Biological Assessment of

City of Chattahoochee Wastewater Treatment Plant

Gadsden County

NPDES # FL0027669

Sampled May 6, 2013

September 2013

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

2013 FDEP Bureau of Laboratories Quality Manual

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EPA End Sheet

Facility Overview

The City of Chattahoochee Wastewater Treatment Plant is a Municipal Domestic Wastewater Treatment Plant. The effluent is discharged into Mosquito Creek, a Class III Fresh Water (see map Appendix A). The design flow of the wastewater system is 0.4 million gallons per day (MGD). The annual average flow for May 2012 to April 2013 was 0.18 MGD. The plant discharges using a sequencing batch reactor and was not discharging during this survey. The last discharge was eight hours prior to field sampling (Northwest District sampling staff).

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.

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 discharge's effects on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (located in Mosquito Creek beginning approximately 450 m upstream of the point of discharge and ending approximately 550 m upstream of the point of discharge) and a Test Site (located in Mosquito Creek beginning approximately 150 m downstream of the point of discharge and ending approximately 50 m downstream of the point of discharge). The Control Site is downstream of the outfall of another facility (Florida State Hospital WWTP) that could affect the Control Site samples. Effluent samples were taken as grab and composite samples from a decant container at monitoring location EFF-02, after dechlorination.

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

The following were involved in this investigation: Nathan Mulkey, Rick Abad, and Frank Butera (FDEP Northwest District Office, Pensacola), and FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Mike Tanski, Andrew Tintle and Jennifer Weger).

Results

Organic Constituents (See Table 1 and Appendix F)

- 1,4-Dioxane was detected in the effluent grab sample and the field blank sample. The result for the effluent was obtained from an unpreserved or an improperly preserved sample (Y-qualified).
- Sucralose was detected in the effluent sample and at a low level in the Test Site sample. Sucralose was detected in the Control Site sample between the method detection limit (MDL) and practical quantitation limit (PQL). It is unknown whether the sucralose found in the Test Site sample was from the effluent since the facility was not discharging at the time that the samples were collected. It is possible that the sucralose detected in both the Control and Test Site samples was from the Florida State Hospital WWTP outfall since both sites are downstream of the outfall.
- No additional organic constituents were detected in the effluent sample or field blank sample.

Metals (See Table 2 and Appendix F)

- All metals detected in the effluent grab samples were present at levels that complied with effluent permit limits and Class III Freshwater Quality Criteria (62-302.530, F. A. C.).

- All metals in Control and Test Site grab samples were either undetected or detected at levels that complied with Class III Freshwater Quality Criteria (62-302.530, F. A. C.).
- No metals were detected in the field blank.

Toxicity Whole Effluent Test (See Table 1 and Appendices G and H)

- Tests were performed May 7 through 14, 2013.
- The chronic definitive bioassay for the water flea, *Ceriodaphnia dubia*, was invalidated due to insufficient reproduction in the controls and 100% mortality in the concurrent standard reference toxicant (SRT) test suggesting a dilution water issue. The physical and chemical parameters did not reveal abnormal values.
- The effluent composite sample IC25 for the fish, *Pimephales promelas*, during the chronic definitive bioassay was less than 100%, which is below the minimum effluent permit limit.

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

- Habitat Assessment scores were similar at the Control Site (98) and Test Site (112), which places both sites in the Suboptimal category. While the Test 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 and quality of the riparian zone vegetation of both banks.
- Dissolved oxygen (mg/L), pH (Standard Units), and specific conductance (µmhos/cm) of the effluent, Control Site, and Test Site complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.) and effluent permit limits.
- Total residual chlorine (TRC) measured by the inspector in the effluent composite sample (0.70 mg/L) exceeded Class III Freshwater Quality Criterion (62-302.530(18), F.A.C.) and the facility permit limit. TRC measured in the bioassay samples in the laboratory was < 0.03 mg/L, although that result was from a sample that was held beyond the accepted holding time.
- Chlorophyll *a* (corrected) was detected between the method detection limit (MDL) and the practical quantitation limit (PQL) in the effluent grab sample and both the Control and Test Site samples.
- Total suspended solids (TSS; mg/L) and carbonaceous biochemical oxygen demand (CBOD; mg/L) of the effluent grab sample complied with permit limits.

Microbiology (See Table 1 and Appendix F)

- Fecal coliforms were detected in the effluent grab sample and at both the Control and Test Site samples at levels which complied with Class III Freshwater Quality Criterion (62-302.530(6), F.A.C.) and the facility permit limit.

Nutrients (See Table 1 and Appendix F)

- Effluent grab sample nutrient levels complied with permit limits.
- Total phosphorus in both the Control and Test Site grab samples was approximately 26 times lower than the effluent grab sample. Total ammonia was similar in all grab samples. Un-ionized ammonia in the effluent grab sample complied with Class III Freshwater Criterion (62-302.530(3), F.A.C.) and the facility permit limit. Nitrogen values in both the Control and Test Site grab samples were lower than effluent grab sample values, and the Test Site grab sample values were slightly higher than the Control Site grab sample values. The slight elevation in the nitrogen values in the Test Site grab samples in comparison to the Control Site grab samples cannot be attributed to the effluent since the facility last discharged eight hours prior to field sampling; however, the effluent does have the potential for nutrient enrichment at the Test Site.
- Total ammonia was detected between the method detection limit (MDL) and practical quantitation limit (PQL) in the field blank.

Algal Growth Potential (See Table 3 and Appendix F)

- Raschke and Shultz (1987) determined that AGP values above 5.0 mg dry weight/L, which represents a "problem" threshold for fresh receiving waters, imply nutrient enrichment. The AGP value in the effluent sample using the freshwater species, *Pseudokirchneriella subcapitata,* was approximately 18 times greater than the problem threshold value. The analytical chemistry suggests that the effluent is nitrogen-limited.
- The AGP values in the Control and Test Site grab samples using the freshwater species, *Pseudokirchneriella subcapitata,* were approximately 5 times greater than the problem threshold value. The facility's effluent has the potential to further enrich this portion of Mosquito Creek when the facility is discharging.

Bioassessment

Periphyton (See Table 4 and Appendices I-1 and I-2)

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

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

- Quantitative macroinvertebrate data were collected from Hester Dendy samplers at the Control and Test Sites. The Shannon-Weaver diversity scores were similar at the Control and Test Sites (3.85 and 3.46, respectively). Both sites were dominated by dipterans which are considered to be pollution tolerant. The Control Site had more trichopterans, which are considered to be sensitive to disturbance, than the Test Site. Suspension feeders dominated at both sites, though they made up a greater percentage of the community composition at the Test Site. The Control Site had higher numbers of shredders and surface deposit feeders than the Test Site. Overall, there were no negative effects on macroinvertebrates at the Test Site that were attributable to the effluent.
- Qualitative macroinvertebrate data from dipnet samples indicated that the macroinvertebrate community at the Test Site was better than the Control Site. The Test Site scored 70 A on the Stream Condition Index (SCI) placing it in Category 1, and the Control Site scored 61 A, placing it in Category 2 (see Appendix C for an explanation of SCI Categories). Both sites had similar numbers of Ephemeroptera, Trichoptera, sensitive and clinger taxa. The percentage of suspension feeders was higher at the Test Site than the Control Site. The Test Site had a higher percentage of tanytarsini individuals (which tend to decline with human disturbance) and a lower percentage of very tolerant individuals than the Control Site. (See Appendix C for an explanation of how these 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.

Conclusion

The effluent composite sample IC25 for the fish, *Pimephales promelas,* during the chronic definitive bioassay was less than 100%, which is below the minimum effluent permit limit. Total residual chlorine detected in the effluent composite sample exceeded the Class III Freshwater Quality Criterion (62-302.530(18), F.A.C.) and the permitted limit. The nutrient and AGP values of the effluent grab samples were higher than that of the Control and Test Site grab samples. Although the Test Site grab samples' nutrients were slightly elevated in comparison to the Control Site grab samples, that cannot be attributed to the effluent since the facility last discharged eight hours prior to field sampling; however, the effluent does have the potential for nutrient enrichment at the Test Site. The periphyton and macroinvertebrate data collected did not indicate differences in the communities between the Control and Test Sites due to the effluent. The effluent did not appear to be adversely affecting the biota in this portion of Mosquito Creek.

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

City of Chattahoochee WWTP	Class III Criteria	Effluent Limits	Effluent	Control Site	Test Site	Field Blank
Organic Constituents (µg/L)						
1,4-Dioxane	-	-	0.32 Y	-	-	0.15
Sucralose	-	-	13	0.044 I	0.067	-
Nutrients (mg/L)						
Total Phosphorus	-	Report p	1.5	0.058	0.056	0.002 U
Total Ammonia	-	Report p	0.022	0.025	0.023	0.004 I
Un-ionized Ammonia	≤ 0.02 s	≤ 0.02 s	< 0.02 c	< 0.02 c	< 0.02 c	-
Nitrate and Nitrite	-	-	1.5	0.72	0.72	0.004 U
Total Kjeldahl Nitrogen	-	≤ 2.0 ps	0.49	0.25	0.33	0.080 U
Organic Nitrogen	-	-	0.4680 c	0.2250 c	0.3070 c	-
Total Nitrogen	-	Report p	1.9900 c	0.9700 c	1.0500 c	-
Total Organic Carbon	-	-	3.1	4.4	4.4	0.50 U
General Physical and Chemical Parameters						
Habitat Assessment	-	-	-	98	112	-
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0 s	6.9	8.5	8.8	-
pH (SU)	6.0 - 8.5	6.0 - 8.5	6.8	7.0	7.0	-
Specific Conductance (µmhos/cm)	≤ 1,275	-	409	87	86	-
Temperature (°C)	-	-	21.0	18.2	17.3	-
Salinity	-	-	< 0.21 c	0.04	0.04	-
Sample Depth (m)	-	-	-	0.30	0.291	-
Alkalinity (mg CaCO3/L)	≥ 20.0	-	122	31	31	0.65 U
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01 s	0.70	-	-	-
Chlorophyll *a* (µg/L) - Corrected	-	-	0.64 I	0.69 I	0.83 I	-
Phaeophytin (µg/L)	-	-	0.40 U	0.52 I	0.70 I	-
Total Suspended Solids (mg/L)	-	≤ 30.0 ps	2 I	7 I	7 I	-
Turbidity (NTU)	< 29 t	-	1.5 A	7.6	7.2	0.10 U
Color (true, PCU)	-	-	3.8 I	46	45 A	2.5 U
CBOD, 5 day (mg/L), N - inhibited	-	≤ 20.0 ps	1.2 IJ	0.62 IJ	0.45 IJ	-
Chloride (mg/L)	-	-	34	5.1	5.1	0.20 U
Fluoride (mg/L)	≤ 10.0	-	0.14	0.073 I	0.073 I	0.035 U
Sulfate (mg/L)	-	-	24	1.1	1.1	0.20 U
Flow (MGD)	-	Report	No Flow	-	-	-
Hardness (mg $CaCO_3$)	-	-	142 c	38.4 c	38.2 c	0.35 c
Toxicity (Chronic Definitive, IC25, % effluent)						
Bioassay - Water flea *(Ceriodaphnia dubia)*	-	≥ 100 r	No Result O**	-	-	-
Bioassay - Fish *(Pimephales promelas)*	-	≥ 100 r	69.8 r	-	-	-
Microbiology (Number of colony forming units/100ml)						
Fecal Coliforms	≤ 400s #	≤ 800s	7 B	94	110	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.

Value exceeds the Class III Water Quality Criteria or permit limits

c - Value is calculated
p - 8-hour flow proportioned composite
r - 24-hour flow proportioned composite
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
O - Sampled, but analysis lost or not performed
U - Material analyzed for but not detected; value reported is the method detection limit
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
IC25 - A 25% Inhibition 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.)
** - See the toxicity discussion on pg. 4 of this report for more information

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

City of Chattahoochee WWTP	Effluent Class III Criteria	Effluent	Control Site Class III Criteria	Control Site	Test Site Class III Criteria	Test Site
Metals (µg/L unless otherwise noted)						
Aluminum	-	-	-	459	-	477
Arsenic	≤ 50	0.51 I	≤ 50	0.42 I	≤ 50	0.41 I
Cadmium	≤ 0.351 b	0.068 I	≤ 0.133 b	0.050 U	≤ 0.133 b	0.056 I
Calcium (mg/L)	-	39.2	-	9.27	-	9.16
Chromium, total	≤ 115 bψ	0.32 I	≤ 39.4 bψ	0.75 I	≤ 39.2 bψ	0.74 I
Copper	≤ 12.6 b	3.23	≤ 4.12 b	0.88 I	≤ 4.1 b	0.93 I
Iron	≤ 1,000	79 I	≤ 1,000	770	≤ 1,000	780
Lead	≤ 4.97 b	0.31 I	≤ 0.941 b	0.46 I	≤ 0.935 b	0.48 I
Magnesium (mg/L)	-	10.6	-	3.71	-	3.72
Nickel	≤ 70.2 b	0.74 I	≤ 23.2 b	0.36 I	≤ 23.1 b	0.47 I
Potassium (mg/L)	-	6.8	-	-	-	-
Selenium	≤ 5.0	-	≤ 5.0	0.20 U	≤ 5.0	0.20 U
Silver	≤ 0.07	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U
Sodium	-	28.9	-	2.9	-	2.9
Zinc	≤ 161 b	35	≤ 53.3 b	5.0 U	≤ 53.0 b	5.0 U

See Table 1 for calculated hardness.

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness

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

ψ - Class III Freshwater Quality Criterion (62-302.530(19)(a), F.A.C.) for chromium-III

Table 3. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), total nitrogen (TN) and total phosphorus (TP) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratio of nitrogen to phosphorus

City of Chattahoochee WWTP					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Total N:P ratio
Effluent	92.0	57.8 ± 11.6	75.6 ± 15.1		1.3
Control Site	26.0	28.3 ± 5.7	36.9 ± 7.4	24.9 ± 5.0	16.7
Test Site	24.2	28.2 ± 5.6	39.9 ± 8.0	24.1 ± 4.8	18.8

Table 4. Periphyton composition - qualitative

City of Chattahoochee WWTP	Control Site	Test Site
Number of Wet Taxa	14	8
Number of Wet Algal Units Identified	301	301
Percent Dominant Wet Taxon	89.37	88.37
Dominant Wet Taxon Name	Bacillariophyta (Diatoms)	Bacillariophyta (Diatoms)
Number of Diatom Taxa	49	64
Number of Diatom Algal Units Identified	500	500
Percent Dominant Diatom Taxon	19.4	10.4
Dominant Diatom Taxon Name	*Achnanthidium minutissimum*	*Navicula sp.*
Percentage Composition for Wet Algae		
Blue-green algae	6.98	10.63
Green algae	3.65	1
Diatoms	89.37	88.37

Table 5. Macroinvertebrate Hester-Dendy samples - quantitative

City of Chattahoochee WWTP	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	3.85	3.46
Number of Taxa	33	38
Number of EPT Taxa	9	11
Percent Dominant Taxon	22.28	39.56
Dominant Taxon Name	*Rheotanytarsus exiguus grp.* (Diptera)	*Simulium sp.* (Diptera)
Total Number of Individuals (counted)	440	813
Total Number of Individuals (#/m^2)	1,166	2,153
Community Composition: Percent of total		
Acariformes	0.2	0.6
Coleoptera	2.1	3.6
Diptera	77.9	81.9
Ephemeroptera	3.2	2.6
Gastropoda	0.2	0.3
Oligochaeta	0.0	0.1
Plecoptera	1.6	1.2
Trichoptera	14.5	9.7
Other	0.3	0.0
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	0.0	0.1
Piercers	0.0	0.1
Predators	5.6	5.3
Scrapers	3.1	3.2
Shredders	15.7	5.1
Surface Deposit Feeders	33.7	23.2
Suspension Feeders	41.9	62.8
Unknown	0.0	0.1

Table 6. Macroinvertebrate dipnet samples - qualitative

City of Chattahoochee WWTP	Control Site		Test Site	
Summary Statistics				
Stream Condition Index 2007 (value)	61 A		70 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	39	34	27	36
Number of Ephemeroptera Taxa	5	4	5	8
Number of Trichoptera Taxa	4	4	4	3
Number of Clinger Taxa	8	8	9	10
Number of Long-lived Taxa	3	1	0	2
Number of Sensitive Taxa	9	8	9	13
Percent of Dominant Taxon	15.8	16.1	14.9	12.4
Percent Suspension Feeders and Filterers	15.8	14.2	34.5	29.4
Percent of Tanytarsini Individuals	3.4	2.6	8.1	2.6
Percent of Very Tolerant Individuals	4.1	2.6	1.4	0.0
Total Number of Individuals	146	155	148	153
Community Composition: Percent of total				
Dominant Taxon Name	*Caenis sp.* (Ephemeroptera)	*Caenis sp.* (Ephemeroptera)	*Simulium sp.* (Diptera)	*Simulium sp.* (Diptera)
Acariformes	2.7	1.3	2.0	0.7
Amphipoda	8.2	14.8	0.7	2.6
Bivalvia	0.7	0.7	0.0	0.7
Coleoptera	6.9	5.8	11.5	9.2
Decapoda	0.7	0.0	0.0	0.0
Diptera	34.3	34.2	45.3	37.9
Ephemeroptera	23.3	20.7	21.0	22.2
Gastropoda	2.7	1.3	2.0	0.0
Odonata	0.7	0.0	0.0	1.3
Oligochaeta	0.7	0.7	0.0	0.0
Plecoptera	2.7	5.2	3.4	9.2
Trichoptera	16.4	15.5	14.2	16.3
Other	0.01	0.0	0.0	0.01
Functional Feeding Groups: Percent of total				
Burrowing Deposit Feeders	0.7	0.7	0.0	0.0
Piercers	7.5	7.1	1.4	5.9
Predators	7.2	10.7	8.5	12.8
Scavengers	0.3	0.3	0.7	0.0
Scrapers	18.2	14.2	21.0	15.7
Shredders	11.6	15.2	7.4	8.8
Surface Deposit Feeders	38.7	37.7	26.7	27.5
Suspension Feeders	15.8	14.2	34.5	29.4

A - Value reported is the mean of two determinations

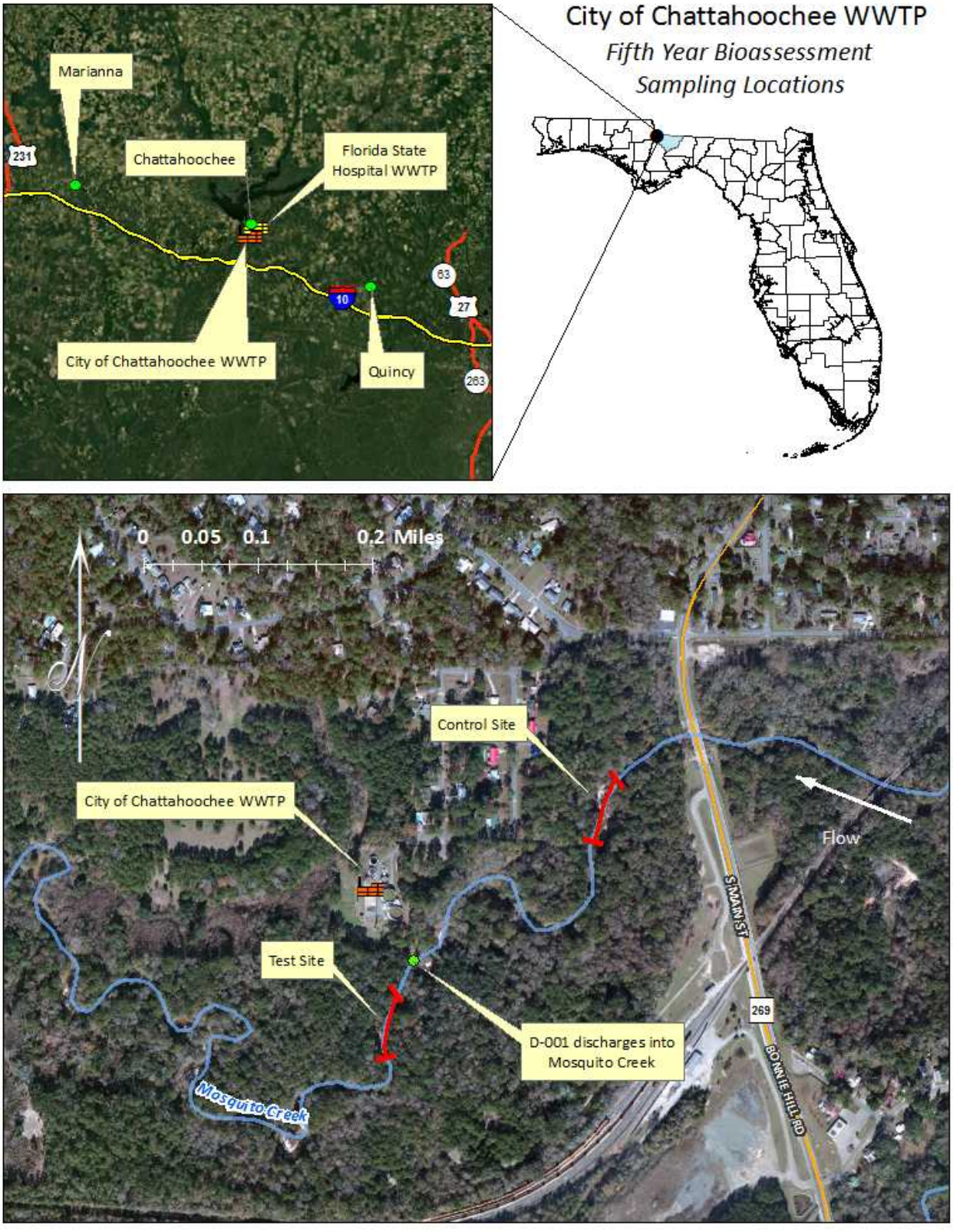
* SCI_2007 categories from Table LT 7200-2 of DEP-SOP-002/01 as referenced in Quality Assurance Rule (62-160 F.A.C.), December 3, 2008: Values 0 ≤ 34 are Category 3; Values 35 < 67 are Category 2; Values 68 ≤ 100 are Category 1

Appendix A

City of Chattahoochee WWTP

Fifth Year Bioassessment

Sampling Locations



Appendix B

Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: **Krista McGraw**	**Contact Number:** **595-0612**
Facility Name (as it appears on permit): City of Chattahoochee WWTP	**Former Names:**
NPDES Permit Number: FL0027669	**Permit Expiration Date:** October 22, 2014
Physical Address: 211 Palm St Chattahoochee, FL 32324	
District: **NWD**	**County:** Gadsden County
Function of Facility: Municipal domestic wastewater treatment plant	
Facility Type: DW	**Permitted Capacity (MGD):** 0.4 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 0.17533 MGD (3/1/12 – 2/28/13)	
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**	

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' 08.6" N, longitude 84°50' 45.1" W.

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):
0.4 MGD AADF activated sludge wastewater treatment facility. The WWTF has provisions for influent screening, biological treatment by sequencing batch reactors, clarification, effluent equalization, clarification, aerobic digestion of residuals, chlorine gas disinfection and sulfur dioxide dechlorination. The residuals are dewatered by a belt filter press and drying beds before transported to a landfill for disposal.

PART I: Continued

List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D-001 to Mosquito Creek. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with Permit Condition I.B.7. :

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Flow, in conduit or thru treatment plant	MGD	Max Max	0.4 Report	Annual Average Monthly Average	Continuous	Recording Flow Meter with Totalizer	FLW-01	See I.A.4
BOD, Carbonaceous 5 day, 20C	mg/L	Max Max Max Max	10.0 12.5 15.0 20.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	8-hr FPC	EFF-02	
Solids, Total Suspended	mg/L	Max Max Max Max	15.0 18.8 22.5 30.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	8-hr FPC	EFF-02	
Phosphorus, Total (as P)	mg/L	Max	Report Report Report	Annual Average Monthly Average Single Sample	Weekly	8-hr FPC	EFF-02	
Nitrogen, Total	mg/L	Max	Report Report Report	Annual Average Monthly Average Single Sample	Weekly	8-hr FPC	EFF-02	
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	2.0	Single Sample	Weekly	8-hr FPC	EFF-02	
Nitrogen, Nitrate, Total (as N)	mg/L	Max	Report	Monthly Average	Weekly	8-hr FPC	EFF-02	
Nitrogen, Ammonia, Total (as N)	mg/L	Max	Report	Monthly Average	Weekly	8-hr FPC	EFF-02	
Nitrogen, Ammonia, Total unionized (as N)	mg/L	Max	0.02	Single Sample	Weekly	Calculated	EFF-02	
pH	s.u.	Min Max	6.0 8.5	Single Sample Single Sample	Continuous	Meter	EFF-02	See I.A.3
Oxygen, Dissolved (DO)	mg/L	Min	5.0	Single Sample	Daily; 24 hours	Grab	EFF-02	

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Chlorine, Total Residual (For Disinfection)	mg/L	Min	0.5	Single Sample	Continuous	Meter	EFA-01	See I.A.3 and I.A.6
Chlorine, Total Residual (For Dechlorination)	mg/L	Max	0.01	Single Sample	Daily; 24 hours	Grab	EFD-01	
Coliform, Fecal	#/100mL	Max Max Max	200 200 800	Annual Average Monthly Geometric Mean Single Sample	Weekly	Grab	EFF-02	See I.A.5
Chronic Whole Effluent Toxicity, 7-Day IC25 (Ceriodaphnia dubia)	percent	Min	100	Single Sample	Semi-Annually; twice per year	24-hr FPC	EFF-02	See I.A.7
Chronic Whole Effluent Toxicity, 7-Day IC25 (Pimephales promelas)	percent	Min	100	Single Sample	Semi-Annually; twice per year	24-hr FPC	EFF-02	See I.A.7

8. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee shall evaluate the effects of the discharge on the receiving waters of Mosquito Creek. The ambient monitoring sites shall be monitored by the permittee as specified below and reported in accordance with Permit Condition I.B.7. :

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
BOD, Carbonaceous 5 day, 20C	mg/L	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Solids, Total Suspended	mg/L	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Nitrogen, Ammonia, Total (as N)	mg/L	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Nitrogen, Ammonia, Total unionized (as N)	mg/L	Max	Report	Single Sample	Semi-Annually; twice per year	Calculated	SWB-02, SWA-03, SWA-06	
Nitrogen, Nitrate, Total (as N)	mg/L	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Nitrogen, Total (as N)	mg/L	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Phosphorus, Total (as P)	mg/L	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Coliform, Fecal	#/100mL	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Water Level at samp. collection time	ft	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Temperature (C), Water	Deg C	Max	Report	Single Sample	Semi-Annually; twice per year	Meter	SWB-02, SWA-03, SWA-06	
Oxygen, Dissolved (DO)	mg/L	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Oxygen, Dissolved, % Saturation	%	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
pH	s.u.	Max	Report	Single Sample	Semi-Annually; twice per year	Meter	SWB-02, SWA-03, SWA-06	
Specific Conductance	umhos/cm	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Turbidity	NTU	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	
Color	Pt-Co	Max	Report	Single Sample	Semi-Annually; twice per year	Grab	SWB-02, SWA-03, SWA-06	

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.):

7. The permittee shall comply with the following requirements to evaluate chronic whole effluent toxicity of the discharge from outfall D-001.

   a. Effluent Limitation
      (1) Whole effluent chronic toxicity shall not exceed a 25 percent inhibition concentration (IC25) of less than 100% effluent in any test. [Rules 62-302.530(61) and 62-4.241(1)(b), F.A.C.]
      (2) Whole effluent acute toxicity shall not exceed a 96 hour LC50 of less than 100% effluent in any test. [Rule 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.]

   b. Monitoring Frequency
      (1) Routine toxicity tests shall be conducted semi-annually; twice per year, the first starting within 60 days of the issuance date of this permit and lasting for the duration of this permit.

   c. Sampling Requirements
      (1) For each routine test or additional follow-up test conducted, a total of three samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.
      (2) The first sample shall be used to initiate the test. The remaining two 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.
      (3) Samples for routine and additional follow-up tests shall not be collected on the same day.

   d. Test Requirements
      (1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: **100%**, **50%**, **25%**, **12.5%**, and **6.25%** final effluent.
      (2) The permittee shall conduct a daphnid, **Ceriodaphnia dubia**, Survival and Reproduction Test and a fathead minnow, **Pimephales promelas**, Larval Survival and Growth Test, concurrently.
      (3) All test species, procedures and quality assurance criteria used shall be in accordance with **Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms**, 4th ed., EPA-821-R-02-013. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with the revised method.
      (4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7.

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

Facility Mixing Zone Details (if applicable):
N/A

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

Date	Parameter and Units		Limit	Result
8/31/2012	COLIFORM, FECAL	#/100mL	200	185
8/31/2012	COLIFORM, FECAL	#/100mL	800	920
1/31/2013	IC25 STATRE 7DAY CHR CERIODAPHNIA	%	100	6.25
2/28/2013	IC25 STATRE 7DAY CHR CERIODAPHNIA	%	100	6.25
2/28/2013	IC25 STATRE 7DAY CHR CERIODAPHNIA	%	100	6.25

Describe previous FYI and WQBEL study:
2/23/2009 is date of last FYI

"Water Quality Assessment of Mosquito Creek and the Chattahoochee Wastewater Treatment Facility", Jones&Edmonds &Associates, Inc., Gainesville, FL February 1998. The report and study concluded that the effluent limits for the WWTP are more than adequate to protect the receiving waters and maintain its intended use and classification.

Describe previous or current Enforcement Actions (including WLs):
N/A

Describe any violations or problems noted in previous inspection:
Department's Field TRC measurement from 8/15/12 inspection was out of compliance at 0.22 mg/L (max permit limit is 0.01 mg/L).

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

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

PART II: Sampling Event Information

Date(s) sample collected: 5/16/2013	**Sampler(s):** Nathan Mulkey, Rick Abad, Frank Butera
Temperature (Deg C): 20.99	**pH (SU):** 6.81
Dissolved Oxygen (mg/L): 6.86	**Conductivity (umhos/cm):** 409
Total Residual Chlorine (mg/L): Influent: 0.13	**Total Residual Chlorine - after Disinfection (mg/L):** .024
Method of Chlorination:	**Method of De-chlorination:**

Flow During Sample Collection for each outfall(MGD):
No flow during sampling (SBR)

Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):

Describe Discharge during Sampling Event:
☐ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☒ Other, please specify

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

SBR facility. Facility last discharged 8 hours prior to field sampling both effluent and in stream.

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. The results from these analyses were compared with Water Quality Criteria (62-302, F.A.C.) and facility permit limits. Exceedances of Water Quality Criteria may constitute violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62-302.500(1)a and/or a violation of facility permit limits. An inhibition concentration greater than 25% in a chronic test may constitute exceedances of 62-302.530(20), 62-302.530(61) and/or a violation of facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of 62-302.530(61) and/or a violation of facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedance of 62-302.530(6) and/or a violation of facility permit limits. Fecal coliform and enterococci results often are based on colony counts outside the acceptable range (B-qualifier). The dilutions performed on the sample did not yield results within the method acceptable range of 20- 60 colony forming units per plate. The B-qualifier does not affect data quality.

(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 exceedances 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 constitute an exceedance of 62-302.530(61), F.A.C.

(7) Algal Phytoplankton and Periphyton Assemblages

Qualitative periphyton are sampled by taking subsamples of algae from natural substrates throughout the sample reach. Phytoplankton were sampled from the water column using a 1 L grab sample. Periphyton were subsampled and identified to the lowest practical level, usually species. 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 an estimate of algal biomass . High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be constitute exceedances 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 exceedances 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

Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days. 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.

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 exceedances 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 exceedances 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..

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 exceedances 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 exceedances 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..

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 constitute exceedances of 62-302.530(10), 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 exceedances 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 a violation of 62-302.530(61).

(9) Definition of Qualifiers

A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value
K - Actual value is known to be less than value given
L - Actual value is known to be greater than value given
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate
Z - Colonies were too numerous to count (TNTC)

Appendix D

Chain of Custody

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2013-05-06-16
FYI City of Chattahoochee STP Sampling Inspection

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

Requester: Michelle Fish
Collected By: Nathan Mullis / Frank Butler / Rick Neal
Sampling Agency: FDEP
Field Report Prepared By: N. Mullis
Send Final Report To: Kim Allen

Lab ID *	Location / Field ID / Matrix / Temp / pH / Latitude / Longitude	Collection (comp begin or grab) / Composite end / Tot Res Chlorine / Diss Oxygen / Storet Station Number / Sample Depth / Salinity / Sp Conductance / NPDES Number / Comments	Bottle Group(s)**
	Location: Chattahoochee STP Field ID: TOX 1 Matrix (include type e.g. Salt, Fresh, etc): Fresh Temp (C): pH: Latitude: ☐ dd ☐ dms Longitude: ☐ dd ☐ dms	☑ Comp ☐ Grab Collection (comp begin or grab) Eastern: Date 5/5/13 Time 0400 Central Composite end Eastern: Date 5/6/13 Time 0500 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: EFF-02	A
	Location: Chattahoochee STP Field ID: EFFLeat Matrix (include type e.g. Salt, Fresh, etc): Fresh Temp (C): pH: Latitude: ☐ dd ☐ dms Longitude: ☐ dd ☐ dms	☐ Comp ☑ Grab Collection (comp begin or grab) Eastern: Date 5/6/13 Time 1200 Central Composite end Eastern: Date Time 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: EFF-02	A+B
	Location: Chattahoochee STP Field ID: Field Blank Matrix (include type e.g. Salt, Fresh, etc): Temp (C): pH: Latitude: ☐ dd ☐ dms Longitude: ☐ dd ☐ dms	☐ Comp ☐ Grab Collection (comp begin or grab) Eastern: Date 5/6/13 Time 1225 Central Composite end Eastern: Date Time 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:	
	Location: Masquito Creek Field ID: Test Matrix (include type e.g. Salt, Fresh, etc): Fresh Temp (C): pH: Latitude: ☐ dd ☐ dms Longitude: ☐ dd ☐ dms	☐ Comp ☑ Grab Collection (comp begin or grab) Eastern: Date 5/6/13 Time 1230 Central Composite end Eastern: Date Time 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:	C

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	5/6/13	HAND	Frank Rush	5-6-13 3:59				5/6/13 4:00

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

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Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2013-05-06-16
FYI City of Chattahoochee STP Sampling Inspection

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

Requester: Michelle Fish
Collected By: Nathan Melka
Sampling Agency: FDEP

Field Report Prepared By: N. Melka
Send Final Report To: Kim Allen

Lab ID *	Location	Comp / Grab	Collection (comp begin or grab) Eastern Date Time Central	Composite end Eastern Date Time Central	Bottle Group(s)**
	Magnolia Creek	☐ Comp ☑ Grab	Date 5/6/13 Time 1300 Central	Date Time Central	C
	Field ID: Control	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments		

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

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

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

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[signature]	5/6/13	HAND	Frank Rush	5-6-13 3:59			[signature]	5/6/13 4:0a

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

2013-05-06-16

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-~~2010-01-INF-03~~
~~Charlotte Harbor Bay~~

Event ID *

Requester: ~~Cheryl Beach~~

Field Report Prepared By: N. Mulky

Customer: NW-DIST

Collected By: Nathan Mulky

Send Final Report To ~~Cheryl Beach~~

Project ID: ~~BIOSUMMARY~~ FY15

Sampling Agency: FDEP

PMAS: ~~4000~~ 1143

Lab ID *	Location: Mosquito Creek	☐ Comp ☒ Grab	Collection (begin) Date 5/6/13 Time 1230 Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)** D		
	Field ID: Test	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "		Comments			
Lab ID *	Location: Mosquito Creek	☐ Comp ☒ Grab	Collection (begin) Date 5/6/13 Time 1300 Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)** D		
	Field ID: Control	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "		Comments			
Lab ID *	Location	☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**		
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "		Comments			
Lab ID *	Location	☐ Comp ☐ Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**		
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number			
	Matrix (Include type e.g. Salt, Fresh, etc	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' "	Longitude o ' "		Comments			

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* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

2013-05-06-16

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-~~2013-05-01-32~~

~~Bill Braddock/Ed Uben~~

Requester: ~~Cheryl Black~~

Field Report Prepared By:

Customer: NW-DIST

Project ID: ~~DISCRETIONARY~~ FYI5

PMAS: ~~1290~~ 1143

Collected By: Marcel Boss

Sampling Agency: FDEP

Send Final Report To: ~~Cheryl Burch~~ Kim Allen

Lab ID *	Location	Comp / Grab	Collection (comp begin or grab) Date Time Eastern Central	Composite end Date Time Eastern Central	Bottle Group(s)**
	City of Chattahoochee STP	☑ Comp ☐ Grab	5/7/13 Time 0800	5/8/13 Time 0800	A
	Field ID: TOX 2	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm); NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments		

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

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

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

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Marcel Boss	5/8/13 1:05	HAND	~~AQB~~	5-08-13 13:05				

* 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

Request Number: RQ-2013-05-06-16

Event ID *

Requester: ~~Cheryl Bunch~~

Field Report Prepared By:

Customer: NW-DIST

Collected By:

Send Final Report To ~~Glenn Brown~~ Kim Allen

Project ID: ~~DISCRETIONARY~~ FYIS

Sampling Agency: FDEP

PMAS: ~~4300~~ 1143

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	City of Chattahoochee STP	☑ Comp ☐ Grab	Date 5/9/13 Time 0800 Central	Date 5/10/13 Time 0800 Central	A
	Field ID: 70X3	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' " .	Longitude o ' " .	Comments		

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

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

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

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Marcel Buss	5/10/13 12:44	HAND	[illegible]	5-10-13 12.44				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix E

Physical/Chemical and Habitat Assessment field sheets

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

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID : 71360 ORG ID : 21FLPNS

COUNTY : GADSEN STORET # : 21FL0076

DATE : 05-06-2013 TIME : 13:40 CST

Latitude : 30 (degrees) 41 (minutes) 13.9 (seconds) Longitude : 84 (degrees) 50 (minutes) 35.20 (seconds)

SITE NAME : Mosquito Ck. Control Ø= 30.6872 84.8431

SAMPLE COMPLETE ?

FIELD ID/NAME : Control RECEIVING BODY OF WATER : Apalachicola River

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 : 718 Right Bank : >68

High Water Mark: 1.5 (m) + 1.1 (above present water level) = 2.6 (present depth) (above bed)

Artificially Impounded ☐ Yes ☒ No

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

10 m wide

0.25 m/s .33 m/s 0.23 m/s

0.3 m deep 0.5 m deep 0.4 m deep

Artificially Channelized : ☒ No ☐ Mostly recovered, more sinuous ☐ Some recovery ☐ 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
4% Woody Debris (Snags)	~~0.04~~	7	5
2% Undercut Banks / Roots	~~0.02~~	7	5
<1 Leaf Packs or Mat	—	4	
<1 Aquatic Vegetation	—		
Rock or Shell Rubble..	~~0.02~~	~~54~~ 1	
92% Sand.....	92	~~28~~ 21	
Mud / Muck / Silt			
Other ~~GRAVEL~~	~~0.02~~	1	
2% Other GRAVEL	2	1	

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :	0.30	18.21	6.97	8.53	87	0.04	
Mid-Depth :							☒ VOB
Bottom :							

Water Surface Oils : ☒ None ☒ Sheen (Slight) ☐ 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 : Partly Cloudy / Overcast. Cool Clear DAY. 70's. Slightly STAND. No Pools. BOTH BANKS W/ EROSION GULLY for entire 100m REACH

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

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

ABUNDANCE

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

SAMPLING TEAM : NATHAN MULKEY, R. ABAD, F. BUTERA SIGNATURE : DATE : 5-6-2013

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

SAMPLE ID 71360

SUBMITTING AGENCY CODE: 21FLPNS SUBMITTING AGENCY NAME: FL DEP NWD	STORET STATION NUMBER: 31010076	DATE (MM/DD/YY): 5-6-203	RECEIVING BODY OF WATER:
REMARKS:	COUNTY: GADSEN	LOCATION: MOSQUITO CK. CONTROL	FIELD ID/NAME:

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 17	Four or more major productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 (7) 6	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 6	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 8 7 (6)	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity 19	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 (19) 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering 17 Primary Score 39	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. 20 19 18 17 16	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered. 15 14 13 12 11	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area. 10 9 8 7 6	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks. 5 4 3 2 1
Bank Stability Right Bank 4 Left Bank 4	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful to top of bank. Bankfull is within or above the root zone with few raw, eroded areas. 10 9 27	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6 18	Only meets 1 of the 3 requirements for optimal bank stability. 15 5 4 12	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 9 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	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 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 6 Left Bank 5 Secondary Score 59	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). 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. ← ERODING BANKS (5) 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

98 **TOTAL SCORE**

Date: 5-6-2013	Analyst: F BUTERA	Signature:

Form FD 9000-5 Revision Date: December 19, 2011

SAMPLE ID 7360

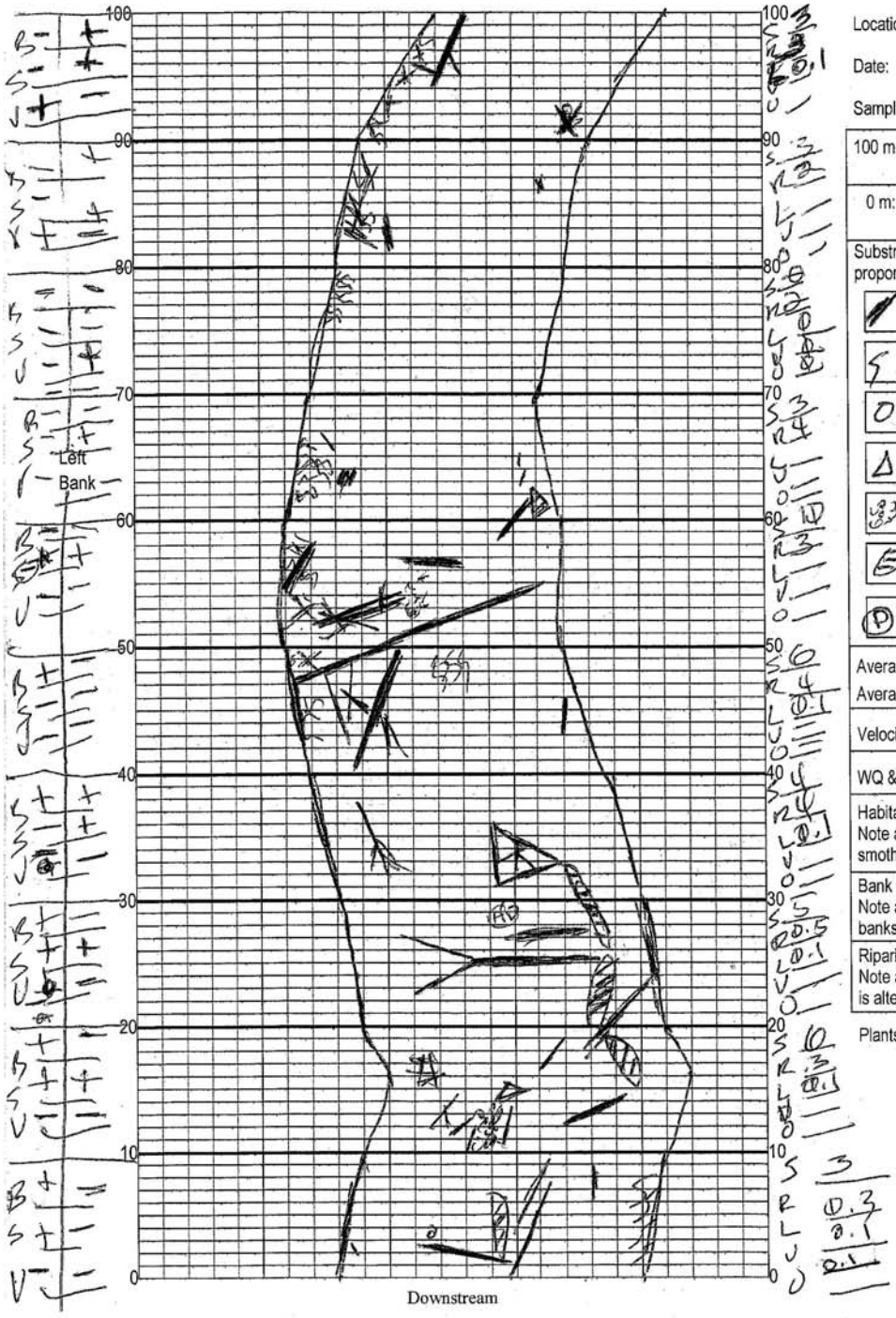
DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet

STORET 31610076

Location: MOSQUITO CK. CONTROL

Date: 5-26-2013

Sampler: FBULTENA



100 m: Latitude _____
Longitude _____

0 m: Latitude 30.68777
Longitude 84.84333

Substrates: Code key, draw proportionate habitat abundance. %

- Snags 43/1100 4%
- Roots/undercut banks 23/1100 2.1%
- Leaf Packs (or mats) 0.6/1100
- Aquatic Macrophytes
- GRAVEL
- BAR 1.8%
- Pools total # observed = 4
  # range expected = 1-2

Average width 11 m
Average depth 0.4 m

Velocity measured at 100 meter mark.

WQ & chemistry taken at 0 meter mark.

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

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

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

Plants observed / other notes:
POISON SUMAC
ITEA
LIQUIDAMBAR
MIMOSA
MUSCODINE
SMILAX
RUBUS
MILIANIA
CARPINUS

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: June 2, 2011

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

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET ELFS

SAMPLE ID : 71359 ORG ID : 21 FLPNS
COUNTY : GADSEN STORET # : 31010125
DATE : 05-06-2013 TIME : 12:25 CST

Latitude : 30 (degrees) 41 (minutes) 04.06 (seconds)
Longitude : 84 (degrees) 54 (minutes) 46.82 (seconds)

SITE NAME : MOSQUITO CK TEST SAMPLE COMPLETE ? _____
FIELD ID/NAME : TEST RECEIVING BODY OF WATER : APALACHICOLA R.

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 : 7m Right Bank : 7m

High Water Mark: 2.6 (m) + 1.3 (present depth) = 3.9 (above bed)
(above present water level)

Artificially Impounded ☐ Yes ☒ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect
5M 13 m wide

0.33 m/s	0.33 m/s	0.4 m/s 8.5 sec
0.3 m deep	0.3 m deep	0.4 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	7%	
Undercut Banks / Roots	5	2.4	
Leaf Packs or Mat	5	0.3	
Aquatic Vegetation	1	<1%	
Rock or Shell Rubble..			
Sand.....	4	87.4	
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 :		17.3					
Mid-Depth :							☒ VOB
Bottom :	0.291	17.32	6.95	8.75	86	0.04	DO% 91.1

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 : CRYSTAL CLEAR DAY.
- 40 - 80 % CLOUD COVER - LAST RAIN APPROX 2-3 WKS. PRIOR

☐ The antecedent hydrologic conditions have been met to my best knowledge.
Water samples preserved ? ☒ Yes ☒ pH<2 ☐ No Algae samples preserved ? ☒ Yes ☐ No

ABUNDANCE

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

SAMPLING TEAM : N. Mulkey, Rick Asad, F Burgett SIGNATURE : DATE : 5/6/2013

Revision Date: September 5, 2008

DEP-SOP-001/01: Form FD 9000-5

SAMPLE ID 71359

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION

STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: 21 FLDNS SUBMITTING AGENCY NAME: FL DEP NWD	STORET STATION NUMBER: 31010125	DATE (MM/DD/YY): 5-6-13	RECEIVING BODY OF WATER: APALACHICOLA R.
REMARKS:	COUNTY: GADSEN	LOCATION: MOSQUITO CK TEST	FIELD ID/NAME:

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** ~~12~~ 11	Four or more major productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 (11)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 8 10%	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 (8) 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity 24 0.4	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 (20) 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering 9 Primary Score 48	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. (20) 19 18 17 16	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered. 15 14 13 12 11	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area. 10 9 8 7 6	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks. 5 4 3 2 1
Bank Stability Right Bank 6 Left Bank 5	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful to top of bank. 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 10	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 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 6 Left Bank 7 Secondary Score 64	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). 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

112 **TOTAL SCORE**

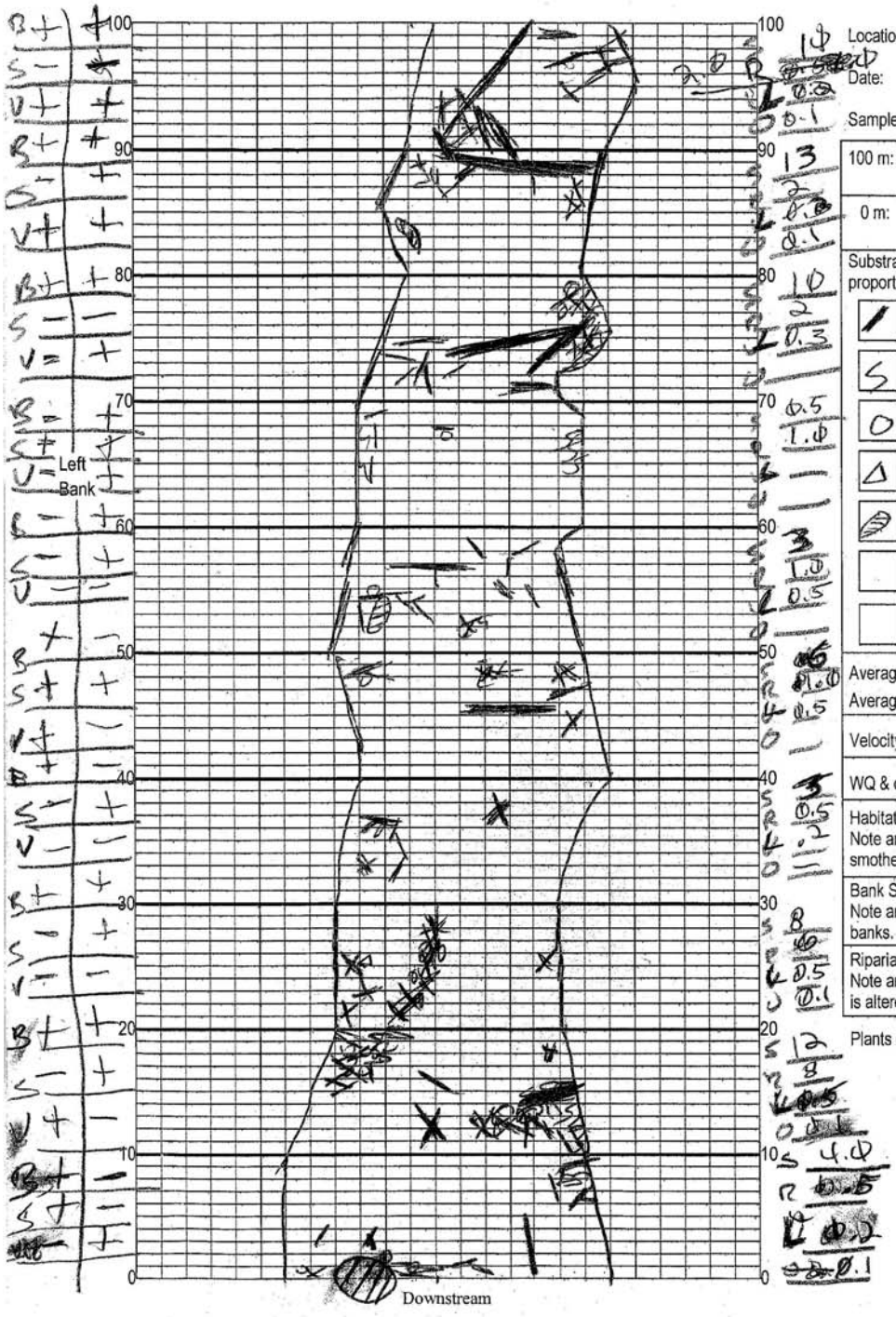
Date: 5-06 13	Analyst: FBUTCOA	Signature:

Form FD 9000-5 Revision Date: December 19, 2011

SAMPLE ID 71359

DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet

STORET 31D1D125



Location: MOSQUITO CK. TEST
Date: 05-06-2013
Sampler: FRUTERA

100 m: Latitude _____
Longitude _____
0 m: Latitude 30.68446
Longitude -84.84634

Substrates: Code key, draw proportionate habitat abundance. %

Snags	6915/1000	6.9 5
Roots/undercut banks	2/1000	2.4
Leaf Packs (or mats)	3/1000	0.3 1%
Aquatic Macrophytes	.005	
BANK	.05/1000	
Pools	total # observed = ____ # range expected = ____	

Average width _____ m
Average depth _____ m

Velocity measured at ____ meter mark.

WQ & chemistry taken at 0 meter mark.

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

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

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

Plants observed / other notes:
POISON SUMAC
POISON IVY
SMALL PALM
CYPRESS
RED MAPLE
POPCORN
ITEA VIRGINICA
MUSCADINE
CARPINUS

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is ~~same~~ vertical scale, draw proportionately).

Revision Date: June 2, 2011

Appendix F
Chemical analysis of effluent and receiving water

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
5/6/2013 13:00	Effluent	AGP/LN	Algal Growth Potential	92.0		mg DryWt/L	0.3	0.9
5/6/2013 13:00	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.2	IJ	mg/L	0.2	2
5/6/2013 13:00	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40	U	ug/L	0.4	1.2
5/6/2013 13:00	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.64	I	ug/L	0.55	1.7
5/6/2013 13:00	Effluent	Microbiology	Fecal Coliforms-Membrane Filter	7	B	cfu/100 mL	2	2
5/6/2013 13:00	Effluent	Metals	Chromium	0.32	I	ug/L	0.3	1.2
5/6/2013 13:00	Effluent	Metals	Nickel	0.74	I	ug/L	0.25	1
5/6/2013 13:00	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
5/6/2013 13:00	Effluent	Metals	Magnesium	10.6		mg/L	0.04	0.16
5/6/2013 13:00	Effluent	Metals	Lead	0.31	I	ug/L	0.2	0.8
5/6/2013 13:00	Effluent	Metals	Potassium	6.8		mg/L	0.3	1.2
5/6/2013 13:00	Effluent	Metals	Iron	79	I	ug/L	30	120
5/6/2013 13:00	Effluent	Metals	Arsenic	0.51	I	ug/L	0.25	1
5/6/2013 13:00	Effluent	Metals	Copper	3.23		ug/L	0.5	1
5/6/2013 13:00	Effluent	Metals	Cadmium	0.068	I	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Metals	Sodium	28.9		mg/L	0.5	2
5/6/2013 13:00	Effluent	Metals	Calcium	39.2		mg/L	0.075	0.3
5/6/2013 13:00	Effluent	Metals	Zinc	35		ug/L	5	20
5/6/2013 13:00	Effluent	Nutrients	Total-P	1.5		mg P/L	0.025	0.25
5/6/2013 13:00	Effluent	Nutrients	NO2NO3-N	1.5		mg N/L	0.04	0.1
5/6/2013 13:00	Effluent	Nutrients	Alkalinity	122		mg CaCO3/L	0.65	2.5
5/6/2013 13:00	Effluent	Nutrients	Sulfate	24		mg SO4/L	0.2	0.5
5/6/2013 13:00	Effluent	Nutrients	Organic Carbon	3.1		mg C/L	0.5	1
5/6/2013 13:00	Effluent	Nutrients	Ammonia-N	0.022		mg N/L	0.002	0.005
5/6/2013 13:00	Effluent	Nutrients	Turbidity	1.5	A	NTU	0.1	0.1
5/6/2013 13:00	Effluent	Nutrients	Kjeldahl Nitrogen	0.49		mg N/L	0.08	0.2
5/6/2013 13:00	Effluent	Nutrients	TSS	2	I	mg/L	2	10
5/6/2013 13:00	Effluent	Nutrients	Fluoride	0.14		mg F/L	0.035	0.1
5/6/2013 13:00	Effluent	Nutrients	Chloride	34		mg Cl/L	0.2	0.5
5/6/2013 13:00	Effluent	Nutrients	Color (true)	3.8	I	PCU	2.5	6
5/6/2013 13:00	Effluent	Pesticides	Chlorpyrifos Methyl	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Malathion	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Alachlor	0.30	U	ug/L	0.3	1.2
5/6/2013 13:00	Effluent	Pesticides	Ethoprop	0.025	U	ug/L	0.025	0.1
5/6/2013 13:00	Effluent	Pesticides	Mevinphos	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Ametryn	0.050	UJ	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Metalaxyl	0.20	U	ug/L	0.2	0.8

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
5/6/2013 13:00	Effluent	Pesticides	Metribuzin	0.10	U	ug/L	0.1	0.4
5/6/2013 13:00	Effluent	Pesticides	Butylate	0.10	U	ug/L	0.1	0.4
5/6/2013 13:00	Effluent	Pesticides	Diazinon	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Ethion	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Fenamiphos	0.15	U	ug/L	0.15	0.6
5/6/2013 13:00	Effluent	Pesticides	Fonofos	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Hexazinone	0.15	U	ug/L	0.15	0.6
5/6/2013 13:00	Effluent	Pesticides	Naled	0.20	UJ	ug/L	0.2	0.8
5/6/2013 13:00	Effluent	Pesticides	Atrazine	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Parathion Ethyl	0.10	UJ	ug/L	0.1	0.4
5/6/2013 13:00	Effluent	Pesticides	Phorate	0.025	U	ug/L	0.025	0.1
5/6/2013 13:00	Effluent	Pesticides	Prometryn	0.10	U	ug/L	0.1	0.4
5/6/2013 13:00	Effluent	Pesticides	Chlorpyrifos Ethyl	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Norflurazon	0.15	UJ	ug/L	0.15	0.6
5/6/2013 13:00	Effluent	Pesticides	Parathion Methyl	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Sucralose	13		ug/L	0.2	1
5/6/2013 13:00	Effluent	Pesticides	Azinphos Methyl	0.10	UJ	ug/L	0.1	0.4
5/6/2013 13:00	Effluent	Pesticides	Metolachlor	0.30	U	ug/L	0.3	1.2
5/6/2013 13:00	Effluent	Pesticides	Simazine	0.050	U	ug/L	0.05	0.2
5/6/2013 13:00	Effluent	Pesticides	Bromacil	0.20	UJ	ug/L	0.2	0.8
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Hexachloroethane	3.4	U	ug/L	3.4	13
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	1,4-Dioxane	0.32	Y	ug/L	0.02	0.1
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	17	UJ	ug/L	17	67
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Anthracene	0.22	U	ug/L	0.22	0.9

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.4	U	ug/L	3.4	13
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	45
5/6/2013 13:00	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	45	U	ug/L	45	180
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.2	U	ug/L	2.2	9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	4-Nitrophenol	17	U	ug/L	17	67
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.4	U	ug/L	3.4	13
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Dimethyl phthalate	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	3.4	U	ug/L	3.4	13
5/6/2013 13:00	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Pentachlorophenol	3.4	U	ug/L	3.4	13
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.4	U	ug/L	3.4	13
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	9
5/6/2013 13:00	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.4	U	ug/L	3.4	13
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.5
5/6/2013 13:00	Effluent	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	450
5/6/2013 13:00	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.5
5/6/2013 8:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	No Result	O	IC25		
5/6/2013 8:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	69.8		IC25		
5/6/2013 8:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	50.0		NOEC		
5/6/2013 8:00	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	No Result	O	NOEC		
5/6/2013 14:00	Control Site	AGP/LN	Algal Growth Potential	26.0		mg DryWt/L	0.3	0.9
5/6/2013 14:00	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.69	I	ug/L	0.62	1.9

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
5/6/2013 14:00	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.52	I	ug/L	0.45	1.4
5/6/2013 14:00	Control Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.62	IJ	mg/L	0.2	2
5/6/2013 14:00	Control Site	Microbiology	Fecal Coliforms-Membrane Filter	94		cfu/100 mL	2	2
5/6/2013 14:00	Control Site	Metals	Silver	0.025	U	ug/L	0.025	0.1
5/6/2013 14:00	Control Site	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
5/6/2013 14:00	Control Site	Metals	Iron	770		ug/L	30	120
5/6/2013 14:00	Control Site	Metals	Sodium	2.9		mg/L	0.5	2
5/6/2013 14:00	Control Site	Metals	Zinc	5.0	U	ug/L	5	20
5/6/2013 14:00	Control Site	Metals	Chromium	0.75	I	ug/L	0.3	1.2
5/6/2013 14:00	Control Site	Metals	Copper	0.88	I	ug/L	0.5	1
5/6/2013 14:00	Control Site	Metals	Selenium	0.20	U	ug/L	0.2	0.8
5/6/2013 14:00	Control Site	Metals	Lead	0.46	I	ug/L	0.2	0.8
5/6/2013 14:00	Control Site	Metals	Nickel	0.36	I	ug/L	0.25	1
5/6/2013 14:00	Control Site	Metals	Calcium	9.27		mg/L	0.075	0.3
5/6/2013 14:00	Control Site	Metals	Magnesium	3.71		mg/L	0.04	0.16
5/6/2013 14:00	Control Site	Metals	Aluminum	459		ug/L	5	20
5/6/2013 14:00	Control Site	Metals	Arsenic	0.42	I	ug/L	0.25	1
5/6/2013 14:00	Control Site	Nutrients	Fluoride	0.073	I	mg F/L	0.035	0.1
5/6/2013 14:00	Control Site	Nutrients	Kjeldahl Nitrogen	0.25		mg N/L	0.08	0.2
5/6/2013 14:00	Control Site	Nutrients	NO2NO3-N	0.72		mg N/L	0.004	0.01
5/6/2013 14:00	Control Site	Nutrients	Ammonia-N	0.025		mg N/L	0.002	0.005
5/6/2013 14:00	Control Site	Nutrients	Turbidity	7.6		NTU	0.1	0.1
5/6/2013 14:00	Control Site	Nutrients	Chloride	5.1		mg Cl/L	0.2	0.5
5/6/2013 14:00	Control Site	Nutrients	Alkalinity	31		mg CaCO3/L	0.65	2.5
5/6/2013 14:00	Control Site	Nutrients	Organic Carbon	4.4		mg C/L	0.5	1
5/6/2013 14:00	Control Site	Nutrients	Total-P	0.058		mg P/L	0.005	0.05
5/6/2013 14:00	Control Site	Nutrients	Sulfate	1.1		mg SO4/L	0.2	0.5
5/6/2013 14:00	Control Site	Nutrients	TSS	7	I	mg/L	2	10
5/6/2013 14:00	Control Site	Nutrients	Color (true)	46		PCU	2.5	6
5/6/2013 14:00	Control Site	Pesticides	Sucralose	0.044	I	ug/L	0.01	0.052
5/6/2013 13:30	Test Site	AGP/LN	Algal Growth Potential	24.2		mg DryWt/L	0.3	0.9
5/6/2013 13:30	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.83	I	ug/L	0.55	1.7
5/6/2013 13:30	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.70	I	ug/L	0.4	1.2
5/6/2013 13:30	Test Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.45	IJ	mg/L	0.2	2
5/6/2013 13:30	Test Site	Microbiology	Fecal Coliforms-Membrane Filter	110		cfu/100 mL	2	2
5/6/2013 13:30	Test Site	Metals	Chromium	0.74	I	ug/L	0.3	1.2
5/6/2013 13:30	Test Site	Metals	Arsenic	0.41	I	ug/L	0.25	1
5/6/2013 13:30	Test Site	Metals	Selenium	0.20	U	ug/L	0.2	0.8
5/6/2013 13:30	Test Site	Metals	Zinc	5.0	U	ug/L	5	20
5/6/2013 13:30	Test Site	Metals	Nickel	0.47	I	ug/L	0.25	1

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
5/6/2013 13:30	Test Site	Metals	Sodium	2.9		mg/L	0.5	2
5/6/2013 13:30	Test Site	Metals	Magnesium	3.72		mg/L	0.04	0.16
5/6/2013 13:30	Test Site	Metals	Aluminum	477		ug/L	5	20
5/6/2013 13:30	Test Site	Metals	Iron	780		ug/L	30	120
5/6/2013 13:30	Test Site	Metals	Cadmium	0.056	I	ug/L	0.05	0.2
5/6/2013 13:30	Test Site	Metals	Copper	0.93	I	ug/L	0.5	1
5/6/2013 13:30	Test Site	Metals	Lead	0.48	I	ug/L	0.2	0.8
5/6/2013 13:30	Test Site	Metals	Calcium	9.16		mg/L	0.075	0.3
5/6/2013 13:30	Test Site	Metals	Silver	0.025	U	ug/L	0.025	0.1
5/6/2013 13:30	Test Site	Nutrients	Ammonia-N	0.023		mg N/L	0.002	0.005
5/6/2013 13:30	Test Site	Nutrients	Organic Carbon	4.4		mg C/L	0.5	1
5/6/2013 13:30	Test Site	Nutrients	Color (true)	45	A	PCU	2.5	6
5/6/2013 13:30	Test Site	Nutrients	Fluoride	0.073	I	mg F/L	0.035	0.1
5/6/2013 13:30	Test Site	Nutrients	Turbidity	7.2		NTU	0.1	0.1
5/6/2013 13:30	Test Site	Nutrients	TSS	7	I	mg/L	2	10
5/6/2013 13:30	Test Site	Nutrients	Kjeldahl Nitrogen	0.33		mg N/L	0.08	0.2
5/6/2013 13:30	Test Site	Nutrients	Sulfate	1.1		mg SO4/L	0.2	0.5
5/6/2013 13:30	Test Site	Nutrients	Chloride	5.1		mg Cl/L	0.2	0.5
5/6/2013 13:30	Test Site	Nutrients	Total-P	0.056		mg P/L	0.005	0.05
5/6/2013 13:30	Test Site	Nutrients	Alkalinity	31		mg CaCO3/L	0.65	2.5
5/6/2013 13:30	Test Site	Nutrients	NO2NO3-N	0.72		mg N/L	0.004	0.01
5/6/2013 13:30	Test Site	Pesticides	Sucralose	0.067		ug/L	0.01	0.051
5/5/2013 13:25	Field Blank	Metals	Lead	0.20	U	ug/L	0.2	0.8
5/5/2013 13:25	Field Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
5/5/2013 13:25	Field Blank	Metals	Copper	0.50	U	ug/L	0.5	1
5/5/2013 13:25	Field Blank	Metals	Chromium	0.30	U	ug/L	0.3	1.2
5/5/2013 13:25	Field Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
5/5/2013 13:25	Field Blank	Metals	Iron	30	U	ug/L	30	120
5/5/2013 13:25	Field Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
5/5/2013 13:25	Field Blank	Metals	Cadmium	0.050	U	ug/L	0.05	0.2
5/5/2013 13:25	Field Blank	Metals	Sodium	0.50	U	mg/L	0.5	2
5/5/2013 13:25	Field Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
5/5/2013 13:25	Field Blank	Metals	Potassium	0.30	U	mg/L	0.3	1.2
5/5/2013 13:25	Field Blank	Metals	Zinc	5.0	U	ug/L	5	20
5/5/2013 13:25	Field Blank	Metals	Magnesium	0.040	U	mg/L	0.04	0.16
5/5/2013 13:25	Field Blank	Nutrients	Chloride	0.20	U	mg Cl/L	0.2	0.5
5/5/2013 13:25	Field Blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
5/5/2013 13:25	Field Blank	Nutrients	Color (true)	2.5	U	PCU	2.5	6
5/6/2013 13:25	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080	U	mg N/L	0.08	0.2
5/6/2013 13:25	Field Blank	Nutrients	Total-P	0.002	U	mg P/L	0.002	0.005

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
5/5/2013 13:25	Field Blank	Nutrients	Ammonia-N	0.004	I	mg N/L	0.002	0.005
5/6/2013 13:25	Field Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
5/5/2013 13:25	Field Blank	Nutrients	Sulfate	0.20	U	mg SO4/L	0.2	0.5
5/5/2013 13:25	Field Blank	Nutrients	Turbidity	0.10	U	NTU	0.1	0.1
5/5/2013 13:25	Field Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
5/5/2013 13:25	Field Blank	Nutrients	Organic Carbon	0.50	U	mg C/L	0.5	1
5/5/2013 13:25	Field Blank	Pesticides	Diazinon	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Ametryn	0.054	UJ	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Alachlor	0.32	U	ug/L	0.32	1.3
5/5/2013 13:25	Field Blank	Pesticides	Azinphos Methyl	0.11	UJ	ug/L	0.11	0.43
5/5/2013 13:25	Field Blank	Pesticides	Chlorpyrifos Methyl	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Metalaxyl	0.22	U	ug/L	0.22	0.86
5/5/2013 13:25	Field Blank	Pesticides	Metolachlor	0.32	U	ug/L	0.32	1.3
5/5/2013 13:25	Field Blank	Pesticides	Naled	0.22	UJ	ug/L	0.22	0.86
5/5/2013 13:25	Field Blank	Pesticides	Parathion Ethyl	0.11	UJ	ug/L	0.11	0.43
5/5/2013 13:25	Field Blank	Pesticides	Ethion	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Hexazinone	0.16	U	ug/L	0.16	0.65
5/5/2013 13:25	Field Blank	Pesticides	Metribuzin	0.11	U	ug/L	0.11	0.43
5/5/2013 13:25	Field Blank	Pesticides	Norflurazon	0.16	UJ	ug/L	0.16	0.65
5/5/2013 13:25	Field Blank	Pesticides	Bromacil	0.22	UJ	ug/L	0.22	0.86
5/5/2013 13:25	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Fenamiphos	0.16	U	ug/L	0.16	0.65
5/5/2013 13:25	Field Blank	Pesticides	Fonofos	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Parathion Methyl	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Malathion	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Phorate	0.027	U	ug/L	0.027	0.11
5/5/2013 13:25	Field Blank	Pesticides	Prometryn	0.11	U	ug/L	0.11	0.43
5/5/2013 13:25	Field Blank	Pesticides	Atrazine	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Butylate	0.11	U	ug/L	0.11	0.43
5/5/2013 13:25	Field Blank	Pesticides	Simazine	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Pesticides	Sucralose	0.011	U	ug/L	0.011	0.054
5/5/2013 13:25	Field Blank	Pesticides	Ethoprop	0.027	U	ug/L	0.027	0.11
5/5/2013 13:25	Field Blank	Pesticides	Mevinphos	0.054	U	ug/L	0.054	0.22
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	450
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.2	U	ug/L	2.2	9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	9

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	1,4-Dioxane	0.15		ug/L	0.02	0.1
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Anthracene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.4	U	ug/L	3.4	13
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Pentachlorophenol	3.4	U	ug/L	3.4	13
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	45	U	ug/L	45	180
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.4	U	ug/L	3.4	13
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	17	UJ	ug/L	17	67
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Hexachloroethane	3.4	U	ug/L	3.4	13
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.4	U	ug/L	3.4	13
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	4-Nitrophenol	17	U	ug/L	17	67
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	3.4	U	ug/L	3.4	13
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	45
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.9

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.4	U	ug/L	3.4	13
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.9
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.5
5/5/2013 13:25	Field Blank	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.5

Appendix G

Toxicological results

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: City of Chattahoochee WWTP
Address: 211 Palm Street Chattahoochee
County: Gadsden 32324
NPDES Permit #: FL0027669
Contact/District: Nathan Mallory / Northwest

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: 5.7.13 Time: 1430 ~~BA~~
End Date: 5.14.13 Time: ~~1100~~ AP 1100

Diluent/ Batch:
MHW / 4-30-13 Test Days Used: 0-7
MHW /_____ Test Days Used: _____
ASW /_____ Test Days Used: _____
ASW /_____ Test Days Used: _____

Organism age : 24 ~~days~~ hrs
Feeding Prior to Test and Daily
Artemia Lot # : 08817
Chamber size : 1000 ml
Test volume : 500 ml

Organism Batch #: 5.7.13	
Artemia Batch #	Day 3 91.13
Day 0 88.13	Day 4 92.13
Day 1 89.13	Day 5 ~~93~~ 93.13
Day 2 90.13	Day 6 94.13

LIMS entry: 5-22-13 MF Entry verification: AP 5-22-13

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2013-05-060-21	1501537	5-6-13 0800	5-7-13 0705
Test Day 2	2	TLH-2013-05-08-69	1502497	5-8-13 0800	5-8-13 1325
Test Day 4	3	TLH-2013-05-10-37	1503311	5-10-13 0800	5-10-13 1300

Water Quality Parameters	Batch # 4.30.13 MHW~~CB~~ ASW (circle one)	MHWCD ASW (circle one)	NA Sample 1	NA Sample 2	NA Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	NM	NM	NM			
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03	<0.03	<0.03		AP/CR	CR/AP
Alkalinity (mg/L as $CaCO_3$):	Cole		128	127	140		CR	AP
Hardness (mg/L as $CaCO_3$):	84		137	145	135		CR	AP
Total Ammonia (mg/L as N):	<0.017		<0.017	<0.017	<0.017		MF	CR
Conductivity (umhos) mmhos:	304		425	~~414 MF~~ 417 CR	430		BA/CR	AP
Salinity (ppth):								

* NM = not measured

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 2 min 24.6 max 26.2
Water bath # ___ min.____ max.____
Room B246 min 23.8 max 25.3

Sample Validation:
Instructions: Check yes or no. Fill in temperatures.
Temperature: Shipped ≤ 6°C ~~Yes~~ MF □ No ✱
If Hand Delivered:Cooling ✓ Yes □ No (received ____°C collected___°C)
Holding Time: ≤ 36 Hours ✓ Yes □ No
(Composite-end of collection; grab-when collected;
4 in 24 - time last sample collected)

Statistics	
Growth NOEC:	100 %
Growth LOEC:	>100 %
Growth IC_{20}: MF ~~12.1~~ %	11.8 % AP
Growth IC_{25}:	~~78.9~~ % MF 69.8 %
Ctrl % CV:	12.2 %
Dunnetts PMSD:	~~33.1~~ % MF 31.4 %
Survival NOEC:	50 %
Survival LOEC:	100 %

Investigators' signatures

	Initials:
Brian Banks	BA
Marshall Faircloth	MF
Cassidy Record	CR
Adrienne Pennington	AP

REVIEWER Liz Miller LM

Comments: ✱ Samples hand delivered, all samples (bioassay) ~~temperature~~ MF
Temperatures were less than 6°C, MF 5-21-13
Samples 1-3 aerated, ~~Aeration before~~ AP
Samples aerated from 9.8, 9.8, and 10.6 to 8.3, 8.2, and 7.7. AP

PAGE 00029 revised 03/26/13 MF

Chronic Bioassay Survival Benchsheet

Facility: City of Chattahoochee

LIMS Sample Number: 1501532
(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	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	9^{1D}	9	9
Sample 12.5 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	9^{1D}	7^{2D}	7	7
	C	10	10	10	10	9^{1D}	4^{5D}	4	4
	D	10	10	10	10	9^{1D}	8^{1D}	8	8
Sample 25 %	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	8^{2D}	6^{2D}	5^{1D}	5	5
Sample 50 %	A	10	10	10	10	10	9^{1D}	9	8
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	7^{3D}	7	7
	D	10	10	10	10	10	9^{1D}	9	9
Sample 100 %	A	10	10	10	10	10	9^{1D}	9	9
	B	10	10	10	10	10	10	9^{1D}	8^{1D}
	C	10	10	10	10	10	8^{2D}	8	8
	D	10	10	9^{1D}	9	8^{1D}	7^{1D}	7	6^{1D}
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: BA	Checked by:		BA	BA	BA	BA	CR	CR	AP
Verified by: MF									

Comments:

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Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_14 parameter pg 1

Sample Source: City of Chattahoochee

LIMS Sample #: 150532 (for Lab sample #1)

conc = concentration rep = replicate circle umhos or mmhos

Test Day		Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0 ↓	sample:	Control	A	7.6	24.0	7.4	304							
	1	6.25%	A	7.6	24.0	7.4	311							
	1	12.5%	A	7.6	24.1	7.6	318							
	1	25%	A	7.6	24.0	7.7	332							
	1	50%	A	7.6	24.0	7.2	360							
	1	100%	A	7.5	24.0	7.3	425							
	1		A											
	Measured by:			BA	BA	BA	BA							
	Recorded by:			BA	BA	BA	BA							
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	7.8	25.6	7.9	305		B	7.6	24.2	7.9	313	
	1	6.25%	B	7.8	25.3	7.8	310		B	7.6	24.3	7.9	312	
	1	12.5%	B	7.8	25.1	7.8	318		B	7.6	24.3	7.8	318	
	1	25%	B	7.8	25.3	7.8	333		B	7.6	24.3	7.8	336	
	1	50%	B	7.9	24.7	7.7	357		B	7.7	24.3	7.7	358	
	1	100%	B	8.1	24.8	7.8	420		B	7.7	24.5	7.8	419	
	1		B						B					
	Measured by:			CR	MF	CR	CR			CR	CR	CR	CR	
	Recorded by:			CR	CR	CR	CR			CR	CR	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	sample:	Control	C	7.7	25.8	6.9	311		C	7.9	24.2	7.6	300	
	2	6.25%	C	7.3	25.2	6.9	318		C	7.9	24.3	7.7	305	
	2	12.5%	C	7.4	25.9	6.3	327		C	7.9	24.2	7.7	314	
	2	25%	C	7.4	26.1	6.6	340		C	7.9	24.3	7.6	330	
	2	50%	C	7.5	25.7	6.7	368		C	7.9	24.3	7.3	358	
	2	100%	C	7.7	25.8	6.4	428		C	7.8	24.3	7.4	417	
	2		C						C					
	Measured by:			CR	CR	CR	CR			CR	CR	CR	CR	
	Recorded by:			CR	CR	CR	CR			CR	CR	CR	CR	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	sample:	Control	D	7.9	24.9	7.1	310		D	7.3	24.4	7.2	303	
	2	6.25%	D	7.9	24.6	7.0	316		D	7.4	24.4	6.9	307	
	2	12.5%	D	7.9	24.8	7.2	324		D	7.4	24.5	6.4	314	
	2	25%	D	7.9	24.9	7.2	337		D	7.5	24.7	6.9	327	
	2	50%	D	7.9	24.5	7.1	367		D	7.5	25.1	7.1	364	
	2	100%	D	7.8	24.3	7.1	431		D	7.5	25.6	7.2	427	
	2		D						D					
	Measured by:			CR	CR	CR	CR			BA	BA	BA	BA	
	Recorded by:			CR	CR	CR	CR			BA	BA	BA	BA	

Comments:

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

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Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_14

parameter pg 2

Sample Source: City of Chattahoochee

LIMS Sample #: 150 1537 (for Lab sample #1)

conc = concentration rep = replicate

Test Day ↓	% Conc.	Before Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	After Renewal: Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 4 sample:	Control	A	8.0	26.0	6.7	310		A	8.0	25.0	7.4	298	
3	6.25	A	8.0	25.6	6.6	312		A	8.0	24.8	7.3	309	
3	12.5	A	7.9	25.6	6.7	321		A	8.0	24.8	7.1	316	
3	25	A	7.9	26.0	6.7	336		A	7.9	24.9	7.0	333	
3	50	A	7.9	25.8	6.6	371		A	7.9	25.0	6.9	363	
3	100	A		25.9	6.5	442		A	7.9	25.0	6.9	430	
3		A						A					
Measured by:			BA	MF	BA	BA			BA	BA	BA	BA	
Recorded by:			BA	MF	BA	BA			BA	BA	BA	BA	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5 sample:	Control	B	7.5	25.7	6.3	307		B	7.7	24.9	7.7	311	
3	6.25	B	7.5	25.9	5.6	313		B	7.7	24.7	7.4	302	
3	12.5	B	7.4	25.9	5.6	324		B	7.7	24.8	7.4	312	
3	25	B	7.5	25.3	6.7	344		B	7.7	24.7	7.5	327	
3	50	B	7.5	25.7	6.0	367		B	7.8	24.6	7.5	356	
3	100	B	7.9	25.5	6.1	435		B	8.1	24.6	7.3	418	
3		B						B					
Measured by:			CR	MF	CR	CR			CR	MF	CR	CR	
Recorded by:			CR	MF	CR	CR			CR	MF	CR	CR	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6 sample:	Control	C	7.5	25.9	5.9	311		C	7.7	23.9	7.3	307	
3	6.25	C	7.5	26.1	6.0	316		C	7.7	23.8	7.3	310	
3	12.5	C	7.5	26.0	6.1	328		C	7.7	23.7	7.3	322	
3	25	C	7.5	26.3	6.3	344		C	7.7	23.8	7.3	336	
3	50	C	7.5	26.3	6.2	378		C	7.8	23.9	7.2	368	
3	100	C	7.9	26.2	6.2	441		C	8.1	24.3	7.2	437	
3		C						C					
Measured by:			AP	CR	AP	AP			CR	CR	CR	CR	
Recorded by:			CR	CR	CR	CR			AP	CR	AP	AP	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7 sample:	Control	D	7.7	25.4	7.0	313		D					
3	6.25	D	7.7	25.3	6.9	322		D					
3	12.5	D	7.6	25.3	6.8	336		D					
3	25	D	7.6	25.4	6.8	347		D					
3	50	D	7.7	25.1	6.7	382		D					
3	100	D	8.0	24.6	6.5	448		D					
3								D					
Measured by:			CR	CR	CR	CR							
Recorded by:			CR	CR	CR	CR							

Comments:

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

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Page

Chronic Bioassay Weighing Benchsheet

Facility: City of Chattahoochee

LIMS Sample Number: 1501532 (for Lab Sample # 1)

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

Concentration	Replicate	Pan #	Pan wt. g (mean wt = fish wt divided by 10; convert g to mg: move decimal 3 places to right)	Pan + Fish g	Fish wt. g	Original # Fish	Mean wt. mg	Avg
Control	A	1	0.02336	0.02996	0.00660	10	0.660	
	B	2	0.02283	0.02902	0.00619	10	0.619	
	C	3	0.02285	0.02901	0.00616	10	0.616	0.59
	D	4	0.02266	0.02758	0.00492	10	0.492	
sample 6.25 %	A	5	0.02216	0.02878	0.006662	10	0.6662	
	B	6	0.02212	0.02852	0.00640	10	0.64	
	C	7	0.02319	0.02849	0.00530	10	0.53	0.615
	D	8	0.02156	0.02784	0.00628	10	0.628	
sample 12.5 %	A	9	0.02191	0.02770	0.00579	10	0.579	
	B	10	0.02168	0.02622	0.00454	10	0.454	
	C	11 AP	~~0.02273~~ ~~0.02336~~	0.02456	0.00183	10	0.183	0.42
	D	12 AP	~~0.02144~~ ~~0.02273~~	0.02616	0.00472	10	0.472	
sample 25 %	A	13 AP	~~0.02269~~ ~~0.02144~~	0.02840	0.00571	10	0.571	
	B	14 AP	~~0.02322~~ ~~0.02269~~	0.02785	0.00563	10	0.563	
	C	15 AP	~~0.02182~~ ~~0.02222~~	0.02748	0.00566	10	0.566	0.49
	D	16 AP	~~0.02236~~ ~~0.02182~~	0.02499	0.00273	10	0.273	
sample 50 %	A	17 AP	~~0.02294~~ ~~0.02336~~	0.02700	0.00406	10	0.406	
	B	18 AP	~~0.02328~~ ~~0.02326~~	0.02848	0.00620	10	0.620	
	C	19	0.02143	0.02553	0.00410	10	0.410	0.49
	D	20	0.02271	0.02805	0.00534	10	0.534	
sample 100 %	A	21	0.02265	0.02724	0.00459	10	0.459	
	B	22	0.02183	0.02680	0.00497	10	0.497	
	C	23	0.02199	0.02583	0.00384	10	0.384	0.43
	D	24	0.02166	0.02553	0.00387	10	0.387	
sample %	A					10		
	B					10		
	C					10		
	D					10		
	Weighed by initials:		CR	AP		revised 7/16/08 mf		

Comments:

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

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

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Chronic Bioassay Weighing Benchsheet

Quality Control

Facility: City of Chattahoochee

LIMS Sample Number: 1501532 (for Lab Sample # 1)

***P. promelas and M. beryllina* Bench sheet**

SOPs TA07_09, TA07_14 and TA06_21

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

Tare weighed by: CR

Final weighed by: AP

Tare Weighing Date: 5-13-13 Final Weighing Date: 5-15-13

				Measured Value (g)		S-weight Value (g)
Tare Pan 1 after Pan 5 (g)	0.02336	@ 0.02336	S-weights	0.01000	@	0.01
Tare Pan 1 after Pan 10 (g)	0.02336	@ 0.02336	at tare	0.03004	@	0.03
Tare Pan 1 after Pan 15 (g)	0.02336	@ 0.02336	S-weights	0.00999	@	0.01
Tare Pan 1 after Pan 20 (g)	0.02337	@ 0.02336	at final	0.05003	@	0.05
Tare Pan 1 after Pan 25 (g)	0.02337	@ 0.02336				
Tare Pan 1 after Pan 30 (g)		@	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)	0.02993	@ 0.02996				
Final Pan 1 after Pan 10 (g)	0.02994	@ 0.02996				
Final Pan 1 after Pan 15 (g)	0.02993	@ 0.02996				
Final Pan 1 after Pan 20 (g)	0.02993	@ 0.02996				
Final Pan 1 after Pan 25 (g)	0.02993	@ 0.02996				
Final Pan 1 after Pan 30 (g)		@				
Final Pan 1 after Pan 35 (g)		@				
Final Pan 1 after Pan 40 (g)		@				
Final Pan 1 after Pan 45 (g)		@				
Final Pan 1 after Pan 48 (g)		@				

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

Comments:

revised 7/16/08 MF

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Test ID: City of Chattahoochee Dates: 5-7-13 to 5-14-13

METER / DEVICE	ID	SOP	Parameter	Method	√ used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #4
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓

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

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

Entered By: 5-15-13 AP

V 1.3 2/15/13 MF

PAGE

Larval Fish Growth and Survival Test-7 Day Growth

Start Date:	5/7/2013 14:30	Test ID:	chat513	Sample ID:	Chattahoochee STP
End Date:	5/14/2013 11:00	Lab ID:	DEP TOXLAB-FDEP Biology T	Sample Type:	EFF1-POTW
Sample Date:		Protocol:	EPAM 94-EPA/600/4-91/003	Test Species:	MB-Menidia beryllina
Comments:	Pimephales promelas chronic bioassay for City of Chattahoochee STP May 7, 2013				

Conc-%	1	2	3	4
D-Control	0.6600	0.6190	0.6160	0.4920
6.25	0.6620	0.6400	0.5300	0.6280
12.5	0.5790	0.4540	0.1830	0.4720
25	0.5710	0.5630	0.5660	0.2730
50	0.4060	0.6200	0.4100	0.5340
100	0.4590	0.4970	0.3840	0.3870

			Transform: Untransformed					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.5968	1.0000	0.5968	0.4920	0.6600	12.176	4	0.6059	1.0000
6.25	0.6150	1.0306	0.6150	0.5300	0.6620	9.494	4	0.6059	1.0000
12.5	0.4220	0.7072	0.4220	0.1830	0.5790	39.956	4	0.4693	0.7745
25	0.4933	0.8266	0.4933	0.2730	0.5710	29.776	4	0.4693	0.7745
50	0.4925	0.8253	0.4925	0.4060	0.6200	21.058	4	0.4693	0.7745
100	0.4318	0.7235	0.4318	0.3840	0.4970	12.884	4	0.4318	0.7126

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.90638	0.884	-1.0023	0.92364
Bartlett's Test indicates equal variances (p = 0.34)	5.68376	15.0863		

			Linear Interpolation (200 Resamples)		
Point	%	SD	95% CL(Exp)		Skew
IC05	7.636	2.203	0.959	13.718	4.7530
IC10	9.022	6.037	5.360	23.895	6.5359
IC15	10.407	14.661	7.095	92.513	2.6199
IC20	11.793				
IC25	69.792				
IC40	>100				
IC50	>100				

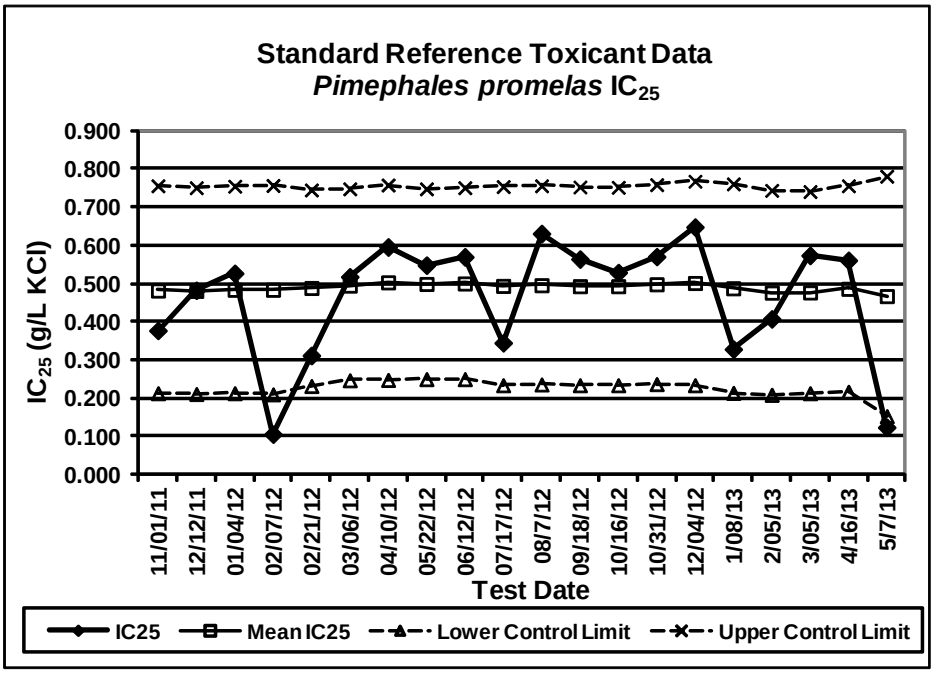
Appendix H

Standard Reference Toxicant Data

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

Date	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit	Date
11/01/11	0.377	0.482	0.14	0.213	0.756	11/01/11
12/12/11	0.483	0.481	0.14	0.211	0.751	12/13/11
01/04/12	0.527	0.484	0.14	0.213	0.755	01/04/12
02/07/12	0.106	0.484	0.14	0.210	0.757	02/07/12
02/21/12	0.312	0.489	0.13	0.232	0.745	02/21/12
03/06/12	0.518	0.495	0.13	0.247	0.748	03/06/12
04/10/12	0.596	0.503	0.13	0.248	0.758	04/10/12
05/22/12	0.548	0.499	0.12	0.250	0.748	05/22/12
06/12/12	0.570	0.501	0.12	0.250	0.751	06/12/12
07/17/12	0.345	0.494	0.13	0.234	0.754	07/17/12
08/7/12	0.631	0.496	0.13	0.236	0.756	08/07/12
09/18/12	0.564	0.493	0.13	0.234	0.753	09/18/12
10/16/12	0.529	0.493	0.13	0.234	0.752	10/16/12
10/31/12	0.571	0.498	0.13	0.237	0.759	10/31/12
12/04/12	0.648	0.501	0.13	0.234	0.768	12/04/12
1/08/13	0.329	0.488	0.14	0.214	0.761	01/08/13
2/05/13	0.408	0.477	0.13	0.209	0.744	02/05/13
3/05/13	0.574	0.477	0.13	0.213	0.741	03/05/13
4/16/13	0.561	0.486	0.13	0.217	0.756	04/16/13
5/7/13	0.124	0.467	0.16	0.153	0.781	5/72013

Means are from the last 20 SRTs.
Lower Confidence Limit = mean - 2 * Std Dev EPA 75th %CV: 38%
Upper Confidence Limit = mean + 2 * Std Dev lab % CV:33.4%



FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina*

Test Species (circle one)

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

Diluent/ Batch: MHW/4-30-13 Test Days Used: 0-7

Diluent/ Batch: _____ Test Days Used: _____

Toxicant/ Batch # : KCl/5-6-13

Artemia Lot # : 08813

Start Date: 5.7.13 Time: 1400

End Date: 5.14.13 Time: 1080

Organism Batch #/ Age: 5-7-13/ <24 hrs

Artemia Batch #		Day 2	90.13	Day 5	93.13
Day 0	88.13	Day 3	91.13	Day 6	94.13
Day1	89.13	Day 4	92.13		

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 MHW 4.30.13	Diluent (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03		HACH	AP	CR
Alkalinity (mg/L as $CaCO_3$):	66		HACH	CR	BA
Hardness (mg/L as $CaCO_3$):	84		HACH	CR	BA
Total Ammonia (mg/L as N):	<0.017		DENVER	MF	CR
Conductivity (µmhos-cm) mmhos-cm:	302		METTLER	BA	CR

Statistics	
Growth NOEC:	<0.125 g/L
Growth LOEC:	0.125 g/L
Growth IC_{20}:	0.0993 g/L
Growth IC_{25}:	0.124 g/L
Ctrl % CV:	8.85 %
Dunnetts PMSD:	13.6 %
Survival NOEC:	0.5 g/L
Survival LOEC:	1 g/L

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Test incubated in : Temperature Range °C:

Incubator # 2 min. 24.6 max. 26.2

Water bath # ___ min. _____ max. _____

Room B246 min: 23.8 max: ~~23.8~~ CR 25.3

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

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

Investigators' signatures

Bree Abela

Marshall Fairbrother

Cassidy Harcrow

Adrienne Pennington

Liz Miller

REVIEWER

Comments:

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revised 8/6/12 JD

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or Menidia beryllina Survival

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

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

Concentration	Replicate	Chamber	TEST DAY 0	1	2	3	4	5	6	7
Control	A	E1	10	10	10	10	10	10	10	10
	B	E2	10	10	10	10	10	10	10	10
	C	E3	10	10	10	10	10	10	10	10
	D	E4	10	10	10	10	10	10	10	10
0.125	A	E5	10	10	10	10	10	10	10	10
	B	E6	10	10	10	10	10	10	10	10
	C	E7	10	10	10	10	10	10	10	10
	D	E8	10	10	10	10	10	10	10	10
0.25 ~~0.125~~ BA	A	E9	10	9 1D	9	9	9	9	9	9
	B	E10	10	10	10	10	10	10	10	~~10~~ AP 9 1D
	C	E11	10	10	10	10	10	10	10	10
	D	E12	10	10	10	10	10	10	10	10
0.5 BA ~~0.25~~	A	E13	10	10	10	10	10	10	10	10
	B	E14	10	10	10	10	10	10	10	10
	C	E15	10	10	10	10	10	10	10	AP ~~10~~ 9 1D 10
	D	E16	10	10	10	10	10	10	10	10
1.0 BB ~~0.5~~	A	E17	10	~~10~~ 4 6D BA	6	4 2D	4	3 1D	2 1D	1 1D
	B	E18	10	2 8D	2	2	1 1D	1	1	1
	C	E19	10	2 8D	2	1	1	1	1	1
	D	E20	10	4 6D	4	3 1D	3	3	1 2D	0 1D
2.0 ~~1.0~~ BK	A	E21	10	0 10D	0	0				
	B	E22	10	0 10D	0	0				
	C	E23	10	1 9D	1	0 1D				
	D	E24	10	0 10D	0	0				
~~2.0~~ BA	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): BA		Checked by:		BA	CR	CR	BA	CR	AP	AP
Verified by (0 hr): MF										
Concentrations prepared by:			BA	CR	CR	CR	BA	MF	AP	

Comments:

PAGE 00030 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: 5.7.13 End Date: 5-14-13

Start Time: 1400 End Time: 1000

conc = concentration rep = replicate circle umhos or mmhos

Test Day		Before Renewal						After Renewal					
	Test Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	Control	A	7.4	24.2	7.9	302							
	0.125	A	7.4	24.1	8.0	557							
	0.25	A	7.5	24.2	8.1	810							
	0.5	A	7.5	24.9	8.2	1264							
	1.0	A	7.5	24.2	8.0	2120							
	2.0	A	7.6	24.2	7.8	3950							
		A											
	Measured by		BA	BA	BA	BA							
	Recorded by		BA	BA	BA	BA							
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	Control	B	8.1	25.7	7.9	297		B	7.7	24.6	8.0	379	
	0.125	B	8.1	25.8	7.8	537		B	7.8	24.5	8.1	522	
	0.25	B	8.1	25.6	7.8	786		B	7.8	24.5	8.0	746	
	0.5	B	8.1	25.9	7.9	1231		B	7.8	24.5	8.3	1196	
	1.0	B	8.1	25.8	8.0	2040		B	7.9	24.5	8.0	2060	
	2.0	B	8.1	25.8	7.9	3820		BC	7.9	24.5	8.0	3810	
		B						B					
	Measured by		CR	MF	CR	CR			CR	CR	CR	CR	
	Recorded by		CR	CR	CR	CR			CR	CR	CR	CR	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	Control	C	7.7	25.3	7.0	309		C	7.7	24.3	7.9	285	
	0.125	C	7.7	24.9	7.1	538		C	7.7	24.2	7.8	504	
	0.25	C	7.7	24.7	7.1	780		C	7.8	24.1	7.7	730	
	0.5	C	7.8	25.1	7.3	1234		C	7.8	24.1	7.7	1176	
	1.0	C	7.8	24.7	7.3	2140		C	7.9	24.3	7.8	2060	
	2.0	C	7.8	24.6	7.4	3930		C	8.0	24.4	7.9	3780	
		C						C					
	Measured by		CR	CR	CR	CR	CR		CR	CR	CR	CR	
	Recorded by		CR	CR	CR	CR	CR		CR	CR	CR	CR	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	Control	D	7.8	24.6	7.2	306		D	7.8	24.4	6.9	299	
	0.125	D	7.8	24.6	7.3	540		D	7.7	24.4	6.9	534	
	0.25	D	7.9	24.5	7.5	780		D	7.7	24.3	6.9	771	
	0.5	D	7.9	24.4	7.6	1252		D	7.8	24.3	7.0	1248	
	1.0	D	8.0	24.8	7.6	2140		D	7.8	24.3	7.0	2160	
	2.0	BA DC	8.0	24.6	7.7	3990		D					
		D						D					
	Measured by		CR	CR	CR	CR			BA	CR	BA	BA	
	Recorded by		CR	CR	CR	CR			BA	CR	BA	BA	

Comments:

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

Chronic SRT Parameters Benchsheet

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

parameter pg 2

Start Date: 5.7.13 End Date: 5.14.13

Start Time: 1400 End Time: 1000

conc = concentration rep = replicate

Test Day		Before Renewal						After Renewal					
	Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos) mmhos	Salinity ppth	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (umhos) mmhos	Salinity ppth
Day 4	Control	A	8.1	25.8	6.1	307		A	8.1	24.9	7.2	299	
	0.125	A	8.0	25.6	6.6	548		A	8.0	24.8	7.0	536	
	0.25	A	8.0	25.2	6.3	781		A	8.0	24.7	6.9	770	
	0.5	A	8.0	25.5	6.5	1249		A	8.0	24.8	6.9	1227	
	1.0	A	8.1	25.4	6.5	2170		A	8.0	24.7	7.0	2130	
		A						A					
		A						A					
	Measured by		BA	MF	BA	BA			BA	BA	BA	BA	
	Recorded by		BA	MF	BA	BA			BA	BA	BA	BA	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	Control	B	7.9	24.9	5.9	304		B	8.1	24.7	7.7	297	
	0.125	B	7.8	24.9	6.0	533		B	8.0	24.7	7.6	523	
	0.25	B	7.9	25.1	6.9	766		B	8.0	24.7	7.5	753	
	0.5	B	7.9	25.0	6.9	1235		B	8.0	24.6	7.6	1202	
	1.0	B	7.9	24.9	6.9	2150		B	8.1	24.6	7.7	2130	
		B						B					
		B						B					
	Measured by		CR	MF	CR	CR			MF	MF	MF	MF	
	Recorded by		CR	MF	CR	CR			MF	MF	MF	MF	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	Control	C	7.8	25.1	5.6	319		C	8.0	23.4	7.4	310	
	0.125	C	7.7	25.1	5.6	548		C	7.9	23.6	7.3	531	
	0.25	C	7.7	25.0	5.3	791		C	7.9	23.7	7.3	774	
	0.5	C	7.8	25.2	5.4	1252		C	8.0	23.6	7.3	1228	
	1.0	C	7.8	25.1	7.5	2150		C	8.0	23.7	7.3	2120	
		C						C					
		C						C					
	Measured by		AP	CR	AP	AP			CR	AP	CR	CR	
	Recorded by		CR	CR	CR	CR			AP	CR	AP	AP	
		Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	Control	D	7.8	24.9	6.3	313		D					
	0.125	D	7.8	24.7	6.3	550		D					
	0.25	D	7.8	24.6	6.4	796		D					
	0.5	D	7.8	24.6	6.4	1282		D					
	1.0	D	7.9	24.6	7.3	2190		D					
		D						D					
		D						D					
	Measured by		CR	CR	CR	CR							
	Recorded by		CR	CR	CR	CR							

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)	Avg
Control	A	25	0.02202	0.02992	0.0079	10	0.79	
	B	26	0.02163	0.02828	0.00665	10	0.665	
	C	27	0.02258	0.02956	0.00698	10	0.698	0.737
	D	28	0.02241	0.03035	0.00794	10	0.794	
0.125	A	29	0.02232	0.02814	0.00573	10	0.573	
	B	30	0.02331	0.02922	0.00591	10	0.591	
	C	31	0.02317	0.02937	0.0062	10	0.62	0.54
	D	32	0.02337	0.02749	0.00412	10	0.412	
0.25	A	33	0.02390	0.02775	0.00385	10	0.385	
	B	34	0.02235	0.02696	0.00461	10	0.461	
	C	35	0.02317	0.02809	0.00492	10	0.492	0.45
	D	36	0.02227	0.02722	0.00495	10	0.495	
0.5	A	37	0.02114	0.02591	0.00477	10	0.477	
	B	38	0.02221	0.02635	0.00414	10	0.414	
	C	39	0.02201	0.02655	0.00454	10	0.454	0.44
	D	40	0.02183	0.02598	0.00415	10	0.415	
1.0	A	41	0.02157	0.02243	0.00086	10	0.086	
	B	42	0.02325	0.02384	0.00059	10	~~0.056~~ 0.059	0.059
	C	43	0.02296	0.02330	0.00034	10	0.034	
	D	~~44~~ AP				10		
	A					10		
	B					10		
	C					10		
	D					10		
	A					10		
	B					10		
	C					10		
	D					10		
		Weighed by:	CR	AP				

Comments:

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

PAGE 00033 revised 8/24/06 MF/SP

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* QC

SOPs TA07_09, TA07_14 and TA06_21

all weights in grams

Empty Pan Weights Date: 5-13-13 Weighed by: AP

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02202	@ 0.02202
after Pan 10	0.02204	@ 0.02202
after Pan 15	0.02202	@ 0.02202
after Pan 20	0.02202	@ 0.02202
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.01000	@ 0.01
	0.03004	@ 0.03

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 5-15-13 Weighed by: AP

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02992	@ 0.02992
after Pan 10	0.02992	@ 0.02992
after Pan 15	0.02990	@ 0.02992
after Pan 20	0.02991	@ 0.02992
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.00999	@ 0.01
	0.05003	@ 0.05

Drying Oven ID: ER034000

Temperature °C: 100

Drying Hours: 8

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

Comments:

Test ID: P.promelas chronic SRT Dates: 5-7-13 to 5-14-13

METER / DEVICE	ID	SOP	Parameter	Method	√ used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #4
Hach Pocket Colorimeter II #1	05110C042029	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Hach Pocket Colorimeter II #2	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓

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

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

Entered By: 5-16-13 AP

V 1.2 2/20/11 MF/jd

Test Page 2 of 2 PAGE

MARINCO BIOASSAY LABORATORY
The Aquatic Toxicology Specialists

NELAP Certification # E84191

Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Shipping Date: 5/6/13

Ship to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood/Lot Number	Temp. (°C)	pH (S.U.)	Salinity (‰)
Mysidopsis bahia	300	3 DAYS	MS 130503	25	7.9	10
	150	3 DAYS	MS 130503	25	7.9	20
Menidia beryllina						
						Hardness mg/L
Cyprinella leedsi						
Pimephales promelas	550	<24HRS	FM130505-1530	25	7.8	80
Ceriodaphnia dubia						
Daphnia magna						
YCT						
P. subcapitata						

Packed by: PM

Shipped Via: Fed Ex

Notes: _____

Thank you for your order.

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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 from samples collected in Mosquito Creek, upstream and downstream of City of Chattahoochee WWTP on 5/6/13.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyta	269	266
Chlorophycota		
Chlorella sp.	4	-
Closterium venus venus	-	1
Cosmarium anisochondrum anisochondrum	1	-
Cosmarium phaseolus phaseolus	1	-
Cosmarium variolatum variolatum	1	-
Pediastrum tetras	1	-
Scenedesmus bijuga	1	1
Scenedesmus brasiliensis	1	-
Scenedesmus quadricauda	-	1
Scenedesmus sp.	1	-
Cyanophycota		
Cyanothece aeruginosa	-	3
Hapalosiphon sp.	1	-
Jaaginema gracile	7	1
Oscillatoria tenuis	5	1
Pleurocapsa sp.	1	-
Pseudanabaena mucicola	1	-
Schizothrix calcicola	6	23
Synechocystis sp.	-	4

Appendix I-2

Diatom taxa list and number of valves counted to a target of 500 valves for qualitative periphyton collected from samples collected in Mosquito Creek, upstream and downstream of City of Chattahoochee WWTP on 5/6/13.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyceae		
Achnanthes amoena	3	1
Achnanthidium sp.	7	2
Achnanthidium exiguum	3	2
Achnanthidium minutissimum	97	19
Asterionella formosa	-	1
Aulacoseira granulata	2	-
Aulacoseira herzogii	1	-
Caloneis sp.	1	6
Capartogramma crucicula	1	-
Cocconeis sp.	-	1
Cocconeis fluviatilis	16	32
Cocconeis placentula	58	36
Craticula sp.	7	20
Cymbella sp.	-	1
Denticula sp.	-	4
Diadesmis confervacea	1	-
Diadesmis contenta	8	4
Diploneis sp.	-	1
Discostella pseudostelligera	-	1
Encyonema silesiacum	4	2
Eunotia sp.	8	45
Eunotia bilunaris	1	1
Eunotia formica	1	1
Eunotia pectinalis undulata	-	2
Fragilaria capucina	3	1
Fragilaria martyi	-	7
Fragilariaceae	1	-
Frustulia sp.	1	2
Geissleria acceptata	16	3
Geissleria decussis	2	11
Gomphonema sp.	19	39
Gomphonema minutum	32	6
Gomphonema parvulum	28	17
Gyrosigma scalproides	-	2
Hippodonta capitata	-	2
Karayevia clevei	-	1

Appendix I-2 (continued)

Luticola mutica	-	3
Melosira sp.	6	22
Navicula sp.	43	57
Navicula cryptocephala	3	2
Navicula cryptotenella	6	10
Navicula germainii	4	2
Navicula longicephala	2	1
Navicula minima	11	1
Navicula peregrina	1	11
Navicula viridula	-	1
Neidium sp.	1	1
Nitzschia sp.	6	4
Nitzschia amphibia	-	7
Nitzschia dissipata	-	1
Nitzschia intermedia	1	-
Nitzschia sinuata	-	1
Nupela neotropica	1	-
Nupela vitiosa	8	9
Pinnularia sp.	8	8
Placoneis clementis	-	3
Placoneis elginensis	-	1
Planothidium sp.	-	1
Planothidium apiculatum	1	4
Planothidium frequentissimum	5	5
Planothidium peragalli	5	3
Planothidium rostratum	47	22
Pleurosigma laveis	-	8
Pleurosira laevis	3	-
Psammothidium subatomoides	1	3
Sellaphora sp.	2	-
Sellaphora pupula	-	3
Stauroneis smithii	1	1
Staurosirella pinnata	5	20
Surirella sp.	-	5
Synedra ulna	8	4
Tabellaria fenestrata	-	1
Thalassiosira sp.	-	2

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 28 days upstream and downstream of the City of Chattahoochee WWTP and collected on 5/6/13. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Oligochaeta		
Tubificidae	-	3
Arthropoda		
Arachnida		
Acariformes		
Hygrobates sp.	-	13
Undetermined	3	-
Insecta		
Coleoptera		
Ancyronyx variegatus	-	8
Macronychus glabratus	16	52
Microcylloepus pusillus	-	6
Stenelmis sp.	8	11
Diptera		
Atrichopogon sp.	-	3
Corynoneura sp.	11	24
Cricotopus bicinctus	149	-
Cricotopus or orthocladius sp.	80	13
Hemerodromia sp.	53	111
Neoplasta sp.	3	-
Nilotanypus sp.	5	-
Nilotanypus fimbriatus	-	8
Parakiefferiella sp.	-	3
Phaenopsectra punctipes grp.	3	-
Polypedilum aviceps	3	22
Polypedilum fallax	-	17
Polypedilum flavum	125	99
Polypedilum scalaenum grp.	-	3
Rheocricotopus robacki	11	67
Rheotanytarsus exiguus grp.	260	236
Rheotanytarsus pellucidus	5	40
Simulium sp.	50	852
Tanytarsus sp. C Epler	4	21
Tanytarsus sp. D Epler	9	-
Tanytarsus sp. U Epler	-	3

Appendix J-1 (continued)

Thienemanniella similis	-	8
Thienemanniella sp. B Epler	35	-
Thienemanniella xena	35	114
Thienemannimyia grp.	8	11
Tvetenia tshernovskii	61	109
Ephemeroptera		
Baetis intercalaris	16	27
Caenis sp.	11	3
Isonychia sp.	-	5
Labiobaetis propinquus	3	5
Maccaffertium exiguum	5	12
Maccaffertium smithae	-	4
Tricorythodes albilineatus	3	-
Megaloptera		
Corydalus cornutus	3	-
Plecoptera		
Agnetina annulipes	-	3
Perlesta placida complex	19	24
Trichoptera		
Cheumatopsyche sp.	79	120
Hydropsyche sp.	88	86
Hydroptila sp.	-	3
Neotrichia sp.	3	-
Mollusca		
Gastropoda		
Ancylidae	3	5

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 City of Chattahoochee WWTP facility for 28 days and collected on 5/6/13.

	Control Site	Test Site
Annelida		
Oligochaeta		
Tubificidae	-	1
Arthropoda		
Arachnida		
Acariformes		
Hygrobates sp.	-	3
Undetermined	1	2
Insecta		
Coleoptera		
Ancyronyx variegatus	-	3
Elmidae	-	1
Macronychus glabratus	6	19
Microcylloepus pusillus	-	2
Stenelmis sp.	3	4
Diptera		
Atrichopogon sp.	-	1
Chironomidae	1	1
Corynoneura sp.	4	9
Cricotopus bicinctus	56	-
Cricotopus or orthocladius sp.	30	5
Hemerodromia sp.	20	42
Neoplasta sp.	1	-
Nilotanypus sp.	2	-
Nilotanypus fimbriatus	-	3
Parakiefferiella sp.	-	1
Phaenopsectra punctipes grp.	1	-
Polypedilum sp.	1	2
Polypedilum aviceps	1	8
Polypedilum fallax	-	6
Polypedilum flavum	46	36
Polypedilum scalaenum grp.	-	1
Rheocricotopus robacki	4	25
Rheotanytarsus sp.	1	1
Rheotanytarsus exiguus grp.	97	88
Rheotanytarsus pellucidus	2	15
Simulium sp.	19	322

Appendix J-2 (continued)

Tanytarsus sp.	2	-
Tanytarsus sp. C Epler	1	8
Tanytarsus sp. D Epler	2	-
Tanytarsus sp. U Epler	-	1
Thienemanniella sp.	24	2
Thienemanniella similis	-	3
Thienemanniella sp. B Epler	1	-
Thienemanniella xena	1	41
Thienemannimyia grp.	3	4
Tvetenia tshernovskii	23	41
Ephemeroptera		
Baetis intercalaris	6	10
Caenis sp.	4	1
Heptageniidae	1	2
Isonychia sp.	-	2
Labiobaetis propinquus	1	2
Maccaffertium exiguum	1	3
Maccaffertium smithae	-	1
Tricorythodes albilineatus	1	-
Megaloptera		
Corydalus cornutus	1	-
Plecoptera		
Agnetina annulipes	-	1
Perlesta placida complex	7	9
Trichoptera		
Cheumatopsyche sp.	8	18
Hydropsyche sp.	9	13
Hydropsychidae	46	47
Hydroptila sp.	-	1
Neotrichia sp.	1	-
Mollusca		
Gastropoda		
Ancylidae	1	2

Appendix K-1

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of City of Chattahoochee WWTP on 5/6/13. 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	-	-	-
Stylaria lacustris	-	1	-	-
Arthropoda				
Arachnida				
Acariformes				
Atractides sp.	1	2	3	-
Hygrobates sp.	1	-	-	-
Lebertia sp.	1	-	-	-
Mideopsis sp.	1	-	-	-
Undetermined	-	-	-	1
Crustacea				
Amphipoda				
Hyalella azteca	12	23	1	4
Decapoda				
Cambaridae	1	-	-	-
Insecta				
Coleoptera				
Ancyronyx variegatus	-	-	-	1
Dineutus sp.	-	1	2	-
Dubiraphia vittata	2	2	1	2
Macronychus glabratus	2	3	5	2
Microcylloepus pusillus	6	2	6	6
Stenelmis sp.	-	1	-	-
Stenelmis xylonastis	-	-	3	3
Diptera				
Ablabesmyia mallochi	-	2	-	-
Brillia sp.	-	-	-	1
Cricotopus sp.	1	2	-	-
Cricotopus or orthocladius sp.	4	3	-	2
Hemerodromia sp.	1	7	3	1
Palpomyia/bezzia grp.	1	-	-	-
Paracladopelma sp.	1	-	-	-
Pentaneura inconspicua	-	-	-	1
Polypedilum aviceps	4	1	9	4
Polypedilum fallax	-	-	-	2

Appendix K-1 (continued)

Polypedilum flavum	11	14	10	13
Polypedilum illinoense grp.	1	-	-	-
Rheocricotopus robacki	-	1	2	1
Rheotanytarsus exiguus grp.	5	2	12	3
Rheotanytarsus pellucidus	-	-	-	1
Robackia sp.	1	-	-	-
Robackia demeijerei	-	-	1	-
Simulium sp.	4	6	22	19
Stenochironomus sp.	1	2	-	-
Tanytarsus sp. C Epler	-	2	-	-
Thienemanniella sp.	1	-	-	-
Thienemannimyia grp.	-	1	-	1
Tipulidae	-	1	-	-
Tribelos jucundum	-	-	-	1
Tvetenia tshernovskii	14	9	8	8
Ephemeroptera				
Baetis intercalaris	-	3	2	4
Baetisca rogersi	-	-	-	1
Caenis sp.	23	25	19	16
Heptageniidae	1	1	-	-
Isonychia sp.	2	-	-	5
Labiobaetis propinquus	7	3	1	1
Maccaffertium sp.	-	-	-	3
Maccaffertium exiguum	-	-	2	-
Macdunnoa brunnea	-	-	7	3
Tricorythodes albilineatus	1	-	-	1
Odonata				
Boyeria vinosa	1	-	-	-
Hetaerina sp.	-	-	-	2
Plecoptera				
Acroneuria abnormis	-	-	-	1
Perlesta placida complex	4	8	5	13
Trichoptera				
Cheumatopsyche sp.	4	2	12	12
Hydropsyche sp.	7	10	5	4
Hydroptila sp.	11	11	2	9
Neotrichia sp.	2	-	-	-
Oecetis sphyra/morsei	-	-	2	-
Oxyethira sp.	-	1	-	-
Mollusca				
Bivalvia				
Corbicula fluminea	1	1	-	1

Appendix K-1 (continued)

Gastropoda				
Ancylidae	1	-	1	-
Micromenetus sp.	1	1	2	-
Melanoides sp.	2	1	-	-

Appendix K-2

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of City of Chattahoochee WWTP on 5/6/13.

		Control Site		Test Site	
		Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Annelida					
Oligochaeta					
	Bratislavia unidentata	1	-	-	-
	Stylaria lacustris	-	1	-	-
Arthropoda					
Arachnida					
Acariformes					
	Atractides sp.	1	2	3	-
	Hygrobates sp.	1	-	-	-
	Lebertia sp.	1	-	-	-
	Mideopsis sp.	1	-	-	-
	Undetermined	-	-	-	1
Crustacea					
Amphipoda					
	Hyalella azteca	12	23	1	4
Decapoda					
	Cambaridae	1	-	-	-
Insecta					
Coleoptera					
	Ancyronyx variegatus	-	-	-	1
	Dineutus sp.	-	1	2	-
	Dubiraphia vittata	2	2	1	2
	Macronychus glabratus	2	3	5	2
	Microcylloepus pusillus	6	2	6	6
	Stenelmis sp.	-	1	2	2
	Stenelmis xylonastis	-	-	1	1
Diptera					
	Ablabesmyia mallochi	-	2	-	-
	Brillia sp.	-	-	-	1
	Chironomidae	8	4	-	3
	Cricotopus sp.	1	2	-	-
	Cricotopus or orthocladius sp.	3	3	-	2
	Hemerodromia sp.	1	7	3	1
	Palpomyia/bezzia grp.	1	-	-	-
	Paracladopelma sp.	1	-	-	-
	Pentaneura inconspicua	-	-	-	1
	Polypedilum aviceps	3	1	9	4
	Polypedilum fallax	-	-	-	2
	Polypedilum flavum	9	11	10	11

Appendix K-2 (continued)

Rheopelopia ornata grp.	- 1	1 -	2 -	1 -
Rheotanytarsus exiguus grp.	4	2	12	3
Rheotanytarsus pellucidus	-	-	-	1
Robackia sp.	1	-	-	-
Robackia demeijerei	-	-	1	-
Simulium sp.	4	6	22	19
Stenochironomus	1	2	-	-
Tanytarsus sp. C Epler	-	2	-	-
Thienemanniella	1	-	-	-
Thienemannimyia grp.	-	1	-	1
Tipulidae	-	1	-	-
Tribelos jucundum	-	-	-	1
Tvetenia tshernovskii	11	8	8	7
Ephemeroptera				
Baetidae	5	4	-	-
Baetis intercalaris	-	1	2	4
Baetisca rogersi	-	-	-	1
Caenis sp.	23	25	19	16
Heptageniidae	1	1	4	4
Isonychia sp.	2	-	-	5
Labiobaetis propinquus	2	1	1	1
Maccaffertium sp.	-	-	-	1
Maccaffertium exiguum	-	-	1	-
Macdunnoa brunnea	-	-	4	1
Tricorythodes albilineatus	1	-	-	1
Odonata				
Boyeria vinosa	1	-	-	-
Hetaerina sp.	-	-	-	2
Plecoptera				
Acroneuria abnormis	-	-	-	1
Perlesta placida complex	3	8	5	12
Perlidae	1	-	-	1
Trichoptera				
Cheumatopsyche sp.	4	1	7	8
Hydropsyche sp.	6	6	3	3
Hydropsychidae	1	5	7	4
Hydroptila sp.	10	10	2	8
Neotrichia sp.	2	-	-	-
Oecetis sphyra/morsei	-	-	2	-
Oxyethira sp.	-	1	-	-
Undetermined	1	1	-	2

Appendix K-2 (continued)

Mollusca					
Bivalvia					
	Corbicula fluminea	1	1	-	1
Gastropoda					
	Ancylidae	1	-	1	-
	Micromenetus sp.	1	1	2	-
	Melanoides sp.	2	1	-	-

EPA End Sheet

The Bioassay of the City of Chattahoochee WWTP effluent sampled on May 6, 2013, 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	1 3 0 5 0 6		# B	# S	# 1

Remarks

#

The Priority Pollutants Analysis for the City of Chattahoochee WWTP effluent sampled on May 6, 2013 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	1 3 0 5 0 6		# X	# S	# 1

Remarks

#

Biological Analyses of the City of Chattahoochee WWTP effluent sampled on May 6, 2013, 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	1 3 0 5 0 6		# S	# S	# 1

Remarks

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