

Effluent Quality Assessment

Spencer WWTF

Clay County

NPDES #FL0173371

Sampled April 16, 2007

September 2007

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

Spencer Wastewater Treatment Facility, 4145-1 Savannah Glen Drive, Orange Park, Clay County, Florida, 32073, NPDES #FL0173371. Effluent samples for this facility were collected on April 16, 2007.

Introduction

The Spencer Wastewater Treatment Facility (WWTF) uses the activated-sludge process to treat domestic wastewater to advanced wastewater treatment standards. The facility has a design flow of 2.5 million gallons per day (MGD) annual average daily flow (AADF). The AADF from March 1, 2006, through April 30, 2007, was 0.06 MGD to surface water wetlands (Outfall D-002) and 0.401 MGD to the public access reuse system (R-001) (Note: flow data were not reported for January 2007). During the sampling event, all discharge from the facility was going to reuse system R-001; there was no discharge to the wetlands. The facility consists of an aerated grit chamber, a manual bar screen, a mechanical bar screen, an aerated surge tank, an anoxic basin, an aeration basin, two secondary clarifiers, two traveling bridge filters, two chlorine contact chambers, two liquid sodium hypochlorite storage tanks, a liquid sodium bisulfate storage tank, an effluent transfer pumping station, a reuse service pumping station, a reject return pumping station, two reclaimed water storage tanks, a lined reject storage pond, a reclaimed water storage pond, and an aerobic digester. The facility is equipped with surge tank blowers, surge tank return pumps, mechanical aerators, return sludge pumps, a waste sludge pump, reuse service pumps, reject pumps, a liquid chlorine dose system, a dechlorination system for wetland backup discharge, a reuse monitoring and control system, digester blowers, and a 400 KW emergency generator. Treated effluent is discharged to a 1.35 MGD AADF permitted capacity Type III slow-rate public access reuse and land application system (R-001). The reuse system serves the Spencer reclaimed water service area. Backup disposal of the effluent was formerly through two 0.2 hectare (0.5 acre) constructed wetland cells that discharged through Outfall D-001 to the Spencer wetland and then to Double Run Branch, a tributary of Little Black Creek (Class III freshwater). More recently, effluent discharged through a diffuser pipe at Outfall D-002 to the Spencer wetland and to Double Run Branch. Outfalls D-001/D-002 are located approximately at latitude 30º 10’ 18” N, longitude 81º 48’ 23” W. At the time of sampling, all effluent was going to the reuse system (R-001).

There is no current Administrative Order (AO) or Consent Order (CO) for this facility. The facility was under Consent Order OGC FILE NO. 04-1165 due to exceedences for nitrogen and carbonaceous biochemical oxygen demand (CBOD). This consent order was closed on February 20, 2007. The facility has no mixing zones. A review of Discharge Monitoring Report data for the past year showed permit violations for total nitrogen in March, September, October, and November 2006 and also permit violations for BOD in March, June, July, August, and September 2006. The last Compliance evaluation inspection, performed on May 3, 2006, rated the facility as out of compliance. (Facility information provided by Jennifer Paris and Tom Kallemeyn of FDEP Northeast District.)

Methods

Effluent samples were collected from the EFA-1 (EFA-2) NPDES sampling point (after disinfecttion, prior to the constructed wetlands) for Outfall D-001 by Tom Kallemeyn (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. In-stream samples for nutrient, algal growth potential, and periphyton analyses were collected upstream and downstream of input from the Spencer wetland in Double Run Branch. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

See Appendix A for a map of sampling sites, and Appendix B for the chain of custody form.

The 96-hour acute screening toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_01, TA07_02, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

Total residual chlorine (4.48 mg/L) was detected in the bioassay sample in the laboratory. An aliquot of this sample was dechlorinated by the addition of sodium thiosulfate (0.025 N) at a rate of 4.7 mL per liter

of sample to neutralize the chlorine. Bioassays were performed on the dechlorinated aliquot in addition to the bioassays performed on the original sample. The same concentration of sodium thiosulfate was added to the dechlorinated test controls. The purpose of the dechlorinated test control treatment was to confirm that there was no adverse effect of adding sodium thiosulfate to the sample. There was no mortality in the dechlorinated test controls of the *Cyprinella leedsi* test.

Due to a laboratory error, the dechlorinated *Ceriodaphnia dubia* test was prematurely terminated; the test is reported as "No Result."

Toxicity Test Results

Tests were performed April 17 – 21, 2007.

Ceriodaphnia dubia 96-hour acute screening bioassay –	LC_{50} < 100%, 100% mortality in 100% sample within 10 minutes
Ceriodaphnia dubia 96-hour acute screening bioassay – **Dechlorinated**	No Result
Cyprinella leedsi 96-hour acute screening bioassay –	LC_{50} < 100%, 100% mortality in 100% sample within 10 minutes
Cyprinella leedsi 96-hour acute screening bioassay – **Dechlorinated**	LC_{50} > 100%, 20% mortality in 100% sample at 96 hours

The original bioassay sample was acutely toxic to both test species. The dechlorinated sample showed low level toxicity to the *C. leedsi* test organisms.

The observed toxicity was primarily attributed to the total residual chlorine (TRC) in the sample. The TRC concentrations as low as 0.028 mg/L have been found to be acutely toxic to some freshwater fish and invertebrates (EPA *Quality Criteria for Water* 1986, EPA 44015-86-001, 1986). The cause of mortality in the dechlorinated fish test was not determined.

The sample collection location for this inspection is not the compliance sampling location for acute toxicity; the compliance sampling location is after the constructed wetlands.

See Appendix C for bioassay bench sheets. See Appendix D 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 E for test organism receipts.

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 54.6 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. The AGP of the dechlorinated effluent was 49.2 mg dry wt/L. Raschke and Shultz (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 of the effluent based on inorganic nitrogen concentrations was 51.7 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

See Table 1 for AGP results

Chemistry Results

Total residual chlorine (TRC) was detected at a concentration of 5.0 mg/L in the field and a concentration of 4.48 mg/L in the laboratory. These TRC concentrations are not in violation of permit conditions for discharge into the wetlands, but do exceed the Class III freshwater quality criterion for TRC (62-302.530(18), F.A.C.). Total ammonia was neither detected in the bioassay sample in the laboratory nor in the sample collected and preserved for chemical analysis.

Copper, iron, 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.). Aluminum and diethyl phthalate were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Atrazine was also detected in the effluent.

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

NOTE: Permit limits applicable at EFA-2 (post-disinfection) to Phase IV of the facility expansion project are used in this report to determine compliance.

In-Stream Results

AGP values were 4.51 and 4.62 mg dry wt/L at the upstream and downstream sites, respectively, both of which are below the “problem” threshold (Table 1). Nutrient levels were slightly higher downstream than upstream of the wetland influence, but overall the levels were low in the receiving waters (Table 2). Habitat assessment scores were high (optimal) at both sites (Table 2). The periphyton community was dominated by diatoms at both sites, although the dominant taxa differed between sites (see Table 3).

See Appendix G for complete field sheets and habitat assessment forms. See Appendix H for complete list of periphyton taxa found at the upstream Control and downstream Test sites.

Conclusion

The effluent sample collected from the EFA-1 (EFA-2) sampling point for Outfall D-001 (D-002) for this facility on April 16, 2007, was acutely toxic to both test species during the 96-hour acute screening bioassays. The observed toxicity was primarily attributed to the effluent’s total residual chlorine. The dechlorinated *Cyprinella leedsi* test showed low levels of toxicity. The cause of this toxicity was not determined. The dechlorinated *Ceriodaphnia dubia* test was prematurely terminated and reported as “No Result.” The effluent AGP result exceeded the "problem” threshold for fresh receiving waters; however, the AGP results from samples taken upstream and downstream of the wetland discharge were less than the “problem” threshold, suggesting that the wetland treatment process effectively removes nutrients. Effluent water quality samples did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

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

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

Table 1. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN) and total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus for samples collected from the Spencer Wastewater Treatment Facility on April 16, 2007.

Spencer WWTF											
Location	AGP (measured)		Predicted AGP (TSIN) ± 20%			Predicted AGP (TN) ± 20%			Inorganic N:P ratio	Total N:P ratio
Effluent	54.6		31.9	±	6.4	51.7	±	10.3	0.8	1.2
Effluent Dechlorinated	49.2		-			-			-	-
Upstream	4.5		1.1	±	0.2	9.8	±	2.0	7.0	12.9
Downstream	4.6	A	1.2	±	0.2	12.6	±	2.5	6.2	16.6

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

Table 2. Effluent limits, Class III Freshwater Criteria, and chemical data for samples collected at the Spencer Wastewater Treatment Facility on April 16, 2007.

Spencer WWTF	Class III Stds	Effluent Limits	Effluent	Upstream	Downstream
Organic Constituents (µg/L)					
Atrazine	-	-	0.33	-	-
Diethyl phthalate	-	-	1.5 I	-	-
Metals (µg/L unless otherwise noted)					
Aluminum	-	-	5.5 I	-	-
Arsenic	≤ 50	-	0.5 U	-	-
Cadmium	≤ 0.3 b	-	0.05 U	-	-
Calcium (mg/L)	-	-	25.5 A	-	-
Chromium-III	≤ 95.9 b	-	0.3 U	-	-
Copper	≤ 10.4 b	-	0.94 A	-	-
Iron	≤ 1,000	-	163 A	-	-
Lead	≤ 3.8 b	-	0.2 U	-	-
Magnesium (mg/L)	-	-	12.2 A	-	-
Nickel	≤ 58.2 b	-	3.8 A	-	-
Selenium	≤ 5.0	-	0.5 U	-	-
Silver	≤ 0.07	-	0.025 U	-	-
Zinc	≤ 133.8 b	-	47 A	-	-
Nutrients (mg/L)					
Ortho-phosphate	-	-	1	0.004 I	0.005 I
Total Phosphorus	-	≤ 2.0 ps	1.1 A	0.02 U	0.02 U
Total Ammonia	-	≤ 3.2 ps	0.01 U	0.01 U	0.01 U
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate and Nitrite	-	-	0.83	0.018	0.021
Total Kjeldahl Nitrogen	-	-	0.53 A	0.24 A	0.31
Organic Nitrogen	-	-	0.53 c	0.24 c	0.31 c
Total Nitrogen	-	≤ 6.0 ps	1.36 c	0.258 c	0.331 c
General Physical and Chemical Parameters					
Habitat Assessment	-	-	-	129	123
Dissolved Oxygen (mg/L)	≥ 5.0 s	-	7.0	10.0	10.1
pH (SU)	6.0 - 8.5 s	6.0 - 8.5 s	7.4	7.8	7.5
Conductivity (µmhos/cm)	≤ 1,275 s	-	648	163	168
Temperature °C	-	-	21.1	15.5	15.5
Sample Depth	-	-	-	0.2	0.2
Total Residual Chlorine (mg/L)	≤ 0.01	≥ 1.0 s	5	-	-
Total Suspended Solids (mg/L)	-	≤ 10.0 ps	4 U	-	-
Color (pt-Co)	-	-	5	-	-
CBOD, 5 day (mg/L), N - inhibited	-	≤ 10.0 ps	7 AL	-	-
Sulfate (mg/L)	-	-	91 A	-	-
Flow (MGD)	-	≤ 0.83 a	0.06 a	-	-
Hardness (mg $CaCO_3$)	-	-	113.91 c	-	-
Microbiology (Number of counts/100ml)					
Fecal Coliforms	≤ 800 s	≤ 86 s	-	-	-

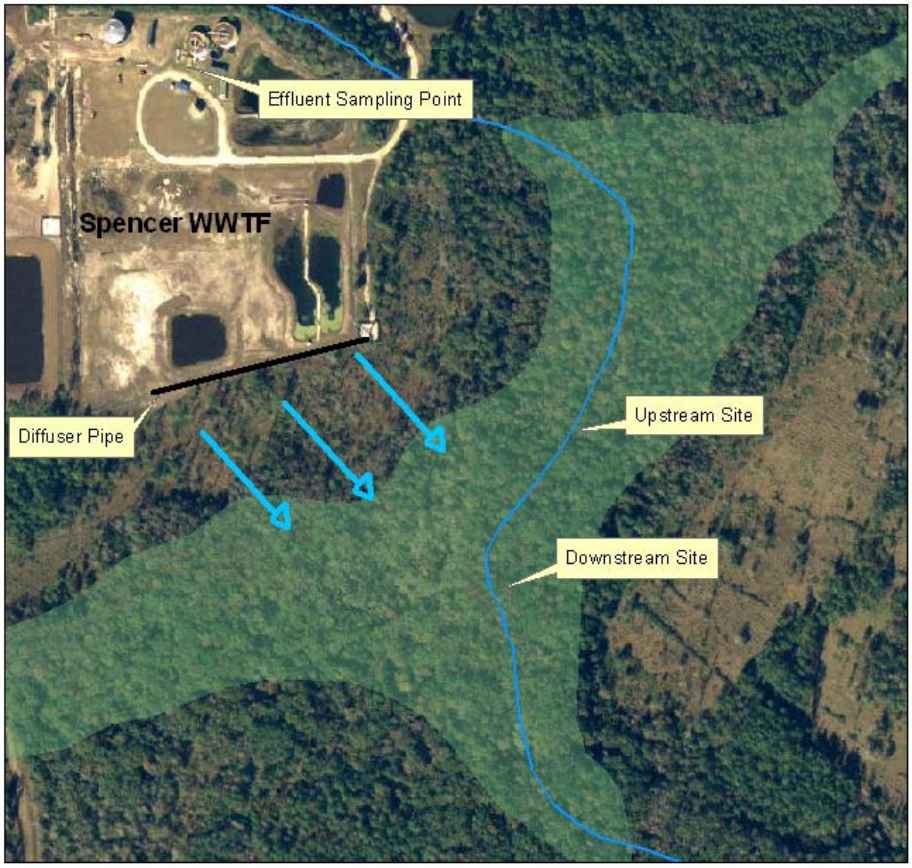
Value exceeds the Class III Water Quality Criteria or permit limits

a - Annual average
b - Value is calculated based on hardness
c - Value is calculated
p - limit for a 16-hr flow-proportional composite sample
s - Single sample
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
L - Actual value is known to be greater than value given
U - Material analyzed for but not detected; value reported is the method detection limit

Table 3. Periphyton composition at control and test sites.

Spencer WWTF	Control Site	Test Site
Number of Taxa	35	49
Dominant Taxon (name)	*Cocconeis placentula*	*Eunotia* sp.
Number of Algal Units Identified	300	300
Percentage Composition		
Blue-green algae	3.3	3.7
Green algae	2.0	0.0
Diatoms	94.3	95.3
Euglenophytes	0.3	1.0

Appendix A. Spencer WWTF sampling locations



Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2007-04-16-33
Spencer WWTF

Requester: Shannan Bogdanov
Field Report Prepared By: Tom Kellemeyer
Collected By: Tom Kellemeyer
Send Final Report To Melissa Long
Sampling Agency: DEP NED

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

Lab ID *	Location / Field ID	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (begin) Date Time Eastern Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Sample Depth	Salinity (PPTh) / Sp Conductance (umho/cm)	Collection (end) Date Time Eastern Central	Storet Station Number	NPDES Number	Comments	Bottle Group(s)**
	Spencer WWTP final Effluent	effluent	21.07	7.35	o ' "	o ' "	☐ Comp ☑ Grab	4/16/07 Time 10:00 Eastern Central		7.00	— m ☐ ft	648 ☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)					A
	Spencer WWTP final Effluent	Effluent	21.07	7.35	o ' "	o ' "	☐ Comp ☑ Grab	4/16/07 Time 10:15 Eastern Central		7.00	— m ☐ ft	649 ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)				TOX 5 ppm	A
	Spencer WWTP Equipment Blank	DI			o ' "	o ' "	☑ Comp ☐ Grab	4/16/07 Time 1030 Eastern Central			m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)					B
	Double Be upstream of Spencer Discharge	fresh	15.43	7.81	o ' "	o ' "	☑ Comp ☐ Grab	4/16/07 Time 12:45 Eastern Central		10.03	0.2 m ☐ ft	163 ☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)					GD

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By	Date/Time	Received By:	Date/Time
Tom Kellemeyer	4/16/07 1630	DHC	Tom.E	04/17/07 9:30				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

PDF 4/17/07 9:52am

4 bottles - BF

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2007-04-16-33
Spencer WWTF

Event ID *

Requester: Shannan Bogdanov
Field Report Prepared By: Tom Kallemeyn

Customer: NE-DIST
Collected By: Tom Kallemeyn
Send Final Report To Melissa Long

Project ID: FYI3
Sampling Agency: DEP NED

PMAS: 1143

Lab ID *	Location: Double Bc Downstream of Spencer outfall	☐ Comp ☑ Grab	Collection (begin) Date: 4/16/07 Time: 1250	Eastern Central	Collection (end) Date Time	Eastern Central	Bottle Group(s)**
	Field ID		Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 10.09	Storet Station Number		C, D
	Matrix (Include type e.g. Salt, Fresh, etc): Fresh	Temp (C): 13.47	pH: 7.54	Sample Depth: ☐ m ☑ 0.2 ft	168	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "	Comments				
Lab ID *	Location	☐ Comp ☐ Grab	Collection (begin) Date Time	Eastern Central	Collection (end) Date Time	Eastern Central	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) Date Time	Eastern Central	Collection (end) Date Time	Eastern Central	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) Date Time	Eastern Central	Collection (end) Date Time	Eastern Central	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
TKellemeyn	4/16/07 1620	DHL	Tom. B	04/17/07 9:20				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Section - Acute Screen Bioassay Bench Sheets

Facility: Spencer WWTF

Address: NEAR SPENCER CROSSING S/D

City: ORANGE PARK **County:** CLAY

Contact/District: JENNIFER PARIS / NORTHEAST DISTRICT

NPDES Permit #: FL0173371

LIMS Job #: TLH-2007-04-17-46-01 **LIMS Sample #:** 1001756

Lims Data Entry: 5/7/07 MF **Data Entry Verification:** 5.8.07 JD

Sample Collection: Date: 4/16/07 Time: 1015

Hold Time Start: Date: 4/16/07 Time: 1015

Comments: The Sample contained 4.48 mg/L Total residual chlorine. A dechlorinated aliquot was prepared by adding 4.7 mg/L 0.025N Sodium thiosulfate to the sample. The TRC of the dechlorinated aliquot was <0.03 mg/L. A dechlorinated control was prepared by adding 4.7 mg/L sodium thiosulfate to the appropriate control water. MF 4-17-07

Due to a communication error the dechlorinated C. dubia test was terminated at 48 hours and 48 hour Parameters were not measured. See NCR 2439 MF 5/3/07

Instructions (for below): Circle appropriate wording. If yes is circled, complete blanks.

Test Type: Screen

Static / (Static Renewal) / Flow-through

Test Duration: 48 (96) Hours.

Light Intensity : 50 - 100 ft. candles.

Photoperiod : 16 hours light 8 hours dark.

Test 1 validation: **Test 1:** SOP TA 07_01

Control survival ≥90%: (Yes) No terminated at 48hr+10 minutes

Temperature Range ≤3°C: (Yes) No

Test 2 validation: **Test 2:** SOP TA 07_02

Control survival ≥90%: (Yes) No

Temperature Range ≤3°C: (Yes) No

Initial sample handling:

PH adjustment : yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____

Aeration : yes (no) Initial DO: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: ____bubbles/min

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

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

Dechlorination: (yes) no 4.8 mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: <0.03 mg/L

Sample Validation:

Temperature: Shipped ≤6°C (Yes) No Hand Delivered: Cooling (received °C < collected °C) Yes No

Holding Time: ≤36 Hours (Yes) No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Temperature Range °C

Incubator # 2 Range 25.3-26.3

Room B246: 25.0-26.1

Waterbath: N/A

Investigators' Signatures

James Davis

Patsy Vicknair

Marshall Faircloth

Bill Reddick

Nicole Wellendorf

REVIEWER

Water Quality Parameters	20% DMW	Moderately Hard Water/ (Well Water)	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Other:	Original Sample	Method (A)	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A		5.0	~~Hach~~ MF	Tom Kallemeyn	MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03				4.48	HACH	PPV	BA
Alkalinity (mg/L as $CaCO_3$):	79	141				94	HACH	PPV	BA
Hardness (mg/L as $CaCO_3$):	86	139				137	HACH	PPV	BA
Total Ammonia (mg/L as N):	<0.017	<0.017				<0.017	DENVER	BA	PPV
Salinity (ppth):	<1	<1				<1	YSI / Mettler	SD	BA

(A) facility automatic meter. MF 5/3/07

V 1.4 9/12/05

000031

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Appendix C. (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 1001750 Test #: 1/2 Test Started: Date 4/17/07 Time: 1315
Organism: C. dubia SOP #: TA 07_01 Test Ended: Date 4/19/07 Time: 1200
Organism Batch: 15-07 Diluent/ Batch: DRW / 4-12-07
Organism Age: < 24 hr. Food: YCT P. subcapitata Artemia
Chamber Size: 30 mL Batch: 1-7-07 2-7-07 —
Test Volume: 20 mL Feeding: (Prior to test) - Prior to renewal - Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A	5	5 mf (A)	—			
	B	B	5	4 1D	—			
	C	C	5	3 2D	—			
	D	D	5	3 2D	—			
100%	A	A	5	—	—			
	B	B	5	—	—			
	C	C	5	—	—			
	D	D	5	—	—			
dechlorinated Control	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	5	5			
	D	D	5	5	5			
Dechlorinated 100%	A	A	5	5	5			
	B	B	5	5	5			
	C	C	5	4 1D	4			
	D	D	5	5	5			

(A) There was no control mortality at 0 hr + 10 minutes when the 100% sample concentration showed 100% mortality. The control mortality at 24 hours was likely due to volatilization of Chlorine from the 100% sample. This phenomenon was demonstrated in 2001.** However, TRC was not measured in the control at 24 hours.
MF 5-10-07
* and absorption of chlorine into the control.
** in the FDEP laboratory

Organisms loaded by: MF Checked by: [redacted] BA BA
Loading Verified by: BK
m = missing d = dead BR = before renewal AR = after renewal

Comments: all organisms dead in 100% sample within 10 minutes of loading. MF 4-17-07
Chlorinated test terminated at 0hr + 0 minutes MF 4-17-07 5-3-07
See NCR 2439

Test Results:
% mortality in 100% sample: 100%
LC_{50}: <100% If Calculated: 95% CI _____ Method: _____

Dechlorinated test Results:
% mortality in 100% dechlorinated 5%
LC_{50}: >100% Reported as No Result See NCR 2439

Screening Tests:
Report LC50 as >100%, =100%, or <100%. Due to a communication error the dechlorinated test was terminated at 48 hours. MF/5/8/07
Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

V 2.1 11/01/2005

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Appendix C. (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 1001756 Test #: 2/2 Test Started: Date 4/17/07 Time: 1330
Organism: C. leedsi SOP #: TA 07_02 Test Ended: Date 4.22.07 Time: 1200
Organism Batch: 4-17-07 Diluent/ Batch: ~~ECELC~~ / 4-16-07
Organism Age: ~~24 HRS~~ 2 DAYS Food: YCT P. subcapitata Artemia
Chamber Size: 1000 mL Batch: — — 48-07 / 50-07
Test Volume: 500 mL Feeding (Prior to test) (Prior to renewal) Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A13	5	5	5	5	5	5
	B	A14	5	5	5	5	5	5
	C	A15	5	5	5	5	5	5
	D	A16	5	5	5	5	5	5
100%	A	A17	5	—	~~5~~	~~5~~	—	—
	B	A18	5	—	A. ~~5~~	~~5~~	—	—
	C	A19	5	—	(JD) ~~5~~	~~5~~	—	—
	D	A20	5	—	~~5~~	~~5~~	—	—
Dechlor Ctrl	A	E17	5	5	5	5	5	5
	B	E18	5	5	5	5	5	5
	C	E19	5	5	5	5	5	5
	D	E20	5	5	5	5	5	5
Dechlor 100%	A	E21	5	5	5	5	5	3 20
	B	E22	5	5	5	5	5	5
	C	E23	5	5	5	5	5	3 20
	D	E24	5	5	5	5	5	5
Organisms loaded by: JD	Checked by:		JD	JD	JD	SD	DEV	
Loading Verified by: MF								

m = missing d = dead BR = before renewal AR = after renewal

Comments: all organisms died in 100% sample within 10 minutes of loading, MF 4-17-07
Chlorinated test terminated at 0hr + 10 minutes 5/4/07
A. transfer error J.D. 4.19.07

Test Results:
% mortality in 100% sample: 100%
LC_{50}: < 100% If Calculated: 95% CI _____ Method: _____

Dechlorinated Test Results:
% mortality in 100% dechlorinated sample 20%
LC_{50} = >100%

Screening Tests:
Report LC50 as >100%, =100%, or <100%.
Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 1001756 **Test #:** 1 of 2

TEST SOP #: TA07_ 01 **Test Species:** (Ceriodaphnia dubia) Cyprinella leedsi Pimephales promelas Americamysis bahia Menidia beryllina Other:_____

Concentration ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M	M (B)	~~A~~ (A)			
pH (S.U.)	8.1	7.9				
Temperature °C	24.3	24.5	~~24.0~~			
Dissolved Oxygen mg/L	7.4	7.7				
Conductivity (µmhos) mmhos	176	198	215			
(initials) Measured by:	JD	BA				
(initials) Recorded by:	JD	BA				

Concentration 10%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M	M (B)	(A)			
pH (S.U.)	7.6	8.2				
Temperature °C	24.0	24.0	~~24.0~~			
Dissolved Oxygen mg/L	7.6	7.1				
Conductivity (µmhos) mmhos	655	6890 BA	1032			
(initials) Measured by:	JD	BA				
(initials) Recorded by:	JD	BA				

Comments:

(A) Due to a communication error, dechlorinated Test Parameter were not measured at 48 hours and the test was terminated at 48 hours. M.F 5/3/07 24hour parameters for chlorinated tested control were not recalled MF 5/3/07

Concentration dechlor ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M	M	(A)			
pH (S.U.)	8.2	8.2				
Temperature °C	24.7	24.0	~~24.0~~			
Dissolved Oxygen mg/L	7.8	7.6				
Conductivity (µmhos) mmhos	193	193				
(initials) Measured by:	JD	BA				
(initials) Recorded by:	JD	BA				

Comments:

Concentration dechlor 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	M	M	(A)			
pH (S.U.)	7.6	8.0				
Temperature °C	24.0	24.0				
Dissolved Oxygen mg/L	7.8	7.2				
Conductivity (µmhos) mmhos	673	699				
(initials) Measured by:	JD	BA				
(initials) Recorded by:	JD	BA				

Comments:

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V 2.0 2/24/04

FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 1001756 **Test #:** 2 of 2

TEST SOP #: TA07_ 02 **Test Species:** *Ceriodaphnia dubia* (*Cyprinella leedsi*) *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:_____

Concentration Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.9	8.0	8.3	8.0	8.0	8.1
Temperature °C	24.6	24.6	24.4	24.3	24.1	24.4
Dissolved Oxygen mg/L	7.4	6.7	7.5	7.4	5.9	6.8
Conductivity ~~µmhos~~ mmhos	287	272	278	265	275	284
(initials) Measured by:	JD	JD	PPV	JD	JD	BA
(initials) Recorded by:	JD	JD	PPV	JD	JD	BA

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	–	–	–
pH (S.U.)	7.5	–	–	–	–	–
Temperature °C	25.2	–	–	–	–	–
Dissolved Oxygen mg/L	7.7	~~6.7~~ (JD)	–	–	–	–
Conductivity ~~µmhos~~ mmhos	661	–	–	–	–	–
(initials) Measured by:	JD	~~JD~~	PPV	PPV	PPV	PPV
(initials) Recorded by:	JD	JD	PPV	PPV	PPV	PPV

Comments:

Concentration Dilution Ctrl	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.9	8.1	8.2	8.1	8.0	8.1
Temperature °C	24.6	24.2	24.4	24.2	24.3	24.4
Dissolved Oxygen mg/L	7.5	6.9	7.5	7.5	5.9	6.7
Conductivity ~~µmhos~~ mmhos	290	286	296	278	285	292
(initials) Measured by:	JD	JD	PPV	JD	JD	BA
(initials) Recorded by:	JD	JD	PPV	JD	JD	BA

Comments:

Concentration Dilution 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.5	7.8	8.0	7.7	7.8	7.7
Temperature °C	24.9	24.0	24.1	24.7	24.3	24.3
Dissolved Oxygen mg/L	7.6	6.7	7.3	8.1	6.1	6.5
Conductivity ~~µmhos~~ mmhos	677	679	679	644	658	669
(initials) Measured by:	JD	JD	PPV	JD	JD	BA
(initials) Recorded by:	JD	JD	PPV	JD	JD	BA

Comments:

V 2.0 2/24/04

Appendix D. SRT Bench Sheets and Statistical Analysis

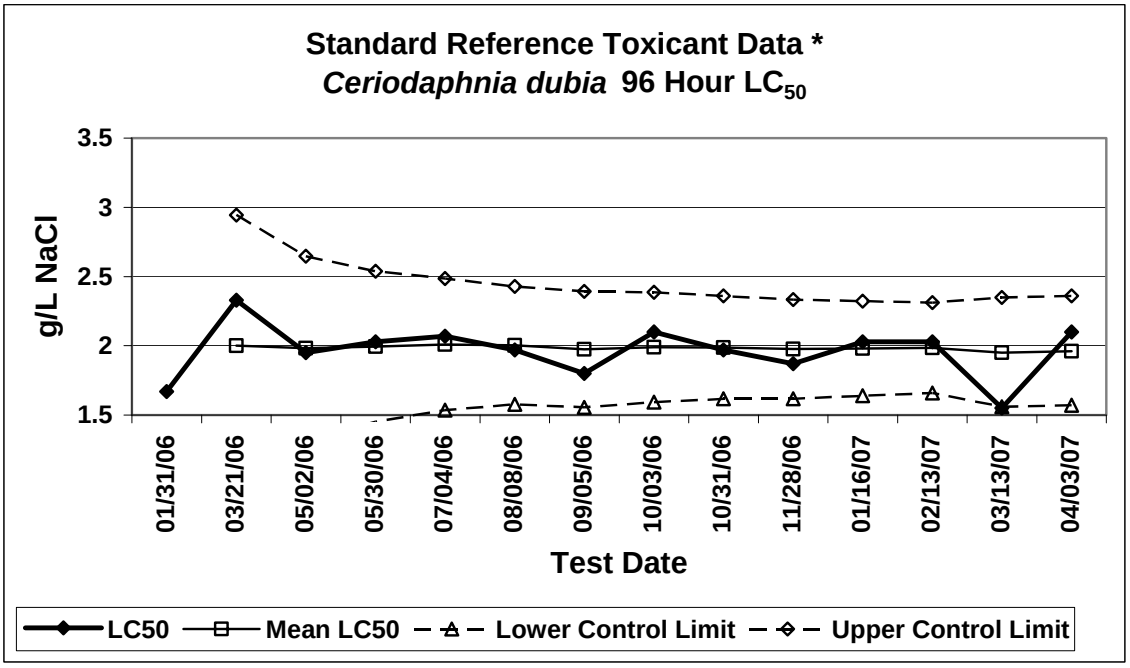
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
01/31/06	1.67				
03/21/06	2.33	2.00	0.47	1.07	2.94
05/02/06	1.95	1.98	0.33	1.32	2.65
05/30/06	2.03	2.00	0.27	1.45	2.54
07/04/06	2.07	2.01	0.24	1.54	2.48
08/08/06	1.97	2.00	0.21	1.58	2.43
09/05/06	1.80	1.97	0.21	1.56	2.39
10/03/06	2.10	1.99	0.20	1.59	2.39
10/31/06	1.97	1.99	0.19	1.62	2.36
11/28/06	1.87	1.98	0.18	1.62	2.33
01/16/07	2.03	1.98	0.17	1.64	2.32
02/13/07	2.03	1.99	0.16	1.66	2.31
03/13/07	1.55	1.95	0.20	1.56	2.35
04/03/07	2.10	1.96	0.19	1.57	2.36

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

CV = 9.69
EPA reference 75th quartile CV = 29%



* Fewer than 20 data points due to recent initiation of 96 hour SRT testing.

Appendix D. (continued)

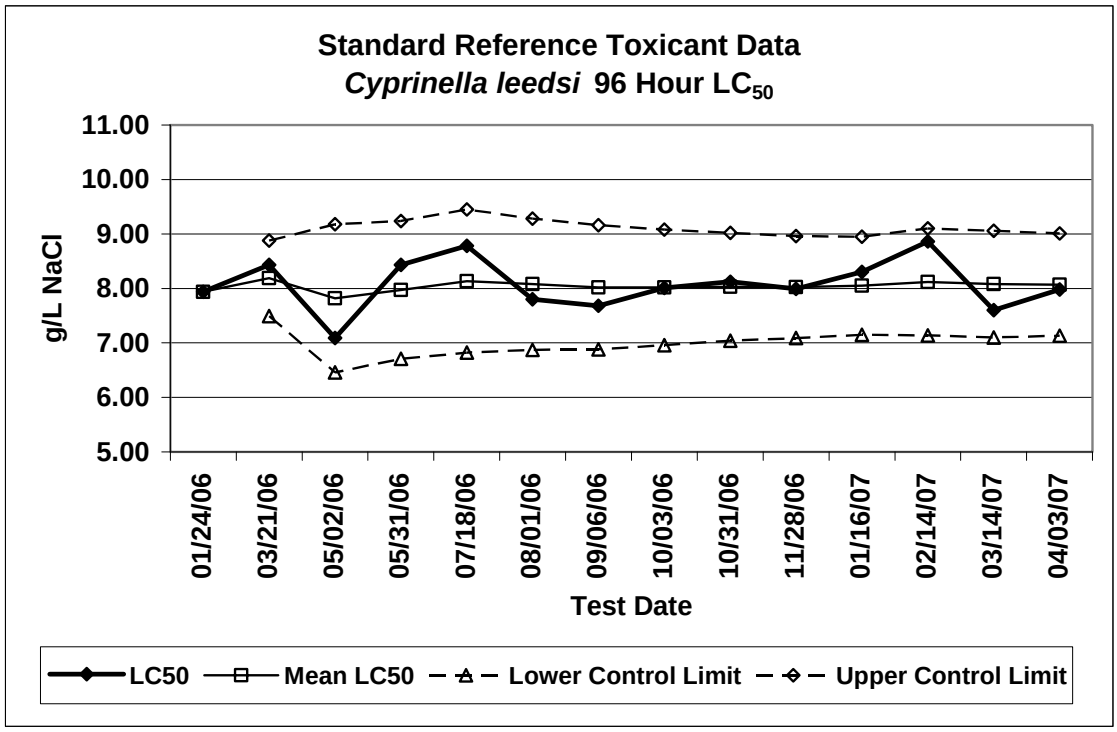
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
01/24/06	7.94	7.94			
03/21/06	8.43	8.19	0.35	7.49	8.88
05/02/06	7.09	7.82	0.68	6.46	9.18
05/31/06	8.43	7.97	0.63	6.71	9.24
07/18/06	8.78	8.13	0.66	6.82	9.45
08/01/06	7.80	8.08	0.60	6.87	9.28
09/06/06	7.68	8.02	0.57	6.88	9.16
10/03/06	8.01	8.02	0.53	6.96	9.08
10/31/06	8.12	8.03	0.49	7.04	9.02
11/28/06	7.99	8.03	0.49	7.09	8.96
01/16/07	8.30	8.05	0.45	7.15	8.95
02/14/07	8.86	8.12	0.49	7.14	9.10
03/14/07	7.60	8.08	0.49	7.10	9.06
04/03/07	7.98	8.07	0.47	7.13	9.01

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

CV = 5.82
EPA reference 75th quartile CV = 19%



* Fewer than 20 data points due to recent initiation of 96 hour SRT testing.

Appendix D. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0 — *Menidia beryllina* Method 2006.0 — *Hyalella azteca* Method 100.1 EPA-600-R-99-064
Ceriodaphnia dubia Method 2002.0 — *Cyprinella leedsi* Method 2000.0 — *Pimephales promelas* Other: _____

Method from EPA-821-R-02-012
Test Type: 48 hour non-renewal / 96 hour renewal
Test Page 1 of 2

Diluent/ Batch #: DMW / 4-2-07
Toxicant/ Batch#: NaCl 4-3-07

Test Beginning: Date: 4-3-07 Time: 11:00
Test Ending: Date: 4-7-07 Time: 9:00

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	BA
Alkalinity (mg/L as $CaCO_3$):	78	Hach	PN
Hardness (mg.L as $CaCO_3$):	88	Hach	PN
Total Ammonia (mg/L as N):	<0.017	Denver	MF
Salinity (ppth):	<1	Mettler	BA

Organism Batch #/ Age: 13-07 / <24hrs
Feeding: Prior to test / Prior to renewal / Daily
Food: YCT *P.subcapitata* Artemia: Lot #_____
Food Batch: 1-1-07 02-07-07 0hr — 24hr — 48hr — 72hr —
Chamber size: 30 mL
Test volume: 20 mL per replicate

Conc. g/L µg/L mg/L	Rep.	Chamber #	Number Live 0 hr	24 hr	48 hr	pH (SU) 0 hr	24 hr	48 hr	Temperature (°C) 0 hr	24 hr	48 hr	D.O. (mg/L) 0 hr	24 hr	48 hr	Uncorrected Conductivity µmhom/cm mmhos/cm 0 hr	24 hr	48 hr
			~~48 hr~~	~~72 hr~~	~~96 hr~~	~~48 hr~~	~~72 hr~~	~~96 hr~~	~~48 hr~~	~~72 hr~~	~~96 hr~~	~~48 hr~~	~~72 hr~~	~~96 hr~~	~~48 hr~~	~~72 hr~~	~~96 hr~~
Control	A	A	5	5	5	7.9		7.8	25.2		24.0	7.9		7.6	174		0.210
	B	B	5	5	5										0.174 BA		
	C	C	5	5	5												
	D	D	5	5	5												
1.5	A	A	5	5	5	8.0		7.8	25.3		24.0	7.6		7.6	2.96		3.13
	B	B	5	5	5												
	C	C	5	5	5												
	D	D	5	5	5												
2.0	A	A	5	5	5	8.1		7.8	25.3		24.0	7.5		7.5	3.84		4.14
	B	B	5	5	5												
	C	C	5	5	4D												
	D	D	5	5	5												
2.5	A	A	5	5	1D	8.1		7.8	25.2		24.0	7.6		7.4	4.72		5.1
	B	B	5	5	3D												
	C	C	5	5	2D												
	D	D	5	5	1D												
3.0	A	A	5	4D	0D	8.1		7.8	25.1		24.0	7.6		7.4	5.61		6.08
	B	B	5	5	0SD												
	C	C	5	5	0SD												
	D	D	5	4D	0D												
4.0	A	A	5	0SD	-	8.1	7.9	-	25.0	24.5	-	7.7	6.4	-	7.3	7.9	-
	B	B	5	0SD	-												
	C	C	5	0SD	-												
	D	D	5	0SD	-												
	A																
	B																
	C																
	D																
Loaded / measured by:			BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
Recorded by:			BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA

Investigators' Signatures
Nigel Wellenkamp
REVIEWER

Concentrations prepared by: BA
Loading verified by: PN
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 25.7 max. 26.3 mean 26.0
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 24.9 max. 26.3 mean 25.6

Comments:

Statistics: Method: Spearman-Karber
48y 96 hour LC_{50}: 2.37
95% Confidence Interval: lower 2.25 upper 2.49

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Appendix D. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0 | *Menidia beryllina* Method 2006.0 | *Hyalella azteca* Method 100.1 EPA-600-R-99-064
Ceriodaphnia dubia Method 2002.0 | *Cyprinella leedsi* Method 2000.0 | *Pimephales promelas* Method 2000.0 | Other: _____

Method from EPA-821-R-[illegible]

Test Type: 48 hour non-renewal / (96 hour renewal)

Test Page 1 of 2

Diluent/ Batch #: DMW / 4-2-07
Toxicant/ Batch#: NaCl / 3-3-07

Test Beginning: Date: 4-3-07 Time: 1400
Test Ending: Date: 4-7-07 Time: 09:00

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	BA
Alkalinity (mg/L as $CaCO_3$):	78	Hach	PPV
Hardness (mg.L as $CaCO_3$):	88	Hach	PPV
Total Ammonia (mg/L as N):	<0.017	Denver	MF
Salinity (ppth):	21	Mettler	BA

Organism Batch #/ Age: 13-07 / <24hrs
Feeding: (Prior to test) Prior to renewal / Daily
Food: YCT *P.subcapitata* Artemia: Lot #_____
Food Batch: 1-1-07 02-07-07 0hr 24hr 48hr 72hr
Chamber size: 30 mL
Test volume: 20 mL per replicate

Conc µg/L 0	Rep.	Chamber #	Number Live 0 hr	Number Live 24 hr	Number Live 48 hr	pH (SU) 0 hr	pH (SU) 24 hr	pH (SU) 48 hr	Temperature (°C) 0 hr	Temperature (°C) 24 hr	Temperature (°C) 48 hr	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 hr	D.O. (mg/L) 48 hr	Uncorrected Conductivity µmhom/cm (mmhos/cm) 0 hr	Uncorrected Conductivity 24 hr	Uncorrected Conductivity 48 hr
			48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr
Control	A	A	5	5	5	8.0		8.2	24.0		24.0	7.3		7.9	0.173		0.195
	B	B	5	5	5												
	C	C	5	5	5												
	D	D	5	5	5												
1.5	A	A	5	5	5	8.1		8.1	24.0		24.0	7.5		7.8	2.96		3.21
	B	B	5	5	5												
	C	C	5	5	5												
	D	D	5	5	5												
2.0	A	A	5	5	5	8.1		8.1	24.0		24.0	7.4		7.8	3.83		4.24
	B	B	5	4 1D	4												
	C	C	4	2 2D	2												
	D	D	5	5	4 1D												
2.5	A	A	1	0 1D	-	8.1		8.1	24.0		24.0	7.4		7.7	4.69		5.29
	B	B	3	1 2D	0 1D												
	C	C	2	1 1D	0 1D												
	D	D	1	1	0 1D												
3.0	A	A	-	-	-	-		-	-		-	-		-	-		-
	B	B	-	-	-												
	C	C	-	-	-												
	D	D	-	-	-												
4.0	A	A	-	-	-	-		-	-		-	-		-	-		-
	B	B	-	-	-												
	C	C	-	-	-												
	D	D	-	-	-												
	A																
	B																
	C																
	D																
Loaded / measured by:			BA	BA	BA	BA		BA	BA		BA	BA		BA	BA		BA
Recorded by:			BA	BA	BA	BA		BA	BA		BA	BA		BA	BA		BA

Investigators' Signatures
Eric Mace
Tomas Damid
Rafael Vichivad
Marshall Faircloth
_____
Nicki Wetherby
REVIEWER

Concentrations prepared by: BA
Loading verified by: PPV
Light Intensity: 50-100 ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 23.7 max. 26.3 mean 26.0
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 24.9 max. 26.3 mean 25.6

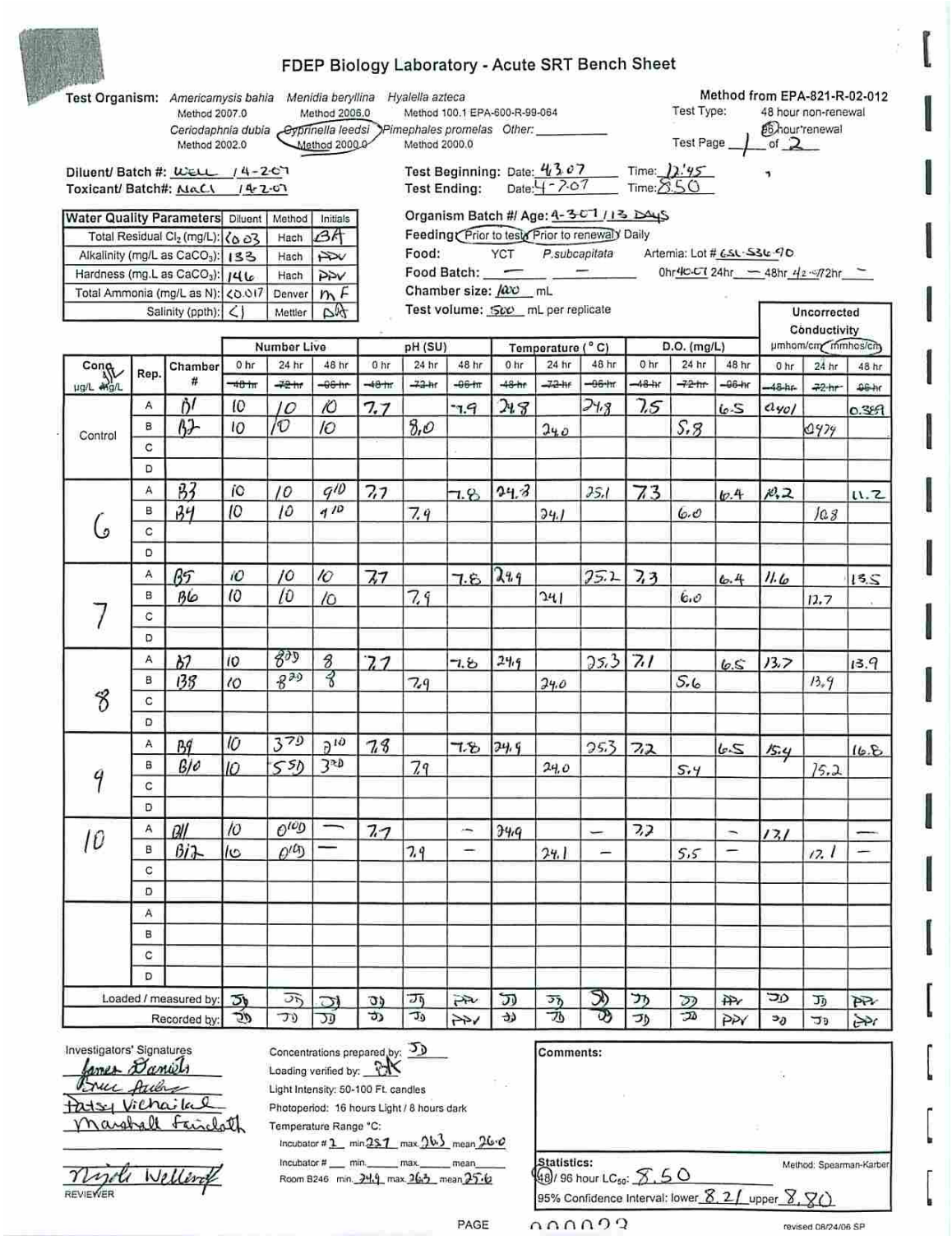
Comments:

Statistics: Method: Spearman-Karber
48 / (96) hour LC_{50}: 2.10
95% Confidence Interval: lower 2.00 upper 2.20

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revised 08/24/06 SP

Appendix D. (continued)



FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0; *Menidia beryllina* Method 2006.0; *Hyalella azteca* Method 100.1 EPA-600-R-99-064; *Ceriodaphnia dubia* Method 2002.0; *Cyprinella leedsi* Method 2000.0; *Pimephales promelas* Method 2000.0; Other: _____

Method from EPA-821-R-02-012

Test Type: 48 hour non-renewal / (96 hour renewal)

Test Page 1 of 2

Diluent/ Batch #: well 14-2-07

Toxicant/ Batch#: NaCl 14-2-07

Test Beginning: Date: 4.3.07 Time: 12:45

Test Ending: Date: 4-7-07 Time: 8:50

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	BA
Alkalinity (mg/L as $CaCO_3$):	133	Hach	PPV
Hardness (mg.L as $CaCO_3$):	146	Hach	PPV
Total Ammonia (mg/L as N):	<0.017	Denver	MF
Salinity (ppth):	<1	Mettler	DM

Organism Batch #/ Age: 4-3-07 / 13 DAYS

Feeding (Prior to test) (Prior to renewal) Daily

Food: YCT *P.subcapitata* Artemia: Lot # GSL-S36470

Food Batch: — — 0hr 40-07 24hr — 48hr 4/2 - 72hr —

Chamber size: 100 mL

Test volume: 500 mL per replicate

Conc µg/L mg/L	Rep.	Chamber #	Number Live 0 hr / ~~48 hr~~	Number Live 24 hr / ~~72 hr~~	Number Live 48 hr / ~~96 hr~~	pH (SU) 0 hr / ~~48 hr~~	pH (SU) 24 hr / ~~72 hr~~	pH (SU) 48 hr / ~~96 hr~~	Temperature (°C) 0 hr / ~~48 hr~~	Temperature (°C) 24 hr / ~~72 hr~~	Temperature (°C) 48 hr / ~~96 hr~~	D.O. (mg/L) 0 hr / ~~48 hr~~	D.O. (mg/L) 24 hr / ~~72 hr~~	D.O. (mg/L) 48 hr / ~~96 hr~~	Uncorrected Conductivity µmhom/cm (mmhos/cm) 0 hr / ~~48 hr~~	Uncorrected Conductivity 24 hr / ~~72 hr~~	Uncorrected Conductivity 48 hr / ~~96 hr~~
Control	A	B1	10	10	10	7.7		7.9	24.8		24.8	7.5		6.5	0.401		0.389
	B	B2	10	10	10		8.0			24.0			5.8			0.474	
	C																
	D																
6	A	B3	10	10	9/10	7.7		7.8	24.8		25.1	7.3		6.4	11.2		11.2
	B	B4	10	10	9/10		7.9			24.1			6.0			10.8	
	C																
	D																
7	A	B5	10	10	10	7.7		7.8	24.9		25.2	7.3		6.4	11.6		13.5
	B	B6	10	10	10		7.9			24.1			6.0			12.7	
	C																
	D																
8	A	B7	10	8/3D	8	7.7		7.8	24.9		25.3	7.1		6.5	13.7		13.9
	B	B8	10	8/3D	8		7.9			24.0			5.6			13.9	
	C																
	D																
9	A	B9	10	3/3D	3/10	7.8		7.8	24.9		25.3	7.2		6.5	15.4		16.8
	B	B10	10	5/3D	3/3D		7.9			24.0			5.4			15.2	
	C																
	D																
10	A	B11	10	0/10D	—	7.7		—	24.9		—	7.2		—	13.1		—
	B	B12	10	0/10D	—		7.9	—		24.1	—		5.5	—		12.1	—
	C																
	D																
	A																
	B																
	C																
	D																
Loaded / measured by:			JD	JD	JD	JD	JD	PPV	JD	JD	JD	JD	JD	PPV	JD	JD	PPV
Recorded by:			JD	JD	JD	JD	JD	PPV	JD	JD	JD	JD	JD	PPV	JD	JD	PPV

Investigators' Signatures

James Daniels

Eric Ahlers

Patsy Vichaikul

Marshall Faircloth

Nicole Wellendorf

REVIEWER

Concentrations prepared by: JD

Loading verified by: PK

Light Intensity: 50-100 Ft. candles

Photoperiod: 16 hours Light / 8 hours dark

Temperature Range °C:

Incubator # 1 min. 25.7 max. 26.3 mean 26.0

Incubator # ___ min. ___ max. ___ mean ___

Room B246 min. 24.9 max. 26.3 mean 25.6

Comments:

Statistics: Method: Spearman-Karber

(48) / 96 hour LC_{50}: 8.50

95% Confidence Interval: lower 8.21 upper 8.80

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Appendix D. (continued)

FDEP Biology Laboratory - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* Method 2007.0; *Menidia beryllina* Method 2006.0; *Hyalella azteca* Method 100.1 EPA-600-R-99-064; *Ceriodaphnia dubia* Method 2002.0; *Cyprinella leedsi* Method 2000.0; *Pimephales promelas* Method 2000.0; Other: _____

Method from EPA-821-R-02-012
Test Type: 48 hour non-renewal / 96 hour renewal
Test Page 2 of 2

Diluent/ Batch #: WELL 1-4-07
Toxicant/ Batch#: NaCl 1-4-07

Test Beginning: Date: 4.3.07 Time: 12:45
Test Ending: Date: 4-7-07 Time: 8:50

Water Quality Parameters	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.05	Hach	BA
Alkalinity (mg/L as $CaCO_3$):	133	Hach	DAV
Hardness (mg.L as $CaCO_3$):	146	Hach	DAV
Total Ammonia (mg/L as N):	<0.07	Denver	MF
Salinity (ppth):	<1	Mettler	BA

Organism Batch #/ Age: 4-3-07 / 13 DAYS
Feeding: Prior to test / Prior to renewal / Daily
Food: YCT *P.subcapitata* Artemia: Lot # GSL-536-90
Food Batch: — — 0hr 40.07 24hr — 48hr 42 72hr —
Chamber size: 1000 mL
Test volume: 500 mL per replicate

Conc. g/L µg/L mg/L	Rep.	Chamber #	Number Live 0 hr / 48 hr	Number Live 24 hr / 72 hr	Number Live 48 hr / 96 hr	pH (SU) 0 hr / 48 hr	pH (SU) 24 hr / 72 hr	pH (SU) 48 hr / 96 hr	Temperature (°C) 0 hr / 48 hr	Temperature (°C) 24 hr / 72 hr	Temperature (°C) 48 hr / 96 hr	D.O. (mg/L) 0 hr / 48 hr	D.O. (mg/L) 24 hr / 72 hr	D.O. (mg/L) 48 hr / 96 hr	Uncorrected Conductivity µmhom/cm mmhos/cm 0 hr / 48 hr	Uncorrected Conductivity 24 hr / 72 hr	Uncorrected Conductivity 48 hr / 96 hr
Control	A	B1	10	10	10	8.0		8.2	24.0		25.3	7.7		7.5	0.268		0.278
	B	B2	10	10	10		8.1			24.3			7.2			0.274	
	C																
	D																
6	A	B3	9	9	9	7.8		8.2	24.1		25.6	7.3		7.2	10.0		10.3
	B	B4	9	9	9		8.0			24.9			7.0			10.3	
	C																
	D																
7	A	B5	10	10	9 1D	7.9		8.2	24.0		25.1	7.4		7.2	12.0		12.4
	B	B6	10	10	9 1D		8.1			24.6			7.0			12.5	
	C																
	D																
8	A	B7	8	8	6 2D	7.9		8.2	24.0		25.1	7.5		7.2	13.8		14.2
	B	B8	8	8	5 3D		8.1			24.7			6.9			14.1	
	C																
	D																
9	A	B9	2	1 1D	0 1D	8.0		8.2	24.0		25.7	7.5		7.2	15.5		16.0
	B	B10	3	2 1D	0 2D		8.1			24.5			6.9			15.7	
	C																
	D																
10	A	B11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	B	B12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	C																
	D																
	A																
	B																
	C																
	D																
Loaded / measured by:			JD	JD	BA	DAV	DAV	DAV	DAV	DAV	BA	DAV	DAV	DAV	DAV	DAV	DAV
Recorded by:			JD	JD	BA	DAV	DAV	DAV	DAV	DAV	BA	DAV	DAV	DAV	DAV	DAV	DAV

Investigators' Signatures
James Daniels
Brad Rochow
Patsy Vickers
Marshall Faircloth

Reviewer: Nigel Wellendorf

Concentrations prepared by: JD
Loading verified by: BA
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min 25.7 max 26.3 mean 26.0
Incubator # ___ min ___ max ___ mean ___
Room B246 min 24.9 max 26.3 mean 25.6

Comments:

Statistics: Method: Spearman-Karber
48 / 96 hour LC_{50}: 7.98
95% Confidence Interval: lower 7.7 upper 8.28

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Appendix D. (continued)

***Ceriodaphnia dubia* Acute Standard Reference Toxicant Test**

DATE: 04-03-07 DURATION: 96 hr. TOXICANT: Nacl
SPECIES: *Ceriodaphnia dubia*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
1.50	20	0
2.00	20	5
2.50	20	20
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: 0.00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.10
95% LOWER CONFIDENCE: 2.00
95% UPPER CONFIDENCE: 2.20

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

DATE: 04-03-07 DURATION: 96 hr. TOXICANT NaCl
SPECIES: *Cyprinella leedsi*

RAW DATA: Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
6.00	20	2
7.00	20	2
8.00	20	9
9.00	20	20
10.00	20	20

SPEARMAN-KARBER TRIM: 10.00%

SPEARMAN-KARBER ESTIMATES: LC50: 7.98
95% LOWER CONFIDENCE: 7.70
95% UPPER CONFIDENCE: 8.28

Appendix E. Test Organism Receipts

MBL Aquaculture
4569 Samuel Street
Sarasota, Florida 34233
TEL: (800) 889-0384
FAX: (941) 922-3874
EMAIL: sales@mblaquaculture.com
WEB: www.MBLAquaculture.com

NELAC Accredited

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 4/2/07

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood Number	Temperature	Salinity
Mysidopsis bahia	400+	4 Days	MS070329	25°C	~15‰
Menidia beryllina	400+	11 Days	SS070311	25°C	~15‰
Cyprinella leedsi	150+	11 Days	CL070321	25°C	
Pimephales promelas	150+	8 Days	FM070315-1530	25°C	

Packed by: Frank Gauj

Shipped Via: FedEx

Notes: _____

Thank you for your order

Appendix E. (continued)

MBL Aquaculture
4569 Samuel Street
Sarasota, Florida 34233
TEL: (800) 889-0384
FAX: (941) 922-3874
EMAIL: sales@mblaquaculture.com
WEB: www.MBLAquaculture.com

NELAC Accredited

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 4/16/07

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood Number	Temperature	Salinity
Mysidopsis bahia					
Menidia beryllina					
Cyprinella leedsi	120+	11 Days	CiC70405	25°C	
Pimephales promelas	350+	<24 hrs	TMO0416-1HO	25°C	

Packed by: Frank Gauji

Shipped Via: FedEx

Notes: _____

Thank you for your order.

Appendix F. Chemical Analyses performed on the effluent from the Spencer Wastewater Treatment Facility Outfall D-001, sampled on April 16, 2007.

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
4/16/2007 12:50	DOUBLE BR DOWNSTREAM OF SPENCER OUTFALL	Bio-AGP/LimNut	Algal Growth Potential	4.62	mg DryWt/L	A	0.3	0.9
4/16/2007 12:45	DOUBLE BR UPSTREAM OF SPENCER DISCHARGE	Bio-AGP/LimNut	Algal Growth Potential	4.51	mg DryWt/L		0.3	0.9
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Bio-AGP/LimNut	Algal Growth Potential	54.6	mg DryWt/L		0.3	0.9
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Bio-AGP/LimNut	Algal Growth Potential-Dechlorinated	49.2	mg DryWt/L		0.3	0.9
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Bio-BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	7	mg/L	AL	0.2	2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	1,2,4-Trichlorobenzene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	1,2-Dichlorobenzene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	1,3-Dichlorobenzene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	1,4-Dichlorobenzene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2,4,6-Trichlorophenol	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2,4-Dichlorophenol	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2,4-Dimethylphenol	9.8	ug/L	U	9.8	39
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	59
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2,4-Dinitrotoluene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2,6-Dinitrotoluene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2-Chloronaphthalene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2-Chlorophenol	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	2-Nitrophenol	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	3,3'-Dichlorobenzidine	39	ug/L	U	39	160
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	4,4'-DDT	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	4-Bromophenyl phenyl ether	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	4-Chloro-3-methylphenol	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	7.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	4-Nitrophenol	15	ug/L	U	15	59
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Acenaphthene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Acenaphthylene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Aldrin	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Anthracene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Benzidine	98	ug/L	U	98	390
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Benzo(a)anthracene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Benzo(a)pyrene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Benzo(b)fluoranthene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Benzo(g,h,i)perylene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Benzo(k)fluoranthene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Bis(2-chloroethoxy)methane	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Bis(2-chloroethyl)ether	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	59
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Butyl benzyl phthalate	4.9	ug/L	U	4.9	20
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Chrysene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Di-n-butyl phthalate	4.9	ug/L	U	4.9	20
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Di-n-octyl phthalate	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Dibenzo(a,h)anthracene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Diethyl phthalate	0.98	ug/L	U	0.98	3.9

Appendix F. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Dimethyl phthalate	49	ug/L	U	49	200
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Endosulfan I	3.9	ug/L	U	3.9	16
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Endosulfan II	3.9	ug/L	U	3.9	16
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Endrin	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Endrin aldehyde	3.9	ug/L	U	3.9	16
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Fluoranthene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Fluorene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Hexachlorobenzene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	12
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	U	2.9	12
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Indeno(1,2,3-cd)pyrene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Isophorone	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	U	2	7.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	N-Nitrosodimethylamine	2	ug/L	U	2	7.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	N-Nitrosodiphenylamine/ Diphenylamine	2.9	ug/L	U	2.9	12
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Naphthalene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Nitrobenzene	2	ug/L	U	2	7.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	12
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Phenanthrene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Phenol	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	Pyrene	0.98	ug/L	U	0.98	3.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	5.9
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	5.9
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	1,2,4-Trichlorobenzene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	1,2-Dichlorobenzene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	1,3-Dichlorobenzene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	1,4-Dichlorobenzene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2,4,6-Trichlorophenol	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2,4-Dichlorophenol	1	ug/L	UJ	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2,4-Dimethylphenol	10	ug/L	UJ	10	40
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	60
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2,4-Dinitrotoluene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2,6-Dinitrotoluene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2-Chloronaphthalene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2-Chlorophenol	1	ug/L	UJ	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2-Methyl-4,6-dinitrophenol	3	ug/L	U	3	12
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	2-Nitrophenol	1	ug/L	UJ	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	3,3'-Dichlorobenzidine	40	ug/L	U	40	160
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	4,4'-DDT	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	4-Bromophenyl phenyl ether	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	4-Chloro-3-methylphenol	1	ug/L	UJ	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	4-Nitrophenol	15	ug/L	U	15	60

Appendix F. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Acenaphthene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Acenaphthylene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Aldrin	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Anthracene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Benzidine	100	ug/L	U	100	400
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Benzo(a)anthracene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Benzo(a)pyrene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Benzo(b)fluoranthene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Benzo(g,h,i)perylene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Benzo(k)fluoranthene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Bis(2-chloroethoxy)methane	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Bis(2-chloroethyl)ether	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Bis(2-chloroisopropyl)ether	3	ug/L	U	3	12
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	60
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Butyl benzyl phthalate	5	ug/L	U	5	20
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Chrysene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Di-n-butyl phthalate	5	ug/L	U	5	20
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Di-n-octyl phthalate	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Dibenzo(a,h)anthracene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Diethyl phthalate	1.5	ug/L	I	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Dimethyl phthalate	50	ug/L	U	50	200
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Endosulfan I	4	ug/L	U	4	16
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Endosulfan II	4	ug/L	U	4	16
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Endrin	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Endrin aldehyde	4	ug/L	U	4	16
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Fluoranthene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Fluorene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Hexachlorobenzene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Hexachlorobutadiene	3	ug/L	U	3	12
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Hexachlorocyclopentadiene	3	ug/L	U	3	12
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Hexachloroethane	3	ug/L	U	3	12
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Indeno(1,2,3-cd)pyrene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Isophorone	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	U	2	8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	N-Nitrosodimethylamine	2	ug/L	U	2	8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	N-Nitrosodiphenylamine/ Diphenylamine	3	ug/L	U	3	12
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Naphthalene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Nitrobenzene	2	ug/L	U	2	8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Pentachlorophenol	3	ug/L	U	3	12
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Phenanthrene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Phenol	1	ug/L	UJ	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	Pyrene	1	ug/L	U	1	4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	6
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Alachlor	0.59	ug/L	U	0.59	2.4

Appendix F. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Ametryn	0.049	ug/L	U	0.049	0.2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Atrazine	0.049	ug/L	U	0.049	0.2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Azinphos Methyl	0.2	ug/L	U	0.2	0.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Bromacil	0.2	ug/L	U	0.2	0.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Chlorpyrifos Ethyl	0.049	ug/L	U	0.049	0.2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Chlorpyrifos Methyl	0.098	ug/L	UJ	0.098	0.39
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Diazinon	0.049	ug/L	UJ	0.049	0.2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Ethion	0.049	ug/L	U	0.049	0.2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Ethoprop	0.098	ug/L	U	0.098	0.39
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Fenamiphos	0.2	ug/L	U	0.2	0.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Fonofos	0.098	ug/L	U	0.098	0.39
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Hexazinone	0.098	ug/L	U	0.098	0.39
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Malathion	0.15	ug/L	UJ	0.15	0.6
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Metolachlor	0.49	ug/L	UJ	0.49	2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Metribuzin	0.098	ug/L	U	0.098	0.39
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Mevinphos	0.2	ug/L	U	0.2	0.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Naled	0.78	ug/L	UJ	0.78	3.1
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Norflurazon	0.15	ug/L	U	0.15	0.6
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Parathion Methyl	0.098	ug/L	U	0.098	0.39
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Phorate	0.049	ug/L	U	0.049	0.2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	GC-Water	Simazine	0.049	ug/L	UJ	0.049	0.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Alachlor	0.59	ug/L	U	0.59	2.4
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Ametryn	0.049	ug/L	U	0.049	0.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Atrazine	0.33	ug/L		0.049	0.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Azinphos Methyl	0.2	ug/L	U	0.2	0.8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Bromacil	0.2	ug/L	U	0.2	0.8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Chlorpyrifos Ethyl	0.049	ug/L	U	0.049	0.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Chlorpyrifos Methyl	0.098	ug/L	UJ	0.098	0.39
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Diazinon	0.049	ug/L	UJ	0.049	0.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Ethion	0.049	ug/L	U	0.049	0.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Ethoprop	0.098	ug/L	U	0.098	0.39
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Fenamiphos	0.2	ug/L	U	0.2	0.8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Fonofos	0.098	ug/L	U	0.098	0.39
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Hexazinone	0.098	ug/L	U	0.098	0.39
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Malathion	0.15	ug/L	UJ	0.15	0.6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Metolachlor	0.49	ug/L	UJ	0.49	2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Metribuzin	0.098	ug/L	U	0.098	0.39
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Mevinphos	0.2	ug/L	U	0.2	0.8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Naled	0.78	ug/L	UJ	0.78	3.1
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Norflurazon	0.15	ug/L	U	0.15	0.6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Parathion Methyl	0.098	ug/L	U	0.098	0.39
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Phorate	0.049	ug/L	U	0.049	0.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	GC-Water	Simazine	0.049	ug/L	UJ	0.049	0.2

Appendix F. (continued)

Date Sampled	Field ID	Analysis	Component	Result	Units	Remark	MDL	PQL
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Aluminum	4	ug/L	U	4	16
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Arsenic	0.5	ug/L	U	0.5	2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Calcium	0.02	mg/L	U	0.02	0.08
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Chromium	0.3	ug/L	U	0.3	1.2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Copper	0.2	ug/L	U	0.2	0.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Iron	5	ug/L	U	5	20
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Lead	0.2	ug/L	U	0.2	0.8
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Magnesium	0.005	mg/L	U	0.005	0.02
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Nickel	0.25	ug/L	U	0.25	1
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Metals-Water	Zinc	5	ug/L	U	5	20
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Aluminum	5.5	ug/L	I	4	16
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Arsenic	0.5	ug/L	U	0.5	2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Calcium	25.5	mg/L	A	0.02	0.08
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Chromium	0.3	ug/L	U	0.3	1.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Copper	0.94	ug/L	A	0.2	0.8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Iron	163	ug/L	A	5	20
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Lead	0.2	ug/L	U	0.2	0.8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Magnesium	12.2	mg/L	A	0.005	0.02
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Nickel	3.8	ug/L	A	0.25	1
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Metals-Water	Zinc	47	ug/L	A	5	20
4/16/2007 12:50	DOUBLE BR DOWNSTREAM OF SPENCER OUTFALL	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
4/16/2007 12:50	DOUBLE BR DOWNSTREAM OF SPENCER OUTFALL	Nutrients-Liquid	Kjeldahl Nitrogen	0.31	mg N/L		0.08	0.2
4/16/2007 12:50	DOUBLE BR DOWNSTREAM OF SPENCER OUTFALL	Nutrients-Liquid	NO2NO3-N	0.021	mg N/L		0.004	0.01
4/16/2007 12:50	DOUBLE BR DOWNSTREAM OF SPENCER OUTFALL	Nutrients-Liquid	O-Phosphate-P	0.005	mg P/L	I	0.004	0.01
4/16/2007 12:50	DOUBLE BR DOWNSTREAM OF SPENCER OUTFALL	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
4/16/2007 12:45	DOUBLE BR UPSTREAM OF SPENCER DISCHARGE	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
4/16/2007 12:45	DOUBLE BR UPSTREAM OF SPENCER DISCHARGE	Nutrients-Liquid	Kjeldahl Nitrogen	0.24	mg N/L	A	0.08	0.2
4/16/2007 12:45	DOUBLE BR UPSTREAM OF SPENCER DISCHARGE	Nutrients-Liquid	NO2NO3-N	0.018	mg N/L		0.004	0.01
4/16/2007 12:45	DOUBLE BR UPSTREAM OF SPENCER DISCHARGE	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	I	0.004	0.01
4/16/2007 12:45	DOUBLE BR UPSTREAM OF SPENCER DISCHARGE	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Nutrients-Liquid	Kjeldahl Nitrogen	0.08	mg N/L	U	0.08	0.2
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Nutrients-Liquid	Sulfate	0.2	mg SO4/L	U	0.2	0.5
4/16/2007 10:30	SPENCER WWTP-EQUIPMENT BLANK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Nutrients-Liquid	Color	5	PCU		5	5
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Nutrients-Liquid	Kjeldahl Nitrogen	0.53	mg N/L	A	0.08	0.2
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Nutrients-Liquid	NO2NO3-N	0.83	mg N/L		0.04	0.1
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Nutrients-Liquid	O-Phosphate-P	1	mg P/L		0.04	0.1
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Nutrients-Liquid	Specific_Conductance	578	umhos/cm		2	8
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Nutrients-Liquid	Sulfate	91	mg SO4/L	A	1	2.5
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Nutrients-Liquid	TSS	4	mg/L	U	4	16
4/16/2007 10:00	SPENCER WWTP-FINAL EFFLUENT	Nutrients-Liquid	Total-P	1.1	mg P/L	A	0.04	0.12

Appendix G. Field Sheets and Habitat Assessment Forms

FDEP-SOP-001/01: Form FD 9000-3 (June 1, 2001)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		4-16-07	1200	Little Black Cr

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	CLAY	Double Br upstream of Spencer Discharge	

RIPARIAN ZONE/STREAM FEATURES

Predominant Land-Use in Watershed (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)

Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☐ Heavy ☐

Local Watershed NPS Pollution (check box): No evidence ☐ Slight ☐ Moderate potential ☒ Obvious sources ☐

Width of riparian vegetation (m) On least buffered side: >18

List & map dominant Vegetation on back

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

m wide

m/s | 0.2 m/s | m/s

Artificially Channelized ☒ no ☐ recent, severe ☐ some recovery ☐ mostly recovered

Artificially Impounded ☐ yes more sinuous

High Water Mark: 0.5 (m above present water level) + 0.2 (present depth in m) = 0.7 (m above bed)

m deep | 0.2 m deep | m deep

Canopy Cover % : Open: ☐ Lightly Shaded (11-45%): ☐ Moderately Shaded (46-80%): ☒ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☒ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand Smothering: none (moderate) slight severe Silt smothering: none moderate (slight) severe Other:

Substrate Type	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	6			Sand	60		
Leaf Packs of Mats	11			Mud/Muck/Silt	18		
Aquatic Vegetation				Other:			
Rock or Shell Rubbie				Other:			
Undercut banks/Roots	5			*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (umho/cm) Or Salinity (ppt):			Secchi (m):
Top								
Mid-depth								
Bottom								

System Type: Stream: 1st-2nd order ☐ 3rd-4th order ☐ 5th – 6th order ☐ 7th order or greater ☐ Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐

Water Odors (check box): Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils (check box): None: ☒ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☒ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☒ Other: ☐

Weather Conditions/Notes:

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☒	☐	☐
Fish	☐	☐	☒	☐
Aquatic Macrophytes	☒	☐	☐	☐
Iron/sulfur Bacteria	☒	☐	☐	☐

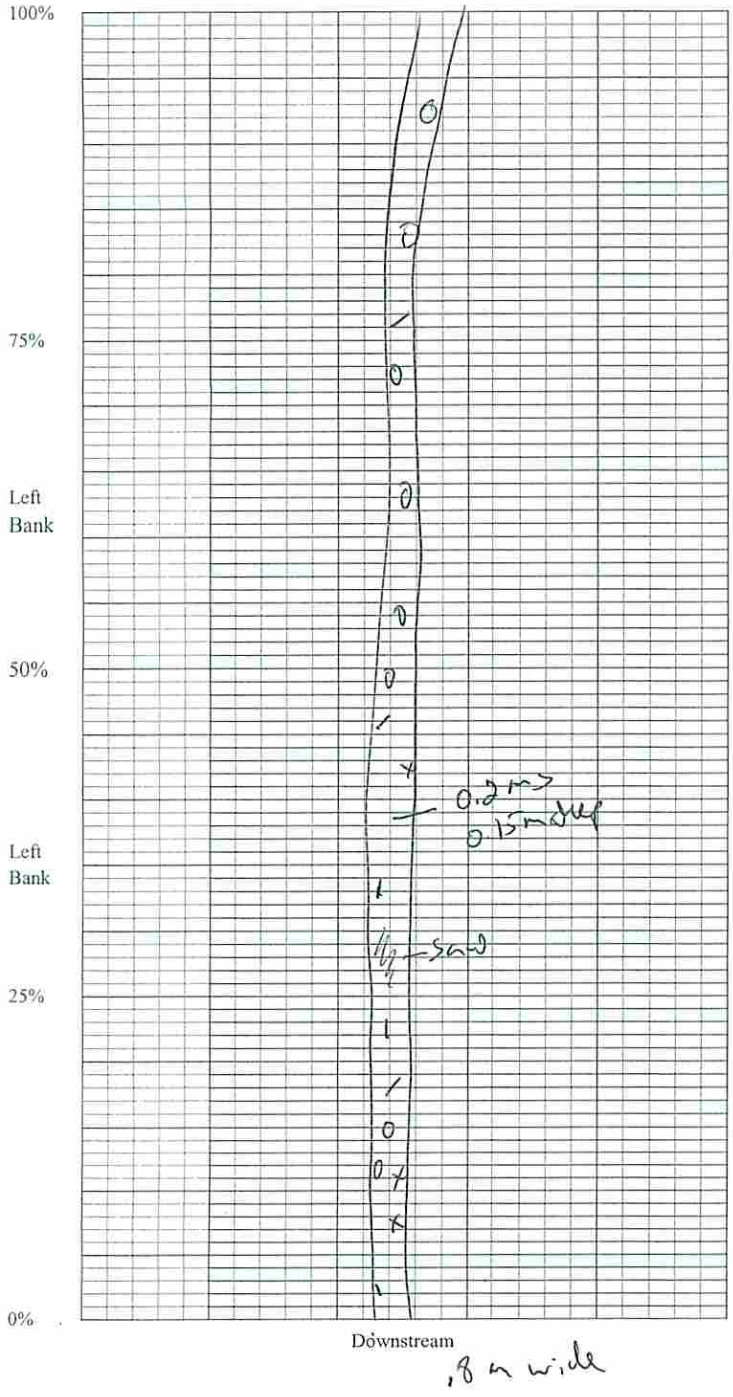
SAMPLING TEAM: Kalleney Crapo

SIGNATURE:

DATE: 4-16-07

Appendix G. (continued)

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (June 1, 2001)
Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.
☑ Snags
☒ Roots/undercut banks
☑ Leaf Packs (or mats)
☐ Macrophytes
☐ _____
☐ _____
☐ _____
Velocity: Note where velocity measures were taken.
Habitat Smothering: Note areas (on map) where sand or silt is something substrates, limiting habitability.
Bank Stability: Note areas (on map) with unstable, eroding banks.
Riparian Buffer Width: Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed/other notes:

Snags 5
Leaf 9
root 4
18

22% total

Appendix G. (continued)

FDEP-SOP-001/01: Form FD 9000-5 (June 1, 2001)

STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		4/16/07	Little Black Cr

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	CLAY	Double Br Upstream of Spencer WWTP Disch	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 12	Four or more productive habitats present (snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock). 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability 13	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity 14	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec. Or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 12 Primary Score 51	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of the habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	Many have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 9 Left Bank 9	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12m to 18 m 8 7 6	Width of native vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 10 Secondary Score 78	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody machrophytes. Normal, expected plant community for given sunlight & habitat conditions. 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian ozone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1

129 **TOTAL SCORE**

ANALYSIS DATE:	ANALYST:	SIGNATURE:
4-16-07	Kallemeyn	TLG Kallemeyn

Appendix G. (continued)

FDEP-SOP-001/01: Form FD 9000-3 (June 1, 2001)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		4-16-07	12:30	Lifth Black Cr

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	CLAY	Double Br Down Strem of Spencer Discharge	

RIPARIAN ZONE/STREAM FEATURES

Predominant Land-Use in Watershed (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)

Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☐ Heavy ☐

Local Watershed NPS Pollution (check box): No evidence ☐ Slight ☐ Moderate potential ☒ Obvious sources ☐

Width of riparian vegetation (m) On least buffered side: 18

List & map dominant Vegetation on back

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

m wide

m/s | 0.15 m/s | m/s

m deep | 0.25 m deep | m deep

Artificially Channelized ☒ no ☐ recent, severe ☐ some recovery ☐ mostly recovered

Artificially Impounded ☐ yes more sinuous

High Water Mark: 0.7 (m above present water level) + 0.25 (present depth in m) = 0.95 (m above bed)

Canopy Cover %: Open: ☐ Lightly Shaded (11-45%): ☐ Moderately Shaded (46-80%): ☒ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☒ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand Smothering: none slight (moderate) severe Silt smothering: none slight (moderate) severe Other: ____

Substrate Type	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	7			Sand	40		
Leaf Packs of Mats	5			Mud/Muck/Silt	38		
Aquatic Vegetation				Other:			
Rock or Shell Rubbie				Other:			
Undercut banks/Roots	11			*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (umho/cm) Or Salinity (ppt):			Secchi (m):
Top								
Mid-depth								
Bottom								

System Type: Stream: 1st-2nd order 5th – 6th order 3rd-4th order 7th order or greater Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐

Water Odors (check box): Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils (check box): None: ☒ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☒ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☒ Other: ☐

Weather Conditions/Notes:

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☒	☐	☐
Fish	☐	☐	☒	☐
Aquatic Macrophytes	☒	☐	☐	☐
Iron/sulfur Bacteria	☒	☐	☐	☐

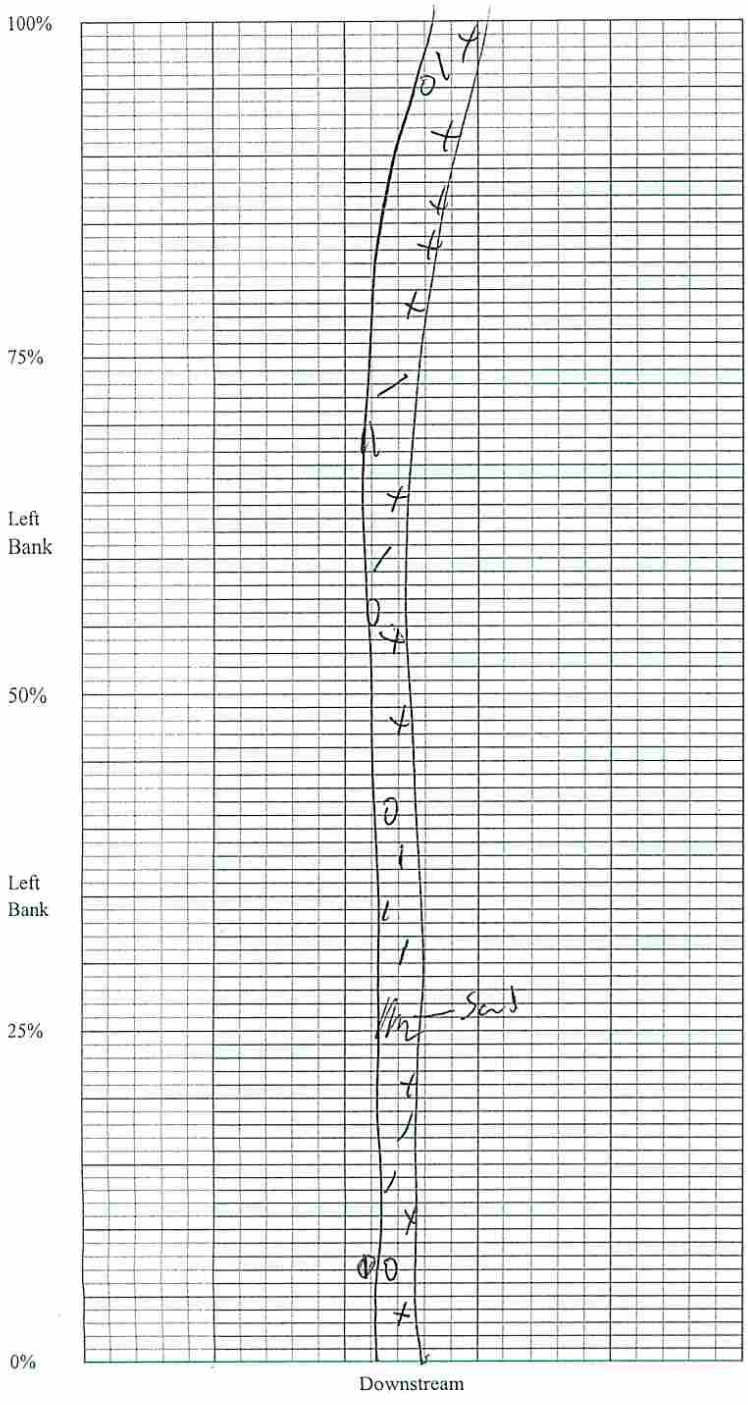
SAMPLING TEAM: Kelley / Cooper

SIGNATURE:

DATE: 4-16-07

Appendix G. (continued)

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (June 1, 2001)
Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



Substrates: Code key, draw proportionate habitat abundance.

- ☐ Snags
- ☐ Roots/undercut banks
- ☐ Leaf Packs (or mats)
- ☐ Macrophytes
- ☐ _____
- ☐ _____
- ☐ _____

Velocity:
Note where velocity measures were taken.

Habitat Smothering:
Note areas (on map) where sand or silt is something substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed/other notes:

11% 10 100s
7% 8 Many
5% 4 Leaf
23%

Appendix G. (continued)

FDEP-SOP-001/01: Form FD 9000-5 (June 1, 2001)

STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		4-16-07	Little Black Cr

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Clay	Double Br downstream of	Spencer WWTP Discharge

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 12	Four or more productive habitats present (snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock). 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags). 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed. 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered. 5 4 3 2 1
Substrate Availability 13	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity 12	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec. Or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 9 Primary Score 45	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of the habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	Many have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 9 Left Bank 9	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12m to 18 m 8 7 6	Width of native vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 10 Secondary Score 79	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody machrophytes. Normal, expected plant community for given sunlight & habitat conditions. 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian ozone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1

123 **TOTAL SCORE**

ANALYSIS DATE:	ANALYST:	SIGNATURE:
4-16-07	Kelley	

Appendix H1. Taxa list (organized by phylum) and number of individuals counted for qualitative periphyton samples collected upstream and downstream of Spencer WWTF discharge on April 16, 2007.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyta	283	286
Chlorophycota		
Chlorella sp.	1	-
Chlorococcum sp.	1	-
Oedogonium sp.	1	-
Protococcus sp.	3	-
Cyanophycota		
Chroococcus minutus	-	4
Cyanobium parvum	-	1
Jaaginema sp.	5	4
Planktolyngbya sp.	2	-
Pseudanabaena sp.	3	2
Euglenophycota		
Trachelomonas sp.	1	3

Appendix H2. Taxa list (organized by family) and number of individuals counted for the diatom portion of the qualitative periphyton samples collected upstream and downstream of Spencer WWTF discharge on April 16, 2007.

	Control	Test
Achnanthaceae		
Achnanthes sp.	21	6
Achnanthes exigua	1	
Achnanthes lanceolata		3
Achnanthes lanceolata apiculata	24	25
Achnanthes lanceolata rostrata	9	
Achnanthes minutissima	35	1
Amphipleuraceae		
Frustulia sp.	3	2
Bacillariaceae		
Bacillaria paxillifer		2
Nitzschia sp.	4	24
Nitzschia amphibia		2
Nitzschia nana		4
Nitzschia obtusa		2
Nitzschia scalaris		1
Catenulaceae		
Amphora sp.		1
Class Bacillariophyceae		
Bacillariophyceae	5	3
Cocconeidaceae		
Cocconeis fluviatilis	13	13
Cocconeis placentula	153	86
Cymbellaceae		
Cymbella aspera		1
Encyonema minutum		2
Encyonema neomesianum		1
Encyonema silesiacum		1
Encyonopsis microcephala	3	
Diadesmidaceae		
Diadesmis confervacea		1
Eunotiaceae		
Eunotia sp.	108	179
Eunotia bilunaris	10	11
Eunotia monodon		2
Eunotia pectinalis	15	5
Fragilariaceae		
Fragilaria sp.	2	
Fragilariaceae	6	
Synedra ulna	1	1
Gomphonemataceae		
Gomphonema sp.	19	17
Gomphonema parvulum	12	5
Naviculaceae		
Hippodonta hungarica		1

Navicula sp.	17	29
Navicula constans		1
Navicula cryptocephala	5	1
Navicula minima		1
Navicula radiosa	24	28
Navicula viridulacalcis		2
Naviculaceae		1
Sellaphora pupula	1	
Neidiaceae		
Neidium sp.		2
Pinnulariaceae		
Pinnularia sp.	2	15
Pleurosigmataceae		
Gyrosigma sp.		1
Stauroneidaceae		
Craticula sp.		1
Stauroneis sp.		2
Stauroneis phoenicenteron		1
Stephanodiscaceae		
Cyclotella sp.	1	
Cyclotella meneghiniana	4	6
Cyclotella pseudostelligera	2	4
Surirellaceae		
Surirella sp.		3

The Bioassay of Spencer Wastewater Treatment Facility effluent sampled on April 16, 2007. NPDES #FL0173371.

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 1 7 3 3 7 1 11	12 0 7 0 4 1 6	18 B	19 S	20 1

Remarks

66

The Priority Pollutants Analysis of Spencer Wastewater Treatment Facility effluent sampled on April 16, 2007. NPDES #FL0173371.

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 1 7 3 3 7 1 11	12 0 7 0 4 1 6	18 X	19 S	20 1

Remarks

66

Biological Analyses of Spencer Wastewater Treatment facility effluent sampled on April 16, 2007. NPDES #FL0173371.

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 1 7 3 3 7 1 11	12 0 7 0 4 1 6	18 S	19 S	20 1

Remarks

66