

Biological Assessment of

Town of Century Wastewater Treatment Plant

Escambia County

NPDES #FL0032468

Sampled December 4-6, 2005

June 2006

Biology Section

Bureau of Laboratories

Division of Resource Assessment and Management

Quality Manual No. 870346G

NELAC Certification No. E31780

Florida Department of Environmental Protection

Fifth Year Inspection Summary

Discharger:	Town of Century Wastewater Treatment Plant
Physical Address:	Jefferson Street, Century, Florida
County:	Escambia
NPDES Number:	FL0032468
Permit Expiration:	July 17, 2007

Toxics Sampling Inspection **(XSI)**

Date Sampled: December 5, 6, 2005

Results: Effluent copper (12.9 µg/L) potentially exceeded the Class III Water Quality Criterion (≤ 5.0 µg/L; 62-302.530(24), F.A.C.); the effluent metals sample was not properly preserved, and thus results are estimated. Effluent zinc was detected at a level that complied with the Class III Water Quality Criterion (62-302.530(71), F.A.C.). Aluminum, cadmium, iron, and nickel were found in the effluent at levels above the method detection limits (MDL) and below the practical quantitation limits (PQL). Organic constituents were not detected in the effluent.

Iron concentrations at the Control (1,910 µg/L) and Test (1,580 µg/L) Sites exceeded the Class III Water Quality Criterion (≤ 1,000 µg/L; 62-302.530(39), F.A.C.). Aluminum levels were high at both sites as well. High levels of these metals may be attributable to particulates (high turbidity and total suspended solids) in the samples. Zinc was detected between the MDL and the PQL at the Test Site, but not detected at the Control Site.

Compliance Biomonitoring Inspection **(CBI)**

Date Sampled: December 4, 2005

Results: Two sets of 12-hour composite effluent samples were collected and tested, rather than the four sets of 6-hr composites required by the permit. Neither was acutely toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during 96-hour acute bioassays.

Water Quality Inspection **(WQI)**

Date Sampled: December 5, 6, 2005

Results: Dissolved oxygen (DO), pH, and conductivity measurements from the effluent, Control Site, and Test Site complied with Class III Water Quality Criteria (62-302.530, F.A.C.) and permit limits. Fecal coliforms were not detected in the effluent. Effluent total coliforms complied with Class III Water Quality Criteria and facility permit limits. Fecal and total coliforms were detected in the

receiving waters at levels that complied with Class III Water Quality Criteria. Effluent ortho-phosphate (2.3 mg/L), ammonia (0.11 mg/L), and nitrate+nitrite (8.3 mg/L) concentrations may have contributed to slightly higher nutrient concentrations at the Test Site (0.012, 0.036, 0.17 mg/L) compared to the Control Site (0.007, 0.027, 0.11 mg/L). Effluent ammonia (0.11 mg/L), total suspended solids (TSS; < 4 mg/L), and carbonaceous biochemical oxygen demand (CBOD; 0.27 mg/L) complied with permit limits.

Impact Bioassessment Inspection **(IBI)**

Date Sampled: December 6, 2005

Results: The effluent algal growth potential (AGP) was 399 mg dry wt/L, which is well above the problem threshold for freshwaters. However, both the Control (0.980 mg dry wt/L) and Test (0.845 mg dry wt/L) Site AGP levels were below that threshold, indicating that the effluent is not increasing algal growth potential in this portion of the Escambia River. Qualitative periphyton sampling indicated that there was little difference between periphyton communities at the upstream Control and downstream Test Sites. Quantitative Hester-Dendy macroinvertebrate sampling showed high taxa richness and diversity at the Control Site, but the sampler was not recovered from the Test Site. Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples indicated a slightly higher quality community at the Control Site than at the Test Site. SCI scores were 59 for the Control Site and 46 for the Test Site, placing both in the “Fair” category.

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 condition

Introduction

The Town of Century Wastewater Treatment Plant is located in Escambia County, Florida (Appendix 1). This facility is a conventional, extended-aeration, secondary wastewater treatment plant. Activities at this plant include flow equalization, influent screening, aeration, secondary clarification, chlorination, dechlorination, and post-aeration (see Facility Summary in Appendix 2). After treatment, the effluent is discharged into the Class III fresh water of Escambia River. The design flow of the wastewater system is 0.45 million gallons per day (MGD). The actual mean flow during this survey was 0.317 MGD (see Facility Summary in Appendix 2). The mean flow in the Escambia River at the adjacent gauging station during this sampling period was 2,771 MGD, slightly lower than the 70-yr mean for those days (3,088 MGD).

Surface Water Quality Criteria and facility permit limits are listed in Table 1. According to the facility's monthly discharge monitoring report from 9/04 to 11/05, the plant has had numerous exceedances for pH, total residual chlorine, and dissolved oxygen. In September 2004, the plant also exceeded permit limits for biochemical oxygen demand (BOD) and fecal coliforms due to effects from Hurricane Ivan (Appendix 2).

Methods

The purpose of this investigation was to determine the potential effects of the facility's effluent on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (located in Escambia River approximately 2,200 meters upstream of the discharge) and a Test Site (located in Escambia River approximately 70 meters downstream of the discharge). Big Escambia Creek feeds into the Escambia River immediately upstream of the effluent and Test Site and downstream from the Control Site. This stream prevented closer placement of the Control Site, and may contribute to conditions at the Test Site. The mean flow in Big Escambia Creek at a gauging site upstream in Alabama during the sampling period was 166 MGD. No samples were taken from Big Escambia Creek. Effluent was sampled on 12/4/05 - 12/5/05, and Control and Test Sites were sampled on 12/6/05 due to weather conditions on 12/5/05. Detailed methods and their relationship to Florida Administrative Code are given in Appendix 3.

All field and laboratory biological methods followed Biology Section Standard Operating Procedures (SOPs, see http://www.floridadep.org/labs/qa/2002sops.htm for details) and met FDEP quality assurance/quality control standards (see http://www.floridadep.org/labs/qa/index.htm).

The following were involved in this investigation: Glenn Butts, Laurence Donelan, and Frank Butera (FDEP Northwest District), and FDEP Central Laboratory in Tallahassee. See Appendix 4 for the chain of custody form (sample submittal form). The report was reviewed by District representatives and the Point Source Studies Review Committee (Wayne Magley, Shannan Bogdanov, and Michael Tanski).

Results and Discussion

- Specific chemical results are reported in Table 1 and a complete list of chemical analytes can be reviewed in Appendix 5. The effluent metals sample was not properly preserved upon collection, so effluent metals data may not be accurate (See Table 1). Effluent copper (12.9 µg/L) potentially exceeded the Class III Water Quality Criterion (≤ 5.0 µg/L; 62-302.530(24), F.A.C.). Effluent zinc was detected at a level that complied with the Class III Water Quality Criterion (62-302.530(71), F.A.C.). Aluminum, cadmium, iron, and nickel were found in the effluent at levels above the method detection limit (MDL) and below the practical quantitation limit (PQL). Organic pollutants were not detected in the effluent.
- Metals were not elevated at the Test Site compared to the Control Site (Table 1). Iron was detected at the Control (1,910 µg/L) and Test (1,580 µg/L) Sites at levels that exceed the Class III Water Quality Criterion (≤ 1,000 µg/L, 62-302.530 (39), F.A.C.). Lead was detected at both sites at levels that complied with the Class III Water Quality Criterion (62-302.530(40), F.A.C.). Aluminum was detected at both sites. At the Control Site, chromium-III was detected between the MDL and PQL, and chromium-III and zinc were detected between the MDL and PQL at the Test Site. High levels of iron and aluminum at both sites in the Escambia River could be attributed to particulate matter in the samples, indicated by high turbidity (22 NTU at Control Site, 19 NTU at Test Site) and total suspended solids (TSS; 18 mg/L at Control Site, 14 mg/L at Test Site) in the samples (Table 1).
- Conductivity, pH, and dissolved oxygen levels of the effluent, Control Site, and Test Site complied with Class III Water Quality Criteria (Table 1; 62-302.530, F.A.C.) and facility permit limits.
- The effluent sample was not acutely toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during 96-hour acute screening bioassays (See Table 1 for percent mortality, Appendix 6 for bioassay bench sheets, and

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

Town of Century WWTP	Class III Stds	Effluent Limits	Effluent 12/5/05	Control Site 12/6/05	Test Site 12/6/05
Organic Constituents (µg/L)					
None Detected	-	-	-	-	-
Metals (µg/L unless otherwise noted)					
Aluminum	-	-	9.3 IY	672	521
Arsenic	≤ 50	-	4 UY	4 U	4 U
Cadmium	≤ 0.6 b	-	0.057 IY	0.05 U	0.05 U
Calcium (mg/L)	-	-	16.8 Y	8.8	7.9
Chromium-III	≤ 47.7 b	-	1 UY	1.6 I	1.2 I
Copper	≤ 5 b	-	12.9 Y	3.7 U	3.7 U
Iron	≤ 1000	-	33 IY	1910	1580
Lead	≤ 1.3 b	-	0.22 UY	0.76	0.61
Magnesium (mg/L)	-	-	1.6 Y	1.1	1
Nickel	≤ 28.3 b	-	2.9 IY	1 U	1 U
Selenium	≤ 5	-	0.5 UY	0.5 U	0.5 U
Silver	≤ 0.07	-	0.025 UY	0.025 U	0.025 U
Zinc	≤ 64.9 b	-	32 Y	3 U	3.1 I
Nutrients (mg/L)					
Ortho-phosphate	-	-	2.3	0.007 I	0.012
Total Phosphorus	-	-	2.4	0.044 I	0.024 I
Ammonia	-	≤ 6.0 s *	0.11 f	0.027	0.036
Unionized Ammonia	≤ 0.02 s	-	< 0.02 c	< 0.02 c	< 0.02 c
Nitrate+Nitrite	-	-	8.3	0.11	0.17
Total Kjeldahl Nitrogen	-	-	0.72	0.3 I	0.22 I
Organic Nitrogen	-	-	0.61 c	0.27 c	0.18 c
Total Nitrogen	-	-	9.02 c	0.41 c	0.39 c
General Physical and Chemical Parameters					
Habitat Assessment	-	-	-	94	85
Dissolved Oxygen (mg/L)	≥ 5 s	≥ 6.0 s	9.6	10.7	9.8
pH (S.U.)	6.0-8.5 sp	6.0-8.5 s	6.1	6.1	5.9
Conductivity (umhos/cm)	≤ 1275 s	-	281	56	55
Temperature (C)	-	-	21.3	13.0	12.6
Color (Pt-Co) **	-	-	15	100	80
TSS (mg/L)	-	≤ 60.0 s *	4 U	-	-
TSS (mg/L)**	-	≤ 60.0 s *	5 U	18 A	14
CBOD, 5 day (mg/L)	-	≤ 60.0 s *	0.27 I	-	-
BOD, 5 day (mg/L) **	-	-	2 U	0.8	0.9
Turbidity (NTU) **	≤ 51	-	1	22	19
Residual Chlorine (mg/L)	≤ 0.01	-	0.02 U	-	-
Chlorophyll a (µg/L)	-	-	0.85 U	0.85 U	1.7 U
Phaeophytin (µg/L)	-	-	1.5 U	1.5 U	3 U
Flow (MGD) (November 2005)	-	0.45 m	0.318 m	-	-
Hardness (mg/L)	-	-	48.5 c	-	-
Microbiology (# counts/100ml)					
Fecal Coliforms-Membrane Filter **	≤ 800 s	≤ 800 s	1 K	220 Q	172 BQ
Total Coliforms-Membrane Filter **	≤ 2400 s	-	350	460 Q	620 Q
Toxicology Bioassays (96-hr acute screening, static renewal, % mortality in 100% effluent), sampled 12/4/05 ***					
Fish - *Cyprinella leedsi* - sampled 0608 hr	-	-	0% Q	-	-
Water flea - *Ceriodaphnia dubia* - sampled 0608 hr	-	-	0% Q	-	-
Fish - *Cyprinella leedsi* - sampled 1803 hr	-	-	0% Q	-	-
Water flea - *Ceriodaphnia dubia* - sampled 1803 hr	-	-	0% Q	-	-

Value exceeds the Class III Water Quality Criteria

* Effluent Limit for an 8-hr flow-proportioned composite sample.

** Analyses conducted at the FDEP Northwest District Lab.

*** Bioassay samples were 12-hour composites.

b - Value is calculated based on hardness

c - Value is calculated

f - Ammonia detected in the field blank at 0.018 I mg/L

m - Monthly average

s - Single sample

p - Shall not vary more than one unit above or below natural background.

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

B - Results based on colony counts outside the acceptable range

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

K - Actual value is known to be less than value given

Q - Sample held beyond normal holding time

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

Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.

Table 2. Measured and predicted algal growth potential (AGP) for total soluble nitrogen (TSIN), ortho phosphate (OP), total nitrogen (TN), and total phosphorus (TP) limitation of the freshwater species Pseudokirchneriella subcapitata.

Town of Century WWTP	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Samples	399	319.58 ± 63.916	989 ± 197.8	342.76 ± 68.552	1032 ± 206.4	3.66	3.76
Control Site	0.980 A	5.21 ± 1.042	3.01 ± 0.602	15.58 ± 3.116	18.92 ± 3.784	19.57	9.32
Test Site	0.845 I	7.83 ± 1.566	5.16 ± 1.032	14.82 ± 2.964	10.32 ± 2.064	17.17	16.25

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

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

Appendix 7 for supporting standard reference toxicant data). Due to sampler error, two sets of 12-hour composites were collected and tested, rather than the four sets of 6-hr composites required by the permit.

- Fecal coliforms were not detected in the effluent. Effluent total coliforms complied with Class III Water Quality Criteria and facility permit limits. Fecal and total coliforms were detected in the receiving waters at levels that complied with Class III Water Quality Criteria; however, holding times for these analyses were exceeded for Control and Test Sites (See Table 1 for results and Appendix 6 for laboratory worksheets).
- The effluent total nitrogen and total phosphorus concentrations were 9.02 and 2.4 mg/L, respectively, and most of those nutrients were in the available forms of nitrate+nitrite (8.3 mg/L) and ortho-phosphate (2.3 mg/L; Table 1). Although effluent nutrient levels were high, they only appeared to elevate available nitrate+nitrite, ammonia, and ortho-phosphate levels very slightly at the test site (0.17, 0.036, 0.012 mg/L, respectively) compared to the control site (0.11, 0.027, 0.007 mg/L, respectively; Table 1). Differences between the Control and Test Sites could have also been due to inputs from Big Escambia Creek. All Test and Control Site nutrient levels, except for nitrate+nitrite, ranked in the 5th-10th percentile of typical values for Florida streams; nitrate+nitrite ranked in the 50th and 60th percentiles for the Control and Test Sites, respectively (Appendix 8).
- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al*. 1978). Raschke and Shultz (1987) found that AGP above 5.0 mg dry wt/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. Effluent AGP was 399 mg dry wt/L, which is well above this threshold. The AGP values at the upstream Control Site and downstream Test Site were both below that threshold at 0.980 and 0.845 mg dry wt/L, respectively (Table 2). These results suggest that nutrient enrichment related to the discharge in this portion of the Escambia River is not occurring, but that the effluent could cause algal blooms if receiving water conditions were different. There was no evidence of growth inhibition in AGP data (Table 2).
- Chlorophyll-*a* was not detected in water samples of the effluent or from the Control and Test Sites (Table 1). We note that nutrients in the water column may or may not fuel algal production immediately, depending upon the sum of environmental conditions that limit algal growth at the site (e.g. flow, pH, shading, turbidity). In this case, turbidity was high at both the Control (22 NTU) and Test (19 NTU) Sites, ranking in the 95th percentile of typical values for Florida streams. Thus it is not necessarily contradictory for ambient nutrient levels to be high and for no chlorophyll to be detected in water samples.

Table 3. Periphyton composition

Town of Century WWTP	Control Site	Test Site
Number of Taxa	55	49
Percent Dominant Taxon	14.4	12.5
Dominant Taxon (name)	*Navicula sp.*	*Gomphonema parvulum*
Number of Algal Units Identified	313	313
Percentage Composition		
Blue-green algae	2.2	3.5
Diatoms	97.8	96.2
Green algae	0.0	0.3
Other	0.0	0.0

Table 4. Macroinvertebrate Hester-Dendy Samples - Quantitative

Town of Century WWTP	Control Site	Test Site *
Summary Statisics		
Shannon-Weaver Diversity	4.19	-
Number of Taxa	47	-
Florida Index	32	-
Number of EPT Taxa	14	-
Percent Dominant Taxon	15	-
Dominant Taxon (name)	*Cricotopus bicinctus*	-
Dominant Taxon (group)	Diptera	-
Total Number of Individuals (counted)	833	-
Total Number of Individuals (#/m2)	2207	-
Community Composition: Percent of total		
Diptera	69.6	-
Ephemeroptera	7.8	-
Oligochaeta	7.3	-
Plecoptera	1.8	-
Trichoptera	13.2	-
Other	0.2	-
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	7.3	-
Piercers	2.8	
Predators	1.9	-
Scrapers	4.2	-
Shredders	18.0	-
Surface Deposit Feeders	40.2	-
Suspension Feeders	25.2	-
Unknown	0.4	-

* Hester-Dendy sampler lost at Test Site

- Periphyton algal community compositions of the Control and Test Sites were very similar (Table 3, Appendix 10). Communities at both sites were composed almost entirely of diatoms (> 96% community composition; Table 3).
- Quantitative measures of benthic macroinvertebrate assemblages from Hester-Dendy samplers showed high diversity and taxa richness at the Control Site (Table 4, Appendix 11). Samplers were not recovered from the Test Site; therefore no comparison can be made.
- Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples are summarized in Tables 5 and 6 and in Appendix 12. The Control Site SCI score of 59 and the Test Site SCI score of 46 placed them both in the "Fair" category, although the Test Site score is only one point above the upper limit of the "Poor" category (Table 6b). Habitat assessment scores were 94 at the Control Site and 85 at the Test Site, with riparian zone vegetation quality and bank stability scoring lower at the Test Site (Table 1, data sheets in Appendix 9). The most noticeable changes in the macroinvertebrate community from the Control Site to the Test Site were the sharp decline in caddisflies (Trichoptera; usually increase downstream of inputs of nutrients and sediment), sharp increase in predatory stoneflies (Plecoptera), and increase in very tolerant taxa (Table 5). Control and Test Site water chemistry and habitat assessments do not clearly explain these differences.

Summary

FDEP data from this inspection indicate a potential exceedance of the Class III copper criterion (62-302.530(24), F.A.C.) by this facility. Further water sampling should be conducted with the proper preservation. There were no other effluent exceedances of Class III water quality criteria or permit limits. Effluent AGP and nutrient levels were very high, but did not greatly elevate nutrients nor cause nuisance algal conditions at the Test Site due to the high volume and poor water clarity (Test Site turbidity was 19 NTU) of the receiving waterbody, the Escambia River. Although both sites scored in the "Fair" category for the SCI, the Test Site scored 13 points lower than the Control Site and was one point shy of the "Poor" category, and the habitat quality was slightly lower at the Test Site. Further investigations would be necessary to determine if these differences in the macroinvertebrate community are due to effects of the effluent, habitat, or simply due to sampling variability. High nutrient levels in this inspection and past permit violations for DO, pH, and TRC suggest that this facility should consider tertiary wastewater treatment.

Table 5. Macroinvertebrate Dipnet Samples - Qualitative

Town of Century WWTP	Control Site	Test Site
Stream Condition Index (value)	59	46
Stream Condition Index (word)	Fair	Fair
Stream Condition Index Metrics		
Number of Total Taxa	28	35
Number of Ephemeroptera Taxa	5	8
Number of Trichoptera Taxa	6	2
Number of Clinger Taxa	6	7
Number of Long-lived Taxa	1	2
Number of Sensitive Taxa	8	7
Percent of Dominant Taxon	20.0	20.2
Percent Suspension Feeders and Filterers	39.0	5.1
Percent of Tanytarsini individuals	2.0	0.9
Percent of Very Tolerant individuals	9.0	27.5
Total Number of Individuals	100	109
Community Composition: Percent of total		
Dominant Taxon (name)	*Hydropsyche incommoda*	*Neoperla clymene*
Dominant Taxon (group)	Trichoptera	Plecoptera
Coleoptera	1.0	10.1
Diptera	16.0	25.7
Ephemeroptera	17.0	20.2
Gastropoda	0.0	11.9
Oligochaeta	20.0	2.8
Plecoptera	2.0	21.1
Trichoptera	41.0	4.6
Other	3.0	3.6
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	20.0	2.8
Piercers	5.0	0.0
Predators	3.5	25.2
Scavengers	0.0	1.8
Scrapers	3.0	20.6
Shredders	6.5	14.2
Surface Deposit Feeders	22.0	28.4
Suspension Feeders and Filterers	39.0	5.0
Unknown	1.0	1.8

Literature Cited

Barbour, M. T. and J. B. Stribling. 1994. A technique for assessing stream habitat structure. In: Proceedings of Riparian Ecosystems in the Humid United States: Functions and Values. U. S. Dept. Agriculture. 15-18 March 1993, Atlanta, Ga. 22 pp.

Beck, W. M. Jr. 1954. Studies in stream pollution biology 1. A simplified ecological classification of organisms. Quart. J. Fla. Acad. Sci. 17(4): 211-227.

Clements, W.H, D.S. Cherry, and J. Cairns, Jr. 1988. Structural alterations in aquatic insect communities exposed to copper in laboratory streams. Environmental Toxicology and Chemistry 7: 715-722.

Clements, W.H, D.S. Cherry, and J. Cairns, Jr. 1989. The influence of copper exposure on predator-prey interactions in aquatic insect communities. Freshwater Biology 21: 483-488.

Fore, L. 2004. Development and Testing of Biomonitoring Tools for Macroinvertebrates in Florida Streams.

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

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

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

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

Ross, L. T. 1990. Methods for aquatic biology. Florida Department of Environmental Regulation Technical Series 10(1): 1-47.

Sokal, R. R. and F. J. Rohlf. 1995. Biometry, Third edition. W. H. Freeman and Company, New York.

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

Stevenson, R. J. and J. P. Smol. 2003. Use of algae in environmental assessments, pp. 775-803, in:

New SCI Tables, following LT7000 as revised January 2005

Table 6a. Stream Condition Index Metrics - Panhandle Bioregion

Town of Century WWTP, Control Site			
Metric:	Value	Raw Metric Score	Fixed Score 0 -10
Total Number of Taxa	28	3.6	3.6
Number of Ephemeroptera Taxa	5	8.3	8.3
Number of Trichoptera Taxa	6	8.6	8.6
Number of Clinger Taxa	6	3.9	3.9
Number of Long-lived Taxa	1	2.0	2.0
Number of Sensitive Taxa	8	4.2	4.2
Percent Contribution of Dominant Taxon	20.0	7.0	7.0
Percent Suspension Feeders and Filterers	39.0	8.6	8.6
Percent of Tanytarsini individuals	2.0	3.3	3.3
Percent of Very Tolerant individuals	9.0	3.6	3.6
Total Score			**59**
Interpretation of Scores		Good	73-100
		Fair	46-72
		Poor	19-45
		Very Poor	0-18

Table 6b. Stream Condition Index Metrics - Panhandle Bioregion

Town of Centruy WWTP, Test Site			
Metric:	Value	Raw Metric Score	Fixed Score 0 -10
Total Number of Taxa	35	5.8	5.8
Number of Ephemeroptera Taxa	8	13.3	10.0
Number of Trichoptera Taxa	2	2.9	2.9
Number of Clinger Taxa	7	4.5	4.5
Number of Long-lived Taxa	2	4.0	4.0
Number of Sensitive Taxa	7	3.7	3.7
Percent Contribution of Dominant Taxon	20.2	6.9	6.9
Percent Suspension Feeders and Filterers	5.1	0.9	0.9
Percent of Tanytarsini individuals	0.9	2.0	2.0
Percent of Very Tolerant individuals	27.5	0.7	0.7
Total Score			**46**
Interpretation of Scores		Good	73-100
		Fair	46-72
		Poor	19-45
		Very Poor	0-18

Freshwater algae of North America, edited by J. D. Wehr and R. G. Sheath, Academic Press, San Diego. 918 pp.

Wallace, J. B., J. W. Grubaugh and M. R. Whiles. 1996. Biotic indices and stream ecosystem processes: results from an experimental study. Ecol. Appl. 6(1): 140-151.

USEPA. 2000. Nutrient Criteria Technical Guidance Manual – River and Streams. EPA-822-B-00-002.

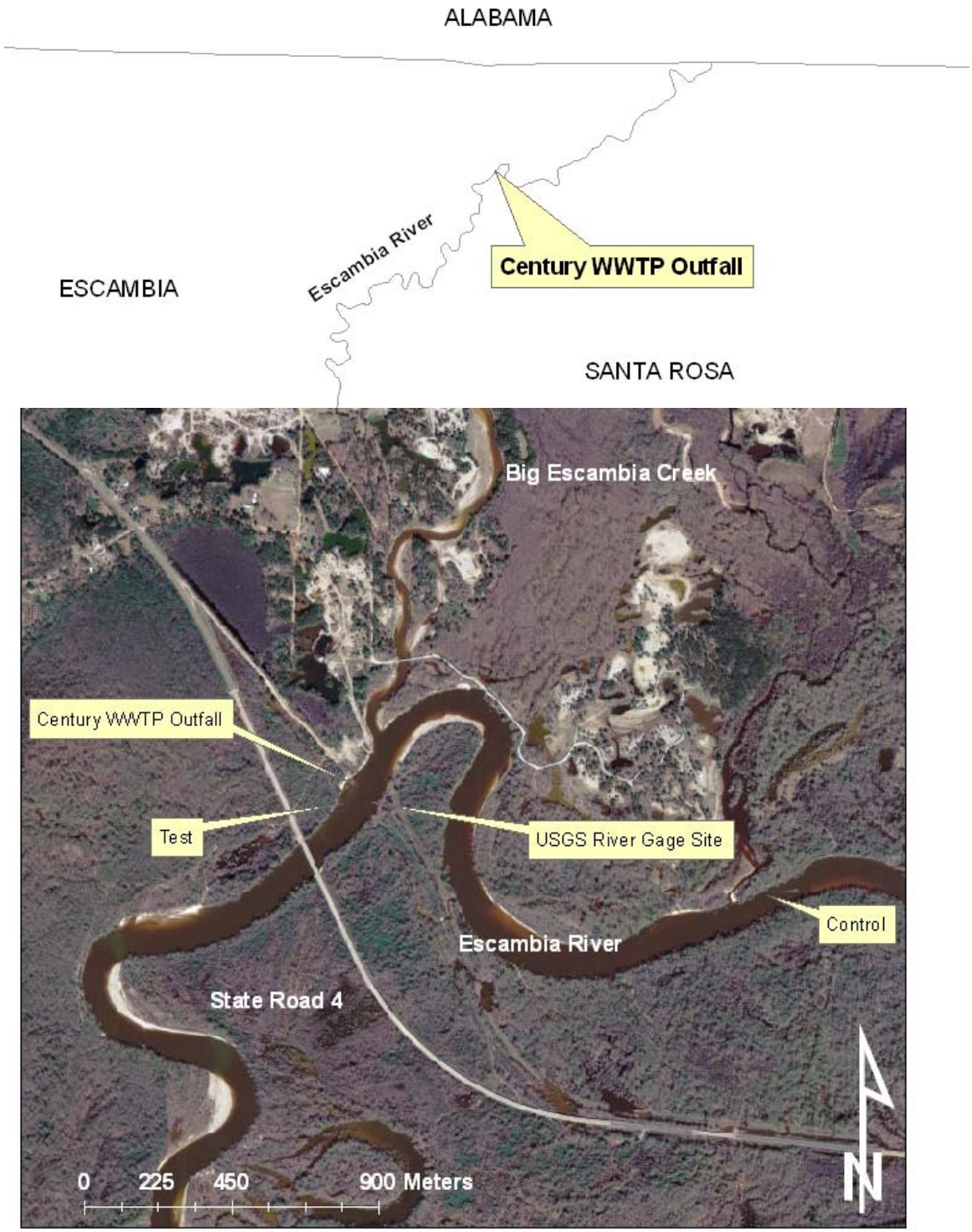
USEPA. 2002. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to freshwater organisms. 4th Edition. EPA-821-R-02-01

Appendices

- Appendix 1. Map of facility
- Appendix 2. Facility summary and DMR data
- Appendix 3. Explanation of measurements
- Appendix 4. Chain of Custody form
- Appendix 5. Chemical analyses of effluent and receiving water.
- Appendix 6. Additional physical, chemical, toxicological, and microbiological results
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- Appendix 8. Typical values for selected parameters in Florida waters
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- Appendix 10. Periphyton: Taxa list and number of individuals counted
- Appendix 11a. Hester-Dendy multi-plate samplers: Taxa list and macroinvertebrate density (average number of individuals per m^2)
- Appendix 11b. Hester-Dendy multi-plate samplers: Taxa list and total number of macroinvertebrates counted
- Appendix 12a. Dipnet samples: Taxa list and number of macroinvertebrates counted (collapsed)
- Appendix 12b. Dipnet samples: Taxa list and number of macroinvertebrates counted

Appendix 1

Map of Facility



Appendix 2

Facility Summary and DMR data

Facility Name (as it appears on permit):Town of Century		**Former Names:N/A**
Physical Address:Town of Century P.O. Drawer 790 Century, FL 32535	**NPDES Permit No.:FL0032468 Expiration Date:07-17-07**	**Prepared By:Glenn Butts**
County:Escambia District:NW District	**State Permit No.:1017M04108 Expiration Date:07-17-07**	**Facility Type:Domestic**
Function of Facility:Treat domestic wastewater from the Town of Century		
Sampling Location (specify lat/longs of NPDES point):30 57 53N & 87 15 22W		
Description of treatment process: This is a 0.45 MGD monthly average flow conventional extended aeration secondary yreatment consisting of flow equalization, influent screening, aeration, secondary clarification, chlorination, de-chlorination, and post aeration. There is also a 0.452 MG reject storage pond. And two 0.45 MGD Aqua Disk filter units.		
Receiving Waters:Escambia River		**Classification:Class 111 Fresh**

Temperature (C):21.25	**Design Flow:0.45 MGD**
pH (SU):6.10	**Mean Flow:0.374 MGD**
Conductivity (umhos/cm):281	**Flow During Survey:0.317 MGD**
Dissolved Oxygen (mg/L):9.55	**Total Residual Chlorine (mg/L):0.02**

Discharge is: Continuous Intermittent Seasonal Rainfall Dependent Other continuous

Facility Mixing Zone Details: No mixing zone

List Effluent Limits: As per permit

Parameter and Units	Limit	Describe special permit conditions and permit modifications:
Flow (MGD)	0.45 (average monthly max)	
CBOD, 5 day, 20C (mg/L)	20.0 (annual average) 30.0 (monthly average) 45.0 (weekly average) 60.0 (single sample max)	
Total Suspended Solids (mg/L)	20.0 (annual average) 30.0 (monthly average) 45.0 (weekly average) 60.0 (single sample max)	
pH (SU)	6.0 – 8.5	
Coliform, Fecal (#/100 ml)	See 62-302.530(6), F.A.C.	
Dissolved Oxygen (mg/L)	≥ 6.0	
Total Residual Chlorine (mg/L)	≤ 0.01	
Total Ammonia (mg/L)	2.0 (annual average) 2.5 (monthly average) 3.0 (weekly average) 6.0 (single sample max)	

Description of permitted outfall:D001 discharges on West side of river at the old SR 4 bridge
List permit violations (DMR data) and plant upsets that occurred at the plant within the last year: No major infractions noted in compliance history.
Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions: FYI 5 on 08-31-01 found compliance with toxics sampling (heavy metals, organics), Bioassay was not toxic to the test organisms, Impact bioassessment found no biological impairment in Escambia River, Water quality assessment did show some elevated AGP below outfall, 8.66 mg dry wt/L vs 1.36 mg dry wt/L at control site.
Discuss MOR trends to prior data; is trend improving or declining: MOR trends did not indicate declining water quality.
Additional Information:

Monthly Operating Report data for Town of Century WWTP from September 2004 through November 2005

Facility ID	Facility Name	Outfall Type	Monitoring Date	Outfall Indicator	Parameter Description	Value	Limit	Statistical Base	Value	Limit	Statistical Base	Units
FL0032468	CENTURY STP	EFFLUENT	9/30/2004	001-1	PH	3.5	6	MINIMUM	6.7	8.5	MAXIMUM	SU
FL0032468	CENTURY STP	EFFLUENT	9/30/2004	001-1	CHLORINE, TOTAL RESIDUAL	0.4	.5	MINIMUM				MG/L
FL0032468	CENTURY STP	EFFLUENT	9/30/2004	001-1	COLIFORM, FECAL GENERAL	1205	ADDMON	MO GEOMN	2400	800	MAXIMUM	#/ 100ML
FL0032468	CENTURY STP	EFFLUENT	9/30/2004	001-1	BOD, CARBONACEOUS 05 DAY, 20C	110	30	MO AVG		60	MAXIMUM	MG/L
FL0032468	CENTURY STP	EFFLUENT	9/30/2004	001-1	BOD, CARBONACEOUS 05 DAY, 20C	105	20	ANNL AVG				MG/L
FL0032468	CENTURY STP	EFFLUENT	10/31/2004	001-1	OXYGEN, DISSOLVED (DO)	1.8	6	MINIMUM				MG/L
FL0032468	CENTURY STP	EFFLUENT	11/30/2004	001-1	PH	3.9	6	MINIMUM	6.6	8.5	MAXIMUM	SU
FL0032468	CENTURY STP	EFFLUENT	11/30/2004	001-1	CHLORINE, TOTAL RESIDUAL	<0.04	.01	MAXIMUM				MG/L
FL0032468	CENTURY STP	EFFLUENT	12/31/2004	001-1	PH	5.8	6	MINIMUM	6.7	8.5	MAXIMUM	SU
FL0032468	CENTURY STP	EFFLUENT	1/31/2005	001-1	PH	5.1	6	MINIMUM	7.0	8.5	MAXIMUM	SU
FL0032468	CENTURY STP	EFFLUENT	2/28/2005	001-1	PH	5.8	6	MINIMUM	6.8	8.5	MAXIMUM	SU
FL0032468	CENTURY STP	EFFLUENT	3/31/2005	001-1	OXYGEN, DISSOLVED (DO)	4.0	6	MINIMUM				MG/L
FL0032468	CENTURY STP	EFFLUENT	4/30/2005	001-1	OXYGEN, DISSOLVED (DO)	2.8	6	MINIMUM				MG/L
FL0032468	CENTURY STP	EFFLUENT	5/31/2005	001-1	OXYGEN, DISSOLVED (DO)	5.3	6	MINIMUM				MG/L
FL0032468	CENTURY STP	EFFLUENT	7/31/2005	001-1	CHLORINE, TOTAL RESIDUAL	<0.04	.01	MAXIMUM				MG/L
FL0032468	CENTURY STP	EFFLUENT	7/31/2005	001-1	CHLORINE, TOTAL RESIDUAL	0.4	.5	MINIMUM				MG/L
FL0032468	CENTURY STP	EFFLUENT	9/30/2005	001-1	PH	5.9	6	MINIMUM	7.1	8.5	MAXIMUM	SU
FL0032468	CENTURY STP	EFFLUENT	10/31/2005	001-1	PH	5.4	6	MINIMUM	7.0	8.5	MAXIMUM	SU
FL0032468	CENTURY STP	EFFLUENT	11/30/2005	001-1	PH	1.2	6	MINIMUM	7.1	8.5	MAXIMUM	SU

Appendix 3

Explanation of Measurements

(1) Quality Assurance and Quality Control

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

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. A list of the analytes tested for, results, data qualifiers, the minimum detection limit and the practical quantitation limit are given in Appendix 4. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits (Table 1, Appendix 2). Exceedances of Water Quality Criteria may be violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Acute screening toxicity bioassays were performed on the effluent sample using the water flea, *Ceriodaphnia dubia,* and the fish, *Cyprinella leedsi* following FDEP SOPs TA07_01 and TA07_02. Failure of toxicity testing may constitute a violation of 62-302.520(21), 62-302.530(62) and/or facility permit limits. Standard reference toxicant tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

The effluent and water from control and test sites were analyzed for the presence and concentration of total and fecal coliform bacteria following FDEP SOPs MB1_0 and MB1_1. High levels of fecal or total coliform bacteria may constitute violation of 62-302.530(6), 62-302.530(7) and/or facility permit limits.

(5) Habitat Assessment

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

(6) Algal Growth Potential (AGP)

The effluent and water from control and test sites are autoclaved, filtered (0.45μm), inoculated with the unicellular green alga, *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum,* USEPA 2002*),* and incubated for 14 days (FDEP SOP TA08_05). The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a "problem" threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute one line of evidence for violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(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 ± 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may be a violation of 62-302.530(62) F.A.C..

(7) Algal Phytoplankton and Periphyton Assemblages

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

Chlorophyll *a* Content: Chlorophyll *a* content is measured in both phytoplankton and periphyton samples to estimate algal biomass (FDEP SOP BB05). High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be a violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton samples and number of natural units/cm^2 for periphyton samples. Although algal density of a single site is highly variable and depends on a number of factors, comparison of algal density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).

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

Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) 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 with more equitable abundance among taxa (Magurran 1988). Low diversity scores related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

(8) Benthic Macroinvertebrate Assemblages

Methods: Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days (QA Rule SOP FS7430). Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species (FDEP SOP IZ06).

Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitutes a violation of 62-302.530(11) 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 (Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) 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 (FDEP 1994) and shredders (EA Engineering 1994). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida. This Index was revised in 2004 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 depending on

which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists in 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. Scores are broken into four ordinal groups: Good, Fair, Poor, and Very Poor. 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 of "Poor" or "Very Poor" related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

(9) Statistical Comparisons

Statistical comparisons of the proportions of taxa, major groups or feeding groups were made using 95% confidence intervals on proportions. A 95% confidence interval is the range of values above and below a given proportion that has a 95% chance of containing the true proportion (Sokal and Rohlf 1995). If the 95% confidence intervals for two proportions do not overlap, then the proportion of X in sample 1 is significantly different from the proportion of X in sample 2 at $p<0.05$. A "$p<0.05$" level of significance means that there is less than a 5% chance that the true proportions in the two samples are the same. All comparisons that are labeled as significant in the text have a probability <0.05 that the proportions are the same.

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2005-12-05-25
Town of Century WWTP

Requester: Shannan Gunnoe

Field Report Prepared By: BUTTS, DONELAN

Customer: NW-DIST

Collected By: G. BUTTS, L. DONELAN

Send Final Report To Bill Chandler

Project ID: FYI5

Sampling Agency: FDEP NW DISTRKT

PMAS: 1143

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	ESCAMBIA RIVER ABOVE SR 4	☐ Comp ☒ Grab	12-06-05	12-06-05	
	Field ID # 1	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number 33.02.0225	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number
	Latitude o ' "	Longitude o ' "		Comments CONTROL N 30°57'48.1" W 87°13'15.9"	

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	CENTURY WWTP EFFLUENT	☒ Comp ☐ Grab	12-4-05	12-05-05 10:20	
	Field ID # 2 BOD 1 bottle	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 7.55	Storet Station Number 1017M04108	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C) 21.25	pH 6.10	Sample Depth 0.5 ☐ m ☐ ft	281 ☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm) NPDES Number FL0032468
	Latitude o ' "	Longitude o ' "		Comments RAIN TODAY	

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	ESCAMBIA RIVER BELOW CENTURY WWTP	☐ Comp ☒ Grab			
	Field ID # 3	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number 33.02.0226	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number
	Latitude o ' "	Longitude o ' "		Comments TEST SITE N30°57'56.5" W87°14'6.3"	

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	NW DISTRICT CHEM LAB BLANKS	☐ Comp ☒ Grab		12-05-05 0700	
	Field ID BK BOD 1 bottle	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm) NPDES Number
	Latitude o ' "	Longitude o ' "		Comments RIVER SAMPLES ON 12-06-05	

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
G. BUTTS	120505	DHL						

2 BioAssay 10:50 12.6.05 Tomer Parish

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

DK 12-06-05 8:35am

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2005-12-05-25
Town of Century WWTP

Requester: Shannan Gunnoe
Field Report Prepared By: BUTTS, DONELAN

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

Collected By: G. BUTTS, L. DONELAN
Sampling Agency: FDEP NW DISTRICT
Send Final Report To Bill Chandler

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	ESCAMBIA RIVER ABOVE SR 4	☐ Comp ☒ Grab	Date 12-06-05 Time 1340 Central	Date 12-06-05 Time Central	A B
	Field ID # 1	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 10.7	Storet Station Number 33.02.0225	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C) 13.01	pH 6.10	Sample Depth 0.2 ☑ m ☐ ft	Salinity (PPTh) ☑ Sp Conductance (umho/cm) 56	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments CONTROL N30°57'48.1" W87°13'15.9"		
Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	CENTURY WWTP EFFLUENT	☒ Comp ☐ Grab	Date 12-4-05 Time	Date 12-05-05 Time	
	Field ID # 2	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number 1017MO4108	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C)	pH	Sample Depth ☐ m ☐ ft	Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number FL0032468
	Latitude o ' "	Longitude o ' "	Comments		
Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	ESCAMBIA RIVER BELOW CENTURY WWTP	☐ Comp ☒ Grab	Date 12-06-05 Time 1030 Central	Date 12-06-05 Time Central	A
	Field ID # 3	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 9.75	Storet Station Number 33.02.0226	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C) 12.59	pH 5.94	Sample Depth 0.2 ☑ m ☐ ft	Salinity (PPTh) ☑ Sp Conductance (umho/cm) 55	NPDES Number	B
	Latitude o ' "	Longitude o ' "	Comments TEST SITE N30°57'56.5" W87°14'6.3" NO HD samples		
Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	NW DISTRICT CHEM LAB BLANKS	☐ Comp ☒ Grab	Date Time	Date 12-05-05 Time	
	Field ID Bk	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) FRESH	Temp (C)	pH	Sample Depth ☐ m ☐ ft	Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Donelan	12-06-05 1730							

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

SK 12-7-05 8:30 AM

Appendix 5

Chemical analysis of effluent and receiving water

DATE SAMPLED	SITE LOCATION	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
12/4/2005 6:08	CENTURY WWTP EFFLUENT	#2	Bio-Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50		100	LC50	LQ	
12/4/2005 6:08	CENTURY WWTP EFFLUENT	#2	Bio-Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	LC50	LQ		
12/4/2005 18:03	CENTURY WWTP EFFLUENT	#2 A	Bio-Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50		100	LC50	LQ	
12/4/2005 18:03	CENTURY WWTP EFFLUENT	#2 A	Bio-Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	LC50	LQ		
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	1,2,4-Trichlorobenzene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	1,2-Dichlorobenzene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	1,3-Dichlorobenzene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	1,4-Dichlorobenzene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2,4,6-Trichlorophenol	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2,4-Dichlorophenol	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2,4-Dimethylphenol	49	ug/L	U	49	190
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	58
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2,4-Dinitrotoluene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2,6-Dinitrotoluene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2-Chloronaphthalene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2-Chlorophenol	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	2-Nitrophenol	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	3,3'-Dichlorobenzidine	39	ug/L	UJ	39	160
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	4,4'-DDT	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	4-Bromophenyl phenyl ether	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	4-Chloro-3-methylphenol	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	4-Nitrophenol	15	ug/L	U	15	58
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Acenaphthene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Acenaphthylene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Aldrin	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Anthracene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Benzidine	97	ug/L	U	97	390
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Benzo(a)anthracene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Benzo(a)pyrene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Benzo(b)fluoranthene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Benzo(g,h,i)perylene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Benzo(k)fluoranthene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Bis(2-chloroethoxy)methane	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Bis(2-chloroethyl)ether	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	58
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Butyl benzyl phthalate	4.9	ug/L	U	4.9	19

DATE SAMPLED	SITE LOCATION	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Chrysene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Di-n-butyl phthalate	4.9	ug/L	U	4.9	19
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Di-n-octyl phthalate	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Dibenzo(a,h)anthracene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Diethyl phthalate	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Dimethyl phthalate	49	ug/L	U	49	190
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Endosulfan I	3.9	ug/L	U	3.9	16
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Endosulfan II	3.9	ug/L	U	3.9	16
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Endrin	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Endrin aldehyde	3.9	ug/L	U	3.9	16
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Fluoranthene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Fluorene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Hexachlorobenzene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	12
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	U	2.9	12
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Indeno(1,2,3-cd)pyrene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Isophorone	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	UJ	2.9	12
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Naphthalene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	12
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Phenanthrene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Phenol	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	Pyrene	0.97	ug/L	U	0.97	3.9
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	5.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Alachlor	0.59	ug/L	U	0.59	2.4
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Ametryn	0.05	ug/L	U	0.05	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Atrazine	0.05	ug/L	U	0.05	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Azinphos Methyl	0.2	ug/L	U	0.2	0.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Bromacil	0.2	ug/L	U	0.2	0.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Chlorpyrifos Ethyl	0.05	ug/L	U	0.05	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Chlorpyrifos Methyl	0.099	ug/L	U	0.099	0.4
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Diazinon	0.05	ug/L	U	0.05	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Ethion	0.05	ug/L	U	0.05	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Ethoprop	0.099	ug/L	U	0.099	0.4
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Fenamiphos	0.2	ug/L	UJ	0.2	0.8

DATE SAMPLED	SITE LOCATION	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Fonofos	0.099	ug/L	U	0.099	0.4
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Hexazinone	0.099	ug/L	U	0.099	0.4
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Malathion	0.15	ug/L	UJ	0.15	0.6
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Metolachlor	0.5	ug/L	U	0.5	2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Metribuzin	0.099	ug/L	U	0.099	0.4
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Mevinphos	0.2	ug/L	U	0.2	0.8
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Naled	0.79	ug/L	U	0.79	3.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Norflurazon	0.15	ug/L	U	0.15	0.6
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Parathion Methyl	0.099	ug/L	U	0.099	0.4
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Phorate	0.05	ug/L	U	0.05	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	GC-Water	Simazine	0.05	ug/L	U	0.05	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Aluminum	5	ug/L	UY	5	20
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Arsenic	4	ug/L	UY	4	16
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Cadmium	0.05	ug/L	UY	0.05	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Calcium	0.05	mg/L	UY	0.05	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Chromium	1	ug/L	UY	1	4
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Copper	0.25	ug/L	UY	0.25	1
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Iron	10	ug/L	UY	10	40
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Lead	0.075	ug/L	UY	0.075	0.3
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Magnesium	0.01	mg/L	UY	0.01	0.04
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Nickel	1	ug/L	UY	1	4
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Selenium	0.5	ug/L	UY	0.5	2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Silver	0.025	ug/L	UY	0.025	0.1
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Metals-Water	Zinc	3	ug/L	UY	3	12
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Nutrients-Liquid	Ammonia-N	0.018	mg N/L	I	0.01	0.02
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Nutrients-Liquid	Kjeldahl Nitrogen	0.08	mg N/L	U	0.08	0.2
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
12/5/2005 7:00	NW DISTRICT CHEM LAB BLANK	BK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Bio-AGP/LimNut	Algal Growth Potential	399	mg DryWt/L		0.3	0.9
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Bio-BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.27	mg/L	I	0.2	2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	U	1.5	4.5
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	1,2,4-Trichlorobenzene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	1,2-Dichlorobenzene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	1,3-Dichlorobenzene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	1,4-Dichlorobenzene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2,4,6-Trichlorophenol	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2,4-Dichlorophenol	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2,4-Dimethylphenol	51	ug/L	U	51	200
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	61
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2,4-Dinitrotoluene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2,6-Dinitrotoluene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2-Chloronaphthalene	1	ug/L	U	1	4

DATE SAMPLED	SITE LOCATION	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2-Chlorophenol	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2-Methyl-4,6-dinitrophenol	3	ug/L	U	3	12
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	2-Nitrophenol	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	3,3'-Dichlorobenzidine	40	ug/L	UJ	40	160
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	4,4'-DDT	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	4-Bromophenyl phenyl ether	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	4-Chloro-3-methylphenol	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	8.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	4-Nitrophenol	15	ug/L	U	15	61
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Acenaphthene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Acenaphthylene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Aldrin	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Anthracene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Benzidine	100	ug/L	U	100	400
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Benzo(a)anthracene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Benzo(a)pyrene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Benzo(b)fluoranthene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Benzo(g,h,i)perylene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Benzo(k)fluoranthene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Bis(2-chloroethoxy)methane	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Bis(2-chloroethyl)ether	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Bis(2-chloroisopropyl)ether	3	ug/L	U	3	12
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	61
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Butyl benzyl phthalate	5.1	ug/L	U	5.1	20
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Chrysene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Di-n-butyl phthalate	5.1	ug/L	U	5.1	20
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Di-n-octyl phthalate	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Dibenzo(a,h)anthracene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Diethyl phthalate	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Dimethyl phthalate	51	ug/L	U	51	200
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Endosulfan I	4	ug/L	U	4	16
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Endosulfan II	4	ug/L	U	4	16
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Endrin	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Endrin aldehyde	4	ug/L	U	4	16
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Fluoranthene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Fluorene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Hexachlorobenzene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Hexachlorobutadiene	3	ug/L	U	3	12
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Hexachlorocyclopentadiene	3	ug/L	U	3	12
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Hexachloroethane	3	ug/L	U	3	12
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Indeno(1,2,3-cd)pyrene	1	ug/L	U	1	4

DATE SAMPLED	SITE LOCATION	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Isophorone	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	U	2	8.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	N-Nitrosodimethylamine	2	ug/L	U	2	8.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	N-Nitrosodiphenylamine	3	ug/L	UJ	3	12
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Naphthalene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Nitrobenzene	2	ug/L	U	2	8.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Pentachlorophenol	3	ug/L	U	3	12
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Phenanthrene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Phenol	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	Pyrene	1	ug/L	U	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	6.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Alachlor	0.6	ug/L	U	0.6	2.4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Ametryn	0.05	ug/L	U	0.05	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Atrazine	0.05	ug/L	U	0.05	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Azinphos Methyl	0.2	ug/L	U	0.2	0.8
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Bromacil	0.2	ug/L	U	0.2	0.8
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Chlorpyrifos Ethyl	0.05	ug/L	U	0.05	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Chlorpyrifos Methyl	0.1	ug/L	U	0.1	0.4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Diazinon	0.05	ug/L	U	0.05	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Ethion	0.05	ug/L	U	0.05	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Ethoprop	0.1	ug/L	U	0.1	0.4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Fenamiphos	0.2	ug/L	UJ	0.2	0.8
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Fonofos	0.1	ug/L	U	0.1	0.4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Hexazinone	0.1	ug/L	U	0.1	0.4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Malathion	0.15	ug/L	UJ	0.15	0.6
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Metolachlor	0.5	ug/L	U	0.5	2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Metribuzin	0.1	ug/L	U	0.1	0.4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Mevinphos	0.2	ug/L	U	0.2	0.8
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Naled	0.8	ug/L	U	0.8	3.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Norflurazon	0.15	ug/L	U	0.15	0.6
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Parathion Methyl	0.1	ug/L	U	0.1	0.4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Phorate	0.05	ug/L	U	0.05	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	GC-Water	Simazine	0.05	ug/L	U	0.05	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Aluminum	9.3	ug/L	IY	5	20
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Arsenic	4	ug/L	UY	4	16
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Cadmium	0.057	ug/L	IY	0.05	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Calcium	16.8	mg/L	Y	0.05	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Chromium	1	ug/L	UY	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Copper	12.9	ug/L	Y	0.25	1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Iron	33	ug/L	IY	10	40

DATE SAMPLED	SITE LOCATION	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Lead	0.22	ug/L	UY	0.22	0.88
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Magnesium	1.6	mg/L	Y	0.01	0.04
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Nickel	2.9	ug/L	I	1	4
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Selenium	0.5	ug/L	UY	0.5	2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Silver	0.025	ug/L	UY	0.025	0.1
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Metals-Water	Zinc	32	ug/L	Y	3	12
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Nutrients-Liquid	Ammonia-N	0.11	mg N/L		0.01	0.02
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Nutrients-Liquid	Kjeldahl Nitrogen	0.72	mg N/L		0.08	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Nutrients-Liquid	NO2NO3-N	8.3	mg N/L		0.08	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Nutrients-Liquid	O-Phosphate-P	2.3	mg P/L		0.08	0.2
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Nutrients-Liquid	TSS	4	mg/L	U	4	16
12/5/2005 10:20	CENTURY WWTP EFFLUENT	#2	Nutrients-Liquid	Total-P	2.4	mg P/L		0.1	0.3
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Bio-AGP/LimNut	Algal Growth Potential	0.845	mg DryWt/L	I	0.3	0.9
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	1.7	ug/L	U	1.7	5.2
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	3	ug/L	U	3	9
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Bio-Invertebrates	Macroinvert-FW-Qual-Dipnetx20-# Taxa	38	# Taxa			
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Bio-Peri/Phyto	Periphyton-Qualitative-# Diatom Taxa	43	# Taxa			
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Bio-Peri/Phyto	Periphyton-Qualitative-# Wet Taxa	6	#Taxa			
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Aluminum	521	ug/L		5	20
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Arsenic	4	ug/L	U	4	16
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Calcium	7.9	mg/L		0.05	0.2
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Chromium	1.2	ug/L	I	1	4
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Copper	3.7	ug/L	U	3.7	15
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Iron	1,580	ug/L		10	40
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Lead	0.61	ug/L		0.075	0.3
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Magnesium	1	mg/L		0.01	0.04
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Nickel	1	ug/L	U	1	4
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Metals-Water	Zinc	3.1	ug/L	I	3	12
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Nutrients-Liquid	Ammonia-N	0.036	mg N/L		0.01	0.02
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Nutrients-Liquid	Kjeldahl Nitrogen	0.22	mg N/L	I	0.16	0.4
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Nutrients-Liquid	NO2NO3-N	0.17	mg N/L		0.004	0.01
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Nutrients-Liquid	O-Phosphate-P	0.012	mg P/L		0.004	0.01
12/6/2005 10:30	ESCAMBIA RIVER BELOW CENT.	# 3	Nutrients-Liquid	Total-P	0.024	mg P/L	I	0.02	0.06
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Bio-AGP/LimNut	Algal Growth Potential	0.98	mg DryWt/L	A	0.3	0.9
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	1.5	ug/L	U	1.5	4.5
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Bio-Invertebrates	Macroinvert-FW-Qual-Dipnetx20-# Taxa	28	# Taxa			
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Bio-Peri/Phyto	Periphyton-Qualitative-# Diatom Taxa	52	# Taxa			
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Bio-Peri/Phyto	Periphyton-Qualitative-# Wet Taxa	3	#Taxa			
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Aluminum	672	ug/L		5	20
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Arsenic	4	ug/L	U	4	16
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Calcium	8.8	mg/L		0.05	0.2
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Chromium	1.6	ug/L	I	1	4

DATE SAMPLED	SITE LOCATION	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Copper	3.7	ug/L	U	3.7	15
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Iron	1,910	ug/L		10	40
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Lead	0.76	ug/L		0.075	0.3
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Magnesium	1.1	mg/L		0.01	0.04
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Nickel	1	ug/L	U	1	4
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Metals-Water	Zinc	3	ug/L	U	3	12
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Nutrients-Liquid	Ammonia-N	0.027	mg N/L		0.01	0.02
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Nutrients-Liquid	Kjeldahl Nitrogen	0.3	mg N/L	I	0.16	0.4
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Nutrients-Liquid	NO2NO3-N	0.11	mg N/L		0.004	0.01
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Nutrients-Liquid	O-Phosphate-P	0.007	mg P/L	I	0.004	0.01
12/6/2005 13:40	ESCAMBIA RIVER ABOVE SR 4	# 1	Nutrients-Liquid	Total-P	0.044	mg P/L	I	0.02	0.06
12/6/2005 14:40	ESCAMBIA RIVER ABOVE SR 4	#1-REP1	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	24	# Taxa			
12/6/2005 14:40	ESCAMBIA RIVER ABOVE SR 4	#1-REP2	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	32	# Taxa			
12/6/2005 14:40	ESCAMBIA RIVER ABOVE SR 4	#1-REP3	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	26	# Taxa			

Appendix 6

Additional physical, chemical, toxicological and microbiological results

Florida Department of Environmental Protection
Northwest District Chemistry Laboratory
160 Governmental Center
Pensacola, FL 32502
DOH Accreditation E31887
Chemical Analysis Report
Escambia River Century

Project ID:Escambia River
Sample Date:12/065
Report Date:12/13/05
Pages:5
Log Number:17757-17758

Certified by:

Abbreviations and data remark codes

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

Results for NELAP accredited tests contained in this report meet the requirements specified for the National Environmental Laboratory Accreditation Program.
Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published test performance acceptance criteria.

Comments:

Florida Department of Environmental Protection
Northwest District Chemistry Laboratory
160 Governmental Center
Pensacola, FL 32502
DOH Accreditation E31887
Chemical Analysis Report

Qualifier explanation from FAC 62-160.700:

B- Results based upon colony counts outside the acceptable range. This code applies to microbiological tests and specifically to membrane filter colony counts. The code is to be used if the colony count is generated from a plate in which the total number of coliform colonies is outside the method-indicated ideal range. The code is not to be used if a 100 mL sample has been filtered and the colony count is less than the lower value of the ideal range.

These ideal ranges are defined in the method as:
Fecal coliform bacteria: 20-60 colonies
Total coliform bacteria: 20-80- colonies

Please note: qualifier does NOT indicate that the data is unacceptable, only that the precision of the number is not as statistically robust as a number generated from an ideal plate range.

The same principle and qualifiers apply to Enterococci tests, even though they are not part of the Florida Water Quality Standards.

For additional information please contact
William Chandler
Jeanne Williams
Suncom 9695-8300 Phone (850) 595-8300

NORTHWEST DISTRICT LABORATORY
160 GOVERNMENTAL CENTER
PENSACOLA, FL 32502

Project: ESCAMBIA RIVER
SITE: 1
DATE: 12/06/05
SAMPLED BY: DONELAN

TYPE: SMP
STORET#: N/A
TIME: 1340
REQUESTED BY: DONELAN

CODE	PARAMETER	UNITS	VALUE(S) BY SAMPLE DEPTH 0.15m
00029	Log Number	CODE	17757
00078	Secchi depth	meters	0.5
00299	Diss. oxygen (probe)	mg/l	10.7
00010	Water temperature	°C	13.01
00094	Conductivity	µmho/cm	56
00400	pH	units	6.10
00530	Residue, nonfilt.	mg/l	18A
00080	Color	Pt-Co	100
00076	Turbidity	NTU	22
31501	Total coliform	#/100ml	460Q
31616	Fecal coliform	#/100ml	220Q
00310	BOD, 5 day, total	mg/l	0.8

Results for NELAP accredited tests contained in this report meet the requirements specified for the National Environmental Laboratory Accreditation Program. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published test performance acceptance criteria. NELAP Cert. E31887

Department of Environmental Protection

Water Quality Report Form

Agency	Station	Date	TIME A-GRAB	TIME B COMPOSITE SAMPLE	Sample depth 0.5' or 0.15m
FDEP	33.02.0225	12-06-05	1340	COMP BEGIN / END	0.2

Remarks: Module number: 1306

CONTROL

LOCATION ESCAMBIA RIVER ABOVE SR 4

Parameter	Unit	Code	Value	Parameter	Unit	Code	Value
Field Indent	Number	29	1	pH Lab	Std. Unit	403	
Temp. Water	°C	10	13.01	Alkalinity	mg/L	410	✓
Temp. Air	°C	20		Salinity	PPTH	480	
Precipitation (24hhr)	Inches	45		TOC	mg/L	680	
Water Level	Meters	82903		NFLT Residue	mg/L	530	✓
Cloud Cover	Percent	32		N-NH3, Total	mg/L	610	
Wind Velocity	MPH	35		Un-Ionized NH3	mg/L	619	
Wind Dir. From	Degrees	36		N-TKN	mg/L	625	
Tide Stage	Code	67		N-NO2 +NO3	mg/L	630	
Wave Height	Code	70222		Phos-Total	mg/L	665	
Turbidity, HACH	NTU	76	✓	Chloride	mg/L	940	
Secchi	Meters	78	0.5	Enterococcus	#/100mL	31649	
Color	PT-CO	80	✓	Total Coliform	#/100mL	31501	✓
ORP	Milivolt	90		Fecal Coliform	#/100mL	31616	✓
Cond. Field	UMHO	94	56	Chlorophyll A	UG/L	32210	
Cond. Lab	UMHO	95		Chlorophyll A	Corrected	32211	
DO Probe	mg/L	299	10.7	Calcium	mg/L	OO916	
DO	mg/L	300		Magnesium	mg/L	OO927	
BOD	mg/L	310	✓	Potassium	mg/L	OO937	
pH Field	Std. Unit	400	6.10	Sodium	mg/L	OO929	

Sample Taken By: Dane Inn / Butler

Report Verified By:

Report Prepared By:

( ) CHANGE Date Submitted

DEP Form PERM 21-10 (Sept 95) Modified by JRA 1/22/2003

NORTHWEST DISTRICT LABORATORY
160 GOVERNMENTAL CENTER
PENSACOLA, FL 32502

Project: ESCAMBIA RIVER
SITE: 3
DATE: 12/06/05
SAMPLED BY: DONELAN

TYPE: SMP
STORET#: N/A
TIME: 1030
REQUESTED BY: DONELAN

CODE	PARAMETER	UNITS	VALUE(S) BY SAMPLE DEPTH 0.15m
00029	Log Number	CODE	17758
00299	Diss. oxygen (probe)	mg/l	9.75
00010	Water temperature	°C	12.95
00094	Conductivity	µmho/cm	55
00400	pH	units	5.94
00530	Residue, nonfilt.	mg/l	14
00080	Color	Pt-Co	80
00076	Turbidity	NTU	19
31501	Total coliform	#/100ml	620Q
31616	Fecal coliform	#/100ml	172BQ
00310	BOD, 5 day, total	mg/l	0.9

Results for NELAP accredited tests contained in this report meet the requirements specified for the National Environmental Laboratory Accreditation Program. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published test performance acceptance criteria. NELAP Cert. E31887

Department of Environmental Protection

Water Quality Report Form

Agency FDEP	Station 33.02.0226	Date 12-06-05	TIME A- GRAB 1030	Sample depth 0.5' or 0.15m 0.2
			TIME B COMPOSITE SAMPLE	
			COMP BEGIN	
			END	

Remarks: Module number: 1306

TEST SITE

LOCATION ESCAMBIA RIVER BELOW CENTURY WWTP OUTFALL

Parameter	Unit	Code	Value	Parameter	Unit	Code	Value
Field Indent	Number	29	3	pH Lab	Std. Unit	403	
Temp. Water	°C	10	12.95	Alkalinity	mg/L	410	✓
Temp. Air	°C	20		Salinity	PPTH	480	
Precipitation (24hhr)	Inches	45		TOC	mg/L	680	
Water Level	Meters	82903		NFLT Residue	mg/L	530	✓
Cloud Cover	Percent	32		N-NH3, Total	mg/L	610	
Wind Velocity	MPH	35		Un-Ionized NH3	mg/L	619	
Wind Dir. From	Degrees	36		N-TKN	mg/L	625	
Tide Stage	Code	67		N-NO2 +NO3	mg/L	630	
Wave Height	Code	70222		Phos-Total	mg/L	665	
Turbidity, HACH	NTU	76	✓	Chloride	mg/L	940	
Secchi	Meters	78		Enterococcus	#/100mL	31649	
Color	PT-CO	80	✓	Total Coliform	#/100mL	31501	✓
ORP	Milivolt	90		Fecal Coliform	#/100mL	31616	✓
Cond. Field	UMHO	94	55	Chlorophyll A	UG/L	32210	
Cond. Lab	UMHO	95		Chlorophyll A	Corrected	32211	
DO Probe	mg/L	299	9.75	Calcium	mg/L	OO916	
DO	mg/L	300		Magnesium	mg/L	OO927	
BOD	mg/L	310	✓	Potassium	mg/L	OO937	
pH Field	Std. Unit	400	5.54	Sodium	mg/L	OO929	

Sample Taken By: Dawelson / Bunting

Report Verified By:

Report Prepared By:

( ) CHANGE Date Submitted

DEP Form PERM 21-10 (Sept 95) Modified by JRA 1/22/2003

Florida Department of Environmental Protection
Northwest District Chemistry Laboratory
160 Governmental Center
Pensacola, FL 32502
DOH Accreditation E31887
Chemical Analysis Report

Century effluent

Project ID:Century WWTP
Sample Date:12/0505
Report Date:12/13/05 **Certified by:**
Pages:3
Log Number:17741

Abbreviations and data remark codes

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

Results for NELAP accredited tests contained in this report meet the requirements specified for the National Environmental Laboratory Accreditation Program.
Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published test performance acceptance criteria.

Comments:

Florida Department of Environmental Protection
Northwest District Chemistry Laboratory
160 Governmental Center
Pensacola, FL 32502
DOH Accreditation E31887
Chemical Analysis Report

Qualifier explanation from FAC 62-160.700:

B- Results based upon colony counts outside the acceptable range. This code applies to microbiological tests and specifically to membrane filter colony counts. The code is to be used if the colony count is generated from a plate in which the total number of coliform colonies is outside the method-indicated ideal range. The code is not to be used if a 100 mL sample has been filtered and the colony count is less than the lower value of the ideal range.

These ideal ranges are defined in the method as:
Fecal coliform bacteria: 20-60 colonies
Total coliform bacteria: 20-80- colonies

Please note: qualifier does NOT indicate that the data is unacceptable, only that the precision of the number is not as statistically robust as a number generated from an ideal plate range.

The same principle and qualifiers apply to Enterococci tests, even though they are not part of the Florida Water Quality Standards.

For additional information please contact
William Chandler
Jeanne Williams
Suncom 9695-8300 Phone (850) 595-8300

NORTHWEST DISTRICT LABORATORY
160 GOVERNMENTAL CENTER
PENSACOLA, FL 32502

Project: CENTURY
SITE: 2
DATE: 12/05/05
SAMPLED BY: BUTTS

TYPE: DW
STORET#: N/A
TIME: 1020
REQUESTED BY: BUTTS

CODE	PARAMETER	UNITS	VALUE(S) BY SAMPLE DEPTH 0.15m
00029	Log Number	CODE	17741
00299	Diss. oxygen (probe)	mg/l	9.55
00010	Water temperature	°C	21.25
00094	Conductivity	µmho/cm	281
00400	pH	units	6.10
31501	Total coliform	#/100ml	350
31616	Fecal coliform	#/100ml	1K
00080	Color	Pt-Co	15
00076	Turbidity	NTU	1
00530	Residue, nonfilt.	mg/l	5U
00310	BOD, 5 day, total	mg/l	2U

Results for NELAP accredited tests contained in this report meet the requirements specified for the National Environmental Laboratory Accreditation Program. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published test performance acceptance criteria. NELAP Cert. E31887

Department of Environmental Protection

Water Quality Report Form

7741

TIME A-GRAB	1020
TIME B COMPOSITE SAMPLE	
COMP BEGIN	
COMP END	

Agency	Station	Date	Sample depth
FDEP	1017M04108	12-05-05	0.5' or 0.15m

Remarks: Module number: 1306

RSW

LOCATION CENTURY WWTP OUTFALL

Parameter	Unit	Code	Value	Parameter	Unit	Code	Value
Field Indent	Number	29	2	pH Lab	Std. Unit	403	
Temp. Water	°C	10	21.25	Alkalinity	mg/L	410	
Temp. Air	°C	20		Salinity	PPTH	480	
Precipitation (24hhr)	Inches	45		TOC	mg/L	680	
Water Level	Meters	82903		NFLT Residue ✓	mg/L	530	
Cloud Cover	Percent	32		N-NH3, Total	mg/L	610	
Wind Velocity	MPH	35		Un-Ionized NH3	mg/L	619	
Wind Dir. From	Degrees	36		N-TKN	mg/L	625	
Tide Stage	Code	67		N-NO2 +NO3	mg/L	630	
Wave Height	Code	70222		Phos-Total	mg/L	665	
Turbidity, HACH ✓	NTU	76		MARGINAL Chloride ✓	mg/L	940	
Secchi	Meters	78		Enterococcus	#/100mL	31649	
Color ✓	PT-CO	80		Total Coliform ✓	#/100mL	31501	
ORP	Milivolt	90		Fecal Coliform ✓	#/100mL	31616	
Cond. Field	UMHO	94		Chlorophyll A	UG/L	32210	
Cond. Lab	UMHO	95	281	Chlorophyll A	Corrected	32211	
DO Probe	mg/L	299	9.55	Calcium	mg/L	OO916	
DO	mg/L	300		Magnesium	mg/L	OO927	
BOD ✓	mg/L	310		Potassium	mg/L	OO937	
pH Field	Std. Unit	400	6.10	Sodium	mg/L	OO929	

Sample Taken By: G. BUTTS, C STOLL

Report Verified By:

Report Prepared By:

( ) CHANGE Date Submitted

DEP Form PERM 21-10 (Sept 95) Modified by JRA 1/22/2003

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

Facility: Town of Century. WWTP
Address: Jefferson St.
City: Century County: Escambia
Contact/District: Glenn Butts / Northwest
NPDES Permit #: FL 0032468
LIMS Job #: TLH-2005-12-09-01 LIMS Sample #: 835737

Sample Collection: Date: 12-4-05 Time: 0600
Hold Time Start: Date: 12-4-05 Time: 0600
Sample: 1 of 2(A)

Comments: (B) Fewer samples received than expected - only 2 discrete sample aliquots totaled of 2 lbs per sample set up. MF 12-6-05 Toxicity lab was expecting 4 samples collected over 24 hour period. Received 2 samples composited over 12 hours and MF 1-11-06 4 tests set up under. On 2 tests expected by District Lab notified of step upon the fact when explained test was already set up MF 12-8-05

Lims Data Entry: 1-9-06 SR
Data Entry Verification: 1-10-06 MF
Instructions (for below): Circle appropriate wording. If yes is circled complete blanks.
SOP# TA07 01 163
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:
Control survival ≥90% Yes No
Temperature Range ≤3°C: Yes No

Test 2 validation:
Control survival ≥90% Yes No
Temperature Range ≤3°C: Yes No

PH adjustment : yes no Initial pH NaOH N HCl N Drops mL Final pH
Aeration : yes no Initial DO: mg/L Final DO: mg/L Duration: minutes Rate: ~ bubbles/min
Salinity adjusted (Test 1): yes no Initial Salinity: Final Salinity: Salts Hypersaline brine
Salinity adjusted (Test 2): yes no Initial Salinity: Final Salinity: Salts Hypersaline brine
Dechlorination: yes no mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC

Temperature Range °C
Incubator # 2 Range 345-356
Room B246: 234-252
Waterbath: N/A

Sample Validation:
Temperature: Shipped ≤6°C Yes No Hand Delivered: Cooling (received °C < collected °C) Yes No
Holding Time: ≤36 Hours Yes No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

(B) Based on sample collection times determined after test initiation, samples were out of hold. MF 1/10/06 NCR 1873 written.

Investigators' Signatures
Sarah Pigeon
Mary Riley
Mandy Bullock
Bruce Boldt
Mandy Wellendorf
REVIEWER

Water Quality Parameters	20% DMW	Well Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Moderately Hard Water	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	N/A	N/A	N/A	N/A	N/A	Not Required		—	—
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03				<0.03	HACH	SR	MF
Alkalinity (mg/L as $CaCO_3$):	86	119				45	HACH	SR	SR
Hardness (mg/L as $CaCO_3$):	90	138				56	HACH	SR	SR
Total Ammonia (mg/L as N):	<0.017	<0.017				0.197	DENVER	MF	SR
Salinity (ppt):	<1	<1				<1	YSI	SR / SV	MF

V 2 2/26/04

FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 885737 Test #: 1 Test Started: Date 12-6-05 Time: 1330

Organism: C. dubia Test Ended: Date 12-10-05 Time: 1250

Organism Batch: H5-05 Diluent/ Batch: DMW / 36-05

Organism Age: <24 hr Food: YCT *P. subcapitata* *Artemia*

Chamber Size 30 mL Batch: 04-05 06-05 –

Test Volume 20 mL Feeding: (Prior to test) - Prior to renewal - Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
GRL	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
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
Organisms loaded by: SP		Checked by:	X	MF	MF	MF	MF	SP
Loading Verified by: MF		(initials)						

Comments:

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

Test Results:

% mortality in 100% sample 0

LC_{50}: >100 If Calculated: 95% CI _____ Method: _____

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

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

000194

Page V.1 2/23/04

FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 885737 Test #: 2 Test Started: Date 12-6-05 Time: 1315

Organism: C. leatsi Test Ended: Date 12-16-05 Time: 1300

Organism Batch: 36-05 Diluent/ Batch: Well H2O 12-5-05

Organism Age: 9 days Food: YCT *P. subcapitata* *Artemia*

Chamber Size 1000 mL Batch: - - GSL536-90

Test Volume 500 mL

Feeding: Prior to test (circled) - 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	E1	5	5	5	5	5	5
	B	E2	5	5	5	5	5	5
	C	E3	5	5	5	5	5	5
	D	E4	5	5	5	5	5	5
100%	A	E5	5	5	5	5	5	5
	B	E6	5	5	5	5	5	5
	C	E7	5	5	5	5	5	5
	D	E8	5	5	5	5	5	5
Organisms loaded by: JD		Checked by: (initials)	X	JD	MF	SP	SP	SP

Loading Verified by: SP

Comments:

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

Test Results:

% mortality in 100% sample 0

LC_{50}: >100 If Calculated: 95% CI ____ Method: ____

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

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

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Bioassay Parameters

LIMS Sample # : 885737 Test # : 1 of 2

TEST SOP: TA07_ 01 Test Species: (Ceriodaphnia dubia) Cyprinella leedsi Pimephales promelas

Americamysis bahia Menidia beryllina Other:

V.1 2/24/04

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A		B	B		C
pH (S.U.)	8.1		8.2	8.1		8.0
Temperature °C	24.0		25.1	25.1		24.0
Dissolved Oxygen mg/L	7.8		7.6	7.4		7.9
Conductivity (µmhos) mmhos	180.0		210	170		195
(initials) Measured by:	JD		JD	SB		SB
(initials) Recorded by:	JD		JD	SB		SB

Comments: @ 72

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A		B	B		C
pH (S.U.)	6.9		7.8	7.0		7.9
Temperature °C	24.0		26.0	26.0		24.0
Dissolved Oxygen mg/L	8.4		7.3	8.4		8.2
Conductivity (µmhos) mmhos	330		387	342		395
(initials) Measured by:	JD		JD	SB		SB
(initials) Recorded by:	JD		JD	SB		SB

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

000195

V.1 2/24/04

Page 000198 unused.

Bioassay Parameters

LIMS Sample # : 885737 **Test # :** 2 of 2

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

V.1 2/24/04

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.8	8.2	8.2	8.1	8.2	8.2
Temperature °C	25.2	24.6	24.5	25.2	24.6	24.7
Dissolved Oxygen mg/L	7.4	7.3	7.1	7.0	6.6	6.8
Conductivity (µmhos) mmhos	270	287	280	261	282	304
(initials) Measured by:	JD	GS	GS	JD	GS	GS
(initials) Recorded by:	JD	GS	GS	JD	GS	GS

Comments:

Concentration 100 %	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	(B) 7.3 (73)	7.5	7.7	7.2	7.5 (13)	7.7
Temperature °C	25.0	24.1	24.2 (31)	25.5	24.9	25.1
Dissolved Oxygen mg/L	9.0	7.1	7.0	7.9	6.3	6.6
Conductivity (µmhos) mmhos	340	370	373	344	361	304 (6)
(initials) Measured by:	JD	GS	GS	JD	GS	GS
(initials) Recorded by:	JD	GS	GS	JD	GS	GS

Comments: (2) DIL DIL A – 6.9 (32)
(B) pH 7.4 GS (C) conductivity 383 GS

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

V.1 2/24/04

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

Facility: Town of Century WWTP

LIMS Job #: TLH-2005-12-~~06~~ 09 01 (α)

LIMS Sample #: 890332

Sample Collection: Date: 12-4-05 Time: 1805

Hold Time Start: Date: 12-4-05 Time: 1803

Sample: 2 of ~~2~~ 2(B)

Lims Data Entry: 1-9-06 SP

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

Data Entry Verification: 1-10-06 MF

SOP# TA07 01 102

Test 1 validation:

Control survival ≥90%: (Yes) No

Temperature Range ≤3°C: (Yes) No

Test 2 validation:

Control survival ≥90%: (Yes) No

Temperature Range ≤3°C: (Yes) No

Comments: (B) only 2 sample received - MF 12-6-05

(A) transfer error SP

These were 2 tests were performed on the second jug of the ~~original~~ MF 12-11-06 3 jug composite sample. The sample collection differed from the protocol 4 in 24 grabs and the laboratory was only notified after the last aliquot was used up. MF 12-8-05

Initial sample handling:

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

Aeration : yes (no) Initial DO: mg/L Final DO: mg/L Duration: minutes Rate: ~ bubbles/min

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

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

Dechlorination: yes (no) Sodium Thiosulfate added: ml/L

Water Quality Parameters	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	not measured		—	SP
Lab Total Residual Cl2 (mg/L):	<0.03	HACH	SP	MF
Alkalinity (mg/L as $CaCO_3$):	~~66~~ 48	HACH	EW	SP
Hardness (mg/L as $CaCO_3$):	~~48~~ 52	HACH	EW	SP
Total Ammonia (mg/L as N):	~~2.07~~ 2.11	DENVER	MF	SP
Salinity (ppt):	<1	YSI	SP	MF

FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 890332 Test #: 1 Test Started: Date 12-6-05 Time: 1345

Organism: C. dubia Test Ended: Date 12-12-05 Time: 1255

Organism Batch: 45-05 Diluent/ Batch: DMW / 36-05

Organism Age: <24 hr Food: YCT *P. subcapitata* *Artemia*

Chamber Size 30 mL Batch: 04-05 06-05 —

Test Volume 20 mL Feeding: Prior to test - Prior to renewal - Daily

Concentration	Replicate	Chamber #	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	5
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
Organisms loaded by: SR		Checked by: (initials)	X	JD	MF	MF	MF	SR

Loading Verified by: MF

Comments:

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

Test Results:

% mortality in 100% sample 0

LC_{50}: >100 If Calculated: 95% CI ____ Method: ____

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

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

FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 890332 Test #: 2 Test Started: Date 12-6-05 Time: 1330

Organism: C. leedsi Test Ended: Date 12-10-05 Time: 1300

Organism Batch: 36-05 Diluent/ Batch: Well H2O / 12-5-05

Organism Age: 9 days Food: YCT *P. subcapitata* *Artemia*

Chamber Size 1000 mL Batch: – – GSL 536-90

Test Volume 500 mL Feeding: Prior to test - Prior to renewal - Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A	E9	5	5	5	5	5	5
	B	E10	5	5	5	5	5	5
	C	E11	5	5	5	5	5	5
	D	E12	5	5	5	5	5	5
100%	A	E13	5	5	5	5	5	5
	B	E14	5	5	5	5	5	5
	C	E15	5	5	5	5	5	5
	D	E16	5	5	5	5	5	5
Organisms loaded by: JJ		Checked by: (initials)	X	JJ	JJ	SF	JR/SP	SF

Loading Verified by: SP

Comments:

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

Test Results:

% mortality in 100% sample 0

LC_{50}: >100 If Calculated: 95% CI_____ Method:_____

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

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

Bioassay Parameters

LIMS Sample # : 890332 **Test # :** 1 of 2

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

V.1 2/24/04

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A		B	B		C
pH (S.U.)	8.1		8.2	8.0		8.0
Temperature °C	24.1		25.4	25.4		24.0
Dissolved Oxygen mg/L	~~24.1~~ 8.0		7.6	7.7		7.8
Conductivity (µmhos) mmhos	178		148.9	169		214
(initials) Measured by:	SP		JD	SP		SP
(initials) Recorded by:	SP		JD	SP		SP

Comments: Ø hr DO 8.0 SP

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A		B	B		C
pH (S.U.)	7.0		7.8	7.1		8.0
Temperature °C	24.3		24.0	25.7		24.1
Dissolved Oxygen mg/L	~~24.3~~ 8.4		7.5	8.6		8.0
Conductivity (µmhos) mmhos	332		359	328		431
(initials) Measured by:	SP		JD	SP		SP
(initials) Recorded by:	SP		JD	SP		SP

Comments: Ø hr DO 8.4 SP

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

0110202

V.1 2/24/04

Bioassay Parameters

LIMS Sample # : 890332 **Test # :** 2 **of** 2

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

V.1 2/24/04

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.8	8.2	8.3	8.2	8.2	8.2
Temperature °C	26.7	24.0	25.5	24.3	24.1	24.5
Dissolved Oxygen mg/L	7.7	7.1	6.7	7.6	7.2	7.7
Conductivity µmhos mmhos	270	281	286	268	271	306
(initials) Measured by:	JD	CB	CB	JD	CB	CB
(initials) Recorded by:	JD	CB	CB	JD	CB	CB

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.0	7.5	7.8	7.3	7.4	~~8.8~~ 7.7
Temperature °C	24.7	24.0	24.6	24.4	24.0	25.2
Dissolved Oxygen mg/L	9.1	6.9	7.2	8.0	7.1	7.2
Conductivity µmhos mmhos	330	380	378	340	378	383
(initials) Measured by:	JD	CB	CB	JD	CB	CB
(initials) Recorded by:	JD	CB	CB	JD	CB	CB

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

V.1 2/24/04

Appendix 7

Standard Reference Toxicant test data

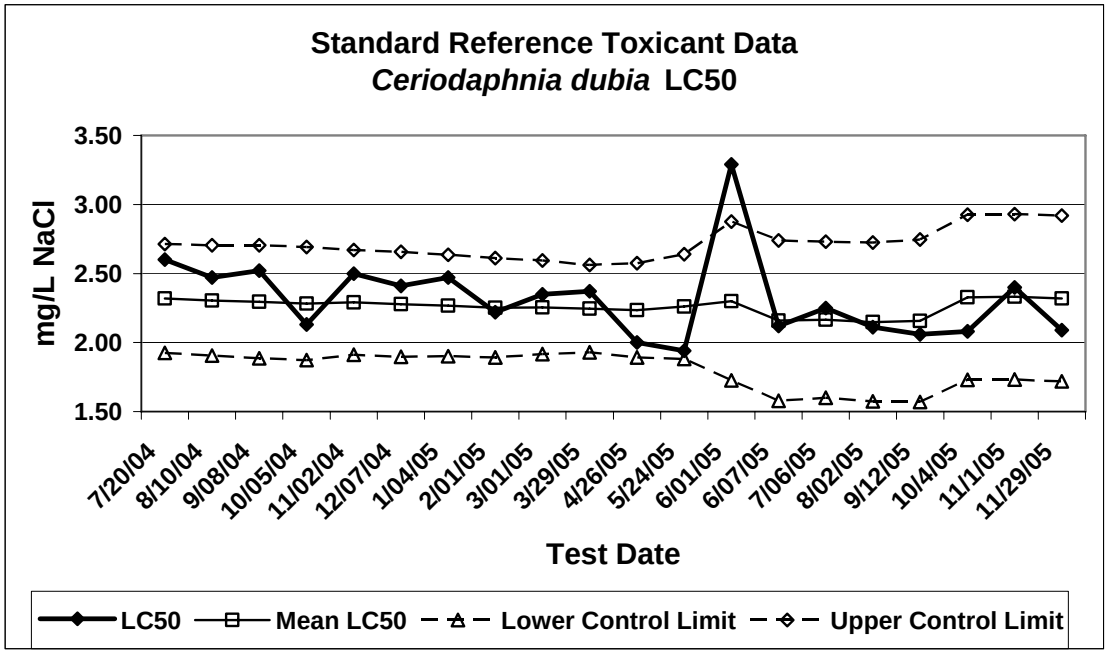
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
7/20/04	2.60	2.32	0.20	1.92	2.71
8/10/04	2.47	2.30	0.20	1.90	2.70
9/08/04	2.52	2.30	0.21	1.88	2.71
10/05/04	2.13	2.28	0.20	1.87	2.69
11/02/04	2.50	2.29	0.19	1.91	2.67
12/07/04	2.41	2.28	0.19	1.90	2.66
1/04/05	2.47	2.27	0.18	1.90	2.63
2/01/05	2.22	2.25	0.18	1.89	2.61
3/01/05	2.35	2.26	0.17	1.92	2.59
3/29/05	2.37	2.25	0.16	1.93	2.56
4/26/05	2.00	2.23	0.17	1.89	2.58
5/24/05	1.94	2.26	0.19	1.88	2.64
6/01/05	3.29	2.30	0.29	1.73	2.87
6/07/05	2.12	2.16	0.29	1.58	2.74
7/06/05	2.25	2.17	0.28	1.60	2.73
8/02/05	2.11	2.15	0.29	1.57	2.72
9/12/05	2.06	2.16	0.29	1.57	2.75
10/4/05	2.08	2.33	0.30	1.73	2.93
11/1/05	2.40	2.33	0.30	1.73	2.93
11/29/05	2.09	2.32	0.30	1.72	2.92

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

CV = 12.95
EPA reference 75th quartile CV = 29%



FDEP Biology Section -- Acute SRT Bench Sheet

Test Organism: (*Ceriodaphnia dubia*) *Cyprinella leedsi* *Pimephales promelas*
Americamysis bahia *Menidia beryllina* *Hyalella azteca* Other:

Test Type: Screening / (Definitive)
(Static) / Static Renewal

Toxicant/ Batch# NaCl 11-05
Diluent/ Batch #: DMW 135-05
Diluent Salinity: <1 ppth

Test Beginning: Date: 11-29-05 Time: 1330
Test Ending: Date: 12-1-05 Time: 1330
Organism Batch #: 43-05
Organism Age: <24hrs

Chamber size: 30 mL
Sample volume: 20 mL

Food: YCT/*P.subcapitata* Artemia
Food Batch: 0405 / 0605 —

Feeding: Prior to test / Prior to renewal / Daily

Conc. (‰)	Chamber#	Number Live 0 hr / 48 hr	Number Live 24 hr / 72 hr	Number Live 48 hr / 96 hr	pH 0 hr / 48 hr	pH 24 hr / 72 hr	pH 48 hr / 96 hr	Temperature (°C) 0 hr / 48 hr	Temperature (°C) 24 hr / 72 hr	Temperature (°C) 48 hr / 96 hr	D.O. (mg/l) 0 hr / 48 hr	D.O. (mg/l) 24 hr / 72 hr	D.O. (mg/l) 48 hr / 96 hr	UNCORRECTED (Cond. (mmhos/cm)) Cond. (µmhos/cm) 0 hr / 48 hr	24 hr / 72 hr	48 hr / 96 hr
CTPL	A	5	5	5	6.8			25.1			7.5			8.73		
	B	5	5	5			7.9			23.9			(A) 4.5			0.224
	C	5	5	5									7.4			
	D	5	5	5												
1.5	A	5	5	4^{10}	6.7			25.5			7.4			2.94		
	B	5	5	5			7.9			23.9			(A) ~~4.6~~			3.51
	C	5	5	5									7.3			
	D	5	5	5												
2.0	A	5	5	4^{10}	6.8			25.4			7.3			3.78		
	B	5	5	3^{20}			8.0			23.9			7.2			~~3.7~~ 4.32 SP
	C	5	4^{10}	3^{10}												
	D	5	5	3^{20}												
2.5	A	5	4^{10}	2^{20}	6.8			25.4			7.2			4.71		
	B	5	5	0^{50}			8.0			23.9			7.3			5.55
	C	5	3^{20}	1^{20}												
	D	5	4^{10}	0^{40}												
3.0	A	5	3^{20}	0^{30}	6.9			25.5			7.3			5.58		
	B	5	3^{20}	0^{30}			8.0			23.9			7.3			6.68
	C	5	3^{20}	0^{35}												
	D	5	2^{30}	0^{20}												
4.0	A	5	0^{50}	-	6.9			25.3			7.0			7.23		
	B	5	0^{50}	-		8.0	-		24.2	2^{1hr} -		8.4	-		7.92	-
	C	5	0^{50}	-			-			-			-			-
	D	5	0^{50}	-												
Loaded / measured by:		MF	SP	SP	MF	JJ	SP	MF	JJ	SP	MF	JJ	~~MF~~	MF	JJ	SP
Recorded by:		SP	SP	SP	MF	JJ	SP	MF	JJ	SP	MF	JJ	~~MF~~ SP/SP	MF	JJ	SP

Investigators' Signatures
Sarah Pinkard
Marshall Faircloth
Jess Rich
Nicole Wellendorf
REVIEWER

Concentrations prepared by: MF
Loading verified by: SP
Temperature Range °C:
Incubator # 3 24.9-26.4°C
Incubator # ___
Room B246 23.3-25.4°C
Light Intensity:
50-100 Ft. candles (yes) no)
Photoperiod:
16 hours Light / 8 hours dark (yes) no)

Remarks:
(A) DO meter set on wrong salinity 1st value
SP

LC50: 2.09
95% CI: lower 1.95 upper 2.25

Page 000057

Revised 9/12/2005

Ceriodaphnia dubia Acute Standard Reference Toxicant Test

START DATE: 11/29/05 END DATE: 12/01/05

DURATION: 48 H

TOXICANT : NaCl

RAW DATA:

Concentration (g/L)	Number Exposed	Mortalities
0.00	20	0
1.50	20	1
2.00	20	7
2.50	20	17
3.00	20	20
4.00	20	20

SPEARMAN-KARBER TRIM: 5.00%

SPEARMAN-KARBER ESTIMATES: LC50: 2.09

95% LOWER CONFIDENCE: 1.95

95% UPPER CONFIDENCE: 2.25

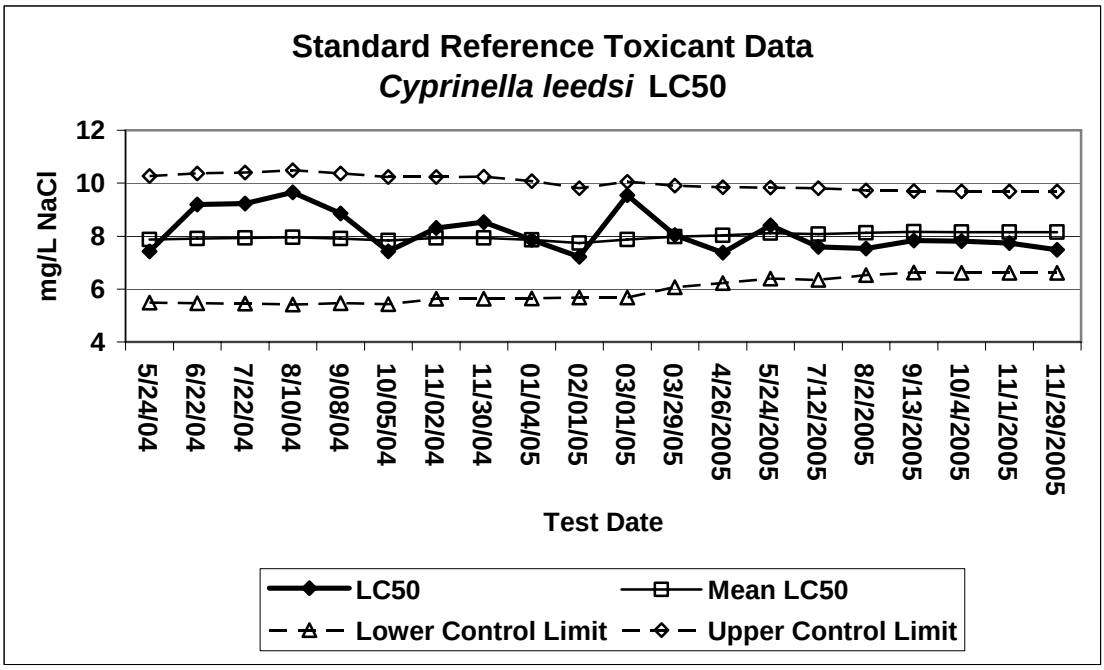
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
5/24/04	7.42	7.88	1.20	5.49	10.27
6/22/04	9.19	7.91	1.23	5.46	10.36
7/22/04	9.23	7.93	1.24	5.45	10.41
8/10/04	9.65	7.95	1.27	5.41	10.49
9/08/04	8.85	7.91	1.22	5.46	10.36
10/05/04	7.43	7.83	1.20	5.43	10.24
11/02/04	8.31	7.93	1.15	5.63	10.24
11/30/04	8.53	7.94	1.15	5.63	10.24
01/04/05	7.86	7.87	1.11	5.65	10.08
02/01/05	7.22	7.74	1.03	5.68	9.80
03/01/05	9.54	7.87	1.09	5.68	10.05
03/29/05	8.04	7.99	0.96	6.07	9.91
4/26/2005	7.38	8.03	0.90	6.22	9.84
5/24/2005	8.41	8.11	0.86	6.40	9.83
7/12/2005	7.59	8.08	0.86	6.35	9.81
8/2/2005	7.53	8.13	0.80	6.53	9.72
9/13/2005	7.84	8.16	0.77	6.63	9.70
10/4/2005	7.81	8.16	0.77	6.62	9.69
11/1/2005	7.74	8.15	0.77	6.61	9.69
11/29/2005	7.49	8.15	0.77	6.61	9.69

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

CV = 9.45
EPA reference 75th quartile CV = 19%



[redacted]

FDEP Biology Section -- Acute SRT Bench Sheet

Test Organism: *Ceriodaphnia dubia* (*Cyprinella leedsi*) *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* *Hyalella azteca* Other:_____

Test Type: Screening / (Definitive) (Static) / Static Renewal

Toxicant/ Batch# NaCl / 9-05

Diluent/ Batch #: well / 11-29-05

Diluent Salinity: <1 ppth

Food: YCT/*P.subcapitata* / Artemia

Food Batch: - / - / GSL 536-90

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

Test Beginning: Date: 11-29-05 Time: 1220

Test Ending: Date: 12-1-05 Time: 1300

Organism Batch #: 34-05

Organism Age: 11 days

Chamber size: 1000 mL

Sample volume: 500 mL

Conc. (%)	Chamber#	Number Live 0 hr / 24 hr / 48 hr			PH 0 hr / 24 hr / 48 hr			Temperature (° C) 0 hr / 24 hr / 48 hr			D.O. (mg/l) 0 hr / 24 hr / 48 hr			UNCORRECTED Cond. (mmhos/cm) 0 hr / 24 hr / 48 hr			Cond. (µmhom/cm) 0 hr / 24 hr / 48 hr		
		48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr
CTRL A	B13	10	10	10	8.0		8.1	24.6		24.4	7.9		6.4	0.341		0.250			
B	B14	10	10	9[D]		8.2			24.3			6.8			0.422				
6.0 A	B15	10	10	8[2D]	7.8		8.0	24.9		24.3	7.8		6.5	10.8		11.1			
B	B16	10	9[D]	9		7.9			24.0			7.0			9.57				
7.0 A	B17	10	7[3D]	7	7.8		8.1	25.0		24.3	7.7		6.5	12.5		12.8			
B	B18	10	9[D]	8[D]		8.0			24.0			6.7			11.2				
8.0 A	B19	10	2[3D]	2	7.8		8.1	25.1		24.3	7.7		6.4	14.0		14.3			
B	B20	10	4[6D]	3[D]		7.9			24.6			6.4			13.2				
9.0 A	B21	10	0[10D]	-	7.8		-	25.2		-	7.6		-	15.5		-			
B	B22	10	0[10D]	-		7.9			24.3			7.2			15.1				
10.0 A	B23	10	0[0D]	-	7.8		-	24.9		-	7.6		-	16.9		-			
B	B24	10	0[10D]	-		7.9			24.0			7.6			16.7				
Loaded / measured by:		JD	SB	JD	SD	JD	JD	SP	SB	JD	SB	JD	JD	SP	JD	JD			
Recorded by:		SB	SB	JD	SP	JD	JD	SB	SP	JD	SP	JD	JD	SB	JD	JD			

Investigators' Signatures

Sarah Pickard

James Tyrrell

Brandon Painchaud

Nicole Willoughby

REVIEWER

Concentrations prepared by: JE

Loading verified by: SB

Temperature Range °C:

Incubator # 3 24.8-26.4°C

Incubator # ___ ___

Room B246 23.3-25.4°C

Light Intensity:

50-100 Ft. candles (yes) no)

Photoperiod:

16 hours Light / 8 hours dark (yes) no)

Remarks:

LC50: 7.49

95% CI: lower 7.16 upper 7.85

Revised 9/12/2005

Cyprinella leedsi Acute Standard Reference Toxicant Test

START DATE: 11/29/05 END DATE: 12/01/05

DURATION: 48 H

TOXICANT : NaCl

RAW DATA:

Concentration (g/L)	Number Exposed	Mortalities
0.00	20	1
6.00	20	3
7.00	20	5
8.00	20	15
9.00	20	20
10.00	20	20

SPEARMAN-KARBER TRIM: 10.53%

SPEARMAN-KARBER ESTIMATES: LC50: 7.49

95% LOWER CONFIDENCE: 7.16

95% UPPER CONFIDENCE: 7.85

11842 Research Circle
Alachua, FL 32615
T: (386) 462-7889
F: (386) 462-7264
www.hydrosphere.net

HYDROSPHERE
research

Packaging List

Date	Customer Number	Order Shipped Via
11/29/2005	NA	Hydrosphere Research
Customer		**Order Prepared By**
FDEP Marshall Faircloth Biology Mail Stop 6515 2600 Blair Stone Road Tallahassee, Fl 32399-2400		Dustin Onash

Quantity	Description
100	C. leedsi #937, Hatched on 11/17/2005

4569 Samuel Street
Sarasota, Florida
34233

NELAC Accredited

MBL
MARINCO
BIOASSAY
LABORATORY

TEL: (941) 925-3594
TEL: (800) 889-0384
FAX: (941) 922-3874
Email: lab@biologylab.com
Internet: biologylab.com

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 12/05/05

Shipped to: FDEP

P.O. No: Verbal

Species	Quantity	Age	Brood Number	Temperature	Salinity
Mysidopsis bahia					
Menidia beryllina					
Cyprinella leedsi	360+	8days	CLOSE 27	25°C	
Pimephales promelas					

Packed by: Diane Thornton

Shipped Via: Fed Ex

Notes: Peter (Hydrosphere)

Thank you for your order.

Diane

Appendix 8

Typical Values for Selected Parameters in Florida Waters

Percentile Distribution (1617 stations)

CONTROL SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Hester-Dendy Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	**4.19**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	26	29	32	**47**
Dipnet Taxa Richness	9	12	17	20	22	24.5	26	28	31	37	53	**28**
Total Kjeldahl Nitrogen	0.30	0.39	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80	**0.3 I**
Total Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60	**0.027**
Nitrate plus Nitrite	0.01	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	**0.11**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51	**0.044 I**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37	**0.007 I**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**22**

TEST SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Hester-Dendy Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	**ND**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	26	29	32	**ND**
Dipnet Taxa Richness	9	12	17	20	22	24.5	26	28	31	37	53	**35**
Total Kjeldahl Nitrogen	0.30	0.39	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80	**0.22 I**
Total Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60	**0.036**
Nitrate plus Nitrite	0.01	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	**0.17**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51	**0.024 I**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37	**0.012**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**19**

Taxa richness and diversity values are for benthic macroinvertebrates. Hester-Dendy sample= benthic macroinvertebrates collected from a standardized multi-plate sampler. Dipnet taxa richness = number of taxa collected in standardized dipnet sweep samples. Diversity = Shannon-Weaver H'. NTU = Nephelometric turbidity units. Adapted from Joe Hand, FDER, personal communication, 1991 (data collected 1980-1989). ND = No data. I = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

Appendix 9

Habitat Assessment Field Sheets

HD'S OUT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5-10-96)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: NW DISTRICT	STORET STATION NUMBER: 33.02.0225	DATE (M/D/Y): 11-08-05	TIME: 0955	RECEIVING BODY OF WATER: ESCAMBIA RIVER

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
CONTROL	ESCAMBIA	ABOVE SR 4 AND CENTURY WWTP OUTFALL	# 1

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
40	20	20	20				

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***

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

m wide | m/s | m/s | m/s | m deep | m deep | m deep

Artificially Channelized ☐ no ☐ ☐ ☐ ☐ recent, severe some recovery mostly recovered more sinuous
Artificially Impounded ☐ yes

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

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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)	✓			Sand	✓		
Leaf Packs or Mats				Mud/Muck/Silt	✓		
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Undercut banks/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. (µmho/cm) or Salinity (ppt):	DO%		Secchi (m):
Top	0.5	19.42	5.97	8.96	98	96.2		1.3
Mid-depth	1.1	19.42	6.16	8.43	97	90.5		
Bottom	2.2	19.42	6.06	8.47	97	90.5		

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

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

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:
N 30° 57' 49.9" 49.1
W 87° 13' 15.9" 15.9

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

SAMPLING TEAM:	SIGNATURE:	DATE:
G. Butts, L. Donelan	Glenn Butts	11-08-05

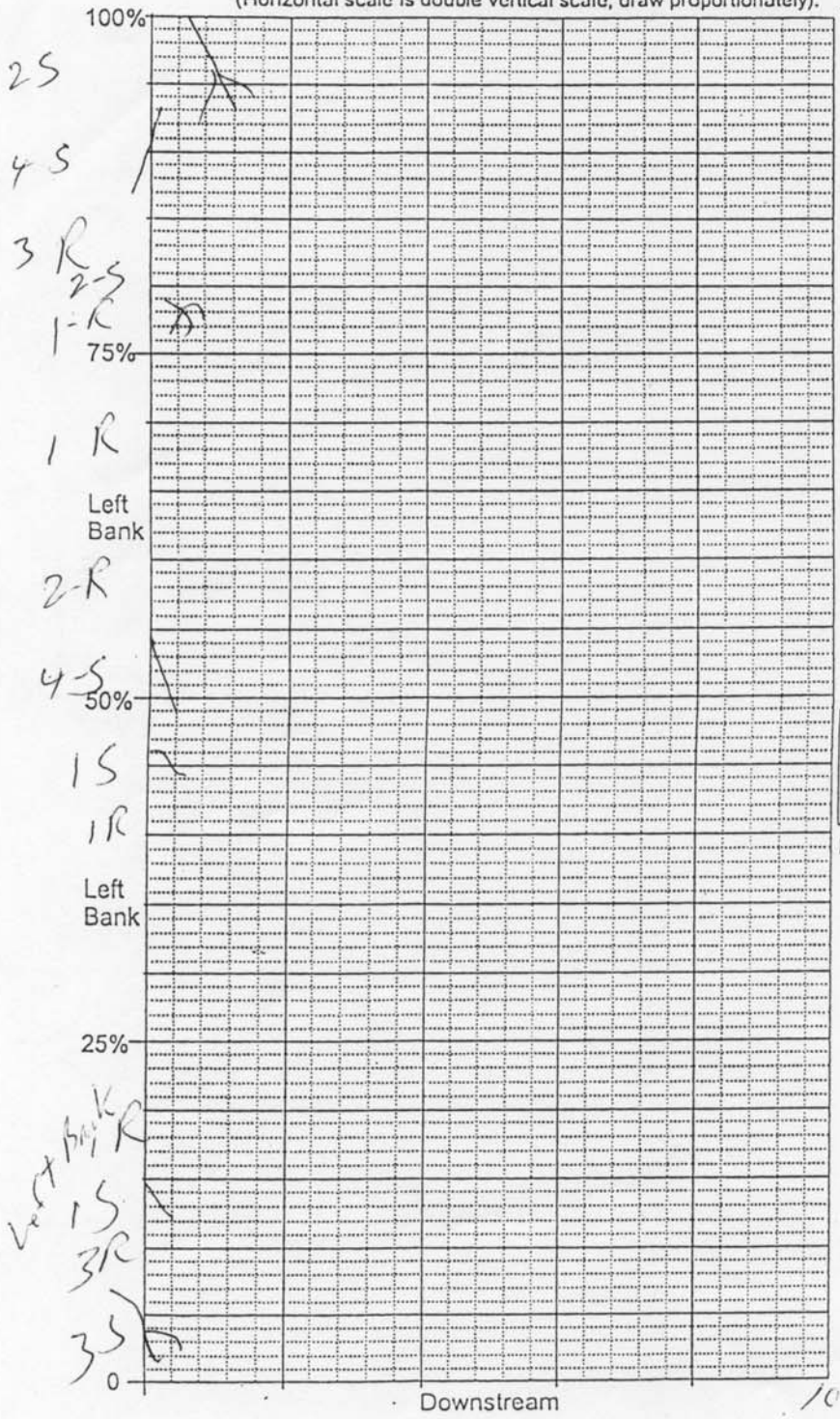
33.02.0225

33020225
Esc. River abv SR4 + Big Esc. Cre

Site Map / Habitat Sketch

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

Field ID: 1 CONTROL



Substrates: Code key, draw proportionate habitat abundance.

- [S] Snags
- [R] Roots/undercut banks
- [ ] Leaf Packs (or mats)
- [ ] Macrophytes
- [ ] _____
- [ ] _____
- [ ] _____

Velocity:
Note where velocity measures were taken.

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

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

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

Plants observed/other notes:

S R
17 12

HD'S OUT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (5-27-98)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: NW DISTRICT	STORET STATION NUMBER: 33.02.0225	DATE (M/D/Y): 11-08-05	RECEIVING BODY OF WATER: ESCAMBIA RIVER
REMARKS: CONTROL	COUNTY: ESCAMBIA	LOCATION: ABOVE SR 4 AND CENTURY WWTP OUTFALL	FIELD ID/NAME: # 1 CONTROL

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components				
Substrate Diversity [12]	Four or more productive habitats present (snags tree roots, aquatic vegetation, leaf packs (partially decayed), undercut banks, 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 [11]	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 [16]	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 [7]	Less than 20% of habitats affected by sand or silt accumulation	20%-50% of habitats affected by sand or silt accumulation	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 (7) 6	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent 5 4 3 2 1
Primary Score [46]	20 19 18 17 16	15 14 13 12 11		
Secondary Habitat Components				
Artificial Channelization [18]	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 (18) 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability				
Right Bank [7]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 (7) 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 (4)	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Left Bank [4]				
Riparian Buffer Zone Width				
Right Bank [9]	Width of native vegetation (least buffered side) greater than 18 m 10 (9)	Width of native vegetation (least buffered side) 12 m to 18 m 8 (7) 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Left Bank [7]				
Riparian Zone Vegetation Quality				
Right Bank [9]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. 10 (9)	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1
Left Bank [9]				
Secondary Score [63]				

TOTAL SCORE [109]

ANALYSIS DATE: 11-08-05	ANALYST: BUTTS, DONELAN	SIGNATURE: Glenn Butts

N 30° 57' 48.1"
W 87° 13' 15.9

33.02.0225

HD'S OUT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5-10-96)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
8010 / NW DISTRICT	33.02.0226	11-08-05	1110	ESCAMBIA RIVER

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
TEST SITE	ESCAMBIA	~~BELOW~~ ABOVE SR 4 AND CENTURY WWTP OUTFALL	# 3

RIPARIAN ZONE/INSTREAM FEATURES

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

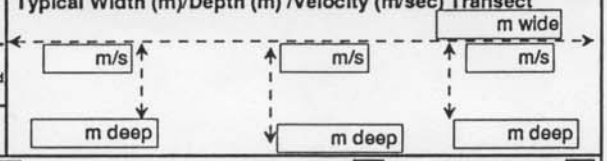
Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)

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***

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



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

Artificially Impounded ☐ yes ☐ more sinuous

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

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

SEDIMENT/SUBSTRATE

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

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

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

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand			
Leaf Packs or Mats				Mud/Muck/Silt			
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Undercut banks/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. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	0.5	19.82	6.12	8.92	82			1.3
Mid-depth	2.5	19.81	6.17	8.38	81			
Bottom	6.8	19.78	6.16	8.34	81			

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:
N 30° 57' 56.5"
W 87° 14' 6.3"

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

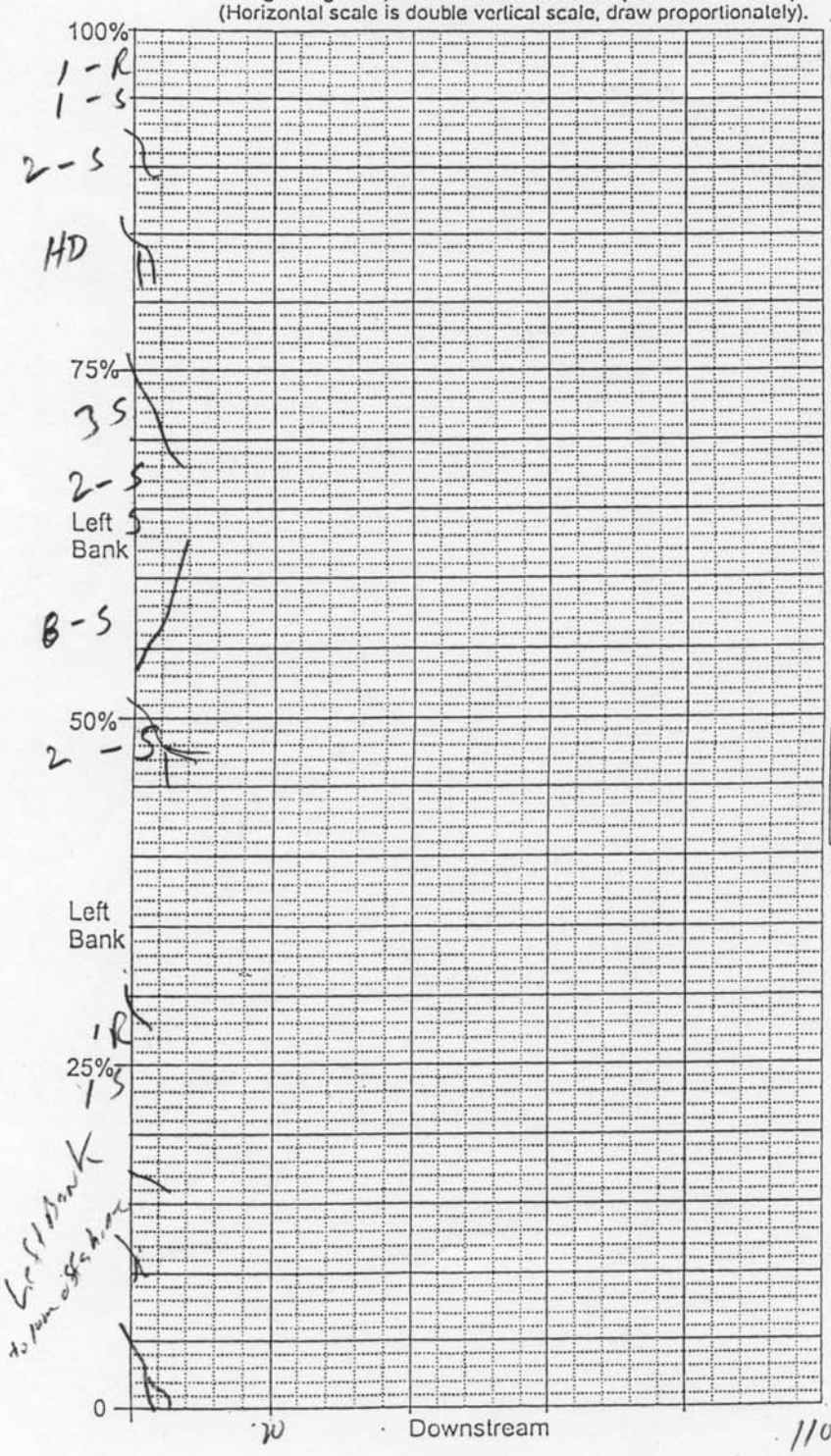
SAMPLING TEAM:	SIGNATURE:	DATE:
G. BUTTS, L. DONELAN	Glenn Butts	

33020226
Esc. River blw Century
WWTP outfall

Site Map / Habitat Sketch

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

Field ID: 3 TEST



Substrates: Code key, draw proportionate habitat abundance.

- [S] Snags
- [R] Roots/undercut banks
- [ ] Leaf Packs (or mats)
- [ ] Macrophytes
- [ ] _____
- [ ] _____
- [ ] _____

Velocity:
Note where velocity measures were taken.

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

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

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

Plants observed/other notes:

S R 7
26 12
R 7
S 1

S 1
R 1

S 5
R 2

HD'S OUT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (5-27-98)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: NW DISTRICT	STORET STATION NUMBER: 33.02.0026	DATE (M/D/Y): 11-08-05	RECEIVING BODY OF WATER: ESCAMBIA RIVER
REMARKS: TEST SITE	COUNTY: ESCAMBIA	LOCATION: ~~BELOW~~ ABOVE SR 4 AND CENTURY WWTP OUTFALL	FIELD ID/NAME: #3

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components				
Substrate Diversity [9]	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), undercut banks, 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 [8]	Greater than 30% productive habitat present at site. 20 19 18 17 16	16% to 30% productive habitat, by aerial extent. 15 14 13 12 11	6% to 15 % productive habitat 10 9 (8) 7 6	Less than 5% productive habitat. 5 4 3 2 1
Water Velocity [18]	Max. observed at typical transect: >0.25 m/sec. but < 1 m/sec 20 19 18 17 (16)	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 (13) 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect <0.05 m/sec, or spate occurring; > 1 m/sec 5 4 3 2 1
Habitat Smothering [5]	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent (5) 4 3 2 1
Primary Score [34]				
Secondary Habitat Components				
Artificial Channelization [10]	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected (10) 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank [5] Left Bank [4]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. (5) 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank [9] Left Bank [6]	Width of native vegetation (least buffered side) greater than 18 m 10 (9)	Width of native vegetation (least buffered side) 12 m to 18 m 8 7 (6)	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank [9] Left Bank [7]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. 10 (9)	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 (7) 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1
Secondary Score [50]				

84 TOTAL SCORE

ANALYSIS DATE: 11-08-05	ANALYST: BUTTS, DONELAN	SIGNATURE: Glenn Butts

HD's IN

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

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SCJ 1/1

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	33020225	12/6/05	1340	Esc. Bay

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
Control SC1 H2O pickup HDs. + Algae	Esc.	Escambia River abv SR4 + abv Big Esc. Creek West Bank	1 CONTROL

RIPARIAN ZONE/STREAM FEATURES

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

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

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

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

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

List & map dominant Vegetation on back

Typical Width (m) Depth (m)/Velocity (m/sec) Transect: 18.3 m wide

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

Artificially Impounded ☐ yes more sinuous

	m/s	m/s	m/s
	2.5		

High Water Mark: 2.0 (m above present water level) + 2.7 (present depth in m) = (m above bed)

	m deep	m deep	m deep
	2.7		

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 moderate (slight severe) Other: _____

Substrate Type	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags) ✓	4	7		Sand			
Leaf Packs of Mats				Mud/Muck/Silt ✓		6	
Aquatic Vegetation				Other:			
Rock or Shell Rubbie				Other:			
Undercut banks/Roots ✓	4	7		*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):	% DO		Secchi (m):
Top	0.2	13.01	6.10	10.7	56	100		
Mid-depth	3.05	13.01	6.3	10.1	55	96		1.5
Bottom	6.7	13.02	6.21	10.1	55	96		

System Type: Stream: 1st-2nd order 3rd-4th order (7th order or greater) 5th – 6th order 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:
Sunny, cool (50's)

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

SAMPLING TEAM: Penelope / Barbara

SIGNATURE:

DATE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (5-27-98)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 33020725	DATE (M/D/Y): 12-06-05	RECEIVING BODY OF WATER: Esc. Bay

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
CONTROL	Esc.	Esc. River abv SR 4 + abv Big Esc. Creek	1

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components				
Substrate Diversity [6]	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), undercut banks, 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 [3]	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 [16]	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 [1]	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent 5 4 3 2 (1)
Primary Score [76]				
Secondary Habitat Components				
Artificial Channelization [20]	No artificial channelization or dredging. Stream with normal, sinuous pattern (20) 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability				
Right Bank [4]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 (4)	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Left Bank [4]				
Riparian Buffer Zone Width				
Right Bank [10]	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12 m to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Left Bank [10]				
Riparian Zone Vegetation Quality				
Right Bank [10]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1
Left Bank [10]				
Secondary Score [68]				

[94] **TOTAL SCORE** 58.75

ANALYSIS DATE:	ANALYST:	SIGNATURE:
12-06-05	Pinelas / Beheler	

HD'S IN

NOT FOUND

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

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
	33020226	12-06-05	1030	Esc. Bay

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
SCI w/H2O pick up HDs Algae	Esc	Escambia River blw Century WWTP outfall	3 TEST

Lost HDs

RIPARIAN ZONE/STREAM FEATURES

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

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

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

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

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

List & map dominant Vegetation on back

Typical Width (m) Depth (m)/Velocity (m/sec) Transect: 120 m wide

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

Artificially Impounded ☐ yes more sinuous

0.1 m/s .3 m/s .35 m/s

High Water Mark: 2.5 + [ ] = [ ]
(m above present water level) (present depth in m) (m above bed)

2.5 m deep 2.0 m deep 2.8 m deep

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

SEDIMENT/SUBSTRATE

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

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

Sediment Deposition: Sludge: ☐ Sand Smothering: none 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) ✓	1	7		Sand			
Leaf Packs of Mats				Mud/Muck/Silt ✓	1	6	
Aquatic Vegetation				Other:			
Rock or Shell Rubbie				Other:			
Undercut banks/Roots ✓	1	7		*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):	%DO		Secchi (m):
Top	0.2	12.59	5.94	9.75	55	90.4		0.52
Mid-depth	1.4	12.59	6.69	9.45	55	87.8		
Bottom	2.8	12.57	6.03	9.6	55	88.6		

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: Clear - Cold
Rain last 2 Days 2in

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

SAMPLING TEAM:	SIGNATURE:	DATE:
Powell / Buford		

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRESHWATER BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET (5-27-98)

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER: 33020726	DATE (M/D/Y):	RECEIVING BODY OF WATER: Esc. Bay
REMARKS: TEST	COUNTY: Esc.	LOCATION: Esc. River b/w Century WWTP and SR 11	FIELD ID/NAME: 3

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** [6]	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), undercut banks, 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 [3]	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 [16]	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 [1]	Less than 20% of habitats affected by sand or silt accumulation	20%-50% of habitats affected by sand or silt accumulation	Smothering of 50%-80% of habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, a severe problem, pools absent 5 4 3 2 (1)
Primary Score [26]	20 19 18 17 16	15 14 13 12 11		
Secondary Habitat Components **Artificial Channelization** [19]	No artificial channelization or dredging. Stream with normal, sinuous pattern (Bridge + B. Ramp) 20 (19) 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank [3] Left Bank [2]	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 (2) 1
Riparian Buffer Zone Width Right Bank [10] Left Bank [9]	Width of native vegetation (least buffered side) greater than 18 m 10 (9)	Width of native vegetation (least buffered side) 12 m to 18 m 8 7 6	Width of native vegetation 6 to 12 m, human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank [9] Left Bank [7]	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions. 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 (7) 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of streambank surfaces are vegetated and/or poor plant community (*e.g.* grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less. 3 2 1
Secondary Score [57]				

[85] **TOTAL SCORE** 53.1%

ANALYSIS DATE: 12-06-05	ANALYST: Dixie Jo Baker	SIGNATURE:

Appendix 10

Taxa list and number of individuals counted for periphyton collected from natural substrates upstream and downstream of Town of Century WWTP facility discharge, 12-6-05.

	Control Site	Test Site
Bacillariophyta		
Achnanthes clevei	-	1
Achnanthes lanceolata	2	-
Achnanthes lanceolata apiculata	2	-
Achnanthes lanceolata rostrata	10	24
Achnanthes minutissima	5	4
Achnanthes rupestoides	1	-
Amphipleura pellucida	2	-
Amphora sp.	1	-
Bacillariophyceae	7	7
Capartogramma crucicula	-	1
Cocconeis fluviatilis	8	3
Cyclotella meneghiniana	-	1
Cyclotella pseudostelligera	2	-
Cyclotella stelligera	-	1
Cymbella sp.	8	4
Cymbella cistula	-	1
Cymbella tumida	11	8
Cymbella turgidula	13	11
Cymbellaceae	7	3
Diadesmis contenta	1	1
Encyonema sp.	2	1
Encyonema minutum	1	4
Encyonema neomesianum	-	2
Encyonema silesiacum	2	6
Eunotia sp.	13	9
Eunotia pectinalis	1	-
Fragilaria sp.	3	1
Fragilaria delicatissima	1	-
Fragilariaceae	5	5
Frustulia sp.	1	2
Frustulia rhomboides	2	4
Gomphonema sp.	7	23
Gomphonema gracile	2	4
Gomphonema parvulum	6	39
Gyrosigma sp.	3	3
Gyrosigma spenceri	4	1
Hippodonta capitata	1	2
Hippodonta hungarica	1	-
Luticola mutica	1	-
Melosira sp.	10	9
Navicula sp.	45	28
Navicula cryptocephala	4	1
Navicula germainii	5	5
Navicula minima	1	1

Appendix 10 (cont'd)

	Control Site	Test Site
Navicula rostellata	15	13
Navicula schroeteri	20	35
Naviculaceae	7	8
Neidium sp.	2	-
Nitzschia sp.	33	14
Nitzschia amphibia	-	1
Nitzschia lorenziana	3	-
Nitzschia nana	2	-
Nitzschia palea	6	-
Pinnularia sp.	-	5
Sellaphora pupula	4	1
Stauroneis sp.	-	1
Surirella sp.	2	-
Surirella minuta	2	-
Synedra ulna	7	3
Tabellaria sp.	1	-
Tryblionella sp.	1	-
Chlorophycota		
Chlorella sp.	-	1
Cyanophycota		
Cyanobium parvum	-	1
Jaaginema sp.	1	3
Oscillatoria tenuis	3	5
Planktolyngbya sp.	3	1
Planktothrix sp.	-	1

Appendix 11a

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 of the Town of Century facility and collected 12-06-05. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site
Annelida	
Nais behningi	25
Nais communis complex	134
Slavina appendiculata	3
Arthropoda	
Diptera	
Brillia flavifrons	6
Chironomini genus IV	3
Cladotanytarsus sp.	3
Cricotopus albiforceps	16
Cricotopus bicinctus	331
Cricotopus / Orthocladius sp.	71
Goeldichironomus holoprasinus	6
Hemerodromia sp.	3
Nanocladius sp.	6
Orthocladius sp.	6
Parakiefferiella sp. B Epler	15
Parakiefferiella sp. E Epler	226
Phaenopsectra punctipes grp.	6
Polypedilum fallax	30
Polypedilum flavum	27
Potthastia longimana	6
Rheocricotopus robacki	305
Rheotanytarsus exiguus grp.	223
Rheotanytarsus pellucidus	50
Tanytarsus sp. A Epler	15
Tanytarsus sp. D Epler	46
Tanytarsus sp. L Epler	33
Tanytarsus sp. M Epler	6
Tanytarsus sp. S Epler	6
Thienemanniella lobapodema	50
Thienemanniella xena	32
Thienemannimyia grp.	6
Tvetenia vitracies	6
Ephemeroptera	
Baetis intercalaris	5
Maccaffertium exiguum	63
Maccaffertium smithae	88
Stenacron sp.	7
Tricorythodes albilineatus	8
Plecoptera	
Neoperla clymene	31
Pteronarcys sp.	6
Taeniopteryx sp.	3

Appendix 11a (cont'd)

		Control Site
	Trichoptera	
	Brachycentrus numerosus	3
	Cheumatopsyche sp.	3
	Chimarra sp.	29
	Hydropsyche sp.	193
	Hydroptila sp.	61
	Polycentropodidae	3
Mollusca		
	Ancylidae	3
	Planorbidae	3

Appendix 11b

Benthic macroinvertebrates taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 3 samples) incubated upstream of the Town of Century WWTP facility for 28 days and collected 12-06-05.

	Control Site
Annelida	
Naididae	3
Nais behningi	9
Nais communis complex	48
Slavina appendiculata	1
Arthropoda	
Diptera	
Brillia flavifrons	2
Chironomidae	57
Chironomini genus IV	1
Cladotanytarsus sp.	1
Cricotopus sp.	7
Cricotopus albiforceps	5
Cricotopus bicinctus	106
Cricotopus / Orthocladius sp.	24
Goeldichironomus holoprasinus	2
Hemerodromia sp.	1
Nanocladius sp.	2
Orthocladius sp.	2
Parakiefferiella sp.	18
Parakiefferiella sp. B Epler	4
Parakiefferiella sp. E Epler	60
Phaenopsectra punctipes grp.	2
Polypedilum fallax	10
Polypedilum flavum	9
Potthastia longimana	2
Rheocricotopus robacki	104
Rheotanytarsus exiguus grp.	76
Rheotanytarsus pellucidus	17
Tanytarsus sp.	1
Tanytarsus sp. A Epler	5
Tanytarsus sp. D Epler	15
Tanytarsus sp. L Epler	11
Tanytarsus sp. M Epler	2
Tanytarsus sp. S Epler	2
Thienemanniella lobapodema	17
Thienemanniella xena	11
Thienemannimyia grp.	2
Tvetenia vitracies	2
Ephemeroptera	
Baetidae	1
Baetis intercalaris	1
Heptageniidae	16
Maccaffertium sp.	18
Maccaffertium exiguum	10
Maccaffertium smithae	14
Stenacron sp.	2
Tricorythodes albilineatus	3

Appendix 11b (cont'd)

	Control Site
Plecoptera	
Neoperla sp.	2
Neoperla clymene	7
Perlidae	2
Pteronarcys sp.	2
Taeniopteryx sp.	1
Undetermined Plecoptera	1
Trichoptera	
Brachycentrus numerosus	1
Cheumatopsyche sp.	1
Chimarra sp.	11
Hydropsyche sp.	70
Hydropsychidae	3
Hydroptila sp.	23
Polycentropodidae	1
Mollusca	
Ancylidae	1
Planorbidae	1

Appendix 12a

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps upstream and downstream of Town of Century WWTP facility (12-06-05). See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Enchytraeidae	2	1
Tubificidae	12	-
Eclipidrilus sp.	6	2
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	-	2
Insecta		
Coleoptera		
Dineutus discolor	-	1
Gyrinus analis	-	3
Hydrobius tumidus	-	1
Neoporus sp.	-	1
Scirtes sp.	-	2
Sperchopsis tessellatus	-	2
Stenelmis sp.	-	1
Tropisternus sp.	1	-
Diptera		
Ablabesmyia mallochi	1	-
Cricotopus bicinctus	8	3
Cryptotendipes sp.	-	1
Hemerodromia sp.	1	-
Polypedilum halterale grp.	1	-
Polypedilum illinoense grp.	1	19
Pseudochironomus sp.	-	1
Rheotanytarsus exiguus grp.	1	-
Rheotanytarsus pellucidus	1	-
Sciaridae	-	2
Stenochironomus sp.	1	-
Tanytarsus sp. A Epler	-	1
Tipula sp.	-	1
Tvetenia vitracies	1	-
Ephemeroptera		
Acerpenna pygmaea	-	1
Baetis sp.	3	-
Baetis intercalaris	-	3
Baetisca becki	-	1
Caenis sp.	-	1
Centroptilum triangulifer	7	-
Eurylophella doris	1	-
Heptageniidae	3	-
Hexagenia sp.	3	4
Maccaffertium exiguum	-	3
Maccaffertium smithae	-	7
Stenacron sp.	-	2

Appendix 12a (cont'd)

	Control Site	Test Site
Odonata		
Coenagrionidae	-	1
Neurocordulia molesta	1	-
Plecoptera		
Acroneuria arenosa/evoluta	1	-
Neoperla clymene	-	22
Taeniopteryx sp.	1	1
Trichoptera		
Cheumatopsyche sp.	2	-
Chimarra sp.	1	-
Hydropsyche sp.	-	4
Hydropsyche incommoda	20	-
Hydropsyche mississippiensis	12	-
Hydroptila sp.	5	-
Nectopsyche candida	-	1
Nectopsyche exquisita	1	-
Mollusca		
Bivalvia		
Corbicula fluminea	-	1
Sphaeriidae(mollusca)	2	-
Gastropoda		
Ancylidae	-	1
Physidae	-	1
Pseudosuccinea columella	-	4
Pyrgophorus platyrachis	-	7

Appendix 12b

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps upstream and downstream of Town of Century WWTP facility (12-06-05).

	Control Site	Test Site
Annelida		
Enchytraeidae	2	1
Tubificidae	12	-
Eclipidrilus sp.	6	2
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	-	2
Insecta		
Coleoptera		
Dineutus discolor	-	1
Gyrinus analis	-	3
Hydrobius tumidus	-	1
Neoporus sp.	-	1
Scirtes sp.	-	2
Sperchopsis tessellatus	-	2
Stenelmis sp.	-	1
Tropisternus sp.	1	-
Diptera		
Ablabesmyia mallochi	1	-
Chironomidae	-	7
Cricotopus bicinctus	8	2
Cryptotendipes sp.	-	1
Hemerodromia sp.	1	-
Polypedilum halterale grp.	1	-
Polypedilum illinoense grp.	1	13
Pseudochironomus sp.	-	1
Rheotanytarsus exiguus grp.	1	-
Rheotanytarsus pellucidus	1	-
Sciaridae	-	2
Stenochironomus sp.	1	-
Tanytarsus sp. A Epler	-	1
Tipula sp.	-	1
Tvetenia vitracies	1	-
Ephemeroptera		
Acerpenna pygmaea	-	1
Baetis sp.	3	-
Baetis intercalaris	-	3
Baetisca becki	-	1
Caenis sp.	-	1
Centroptilum triangulifer	7	-
Eurylophella doris	1	-
Heptageniidae	3	1
Hexagenia sp.	3	4
Maccaffertium exiguum	-	3
Maccaffertium smithae	-	6
Stenacron sp.	-	2

Appendix 12b (cont'd)

	Control Site	Test Site
Odonata		
Coenagrionidae	-	1
Neurocordulia molesta	1	-
Plecoptera		
Acroneuria arenosa/evoluta	1	-
Neoperla clymene	-	22
Taeniopteryx sp.	1	1
Trichoptera		
Cheumatopsyche sp.	2	-
Chimarra sp.	1	-
Hydropsyche sp.	-	4
Hydropsyche incommoda	20	-
Hydropsyche mississippiensis	12	-
Hydroptila sp.	5	-
Nectopsyche candida	-	1
Nectopsyche exquisita	1	-
Mollusca		
Bivalvia		
Corbicula fluminea	-	1
Sphaeriidae(mollusca)	2	-
Gastropoda		
Ancylidae	-	1
Physidae	-	1
Pseudosuccinea columella	-	4
Pyrgophorus platyrachis	-	7

The Bioassay of Town of Century WWTP effluent sampled on December 5-6, 2005, 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 F L 0 0 3 2 4 6 8 11	12 0 5 1 2 0 4	18 **B**	19 **S**	20 1

Remarks

66

The Priority Pollutants Analysis for Bioassay of Town of Century WWTP effluent sampled on December 5-6, 2005, 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 F L 0 0 3 2 4 6 8 11	12 0 5 1 2 0 4	18 **X**	19 **S**	20 1

Remarks

66

Biological Analyses of the Town of Century WWTP effluent sampled on December 5-6, 2005, 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 F L 0 0 2 0 3 3 8 11	12 0 5 1 2 0 4	18 **S**	19 **S**	20 1

Remarks

66