

Effluent Quality Assessment

Green Cove Springs South WWTF

Clay County

NPDES #FL0030210

Sampled October 15-17, 2012 and October 19, 2012

February 2013

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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Green Cove Springs South WWTF, 925 State Road 16 East, Green Cove Springs, Clay County, Florida, 32043. NPDES #FL0030210. Effluent 24-hour flow proportional composite samples for toxicity testing were collected October 15, 2012, October 17, 2012, and October, 19, 2012. Effluent 8-hour flow proportional composite samples for nutrients, total suspended solids and carbonaceous biochemical oxygen demand were collected on October 16, 2012. Effluent grab samples for chemical and biological analysis were collected October 17, 2012.

Introduction

Green Cove Springs South WWTF is a wastewater treatment facility which uses aeration, clarification, filtration and chlorination to treat domestic wastewater. (See Appendix F for detailed facility information provided by Kyle Watson of FDEP Northeast District.)

Methods

Samples were collected from the EFD-1 NPDES sampling point for Outfall D-001 by Eesa Ali and Jeremy Parrish FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/bars/sas/sop/index.htm.

See Appendix A for the completed chain of custody form.

The chronic definitive toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_05, TA07_09, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.dep.state.fl.us/water/sas/sop/index.htm.

Results and Discussion

- **Toxicity Test Results**
  Tests were performed October 16 - 23, 2012.

  Ceriodaphnia dubia chronic definitive bioassay – NOEC: 100%
  IC25: 98.2%*

  Pimephales promelas chronic definitive bioassay – NOEC: 100%
  IC25:>100%

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

  *Mean reproduction in the control was 15.7 neonates; mean reproduction in 100% sample was 15.2 neonates. These means are not significantly different. The IC25 calculated as 98.2% sample due to data smoothing in the calculation.

  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 202.0 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) determined that AGP values above 5.0 mg dry weight/L represent a “problem” threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen-limited (Miller et al 1978).

  See Table 1 for AGP results and qualifiers.

- **Chemistry Results**
  Total residual chlorine was undetected in the effluent on October 15, 2012, October 17, 2012, and October 19, 2012 during the collection of toxicity samples. Total ammonia was not detected in bioassay sample # 1 but was detected in bioassay samples # 2 (0.049 mg N/L) and # 3 (0.040 mg N/L) in the bioassay laboratory. The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.011 I mg N/L. Unionized ammonia cannot be calculated for the 8-hour flow proportioned composite sample because temperature, salinity, and pH were not measured. In addition to the composite nutrient samples, a grab sample was collected as well. The total ammonia concentration in the grab sample was 0.015 I mg N/L. Based on the pH, salinity, and temperature of the effluent grab sample when collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

  Nickel and zinc were detected in the effluent at levels that comply with Class III Freshwater Quality Criteria (62-302.530, F.A.C.). Arsenic, chromium-III, and copper were detected between the minimum detection limit (MDL) and practical quantitation limit (PQL).

  Dissolved oxygen, pH, conductivity and temperature of the effluent complied with Class III Freshwater Quality Criteria and/or permit limits. Carbonaceous Biochemical Oxygen Demand (CBOD) was detected between the MDL and PQL and complied with permit limits. Fluoride was detected at a level that complies with Class III Freshwater Quality Criteria.

  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 EFD-1 NPDES sampling point for this facility on October 15, 17, and 19, 2012, were not chronically toxic to either test species during the chronic 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 October 16-17, 2012 did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

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

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

Table 1. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN) and total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the Green Cove Springs South WWTF on October 17, 2012.

Green Cove Springs South WWTF NPDES#FL0030210					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
EFD-1	202.0	144.8 ± 29.0	165.3 ± 33.1	1.1	1.1

Table 2. Effluent limits, Class III Freshwater Criteria, chemical data, and microbiological data for samples collected from the Green Cove Springs South WWTF on October 16-17, 2012

Green Cove Springs South WWTF NPDES#FL0030210	Class III Criteria	Effluent Limits	EFD-1 8h FPC 10-16	EFD-1 Grab
Organic Constituents (µg/L)				
None Detected	-	-	None Detected	
Metals (µg/L unless otherwise noted)				
Aluminum	-	-	-	11 I
Arsenic	≤ 50	-	-	0.61 I
Cadmium	≤ 0.42 b	-	-	0.05 U
Calcium (mg/L)	-	-	-	46.1
Chromium-III	≤140 b	-	-	0.38 I
Copper	≤ 15.5 b	-	-	0.92 I
Iron	≤ 1,000	-	-	30 U
Lead	≤ 6.75 b	-	-	0.2 U
Magnesium (mg/L)	-	-	-	15.9
Nickel	≤ 86.0 b	-	-	1.49
Selenium	≤ 5.0	-	-	0.2 U
Silver	≤ 0.07	-	-	0.025 U
Sodium	-	-	-	55.9
Zinc	≤ 198 b	-	-	30
Nutrients (mg/L)				
Ortho-phosphate	-	Report	-	3.4
Total Phosphorus	-	Report	4.1	3.9
Total Ammonia	-	Report	0.015 I	0.011 I
Un-ionized Ammonia	≤ 0.02 s	≤ 0.02 c	-	< 0.02 c
Nitrate and Nitrite	-	Report	2.6	3.8
Total Kjeldahl Nitrogen	-	Report	0.66	0.55
Organic Nitrogen	-	-	0.645 c	0.539 c
Total Nitrogen	-	Report	3.26 c	4.35 c
Organic Carbon	-	-	-	6.5
General Physical and Chemical Parameters				
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0	-	7.5
pH (SU)	6.0 - 8.5	6.0 - 8.5	-	7.1
Conductivity (µmhos/cm)	≤ 1,275	-	-	669
Temperature (°C)	-	Report	-	26.3
Sample Depth (m)	-	-	-	0.15
Alkalinity	-	-	-	117
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	-	0.00*
Total Suspended Solids (mg/L)	-	≤ 60.0 s	2 U	-
CBOD, 5 day (mg/L), N - inhibited	-	≤ 60.0 s	0.99 IQ	-
Chloride (mg/L)	-	-	-	70
Fluoride (mg/L)	≤ 10.0	-	-	0.46
Sulfate (mg/L)	-	-	-	68
Flow (MGD)	-	≤ 0.500 a	-	0.37 a
Hardness (mg $CaCO_3$)	-	-	-	181 c
Microbiology (Number of colony forming units/100ml)				
Fecal Coliforms ¥	≤ 400s #	≤ 800 s	-	2 U

"-" Sample/measurement was not collected or criterion/limit does not exist

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

Q - Sample held beyond normal holding time

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

¥ - Fecal coliform analysis performed by Columbia Analytical Services - FL Overflow Laboratories for NED

- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)

*-Total Residual Chlorine was measured in the field 10/15/12, 10/17/12, and 10/19/12 with the toxicity sample collection.

J - Estimated value (appears in Appendix E)

L - Actual value is known to be greater than value given (appears in Appendix E)

Appendix A. Chain of Custody Form

Check box if data qualified

NED FD0511 **Florida Department of Environmental Protection *North East District* Field sheet**

Sample Project South plant 3YI — Lab request # 1212 00-15-612
Collected By JP/EA — Date Collected 10/15/12

Lab ID #	Storet#	Site Name	Matrix:Water Surface Fresh ☐ Surface Salt ☐ Effluent ☒	Comments Air temp TRC 00 Wind pp/ dir 10/14 – 10/15 9.96mg/l 1.1°C pick-up
		South Plant Effluent 24hr composite		

Time	Total depth(m)	Sample depth(m)	Temp °C	Conductivity µmhos	Salinity ‰	pH s.u.	D.O. mg/L	D.O. % sat	Secchi m	Vel. ft./sec	Tide Ebb/Fld Slack	Turb NTU
935	1	0.5	26.9	663	0.3	7.18	7.24	90.5	—	—	—	—

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler(HS), Grab(G), Pole(P)		Preservation	Suite	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	☐HS ☐G ☐P	Ice& H_2SO_4 <2 pH*		
G / C / Na	Ortho Phosphorous	☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD	☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll, Phaeophytin ½ secchi ½ tot depth	☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4	☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS	☐HS ☐G ☐P	HNO_3 <2 pH*		
G / C / Na	Other:Tox, BNA, Pest, O&G, AGP, CN, _____	☐HS ☐G ☐P	Ice/	C	
G / C / Na	Microbiology: Fecal Coliform	☐HS ☐G ☐P	Ice		

Lab ID #	Storet#	Site Name	Matrix:Water Surface Fresh ☐ Surface Salt ☐ Effluent ☐	Comments
		peristalic auto-sampler		

Time	Total depth(m)	Sample depth(m)	Temp °C	Conductivity µmhos	Salinity ‰	pH s.u.	D.O. mg/L	D.O. % sat	Secchi m	Vel. ft./sec	Tide Ebb/Fld Slack	Turb NTU

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler(HS), Grab(G), Pole(P)		Preservation	Suite	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	☐HS ☐G ☐P	Ice& H_2SO_4 <2 pH*		
G / C / Na	Ortho Phosphorous	☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD	☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll, Phaeophytin ½ secchi ½ tot depth	☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4	☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS	☐HS ☐G ☐P	HNO_3 <2 pH*		
G / C / Na	Other:Tox, BNA, Pest, O&G, AGP, CN, _____	☐HS ☐G ☐P	Ice/		
G / C / Na	Microbiology: Fecal Coliform	☐HS ☐G ☐P	Ice		

Lab ID #	Storet#	Site Name	Matrix:Water Surface Fresh ☐ Surface Salt ☐ Effluent ☐	Comments

Time	Total depth(m)	Sample depth(m)	Temp °C	Conductivity µmhos	Salinity ‰	pH s.u.	D.O. mg/L	D.O. % sat	Secchi m	Vel. ft./sec	Tide Ebb/Fld Slack	Turb NTU

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler(HS), Grab(G), Pole(P)		Preservation	Suite	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	☐HS ☐G ☐P	Ice& H_2SO_4 <2 pH*		
G / C / Na	Ortho Phosphorous	☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD	☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll, Phaeophytin ½ secchi ½ tot depth	☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4	☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS	☐HS ☐G ☐P	HNO_3 <2 pH*		
G / C / Na	Other:Tox, BNA, Pest, O&G, AGP, CN, _____	☐HS ☐G ☐P	Ice/		
G / C / Na	Microbiology: Fecal Coliform	☐HS ☐G ☐P	Ice		

Relinquished	Date	Time	Shipping	Received	Date/Time
C. Mm	10/15/12	1335	FEDEX	ARR	10/16/12 09:30

*All acid preserved samples are with 2ml of (1to1) acid unless noted otherwise. H_2SO_4 Lot #_____ HNO_3 Lot #_____

Patrick O'Connor (PWO) / Jeremy Parrish (JP) / Chuck Plank (CP) / Jann Gruentzel (JG) / Sharon Piltz (SP) / Eesa Ali (EA) / Jake Mast (JM) / Bipin Adhyaru (BA) / Tom Kallemeyn (TK) All samples collected and handled per DEP SOP FS 1000,2000,2100,2400,FC 1000

2nd COC 10.16.12 @ 9.41
B. Alexander

Florida Department of Environmental Protection

Event ID *

Request Number: RQ-2012-10-15-42
FYI3 South Plant-Green Cove Springs Sampling Inspection

Central Laboratory Sample Submittal Form

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

Requester: Michelle Fish
Collected By: Eesa Ali & Jeremy Parrish
Sampling Agency: DEP-NE
Field Report Prepared By: Eesa Ali
Send Final Report To: Tom Rauth

Lab ID *: Location: South Green Cove Springs WWTF EFD-1
☑ Comp ☐ Grab | Collection (comp begin or grab) Eastern Central: Date 10-16-12 Time 0600 | Composite end Eastern Central: Date 10-16-12 Time 1400 | Bottle Group(s)**: C
Field ID: 8hr Flow Proportional Sample
Tot Res Chlorine (mg/L): | Diss Oxygen (mg/L): | Storet Station Number:
Matrix (include type e.g. Salt, Fresh, etc): wastewater | Temp (C): | pH:
Sample Depth ☐ m ☐ ft | ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) | NPDES Number:
Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms
Comments: CBOD, nutrients, TSS collected by WWTF

Lab ID *: Location: South ~~Green~~ GCS WWTF EFD-1
☑ Comp ☐ Grab | Collection (comp begin or grab) Eastern Central: Date 10-16-12 Time 0600 | Composite end Eastern Central: Date 10-17-12 Time 0600 | Bottle Group(s)**: C
Field ID: 24-hr FPC
Tot Res Chlorine (mg/L): 0.00 | Diss Oxygen (mg/L): | Storet Station Number:
Matrix (include type e.g. Salt, Fresh, etc): wastewater | Temp (C): | pH:
Sample Depth ☐ m ☐ ft | ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) | NPDES Number:
Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms
Comments: Toxicity collected by DEP TRC=0.00

Lab ID *: Location: South GCS WWTF EFD-1
☐ Comp ☑ Grab | Collection (comp begin or grab) Eastern Central: Date 10/17/12 Time 730 | Composite end Eastern Central: Date Time | Bottle Group(s)**: A
Field ID: GRAB
Tot Res Chlorine (mg/L): 0.00 | Diss Oxygen (mg/L): 7.5
Matrix (include type e.g. Salt, Fresh, etc): Juke water | Temp (C): 26.25 | pH: 7.07
Sample Depth ☑ m 0.15 ☐ ft | 0.3 ☑ Salinity (PPTh) 669 ☑ Sp Conductance (umho/cm) | NPDES Number:
Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms
Comments: direct grab

Lab ID *: Location: Field Blank
☐ Comp ☑ Grab | Collection (comp begin or grab) Eastern Central: Date 10-17-12 Time 721 | Composite end Eastern Central: Date Time | Bottle Group(s)**: BB Q
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: Suite D-"24hr FPC Blank" will be sent after sampler is cleaned.

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
E. Ali	10-17-12	Fed Ex	ABP	10-18-12				

09:10 2 bioassy 9:45, 10.18.12 B. Brannen

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

NED FD0511 **Florida Department of Environmental Protection *North East District* Field sheet**

Check box if data qualified ☐

Sample Project Green Cove 3XI FL0030210 Lab request # 2012-10-15-42

Collected By JP/EA Date Collected 10/19/12

Lab ID #	Storet#	Site Name	Matrix:Water	Comments
121514	N/A	Green Cove South EFF-D composite 24 hr.	Surface Fresh ☐ Surface Salt ☐ Effluent ☐ wastewater	Air temp ____ Wind pp/ dir ____ 1.0 °C

Time	Total depth(m)	Sample depth(m)	Temp °C	Conductivity µmhos	Salinity ‰	pH s.u.	D.O. mg/L	D.O. % sat	Secchi m	Vel. ft./sec	Tide Ebb/Fld Slack	Turb NTU
1000		0.7	26.5	0674	0.33	7.06	7.44	92.7	VSB	TRC=0.00		

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler(HS), Grab(G), Pole(P)		Preservation	Suite	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	☐HS ☐G ☐P	Ice& H_2SO_4 <2 pH*		
G / C / Na	Ortho Phosphorous	☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD	☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll, Phaeophytin ½ secchi ½ tot depth	☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4	☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS	☐HS ☐G ☐P	HNO_3, <2 pH*		
G / C / Na	Other:Tox, BNA, Pest, O&G, AGP, CN, _____	☐HS ☐G ☐P	Ice/	C	JP
G / C / Na	Microbiology: Fecal Coliform	☐HS ☐G ☐P	Ice		

Lab ID #	Storet#	Site Name	Matrix:Water	Comments
121514	Equipment BLANK	(composite Samplers)	Surface Fresh ☐ Surface Salt ☐ Effluent ☐	

Time	Total depth(m)	Sample depth(m)	Temp °C	Conductivity µmhos	Salinity ‰	pH s.u.	D.O. mg/L	D.O. % sat	Secchi m	Vel. ft./sec	Tide Ebb/Fld Slack	Turb NTU
1107												

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler(HS), Grab(G), Pole(P)		Preservation	Suite	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	☐HS ☐G ☐P	Ice& H_2SO_4 <2 pH*		
G / C / Na	Ortho Phosphorous	☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD	☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll, Phaeophytin ½ secchi ½ tot depth	☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4	☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS	☐HS ☐G ☐P	HNO_3,<2 pH*		
G / C / Na	Other:Tox, BNA, Pest, O&G, AGP, CN, BLANK	☐HS ☐G ☐P	Ice/	D	EA
G / C / Na	Microbiology: Fecal Coliform	☐HS ☐G ☐P	Ice		

Lab ID #	Storet#	Site Name	Matrix:Water	Comments
			Surface Fresh ☐ Surface Salt ☐ Effluent ☐	

Time	Total depth(m)	Sample depth(m)	Temp °C	Conductivity µmhos	Salinity ‰	pH s.u.	D.O. mg/L	D.O. % sat	Secchi m	Vel. ft./sec	Tide Ebb/Fld Slack	Turb NTU

Grab/Composite Not applicable	Parameter/Method Horizontal Sampler(HS), Grab(G), Pole(P)		Preservation	Suite	Initials
G / C / Na	Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	☐HS ☐G ☐P	Ice& H_2SO_4 <2 pH*		
G / C / Na	Ortho Phosphorous	☐HS ☐G ☐P	Ice & .45µm filtered		
G / C / Na	BOD/CBOD	☐HS ☐G ☐P	Ice		
G / C / Na	Chlorophyll, Phaeophytin ½ secchi ½ tot depth	☐HS ☐G ☐P	Ice		
G / C / Na	Physical Aggregate:TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4	☐HS ☐G ☐P	Ice		
G / C / Na	Metals: ICP,ICPMS	☐HS ☐G ☐P	HNO_3,<2 pH*		
G / C / Na	Other:Tox, BNA, Pest, O&G, AGP, CN, _____	☐HS ☐G ☐P	Ice/		
G / C / Na	Microbiology: Fecal Coliform	☐HS ☐G ☐P	Ice		

Relinquished	Date	Time	Shipping	Received	Date/Time
	10/19/12	1130	FEDEX	10-20-12 0900 M. Fairclath	

*All acid preserved samples are with 2ml of (1to1) acid unless noted otherwise. H_2SO_4 Lot #_____ HNO_3 Lot #_____

Patrick O'Connor (PWO) / Jeremy Parrish (JP) / Chuck Plank (CP) / Jann Gruentzel (JG) / Sharon Piltz (SP) / Eesa Ali (EA) / Jake Mast (JM) / Bipin Adhyaru (BA) / Tom Kallemeyn (TK) All samples collected and handled per DEP SOP FS 1000,2000,2100,2400,FC 1000

2 coolers (3 Jug total) + 3 Jug Wkbtl = 0.1°C

2 Jug Red = 0.4°C

Appendix B. Bench Sheets

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia

Facility: Green Cove Springs South WWTF
Address: 925 State Road 16 East Green Cove Springs
County: CLAY Zip Code 32043
NPDES Permit #: FL 0030210
Contact/District: Eesa Ali / Northeast

LIMS entry: 11-5-12 MF verified: 11.5.12 BA

Diluent/ Batch: SDMHW
~~20% DMW~~ MF 10-10-12 Test Days Used: 0 - 4
~~20% DMW~~ 10-11-12 Test Days Used: 5 - 8

SOP#: TA07_05 EPA 821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #: 10-16-12
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: ☑ YCT ☐ *P. subcapitata*
Food Batch: 9-10-12 6-7-12
Chamber size : 30 ml
Sample volume : 20 ml

Sample Received	LAB Sample #	LIMS JOB #	LIMS SAMPLE #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2012-10-16-66	1461661	10-15-12 0900	10-16-12 0940
Test Day 2	2	TLH-2012-10-18-54	1462377	~~10-17-12~~ 10-18-12 INV MF	10-18-12 0945
Test Day 4	3	TLH-2012-10-23-01	1463103	10-19-12 1000	10-20-12 0900

* 10-17-12 0600 MF

Water Quality Parameters	Batch # 10.16.12 SDMHW ~~20% DMW~~ MF	~~20% DMW~~	NA Sample 1	NA Sample 2	NA Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	0.0	0.0	0.0		~~BA~~ NE DH	MF
Lab Total Residual Cl_2 (mg/L):	<0.03 MF		<0.03	<0.03	<0.03		BA	MF
Alkalinity (mg/L as $CaCO_3$):	<20 182		113	127	118		HW/BA	MF
Hardness (mg/L as $CaCO_3$):	89		174	176	178		HW/BA	MF
Total Ammonia (mg/L as N):	<0.017		<0.017	0.049	0.040		MF	BA
Conductivity (~~µmhos~~) mmhos:	2.41		679	670	636		BA/MF	MF/BA
Salinity (ppth):								

Test Incubated in: Incubator #: 2

Temperature Shipped ≤ 6° C (all samples) (yes) no
Holding Time ≤ 36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min. 24.9 max. 28.6 mean —
Room B246 min. ____ max. ____ mean ____
~~Test~~ B246 min. 24.3 max. 25.7 mean —

Loaded by: BA

Test Replicates	Loaded from culture vial
1	A7
2	A8
3	A9
4	A14
5	A22
6	A23
7	A24
8	A29
9	A18
10	B5

Results	
Control % CV:	59.4%
Dunnetts PMSD:	47.3%
Reproduction NOEC:	100 %
Reproduction LOEC:	>100
Survival NOEC:	100 %
Survival LOEC:	>100 %
ICP_{20}:	88.6 %
ICP_{25}:	98.2 %

Investigators' signatures
Marshall Faircloth
Boyce Alexander
Hans Wulff

Liz Mercer
REVIEWER

Comments: Test aerated at ~100 bubbles per minute for 15 minutes to reduce D.O. from 10.1 mg/L to 7.0 mg/L BA 10.16.12

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Green Cove Springs South WWTF

LIMS Sample #: 146161 for lab sample #1

Start Date: 10.16.12 Time: 10:45

End Date: 10-24-12 Time: 1030

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	0	0	0	0	0	0	1	3	0	mf 7/8	10	0.8
	4	0	0	0	0	0	0	0	1S	0	0	0	10	0
	5	9 1	7	X0	0	7	9	8	8	6	5	50	9	5.0
	6	13	5	|	1	6	13	9	8	8	0	64	9	6.4
	7	0	0	|	4	0	0	6	mf4	–	1	11 0nf	9	1.1
	8	0	13	1	0	4	7	NC	NC	NC	0	24	9	2.4
	Total	17	25	0	5	17	29	23	18	17	6	157	9	15.7

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
6.25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	2	4	5	0	4	0	5	4	0	0	24	10	2.4
	4	0	0	8	2	0	7	0	0	0	0	17	10	1.7
	5	8	9	0	0	8	8	6	6	8	0	53	10	5.3
	6	12	12	13	10	11	8	10	8	0	0	84	10	8.4
	7	–	–	–	0	–	–	–	–	1S	7	23	10	2.3
	8	NC	NC	NC	11	NC	NC	NC	NC	0	1S	11	10	1.1
	Total	22	25	26	23	23	23	21	18	23	8	212	10	21.2

Organisms loaded by: BA

Day	Counted/ verified by:	Concentrations prepared by:
0	SM	BA
1	BA	BA
2	MF	MF
3	MF	MF
4	MF	MF
5	MF	MF
6	MF	MF
7	BA	BA
8	MF	—

Concentration	Mean neonates /adult	% survival
Control	15.7	90
6.25%	21.2	100
12.50%	21.2	100
25% 22	~~21.2~~	100
50%	22.5	100
100%	15.2	90

Test acceptability		
Mean control reproduction 15/female	(yes)	no
3rd brood in 60% of surviving females	(yes)	no
Control survival ≥ 80%:	(yes)	no

Comments: S= split NC= No count (4th brood)

*Day 0 is test initiation day
X = Dead (original organism)

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Green Cove Springs South WWTF

LIMS Sample # : 1461616 for lab sample #1

Start Date: 10.16.12 Time: 10:45

End Date: 10-24-12 Time: 1030

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
12.50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	3	3	0	4	5	4	5	2	0	27	10	2.7
	4	8	0	1S	0	0	0	0	0	0	0	8	10	0.8
	5	0	10	0	0	9	10	10	9	6	3	57	10	5.7
	6	11	12	12	4	14	4	0	11	11	5	84	10	8.4
	7	2	-	OM	10	-	-	11	-	-	0	23	10	2.3
	8	NC	NC	3	0	NC	NC	NC	NC	NC	10	13	10	1.3
	Total	21	25	19	14	27	19	25	25	19	18	212	10	21.2

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	4	4	0	2	2	0	4	3	0	22	10	2.2
	4	8	0	10	0	0	0	0	0	0	0	18	10	1.8
	5	0	10	0	3	7	8	8	10	9	3	58	10	5.8
	6	11	11	15	4	11	10	10	14	7	13	106	10	10.6
	7	-	-	-	7	-	-	0	-	-	0	7	10	0.7
	8	NC	NC	NC	NC	NC	NC	0	NC	NC	9	9	10	0.9
	Total	22	25	29	14	20	20	18	28	19	25	220	10	22.0

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	4	0	0	0	1	0	0	0	9	10	0.9
	4	8	0	0	0	0	0	0	0	0	3	11	10	1.1
	5	0	10	0	9	0	9	4	9	6	9	57	10	5.7
	6	11	6	16	5	3	10	5	12	1S	0	68	10	6.8
	7	-	11	10	11	11	11	-	0	11	11	76	10	7.6
	8	NC	NC	NC	NC	0	NC	NC	4	0	NC	4	10	0.4
	Total	23	27	30	25	14	30	10	25	18	23	225	10	22.5

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
100%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	3	0	0	0	3	10	0.3
	4	0	0	5	0	0	0	0	4	0	0	9	10	0.9
	5	3	5	0	X	0	M	0	0	8	0	16	9	1.6
	6	12	4	12	|	4	@	0	9	11	0	48	9	4.8
	7	7	8	0	|	5	0	2	12	0	0	34	9	3.4
	8	NC	NC	10	|		4	10	NC	12	6	42	9	4.2
	Total	22	17	27	0	5	4	15	25	31	6	152	9	15.2

Comments:

S = split brood

@ = aborted

NC = 4th count

*Day 0 is test initiation day

X = Dead (original organism)

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Green Cove Springs South WWTF SOP TA07_05

LIMS Sample #: 146161 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample					Old Sample				
			Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample	Control	M	7.2	24.5	7.0	341 BA					
	1	6.25%	M	7.2	24.1	7.5	332					
	1	12.5%	M	7.2	24.0	7.6	354					
	1	25%	M	7.2	24.0	7.7	400					
	1	50%	M	7.3	24.0	7.8	492					
	1	100%	M	7.4	24.0	8.0	679					
	Measured by:			BA	BA	BA	BA					
	Recorded by:			BA	BA	BA	BA					
Day 1	sample:	Control	M	7.4	25.1	6.7	308	M	7.7	24.0	7.0	359
	1	6.25%	M	7.5	25.0	6.7	331	M	7.7	24.0	7.1	386
	1	12.5%	M	7.5	24.9	6.8	354	M	7.7	24.0	7.4	393
	1	25%	M	7.5	24.7	6.9	397	M	7.7	24.0	7.4	439
	1	50%	M	7.5	24.6	7.0	485	M	7.7	24.0	7.4	533
	1	100%	M	7.5	24.5	7.0	666	M	7.7	24.0	7.2	747
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 2	sample:	Control	M	8.0	25.0	8.2	302	M	8.0	24.0	8.2	339 MF
	2	6.25%	M	8.0	25.1	8.2	324	M	8.1	24.1	8.3	347
	2	12.5%	M	8.0	24.8	8.2	345	M	8.1	24.6	8.3	365
	2	25%	M	8.0	24.5	8.2	385	M	8.1	24.5	8.4	419
	2	50%	M	7.9	24.5	8.2	464	M	8.0	24.4	8.4	514
	2	100%	M	7.8	24.4	8.3	628	M	8.0	24.5	8.3	696
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 3	sample:	Control	M	8.0	24.7	7.8	313	M	8.1	24.5	7.7	360
	2	6.25%	M	8.0	24.8	7.9	339	M	8.2	24.7	7.8	369
	2	12.5%	M	8.0	24.8	7.8	361	M	8.2	25.1	7.8	376
	2	25%	M	8.0	24.9	7.8	403	M	8.1	25.1	7.9	418
	2	50%	M	8.0	24.8	7.8	480	M	8.1	24.9	7.7	516
	2	100%	M	8.1	24.8	7.7	647	M	8.1	24.9	7.8	734
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF

Comments:

Replicate M= "Metered" vial, a surrogate vial for parameters

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Green Cove Springs South WWTF SOP TA07_05

LIMS Sample #: 1461661 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample					Old Sample				
			Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	sample:	Control	M	7.9	24.1	8.2	315	M	8.0	24.6	8.3	335
	3	6.25%	M	7.9	24.4	8.3	339	M	8.0	24.6	8.4	352
	3	12.5%	M	7.8	24.6	8.4	362	M	7.9	24.7	8.5	377
	3	25%	M	7.9	24.6	8.3	404	M	7.9	24.6	8.5	426
	3	50%	M	7.9	24.4	8.2	484	M	7.9	24.3	8.4	526
	3	100%	M	7.9	24.4	8.1	655	M	7.9	24.2	8.3	715
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 5	sample:	Control	M	8.2	24.5	7.8	307	M	8.1	24.6	8.3	333
	3	6.25%	M	8.1	24.7	7.9	338	M	8.2	24.2	8.2	377
	3	12.5%	M	8.1	24.6	8.0	362	M	8.1	24.9	8.4	370
	3	25%	M	8.1	24.6	8.1	403	M	8.0	25.1	8.2	412
	3	50%	M	8.1	24.5	8.2	486	M	8.0	25.1	8.0	504
	3	100%	M	8.0	24.4	8.2	658	M	8.0	24.8	8.1	720
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 6	sample:	Control	M	8.2	24.2	7.9	314	M	8.3	24.7	8.2	341
	3	6.25%	M	8.2	24.9	8.0	336	M	8.2	24.7	8.1	368
	3	12.5%	M	8.2	24.9	8.0	359	M	8.2	25.0	8.0	374
	3	25%	M	8.1	24.9	8.0	403	M	8.2	25.1	8.0	420
	3	50%	M	8.1	24.9	8.0	487	M	8.1	25.2	8.0	510
	3	100%	M	8.2	25.0	8.0	655	M	8.1	25.1	8.0	696
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 7	sample:	Control	M	7.5	25.0	7.6	308	M	7.7	25.1	7.5	388
	3	6.25%	M	7.4	25.0	7.7	325	M	7.7	24.0	7.7	368
	3	12.5%	M	7.5	24.9	7.8	346	M	7.7	24.0	7.7	376
	3	25%	M	7.5	25.0	7.8	383	M	7.7	24.0	7.7	409
	3	50%	M	7.5	24.9	7.8	468	M	7.7	24.0	7.7	495
	3	100%	M	7.6	24.9	7.8	637	M	7.7	24.0	7.5	716
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA

			pH	Tem	DO	Cond
	~~MC~~	M	8.1	24.7	7.8	336
	6.25%	M	8.0	24.9	7.7	355
	12.5%	M	8.0	25.2	7.7	377
	25%	M	8.0	25.4	7.7	419
	50 %	M	7.9	25.5	7.7	509
	100%	M	7.9	25.3	7.7	656
	~~Measured by:~~ MF	MF	MF	MF	MF	MF

Comments:

Day 8 old

Replicate M= "Metered" vial, a surrogate vial for parameters

Test Page 5 of 6

PAGE 65

revised 07/15/08 MF

Test ID: Green Cove Springs South WWTF Dates: October 16–24, 2012

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 M. Faircloth 10-30-12

V 1.1 9/21/10 MF/jd

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: Green Cove Springsouth WWTP
Address: 925 State Rd. 16 East, Green Cove Springs
County: Clay
NPDES Permit #: FL0030210
Contact/District: Ellen Ali/Northeast

Diluent/ Batch:
MHW / 9.28.12 Test Days Used: 0-6
MHW /_____ Test Days Used: _____
ASW /_____ Test Days Used: _____
ASW /_____ Test Days Used: _____

Test Species (circle one)
(P. promelas) SOP#: TA07_09 EPA-821-R-02-013 Method 1000.0
M. beryllina SOP#: TA07_14 EPA-821-R-02-014 Method 1006.0

Start Date: 10.16.12 Time: 1330
End Date: 10-23-12 Time: 1000

Organism age : ~~1 days~~ <24 hrs MF
Feeding Prior to Test and Daily
Artemia Lot # : 08812
Chamber size : 1000 ml
Test volume : 500 ml

Artemia Batch #			
Day 0	135-12	Day 4	139-12
Day 1	136-12	Day 5	140-12
Day 2	137-12	Day 6	141-12
		Day 3	138-12

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2012-10.16-66	1461661	10-15-12 0900	10-16-12 0940
Test Day 2	2	TLH-2012-10-18-54	1462377	(A) ~~10-15-12 0900~~ 10-17-12 0600 MF	10-18-12 0945
Test Day 4	3	TLH-2012-10.23-01	1463103	10-19-12 1000	10-20-12 0900

(A) 10-17-12 0600 Sent for MF

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3	1	2	3
Sample:	0.0	0.0	0.0	<0.03	<0.03	<0.03	113	127	118	174	176	178
Diluent/Control:				<0.03			75			96		
Method:				Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	MF	District	Personnel	BA	BA	BA	HW	HW	BA	HW	HW	BA
Verified by:	MF	MF	MF	~~BA~~ MF	MF	MF	MF	MF	MF	MF	MF	MF

	Conductivity (circle one) (µmhos-cm) mmhos-cm)			Ammonia (mg/L)			Salinity (ppth)		
Lab Sample#:	1	2	3	1	2	3	1	2	3
Sample:	337	670	636	<0.017	0.049	0.040	—	—	—
Diluent/Control:	677	~~670~~ MF	—	~~0.049~~ MF	<0.017		—	—	—
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler
Measured by:	BA	BA	MF	MF	MF	MF			
Verified by:	~~BA~~ MF	MF							

Lims entry 11-5-12 MF
Verification 11-5-12 BA

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 3 min. 24.1 max. 26.2 mean —
Water bath # ____ min.____ max.____ mean____
Room B246 min. 24.3 max. 25.7 mean —

Statistics	
Growth NOEC:	100 %
Growth LOEC:	>100 %
Growth IC_{20}:	>100 %
Growth IC_{25}:	>100 %
Ctrl % CV:	8.02
Dunnetts PMSD:	17.6%
Survival NOEC:	100 %
Survival LOEC:	>100 %

Investigators' signatures
Brian Thrift
Marshall Faircloth
Ken Walker

REVIEWER

Comments: Test aerated @ 100 bubbles/minute for 15 minutes to reduce DO. from 10.1 mg/L to 7.0 mg/L, BA 10.16.12

00050

revised 08/24/06 MF/SP

Chronic Bioassay Survival Benchsheet

Facility: Green Cove Springs South WWTF

LIMS Sample Number: 146166 1
(for Lab Sample # 1)

Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
***P. promelas* SOP TA07_09 *M. beryllina* SOP TA07_14**

Organism: (*P. promelas*) *M.beryllina* (circle one)

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10	10	10	10
	B	10	10	8 9	9	9	10*	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 6.25 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	9 10	9	9
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 12.5 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 25 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	9 10	9	9	8 10
	C	10	10	9 10	9	9	9	9	9
	D	10	10	10	10	10	10	10	10
Sample 50 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	9 10	9	9	9
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 100 %	A	10	10	10	10	10	10	10	10
	B	10	10	9 10	9	9	9	9	9
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: BA	Checked by:		BA	HW	BA	BA	BA	BA	BA
Verified by:									

Comments: * 10 alive, day 5. Replicate miscounted day 2-4. BA 10.21.12

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Chronic Bioassay Parameters Bench Sheet

***P. promelas* and *M. beryllina* SOP TA07_09 and TA-07_15** parameter pg. 1

Sample Source: Green Cove Springs South WWTF — Start Date: 10.16.12 — End Date: 10-23-12

LIMS Sample #: 146161 (for Lab sample #1) — Start Time: 1330 — End Time: 1000

conc = concentration — rep = replicate — circle umhos or mmhos

Test Day			Before Renewal							After Renewal						
		Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth		Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	
Day 0	sample:	Control	A	7.2	24.7	7.0	337									
	1	6.25%	A	7.3	24.5	7.4	364									
	1	12.5%	A	7.3	24.3	7.4	389									
	1	25%	A	7.3	24.3	7.3	423									
	1	50%	A	7.3	24.3	7.3	497									
	1	100%	A	7.3	24.3	7.6	677									
	1		A													
	Measured by:			BA	BA	BA	BA									
	Recorded by:			BA	BA	BA	BA									
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 1	sample:	Control	B	7.4	25.0	7.4	349			B	7.3	24.7	6.9	345		
	1	6.25%	B	7.5	25.8	7.5	380			B	7.3	24.3	7.1	372		
	1	12.5%	B	7.6	25.0	7.3	397			B	7.3	24.1	7.0	391		
	1	25%	B	7.6	25.5	7.4	435			B	7.3	24.0	7.1	431		
	1	50%	B	7.6	25.1	7.4	506			B	7.3	24.0	7.3	507		
	1	100%	B	7.6	25.3	7.3	684			B	7.3	24.0	7.3	687		
	1		B							B						
	Measured by:			BA	BA	BA	BA				BA	BA	BA	BA		
	Recorded by:			BA	BA	BA	BA				BA	BA	BA	BA		
			Rep	pH	Temp	~~DO~~ BA	Conductivity	~~Salinity~~ BA		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 2	sample:	Control	C	7.4	25.8	~~7.7~~	247	(A) 6.7		C	7.3	24.6	7.8	304		
	2	6.25%	C	7.4	25.6	~~7.7~~	374	(A) 7.2		C	7.3	24.6	7.7	322		
	2	12.5%	C	7.4	25.8	~~7.7~~	398	(A) 7.4		C	7.4	24.7	7.7	359		
	2	25%	C	7.4	26.0	~~7.7~~	439	(A) 7.5		C	7.4	24.7	7.6	406		
	2	50%	C	7.5	25.6	–	512	(A) 7.3		C	7.4	24.7	7.6	487		
	2	100%	C	7.5	25.4	–	681	(A) 7.2		C	7.4	25.1	7.6	655		
	2		C							C						
	Measured by:			BA	BA	BA	BA	BA			BA	BA	BA	BA		
	Recorded by:			BA	BA	BA	BA	BA			BA	BA	BA	BA		
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 3	sample:	Control	D	7.2	26.0	7.9	328			D	7.4	24.0	7.3	306		
	2	6.25%	D	7.2	26.0	7.1	340			D	7.4	24.0	7.1	327		
	2	12.5%	D	7.2	26.0	7.0	378			D	7.4	24.0	6.9	356		
	2	25%	D	7.2	25.8	7.0	430			D	7.4	24.0	7.0	402		
	2	50%	D	7.3	25.9	6.8	503			D	7.4	24.0	7.2	487		
	2	100%	D	7.4	25.8	6.7	665			D	7.4	24.0	7.2	677		
	2		D							D						
	Measured by:			BA	BA	BA	BA				BA	BA	BA	BA		
	Recorded by:			BA	BA	BA	BA				BA	BA	BA	BA		

Comments: (A) Transcription error DO recorded in salinity column

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15

parameter pg. 2

Sample Source: Green Cove Springs South WWTF
LIMS Sample #: 146 1661 (for Lab sample #1)

Start Date: 10-16-12 End Date: 10-23-12
Start Time: 1330 End Time: 1000

conc = concentration rep = replicate

Test Day			Before Renewal							After Renewal						
	Conc.		Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth		Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	
Day 4 ↓	sample:	Control	A	7.3	25.5	7.2	307			A	7.2	24.5	7.2	315		
	3	6.25%	A	7.3	25.7	7.3	325			A	7.3	24.7	7.2	308		
	3	12.5%	A	7.3	26.0	7.4	361			A	7.3	24.7	7.1	333		
	3	25%	A	7.3	25.7	7.2	402			A	7.3	24.4	7.1	382		
	3	50%	A	7.4	25.8	7.3	487			A	7.3	24.2	7.1	464		
	3	100%	A	7.4	25.9	7.2	677			A	7.4	24.0	7.1	BA 643		
	3		A							A						
	Measured by:			BA	BA	BA	BA				BA	BA	BA	BA		
	Recorded by:			BA	BA	BA	BA				BA	BA	BA	BA		
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 5	sample:	Control	B	7.3	25.2	6.7	297			B	7.3	24.6	6.5	291		
	3	6.25%	B	7.3	25.4	6.7	321			B	7.3	24.4	6.9	300		
	3	12.5%	B	7.3	25.2	6.7	342			B	7.3	24.3	7.1	341		
	3	25%	B	7.3	25.2	6.7	400			B	7.3	24.2	7.3	389		
	3	50%	B	7.3	25.6	6.7	482			B	7.3	24.1	7.3	477		
	3	100%	B	7.3	25.2	6.5	653			B	7.5	24.1	7.3	656		
	3		B							B						
	Measured by:			BA	MF	BA	BA				BA	BA	BA	BA		
	Recorded by:			BA	MF	BA	BA				BA	BA	BA	BA		
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 6	sample:	Control	C	7.1	25.5	6.1	300			C	7.2	24.6	7.5	289		
	3	6.25%	C	7.1	25.3	6.0	303			C	7.3	24.3	7.3	304		
	3	12.5%	C	7.2	25.3	6.0	355			C	7.2	24.2	7.0	337		
	3	25%	C	7.1	25.6	6.3	398			C	7.2	24.0	7.0	383		
	3	50%	C	7.1	25.2	6.1	498			C	7.3	24.0	7.1	480		
	3	100%	C	7.2	25.5	6.2	681			C	7.3	24.0	7.2	672		
	3		C							C						
	Measured by:			BA	BA	BA	BA				BA	BA	BA	BA		
	Recorded by:			BA	BA	BA	BA				BA	BA	BA	BA		
			Rep	pH	Temp	DO	Conductivity	Salinity		Rep	pH	Temp	DO	Conductivity	Salinity	
Day 7	sample:	Control	D	7.2	25.9	7.1	301			D						
	3	6.25%	D	7.2	25.4	6.8	316			D						
	3	12.5%	D	7.2	25.6	6.9	346			D						
	3	25%	D	7.2	25.2	6.8	388			D						
	3	50%	D	7.2	25.2	6.8	486			D						
	3	100%	D	7.2	25.4	6.7	677			D						
	3									D						
	Measured by:			BA	BA	BA	BA									
	Recorded by:			BA	BA	BA	BA									

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional

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Chronic Bioassay Weighing Benchsheet

Facility: Green Cove Springs South WWTF

LIMS Sample Number: 146166 1

(for Lab Sample # 1)

***P. promelas* and *M. beryllina* Bench Sheet**
SOP TA06_21

			mean wt = fish wt divided by 10 convert g to mg: move decimal 3 places to right					
Concentration	Replicate	Pan #	Pan wt. g	Pan + Fish g	Fish wt. g	Original # Fish	Mean wt. mg	
Control	A	17	0.01982	0.02452	0.0047	10	0.470	
	B	18	0.01993	0.02459	0.00466	10	0.466	
	C	19	0.01973	0.02458	0.00485	10	0.485	0.493
	D	20	0.01925	0.02476	0.00551	10	0.551	
sample 6.25%	A	21	0.01980	0.02523	0.00543	10	0.543	
	B	22	0.01942	0.02391	0.00449	10	0.449	
	C	23	0.01943	0.02396	0.00453	10	0.453	0.487
	D	24	0.01912	0.02415	0.00503	10	0.503	
sample 12.5%	A	25	0.01939	0.02463	0.00524	10	0.524	
	B	26	0.02000	0.02585	0.00585	10	0.585	0.5485
	C	27	0.01930	0.02460	0.00497	10	0.497	
	D	28	0.01963	0.02518	0.00555	10	0.555	
sample 25%	A	29	0.01874	0.02377	0.00503	10	0.503	
	B	30	0.02026	0.02508	0.00482	10	0.482	0.5308
	C	31	0.02056	0.02566	0.00510	10	0.510	
	D	32	0.01964	0.02592	0.00628	10	0.628	
sample 50%	A	33	0.01983	0.02577	0.00594	10	0.594	
	B	34	0.01949	0.02500	0.00551	10	0.551	0.6003
	C	35	0.01926	0.02536	0.00610	10	0.610	
	D	36	0.01906	0.02552	0.00646	10	0.646	
sample 100%	A	37	0.01974	0.02611	0.00637	10	0.637	
	B	38	0.01942	0.02474	0.00532	10	0.532	0.6063
	C	39	0.01895	0.02589	0.00694	10	0.694	
	D	40	0.01997	0.02559	0.00562	10	0.562	
sample %	A					10		
	B					10		
	C					10		
	D					10		
	Weighed by initials:		BA	MF		revised 7/16/08 mf		

Comments:

Balance: Ohaus 250D Ser# 1125481084
S-Weights: BIO-S-Weights-01

Note: Pan number (#) refers to actual Pan number.

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Chronic Bioassay Weighing Benchsheet

Quality Control

Facility: Green Cove Springs South WWTF

LIMS Sample Number: 1461661
(for Lab Sample # 1)

***P. promelas and M. beryllina* Bench sheet**
SOPs TA07_09, TA07_14 and TA06_21

Drying Oven ID:	ER034000
Temperature °C:	100
Hours:	8

Tare weighed by: BA
Final weighed by: MF

20 MF

Tare Weighing Date: 10-16-12 Final Weighing Date: 10-20-12

Tare Pan 1 after Pan 5 (g)	0.01877	@	0.01877		Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 10 (g)	0.01875	@	0.01878 MF	S-weights at tare	0.01003	@	0.01
Tare Pan 1 after Pan 15 (g)	0.01876	@	0.01877 MF		0.05001	@	0.05
Tare Pan 1 after Pan 20 (g)	0.01877	@	0.01877	S-weights at final	0.02001	@	0.02
Tare Pan 1 after Pan 25 (g)	0.01877	@	0.01877		0.05005	@	0.05
Tare Pan 1 after Pan 30 (g)		@					
Tare Pan 1 after Pan 35 (g)		@		Balance: Ohaus 250D Ser# 1125481084			
Tare Pan 1 after Pan 40 (g)		@		S-Weights: BIO-S-Weights-01			
Tare Pan 1 after Pan 45 (g)		@					
Tare Pan 1 after Pan 48 (g)		@					
Final Pan 1 after Pan 5 (g)	0.02455 MF	@	0.02452				
Final Pan 1 after Pan 10 (g)	0.02454	@	0.02452				
Final Pan 1 after Pan 15 (g)	0.02454	@	0.02452				
Final Pan 1 after Pan 20 (g)	0.02453	@	0.02452				
Final Pan 1 after Pan 25 (g)	0.02455	@	0.02452				
Final Pan 1 after Pan 30 (g)		@					
Final Pan 1 after Pan 35 (g)		@					
Final Pan 1 after Pan 40 (g)		@					
Final Pan 1 after Pan 45 (g)		@					
Final Pan 1 after Pan 48 (g)		@					

Note: Pan numbers (5, 10, etc.) for Tare and Final refers to sequence of weighing as actual Pan #s may differ.

Comments:

revised 7/16/08 MF

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Test ID: Green Cove Springs South WWTF Dates: October 16—23, 2012

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 M. Faircloth 1-15-13

V 1.1 9/21/10 MF/jd

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Appendix C. SRT Bench Sheets and Statistical Analysis

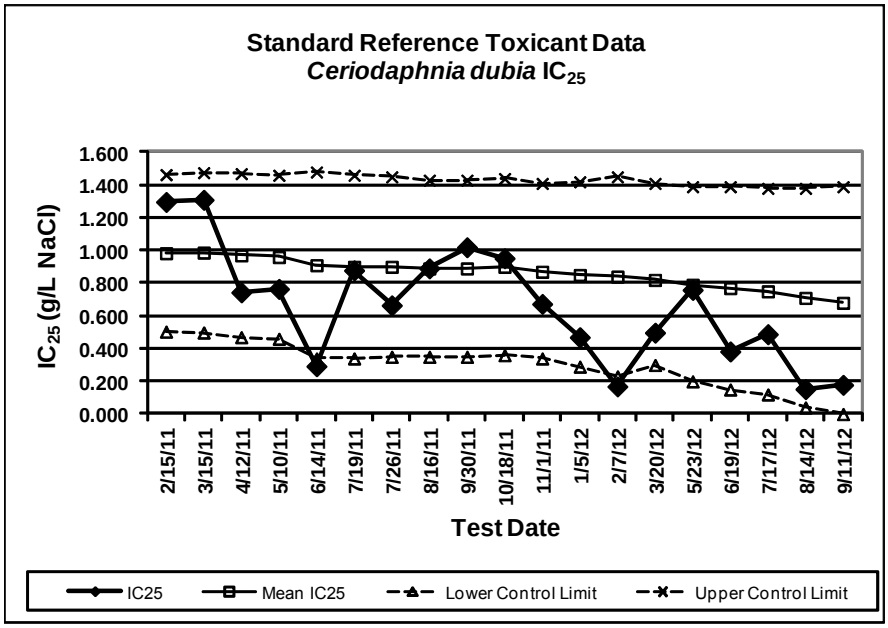
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit
2/15/11	1.100	0.97	0.23	0.50	1.44
3/15/11	1.297	0.98	0.24	0.50	1.46
4/12/11	1.310	0.99	0.24	0.50	1.48
5/10/11	0.744	0.97	0.25	0.47	1.47
6/14/11	0.765	0.96	0.25	0.46	1.46
7/19/11	0.293	0.91	0.28	0.34	1.48
7/26/11	0.879	0.90	0.28	0.34	1.46
8/16/11	0.665	0.90	0.27	0.35	1.45
9/30/11	0.891	0.89	0.27	0.35	1.43
10/18/11	1.020	0.89	0.27	0.35	1.43
11/1/11	0.953	0.90	0.27	0.36	1.44
1/5/12	0.674	0.87	0.27	0.34	1.41
2/7/12	0.470	0.85	0.28	0.29	1.42
3/20/12	0.169	0.84	0.31	0.23	1.45
5/23/12	0.498	0.82	0.32	0.30	1.41
6/19/12	0.760	0.79	0.30	0.20	1.39
7/17/12	0.383	0.77	0.31	0.15	1.39
8/14/12	0.489	0.75	0.31	0.12	1.38
9/11/12	0.153	0.71	0.33	0.04	1.38
10/16/12	0.179	0.68	0.35	0.00	1.39

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

EPA 75th Percentile %CV for Reproduction **45%**
Last 20 - Lab %CV Reproduction 51.8%



FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia

Diluent/ Batch: ~~20% DMW~~ SD MHW / 10-10-12 Test Days Used: 0-4
MF ~~20% DMW~~ / 10-11-12 Test Days Used: 5-7
Toxicant/ Batch: NaCl / 10-5-12

SOP # : TA 07_05
EPA-821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #/ Age: 10.16.12 / <24 hr.
Feeding: Prior to Test and Daily
Food: ☐ YCT ☐ *P. subcapitata*
Food Batch: 9.10.12 6.7.12
Chamber size: 30 mL
Test Volume: 20 mL

Start Date: 10-16-12 Time: 0830
End Date: 10-24-12 Time: 0900

Batch:	10-10-12	10-11-12			
Water Quality Parameters	~~20% DMW~~ MF SD MHW	~~20% DMW~~ MF SD MHW	Other	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03		BA	MF
Alkalinity (mg/L as $CaCO_3$):	82	83		~~BA~~ MF HW	MF
Hardness (mg/L as $CaCO_3$):	89	91		HW	BA
Total Ammonia (mg/L as N):	<0.017	<0.017		MF	BA
Conductivity (umhos-cm) mmhos-cm :	304	310		MF	SD

Loaded by: MF

Day	Concentrations prepared by	Counted by
0	MF	BA
1	BA	BA
2	MF	MF
3	MF	MF
4	MF	MF
5	MF	MF
6	MF	MF
7	BA	BA
8		MF

Test Replicate	Loaded from culture vial
1	A7
2	A8
3	A01
4	A14
5	A22
6	A23
7	A24
8	A29
9	A18
10	B5

Results	
Control % CV:	44.3%
Dunnetts PMSD:	35.8 %
Reproduction NOEC:	0.25 g/L
Reproduction LOEC:	0.5 g/L
Survival NOEC:	1 g/L
Survival LOEC:	2 g/L
IC_{20}:	MF ~~0.179~~ 0.143
IC_{25}:	0.179 g/L

Comments:

Investigators' signatures

Test Incubated in: Incubator: # 2
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # ~~2~~ ~~24~~ MF min. 24.9 max. 28.6 mean —
Room B246 ~~24.5~~ MF min. ~~25.1~~ MF max. 25.7 mean —
Test min.____ max. 24.3 mean____

REVIEWER

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Test Page 1 of 6

PAGE

07/15/08 MF

Ceriodaphnia dubia Survival and Reproduction

Start Date: 10-16-12 Time: 0830 Loaded by: MF
End Date: 10-24-12 Time: 0900 Verified by: BA

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
2/L	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	3	0	0	0	0	0	0	0	3	10	0.3
Control	4	0	0	0	0	0	0	0	0	0	0	0	10	0
	5	0	9	2	11	7	4	0	7	0	8	48	10	4.8
	6	11	11	12	11	11	6	6	6	3	0	78	10	7.8
	7	0	11	-	0	15	1 (S)	14	10	0	8	58	10	5.8
	8	0	NC	NC	12	NC	6	0	NC	4	0	22	10	2.2
	Total	11	31	17	34	33	17	20	23	7	16	209	10	20.9
	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	3	0	0	0	0	0	0	0	3	10	0.3
0.25	4	X 0	0	0	0	0	0	0 MF	0	0	4	4	9 8 MF	0.4
	5	|	0	8	6	6	7	X 8 MF	X 0	0	9	42	7	4.2
	6	|	4	8	7	7	7	|	|	6	0	39	7	3.9
	7	|	7	-	8	9	2	|	|	9	9	42	7	4.2
	8	|	0	NC	NC	NC	4 (S)	|	|	0	NC	6	7	0.9
	Total	0	11	19	21	22	20	6	0	15	22	136	MF ~~36~~ 7	13.6
	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0 X	0	0	0	0	0	0	0	0	X 0	0	8 MF	0
0.5	4	|	0	0	0	0	0	X |	0	0	|	0	7	0.7
	5	|	0	0	4	4	6	|	5 MF	0 X	|	19	6	MF 1.9
	6	|	7	7	0	7	7	|	5	|	|	33	6	3.3
	7	|	13	3	0	3	0	|	4	|	|	23	6	2.3
	8	|	0	0	0	NC	9	|	NC	|	|	9	6	0.9
	Total	0	20	10	4	14	22	0	14	0	0	84	6	8.4

Comments: ~~0 = appear to be dead mf~~ MF Checked with scope OK. NC = not counted - "4th" brood
(S) = split brood

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FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
g/L	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
1.0	4	0	0	0	0	0	X0	0	0	0	3	3	9	0.3
	5	0	0	0	0	0	\	0	0	0X	2	2	8	0.2
	6	5	6	8	5	6	\	7	2	\	2	41	8	4.1
	7	2	6	6	0	0	\	2	4 0	\	-	16	8	1.6
	8	0	0	8	6	M	\	0	6	\	NC	20	8	2.0
	Total	7	12	22	11	6	\	9	8	10	7	82	8	8.2
	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
2.0	4	0	0	0	0	0	0	X0	X0	0	0	0	8	0
	5	0	0	2	0	0	y0	X0	X0	0X	0	2	6	0.2
	6	2	2	4	2	0	\	\	\	\	0	10	6	1.0
	7	X	0	0	0	0	\	\	\	\	0	0	5	0
	8	\	0	0	0	0	\	\	\	\	0	0	5	0
	Total	2	2	6	2	0	0	0	0	0	0	12	5	1.2
	0												10	
	1	X	X	X	X	X	X	X	X	X	X			
4.0	2													
	3													
	4													
	5													
	6													
	7													
	8													
	Total													

Comments:

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day 9/L

	Conc.	New Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0 ↓	Control	M	8.1	24.4	8.0	304					
	0.25	M	8.1	24.6	8.0	778					
	0.5	M	8.1	24.6	8.0	1231					
	1.0	M	8.1	24.7	8.0	2110					
	2.0	M	8.1	24.8	7.9	3790					
	4.0	M	8.0	25.3	7.8	7220					
	Measured by:		MF	MF	MF	MF					
	Recorded by:		MF	MF	MF	MF					
Day 1	Control	M	7.4	24.4	7.4	309	A	7.6	24.0	7.4	359
	0.25	M	7.4	24.4	7.4	773	A	7.6	24.0	7.4	892
	0.5	M	7.4	24.3	7.5	1240	A	7.6	24.0	7.5	1327
	1.0	M	7.4	24.2	7.5	2120	A	7.6	24.0	7.5	2780
	2.0	M	7.4	24.0	7.5	3850	A	7.6	24.0	7.6	4280
	4.0	M					A	7.6	24.0	7.6	7960
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 2	Control	M	8.0	25.0	7.8	301	A	8.0	24.2	8.2	341
	0.25	M	7.9	25.1	7.9	769	A	7.9	24.6	8.1	823
	0.5	M	7.9	25.1	8.0	1200	A	7.9	24.7	8.2	1285
	1.0	M	7.9	25.1	7.9	2050	A	7.9	24.7	8.1	2200
	2.0	M	7.9	25.0	7.9	3700	A	7.9	24.7	8.0	3890
		M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 3	Control	M	7.9	25.0	7.7	311	A	7.9	24.2	7.6	345
	0.25	M	7.9	24.9	7.6	795	A	7.9	24.3	7.7	857
	0.5	M	7.9	24.9	7.6	1266	A	7.9	24.4	7.7	1295
	1.0	M	7.9	24.9	7.6	2160	A	7.9	24.4	7.7	2220
	2.0	M	7.9	24.9	7.5	3850	A	7.9	24.3	7.7	4000
		M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF

Comments:

M= "Metered" vial, a surrogate vial for parameters

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day ↓	Conc.%	New Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	Control	M	7.8	24.0	7.9	302	A	7.8	24.6	8.1	322
	0.25	M	7.8	24.1	8.0	760	A	7.8	25.1	8.3	815
	0.5	M	7.8	24.1	8.0	1184	B	7.9	25.1	8.3	1289
	1.0	M	7.8	24.2	8.0	2050	A	7.9	252	8.2	2120
	2.0	M	7.8	24.3	7.9	3720	A	7.9	25.3	8.2	3910
		M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 5	Control	M	8.2	24.5	7.7	310	A	8.2	24.3	7.8	330
	0.25	M	8.2	25.0	7.7	788	B	8.2	24.3	7.9	788
	0.5	M	8.2	25.1	7.8	1238	B	8.2	24.1	7.9	1284
	1.0	M	8.2	25.2	7.7	2100	A	8.2	24.1	8.1	2230
	2.0	M	8.2	25.3	7.9	3830	A	8.1	24.0	8.0	4160
		M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 6	Control	M	8.2	24.2	8.2	310	A	8.1	24.9	8.1	337
	0.25	M	8.2	24.9	8.1	758	B	8.1	24.9	8.0	832
	0.5	M	8.2	25.0	8.1	1210	B	8.1	24.7	8.0	1295
	1.0	M	8.2	25.0	8.1	2100	A	8.1	24.6	8.0	2270
	2.0	M	8.2	25.1	8.1	3760	A	8.1	24.8	8.0	3940
		M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 7	Control	M	7.8	24.0	8.1	312	B	7.8	24.0	7.5	332
	0.25	M	7.7	24.0	8.0	796	B	7.7	24.0	7.7	818
	0.5	M	7.7	24.0	8.1	1266	B	7.7	24.0	7.7	1312
	1.0	M	7.7	24.0	8.1	2140	B	7.8	24.0	7.7	2230
	2.0	M	7.7	24.0	8.1	3770	B	7.7	24.0	7.7	4140
		M									
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 8	Control	M					A	8.1	24.5	7.8	341
	0.25	M					B	8.1	24.3	7.8	865
	0.5	M					B	8.0	24.5	7.9	1290
	1.0	M					A	8.0	24.7	7.8	2220
	2.0	M					B	8.0	25.0	7.8	3940
		M									
	Measured by:										
	Recorded by:										

Replicate M= "Metered" vial, a surrogate vial for parameters

Chronic C. dubia

Test ID: October SRT

Dates: 10-16-12 — 10-24-12

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 10-30-12 m. faircloth

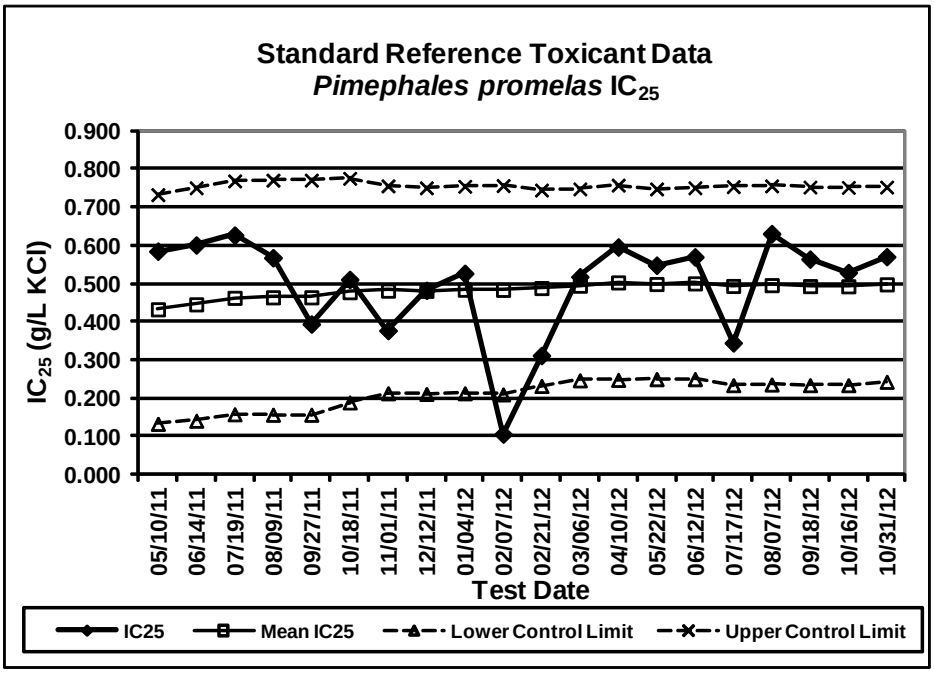
V 1.1 9/21/10 MF/jd

00072

Florida Department of Environmental Protection
Bureau of Laboratories
Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Pimephales promelas (fathead minnow) - Potassium Chloride (KCl)

Date	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit
05/10/11	0.585	0.433	0.15	0.133	0.733
06/14/11	0.601	0.446	0.15	0.141	0.751
07/19/11	0.627	0.463	0.15	0.158	0.769
08/09/11	0.568	0.464	0.15	0.157	0.771
09/27/11	0.394	0.464	0.15	0.157	0.771
10/18/11	0.511	0.478	0.14	0.189	0.776
11/01/11	0.377	0.482	0.14	0.213	0.756
12/12/11	0.483	0.481	0.14	0.211	0.751
01/04/12	0.527	0.484	0.14	0.213	0.755
02/07/12	0.106	0.484	0.14	0.210	0.757
02/21/12	0.312	0.489	0.13	0.232	0.745
03/06/12	0.518	0.495	0.13	0.247	0.748
04/10/12	0.596	0.503	0.13	0.248	0.758
05/22/12	0.548	0.499	0.12	0.250	0.748
06/12/12	0.570	0.501	0.12	0.250	0.751
07/17/12	0.345	0.494	0.13	0.234	0.754
08/07/12	0.631	0.496	0.13	0.236	0.756
09/18/12	0.564	0.493	0.13	0.234	0.753
10/16/12	0.529	0.493	0.13	0.234	0.752
10/31/12	0.571	0.498	0.13	0.243	0.753

Means are from the last 20 SRTs.
Lower Confidence Limit = mean - 2 * Std Dev EPA 75th %CV: 38%
Upper Confidence Limit = mean + 2 * Std Dev lab % CV: 26.2%



FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina*

Test Species (circle one)

P. promelas	SOP#: TA07_09	EPA-821-R-02-013	Method 1000.0
M. beryllina	SOP#: TA07_14	EPA-821-R-02-014	Method 1006.0

Diluent/ Batch: MHW/ 9.28.12 Test Days Used: 0-6

Diluent/ Batch: _____ Test Days Used: _____

Toxicant/ Batch # : KCl/ 10-16-12 MF 15

Artemia Lot # : 08812

Start Date: 10.16.12 Time: 1300

End Date: 10-23-12 Time: 1000

Organism Batch #/ Age: 10.16.12 / 1 day

Artemia Batch #					
Day 0	135-12	Day 2	137-12	Day 5	140-12
Day1	136-12	Day 3	138-12	Day 6	141-12
		Day 4	139-12		

Chamber size : 1000 ml

Test volume : 500 ml

Feeding: *P. promelas* 0.15 g wet wt. 2X day 6 hour interval

M. beryllina 0.10 g wet wt days 0-2 0.15g wet wt. days 3-7

Water Quality Parameters	Diluent	Diluent (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03		HACH	BA	MF
Alkalinity (mg/L as $CaCO_3$):	75		HACH	BA	MF
Hardness (mg/L as $CaCO_3$):	96		HACH	BA	MF
Total Ammonia (mg/L as N):	20.017		DENVER	MF	BA
Conductivity (µmhos-cm mmhos-cm):	341		METTLER	BA	MF

Statistics	
Growth NOEC:	0.5 g/L
Growth LOEC:	1.0 g/L
Growth IC_{20}:	0.4907
Growth IC_{25}:	0.5292
Ctrl % CV:	10.6%
Dunnetts PMSD:	21.4%
Survival NOEC:	0.5 g/L
Survival LOEC:	1.0 g/L

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Test incubated in :

		Temperature Range °C: min.	max.
Incubator #	3	MF 24.4	26.3
Water bath #	____	_____	_____
Room B246		24.3	25.7

P. promelas PMSD Bounds for Growth: Lower 12 Upper 30

M. beryllina PMSD Bounds for Growth: Lower 11 Upper 28

Investigators' signatures

Marshall Faircloth

Liz Miller

REVIEWER

Comments:

revised 8/6/12 JD

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or Menidia beryllina Survival

Organism: (*P. promelas*) *M.beryllina* (circle one) D = dead M = missing

Concentration: µg/L (g/L) (circle one)

			TEST DAY							
Concentration	Replicate	Chamber	0	1	2	3	4	5	6	7
Control	A	E 1	10	10	10	10	10	10	10	10
	B	E 2	10	10	10	10	10	10	10	10
	C	E 3	10	10	10	10	10	10	10	10
	D	E 4	10	10	10	10	10	10	10	10
0.125	A	E 5	10	10	10	10	10	10	9 1D	9
	B	E 6	10	10	10	10	10	10	10	10
	C	E 7	10	10	10	9 1D	9	9	BA/9	9
	D	E 8	10	10	10	9 1D	9	9	9	9
0.25	A	E 9	10	10	10	10	10	10	10	10
	B	E 10	10	10	10	9 1D	9	9	9	9
	C	E 11	10	10	10	10	10	10	10	10
	D	E 12	10	10	10	10	10	10	10	10
0.5	A	E 13	10	10	10	10	10	10	10	10
	B	E 14	10	8 2D	6 2D	5 1D	5	5	5	5
	C	E 15	10	9 1D	9	9	9	9	9	9
	D	E 16	10	10	8 2D	8	8	7 1D	7	7
1.0	A	E 17	10	2 8D	2	0 2D	–	–	–	–
	B	E 18	10	1 9D	1 ~~DD~~ HW	0 1D	–	–	–	–
	C	E 19	10	1 9D	0 1D HW	–	–	–	–	–
	D	E 20	10	1 9D	0 ~~TCD~~ 1D	~~0~~	–	–	–	–
2.0	A	E 21	10	0 10D	–	–	–	–	–	–
	B	E 22	10	0 10D	–	–	–	–	–	–
	C	E 23	10	0 10D	–	–	–	–	–	–
	D	E 24	10	0 10D	–	–	–	–	–	–
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): BA		Checked by:		BA	HW	BA	BA	BA	BA	BA
Verified by (0 hr): MF										
Concentrations prepared by: BA				BA	BA	BA	BA	BA	BA	BA/HW

Comments:

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revised 7/16/08 MF

Chronic SRT Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg. 1

Start Date: 10.16.12 End Date: 10.23.12

Start Time: 1300 End Time: 0900

conc = concentration rep = replicate circle umhos or mmhos

Test Day	Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	Control	A	7.6	24.0	7.3	341							
	0.125	A	7.6	24.0	7.4	631							
	0.25	A	7.6	24.0	7.5	810							
	0.5	A	7.7	24.1	7.6	1369							
	1.0	A	7.7	24.1	7.6 BA	2060							
	2.0	A	7.8	24.1	7.6	3910							
		A											
	Measured by		BA	BA	BA	BA							
	Recorded by		BA	BA	BA	BA							
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	7.8	25.7	7.6	355		B	7.6	24.0	7.3	348	
	0.125	B	7.8	24.6	7.6	645		B	7.5	24.0	7.0	616	
	0.25	B	7.8	24.7	7.7	833		B	7.5	24.0	6.9	843	
	0.5	B	7.9	24.8	7.7	1416		B	7.6	24.0	7.1	1387	
	1.0	B	7.9	24.7	7.6	2126		B	7.6	24.0 BA	7.3	2150	
	2.0	B	7.9	24.9	7.7	4080		B					
		B		24.9 BA				B					
	Measured by		BA	BA	BA	BA			BA	BA	BA	BA	
	Recorded by		BA	BA	BA	BA			BA	BA	BA	BA	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	7.7	24.6	7.2	350		C	7.5	24.6	8.0	343	
	0.125	C	7.7	24.0	7.0	619		C	7.5	24.4	7.8	573	
	0.25	C	7.7	24.3	7.2	852		C	7.5	24.5	7.8	790	
	0.5	C	7.7	24.0	7.3	1398		C	7.5	24.6	7.8	1304	
	1.0	C	7.7	24.2	7.4	2190		C	7.6	24.6	7.8	2200	
		C						C					
		C						C					
	Measured by		BA	BA	BA	BA			BA	BA	BA	BA	
	Recorded by		BA	BA	BA	BA			BA	BA	BA	BA	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	7.5	24.8	7.3	361		D	7.5	24.0	7.2	320	
	0.125	D	7.5	25.2	7.2	593		D	7.4	24.0	7.3	560	
	0.25	D	7.5	24.3	7.0	824		D	7.5	24.0	7.2	818	
	0.5	D	7.5	24.7	6.9	1357		D	7.5	24.0	7.2	1317	
	1.0	D	7.5	24.7	7.0	2270		D					
		D						D					
		D						D					
	Measured by		BA	BA	BA	BA			BA	BA	BA	BA	
	Recorded by		BA	BA	BA	BA			BA	BA	BA	BA	

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

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Chronic SRT Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg. 2

Start Date: 10-16-12 End Date: 10-23-12

Start Time: 1300 End Time: 1000

conc = concentration rep = replicate

Test Day	Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos mmhos)	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos mmhos)	Salinity ppth
Day 4	Control	A	7.5	24.9	7.0	323		A	7.5	24.0	7.7	310	
	0.125	A	7.5	24.7	7.0	553		A	7.5	24.0	7.6	488	
	0.25	A	7.5	24.0	7.0	801		A	7.5	24.0	7.4	772	
	0.5	A	7.5	24.0	7.(	1283		A	7.6	24.2	7.3	1322	
		A						A					
		A						A					
		A						A					
	Measured by		BA	BA	BA	BA			BA	BA	BA	BA	
	Recorded by		BA	BA	BA	BA			BA	BA	BA	BA	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity * Temp
Day 5	Control	B	7.5	24.0	6.9	306		B	7.6	~~24.0~~	7.7	297	24.0
	0.125	B	7.5	24.1	6.8	496		B	7.6	~~24.1~~	7.6	509	24.0
	0.25	B	7.5	24.2	6.7	780		B	7.6	~~24.2~~	7.5	~~790~~	24.0
	0.5	B	7.6	24.1	6.7	1325		B	7.6	~~24.1~~ BA	7.6	1265	24.0
		B						B					
		B						B					
		B						B					
	Measured by		BA	MF	BA	BA			~~BA~~	~~MF~~	BA	BA	BA
	Recorded by		BA	MF	BA	BA			BA	~~MF~~	BA	BA	BA
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	Control	C	7.3	24.6	6.3	299		C	7.5	24.0	7.2	296	
	0.125	C	7.3	24.7	6.4	524		C	7.4	24.0	7.2	512	
	0.25	C	7.3	24.8	6.2	813		C	7.4	24.0	7.3	840	
	0.5	C	7.3	25.0	6.1	1291		C	7.5	24.0	7.3	1238	
		C						C					
		C						C					
		C						C					
	Measured by		BA	BA	BA	BA			BA	BA	BA	BA	
	Recorded by		BA	BA	BA	BA			BA	BA	BA	BA	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	Control	D	7.4	25.2	7.1	298		D					
	0.125	D	7.3	25.1	7.3	526		D					
	0.25	D	7.4	24.5	7.0	812		D					
	0.5	D	7.4	24.7	7.1	1254		D					
		D						D					
		D						D					
		D						D					
	Measured by		BA	BA	BA	BA							
	Recorded by		BA	BA	BA	BA							

* Before Temps in after renewal spaces. MF 10-21-12
Renewal temps recorded in salinity column. dm for MF

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional.

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Weights

SOP TA06_21

Organism: (*P. promelas*) *M.beryllina* (circle one)

Concentration: µg/L (g/L) (circle one)

mean wt = fish wt divided by 10

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)	
Control	A	1	0.01877	0.02391	0.00514	10	0.514	0.495
	B	2	0.01958	0.02379	0.00421	10	0.421	
	C	3	0.01895	0.02397	0.00502	10	0.502	
	D	4	0.01946	0.02490	0.00544	10	0.544	
0.125g/L	A	5	0.01963	0.02353	0.00390	10	0.390	0.452
	B	6	0.02052 BA	0.02586	0.00534	10	0.534	
	C	7	0.01968 BA	0.02349	0.00381	10	0.381	
	D	8	0.02021 BA	0.02521	0.00503	10	0.503	
0.25g/L	A	9	0.01986	0.02360	0.00374	10	0.374	0.440
	B	10	0.02005	0.02405	0.00400	10	0.400	
	C	11	0.02005	0.02495	0.00490	10	0.490	
	D	12	0.01884	0.02380	0.00496	10	0.496	
0.5g/L	A	13	0.01925	0.02320	0.00395	10	0.395	0.395
	B	14	0.01913	0.02244	0.00331	10	0.331	
	C	15	0.01803	0.02290	0.00487	10	0.487	
	D	16	0.01953	0.02318	0.00365	10	0.365	
	A					10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
		Weighed by:	BA	MF				

Comments:

Note: Pan number (#) refers to actual Pan number.

revised 8/24/06 MF/SP

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* QC

SOPs TA07_09, TA07_14 and TA06_21

all weights in grams

Empty Pan Weights Date: 10-22-12 MF Weighed by: BA

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.01877	@ 0.01877
after Pan 10	0.01877	@ 0.01877
after Pan 15	0.01877	@ 0.01877
after Pan 20		@
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.01003	@ 0.01
	0.05001	@ 0.05

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 10-26-12 Weighed by: MF

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02390	@ 0.02391
after Pan 10	0.02392	@ 0.02391
after Pan 15	0.02394	@ 0.02391
after Pan 20		@
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.02001	@ 0.02
	0.05005	@ 0.05

Drying Oven ID: ER034000

Temperature °C: 105°C

Drying Hours: 8 hr

Note: Pan number (5, 10, etc.) refers to sequence of weighing as actual Pan #s may differ.

Comments:

PAGE 20

revised 7/16/08 MF

Test ID: P. promelas Chronic SRT Dates: October 16-23, 2012

METER / DEVICE	ID	SOP	Parameter	Method	√ 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 #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Entered By: M. Faircloth 11-20-12

V 1.2 2/20/11 MF/jd

Appendix D. Test Organism Receipt

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 10/15/12

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia						
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi	~~150~~ 55	~~9 DAYS~~	~~CL121006~~	~~25~~	~~7.8~~	~~80~~
Pimephales promelas	550	<24 HRS	FM121014-1625	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

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

Appendix E. Chemical Analyses performed on the effluent from the Green Cove Springs WWTF Outfall D-001, sampled on October 15-17, 2012 and October 19, 2012.

Date Sampled	Field_ID	Analysis	Component	Results	Remark	Units	MDL	PQL
10/15/2012 9:00	SOUTH PLANT	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100	L	IC25		
10/15/2012 9:00	SOUTH PLANT	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100		NOEC		
10/15/2012 9:00	SOUTH PLANT	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	98.2		IC25		
10/15/2012 9:00	SOUTH PLANT	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100		NOEC		
10/15/2012 9:00	SOUTH PLANT	Field Parameter	Sample Depth	0.5		m		
10/15/2012 9:00	SOUTH PLANT	Field Parameter	Temperature	26.9		C		
10/15/2012 9:00	SOUTH PLANT	Field Parameter	Specific Conductance	663		umhos/cm		
10/15/2012 9:00	SOUTH PLANT	Field Parameter	Dissolved Oxygen	7.24		mg/L		
10/15/2012 9:00	SOUTH PLANT	Field Parameter	pH	7.18				
10/16/2012 14:00	8 hrs flow propor --- sample	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.99	IQ	mg/L	0.2	2
10/16/2012 14:00	8 hrs flow propor --- sample	Nutrients	Total-P	4.1		mg P/L	0.025	0.25
10/16/2012 14:00	8 hrs flow propor --- sample	Nutrients	Ammonia-N	0.015	I	mg N/L	0.01	0.02
10/16/2012 14:00	8 hrs flow propor --- sample	Nutrients	Kjeldahl Nitrogen	0.66		mg N/L	0.08	0.2
10/16/2012 14:00	8 hrs flow propor --- sample	Nutrients	NO2NO3-N	2.6		mg N/L	0.04	0.1
10/16/2012 14:00	8 hrs flow propor --- sample	Nutrients	TSS	2	U	mg/L	2	10
10/17/2012 6:00	24 HRS FPC	Field Parameter	Total Residual Chlorine	0		mg/L		
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	AGP/LN	Algal Growth Potential	202		mg DryWt/L	0.3	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Overflow	Fecal Coliforms-Membrane Filter	2	U	cfu/100 mL	2	
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Magnesium	15.9		mg/L	0.04	0.16
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Copper	0.92	I	ug/L	0.5	1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Nickel	1.49		ug/L	0.25	1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Calcium	46.1		mg/L	0.075	0.3
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Selenium	0.2	U	ug/L	0.2	0.8
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Lead	0.2	U	ug/L	0.2	0.8
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Chromium	0.38	I	ug/L	0.3	1.2
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Silver	0.025	U	ug/L	0.025	0.1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Arsenic	0.61	I	ug/L	0.25	1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Zinc	30		ug/L	5	20

Date Sampled	Field_ID	Analysis	Component	Results	Remark	Units	MDL	PQL
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Iron	30	U	ug/L	30	120
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Metals	Aluminum	11	I	ug/L	5	20
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	Total-P	3.9		mg P/L	0.025	0.25
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	NO2NO3-N	3.8		mg N/L	0.04	0.1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	Fluoride	0.46		mg F/L	0.035	0.1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	Sulfate	68		mg SO4/L	0.4	1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	Chloride	70		mg Cl/L	0.4	1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	Alkalinity	117		mg CaCO3/L	0.65	2.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	Kjeldahl Nitrogen	0.55		mg N/L	0.08	0.2
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	O-Phosphate-P	3.4		mg P/L	0.08	0.2
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	Organic Carbon	6.5		mg C/L	0.4	0.8
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Nutrients	Ammonia-N	0.011	I	mg N/L	0.01	0.02
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Simazine	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Alachlor	0.31	U	ug/L	0.31	1.3
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Fenamiphos	0.16	U	ug/L	0.16	0.63
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Butylate	0.1	U	ug/L	0.1	0.42
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Malathion	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Hexazinone	0.16	U	ug/L	0.16	0.63
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Chlorpyrifos Methyl	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Fonofos	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Ametryn	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Chlorpyrifos Ethyl	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.42
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Norflurazon	0.16	U	ug/L	0.16	0.63
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Phorate	0.026	U	ug/L	0.026	0.1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Parathion Methyl	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Ethion	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Atrazine	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Diazinon	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Mevinphos	0.052	U	ug/L	0.052	0.21
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Parathion Ethyl	0.1	U	ug/L	0.1	0.42
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Bromacil	0.21	U	ug/L	0.21	0.84

Date Sampled	Field_ID	Analysis	Component	Results	Remark	Units	MDL	PQL
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Naled	0.21	U	ug/L	0.21	0.84
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Metalaxyl	0.21	U	ug/L	0.21	0.84
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Ethoprop	0.026	U	ug/L	0.026	0.1
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Azinphos Methyl	0.1	U	ug/L	0.1	0.42
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Pesticides	Metolachlor	0.31	U	ug/L	0.31	1.3
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	UJ	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2-Nitrophenol	1.1	UJ	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Hexachloroethane	3.4	U	ug/L	3.4	13
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Phenol	1.1	UJ	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2-Chlorophenol	1.1	UJ	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2,4-Dimethylphenol	11	UJ	ug/L	11	45
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2,4-Dinitrophenol	17	U	ug/L	17	67
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	3,3'-Dichlorobenzidine	45	U	ug/L	45	180
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.4	U	ug/L	3.4	13
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Pentachlorophenol	3.4	U	ug/L	3.4	13
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.4	U	ug/L	3.4	13
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.5

Date Sampled	Field_ID	Analysis	Component	Results	Remark	Units	MDL	PQL
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Dimethyl phthalate	11	U	ug/L	11	45
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	450
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.4	U	ug/L	3.4	13
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Anthracene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	17	U	ug/L	17	67
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Di-n-butyl phthalate	5.6	U	ug/L	5.6	22
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.4	U	ug/L	3.4	13
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	UJ	ug/L	1.1	4.5
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	4-Nitrophenol	17	U	ug/L	17	67
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Butyl benzyl phthalate	5.6	U	ug/L	5.6	22
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.9
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Priority Organic Pollutants	Hexachlorobutadiene	3.4	U	ug/L	3.4	13
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Field Parameter	Sample Depth	0.15		m		
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Field Parameter	pH	7.07				
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Field Parameter	Specific Conductance	669		umhos/cm		
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Field Parameter	Dissolved Oxygen	7.5		mg/L		
10/17/2012 7:30	GCS WWTF South EFD-1 (grab)	Field Parameter	Temperature	26.25		C		
10/19/2012 10:00	EFF-D	Field Parameter	Temperature	26.5		C		
10/19/2012 10:00	EFF-D	Field Parameter	Specific Conductance	674		umhos/cm		

Date Sampled	Field_ID	Analysis	Component	Results	Remark	Units	MDL	PQL
10/19/2012 10:00	EFF-D	Field Parameter	Dissolved Oxygen	7.44		mg/L		
10/19/2012 10:00	EFF-D	Field Parameter	Sample Depth	0.7		m		
10/17/2012 7:21	GCS WWTF Field blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
10/17/2012 7:21	GCS WWTF Field blank	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
10/17/2012 7:21	GCS WWTF Field blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
10/17/2012 7:21	GCS WWTF Field blank	Metals	Nickel	0.25	U	ug/L	0.25	1
10/17/2012 7:21	GCS WWTF Field blank	Metals	Copper	0.5	U	ug/L	0.5	1
10/17/2012 7:21	GCS WWTF Field blank	Metals	Iron	30	U	ug/L	30	120
10/17/2012 7:21	GCS WWTF Field blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
10/17/2012 7:21	GCS WWTF Field blank	Metals	Aluminum	5	U	ug/L	5	20
10/17/2012 7:21	GCS WWTF Field blank	Metals	Zinc	5	U	ug/L	5	20
10/17/2012 7:21	GCS WWTF Field blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
10/17/2012 7:21	GCS WWTF Field blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
10/17/2012 7:21	GCS WWTF Field blank	Metals	Sodium	0.5	U	mg/L	0.5	2
10/17/2012 7:21	GCS WWTF Field blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
10/17/2012 7:21	GCS WWTF Field blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	Total-P	0.002	U	mg P/L	0.002	0.005
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	Organic Carbon	0.4	U	mg C/L	0.4	0.8
10/17/2012 7:21	GCS WWTF Field blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Chlorpyrifos Methyl	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Atrazine	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Metribuzin	0.099	U	ug/L	0.099	0.4
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Parathion Ethyl	0.099	U	ug/L	0.099	0.4
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Azinphos Methyl	0.099	U	ug/L	0.099	0.4
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Ethoprop	0.025	U	ug/L	0.025	0.099

Date Sampled	Field_ID	Analysis	Component	Results	Remark	Units	MDL	PQL
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Fonofos	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.59
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Parathion Methyl	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Prometryn	0.099	U	ug/L	0.099	0.4
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Malathion	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Metalaxyl	0.2	U	ug/L	0.2	0.79
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Phorate	0.025	U	ug/L	0.025	0.099
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Diazinon	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Mevinphos	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Simazine	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Alachlor	0.3	U	ug/L	0.3	1.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Hexazinone	0.15	U	ug/L	0.15	0.59
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Metolachlor	0.3	U	ug/L	0.3	1.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Ametryn	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Butylate	0.099	U	ug/L	0.099	0.4
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Ethion	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Naled	0.2	U	ug/L	0.2	0.79
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.79
10/17/2012 7:21	GCS WWTF Field blank	Pesticides	Chlorpyrifos Ethyl	0.049	U	ug/L	0.049	0.2
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Anthracene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Acenaphthene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Acenaphthylene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12

Date Sampled	Field_ID	Analysis	Component	Results	Remark	Units	MDL	PQL
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Chrysene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	U	ug/L	39	160
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Benzo(a)pyrene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Benzo(a)anthracene	0.19	U	ug/L	0.19	0.78
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8

Date Sampled	Field_ID	Analysis	Component	Results	Remark	Units	MDL	PQL
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
10/17/2012 7:21	GCS WWTF Field blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	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: Kyle Watson		Contact Number: (904) 529-2206
Facility Name (as it appears on permit): Green Cove Springs South WWTF		Former Names:
NPDES Permit Number: FL0030210	Permit Expiration Date: 4/29/2014	
Physical Address: 925 State Road 16 East Green Cove Springs, FL 32043		
District: Northeast	County: Clay	
Function of Facility:		
Facility Type: Domestic Wastewater	Permitted Capacity (MGD): 0.500 MGD	
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 0.37 MGD		
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): N/A		
Description of type of Discharge: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify		

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

EFA-1 - Sample point immediately after disinfection, prior to dechlorination
EFD-1 - Sample point after dechlorination and prior to discharge to the Outfall D-001

Description of Permitted Outfall(s):

An existing 0.500 MGD annual average daily flow (AADF) permitted discharge to St. Johns River (Class III fresh waters – WBID 2213I) at Discharge Location (D-001).

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

- A static bar screen (4 feet wide and ¾ inch spacing) at the splitter box;
- Two aeration basins (Each has a sidewater depth of 15.0 feet, a volume of 131,350 gallons, and a capacity of 131,350 gpd), two 60 hp centrifugal blowers, and coarse bubble diffusers;
- Two 40-foot diameter secondary clarifiers with sidewater depth of 13 feet, a total surface area of 1256 square feet (sq.ft.), a weir length of 126 feet each, and a total volume of 224,552 gallons;
- One disk filtration system including filter disks, center tube, backwash system, sludge removal system, and filter system instrumentation and controls including level sensors. Average hydraulic loading rates of the filter operating at an average daily flow of 0.50 MGD and at peak hourly flow of 2.0 MGD are 1.6 gpm/ ft^2 and 6.0 gpm/ft^2, respectively;
- Two chlorine contact basins (26,570 gallons total) using hypochlorite solution as a disinfection agent;
- Bulk sodium hypochlorite feed system (Paced by a 4-20 mADC flow signal) and two polyethylene storage tanks (500 gallons). A solution of 12 % Sodium Hypochlorite and specific gravity of 1.16 will be used in the systems;
- One aerobic digester (102,480 gallons);
- Four sludge drying beds (2,500 square feet each).
- Radio telemetry supervisory control and data acquisition (SCADA) system;
- All mechanical, electrical, instrumental controls, meters (flow meter, turbidity meter, etc.) are installed as indicated in the Technical Specification;
- Two 125-hp centrifugal blowers; and
- A reclaimed water pumping system which will consist of two (2) skid-mounted self-priming pumps arranged to pump by alternating between the two pumps. Each of the two pumps has capacity of 1050 gpm at 80 ft total head

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, the Surface Water Discharge, D-001	MGD	Maximum	0.500	Report	-	-	Continuous	Recording flow meters and totalizers	EFD-1	See Cond.I.A.3
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	20.0	25.0	40.0	60.0	Weekly	8-hour flow proportioned composite	EFD-1	
BOD, Carbonaceous 5 day, % Removal	%	Minimum	-	85.0	-	-	Monthly	Calculated	CAL-1	See Cond.I.A.6
Solids, Total Suspended	MG/L	Maximum	20.0	30.0	45.0	60.0	Weekly	8-hour flow proportioned composite	EFD-1	
Solids, Total Suspended, % Removal	%	Minimum	-	85.0	-	-	Monthly	Calculated	CAL-1	See Cond.I.A.6
pH	SU	Range	-	-	-	6.0 to 8.5	5 Days/Week	Grab	EFD-1	
Coliform, Fecal	#/100ML	Maximum	See Permit Condition I.A.4.				Weekly	Grab	EFD-1	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	0.5	5 Days/Week	Grab	EFA-1	See Cond.I.A.5
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	Weekly	Grab	EFD-1	See Cond.I.A.9
Dissolved Oxygen	MG/L	Minimum	-	-	-	5.0	5 Days/Week	Meter or Instrument	EFD-1	See Cond.I.A.7

			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
Total Ammonia (as N)	**MG/L**	**Maximum**	**Report**	-	-	**Report**	**Weekly**	**Grab**	**EFD-1**	**See Cond.I.A.8**
Water Temperature	**Deg C**	**Maximum**	-	-	-	**Report**	**Weekly**	**Meter**	**EFD-1**	**See Cond.I.A.8**
Un-ionized Ammonia (as N)	**MG/L**	**Maximum**	-	-	-	**0.02**	**Weekly**	**Calculated**	**CAL-2**	**See Cond.I.A.8**
Total Nitrogen (as N)	**MG/L**	**Maximum**	**Report**	**Report**		**Report**	**Weekly**	**8-hour flow proportioned composite**	**EFD-1**	
TMDL – WLA, Nitrogen, Total (as N)	-	**Maximum**	Report **(Total Ann Mass Load) (Lbs/Yr)**	Report **(Monthly Mass Load) (Lbs/mo.)**	-	-	**Monthly**	**Calculated**	**CAL-3**	**See Cond.I.A.10**
Total Phosphorous (as P)	**MG/L**	**Maximum**	**Report**	**Report**		**Report**	**Weekly**	**8-hour flow proportioned composite**	**EFD-1**	
TMDL – WLA Total Phosphorous (as P)	-	**Maximum**	Report **(Total Ann Mass Load) (Lbs/Yr)**	Report **(Monthly Mass Load) (Lbs/mo.)**	-	-	**Monthly**	**Calculated**	**CAL-4**	**See Cond.I.A.10**
Nitrogen, Total Kjeldahl, as N	**MG/L**	**Maximum**	-	-	-	**Report**	**Quarterly**	**8-hour flow proportioned composite**	**EFD-1**	
Nitrate plus Nitrite, as N	**MG/L**	**Maximum**	-	-	-	**Report**	**Quarterly**	**8-hour flow proportioned composite**	**EFD-1**	

			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
Total Phosphorous, as P	**MG/L**	**Maximum**	-	-	-	**Report**	**Quarterly**	**8-hour flow proportioned composite**	**EFD-1**	
Orthophosphate, as P	**MG/L**	**Maximum**	-	-	-	**Report**	**Quarterly**	**Filtered-Grab**	**EFD-1**	
Algal Growth Potential (AGP)	**Mg DryWt/L**	**Maximum**	-	-	-	**Report**	**2nd and 3rd Quarters**	**Grab**	**EFD-1**	
Stream Monitoring	**See Permit Condition I.A.11**								**SWB-1, SWI-1, SWU-1, SWD-1**	
Chronic Whole Effluent Toxicity	**See Permit Condition I.A.12**								**EFD-1**	

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
St Johns River	Class III fresh waters – WBID 2213I

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):
The permittee shall conduct a daphnid, *Ceriodaphnia dubia*, Survival and Reproduction Test and a fathead minnow, *Pimephales promelas*, Larval Survival and Growth Test, concurrently. Results from all required tests shall be entered on a semi-annual Discharge Monitoring Report (DMR) as the calculated IC_{25} for each test species.

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

Facility Mixing Zone Details (if applicable):
The point of discharge is located approximately at latitude 29 o 59' 27" N, longitude 81 o 39' 34" W, at discharge location D-001 which is approximately 150 feet in length and discharges at a depth of approximately 5.0 feet

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

Date	Parameter and Units	Limit	Result
5/2012 S1- 2012	Fecal Coliform IC_{25} statre 7 day chronic *Ceriodaphnia dubia*	800 #/100mL 100 % (min)	60Z (TNTC) 4.0

Describe previous FYI and WQBEL study:
A Third Year Inspection (FYI3) inspection of the WWTF was conducted on June 21, 2004. The survey was composed of four parts: a compliance sampling inspection (CSI), a toxics sampling inspection (XSI: samples the effluent for the presence of metals, pesticides, base neutrals/acid extractables, and other facility specific toxic pollutants), a compliance biomonitoring inspection (CBI-Acute, whole effluent toxicity test), and a compliance evaluation inspection (CEI)). All resulting in IC ratings.

Describe previous or current Enforcement Actions (including WLs):
1/2006 - Warning Letter No. WL-05-0057-DW-10-NED – Exceeded limit of 0.02 mg/L for Un-ionized Ammonia seven times since 10/2004. Resolved with a $5250 penalty.

Describe any violations or problems noted in previous inspection:
Excess debris in the digestor. New, smaller bar screen should help upon installation.

Discuss whether DMR trends within previous five years are improving or declining:
They've been getting better. Haven't had many exceedances throughout, but fully reporting DMRs better than previously done.

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

Lack of funding has delayed construction of new reuse system, which will become the primary discharge upon completion.

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

Appendix G. EPA End Sheet

The Bioassay of Green Cove Springs South WWTF effluent sampled on October 15, 2012, October 17, 2012, October 19, 2012. NPDES #FL0030210.

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

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

Remarks

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The Priority Pollutants Analysis of Green Cove Springs effluent sampled on October 17,2012. NPDES #FL0030210.

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

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

Remarks

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Biological Analyses of Green Cove Springs effluent sampled on October 16, 2012 and October 17, 2012. NPDES #FL0030210.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 0 2 1 0 11	12 1 2 1 0 1 6	18 S	19 S	20 1

Remarks

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