

Effluent Quality Assessment

Hurlburt Field AFB WWTF

Okaloosa County

NPDES #FL0003174

Sampled October 5, 7 and 9, 2009

March 2010

Biology Section
Bureau of Laboratories
Division of Environmental Assessment and Restoration

Quality Manual No. 870346G
NELAC Certification No. E31780

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Hurlburt Field AFB WWTF, 415 Independence Road, Building 90053, Hurlburt Field, Okaloosa County, Florida, 32544-5244. NPDES #FL0003174. Effluent samples for bioassay, algal growth potential, microbiological and chemical analyses for this facility were collected on October 5, 2009. Additional samples for the chronic bioassay tests were collected on October 7 and 9, 2009.

Introduction

Hurlburt Field AFB WWTF is a domestic wastewater treatment facility which treats wastewater from Hurlburt Air Force Base. The facility has no Administrative Orders, Consent Orders or Mixing Zones. Discharge Monitoring Report data shows no violations of surface water criteria or permitted limits during the past year (See Appendix F for detailed facility information provided by Kim Allen of FDEP Northwest District.)

Methods

Samples for bioassay, algal growth potential (AGP), microbiological and chemical analyses were collected from the EFF-01 and EFF-02 NPDES sampling points for Outfall D-001 by Rick Abad and Nathan Mulkey (FDEP Northwest District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

See Appendix A for the completed chain of custody forms.

The freshwater chronic screening 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.floridadep.org/labs/cgi-bin/sop/biosop.asp.

Results and Discussion

Toxicity Test Results

Tests were performed October 6 - 13, 2009.

Ceriodaphnia dubia chronic screening bioassay – NOEC = 100% for survival;
NOEC = 100% for reproduction

Pimephales promelas chronic screening bioassay – NOEC = 100% for survival;
LOEC = 100% for growth

The bioassay samples were not chronically toxic to the *Ceriodaphnia dubia* test organisms but did show toxicity to the *Pimephales promelas* test organisms. The cause of toxicity was not determined.

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 Algal Growth Potential (AGP) in the effluent was 183 A (A – Value reported is the mean of two or more determinations) mg dry weight/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) found that AGP values above 5.0 mg dry weight/L represent a “problem” threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen-limited. The predicted AGP based on inorganic nitrogen concentrations was 115 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine and total ammonia were not detected in any of the three bioassay samples in the bioassay laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.024 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg N/L.

Copper, nickel and zinc were detected in the effluent at levels that comply with Class III fresh water quality criteria (62-302.530, F.A.C.). Effluent cadmium (0.67µg/L) violated the criterion for Class III freshwaters for cadmium (≤ 0.2 µg/L; 62-302.530(15), F.A.C.). Aluminum, arsenic and lead were detected between the laboratory method detection limits (MDL) and the laboratory practical quantification limits (PQL). Priority organic pollutants, pesticides, fecal coliforms and enterococci were not detected in the effluent.

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

Conclusion

The effluent samples collected from the EFF-01 NPDES sampling point for Outfall D-001 for this facility on October 5, 7 and 9, 2009, were not toxic to the *Ceriodaphnia dubia* test organisms but did show toxicity to the *Pimephales promelas* test organisms. The effluent AGP result greatly exceeded the "problem" threshold for fresh receiving waters suggesting that nutrient enrichment may be an issue. Effluent cadmium (0.67µg/L) violated the criterion for Class III freshwaters for cadmium (≤ 0.2 µg/L; 62-302.530(15), F.A.C.). Other effluent water quality samples collected on October 5, 2009, did not violate water quality criteria or permit limits.

Literature Cited

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

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

Table 1. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), orthophosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the Hurlburt Field AFB WWTF on October 5, 2009.

Hurlburt Field AFB WWTF						
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	183.0 A	114.9 ± 23.0	313.9 ± 62.8	131.1 ± 26.2	326.8 ± 65.4	4.1	4.5

A - Value reported is the mean of two or more determinations

Table 2. Effluent limits, Class III Freshwater Criteria and chemical and microbiological data for samples collected from the Hurlburt Field AFB WWTF facility on October 5, 7 and 9, 2009.

Hurlburt Field AFB WWTF NPDES# FL0003174	Class III Criteria	Effluent Limits	Effluent	Effluent Toxicity Sample 2	Effluent Toxicity Sample 3
Organic Constituents (µg/L)					
None Detected	-		None Detected		
Metals (µg/L unless otherwise noted)					
Aluminum	-	-	89 I	-	-
Arsenic	≤ 50	-	0.59 I	-	-
Cadmium	≤ 0.2 b	-	0.67	-	-
Calcium (mg/L)	-	-	13.9	-	-
Chromium-III	≤ 45.4 b	-	0.3 U	-	-
Copper	≤ 4.8 b	-	3.51	-	-
Iron	≤ 1,000	-	30 U	-	-
Lead	≤ 1.2 b	-	0.21 I	-	-
Magnesium (mg/L)	-	-	2.68	-	-
Mercury	≤ 0.012	-	-	-	-
Nickel	≤ 26.9 b	-	1.3	-	-
Selenium	≤ 5.0	-	0.2 U	-	-
Silver	≤ 0.07	-	0.025 U	-	-
Zinc	≤ 61.8 b	-	28	-	-
Nutrients (mg/L)					
Ortho-phosphate	-	-	0.73	-	-
Total Phosphorus	-	≤ 2.0 s	0.76	-	-
Total Ammonia	-	≤ 3.2 s	0.024	0.017 U£	0.017 U£
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate and Nitrite	-	-	3	-	-
Total Kjeldahl Nitrogen	-	-	0.45	-	-
Organic Nitrogen	-	-	0.426 c	-	-
Total Nitrogen	-	≤ 6.0 s	3.45 c	-	-

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness

c - Value is calculated

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

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

£ - Analysis performed by Bioassay laboratory

Table 2. (continued)

Hurlburt Field AFB WWTF NPDES# FL0003174	Class III Criteria	Effluent Limits	Effluent	Effluent Toxicity Sample 2	Effluent Toxicity Sample 3
General Physical and Chemical Parameters					
Dissolved Oxygen (mg/L)	≥ 5.0	Report	10.7	7.9	7.8
pH (SU)	6.0 - 8.5	6.0 - 8.5 s	7.3	7.4	7.4
Conductivity (µmhos/cm)	≤ 1,275	-	546	526 £	543 £
Temperature (°C)	-	-	26.4	27.3	27.6
Sample Depth (m)	-	-	0.15	-	-
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01 s	0.03 UQ£	0.03 UQ£	0.03 UQ£
Chlorophyll *a* (µg/L) - Corrected	-	-	0.55 U	-	-
Phaeophytin (µg/L)	-	-	0.4 U	-	-
Total Suspended Solids (mg/L)	-	≤ 10.0 s	4 U	-	-
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 s	1.4 I	-	-
Sulfate (mg/L)	-	-	38	-	-
Flow (MGD)	-	≤ 1.0 a	0.4918 a	-	-
Hardness (mg $CaCO_3$)	-	-	45.74 c	59 £	58 £
Microbiology (Number of colony forming units/100ml)					
Fecal Coliforms @	≤ 400s #	≤ 800 s	1 U	-	-
Enterococci @	-	-	2 U	-	-

Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average

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 and Enterococci analyses performed by University of West Florida lab

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

£ - Analysis performed by Bioassay laboratory

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2009-07-13-54
Hurlburt AFB

Event ID *

Requester: Jennifer Paris
Field Report Prepared By: N. Mulkey

Customer: NW-DIST
Collected By: Nathan Mulkey / Rick Abaid
Send Final Report To Greg Smith

Project ID: FYI5
Sampling Agency: NWFDEP

PMAS: 1143

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Hurlburt Field	☐ Comp ☒ Grab Date 10/5/09 Time 1000 Eastern Central	Date ____ Time ____ Eastern Central	A
	Field ID: Hurlburt	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L): 10.74	Storet Station Number:
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh	Temp (C): 26.35	pH: 7.31	Sample Depth: 0.15 ☒ m ☐ ft
	Latitude o ' " .	Longitude o ' " .	Salinity (PPTh): ☐ Sp Conductance (umho/cm): 546	NPDES Number:
			Comments: Tests ~~SO4-EC~~ NA W-Sulfide omitted	VM

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Hurlburt Field	☒ Comp ☐ Grab Date 10/4/09 Time 0738 Eastern Central	Date 10/5/09 Time 0639 Eastern Central	A
	Field ID: Hurlburt TOX	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
	Latitude o ' " .	Longitude o ' " .	Salinity (PPTh): ☐ Sp Conductance (umho/cm):	NPDES Number:
			Comments:	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Hurlburt Field	☐ Comp ☐ Grab Date 10/5/09 Time 1030 Eastern Central	Date ____ Time ____ Eastern Central	D
	Field ID: Equip Blank	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
	Latitude o ' " .	Longitude o ' " .	Salinity (PPTh): ☐ Sp Conductance (umho/cm):	NPDES Number:
			Comments: Test W-Sulfide blank omitted	

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

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	10/5/09	Fed Ex	Tehmoures Ebrahimi	9:30 10/06/09				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-07-13-54
Hurlburt AFB

Requester: Jennifer Paris
Field Report Prepared By: N. Milby
Collected By: Nathan Milby / [redacted] Rick Abel
Send Final Report To Greg Smith
Sampling Agency: NWFDEP

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

Lab ID *	Location: Hurlburt Field	☒ Comp ☐ Grab	Collection (begin) Eastern Central: Date 10/6/09 Time 0610	Collection (end) Eastern Central: Date 10/7/09 Time 0818	Bottle Group(s)**: A		
	Field ID: Hurlburt TOX	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 7.85	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C): 27.3	pH: 7.36	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments				

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

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

Lab ID *	Location	☐ Comp ☐ Grab	Collection (begin) Eastern Central: Date Time	Collection (end) Eastern Central: Date Time	Bottle Group(s)**		
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments: 2 Bags Rec'd in tox by J.D. 10.8.09 10:21				

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[redacted]	10/7/09	FedEx	[redacted]	10-8-09 09:35				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-07-13-54
Hurlburt AFB

Requester: Jennifer Paris

Field Report Prepared By: N. Milby

Customer: NW-DIST

Collected By: Nathan Milby / Rick Abad

Send Final Report To ~~Greg Smith~~ Kim Allen

Project ID: FYI5

Sampling Agency: NWFDEP

PMAS: 1143

Lab ID *	Location: Hurlburt Field WWTF	☒ Comp ☐ Grab	Collection (begin) Eastern Central: Date 10/8/09 Time 0800	Collection (end) Eastern Central: Date 10/9/09 Time 0804	Bottle Group(s)**: A		
	Field ID: Hurlburt TOX	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 7.81	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C): 27.6	pH: 7.37	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments				
Lab ID *	Location	☐ Comp ☐ Grab	Collection (begin) Eastern Central: Date Time	Collection (end) Eastern Central: Date Time	Bottle Group(s)**		
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments				
Lab ID *	Location	☐ Comp ☐ Grab	Collection (begin) Eastern Central: Date Time	Collection (end) Eastern Central: Date Time	Bottle Group(s)**		
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments				
Lab ID *	Location	☐ Comp ☐ Grab	Collection (begin) Eastern Central: Date Time	Collection (end) Eastern Central: Date Time	Bottle Group(s)**		
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " .	Longitude o ' " .	Comments				

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Matt Clark	10/9/09	Fed Ex	Marshall Faircloth	10/10/09 0910				

2 coolers
cooler 1 temp 0.7°C NF 0940 10/10/09
cooler 2 temp 0.5°C NF 0940 10/10/09

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix B. Bench Sheets

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia

Facility: Hurlburt Field Air Force Base WWTF
Address: 415 Independence Road, Building 90053
County: OKaloosa
NPDES Permit #: FL 0003174
Contact/District: Nathan Mulkey/NWD

LIMS entry: 10-16-09 MF verified: 10.16.09

Diluent/ Batch: 20% DMW / 9-29-09 Test Days Used: 0-3
20% DMW / 10.6.09 Test Days Used: 4-8.5 mf for BA

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

Start Date: 10-6-09 Time: 1300
End Date: 10-12-09 Time: 1130

Organism: *Ceriodaphnia dubia*
Organism Batch #: 36-09
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: YCT *P. subcapitata*
Food Batch: 7-15-09 7-23-09
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-2009-10-06-80	1219236	10-5-09 0739	10.6.09 11:47
Test Day 2	2 mf(61)	TLH-2009-10-08-80	1220309	10-7-09 0918	10.8.09 10.21
Test Day 4	3	TLH-2009-10-12-01	1220692	10-9-09 0904	10-10-09 0910

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	Not Measured			<0.03	<0.03	<0.03	150	130	118
Diluent/Control:				<0.03	<0.03	<0.03	96	97	97
Method:	—	—	—	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	—	—	—	CP/SD	JW	JW/MF	BA	BA	BA/MF
Verified by:	BA	BA	BA	JA	JA	BA	JB	JB	JB
	Conductivity (circle one) (µmhos-cm) (mmhos-cm)			Ammonia (mg/L)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	585	502	550	<0.017	<0.017	<0.017	78	59	58
Diluent/Control:	180	183	180	<0.017	<0.017	<0.017	92	87	87
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Hach	Hach	Hach
Measured by:	BA	BA/MF	MF	MF	MF	MF	BA	BA	BA/MF
Verified by:	JB	JB	BA	JA	BA	BA	JB	JB	JB

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. 25.3 max. 26.3 mean 25.8
Room B246 min. 22.8 max. 25.8 mean 24.3

Investigators' signatures
Marshall Faircloth
Grace Parker
James Daniel
Chelsea French
REVIEWER

Test Replicate	Loaded from culture vial
1	A26
2	A3
3	B11
4	A8 mf only*
5	B10
6	B26
7	A6
8	A20
9	A24
10	A17

Statistics	
Control % CV:	34.7
Dunnetts PMSD:	23.2%
Reproduction NOEC:	100%
Survival NOEC:	100%
T-test value	1.08796
T- table value:	1.734
df:	18

Comments:

Test Page 1 of 3 PAGE 000053 revised 08/24/06 MF/SP

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Facility: Hurlburt Field AFB WWTF

LIMS Sample # 1219236 for lab sample 1

Start Date: 10.6.09 Time: 13:00

End Date: 10-12-09 Time: 1130

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	10	0
	3	2	0	2	0	3	4	0	2	4	3	20	10	2.0
	4	0	0	0	6	0	0	0	0	0	0	6	10	0.6
	5	8	5	6	10	7	7	0	4	6	8	61	10	6.1
	6	11	12	10	0	11	11	2	10	11	13	91	10	9.1
	7													
	8													
	Total	21	17	18	16	21	22	2	16	21	24	178	10	17.8

Organisms loaded by: BA	
Day	Counted/ verified by:
0	MF
1	MF
2	BA
3	MF
4	MF
5	MF
6	MF
7	
8	

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total Neonates	Surviving adults	Neonates per adult
100 % sample	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	0	4	0	4	4	3	2	2	3	27	10	2.7
	4	0	0	0	4	0	0	0	0	0	0	4	10	0.4
	5	8	6	8	0	7	6	8	6	5	8	62	10	6.2
	6	13	10	12	8	12	12	11	9	11	13	111	10	11.1
	7													
	8													
	Total	25	16	24	12	23	22	23	17	18	24	204	10	~~20.4~~ 20.4 MF/BA

Concentration	Mean neonates /adult	% survival
Control	17.8	100%
100%	20.4	100%

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

Comments: Day 4 100% Rep 7 = Split Brood MF 10-10-09

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

Revised 08/31/06 MF/SP

Appendix B. (continued)

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Hurlburt Field AFB WWTF

LIMS Sample # : 1219236 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample: Control		M	7.9	24.4	7.3	180					
	1	100%	M	8.0	25.2	8.5	585					
	Measured by:			BA	BA	BA	BA					
	Recorded by:			BA	BA	BA	BA					
Day 1	sample: Control		M	8.0	25.2	7.9	177	M	8.1	25.0	7.8	182
	1	100%	M	8.4	25.5	7.4	590	M	8.3	24.6	7.6	590
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 2	sample: Control		M	8.0	24.0	7.5	BA 173	M	7.9	24.0	7.4	183
	2	100%	M	8.3	24.6	7.4	496	M	8.1	24.0	7.3	591
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 3	sample: Control		M	8.1	24.0	8.0	183	M	8.1	24.3	7.9	188
	2	100%	M	8.2	25.3	7.8	502	M	8.2	24.2	7.6	508
	Measured by:			MF	BA/MF	MF	BA/MF		MF	MF	MF	MF
	Recorded by:			MF	BA/MF	MF	BA/MF		MF	MF	MF	MF
Day 4	sample: Control		M	8.1	25.3	7.7	180	M	8.1	24.9	7.4	179
	3	100%	M	8.0	25.6	8.2	550	M	8.2 MF	24.6	7.4	517
	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	8.0	25.6	7.5	175	M	8.1	24.5	7.5	188
	3	100%	M	8.2	25.7	7.4	546	M	8.2	24.5	7.6	580
	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					M	7.9	24.4	7.4	180
	3	100%	M					M	8.1	24.3	7.5	558
	Measured by:								MF	MF	MF	MF
	Recorded by:								MF	MF	MF	MF
Day 7	sample: Control		M					M				
	3		M					M				
	Measured by:											
	Recorded by:											
Day 8	sample: Control							M				
	3							M				
	Measured by:											
	Recorded by:											

Comments:

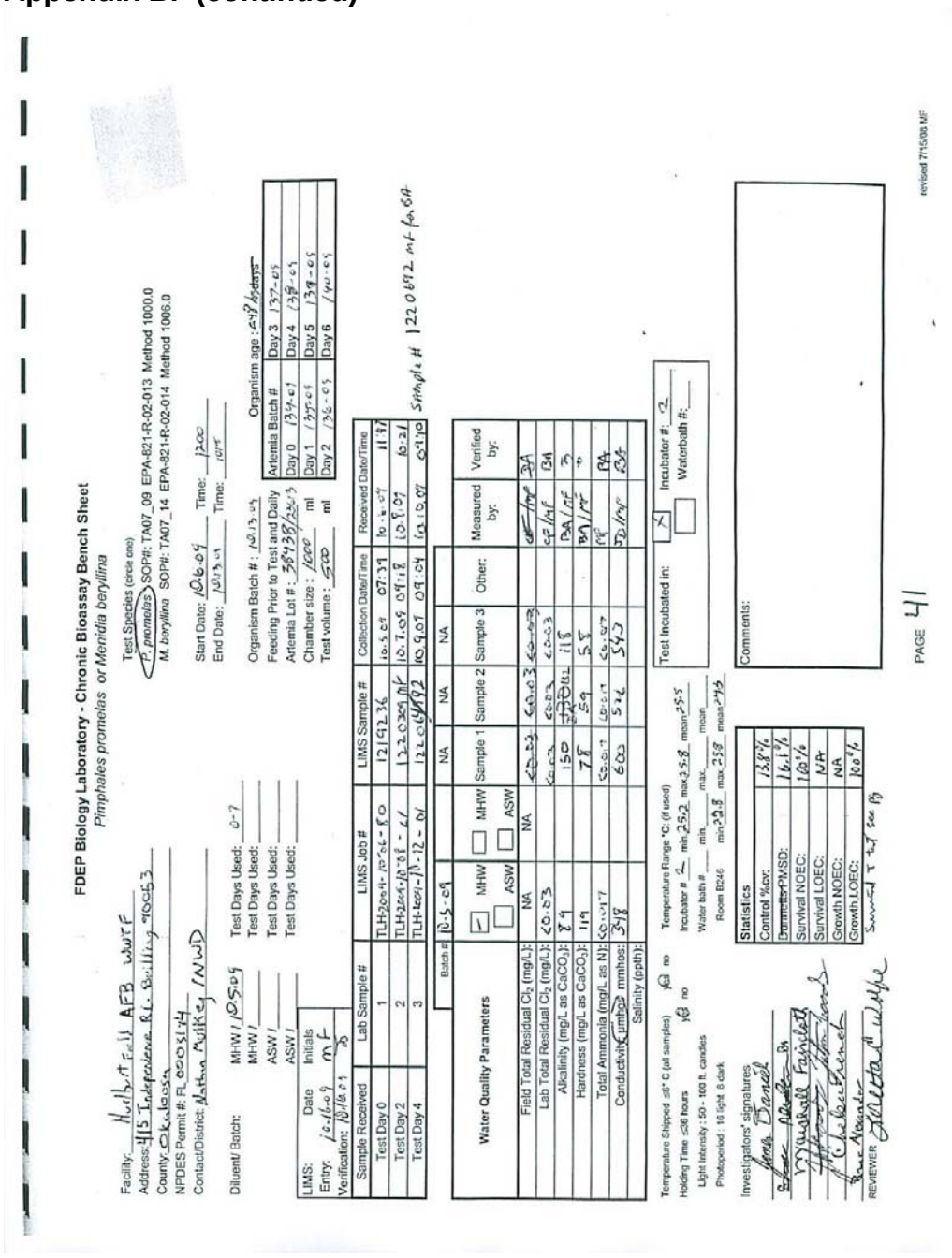
Replicate M= "Metered" vial, a surrogate vial for parameters

Test Page 3 of 3

PAGE 000060

revised 08/24/06 MF/SP

Appendix B. (continued)



FDEP Biology Laboratory - Chronic Bioassay Bench Sheet
Pimphales promelas or Menidia beryllina

Facility: Hurlburt Field AFB
Address: 415 Independence Blvd, Building 90563
County: Okaloosa
NPDES Permit #: FL0005134
Contact/Distrikt: Mike Mulkey / NWD

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: 10.6.05 Time: 1300
End Date: 10.9.05 Time: 1015

Organism age: 24-48 hours

Artemia Batch #	Day 3	137-05
Day 0	134-01	Day 4	138-05
Day 1	137-05	Day 5	139-05
Day 2	136-05	Day 6	140-05

Feeding Prior to Test and Daily
Artemia Lot #: 3873B/2005
Chamber size: 1000 ml
Test volume: 500 ml

Diluent/ Batch: MHW / 05015 Test Days Used: 0-7
MHW / Test Days Used:
ASW / Test Days Used:
ASW / Test Days Used:

LIMS:	Date	Initials
Entry:	10.6.05	MF
Verification:	10.12.05	MF

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-20644-05-10-500	121612.36	10.5.05 07:39	10.6.05 11:47
Test Day 2	2	TLH-20644-10.7.05 - 47	122003.01F	10.7.05 09:18	10.8.05 10:21
Test Day 4	3	TLH-20644-10.12 - 01	122.01.0902	10.9.05 09:04	10.10.05 09:10

Sample # 122.0812 MF 10.6.05

Batch #: 10.5-05

Water Quality Parameters	MHW / ASW	MHW / ASW	Sample 1	Sample 2	Sample 3	Other:	Measured by:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	<0.03	<0.03	<0.03		JM	JM
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03	<0.03	<0.03		10/6/05	BM
Alkalinity (mg/L as $CaCO_3$):	89		150	120	118		DM/MF	JS
Hardness (mg/L as $CaCO_3$):	119		78	59	55		BM/MF	JS
Total Ammonia (mg/L as N):	<0.017		<0.017	<0.017	<0.017		MF	PM
Conductivity (umhos or mmhos):	318		603	512	543		JD/MF	ESH
Salinity (ppth):								

Temperature Shipped ≤8° 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: (if used)
Incubator # 1 min 25.2 max 25.8 mean 25.5
Water bath # ___ min ___ max ___ mean ___
Room B246 min 23.8 max 25.8 mean 24.6

Test Incubated in: [X] Incubator #: 2 [ ] Waterbath #: ___

Investigators' signatures
Jonas Daniel
Brian Nash
YOUNGBLOOD Fairfield
Jeffrey Jones
Christopher Jones
Rose Alexander
REVIEWER Stephanie Mulvihill

Statistics	
Control %ov:	13.8%
Dunnett PMSD:	16.1%
Survival NOEC:	100%
Survival LOEC:	NA
Growth NOEC:	NA
Growth LOEC:	100%

Survival & Growth See 10

Comments:

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revised 7/15/05 MF

Appendix B. (continued)

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Pimphales promelas or Menidia beryllina Survival

Facility: Hurlburt

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

LIMS Sample Number: 1219236 for lab sample #1

Start Date: 10.6.09 Time: 1200

End Date: 10.13.09 Time: 1015

		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	10	10	10	10	10	10
	C	10	9 D	9	9	9	9	9	9
	D	10	10	10	10	10	10	10	10
100 % sample concentration	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	8 D	8	8	8	8	8	8
	D	10	9 D	9	9	9	9	9	9
Control	A	10							
	B	10							
	C	10							
	D	10							
% sample concentration	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: JD	Checked by:		JD	JD	JD	JD	BH	JD	JD
Verified by: MF									

Comments:

Appendix B. (continued)

Biology Laboratory Chronic Screening Bioassay Benchsheet

Parameters

P. promelas SOP TA-07_09 *M. beryllina* SOP TA-07_14

Sample Source: Hurlburt

LIMS Sample #: 1214236 (for Lab sample #1)

Test Day ↓		Conc.	Old Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm) (mmhos/cm)	Salinity ppth	New Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Cond (µmhos/cm) (mmhos/cm)	Salinity ppth
Day 0	sample:	Control							A	8.0	24.0	7.6	348	—
	1	100%							A	8.0	24.7	8.9	600	—
	Measured by:									JW	JW	JW	JW	—
	Recorded by:									JW	JW	JW	JW	—
Day 1	sample:	Control	B	7.6	24.5	7.0	368	—	B	8.1	24.3	5.6	376	—
	1	100%	B	8.0	24.8	6.9	593	—	B	8.2	24.9	5.8	601	—
	Measured by:			JW	JW	JW	JW	—		JW	JW	JW	JW	—
	Recorded by:			JW	JW	JW	JW	—		JW	JW	JW	JW	—
Day 2	sample:	Control	C	7.9	25.7	5.5	348	—	C	8.2	24.1	7.7	437	—
	2	100%	C	8.0	25.4	5.3	616	—	C	8.2	24.4	7.7	526	—
	Measured by:			JW	JW	JW	JW	—		JW	JW	JW	JW	—
	Recorded by:			JW	JW	JW	JW	—		JW	JW	JW	JW	—
Day 3	sample:	Control	D	7.7	24.0	6.6	406	—	D	7.6	24.0	6.9	390	—
	2	100%	D	7.8	24.0	6.8	559	—	D	7.7	24.4	6.4	531	—
	Measured by:			JW	JW	JW	JW	—		JW	JW	JW	JW	—
	Recorded by:			JW	JW	JW	JW	—		JW	JW	JW	JW	—
Day 4	sample:	Control	A	7.7	24.7	6.1	390	—	A	8.0	25.0	7.2	337	—
	3	100%	A	7.8	24.6	6.0	515	—	A	8.0	25.4	7.8	543	—
	Measured by:			JW	JW	JW	JW	—		MF	MF	MF	MF	—
	Recorded by:			JW	JW	JW	JW	—		MF	MF	MF	MF	—
Day 5	sample:	Control	B	7.4	24.3	6.2	352	—	B	8.2	24.0	7.4	338	—
	3	100%	B	7.6	24.5	6.2	544	—	B	8.2	24.1	7.3	552	—
	Measured by:			BA	BA	BA	BA	—		BA	BA	BA	BA	—
	Recorded by:			BA	BA	BA	BA	—		BA	BA	BA	BA	—
Day 6	sample:	Control	C	7.7	25.2	6.8	341	—	C	7.6	24.3	7.0	355	—
	3	100%	C	7.9	25.1	6.8	556	—	C	7.9	24.9	6.9	565	—
	Measured by:			JW	JW	JW	JW	—		JW	JW	JW	JW	—
	Recorded by:			JW	JW	JW	JW	—		JW	JW	JW	JW	—
Day 7	sample:	Control	D	7.6	25.2	5.7	385	—						
	3	100%	D	7.8	25.1	5.9	545	—						
	Measured by:			JW	JW	JW	JW	—						
	Recorded by:			JW	JW	JW	JW	—						

Test Rep. = Replicate Record Salinity < 1 if freshwater Circle µmhos-cm or mmhos-cm

Comments:

revised 7/15/08 mf

Test Page 3 of 5

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Appendix B. (continued)

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Facility: Hurlburt

LIMS Sample Number: 1219236 for lab sample #1

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # Fish	Mean wt. (mg)
			mean wt = fish wt divided by 10 convert g to mg: move decimal 3 places to right				
Control	A	1	0.01482	0.02140	0.00658	10	.658
	B	2	0.01497	0.02113	0.00616	10	.616
	C	3	0.01427	0.02006	0.00579	10	.579
	D	4	0.01409	0.02197	0.00788	10	.788
100 % sample	A	5	0.01405	0.01884	0.00479	10	.479
	B	6	0.01451	0.01998	0.00547	10	.547
	C	7	0.01491	0.01934	0.00443	10	.443
	D	8	0.01382	~~0.01958~~ 0.01958	0.00576	10	.576
Control	A					10	
	B					10	
	C					10	
	D					10	
% sample	A					10	
	B					10	
	C					10	
	D					10	
	Weighed by initials:		JS	JS			

Growth	%CV	PMSD
Control	13.8%	16.1%

1.94300

Growth	Table	Calculated	dF
T-test	~~2.7483~~ MF	2.71834	6
T-test	1.94300	0.87240	6

Survival

Drying	
Temperature °C:	100
Hours:	60

S-weight ID: BIO-S-WEIGHTS-01

Balance ID: OHAUS 250D SER. 1125481084

Tare Weighing Date: 12/2/09 Final Weighing Date: 12/4/09

							Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.01483	@	0.01482	S-weights	0.01	@	0.01
Tare Pan 1 after Pan 8 (g)	0.01484	@	0.01482	at tare	0.03002	@	0.03
Final Pan 1 after Pan 5 (g)	0.02145	@	0.02140	S-weights	0.00495	@	0.01
Final Pan 1 after Pan 8 (g)	0.02144	@	0.02140	at final	0.05	@	0.05

Comments:

Test Page 4 of 5 PAGE 4/4 revised 07/15/08 MF

Appendix B. (continued)

Bioassay Instrument ID

Test ID: Humbert Dates: October 6-13, 2009

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

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

entered by MF 11-17-09

V 1.1 6/12/08 MF

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Appendix C. SRT Bench Sheets and Statistical Analysis

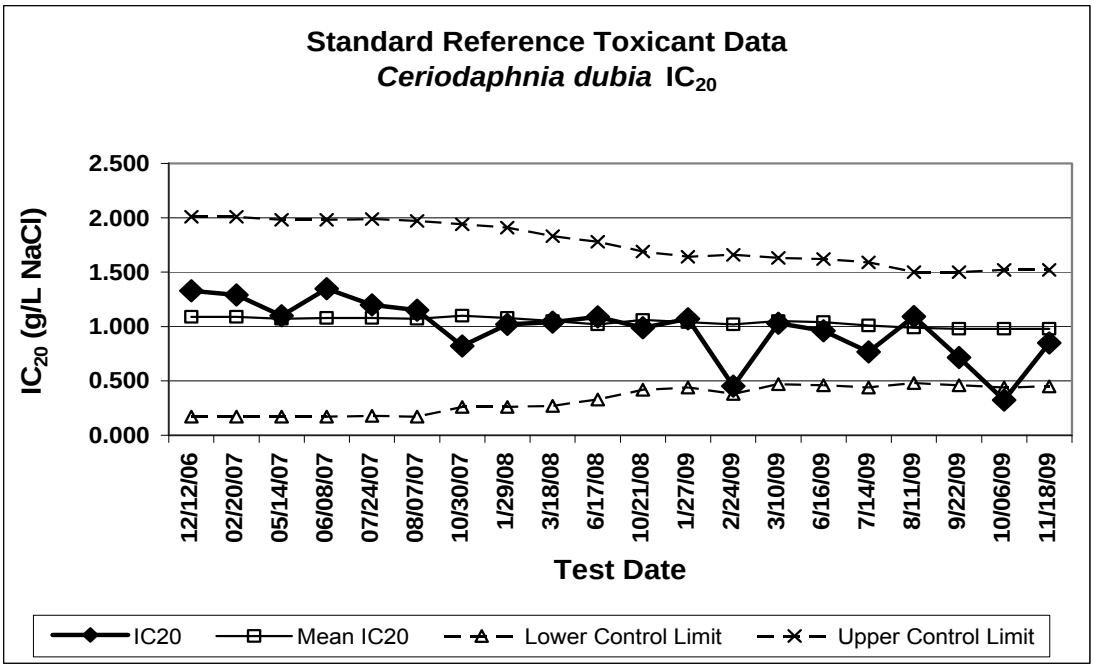
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
12/12/06	1.330	1.09	0.46	0.17	2.01
02/20/07	1.290	1.09	0.46	0.17	2.01
05/14/07	1.100	1.07	0.45	0.17	1.98
06/08/07	1.347	1.08	0.45	0.17	1.98
07/24/07	1.200	1.08	0.45	0.18	1.99
08/07/07	1.150	1.07	0.45	0.17	1.97
10/30/07	0.821	1.10	0.42	0.26	1.94
1/29/08	1.020	1.08	0.41	0.26	1.91
3/18/08	1.040	1.05	0.39	0.27	1.83
6/17/08	1.090	1.02	0.36	0.33	1.78
10/21/08	0.989	1.06	0.32	0.42	1.69
1/27/09	1.070	1.04	0.30	0.44	1.64
2/24/09	0.452	1.02	0.32	0.38	1.66
3/10/09	1.030	1.05	0.29	0.47	1.63
6/16/09	0.960	1.04	0.29	0.46	1.62
7/14/09	0.768	1.01	0.29	0.44	1.59
8/11/09	1.093	0.99	0.26	0.48	1.50
9/22/09	0.716	0.98	0.26	0.46	1.50
10/06/09	0.325	0.98	0.27	0.44	1.52
11/18/09	0.848	0.98	0.27	0.45	1.52

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

NOTE: Follow-up test initiated on October 20th invalidated due to control reproduction failure. Poor reproduction in C. dubia culture during this time was noted and corrected.



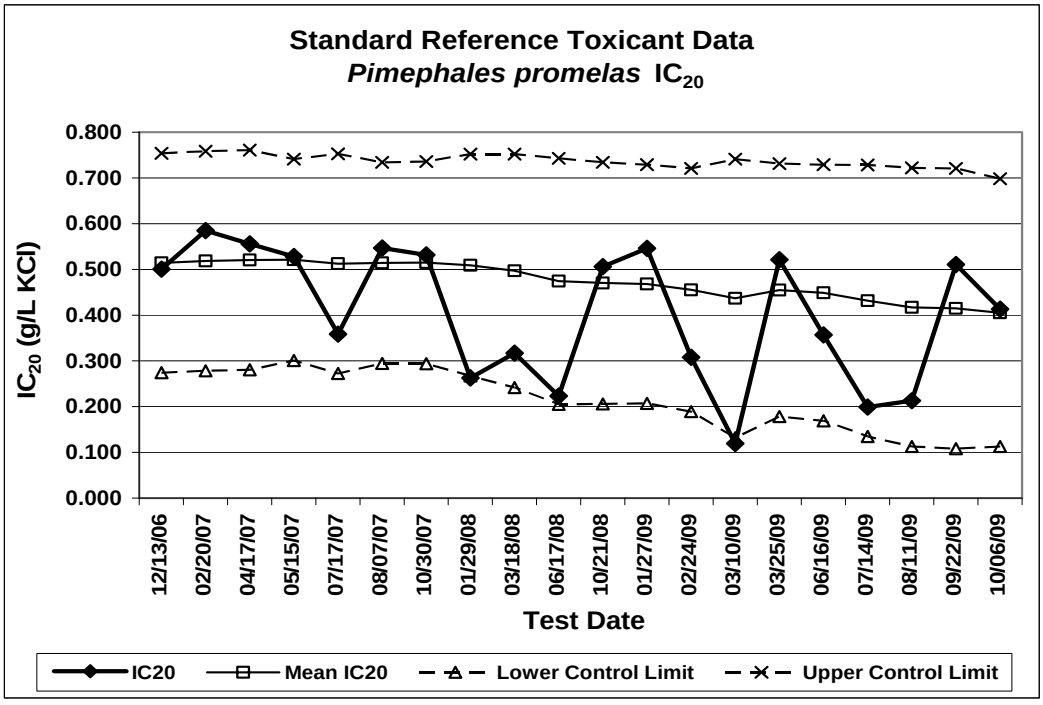
Appendix C. (continued)

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	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
12/13/06	0.501	0.514	0.12	0.274	0.754
02/20/07	0.585	0.518	0.12	0.278	0.758
04/17/07	0.556	0.521	0.12	0.281	0.761
05/15/07	0.528	0.521	0.11	0.301	0.741
07/17/07	0.358	0.513	0.12	0.273	0.753
08/07/07	0.547	0.514	0.11	0.294	0.734
10/30/07	0.531	0.515	0.11	0.294	0.736
01/29/08	0.263	0.509	0.12	0.267	0.752
03/18/08	0.317	0.497	0.13	0.242	0.752
06/17/08	0.223	0.474	0.13	0.205	0.743
10/21/08	0.506	0.470	0.13	0.206	0.734
01/27/09	0.546	0.468	0.13	0.207	0.729
02/24/09	0.308	0.455	0.13	0.189	0.721
03/10/09	0.119	0.437	0.15	0.132	0.741
03/25/09	0.521	0.455	0.14	0.178	0.731
06/16/09	0.357	0.449	0.14	0.169	0.729
07/14/09	0.199	0.432	0.15	0.135	0.728
08/11/09	0.213	0.417	0.15	0.113	0.722
09/22/09	0.511	0.415	0.15	0.108	0.721
10/062/09	0.413	0.405	0.15	0.113	0.698

Means are from all SRT tests, up to 20 tests..
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev



FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia

Diluent/ Batch: 20% DMW / 9-29-09 Test Days Used: 0-4
20% DMW / 10-6-09 Test Days Used: PTX 5
Toxicant/ Batch: NaCl / 10-6-09

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

Organism: *Ceriodaphnia dubia*
Organism Batch #/ Age: 36.09 / <24 hr.
Feeding: Prior to Test and Daily
Food: [x] YCT [x] *P. subcapitata*
Food Batch: 7-15-09 7-23-09
Chamber size: 30 mL
Test Volume: 20 mL

Start Date: 10-6-09 Time: 1225
End Date: 10-12-09 Time: 1330

Batch:	9-29-09	10-6-09			
Water Quality Parameters	20% DMW	20% DMW	Other	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03		JW/CF	MF
Alkalinity (mg/L as $CaCO_3$):	86	97		BA	MF
Hardness (mg/L as $CaCO_3$):	92	87		BA	MF
Total Ammonia (mg/L as N):	<0.017	<0.017		MF	JS
Conductivity µmhos-cm (mmhos-cm)	0.1727	0.175		BA/MF	MF/

Results	
Control % CV:	19.4 %
Dunnetts PMSD:	35.5 %
Reproduction NOEC:	<0.59 g/L
Reproduction LOEC:	0.59 g/L
Survival NOEC:	1.39/L
Survival LOEC:	2 g/L
ICP_{20}:	0.325 g/L
ICP_{25}:	0.406 g/L

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

Loaded by: BA

Test Replicate	Loaded from culture vial
1	A26
2	A3
3	B16
4	A7
5	B10
6	B26
7	A6
8	B20
9	A24
10	A17

Comments:

Investigators' signatures
Marshall Faircloth
Chelsea French
REVIEWER

Test Incubated in: Incubator: # 2
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min. 25.2 max. 25.8 mean 25.5
Room B246 ___ min. 22.8 max. 25.8 mean 24.3
Test min. 24.0 max. 26.0 mean NA

Appendix C. (continued)

Ceriodaphnia dubia Survival and Reproduction

Start Date: 10.6.09 Time: 12:25 Loaded by: BA
End Date: 10-12-09 Time: 1330 Verified by: MF

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
Control	0												10	
	1												10	
	2	~~0~~	(A) 10	10	10	10	10	10	10	10	10	0	10	0
	3	3	3	3	3	3	3	0	0	4	0	22	10	2.2
	4	0	0	0	0	0	0	6	5	0	4	15	10	1.5
	5	8	6	8	5	6	6	0	5	6	7	57	10	5.7
	6	12	11	12	10	10	11	12	0	8	7	93	10	9.3
	7													
	8													
	Total	23	20	23	18	19	20	18	10	18	18	187	10	18.7
0.59 ppth	0												10	
	1												10	
	2	~~10~~ (A)	~~10~~	10	10	0	0	0	0	0	0	0	10	0
	3	3	0	3	1	0	2	0	1	0	3	13	10	1.3
	4	0	4	0	0	0	0	0	0	0	8	12	10	1.2
	5	5	7	8	9	0	0	0	6	0	0	35	10	3.5
	6	10	0	11	13	8^A	5^A	8^A	10	6	9	59	10	5.9
	7													
	8								(17) 18 MF					
	Total	18	11	22	23	0	2	0		6	20	119	10	11.9
0.89 ppth	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	2	0	2	1	2	0	1	4	12	10	1.2
	4	0	0	0	0	0	0	0	0	0	0	0	10	0
	5	1	2	5	0	0	5	0	0	5	7	25	10	2.5
	6	0	10	7	7^A	6^A	3	1^A	6^A	10	10	40	10	4.0
	7													
	8													
	Total	1	12	14	0	2	9	2	0	16	21	77	10	7.7

Comments: A = aborted
(A) Checkmarks unneeded, a hold over from the culture transfer boards indicating that the adult is alive BA 11.17.09

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Appendix C. (continued)

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
1.3 ppth	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	3	3	10	0.3
	4	3	0	0	2	0	0	0	0	0	0	5	10	0.5
	5	7	0	0	7	0	0	0	2	0	5	21	10	2.1
	6	8	0	0	0	0	0	0	2	0	6	16	10	1.6
	7													
	8													
	Total	18	0	0	9	0	0	0	4	0	14	45	10	4.5
2.0 ppth	0												10	
	1												10	
	2	0	X	0	0	0	0	0	0	0	0	0	9	0
	3	0	0X	0	0	0	0	0	0	0	0	0	9	0
	4	0		0	0	X0	1	0	0	0	0	1	8	0.1
	5	0		0	0		0	0	0	0	0	0	8	0
	6	2		0	0		2	0	0	2	0	M 6	8	0.6
	7													
	8													
	Total	2	0	0	0	0	3	0	0	2	0	7	8 (10)	0.7
3.0 ppth	0												10	
	1												10	
	2	X0	X0	X0	X0	X0	0	X0	X0	X0	X0	0	1	0
	3						0	0				0	1	0
	4	0					X0					0	0	0
	5											0	0	0
	6											0	0	0
	7											0	0	0
	8											0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:

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Appendix C. (continued)

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 0	Control	M	8.0	24.2	7.3	0.177					
	0.59 ppth	M	8.0	24.0	7.3	1.28					
	0.89 ppth	M	8.0	24.0	7.2	1.83					
	1.3ppth	M	8.0	24.0	7.4	2.57					
	2.0 ppth	M	8.0	24.0	7.4	3.81					
	3.0 ppth	M	8.1	24.0	7.4	5.51					
	Measured by:		BA	BA	BA	BA					
	Recorded by:		BA	BA	BA	BA					
Day 1	Control	M	8.2	24.8	7.6	0.178	A	8.3	24.6	7.5	0.180
	0.59 ppth	M	8.1	25.6	7.7	1.30	A	8.3	24.7	7.5	1.26
	0.89 ppth	M	8.1	25.4	7.6	1.84	A	8.2	24.7	7.6	1.84
	1.3ppth	M	8.1	25.6	7.5	2.60	A	8.2	25.0	7.6	2.61
	2.0 ppth	M	8.1	25.7	7.5	3.85	A	8.2	25.0	7.5	3.86
	3.0 ppth	M	8.1	26.0	7.5	5.55	A	8.2	25.1	7.6	5.53
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 2	Control	M	7.9	24.0	7.6	0.174	A	7.8	24.0	7.3	0.182
	0.59 ppth	M	7.9	24.7	7.6	1.28	A	7.8	24.0	7.3	1.32
	0.89 ppth	M	7.9	24.8	7.4	1.81	A	7.8	24.0	7.2	1.85
	1.3ppth	M	7.9	24.6	7.3	2.52	A	7.8	24.0	7.2	2.62
	2.0 ppth	M	8.0	24.4	7.3	3.73	A	7.8	24.0	7.2	3.81
	3.0 ppth	M	8.0	24.0	7.4	5.41	A	7.8	24.0	7.2	5.72
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 3	Control	M	8.1	25.5	8.0	0.180	A	8.2	24.3	7.8	0.181
	0.59 ppth	M	8.1	25.4	7.8	1.27	A	8.1	24.1	7.6	1.26
	0.89 ppth	M	8.1	25.2	7.8	1.82	A	8.1	24.2	7.6	1.85
	1.3ppth	M	8.1	25.4	7.7	2.55	A	8.1	24.4	7.5	2.56
	2.0 ppth	M	8.1	25.7	7.7	3.81	A	8.1	24.5	7.6	3.74
	3.0 ppth	M	8.1	25.5	7.6	5.43	F	8.1	24.7	7.7	5.44
	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

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Appendix C. (continued)

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	7.3	25.2	7.4	0.234	M	7.8	24.5	7.2	0.189
	0.59 ppth	M	8.0	25.3	7.5	1.24	M	7.8	24.4	7.0	1.29
	0.89 ppth	M	7.9	25.4	7.5	1.78	M	7.8	24.4	7.1	1.82
	1.3ppth	M	8.0	25.4	7.5	2.60	M	7.8	24.4	7.1	2.61
	2.0 ppth	M	8.0	25.4	7.6	3.70	M	7.9	24.6	7.1	3.81
	3.0 ppth	M	8.0	25.4	7.6	~~5.40~~ 5.40	M	7.9	24.4	7.2	5.52
	Measured by:		JS	JS	JS	JS		JS	JS	JS	JS
	Recorded by:		JS	JS	JS	JS		JS	JS	JS	JS
Day 5	Control	M	8.0	25.4	7.4	0.175	A	8.1	24.7	7.6	0.188
	0.59 ppth	M	8.0	25.4	7.8	1.28	A	8.0	24.4	7.6	1.29
	0.89 ppth	M	8.0	25.5	7.7	1.84	A	8.0	24.5	7.7	1.83
	1.3ppth	M	8.0	25.4	7.6	2.64	A	8.0	24.5	7.7	2.63
	2.0 ppth	M	8.0	25.4	7.6	3.76	A	8.0	24.3	7.7	3.72
	3.0 ppth	M	—	—	—	—	A				
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 6	Control	M					A	8.0	24.5	7.4	0.186
	0.59 ppth	M					A	8.0	24.4	7.4	1.34
	0.89 ppth	M					A	8.0	24.4	7.4	1.91
	1.3ppth	M					A	8.0	24.6	7.4	2.74
	2.0 ppth	M					A	8.0	24.5	7.3	3.78
	3.0 ppth	M									
	Measured by:							MF	MF	MF	MF
	Recorded by:							MF	MF	MF	MF
Day 7	Control	M									
	0.59 ppth	M									
	0.89 ppth	M									
	1.3ppth	M									
	2.0 ppth	M									
	3.0 ppth	M									
	Measured by:										
	Recorded by:										
Day 8	Control	M									
	0.59 ppth	M									
	0.89 ppth	M									
	1.3ppth	M									
	2.0 ppth	M									
	3.0 ppth	M									
	Measured by:										
	Recorded by:										

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

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Appendix C. (continued)

Bioassay Instrument ID

Test ID: C. dubia chronic SRT Dates: 10 - 6-12-2009

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

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)
entered by M. Failoth October 14, 2009

V 1.1 6/12/08 MF

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Test Page 6 of 6 Page

Appendix C. (continued)

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/10.5.09 Test Days Used: 0-7 (PMSD 16.5D)

Diluent/ Batch: _____ Test Days Used: _____

Toxicant/ Batch # : KCl/9.21.09

Artemia Lot # : 38473B / 23613

Start Date: 10.6.09 Time: 1215

End Date: 10.13.09 Time: 1020

Organism Batch #/ Age: 10.6.09 / 24hrs

Artemia Batch #	Day 2 136-09	Day 5 139-09
Day 0 134-09	Day 3 137-09	Day 6 140-09
Day1 135-09	Day 4 138-09	

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	JW	BA
Alkalinity (mg/L as $CaCO_3$):	89		HACH	BA	JD
Hardness (mg/L as $CaCO_3$):	119		HACH	BA	JD
Total Ammonia (mg/L as N):	<0.017		DENVER	MF	BA
Conductivity (umhos-cm) mmhos-cm:	316		METTLER	MF	BA

Statistics	
Growth NOEC:	0.5 g/L
Growth LOEC:	1 g/L
Growth IC_{20}:	0.41333 g/L
Growth IC_{25}:	0.468
Ctrl % CV:	16.1
Dunnetts PMSD:	25.4
Survival NOEC:	0.5
Survival LOEC:	1

Test incubated in : ☑ Incubator # 2

☐ Waterbath #_____

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C:

Incubator # 2 min. 25.3 max. 26.3 mean 25.8 ~~24.8~~

Water bath # ____ min._____ max._____ mean_____

Room B246 min. 22.8 max. 25.8 mean 24.3

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

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

Investigators' signatures

James Daniels

Bake Alexander

Marshall Faircloth

John Lloyd

Laurie C. Wolfe

REVIEWER

Comments:

revised 7/16/08 MF

Appendix C. (continued)

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	7 3D	7	7	7	7	7	7
	B	E 2	10	10	10	10	10	10	9 1D	9
	C	E 3	10	10	10	10	10	10	10	10
	D	E 4	10	10	10	10	10	10	10	10
.125	A	E 5	10	10	10	9 1D	9	9	9	9
	B	E 6	10	10	10	9 1D	9	9	9	9
	C	E 7	10	8 2D	8	8	8	8	8	8
	D	E 8	10	10	10	10	10	10	10	10
.25	A	E 9	10	10	10	10	10	10	10	10
	B	E 10	10	10	10	10	10	10	10	10
	C	E 11	10	10	10	10	10	10	10	10
	D	E 12	10	10	10	10	10	10	10	10
.5	A	E 13	10	7 3D	7	7	6 1D	5 1D	5	5
	B	E 14	10	8 2D	8	8	8	8	8	8
	C	E 15	10	9 1D	9	9	9	8 1P	8	8
	D	E 16	10	7 3D	7	7	7	7	7	7
1.0	A	E 17	10	3 7D	2 1D	1 1D	1	1	0 1D	
	B	E 18	10	2 8D	2	0 2D	—	—	—	
	C	E 19	10	1 9D	1	1	0 1D	—	—	
	D	E 20	10	1 9D	0 1D	—	—	—	—	
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):			Checked by:							
Verified by (0 hr):										
Concentrations prepared by:										

Comments:

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revised 7/16/08 MF

Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Parameters

Start Date: 10.6.04 Time: 1215
End Date: 10/13/04 Time: 1020

Organism: (*P. promelas*) *M.beryllina* (circle one)
Concentration: µg/L (mL) (circle one)

circle µmhos or mmhos

Test Day		Before Renewal					Test Start and After Renewal				
↓	Concentration	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos mmhos	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos mmhos
Day 0	Control						A	8.1	24.3	8.0	346
	.125						A	8.1	24.3	7.9	562
	.25						A	8.1	24.2	7.9	805
	.5						A	8.1	24.1	7.9	1278
	1.0						A	8.1	24.0	7.9	2200
	2.0						A	8.1	24.0	7.9	4040
							A				
	Measured by:										
	Recorded by:										
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 1	Control	B	7.7	25.0	7.2	380	B	7.7	24.5	7.3	413
	.125	B	7.7	24.8	7.2	560	B	7.6	24.3	6.1	616
	.25	B	7.7	24.5	7.1	800	B	7.9	24.4	6.1	854
	.5	B	7.7	24.7	7.1	1292	B	7.8	24.4	6.3	1375
	1.0	B	7.8	25.0	7.1	2160	B	7.9	24.3	6.1	2250
	2.0	B	7.9	24.9	7.2	3970	B	—	—	—	—
		B					B				
	Measured by:		JD	JD	JD	JD		JW	JD	JW	JW
	Recorded by:		JD	JD	JD	JD		JW	JW	JW	JW
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 2	Control	C	7.6	24.2	5.3	367	C	8.0	24.1	7.5	379
	.125	C	7.8	24.8	5.5	604	C	8.0	24.0	7.6	564
	.25	C	7.8	24.9	5.4	859	C	8.0	24.0	7.6	799
	.5	C	7.8	24.9	5.4	1305	C	8.0	24.0	7.6	1287
	1.0	C	7.9	25.1	5.6	2230	C	8.1	24.0	7.7	2150
		C	JW				C				
		C	JW				C				
	Measured by:		JW	JD	JW	JW		JD	JD	JD	JD
	Recorded by:		JW	JD	JW	JW		JD	JD	JD	JD
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 3	Control	D	7.5	24.0	6.4	376	D	7.8	24.0	6.4	374
	.125	D	7.5	24.0	6.0	578	D	7.8	24.0	6.8	584
	.25	D	7.5	24.1	6.0	819	D	7.9	24.0	6.9	823
	.5	D	7.6	24.0	6.4	1292	D	7.9	24.0	6.9	1283
	1.0	DC	7.6	24.0	6.6	2190	D	8.0	24.0	7.2	2200
		D					D				
		D					D				
	Measured by:		JD	JD	JD	JD		JW	JD	JW	JW
	Recorded by:		JD	JD	JD	JD		JW	JW	JW	JW

Comments:

Appendix C. (continued)

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Parameters

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

Concentration: µg/L mg/L (circle one)

circle µmhos or mmhos

Test Day		Before Renewal					After Renewal					
	Concentration	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos mmhos	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity µmhos mmhos
Day 4	Control	A	7.6	25.0	6.0	352	A	7.8	25.1	7.2	369
	.125	A	7.5	24.9	6.0	584	A	7.8	24.8	7.0	572
	.25	A	7.6	24.8	6.1	827	A	7.9	24.8	7.3	800
	.5	A	7.6	24.7	6.1	1265	A	7.9	24.5	7.4	1259
	1	A	7.7	24.7	6.3	2190	A	7.9	24.8	7.4	2200
		A					A		~~0.50~~		
		A					A				
	Measured by:		~~JD~~	~~JD~~	~~JD~~	~~JD~~		~~JD~~	~~JD~~	~~JD~~	~~JD~~
	Recorded by:		~~JD~~	~~JD~~	~~JD~~	~~JD~~		~~JD~~	~~JD~~	~~JD~~	~~JD~~
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 5	Control	B	7.6	24.8	6.6	380	B	8.1	24.0	7.7	342
	.125	B	7.6	24.6	6.7	589	B	8.2	24.0	7.5	579
	.25	B	7.6	24.8	6.7	826	B	8.2	24.0	7.4	806
	.5	B	7.6	24.8	6.7	1302	B	8.2	24.0	7.4	1292
	1	BA	7.6	24.3	6.7	2260	B	8.2	24.0	7.3	2210
		B					B				
		B					B				
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 6	Control	C	7.6	24.7	6.3	354	C	7.9	24.2	7.0	339
	.125	C	7.6	25.2	6.4	591	C	7.8	24.0	7.0	566
	.25	C	7.6	25.1	6.4	819	C	7.8	24.0	6.9	796
	.5	C	7.7	25.0	6.6	1300	C	7.8	24.7	7.0	1285
	1.0	CA	7.7	25.2	6.5	2250	C				
		C					C				
		C					C				
	Measured by:		~~JD~~	~~JD~~	~~JD~~	~~JD~~		JW	JD	JW	JW
	Recorded by:		~~JD~~	~~JD~~	~~JD~~	~~JD~~		JW	JW	JW	JW
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 7	Control	D	7.5	25.3	6.5	380	D				
	.125	D	7.5	25.2	6.5	578	D				
	.25	D	7.5	25.3	6.4	809	D				
	.5	D	7.5	25.2	6.4	1226	D				
	1.0	D					D				
		D					D				
		D					D				
	Measured by:		~~JD~~	~~JD~~	~~JD~~	~~JD~~					
	Recorded by:		~~JD~~	~~JD~~	~~JD~~	~~JD~~					

Comments:

Test Page 4 of 6

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revised 8/24/06 MF/SP

Appendix C. (continued)

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	9	0.01342	0.01812	0.00470	10	.470
	B	10	0.01397	0.01900	0.00503	10	.503
	C	11	0.01338	0.01834	0.00496	10	.496
	D	12	0.01283	0.01941	0.00658	10	.658
0.125	A	13	0.01363	0.02063	0.00700	10	.700
	B	14	0.01279	0.01943	0.00664	10	.664
	C	15	0.01420	0.01990	0.00570	10	.570
	D	16	0.01356	0.01931	0.00575	10	.575
.25	A	17	0.01372	0.02053	0.00681	10	.681
	B	18	0.01414	0.01929	0.00515	10	.515
	C	19	0.01365	0.01817	0.00452	10	.452
	D	20	0.01493	0.02045	0.00552	10	.552
.5	A	21	0.01458	0.01752	0.00294	10	.294
	B	22	0.01357	0.01830	0.00473	10	.473
	C	23	0.01379	0.01842	0.00463	10	.463
	D	24	0.01453	0.01894	0.00441	10	.441
	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:	JS	JS			

Comments:

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

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revised 8/24/06 MF/SP

Appendix C. (continued)

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: 10.12.09 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.01343	@ 0.01342
after Pan 10	0.01343	@ 0.01342
after Pan 15	0.01342	@ 0.01342
after Pan 20	0.01342	@ 0.01342
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	0.01	@ 0.01
	0.03002	@ 0.03

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 10.14.09 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.01811	@ 0.01812
after Pan 10	0.01809	@ 0.01812
after Pan 15	0.01811	@ 0.01812
after Pan 20	0.01812	@ 0.01812
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	0.00995	@ 0.01
	0.05	@ 0.05

Drying Oven ID: ERO 34000

Temperature °C: 100

Drying Hours: 6

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

Comments:

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revised 7/16/08 MF

Appendix C. (continued)

Bioassay Instrument ID

Test ID: P. promelas chronic SRT Dates: October 6-13, 2009

METER / DEVICE	ID	SOP	Parameter	Method	√used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
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	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓
Drying oven	Fro39000				✓

entered by J.D.

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 Jana Daniel 10.20.09

V 1.1 6/12/08 MF

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Appendix C. (continued)

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	10/6/2009 12:25	Test ID:	cdsrt10609	Sample ID:	REF-Ref Toxicant
End Date:	10/12/2009 13:30	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAFW02-EPA/821/R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:	SRT concurrent with Hurlburt				

Conc-gm/L	1	2	3	4	5	6	7	8	9	10
D-Control	23.000	20.000	23.000	18.000	19.000	20.000	18.000	10.000	18.000	18.000
0.59	18.000	11.000	22.000	23.000	0.000	2.000	0.000	17.000	6.000	20.000
0.89	1.000	12.000	14.000	0.000	2.000	9.000	2.000	0.000	16.000	21.000
1.3	18.000	0.000	0.000	9.000	0.000	0.000	0.000	4.000	0.000	14.000
2	2.000	0.000	0.000	0.000	0.000	3.000	0.000	0.000	2.000	0.000
3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

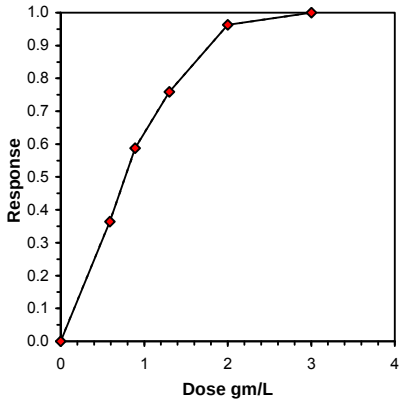
			Transform: Untransformed					Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	18.700	1.0000	18.700	10.000	23.000	19.371	10	18.700	1.0000
0.59	11.900	0.6364	11.900	0.000	23.000	77.773	10	11.900	0.6364
0.89	7.700	0.4118	7.700	0.000	21.000	100.046	10	7.700	0.4118
1.3	4.500	0.2406	4.500	0.000	18.000	150.809	10	4.500	0.2406
2	0.700	0.0374	0.700	0.000	3.000	165.643	10	0.700	0.0374
3	0.000	0.0000	0.000	0.000	0.000	0.000	10	0.000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.962606	0.93	0.256091	-0.23565
Bartlett's Test indicates unequal variances (p = 8.43E-06)	28.83904	13.2767		

Linear Interpolation (200 Resamples)

Point	gm/L	SD	95% CL		Skew
IC05*	0.0811	0.1068	0.0481	0.4733	3.0391
IC10*	0.1623	0.1357	0.0962	0.6167	1.8400
IC15*	0.2434	0.1471	0.1443	0.6503	1.1608
IC20*	0.3245	0.1483	0.1924	0.6862	0.6768
IC25*	0.4056	0.1513	0.2405	0.7249	0.4710
IC40	0.6386	0.1388	0.3847	0.9028	0.1498
IC50	0.7721	0.1446	0.4809	1.0391	0.1969

* indicates IC estimate less than the lowest concentration



Appendix C. (continued)

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	10/6/2009 12:15	Test ID:	ppsrt10609	Sample ID:	REF-Ref Toxicant
End Date:	10/13/2009 10:20	Lab ID:	DEP TOXLAB-FDEP Biology To	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAF 94-EPA/600/4-91/002	Test Species:	PP-Pimephales promelas
Comments:	P promelas chronic srt concurrent with Hurlburt Field AFB				

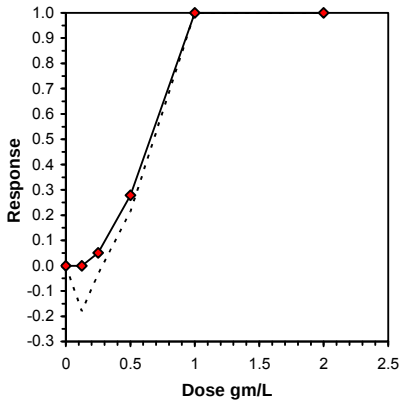
Conc-gm/L	1	2	3	4
D-Control	0.4700	0.5030	0.4960	0.6580
0.125	0.7000	0.6640	0.5700	0.5750
0.25	0.6810	0.5150	0.4520	0.5520
0.5	0.2940	0.4730	0.4630	0.4410
1	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000

			Transform: Untransformed					Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.5318	1.0000	0.5318	0.4700	0.6580	16.052	4	0.5795	1.0000
0.125	0.6273	1.1796	0.6273	0.5700	0.7000	10.353	4	0.5795	1.0000
0.25	0.5500	1.0343	0.5500	0.4520	0.6810	17.563	4	0.5500	0.9491
0.5	0.4178	0.7856	0.4178	0.2940	0.4730	20.006	4	0.4178	0.7209
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4	0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.964763	0.844	0.267044	-0.63339
Bartlett's Test indicates equal variances (p = 0.94)	0.409691	11.34487		

Linear Interpolation (200 Resamples)

Point	gm/L	SD	95% CL(Exp)		Skew
IC05	0.2478	0.0573	0.0981	0.3637	-0.2176
IC10	0.3038	0.0602	0.1155	0.4559	-0.2014
IC15	0.3586	0.0673	0.1429	0.5558	-0.0954
IC20	0.4133	0.0649	0.2260	0.5910	-0.2510
IC25	0.4681	0.0569	0.2987	0.6057	-0.5937
IC40	0.5838	0.0435	0.4172	0.6789	-1.0098
IC50	0.6532	0.0374	0.4997	0.7324	-1.1340



Appendix C. (continued)

Sample:	Hurlburt Field AFB WWTF	Date tested:	October 6-12, 2009			
Species:	*Ceriodaphnia dubia*	Test Type:	chronic screen			
						p=0.05
	Treatment A	Treatment B	# of Reps/Sample	10	df	Table t-value
	Control	100%			1	6.31400
	1.00	1.00			2	2.92000
	1.00	1.00			3	2.35300
	1.00	1.00			4	2.13200
	1.00	1.00			5	2.01500
	1.00	1.00			6	1.94300
	1.00	1.00			7	1.89500
	1.00	1.00			8	1.86000
	1.00	1.00			9	1.83300
	1.00	1.00			10	1.81200
	1.00	1.00			18	1.73400
Average	1.000	1.000				
	t-value=	NA				
	df=	18.00000				

Sample:	Hurlburt Field AFB WWTF	Date tested:	October 6 - 12, 2009	
Species:	*Ceriodaphnia dubia*	Test Type:	chronic screening	
	Leave rep value blank if few reps used			
	Teatment A	Treatment B	#of Reps./sample	10
Replicate #	Control	100%		
1	21	25		p=0.05
2	17	16	df	Table t-value
3	18	24	1	6.31400
4	16	12	2	2.92000
5	21	23	3	2.35300
6	22	22	4	2.13200
7	2	23	5	2.01500
8	16	17	6	1.94300
9	21	18	7	1.89500
10	24	24	8	1.86000
			9	1.83300
Average	17.8	20.4	10	1.81200
			18	1.734
	t-value=	-1.08796		
	df=	18		

Appendix C. (continued)

Sample:	Hurlburt Field AFB WWTF	Dates tested:	October 6-13, 2009			
Species:	*Pimephales promelas*	Test Type:	Chronic Screen			
						p=0.05
	Treatment A	Treatment B	# of Reps/Sample	4	df	Table t-value
	Control	100%			1	6.31400
	1.00	1.00			2	2.92000
	1.00	1.00			3	2.35300
	0.90	0.80			4	2.13200
	1.00	0.90			5	2.01500
					6	1.94300
Average	0.975	0.925			7	1.89500
					8	1.86000
	t-value=	0.87240			9	1.83300
	df=	6.00000			10	1.81200
					18	1.73400

Sample:	Hurlburt Field AFB WWTF	Date tested:	October 6-13, 2009	
Species:	*Pimephales promelas*	Test Type:	Chronic screening	
	Leave rep value blank if few reps used			
	Teatment A	Treatment B	#of Reps./sample	4
Replicate #	Control	100%		
1	0.658	0.479		p=0.05
2	0.616	0.547	df	Table t-value
3	0.579	0.443	1	6.31400
4	0.788	0.576	2	2.92000
5			3	2.35300
6			4	2.13200
7			5	2.01500
8			6	1.94300
9			7	1.89500
10			8	1.86000
			9	1.83300
Average	0.66025	0.51125	10	1.81200
			18	1.734
	t-value=	2.71834		
	df=	6		

Appendix D. Test Organism Receipts

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 9/28/09 10/5/09

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood Number	Temp.	pH	Salinity
Mysidopsis bahia						
Menidia beryllina	150	12 DAYS	SS090923	25°C	8.0 S.U.	20‰
						Hardness
Cyprinella leedsi	150	12 DAYS	CL090923	25°C	7.8 S.U.	80 mg/L
Pimephales promelas	350	<24 HRS	FM091004-1625	25°C	7.8 S.U.	80 mg/L

Packed by: PM

Shipped Via: FedEx

Notes: _____

Thank you for your order.

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

Appendix E. Chemical Analyses performed on the effluent from the Hurlburt Field AFB WWTF Facility Outfall D-001, sampled on October 5, 2009.

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
10/5/2009 11:00	Effluent	AGP/LN	Algal Growth Potential	183	A	mg DryWt/L	0.3	0.9
10/5/2009 11:00	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
10/5/2009 11:00	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
10/5/2009 11:00	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.4	I	mg/L	0.2	2
10/5/2009 11:00	Effluent	Overflow	Enterococci-Membrane Filter	2	U	#/100 mL	2	2
10/5/2009 11:00	Effluent	Overflow	Fecal Coliforms-Membrane Filter	1	U	#/100 mL	1	1
10/5/2009 11:00	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
10/5/2009 11:00	Effluent	Metals	Cadmium	0.67		ug/L	0.03	0.12
10/5/2009 11:00	Effluent	Metals	Iron	30	U	ug/L	30	120
10/5/2009 11:00	Effluent	Metals	Chromium	0.3	U	ug/L	0.3	1.2
10/5/2009 11:00	Effluent	Metals	Nickel	1.3		ug/L	0.25	1
10/5/2009 11:00	Effluent	Metals	Zinc	28		ug/L	5	20
10/5/2009 11:00	Effluent	Metals	Lead	0.21	I	ug/L	0.2	0.8
10/5/2009 11:00	Effluent	Metals	Copper	3.51		ug/L	0.5	0.5
10/5/2009 11:00	Effluent	Metals	Arsenic	0.59	I	ug/L	0.25	1
10/5/2009 11:00	Effluent	Metals	Selenium	0.2	U	ug/L	0.2	0.8
10/5/2009 11:00	Effluent	Metals	Magnesium	2.68		mg/L	0.04	0.16
10/5/2009 11:00	Effluent	Metals	Calcium	13.9		mg/L	0.075	0.3
10/5/2009 11:00	Effluent	Metals	Aluminum	89	I	ug/L	60	240
10/5/2009 11:00	Effluent	Nutrients	Total-P	0.76		mg P/L	0.02	0.05
10/5/2009 11:00	Effluent	Nutrients	TSS	4	U	mg/L	4	16
10/5/2009 11:00	Effluent	Nutrients	O-Phosphate-P	0.73		mg P/L	0.02	0.05
10/5/2009 11:00	Effluent	Nutrients	NO2NO3-N	3		mg N/L	0.04	0.1
10/5/2009 11:00	Effluent	Nutrients	Ammonia-N	0.024		mg N/L	0.01	0.02
10/5/2009 11:00	Effluent	Nutrients	Kjeldahl Nitrogen	0.45		mg N/L	0.08	0.2
10/5/2009 11:00	Effluent	Nutrients	Sulfate	38		mg SO4/L	0.2	0.5
10/5/2009 11:00	Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
10/5/2009 11:00	Effluent	Pesticides	DDD-p,p'	0.02	U	ug/L	0.02	0.08
10/5/2009 11:00	Effluent	Pesticides	DDT-p,p'	0.03	U	ug/L	0.03	0.12
10/5/2009 11:00	Effluent	Pesticides	Endosulfan Sulfate	0.02	U	ug/L	0.02	0.08
10/5/2009 11:00	Effluent	Pesticides	Endrin Aldehyde	0.02	U	ug/L	0.02	0.08
10/5/2009 11:00	Effluent	Pesticides	Alachlor	0.6	U	ug/L	0.6	2.4
10/5/2009 11:00	Effluent	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
10/5/2009 11:00	Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
10/5/2009 11:00	Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
10/5/2009 11:00	Effluent	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
10/5/2009 11:00	Effluent	Pesticides	Azinphos Methyl	0.2	UJ	ug/L	0.2	0.8
10/5/2009 11:00	Effluent	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
10/5/2009 11:00	Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
10/5/2009 11:00	Effluent	Pesticides	Endosulfan I	0.02	U	ug/L	0.02	0.08
10/5/2009 11:00	Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
10/5/2009 11:00	Effluent	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
10/5/2009 11:00	Effluent	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
10/5/2009 11:00	Effluent	Pesticides	Ethoprop	0.1	UJ	ug/L	0.1	0.4
10/5/2009 11:00	Effluent	Pesticides	Mevinphos	0.2	UJ	ug/L	0.2	0.8
10/5/2009 11:00	Effluent	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
10/5/2009 11:00	Effluent	Pesticides	Dieldrin	0.02	U	ug/L	0.02	0.08
10/5/2009 11:00	Effluent	Pesticides	Endosulfan II	0.02	U	ug/L	0.02	0.08
10/5/2009 11:00	Effluent	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
10/5/2009 11:00	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
10/5/2009 11:00	Effluent	Pesticides	DDE-p,p'	0.02	U	ug/L	0.02	0.08
10/5/2009 11:00	Effluent	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
10/5/2009 11:00	Effluent	Pesticides	Toxaphene	0.75	U	ug/L	0.75	3
10/5/2009 11:00	Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
10/5/2009 11:00	Effluent	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
10/5/2009 11:00	Effluent	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
10/5/2009 11:00	Effluent	Pesticides	Metolachlor	0.5	U	ug/L	0.5	2
10/5/2009 11:00	Effluent	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
10/5/2009 11:00	Effluent	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
10/5/2009 11:00	Effluent	Pesticides	Chlordane	0.2	U	ug/L	0.2	0.8
10/5/2009 11:00	Effluent	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
10/5/2009 11:00	Effluent	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
10/5/2009 11:00	Effluent	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
10/5/2009 11:00	Effluent	Pesticides	Endrin	0.05	U	ug/L	0.05	0.2
10/5/2009 11:00	Effluent	Pesticides	Heptachlor Epoxide	0.02	U	ug/L	0.02	0.08
10/5/2009 11:00	Effluent	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
10/5/2009 11:00	Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
10/5/2009 11:00	Effluent	Pesticides	Naled	0.8	UJ	ug/L	0.8	3.2
10/5/2009 11:00	Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
10/5/2009 11:00	Effluent	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
10/5/2009 11:00	Effluent	Pesticides	Methoxychlor	0.05	U	ug/L	0.05	0.2
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2-Chlorophenol	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Pyrene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.6
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8	U	ug/L	2.8	11
10/5/2009 11:00	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38	U	ug/L	38	150
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Anthracene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8	U	ug/L	2.8	11
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Fluoranthene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Phenol	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	14	U	ug/L	14	57
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	4.7	U	ug/L	4.7	19
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8	U	ug/L	2.8	11
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2-Nitrophenol	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Pentachlorophenol	2.8	U	ug/L	2.8	11
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Hexachloroethane	2.8	U	ug/L	2.8	11
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Acenaphthylene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Acenaphthene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	14	U	ug/L	14	57
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Diethyl phthalate	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Hexachlorobenzene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.6
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Naphthalene	0.95	U	ug/L	0.95	3.8

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Benzidine	95	U	ug/L	95	380
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Chrysene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Dimethyl phthalate	9.5	U	ug/L	9.5	38
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	2.8	U	ug/L	2.8	11
10/5/2009 11:00	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.6
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.6
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	4.7	U	ug/L	4.7	19
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Isophorone	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8	U	ug/L	2.8	11
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Phenanthrene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	9.5	U	ug/L	9.5	38
10/5/2009 11:00	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	4-Nitrophenol	14	U	ug/L	14	57
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Fluorene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.95	U	ug/L	0.95	3.8
10/5/2009 11:00	Effluent	Field Parameter	pH	7.31				
10/5/2009 11:00	Effluent	Field Parameter	Dissolved Oxygen	10.74		mg/L		
10/5/2009 11:00	Effluent	Field Parameter	Specific Conductance	546		umhos/cm		
10/5/2009 11:00	Effluent	Field Parameter	Sample Depth	0.15		m		
10/5/2009 11:00	Effluent	Field Parameter	Temperature	26.35		C		
10/5/2009 11:30	Equipment Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
10/5/2009 11:30	Equipment Blank	Metals	Zinc	5	U	ug/L	5	20
10/5/2009 11:30	Equipment Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
10/5/2009 11:30	Equipment Blank	Metals	Iron	30	U	ug/L	30	120
10/5/2009 11:30	Equipment Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
10/5/2009 11:30	Equipment Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
10/5/2009 11:30	Equipment Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
10/5/2009 11:30	Equipment Blank	Metals	Aluminum	60	U	ug/L	60	240
10/5/2009 11:30	Equipment Blank	Metals	Copper	0.5	U	ug/L	0.5	0.5
10/5/2009 11:30	Equipment Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
10/5/2009 11:30	Equipment Blank	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
10/5/2009 11:30	Equipment Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
10/5/2009 11:30	Equipment Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
10/5/2009 11:30	Equipment Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
10/5/2009 11:30	Equipment Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
10/5/2009 11:30	Equipment Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
10/5/2009 11:30	Equipment Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
10/5/2009 11:30	Equipment Blank	Nutrients	TSS	4	U	mg/L	4	16
10/5/2009 11:30	Equipment Blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
10/5/2009 11:30	Equipment Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
10/5/2009 11:30	Equipment Blank	Pesticides	Ametryn	0.051	U	ug/L	0.051	0.2
10/5/2009 11:30	Equipment Blank	Pesticides	Atrazine	0.051	U	ug/L	0.051	0.2
10/5/2009 11:30	Equipment Blank	Pesticides	Butylate	0.21	U	ug/L	0.21	0.84
10/5/2009 11:30	Equipment Blank	Pesticides	Fenamiphos	0.21	U	ug/L	0.21	0.84
10/5/2009 11:30	Equipment Blank	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
10/5/2009 11:30	Equipment Blank	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
10/5/2009 11:30	Equipment Blank	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
10/5/2009 11:30	Equipment Blank	Pesticides	Phorate	0.051	U	ug/L	0.051	0.2
10/5/2009 11:30	Equipment Blank	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
10/5/2009 11:30	Equipment Blank	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
10/5/2009 11:30	Equipment Blank	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
10/5/2009 11:30	Equipment Blank	Pesticides	Dieldrin	0.021	U	ug/L	0.021	0.084
10/5/2009 11:30	Equipment Blank	Pesticides	Bromacil	0.21	U	ug/L	0.21	0.84
10/5/2009 11:30	Equipment Blank	Pesticides	Metolachlor	0.51	U	ug/L	0.51	2
10/5/2009 11:30	Equipment Blank	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
10/5/2009 11:30	Equipment Blank	Pesticides	Endosulfan Sulfate	0.021	U	ug/L	0.021	0.084
10/5/2009 11:30	Equipment Blank	Pesticides	Toxaphene	0.77	U	ug/L	0.77	3.1
10/5/2009 11:30	Equipment Blank	Pesticides	Chlorpyrifos Ethyl	0.051	U	ug/L	0.051	0.2
10/5/2009 11:30	Equipment Blank	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
10/5/2009 11:30	Equipment Blank	Pesticides	Diazinon	0.051	U	ug/L	0.051	0.2

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
10/5/2009 11:30	Equipment Blank	Pesticides	DDE-p,p'	0.021	U	ug/L	0.021	0.084
10/5/2009 11:30	Equipment Blank	Pesticides	Endrin	0.051	U	ug/L	0.051	0.2
10/5/2009 11:30	Equipment Blank	Pesticides	DDT-p,p'	0.031	U	ug/L	0.031	0.12
10/5/2009 11:30	Equipment Blank	Pesticides	Alachlor	0.62	U	ug/L	0.62	2.5
10/5/2009 11:30	Equipment Blank	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
10/5/2009 11:30	Equipment Blank	Pesticides	Naled	0.82	UJ	ug/L	0.82	3.3
10/5/2009 11:30	Equipment Blank	Pesticides	DDD-p,p'	0.021	U	ug/L	0.021	0.084
10/5/2009 11:30	Equipment Blank	Pesticides	Endosulfan I	0.021	U	ug/L	0.021	0.084
10/5/2009 11:30	Equipment Blank	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
10/5/2009 11:30	Equipment Blank	Pesticides	Heptachlor Epoxide	0.021	U	ug/L	0.021	0.084
10/5/2009 11:30	Equipment Blank	Pesticides	Azinphos Methyl	0.21	UJ	ug/L	0.21	0.84
10/5/2009 11:30	Equipment Blank	Pesticides	Ethion	0.051	U	ug/L	0.051	0.2
10/5/2009 11:30	Equipment Blank	Pesticides	Metalaxyl	0.26	U	ug/L	0.26	1
10/5/2009 11:30	Equipment Blank	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
10/5/2009 11:30	Equipment Blank	Pesticides	Chlordane	0.21	U	ug/L	0.21	0.84
10/5/2009 11:30	Equipment Blank	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
10/5/2009 11:30	Equipment Blank	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
10/5/2009 11:30	Equipment Blank	Pesticides	Methoxychlor	0.051	U	ug/L	0.051	0.2
10/5/2009 11:30	Equipment Blank	Pesticides	Ethoprop	0.1	UJ	ug/L	0.1	0.4
10/5/2009 11:30	Equipment Blank	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
10/5/2009 11:30	Equipment Blank	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
10/5/2009 11:30	Equipment Blank	Pesticides	Mevinphos	0.21	UJ	ug/L	0.21	0.84
10/5/2009 11:30	Equipment Blank	Pesticides	Simazine	0.051	U	ug/L	0.051	0.2
10/5/2009 11:30	Equipment Blank	Pesticides	Endosulfan II	0.021	U	ug/L	0.021	0.084
10/5/2009 11:30	Equipment Blank	Pesticides	Endrin Aldehyde	0.021	U	ug/L	0.021	0.084
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5.1	U	ug/L	5.1	20
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	12

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	41
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	12
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	61
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	61
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	12
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41	U	ug/L	41	160
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	8.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	41
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	61
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5.1	U	ug/L	5.1	20
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	12
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	8.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	12
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	410
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4.1

Appendix E. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Remark	Units	MDL	PQL
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	8.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	12
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	U	ug/L	3.1	12
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	8.1
10/5/2009 11:30	Equipment Blank	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4.1
10/5/2009 7:39	Effluent tox	Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100		NOEC		
10/5/2009 7:39	Effluent tox	Toxicology	Bioassay-Chronic-Scrn-FW-Fish, NOEC	100	K	NOEC		
10/7/2009 9:18	Effluent tox 2	Field Parameter	pH	7.36				
10/7/2009 9:18	Effluent tox 2	Field Parameter	Dissolved Oxygen	7.85		mg/L		
10/7/2009 9:18	Effluent tox 2	Field Parameter	Temperature	27.3		C		
10/9/2009 9:04	Effluent tox 3	Field Parameter	pH	7.37				
10/9/2009 9:04	Effluent tox 3	Field Parameter	Temperature	27.6		C		
10/9/2009 9:04	Effluent tox 3	Field Parameter	Dissolved Oxygen	7.81		mg/L		

Appendix F. Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Kim Allen	**Contact Number:** 595-8300 ext. 1185
Facility Name (as it appears on permit): Hurlburt Field AFB WWTF	**Former Names:**
NPDES Permit Number: FL0003174	**Permit Expiration Date:** 6/16/10
Physical Address: 415 Independence Road, Building 90053	
District: NWD	**County:** Okaloosa
Function of Facility: The function of this facility is to treat wastewater from Hurlburt Air Force Base.	
Facility Type: DW	**Permitted Capacity (MGD):** 1.0
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 0.5615 mgd Annual Average (1/08-12/08)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): None	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

Appendix F. (continued)

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

2. Effluent samples shall be taken at the monitoring site locations listed in Permit Condition I. A. 1. and as described below:

Monitoring Location Site Number	Description of Monitoring Location
EFA-01	V-Notch Weir Box After Chlorine Contact Chamber
EFD-01	Bottom End of Cascade Aeration
EFF-01	V-Notch Weir Box After Chlorine Contact Chamber
EFF-02	Bottom End of Cascade Aeration
FLW-01	Effluent Flow Meter at V-Notch Weir After Chlorine Contact Chamber

2. Wetlands monitoring as required by I.B.1. shall be conducted at each of the three designated receiving wetlands monitoring sites as described below:

Monitoring Location Site Number	Description of Monitoring Location
WIM-02	Station 3 per Wetlands Monitoring Plan, old WER-3
WIM-03	Station 5 per Wetlands Monitoring Plan, old WER-5
WEP-01	Station 4 per Wetlands Monitoring Plan, old WER-4

Description of Permitted Outfall(s):

D-001 is comprised of 4 discharge surface water structures approximately .5 miles NE of WWTF, along the southeastern edge of an unnamed arm of East Bay Swamp. The troughs are designed to sheet flow into the swamp. The swamp arm eventually drains into unnamed tributaries of the East Bay River (Class III fresh).

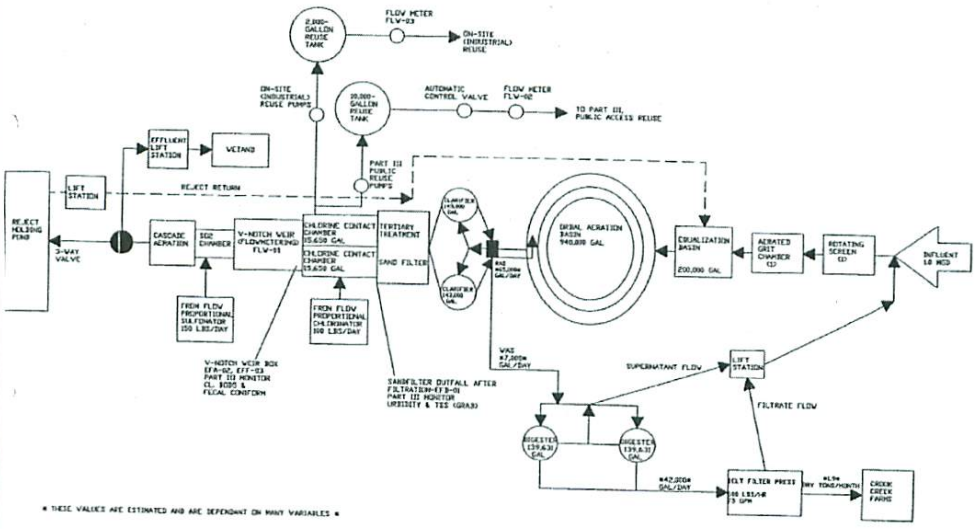
Appendix F. (continued)

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

This facility is a 1.0 MGD annual average daily flow (AADF) tertiary treatment return activated sludge, biological nutrient removal wastewater facility. The main treatment train consists of influent screening, an aerated grit chamber, an equalization basin, an Orbal Sim-Prebiological nutrient removal process basin (reactor), dual clarifiers, dual tertiary filters with denitrification capability, chlorination in a chlorine contact chamber, dechlorination and re-aeration. Treated water not meeting standards can be routed to an on-site rejects storage pond and subsequently re-introduced into the process at the head of the plant. Residuals are aerobically digested, belt pressed, and land applied at a off-site residuals agricultural land application sites.

The facility is permitted to discharge effluent from outfall D-001 to wetlands in East Bay Swamp, to R-001, a slow-rate Part III public access general service area, and to Industrial Reuse R-002 at the plant site.

HURLBURT FIELD ADVANCED WASTEWATER TREATMENT PLANT PROCESS FLOW DIAGRAM



Appendix F. (continued)

PART I: Continued										
List <u>current</u> 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

Appendix F. (continued)

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Surface Water Discharges

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D-001 to wetlands in East Bay Swamp. Such discharge shall be limited and monitored by the permittee as specified below:

			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, Total: Flow D-001 plus Flow R-001	MGD	Maximum	1.0	Report (Mo.Avg.)	-	-	Daily	Calculated	OTH-01	See Cond.I.A.3, 5 and I.C.4
Flow, Wetlands, D-001	MGD	Maximum	1.0	-	-	-	Continuous	Meter	FLW-01	See Cond.I.A.3, 5
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFF-01	
Solids, Total Suspended	MG/L	Maximum	5.0	6.25	7.5	10.0	Weekly	16-hour flow proportioned composite	EFF-01	
Nitrogen, Total (as N)	MG/L	Maximum	3.0	3.75	4.5	6.0	Weekly	16-hour flow proportioned composite	EFF-01	
Phosphorus, Total (as P)	MG/L	Maximum	1.0	1.25	1.5	2.0	Weekly	16-hour flow proportioned composite	EFF-01	
Coliform, Fecal	#/100ml	Maximum	See Permit Condition I.A.6.				Weekly	Grab	EFF-01	
Whole Effluent Toxicity	See Permit Condition I.A.8								EFF-02	
pH	SU	Range	-	-	-	6.0 to 8.5	Continuous	Meter	EFF-01	See Cond.I.A.4
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	0.5	Continuous	Meter	EFA-01	See Cond.I.A.4, 7
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	Daily	Grab	EFD-01	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	Report	Daily	Grab	EFF-02	See Cond.I.A.10.
Ammonia	MG/L	Maximum	1.6	2.0	-	3.2	Weekly	16-hour flow proportioned composite	EFF-01	

Appendix F. (continued)

B. Wetlands Monitoring

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee shall monitor water quality in the receiving wetlands at Wetlands Stations 3, 4 and 5. Wetlands monitoring shall be performed in accordance with the following:

			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
Stage (Water Depth)	Feet	Report	Report	-	-	-	Every Two Weeks	Stage Recorder/ Staff Gauge	WEP-01	See I.B.2.&3.
Nitrogen, Total as N	mg/L	Maximum	3.0	-	-	-	Annually	Grab		
Nitrogen, Ammonia, Total unionized (as N)	mg/L	Maximum	0.02	-	-	-	Annually	Calculated		
Phosphorus, Total as P	mg/L	Maximum	0.2	-	-	-	Annually	Grab		
Nitrogen, Ammonia, Total as N	mg/L	Report					Annually	Grab	WEP-01 WIM-02 WIM-03	
Total Suspended Solids	mg/L	Report	-	-	-	-	Annually	Grab		
Fecal Coliform Bacteria	#/100ml	Report	-	-	-	-	Annually	Grab		
BOD, Carbonaceous, 5 Day, 20 Deg C	mg/L	Report	-	-	-	-	Annually	Grab		
pH	s.u.	Report	-	-	-	-	Annually	Field Probe		
Temperature, Water	deg C	Report	-	-	-	-	Annually	Field Thermometer 48 hr dawn-dusk		
Nitrogen, Total Kjeldahl as N	mg/L as N	Report	-	-	-	-	Annually	Grab		
Specific Conductance, Field	umhos/cm	Report	-	-	-	-	Annually	Field Probe		
Phosphorus, Total as P	mg/L as P	Report	-	-	-	-	Annually	Grab		
NO_2+NO_3, Total as N	mg/L as N	Report	-	-	-	-	Annually	Grab		
Sulfite, Total as SO_3	mg/L as SO_3	Report	-	-	-	-	Annually	Grab		
Chlorophyll-A, Phytoplankton, Fluorometric Method	mg/cu. meter	Report	-	-	-	-	Annually	Grab		
Oxygen, Dissolved (DO)	mg/L	Report	-	-	-	-	Annually	Field Probe 48 hr dawn-dusk		
Stage (Water Depth), at samp. collect. time	Feet	Report	-	-	-	-	Annually	Staff Gauge		
Sulfide (as S)	mg/L as S	Report	-	-	-	-	Annually	Sediment		
Herbaceous Vegetation	-	Report	-	-	-	-	Annually	-		See I.B.2.&4.
Fish	-	Report	-	-	-	-	Annually	-		
Woody Vegetation	-	Report	-	-	-	-	Annually	-		
Threatened and Endangered Plant and Animal Species List	-	Report	-	-	-	-	Annually	-		

Appendix F. (continued)

PART I: Continued	
Receiving Waters: East Bay Swamp to East Bay	**Classification (indicate whether fresh or marine):** Class III fresh

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

The permittee shall annually conduct a daphnid, **Ceriodaphnia dubia**, Survival and Reproduction test and a fathead
minnow, **Pimephales promelas**, Larval Survival and Growth Test. These tests shall be conducted using a control (0% effluent) and one test concentration of **100%** effluent.

For each set of tests conducted, a Flow proportional 24 hr. composite sample of final effluent shall be collected and used per the sampling schedule discussed in EPA-821-R-02-013, Section 8.3, or the most current edition. Two additional composite samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.

An NOEC of less than 100% effluent in any "routine" or additional definitive test will be a violation of these permit conditions and Rule *62-302.530(62), FAC*.

If an NOEC of less than 100% effluent is found in a "routine" test, the permittee shall conduct three additional tests on each species indicating the violation.

The first additional test shall be conducted using a control (0% effluent) and a minimum of five dilutions: **100%, 50%, 25%, 12.5% and 6.25%** effluent. The dilution series may be modified in the second and third test to more accurately identify the toxicity, such that at least two dilutions above (not to exceed 100% effluent) and two dilutions below the target concentration and a control (0% effluent) are run. All test results shall be statistically analyzed according to the Appendices in EPA-821-R-02-013, or the most current edition.

For each additional test, the sample collection requirements and the test acceptability criteria specified in section a. above must be met for the test to be considered valid. The first test shall begin within two weeks of the end of the "routine" tests, and shall be conducted weekly thereafter until three additional, valid tests are completed.

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

None

Facility Mixing Zone Details (if applicable):

None

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

Date	Parameter and Units	Limit	Result
None			

Describe previous FYI and WQBEL study:

Did not find a record of any previous FYI's.

Appendix F. (continued)

Describe previous or current Enforcement Actions (including WLs): None
Describe any violations or problems noted in previous inspection: None.
Discuss whether DMR trends within previous five years are improving or declining: Same.
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

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**	

Appendix F. (continued)

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

Appendix G. EPA End Sheet

The Bioassay of the Hurlburt Field AFB WWTF facility effluent sampled on October 5, 7 and 9, 2009. NPDES #FL0003174.

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 0 3 1 7 4 11	12 0 9 1 0 0 5	18 B	19 S	20 1

Remarks

66

The Priority Pollutants Analysis of the Hurlburt Field AFB WWTF facility effluent sampled on October 5, 2009. NPDES #FL0003174.

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 0 3 1 7 4 11	12 0 9 1 0 0 5	18 B	19 S	20 1

Remarks

66

Biological Analyses of the Hurlburt Field AFB WWTF facility effluent sampled on October 5, 2009. NPDES #FL0003174.

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 0 3 1 7 4 11	12 0 9 1 0 0 5	18 B	19 S	20 1

Remarks

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