Biological Assessment of

City of Chattahoochee Wastewater Treatment Facility

Gadsden County

NPDES #FL0027669

Sampled February 23, 2009

July 2009

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

Quality Manual No. 870346G

NELAC Certification No. E31780

Florida Department of Environmental Protection

Fifth Year Inspection Summary

Discharger:	City of Chattahoochee Wastewater Treatment Facility
Physical Address:	211 Palm Street, Chattahoochee, FL 32324
County:	Gadsden
NPDES Number:	FL0027669
Permit Expiration:	October 17, 2009

Sampled: February 23, 2009

- Toxics Sampling Inspection **(XSI)**: There were no organic constituents detected in the effluent. There were no metal exceedences in the effluent. Iron and lead at both the Control and Test Sites exceeded the Class III Water Quality Criterion (62-302.530(38) & (39)) F.A.C.). See Table 2 and Appendix E. Aluminum levels were elevated (>1,600 μg/L) at both the Control and Test Sites, but aluminum was undetected in the effluent.
- Compliance Biomonitoring Inspection **(CBI)**: The No Observed Effect Concentration (NOEC) for reproduction of the water flea, *Ceriodaphnia dubia*, was 25%, which is a violation of the facility's permit limits. The effluent was not toxic to the freshwater fish, *Pimephales promelas*.
- Water Quality Inspection **(WQI)**: Algal Growth Potential (AGP) values of the effluent and both the Control and Test Sites exceeded the "problem" threshold of 5.0 mg dry wt/L for fresh water (Raschke & Schulz, 1987). This indicates nutrient enrichment in Mosquito Creek from sources other than the effluent. The effluent does not appear to be exacerbating the problem.
- Impact Bioassessment Inspection **(IBI)**: No adverse affects of the effluent on the periphyton and macroinvertebrate community were apparent at the Test Site.

Biological assessments are prepared by FDEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions.

Introduction

Methods

Results and Discussion

Literature Cited

Tables

Table 1. Effluent limits, Class III Freshwater Criteria and chemical, microbiological and toxicological data.

Table 2. Effluent limits, Class III Freshwater Criteria and metals data.

Table 3. Measured and predicted algal growth potential (AGP)

Table 4. Periphyton composition - Qualitative

Table 5. Macroinvertebrate Hester-Dendy samples – Quantitative

Table 6. Macroinvertebrate dipnet samples - Qualitative

Appendices

Appendix A. Map of facility

Appendix B. Facility summary

Appendix C. Explanation of measurements

Appendix D. Chain of Custody

Appendix E. Chemical analyses of effluent and receiving water.

Appendix F. Additional physical, chemical, toxicological and microbiological results

Appendix G. Standard Reference Toxicant Data

Appendix H. Physical/Chemical and Habitat Assessment field sheets

Appendix I-1. Qualitative periphyton – wet algal taxa list and number of algal units counted

Appendix I-2. Qualitative periphyton – diatom taxa list and number of diatom valves counted

Appendix J-1. Hester-Dendy macroinvertebrate samples: taxa list and average number of individuals per m2

Appendix J-1. Hester-Dendy macroinvertebrate samples: taxa list and total number of individuals counted

Appendix K-1. Dipnet sweep macroinvertebrate samples: collapsed taxa list and number of individuals counted by replicate

Appendix K-1. Dipnet sweep macroinvertebrate samples: taxa list and number of individuals counted

EPA End Sheet

Introduction

The City of Chattahoochee Wastewater Treatment Facility is a Municipal Domestic Wastewater Treatment plant. The effluent is discharged into Mosquito Creek, a Class III Fresh Water. The design flow of the wastewater system is 0.40 million gallons per day (MGD). The annual average flow for January, 2008 to December, 2008 was 0.351 MGD. The plant discharges using a sequencing batch reactor, and discharge is twice a day for approximately 3 hours at a time. The flow measured during this survey was 0.396 MGD (Northwest District Branch Office sampling staff).

The facility currently has a mixing zone for unionized ammonia, which extends 481 feet from the point of discharge. See the Facility Summary (Appendix B) for a description of the facility, summary of permit limits, and discharge monitoring report (DMR) information.

Methods

The purpose of this investigation was to determine the discharger's effects on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (located in Mosquito Creek approximately 50 m upstream of the point of discharge) and a Test Site (located approximately 170 m downstream of the point of discharge, beyond the downstream edge of the mixing zone). See map in Appendix A.

All field and laboratory biological methods followed Bureau of Laboratories and Biology Section Standard Operating Procedures (see http://www.floridadep.org/labs/sop/index.htm for details) and met DEP quality assurance/quality control standards (see http://www.floridadep.org/labs/qa/index.htm). Explanations of specific methods and measurements can be found in Appendix C.

The following were involved in this investigation: Michelle Fish and Danielle Melnick (DEP Northwest District Branch Office) and DEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Michael Tanski, Jennifer Paris, and Nancy Ross).

Results and Discussion

Toxics Sampling Inspection (XSI):

Organic Constituents (See Table 1 and Appendix E)

- No organic constituents were detected in the effluent.

Metals (See Table 2 and Appendix E)

- Effluent copper and zinc were detected at levels that complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C.).
- Effluent arsenic, cadmium, and nickel were present at levels between the minimum detection limit (MDL) and practical quantitation limit (PQL).
- Control Site iron (1,080 μg/L) and lead (0.82 μg/L) exceeded Class III Fresh Water Quality Criteria (62-302.530(38) & (39)).
- Test Site iron (1,140 μg/L) and lead (0.83 μg/L) exceeded Class III Fresh Water Quality Criteria (62-302.530(38) & (39)).
- Control and Test Site chromium III and copper were detected at levels that complied with Class III Fresh Water Quality Criteria.

- Control and Test Site arsenic and nickel were present at levels between the MDL and PQL.

Compliance Biomonitoring Inspection (CBI):

- The NOEC for reproduction of the water flea, *Ceriodaphnia dubia*, was 25%, which is a violation of the facility's permit limits. The NOEC for survival of *C. dubia* was 100%. The NOEC for reproduction and survival of the fish, *Pimephales promelas*, was 100% (See Table 1 and Appendices F and G).

Water Quality Inspection (WQI):

Physical and Chemical Parameters (See Table 1 and Appendices D and E)

- Dissolved oxygen (mg/L), conductivity (µmhos/cm), and pH (Standard Units) of the effluent complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C.) and effluent permit limits.
- Total suspended solids (mg/L) and Carbonaceous Biological Oxygen Demand (CBOD; mg/L) of the effluent complied with permit limits.
- Fecal coliforms were not detected in the effluent. Fecal coliforms were detected at both the Control Site (320 colony forming units/100 mL) and the Test Site (220 colony forming units/100 mL) at levels that complied with Class III Fresh Water Quality Criterion (62-302.530(6) F.A.C.). The source of the fecal coliforms in Mosquito Creek is unknown but not attributed to the effluent. Physical and chemical parameters of the Control Site and Test Site were similar and complied with Class III Fresh Water Quality Criteria.

Impact Bioassessment Inspection (IBI):

Nutrients (See Table 1 and Appendix E)

- Effluent unionized ammonia complied with permit limits and the Class III Fresh Water Quality Criterion. Effluent TKN also complied with permit limits.
- Total phosphorus at both the Control and Test Sites was an order of magnitude lower than the effluent value, and ortho-phosphate was 25 times lower than the effluent value. Nitrogen values at both the Control and Test Sites were lower than effluent values, and total ammonia was similar to the effluent value. Nutrient measurements at the Control and Test Sites were similar to each other. Although effluent nutrient measurements were higher than those of the Control Site, there was no detectable nutrient enrichment from the effluent at the Test Site.

Physical and Chemical Parameters (See Table 1 and Appendices E and G)

- Habitat Assessment scores were similar at the Control Site (112) and Test Site (111), which places both sites in the Suboptimal category. While the Control Site had better substrate diversity, both sites had low substrate availability and experienced habitat smothering. Also, both sites lost points for lack of bank stability of both banks, and the Control Site lost points for riparian zone buffer width of the left bank.
- Chlorophyll *a* content estimates algal biomass, and high algal biomass implies nutrient stress (Stevenson and Bahls, 1999). Chlorophyll a was undetected in the effluent sample and was detected at a low level (1.1 I µg/L) at both the Control and Test Sites.

Algal Growth Potential (See Table 3; Appendix E)

- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al*. 1978). 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 AGP values in the effluent and all receiving water sites were significantly above the problem threshold. Despite the higher effluent AGP value (59.0 mg dry weight/L) as compared to the AGP values of the Control and Test Sites (34.2 and 33.0 mg dry weight/L, respectively), the similar upstream and downstream values indicate nutrient enrichment in Mosquito Creek from sources other than the effluent. It does not appear that the effluent is exacerbating that condition.

Periphyton (See Tables 4; Appendix I-1 and I-2)

- Periphyton communities at both the Control and Test Sites consisted mostly of diatoms. The diatom community at both sites was dominated by the genus *Melosira* sp. There were no adverse affects apparent on the periphyton community in Mosquito Creek from the effluent.

Macroinvertebrates (See Tables 5 and 6; Appendix J-1, J-2, K-1 and K-2)

- The Shannon-Weaver diversity scores were high at the Control and Test Sites (4.15 and 4.04, respectively). Both sites were dominated by dipterans but at a low percent dominance. Both sites had sensitive taxa, such as plecopterans, present. It should be noted that the Hester-Dendys were deployed for 42 days rather than the standard 28 days due to travel restrictions.
- Qualitative macroinvertebrate data from dipnet samples indicated that the macroinvertebrate community at the Test Site was slightly better than the Control Site. The Test Site scored 73 A on the Stream Condition Index (SCI) placing it in Category 1, and the Control Site scored 66 A, placing it on the high end of Category 2 (see Appendix C for an explanation of SCI Categories). Both sites had similar numbers of ephemeroptera, trichoptera, sensitive and clinger taxa. No long-lived taxa were collected from the Test Site, but only two long-lived taxa were collected from the Control Site. The percentage of suspension feeders was similar at both sites. The Test Site had a higher percentage of tanytarsini individuals (which tend to decline with human disturbance) but also a higher percentage of very tolerant individuals than the Control Site (see Appendix C for an explanation of how SCI metrics typically respond to human disturbance). Overall, there were no negative effects on macroinvertebrates at the Test Site that were attributable to the effluent. Any adverse affects on the macroinvertebrate community were more likely attributable to lack of habitat availability due to habitat smothering.

Literature Cited

Karr, J.R. & E.W. Chu. 1998. Restoring life in running waters: Better biological monitoring. Island Press. Covelo, California. 200 p.

Magurran, A. E. 1988. Ecological diversity and its measurement. Princeton University Press, Princeton, New Jersey.

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.

Plafkin, J. L., M. T. Barbour, K. D. Porter, S. K. Gross and R. M. Hughes. 1989. Rapid bioassessment protocols for use in streams and rivers: Benthic macroinvertebrates and fish. U. S. EPA, Office of Water Regulations and Standards, Washington D.C., EPA 440-4-89-001

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.

Stevenson, R. J. and L. L. Bahls. 1999. Periphyton protocols. Pp. 6.1-6.22 in: Rapid bioassessment protocols for use in wadeable streams and rivers. 2nd edition. By: M. T. Barbour, J. Gerritsen, B. D. Snyder and J. B. Stribling. EPA 841-B-99-002. U. S. Environmental Protection Agency, Office of Water, Washington, D. C.

Table 1. Effluent limits, Class III Freshwater Criteria and chemical, microbiological and toxicological data.

Chattahoochee WWTP	Class III Criteria	Effluent Limits	Effluent	Control Site	Test Site
Organic Constituents (µg/L)					
None Detected	-	None Detected			
Nutrients (mg/L)					
Ortho-phosphate	-	-	0.63	0.022	0.025
Total Phosphorus	-	-	0.71	0.062	0.064 A
Total Ammonia	-	Report	0.028	0.025	0.021
Un-ionized Ammonia	≤ 0.02 s	≤ 0.046	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate and Nitrite	-	-	0.77	0.53	0.52
Total Kjeldahl Nitrogen	-	≤ 2	0.55	0.35	0.4
Organic Nitrogen	-	-	0.522 c	0.325 c	0.379 c
Total Nitrogen	-	-	1.32 c	0.88 c	0.92 c
General Physical and Chemical Parameters					
Habitat Assessment	-	-	-	112	111
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5	10.4	11.3	11.5
pH (SU)	6.0 - 8.5	6.0 - 8.5	6.6	6.7	6.2
Conductivity (µmhos/cm)	≤ 1,275	-	405	74	75
Temperature (°C)	-	-	16.8	10.3	10.2
Sample Depth (m)	-	-	0	0.3	0.3
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	0.0	-	-
Chlorophyll *a* (µg/L) - Corrected	-	-	0.55 U	1.1 I	1.1 I
Phaeophytin (µg/L)	-	-	0.24 U	0.32 I	0.53 I
Total Suspended Solids (mg/L)	-	≤ 30	4 U	11 I	11 I
CBOD, 5 day (mg/L), N - inhibited	-	≤ 20	1.2 IJ	0.28 IJ	0.57 IJ
Hardness (mg $CaCO_3$)	-	-	146.58 c	31.62 c	33.00 c
Toxicity (Chronic definitive bioassay, NOEC)					
Survival - Water flea *(Ceriodaphnia dubia)*	-	NOEC	> 100%	-	-
Reproduction - Water flea *(Ceriodaphnia dubia)*	-	NOEC	25%	-	-
Survival - Fish *(Pimephales promelas)*	-	NOEC	> 100%	-	-
Reproduction - Fish *(Pimephales promelas)*	-	NOEC	> 100%	-	-
Microbiology (Number of colony forming units/100ml)					
Fecal Coliforms	≤ 400s #	-	2 U	320	220

Value exceeds the Class III Water Quality Criteria or permit limits

c - Value is calculated

s - Single sample

t - Shall not exceed 29 NTUs above background

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

J - Estimated value

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

NOEC - A no observed effect concentration less than 100% effluent will constitute a violation of this permit

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

Table 2. Effluent limits, Class III Freshwater Criteria and metals data. Class III Criteria based on hardness are presented individually for each site based on hardness at that site.

Chattahoochee WWTP	Effluent Class III Criteria	Effluent Limits	Effluent	Control Site Class III Criteria	Control Site	Test Site Class III Criteria	Test Site
Metals (µg/L unless otherwise noted)							
Aluminum	-	-	60 U	-	1,690	-	1,670
Arsenic	≤ 50	-	0.45 I	≤ 50	0.38 I	≤ 50	0.36 I
Cadmium	≤ 0.4 b	-	0.034 I	≤ 0.12 b	0.03 U	≤ 0.12 b	0.03 U
Calcium (mg/L)	-	-	39.9	-	7.32	-	7.64
Chromium-III	≤ 117.9 b	-	0.3 U	≤ 33.56 b	1.5	≤ 34.76 b	1.7
Copper	≤ 12.9 b	-	1.56	≤ 3.49 b	1.52	≤ 3.62 b	1.64
Iron	≤ 1,000	-	30 U	≤ 1,000	1,080	≤ 1,000	1,140
Lead	≤ 5.2 b	-	0.2 U	≤ 0.73 b	0.82	≤ 0.78 b	0.83
Magnesium (mg/L)	-	-	11.4	-	3.24	-	3.38
Mercury	≤ 0.012	-	-	≤ 0.012	-	≤ 0.012	-
Nickel	≤ 72.1 b	-	0.43 I	≤ 19.69 b	0.69 I	≤ 20.42 b	0.78 I
Selenium	≤ 5.0	-	0.2 U	≤ 5.0	0.2 U	≤ 5.0	0.2 U
Silver	≤ 0.07	-	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U
Zinc	≤ 165.7 b	-	32	≤ 45.17 b	5 U	≤ 46.83 b	5 U

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness found in Table 1

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

Table 3. 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.

Chattahoochee WWTP							
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	59.0	30.3 ± 6.1		50.2 ± 10.0		1.3	1.9
Control Site	34.2	21.1 ± 4.2	9.5 ± 1.9	33.4 ± 6.7	26.7 ± 5.3	25.2	14.2
Test Site	33.0 A	20.6 ± 4.1	10.8 ± 2.2	35.0 ± 7.0	27.5 ± 5.5	21.6	14.4

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

Table 4. Periphyton Composition - Qualitative.

Chattahoochee WWTP	Control Site	Test Site
Number of Wet Taxa	6	7
Number of Wet Algal Units Identified	301	300
Percent Dominant Wet Taxon	90.4	88.7
Dominant Wet Taxon Name	Bacillariophyta (Diatoms)	Bacillariophyta (Diatoms)
Number of Diatom Taxa	57	59
Number of Diatom Algal Units Identified	505	499
Percent Dominant Diatom Taxon	31.3	44.1
Dominant Diatom Taxon Name	*Melosira* sp.	*Melosira* sp.
Percentage Composition for Wet Algae		
Blue-green algae	7.6	11.0
Green algae	2.0	0.3
Diatoms	90.4	88.7

Table 5. Macroinvertebrate Hester-Dendy Samples - Quantitative.

Chattahoochee WWTP	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	4.15	4.04
Number of Taxa	47	42
Number of EPT Taxa	16	12
Percent Dominant Taxon	19.2	20.2
Dominant Taxon Name	*Polypedilum flavum* (Diptera)	*Rheotanytarsus exiguus grp.* (Diptera)
Total Number of Individuals (counted)	867	1,084
Total Number of Individuals (#/m^2)	1,723	2,154
Community Composition: Percent of total		
Acariformes	0.1	0.0
Coleoptera	1.5	1.7
Diptera	68.7	74.3
Ephemeroptera	10.6	10.5
Gastropoda	0.2	0.1
Isopoda	0.0	0.1
Oligochaeta	0.0	0.2
Plecoptera	8.4	4.1
Trichoptera	10.4	9.0
Other	0.0	0.0
Functional Feeding Groups: Percent of total		
Browser-Grazers	0.0	0.1
Burrowing Deposit Feeders	0.0	0.2
Piercers	0.4	0.2
Predators	7.9	3.7
Scavengers	0.0	0.1
Scrapers	5.9	5.7
Shredders	13.4	13.0
Surface Deposit Feeders	29.4	29.8
Suspension Feeders	30.9	32.3
Unknown	12.2	15.0

Note: Hester-Dendys were incubated for 42 days rather than the accepted 28 days because of travel restrictions

Table 6. Macroinvertebrate Dipnet Samples - Qualitative.

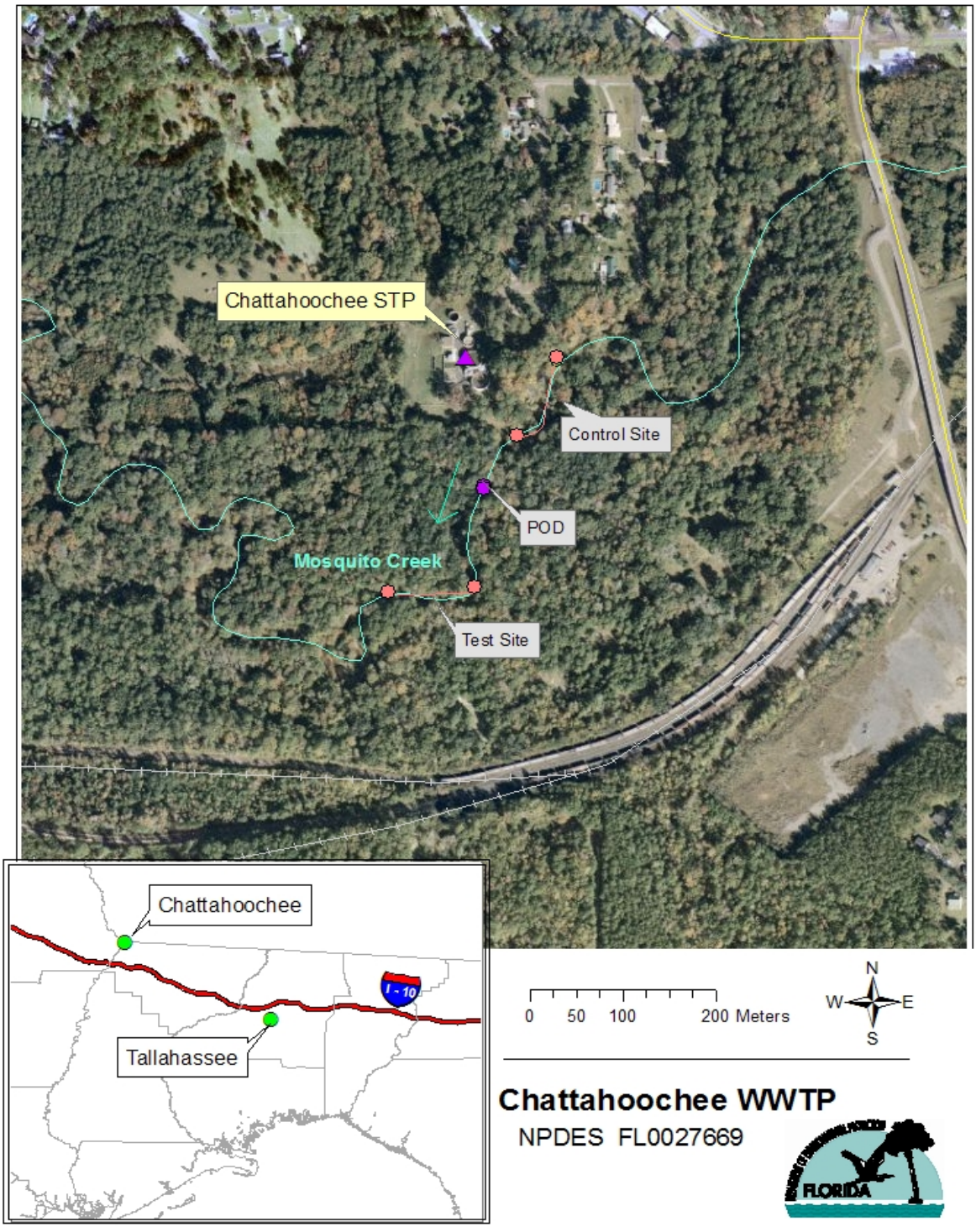
Chattahoohchee WWTP	Control Site		Test Site	
Summary Statistics				
Stream Condition Index 2007 (value)	66 A		73 A	
Stream Condition Index 2007 (category) *	Category 2		Category 1	
Stream Condition Index Metrics	Rep 1	Rep 2	Rep 1	Rep 2
Number of Total Taxa	35	33	48	40
Number of Ephemeroptera Taxa	7	7	8	7
Number of Trichoptera Taxa	5	5	7	4
Number of Clinger Taxa	12	8	9	8
Number of Long-lived Taxa	2	0	0	0
Number of Sensitive Taxa	15	10	17	14
Percent of Dominant Taxon	12.8	13.2	12.1	7.0
Percent Suspension Feeders and Filterers	19.5	21.7	23.5	23.4
Percent of Tanytarsini Individuals	2.7	1.3	10.1	11.2
Percent of Very Tolerant Individuals	4.7	4.0	7.4	14.0
Total Number of Individuals	149	152	149	143
Community Composition: Percent of total				
Dominant Taxon Name	*Baetis intercalaris* (Ephemeroptera)	*Simulium/ Baetis intercalaris* (Diptera/ Ephemeroptera)	*Baetis intercalaris* (Ephemeroptera)	*Perlidae/ Cheumatopsyche/ Rheotanytarsus exiguus grp* (Plecoptera/ Trichoptera/Diptera)
Acariformes	2.7	2.0	0.0	1.4
Amphipoda	0.0	2.6	1.3	1.4
Coleoptera	3.4	0.7	2.7	0.7
Diptera	38.3	39.5	48.3	51.1
Ephemeroptera	31.5	32.2	21.5	18.2
Gastropoda	0.0	0.7	0.7	2.1
Isopoda	0.0	0.0	2.7	4.9
Odonata	0.7	0.0	0.0	0.0
Oligochaeta	0.0	0.0	4.0	2.8
Plecoptera	8.1	11.2	6.0	7.0
Trichoptera	15.4	11.2	12.8	10.5
Other	0	0.01	0.01	0
Functional Feeding Groups: Percent of total				
Browser-Grazers	0.0	0.0	1.3	2.5
Burrowing Deposit Feeders	0.0	0.0	4.0	2.8
Piercers	2.7	2.6	2.7	1.4
Predators	11.1	16.5	8.4	10.8
Scavengers	0.3	0.0	1.3	2.5
Scrapers	16.8	14.8	12.8	9.1
Shredders	13.4	8.2	11.4	12.9
Surface Deposit Feeders	30.9	27.0	27.9	29.0
Suspension Feeders	19.5	21.7	23.5	23.4
Unknown	5.4	9.2	6.7	5.6

A - Value reported is the mean of two determinations

* SCI_2007 categories from Table LT 7200-2 of Draft DEP-SOP-002/01 as referenced in Draft Quality Assurance Rule (62-160 F.A.C.), September 17, 2007: Values 0 ≤ 34 are Category 3; Values 35 < 67 are Category 2; Values 68 ≤ 100 are Category 1

Appendix A

Map of Facility



Appendix B

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. 1191
Facility Name (as it appears on permit): City of Chattahoochee WWTF	**Former Names:**
NPDES Permit Number: FL0027669	**Permit Expiration Date:** 10/17/09
Physical Address: 211 Palm Street Chattahoochee, FL 32324	
District: NWD	**County:** Gadsden
Function of Facility: Municipal domestic wastewater treatment plant	
Facility Type: DW	**Permitted Capacity (MGD):** 0.40 mgd
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): .334 mgd Annual Average (avg for 11/07-10/08)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): **N/A**	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify** ***Sequencing Batch Reactor, so discharge is in batches**	

Appendix B. (continued)

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

WWTP discharge sampling locations:
EFA-01 Discharge from Chlorine contact Chamber
EFD-01 Effluent after Dechlorination
EFF-02 Effluent Sample Point
FLW-01 Effluent Flow Meter

Ambient Sampling locations:
SWB-02 120 feet upstream of the WWTF Outfall on Mosquito Creek
SWA-03 670 feet downstream of the WWTF Outfall.
SWA-06 Located Near the Mouth of Mosquito Creek

Description of Permitted Outfall(s):

D-001 is an 18-inch diameter clay vitrified pipe at or near the water surface in Mosquito Creek. The point of discharge is located approximately at latitude 30° 41' 07" N, longitude 84° 50' 46" W.

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

0.40 MGD AADF activated sludge wastewater treatment facility. The facility includes an influent pump station, influent screening, aeration, clarification, aerobic digestion of residuals, chlorine gas disinfection and sulfur dioxide dechlorination. Disposal is at D-001, adjacent to the treatment facility site in Mosquito Creek, a Class III fresh water.

2. During the period beginning upon completion of construction and startup of the modified wastewater treatment facility and lasting through the expiration date, the permittee is authorized to discharge effluent from Outfall D-001 to Mosquito Creek. 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, in conduit or thru treatment plant	MGD	Maximum	0.4	-	-	-	Continuous	Recording flow meters and totalizers	FLW-01	See Cond.I.A.5
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	10.0	12.5	15.0	20.0	Weekly	8-hour flow proportioned composite	EFF-02	
Nitrogen, Total	MG/L	Maximum	-	Report	-	-	Weekly	8-hour flow proportioned composite	EFF-02	
Nitrogen, Kjeldahl, Total (as N)	MG/L	Maximum	-	-	-	2.0	Weekly	8-hour flow proportioned composite	EFF-02	
Nitrogen, Ammonia, Total (as N)	MG/L	Maximum	-	-	-	Report	Weekly	8-hour flow proportioned composite	EFF-02	
Nitrogen, Ammonia, Total unionized (as N)	MG/L	Maximum	-	-	-	0.046	Weekly	Calculated	EFF-02	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	Daily	Grab	EFA-01	
Phosphorus, Total (as P)	MG/L	Maximum	-	Report	-	-	Weekly	8-hour flow proportioned composite	EFF-02	
Solids, Total Suspended	MG/L	Maximum	15.0	18.8	22.5	30.0	Weekly	8-hour flow proportioned composite	EFF-02	
pH	SU	Range	-	-	-	6.0 to 8.5	Continuous	Grab	EFF-02	See Cond.I.A.4
Coliform, Fecal	#/100ML	Maximum	See Permit Condition I.A.6.				Weekly	Grab	EFF-02	
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	Daily	Grab	EFD-01	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	0.5	Continuous	Grab	EFA-01	See Cond.I.A.4, 7
Whole Effluent Toxicity	See Permit Condition I.A.8								EFF-02	

Ambient Sampling required:

1) Physical parameters - The following parameters will be obtained 1.0 feet below the surface and 1.0 feet above the bottom at each sampling station **semi-annually**:
- Water temperature - Conductivity - Color
- Water depth - pH - Turbidity
- Dissolved oxygen - D.O. % Saturation - Water Level Reading

2) Chemical parameters - Samples will be obtained 1.0 feet below the surface and 1.0 feet above the bottom at each sampling station **semi-annually** in order to determine the following:
- Total Nitrogen - Fecal Coliform - Total Phosphorus
- NH3 - Total Coliform - CBOD**5**
- NO3 - TSS - Silver (Total Recoverable)

17

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
Mosquito Creek	Class III Fresh

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

The permittee is required to conduct semiannual chronic whole effluent toxicity tests using a control (0% effluent) and a minimum of five dilutions: **100%, 50%, 25%, 12.5% and 6.25%** effluent (**Ceriodaphnia dubia**, Survival and Reproductiontest and a fathead minnow, **Pimephales promelas**, Larval Survival and Growth Test).

For each set of tests conducted, a 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.

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

AO030NW was issued 3/25/99 and was closed 7/31/06. It required modifications to the facility so that an ammonia limit of 2.0 mg/L could be achieved.

Facility Mixing Zone Details (if applicable):

This permit includes a zone of mixing for unionized ammonia (NH3 as N). The mixing zone is 481 feet in length measured downstream form the point of discharge and is measured across the entire width of the receiving stream and through the entire depth of the stream.

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

Date	Parameter and Units	Limit		Result
12/31/2007	NITROGEN, KJELDAHL, TOTAL (AS N)	2	MAXIMUM	2.24
5/31/2008	OXYGEN, DISSOLVED (DO)	5	MINIMUM	4.8
6/30/2008	OXYGEN, DISSOLVED (DO)	5	MINIMUM	4.8
7/31/2008	OXYGEN, DISSOLVED (DO)	5	MINIMUM	4.6
8/31/2008	NITROGEN, KJELDAHL, TOTAL (AS N)	2	MAXIMUM	2.95
9/30/2008	OXYGEN, DISSOLVED (DO)	5	MINIMUM	4.8
9/30/2008	NOEL STATRE 7DAY CHR PIMEPHALES	100	MINIMUM	97.5
10/31/2008	OXYGEN, DISSOLVED (DO)	5	MINIMUM	4.6

Describe previous FYI and WQBEL study:

"Water Quality Assessment of Mosquito Creek and the Chattahoochee Wastewater Treatment Facility", Jones&Edmonds &Associates, Inc., Gainesville, FL February 1998. The study concluded that the effluent limits for CBOD5, pH, DO, fecal coliform, TSS and TP from the previous permit were more than adequate to protect the receiving waters and maintain its intended use and classification. However, the study did conclude that because the Class III freshwater standard for unionized ammonia is 0.02 mg/L, total effluent ammonia must be less than equal to 2.0 mg/L.

Describe previous or current Enforcement Actions (including WLs):

Describe any violations or problems noted in previous inspection:
N/A

Discuss whether DMR trends within previous five years are improving or declining:

Generally improving.

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: 2/23/2009	**Sampler(s):** Michelle Fish, Danielle Melnick
Temperature (Deg C): 16.8	**pH (SU):** 6.56 SU
Dissolved Oxygen (mg/L): 10.41 mg/L	**Conductivity (umhos/cm):** 405 umho/cm
Total Residual Chlorine (mg/L): 0.6	**Total Residual Chlorine - after Disinfection (mg/L):** 0.00
Method of Chlorination: Gas	**Method of De-chlorination:** Gas SO_2

Flow During Sample Collection for each outfall(MGD):
1100 gpm

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):

12/2008	.375 MGD	6/2008	.347 MGD
11/2008	.372 MGD	5/2008	.335 MGD
10/2008	.375 MGD	4/2008	.333 MGD
9/2008	.375 MGD	3/2008	.325 MGD
8/2008	.372 MGD	2/2008	.318 MGD
7/2008	.359 MGD	1/2008	.320 MGD

2008 Annual Average (Jan 08 – Dec 08): .351

Describe Discharge during Sampling Event: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:

Appendix C

Explanation of Measurements

(1) Quality Assurance and Quality Control

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at http://www.floridadep.org/labs/sop/index.htm and/or http://www.floridadep.org/labs/qa/index.htm .

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. A list of the analytes tested for, results, data qualifiers, the minimum detection limit and the practical quantitation limit are given in Appendix E. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits (Tables 1 and 2, Appendix B). Exceedances of Water Quality Criteria may be violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Failure of toxicity testing may constitute a violation of 62-302.520(20), 62-302.530(61) and/or facility permit limits

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute violation of 62-302.530(6) and/or facility permit limits

(5) Habitat Assessment

Habitat assessment is used to evaluate the physical structure and extent of disturbance in a waterbody. Eight aspects are ranked, with 20 possible points for each aspect (QA Rule SOP FT 3100). The Habitat Assessment score includes types and amounts of benthic substrates, water velocity, amount of sand or silt accumulation, extent of artificial channelization, bank stability, and riparian zone width and vegetation type. All scores are summed to yield an overall Habitat Assessment score. Habitat Assessment score ranges from 11-160 and overall habitat quality is assigned to one of four categories: Optimal (120-160 points), Suboptimal (80-119 points), Marginal (40-79 points), and Poor (11-39 points).

(6) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a “problem” threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute one line of evidence for violation of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of $\pm$ 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may be a violation of 62-302.530(61) F.A.C.

(7) Algal Phytoplankton and Periphyton Assemblages

Methods: Qualitative periphyton were sampled at both control and test sites by taking subsamples of algae from natural substrates throughout the sample reach (QA Rule FS7220). Phytoplankton were sampled using a 1 L grab sample (QA Rule SOP FS7100). Periphyton were subsampled and identified to the lowest practical level, usually species (FDEP SOPs AB03, AB03_1 and AB05). Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

Chlorophyll *a* Content: Chlorophyll *a* content is measured in phytoplankton samples to estimate algal biomass (FDEP SOP BB05). High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be a violation of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton samples. Although algal density of a single site is highly variable and depends on a number of factors, comparison of algal density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).

Taxa richness: Taxa richness is the number of distinct algal taxa present in a sample. Extreme nutrient enrichment tends to reduce the number of different types of algae present in a sample because a few tolerant taxa tend to reproduce rapidly and constitute the majority of the cells present. However, moderate nutrient enrichment of nutrient poor waters may sometimes be correlated with increased algal taxa richness (Stevenson and Bahls 1999) as the algal community begins to respond to the increased input of nutrients.

Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C.

(8) Benthic Macroinvertebrate Assemblages

Methods: Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 42 days. Hester-Dendys are normally incubated for 28 days (QA Rule SOP FS7430), but they could not be retrieved at 28 days due to travel restrictions. Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species (FDEP SOP IZ06).

Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitutes a violation of 62-302.530(10) F.A.C..

Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Fore et. al. 2007, Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders and shredders (Fore et. al. 2007). Changes in the proportions of functional feeding groups related to a facility's

effluent may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida (Fore et. al. 2007). This Index was revised in 2007 using data from qualitative dipnet samples. The SCI now assigns points to ten parameters; depending on how closely each parameter approaches an expected value (QA Rule SOP LT 7200). Points are assigned according to in which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists -and summed to yield a final SCI score (range 0-100). Included in the calculation of SCI are taxa richness, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, number of sensitive taxa, number of clinger taxa, number of long-lived taxa, percent contribution of Tanytarsini, percent contribution of very tolerant, and the percent contribution of suspension and filter feeders. As human disturbance increases, it is expected that taxa richness, the number of Ephemeroptera taxa, Trichoptera taxa, sensitive taxa, clinger taxa, long-lived taxa, and the percent contribution of Tanytarsini and suspension and filter feeders will decrease while percent contribution of dominant taxon, and percent contribution of very tolerant taxa will increase.

Scores are broken into three categories (1, 2, and 3). Sites in Category 1 are described as having higher diversity than Category 2 sites, particularly for Ephemeroptera and Trichoptera. A Category 1 site may have several more clinger and sensitive taxa, a higher proportion of Tanytarsini, and a lower percent of a dominant taxon than a site in Category 2. The site will also have a very small percentage of very tolerant individuals, if any.

Sites in Category 2 are described as having an average of 30 species with several different taxa of Ephemeroptera and Trichoptera. A Category 2 site also has several different long-lived taxa and, on average, 5 clinger and 6 sensitive taxa. There is a slight increase in dominance by a single taxon relative to sites in Category 1. Very tolerant taxa represent a small percentage of individuals but are noticeably increased as compared to sites in Category 1.

Sites in Category 3 are described as having a notable loss in taxonomic diversity, and Ephemeroptera, Trichoptera, long-lived, clinger and sensitive taxa are uncommon or rare. Filter feeders are reduced by at least 50%. The site is dominated by a tolerant taxon, and very tolerant individuals represent a large proportion of the individuals collected.

SCI 2007 categories are from Table LT 7200-2 of DEP-SOP-002/01 as referenced in Draft Quality Assurance Rule (62-160 F.A.C.), December 3, 2008. A decrease in ordinal SCI score from the Control to the Test site may be evidence of degradation related to a facility's effluent. An SCI score in Category 3, if it is shown to be related to a facility's effluent, may constitute violations of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2009-02-09-24
Chattahoochee WWTP

Requester: Jennifer Paris
Field Report Prepared By:

Customer: NW-DIST
Collected By: Blake Spencer, Chelsea French, Jon Ray
Send Final Report To Greg Smith

Project ID: FYI5
Sampling Agency: Dep. - Tallahassee

PMAS: 1143

Lab ID *	Location	Field ID	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (begin) Date Time (Eastern/Central)	Collection (end) Date Time (Eastern/Central)	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m/ft	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number	Comments	Bottle Group(s)**
	Chattahoochee WWTP	Effluent	Fresh	16.8	6.56	o ' "	o ' "	Grab	2/23/09 1003 Eastern			10.41			Sp Conductance 405		flow 1179 gpm	A
	Chattahoochee WWTP	Control Site	fresh	10.31	6.67	o ' "	o ' "	Grab	2/23/09 1200 Eastern			11.26		0.3 m	Sp Conductance 74		water chem + SCI (FW-ALDC)	B+C
	Chattahoochee WWTP	Test Site	fresh	10.23	6.21	o ' "	o ' "	Grab	2/23/09 1115 Eastern			11.52		0.3 m	Sp Conductance 75		water chem + SCI (FW-ALDC)	B+C
	Chattahoochee WWTP	Control - Rep 1	Biology			o ' "	o ' "	Comp / Grab	2/23/09 Time Eastern								Hester Dendy	C

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Cheryl Swanson	2/23/09 1541	Hand	[illegible]	2/23/09 1541	3 Bacti CF	2/23/09 1554		

* 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-2009-02-09-24
Chattahoochee WWTP

Requester: Jennifer Paris

Field Report Prepared By:

Customer: NW-DIST

Collected By: Blake Spencer, Chelsea French, Jon Ray

Send Final Report To Greg Smith

Project ID: FY15

Sampling Agency: DEP - Tallahassee

PMAS: 1143

Lab ID *	Location	Field ID	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m / ft	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number	Bottle Group(s)**	Comments
	Chattahoochee WWTP	Control - Rep 2	Biology			o ' "	o ' "	☐ Comp ☐ Grab	2/23/09					☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		C	HD
	Chattahoochee WWTP	Control - Rep 3	Biology			o ' "	o ' "	☐ Comp ☐ Grab	2/23/09					☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		C	HD
	Chattahoochee WWTP	Control - Rep 4	Biology			o ' "	o ' "	☐ Comp ☐ Grab	2/23/09					☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		C	HD
	Chattahoochee WWTP	Test - Rep 1	Biology			o ' "	o ' "	☐ Comp ☐ Grab	2/23/09					☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		C	HD

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Cheryl Swanson	2/23/09 1541	Hand	[illegible]	2/23/09 1541				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix E. Chemical analysis of effluent and receiving water

Date_Sampled	Field_Sample_ID	Station	SCH_Group	Component	Value	Qualifier	Units_	MDL	PQL
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	AGP/LN	Algal Growth Potential	59		mg DryWt/L	0.3	0.9
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.2	IJ	mg/L	0.2	2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.24	U	ug/L	0.24	0.71
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Microbiology	Fecal Coliforms-Membrane Filter	2	U	#/100 mL	2	2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC20	13		IC20		
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100		NOEC		
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Toxicology	Bioassay-Chron-Def-FW-Fish, IC20	100	L	IC20		
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	25		NOEC		
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Calcium	39.9		mg/L	0.075	0.3
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Cadmium	0.034	I	ug/L	0.03	0.12
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Iron	30	U	ug/L	30	120
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Copper	1.56		ug/L	0.5	0.5
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Chromium	0.3	U	ug/L	0.3	1.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Aluminum	60	U	ug/L	60	240
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Zinc	32		ug/L	5	20
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Lead	0.2	U	ug/L	0.2	0.8
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Arsenic	0.45	I	ug/L	0.25	1
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Nickel	0.43	I	ug/L	0.25	1
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Metals	Magnesium	11.4		mg/L	0.04	0.16
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Nutrients	NO2NO3-N	0.77		mg N/L	0.004	0.01
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Nutrients	Ammonia-N	0.028		mg N/L	0.01	0.02
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Nutrients	Total-P	0.71		mg P/L	0.02	0.05
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Nutrients	TSS	4	U	mg/L	4	16
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Nutrients	Kjeldahl Nitrogen	0.55		mg N/L	0.08	0.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Nutrients	O-Phosphate-P	0.63		mg P/L	0.02	0.05
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Butylate	0.21	U	ug/L	0.21	0.84
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Chlorpyrifos Ethyl	0.052	U	ug/L	0.052	0.21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Diazinon	0.052	U	ug/L	0.052	0.21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Ethoprop	0.1	UJ	ug/L	0.1	0.4
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Metolachlor	0.52	U	ug/L	0.52	2.1
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Naled	0.83	UJ	ug/L	0.83	3.3
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Phorate	0.052	UJ	ug/L	0.052	0.21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Endrin	0.052	U	ug/L	0.052	0.21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Fenamiphos	0.21	U	ug/L	0.21	0.84
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Norflurazon	0.16	U	ug/L	0.16	0.64

Appendix E. (continued)

Date_Sampled	Field_Sample_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Prometryn	0.16	U	ug/L	0.16	0.64
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Simazine	0.052	U	ug/L	0.052	0.21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Alpha-BHC	0.01	U	ug/L	0.01	0.04
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Beta-BHC	0.01	U	ug/L	0.01	0.04
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Endrin Aldehyde	0.021	U	ug/L	0.021	0.084
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Methoxychlor	0.052	UJ	ug/L	0.052	0.21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Atrazine	0.052	U	ug/L	0.052	0.21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Malathion	0.16	U	ug/L	0.16	0.64
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Metalaxyl	0.26	U	ug/L	0.26	1
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Delta-BHC	0.01	U	ug/L	0.01	0.04
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Azinphos Methyl	0.21	UJ	ug/L	0.21	0.84
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Chlordane	0.21	U	ug/L	0.21	0.84
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	DDD-p,p'	0.021	U	ug/L	0.021	0.084
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Endosulfan I	0.021	U	ug/L	0.021	0.084
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Heptachlor	0.01	U	ug/L	0.01	0.04
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Alachlor	0.62	U	ug/L	0.62	2.5
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Mevinphos	0.21	U	ug/L	0.21	0.84
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Aldrin	0.01	U	ug/L	0.01	0.04
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Endosulfan Sulfate	0.021	U	ug/L	0.021	0.084
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Gamma-BHC	0.01	U	ug/L	0.01	0.04
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Ametryn	0.052	U	ug/L	0.052	0.21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	DDT-p,p'	0.031	U	ug/L	0.031	0.12
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Dieldrin	0.021	U	ug/L	0.021	0.084
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Bromacil	0.21	U	ug/L	0.21	0.84
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Parathion Ethyl	0.16	U	ug/L	0.16	0.64
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Heptachlor Epoxide	0.021	U	ug/L	0.021	0.084
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Toxaphene	0.78	U	ug/L	0.78	3.1
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Ethion	0.052	U	ug/L	0.052	0.21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	DDE-p,p'	0.021	U	ug/L	0.021	0.084
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Pesticides	Endosulfan II	0.021	U	ug/L	0.021	0.084
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	62
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Acenaphthylene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Pentachlorophenol	3.1	U	ug/L	3.1	12
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	U	ug/L	3.1	12
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Fluorene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Fluoranthene	1	U	ug/L	1	4.2

Appendix E. (continued)

Date_Sampled	Field_Sample_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Di-n-octyl phthalate	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(a)anthracene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Anthracene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	U	ug/L	3.1	12
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	62
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Di-n-butyl phthalate	5.2	U	ug/L	5.2	21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	U	ug/L	3.1	12
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2-Chloronaphthalene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Naphthalene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dichlorophenol	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dinitrotoluene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(g,h,i)perylene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Dimethyl phthalate	10	U	ug/L	10	42
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachlorobenzene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Isophorone	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	U	ug/L	2.1	8.3
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	U	ug/L	2.1	8.3
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(a)pyrene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Chrysene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Diethyl phthalate	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachlorobutadiene	3.1	U	ug/L	3.1	12
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Phenanthrene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dinitrophenol	16	UJ	ug/L	16	62
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2,6-Dinitrotoluene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2-Chlorophenol	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	U	ug/L	3.1	12
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2-Nitrophenol	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachloroethane	3.1	U	ug/L	3.1	12
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Pyrene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Acenaphthene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(b)fluoranthene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Dibenzo(a,h)anthracene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	U	ug/L	2.1	8.3
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Nitrobenzene	2.1	U	ug/L	2.1	8.3
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Phenol	1	U	ug/L	1	4.2

Appendix E. (continued)

Date_Sampled	Field_Sample_ID	Station	SCH_Group	Component	Value	Qualifier	Units_	MDL	PQL
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dimethylphenol	10	U	ug/L	10	42
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(k)fluoranthene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Butyl benzyl phthalate	5.2	U	ug/L	5.2	21
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	1	U	ug/L	1	4.2
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	3,3'-Dichlorobenzidine	42	UJ	ug/L	42	170
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Priority Organic Pollutants	Benzidine	100	U	ug/L	100	420
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Field Parameter	Specific Conductance	405		umhos/cm		
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Field Parameter	pH	6.56				
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Field Parameter	Dissolved Oxygen	10.41		mg/L		
2/23/2009 10:03	EFFLUENT	CHATTAHOOCHEE	Field Parameter	Temperature	16.8		C		
2/25/2009 14:50	EFF. RENEWAL	CHATTAHOOCHEE	Field Parameter	Dissolved Oxygen	7.5		mg/L		
2/25/2009 14:50	EFF. RENEWAL	CHATTAHOOCHEE	Field Parameter	Total Residual Chlorine	1.2		mg/L		
2/25/2009 14:50	EFF. RENEWAL	CHATTAHOOCHEE	Field Parameter	Temperature	17.9		C		
2/25/2009 14:50	EFF. RENEWAL	CHATTAHOOCHEE	Field Parameter	pH	6.7				
2/27/2009 14:55	EFF. RENEWAL	CHATTAHOOCHEE	Field Parameter	Total Residual Chlorine	0.8		mg/L		
2/27/2009 14:55	EFF. RENEWAL	CHATTAHOOCHEE	Field Parameter	Dissolved Oxygen	8.7		mg/L		
2/27/2009 14:55	EFF. RENEWAL	CHATTAHOOCHEE	Field Parameter	Temperature	18.6		C		
2/27/2009 14:55	EFF. RENEWAL	CHATTAHOOCHEE	Field Parameter	pH	6.6				
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	AGP/LN	Algal Growth Potential	34.2		mg DryWt/L	0.3	0.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.1	I	ug/L	0.55	1.7
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.32	I	ug/L	0.24	0.71
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.28	IJ	mg/L	0.2	2
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Microbiology	Fecal Coliforms-Membrane Filter	320		#/100 mL	9	9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Arsenic	0.38	I	ug/L	0.25	1
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Copper	1.52		ug/L	0.5	0.5
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Lead	0.82		ug/L	0.2	0.8
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Nickel	0.69	I	ug/L	0.25	1
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Chromium	1.5		ug/L	0.3	1.2
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Zinc	5	U	ug/L	5	20
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Selenium	0.2	U	ug/L	0.2	0.8
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Calcium	7.32		mg/L	0.075	0.3
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Iron	1080		ug/L	30	120
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Magnesium	3.24		mg/L	0.04	0.16
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Metals	Aluminum	1690		ug/L	60	240
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Nutrients	Total-P	0.062		mg P/L	0.004	0.01
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Nutrients	Ammonia-N	0.025		mg N/L	0.01	0.02
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Nutrients	O-Phosphate-P	0.022		mg P/L	0.004	0.01

Appendix E. (continued)

Date_Sampled	Field_Sample_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Nutrients	NO2NO3-N	0.53		mg N/L	0.004	0.01
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Nutrients	TSS	11	I	mg/L	4	16
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Nutrients	Kjeldahl Nitrogen	0.35		mg N/L	0.08	0.2
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(a)pyrene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(a)anthracene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Naphthalene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	UJ	ug/L	39	150
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Di-n-butyl phthalate	4.8	U	ug/L	4.8	19
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.7
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dinitrophenol	15	UJ	ug/L	15	58
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.7
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(k)fluoranthene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Butyl benzyl phthalate	4.8	U	ug/L	4.8	19
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.7
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Phenanthrene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Anthracene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(b)fluoranthene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.7
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390

Appendix E. (continued)

Date_Sampled	Field_Sample_ID	Station	SCH_Group	Component	Value	Qualifier	Units_	MDL	PQL
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Pyrene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Acenaphthene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Fluorene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Acenaphthylene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Chrysene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Fluoranthene	0.97	U	ug/L	0.97	3.9
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	Sample Depth	0.3		m		
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	Specific Conductance	74		umhos/cm		
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	pH	6.67				
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	Specific Conductance	74		umhos/cm		
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	pH	6.67				
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	Temperature	10.31		C		
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	Sample Depth	0.3		m		
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	Dissolved Oxygen	11.26		mg/L		
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	Temperature	10.31		C		
2/23/2009 12:00	CONTROL SITE	CHATTAHOOCHEE	Field Parameter	Dissolved Oxygen	11.26		mg/L		
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	AGP/LN	Algal Growth Potential	33	A	mg DryWt/L	0.3	0.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.57	IJ	mg/L	0.2	2
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.1	I	ug/L	0.55	1.7
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.53	I	ug/L	0.24	0.71
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Microbiology	Fecal Coliforms-Membrane Filter	220		#/100 mL	9	9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Iron	1140		ug/L	30	120
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Calcium	7.64		mg/L	0.075	0.3
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Copper	1.64		ug/L	0.5	0.5
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Chromium	1.7		ug/L	0.3	1.2
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Aluminum	1670		ug/L	60	240
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Nickel	0.78	I	ug/L	0.25	1
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Silver	0.025	U	ug/L	0.025	0.1
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Selenium	0.2	U	ug/L	0.2	0.8

Appendix E. (continued)

Date_Sampled	Field_Sample_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Lead	0.83		ug/L	0.2	0.8
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Magnesium	3.38		mg/L	0.04	0.16
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Arsenic	0.36	I	ug/L	0.25	1
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Metals	Zinc	5	U	ug/L	5	20
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Nutrients	NO2NO3-N	0.52		mg N/L	0.004	0.01
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Nutrients	Total-P	0.064	A	mg P/L	0.004	0.01
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Nutrients	Kjeldahl Nitrogen	0.4		mg N/L	0.08	0.2
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Nutrients	Ammonia-N	0.021		mg N/L	0.01	0.02
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Nutrients	O-Phosphate-P	0.025		mg P/L	0.004	0.01
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Nutrients	TSS	11	I	mg/L	4	16
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Acenaphthene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(a)pyrene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Fluorene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(k)fluoranthene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Chrysene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(a)anthracene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzidine	97	U	ug/L	97	390
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(b)fluoranthene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	UJ	ug/L	39	160
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.97	U	ug/L	0.97	3.9

Appendix E. (continued)

Date_Sampled	Field_Sample_ID	Station	SCH_Group	Component	Value	Qualifier	Units	MDL	PQL
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Naphthalene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Phenanthrene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Pyrene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2,4-Dinitrophenol	15	UJ	ug/L	15	58
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Acenaphthylene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Anthracene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Fluoranthene	0.97	U	ug/L	0.97	3.9
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	Dissolved Oxygen	11.52		mg/L		
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	Temperature	10.23		C		
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	Specific Conductance	75		umhos/cm		
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	Sample Depth	0.3		m		
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	Specific Conductance	75		umhos/cm		
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	pH	6.21				
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	Sample Depth	0.3		m		
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	Temperature	10.23		C		
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	Dissolved Oxygen	11.52		mg/L		
2/23/2009 11:15	TEST SITE	CHATTAHOOCHEE	Field Parameter	pH	6.21				

Appendix F

Additional physical, chemical, and toxicological results

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia

Facility: Chattahoochee WWTP
Address: 211 Palm Street, Chattahoochee 32324
County: Gadsden
NPDES Permit #: FL 0027669
Contact/District: Kim Allen / Northwest

LIMS entry: 3-19-09 MF verified: BA 3-19-09

Diluent/ Batch: 20% DMW / 2-6-09 Test Days Used: 0-3
20% DMW / 2-24-09 Test Days Used: 4-6

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

Start Date: 2-24-09 Time: 12:15
End Date: 3-2-09 Time: 14:50

Organism: *Ceriodaphnia dubia*
Organism Batch #: 8-09
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: YCT *P. subcapitata*
Food Batch: 1-22-09 2-13-09
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- 2009-02-B-05	116795O	2-23-09 1003	224-09 0845
Test Day 2	2	TLH-2009-02-25-101	116798 3	2-25-09 1745	2-26-09 10:25
Test Day 4	3	TLH-2009-02-27-62	116 9903	2-27-09 1440	2-27-09 16:40

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	0.00	0.00	<0.03	<0.03	<0.03	151	164	139
Diluent/Control:				<0.03	<0.03	<0.03	87	83	83
Method:	—	—		Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	—	Mitchell Fish	Mitchell Fish	KMS	KMS	KMS	BA/KMS	BA/KMS	~~BA~~/KMS
Verified by:	MF	MF	MF	BA	BA	BA	MF	MF	BA
	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:	411	423	427	<0.017	<0.017	<0.017	161	152	136
Diluent/Control:	175	180	177	<0.017	<0.017	<0.017	85	84	84
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Hach	Hach	Hach
Measured by:	MF/BA	MF	MF	MF	MF	MF	BA/KMS	BA/KMS	~~BA~~/KMS
Verified by:	BA/MF	BA	BA	BA	BA	BA	MF	MF	BA

MF incorrect initials 4/14/09

MF incorrect initials 4-14-09

Temperature Shipped ≤6° C (all samples) (yes) no Hand delivered
Holding Time ≤36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min. 25.5 max. 26.5 mean 26.0
Room B246 min. 21.6 max. 25.4 mean 23.5

Test Replicate	Loaded from culture vial
1	A4
2	A5
3	A10
4	A21
5	B4
6	B9
7	B19
8	B24
9	B28
10	C1

Results	
Control % CV:	25.6%
Dunnetts PMSD:	33.9%
Reproduction NOEC:	25%
Reproduction LOEC:	50%
Survival NOEC:	100%
Survival LOEC:	~~MF~~ 71 100% MF 3-19-09
ICP_{20}:	13%
ICP_{25}:	19%

Investigators' signatures
Marshall Faircloth
Brian Herendeen
Amber Parker
Kim McSpencer

Loretta C Wolfe
REVIEWER

Comments:

Test Page 1 of 5

PAGE 000016

revised 08/24/06 MF/SP

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Facility: Chattahoochee WWTP

LIMS Sample #: 1167950 for lab sample #1

Start Date: 2.24.09 Time: 12:15

End Date: 2.2.09 Time: 14:50

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	4	0	0	0	0	2	6	10	0.6
	4	5	5	6	4	0	6	5	6	4	0	41	10	4.1
	5	6	8	11	7	8	9	7	8	5	5	74	10	7.4
	6	0	15	8	7	6	8	12	9	11	7	83	10	8.3
	7													
	8													
	Total	11	28	25	18	18	23	24	23	20	14	204	10	20.4

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
6.25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	4	0	0	0	1	0	5	10	0.5
	4	6	6	5	4	0	6	5	4	0	0	36	10	~~10~~ 3.6
	5	3	8	9	6	10	9	8	8	1	9	~~72~~ 71	10	~~6.2~~ 7.1
	6	11	13	13	10	6	0	8	8	12	11	~~83~~ 92	10	~~8.3~~ 9.2
	7													
	8													
	Total	20	27	27	20	20	15	21	20	14	20	204	10	20.4

adults mf counted 2/28/09

Organisms loaded by: BA

Day	Counted/ verified by:	Concentrations prepared by:
0	mf	mf
1	BA	KMS/mf
2	BA	BA
3	BA	mf
4	mf	mf
5	BA	BA
6	BA	BA
7		
8		

Concentration	Mean neonates /adult	% survival
Control	20.4	100%
6.25%	20.4	100%
12.50%	16.4	100%
25%	14.3	90%
50%	12.2	100%
100%	9.6	90%

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

Comments: (A) Transcription error BA 3-4-09

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

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Facility: Chytahoochee WWTP

LIMS Sample # : 1167950 for lab sample #1

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
12.50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	4	2	6	2	0	6	6	4	4	0	34 mF 2-28-09	10	3.4
	5	3	6	9	3	10	3	6	8	1	9	58	10	5,8
	6	0	10	6	8	11	0	8	11	7	11	72	10	7.2
	7													
	8													
	Total	7	18	21	13	21	9	20	23	12	20	164	10	16.4

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	X	0	0	0	9 mF 2-28-09	0
	4	2	4	5	3	0	0	5		2	0	21 (A)	9	2.1
	5	0	12	5	0	9	0	9		8	9	52	9	5,7
	6	7	13	12	10	0	2	11		9	8	70	9	7,0
	7													
	8													
	Total	9	29	22	13	9	0	25	0	19	17	143	9	14,3

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	6	6	4	4	2	0	3	5	1	0	31	10	3.1
	5	3	9	6	2	0	2	0	4	7	0	33	10	3,3
	6	4	11	12	7	4	0	5	7	6	0	58	10	5.8
	7													
	8													
	Total	13	28	22	13	6	2	8	16	14	0	122	10	12.2

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
100%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	X	0 mF 2-28-09	9	0
	4	0	5	5	0	0	6	2	0	2		20 (A)	9	2.0
	5	1	1	5	0	4	0	3	2	2		19	9	1.9
	6	10	7	6	6	7	0	10	3	8		57	9	5,7
	7													
	8													
	Total	11	13	16	6	11	6	15	6	12	0	96	9	9.6

Comments: (A) mF 2-28-09 write-in adults in neonate space.

000018

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

revised 08/24/06 MF/SP

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Chuluota WWTP

LIMS Sample #: 1167950 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	8.0	24.4	7.9	175					
	1	6.25%	M	8.0	24.0	7.8	190					
	1	12.5%	M	8.0	24.2	7.9	206					
	1	25%	M	8.0	24.2	7.9	235					
	1	50%	M	7.9	24.4	7.9	293					
	1	100%	M	7.8	24.4	7.9	413					
	Measured by:			MF	MF	MF	MF					
	Recorded by:			MF	BA	MF	MF					
Day 1	sample:	Control	M	8.0	24.5	8.1	215	M	7.8	23.8	7.7	209
	1	6.25%	M	8.0	25.1	8.0	214	M	7.9	24.0	8.0	221
	1	12.5%	M	8.0	25.2	8.0	220	M	8.0	24.0	8.2	217
	1	25%	M	7.9	25.2	8.1	251	M	8.1	24.0	8.1	248
	1	50%	M	7.9	25.1	8.0	305	M	8.2	24.3	8.1	310
	1	100%	M	7.7	24.5	8.4	435	M	8.3	24.5	7.9	441
	Measured by:			MM	MM	MM	MM		MM	MM	MM	MM
	Recorded by:			MM	MM	MM	MM		MM	MM	MM	MM
Day 2	sample:	Control	M	8.2	24.0	8.1	189	M	7.6	24.0	8.3	187
	2	6.25%	M	8.1	24.0	8.1	203	M	7.7	24.0	8.2	203
	2	12.5%	M	8.1	24.0	8.1	215	M	7.8	24.0	8.1	214
	2	25%	M	8.1	24.0	8.1	245	M	7.8	24.0	8.1	258
	2	50%	M	8.0	24.0	8.0	307	M	7.9	24.0	8.0	316
	2	100%	M	8.0	24.0	8.0	432	M	8.0	24.0	7.9	435
	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	25.1	7.6	180	M	7.7	23.7	7.5	232
	2	6.25%	M	7.9	25.0	7.6	197	M	7.7	23.6	7.4	235
	2	12.5%	M	7.8	25.0	7.8	213	M	7.7	23.5	7.4	226
	2	25%	M	7.7	24.8	7.8	243	M	7.8	23.6	7.4	257
	2	50%	M	7.7	24.7	7.9	302	M	8.0	23.7	7.4	319
	2	100%	M	7.4	24.5	8.0	423	M	8.2	23.9	7.2	436
	Measured by:			MF	MF	MF	MF		MM	MM	MM	MM
	Recorded by:			MF	MF	MF	MF		MM	MM	MM	MM

Comments:

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

revised 08/24/06 MF/SP

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Chattahoochee WWTP

LIMS Sample #: 1167950 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample					Old Sample				
			Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	sample:	Control	M	8.0	25.3	7.6	177	M	8.2	24.6	7.3	186
	3	6.25%	M	8.0	26.0	7.8	201	M	8.2	24.5	7.4	204
	3	12.5%	M	7.9	26.0	7.8	215	M	8.2	24.6	7.4	217
	3	25%	M	7.9	26.0	7.7	245	M	8.1	24.6	7.4	250
	3	50%	M	7.8	25.8	7.8	304	M	8.1	24.6	7.4	309
	3	100%	M	7.5	25.6	7.9	427	M	8.2	24.7	7.4	430
	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	7.8	24.1	7.8	181	M	8.0	24.0	7.4	194
	3	6.25%	M	7.9	24.0	7.6	195	M	8.1	24.0	7.4	198
	3	12.5%	M	7.9	24.0	7.5	209	M	8.2	24.0	7.5	216
	3	25%	M	7.9	24.0	7.4	241	M	8.2	24.0	7.5	244
	3	50%	M	7.9	24.0	7.4	300	M	8.3	24.0	7.4	317
	3	100%	M	7.8	24.0	7.3	426	M	8.4	24.0	7.5	468
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 6	sample:	Control	M					M	7.8	24.7	6.5	185
	3	6.25%	M					M	7.9	24.8	6.8	201
	3	12.5%	M					M	7.9	24.9	6.9	213
	3	25%	M					M	8.0	24.8	7.0	249
	3	50%	M					M	8.0	24.8	7.0	306
	3	100%	M					M	8.2	25.0	6.7	431
	Measured by:								BA	BA	BA	BA
	Recorded by:								BA	BA	BA	BA
Day 7	sample:	Control	M					M				
	3	6.25%	M					M				
	3	12.5%	M					M				
	3	25%	M					M				
	3	50%	M					M				
	3	100%	M					M				
	Measured by:											
	Recorded by:											

Comments:

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

revised 08/24/06 MF/SP

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	2/24/2009 12:15	Test ID:	chattfeb09	Sample ID:	FL0027669-NPDES Permit #
End Date:	3/2/2009 14:50	Lab ID:	Chattahoochee WWTP	Sample Type:	EFF1-POTW
Sample Date:		Protocol:	EPAFW02-EPA/821/R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:					

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	11.000	28.000	25.000	18.000	18.000	23.000	24.000	23.000	20.000	14.000
6.25	20.000	27.000	27.000	20.000	20.000	15.000	21.000	20.000	14.000	20.000
12.5	7.000	18.000	21.000	13.000	21.000	9.000	20.000	23.000	12.000	20.000
25	9.000	29.000	22.000	13.000	9.000	0.000	25.000	0.000	19.000	17.000
50	13.000	28.000	22.000	13.000	6.000	2.000	8.000	16.000	14.000	0.000
100	11.000	13.000	16.000	6.000	11.000	6.000	15.000	6.000	12.000	0.000

			Transform: Untransformed					1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	20.400	1.0000	20.400	11.000	28.000	25.649	10			
6.25	20.400	1.0000	20.400	14.000	27.000	20.565	10	0.000	2.287	6.924
12.5	16.400	0.8039	16.400	7.000	23.000	34.517	10	1.321	2.287	6.924
25	14.300	0.7010	14.300	0.000	29.000	69.388	10	2.015	2.287	6.924
*50	12.200	0.5980	12.200	0.000	28.000	70.912	10	2.708	2.287	6.924
*100	9.600	0.4706	9.600	0.000	16.000	51.782	10	3.567	2.287	6.924

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.72216	1.035	-0.0699	0.05714
Bartlett's Test indicates equal variances (p = 0.07)	10.2989	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test Treatments vs D-Control	25	50	35.3553	4	6.92365	0.33939	191.91	45.8389	0.00275	5, 54

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or *Menidia beryllina*

Facility: Military Point Chattahoochee WWTP
Address: 211 Polk Street, Chattahoochee 32324
County: Gadsden
NPDES Permit #: FL0027669
Contact/District: Kim Allen / North West

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: 2.24.09 Time: 1200
End Date: 3.3.09 Time: 1100

Diluent/ Batch: MHW / 2.6.09 Test Days Used: 0-7
MHW / Test Days Used:
ASW / Test Days Used:
ASW / Test Days Used:

Organism Batch #: 2-24-09 MF Organism age: 624 hours

Feeding Prior to Test and Daily
Artemia Lot #: 38138
Chamber size: 1000 ml
Test volume: 500 ml

Artemia Batch #			
Day 0	22-09	Day 4	26-09
Day 1	23-09	Day 5	27-09
Day 2	24-09	Day 6	28-09
Day 3	25-09		

LIMS:	Date	Initials
Entry:	3-19-09	MF
Verification:	3-19-09	BA

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2009-02-23-05	1160950	~~2.23.09 / 2345~~ (A)	2.24.09 / 0815
Test Day 2	2	TLH-2009-02-25-M-01	1168983	~~2.25.09 / 1440~~ (A)	2.26.09 / 1025
Test Day 4	3	TLH-2009-02-02-62	1169900	2.27.09 / 1440	2.27.09 / 1640

(A) Collection Date/Time
Sample 1 = 2.23.09 @ 1003 J.P.
Sample 2 = 2.25.09 @ 245

Water Quality Parameters	Batch # 2.6.09 ☑ MHW ☐ ASW	☐ MHW ☐ ASW	NA Sample 1	NA Sample 2	NA Sample 3	Other:	Measured by:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	not measured	0.0	0.0		michelle frank	MF
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03	<0.03	<0.03		JD	JD/BA
Alkalinity (mg/L as $CaCO_3$):	90		151	164	139		BA/Kim	JD
Hardness (mg/L as $CaCO_3$):	82		161	152	136		BA/Kim	JD
Total Ammonia (mg/L as N):	<0.17		<0.17	<0.17	<0.17		MF	JD
Conductivity: µmhos mmhos:	284		42	429	433		JD	BA
Salinity (ppth):	–		–	–	–		JD	BA

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: (if used)
Incubator # 2 min 25.5 max 26.5 mean 26.0
Water bath # ____ min ____ max ____ mean ____
Room B246 min 21.6 max 25.1 mean 23.5

Test Incubated in: ☑ Incubator #: 2
☐ Waterbath #: ____

Investigators' signatures
James Daniels
Dave Alexander
Marshall Faircloth
Kim M Spencer

REVIEWER Roberta C White

Statistics	
Control %cv:	5.97%
Dunnetts PMSD:	19.5%
Survival NOEC:	100%
Survival LOEC:	>100%
Growth NOEC:	100
Growth LOEC:	>100%
Growth IC20	>100%
Growth IC25	>100%
Survival IC20	>100%
Survival IC25	>100%

Comments:

PAGE 00 008

revised 7/15/08 MF

Chronic Bioassay Survival Benchsheet

Facility: Chattahoochee WWTP

LIMS Sample Number: 1167950
(for Lab Sample # 1)

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

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

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

Comments:

Chronic Bioassay Parameters Benchsheet

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

Sample Source: Chattahoochee WWTP — Start Date: 2/23/24.09 — End Date: 3/3.09

LIMS Sample #: 1167950 (for Lab sample #1) — Start Time: 1200 — End Time: 1100

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

Test Day ↓		Conc.	New Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	Old Sample: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	sample:	Control	A	7.7	24.2	7.5	284	–						
	1	6.25%	A	7.8	24.1	7.6	291	–						
	1	12.5%	A	7.8	24.0	7.7	301	–						
	1	25%	A	7.8	24.1	7.7	312	–						
	1	50%	A	7.7	24.1	7.7	342	–						
	1	100%	A	7.5	24.2	7.8	412	–						
	1		A											
	Measured by:			JD	JD	JD	JD	JD						
	Recorded by:			JD	JD	JD	JD	JD						
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	7.8	25.4	8.2	291	–	B	7.9	25.4	7.9	297	–
	1	6.25%	B	7.7	25.3	8.1	298	–	B	7.9	25.3	7.9	308	–
	1	12.5%	B	7.7	24.4	8.0	303	–	B	8.0	25.3	7.9	306	–
	1	25%	B	7.7	24.3	8.0	318	–	B	7.9	25.3	7.9	328	–
	1	50%	B	7.7	24.0	7.9	340	–	B	8.0	25.2	8.0	355	–
	1	100%	B	7.5	24.0	7.9	421	–	B	8.0	25.2	8.1	423	–
	1		B						B				433	
	Measured by:			JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by:			KMS	KMS	KMS	KMS	–		JD	JD	JD	JD	JD
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	sample:	Control	C	7.7	24.0	7.8	306	–	C	7.6	29.8	7.6	300	–
	2	6.25%	C	7.6	24.0	7.9	309	–	C	7.7	25.1	7.3	304	–
	2	12.5%	C	7.6	24.1	7.9	311	–	C	7.7	25.2	7.2	313	–
	2	25%	C	7.6	24.0	7.9	332	–	C	7.7	25.0	7.2	323	–
	2	50%	C	7.7	24.0	7.9	350	–	C	7.7	25.0	7.0	360	–
	2	100%	C	7.7	24.0	7.9	429	–	C	7.7	25.0	6.9	432	–
	2		C						C					
	Measured by:			JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by:			JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	sample:	Control	D	7.7	25.9	7.0	337	–	D	7.7	25.0	6.5	303	–
	2	6.25	D	7.4	24.2	7.1	325	–	D	7.6	25.0	5.9	307	–
	2	12.5	D	7.4	24.0	7.3	329	–	D	7.6	25.0	5.9	321	–
	2	25	D	7.4	24.0	7.2	325	–	D	7.6	24.8	5.9	336	–
	2	50	D	7.5	24.0	7.2	359	–	D	7.6	24.8	5.9	366	–
	2	100	D	7.3	24.1	7.4	438	–	D	7.6	24.7	5.6	443	–
	2		D						D					
	Measured by:			KMS	JD	KMS	KMS	–			JD	JD	JD	JD
	Recorded by:			KMS	JD	KMS	KMS	–			JD	JD	JD	JD

Comments:

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

Chronic Bioassay Parameters Benchsheet

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

Sample Source: chattahoochee
Start Date: 2.24.09 End Date: 3.3.09
LIMS Sample #: 1167950 (for Lab sample #1)
Start Time: 1300 End Time: 1100

conc = concentration rep = replicate

Test Day ↓		Conc.	New Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	Old Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 4	sample:	Control	A	7.9	25.9	6.7	292	—	A	7.5	25.4	6.4	293	—
	3	6.25	A	7.8	25.9	6.8	294	—	A	7.6	25.4	6.1	307	—
	3	12.5	A	7.9	25.9	6.9	306	—	A	7.6	25.2	6.2	307	—
	3	25	A	7.8	25.8	7.0	325	—	A	7.5	25.2	5.0	336	—
	3	50	A	7.7	25.7	6.8	352	—	A	7.5	25.1	5.5	362	—
	3	100%	A	7.5	25.3	7.0	437	—	A	7.5	25.4	6.0	445	—
	3		A						A					
	Measured by:			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Recorded by:			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	sample:	Control	B	7.9	25.9	7.3	305	—	B	7.6	25.3	6.8	310	—
	3	6.25	B	7.9	25.8	7.2	325	—	B	7.6	25.4	6.6	311	—
	3	12.5	B	7.9	25.9	7.2	330	—	B	7.7	25.3	6.5	312	—
	3	25	B	7.8	25.5	7.2	340	—	B	7.6	25.0	6.5	323	—
	3	50	B	7.7	25.0	7.2	366	—	B	7.6	24.7	6.4	360	—
	3	100%	B	7.5	25.0	7.3	437	—	B	7.7	24.9	6.5	443	—
	3		B						B					
	Measured by:			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Recorded by:			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	sample:	Control	C	7.5	24.0	6.8	320	—	C	7.6	24.0	5.7	332	—
	3	6.25	C	7.6	24.0	6.7	324	—	C	7.6	24.0	5.5	340	—
	3	12.5	C	7.7	24.0	6.7	333	—	C	7.6	24.1	5.5	333	—
	3	25	C	7.7	24.0	6.9	348	—	C	7.5	24.1	5.7	362	—
	3	50	C	7.7	24.0	7.0	375	—	C	7.6	24.1	5.9	375	—
	3	100%	C	7.6	24.0	7.1	440	—	C	7.6	24.0	5.9	447	—
	3		C						C					
	Measured by:			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Recorded by:			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	sample:	Control							D	7.5	25.0	6.2	340	—
	3	6.25							D	7.5	25.0	6.1	353	—
	3	12.5							D	7.5	25.1	6.2	357	—
	3	25							D	7.5	25.0	5.3	377	—
	3	50							D	7.5	25.0	5.4	401	—
	3	100							D	7.8	25.0	6.0	469	—
	3								D					
	Measured by:									kmm	[illegible]	kmm	kmm	—
	Recorded by:									kmm	[illegible]	kmm	kmm	—

Comments:

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

Page 00 011.

Chronic Definitive Bioassay Weighing Benchsheet

Facility: Chatts Woodlee

LIMS Sample Number: 1107950
(for Lab Sample # 1)

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

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	17	0.02414	0.03075	0.00661	10	0.661
	B	18	0.02413	0.03101	0.00688	10	0.688
	C	19	0.02304	0.03019	0.00715	10	0.715
	D	20	0.02452	0.03073	0.00621	10	0.621
sample 6.25 %	A	21	0.02345	0.03027	0.00682	10	0.682
	B	22	0.02164	0.02938	0.00744	10	0.744
	C	23	0.02470	0.03163	0.00693	10	0.693
	D	24	0.02213	0.02718	0.00505	10	0.505
sample 12.5 %	A	25	0.02298	0.02865	0.00567	10	0.567
	B	26	0.02352	0.02857	0.00505	10	0.505
	C	27	0.02245	0.02859	0.00614	10	0.614
	D	28	0.02248	0.02800	0.00552	10	0.552
sample 25 %	A	29	0.02213	0.02717	0.00504	10	0.504
	B	30	0.02200	0.02857	0.00657	10	0.657
	C	31	0.02441	0.03155	0.00714	10	0.714
	D	32	0.02436	0.03119	0.00683	10	0.683
sample 50 %	A	33	0.02452	0.03144	0.00692	10	0.692
	B	34	0.02293	0.02917	0.00624	10	0.624
	C	35	0.02232	0.02863	0.00631	10	0.631
	D	36	0.02309	0.02913	0.00604	10	0.604
sample 100 %	A	37	0.02262	0.02851	0.00589	10	0.589
	B	38	0.02364	0.03123	0.00759	10	0.759
	C	39	0.02330	0.02861	0.00531	10	0.531
	D	40	0.02304	0.03001	0.00697	10	0.697
sample %	A					10	
	B					10	
	C					10	
	D					10	
	Weighed by initials:		JD	JD	JD	revised 7/16/08 mf	

Comments:

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

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

Page 00 012

Chronic Bioassay Weighing Benchsheet

Quality Control

Facility: Chattahoochee WWTP

LIMS Sample Number: 1167950
(for Lab Sample # 1)

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

Drying Oven ID:	VWR#2	Tare weighed by:	D.D.
Temperature °C:	100	Final weighed by:	D.D.
Hours:	8		
Tare Weighing Date:	3.2.09	Final Weighing Date:	3.6.09

				Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.02556	@	0.02556	S-weights	0.01004	@ 0.01
Tare Pan 1 after Pan 10 (g)	0.02560	@	0.02556	at tare	0.03005	@ 0.03
Tare Pan 1 after Pan 15 (g)	0.02560	@	0.02556	S-weights	0.01004	@ 0.01
Tare Pan 1 after Pan 20 (g)	0.02560	@	0.02556	at final	0.05004	@ 0.05
Tare Pan 1 after Pan 25 (g)	0.02560	@	0.02556			
Tare Pan 1 after Pan 30 (g)	0.02560	@	0.02556	Balance: Ohaus 250D Ser# 1125481084		
Tare Pan 1 after Pan 35 (g)		@		S-Weights: BIO-S-Weights-01		
Tare Pan 1 after Pan 40 (g)		@				
Tare Pan 1 after Pan 45 (g)		@				
Tare Pan 1 after Pan 48 (g)		@				
Final Pan 1 after Pan 5 (g)	0.03075	@	0.03075			
Final Pan 1 after Pan 10 (g)	0.03073	@	0.03075			
Final Pan 1 after Pan 15 (g)	0.03073	@	0.03075			
Final Pan 1 after Pan 20 (g)	0.03072	@	0.03075			
Final Pan 1 after Pan 25 (g)	0.03078	@	0.03075			
Final Pan 1 after Pan 30 (g)	0.03079	@	0.03075			
Final Pan 1 after Pan 35 (g)		@				
Final Pan 1 after Pan 40 (g)		@				
Final Pan 1 after Pan 45 (g)		@				
Final Pan 1 after Pan 48 (g)		@				

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

Comments:

revised 7/16/08 MF

Page 00 013

Larval Fish Growth and Survival Test-7 Day Biomass				
Start Date:	2/24/2009	Test ID:	Chattf2409	Sample ID:	FL0027669-NPDES Permit #
End Date:	3/3/2009 11:00	Lab ID:	Chattahoochee STP	Sample Type:	EFF1-POTW
Sample Date:	2/23/2009	Protocol:	EPAFW02-EPA/821/R-02-013	Test Species:	PP-Pimephales promelas
Comments:	P. promelas Chronic Bioassay for Chattahoochee STP				

Conc-%	1	2	3	4
D-Control	0.6610	0.6880	0.7150	0.6210
6.25	0.6820	0.7440	0.6930	0.5050
12.5	0.5670	0.5050	0.6140	0.5520
25	0.5040	0.6570	0.7140	0.6830
50	0.6920	0.6240	0.6310	0.6040
100	0.5890	0.7590	0.5310	0.6970

			Transform: Untransformed					1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.6713	1.0000	0.6713	0.6210	0.7150	5.974	4			
6.25	0.6560	0.9773	0.6560	0.5050	0.7440	15.888	4	0.281	2.410	0.1306
12.5	0.5595	0.8335	0.5595	0.5050	0.6140	8.028	4	2.062	2.410	0.1306
25	0.6395	0.9527	0.6395	0.5040	0.7140	14.588	4	0.586	2.410	0.1306
50	0.6378	0.9501	0.6378	0.6040	0.6920	5.948	4	0.618	2.410	0.1306
100	0.6440	0.9594	0.6440	0.5310	0.7590	15.994	4	0.503	2.410	0.1306

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95076	0.884	-0.6911	0.16348
Bartlett's Test indicates equal variances (p = 0.33)	5.7652	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test Treatments vs D-Control	100	>100		1	0.1306	0.19456	0.00605	0.00587	0.42967	5, 18

Bioassay Instrument ID

Test ID: Chattahoochee STP Dates: Feb. 24 - Mar. 3, 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	VWR #2	—	—	—	✓

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. Fairbeth 3/19/09

V 1.1 6/12/08 MF

Appendix G

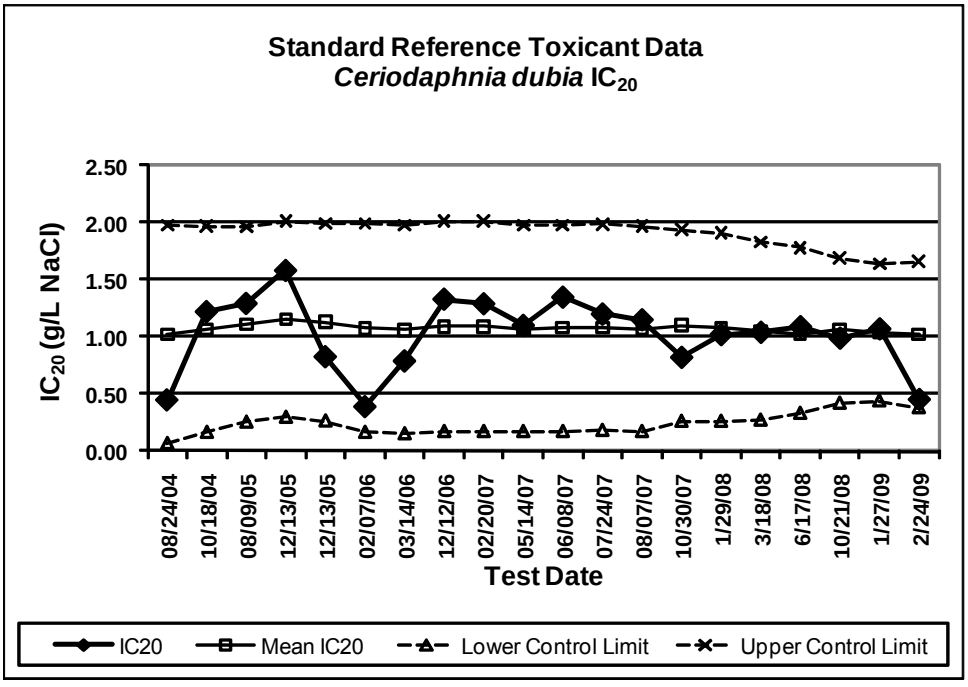
Standard Reference Toxicant Data

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	Date
08/24/04	0.45	1.02	0.48	0.06	1.98	08/24/04
10/18/04	1.22	1.07	0.45	0.16	1.97	10/18/04
11/16/04	1.29	1.11	0.43	0.25	1.96	08/09/05
08/09/05	1.58	1.15	0.43	0.30	2.01	12/13/05
12/13/05	0.83	1.13	0.43	0.26	1.99	12/13/05
02/07/06	0.39	1.08	0.46	0.16	1.99	02/07/06
03/14/06	0.79	1.06	0.46	0.15	1.98	03/14/06
12/12/06	1.33	1.09	0.46	0.17	2.01	12/12/06
02/20/07	1.29	1.09	0.46	0.17	2.01	02/20/07
05/14/07	1.10	1.07	0.45	0.17	1.98	05/14/07
06/08/07	1.35	1.08	0.45	0.17	1.98	06/08/07
07/24/07	1.20	1.08	0.45	0.18	1.99	07/24/07
08/07/07	1.15	1.07	0.45	0.17	1.97	08/07/07
10/30/07	0.82	1.10	0.42	0.26	1.94	10/30/07
1/29/08	1.02	1.08	0.41	0.26	1.91	1/29/08
3/18/08	1.04	1.05	0.39	0.27	1.83	3/18/08
6/17/08	1.09	1.02	0.36	0.33	1.78	6/17/08
10/21/08	0.99	1.06	0.32	0.42	1.69	10/21/08
1/27/09	1.07	1.04	0.30	0.44	1.64	1/27/09
2/24/09	0.45	1.02	0.32	0.38	1.66	2/24/09

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

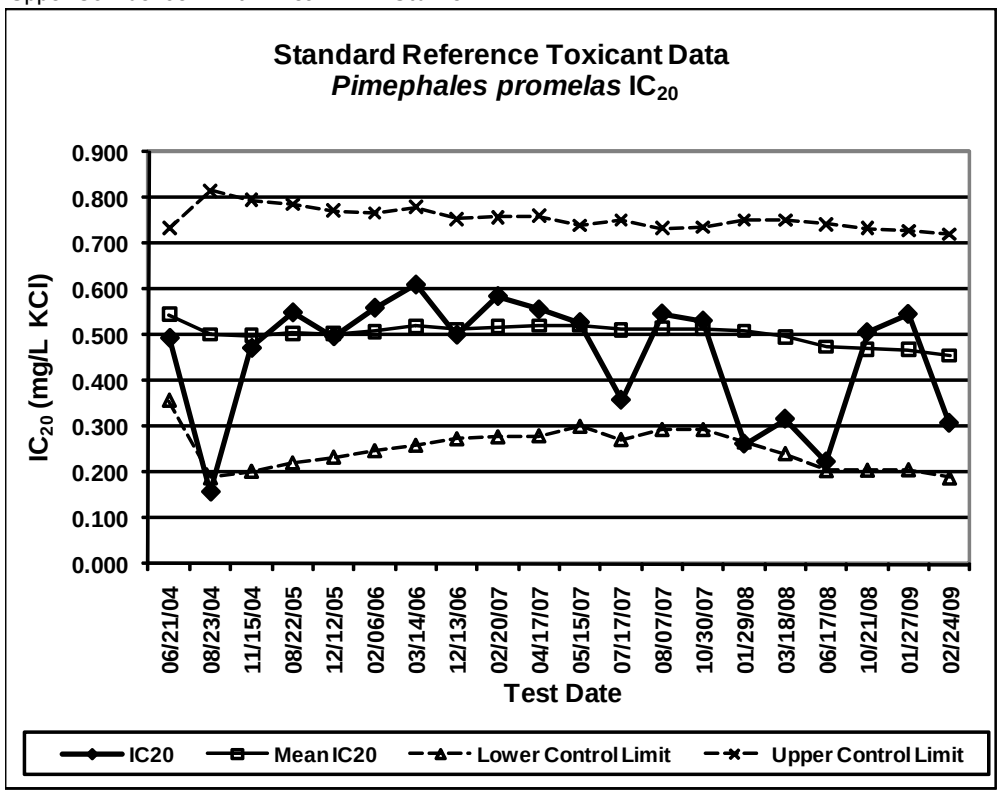


Florida Department of Environmental Protection
Bureau of Laboratories

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	Date
06/21/04	0.494	0.546	0.09	0.358	0.734	06/21/04
08/23/04	0.157	0.503	0.16	0.190	0.815	08/23/04
11/15/04	0.472	0.499	0.15	0.204	0.795	11/15/04
08/22/05	0.549	0.504	0.14	0.222	0.786	08/22/05
12/12/05	0.497	0.503	0.13	0.234	0.772	12/12/05
02/06/06	0.559	0.508	0.13	0.248	0.767	02/06/06
03/14/06	0.610	0.520	0.13	0.260	0.780	03/14/06
12/13/06	0.501	0.514	0.12	0.274	0.754	12/13/06
02/20/07	0.585	0.518	0.12	0.278	0.758	02/20/07
04/17/07	0.556	0.521	0.12	0.281	0.761	04/17/07
05/15/07	0.528	0.521	0.11	0.301	0.741	05/15/07
07/17/07	0.358	0.513	0.12	0.273	0.753	07/17/07
08/07/07	0.547	0.514	0.11	0.294	0.734	08/07/07
10/30/07	0.531	0.515	0.11	0.294	0.736	10/30/07
01/29/08	0.263	0.509	0.12	0.267	0.752	01/29/08
03/18/08	0.317	0.497	0.13	0.242	0.752	03/18/08
06/17/08	0.223	0.474	0.13	0.205	0.743	06/17/08
10/21/08	0.506	0.470	0.13	0.206	0.734	10/21/08
01/27/09	0.546	0.468	0.13	0.207	0.729	01/27/09
02/24/09	0.308	0.455	0.13	0.189	0.721	02/24/09

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 / 2-6-09 Test Days Used: 0-1
20% DMW / 2-24-09 Test Days Used: 2-6
Toxicant/ Batch: NaCl / 35/L 2-24-08

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

Organism: *Ceriodaphnia dubia*
Organism Batch #/ Age: 8-09 / <24 hr.
Feeding: Prior to Test and Daily
Food: YCT *P. subcapitata*
Food Batch: 1-22-09 2-13-09
Chamber size: 30 mL
Test Volume: 20 mL

Start Date: 2-24-09 Time: 1400
End Date: 3-3-09 Time: 1300

B.tch 2-6-09 2-24-09

Water Quality Parameters	20% DMW (B) 2-24-09	Diluent (or other)	Method	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.07 MF		HACH	KMS	BA
Alkalinity (mg/L as $CaCO_3$):	87		HACH	BA	MF
Hardness (mg/L as $CaCO_3$):	85		HACH	BA	MF
Total Ammonia (mg/L as N):	<0.07		DENVER	MF	BA
Conductivity (umhos-cm) mmhos-cm :	175		YSI / Mettler	MF	BA

(A) Put ammonia in chlorine space MF 2-24-09

Results	
Control % CV:	3.44
Dunnetts PMSD:	27.3%
Reproduction NOEC:	<0.59
Reproduction LOEC:	0.59
Survival NOEC:	MF ~~<0.59~~ 1.3 (wrong plate, wrong dilution)
Survival LOEC:	MF ~~0.59~~ 2.0
ICP_{20}:	0.452
ICP_{25}:	0.565

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

Test Replicate	Loaded from culture vial
1	A 4
2	A 5
3	A 10
4	A 21
5	B 4
6	B 9
7	B 19
8	B 24
9	B 28
10	C 1

Comments:

Investigators' signatures

Marshall Faircloth
Ben Alexander
Kevin M. Spencer
James Daniels

Loretta C Wolfe
REVIEWER

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min. 25.5 max. 26.5 mean 26.0
Incubator # ____ min. ____ max. ____ mean ____
Room B246 min. 21.6 max. 25.4 mean 23.5

Ceriodaphnia dubia Survival and Reproduction

Start Date: 2-24-09 Time: 12:40 Loaded by: BA
End Date: 3-3-09 Time: 13 00 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	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	5	5	6	4	0	5	5	5	5	0	40	10	4.0
	5	0	9	8	8	4	8	10	8	11	7	~~74~~ 73 BA	10	7.3
	6	3	12	0	0	X	0	0	8	9	13	46	9	4.6 BA
	7	0	0	13	11	-	8	13	0	15	14	45	9	4.5
	8													
	Total	8	26	27	23	4	21	28	21	26	23	207	9	20.7
0.59 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	0	0	10	0
	4	1	4	3	4	6	1	1	3	6	4	33	10	3.3
	5	0	7	5	7	2	3	0	1	6	5	~~38~~ 36	10	~~3.8~~ 3.6 BA
	6	0	10	0	0	8	0	0	0	8	11	37	10	3.7
	7	0	0	6	8	0	9	6	8	0	0	~~41~~ BA 37	10	~~4.1~~ BA 3.7
	8													
	Total	1	21	14	19	16	13	7	12	20	20	143	10	14.3
0.89 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	0	0	10	0
	4	0	4	3	3	5	0	0	0	4	3	22	10	2.2
	5	0	6	1	4	0	2	6	0	3	1	23	10	2.3
	6	0	6	0	0	4	0	0	0	8	9	27	10	2.7
	7	8	0	12	4	0	0	9	0	0	0	33	10	3.3
	8													
	Total	8	16	16	11	9	2	15	0	15	13	105	10	10.5

Comments: S = split brood count as Day 6 MF 3-3-09
(A) 4th brood not counted BA 3-4-09
(BA) Transcription error BA 3-4-09

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	0	0	10	0
	4	0	0	0	1	2	0	0	0	2	0	5	10	0.5
	5	0	4	4	2	rd	0	1	0	3	0	14	10	1,4
	6	0	0	0	0	6	0	0	1	8	5	20	10	2.0
	7	0	5	5	5	0	2	5	5	0	0	27	10	2,7
	8													
	Total	0	9	9	8	8	2	6	6	13	5	66	10	6.6
2.0 ppth	0												10	
	1												10	
	2	X	0	0	0	0	0	0	0	0	0	0	9	0
	3		0	X	0	0	X	0	X	0	X	0	5	0
	4		0		0	0		0		0		0	5	0
	5		0		0	3		0		0		3	5	0.3
	6		0		0	0		0		X		0	4	0.0
	7		0		0	1		1				2	4	0.2
	8													
	Total	0	0	0	0	4	0	1	0	0	0	5	4	0.5
3.0 ppth	0												10	
	1	X	X	X	X	X	X	X			X		2	
	2								X	X		0	0	0
	3											0	0	0
	4											0	0	0
	5											0	0	0
	6											0	0	0
	7											0	0	0
	8													
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:

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	24.4	7.7	176					
	0.59 ppth	M	7.9	24.1	7.7	1306					
	0.89 ppth	M	7.9	24.3	7.7	1877					
	1.3ppth	M	8.0	24.1 2-24-09	7.7	2660					
	2.0 ppth	M	8.0	(A) 24.5 BA	7.6	3850					
	3.0 ppth	M	8.0	24.5	7.6	5540					
	Measured by:		MF	MF	MF	MF					
	Recorded by:		MF	BA	MF	MF					
Day 1	Control	M	8.0	24.8	8.0	195	A	8.0	23.5	8.0	200
	0.59 ppth	M	8.0	25.4	8.0	1330	A	8.0	23.5	8.0	1467
	0.89 ppth	M	8.0	25.4	8.1	1869	A	8.0	23.7	8.0	2060
	1.3ppth	M	8.1	25.5	8.0	2680	A	8.0	23.8	8.0	2860
	2.0 ppth	M	8.1	25.1	8.2	3890	A	8.0	23.8	8.1	4120
	3.0 ppth	M	8.1	25.0	8.2	5610	A	8.0	23.9	8.1	5790
	Measured by:		kmm	kmm	kmm	kmm		kmm	kmm	kmm	kmm
	Recorded by:		kmm	kmm	kmm	kmm		kmm	kmm	kmm	kmm
Day 2	Control	M	8.1	24.0	8.0	185	A	7.9	24.0	7.7	185
	0.59 ppth	M	8.0	24.0	7.9	1387	A	7.9	24.0	8.0	1439
	0.89 ppth	M	8.1	24.0	7.8	1960	A	7.9	24.0	7.7	1997
	1.3ppth	M	8.1	24.0	7.6	2780	A	7.9	24.0	7.7	2800
	2.0 ppth	M	8.1	24.0	7.4	3950	A	7.9	24.0	7.5	3960
	3.0 ppth	M	8.1	24.0	7.5	5710	A	7.9	24.0	7.6	6180
	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	25.3	7.4	182	A	8.0	24.5	7.2	198
	0.59 ppth	M	8.1	25.7	7.5	1296	A	7.9	24.4	7.3	1420
	0.89 ppth	M	8.0	25.6	7.4	1867	A	7.9	24.5	7.3	1970
	1.3ppth	M	8.0	25.6	7.4	2650	A	8.0	24.4	7.4	2780
	2.0 ppth	M	8.0	25.5	7.4	3830	B	8.0	24.4	7.3	3920
	3.0 ppth	M	—	—	—	—	—	—	—	—	—
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF

Comments: (A) MF called out wrong # 2-24-09 MF

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

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day ↓	Conc.	New Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	Control	M	8.0	25.2	7.6	180	A	8.2	24.6	7.7	184
	0.59 ppth	M	8.0	25.4	7.5	1295	A	8.1	24.5	7.5	1371
	0.89 ppth	M	8.0	25.5	7.5	1842	A	8.1	24.4	7.3	1906
	1.3ppth	M	8.0	25.6	7.4	2660	A	8.1	24.5	7.3	2690
	2.0 ppth	M	8.0	25.7	7.3	3820	B	8.1	24.4	7.3	3860
	3.0 ppth	M	—	—	—	—	—	—	—	—	—
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 5	Control	M	7.7	24.0	7.5	184	A	8.1	24.0	7.2	187
	0.59 ppth	M	7.7	24.0	6.8	1302	A	8.1	24.0	7.1	1300
	0.89 ppth	M	7.8	24.0	6.9	1855	A	8.1	24.0	6.9	1860
	1.3ppth	M	7.8	24.0	7.0	2680	A	8.1	24.0	6.6	2640
	2.0 ppth	M	7.9	24.0	7.1	3880	B	8.1	24.0	6.1	3860
	3.0 ppth	M	—	—	—	—	—	—	—	—	—
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 6	Control	M	7.9	24.0	7.0	184	A	7.9	24.0	6.2	190
	0.59 ppth	M	7.9	24.0	7.1	1307	A	7.9	24.0	6.6	1356
	0.89 ppth	M	7.9	24.0	7.1	1858	A	7.9	24.2	6.8	1900
	1.3ppth	M	7.9	24.0	7.3	2680	A	7.9	24.5	7.0	2730
	2.0 ppth	M	8.0	24.0	7.3	3900	B	8.0	24.4	7.0	3890
	3.0 ppth	M	—	—	—	—	—	—	—	—	—
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 7	Control	M					A	8.0	24.1	7.8	192
	0.59 ppth	M					A	8.0	24.2	7.9	1368
	0.89 ppth	M					A	8.0	24.1	7.8	1980
	1.3ppth	M					A	8.1	24.0	7.7	2800
	2.0 ppth	M					B	8.1	24.0	7.7	3900
	3.0 ppth	M									
	Measured by:							MF	MF	MF	MF
	Recorded by:							MF	MF	MF	MF
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:										

Not needed

Not needed

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

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: MH w/ 2.6.09 Test Days Used: 0-7

Diluent/ Batch: _____ Test Days Used: _____

Toxicant/ Batch # : KCl / 2.23.09

Artemia Lot # : 38434

Start Date: 2.24.09 Time: 1215

End Date: 3.3.09 Time: 1130

Organism Batch #/ Age: 224.09 / < 24hrs

Artemia Batch #	Day 2 24-09	Day 5 27-09
Day 0 22-09	Day 3 25-09	Day 6 28-09
Day1 23-09	Day 4 26-09	

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	JD	JD/MF
Alkalinity (mg/L as $CaCO_3$):	80		HACH	KMS	JD
Hardness (mg/L as $CaCO_3$):	82		HACH	KMS	JD
Total Ammonia (mg/L as N):	<0.017		DENVER	MF	JD
Conductivity ~~umhos-cm~~ mmhos-cm:	277		METTLER	JD	BA

Statistics	
Growth NOEC:	0.25 g/L
Growth LOEC:	0.5 g/L
Growth IC_{20}:	0.308
Growth IC_{25}:	0.333
Ctrl % CV:	11.5 %
Dunnetts PMSD:	18.2%
Survival NOEC:	0.25
Survival LOEC:	0.5

Test incubated in : ☑ Incubator # 2

☐ Waterbath #_____

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C:

Incubator # 2 min. 25.5 max. 26.5 mean 26.0

Water bath # ____ min._____ max._____ mean_____

Room B246 min. 21.6 max. 25.4 mean 23.5

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

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

Investigators' signatures

James Daniel

Brian Abercrombie

Marshall Faircloth

Kim M. Spencer

Loretta C. Wolfe

REVIEWER

Comments:

revised 7/16/08 MF

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)

Concentration	Replicate	Chamber	TEST DAY 0	1	2	3	4	5	6	7
Control	A	B1	10	10	10	10	10	10	10	10
	B	B2	10	10	10	10	10	10	10	10
	C	B3	10	10	10	10	10	10	10	10
	D	B4	10	10	10	10	10	10	10	10
.125	A	B5	10	10	10	10	10	10	10	10
	B	B6	10	10	10	10	10	10	10	10
	C	B7	10	10	10	10	10	10	10	10
	D	B8	10	10	10	10	10	10	10	10
.25	A	B9	10	10	10	10	10	10	10	10
	B	B10	10	10	9 1D	9	9	9	9	9
	C	B11	10	10	10	10	10	10	10	10
	D	B12	10	10	10	10	10	10	10	10
.5	A	B13	10	6 1D	2 4D	2	2	2	2	2
	B	B14	10	9 1D	4 5D	4	4	4	4	4
	C	B15	10	8 2D	6 2D	5 1D	5	5	5	4 1D
	D	B16	10	9 1D	2 7D	2	2	2	2	2
1.0	A	B17	10	0 1D	—	—	—	—	—	—
	B	B18	10	0 1D	—	—	—	—	—	—
	C	B19	10	1 9D	0 1D	—	—	—	—	—
	D	B20	10	1 9D	0 1D	—	—	—	—	—
2.0	A	B21	10	0 1D	—	—	—	—	—	—
	B	B22	10	0 1D	—	—	—	—	—	—
	C	B23	10	0 1D	—	—	—	—	—	—
	D	B24	10	0 1D	—	—	—	—	—	—
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr):		Checked by:								
Verified by (0 hr): MF										
Concentrations prepared by:										

Comments:

revised 7/16/08 MF

Chronic SRT Parameters Benchsheet

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

Start Date: 4/24/09 End Date: 3-3-09

Start Time: 12:15 End Time: 11:30

conc = concentration rep = replicate circle umhos or mmhos

Test Day	Conc.	New Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos) mmhos	Salinity ppth	Old Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	Control	A	7.8	25.5	7.8	277	—						
	.125	A	7.7	25.5	7.6	523	—						
	~~.25~~	A	7.8	25.4	7.5	877	—						
	.5	A	7.8	25.2	7.6	1322	—						
	1.0	A	7.9	25.1	7.4	2310	—						
	2.0	A	7.9	25.1	7.5	4230	—						
		A											
	Measured by		MF	~~JB~~	MF	MF	—						
	Recorded by		MF	~~JB~~	MF	MF	—						
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	7.8	24.9	8.1	295	—	B	7.9	24.8	7.8	291	—
	.125	B	7.8	25.0	8.0	523	—	B	7.9	25.0	7.9	539	—
	.25	B	7.9	25.1	8.0	824	—	B	8.0	25.1	7.8	847	—
	.5	B	7.9	25.2	8.0	1561	—	B	8.0	25.2	7.9	1336	—
	1.0	B	8.0	25.2	8.0	2380	—	B	8.0	25.2	7.9	2380	—
	2.0	B	~~25.2~~	~~25.2~~				B	8.0	25.2	7.9	4250	—
		B						B					
	Measured by		~~JB~~	~~JB~~	~~JB~~	~~JB~~	~~JB~~		~~JB~~	~~JB~~	~~JB~~	~~JB~~	~~JB~~
	Recorded by		VMM	~~JB~~	VMM	VMM	~~JB~~		~~JB~~	~~JB~~	~~JB~~	~~JB~~	~~JB~~
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	7.6	24.0	8.0	304	—	C	7.6	24.4	7.0	294	—
	.125	C	7.6	24.0	7.8	580	—	C	7.6	24.8	6.4	530	—
	.25	C	7.6	24.0	7.8	822	—	C	7.6	24.3	6.5	829	—
	.5	C	7.6	24.0	7.8	1367	—	C	7.6	24.2	6.8	1556	—
	1.0	C	~~7.6~~ NA	MF 4/9/09				C	7.8	24.0	7.1	2600	—
		C						C					
		C						C					
	Measured by		~~JB~~	~~JB~~	~~JB~~	~~JB~~	~~JB~~		~~JB~~	~~JB~~	~~JB~~	~~JB~~	~~JB~~
	Recorded by		~~JB~~	~~JB~~	~~JB~~	~~JB~~	~~JB~~		~~JB~~	~~JB~~	~~JB~~	~~JB~~	~~JB~~
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	7.6	25.9	7.2	301	—	D	7.6	24.6	6.0	319	—
	.125	D	7.3	25.9	7.0	544	—	D	7.6	24.5	6.2	579	—
	.25	D	7.4	25.9	7.0	822	—	D	7.6	24.5	6.5	834	—
	.5	D	7.5	25.9	7.2	1338	—	D	7.7	24.5	6.6	1362	—
	1.0	D						D					
		D						D					
		D						D					
	Measured by		VMM	~~JB~~	VMM	VMM	—		~~JB~~	~~JB~~	~~JB~~	~~JB~~	~~JB~~
	Recorded by		VMM	~~JB~~	VMM	VMM	—		~~JB~~	~~JB~~	~~JB~~	~~JB~~	~~JB~~

Comments:

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

Page 00 017

Chronic SRT Parameters Benchsheet

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

Start Date: 2.24.09 End Date: 3.3.09

Start Time: 12:15 End Time: 11:30

conc = concentration rep = replicate

Test Day ↓	Conc.	New Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	Old Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 4	Control	A	7.7	25.0	7.0	294	—	A	7.6	25.3	6.0	294	—
	.125	A	7.7	25.0	6.9	564	—	A	7.6	25.2	5.9	558	—
	.25	A	7.8	25.0	6.8	831	—	A	7.6	25.8	5.5	830	—
	.5	A	7.8	25.7	6.7	1355	—	A	7.6	25.6	5.1	1345	—
		A						A					
		A						A					
		A						A					
	Measured by		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	Control	B	7.8	25.1	7.5	320	—	B	7.8	25.7	6.5	~~285~~ 297	—
	.125	B	8.0	25.7	7.3	574	—	B	7.7	25.4	6.5	~~254~~ 572	—
	.25	B	8.0	25.3	7.3	848	—	B	7.8	25.6	6.6	~~256~~ 839	—
	.5	B	8.0	24.9	7.2	1317	—	B	7.8	24.7	6.6	~~242~~ 1356	—
		B						B					
		B						B					
		B						B					
	Measured by		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
	Recorded by		JD	JD	JD	JD	JD		JD	JD	JD	JD	JD
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	Control	C	7.7	24.0	6.5	322	—	C	7.5	24.0	5.4	323	—
	.125	C	7.8	24.0	6.4	563	—	C	7.5	24.1	5.8	591	—
	.25	C	7.8	24.0	6.5	851	—	C	7.5	24.1	5.5	859	—
	.5	C	7.8	24.0	6.6	1340	—	C	7.6	24.2	5.5	1384	—
		C						C					
		C						C					
		C						C					
	Measured by		JD by MF	JD by MF	JD by MF	JD by MF	JD		JD	JD	JD	JD	JD
	Recorded by		JD by MF	JD by MF	JD by MF	JD by MF	JD		JD	JD	JD	JD	JD
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	Control							D	7.2	24.5	6.5	355	—
	0.125							D	7.6	25.0	6.4	629	—
	0.25							D	7.6	25.1	6.1	938	—
	0.50							D	7.6	24.4	6.3	1436	—
								D					
								D					
								D					
	Measured by								JD	JD	JD	JD	JD
	Recorded by								JD	JD	JD	JD	JD

@ transcription error JD. 3.4.09

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

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Weights

SOP TA06_21

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

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

mean wt = fish wt divided by 10

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)
Control	A	1	0.02556	0.03111	0.00555	10	0.555
	B	2	0.02419	0.02978	0.00559	10	0.559
	C	3	0.02120	0.02816	0.00696	10	0.696
	D	4	0.02534	0.03190	0.00656	10	0.656
.125	A	5	0.02306	0.02826	0.00520	10	0.520
	B	6	0.02301	0.02862	0.00561	10	0.561
	C	7	0.02523	0.03132	0.00609	10	0.609
	D	8	0.02694	0.03296	0.00602	10	0.602
.25	A	9	0.02675	0.03281	0.00606	10	0.606
	B	10	0.02322	0.02760	0.00438	10	0.438
	C	11	0.02261	0.02902	0.00641	10	0.641
	D	12	0.02336	0.02904	0.00568	10	0.568
.5	A	13	0.02424	0.02648	0.00224	10	0.224
	B	14	0.02337	0.02559	0.00222	10	0.222
	C	15	0.02601	0.02830	0.00229	10	0.229
	D	16	0.02293	0.02654	0.00361	10	0.361
	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:	JD	JD			

Comments:

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

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: 3.2.09 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02556	@ 0.02556
after Pan 10	0.02558	@ 0.02556
after Pan 15	0.02558	@ 0.02556
after Pan 20	0.02559	@ 0.02556
after Pan 25	0.02560	@ 0.02556
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.01004	@ 0.01
	0.03005	@ 0.03

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 3.6.09 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.03111	@ 0.03111
after Pan 10	0.03113	@ 0.03111
after Pan 15	0.03115	@ 0.03111
after Pan 20	0.03114	@ 0.03111 JD
after Pan 25	0.03113	@ 0.03111
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.01004	@ 0.01
	0.05004	@ 0.05

Drying Oven ID: VWR #2

Temperature °C: 100

Drying Hours: 8

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

Comments:

revised 7/16/08 MF

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	2/24/2009 14:00	Test ID:	Cdsrtfeb09	Sample ID:	REF-Ref Toxicant
End Date:	3/3/2009 13:00	Lab ID:	Feb. 2009 chronic srt	Sample Type:	NACL-Sodium chloride
Sample Date:		Protocol:	EPAFW02-EPA/821/R-02-013	Test Species:	CD-Ceriodaphnia dubia
Comments:	Chronic srt concurrent with Chattahoochee STP				

Conc-gm/L	1	2	3	4	5	6	7	8	9	10
D-Control	8.000	26.000	27.000	23.000	4.000	21.000	28.000	21.000	26.000	23.000
0.59	1.000	21.000	14.000	19.000	16.000	13.000	7.000	22.000	20.000	20.000
0.89	8.000	16.000	16.000	11.000	9.000	2.000	15.000	0.000	15.000	13.000
1.3	0.000	9.000	9.000	8.000	8.000	2.000	6.000	6.000	13.000	5.000
2	0.000	0.000	0.000	0.000	4.000	0.000	1.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

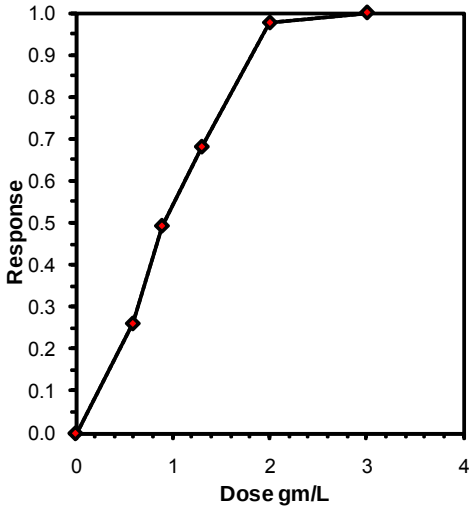
			Transform: Untransformed					Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	20.700	1.0000	20.7000	4.0000	28.0000	39.448	10	20.700	1.0000
0.59	15.300	0.7391	15.3000	1.0000	22.0000	44.441	10	15.300	0.7391
0.89	10.500	0.5072	10.5000	0.0000	16.0000	54.848	10	10.500	0.5072
1.3	6.600	0.3188	6.6000	0.0000	13.0000	56.331	10	6.600	0.3188
2	0.500	0.0242	0.5000	0.0000	4.0000	253.859	10	0.500	0.0242
3	0.000	0.0000	0.0000	0.0000	0.0000	0.000	10	0.000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.87675	0.93	-1.2924	1.65736
Bartlett's Test indicates unequal variances (p = 9.66E-05)	23.5879	13.2767		

Linear Interpolation (200 Resamples)

Point	gm/L	SD	95% CL		Skew
IC05*	0.1131	0.1368	0.0631	0.6072	2.3357
IC10*	0.2262	0.1574	0.1262	0.6486	1.3635
IC15*	0.3393	0.1611	0.1894	0.6798	0.8206
IC20*	0.4523	0.1585	0.2525	0.7250	0.4941
IC25*	0.5654	0.1498	0.3156	0.7800	0.2914
IC40	0.7700	0.1399	0.5050	1.0350	0.1413
IC50	0.9058	0.1441	0.6486	1.1888	0.2999

* indicates IC estimate less than the lowest concentration



Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	2/24/2009 12:15	Test ID:	ppsrtfeb09	Sample ID:	REF-Ref Toxicant
End Date:	3/3/2009 11:30	Lab ID:	P prom chronic srt feb 09	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 Chattahoochee STP				

Conc-gm/L	1	2	3	4
D-Control	0.5550	0.5590	0.6960	0.6560
0.125	0.5200	0.5610	0.6090	0.6020
0.25	0.6060	0.4380	0.6410	0.5680
0.5	0.2240	0.2220	0.2290	0.3610
1	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000

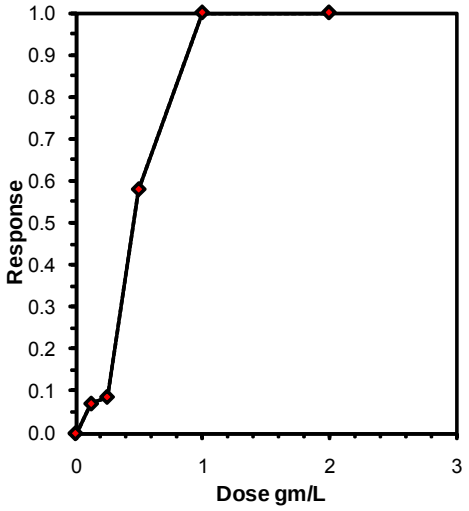
			Transform: Untransformed					Isotonic	
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.6165	1.0000	0.6165	0.5550	0.6960	11.458	4	0.6165	1.0000
0.125	0.5730	0.9294	0.5730	0.5200	0.6090	7.189	4	0.5730	0.9294
0.25	0.5633	0.9136	0.5633	0.4380	0.6410	15.741	4	0.5633	0.9136
0.5	0.2590	0.4201	0.2590	0.2220	0.3610	26.279	4	0.2590	0.4201
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)	0.9678	0.844	-0.1328	-0.4836
Bartlett's Test indicates equal variances (p = 0.70)	1.42035	11.3449		

Linear Interpolation (200 Resamples)

Point	gm/L	SD	95% CL(Exp)		Skew
IC05*	0.0886	0.0868	0.0193	0.3847	0.4195
IC10	0.2569	0.0719	0.0000	0.3243	-0.7406
IC15	0.2822	0.0465	0.0540	0.3484	-1.5171
IC20	0.3076	0.0331	0.1661	0.3753	-1.2000
IC25	0.3329	0.0302	0.2283	0.4005	-0.9789
IC40	0.4089	0.0259	0.3368	0.4938	-0.0657
IC50	0.4595	0.0281	0.3991	0.5807	0.8792

* indicates IC estimate less than the lowest concentration



Bioassay Instrument ID

Test ID: P. Promelas Chronic SRT Dates: Feb. 24 - March 3, 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					

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)

Extend by M. Faircloth 3-19-09

V 1.1 6/12/08 MF

Appendix H

Physical/Chemical and Habitat Assessment field sheets

DEP-SOP-001/01: Form FD 9000-3

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SAMPLE ID : _____ ORG ID : _____

COUNTY : Gadsden STORET # : _____

DATE : 2-23-09 TIME : 1200

Latitude : (degrees) (minutes) (seconds) | Longitude : (degrees) (minutes) (seconds)

SITE NAME : Chattahoochee WWTP SAMPLE COMPLETE ? _____

FIELD ID/NAME : Control Site - 50m upst. POD RECEIVING BODY OF WATER : Mosquito Creek

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category) :

Forest/Natural | silviculture | Field/Pasture | Agricultural | Residential | Commercial | Industry | Other (Specify)

Local Watershed Erosion (select one) : ☑ None ☐ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution : ☑ No evidence ☐ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank : 8 Right Bank : >18

High Water Mark: 1.5 (m) + _____ (present depth) = _____ (above bed)

Artificially Impounded ☐ Yes ☑ No

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

12 m wide

_____ m/s 0.33 m/s _____ m/s

_____ m deep 1 m deep _____ m deep

Artificially Channelized : ☑ No ☐ Some recovery ☐ Mostly recovered, more sinuous ☐ Recent, severe

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

SEDIMENT / SUBSTRATE

Sediment Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Sediment Odors ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify) :

Sediment Deposition ☐ Sludge Sand Smothering : None Slight (Moderate) Severe Silt Smothering (None) Slight Moderate Severe ☐ Other (Specify) :

SUBSTRATE TYPE

Assessment Tool: ☑ SCI ☐ BioRecon ☐ LCI ☐ LVI

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)		8	4
Undercut Banks / Roots		8	3
Leaf Packs or Mat		4	3
Aquatic Vegetation			
Rock or Shell Rubble..		4	
Sand.....		4	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp (°C)	pH (SU)	D.O (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :	0.3	10.31	6.67	11.26	74		
Mid-Depth :							☐ VOB
Bottom :							

Water Surface Oils : ☑ None ☐ Sheen ☐ Globs ☐ Slick

Water Odors : ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify) :

Water Sample Taken ? ☑ Yes ☐ No

Algae Sample Taken ? ☑ Yes ☐ No

SYSTEM TYPE ☑ Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) :

Clarity ☐ Clear ☑ Slightly Turbid ☐ Turbid ☐ Opaque

Color ☐ Tannic ☐ Green (Algae) ☑ Clear ☐ Other (Specify) :

WEATHER CONDITIONS / NOTES :

ABUNDANCE

	Absent	Rare	Common	Abundant
Periphyton :	☐	☑	☐	☐
Fish :	☐	☐	☑	☐
Aquatic Macrophytes :	☑	☐	☐	☐
Iron/Sulfur Bacteria :	☑	☐	☐	☐

☑ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved ? ☑ Yes ☑ pH<2 ☐ No Algae samples preserved ? ☑ Yes ☐ No

SAMPLING TEAM : SWANSON, RAY, FRENCH, SPENCER

SIGNATURE : Chuy Swanson

DATE : 2/23/09

Revision Date: September 5, 2008

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
		02/23/09	Mosquito Creek

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Gadsden	Chattahoochee WWTP	Control Site – 50m upst. POD

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 18	Four or more productive habitats present [snags, tree roots, 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 6	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 18	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 10 Primary Score 52	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. CKS 15 14 13 12 (11)	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). (10) 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 19	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 (19) 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 5 Left Bank 5	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. (5) 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 5	Width of vegetation greater than 18 m (10) 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system (5) 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 8 Left Bank 8 Secondary Score 112	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed (8) 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

_____ **TOTAL SCORE**

Date:	Analyst:	Signature:
2/23/09	Cheryl Swanson	Cheryl Swanson

Form FD 9000-5 Revision Date: June 6, 2008

DEP-SOP-001/01: Form FD 9000-3

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SAMPLE ID : _____ ORG ID : _____

COUNTY : Gadsden STORET # : _____

DATE : 2-23-09 TIME : 1115

Latitude : (degrees) (minutes) (seconds) | Longitude : (degrees) (minutes) (seconds)

SITE NAME : Chattahoochee WWTP SAMPLE COMPLETE ? _____

FIELD ID/NAME : Test Site - 170m dnst. POD RECEIVING BODY OF WATER : Mosquito Creek

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category) :

Forest/Natural | silviculture | Field/Pasture | Agricultural | Residential | Commercial | Industry | Other (Specify)

Local Watershed Erosion (select one) : ☑ None ☐ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution : ☑ No evidence ☐ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank : >18 Right Bank : >18

High Water Mark: 1.5 (m) + 2 (above present water level) = 3.5 (present depth) (above bed)

Artificially Impounded ☐ Yes ☑ No

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

10 m wide

_____ m/s 0.33 m/s _____ m/s

_____ m deep 2 m deep _____ m deep

Artificially Channelized: ☑ No ☐ Some recovery ☐ Mostly recovered, more sinuous ☐ Recent, severe

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

SEDIMENT / SUBSTRATE

Sediment Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Sediment Odors ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify) :

Sediment Deposition ☐ Sludge

Sand Smothering : None Slight (Moderate) Severe

Silt Smothering (None) Slight Moderate Severe

☐ Other (Specify) :

SUBSTRATE TYPE

Assessment Tool: ☑ SCI ☐ BioRecon ☐ LCI ☐ LVI

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)		5	3
Undercut Banks / Roots		5	4
Leaf Packs or Mat		5	3
Aquatic Vegetation			
Rock or Shell Rubble..			
Sand.....		5	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :	0.3	10.23	6.21	11.52	75		
Mid-Depth :							☐ VOB
Bottom :							

Water Surface Oils : ☑ None ☐ Sheen ☐ Globs ☐ Slick

Water Odors : ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify) :

Water Sample Taken ? ☑ Yes ☐ No

Algae Sample Taken ? ☑ Yes ☐ No

SYSTEM TYPE ☐ Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) :

Clarity ☐ Clear ☑ Slightly Turbid ☐ Turbid ☐ Opaque

Color ☐ Tannic ☐ Green (Algae) ☑ Clear ☐ Other (Specify) :

WEATHER CONDITIONS / NOTES : breezy, sunny

ABUNDANCE

	Absent	Rare	Common	Abundant
Periphyton :	☐	☑	☐	☐
Fish :	☐	☐	☑	☐
Aquatic Macrophytes :	☑	☐	☐	☐
Iron/Sulfur Bacteria :	☑	☐	☐	☐

☑ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved ? ☑ Yes ☑ pH<2 ☐ No Algae samples preserved ? ☑ Yes ☐ No

SAMPLING TEAM : SWANSON, RAY, FRENCH, SPENCER

SIGNATURE : Cheryl Swanson DATE : 2/23/09

Revision Date: September 5, 2008

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
		02/23/09	Mosquito Creek

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Gadsden	Chattahoochee WWTP	Test Site - 170 m dnst. POD

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 13	Four or more productive habitats present [snags, tree roots, 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 6	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 18	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 10 Primary Score 47	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). (10) 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 19	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 (19) 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 5 Left Bank 5	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. (5) 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 8 Left Bank 9	Width of vegetation greater than 18 m 10 (9)	Width of vegetation >12 to 18m (8) 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 9 Left Bank 9 Secondary Score 111	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 (9)	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

TOTAL SCORE _____

Date:	Analyst:	Signature:
2/23/09	Cheryl Swanson	Cheryl Swanson

Form FD 9000-5 Revision Date: June 6, 2008

Appendix I-1

Wet ID taxa list and number of algal units counted to a target of 300 natural units for qualitative natural periphyton collections made from Chattahoochee WWTP facility on 2/23/2009.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyta	272	266
Chlorophycota		
Debarya sp.	2	-
Protococcus sp.	4	-
Staurastrum sp.	-	1
Cyanophycota		
Cyanobium parvum	-	1
Cyanothece aeruginosa	-	1
Jaaginema sp.	5	7
Komvophoron schmidlei	-	3
Oscillatoria tenuis	4	-
Planktolyngbya sp.	3	1
Schizothrix calcicola	11	20

Appendix I-2

Diatom taxa list and number of valves counted to a target of 500 valves for qualitative periphyton collected from Chattahoochee WWTP facility on 2/23/09.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyceae		
Achnanthaceae		
Achnanthes fluviatilis	12	8
Achnanthes peragalli	-	3
Achnanthidium sp.	-	7
Achnanthidium affine	4	-
Achnanthidium minutissimum	20	9
Karayevia clevei	2	-
Planothidium sp.	6	5
Planothidium frequentissimum	-	2
Planothidium lanceolatum	1	5
Planothidium peragalli	1	-
Planothidium rostratum	18	3
Psammothidium subatomoides	-	4
Cocconeidaceae		
Cocconeis sp.	1	1
Cocconeis fluviatilis	1	4
Cocconeis placentula	6	-
Bacillariaceae		
Bacillaria paxillifer	2	-
Denticula sp.	1	-
Hantzschia amphioxys	1	-
Nitzschia sp.	33	21
Nitzschia amphibia	-	1
Nitzschia dissipata	3	3
Nitzschia gracilis	2	-
Nitzschia linearis	-	5
Nitzschia palea	-	10
Nitzschia prolongata	-	1
Tryblionella sp.	-	1
Cymbellaceae		
Cymbella sp.	4	-
Cymbella tumida	-	1
Cymbella turgidula	-	2
Encyonema silesiacum	4	1
Gomphonemataceae		
Gomphonema sp.	10	17
Gomphonema gracile	-	1
Gomphonema parvulum	11	6
Rhoicospheniaceae		
Rhoicosphenia sp.	2	-
Eunotiaceae		
Eunotia sp.	9	13
Eunotia bilunaris	3	-
Eunotia formica	5	-
Amphipleuraceae		
Amphipleura pellucida	1	-
Frustulia sp.	1	-
Frustulia vulgaris	2	2
Cavinulaceae		
Cavinula jaernefeltii	1	-

Appendix I-2 (continued)

	Control Site	Test Site
Diadesmidaceae		
Diadesmis contenta	7	8
Naviculaceae		
Capartogramma crucicula	-	1
Geissleria decussis	1	4
Hippodonta capitata	4	-
Kobayasiella sp.	1	1
Navicula sp.	25	20
Navicula cincta	7	2
Navicula constans	-	2
Navicula cryptocephala	5	3
Navicula cryptotenella	-	1
Navicula germainii	7	10
Navicula longicephala	-	1
Navicula minima	36	11
Navicula radiosa	1	-
Navicula rhynchocephala	2	2
Navicula seminulum	2	8
Navicula symmetrica	4	8
Naviculaceae	12	3
Nupela sp.	9	7
Sellaphora pupula	1	-
Neidiaceae		
Neidium sp.	1	-
Neidium alpinum quadripunctatum	-	2
Pinnulariaceae		
Caloneis sp.	4	-
Pinnularia sp.	-	5
Sellaphoraceae		
Fallacia sp.	-	1
Stauroneidaceae		
Craticula sp.	15	9
Craticula molestiformis	-	2
Stauroneis sp.	-	1
Catenulaceae		
Amphora sp.	3	1
Coscinodiscophyceae		
Aulacoseiraceae		
Aulacoseira sp.	1	1
Melosiraceae		
Melosira sp.	158	220
Stephanodiscaceae		
Cyclotella sp.	-	1
Cyclotella pseudostelligera	1	-
Fragilariophyceae		
Fragilariaceae		
Fragilaria capucina	22	18
Fragilaria capucina mesolepta	-	1
Fragilaria capucina vaucheriae	4	-
Fragilaria delicatissima	2	1
Staurosirella pinnata	2	1
Synedra ulna	1	1
Unknown Fragilariaceae	-	6

Appendix J-1

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m^2 rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 49 days upstream and downstream of the Chattahoochee WWTP facility and collected on 2/23/09. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Oligochaeta		
Nais behningi	-	4
Arthropoda		
Arachnida		
Acariformes		
Sperchonopsis sp.	2	-
Crustacea		
Isopoda		
Caecidotea sp.	-	2
Insecta		
Coleoptera		
Ancyronyx variegatus	6	4
Dubiraphia vittata	2	-
Macronychus glabratus	12	22
Microcylloepus pusillus	2	6
Stenelmis sp.	4	4
Diptera		
Atherix sp.	-	2
Brillia flavifrons	11	11
Corynoneura sp.	27	19
Cricotopus bicinctus	19	77
Cricotopus or *orthocladius*	17	34
Eukiefferiella claripennis grp.	-	2
Hemerodromia sp.	8	14
Labrundinia sp.	2	-
Orthocladius dubitatus	-	14
Orthocladius lignicola	4	2
Parakiefferiella sp.	2	-
Parametriocnemus	15	11
Polypedilum aviceps	32	66
Polypedilum flavum	331	343
Pseudosmittia sp.	2	-
Rheocricotopus robacki	52	30
Rheotanytarsus exiguus grp.	242	434
Rheotanytarsus pellucidus	2	9
Simulium sp.	101	48
Synorthocladius sp.	2	-
Tanytarsus sp. C Epler	23	26
Tanytarsus sp. U Epler	6	-
Thienemanniella lobapodema	24	22
Thienemanniella similis	-	14
Thienemanniella sp. B Epler	20	78
Thienemanniella xena	50	40
Thienemannimyia grp.	2	11
Tvetenia vitracies	190	294
Ephemeroptera		
Baetis intercalaris	78	107
Ephemerella invaria	28	20
Eurylophella doris	5	-

Appendix J-1 (continued)

	Control Site	Test Site
Heptagenia flavescens	2	-
Isonychia sp.	2	2
Maccaffertium exiguum	40	49
Maccaffertium smithae	17	27
Teloganopsis deficiens	9	22
Tricorythodes albilineatus	2	-
Plecoptera		
Acroneuria arenosa/evoluta	14	6
Agnetina annulipes	20	30
Perlesta placida complex	111	54
Trichoptera		
Cheumatopsyche sp.	138	158
Hydropsyche sp.	33	33
Hydroptila sp.	6	4
Nectopsyche sp.	2	-
Mollusca		
Gastropoda		
Ancylidae	4	-
Melanoides sp.	-	2

Appendix J-2

Benthic macroinvertebrates taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 3 samples) incubated upstream and downstream of the Chattahoochee WWTP facility for 49 days and collected on 2/23/09.

	Control Site	Test Site
Annelida		
Oligochaeta		
Nais behningi	-	2
Arthropoda		
Arachnida		
Acariformes		
Sperchonopsis sp.	1	-
Crustacea		
Isopoda		
Caecidotea sp.	-	1
Insecta		
Coleoptera		
Ancyronyx variegatus	3	2
Dubiraphia vittata	1	-
Macronychus glabratus	6	11
Microcylloepus pusillus	1	3
Stenelmis sp.	2	2
Diptera		
Atherix sp.	-	1
Brillia flavifrons	5	5
Chironomidae	26	52
Corynoneura sp.	13	9
Cricotopus sp.	8	31
Cricotopus bicinctus	1	5
Cricotopus or *orthocladius*	8	16
Eukiefferiella claripennis grp.	-	1
Hemerodromia sp.	4	7
Labrundinia sp.	1	-
Orthocladius dubitatus	-	7
Orthocladius lignicola	2	1
Parakiefferiella sp.	1	-
Parametriocnemus sp.	7	5
Polypedilum sp.	3	-
Polypedilum aviceps	15	31
Polypedilum flavum	156	161
Pseudosmittia sp.	1	-
Rheocricotopus robacki	25	14
Rheotanytarsus exiguus grp.	116	204
Rheotanytarsus pellucidus	1	4
Simulium sp.	51	24
Synorthocladius sp.	1	-
Tanytarsus sp. C Epler	11	12
Tanytarsus sp. U Epler	3	-
Thienemanniella sp.	17	15
Thienemanniella lobapodema	7	8
Thienemanniella similis	-	5
Thienemanniella sp. B Epler	6	29
Thienemanniella xena	15	15
Thienemannimyia grp.	1	5
Tvetenia vitracies	91	138
Ephemeroptera		
Baetidae	-	1
Baetis intercalaris	39	53

Appendix J-2 (continued)

	Control Site	Test Site
Ephemerella invaria	12	10
Ephemerellidae	3	-
Eurylophella doris	2	-
Heptagenia flavescens	1	-
Isonychia sp.	1	1
Maccaffertium	1	7
Maccaffertium exiguum	19	20
Maccaffertium smithae	8	11
Teloganopsis deficiens	4	11
Tricorythodes albilineatus	1	-
Undetermined Ephemeroptera	1	-
Plecoptera		
Acroneuria arenosa/evoluta	7	3
Agnetina annulipes	10	15
Perlesta placida complex	56	27
Trichoptera		
Cheumatopsyche sp.	63	78
Hydropsyche sp.	15	16
Hydropsychidae	8	1
Hydroptila sp.	3	2
Nectopsyche sp.	1	-
Undetermined Trichoptera	-	1
Mollusca		
Gastropoda		
Ancylidae	2	-
Melanoides sp.	-	1

Appendix K-1

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Chattahoochee WWTP facility on 2/23/09. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site		Test Site	
	Rep 1	Rep 2	Rep 1	Rep 2
Annelida				
Oligochaeta				
Bratislavia unidentata	-	-	1	-
Eclipidrilus palustris	-	-	2	-
Enchytraeidae	-	-	-	2
Lumbriculus variegatus	-	-	2	1
Megascolecidae	-	-	1	-
Tubificidae	-	-	-	1
Arthropoda				
Arachnida				
Acariformes				
Hygrobates sp.	-	-	-	2
Lebertia sp.	4	3	-	-
Crustacea				
Amphipoda				
Crangonyx sp.	-	-	-	1
Hyalella azteca	-	4	2	1
Isopoda				
Caecidotea sp.	-	-	4	7
Insecta				
Coleoptera				
Dineutus sp.	1	-	-	-
Dubiraphia vittata	-	-	1	-
Ectopria thoracica	1	-	-	-
Macronychus glabratus	1	-	-	-
Microcylloepus pusillus	2	-	2	1
Sperchopsis tessellatus	-	1	-	-
Stenelmis sp.	-	-	1	-
Diptera				
Ablabesmyia mallochi	-	2	-	-
Atrichopogon sp.	-	-	2	3
Brillia flavifrons	-	-	-	1
Cladotanytarsus sp.	-	-	1	-
Cricotopus sp.	-	2	-	-
Cricotopus bicinctus	1	-	4	10
Cricotopus or *orthocladius*	-	2	1	2
Dicrotendipes simpsoni	-	-	-	1
Dicrotendipes thanatogratus	-	1	-	-
Hemerodromia sp.	1	-	-	-
Microtendipes sp.	-	-	1	-
Orthocladius dubitatus	-	-	1	-
Orthocladius lignicola	-	-	1	-
Parakiefferiella sp.	-	-	-	1
Parametriocnemus sp.	1	-	-	-
Phaenopsectra punctipes grp.	1	-	-	-
Polypedilum aviceps	2	1	3	1
Polypedilum flavum	15	7	13	8
Polypedilum illinoense grp.	6	4	3	6
Potthastia longimana	2	1	2	-
Pseudochironomus sp.	1	-	-	1
Rheocricotopus robacki	-	1	4	6

Appendix K-1 (continued)

	Control Site		Test Site	
	Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Rheotanytarsus exiguus grp.	4	2	9	10
Rheotanytarsus pellucidus	-	-	1	-
Simulium sp.	15	20	10	8
Stempellinella fimbriata	-	-	1	-
Stenochironomus sp.	2	1	-	-
Tabanidae	-	1	-	-
Tanytarsus sp. A Epler	-	-	-	2
Tanytarsus sp. C Epler	-	-	-	2
Tanytarsus sp. D Epler	-	-	2	-
Tanytarsus sp. M Epler	-	-	-	1
Tanytarsus sp. T Epler	-	-	-	1
Tanytarsus sp. U Epler	-	-	1	-
Thienemanniella lobapodema	-	-	-	1
Thienemannimyia grp.	-	2	1	-
Tribelos jucundum	-	-	1	-
Tvetenia vitracies	6	13	10	8
Ephemeroptera				
Baetis intercalaris	19	20	18	8
Baetisca sp.	-	-	1	-
Baetisca rogersi	-	1	-	-
Caenis sp.	1	-	-	-
Dannella simplex	-	-	1	1
Ephemerella excrucians	-	-	5	1
Ephemerella invaria	3	4	-	-
Eurylophella doris	14	12	4	4
Isonychia sp.	1	1	1	-
Maccaffertium sp.	7	5	-	-
Maccaffertium exiguum	-	-	1	3
Maccaffertium smithae	-	-	-	2
Teloganopsis deficiens	2	6	1	7
Odonata				
Enallagma sp.	1	-	-	-
Plecoptera				
Acroneuria lycorias	1	-	-	-
Agnetina annulipes	1	-	-	-
Isoperla sp.	1	1	2	-
Perlesta placida complex	9	16	7	-
Perlidae	-	-	-	10
Trichoptera				
Cheumatopsyche sp.	6	4	9	10
Hydropsyche sp.	3	6	2	2
Hydroptila sp.	4	4	4	2
Nectopsyche exquisita	6	1	1	-
Oecetis sp.	-	2	-	-
Oecetis georgia	-	-	1	-
Oecetis sphyra/morsei	-	-	1	-
Triaenodes sp.	4	-	1	1
Mollusca				
Gastropoda				
Ancylidae	-	1	-	-
Micromenetus sp.	-	-	1	3

Appendix K-2

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Chattahoochee WWTP facility on 2/23/09.

	Control Site		Test Site	
	Rep 1	Rep 2	Rep 1	Rep 2
Annelida				
Oligochaeta				
Bratislavia unidentata	-	-	1	-
Eclipidrilus palustris	-	-	2	-
Enchytraeidae	-	-	-	2
Lumbriculus variegatus	-	-	2	1
Megascolecidae	-	-	1	-
Tubificidae	-	-	-	1
Arthropoda				
Arachnida				
Acariformes				
Hygrobates sp.	-	-	-	2
Lebertia sp.	4	3	-	-
Crustacea				
Amphipoda				
Crangonyx sp.	-	-	-	1
Hyalella azteca	-	4	2	1
Isopoda				
Caecidotea sp.	-	-	4	7
Insecta				
Coleoptera				
Dineutus sp.	1	-	-	-
Dubiraphia vittata	-	-	1	-
Ectopria thoracica	1	-	-	-
Macronychus glabratus	1	-	-	-
Microcylloepus pusillus	2	-	2	1
Sperchopsis tessellatus	-	1	-	-
Stenelmis sp.	-	-	1	-
Diptera				
Ablabesmyia mallochi	-	2	-	-
Atrichopogon sp.	-	-	2	3
Brillia flavifrons	-	-	-	1
Chironomidae	6	7	6	6
Cladotanytarsus	-	-	1	-
Cricotopus sp.	-	2	-	4
Cricotopus bicinctus	1	-	4	5
Cricotopus or *orthocladius*	-	2	1	2
Dicrotendipes simpsoni	-	-	-	1
Dicrotendipes thanatogratus	-	1	-	-
Hemerodromia sp.	1	-	-	-
Microtendipes sp.	-	-	1	-
Orthocladius dubitatus	-	-	1	-
Orthocladius lignicola	-	-	1	-
Parakiefferiella sp.	-	-	-	1
Parametriocnemus sp.	1	-	-	-
Phaenopsectra punctipes grp.	1	-	-	-
Polypedilum aviceps	2	1	3	1
Polypedilum flavum	12	6	9	7
Polypedilum illinoense grp.	5	3	3	5
Potthastia longimana	2	1	2	-
Pseudochironomus sp.	1	-	-	1
Rheocricotopus robacki	-	1	4	5
Rheotanytarsus exiguus grp.	3	2	8	9

Appendix K-2 (continued)

	Control Site		Test Site	
	Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Rheotanytarsus pellucidus	-	-	1	-
Simulium sp.	15	20	10	8
Stempellinella fimbriata	-	-	1	-
Stenochironomus sp.	2	1	-	-
Tabanidae	-	1	-	-
Tanytarsus sp. A Epler	-	-	-	2
Tanytarsus sp. C Epler	-	-	-	2
Tanytarsus sp. D Epler	-	-	2	-
Tanytarsus sp. M Epler	-	-	-	1
Tanytarsus sp. T Epler	-	-	-	1
Tanytarsus sp. U Epler	-	-	1	-
Thienemanniella lobapodema	-	-	-	1
Thienemannimyia grp.	-	2	1	-
Tribelos jucundum	-	-	1	-
Tvetenia vitracies	5	8	9	7
Ephemeroptera				
Baetidae	-	-	10	4
Baetis intercalaris	19	20	8	4
Baetisca sp.	-	-	1	-
Baetisca rogersi	-	1	-	-
Caenis sp.	1	-	-	-
Dannella simplex	-	-	1	1
Ephemerella excrucians	-	-	4	1
Ephemerella invaria	3	4	-	-
Ephemerellidae	-	-	2	2
Eurylophella doris	14	12	3	3
Heptageniidae	2	-	-	-
Isonychia sp.	1	1	1	-
Maccaffertium sp.	5	5	-	-
Maccaffertium exiguum	-	-	1	3
Maccaffertium smithae	-	-	-	2
Teloganopsis deficiens	2	6	1	6
Odonata				
Enallagma sp.	1	-	-	-
Plecoptera				
Acroneuria lycorias	1	-	-	-
Agnetina annulipes	1	-	-	-
Isoperla sp.	1	1	1	-
Perlesta placida complex	9	16	1	-
Perlidae	-	-	4	10
Undetermined Plecoptera	-	-	3	-
Trichoptera				
Cheumatopsyche sp.	6	4	9	9
Hydropsyche sp.	3	5	2	2
Hydropsychidae	-	-	-	1
Hydroptila sp.	4	4	2	2
Hydroptilidae	-	-	2	-
Nectopsyche exquisita	6	1	1	-
Oecetis sp.	-	2	-	-
Oecetis georgia	-	-	1	-
Oecetis sphyra/morsei	-	-	1	-
Triaenodes sp.	4	-	1	1
Undetermined Trichoptera	-	1	-	-
Mollusca				
Gastropoda				
Ancylidae	-	1	-	-
Micromenetus sp.	-	-	1	3

The Bioassay of the Chattahooche WWTP effluent sampled on February 23, 2009, NPDES #FL0027669

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 2 7 6 6 9 11 12	0 9 0 2 2 3	# B	# S	# 2

Remarks

#

The Priority Pollutants Analysis for Bioassay of the Chattahooche WWTP effluent sampled on February 23, 2009, NPDES #FL0027669

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 2 7 6 6 9 11 12	0 9 0 2 2 3	# X	# S	# 2

Remarks

#

Biological Analyses of the Chattahooche WWTP effluent sampled on February 23, 2009, NPDES #FL0027669

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 2 7 6 6 9 11 12	0 9 0 2 2 3	# S	# S	# 2

Remarks

#