Biological Assessment of

Town of Century Wastewater Treatment Facility

Escambia County

NPDES # FL0032468

Sampled November 27-28, 2011

April 2012

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

Quality Manual No. 870346G

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EPA End Sheet

Facility Overview

The Town of Century WWTF is a Municipal Domestic Wastewater Treatment Facility. The effluent is discharged into the Escambia River, a Class III Fresh Water (see map Appendix A). The design flow of the wastewater system is 0.45 million gallons per day (MGD) Monthly Average Daily Flow (MADF). The annual average flow for November 2010 to October 2011 was 0.47 MGD MADF. Treatment consists of flow equalization, influent screening, aeration, secondary clarification, chlorination, dechlorination, and post aeration. The facility discharges continuously, and the flow was not measured during this survey.

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 the Escambia River beginning 120m upstream of the point of discharge and ending 220m upstream of the point of discharge) and a Test Site (located in the Escambia River beginning 190m downstream of the point of discharge and ending 90m downstream of the point of discharge). Effluent samples for all analyses were taken as grab samples from monitoring location EFF-01 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, Frank Butera, Mike King, Jennifer Claypool (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 (Michelle Fish, Nancy Ross and Ed Smith).

Results

Organic Constituents (See Table 1 and Appendix F)

- No organic constituents were detected in the effluent.
- No organic constituents were detected in the field blank.

Metals (See Table 2 and Appendix F)

- Effluent copper (7.39 µg/L) exceeded the Class III Freshwater Quality Criterion (62-302.530(23)F.A.C.). All other metals in the effluent complied with Class III Freshwater Quality Criteria (62-302.530 F.A.C.).
- All metals for the Control and Test Sites were 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 November 29 through December 3, 2011.
- Routine testing was conducted on four grab samples which were collected at 8 hour increments over a 24 hour period to capture changes in toxicity of the effluent.
- 5% mortality was observed in 100% effluent for the first grab sample 96 hour acute screen static renewal bioassay performed on the water flea *Ceriodaphnia dubia*. Mortality was not

observed in the other three grab samples. This complies with effluent permit limits of less than 20% mortality in 100% effluent.

- The effluent was not toxic to the fish *Cyprinella leedsi,* during any of the 4 grab sample 96 hour acute screen static renewal bioassays and therefore, complied with effluent permit limits.

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

- Habitat Assessment scores were similar at the Control Site (112) and Test Site (108), which places both sites in the suboptimal category. The Control Site had a higher percentage of productive habitat but more habitat smothering than the Test Site. The right bank of the Test Site was less than 18m in portions of the 100m stretch. Disruption of the plant community was also observed on the right bank of the Test Site.
- 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/or effluent permit limits.
- Alkalinity (mg CaCO3/L) of the effluent, Control Site and Test Site complied with Class III Freshwater Quality Criteria (62-302.530(1) F.A.C.).
- Total residual chlorine (TRC) of the effluent was undetected in the bioassay sample as measured in the FDEP laboratory. The sample was held beyond the normal holding time for this measurement (Q qualifier).
- Chlorophyll *a* (corrected) was detected at a low level at both the Control and Test Sites and in the effluent.
- Total suspended solids (mg/L) and Carbonaceous Biochemical Oxygen Demand (CBOD; mg/L) of the effluent complied with permit limits.
- The monthly average daily flow (0.47 MGD) for November 2011 exceeded the permit limit of 0.45 MGD MADF. The facility has completed construction that will increase the treatment capacity to 0.675 MGD MADF and has applied to increase the permit limit, but no revision to the permit has been issued as of the date of this inspection.

Microbiology (See Table 1 and Appendix F)

- Fecal coliform analyses were performed by the University of West Florida, Pensacola, Florida.
- Fecal coliforms were detected in the effluent and at both the Control and Test Sites at levels which complied with Class III Freshwater Quality Criterion (62-302.530(6) F.A.C.) and/or effluent permit limits.

Nutrients (See Table 1 and Appendix F)

- Effluent nutrient levels complied with permit limits.
- The total organic carbon values for the Control and Test Sites were the same. Effluent total organic carbon was lower. Ortho-phosphate, total phosphorus, and nitrate and nitrite at both the Control and Test Sites was an order of magnitude lower than the effluent value. Nitrogen values at both the Control and Test Sites were lower than effluent values. Although effluent nutrient measurements were higher than those of the Control Site, the similarity of nutrient values at the Control and Test Sites indicates no detectable nutrient enrichment downstream from the effluent at the Test Site.
- Nitrates and nitrites were detected in the field blank at a value between the laboratory method detection limit and the laboratory practical quantitation limit (I qualifier). However, nitrate and nitrite in the effluent, Control Site and Test Site samples was greater than ten times the value of 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 represent a “problem” threshold for fresh receiving waters, implying nutrient enrichment. The AGP value in the effluent sample using the freshwater species, *Pseudokirchneriella subcapitata,* was

approximately 31 times greater than the “problem” threshold value. The analytical chemistry suggests that the effluent is nitrogen limited.

- The AGP values for the Control and Test Sites were approximately 5 times greater than the “problem” threshold value. The analytical chemistry suggests that both study sites are nitrogen limited.
- Despite the high AGP value of the effluent, the Test Site AGP value is similar to the Control Site value which indicates that nutrient enrichment from the effluent was not detected at the Test Site.

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 at the Control Site was dominated by *Achnanthidium minutissimum*. The diatom community at the Test Site was dominated by *Melosira* sp. The percentage of blue-green algae was similar at the Control and Test Sites. There were slightly more green algae present at the Test Site. There were no adverse effects apparent on the periphyton community in Escambia River 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 floating Hester-Dendy samplers at the Control and Test Sites. The Shannon-Weaver diversity scores were similar at the Control and Test Sites (4.10 and 4.02, respectively). Both sites were dominated by *Hydroptila* sp., a trichopteran. This taxon comprised approximately of one quarter of each sample. Both sites had similar numbers of total taxa and sensitive taxa. The two communities were similar.
- Qualitative macroinvertebrate data from dipnet samples indicated that the macroinvertebrate community at the Control Site was similar to the Test Site. The Test Site scored 41 A on the Stream Condition Index (SCI), and the Control Site scored 52 A. Both sites scored in Category 2 (see Appendix C for an explanation of SCI Categories). Both sites had similar numbers of ephemeroptera, trichoptera, and clinger taxa. The Test Site had slightly fewer sensitive taxa, long-lived taxa and tanytarsini individuals, all of which tend to decline with human disturbance. (See Appendix C for an explanation of how these SCI metrics typically respond to human disturbance). Both sites were dominated by *Hydroptila* sp., a trichopteran. The Control Site had more suspension feeders which decrease with increasing disturbance. Overall, there were no negative effects on macroinvertebrates at the Test Site that were attributable to the effluent.

Conclusion

Effluent copper exceeded Class III Freshwater Quality Criteria (62-302.530(23)) but was not increasing the copper values at the Test Site when compared to the Control Site. The flow of the facility for the sampling month exceeded permit limits. The facility has applied to increase the permitted treatment capacity. The AGP Tests and nutrient analyses indicate that the effluent is being diluted to the point to have no discernible impact on the Test Site. Test Site AGP and nutrient values were similar to those of the Control Site. The AGP values for the Control and Test Sites were approximately 5 times greater than the “problem” threshold value.

There were no adverse effects apparent on the periphyton community as a result of the effluent. Both sites were dominated by *Hydroptila* sp. as measured by the macroinvertebrate Hester-Dendy samplers and the SCI. The SCI score of the Test Site was lower than the Control Site, however, both sites scored in Category 2. Overall, there were no negative effects on macroinvertebrates at the Test Site that were attributable to the effluent.

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

Town of Century WWTF	Class III Criteria	Effluent Limits	Effluent	Control Site	Test Site	Field Blank
Organic Constituents (µg/L)						
None Detected	-	-	None Detected			
Nutrients (mg/L)						
Total Organic Carbon	-	-	3.3 I	5.2	5.2	1 U
Ortho-phosphate	-	-	2	0.052	0.054	0.004 U
Total Phosphorus	-	-	2.3	0.08	0.083	0.004 U
Total Ammonia	-	≤ 6.0 s	0.063	0.24	0.26	0.01 U
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c	-
Nitrate and Nitrite	-	-	2.9	0.28	0.27	0.005 I
Total Kjeldahl Nitrogen	-	-	0.77	0.53	0.56	0.08 U
Organic Nitrogen	-	-	0.71 c	0.29 c	0.30 c	≤ 0.04 c
Total Nitrogen	-	-	3.67 c	0.81 c	0.83 c	0.05 c
General Physical and Chemical Parameters						
Habitat Assessment	-	-	-	112	108	-
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 6.0	8.9	8.9	8.6	-
pH (SU)	6.0 - 8.5	6.0 - 8.5	6.9	7.1	7.1	-
Conductivity (µmhos/cm)	≤ 1,275	-	307	158	162	-
Temperature (°C)	-	-	21.6	15.6	15.7	-
Sample Depth (m)	-	-	0.15	0.15	0.15	-
Alkalinity (mg $CaCO_3$/L)	≥ 20	-	40	37	37	0.65 U
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01	≤ 0.03 UQ£	-	-	-
Chlorophyll *a* (µg/L) - Corrected	-	-	0.63 I	1.9	1.3 I	-
Phaeophytin (µg/L)	-	-	0.4 U	1.7	1.1 I	-
Total Suspended Solids (mg/L)	-	≤ 60.0 p s	2 I	4 I	6 I	-
Turbidity (NTU)	< 29 t	-	2 A	6.9	7	0.1 U
Color (pt-Co)	-	-	5.4 I	45	46 A	2 U
CBOD, 5 day (mg/L), N - inhibited	-	≤ 60.0 p s	2 J	1.4 IJ	1.2 IJ	-
Chloride (mg/L)	-	-	40	11	11	0.2 U
Fluoride (mg/L)	≤ 10.0	-	0.035 U	0.035 U	0.035 U	0.035 U
Sulfate (mg/L)	-	-	24	19	19	0.2 U
Flow (MGD)	-	≤ 0.45*	0.47*	-	-	-
Hardness (mg $CaCO_3$)	-	-	59.4 c	29.3 c	29.9 c	0.352 c
Toxicity 96 hour Acute Screen, Static Renewal (% mortality in 100% effluent)						
Bioassay - Water flea *(Ceriodaphnia dubia) 11/27/2011 7:01:00 PM*	-	≤ 20	5	-	-	-
Bioassay - Water flea *(Ceriodaphnia dubia) 11/28/2011 12:58:00 AM*	-	≤ 20	0	-	-	-
Bioassay - Water flea *(Ceriodaphnia dubia) 11/28/2011 7:02:00 AM*	-	≤ 20	0	-	-	-
Bioassay - Water flea *(Ceriodaphnia dubia) 11/28/2011 1:01:00 PM*	-	≤ 20	0	-	-	-
Bioassay - Fish *(Cyprinella leedsi) 11/27/2011 7:01:00 PM*	-	≤ 20	0	-	-	-
Bioassay - Fish *(Cyprinella leedsi) 11/28/2011 12:58:00 AM*	-	≤ 20	0	-	-	-
Bioassay - Fish *(Cyprinella leedsi) 11/28/2011 7:02:00 AM*	-	≤ 20	0	-	-	-
Bioassay - Fish *(Cyprinella leedsi) 11/28/2011 1:01:00 PM*	-	≤ 20	0	-	-	-
Microbiology (Number of colony forming units/100ml)						
Fecal Coliforms ¥	≤ 400s #	≤ 400s #	6 B	234	226	-

Value exceeds the Class III Water Quality Criteria or permit limits

c - Value is calculated
p - 8 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
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
¥ - Fecal coliform analysis performed by University of West Florida, Pensacola, FL
* - Monthly average daily flow
# - If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
£ - measurement taken in the FDEP laboratory

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.

Town of Century WWTF	Effluent Class III Criteria	Effluent Limits	Effluent	Control Site Class III Criteria	Control Site	Test Site Class III Criteria	Test Site
Metals (µg/L unless otherwise noted)							
Aluminum	-	-	45	-	218	-	236
Arsenic	≤ 50	-	0.25 U	≤ 50	0.4 I	≤ 50	0.38 I
Cadmium	≤ 0.180 b	-	0.05 U	≤ 0.100 b	0.05 U	≤ 0.110 b	0.05 U
Calcium (mg/L)	-	-	20.80	-	9.22	-	9.48
Chromium-III	≤ 56.3 b	-	0.3 U	≤ 31.5 b	0.59 I	≤ 32.1 b	0.65 I
Copper	≤ 5.98 b	-	7.39	≤ 3.30 b	0.5 U	≤ 3.33 b	0.5 U
Iron	≤ 1,000	-	37 I	≤ 1,000	990	≤ 1,000	980
Lead	≤ 1.64 b	-	0.2 U	≤ 0.700 b	0.24 I	≤ 0.690 b	0.25 I
Magnesium (mg/L)	-	-	1.82	-	1.52	-	1.52
Nickel	≤ 33.6 b	-	1.65	≤ 18.5 b	0.81 I	≤ 18.8 b	0.8 I
Selenium	≤ 5.0	-	0.2 U	≤ 5.0	0.2 U	≤ 5.0	0.2 U
Sodium (mg/L)	-	-	31.7	-	20.2	-	20.7
Silver	≤ 0.070	-	0.025 U	≤ 0.070	0.025 U	≤ 0.070	0.025 U
Zinc	≤ 77.1 b	-	22	≤ 42.3 b	5 U	≤ 43.1 b	5 U

See Table 1 for calculated hardness.

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

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

Town of Century WWTF					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	156.0	112.6 ± 22.5	139.5 ± 27.9	1.5	1.6
Control Site	25.3	19.8 ± 4.0	30.8 ± 6.2	10.0	10.1
Test Site	26.5	20.1 ± 4.0	31.5 ± 6.3	9.8	10.0

Table 4. Periphyton Composition - Qualitative

Town of Century WWTF	Control Site	Test Site
Number of Wet Taxa	10	19
Number of Wet Algal Units Identified	302	302
Percent Dominant Wet Taxon	77.5	74.8
Dominant Wet Taxon Name	Bacillariophyta (Diatoms)	Bacillariophyta (Diatoms)
Number of Diatom Taxa	52	54
Number of Diatom Algal Units Identified	501	500
Percent Dominant Diatom Taxon	14.9	11.0
Dominant Diatom Taxon Name	*Achnanthidium minutissimum*	*Melosira* sp.
Percentage Composition for Wet Algae		
Blue-green algae	20.2	15.9
Green algae	2.3	9.3
Diatoms	77.5	74.8

Table 5. Macroinvertebrate Hester-Dendy Samples - Quantitative

Town of Century WWTF	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	4.10	4.02
Number of Taxa	50	45
Number of EPT Taxa	16	14
Percent Dominant Taxon	21.8	26.6
Dominant Taxon Name	*Hydroptila* sp. (Trichoptera)	*Hydroptila* sp. (Trichoptera)
Total Number of Individuals (counted)	2,928	833
Total Number of Individuals (#/m^2)	7,747	2,206
Community Composition: Percent of total		
Coleoptera	0.0	0.4
Diptera	45.9	50.3
Ephemeroptera	2.0	2.8
Gastropoda	0.1	2.8
Odonata	0.1	0.0
Oligochaeta	11.9	9.9
Plecoptera	0.4	0.2
Trichoptera	39.5	33.7
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	11.9	9.9
Piercers	21.8	26.6
Predators	6.1	6.6
Scrapers	0.9	4.0
Shredders	5.6	9.7
Surface Deposit Feeders	22.2	27.1
Suspension Feeders	31.4	15.4
Unknown	0.2	0.7

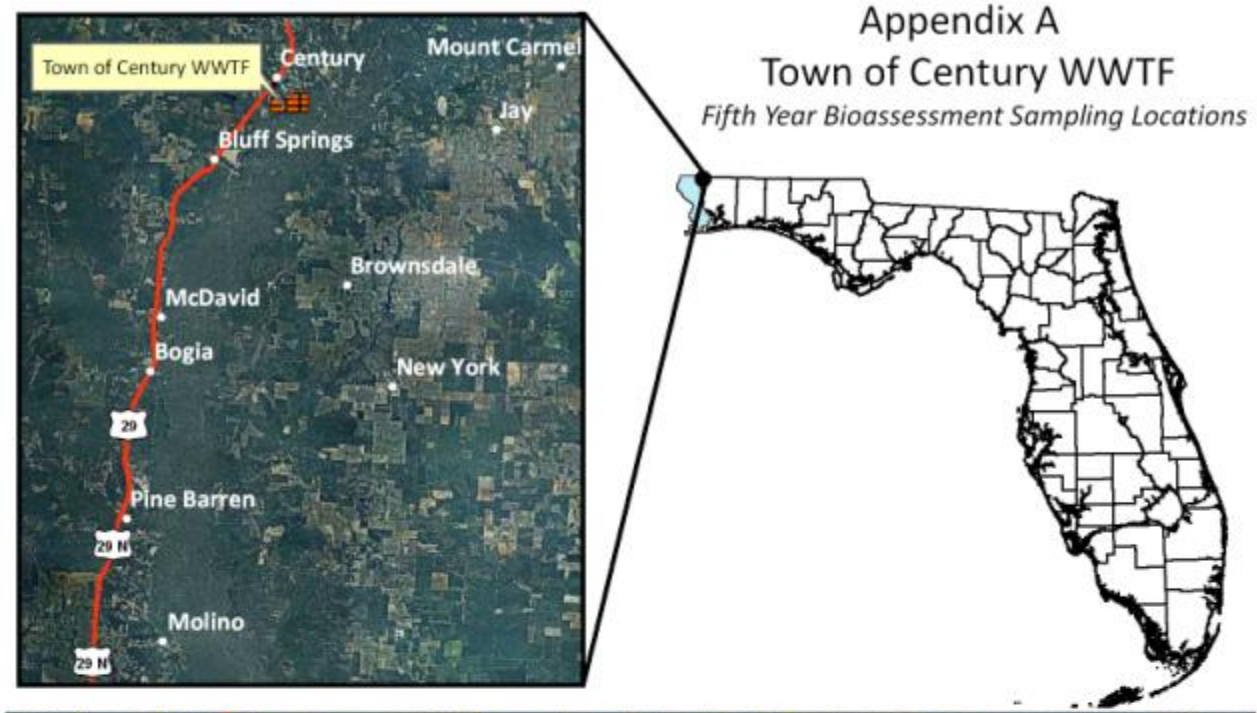
Table 6. Macroinvertebrate Dipnet Samples - Qualitative

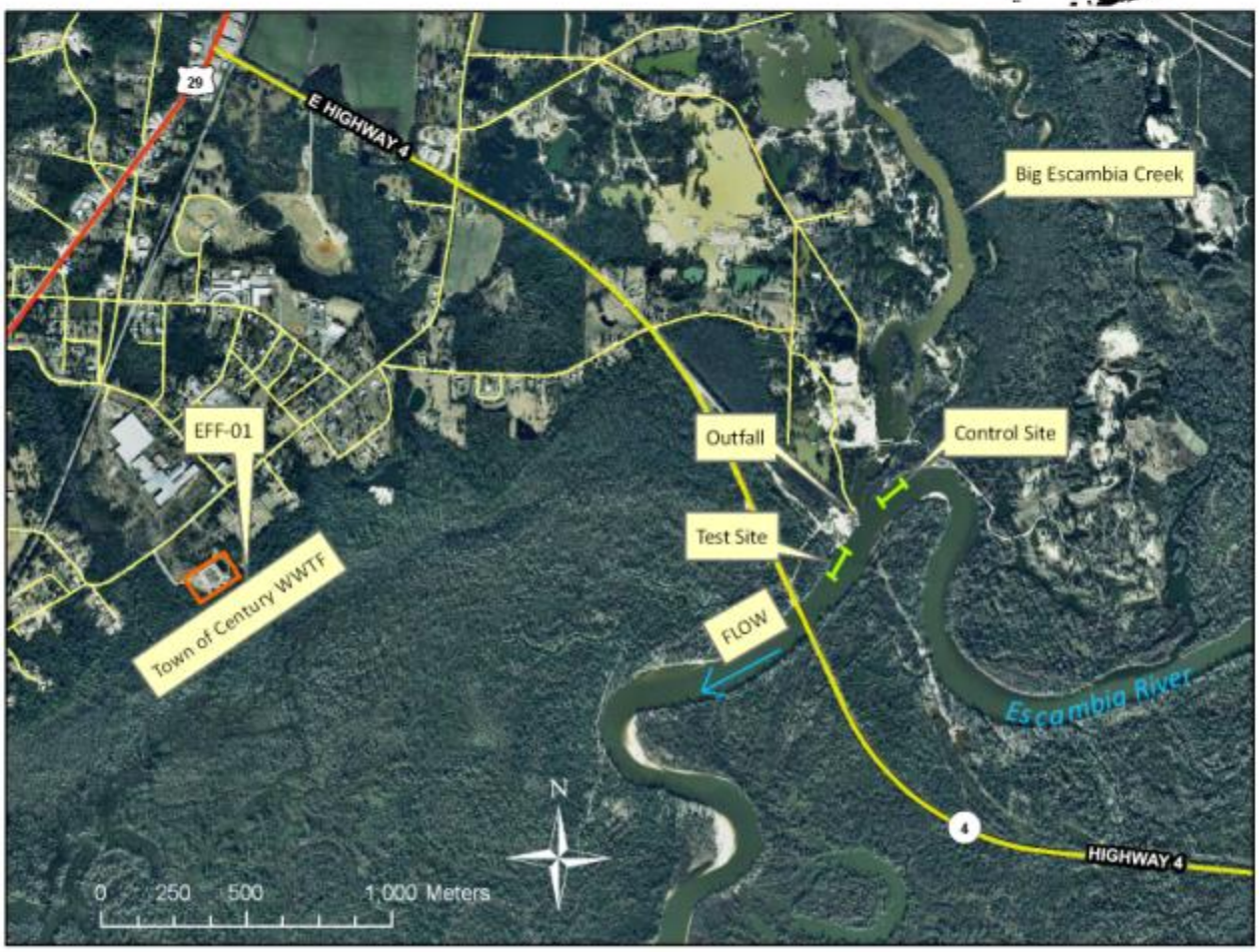
Town of Century WWTF	Control Site		Test Site	
Stream Condition Index 2007 (value)	52 A		41 A	
Stream Condition Index 2007 (category) *	Category 2		Category 2	
Stream Condition Index Metrics	Rep 1	Rep 2	Rep 1	Rep 2
Number of Total Taxa	29	25	26	25
Number of Ephemeroptera Taxa	4	4	5	5
Number of Trichoptera Taxa	8	5	6	5
Number of Clinger Taxa	11	8	7	8
Number of Long-lived Taxa	1	3	0	1
Number of Sensitive Taxa	8	9	6	8
Percent of Dominant Taxon	37.8	51.0	48.8	45.9
Percent Suspension Feeders and Filterers	30.7	22.6	13.4	18.2
Percent of Tanytarsini Individuals	3.4	0.0	0.6	0.0
Percent of Very Tolerant Individuals	10.1	3.2	10.6	6.3
Total Number of Individuals	148	155	160	159
Community Composition: Percent of total				
Dominant Taxon Name	*Hydroptila* sp. (Trichoptera)	*Hydroptila* sp. (Trichoptera)	*Hydroptila* sp. (Trichoptera)	*Hydroptila* sp. (Trichoptera)
Bivalvia	0.0	0.0	0.0	0.6
Coleoptera	4.1	2.6	0.6	0.6
Diptera	22.3	12.3	21.3	26.4
Ephemeroptera	4.7	5.8	8.1	7.6
Gastropoda	0.7	1.3	6.9	0.6
Oligochaeta	2.7	1.3	0.6	0.0
Plecoptera	2.0	3.9	1.3	1.3
Trichoptera	63.5	72.3	60.0	62.9
Other	0	0.6	1.2	0
Functional Feeding Groups: Percent of total				
Burrowing Deposit Feeders	2.7	1.3	0.6	0.0
Piercers	37.8	51.0	48.8	45.9
Predators	3.4	2.3	2.5	1.3
Scrapers	3.7	4.5	10.6	4.4
Shredders	8.5	5.5	6.9	10.7
Surface Deposit Feeders	13.2	12.9	17.2	19.5
Suspension Feeders	30.7	22.6	13.4	18.2

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
Town of Century WWTF
Fifth Year Bioassessment Sampling Locations





Appendix B

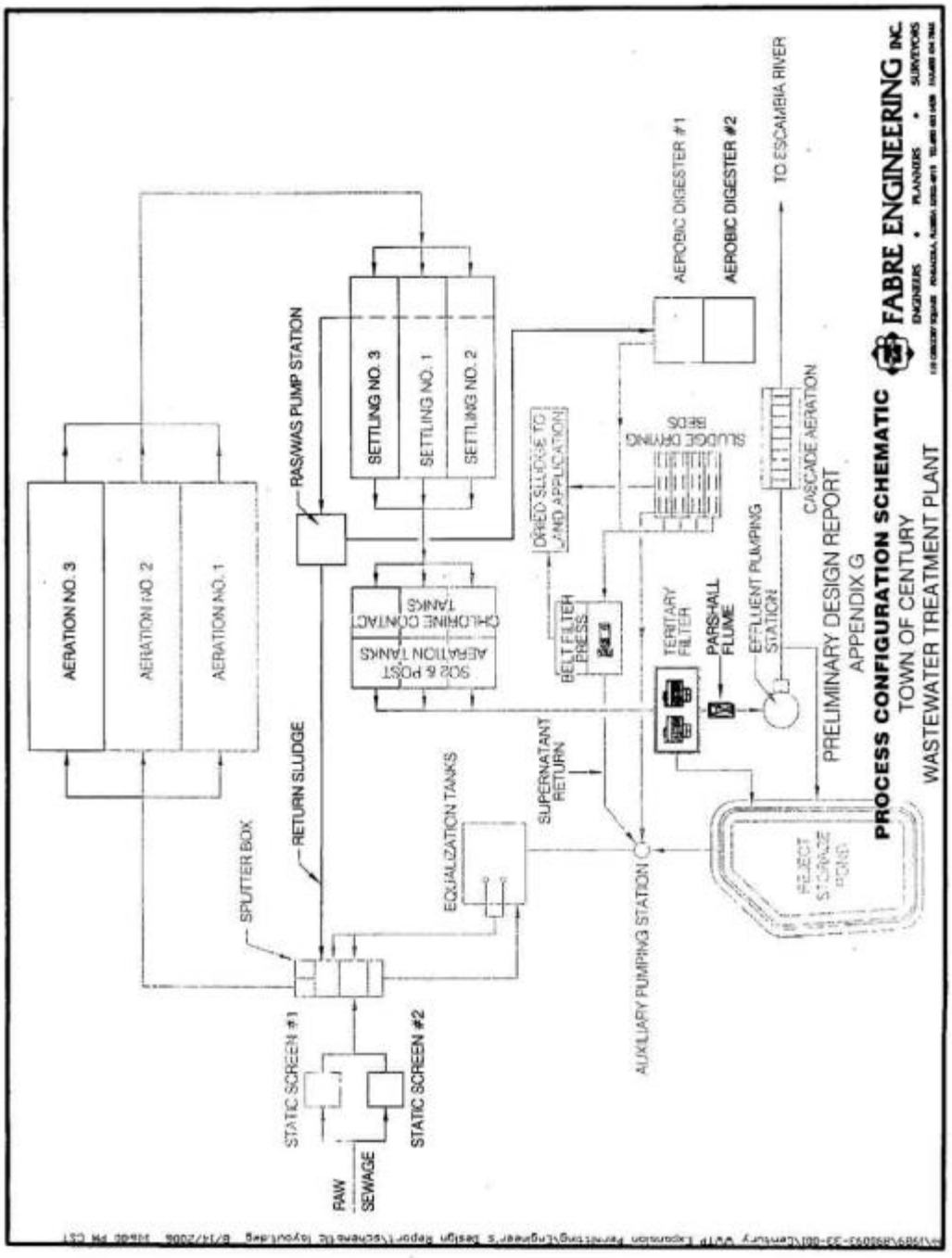
Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Kim Allen	**Contact Number:** (850)595-0553 (10553)
Facility Name (as it appears on permit): Town of Century WWTF	**Former Names:**
NPDES Permit Number: FL0032468	**Permit Expiration Date:** December 20, 2012
Physical Address: Jefferson Street	
District: NWD	**County:** Escambia
Function of Facility: Municipal domestic wastewater treatment facility	
Facility Type: Domestic	**Permitted Capacity (MGD):** .45 MGD (MMADF)
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): .4717 mgd monthly average (1/11-12/11)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): N/A	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	
Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): EFA-01 Post Chlorine Contact EFF-01 Sample point prior to Discharge INF-01 Influent Pumping Station	
Description of Permitted Outfall(s): An existing 0.45 MGD MADF permitted discharge to Escambia River to (Class III fresh waters) at Discharge Location (D-001) which is approximately 15 feet in length and discharges at a depth of approximately 11 feet. The point of discharge is located approximately at latitude 30 o 57' 53" N, longitude 87 o 15' 22" W.	

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

An existing 0.675 MGD monthly average daily flow (MADF) permitted capacity conventional extended aeration secondary domestic wastewater treatment plant consisting of flow equalization, influent screening, aeration, secondary clarification, chlorination, dechlorination, and postaeration.



PART I: Continued										
List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)										
			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Surface Water Discharges

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

			Effluent Limitations				Monitoring Requirements			
Parameter	**Units**	**Max/Min**	**Annual Average**	**Monthly Average**	**Weekly Average**	**Single Sample**	**Monitoring Frequency**	**Sample Type**	**Monitoring Location Site Number**	**Notes**
Flow	MGD	Maximum	-	0.45	-	-	Continuous	Recording flow meters and totalizers	EFF-01	See Cond.I.A.3
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	20.00	30.0	45.0	60.0	Every Two Weeks	8-hour flow proportioned composite	EFF-01	
Solids, Total Suspended	MG/L	Maximum	30.0	30.0	45.0	60.0	Every Two Weeks	8-hour flow proportioned composite	EFF-01	
pH	SU	Range	-	-	-	6.0 to 8.5	5 Days/Week	Grab	EFF-01	
Coliform, Fecal	#/100 ML	Maximum	See Permit Condition I.A.4				Every Two Weeks	Grab	EFF-01	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	0.5	5 Days/Week	Grab	EFA-01	See Cond.I.A.5
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	6.0	5 Days/Week	Grab	EFF-01	
Total Residual Chlorine (For Dechlorination)	MG/L	Maximum	-	-	-	0.01	5 Days/Week	Grab	EFF-01	
Nitrogen, Ammonia, Total (as N)	MG/L	Maximum	2.0	3.0	4.5	6.0	Every Two Weeks	8-hour flow proportioned composite	EFF-01	
Whole Effluent Toxicity (Acute)	See Permit Condition I.A.6								EFF-01-	

PART I: Continued

Receiving Waters:	**Classification (indicate whether fresh or marine):**
Escambia River	Class III

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

Test Requirements

(1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and four bioassays with test concentrations of 100% effluent collected as per 6.d.(1) below.

(3) The permittee shall conduct 96-hour acute static renewal toxicity tests using the daphnid**, Ceriodaphnia dubia,** and the bannerfin shiner, **Cyprinella leedsi**, concurrently.

(4) All test species, procedures and quality assurance criteria used shall be in accordance with **Methods for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms**, EPA-821-R-02-012, or the most current edition. 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 acute toxicity testing in accordance with the revised method.

(5) The control water and dilution water used will be moderately hard water as described in EPA-821-R-02-012, Table 7.

d. Sampling Requirements

(1) Routine tests shall be conducted on four separate grab samples collected at evenly-spaced (6-hr) intervals over a 24-hr period and used in four separate tests in order to catch any peaks of toxicity and to account for daily variations in effluent quality. If the duration of the discharge is less than 24 hours, the duration of discharge shall be documented on the chain of custody.

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:

Monitoring Date	Outfall	Parameter Code	Parameter Description	Data	Limit	Statistical Base	Units
1/31/2011	001-1	P 00300	OXYGEN, DISSOLVED (DO)	5.7	6	MINIMUM	mg/L
1/31/2011	001-1	P 50050	FLOW	0.48	0.45	MO AVG	MGD
2/28/2011	001-1	P 50050	FLOW	0.47	0.45	MO AVG	MGD
3/31/2011	001-1	P 50050	FLOW	0.46	0.45	MO AVG	MGD
6/30/2011	001-1	P 50050	FLOW	0.46	0.45	MO AVG	MGD
7/31/2011	001-1	P 50050	FLOW	0.51	0.45	MO AVG	MGD
8/31/2011	001-1	P 50050	FLOW	0.49	0.45	MO AVG	MGD
8/31/2011	001-1	P 74055	COLIFORM, FECAL	3700	400	90TH %	#/100mL
8/31/2011	001-1	P 74055	COLIFORM, FECAL	3700	800	MAXIMUM	#/100mL
9/30/2011	001-1	P 00300	OXYGEN, DISSOLVED (DO)	4.8	6	MINIMUM	mg/L
9/30/2011	001-1	P 50050	FLOW	0.5	0.45	MO AVG	MGD
10/31/2011	001-1	P 50050	FLOW	0.46	0.45	MO AVG	MGD
11/30/2011	001-1	P 50050	FLOW	0.47	0.45	MO AVG	MGD
12/31/2011	001-1	P 50050	FLOW	0.46	0.45	MO AVG	MGD

***An application to increase flow limit from.450 to .675 mgd was received on 9/20/10. A revision has not yet been issued.**

Describe previous FYI and WQBEL study:

The previous Fifth Year Inspection (FYI) was conducted in 2005. The effluent copper concentration measured exceeded water quality standards, but the result was questionable due to improper preservation. The impact bioassessment in Escambia River did not identify an effluent impact, even with a high effluent AGP.

The 9/4/07 Statement of Basis issued with the Draft permit states that a level I WQBEL review was conducted for the 2007 permit renewal.

A WQBEL was conducted by FDEP's Dr. Richard Wieckowicz in 1995. It concluded that the WWTF had no measureable effects on any River parameters.

Describe previous or current Enforcement Actions (including WLs):

Consent Order (OGC File No. 07-2196-17-DW) was executed 1/3/08 to resolve pH and DO violations. All corrective actions were completed and the CO was closed 3/18/2009.

Describe any violations or problems noted in previous inspection:

This facility was last inspected 10/1/11.
Below are results of samples taken during the inspection:

Parameter	Analytical Method	Permit Limit	Analytical Value
Ammonia	EPA 350.1 Rev 2.0	6.0 mg/L	0.077 mg/L
TSS	SM 2540 D-97	60.0 mg/L	4 U mg/L
$CBOD_5$	SM 5210B	60.0 mg/L	2.2 mg/L
Fecal Coliform Bacteria	SM 9222D	800/100 ml	1 U/100 ml
pH – field	EPA 150.1	6.0-8.5 su	6.90 su
DO – field	EPA 360.1	6.0 mg/L	9.06 mg/L
TRC - field (for disinfection) Basin #1	EPA 330.5	0.5 mg/L	0.70 mg/L
TRC - field (for disinfection) Basin #2	EPA 330.5	0.5 mg/L	2.08 mg/L
TRC - field (for disinfection) Basin #3	EPA 330.5	0.5 mg/L	> 2.20 mg/L
TRC – field (dechlorination)	EPA 330.5	0.01 mg/L	0.01 mg/L

Data Qualifying Codes:
U - Analysis conducted, but analyte not detected. The reported value is the method detection limit for the analyte.

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: 11/28/11	**Sampler(s):** Nathan Mulkey
Temperature (Deg C): 21.57	**pH (SU):** 6.92
Dissolved Oxygen (mg/L): 8.91	**Conductivity (umhos/cm):** 307
Total Residual Chlorine (mg/L):	**Total Residual Chlorine - after Disinfection (mg/L):**

Method of Chlorination:	Method of De-chlorination:
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

Appendix 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. 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.

(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).

Appendix D

Chain of Custody

Florida Department of Environmental Protection

Event ID *

Request Number: RQ-2011-11-14-17
FYI5 Town of Century WWTF Sampling Inspection

Central Laboratory Sample Submittal Form

Requester: Michelle Fish
Field Report Prepared By: N. Milky
Collected By: N Milky
Send Final Report To: Toni Edwards
Sampling Agency: FDEP

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

Lab ID *	Location			Comp / Grab	Collection (begin) Date / Time / Eastern Central	Collection (end) Date / Time / Eastern Central	Bottle Group(s)**
	Town of Century WWTF			☐ Comp ☑ Grab	Date 11/27/11 Time 1801 Eastern Central	Date Time Eastern Central	A
	Field ID: TOX1			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 (begin) Date / Time / Eastern Central	Collection (end) Date / Time / Eastern Central	Bottle Group(s)**
	Town of Century WWTF			☐ Comp ☐ Grab	Date 11/27/11 Time 2358 Eastern Central	Date Time Eastern Central	A
	Field ID: TOX3 NM			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 (begin) Date / Time / Eastern Central	Collection (end) Date / Time / Eastern Central	Bottle Group(s)**
	Town of Century WWTF			☐ Comp ☐ Grab	Date 11/28/11 Time 0602 Eastern Central	Date Time Eastern Central	A
	Field ID: TOX2 NM			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 (begin) Date / Time / Eastern Central	Collection (end) Date / Time / Eastern Central	Bottle Group(s)**
	Town of Century			☐ Comp ☑ Grab	Date 11/28/11 Time 201 Eastern Central	Date Time Eastern Central	A
	Field ID: TOX4			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			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/29/11 9:01am	Hand	ABB	11-29-11 09:06				

* Shaded Areas for Lab use only.
Chief Inorg

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

8 b.o. assay Tubs
M. Faircloth 0924

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-11-14-17
FYI5 Town of Century WWTF Sampling Inspection

Requester: Michelle Fish
Field Report Prepared By: N. Mallory

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

Collected By: Rich Abel, Mike King, Nathan Mallory
Sampling Agency: FDEP
Send Final Report To: Toni Edwards

Lab ID *	Location			Comp / Grab	Collection (begin) Date	Time	Eastern Central	Collection (end) Date	Time	Eastern Central	Bottle Group(s)**
	Town of Century WWTF			☐ / ☑	11/28/11	1230	☑			☐	A
	Field ID: Effluent			Tot Res Chlorine (mg/L):		Diss Oxygen (mg/L): 8.91		Storet Station Number:			
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C): 21.57	pH: 6.92	Sample Depth: .15 ☑ m ☐ ft		307	☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm)		NPDES Number:		
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments:							

Lab ID *	Location			Comp / Grab	Collection (begin) Date	Time	Eastern Central	Collection (end) Date	Time	Eastern Central	Bottle Group(s)**
	Town of Century WWTP			☐ / ☑	11/28/11	1345	☑			☐	B
	Field ID: Test			Tot Res Chlorine (mg/L):		Diss Oxygen (mg/L): 8.61		Storet Station Number:			
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C): 15.68	pH: 7.08	Sample Depth: .15 ☑ m ☐ ft		162	☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm)		NPDES Number:		
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments:							

Lab ID *	Location			Comp / Grab	Collection (begin) Date	Time	Eastern Central	Collection (end) Date	Time	Eastern Central	Bottle Group(s)**
	Town of Century WWTP			☐ / ☑	11/28/11	1336	☑			☐	B
	Field ID: Control			Tot Res Chlorine (mg/L):		Diss Oxygen (mg/L): ~~8.61~~		Storet Station Number:			
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C): ~~15.68~~ 15.04	pH: ~~7.08~~ 7.14	Sample Depth: .15 ☑ m ☐ ft		158	☐ Salinity (PPTh) ☑ Sp Conductance (umho/cm)		NPDES Number:		
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments:							

Lab ID *	Location			Comp / Grab	Collection (begin) Date	Time	Eastern Central	Collection (end) Date	Time	Eastern Central	Bottle Group(s)**
	Town of Century WWTF			☐ / ☐	11/28/11	1250	☑			☐	D
	Field ID: Field Blank			Tot Res Chlorine (mg/L):		Diss Oxygen (mg/L):		Storet Station Number:			
	Matrix (include type e.g. Salt, Fresh, etc):	Temp (C):	pH:	Sample Depth: ☐ m ☐ ft			☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number:		
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments:							

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/28/11	Fed Ex	APS	11/29/11 10:00				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2011-11-14-17
FYI5 Town of Century WWTF Sampling Inspection

Requester: Michelle Fish
Field Report Prepared By:

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

Collected By:
Send Final Report To: Toni Edwards

Sampling Agency:

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Town of Century	☐ Comp ☐ Grab	Date 11/30/11 Time 1330 (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 (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Town of Century	☐ Comp ☐ Grab	Date 11/30/11 Time 1345 (Central)	Date Time Central	C
	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 ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern 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 (begin) Date Time Eastern Central	Collection (end) Date Time Eastern 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		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
			ABB	11/29/11 1000				

* 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 FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____	STORET STATION NUMBER: 33020128	DATE (M/D/Y): 11/28/2011	TIME 1345	RECEIVING BODY OF WATER: Escambia Bay	
REMARKS:	COUNTY: Escambia	LOCATION: Escambia R. Town of Century WWTP above/~~below~~ discharge	FIELD ID/NAME: Town of Century WWTP Test		

RIPARIAN ZONE/STREAM FEATURES

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

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
✓	✓	✓	✓			✓	

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☑ Moderate ☐ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight ☑ Moderate potential ☐ Obvious sources ☐

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: >18m

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☐ no ☐ recent, severe ☐ some recovery ☐ mostly recovered

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK: 1m (m above present water level) + 1.2 (present depth in m) = 2.2 (m above bed)

TYPICAL WIDTH, DEPTH & VELOCITY: 80 m wide

0.5 m/s	0.7 m/s	0.5 m/s
m deep	>1 m deep	>1 m deep

TYPICAL VELOCITIES
7 secs = 0.14 m/s
6 secs = 0.17 m/s
5 secs = 0.20 m/s
4 secs = 0.25 m/s
3 secs = 0.33 m/s
2 secs = 0.50 m/s
1 sec = 1.0 m/s

CANOPY COVER %: OPEN: ☑ LIGHTLY SHADED (11-45%): ☐ MODERATELY SHADED (46-80%): ☐ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐

SEDIMENT OILS: ABSENT: ☑ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE SLIGHT (MODERATE) SEVERE SILT SMOTHERING: NONE SLIGHT (MODERATE) SEVERE OTHER: _____

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	3.2	7	Dip net	SAND	X	2	Dip net
LEAF PACKS OF MATS	0.1	7		MUD/MUCK/SILT			
AQUATIC VEGETATION		2		OTHER:			
ROCK OR SHELL RUBBLE		~~3~~ m		OTHER:			
ROOTS		2					

DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP								
MID-DEPTH	0.340	15.64	~8.74	8.86 88.9	158 0.07 ppt			>1.2
BOTTOM								

SYSTEM TYPE: STREAM: 1ST-2ND ORDER ☐ 3RD-4TH ORDER ☐ 5TH – 6TH ORDER ☐ 7TH ORDER OR GREATER ☐ LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐ _____

WATER ODORS (CHECK BOX): NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐ _____

WATER SURFACE OILS (CHECK BOX): NONE: ☑ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☐ SLIGHTLY TURBID: ☑ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☑ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐ _____

WEATHER CONDITIONS/NOTES: overcast, 50's, rainy

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☑	☐
FISH	☑	☐	☐	☐
AQUATIC MACROPHYTES	☐	☑	☐	☐
IRON/SULFUR BACTERIA	☑	☐	☐	☐

SAMPLING TEAM: M. King, RABAD, Jen Campbell

SIGNATURE: _____ DATE: 11/28/11

Page 11 of 14 Form FD 9000-3 Revision Date: March 31, 2008 (Effective 12/3/08)

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

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION

STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 33020178	DATE (MM/DD/YY): 11/28/2011	RECEIVING BODY OF WATER: Escambia Bay
REMARKS:	COUNTY: Escambia	LOCATION: Escambia R Town of Century WWTP above	FIELD ID/NAME: Town of Century WWTP CTL

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 7	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 (7) 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 5	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat (5) 4 3 2 1
Water Velocity 20	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec (20) 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 11 Primary Score 43	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 (11)	Does not have required number of 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 or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization 20	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. (20) 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 5 Left Bank 5	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. (5) 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 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 still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 9 Secondary Score 19	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

(112) **TOTAL SCORE**

Date: 11/28/11	Analyst: Mike King	Signature:

Form FD 9000-5 Revision Date: September 21, 2011

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

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	33020226	11/28/2011	1330	Escambia Bay

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Escambia	Escambia R. WWTP ~~above~~ below Town of Century discharge	Town of Century WWTP EFL

RIPARIAN ZONE/STREAM FEATURES

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

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
✓	✓	✓	✓			✓	

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☑ Moderate ☐ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight ☑ Moderate potential ☐ Obvious sources ☐

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: ✓

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☑ no ☐ recent, severe ☐ some recovery ☐ mostly recovered

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK: 1m (m above present water level) + 1.5 (present depth in m) = 2.5 m (m above bed)

TYPICAL WIDTH, DEPTH & VELOCITY: 70 m wide @ 95 m

0.3 m/s	0.3 m/s	0.5 m/s
0.6 m deep	0.9 m deep	0.9 m deep

TYPICAL VELOCITIES
7 secs = 0.14 m/s
6 secs = 0.17 m/s
5 secs = 0.20 m/s
4 secs = 0.25 m/s
3 secs = 0.33 m/s
2 secs = 0.50 m/s
1 sec = 1.0 m/s

CANOPY COVER %: OPEN: ☑ LIGHTLY SHADED (11-45%): ☐ MODERATELY SHADED (46-80%): ☐ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐

SEDIMENT OILS: ABSENT: ☑ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE SLIGHT (MODERATE) SEVERE SILT SMOTHERING: NONE SLIGHT (MODERATE) SEVERE OTHER:

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	0.4	7	Dipnet	SAND	98	2	Dipnet
LEAF PACKS OF MATS	0.5	7		MUD/MUCK/SILT			
AQUATIC VEGETATION	0.5	2		OTHER:			
ROCK OR SHELL RUBBLE	0.1	2		OTHER:			
ROOTS				DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION			

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP	0.488	15.68	7.08	8.61	162			>1.5
MID-DEPTH				86.7%	0.08 ppt			
BOTTOM								

SYSTEM TYPE: STREAM: 1ST-2ND ORDER ☐ 3RD-4TH ORDER ☐ 5TH – 6TH ORDER ☐ 7TH ORDER OR GREATER ☐ LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐

WATER ODORS (CHECK BOX): NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐

WATER SURFACE OILS (CHECK BOX): NONE: ☑ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☐ SLIGHTLY TURBID: ☑ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☑ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐

WEATHER CONDITIONS/NOTES: overcast, 50's, rainy

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☐	☑
FISH	☑	☐	☐	☐
AQUATIC MACROPHYTES	☐	☐	☑	☐
IRON/SULFUR BACTERIA	☑	☐	☐	☐

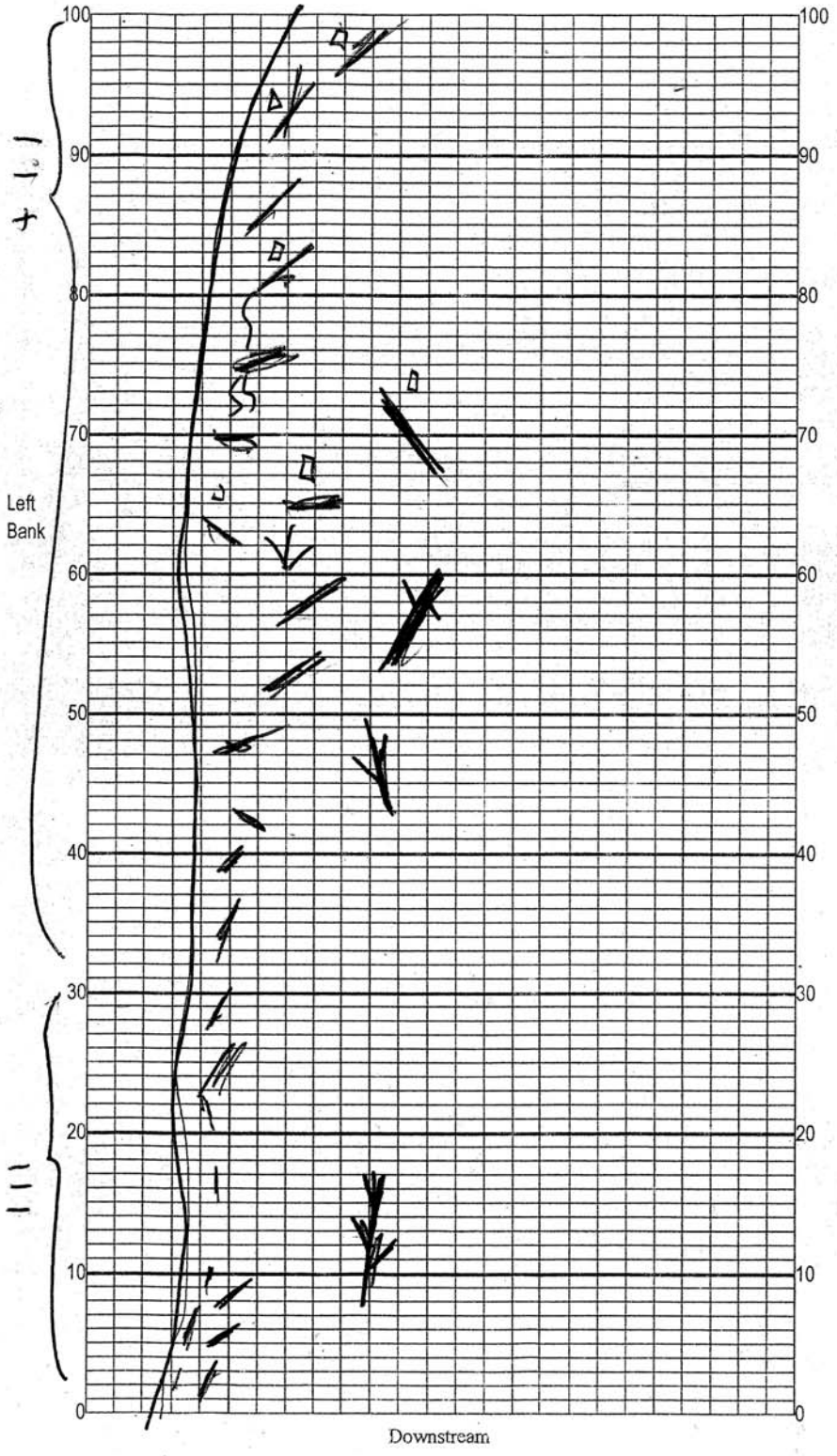
SAMPLING TEAM: M. King, F. ABAD, Jen Claypool

~~SIGNATURE~~

DATE: 11/28/11

1330

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



Location: Escambia R. Town of Century WWTP CTL

Date: 11/28/2011

Sampler: L.ABAD

100 m: Lattitude	30.96845
Longitude	87.23273
0 m: Lattitude	30.96879
Longitude	87.23350

Substrates: Code key, draw proportionate habitat abundance. %

Snags	~~4000~~ 160m 5000	3.2%
Roots/undercut banks	1m	
Leaf Packs (or mats)	5m 5000	0.1%
Aquatic Macrophytes	1m	
gravel	1m	
Pools	total # observed =	
	# range expected =	

Average width 40 m

Average depth >1 m

Velocity measured at 50 meter mark.

WQ & chemistry taken at ~10 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:

* 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 FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	33020226	11/28/2011	1330	Escambia Bay

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Escambia	Escambia R. WWTP ~~above~~ below mt Town of Century discharge	Town of Century WWTP CTL

RIPARIAN ZONE/STREAM FEATURES

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

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
✓	✓	✓	✓			✓	

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☑ Moderate ☐ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight ☑ Moderate potential ☐ Obvious sources ☐

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: ✓

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☑ no ☐ recent, ☐ severe ☐ some recovery ☐ mostly recovered

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK: 1m (m above present water level) + 1.5 (present depth in m) = 2.5m (m above bed)

TYPICAL WIDTH, DEPTH & VELOCITY: 70 m wide @ 95 m

0.3 m/s	0.3 m/s	0.5 m/s
0.6 m deep	0.9 m deep	0.9 m deep

TYPICAL VELOCITIES
- 7 secs = 0.14 m/s
- 6 secs = 0.17 m/s
- 5 secs = 0.20 m/s
- 4 secs = 0.25 m/s
- 3 secs = 0.33 m/s
- 2 secs = 0.50 m/s
- 1 sec = 1.0 m/s

CANOPY COVER %: OPEN: ☑ LIGHTLY SHADED (11-45%): ☐ MODERATELY SHADED (46-80%): ☐ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐

SEDIMENT OILS: ABSENT: ☑ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE SLIGHT SEVERE (MODERATE) SILT SMOTHERING: NONE SLIGHT SEVERE (MODERATE) OTHER: ☐

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	0.4	7	Dipnet	SAND	98	2	Dipnet
LEAF PACKS OF MATS	0.5	7		MUD/MUCK/SILT			
AQUATIC VEGETATION	0.5	2		OTHER:			
ROCK OR SHELL RUBBLE	0.1	2		OTHER:			
ROOTS				DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION			

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP	0.488	15.68	7.08	8.61	162			>1.5
MID-DEPTH				86.7%	0.08 ppt			
BOTTOM								

SYSTEM TYPE: STREAM: 1ST-2ND ORDER ☐ 3RD-4TH ORDER ☐ 5TH – 6TH ORDER ☐ 7TH ORDER OR GREATER ☐ LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐

WATER ODORS (CHECK BOX): NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐

WATER SURFACE OILS (CHECK BOX): NONE: ☑ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☐ SLIGHTLY TURBID: ☑ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☑ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐

WEATHER CONDITIONS/NOTES: overcast, 50's, rainy

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☐	☑
FISH	☑	☐	☐	☐
AQUATIC MACROPHYTES	☐	☐	☑	☐
IRON/SULFUR BACTERIA	☑	☐	☐	☐

SAMPLING TEAM: M. King, F. ABAD, Jen Claypool

~~SIGNATURE~~

DATE: 11/28/11

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

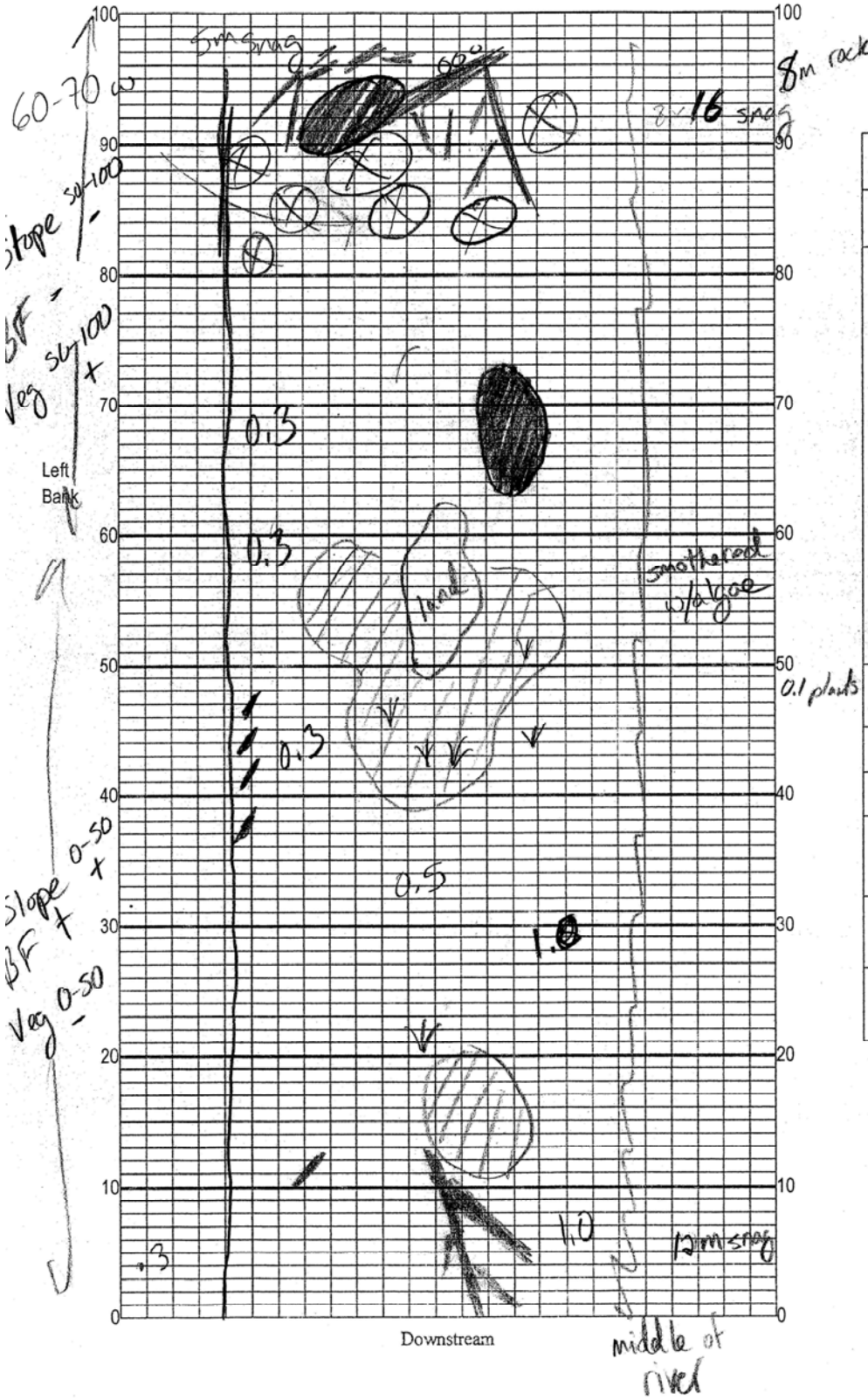
SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 3302026	DATE (MM/DD/YY): 11/28/2011	RECEIVING BODY OF WATER: Escambia Bay
REMARKS:	COUNTY: Escambia	LOCATION: Escambia R. Town of Century WWTP above/below discharge	FIELD ID/NAME: Town of Century WWTP Test

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 7	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 (9) 8 (7) 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 2	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 (2) 1
Water Velocity 20	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ,3 (20) 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 15 Primary Score 44	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. (15) 14 13 12 11	Does not have required number of 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 or silt accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. (20) 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank 6 Left Bank 6	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 (6)	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 6 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 still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 6 Left Bank 10 Secondary Score 64	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. (10) 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 (6)	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

108 **TOTAL SCORE**

Date: 11/28/11	Analyst: M. King / J. Claypool	Signature:

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



Location: Escambia R. Town of Century WWTP below discharge

Date: 11/28/11

Sampler: Jenn Claypool / Mike King

100 m: Lattitude	30.96596
Longitude	87.23432
0 m: Lattitude	30.96549
Longitude	87.23520

Substrates: Code key, draw proportionate habitat abundance. %

Snags	33m	~~0.6~~ 0.4
Roots/undercut banks		
Leaf Packs (or mats)		.05
Aquatic Macrophytes		.05
gravel		
rock/riprap 8m		0.1
Pools	total # observed =	
	# range expected =	

Average width 70 m
Average depth 0.75 m

Velocity measured at 95 meter mark.

WQ & chemistry taken at 100 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:

several algae mats
snags smothered with silt + algae

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double 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
11/28/2011 14:30	Control Site	AGP/LN	Algal Growth Potential	25.3		mg DryWt/L	0.3	0.9
11/28/2011 14:30	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.9		ug/L	0.55	1.7
11/28/2011 14:30	Control Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.4	IJ	mg/L	0.2	2
11/28/2011 14:30	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.7		ug/L	0.4	1.2
11/28/2011 14:30	Control Site	Overflow	Fecal Coliforms-Membrane Filter	234		cfu/100 mL	1	1
11/28/2011 14:30	Control Site	Metals	Calcium	9.22		mg/L	0.075	0.3
11/28/2011 14:30	Control Site	Metals	Magnesium	1.52		mg/L	0.04	0.16
11/28/2011 14:30	Control Site	Metals	Chromium	0.59	I	ug/L	0.3	1.2
11/28/2011 14:30	Control Site	Metals	Silver	0.025	U	ug/L	0.025	0.1
11/28/2011 14:30	Control Site	Metals	Aluminum	218		ug/L	5	20
11/28/2011 14:30	Control Site	Metals	Zinc	5	U	ug/L	5	20
11/28/2011 14:30	Control Site	Metals	Lead	0.24	I	ug/L	0.2	0.8
11/28/2011 14:30	Control Site	Metals	Selenium	0.2	U	ug/L	0.2	0.8
11/28/2011 14:30	Control Site	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
11/28/2011 14:30	Control Site	Metals	Iron	990		ug/L	30	120
11/28/2011 14:30	Control Site	Metals	Sodium	20.2		mg/L	0.5	2
11/28/2011 14:30	Control Site	Metals	Copper	0.5	U	ug/L	0.5	1
11/28/2011 14:30	Control Site	Metals	Arsenic	0.4	I	ug/L	0.25	1
11/28/2011 14:30	Control Site	Metals	Nickel	0.81	I	ug/L	0.25	1
11/28/2011 14:30	Control Site	Nutrients	Color (true)	45		PCU	2	6
11/28/2011 14:30	Control Site	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
11/28/2011 14:30	Control Site	Nutrients	Total-P	0.08		mg P/L	0.005	0.05
11/28/2011 14:30	Control Site	Nutrients	Kjeldahl Nitrogen	0.53		mg N/L	0.08	0.2
11/28/2011 14:30	Control Site	Nutrients	Alkalinity	37		mg CaCO3/L	0.65	2.5
11/28/2011 14:30	Control Site	Nutrients	O-Phosphate-P	0.052		mg P/L	0.004	0.01
11/28/2011 14:30	Control Site	Nutrients	Organic Carbon	5.2		mg C/L	1	5
11/28/2011 14:30	Control Site	Nutrients	NO2NO3-N	0.28		mg N/L	0.004	0.01
11/28/2011 14:30	Control Site	Nutrients	Sulfate	19		mg SO4/L	0.2	0.5
11/28/2011 14:30	Control Site	Nutrients	Ammonia-N	0.24		mg N/L	0.01	0.02
11/28/2011 14:30	Control Site	Nutrients	Chloride	11		mg Cl/L	0.2	0.5
11/28/2011 14:30	Control Site	Nutrients	TSS	4	I	mg/L	2	10
11/28/2011 14:30	Control Site	Nutrients	Turbidity	6.9		NTU	0.1	0.1
11/28/2011 14:30	Control Site	Field Parameter	Sample Depth	0.15		m		
11/28/2011 14:30	Control Site	Field Parameter	Specific Conductance	158		umhos/cm		
11/28/2011 14:30	Control Site	Field Parameter	Temperature	15.64		C		

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
11/28/2011 14:30	Control Site	Field Parameter	pH	7.14				
11/28/2011 14:45	Test Site	AGP/LN	Algal Growth Potential	26.5		mg DryWt/L	0.3	0.9
11/28/2011 14:45	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.1	I	ug/L	0.4	1.2
11/28/2011 14:45	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.3	I	ug/L	0.55	1.7
11/28/2011 14:45	Test Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.2	IJ	mg/L	0.2	2
11/28/2011 14:45	Test Site	Overflow	Fecal Coliforms-Membrane Filter	226		cfu/100 mL	1	1
11/28/2011 14:45	Test Site	Metals	Zinc	5	U	ug/L	5	20
11/28/2011 14:45	Test Site	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
11/28/2011 14:45	Test Site	Metals	Copper	0.5	U	ug/L	0.5	1
11/28/2011 14:45	Test Site	Metals	Arsenic	0.38	I	ug/L	0.25	1
11/28/2011 14:45	Test Site	Metals	Magnesium	1.52		mg/L	0.04	0.16
11/28/2011 14:45	Test Site	Metals	Nickel	0.8	I	ug/L	0.25	1
11/28/2011 14:45	Test Site	Metals	Sodium	20.7		mg/L	0.5	2
11/28/2011 14:45	Test Site	Metals	Calcium	9.48		mg/L	0.075	0.3
11/28/2011 14:45	Test Site	Metals	Silver	0.025	U	ug/L	0.025	0.1
11/28/2011 14:45	Test Site	Metals	Chromium	0.65	I	ug/L	0.3	1.2
11/28/2011 14:45	Test Site	Metals	Aluminum	236		ug/L	5	20
11/28/2011 14:45	Test Site	Metals	Iron	980		ug/L	30	120
11/28/2011 14:45	Test Site	Metals	Lead	0.25	I	ug/L	0.2	0.8
11/28/2011 14:45	Test Site	Metals	Selenium	0.2	U	ug/L	0.2	0.8
11/28/2011 14:45	Test Site	Nutrients	Kjeldahl Nitrogen	0.56		mg N/L	0.08	0.2
11/28/2011 14:45	Test Site	Nutrients	TSS	6	I	mg/L	2	10
11/28/2011 14:45	Test Site	Nutrients	Sulfate	19		mg SO4/L	0.2	0.5
11/28/2011 14:45	Test Site	Nutrients	Chloride	11		mg Cl/L	0.2	0.5
11/28/2011 14:45	Test Site	Nutrients	Total-P	0.083		mg P/L	0.005	0.05
11/28/2011 14:45	Test Site	Nutrients	Ammonia-N	0.26		mg N/L	0.01	0.02
11/28/2011 14:45	Test Site	Nutrients	O-Phosphate-P	0.054		mg P/L	0.004	0.01
11/28/2011 14:45	Test Site	Nutrients	NO2NO3-N	0.27		mg N/L	0.004	0.01
11/28/2011 14:45	Test Site	Nutrients	Alkalinity	37		mg CaCO3/L	0.65	2.5
11/28/2011 14:45	Test Site	Nutrients	Organic Carbon	5.2		mg C/L	1	5
11/28/2011 14:45	Test Site	Nutrients	Turbidity	7		NTU	0.1	0.1
11/28/2011 14:45	Test Site	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
11/28/2011 14:45	Test Site	Nutrients	Color (true)	46	A	PCU	2	6
11/28/2011 14:45	Test Site	Field Parameter	Dissolved Oxygen	8.61		mg/L		
11/28/2011 14:45	Test Site	Field Parameter	Temperature	15.68		C		
11/28/2011 14:45	Test Site	Field Parameter	pH	7.08				
11/28/2011 14:45	Test Site	Field Parameter	Sample Depth	0.15		m		

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
11/28/2011 14:45	Test Site	Field Parameter	Specific Conductance	162		umhos/cm		
11/28/2011 13:30	Effluent	AGP/LN	Algal Growth Potential	156		mg DryWt/L	0.3	0.9
11/28/2011 13:30	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.63	I	ug/L	0.55	1.7
11/28/2011 13:30	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	2	J	mg/L	0.2	2
11/28/2011 13:30	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
11/28/2011 13:30	Effluent	Overflow	Fecal Coliforms-Membrane Filter	6	B	cfu/100 mL	1	1
11/28/2011 13:30	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
11/28/2011 13:30	Effluent	Metals	Copper	7.39		ug/L	0.5	1
11/28/2011 13:30	Effluent	Metals	Arsenic	0.25	U	ug/L	0.25	1
11/28/2011 13:30	Effluent	Metals	Chromium	0.3	U	ug/L	0.3	1.2
11/28/2011 13:30	Effluent	Metals	Calcium	20.8		mg/L	0.075	0.3
11/28/2011 13:30	Effluent	Metals	Lead	0.2	U	ug/L	0.2	0.8
11/28/2011 13:30	Effluent	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
11/28/2011 13:30	Effluent	Metals	Zinc	22		ug/L	5	20
11/28/2011 13:30	Effluent	Metals	Selenium	0.2	U	ug/L	0.2	0.8
11/28/2011 13:30	Effluent	Metals	Sodium	31.7		mg/L	0.5	2
11/28/2011 13:30	Effluent	Metals	Aluminum	45		ug/L	5	20
11/28/2011 13:30	Effluent	Metals	Iron	37	I	ug/L	30	120
11/28/2011 13:30	Effluent	Metals	Nickel	1.65		ug/L	0.25	1
11/28/2011 13:30	Effluent	Metals	Magnesium	1.82		mg/L	0.04	0.16
11/28/2011 13:30	Effluent	Nutrients	Sulfate	24		mg SO4/L	0.2	0.5
11/28/2011 13:30	Effluent	Nutrients	Organic Carbon	3.3	I	mg C/L	1	5
11/28/2011 13:30	Effluent	Nutrients	Total-P	2.3		mg P/L	0.025	0.25
11/28/2011 13:30	Effluent	Nutrients	Kjeldahl Nitrogen	0.77		mg N/L	0.08	0.2
11/28/2011 13:30	Effluent	Nutrients	NO2NO3-N	2.9		mg N/L	0.04	0.1
11/28/2011 13:30	Effluent	Nutrients	TSS	2	I	mg/L	2	10
11/28/2011 13:30	Effluent	Nutrients	Chloride	40		mg Cl/L	0.2	0.5
11/28/2011 13:30	Effluent	Nutrients	O-Phosphate-P	2		mg P/L	0.08	0.2
11/28/2011 13:30	Effluent	Nutrients	Ammonia-N	0.063		mg N/L	0.01	0.02
11/28/2011 13:30	Effluent	Nutrients	Color (true)	5.4	I	PCU	2	6
11/28/2011 13:30	Effluent	Nutrients	Alkalinity	40		mg CaCO3/L	0.65	2.5
11/28/2011 13:30	Effluent	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
11/28/2011 13:30	Effluent	Nutrients	Turbidity	2	A	NTU	0.1	0.1
11/28/2011 13:30	Effluent	Pesticides	Parathion Ethyl	0.16	U	ug/L	0.16	0.65
11/28/2011 13:30	Effluent	Pesticides	Malathion	0.16	U	ug/L	0.16	0.65
11/28/2011 13:30	Effluent	Pesticides	Prometryn	0.16	U	ug/L	0.16	0.65
11/28/2011 13:30	Effluent	Pesticides	Metalaxyl	0.27	U	ug/L	0.27	1.1

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
11/28/2011 13:30	Effluent	Pesticides	Diazinon	0.054	U	ug/L	0.054	0.22
11/28/2011 13:30	Effluent	Pesticides	Chlorpyrifos Ethyl	0.054	U	ug/L	0.054	0.22
11/28/2011 13:30	Effluent	Pesticides	Ametryn	0.054	U	ug/L	0.054	0.22
11/28/2011 13:30	Effluent	Pesticides	Metolachlor	0.54	U	ug/L	0.54	2.2
11/28/2011 13:30	Effluent	Pesticides	Atrazine	0.054	U	ug/L	0.054	0.22
11/28/2011 13:30	Effluent	Pesticides	Ethion	0.054	U	ug/L	0.054	0.22
11/28/2011 13:30	Effluent	Pesticides	Ethoprop	0.11	U	ug/L	0.11	0.43
11/28/2011 13:30	Effluent	Pesticides	Fenamiphos	0.22	U	ug/L	0.22	0.86
11/28/2011 13:30	Effluent	Pesticides	Fonofos	0.11	U	ug/L	0.11	0.43
11/28/2011 13:30	Effluent	Pesticides	Hexazinone	0.11	U	ug/L	0.11	0.43
11/28/2011 13:30	Effluent	Pesticides	Mevinphos	0.22	U	ug/L	0.22	0.86
11/28/2011 13:30	Effluent	Pesticides	Naled	0.86	UJ	ug/L	0.86	3.4
11/28/2011 13:30	Effluent	Pesticides	Norflurazon	0.16	U	ug/L	0.16	0.65
11/28/2011 13:30	Effluent	Pesticides	Bromacil	0.22	U	ug/L	0.22	0.86
11/28/2011 13:30	Effluent	Pesticides	Azinphos Methyl	0.22	U	ug/L	0.22	0.86
11/28/2011 13:30	Effluent	Pesticides	Metribuzin	0.11	U	ug/L	0.11	0.43
11/28/2011 13:30	Effluent	Pesticides	Alachlor	0.65	U	ug/L	0.65	2.6
11/28/2011 13:30	Effluent	Pesticides	Butylate	0.22	U	ug/L	0.22	0.86
11/28/2011 13:30	Effluent	Pesticides	Phorate	0.054	U	ug/L	0.054	0.22
11/28/2011 13:30	Effluent	Pesticides	Chlorpyrifos Methyl	0.11	U	ug/L	0.11	0.43
11/28/2011 13:30	Effluent	Pesticides	Simazine	0.054	U	ug/L	0.054	0.22
11/28/2011 13:30	Effluent	Pesticides	Parathion Methyl	0.11	U	ug/L	0.11	0.43
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Dimethyl phthalate	11	U	ug/L	11	44
11/28/2011 13:30	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	8.8
11/28/2011 13:30	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.3	U	ug/L	3.3	13
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	66
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	8.8
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.88

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Anthracene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.3	U	ug/L	3.3	13
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	5.5	U	ug/L	5.5	22
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	5.5	U	ug/L	5.5	22
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.3	U	ug/L	3.3	13
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	8.8
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Pentachlorophenol	3.3	U	ug/L	3.3	13
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	44
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	66
11/28/2011 13:30	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	3.3	U	ug/L	3.3	13
11/28/2011 13:30	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.3	U	ug/L	3.3	13
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	66
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Hexachloroethane	3.3	U	ug/L	3.3	13
11/28/2011 13:30	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
11/28/2011 13:30	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	44	U	ug/L	44	180
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	440
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.88
11/28/2011 13:30	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	8.8
11/28/2011 13:30	Effluent	Field Parameter	Specific Conductance	307		umhos/cm		

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
11/28/2011 13:30	Effluent	Field Parameter	Dissolved Oxygen	8.91		mg/L		
11/28/2011 13:30	Effluent	Field Parameter	Sample Depth	0.15		m		
11/28/2011 13:30	Effluent	Field Parameter	pH	6.92				
11/28/2011 13:30	Effluent	Field Parameter	Temperature	21.57		C		
11/27/2011 19:01	Effluent	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
11/27/2011 19:01	Effluent	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
11/28/2011 7:02	Effluent	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
11/28/2011 7:02	Effluent	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
11/27/2011 0:58	Effluent	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
11/27/2011 0:58	Effluent	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
11/28/2011 13:01	Effluent	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	L	LC50		
11/28/2011 13:01	Effluent	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	L	LC50		
11/28/2011 13:50	Field Blank	Metals	Sodium	0.5	U	mg/L	0.5	2
11/28/2011 13:50	Field Blank	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
11/28/2011 13:50	Field Blank	Metals	Iron	30	U	ug/L	30	120
11/28/2011 13:50	Field Blank	Metals	Aluminum	5	U	ug/L	5	20
11/28/2011 13:50	Field Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
11/28/2011 13:50	Field Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
11/28/2011 13:50	Field Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
11/28/2011 13:50	Field Blank	Metals	Zinc	5	U	ug/L	5	20
11/28/2011 13:50	Field Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
11/28/2011 13:50	Field Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
11/28/2011 13:50	Field Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
11/28/2011 13:50	Field Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
11/28/2011 13:50	Field Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
11/28/2011 13:50	Field Blank	Metals	Copper	0.5	U	ug/L	0.5	1
11/28/2011 13:50	Field Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
11/28/2011 13:50	Field Blank	Nutrients	NO2NO3-N	0.005	I	mg N/L	0.004	0.01
11/28/2011 13:50	Field Blank	Nutrients	Turbidity	0.1	U	NTU	0.1	0.1
11/28/2011 13:50	Field Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
11/28/2011 13:50	Field Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
11/28/2011 13:50	Field Blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
11/28/2011 13:50	Field Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
11/28/2011 13:50	Field Blank	Nutrients	Color (true)	2	U	PCU	2	6
11/28/2011 13:50	Field Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
11/28/2011 13:50	Field Blank	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
11/28/2011 13:50	Field Blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
11/28/2011 13:50	Field Blank	Nutrients	Organic Carbon	1	U	mg C/L	1	5

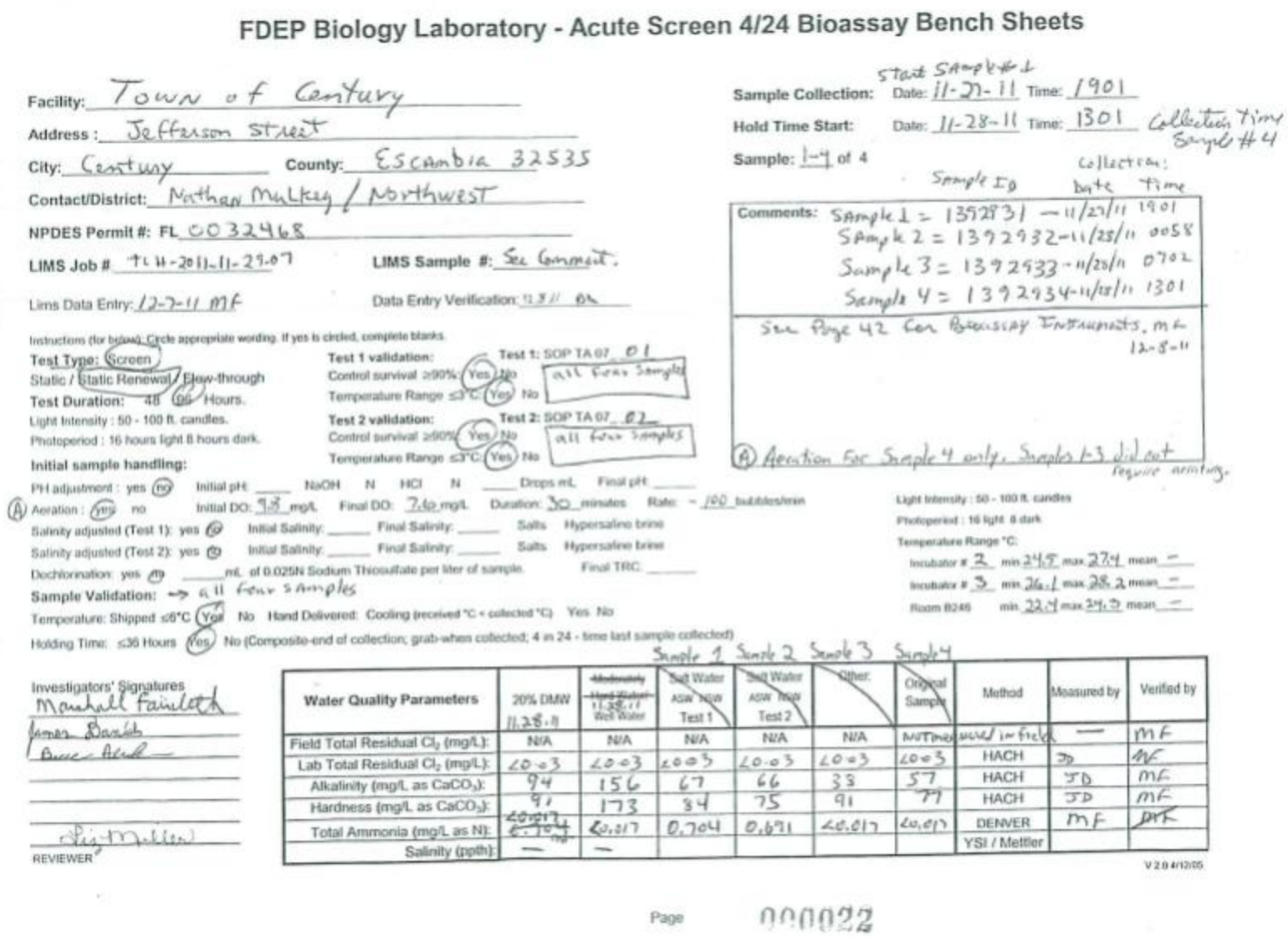
Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
11/28/2011 13:50	Field Blank	Pesticides	Parathion Ethyl	0.16	U	ug/L	0.16	0.63
11/28/2011 13:50	Field Blank	Pesticides	Norflurazon	0.16	U	ug/L	0.16	0.63
11/28/2011 13:50	Field Blank	Pesticides	Bromacil	0.21	U	ug/L	0.21	0.83
11/28/2011 13:50	Field Blank	Pesticides	Alachlor	0.63	U	ug/L	0.63	2.5
11/28/2011 13:50	Field Blank	Pesticides	Atrazine	0.052	U	ug/L	0.052	0.21
11/28/2011 13:50	Field Blank	Pesticides	Malathion	0.16	U	ug/L	0.16	0.63
11/28/2011 13:50	Field Blank	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.42
11/28/2011 13:50	Field Blank	Pesticides	Fenamiphos	0.21	U	ug/L	0.21	0.83
11/28/2011 13:50	Field Blank	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.42
11/28/2011 13:50	Field Blank	Pesticides	Azinphos Methyl	0.21	U	ug/L	0.21	0.83
11/28/2011 13:50	Field Blank	Pesticides	Prometryn	0.16	U	ug/L	0.16	0.63
11/28/2011 13:50	Field Blank	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.42
11/28/2011 13:50	Field Blank	Pesticides	Metolachlor	0.52	U	ug/L	0.52	2.1
11/28/2011 13:50	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.052	U	ug/L	0.052	0.21
11/28/2011 13:50	Field Blank	Pesticides	Butylate	0.21	U	ug/L	0.21	0.83
11/28/2011 13:50	Field Blank	Pesticides	Phorate	0.052	U	ug/L	0.052	0.21
11/28/2011 13:50	Field Blank	Pesticides	Metalaxyl	0.26	U	ug/L	0.26	1
11/28/2011 13:50	Field Blank	Pesticides	Ethion	0.052	U	ug/L	0.052	0.21
11/28/2011 13:50	Field Blank	Pesticides	Ametryn	0.052	U	ug/L	0.052	0.21
11/28/2011 13:50	Field Blank	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.42
11/28/2011 13:50	Field Blank	Pesticides	Simazine	0.052	U	ug/L	0.052	0.21
11/28/2011 13:50	Field Blank	Pesticides	Naled	0.83	UJ	ug/L	0.83	3.3
11/28/2011 13:50	Field Blank	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.42
11/28/2011 13:50	Field Blank	Pesticides	Diazinon	0.052	U	ug/L	0.052	0.21
11/28/2011 13:50	Field Blank	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.42
11/28/2011 13:50	Field Blank	Pesticides	Mevinphos	0.21	U	ug/L	0.21	0.83
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	63
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.2	U	ug/L	3.2	13
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Chrysene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	11	U	ug/L	11	42
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Fluoranthene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.2	U	ug/L	3.2	13
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Naphthalene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	42

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	63
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	3.2	U	ug/L	3.2	13
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.2	U	ug/L	3.2	13
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	U	ug/L	2.1	8.4
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	U	ug/L	2.1	8.4
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5.3	U	ug/L	5.3	21
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Anthracene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Phenanthrene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Pyrene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	42	U	ug/L	42	170
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5.3	U	ug/L	5.3	21
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Nitrobenzene	2.1	U	ug/L	2.1	8.4
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Pentachlorophenol	3.2	U	ug/L	3.2	13
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Benzidine	110	U	ug/L	110	420
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.2	U	ug/L	3.2	13
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	63
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Diethyl phthalate	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Acenaphthene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.2
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Fluorene	0.21	U	ug/L	0.21	0.84

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Hexachloroethane	3.2	U	ug/L	3.2	13
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.21	U	ug/L	0.21	0.84
11/28/2011 13:50	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	U	ug/L	2.1	8.4

Appendix G

Toxicological results



FDEP Biology Laboratory - Acute Screen 4/24 Bioassay Bench Sheets

Facility: Town of Century

Address: Jefferson Street

City: Century County: Escambia 32535

Contact/District: Nathan Mulkey / Northwest

NPDES Permit #: FL 0032468

LIMS Job # TLH-2011-11-29.07 LIMS Sample #: See Comment.

Lims Data Entry: 12-7-11 MF Data Entry Verification: 12/7/11 BK

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

Test Type: Screen

Static / Static Renewal / Flow-through

Test Duration: 48 96 Hours.

Light Intensity : 50 - 100 ft. candles.

Photoperiod : 16 hours light 8 hours dark.

Initial sample handling:

Test 1 validation: Test 1: SOP TA 07 01

Control survival ≥90%: Yes No all four Samples

Temperature Range ≤3°C: Yes No

Test 2 validation: Test 2: SOP TA 07 02

Control survival ≥90%: Yes No all four Samples

Temperature Range ≤3°C: Yes No

Sample Collection: Start Sample #1 Date: 11-27-11 Time: 1901

Hold Time Start: Date: 11-28-11 Time: 1301 Collection Time Sample #4

Sample: 1-4 of 4

Sample ID	Collection: Date	Time
Sample 1 = 1392931	11/27/11	1901
Sample 2 = 1392932	11/28/11	0058
Sample 3 = 1392933	11/28/11	0702
Sample 4 = 1392934	11/28/11	1301

Comments: See Page 42 for Bioassay Enhancements. MF 12-8-11

(A) Aeration for Sample 4 only. Samples 1-3 diluent require aerating.

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

(A) Aeration : yes no Initial DO: 9.3 mg/L Final DO: 7.60 mg/L Duration: 30 minutes Rate: ~ 100 bubbles/min

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

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

Dechlorination: yes no ____mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Sample Validation: → all four Samples

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

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

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C:

Incubator # 2 min 24.5 max 27.4 mean —

Incubator # 3 min 26.1 max 28.2 mean —

Room 8246 min 22.4 max 24.5 mean —

Investigators' Signatures

Marshall Faircloth

James Davis

Bruce Acuff

Reviewer

Water Quality Parameters	20% DMW 11.28.11	~~Moderately Hard Fisher~~ Well Water	Salt Water ASW 100W Test 1	Salt Water ASW 100W Test 2	Other:	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl_2 (mg/L):	N/A	N/A	N/A	N/A	N/A	NOT MEASURED	Measured in Field	—	MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	HACH	JD	MF
Alkalinity (mg/L as $CaCO_3$):	94	156	67	66	33	57	HACH	JD	MF
Hardness (mg/L as $CaCO_3$):	91	173	84	75	91	77	HACH	JD	MF
Total Ammonia (mg/L as N):	<0.017 <0.704 mg	<0.017	0.704	0.691	<0.017	<0.017	DENVER	MF	MF
Salinity (ppth):	—	—					YSI / Mettler		

V 2.0 4/12/05

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FDEP Biology Laboratory - Bioassay Survival Bench Sheet

① 1392931 ③ 1392934 ④
② 1392932 mf

LIMS Sample #: ③ 1392933 Test #: 1,2,3,4 SOP#:TA 07 01 Test Started: Date 11-29-11 Time: 1210

Organism/Batch/Age: ceriodaphnia dubia 11-29-11 / <24hrs mf 20% Test Ended: Date 12-3-11 Time: 0900

Chamber/Test Volume: 30 / 20 ml Diluent/ Batch: DMW / 11-28-11

Food/Batch: YCT 8-26-11 P.sub 8-4-11 Artemia 0hr____ 24hr____48hr____72hr____ Artemia Lot#_____

Feeding: (Prior to Test) (Prior to Renewal) Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5		5	5
1392931 100%	A	A	5	5	4	4	4	4
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
Ctrl	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1392932 100%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1392933 mf Ctrl	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1392933 100%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
Ctrl	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
1392934 100%	A	A	5	5	5	5	5	5
	B	B	5	5	5	5	5	5
	C	C	5	5	5	5	5	5
	D	D	5	5	5	5	5	5
Loaded/Verified by: MF / JD Checked by:			JD	JD	JD	JD	JD	MF

m = missing d = dead BR/AR = Before/After Renewal

Comments: Test 1 @ 1210 Sample 2 @ 1220 Sample 3 @ 1230 Sample 4 @ 1240 loaded by MF

Test Results:

Screening Tests: Report LC50 as >100%, =100%, or <100%.

% mortality in 100% sample: 5% / 0% / 0% LC50: >100% all from sample 1

If Calculated: 95% CI ___ — ___ Method ___

Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

→ 5% mf sample #1 — 0% samples 2/3/4

FDEP Biology Laboratory - Bioassay Survival Bench Sheet

① 1392931 ④ 1392934 MF 1,2,3,4
② 1392932
③ 1392933

LIMS Sample #: ③ 1392933 Test #: 212 SOP#:TA 07 02 Test Started: Date 11.29.11 Time: 1330 MF

Organism/Batch/Age: C.tenuis/11.29.11/13days Test Ended: Date 12-3-11 Time: 0945 8

Chamber/Test Volume: 600 1400 ml Diluent/ Batch: Well 1 11.28.11

Food/Batch: YCT ____ P.sub ____ Artemia 0hr JD 11.29.11 24hr ____ 48hr 11.30.11 72hr ____ Artemia Lot# 23613

Feeding: (Prior to Test) (Prior to Renewal) Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
Ctrl	A	A2	10	10	10	10	10	10
	B	A2	10	10	10	10	10	10
1392931 100%	A	A3	10	10	10	10	10	10
	B	A4	10	10	10	10	10	10
Ctrl	A	A5	10	10	10	10	10	10
	B	A6	10	10	10	10	10	10
1392932 100%	A	A7	10	10	10	10	10	10
	B	A8 JD	10	10	10	10	10	10
Ctrl	A	A9	10	10	10	10	10	10
	B	A10	10	10	10	10	10	10
1392933 100%	A	A11	10	10	10	10	10	10
	B	A12	10	10	10	10	10	10
Ctrl	A	A13	10	10	10	10	10	10
	B	A14	10	10	10	10	10	10
1392934 100%	A	A15	10	10	10	10	10	10
	B	A16	10	10	10	10	10	10
Loaded/Verified by: JD / MF		Checked by:	JD	JD	JD	JD	JD	MF

m = missing d = dead BR/AR = Before/After Renewal

Comments: Sample 1 start 1330; Sample 2 start 1335. Sample 3 start 1340; Sample 4 start 1350 MF 11-29-11

Test Results:

Screening Tests: Report LC50 as >100%, =100%, or <100%.

% mortality in 100% sample: 0% all samples LC50: >100% all samples

If Calculated: 95% CI ____ Method ____

Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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000024

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # — See Concentration Column Test # 1 of 2

Test Species:

☒ *Ceriodaphnia dubia* ☐ *Pimephales promelas* ☐ *Americamysis bahia*
☐ *Cyprinella leedsi* ☐ *Menidia beryllina* ☐ Other:_____

Test aerated: (if DO is < 4.0 mg/L) ☐ Yes ☒ No

	Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☒ µmhos ☐ mmhos	Salinity* (ppth)
1	Ctrl	M	0 hr	8.0	25.8	8.4	197	
			24 hr		XDO			
		M	48 hr BR	7.5	24.0	7.9	204	
		M	48 hr AR	7.8	25.9	7.4	198	
			72 hr					
		A	96 hr	8.2	24.3	8.1	215	
	1392931 100%	M	0 hr	7.3	25.9	8.1	341	
			24 hr					
		M	48 hr BR	7.9	24.0	8.2	374	
		M	48 hr AR	7.4	24.7	7.6	343	
			72 hr					
		A	96 hr	8.1	24.2	8.3	379	
2	Ctrl	M	0 hr	8.0	25.8	8.4	197	
			24 hr					
		M	48 hr BR	7.9	24.0	7.9	204	
		M	48 hr AR	7.8	25.9	7.4	211	
			72 hr					
		A	96 hr	8.2	24.7	8.3	209	
	1392932 100%	M	0 hr	7.3	25.9	8.2	339	
			24 hr					
		M	48 hr BR	8.0	24.1	7.9	356	
		M	48 hr AR	7.5	24.8	7.7	338	
			72 hr					
		A	96 hr	8.1	24.6	8.5	370	
3	Ctrl	M	0 hr	8.0	25.8	8.4	197	
			24 hr					
		M	48 hr BR	7.9	24.1	8.0	204	
		M	48 hr AR	7.8	25.9	7.4	198	
			72 hr					
		A	96 hr	8.2	24.7	8.4	220	
	1392933 100%	M	0 hr	6.9	25.9	8.1	332	
			24 hr					
		M	48 hr BR	7.7	24.1	8.6	359	
		M	48 hr AR	6.8 DO	25.0	7.4	337	
			72 hr					
		A	96 hr	8.0	24.4	8.6	371	
4	Ctrl	M	0 hr	8.0	25.8	8.4	197	
			24 hr					
		M	48 hr BR	8.0	24.0	8.5	223	
		M	48 hr AR	7.8	25.9	7.4	198	
			72 hr					
		A	96 hr	8.2	24.6	8.4	218	
	1392934 100%	M	0 hr	7.6	25.9	7.6	320	
			24 hr					
		M	48 hr BR	7.9	24.0	8.2	342	
		M	48 hr AR	7.7	25.9	8.4	DO 324	
			72 hr		MF			
		A	96 hr	8.0	24.6	8.7	353	

*Measure/ record salinity for marine tests

Comments:

Measured By:
0 hr: DO
24 hr: —
48 hr BR: DO
48 hr AR: DO
72 hr: —
96 hr: MF

000025

FDEP Biology Laboratory - Bioassay Parameter Sheet

LIMS Sample # See Concentration Column Test # 2 of 2

Test Species:

☒ Ceriodaphnia dubia ☐ Pimephales promelas ☐ Americamysis bahia
☒ Cyprinella leedsi ☐ Menidia beryllina ☐ Other:_____

Test aerated: (if DO is < 4.0 mg/L)
☐ Yes ☑ No

Concentration	Replicate	Test Hour	pH (SU)	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity ☒ µmhos ☐ mmhos	Salinity* (ppth)
	A	0 hr	7.5	25.9	8.2	297	
	B	24 hr	8.0	24.3	8.1	291	
Ctrl	A	48 hr BR	8.0	25.7	7.2	305	
	A	48 hr AR	8.1	25.5	7.6	297	
	B	72 hr	7.9	24.3	7.0	289	
	A	96 hr	8.1	25.1	7.2	325	
	A	0 hr	7.3	25.6	8.3	346	
	B	24 hr	7.7	24.6	8.1	345	
1392931 100%	A	48 hr BR	8.1	25.6	7.2	354	
	A	48 hr AR	8.0	25.5	7.0	351	
	B	72 hr	7.7	24.0	6.7	340	
	A	96 hr	7.9 ~~8.1~~	25.0	7.3	370	
	A	0 hr	7.5	25.9	8.2	297	
	B	24 hr	8.1	24.9	8.3	299	
Ctrl	A	48 hr BR	8.2	25.3	7.2	300	
	A	48 hr AR	8.1	25.6	7.5	298	
	B	72 hr	8.0	24.0	6.8	288	
	A	96 hr	8.1	25.1	7.1	324	
	A	0 hr	7.2	25.8	8.5	342	
	B	24 hr	7.6	24.9	8.1	343	
1392932 100%	A	48 hr BR	7.8	25.9	7.6	357	
	A	48 hr AR	8.0	25.5	7.6	345	
	B	72 hr	7.9	24.1	6.8	340	
	A	96 hr	7.8	24.4	7.2	368	
	A	0 hr	7.5	25.9	8.2	297	
	B	24 hr	8.1	25.4	7.9	301	
Ctrl	A	48 hr BR	8.2	25.3	7.4	301	
	A	48 hr AR	7.6	25.5	7.5	297	
	B	72 hr	7.8	24.0	6.8	291	
	A	96 hr	8.1	24.4	7.0	321	
	A	0 hr	6.8	25.7	8.1	335	
	B	24 hr	7.4	24.6	7.6	339	
1392933 100%	A	48 hr BR	7.6	25.7	7.4	353	
	A	48 hr AR	7.2	25.6	7.5	342	
	B	72 hr	7.5	24.0	7.2	336	
	A	96 hr	7.6	25.0	7.2	364	
	A	0 hr	7.5	25.9	8.2	297	
	B	24 hr	8.1	24.6	7.6	297	
Ctrl	A	48 hr BR	8.3	25.6	7.4	302	
	A	48 hr AR	7.7	25.8	7.6	297	
	B	72 hr	7.9	24.0	7.3	289	
	A	96 hr	8.1	24.3	7.1	315	
	A	0 hr	7.5	25.6	7.8	320	
	B	24 hr	7.4	24.3	7.6	325	
1392934 100%	A	48 hr BR	7.6	25.4	7.5	331	
	A	48 hr AR	7.7	25.4	7.8	327	
	B	72 hr	7.6	24.0	7.3	319	
	A	96 hr	7.6	24.5	7.2	347	

*Measure/ record salinity for marine tests

Comments:

Measured By:
0 hr: JB
24 hr: JB
48 hr BR: JB
48 hr AR: JB
72 hr: JB
96 hr: ML

000026

Appendix H

Standard Reference Toxicant Data

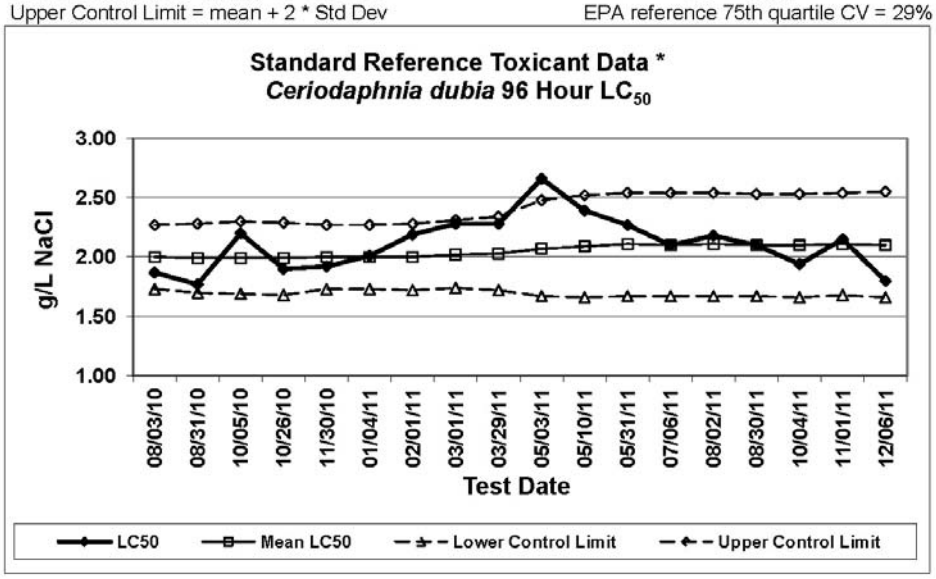
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
08/03/10	1.87	2.00	0.14	1.73	2.27
08/31/10	1.77	1.99	0.14	1.70	2.28
10/05/10	2.20	1.99	0.15	1.69	2.30
10/26/10	1.90	1.99	0.15	1.68	2.29
11/30/10	1.92	2.00	0.14	1.73	2.27
01/04/11	2.01	2.00	0.14	1.73	2.27
02/01/11	2.19	2.00	0.14	1.72	2.28
03/01/11	2.28	2.02	0.14	1.74	2.31
03/29/11	2.28	2.03	0.15	1.72	2.34
05/03/11	2.66	2.07	0.20	1.67	2.48
05/10/11	2.39	2.09	0.21	1.66	2.52
05/31/11	2.27	2.11	0.22	1.67	2.54
07/06/11	2.10	2.10	0.22	1.67	2.54
08/02/11	2.18	2.11	0.22	1.67	2.54
08/30/11	2.10	2.10	0.22	1.67	2.53
10/04/11	1.94	2.10	0.22	1.66	2.53
11/01/11	2.15	2.11	0.22	1.68	2.54
12/06/11	1.80	2.10	0.22	1.66	2.55

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

CV = 11.29
EPA reference 75th quartile CV = 29%



Florida Department of Environmental Protection
Bureau of Laboratories

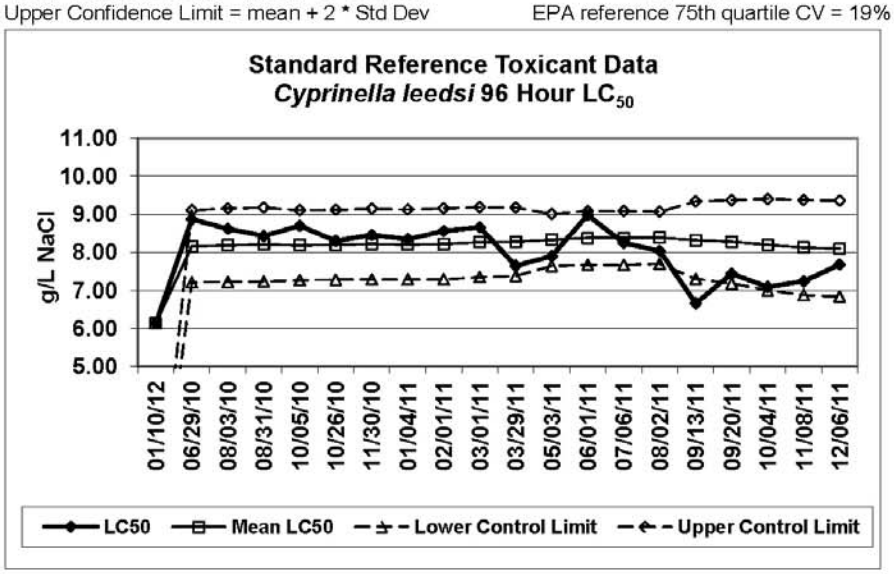
Standard Reference Toxicant (SRT) Test Data - 96-hour Acute Toxicity
Cyprinella leedsi (bannerfin shiner) - Sodium Chloride (NaCl)

NEW MHW 1 10 2012

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
01/10/12	6.13	6.13 -		-	-
06/29/10	8.87	8.16	0.47	7.21	9.11
08/03/10	8.62	8.19	0.48	7.22	9.16
08/31/10	8.43	8.21	0.49	7.23	9.18
10/05/10	8.70	8.19	0.46	7.27	9.11
10/26/10	8.30	8.20	0.46	7.28	9.12
11/30/10	8.46	8.22	0.46	7.29	9.15
01/04/11	8.35	8.21	0.46	7.29	9.13
02/01/11	8.56	8.22	0.47	7.29	9.16
03/01/11	8.66	8.27	0.46	7.35	9.19
03/29/11	7.65	8.28	0.45	7.38	9.18
05/03/11	7.90	8.33	0.34	7.64	9.01
06/01/11	8.98	8.38	0.36	7.67	9.09
07/06/11	8.25	8.38	0.36	7.67	9.09
08/02/11	8.04	8.39	0.34	7.70	9.07
09/13/11	6.66	8.32	0.51	7.30	9.34
09/20/11	7.44	8.28	0.55	7.18	9.37
10/04/11	7.09	8.20	0.60	7.00	9.41
11/08/11	7.24	8.13	0.62	6.88	9.38
12/06/11	7.68	8.10	0.63	6.84	9.36

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

CV = 7.80
EPA reference 75th quartile CV = 19%



Appendix I-1

Wet ID taxa list and number of algal units counted to a target of 300 natural units for qualitative natural periphyton collections made from Town of Century WWTF on 11/28/11.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyta	234	226
Chlorophycota		
Actinastrum hantzschii	2	-
Apatococcus lobatus	-	7
Chlorella sp.	-	3
Chlorococcum humicola	-	2
Closterium venus venus	1	1
Cosmarium pseudoconnatum pluriradians	-	2
Gloeocystis gigas	-	1
Scenedesmus abundans	-	3
Scenedesmus bijuga	2	5
Scenedesmus quadricauda	2	4
Cyanophycota		
Aphanocapsa rivularis	-	1
Chroococcus minimus	-	2
Cyanobium parvum	2	5
Jaaginema sp.	-	6
Jaaginema gracile	7	-
Komvophoron schmidlei	1	-
Merismopedia glauca	-	2
Oscillatoria tenuis	-	7
Phormidium aerugineo-caeruleum	-	3
Planktolyngbya limnetica	-	3
Planktothrix agardhii	1	-
Schizothrix calcicola	45	11
Synechocystis sp.	5	8

Appendix I-2

Diatom taxa list and number of valves counted to a target of 500 valves for qualitative periphyton collected from Town of Century WWTF on 11/28/11.

	Control Site	Test Site
Bacillariophyta		
Achnanthes fluviatilis	4	2
Achnanthidium exiguum	57	28
Achnanthidium microcephalum	11	9
Achnanthidium minutissimum	75	27
Amphora sp.	-	1
Anorthoneis sp.	6	7
Asterionella formosa	-	1
Brachysira brebissonii	-	2
Brachysira vitrea	-	1
Capartogramma crucicula	1	1
Cocconeis sp.	3	-
Cocconeis fluviatilis	-	1
Cocconeis placentula	2	-
Craticula sp.	2	-
Ctenophora pulchella	3	3
Cyclotella meneghiniana	5	-
Cymbella aspera	1	-
Cymbella tumidula	20	6
Cymbellaceae	-	3
Diadesmis confervacea	1	52
Encyonema minutum	1	-
Encyonema neomesianum	-	1
Encyonema silesiacum	3	8
Eunotia sp.	16	13
Eunotia intermedia	1	7
Eunotia rhomboidea	-	1
Eunotia sudetica	1	1
Fragilaria capucina	5	-
Fragilaria capucina vaucheriae	8	12
Fragilariaceae	8	10
Frustulia sp.	-	1
Geissleria acceptata	6	3
Geissleria decussis	-	1
Gomphonema sp.	2	3
Gomphonema affine	-	1
Gomphonema gracile	3	-
Gomphonema parvulum	15	35
Gyrosigma acuminatum	-	1

Appendix I-2 (continued)

	Control Site	Test Site
Hippodonta capitata	-	2
Hippodonta hungarica	2	1
Kobayasiella floridana	-	1
Lemnicola hungarica	1	-
Mastogloia smithii	-	2
Melosira sp.	-	55
Navicula sp.	11	14
Navicula cryptocephala	2	4
Navicula minima	5	5
Navicula rostellata	35	20
Navicula schadei	9	-
Naviculaceae	7	6
Neidium alpinum quadripunctatum	3	7
Nitzschia sp.	6	7
Nitzschia intermedia	5	7
Nitzschia palea	13	9
Nupela vitiosa	3	-
Planothidium sp.	3	3
Planothidium apiculatum	1	1
Planothidium delicatulum	-	1
Planothidium frequentissimum	51	32
Planothidium rostratum	56	37
Pleurosira laevis	2	-
Psammothidium subatomoides	1	28
Sellaphora laevissima	-	1
Sellaphora pupula	1	-
Stauroneis sp.	1	-
Staurosirella pinnata	8	7
Staurosirella pinnata lancettula	1	-
Stenopterobia delicatissima	1	2
Synedra ulna	2	6

Appendix J-1

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m^2 rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the Town of Century WWTF and collected on 11/28/11. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Oligochaeta		
Bratislavia unidentata	11	-
Nais communis complex	847	36
Slavina appendiculata	63	181
Arthropoda		
Coleoptera		
Macronychus glabratus	-	3
Stenelmis sp.	-	5
Diptera		
Ablabesmyia mallochi	70	37
Ablabesmyia peleensis	22	-
Ablabesmyia rhamphe grp.	157	52
Asheum beckae	-	3
Chironomus sp.	28	3
Corynoneura sp.	39	-
Corynoneura sp. B Epler	-	15
Cricotopus bicinctus	280	150
Cricotopus or Orthocladius	246	247
Cryptochironomus sp.	17	-
Dicrotendipes modestus	-	10
Dicrotendipes neomodestus	313	181
Hemerodromia sp.	11	13
Nanocladius sp.	28	3
Parakiefferiella sp. B Epler	-	3
Paratanytarsus sp.	-	9
Polypedilum fallax	11	-
Polypedilum flavum	179	12
Polypedilum scalaenum grp.	11	-
Rheocricotopus robacki	131	15
Rheotanytarsus exiguus grp.	747	48
Rheotanytarsus pellucidus	249	58
Stempellinella fimbriata	11	-
Tanytarsus sp. A Epler	19	18
Tanytarsus sp. C Epler	13	12
Tanytarsus sp. D Epler	54	18
Tanytarsus sp. J Epler	-	3

Appendix J-1 (continued)

	Control Site	Test Site
Tanytarsus sp. L Epler	45	21
Tanytarsus sp. M Epler	19	-
Tanytarsus sp. U Epler	13	-
Tanytarsus sp. Y Epler	13	-
Thienemanniella lobapodema	663	125
Thienemanniella similis	-	16
Thienemanniella xena	33	-
Thienemannimyia grp.	123	33
Tribelos fuscicornis	11	6
Ephemeroptera		
Eurylophella doris	42	21
Heptageniidae	21	-
Isonychia sp.	11	3
Leptophlebiidae	-	3
Maccaffertium smithae	-	19
Pseudocloeon propinquum	32	-
Stenacron sp.	-	5
Tricorythodes albilineatus	53	11
Odonata		
Enallagma sp.	11	-
Plecoptera		
Neoperla sp.	-	5
Neoperla clymene	32	-
Trichoptera		
Cernotina sp.	-	5
Cheumatopsyche sp.	225	9
Chimarra sp.	32	-
Cyrnellus fraternus	11	-
Hydropsyche sp.	794	44
Hydroptila sp.	1,689	587
Nectopsyche sp.	11	-
Nectopsyche exquisita	-	5
Neotrichia sp.	11	-
Neureclipsis sp.	244	85
Oecetis sphyra/morsei	32	8
Oxyethira sp.	11	-
Mollusca		
Gastropoda		
Ancylidae	11	61

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 Town of Century WWTF for 28 days and collected on 11/28/12.

	Control Site	Test Site
Annelida		
Oligochaeta		
Bratislavia unidentata	4	-
Naididae	-	16
Nais communis complex	320	11
Slavina appendiculata	24	55
Arthropoda		
Insecta		
Coleoptera		
Macronychus glabratus	-	1
Stenelmis sp.	-	2
Diptera		
Ablabesmyia sp.	-	6
Ablabesmyia mallochi	25	10
Ablabesmyia peleensis	8	-
Ablabesmyia rhamphe grp.	56	14
Asheum beckae	-	1
Chironomidae	72	42
Chironomus sp.	10	1
Corynoneura sp.	14	4
Corynoneura sp. B Epler	-	1
Cricotopus sp.	6	22
Cricotopus bicinctus	94	29
Cricotopus or Orthocladius	88	84
Cryptochironomus sp.	6	-
Dicrotendipes sp.	16	7
Dicrotendipes modestus	-	3
Dicrotendipes neomodestus	96	55
Hemerodromia sp.	4	5
Nanocladius sp.	10	1
Parakiefferiella sp. B Epler	-	1
Paratanytarsus sp.	-	3
Polypedilum fallax	4	-
Polypedilum flavum	64	4
Polypedilum scalaenum grp.	4	-
Rheocricotopus robacki	47	5
Rheotanytarsus sp.	4	1

Appendix J-2 (continued)

	Control Site	Test Site
Rheotanytarsus exiguus grp.	264	16
Rheotanytarsus pellucidus	88	19
Stempellinella fimbriata	4	-
Tanytarsus sp.	8	-
Tanytarsus sp. A Epler	6	6
Tanytarsus sp. C Epler	4	4
Tanytarsus sp. D Epler	17	6
Tanytarsus sp. J Epler	-	1
Tanytarsus sp. L Epler	14	7
Tanytarsus sp. M Epler	6	-
Tanytarsus sp. U Epler	4	-
Tanytarsus sp. Y Epler	4	-
Thienemanniella sp.	165	30
Thienemanniella lobapodema	80	16
Thienemanniella similis	-	2
Thienemanniella xena	4	-
Thienemannimyia grp.	44	11
Tribelos fuscicornis	4	2
Ephemeroptera		
Baetidae	8	-
Eurylophella doris	16	8
Heptageniidae	8	4
Isonychia sp.	4	1
Leptophlebiidae	-	1
Maccaffertium sp.	-	3
Maccaffertium smithae	-	1
Pseudocloeon propinquum	4	-
Stenacron sp.	-	1
Tricorythodes albilineatus	20	4
Odonata		
Enallagma sp.	4	-
Plecoptera		
Neoperla sp.	-	1
Neoperla clymene	12	-
Undetermined Plecoptera	-	1
Trichoptera		
Cernotina sp.	-	1
Cheumatopsyche sp.	68	3
Chimarra sp.	12	-
Cyrnellus fraternus	4	-
Hydropsyche sp.	240	14
Hydropsychidae	76	3

Appendix J-2 (continued)

	Control Site	Test Site
Hydroptila sp.	636	221
Nectopsyche sp.	4	-
Nectopsyche exquisita	-	2
Neotrichia sp.	4	-
Neureclipsis sp.	92	17
Oecetis sp.	4	-
Oecetis sphyra/morsei	8	3
Oxyethira sp.	4	-
Polycentropodidae	-	16
Undetermined Trichoptera	4	1
Mollusca		
Gastropoda		
Ancylidae	4	23

Appendix K-1

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Town of Century WWTF on 11/28/11. 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				
Nais communis complex	4	2	-	-
Slavina appendiculata	-	-	1	-
Arthropoda				
Coleoptera				
Dryopidae	1	-	-	-
Macronychus glabratus	1	1	-	-
Microcylloepus pusillus	-	1	-	-
Stenelmis sp.	4	2	1	1
Diptera				
Chironomus sp.	-	-	1	-
Cricotopus bicinctus	7	2	-	-
Cricotopus or Orthocladius sp.	6	1	19	22
Dasyhelea sp.	-	-	2	-
Dicrotendipes neomodestus	-	-	9	4
Goeldichironomus sp.	-	-	-	1
Hemerodromia sp.	-	-	-	1
Orthocladius annectens	-	1	-	-
Pagastiella sp.	-	-	1	-
Palpomyia/Bezzia grp.	2	1	-	-
Polypedilum flavum sp.	3	8	-	1
Polypedilum illinoense grp.	3	-	-	5
Rheocricotopus robacki	-	2	-	-
Rheotanytarsus exiguus grp.	3	-	1	-
Rheotanytarsus pellucidus	2	-	-	-
Simulium sp.	2	-	-	-
Stenochironomus sp.	1	-	1	3
Stictochironomus sp.	-	-	-	1
Thienemanniella sp.	-	4	-	3
Thienemannimyia grp.	3	-	-	-
Tipulidae	-	-	-	1
Tvetenia tshernovskii	1	-	-	-
Ephemeroptera				
Baetidae	-	-	7	5

Appendix K-1 (continued)

	Control Site		Test Site	
	Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Ephemeroptera				
Baetidae	-	-	7	5
Eurylophella doris	1	3	1	3
Heptageniidae	2	3	-	-
Isonychia sp.	2	2	1	-
Maccaffertium sp.	-	-	1	-
Maccaffertium exiguum	-	-	-	2
Maccaffertium smithae	-	-	-	1
Tricorythodes albilineatus	2	1	3	1
Megaloptera				
Corydalus cornutus	-	1	-	-
Plecoptera				
Paragnetina kansensis	-	2	-	-
Perlidae	-	-	-	1
Taeniopteryx sp.	3	4	2	1
Trichoptera				
Cheumatopsyche sp.	5	7	2	2
Chimarra sp.	1	1	1	-
Cyrnellus fraternus	1	-	-	1
Hydropsyche sp.	25	22	12	23
Hydroptila sp.	56	79	78	73
Macrostemum carolina	4	3	-	-
Neureclipsis sp.	1	-	-	-
Oecetis sp.	1	-	-	-
Oecetis sphyra/morsei	-	-	1	-
Oxyethira sp.	-	-	2	1
Mollusca				
Bivalvia				
Corbicula fluminea	-	-	-	1
Gastropoda				
Ancylidae	-	1	6	1
Melanoides sp.	-	-	1	-
Micromenetus sp.	1	1	1	-
Physa sp.	-	-	3	-
Nemertea				
Enopla				
Prostoma sp.	-	-	2	-

Appendix K-2

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps conducted upstream and downstream of Town of Century WWTF on 11/28/11.

	Control Site		Test Site	
	Rep 1	Rep 2	Rep 1	Rep 2
Annelida				
Oligochaeta				
Nais communis complex	4	2	-	-
Slavina appendiculata	-	-	1	-
Arthropoda				
Coleoptera				
Dryopidae	1	-	-	-
Macronychus glabratus	1	1	-	-
Microcylloepus pusillus	-	1	-	-
Stenelmis sp.	4	2	1	1
Diptera				
Ceratopogonidae	1	-	-	-
Chironomidae	3	3	7	10
Chironomus sp.	-	-	1	-
Cricotopus sp.	1	1	-	-
Cricotopus bicinctus	4	1	-	-
Cricotopus or Orthocladius	5	1	14	16
Dasyhelea sp.	-	-	2	-
Dicrotendipes neomodestus	-	-	7	3
Goeldichironomus sp.	-	-	-	1
Hemerodromia sp.	-	-	-	1
Orthocladius annectens	-	1	-	-
Pagastiella sp.	-	-	1	-
Palpomyia/Bezzia grp.	1	1	-	-
Polypedilum flavum	3	6	-	1
Polypedilum illinoense grp.	3	-	-	4
Rheocricotopus robacki	-	2	-	-
Rheotanytarsus exiguus grp.	3	-	1	-
Rheotanytarsus pellucidus	2	-	-	-
Simulium sp.	2	-	-	-
Stenochironomus sp.	1	-	1	2
Stictochironomus sp.	-	-	-	1
Thienemanniella sp.	-	3	-	2
Thienemannimyia grp.	3	-	-	-
Tipulidae	-	-	-	1
Tvetenia tshernovskii	1	-	-	-
Ephemeroptera				
Baetidae	-	-	7	5

Appendix K-2 (continued)

	Control Site		Test Site	
	Rep 1	**Rep 2**	**Rep 1**	**Rep 2**
Eurylophella doris	1	3	1	3
Heptageniidae	2	3	-	-
Isonychia sp.	2	2	1	-
Maccaffertium sp.	-	-	1	1
Maccaffertium exiguum	-	-	-	1
Maccaffertium smithae	-	-	-	1
Tricorythodes albilineatus	2	1	3	1
Megaloptera				
Corydalus cornutus	-	1	-	-
Plecoptera				
Paragnetina kansensis	-	1	-	-
Perlidae	-	1	-	1
Taeniopteryx sp.	3	4	2	1
Trichoptera				
Cheumatopsyche sp.	5	7	2	2
Chimarra sp.	1	1	1	-
Cyrnellus fraternus	1	-	-	1
Hydropsyche sp.	25	22	12	23
Hydroptila sp.	56	79	78	73
Macrostemum carolina	4	3	-	-
Neureclipsis sp.	1	-	-	-
Oecetis sp.	1	-	-	-
Oecetis sphyra/morsei	-	-	1	-
Oxyethira sp.	-	-	2	1
Mollusca				
Bivalvia				
Corbicula fluminea	-	-	-	1
Gastropoda				
Ancylidae	-	1	5	1
Micromenetus sp.	1	1	1	-
Physa sp.	-	-	3	-
Melanoides sp.	-	-	1	-
Undetermined Gastropoda	-	-	1	-
Nemertea				
Enopla				
Prostoma sp.	-	-	2	-

The Bioassay of the Town of Century WWTF effluent sampled on November 27-28, 2011 NPDES #FL0032468

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 FL00324681	11 12 111128	# B	# S	# 1

Remarks

#

The Priority Pollutants Analysis for Bioassay of the Town of Century WWTF effluent sampled on November 28, 2011 NPDES #FL0032468

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 FL00324681	11 12 111128	# X	# S	# 1

Remarks

#

Biological Analyses of the Town of Century WWTF effluent sampled on November 28, 2011, NPDES #FL0032468

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 FL00324681	11 12 111128	# S	# S	# 1

Remarks

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