER, J COHEN
Send Final Report To: Joe Squiteri/ Michele Duggan/

Sampling Agency: FDEP SWD

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	D-001	☐ Comp ☑ Grab	Date 8/22/11 Time 1050 Central		A
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
			7.34		
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☒ m ☐ ft	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number
	FRESH	26.82	7.31	0.2	0.20 / 415J
	Latitude ☑ dd ☐ dms	Longitude ☑ dd ☐ dms	Comments		
	28.02656N	81.84768W	J = SP COND DID NOT PASS CCV		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	BLANK	☐ Comp ☑ Grab	Date 8/22/11 Time 1020 Central		B
	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
	LAB DI H_2O				
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments		

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

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab	Date Time Central		
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments		
			4. Biomass Reid in Tar by J.D. 10:14 8.23.11		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	8/22/11 1500	FED EX	AB	8/23/11 08:15				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Laboratory - Acute Bioassay Bench Sheets

Facility: Ridge Generating Station

Address: 3131 K-ville Avenue

City: Auburndale County: Polk

Contact/District: Pete Mennee / Southwest

NPDES Permit #: FL S132772

LIMS Job #: TLH-2011-08-23-29

LIMS Sample #: 1372555

Lims Data Entry: 8.30.11 MF (KM for MF)

Data Entry Verification: 9.01.11 KC

Sample Collection: Date: 08.22.11 Time: 1050

Hold Time Start: Date: 08.22.11 Time: 1050

Comments:

Initial sample handling:

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

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

Aeration: ☑ yes ☐ no Initial DO: 11.1 mg/L Final DO: 7.0 mg/L Duration: 30 minutes Rate: ~100 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: ____

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:
Bruce Alexander	BA
Kathy Conroy	KC
Marshall Faircloth	MF
James Daniel	JD
REVIEWER: Kathy Conroy KM	

Diluent/Control Batch#:	8.18.11	8.23.11							
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	n/a	KC
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03					<0.03	JD	KC
Alkalinity (mg/L as $CaCO_3$):	810	154					138	KC	KC/MF
Hardness (mg/L as $CaCO_3$):	85	143					122	KC	KC/MF
Total Ammonia (mg/L as N):	<0.017	<0.017					<0.03	BA	KC
Conductivity: ☑ µmhos ☐ mmhos	179	280					468	BA	KC
Salinity (ppth):	—	—					—	—	—

V 1.8 1/13/10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1372555 SOP#: TA 07D1 Test # 1 of 2

Test Species:
Batch #: 8.23.11 Age: <24hrs
- [x] *Ceriodaphnia dubia*
- [ ] *Cyprinella leedsi*
- [ ] *Pimephales promelas*
- [ ] *Menidia beryllina*
- [ ] *Americamysis bahia*
- [ ] Other:_____

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

Diluent (Batch # 8.18.11)
- [ ] ASW
- [x] 20% DMW
- [ ] MHW
- [ ] Well

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

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

Test Started: Date 8.23.11 Time 13:30

Test Ended: Date 8.27.11 Time 12:10

Chamber Size 30 ml
Test Volume: 20 ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	4 HD
6.25%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
12.5%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
25%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
50%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
100%	A	A	5	5	5	5	5	4 HD
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
Checked or Verified by:			BA	KC	BA	BA	KC	BA

Food
- [x] YCT Batch# 5.5.11
- [x] P. subcapitata Batch# 55.11
- [ ] Artemia Lot#_____

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

Temperature Range (°C)
Incubator # 2
min. 24.8 max. 27.5 mean ___
Incubator #___
min.___ max.___ mean___
Waterbath #___
min.___ max.___ mean___
Room B246
min. 23.6 max. 24.8 mean ___
Light intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: BA / 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: 5% 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)

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Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample #: 1372555 SOP#: TA 07 D2 Test # 2 of 2

Test Species:
Batch #: B.23.11 Age: 13days
- ☐ 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 # B.24.11) 23 JD
- ☐ ASW ☐ 20% DMW
- ☐ MHW ☒ Well

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

Test Duration:
- ☐ 48 hr
- ☒ 96 hr
- ☐ ___hr

Test Started: Date 8.23.11 Time 1300

Test Ended: Date 8.27.11 Time 1215

Chamber Size 1000ml
Test Volume: 400ml

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
<t.c	A	D13	10	9 JD	8 JD	8	7 JD	7
	B	D14	10	9 JD	8 JD	8	7 JD	6 JD
	~~A JD~~	~~D~~ JD						
6.25%	A	D15	10	9 JD	9	9	9	8 JD
	B	D16	10	9 JD	8 JD	8	8	6 2D
	~~A JD~~							
12.5%	A	D17	10	8 2D	7 JD	7	7	5 2D
	B	D18	10	10	10	10	10	9 JD
	~~A JD~~							
25%	A	D19	10	8 2D	8	8	8	8
	B	D20	10	9 JD	9	9	9	8 JD
	~~A JD~~							
50%	A	D21	10	8 2D	8	8	8	7 JD
	B	D22	10	7 3D	7	7	7	7
100%	A	D23	10	9 JD	8 JD	8	7 JD	6 JD
	B	D24	10	7 3D	6 JD	6	5 JD	5
Checked or Verified by:			JD	JD	JD	JD	JD	BA

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

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

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

Feeding and Artemia Batch #
- ☑ 0 hr 145-11 ☑ Prior to Test
- ☐ 24 hr___
- ☑ 48 hr 147-11 ☑ Prior to Renewal
- ☐ 72 hr___

Temperature Range (°C)
Incubator # 3
min. 24.6 max. 26.7 mean ~

Incubator #___
min.____max.____mean____

Waterbath #___
min.____max.____mean____

Room B246
min. 23.6 max. 24.8 mean ~

Light Intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

NCR 3889
MF 9-1-11

Comments:
* Invalid at 48hours control failure MF 8-30-11

V. 2.5 1-13-10

Substitute 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 Parameter Sheet

LIMS Sample # 1371555 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)
	M	0 hr	7.9	24.3	7.5	179	
	—	24 hr	—	—	—	—	
ctrl	A	48 hr BR	8.0	24.3	7.0	198	
	M	48 hr AR	8.0	24.5	6.3	178	
	—	72 hr	—	—	—	—	
	A	96 hr	8.1	24.4	7.2	201	
	M	0 hr	8.0	24.7	7.8	200	
	—	24 hr	—	—	—	—	
6.25%	A	48 hr BR	8.2	24.0	7.2	205	
	M	48 hr AR	8.1	24.0	6.7	198	
	—	72 hr	—	—	—	—	
	A	96 hr	8.2	24.3	7.7	212	
	M	0 hr	8.1	24.8	8.0	220	
	—	24 hr	—	—	—	—	
12.5%	A	48 hr BR	8.3	24.0	7.5	220	
	M	48 hr AR	8.1	24.0	7.3	216	
	—	72 hr	—	—	—	—	
	A	96 hr	8.2	24.2	7.6	226	
	M	0 hr	8.1	24.8	8.2	255	
	—	24 hr	—	—	—	—	
25%	A	48 hr BR	8.3	24.0	7.5	268	
	M	48 hr AR	8.2	24.0	7.3	250	
	—	72 hr	—	—	—	—	
	A	96 hr	8.2	24.1	7.7	267	
	M	0 hr	8.3	24.9	8.3	319	
	—	24 hr	—	—	—	—	
50%	A	48 hr BR	8.4	24.0	7.6	330	
	M	48 hr AR	8.2	24.0	7.3	313	
	—	72 hr	—	—	—	—	
	A	96 hr	8.3	24.1	7.8	356	
	M	0 hr	8.3	25.3	8.4	470	
	—	24 hr	—	—	—	—	
100%	A	48 hr BR	8.5	24.0	7.6	517	
	M	48 hr AR	8.2	24.0	7.4	455	
	—	72 hr	—	—	—	—	
	A	96 hr	8.4	24.0	7.8	537	
		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: BA
24 hr: —
48 hr BR: BA
48 hr AR: BA
72 hr: —
96 hr: BA

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V. 2.3 1-13-10

Appendix B. (continued)

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample #137255 Test # 2 of 2

Test Species:

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

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

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity* (ppth)
	A	0 hr	7.7	26.0	7.6.8 BA	280	
ctrl	B	24 hr	8.1	24.0	6.9	282	
	A	48 hr BR	8.2	24.0	8.0	282	
	A	48 hr AR	7.9	24.5	7.3	289	
	B	72 hr	8.0	24.0	6.8	288	
	A	96 hr	8.1	24.5	6.4	292	
	A	0 hr	7.8	26.0	7.7	300	
	B	24 hr	8.1	24.0	6.7	300	
6.25%	A	48 hr BR	8.2	24.0	7.9	295	
	A	48 hr AR	8.0	24.9	7.5	297	
	B	72 hr	8.1	24.0	6.8	305	
	A	96 hr	8.1	24.5	5.8	311	
	A	0 hr	7.9	26.0	7.7	309	
	B	24 hr	8.1	24.1	6.8	299	
12.5%	A	48 hr BR	8.2	24.0	7.8	303	
	A	48 hr AR	8.1	24.9	7.7	304	
	B	72 hr	8.0	24.0	6.2	311	
	A	96 hr	8.0	24.7	5.9	317	
	A	0 hr	7.9	26.0	7.1	332	
	B	24 hr	8.2	24.2	6.9	323	
25%	A	48 hr BR	8.2	24.1	7.6	323	
	A	48 hr AR	8.1	24.8	7.7	325	
	B	72 hr	7.9	24.0	6.1	333	
	A	96 hr	8.0	25.0	5.2	343	
	A	0 hr	8.0	26.0	7.0	368	
	B	24 hr	8.1	24.0	6.8	357	
50%	A	48 hr BR	8.2	24.0	7.7	363	
	A	48 hr AR	8.1	24.7	7.8	362	
	B	72 hr	8.0	24.1	6.3	381	
	A	96 hr	8.0	24.3	5.4	380	
	A	0 hr	8.2	26.0	7.0	468	
	BA	24 hr	8.1	24.2	6.6	456	
100%	A	48 hr BR	8.2	24.0	7.5	462	
	A	48 hr AR	8.1	25.1	7.5	467	
	B	72 hr	8.0	24.0	6.3	480	
	A	96 hr	8.0	24.4	4.9	493	
		0 hr		~~26.0~~ BA			
		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: Ⓐ Transcription error BA

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

Page 000083

V. 2.3 1-13-10

Appendix B. (continued)

Test ID: Ridge Generating Station Dates: 8.23.11 – 8.27.11

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-SN101686412 #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 Kaa(0)l 9/1/11

V 1.1 9/21/10 MF/jd

Appendix C. SRT Bench Sheets and Statistical Analysis

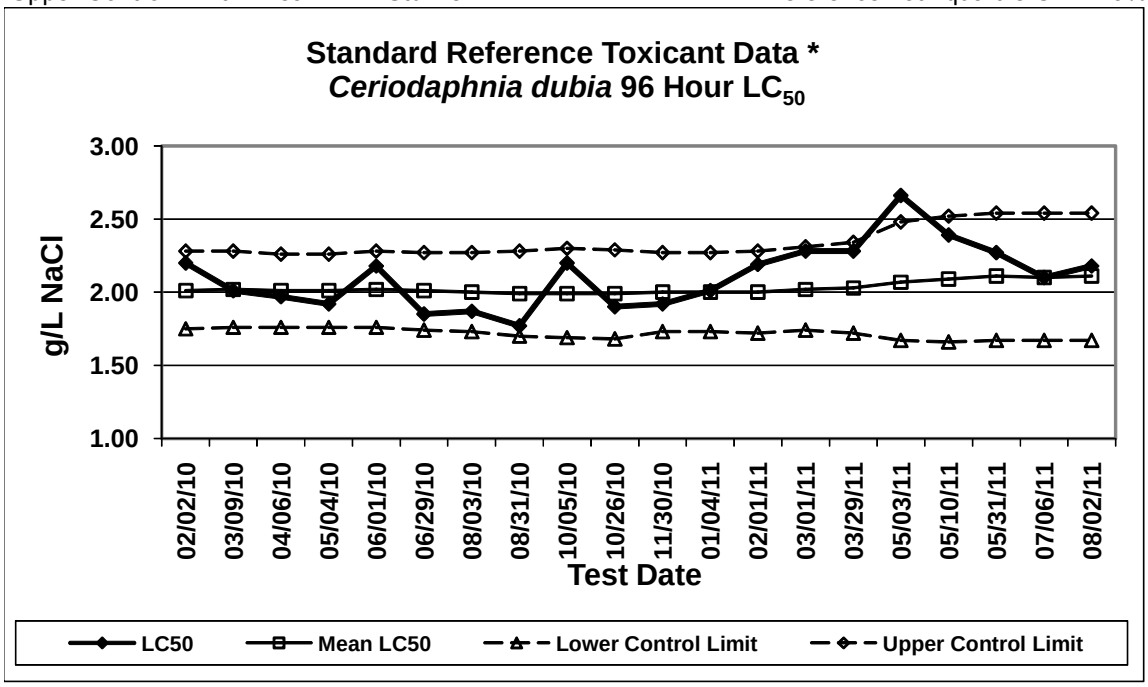
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
02/02/10	2.20	2.01	0.13	1.75	2.28
03/09/10	2.01	2.02	0.13	1.76	2.28
04/06/10	1.97	2.01	0.12	1.76	2.26
05/04/10	1.92	2.01	0.12	1.76	2.26
06/01/10	2.18	2.02	0.13	1.76	2.28
06/29/10	1.85	2.01	0.13	1.74	2.27
08/03/10	1.87	2.00	0.14	1.73	2.27
08/31/10	1.77	1.99	0.14	1.70	2.28
10/05/10	2.20	1.99	0.15	1.69	2.30
10/26/10	1.90	1.99	0.15	1.68	2.29
11/30/10	1.92	2.00	0.14	1.73	2.27
01/04/11	2.01	2.00	0.14	1.73	2.27
02/01/11	2.19	2.00	0.14	1.72	2.28
03/01/11	2.28	2.02	0.14	1.74	2.31
03/29/11	2.28	2.03	0.15	1.72	2.34
05/03/11	2.66	2.07	0.20	1.67	2.48
05/10/11	2.39	2.09	0.21	1.66	2.52
05/31/11	2.27	2.11	0.22	1.67	2.54
07/06/11	2.10	2.10	0.22	1.67	2.54
08/02/11	2.18	2.11	0.22	1.67	2.54

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

CV = 10.29
EPA reference 75th quartile CV = 29%



Appendix C. (continued)

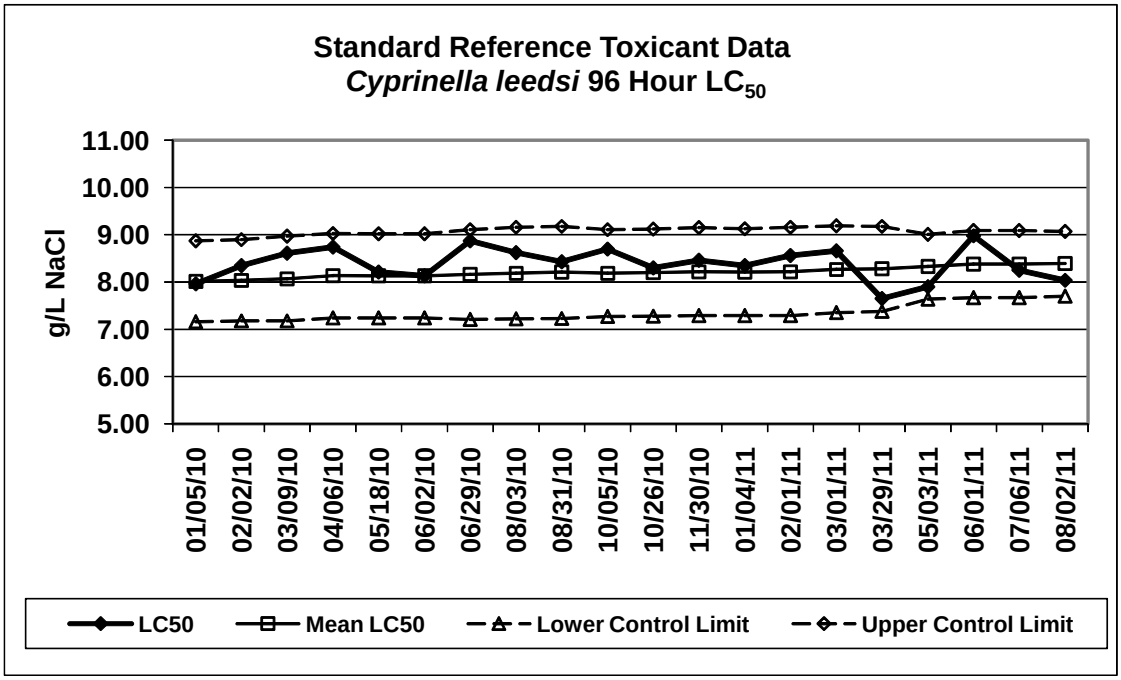
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Cyprinella leedsi (bannerfin shiner) - Sodium Chloride (NaCl)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
01/05/10	7.96	8.01	0.43	7.16	8.87
02/02/10	8.35	8.04	0.43	7.18	8.90
03/09/10	8.61	8.07	0.45	7.18	8.97
04/06/10	8.74	8.14	0.45	7.24	9.03
05/18/10	8.21	8.13	0.45	7.24	9.02
06/02/10	8.13	8.13	0.45	7.24	9.02
06/29/10	8.87	8.16	0.47	7.21	9.11
08/03/10	8.62	8.19	0.48	7.22	9.16
08/31/10	8.43	8.21	0.49	7.23	9.18
10/05/10	8.70	8.19	0.46	7.27	9.11
10/26/10	8.30	8.20	0.46	7.28	9.12
11/30/10	8.46	8.22	0.46	7.29	9.15
01/04/11	8.35	8.21	0.46	7.29	9.13
02/01/11	8.56	8.22	0.47	7.29	9.16
03/01/11	8.66	8.27	0.46	7.35	9.19
03/29/11	7.65	8.28	0.45	7.38	9.18
05/03/11	7.90	8.33	0.34	7.64	9.01
06/01/11	8.98	8.38	0.36	7.67	9.09
07/06/11	8.25	8.38	0.36	7.67	9.09
08/02/11	8.04	8.39	0.34	7.70	9.07

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

CV = 4.09
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 17.28.11 **Organism Batch:** 8.2.11 **Test Beginning:** Date: 8.2.11 Time: 1015

Toxicant/ Batch#: NaCl 18.1.11 Age: <24 hrs **Test Ending:** Date: 8.6.11 Time: 1030

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	BA
Alkalinity (mg/L as $CaCO_3$):	78	TA06_08	KC
Hardness (mg.L as $CaCO_3$):	80	TA06_09	KC
Total Ammonia (mg/L as N):	<0.017	TA06_17	MF
Conductivity: µmhos mmhos	173	TA06_25	KC
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	5.5.11
☑ *P. subcapitata*	5.5.11
☐ Artemia Lot #	

Artemia Batch:

Chamber size: 30 mL

Test volume: 20 mL per replicate

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

Concentrations prepared by: KC

Test Incubated in: Incubator # 15 Waterbath # —

Light Intensity: 50-100 Ft. candles

Photoperiod: 16 hours Light / 8 hours dark

Temperature Range °C:(if used)

Incubator # KC 13 min 24.7 max 26.9 mean —

Waterbath # ___ min. ___ max. ___ mean ___

Room B246 min 24.8 max 25.9 mean —

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

all species 2 hrs prior to test

mysids daily

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

H. azteca 0 hr and 48 hr

Concentration µg/L mg/L g/L	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1.5	A	A	5	4 1D	4	4	4	4
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
2.0	A	A	5	6	5	5	5	5
	B	B	5	5	4 1D	4 1D KC	2 2D	2
	C	C	5	5	4 1D	4	4	4
	D	D	5	5	5	5	5	5
2.5	A	A	5	5	3 2D	3	2 1D	2
	B	B	5	4 1D	3 1D	3	1 2D	1
	C	C	5	4 1D	1 3D	1	0 1D	—
	D	D	5	5	1 4D	1	0 1D	—
3.0	A	A	5	BA 3 2D	0 3D	0	—	—
	B	B	5	5	1 4D	1	1	0 1D
	C	C	5	4 1D	0 4D	0	—	—
	D	D	5	4 1D	0 4D	0	—	—
4.0	A	A	5	0 5D				
	B	B	5	0 5D				
	C	C	5	0 5D				
	D	D	5	0 3D				
Organisms loaded by: KC		Checked by:	BA	BA	KC	KC	BA	JD
Loading Verified by: BA								

AR = after renewal

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

Investigators' Signatures

Kara Cox

Brea Addo

James Daniel

Marshall Faircloth

Reviewer: Liz Miller

Comments:

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

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 2.55	2.35	2.77
96 hour: 2.18	2.05	2.33

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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: 8.2.11 Time: 1015
Test Ending: Date: 8.6.11 Time: 1030
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	8.0	25.7	KC 8.8 8.4	0.173	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.0	24.0	7.8	0.199	
	M	48 hr AR	8.1	24.0	8.2	0.179	
	—	72 hr	—	—	—	—	
	M	96 hr	8.1	24.0	7.6	0.220	
1.5	M	0 hr	8.1	25.75 KC	8.5	2.87	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.2	24.0	7.7	3.03	
	M	48 hr AR	8.2	24.0	7.9	2.90	
	—	72 hr	—	—	—	—	
	M	96 hr	8.1	24.1	7.7	3.06	
2.0	M	0 hr	8.1	25.2	8.5	3.77	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.2	24.0	8.1	4.17	
	M	48 hr AR	8.2	24.0	7.9	3.76	
	—	72 hr	—	—	—	—	
	M	96 hr	8.1	24.1	7.8	4.03	
2.5	M	0 hr	8.1	24.8	8.5	4.69	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.2	24.0	8.2	4.96	
	M	48 hr AR	8.2	24.0	7.8	4.64	
	—	72 hr	—	—	—	—	
	M	96 hr	8.1	24.0	8.0	5.12	
3.0	M	0 hr	8.1	24.5	8.5	5.49	
	—	24 hr	—	—	—	—	
	A	48 hr BR	8.2	24.0	8.1	6.44	
	M	48 hr AR	8.2	24.0	7.8	5.46	
		72 hr	—	—	—	—	
	M	96 hr	8.1	24.1	7.7	6.29	
4.0	M	0 hr	8.1	24.0	8.6	7.14	
	A	24 hr	8.1	24.0	8.6	8.07	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Kaila Cook
Bruce Alsobrook
for Sarah Marshall Faircloth

Reviewed By: Shirley Allen

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

Measure/record salinity for marine tests

Comments: Parameters for Replicate C in the 2.5 g/L concentration were inadvertently not measured @ 72 hours, MF 8-5-11 MF

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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 / B.1.11
Toxicant/ Batch#: NaCl / B.1.11
Organism Batch: B.2.11 Age: 14 days
Test Beginning: Date: 8.2.11 Time: 1315
Test Ending: Date: 8.6.11 Time: 1100

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	KC
Alkalinity (mg/L as $CaCO_3$):	143	TA06_08	KC
Hardness (mg/L as $CaCO_3$):	134	TA06_09	KC
Total Ammonia (mg/L as N):	<0.017	TA06_17	BA
Conductivity: µmhos mmhos	278	TA06_25	JD
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☐ *P. subcapitata*	
☒ Artemia Lot #	23b13

Artemia Batch:
0 hr: 1330-11
24 hr:
48 hr: 1332-11
72 hr:

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

Concentrations prepared by: JD
Test Incubated in: Incubator # 3 Waterbath # —
Incubator # 3 min. 24.7 max. 26.9 mean —
Waterbath # ___ min. ___ max. ___ mean ___
Room B246 min. 24.8 max. 25.9 mean —
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C: (if used)

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 µg/L mg/L (50)	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Control	A	A1	10	9 JD	9	9	9	9
	B	A2	10	10	10	10	10	10
6	A	A3	10	9 JD	8 JD	8	7 JD	7
	B	A4	10	7 JD	7	7	7	7
7	A	A5	10	7 JD	7	7	6 JD	6
	B	A6	10	8 JD	8	8	8	7 JD
8	A	A7	10	6 JD	6	6	6	6
	B	A8	10	7 JD	6 JD	6	6	6
9	A	A9	10	1 JD	1	1	1	1
	B	A10	10	3 JD	2 JD	2	2	2
10	A	A11	10	0 JD	—	—	—	—
	B	A12	10	~~1 JD~~ 2 JD	2	2	2	1 JD
Organisms loaded by: JD		Checked by:	JD	JD	JD	JD	JD	JD

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

Investigators' Signatures
James Daniels
Brooke Hilmer
Kara Cox
Marshall Faircloth

Reviewer: Liz Miller

Comments:

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 8.16	7.74	8.60
96 hour: ~~7.79~~ 8.04 KC	~~7.10~~ 7.34	~~8.56~~ 8.80

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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: 8.2.11 Time: 1315
Test Ending: Date: 8.6.11 Time: 1100

Test Type: ☐ non-renewal ☒ renewal

hr = hour AR = after renewal BR = before renewal

Concentration µg/L mg/L (circle)	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☐ µmhos ☒ mmhos	Salinity (ppth)
Control	A	0 hr	7.8	25.2	8.2	0.278	
	B	24 hr	7.7	24.5	7.6	0.288	
	A	48 hr BR	8.2	25.4	7.0	0.308	
	A	48 hr AR	7.8	25.8	7.3	0.292	
	B	72 hr	8.0	25.1	6.5	0.281	
	A	96 hr	8.0	25.9	6.4	0.353	
6	A	0 hr	8.0	25.9	7.7	10.8	
	B	24 hr	7.9	24.5	7.4	10.5	
	A	48 hr BR	8.2	25.6	6.7	11.1	
	A	48 hr AR	7.9	25.9	7.1	10.9	
	B	72 hr	8.0	25.4	6.3	11.2	
	A	96 hr	8.1	25.8	6.9	9.92	
7	A	0 hr	8.0	25.9	7.8	13.0	
	B	24 hr	7.9	24.9	7.3	12.7	
	A	48 hr BR	8.2	25.5	6.8	13.3	
	A	48 hr AR	8.0	25.8	6.8	12.9	
	B	72 hr	8.0	24.9	6.4	12.6	
	A	96 hr	8.1	25.8	6.9	13.0	
8	A	0 hr	8.0	25.9	7.8	14.4	
	B	24 hr	7.9	24.7	7.0	14.2	
	A	48 hr BR	8.2	25.9	6.7	14.6	
	A	48 hr AR	8.0	25.7	6.8	14.4	
	B	72 hr	7.9	25.9	6.2	14.5	
	A	96 hr	8.1	25.9	6.7	14.6	
9	A	0 hr	8.0	25.9	7.7	16.1	
	B	24 hr	7.9	24.6	6.9	15.9	
	A	48 hr BR	8.2	25.4	6.6	16.7	
	A	48 hr AR	8.0	25.6	6.9	16.1	
	B	72 hr	7.9	25.8	5.7	15.9	
	A	96 hr	8.1	25.9	6.7	16.3	
10	A	0 hr	8.0	25.9	7.5	18.0	
	B	24 hr	7.9	25.3	6.2	17.9	
	B	48 hr BR	8.2	24.9	6.8	18.1	
	B	48 hr AR	8.0	25.9	7.0	18.1	
	B	72 hr	8.1	25.6	6.4	17.8	
	B	96 hr	8.2	25.6	6.8	18.1	

Investigators Signatures: James Daniel, Brooke Hilyard, Kara Lidy, Marshall Faircloth

Reviewed By: Steve Miller

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

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: 8/02/201 DURATION: 96 hr TOXICANT : NaCl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
1.50	20	1
2.00	20	4
2.50	20	17
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: 5.00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.18
95% LOWER CONFIDENCE: 2.05
95% UPPER CONFIDENCE: 2.33

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

DATE: 8/2/11 DURATION: 96 h TOXICANT : NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	1
6.00	20	6
7.00	20	7
8.00	20	8
9.00	20	17
10.00	20	19

SPEARMAN-KARBER TRIM: 26.32%

SPEARMAN-KARBER ESTIMATES: LC50: 8.04
95% LOWER CONFIDENCE: 7.34
95% UPPER CONFIDENCE: 8.80

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

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 8/1/11

Ship to: FDEP

P.O. No:

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (°/₀₀)
Mysidopsis bahia	150 ac	4 DAYS	MS 110728	25	7.9	20
Menidia beryllina	150 ac	12 DAYS	SS 110720	25	7.9	20
						Hardness mg/L
Cyprinella leedsi	150 ac	13 DAYS	CL 110719	25	7.8	80
Pimephales promelas	150 ac	7 DAYS	FM 110725	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PR

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: 8/22/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (°/₀₀)
Mysidopsis bahia						
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi	150 ac	12 DAYS	CL 110810	25	7.8	80
Pimephales promelas	300	<24 HRS	FM 110821-1830	25	7.8	80
	150 ac	7 DAYS	FM 110815	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 E. Chemical Analyses performed on the effluent from the Ridge Generating Station L.P. facility Outfall D-001, sampled on August 22, 2011.

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/22/2011 10:50	Effluent	AGP/LN	Algal Growth Potential	11.1		mg DryWt/L	0.3	0.9
8/22/2011 10:50	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	34	J	mg/L	0.2	2
8/22/2011 10:50	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	36		ug/L	0.55	1.7
8/22/2011 10:50	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
8/22/2011 10:50	Effluent	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100	L	LC50		
8/22/2011 10:50	Effluent	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	No Result		LC50		
8/22/2011 10:50	Effluent	Metals	Selenium	0.21	I	ug/L	0.2	0.8
8/22/2011 10:50	Effluent	Metals	Aluminum	72		ug/L	5	20
8/22/2011 10:50	Effluent	Metals	Iron	170		ug/L	30	120
8/22/2011 10:50	Effluent	Metals	Beryllium	0.025	U	ug/L	0.025	0.1
8/22/2011 10:50	Effluent	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
8/22/2011 10:50	Effluent	Metals	Magnesium	5.98		mg/L	0.04	0.16
8/22/2011 10:50	Effluent	Metals	Chromium	1.8		ug/L	0.3	1.2
8/22/2011 10:50	Effluent	Metals	Copper	1.8		ug/L	0.5	1
8/22/2011 10:50	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/22/2011 10:50	Effluent	Metals	Calcium	40.5		mg/L	0.075	0.3
8/22/2011 10:50	Effluent	Metals	Zinc	13	I	ug/L	5	20
8/22/2011 10:50	Effluent	Metals	Antimony	0.65	I	ug/L	0.25	1
8/22/2011 10:50	Effluent	Metals	Arsenic	7.36		ug/L	0.25	1
8/22/2011 10:50	Effluent	Metals	Nickel	1.42		ug/L	0.25	1
8/22/2011 10:50	Effluent	Metals	Sodium	16.2		mg/L	0.5	2
8/22/2011 10:50	Effluent	Metals	Lead	0.63	I	ug/L	0.2	0.8
8/22/2011 10:50	Effluent	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
8/22/2011 10:50	Effluent	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
8/22/2011 10:50	Effluent	Nutrients	Ammonia-N	0.061		mg N/L	0.01	0.02
8/22/2011 10:50	Effluent	Nutrients	O-Phosphate-P	1.2		mg P/L	0.04	0.1
8/22/2011 10:50	Effluent	Nutrients	Kjeldahl Nitrogen	2.3		mg N/L	0.08	0.2
8/22/2011 10:50	Effluent	Nutrients	Total-P	1.4		mg P/L	0.025	0.25
8/22/2011 10:50	Effluent	Nutrients	TSS	6	I	mg/L	2	10
8/22/2011 10:50	Effluent	Overflow	Oil and Grease	1	U	mg/L	1	3.6
8/22/2011 10:50	Effluent	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
8/22/2011 10:50	Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
8/22/2011 10:50	Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/22/2011 10:50	Effluent	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
8/22/2011 10:50	Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
8/22/2011 10:50	Effluent	Pesticides	Metalaxyl	0.25	UJ	ug/L	0.25	1
8/22/2011 10:50	Effluent	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
8/22/2011 10:50	Effluent	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
8/22/2011 10:50	Effluent	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
8/22/2011 10:50	Effluent	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
8/22/2011 10:50	Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
8/22/2011 10:50	Effluent	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
8/22/2011 10:50	Effluent	Pesticides	Bromacil	0.2	UJ	ug/L	0.2	0.8
8/22/2011 10:50	Effluent	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
8/22/2011 10:50	Effluent	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
8/22/2011 10:50	Effluent	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
8/22/2011 10:50	Effluent	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
8/22/2011 10:50	Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
8/22/2011 10:50	Effluent	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
8/22/2011 10:50	Effluent	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
8/22/2011 10:50	Effluent	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
8/22/2011 10:50	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
8/22/2011 10:50	Effluent	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
8/22/2011 10:50	Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
8/22/2011 10:50	Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
8/22/2011 10:50	Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	3.3	U	ug/L	3.3	13
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Hexachloroethane	3.3	U	ug/L	3.3	13
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	44
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.3	U	ug/L	3.3	13
8/22/2011 10:50	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.89

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	8.9
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.3	U	ug/L	3.3	13
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	8.9
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	17	U	ug/L	17	67
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	8.9
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Pentachlorophenol	3.3	U	ug/L	3.3	13
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	440
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	5.6	U	ug/L	5.6	22
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.3	U	ug/L	3.3	13
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	8.9
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	44	UJ	ug/L	44	180
8/22/2011 10:50	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Dimethyl phthalate	11	U	ug/L	11	44
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.4

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/22/2011 10:50	Effluent	Priority Organic Pollutants	4-Nitrophenol	17	U	ug/L	17	67
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Anthracene	0.26	I	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	17	U	ug/L	17	67
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	5.6	U	ug/L	5.6	22
8/22/2011 10:50	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.3	U	ug/L	3.3	13
8/22/2011 10:50	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
8/22/2011 10:50	Effluent	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.89
8/22/2011 10:50	Effluent	Field Parameter	Dissolved Oxygen	7.34		mg/L		
8/22/2011 10:50	Effluent	Field Parameter	Sample Depth	0.2		m		
8/22/2011 10:50	Effluent	Field Parameter	Temperature	26.82		C		
8/22/2011 10:50	Effluent	Field Parameter	Specific Conductance	415		umhos/cm		
8/22/2011 10:50	Effluent	Field Parameter	pH	7.31				
8/22/2011 10:20	Equip. Blank	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.2	UJ	mg/L	0.2	2
8/22/2011 10:20	Equip. Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
8/22/2011 10:20	Equip. Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
8/22/2011 10:20	Equip. Blank	Metals	Zinc	5	U	ug/L	5	20
8/22/2011 10:20	Equip. Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
8/22/2011 10:20	Equip. Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
8/22/2011 10:20	Equip. Blank	Metals	Copper	0.5	U	ug/L	0.5	1
8/22/2011 10:20	Equip. Blank	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
8/22/2011 10:20	Equip. Blank	Metals	Sodium	0.5	U	mg/L	0.5	2
8/22/2011 10:20	Equip. Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
8/22/2011 10:20	Equip. Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
8/22/2011 10:20	Equip. Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
8/22/2011 10:20	Equip. Blank	Metals	Antimony	0.25	U	ug/L	0.25	1
8/22/2011 10:20	Equip. Blank	Metals	Aluminum	5	U	ug/L	5	20
8/22/2011 10:20	Equip. Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
8/22/2011 10:20	Equip. Blank	Metals	Beryllium	0.025	U	ug/L	0.025	0.1
8/22/2011 10:20	Equip. Blank	Metals	Iron	30	U	ug/L	30	120
8/22/2011 10:20	Equip. Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
8/22/2011 10:20	Equip. Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
8/22/2011 10:20	Equip. Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
8/22/2011 10:20	Equip. Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/22/2011 10:20	Equip. Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
8/22/2011 10:20	Equip. Blank	Nutrients	Cyanide	0.005	U	mg CN/L	0.005	0.02
8/22/2011 10:20	Equip. Blank	Overflow	Oil and Grease	0.7	U	mg/L	0.7	2.5
8/22/2011 10:20	Equip. Blank	Pesticides	Azinphos Methyl	0.21	U	ug/L	0.21	0.83
8/22/2011 10:20	Equip. Blank	Pesticides	Parathion Ethyl	0.16	U	ug/L	0.16	0.62
8/22/2011 10:20	Equip. Blank	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.42
8/22/2011 10:20	Equip. Blank	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.42
8/22/2011 10:20	Equip. Blank	Pesticides	Diazinon	0.052	U	ug/L	0.052	0.21
8/22/2011 10:20	Equip. Blank	Pesticides	Mevinphos	0.21	U	ug/L	0.21	0.83
8/22/2011 10:20	Equip. Blank	Pesticides	Bromacil	0.21	UJ	ug/L	0.21	0.83
8/22/2011 10:20	Equip. Blank	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.42
8/22/2011 10:20	Equip. Blank	Pesticides	Fenamiphos	0.21	U	ug/L	0.21	0.83
8/22/2011 10:20	Equip. Blank	Pesticides	Butylate	0.21	U	ug/L	0.21	0.83
8/22/2011 10:20	Equip. Blank	Pesticides	Alachlor	0.62	U	ug/L	0.62	2.5
8/22/2011 10:20	Equip. Blank	Pesticides	Metalaxyl	0.26	UJ	ug/L	0.26	1
8/22/2011 10:20	Equip. Blank	Pesticides	Simazine	0.052	U	ug/L	0.052	0.21
8/22/2011 10:20	Equip. Blank	Pesticides	Prometryn	0.16	U	ug/L	0.16	0.62
8/22/2011 10:20	Equip. Blank	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.42
8/22/2011 10:20	Equip. Blank	Pesticides	Ethion	0.052	U	ug/L	0.052	0.21
8/22/2011 10:20	Equip. Blank	Pesticides	Chlorpyrifos Ethyl	0.052	U	ug/L	0.052	0.21
8/22/2011 10:20	Equip. Blank	Pesticides	Ametryn	0.052	U	ug/L	0.052	0.21
8/22/2011 10:20	Equip. Blank	Pesticides	Atrazine	0.052	U	ug/L	0.052	0.21
8/22/2011 10:20	Equip. Blank	Pesticides	Phorate	0.052	U	ug/L	0.052	0.21
8/22/2011 10:20	Equip. Blank	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.42
8/22/2011 10:20	Equip. Blank	Pesticides	Malathion	0.16	U	ug/L	0.16	0.62
8/22/2011 10:20	Equip. Blank	Pesticides	Norflurazon	0.16	U	ug/L	0.16	0.62
8/22/2011 10:20	Equip. Blank	Pesticides	Metolachlor	0.52	U	ug/L	0.52	2.1
8/22/2011 10:20	Equip. Blank	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.42
8/22/2011 10:20	Equip. Blank	Pesticides	Naled	0.83	U	ug/L	0.83	3.3
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	61
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8.2
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.1

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	61
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Phenanthrene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Pyrene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Acenaphthene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Anthracene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	12
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Chrysene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Naphthalene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	12
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Acenaphthylene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	410
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	12
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8.2
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	12
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8.2
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	12
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	U	ug/L	3.1	12
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8.2
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	41
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	41
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Fluorene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41	UJ	ug/L	41	160
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	20

Appendix E. continued

Date	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	U	ug/L	5.1	20
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Fluoranthene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	12
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	61
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.2	U	ug/L	0.2	0.82
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.1
8/22/2011 10:20	Equip. Blank	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.1

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: Jason Cohen Jason.Cohen@dep.state.fl.us	**Contact Number:** 813-632-7600 x361
Facility Name (as it appears on permit): Ridge Generating Station L.P.	**Former Names:**
NPDES Permit Number: FLS132772	**Permit Expiration Date:** November 21, 2011
Physical Address: 3131 K-Ville Avenue Auburndale, FL 33823	
District: Southwest	**County:** Polk County
Function of Facility: This facility is a 50-megawatt steam electric power generation station which uses the following raw materials for fuel: yard waste, waste wood, used tires, and landfill gas.	
Facility Type: Minor	**Permitted Capacity (MGD):** Report
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): **8/10 – 7/11** **D-001: 0.093 MGD**	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):	
Description of type of Discharge: ☐ **Continuous** ☒ **Intermittent** ☐ **Seasonal** ☒ **Rainfall Dependent** ☐ **Other, please specify**	

Appendix F. (continued)

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

Sample Point	Description of Monitoring Location
EFF-1	At the point of discharge to the mining reclamation lake, then, to Saddle Creek.

Description of Permitted Outfall(s):

Existing contact stormwater runoff discharges via Outfall D-001 to a mining reclamation lake (Class III Fresh Waters), which ultimately flows to Saddle Creek tributary (Class III Fresh waters). D-001 is located approximately at latitude 28° 01' 35" N, longitude 81° 50' 51" W.

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

Process wastewater generated at the facility is collected, stored, treated, and recycled within the plant. Contact stormwater runoff from the tire storage area is routed to a high-density polyethylene (HDPE) lined retention pond and recycled within the plant. Contact stormwater runoff from the wood storage area is routed to an unlined detention pond. The lined retention pond has the potential to overflow to the unlined detention pond. All contact stormwater runoff in the unlined detention pond enters from perimeter swales that discharge to sedimentation sumps equipped with an oil/debris skimmer plates at the inflow locations. An extensive littoral zone with long travel paths for further settling of fine particulates and extended contact time of vegetation for binding and uptake of pollutants (72-hours for one inch of runoff) provides the primary stormwater treatment. A second skimmer plate is fixed to the bleed-down structure and an aeration unit is built into the outfall sump as a final treatment mechanism. After final treatment the stormwater is then discharged off-site via Outfall D-001 to a mining reclamation lake, then to Saddle Creek.

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)

	Discharge Limitations			Monitoring Requirements		
Parameters (Units)	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (GPD)	Report	Report	--	Daily	Calculated	EFF-1
Specific Conductance (UMHO/CM)	--	1275	--	Monthly See Condition No. 6	Instantaneous	EFF-1
Oxygen, Dissolved (DO) (MG/L)	--	--	5.0	Monthly See Condition No. 6	Instantaneous	EFF-1
Temperature (C), Water (DEG.C)	--	Report	--	Monthly See Condition No. 6	Instantaneous	EFF-1
pH (SU)	--	9.0	6.5	Monthly See Condition No. 6	Instantaneous	EFF-1
Nitrogen, Ammonia, Total (as N) (MG/L)	--	Report	--	Monthly See Condition No. 6	Grab	EFF-1
Ammonia, Unionized (as NH3) (MG/L)	--	0.08	--	Monthly See Condition No. 6	Calculated	EFF-1
Oil and Grease (MG/L)	--	5.0	--	Monthly See Condition No. 6	Grab	EFF-1
Hardness, Total (as CaCO3) (MG/L)	--	Report	--	Monthly See Condition No. 6	Grab	EFF-1
Arsenic, Total Recoverable (UG/L)	--	50.0	--	Monthly See Condition No. 6	Grab	EFF-1
Phenol, Single Compound (MG/L)	--	Report	--	Monthly See Condition No. 6	Grab	EFF-1
Iron, Total Recoverable (MG/L)	--	1.0	--	Monthly See Condition No. 6	Grab	EFF-1
Lead, Total Recoverable (UG/L)	--	See Cond. I.A.3.	--	Monthly See Condition No. 6	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)

Parameters (Units)	Discharge Limitations			Monitoring Requirements		
	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Zinc, Total Recoverable (UG/L)	--	See Cond. I.A.4.	--	Monthly See Condition No. 6	Grab	EFF-1
Sodium, Total Recoverable (UG/L)	--	Report	--	Monthly See Condition No. 6	Grab	EFF-1
Copper, Total Recoverable (MG/L)	--	See Condition I.A.10	--	Monthly See Condition No. 6	Grab	EFF-1
Chromium, Total Recoverable (UG/L)	--	See Condition I.A.11	--	Monthly See Condition No. 6	Grab	EFF-1
Whole Effluent Toxicity (Acute)	See Permit Condition I.A.5					EFF-1

Appendix F. (continued)

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
Existing contact stormwater runoff discharges via Outfall D-001 to a mining reclamation lake (Class III Fresh Waters), which ultimately flows to Saddle Creek tributary	Class III Fresh waters

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

The permittee shall initiate the series of tests described below beginning with the first discharge event after the issuance date of this permit revision to evaluate whole effluent toxicity of the discharge from Outfall D-001. All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 5th ed., EPA-821-R-02-012, or the most current edition. The control water and dilution water used will be moderately hard water as described in EPA-821-R-02-012, Table 7, or the most current edition. A standard reference toxicant quality assurance (QA) acute toxicity test shall be conducted concurrently or no greater than 30 days before the date of the "routine" test, with each species used in the toxicity tests. The results of all QA toxicity tests shall be submitted with the discharge monitoring report (DMR). Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

a. Effluent limitation
   (1) Whole effluent acute toxicity shall not exceed in any "routine" 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.]

b. Monitoring frequency
   (1) "Routine" toxicity tests shall be conducted semi-annually.
   (2) Upon completion of four consecutive, valid "routine" tests that demonstrate compliance with the effluent limitation in 1.a. (1) above, the permittee may submit a written request to the Department for a reduction in monitoring frequency. The Department shall review this request within 45 days of receipt and approve or deny the request in writing. Materials submitted to the Department for review should include a summary of the data and the complete bioassay reports for all tests being considered. In no case shall the frequency of monitoring be reduced to less than annually. Requested reductions in monitoring shall only become effective upon Department approval.
   (3) If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within seven days of the invalidation, the invalid test will not be counted against the requirement for four consecutive valid tests for the purpose of evaluating the reduction of monitoring frequency. If two or more invalidations occur, this provision does not apply.

c. Test Requirements:
   (1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5% and 6.25% effluent
   (2) Additional Follow-up Tests, if required:
      (a) If a routine test does not meet the acute toxicity limitation in 1.a. (1) above, the permittee shall conduct two additional follow-up tests on each species that failed the test.
      (b) The first and second additional follow-up test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5% and 6.25% effluent. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-012.
      (c) The first test shall be initiated within two weeks of the end of the failed routine test. The remaining additional follow-up test shall be conducted weekly thereafter until a total of two valid additional follow-up tests are completed. If the discharge ceases before additional, follow-up test sample(s) can be collected, the follow-up test(s) and companion chemistries shall be collected during the next discharge event(s) until two (2) valid tests are completed.
   (3) The permittee shall conduct 96-hour acute static renewal multi-concentration toxicity tests using the daphnid, Ceriodaphnia dubia, and the bannerfin shiner, Cyprinella leedsi, concurrently.
   (4) All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-821-R-02-012. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct acute toxicity testing in accordance with the revised method.
   (5) The control water and dilution water used will be moderately hard water as described in EPA-821-R-02-012, Table 7.

d. Sampling Requirements
   (1) Routine tests shall be conducted on a single grab sample of final effluent. Samples shall only be collected during an actual discharge event.
   (2) For additional follow-up tests, the tests shall be conducted on single grab samples. Results for each additional test shall include the determination of LC50 values with 95% confidence limits.

Appendix F. (continued)

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
See Attached
Facility Mixing Zone Details (if applicable):
List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:

Date	Parameter and Units	Limit	Result
4/30/08	Zinc ug/L	0	1575
4/30/08	C. dubia %	100	13.87

Describe previous FYI and WQBEL study:
Describe previous or current Enforcement Actions (including WLs):
Describe any violations or problems noted in previous inspection:
Discuss whether DMR trends within previous five years are improving or declining:
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

Appendix F. (continued)

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART II: Sampling Event Information	
Date(s) sample collected: 8/22/11	**Sampler(s):** Pete Wenner Jason Cohen
Temperature (Deg C): 26.82	**pH (SU):** 7.31
Dissolved Oxygen (mg/L): 7.34	**Conductivity (umhos/cm):** 415
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): D-001: 0.05 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): 8/10 – 7/11 D-001: 0.093 MGD	
Describe Discharge during Sampling Event: ☐ Continuous ☒ Intermittent ☐ Seasonal ☒ Rainfall Dependent ☐ Other, please specify	

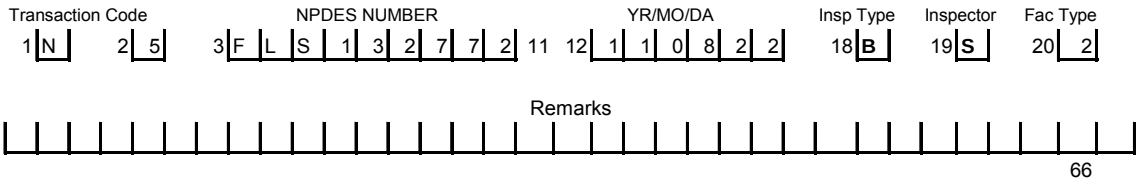
Appendix F. (continued)

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

Appendix G. EPA End Sheet

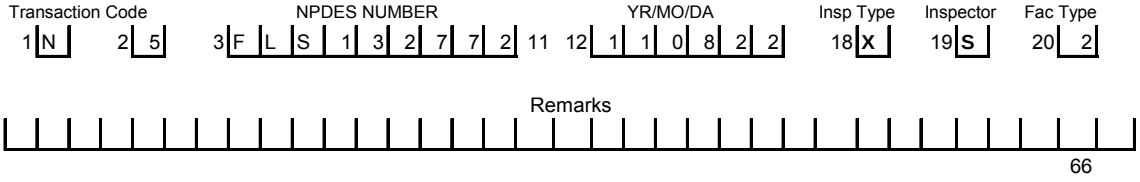
The Bioassay of the Ridge Generating Station L.P., effluent sampled on August 22, 2011. NPDES #FLS132772.

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



The Priority Pollutants Analysis of Ridge Generating Station L.P., effluent sampled on August 22, 2011. NPDES #FLS132772.

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



Biological Analyses of Ridge Generating Station L.P., effluent sampled on August 22, 2011. NPDES #FLS132772.

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

