

Effluent Quality Assessment

Florida Distillers Company – Lake Alfred

Polk County

NPDES #FL0029017

Sampled March 21, 2011

May 2011

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
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Florida Distillers Company - Lake Alfred, 620 Dakota Avenue, Lake Alfred, Polk County, Florida, 33850. NPDES #FL0029017. Effluent grab samples for biological and chemical analyses for this facility were collected on March 21, 2011.

Introduction

Florida Distillers Company – Lake Alfred operates a cane and citrus molasses fermentation and distillation process to produce ethyl alcohol and vinegar. (See Appendix F for detailed facility information provided by Jason Cohen of FDEP Southwest District.)

Methods

Samples were collected from the EFF-03 NPDES sampling point for Outfall D-003 by Jason Cohen and Peter 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 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 April 22- 26, 2011.

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

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

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

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

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

- **Algal Growth Potential**
  The effluent Algal Growth Potential (AGP) was 8.6 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. The analytical chemistry suggests that the effluent is nitrogen-limited. The predicted AGP based on inorganic nitrogen concentrations was 5.9 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

  See Table 1 for AGP results.

- **Chemistry Results**
  Total residual chlorine and total ammonia were not detected in the bioassay sample in the laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.072 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg N/L.

  Copper and fluoride were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Aluminum, arsenic, CBOD, chlorophyll *a,* and iron were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Sulfate and chloride were also detected in the effluent. Microbiological analyses were not performed.

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

Conclusion

The effluent sample collected from the EFF-03 NPDES sampling point for Outfall D-003 for this facility on March 21, 2011, was not acutely toxic to either test species during the 96-hour acute definitive bioassays. The effluent AGP result was greater than the "problem" threshold for fresh receiving waters suggesting that nutrient enrichment may be an issue. Effluent water quality samples collected on March 21, 2011, did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

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

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

Table 1. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), orthophosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata* for samples collected from the Florida Distillers Company - Lake Alfred facility on March 21, 2011.

Florida Distillers Distillers - Lake Alfred NPDES #FL0029017													
Sample	AGP (measured)	Predicted AGP (TSIN) ± 20%			Predicted AGP (OP) ± 20%			Predicted AGP (TN) ± 20%			Predicted AGP (TP) ± 20%			Inorganic N:P ratio	Total N:P ratio
Effluent	8.6	5.9	±	1.2	15.9	±	3.2	10.8	±	2.2	21.5	±	4.3	4.2	5.7

Table 2. Effluent limits, Class III Freshwater Criteria and chemical data for samples collected from the Florida Distillers Company - Lake Alfred facility on March 21, 2011.

Florida Distillers Company - Lake Alfred NPDES# FL0029017	Class III Criteria	Effluent Limits	Effluent	
Organic Constituents (µg/L)				
None Detected	-	-	None Detected	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	5.1	I
Arsenic	≤ 50	-	0.82	I
Cadmium	≤ 0.3 b	-	0.05	U
Calcium (mg/L)	-	-	42.3	
Chromium-III	≤ 114.5 b	-	0.3	U
Copper	≤ 12.5 b	-	1.73	
Iron	≤ 1,000	-	87	I
Lead	≤ 4.9 b	-	0.2	U
Magnesium (mg/L)	-	-	8.7	
Nickel	≤ 69.9 b	-	0.25	U
Selenium	≤ 5.0	-	0.2	U
Silver	≤ 0.07	-	0.025	U
Zinc	≤ 160.7 b	-	5	U
Nutrients (mg/L)				
Ortho-phosphate	-	-	0.037	
Total Phosphorus	-	-	0.05	
Total Ammonia	-	Report	0.072	
Un-ionized Ammonia	≤ 0.02 s	≤ 0.02 s	≤ 0.02	c
Nitrate and Nitrite	-	Report	0.083	
Total Kjeldahl Nitrogen	-	Report	0.2	I
Organic Nitrogen	-	-	0.128	c
Total Nitrogen	-	Report	0.283	c
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0 s	8.0	
pH (SU)	6.0 - 8.5	6.0 - 8.5 s	8.3	
Conductivity (µmhos/cm)	≤ 1,275	≤ 1,275 s	289	
Temperature (°C)	-	≤ 33.3 s	24.5	
Total Residual Chlorine (mg/L)	≤ 0.01	-	0.03	UQ£
Chlorophyll *a* (µg/L) - Corrected	-	-	0.6	I
Phaeophytin (µg/L)	-	-	0.4	U
Total Suspended Solids (mg/L)	-	≤ 20.0 s	4	U
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 s	1.1	I
Oils and Greases (mg/L)	≤ 5.0	≤ 5.0 s	1.4	U
Chloride (mg/L)	-	-	10	
Fluoride (mg/L)	≤ 10.0	-	0.17	
Sulfate (mg/L)	-	-	4.1	
Flow (MGD)	-	1.4 m	0.197	a
Hardness (mg $CaCO_3$)	-	-	141.45	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
m - Monthly average daily flow
s - Single sample
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

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-03-21-22
Florida Distillers - Lake Alfred FYI

Requester: Edward Smith
Field Report Prepared By:
Collected By: P. WENNER, J. COHEN
Send Final Report To: Ilia Balcom
Sampling Agency: FDEP SWD

Customer: SW-DIST
Project ID: FYI5
PMAS: 1143

Lab ID *	Location / Field ID	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m / ft	Salinity (PPTh)	Sp Conductance (umho/cm)	NPDES Number	Bottle Group(s)**	Comments
38311	EFF-03	FRESH	24.47	8.27	N 28.09809 dd / dms	W 81.72086 dd / dms	Grab	Date 3/21/11 Time 1035 Eastern / Central			8.02		0.14	Salinity (PPTh) ✓	Sp Conductance (umho/cm) ✓ 289		A	
38312	BLANK	LAB DI H_2O			dd / dms	dd / dms	Grab	Date 3/21/11 Time 1015 Eastern / Central						Salinity (PPTh)	Sp Conductance (umho/cm)		D	
					dd / dms	dd / dms	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m / ft	Salinity (PPTh)	Sp Conductance (umho/cm)	NPDES Number	Bottle Group(s)**	
					dd / dms	dd / dms	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m / ft	Salinity (PPTh)	Sp Conductance (umho/cm)	NPDES Number	Bottle Group(s)**	Comments: 4 Diossay, Recd in Tox by J.D. 10:40 3.22.11

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	3/21/11 1400	FED Ex					CMC	3/22/11 940A

* 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: Florida Distillers

Address: 620 Dakota Ave., Lake Alfred, FL 33850

City: Lake Alfred County: Polk

Contact/District: Jason Cohen / Southwest

NPDES Permit #: FL 0029017

LIMS Job #: TLH-2011-03-V22-13 KC

LIMS Sample #: 1338118

Lims Data Entry: 3-30-11 MF

Data Entry Verification: 3.30.11 BA

Sample Collection: Date: 3.21.11 Time: 1035

Hold Time Start: Date: 3.21.11 Time: 1035

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: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: ~ ____bubbles/min

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

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

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

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:
James Daniels	JD
Brian Akers	BA
Kara Cox	KC
Marshall Edwards	MF

REVIEWER: Leigh Fuller

Diluent/Control Batch#:	3.14.11	3.21.11							
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):	<0.03	<0.03					<0.03	KC/JD	KC
Alkalinity (mg/L as $CaCO_3$):	80	148					138	KC	KC
Hardness (mg/L as $CaCO_3$):	87	140					133	KC	KC
Total Ammonia (mg/L as N):	<0.017	<0.017					<0.017	MF	KC
Conductivity: ☑ µmhos ☐ mmhos	189	287					292	KC/JD	KC
Salinity (ppth):	—	—					—	—	—

V 1.8 1/13/10

Appendix B. continued

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

LIMS Sample # 1358118 SOP#: TA 07 01 Test # 1 of 2

Test Species:
Batch #: 3.22.11 Age: 24hr
- [x] *Ceriodaphnia dubia*
- [ ] *Cyprinella leedsi*
- [ ] *Pimephales promelas*
- [ ] *Menidia beryllina*
- [ ] *Americamysis bahia*
- [ ] Other:_____

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

Diluent (Batch # 3.14.11)
- [ ] 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 3.22.11 Time 1000

Test Ended: Date 3.26.11 Time 1000

Chamber Size 30 ml
Test Volume: 20 ml

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

Loaded/ Verified by: KC / BA
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_____

Food
- [x] YCT Batch# 2.11.11
- [x] P. subcapitata Batch# 1.25.11
- [ ] Artemia Lot#_____

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

Temperature Range (°C)
Incubator # 2
min. 26.1 max. 27.3 mean –
Incubator #___
min.____max.____mean____
Waterbath #___
min.____max.____mean____
Room B246
min. 24.1 max. 24.9 mean –

Light intensity (ft. candles): 50-100

Photoperiod (hours): 16 light, 8 dark

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 # 133818 SOP#: TA 07 02 Test # 2 of 2

Test Species:
Batch #: 3.22.11 Age: 11 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 # 3.21.11)
☐ ASW ☐ 20% DMW
☐ MHW ☒ Well

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

Test Duration:
☐ 48 hr
☑ 96 hr
☐ ___hr

Test Started: Date 3.22.11 Time ~~1100~~ 1400 KC
Test Ended: Date 3.26.11 Time 1000

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	G67	10	10	10	10	10	10
	B	G68	10	10	10	10	10	10
		1mm for BA						
6.25%	A	G69	10	10	10	10	10	10
	B	G610	10	10	10	10	10	10
		1mm for BA						
12.5%	A	G11	10	10	10	10	10	10
	B	G12	10	10	10	10	10	10
25%	A	G13	10	10	10	10	10	10
	B	G14	10	10	10	10	10	10
50%	A	G15	10	10	10	10	10	10
	B	G16	10	10	10	10	10	10
100%	A	G17	10	10	9|0	9	9	9
	B	G18	10	10	10	10	10	10
Checked or Verified by:			BA	BA	KC	KC	KC	SD

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

Feeding and Artemia Batch #
KC 52-11
☑ 0 hr ~~23613~~ ☑ Prior to Test
☐ 24 hr___
☑ 48 hr ~~23613~~ KC 54-11 ☑ Prior to Renewal
☐ 72 hr___

Temperature Range (°C)
Incubator # 2
min. 26.1 max. 27.3 mean —
Incubator #___
min.___ max.___ mean___
Waterbath #___
min.___ max.___ mean___
Room B246
min. 24.1 max. 24.9 mean —
Light Intensity (ft. candles): 50-100
Photoperiod (hours): 16 light, 8 dark

Loaded/ Verified by: KC / BA
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 Parameter Sheet

LIMS Sample # 1338118 Test # 1 of 2

Test Species:

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

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

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☑ µmhos ☐ mmhos	Salinity* (ppth)
Ctrl	M	0 hr	8.0	24.6	7.8	189	
		24 hr ~~KC 8.3~~		~~24.3 KC~~	~~8.0 KC~~	~~188 KC~~	
	A	48 hr BR	8.3	24.3	8.0	188	
	M	48 hr AR	8.0	24.0	7.9	176	
		72 hr					
	A	96 hr	8.1	24.0	7.8	185	
6.25%	M	0 hr	8.1	24.6	7.7	187	
		24 hr		~~24.3 KC~~	~~8.3 KC~~	~~193 KC~~	
	A	48 hr BR	8.5	24.3	8.3	193	
	M	48 hr AR	8.1	24.1	7.8	186	
		72 hr					
	A	96 hr	8.2	24.0	7.7	191	
12.5%	M	0 hr	8.1	24.7	7.7	193	
		24 hr		~~24.4 KC~~	~~8.3 KC~~	~~201 KC~~	
	A	48 hr BR	8.5	24.4	8.3	201	
	M	48 hr AR	8.1	24.0	7.8	193	
		72 hr					
	A	96 hr	8.3	24.0	7.8	200	
25%	M	0 hr	8.1	24.7	7.7	247	
		24 hr			~~8 KC~~	~~229 KC~~	
	A	48 hr BR	8.5	24.2	8.4	229	
	M	48 hr AR	8.1	24.2	7.7	207	
		72 hr					
	A	96 hr	8.3	24.0	7.7	~~KC 200~~ 214	
50%	M	0 hr	8.2	24.9	7.8	256	
		24 hr				~~237 KC~~	
	A	48 hr BR	8.5	24.4	8.2	237	
	M	48 hr AR	8.1	24.2	7.8	235	
		72 hr					
	A	96 hr	8.3	24.0	7.8	242	
100%	M	0 hr	8.2	25.4	7.7	292	
		24 hr				~~291 KC~~	
	A	48 hr BR	8.6	24.5	8.3	291	
	M	48 hr AR	8.1	24.3	7.8	294	
		72 hr					
	A	96 hr	8.5	24.0	7.9	294	
		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: Cross outs on this page were transcription errors. -KC-

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

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Appendix B. continued

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # 1338118 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	7.8	287	
	B	24 hr	8.0	26.0	6.4	303	
	☒ A	48 hr BR	8.2	24.0	7.1	288	
	☒ A	48 hr AR	7.7	24.0	7.1	272	
	B	72 hr	8.0	25.9	6.1	291	
		96 hr	8.2	25.3	7.0	291	
6.25%	A	0 hr	8.0	24.0	7.9	278	
	B	24 hr	8.1	25.9	6.4	293	
	A	48 hr BR	8.2	24.0	7.0	289	
	A	48 hr AR	7.9	24.0	7.5	275	
	B	72 hr	8.0	25.7	6.4	288	
		96 hr	8.3	25.4	6.9	291	
12.5%	A	0 hr	8.0	24.0	7.8	279	
	B	24 hr	8.1	25.6	6.5	296	
	A	48 hr BR	8.2	24.0	7.0	288	
	A	48 hr AR	8.0	24.0	7.2	273	
	B	72 hr	8.0	25.8	6.7	291	
		96 hr	8.2	25.0	6.7	290	
25%	A	0 hr	8.0	24.0	7.9	283	
	B	24 hr	8.1	25.6	6.3	296	
	A	48 hr BR	8.3	24.0	7.0	290	
	A	48 hr AR	7.9	24.0	7.4	277	
	B	72 hr	8.0	26.1	5.9	293	
		96 hr	8.2	25.1	6.6	322	
50%	A	0 hr	8.0	24.4	8.0	286	
	B	24 hr	8.1	25.8	6.3	295	
	A	48 hr BR	8.2	24.0	7.1	291	
	A	48 hr AR	7.8	24.0	7.4	278	
	B	72 hr	8.0	25.4	6.1	297	
		96 hr	8.2	25.5	6.6	291	
100%	A	0 hr	8.2	24.7	8.0	294	
	B	24 hr	8.1	26.0	6.4	306	
	A	48 hr BR	8.2	24.0	7.1	298	
	A	48 hr AR	7.7	24.0	7.4	289	
	B	72 hr	8.1	25.7	6.9	306	
		96 hr	8.2	24.9	6.5	299	
		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: JD
24 hr: BA
48 hr BR: KC
48 hr AR: JD
72 hr: KC
96 hr: JD

Page 000017

V. 2.3 1-13-10

Appendix C. SRT Bench Sheets and Statistical Analysis

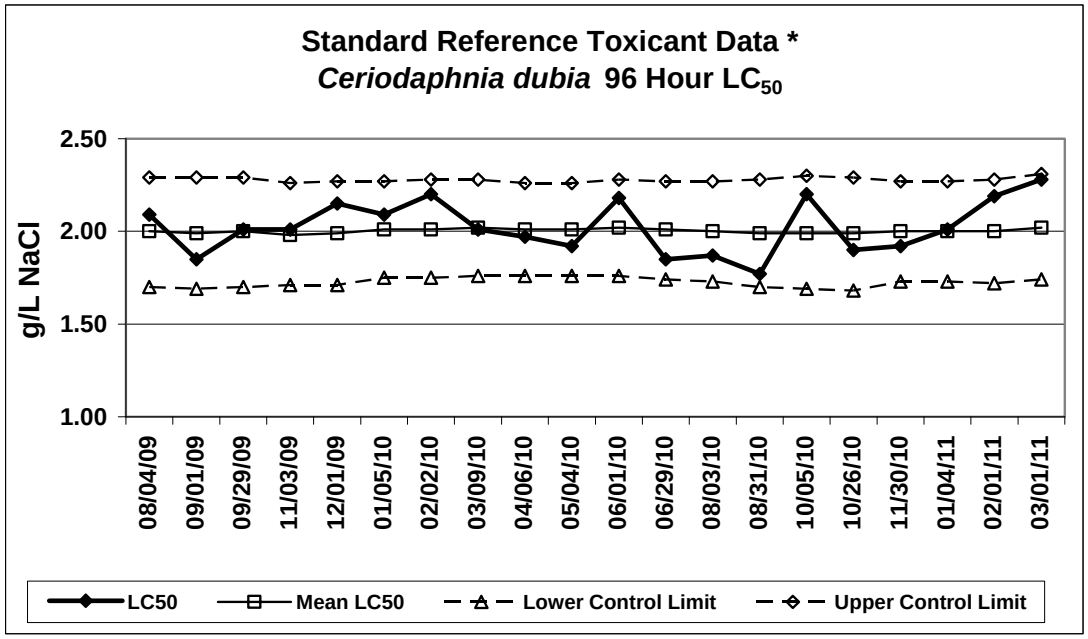
Florida Department of Environmental Protection
Bureau of Laboratories

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

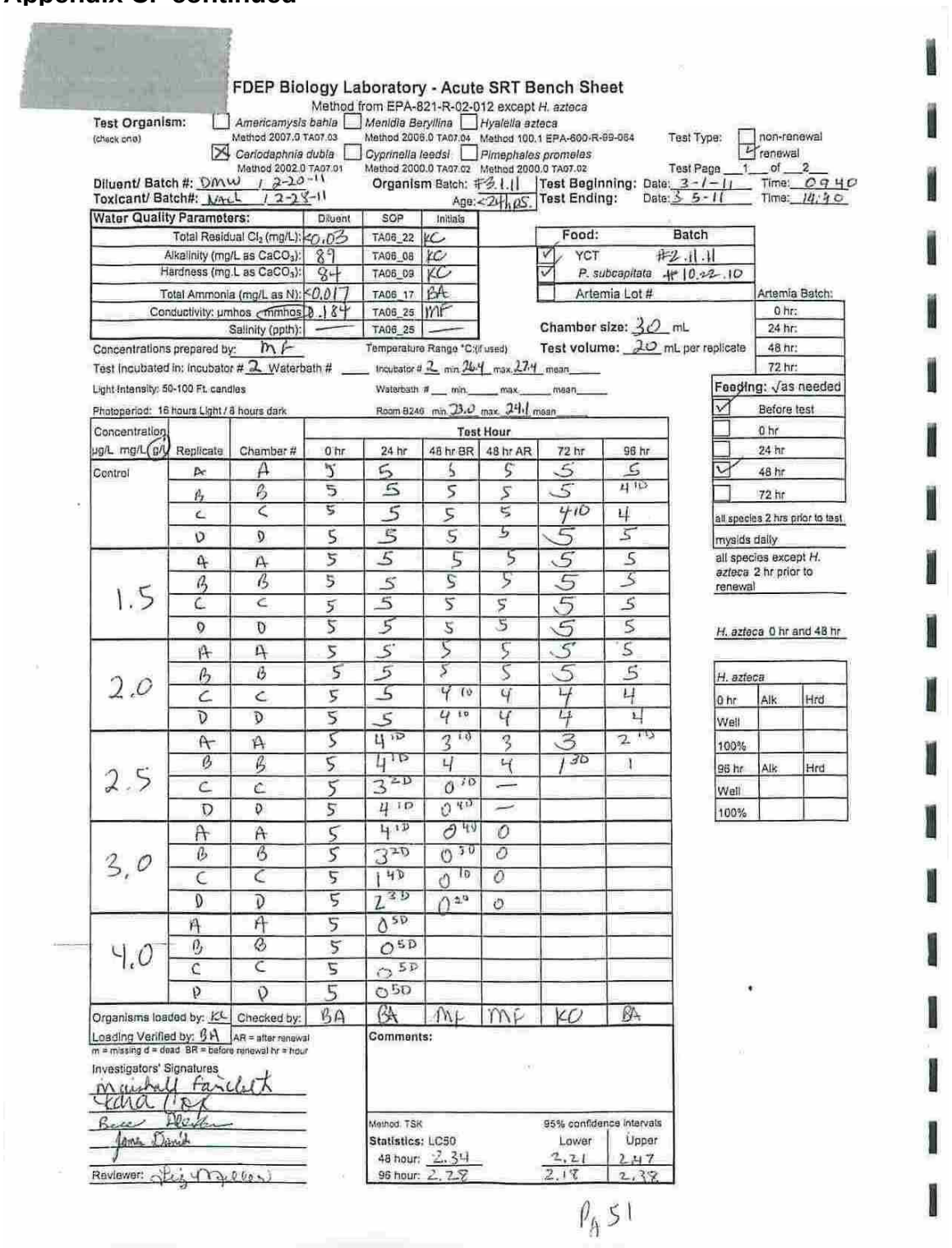
Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
08/04/09	2.09	2.00	0.15	1.70	2.29
09/01/09	1.85	1.99	0.15	1.69	2.29
09/29/09	2.01	2.00	0.15	1.70	2.29
11/03/09	2.01	1.98	0.14	1.71	2.26
12/01/09	2.15	1.99	0.14	1.71	2.27
01/05/10	2.09	2.01	0.13	1.75	2.27
02/02/10	2.20	2.01	0.13	1.75	2.28
03/09/10	2.01	2.02	0.13	1.76	2.28
04/06/10	1.97	2.01	0.12	1.76	2.26
05/04/10	1.92	2.01	0.12	1.76	2.26
06/01/10	2.18	2.02	0.13	1.76	2.28
06/29/10	1.85	2.01	0.13	1.74	2.27
08/03/10	1.87	2.00	0.14	1.73	2.27
08/31/10	1.77	1.99	0.14	1.70	2.28
10/05/10	2.20	1.99	0.15	1.69	2.30
10/26/10	1.90	1.99	0.15	1.68	2.29
11/30/10	1.92	2.00	0.14	1.73	2.27
01/04/11	2.01	2.00	0.14	1.73	2.27
02/01/11	2.19	2.00	0.14	1.72	2.28
03/01/11	2.28	2.02	0.14	1.74	2.31

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

CV = 7.11
EPA reference 75th quartile CV = 29%



Appendix C. continued



FDEP Biology Laboratory - Acute SRT Bench Sheet

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

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

Test Type: ☐ non-renewal ☑ renewal
Test Page 1 of 2

Diluent/ Batch #: DMW 1-20-11
Toxicant/ Batch#: NaCl 1-28-11
Organism Batch: #3.1.11 Age: <24 hrs.
Test Beginning: Date: 3-1-11 Time: 0940
Test Ending: Date: 3-5-11 Time: 14:30

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	KC
Alkalinity (mg/L as $CaCO_3$):	89	TA06_08	KC
Hardness (mg/L as $CaCO_3$):	84	TA06_09	KC
Total Ammonia (mg/L as N):	<0.017	TA06_17	BA
Conductivity: µmhos (mmhos)	0.184	TA06_25	MF
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☑ YCT	#2.11.11
☑ *P. subcapitata*	#10.22.10
☐ Artemia Lot #	

Artemia Batch:
0 hr:
24 hr:
48 hr:
72 hr:

Chamber size: 30 mL
Test volume: 20 mL per replicate

Concentrations prepared by: MF
Temperature Range °C:(if used)
Test incubated in: Incubator # 2 Waterbath # ___ Incubator # 2 min 26.4 max 27.4 mean
Light Intensity: 50-100 Ft. candles Waterbath # ___ min ___ max ___ mean ___
Photoperiod: 16 hours Light / 8 hours dark Room B249 min 23.0 max 24.1 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 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	4 1D
	C	C	5	5	5	5	4 1D	4
	D	D	5	5	5	5	5	5
1.5	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
2.0	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	4 1D	4	4	4
	D	D	5	5	4 1D	4	4	4
2.5	A	A	5	4 1D	3 1D	3	3	2 1D
	B	B	5	4 1D	4	4	1 3D	1
	C	C	5	3 2D	0 1D	—		
	D	D	5	4 1D	0 4D	—		
3.0	A	A	5	4 1D	0 4D	0		
	B	B	5	3 2D	0 3D	0		
	C	C	5	1 4D	0 1D	0		
	D	D	5	2 3D	0 2D	0		
4.0	A	A	5	0 5D				
	B	B	5	0 5D				
	C	C	5	0 5D				
	D	D	5	0 5D				
Organisms loaded by: KC		Checked by:	BA	BA	MF	MF	KC	BA

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

Investigators' Signatures
Marshall Faircloth
Kelsa Cox
Bruce Hooker
Jane Dinh
Reviewer: Reji Mayakkal

Comments:

Method: TSK

Statistics: LC50	95% confidence intervals Lower	Upper
48 hour: 2.34	2.21	2.47
96 hour: 2.28	2.18	2.38

PASS

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: 3-1-11 Time: 0940
Test Ending: Date: 3-5-11 Time: 14:40
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	8.3	24.4	7.7	0.184	
		24 hr					
	A	48 hr BR	8.2	24.3	8.1	0.215	
	A	48 hr AR	8.0	25.7	7.6	0.185	
		72 hr					
	A	96 hr	8.3	24.8	6.8	0.198	
1.5	M	0 hr	8.2	24.7	7.9	2.84	
		24 hr					
	A	48 hr BR	8.2	24.5	8.2	3.11	
	A	48 hr AR	8.0	25.4	7.7	2.70	
		72 hr					
	A	96 hr	8.2	25.1	6.9	2.72	
2.0	M	0 hr	8.2	24.7	7.9	3.71	
		24 hr					
	A	48 hr BR	8.2	24.7	8.3	4.29	
	A	48 hr AR	8.1	25.5	7.7	3.86	
		72 hr					
	A	96 hr	8.2	25.0	7.0	3.89	
2.5	M	0 hr	8.2	24.7	7.9	4.56	
		24 hr					
	A	48 hr BR	8.2	24.7	8.2	5.18	
	A	48 hr AR	8.1	24.5	7.7	4.69	
		72 hr					
	A	96 hr	8.2	24.9	7.1	4.74	
3.0	M	0 hr	8.2	24.7	8.0	5.36	
		24 hr					
	A	48 hr BR	8.2	24.8	8.4	6.13	
	A	48 hr AR					
		72 hr					
		96 hr					
4.0	M	0 hr	8.2	24.5	8.1	7.16	
	A	24 hr	8.0	24.0	7.9	7.69	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures: Marshall Faircloth, Ukara Cox, Bryce Neal, James Daniels
Reviewed By: Stephen Miller

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

Measure/record salinity for marine tests

Comments:

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Appendix C. (continued)

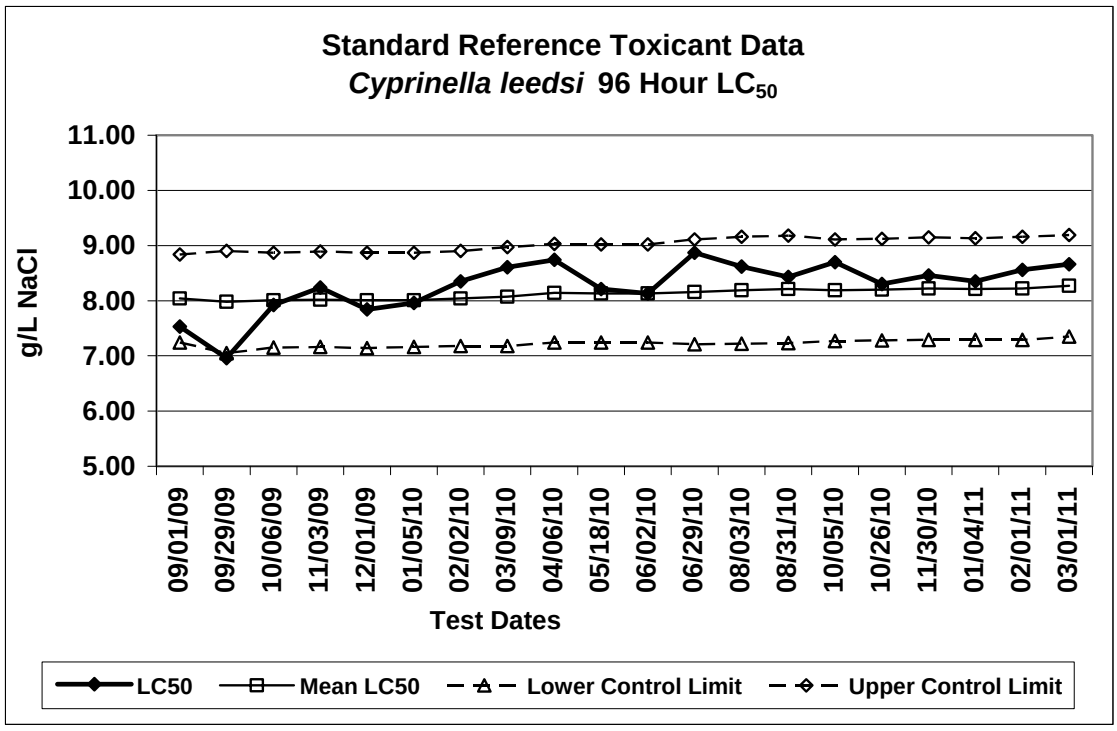
Florida Department of Environmental Protection
Bureau of Laboratories

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
09/01/09	7.53	8.04	0.40	7.24	8.84
09/29/09	6.96	7.98	0.46	7.05	8.90
10/06/09	7.92	8.01	0.43	7.15	8.87
11/03/09	8.24	8.02	0.43	7.16	8.89
12/01/09	7.84	8.01	0.43	7.14	8.87
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

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

CV = 5.55
EPA reference 75th quartile CV = 19%



Appendix C. (continued)

[redacted]

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 / 2-28-11
Toxicant/ Batch#: N.CL / 12-28-11
Organism Batch: #3.1.11 Age: 13days
Test Beginning: Date: 3-1-11 Time: 1300
Test Ending: Date: 3.5.11 Time: 1500

Water Quality Parameters:	Diluent	SOP	Initials
Total Residual Cl_2 (mg/L):	<0.03	TA06_22	KC
Alkalinity (mg/L as $CaCO_3$):	142	TA06_08	KC
Hardness (mg.L as $CaCO_3$):	143	TA06_09	KC
Total Ammonia (mg/L as N):	<0.017	TA06_17	BA
Conductivity: µmhos (mmhos)	0.291	TA06_25	JD
Salinity (ppth):	—	TA06_25	—

Food:	Batch
☐ YCT	
☑ *P. subcapitata*	
☑ Artemia Lot # 23613	Artemia Batch:
	0 hr 41-11
	24 hr:
	48 hr: 43-11
	72 hr:

Chamber size: 1000 mL
Test volume: ~~500~~ 400 mL per replicate

Concentrations prepared by: MF
Temperature Range °C:(if used)
Test Incubated in: Incubator # 2 Waterbath # ____ Incubator # 2 min 26.4 max 27.1 mean ____
Light Intensity: 50-100 Ft. candles Waterbath # ___ min. ____ max. ____ mean ____
Photoperiod: 16 hours Light / 8 hours dark Room B246 min 23.0 max 24.1 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	A1	10	10	10	10	10	10
	B	A2	10	10	10	10	10	10
6	A	A3	10	10	10	10	10	9 1D
	B	A4	10	10	10	10	10	10
7	A	A5	10	10	10	10	10	10
	B	A6	10	10	10	10	10	10
8	A	A7	10	10	10	10	10	10
	B	A8	10	10	10	10	10	10
9	A	A9	10	4 6D	3 1D	3	2 1D	2
	B	A10	10	4 6D	4	4	4	2 2D
10	A	A11	10	D 1D	·			
	B	A12	10	D 1D				
Organisms loaded by: KC		Checked by:	BA	KC	KC	KC	KC	BA

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

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

Investigators' Signatures
Marshall Faircloth
Kara Cox
Jana Davis
Bruce Pruess

Reviewer: Liz Miller

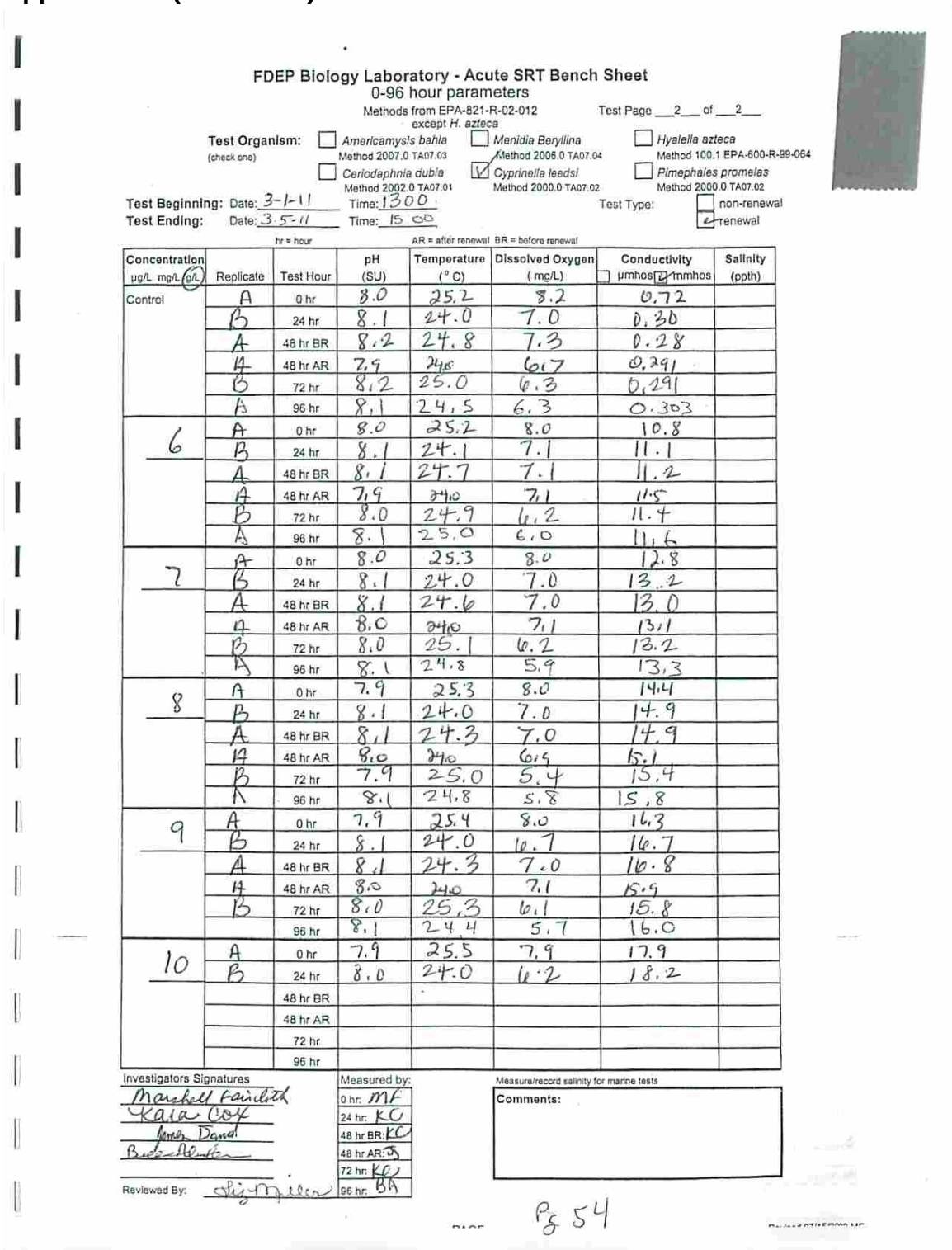
Comments:

Method: TSK

Statistics: LC50		95% confidence intervals Lower	Upper
48 hour:	5.82	8.62	9.04
96 hour:	8.66	8.48	8.84

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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: 3-1-11 Time: 1300
Test Ending: Date: 3-5-11 Time: 1500

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	A	0 hr	8.0	25.2	8.2	0.72	
	B	24 hr	8.1	24.0	7.0	0.30	
	A	48 hr BR	8.2	24.8	7.3	0.28	
	A	48 hr AR	7.9	24.8	6.7	0.291	
	B	72 hr	8.2	25.0	6.3	0.291	
	A	96 hr	8.1	24.5	6.3	0.303	
6	A	0 hr	8.0	25.2	8.0	10.8	
	B	24 hr	8.1	24.1	7.1	11.1	
	A	48 hr BR	8.1	24.7	7.1	11.2	
	A	48 hr AR	7.9	24.0	7.1	11.5	
	B	72 hr	8.0	24.9	6.2	11.4	
	A	96 hr	8.1	25.0	6.0	11.6	
7	A	0 hr	8.0	25.3	8.0	12.8	
	B	24 hr	8.1	24.0	7.0	13.2	
	A	48 hr BR	8.1	24.6	7.0	13.0	
	A	48 hr AR	8.0	24.0	7.1	13.1	
	B	72 hr	8.0	25.1	6.2	13.2	
	A	96 hr	8.1	24.8	5.9	13.3	
8	A	0 hr	7.9	25.3	8.0	14.4	
	B	24 hr	8.1	24.0	7.0	14.9	
	A	48 hr BR	8.1	24.3	7.0	14.9	
	A	48 hr AR	8.0	24.0	6.9	15.1	
	B	72 hr	7.9	25.0	5.4	15.4	
	A	96 hr	8.1	24.8	5.8	15.8	
9	A	0 hr	7.9	25.4	8.0	16.3	
	B	24 hr	8.1	24.0	6.7	16.7	
	A	48 hr BR	8.1	24.3	7.0	16.8	
	A	48 hr AR	8.0	24.0	7.1	15.9	
	B	72 hr	8.0	25.3	6.1	15.8	
		96 hr	8.1	24.4	5.7	16.0	
10	A	0 hr	7.9	25.5	7.9	17.9	
	B	24 hr	8.0	24.0	6.2	18.2	
		48 hr BR					
		48 hr AR					
		72 hr					
		96 hr					

Investigators Signatures
Marshall Faircloth
Kasia Cox
Jenna Dana
Bob Hamilton

Reviewed By: Liz Miller

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

Measure/record salinity for marine tests

Comments:

PAGE Pg 54

Appendix C. (continued)

DATE: 3-1-11 DURATION: 96 h TOXICANT : NaCl
SPECIES: ***Ceriodaphnia dubia***

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	2
1.50	20	0
2.00	20	2
2.50	20	17
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: **LC50: 2.28**
95% LOWER CONFIDENCE: 2.18
95% UPPER CONFIDENCE: 2.38

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

-

DATE: 3-1-11 DURATION: 96 h TOXICANT : NaCl
SPECIES: ***Cyprinella leedsi***

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
.00	20	0
6.00	20	1
7.00	20	0
8.00	20	0
9.00	20	16
10.00	20	20

SPEARMAN-KARBER TRIM: 1.67%

SPEARMAN-KARBER ESTIMATES: **LC50: 8.66**
95% LOWER CONFIDENCE: 8.48
95% UPPER CONFIDENCE: 8.84

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: 2/28/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150 ac	4DAYS	MS 110224	25	~~7.8~~ 8.0 2/28/11	20
Menidia beryllina	150 ac	12DAYS	SS 110216	25	8.0	20
						Hardness mg/L
Cyprinella leedsi	200	12DAYS	CL 110216	25	7.8	80
Pimephales promelas	150 ac	7DAYS	FM 110221	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

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

Appendix D. continued

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 3/21/11

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	150 ac	4 DAYS	MS 110317	25	8.0	20
	250	6 DAYS	MS 110315	25	8.0	20
Menidia beryllina	150 ac	12 DAYS	SS 110309	25	8.0	20
	250 cm	9 DAYS	SS 110312	25	8.0	20
						Hardness mg/L
Cyprinella leedsi	150 ac	11 DAYS	CL 110310	25	7.8	80
Pimephales promelas	150 ac	7 DAYS	FM 110314	25	7.8	80
	250	<24 HRS	FM 110320-1610	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

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Notes: _____

Thank you for your order.

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Appendix E. Chemical Analyses performed on the effluent from the Florida Distillers Company – Lake Alfred Facility Outfall D-003, sampled on March 21, 2011.

Date Sampled	Field ID	Station	Analysis	Component	Result	Qualifier	Units	MDL	PQL
3/21/2011 10:35	Effluent	EFF-03	AGP/LN	Algal Growth Potential	8.63		mg DryWt/L	0.3	0.9
3/21/2011 10:35	Effluent	EFF-03	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
3/21/2011 10:35	Effluent	EFF-03	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.6	I	ug/L	0.55	1.7
3/21/2011 10:35	Effluent	EFF-03	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.1	I	mg/L	0.2	2
3/21/2011 10:35	Effluent	EFF-03	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	100	L	LC50		
3/21/2011 10:35	Effluent	EFF-03	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100	L	LC50		
3/21/2011 10:35	Effluent	EFF-03	Metals	Iron	87	I	ug/L	30	120
3/21/2011 10:35	Effluent	EFF-03	Metals	Lead	0.2	U	ug/L	0.2	0.8
3/21/2011 10:35	Effluent	EFF-03	Metals	Sodium	7.7		mg/L	0.5	2
3/21/2011 10:35	Effluent	EFF-03	Metals	Zinc	5	U	ug/L	5	20
3/21/2011 10:35	Effluent	EFF-03	Metals	Aluminum	5.1	I	ug/L	5	20
3/21/2011 10:35	Effluent	EFF-03	Metals	Arsenic	0.82	I	ug/L	0.25	1
3/21/2011 10:35	Effluent	EFF-03	Metals	Copper	1.73		ug/L	0.5	1
3/21/2011 10:35	Effluent	EFF-03	Metals	Nickel	0.25	U	ug/L	0.25	1
3/21/2011 10:35	Effluent	EFF-03	Metals	Silver	0.025	U	ug/L	0.025	0.1
3/21/2011 10:35	Effluent	EFF-03	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
3/21/2011 10:35	Effluent	EFF-03	Metals	Magnesium	8.7		mg/L	0.04	0.16
3/21/2011 10:35	Effluent	EFF-03	Metals	Calcium	42.3		mg/L	0.075	0.3
3/21/2011 10:35	Effluent	EFF-03	Metals	Selenium	0.2	U	ug/L	0.2	0.8
3/21/2011 10:35	Effluent	EFF-03	Metals	Chromium	0.3	U	ug/L	0.3	1.2
3/21/2011 10:35	Effluent	EFF-03	Nutrients	Sulfate	4.1		mg SO4/L	0.2	0.5
3/21/2011 10:35	Effluent	EFF-03	Nutrients	TSS	4	U	mg/L	4	16
3/21/2011 10:35	Effluent	EFF-03	Nutrients	Alkalinity	131		mg CaCO3/L	0.65	2.5
3/21/2011 10:35	Effluent	EFF-03	Nutrients	Fluoride	0.17		mg F/L	0.035	0.1
3/21/2011 10:35	Effluent	EFF-03	Nutrients	Total-P	0.05		mg P/L	0.005	0.05
3/21/2011 10:35	Effluent	EFF-03	Nutrients	Organic Carbon	1.7	I	mg C/L	1	5
3/21/2011 10:35	Effluent	EFF-03	Nutrients	O-Phosphate-P	0.037		mg P/L	0.004	0.01
3/21/2011 10:35	Effluent	EFF-03	Nutrients	Ammonia-N	0.072		mg N/L	0.01	0.02
3/21/2011 10:35	Effluent	EFF-03	Nutrients	Kjeldahl Nitrogen	0.2	I	mg N/L	0.08	0.2
3/21/2011 10:35	Effluent	EFF-03	Nutrients	Chloride	10		mg Cl/L	0.2	0.5
3/21/2011 10:35	Effluent	EFF-03	Nutrients	Color (true)	5.9	I	PCU	2	6
3/21/2011 10:35	Effluent	EFF-03	Nutrients	NO2NO3-N	0.083		mg N/L	0.004	0.01
3/21/2011 10:35	Effluent	EFF-03	Overflow	Oil and Grease	1.4	U	mg/L	1.4	5

Appendix E. continued

Date Sampled	Field ID	Station	Analysis	Component	Result	Qualifier	Units	MDL	PQL
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Azinphos Methyl	0.2	UJ	ug/L	0.2	0.8
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Fonofos	0.1	UJ	ug/L	0.1	0.4
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Metolachlor	0.5	UJ	ug/L	0.5	2
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Alachlor	0.6	UJ	ug/L	0.6	2.4
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Hexazinone	0.1	UJ	ug/L	0.1	0.4
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Norflurazon	0.15	UJ	ug/L	0.15	0.6
3/21/2011 10:35	Effluent	EFF-03	Pesticides	Parathion Ethyl	0.15	UJ	ug/L	0.15	0.6
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3	U	ug/L	3	12
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Benzo(a)anthracene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Benzo(b)fluoranthene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	20
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4

Appendix E. continued

Date Sampled	Field ID	Station	Analysis	Component	Result	Qualifier	Units	MDL	PQL
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Pentachlorophenol	3	U	ug/L	3	12
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	61
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Hexachlorobutadiene	3	U	ug/L	3	12
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8.1
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8.1
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Fluorene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Naphthalene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Phenanthrene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3	U	ug/L	3	12
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Fluoranthene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8.1
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8.1
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2-Chloronaphthalene	1	UJ	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	U	ug/L	40	160
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Acenaphthene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Acenaphthylene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Benzidine	100	UJ	ug/L	100	400
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Benzo(k)fluoranthene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	61
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Chrysene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	UJ	ug/L	5.1	20
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	40

Appendix E. continued

Date Sampled	Field ID	Station	Analysis	Component	Result	Qualifier	Units	MDL	PQL
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Hexachlorocyclopentadiene	3	U	ug/L	3	12
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Hexachloroethane	3	U	ug/L	3	12
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	40
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Anthracene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Benzo(a)pyrene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3	U	ug/L	3	12
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	Pyrene	0.2	U	ug/L	0.2	0.81
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4
3/21/2011 10:35	Effluent	EFF-03	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	61
3/21/2011 10:35	Effluent	EFF-03	Field Parameter	Temperature	24.47		C		
3/21/2011 10:35	Effluent	EFF-03	Field Parameter	pH	8.27				
3/21/2011 10:35	Effluent	EFF-03	Field Parameter	Dissolved Oxygen	8.02		mg/L		
3/21/2011 10:35	Effluent	EFF-03	Field Parameter	Specific Conductance	289		umhos/cm		
3/21/2011 10:15	Blank	BLANK	Metals	Zinc	5	U	ug/L	5	20
3/21/2011 10:15	Blank	BLANK	Metals	Aluminum	5	U	ug/L	5	20
3/21/2011 10:15	Blank	BLANK	Metals	Arsenic	0.25	U	ug/L	0.25	1
3/21/2011 10:15	Blank	BLANK	Metals	Calcium	0.075	U	mg/L	0.075	0.3
3/21/2011 10:15	Blank	BLANK	Metals	Chromium	0.3	U	ug/L	0.3	1.2
3/21/2011 10:15	Blank	BLANK	Metals	Selenium	0.2	U	ug/L	0.2	0.8
3/21/2011 10:15	Blank	BLANK	Metals	Nickel	0.25	U	ug/L	0.25	1
3/21/2011 10:15	Blank	BLANK	Metals	Iron	30	U	ug/L	30	120
3/21/2011 10:15	Blank	BLANK	Metals	Copper	0.5	U	ug/L	0.5	1
3/21/2011 10:15	Blank	BLANK	Metals	Lead	0.2	U	ug/L	0.2	0.8
3/21/2011 10:15	Blank	BLANK	Metals	Silver	0.025	U	ug/L	0.025	0.1
3/21/2011 10:15	Blank	BLANK	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
3/21/2011 10:15	Blank	BLANK	Metals	Sodium	0.5	U	mg/L	0.5	2
3/21/2011 10:15	Blank	BLANK	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
3/21/2011 10:15	Blank	BLANK	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
3/21/2011 10:15	Blank	BLANK	Nutrients	TSS	4	U	mg/L	4	16
3/21/2011 10:15	Blank	BLANK	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
3/21/2011 10:15	Blank	BLANK	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
3/21/2011 10:15	Blank	BLANK	Nutrients	Color (true)	2	U	PCU	2	6

Appendix E. continued

Date Sampled	Field ID	Station	Analysis	Component	Result	Qualifier	Units	MDL	PQL
3/21/2011 10:15	Blank	BLANK	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
3/21/2011 10:15	Blank	BLANK	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
3/21/2011 10:15	Blank	BLANK	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
3/21/2011 10:15	Blank	BLANK	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
3/21/2011 10:15	Blank	BLANK	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
3/21/2011 10:15	Blank	BLANK	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
3/21/2011 10:15	Blank	BLANK	Nutrients	Organic Carbon	1	U	mg C/L	1	5
3/21/2011 10:15	Blank	BLANK	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
3/21/2011 10:15	Blank	BLANK	Overflow	Oil and Grease	1.4	U	mg/L	1.4	5
3/21/2011 10:15	Blank	BLANK	Pesticides	Norflurazon	0.15	UJ	ug/L	0.15	0.6
3/21/2011 10:15	Blank	BLANK	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
3/21/2011 10:15	Blank	BLANK	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
3/21/2011 10:15	Blank	BLANK	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
3/21/2011 10:15	Blank	BLANK	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
3/21/2011 10:15	Blank	BLANK	Pesticides	Alachlor	0.6	UJ	ug/L	0.6	2.4
3/21/2011 10:15	Blank	BLANK	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
3/21/2011 10:15	Blank	BLANK	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
3/21/2011 10:15	Blank	BLANK	Pesticides	Hexazinone	0.1	UJ	ug/L	0.1	0.4
3/21/2011 10:15	Blank	BLANK	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
3/21/2011 10:15	Blank	BLANK	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
3/21/2011 10:15	Blank	BLANK	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
3/21/2011 10:15	Blank	BLANK	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
3/21/2011 10:15	Blank	BLANK	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
3/21/2011 10:15	Blank	BLANK	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
3/21/2011 10:15	Blank	BLANK	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
3/21/2011 10:15	Blank	BLANK	Pesticides	Parathion Ethyl	0.15	UJ	ug/L	0.15	0.6
3/21/2011 10:15	Blank	BLANK	Pesticides	Metolachlor	0.5	UJ	ug/L	0.5	2
3/21/2011 10:15	Blank	BLANK	Pesticides	Azinphos Methyl	0.2	UJ	ug/L	0.2	0.8
3/21/2011 10:15	Blank	BLANK	Pesticides	Fonofos	0.1	UJ	ug/L	0.1	0.4
3/21/2011 10:15	Blank	BLANK	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
3/21/2011 10:15	Blank	BLANK	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
3/21/2011 10:15	Blank	BLANK	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
3/21/2011 10:15	Blank	BLANK	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
3/21/2011 10:15	Blank	BLANK	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1

Appendix E. continued

Date Sampled	Field ID	Station	Analysis	Component	Result	Qualifier	Units	MDL	PQL
3/21/2011 10:15	Blank	BLANK	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Benzidine	97	UJ	ug/L	97	390
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	UJ	ug/L	4.9	19
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12

Appendix E. continued

Date Sampled	Field ID	Station	Analysis	Component	Result	Qualifier	Units	MDL	PQL
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.97	UJ	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.78
3/21/2011 10:15	Blank	BLANK	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.78

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): Florida Distillers Company – Lake Alfred	**Former Names:**
NPDES Permit Number: FL0029017	**Permit Expiration Date:** 12/12/11
Physical Address: 620 Dakota Avenue Lake Alfred, FL 33850	
District: Southwest	**County:** Polk
Function of Facility: Florida Distillers Company operates a cane and citrus molasses fermentation and distillation process to produce ethyl alcohol and vinegar	
Facility Type: Minor	**Permitted Capacity (MGD):** 1.4
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): (1/10-12/10) D-003 0.197 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):

FLW-3 Flow measurement device at Outfall D-003

EFF-3 Outfall D-003

Description of Permitted Outfall(s):

Surface Water Discharge:
An existing 1.4 MGD maximum monthly average daily flow (MADF) discharge to Lake Haines (Class III Fresh water), D-003. The Outfall D-003 is located approximately at latitude 28°05'53"N, longitude 81°43'15"W.

Land Application:
An existing 0.103 MGD maximum monthly average daily flow (MADF) land application system, R-001, including 5.36 acres of sprayfield and a 0.51-ac percolation pond, is located approximately at latitude 28°05'53"N, longitude 81°43'19"W.

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

Wastewater is generated from distillation stills, fermenters, bottling operation, and boiler blowdown. A maximum flow of 0.103 MGD of wastewater is generated from these operations. Wastewater treatment consists of pH adjustment, extended aeration, and clarification. Treated wastewater is either spray-irrigated in 5.36 acres of spray field or discharged to a 0.51-ac percolation pond

In addition to the process wastewater, the facility produces once through and recirculation non-contact cooling water (1.4 MGD), which is combined with stormwater and discharges to Lake Haines (Class III freshwaters) via outfall D-003.

Stormwater from the roof on the north side of the bottling plant and stormwater from the vinegar plant parking lot discharges to Lake Haines via a separate Outfall D-004, which is covered under the Multi-Sector Generic Permit for Stormwater Discharge Associated with Industrial Activity (MSGP).

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)

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
FLOW	MGD			1.4 Monthly Average Daily Flow			Daily	Meter	FLW-3	
BOD5	Mg/L	Max				10.0	Monthly	Grab	EFF-3	
TSS	Mg/L	Max				20.0	Monthly	Grab	EFF-3	
Temperature	C	Max				33.3	Weekly	Instantaneous	EFF-3	
Oil & Grease	Mg/L	Max				5.0	Monthly	Grab	EFF-3	
DO	Mg/L	Min				5.0	Weekly	Grab	EFF-3	
Specific Conductance	µmhos/cm	Max		Report		1275.0	Weekly	Instantaneous	EFF-3	
pH	SU	Max				8.5	Weekly	Grab	EFF-3	
pH	SU	Min				6.0	Weekly	Grab	EFF-3	
Total Nitrogen	Mg/L	Max				Report	Quarterly	Grab	EFF-3	
Nitrate and Nitrite	Mg/L	Max				Report	Quarterly	Grab	EFF-3	
Ammonia, Total as N	Mg/L	Max				Report	Quarterly	Grab	EFF-3	
Unionized Ammonia, Total as N	Mg/L	Max				0.02	Quarterly	Grab	EFF-3	
TKN	Mg/L	Max				Report	Quarterly	Grab	EFF-3	

Appendix F. continued

PART I: Continued	
Receiving Waters: Lake Haines	**Classification (indicate whether fresh or marine):** Class III Fresh

Appendix F. continued

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

The permittee shall comply with the following requirements to evaluate acute whole effluent toxicity of the discharge from outfall D-003.

a. Effluent limitation

(1) Mortality of less than or equal to 20% in the 100% effluent concentration in any "routine" test shall constitute compliance with these permit conditions and Rule 62-302.200(1) and Rule 62-302.500(1)(a)4, F.A.C. Mortality of greater than 20% in the 100% effluent concentration in any test shall constitute unacceptable toxicity. The permittee shall conduct "additional follow-up" tests as described in 3.c. below for any "routine" test for which unacceptable toxicity has been observed.

(2) Whole effluent acute toxicity shall not exceed in any routine test mortality of greater than 50% in the 100% effluent concentration or in any additional follow-up test [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 once every six months, the first starting within 60 days of permit issuance, and lasting for the duration of this permit unless a reduction in the frequency of monitoring is granted in writing by the Department.

(2) Upon completion of four consecutive, valid "routine" tests that demonstrate compliance with the effluent limitation specified in 1.a. (1) and (2) above the permittee may submit a written request to the Department for a reduction in monitoring. 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 frequency shall only become effective upon Department approval.

c. Test Requirements

(1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and one test concentration of 100% **final effluent.**

(2) Additional Follow-up Tests, if required:

(a) If a routine test does not meet the acute toxicity limitation in 3.a.(1) or (2) above, the permittee shall conduct three additional follow-up tests on each species that failed the test.

(b) The first 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. The dilution series may be modified in the second and third test to more accurately bracket the toxicity, such that at least two dilutions above (not to exceed 100% effluent) and two dilutions below the target concentration and a control (0% effluent) are run. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-012.

(c) The first test shall be initiated within two weeks of the end of the failed routine test. The remaining additional follow-up tests shall be conducted weekly thereafter until a total of three valid additional follow-up tests are completed.

(3) The permittee shall conduct 96-hour acute static renewal 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 one single grab sample collected at the effluent during a discharge event. If the duration of the discharge is less than 24-hours, the duration of discharge shall be documented on the chain of custody.

(2) For additional follow-up tests, a single grab sample shall be collected for each test. Results for each additional test shall include the determination of LC50 values with 95% confidence limits.

e. Quality Assurance Requirements

(1) A standard reference toxicant (SRT) quality assurance (QA) acute toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or no more than 30 days before the date of each routine or additional follow-up test conducted. The SRT-QA data shall be submitted with each companion routine or additional follow-up test required.

(2) If the mortality in the control (0% effluent) exceeds 10% for either species in any test, the test for that species (including the control) shall invalidated and the test repeated.

(3) If during any routine separate grab sample test, 100% mortality occurs prior to the end of the test and control mortality is less than 10% at that time, that test (including the control) shall be terminated with the conclusion that the test fails and constitutes non-compliance.

(4) Additional follow-up tests shall be evaluated for acceptability based on the concentration-response relationship, as required by EPA-821-R-02-012, Section 12.2.6.2. and included with the submitted bioassay reports.

Appendix F. continued

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):			
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
1/31/10	Oil & Grease (mg/L)	5.0	7.0
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: 3/21/11	**Sampler(s):** Pete Wenner Jason Cohen
Temperature (Deg C): 24.47	**pH (SU):** 8.27
Dissolved Oxygen (mg/L): 8.02	**Conductivity (umhos/cm):** 289
Total Residual Chlorine (mg/L): N/A	**Total Residual Chlorine - after Disinfection (mg/L):** N/A
Method of Chlorination: N/A	**Method of De-chlorination:** N/A
Flow During Sample Collection for each outfall(MGD): D-003 = 0.216 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): D-003 = 0.197 MGD (1/10-12/10 Latest Data Available on PCS)	
Describe Discharge during Sampling Event: ☐ **Continuous** ☒ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

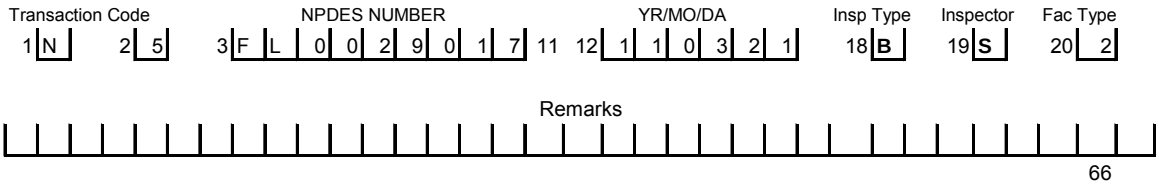
Appendix F. continued

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

Appendix G. EPA End Sheet

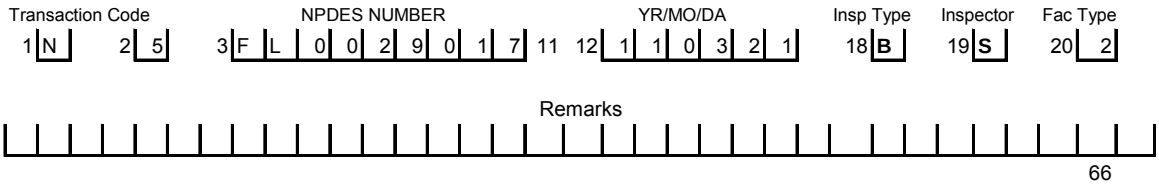
The Bioassay of the Florida Distillers Company - Lake Alfred facility effluent sampled on March 21, 2011. NPDES# FL0029017.

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



The Priority Pollutants Analysis of the Florida Distillers Company - Lake Alfred facility effluent sampled on March 21, 2011. NPDES# FL0029017.

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



Biological Analyses of the Florida Distillers Company - Lake Alfred facility effluent sampled on March 21, 2011. NPDES# FL0029017.

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

